

Fish Projects

Funded in 2009 – 10



Small Project Funding

Each year the FWCP sets aside project funding to target smaller, community-based fisheries projects. Typically these are ‘on-the-ground’ activities to improve fish habitat or evaluate completed fish habitat restoration. They are usually delivered for less than \$10,000 by community organizations or environmental non-profit groups. As with all FWCP projects, they must be biologically sound and go through the regular approval process.

For the current fiscal year the Small Projects scheduled to be delivered include:

Boulder Creek Gravel Additions Evaluation

Gravel was added to Boulder Creek (Kootenay Lake, South Arm) in 2008 to assist in rebuilding kokanee runs. Painted rocks were placed in different zones with the intent of aiding in tracking gravel movement after the 2009 freshet. Evaluation will be completed in early summer 2009 to assess the gravel movement; and results will help determine to whether this technique is applicable in future work.

Conservation Water Licences

Seed project funding has been set aside for scoping and exploring options for obtaining water licenses for fish habitat conservation purposes.

Murphy Creek Post-Enhancement Evaluation

Habitat restoration undertaken in Murphy Creek (north of Trail) in 2008 will be evaluated to ensure that the physical structures are still functioning properly; and to determine whether the initially positive fish response has been maintained. Results will be provided in report form and submitted for publication.

Gerrard Rainbow Trout Monitoring

Monitoring escapement of Gerrard rainbow trout to the main spawning area at the outlet of Trout Lake is an important component in monitoring the success of the Nutrient Restoration Program in Kootenay Lake. This project will contribute funds towards sonic tags that will be implanted into Gerrard rainbow trout in Kootenay Lake, and assist with monitoring these tagged fish at the spawning grounds.

Arrow Lakes Reservoir Nutrient Restoration Program

Arrow Lakes Reservoir (ALR) has been influenced by the construction of three dams – Hugh Keenleyside, Mica and Revelstoke. These dams have impacted native fish populations by permanently changing the hydrograph (flows) and nutrient loading into ALR. This has resulted in decreased lake productivity downstream from the dams causing a decline in kokanee stocks.

To address the nutrient losses in ALR, a “bottom-up” approach was taken through the addition of nutrients (nitrogen and phosphorus in the form of liquid fertilizer) to increase the production of zooplankton - a main food source for kokanee. Nutrients have been added to Upper Arrow since 1999 and are dispensed from the Western Pacific Marine ferries from the end of April through mid-September.

The program benefits kokanee as well as rainbow and bull trout populations which is not only positive for the ecosystem but also recreational and economic opportunities. There are additional benefits to wildlife (eagles, ospreys, bears, etc) as a result of increased lake productivity. The Nutrient Restoration Program in ALR and Kootenay Lake (see below) is regarded as one of the most successful large-lake restoration programs in the world.

It is jointly coordinated by the FWCP and the B.C. Ministry of Environment with one quarter of the project cost coming from the Columbia Power Corporation to offset the impacts from the Arrow Lakes Generating Station.

Upper Columbia Sturgeon Culture

The white sturgeon of the upper Columbia River is an endangered species (and vulnerable to extinction) which has experienced a significant population decline. There has been virtually no successful reproduction in the wild for several decades. Therefore a critical component to sturgeon recovery work includes rearing, raising and releasing juvenile white sturgeon into the Columbia River.

The FWCP is a major funder of the conservation aquaculture program for Columbia River sturgeon - raising thousands of juveniles in a controlled environment at the Sturgeon Hatchery at near Wardner in the East Kootenay.

Broodstock adults are collected from the Columbia River and transported to the hatchery. Milt and eggs are extracted (and the adults returned to the river), the eggs are hatched and the young reared until about 10 months of age. They are then transported to the Columbia River and released, often with the participation of school children and the public.

FWCP is also an active partner in the Upper Columbia White Sturgeon Recovery Initiative and, each year, organizes the juvenile sturgeon release events for these groups. In 2009-2010 it is estimated that about 4,000 juvenile white sturgeon will be raised and released in to the Columbia River.

Hill Creek Spawning Channel

This project, north of Nakusp, has been in operation since the early 1980s to compensate for kokanee and rainbow trout spawning habitat lost as a result of construction of the Revelstoke Dam. Funding covers basic operations, maintenance and evaluation of the Hill Creek Spawning Channel (HCSC) including programs to monitor kokanee fry emigration, and adult kokanee escapement.

New items identified for 2009-10 include upgrades to the living quarters at the channel, brush pile removal, fence wheel upgrade, spawning gravel purchase, and clearing of drainage ditches at the site.

Egg-to-fry survival at HCSC has been positive for the last few years and, in 2008, hit an all time high of 69.4%. In comparison, the egg-to-fry-survival rate in streams is typically less than 15%. The target egg deposition for fall of 2009 is 12 million kokanee eggs, with a target egg-to-fry survival rate of more than 30%. This would result in more than 4 million fry emerging from HCSC in spring 2010. Recent monitoring has shown that the channel also produces substantial numbers of rainbow trout and some bull trout. Healthy fish stocks provide angling opportunities and economic benefits.

The project is jointly coordinated by the FWCP and the B.C. Ministry of Environment.

Meadow Creek Spawning Channel

The ongoing operation and maintenance of the Meadow Creek Spawning Channel (MCSC), built in 1967 at the north end of Kootenay Lake, is to compensate for the loss of spawning habitat for an estimated 2.8 million kokanee following the construction of Duncan Dam. Like Hill Creek Spawning Channel, it is jointly managed by the FWCP and the B.C. Ministry of Environment.

Annual activities include gravel scarification (removing the finer sediments from the gravel), cleaning the settling pond, monitoring adult numbers entering the channel and nearby reaches of the lower Duncan and Lardeau rivers, and monitoring fry production in spring to evaluate over-winter survival of incubating eggs.

Major maintenance and upgrades are also required periodically, and can include building maintenance; channel modifications (gravel and weir), bridge refurbishing, rip rap replenishment, hazardous tree removal and flood protection improvements. Turbidity monitoring associated with mechanical gravel scarification has occurred since 2003.

The 2009-2010 target egg-to-fry survival rate is above 35% with a target egg deposition of 40 million eggs. This would result in more than 14 million fry leaving MCSC in spring 2010.

Improved kokanee production helps the ecosystem in Kootenay Lake. Kokanee are a primary prey species for both bull trout and Gerrard rainbow trout. The decomposition of kokanee carcasses benefits the natural nutrient levels in the lake and river, in addition to providing seasonal forage for other aquatic, terrestrial and avian predators.

The facility is recognized for its kokanee viewing potential and also operates as the provincial source of kokanee eggs for the Freshwater Fish Society of BC.

Kootenay Lake Nutrient Restoration Program (North Arm)

Similar to the dams upstream of Upper Arrow Lakes Reservoir, Duncan Dam, to the north of Kootenay Lake, is trapping nutrients and negatively impacting the ecosystem in the lake. Since 1992 nutrients, in the form of a liquid blend of nitrogen and phosphorus, have been added to replace those nutrients trapped by the dam. This Nutrient Restoration Program – formerly known as the Fertilization Program – is a “bottom-up” approach to ecosystem restoration, and has exhibited positive results: kokanee biomass (the weight of kokanee per hectare) has, for example, more than doubled in Kootenay Lake since nutrient additions started.

Nutrients are dispensed from a tug and barge in a 10 km section of the North Arm between the end of each April and mid-September. Extensive monitoring, at various lake locations, takes place to ensure that water quality is not negatively impacted and that the correct balance of nutrients is added.

In addition to supporting the kokanee population of Kootenay Lake, the Nutrient Restoration Program also helps many other species including the Gerrard rainbow trout, bull trout, ospreys, bald eagles, grizzly bears and great blue herons. There are also spin-off benefits for angling, recreation and local tourism opportunities.

The project is jointly coordinated by the FWCP and the B.C. Ministry of Environment.

Kootenay Lake Creel Survey Design

A creel survey is a method for gaining information on a fishery by interviewing anglers about their catch. This project will directly assist with monitoring the Kootenay Lake Nutrient Restoration Program (NRP) through estimating the harvest of fish species in the lake. One of the primary targets of the NRP is the restoration of Gerrard rainbow trout, bull trout, and kokanee populations and, therefore, proper evaluation of fish benefits should be conducted. These will include measures of both spawner abundance and angler harvest.

Actions will be to:

- Identify, and determine the feasibility of, access point surveys and boat counts to obtain angler effort and harvest estimates;
- Obtain descriptions of daily angler activity patterns to plan the timing of flights for a whole-lake survey;
- Obtain access point CPUE (catch per unit effort) estimates for comparison to ALR and the Kootenay Lake rainbow trout survey;
- Collect biological data (length, weight, age) on harvested fish.
- Review creel surveys from the past to ensure consistency and address limitations.

Kaslo River Bull Trout Assessment

This project will enumerate adfluvial out-migrating bull trout spawners (kelts) during August-October within the Kaslo River watershed. High water conditions during upstream migration limits use of the counter for total upstream counts, but downstream migration during much lower flows presents the opportunity for full enumeration of down-streaming fish. The project will use conventional means of assessing bull trout spawners using redd counts together with data collected from electronic resistivity counters to provide escapement estimates within the watershed. The counters, which have proved an effective method of enumerating migrating fish, were previously purchased by funding from HCTF.

The key objectives are to:

- Establish two fish counting facilities for fall enumeration of Kaslo River and Crawford Creek bull trout, primarily downstream after completion of spawning;
- Develop an expansion estimate for redd counts to actual spawner numbers for both the upper Kaslo River and Crawford Creek;
- Obtain video validation of migrating bull trout across resistivity counters at both sites;
- Establish an index of abundance on the Kaslo River to monitor trends;
- Establish a standardized methodology for the conservation and management of bull trout populations in the Kootenay Lake region;