



April 23, 2007

**CHEAKAMUS RIVER STEELHEAD
FISH CULTURE PROGRAM
April 2007 Update**

Following a spill of sodium hydroxide (NaOH) into the Cheakamus River a two year fish culture program for steelhead trout was initiated by the Ministry of Environment (MoE) in conjunction with CN, the Freshwater Fisheries Society of BC (FFSBC), and Fisheries and Oceans Canada.

The objective of the CN funded steelhead program is to release 20,000 smolts in 2007 and 2008 to supplement the wild adult returns in 2009 and 2010. The fish will not be subject to harvest but allowed to spawn. The steelhead culture program will be closely monitored to try and determine effectiveness, and the MoE will be monitoring the recovery to completion.

InStream Fisheries Research Inc. have been retained by MoE and CN to help coordinate and implement the fish culture monitoring program based on their extensive experience with steelhead supplementation program evaluations and stock assessment. InStream has been actively conducting fisheries work on the Cheakamus River for 8 years.

Previous program updates have reported on Year 1 broodstock capture success, spawning methods and mating structure, rearing locations and smolt targets. This update covers the 2007 smolt release plan, and an update on 2007 brood stock capture.

Juvenile Rearing Update

Steelhead juveniles rearing at Tenderfoot and Fraser Valley Trout hatcheries are doing well and are on target to attain size targets of 75-80g by mid-May release dates. Losses of fish in the rearing process have been minimal.

Fish Marking

As part of the effectiveness monitoring program between MoE and CN, a variety of marking methods (tags) are being used. All fish were marked in early November with an adipose clip to establish hatchery origin. In addition, the fish rearing at FVTH were also implanted with a coded wire tag (CWT). These microscopic magnetic tags were inserted into the boney structure of the fish's head (www.nmt.us/) and will allow for screening of fish on return for rearing origin (TCH or FVTH).

An additional 50 fish from each river release group will have acoustic tags attached as part of program effectiveness monitoring. The migration of these fish can then be followed from the point of release until they leave Johnstone Strait using the Pacific Ocean Shelf tracking (POST) receivers in the watershed and ocean seabed (www.postcoml.org/). Residualization rates, migration routes and loss rates at different areas can then be determined relative to wild fish which were similarly tagged in 2004 and 2005.

Smolt Release Plan

Steelhead hatchery smolt release strategies may affect outmigration survival, residualization rates and competition with wild fish. To balance the benefits and risks of various release options, a multi-release strategy has been developed using available information from the literature combined with local operational restrictions. The releases are designed to encourage a wide geographic distribution of returning hatchery fish into preferred spawning habitat while minimizing the risk of high levels of residualization and potential swamping of remnant populations of wild spawners. The fish marking plan is designed to assist in evaluating the success of these project goals.

Four release sites and two release methods will be utilized. These include:

The 10,000 steelhead juveniles raised in the Tenderfoot hatchery will be volitionally released into the Cheakamus River via Tenderfoot Lake/Creek (Reach 4).

Steelhead juveniles raised in the Fraser Valley Trout Hatchery will be released in three locations;

- 1) 2,000 fish released directly in the upper river (Reach 8).*
- 2) 6,000 fish released directly in the lower river (Reach 3).*
- 3) 2,000 fish released into Gorbushca spawning channel (Reach 4).*

The smolts are tentatively scheduled to be released starting the week of May 7th. The goal is to time the release with the peak of wild smolt migration as derived from trapping operations conducted by BC Hydro. However, with the reduced number of wild smolts anticipated this year determination of in season migration timing may not be possible. Instead, data from past years was utilized to predict likely wild smolt migration timing. Exact release dates will depend on the weather and hatchery staff schedules.

Residualism in Smolt Release.

Based on hatchery releases at other locations, it is expected that between 10 and 20% of released fish may residualize (fail to migrate) for a variety of reasons. Larger fish >200mm which residualize will likely remain resident for the duration of their lifespan. Angler support in sampling and reporting captures of these fish in the fall of 2007 and the spring of 2008 will be solicited. Further details will be supplied in future updates.

Surplus Fish

A by-product of producing the best possible 20,000 smolts was excess fish. In addition to the ~22,000 smolts rearing at the two facilities, approximately 12,500 fish were surplus to the needs of the smolt program. Some of the excess fish were used in a study to determine growth, maturation parameters and residual rates of fish raised under different rearing conditions (e.g. temperature). Hatchery rearing conditions increase growth rates of the fish and are thought to play a role in the increased precociousness and residualization rates documented in hatchery fish. The goal of this project is to determine if different rearing conditions might reduce these undesirable traits in hatchery reared Cheakamus steelhead. If successful this information will then be applied to the next rearing cycle.

The remaining excess fish were stocked into Mill and Cat lakes. Approximately 3,000 of the surplus fish were stocked into Cat Lake earlier this month to provide a local angling opportunity. Nutrient enrichment in Cat Lake is currently being reviewed and may begin in 2007.

Broodstock Collection Update

The importance of suitable broodstock selection was explained in the previous update letter (Feb. 2007). To-date, through volunteer angler assistance, 11 adults have been captured, and we are on schedule to meet the goal of 17 collected before the end on April, and 20 by the end of the run.

Two pairs have been spawned so far, with one male succumbing to a fungal infection after spawning.

Regular program updates will now be provided approximately every six months, or following major events, to the Cheakamus Recovery committees, and the public. The next will focus on the 2007 smolt release and residual smolt monitoring project.

Program Contacts:

Dale Larson – Fraser Valley Trout Hatchery FFSBC – 604-504-4709

Greg Wilson – Ministry of Environment, Regional Biologist - 604-582-5365

Bryan Ludwig – Science Division FFSBC - 250-414-4205