

Rebman Creek Restoration

Objectives

The objectives of this project were to restore holding and rearing habitats for rainbow trout in Rebman Creek.

FRBC Region / MELP Region/MOF Region

Cariboo-Chilcotin / Cariboo / Cariboo

Author

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Proponent

MELP / Weldwood of Canada Ltd. Quesnel

Watershed / Stream

Willow River / Rebman Creek

Location

The Rebman Creek work sites are reached by heading from Quesnel to Barkerville on Highway 26 for approximately 50 km. Turn north at the West Fraser 2400, 24P and 900A logging roads. The access to the Reach 2 and Reach 4 rehabilitation sites are approximately 3 and 6 km along the 900 A road respectively. Deactivated access roads lead down to the sites.

Introduction

The upper Willow River Watershed is approximately 55 km Northeast of Quesnel. Rebman Creek enters the Willow River at the top of Reach 2. The tributary lies near the northern edge of the Quesnel Highland physiographic region and has a total watershed area of 21 km².

Rainbow trout are the dominant species in Rebman Creek and are the target of restoration works.

Assessments and Prescriptions

The Willow River watershed was selected by Ministry of Environment, Lands and Parks, Ministry of Forests, and Weldwood of Canada Ltd. for restoration of fish habitat damaged by logging.

A Level 1 Fish Habitat Assessment (FHAP) of selected reaches in the Willow River watershed

was conducted in 1997 (Ferguson and Bocking 1998). Rebman Creek was identified as a heavily impacted system and a high priority for stream restoration. The lower 7 km of the stream has been logged to the streambank and has caused bank erosion, aggradation, formation of mid-channel bars, infilling of pools and loss of cover including LWD.

Level 2 Fish Habitat Restoration Prescriptions were completed by LGL Limited and Northwest Hydraulic Consultants Ltd. in 1999 (Gaboury et al. 1999).

Past Rehabilitation Work

Riffles were constructed in Reach 4 in 1998. Three hundred metres of new habitat were created through 83 m of construction (Randall 1998).

Rehabilitation Work

The Level 1 FHAP for Reach 2 and Reach 4 rated the percentage of pools and pool frequency as poor (Ferguson and Bocking 1998). The number of functional pieces of LWD in these reaches for creating pools and providing cover was also considered inadequate in the Level 1 report.

Work was completed at a total of 19 sites over a linear distance of nearly 1 kilometer. For each work site a LWD structure and a riffle were constructed. Pools were excavated upstream of the riffle at the location of the LWD structure. The LWD structures were built to provide cover and scour at the excavated pools. The following two basic designs for the LWD structures were used with a few site specific modifications: 1) A triangular lateral log jam with two 6-8 m logs with rootwads and an additional rootwad piece; and 2) A lateral log jam with five 6-8 m logs with rootwads. The LWD structures were ballasted with boulders brought in to the site. The structures were also anchored to the bank by embedding the top 3-4 m of the logs and attaching rock ballast to the logs in the bank.

A riffle base was constructed by having crews move material by hand. An excavator would

then move larger boulders from the pool excavations to the riffle surface. The excavator was used to strategically place large boulders on the crest and face of the riffle to provide stability. A pool was also excavated downstream of the riffle. A schematic construction drawing of the basic riffle design used in Rebman Creek can be found in Chapter 12, figure 12-12 of WRP Technical Circular No. 9 (Newbury et al. 1997).

A total of fourteen sites over 810m of Reach 2 were completed. The Level 2 prescriptions proposed that the restoration of this section of Reach 2 would provide the greatest benefits to the target species, rainbow trout. Five sites were completed in Reach 4 over 170 m. Three of the riffle constructions in Reach 4 involved adding larger material to riffles that were constructed in 1998.

Cost Summary

Item	Cost
Labour	\$43,956
Equipment	\$24,809
Materials	\$6,235
total	\$75,000

Outputs

Channel reconstruction and installation of restoration works were undertaken on nearly 1 km of stream. As well, approximately 160 person days of employment was created based on an 8 hour work day.

Production Estimates

WRP Technical Circular No. 9 indicates that an approximate 2-fold increase in resident rainbow trout numbers can be expected as a result of the instream works (Koning and Keeley 1997).

Proposed Work

Construction of riffle-pool sequences in Reach 2 downstream of the current years works should be undertaken in 2000. The next priorities would be to re-construct 460 m of Reach 3

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Figure 1: Pool complexing with LWD on Rebman Creek, Cariboo Region.



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