Fish Passage Culvert Assessments: South West Vancouver Island, B.C.
Completed in TFL 44 of the Alberni Watershed Group and San Juan Watershed Group, South Island Forest District

Objectives

The objectives of the Fish Passage Culvert Assessments were to:

- Evaluate fish passage at pre-selected closed bottom structures at stream crossings within six high priority watersheds located within TFL 44 on West Vancouver Island.
- Determine if the culverts investigated presented a barrier to fish passage.
- Collect fish habitat characteristics at each crossing.
- Determine if each crossing met the eligibility criteria for a fish passage restoration project.

FIA Investment Schedule Number and Project Number

Investment Schedule: COTFL446803
Project Number: 6803002
Fiscal Year: 2008/2009

Recipient Name and Division/MoF District/MoF Region

MoF Region: Coast Forest Region
Recipient: BCTS, Campbell River Forest District Business Area
Project Area: South Island Forest District

Author(s) and/or Registered Professionals of the Project Completion Abstract

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Watershed/Stream and Location

The six watersheds selected for the study as per Mackinnon (2008a) included the Caycuse River (25.3 km; 91.9 km^2), Doobah Creek (10.0 km; 27.4 km^2), Mactush Creek (12.5 km; 28.1 km^2), Nahmint River (34.6 km; 170.6 km^2), Nitinat River (57.4 km; 251.7 km^2) and the Taylor River (31.5 km; 95.5 km^2). Stream length and watershed area are included in brackets. The Caycuse R., Doobah Cr., and Nitinat R. are included in the San Juan Watershed Group, and the remaining systems are located within the Alberni Watershed Group. All streams discharge to the west side of Vancouver Island.

UTM Coordinates (NAD83) and Watershed

Watershed	TFL/ BCTS Admin Area	UTM[1,2] Zone	Easting	Northing	Watershed Code[2]
Caycuse R.[3]	44/46	10U	376434	5406160	930-071700-25700
Doobah Cr.	BCTS Admin Area	10U	371938	5400336	930-071700-15800
MacTush Cr.	44	10U	366648	5441449	930-147000
Nahmint R.	44	10U	362521	5436031	930-150800
Nitinat R.[4]	44/46	10U	363733	5392400	930-071700
Taylor R.	44	10U	339253	5461615	930-137400-99100-99100

[1] UTM at mouth.
[2] Data from FISS.
[3] Two crossings (0064 and 0068) in the lower Caycuse River system were located in TFL 44.
[4] Six of the 33 crossings assessed in the Nitinat R. Watershed were located in TFL 44.

Introduction

In 2008/2009, ECODynamic Solutions (EDS) Inc. was contracted by BC Timber Sales, to conduct fish passage assessments at closed bottom structures within six priority watersheds in TFL 44. The road networks specified for investigation under the Contract were limited to Forest Service Roads (FSR), pre-1995 Road Permit Roads, and Non-Status Roads within the target watersheds. This was the first project on Vancouver Island to adhere to the new FIA methodologies for fish passage assessment documented in MacKinnon (2008a and 2008b). Crossings with potential upstream habitat value were targeted for fish passage assessment to ensure habitat connectivity. The priority watersheds were confirmed as valuable fish habitat to all or some of the pacific salmon and numerous resident fish species.

Assessments and Prescriptions

A total of 158 crossings were pre-approved by BCTS for investigation and a total of 153 sites were visited by the end of the field program. Of these 153 crossing sites, 65 were corrugated steel pipe (CSPs) culverts, one was an open bottom arch culvert, 64 were wooden box culverts, three were bridges, and 20 sites were deactivated. Field assessments were completed between January 18 and February 20, 2009 and were conducted only at closed bottom structures in fish-bearing waters as per Mackinnon (2008b). All culverts were assessed as being passable, a potential barrier or complete barrier to fish passage. Of the 65 CSPs visited, 50 were determined to be in fish habitat and assessed as being either passable (1) or as a potential (8) or complete (41) barrier to fish passage.

Considering the potential linear distance of habitat gain upstream of the crossing (HGI) and fish habitat quality at the crossing, a restoration priority was proposed for the 49 crossings determined to be barriers, including projected costs and a cost benefit analysis. Options to restore each culvert were presented as either culvert removal, installation of an open bottom structure, installation of a simulated streambed design culvert, or embedding and backwatering of the existing structure.

It was proposed that three culverts be restored in 2009, 11 culverts be restored in 2010, and the remaining 21 be prioritized in the future based on long term operational requirements. Based on the prioritization process, restoration was not recommended at four sites.

Cost Summary Information

Total Project Cost:	**$88,705.01**

For Further Information, Contact:

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References

Mackinnon, G. 2008a. Fish Passage Protocol for Culverted Sites. BC Ministry of Environment. 1st Edition, March 2008. Revised June, 2008. 13 pages.

Mackinnon, G. 2008b. Field Assessment for Fish Passage Determination of Closed Bottomed Structures. BC Ministry of Environment. 2nd Edition, May 2008. 19 pages.

Photographs

Photo 1. View of 2000 mm CSP at crossing 304 in the Taylor River Watershed, January 2009.

Photo 2. View of the crossing 599 in the Nahmint River Watershed, February 2009.