Fish Passage Culvert Assessments: South West Vancouver Island, B.C.
Completed in TFL 46 of the 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 three high priority watersheds located within TFL 46 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: COTFL446804
Project Number: 6804001
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

Cedric Robert, CCEP, Dipl. Tech.
cbrobert@ecodynamics.ca
Rider Petch, B.Sc., R.P.Bio.
rpetch@ecodynamics.ca
Isaac Anderton, B.Sc., R.P.Bio.
ianderton@ecodynamics.ca

ECODynamic Solutions (EDS) Inc.
Unit 214-A, 2459 Cousins Ave.
Courtenay, BC V9N 3N6
Phone/Fax: (250) 334-3039

Watershed/Stream and Location

The three watersheds selected for the study as per Mackinnon (2008a) included the Caycuse River (25.3 km; 91.9 km^2), Gordon River (49.6 km; 215.6 km^2) and Nitinat River (57.4 km; 251.7 km^2). Stream length and watershed area are included in brackets. The Caycuse R., Gordon R., and Nitinat R. are included in the San Juan 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
Gordon R	46	10U	395660	5381341	930-054700
Nitinat R[4]	44/46	10U	363733	5392400	930-071700

[1] UTM at mouth.
[2] Data from FISS.
[3] Thirty-one of 33 crossings in the Caycuse River Watershed were located in TFL 46.
[4] Twenty-seven of the 33 crossings assessed in the Nitinat R. Watershed were located in TFL 46.

Introduction

In 2008/2009, ECODynamic Solutions (EDS) Inc. was contracted by BC Timber Sales, to conduct fish passage assessments at closed bottom structures within three priority watersheds in TFL 46. 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 64 crossings were pre-approved by BCTS for investigation and a total of 62 sites

were visited by the end of the field program. Of these 62 crossing sites, 30 were corrugated steel pipe (CSPs) culverts, 18 were wooden box culverts, three were bridges, and 11 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 30 CSPs visited, 24 were determined to be in fish habitat and assessed as being either passable (1) or as a potential (3) or complete (20) 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 23 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 two culverts be restored in 2009, four culverts be restored in 2010, and the remaining 13 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:	**$54,188.81**

For Further Information, Contact:

Cedric Robert, CCEP, Dipl. Tech. or
Rider Petch, B.Sc., R.P.Bio

ECODynamic Solutions (EDS) Inc.
Unit 214-A, 2459 Cousins Ave.
Courtenay, BC V9N 3N6
Phone/Fax: (250) 334-3039
Email: cbrobert@ecodynamics.com

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 crossing 38A in the Gordon River Watershed, January 2009.

Photo 2. View of the multiple culverts at crossing 87A in the Nitinat River Watershed, February 2009.