

Final Project Summary Report

Off Channel Habitat Restoration in the Mid-Nicola River **PSC File No. SF-2008-H-11**

Prepared for:

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This summary report is based on information provided from the funding proposal (written by M. Gaboury and N. Todd), and the as-built report (Gaboury, M. 2008. Nicola River Off-Channel Habitat Development 2008 as Built Report.) forwarded under separate cover.

EXECUTIVE SUMMARY

The Pacific Salmon Commission: Southern Boundary Restoration and Enhancement Fund provided funding to the Nicola Tribal Association in 2008 to carry out a project to create off channel habitat in the mid Nicola River, Merritt, BC. The project was intended to create stable, high quality, and complex summer rearing and overwintering habitat for Interior Fraser (IFR) coho (Endangered, COSEWIC).

This project was carried out on the Chutter Ranch. A total of 750m of off channel habitat were constructed, creating approximately 5280 m² of instream habitat currently lacking in this reach of the Nicola River (from the outlet of Nicola Lake to the confluence of the Nicola and Coldwater Rivers). Livestock exclusion fencing was installed to ensure the integrity of the site is not disrupted; grass seeding and planting of indigenous rootstock was completed in the disrupted riparian areas.

INTRODUCTION

The mid-Nicola River (outlet of Nicola Lake down to Merritt and its confluence with the Coldwater River) is an important reach for Interior Fraser (IFR) coho (Endangered, COSEWIC). This reach has been compromised by agricultural development since the early 20th Century, and accessible off channel habitat no longer exists in this 20km reach of the Nicola watershed. The operation parameters of the Nicola dam may also be detrimental to fish habitat through 80% of the reach: extended periods of medium to high outflow from Nicola Lake contribute significantly to bank erosion and very high levels of turbidity for up to 2.5 months each spring and throughout the majority of the reach.

The Chutter Ranch has a large irrigation ditch that is wetted year round. It withdraws from the Nicola River just downstream of the Nicola Dam (prior to any areas of significant sediment contribution) and consequently has approximately 0.3 to 0.5 cubic meters per second of high quality clean water flowing through it. Most of this flow is returned to the Nicola River after passing the Ranch's last pumping station (screened intake). The outflow canal traverses a hayfield and spills into the Nicola River approximately 350m from the pumping station, and is currently fish accessible.

This project addresses, in a very significant way, freshwater habitat limitations to IFR coho productivity as identified in Fisheries and Oceans Canada's (DFO) Interior Fraser Coho Strategy. The significant loss of quality fresh water habitat was identified in the National Recovery Strategy for Coho Salmon in the Interior Fraser River Watershed, BC Consultative Draft (Interior Fraser Coho Recovery Team) as a contributing factor in the serious decline of IFR coho. Good quality off channel habitat is especially relevant to increasing coho fry to smolt survival rates. This project will also fit in with the principles of the proposed Nicola Water Use Management Plan concerning more effective use of scarce water resources by implementing multi-use water resource strategies that will provide multiple benefits to interests in addition to those of the agricultural sector. This project is directly relevant to the Pacific Salmon Treaty by addressing the low level of IFR coho populations, which in turn is constraining the ability for the U.S.A. and Canada to manage and harvest more numerous co-migrating stocks and species of salmon. Finally, the project will provide an opportunity for a low-risk high profile cooperative project that will be a "flagship project" marking the Nicola Tribal Association's (NTA) initiative to begin addressing fish habitat issues in the mainstem Nicola River downstream from Nicola Lake.

Objectives for this project are to:

1. construct a 75m long connecting channel, variable depths with two pools to provide some habitat complexity, to bypass the present outlet to the river and connect the irrigation ditch outflow canal to the cut-off oxbow channel that is currently dewatered (some standing groundwater is present).
2. construct a pilot channel through the 650m length of the oxbow, with variable depths to provide for 10-12 sections of pool, riffle, and glide. Complex the oxbow with large woody debris (LWD) to provide cover.

3. seed all disturbed soil areas; install woody debris and large rock as appropriate in pools to provide instream cover; plant approximately 2000 riparian shrubs and trees (1-3 year old indigenous rootstock) as required along the 75m connector channel and along the left bank of the pilot channel in the oxbow.
4. install fence posts for provision of electric fencing along the riparian area of the oxbow pilot channel (left side) and both sides of the connector channel.

METHODS

In March 2008 NTA met with the landowner to conduct onsite reconnaissance to discuss placement/location of the access culvert, fencing, gates, and to confirm the location of available rock and trees. At this time the construction schedule was confirmed for compatibility with ranching operations.

Construction of the connector channel took place from September 29 to October 6, 2008. A Cat 315 excavator was used to construct the channel and a 35D John Deere excavator was used to construct six riffle structures. Only two components of this project required “working in the wet”: connection of the irrigation ditch outflow canal to the new connector channel, and connection of the oxbow outflow to the mainstem Nicola. The rest of the works did not require equipment to enter the wetted perimeter of the river. An environmental monitor was onsite during all periods of instream construction, and contamination equipment was kept onsite in case of a fuel/oil spill.

This project involved the following construction steps:

1. Starting at the existing irrigation canal outlet, the connector channel, 180m long, was excavated to divert the flow into the isolated oxbow (loop cut-off of historic mainstem river channel).
2. Habitat complexity was provided by constructing six pool, riffle, glide sequences in the 180m connector channel. LWD (obtained locally from the pasture land of the landowner Dave Chutter) was placed in the pools, and boulders were placed in the constructed channel to provide instream cover.
3. Two 4m culverts were installed near the existing irrigation canal outlet to allow for cattle and human access across the off-channel.
4. Two dams were built; one was constructed at the downstream end of the overflow channel and one at the existing irrigation canal outlet to the Nicola River. Rip-rap was placed at the toes of both dams to protect against erosion during high water events.
5. Eleven pools were excavated in the oxbow channel (550m long).
6. The confluence of the oxbow outflow channel with the Nicola River was armored with rock to ensure stability during Nicola River flood flows.
7. one LWD and boulder structure was installed at the confluence of the oxbow outflow channel with the Nicola River to maintain integrity of both the oxbow outflow channel and mainstem channel. The LWD structure consists of ponderosa pine root wads with boles attached, which are embedded into the bank to provide anchoring. Structures were also ballasted by cabling the logs to oversized boulders using epoxy (Epcon Ceramic 6). The epoxy-cabling technique is described by Melville (1997¹).
8. Livestock exclusion fencing was installed in November 2008.
9. Grass seeding and planting of indigenous rootstock in the disturbed riparian area was completed in October 2008.

¹Melville, C. 1997. Securing instream structures: epoxy attachment method. Streamline, BC Stream Restoration Technical Bulletin. Vol.2No.1.

RESULTS

This 750m off-channel project developed approximately 5280m² of stable, high quality, complex summer rearing and overwintering habitat for IFR coho, in a high priority watershed.

APPENDIX 1: Financial Summary

Expenditure Type	Estimated costs per funding submission	Actual costs for PSC portion of the project	Actual costs for NTA portion of the project
Wages and benefits	4,968	1,149	2,897
Consultant fees	10,720	14,584	425
Project site costs	51,134	25,855	12,759
NTA Corporate Services Fee	4,187	4,140	
	71,009	45,728	16,081