

September 2018

BC Fish Passage Program Annual Report 2017-2018

Partnership between

**BC Ministry of Forests, Lands, Natural Resource Operations
and Rural Development
Land Based Investment Strategy (LBIS)**

Inter-Agency Fish Passage Technical Working Group



BCTS
BC Timber Sales



**Fisheries and Oceans Canada's
Recreation Fisheries Conservation Partnership Program (RFCPP)**

Canada

Recreational Fisheries Conservation Partnership Program
Programme de partenariats relatifs à la conservation des
pêches récréatives

and the

Pacific Salmon Foundation



Acknowledgements

Inter-Agency Technical Working Group:

Ministry of Forests, Lands, Natural Resource Operations & Rural Development (FLNR)

- David Maloney (Chair), Fish and Aquatic Habitat Branch
- Brian Chow, Engineering Branch
- Elizabeth Easton, previously Resource Practices Branch
- Dave Hamilton, BC Timber Sales
- Lisa Nordin, Resource Planning and Assessment Branch

Ministry of Environment and Climate Change Strategy

- Craig Mount, Knowledge Management Branch
- Richard Thompson, Ecosystems Branch
- Peter Tschaplinski, Ecosystems Branch

Ministry of Transportation and Infrastructure

- Sean Wong, Environmental Management Branch

Fisheries and Oceans Canada:

- Lindsay Gardner, Recreational Fisheries Conservation Partnership Program
- Kim Hardacre, Recreational Fisheries Conservation Partnership Program

Pacific Salmon Foundation (PSF):

- Dianne Ramage, Salmon Recovery
- Timothy Sucic, Finance and Administration

Remediation Project Delivery with RFCPP and PSF:

Lemon Creek, and Rock Creek – Purcell Creek

- Phil MacDonald, BC Timber Sales – Kootenays, FLNR
- Jasbir Naul, Southern Engineering Group, Engineering Branch, FLNR

Dead Horse Lake Tributary/Kuldo FSR Site 23

- Alan Harrison, BC Timber Sales – Skeena, FLNR
- Gail Campbell, BC Timber Sales – Skeena, FLNR

Honna M226

- Larry Duke, Haida Gwaii Natural Resource District, FLNR

Other Remediation Projects:

Shuttleworth Creek/Kilmer FSR

- Megan Sheshurak, BC Timber Sales – Okanagan-Columbia, FLNR

Jamieson Creek

- Drew Alway, Southern Engineering Group, Engineering Branch, FLNR

Matsiu Creek

- Mike McCulley, BC Timber Sales – Seaward-tiasta, FLNR

Table of Contents

Background	4
2017-2018 Budget.....	5
2017-2018 Accomplishments	5
2008-2017 Accomplishments	6
2017-2018 Remediation Projects	7
1. Lemon Creek Fish Passage Remediation Project – Year Two	8
2. Rock Creek Fish Passage Remediation Project – Year Two	9
3. Dead Horse Lake/Kuldo Forest Service Road Site 23 Fish Passage - Year Two ...	10
4. Honna M226 - Year One.....	11
5. Shuttleworth Creek/Kilmer FSR Fish Passage Remediation Project - Year Two ...	12
6. Jamieson Creek Fish Passage Remediation Project - Year Two	13
7. Matsiu Creek Fish Passage Remediation Project - Year One.....	14

Background

Why restore fish passage?

The ability for fish and other aquatic organisms inhabiting streams to move freely (upstream and downstream) throughout their natural environment is an important component of healthy resilient natural aquatic ecosystems. Different fish species and life stages require a variety of habitats at different times of the year. Human-caused barriers such as road-stream crossings that block or delay fish movement can result in changes to fish communities and lost productive capacity. Healthy, resilient fish populations are necessary to maintain BC's fish species diversity and productivity that in turn supports our recreational, commercial, and indigenous food fisheries. In addition to the importance to our fisheries, maintaining access to a full range of habitats is necessary to ensure fish populations and other aquatic species have the best chance to adapt to changing aquatic conditions resulting from climate change.

Fish passage program

In 2007, the Assistant Deputy Ministers of the then BC Ministry of Forests and Range, and Ministry of Environment (MOE) – in cooperation with federal Department of Fisheries and Oceans (DFO) and the Forest Industry (Council of Forest Industries or COFI and Coast Forest Products Association or CFPA) – formed the Fish Passage Program. The inter-agency Fish Passage Technical Working Group (FPTWG) was established and then developed the four-phase 'Fish Passage Strategic Approach' that guides delivery of the program by prioritizing problem road-stream crossings for remediation. The four phases are:

1. *Assessments* undertaken for all road crossings in watersheds that are strategically identified as a high priority for fish;
2. *Habitat confirmations* undertaken at crossings assessed to be the best candidates for remediation to determine actual habitat values to be gained;
3. *Site plans and designs* to determine the most effective structure to remediate priority crossings identified through the habitat confirmation phase;
4. *Remediation* projects that most often involve either (i) the purchasing and installation of new fish-friendly structures (e.g. culverts and bridges) or (ii) road crossing deactivations (e.g. for non-status roads) that restore fish passage.

Data and reports from each of the four-phases are to be uploaded in the Provincial Stream Crossing Information System (PSCIS).

BC's FPTWG has been working with BC Timber Sales (BCTS), Ministry of Transportation and Infrastructure, Pacific Salmon Foundation (PSF) and DFO (through its Recreational Fisheries Conservation Partnership Program – RFCPP) to prioritize and remediate problem road-stream crossings. Between 2008 and 2017 the Fish Passage Program has remediated over 168 road stream crossings resulting in fully restored access to 783.6 kilometers of fish habitat.

The actual delivery of projects on-the-ground is primarily accomplished through agreement with BCTS; however district and regional staff may also lead delivery for some projects. For more information about the LBIS Fish Passage and the FPTWG: <http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/land-based-investment/investment-categories/fish-passage>

2017-2018 Budget

The Fish Passage Program budget totaled \$1,160,224 including:

- \$1,000,000 from LBIS, and
- \$160,224 from federal partnership funding - DFO's Recreation Fisheries Conservation Partnership Program (RFCPP) received by working with the Pacific Salmon Foundation (PSF) – all for remediation projects.

2017-2018 Accomplishments

Assessments

156 fish passage assessments in total: 116 assessments in Coldwater and South Thompson watersheds near Kamloops, 40 assessments in Sayward area on Vancouver Island.

Prioritizing habitat confirmations

One area with assessments was reviewed using LBIS Fish Passage funding to prioritize crossings for habitat confirmations: Bulkley area. Of the 1600 crossing assessments reviewed, 83 appear to be high priorities for habitat confirmations. In addition, using funds external to LBIS Fish Passage, 30 of the reviewed crossing assessments in the South Coast associated with BC Hydro interest areas appear to be high priorities for habitat confirmations.

Habitat confirmations

93 crossings in total: 33 in Horsefly watershed in Cariboo region; 45 in McGregor watershed near Prince George; 8 in North Hirsch watershed in Skeena region; and 7 in the Cascades Natural Resource District (5 in Merritt TSA and 2 in Lillooet TSA).

Site plans and designs

1 crossing: Quartz (Noaxe) Creek Site 540 in Cascades Natural Resource District

Structure Purchase

None in 2017/18. The focus of 2017/18 was to install structures purchased in 2016/17.

Remediations

7 crossings were remediated: Lemon Creek (bridge) and Rock Creek (arch culvert) in Kootenays; Dead Horse Lake tributary-Kuldo FSR Site 23 (embedded culvert) in Skeena; Honna M226 (bridge and deactivation) in Haida Gwaii District; Shuttleworth Creek-Kilmer FSR (arch culvert) in Okanagan-Columbia; and Jamieson Creek (weir removal) near Kamloops. Work also began at Matsi Creek towards several crossing deactivations.

Tables 1 and 2 provide an overall summary of the remediation projects including Year One progress on 2-year projects where the remediation work will be completed in 2018/19.

Communications and Training

- Craig Mount and consultant Sarah Boon completed an article entitled "Reconnecting Fish Habitat Starts with Good Data Management" that discusses PSCIS that was published in the May-June BC Forest Professional magazine

- Provided funding and project support to FPInnovations to prepare two information pamphlets: one on installation of stream bed simulation culverts, and another on monitoring following installation
- In June 2017, FPTWG inspected fish passage embedded structure remediation projects on Vancouver Island
- In August 2017, embedded structures installed with LBIS and RFCPP funding in the Skeena area were inspected by the PSF, Engineering Branch, and BCTS delivery staff in Skeena
- In September 2017, Richard Thompson and Craig Mount from the FPTWG delivered Fish Passage Assessment Training to First Nations in the Lillooet area; this will enable First Nations to undertake LBIS fish passage assessment work.
- Work proceeded towards the preparation of a brochure on the BC Fish Passage Program.

Other

- Funded and supported the second year of a 2-year Benefit-Cost Analysis of Fish Passage Program investments with Final Report completed
- Funded needed road safety upgrades in the Tranquil that are necessary to enable the bridge structure purchased in 2016/17 to be installed in 2018/19
- Maintained/updated PSCIS data base

2008-2017 Accomplishments

Fiscal Year	Expenditure (millions)	Crossing Assessments	Installed Culverts	Installed Bridges	Deactivations	Total crossings remediated	Km fish habitat recovered
2008/09	\$6.1*	4 683	28	17	-	44	158
2009/10	\$3.6*	4 594	23	11	-	34	184
2010/11	\$2.4	8 171	-	-	-	17	305
2011/12	\$0.8	1 987	-	-	-	2	25
2012/13	\$2.0	3 000	-	-	11	18	27
2013/14	\$0.5	1 954	2	2	2	6	18
2014/15	\$1.0**	1 416	1	4	20	25	11.6
2015/16	\$1.4**	16	6	4	0	11#	22.3
2016/17	\$1.2**	276	0	1	3	4	6.3
2017/18	1.2**	156	3	2	1	7#	26.4
Total	\$19.0	26 253	62	41	37	168	783.6

* denotes FIA funding **includes RFCPP funding # includes removal of one small dam

Note: From 2002/03 to 2007/08, further \$18.5 MM was expended from Forest Investment Account (FIA)

2017-2018 Remediation Projects

Table 1: Summary of Remediation Projects 2017/18 in partnership with LBIS, BCTS, RFCPP and PSF

Project	Location	2017/18 Costs	Restoration	Habitat Gain	Fish
1. Lemon Creek – Year Two (Final)	Kootenays	LBIS \$36,454 Total \$99,677	Bridge installed	5000 m	Rainbow Trout and Bull Trout
2. Rock Creek – Year Two (Final)	Kootenays	LBIS \$69,773 Total \$136,373	Bridge installed	2500 m	Rainbow Trout
3. Dead Horse Lake/ Kuldo FSR Site 23 – Year Two (Final)	Skeena	LBIS \$15,182 Total \$51,685	Embedded culvert structure installed	1500 m	Rainbow Trout
4. Honna M226 – Year One	Haida-Gwaii	LBIS \$31,197 Total \$119,697	Bridge installed plus one deactivation	1500 m	Chum, Coho, and Pink Salmon
Subtotal		LBIS \$152,606 Total \$407,432	5 remediations	10,500 m	

LBIS Fish Passage projects in partnership with DFO's RFCPP program and the Pacific Salmon Foundation (PSF) with project delivery by FLNR district and BCTS staff. A Final (Year Two) Report or Year One Progress Report for each projects is available that provides more details.

Table 2: Summary of Other LBIS Fish Passage Remediation Projects 2017/18

Project	Location	2017/18 Costs	Restoration	Habitat Gain	Fish
5. Shuttleworth Creek/Kilmer FSR – Year Two (Final)	Okanagan - Columbia	LBIS \$120,000	Arch culvert installed	6600 m	Rainbow Trout
6. Jamieson Creek Weir Removal Year Two (Final)	Kamloops	LBIS \$11,280	Dam (weir) removed	9250 m (2900 m)	For Rainbow Trout and Bull Trout (For Coho Salmon)
7. Matsiu Year One	Knight Inlet near Port McNeill	LBIS \$50,000	Remove bridge works and infrastructure at Site M7 and deactivate 6 crossings on the east side of valley	-	10,000 m2 habitat gain when project is completed for Coho, Chum, and Pink Salmon; Rainbow and Cutthroat Trout; Dolly Varden; and Steelhead
Subtotal		LBIS \$181,280	2 remediations	15,850 m	
Total		LBIS \$333,886	7 remediations	26,350 m	

1. Lemon Creek Fish Passage Remediation Project – Year Two (Final)



Project Objectives

To restore access to 5000 metres of fish habitat for rainbow and bull trout by replacing a culvert that impedes fish passage with an open bottom structure (bridge) on a tributary to Lemon Creek located in the Slocan Valley of BC.

Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy. Bull trout are classified as blue-listed by the BC Conservation Data Centre as populations are declining throughout its global range due to habitat degradation, disruption of migration patterns; and over fishing.

Project Costs 2017/18 (Year Two)

LBIS: \$36,453
PSF: \$ 2,500
Other: \$11,500
RFCPP: \$49,224
Total: \$99,677

Project Results

In 2016/17 (Year One), a site plan was prepared, and the replacement bridge structure was purchased and delivered. The bridge was installed in 2017/18 (Year Two).

Project delivery thanks to Phil MacDonald, BC Timber Sales – Kootenays for managing the project.

2. Rock Creek Fish Passage Remediation Project – Year Two (Final)



Project Objectives

To restore access to 2500 metres of high quality fish habitat for rainbow trout (spawning, rearing and over-wintering) upstream of crossing #58924 on Rock Creek by replacing a culvert that impedes fish passage with a fish friendly arch culvert structure that provides for safe fish passage. Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy.

Project Costs 2017/18 (Year Two)

LBIS: \$ 69,773
PSF: \$ 2,500
Other: \$ 8,100
RFCPP: \$ 56,000
Total: \$136,373

Project Results

In 2016/17 (Year One), habitat confirmation work verified that the crossing was a priority for remediation, a site plan was prepared, and the replacement bridge structure was purchased and delivered. The arch culvert structure was installed in 2017/18 (Year Two). Project delivery thanks to Phil MacDonald, BC Timber Sales – Kootenays for managing the project.

3. Dead Horse Lake/Kuldo Forest Service Road (FSR) Site 23 Fish Passage - Year Two (Final)



Project Objectives

To restore access to 1500 metres of moderate value spawning habitat for rainbow trout by replacing a culvert that impedes fish passage with a fish friendly embedded culvert structure on a tributary of Dead Horse Lake located in the Skeena region of BC. Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy.

Project Costs 2017/18 (Year Two)

LBIS: \$15,182
 PSF: \$ 2,500
 Other: \$12,503
 RFCPP: \$21,500
 Total: ***\$51,685***

Project Results

In 2016/17 (Year One), a site plan was prepared, and the replacement embedded culvert structure was purchased and delivered. The embedded culvert structure was installed in 2017/18 (Year Two).

Project delivery thanks to Alan Harrison and Gail Campbell, BC Timber Sales – Skeena for managing the project.

4. Honna M226 - Year One



Project Objectives

To restore 1500 metres (over 5000 m³) of high value fish rearing and spawning habitat for Chum, Coho, and Pink salmon by replacing a perched culvert at crossing M226 that impedes fish passage with a fish-friendly crossing structure (bridge) that enables fish passage. Two road crossings downstream of crossing M226 that impede fish passage will also be deactivated.

Project Costs 2017/18 (Year One)

LBIS: \$31,197
PSF: \$ 250
Other: \$54,750
RFCPP: \$33,500
*Total: **\$119,697***

Project Results

In 2017/18 (Year One), more got accomplished than originally intended. The site plan was prepared; the perched culvert at crossing M226 was removed and an existing surplus structure at Haida Gwaii District deemed suitable for the crossing was installed; one of the two road crossings downstream of crossing M226 was deactivated; and prescriptions for in-stream restoration work were prepared. In 2018/19 (Year Two), the second road crossing downstream of M226 will be deactivated, and the in-stream work will be undertaken.

Project delivery thanks to Larry Duke, Haida Gwaii Natural Resource District, for managing the project.

5. Shuttleworth Creek/Kilmer FSR Fish Passage Remediation Project - Year Two (Final)



Project Objectives

To restore at least 6600 metres of spawning and rearing habitat for rainbow trout, on Shuttleworth Creek which is a tributary of the Okanagan River located in the Southern Interior of BC near Penticton, BC. Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy. Other fish species that will benefit from the restored habitat include Longnose Dace, Redside Shiner, and Slimy Sculpin.

Project Costs 2017/18 (Year Two)

LBIS: \$120,000

Project Results

In 2016/17 (Year One), habitat confirmation work and a site plan were completed. The replacement structure was purchased and installed in 2017/18 (Year Two).

Project delivery thanks to Megan Sheshurak, BC Timber Sales – Okanagan-Columbia for managing the project.

6. Jamieson Creek Fish Passage Remediation Project - Year Two (Final)



Left Photo: Cross view of weir



Right Photo: After weir removed

Project Objectives

To remove a dam (weir) that is a barrier to fish passage and restore 9,250 m of habitat for Rainbow and Bull Trout, and 2,900 m of habitat for Coho Salmon. Before removing the dam, alternative sources of water need to be provided to water license holders; this will be accomplished by drilling to provide access to groundwater, and the installation of a pump and power.

Project Costs 2017/18

LBIS: \$11,280

Project Results – Year One

Groundwater well was drilled with pump and power installed in 2016/17 (Year One). The dam (weir) removal was completed in 2017/18 (Year Two).

Project delivery thanks to Drew Alway, Southern Engineering Group, Engineering Branch, FLNR, for managing the project.

7. Matsiu Creek Fish Passage Remediation Project - Year One

Project Objectives
To improve approximately 10,000 m2 of high value fisheries habitat for Coho, Chum, and Pink Salmon; Rainbow and Cutthroat Trout; Dolly Varden; and Steelhead by removing bridge works and infrastructure at Site M7 and deactivating 6 crossings on the east side of valley to restore flow regimes, natural pool and riffle development, restore migration, stabilize bed load, reduce sediment and bed load, reduce damage to riparian areas from upstream water impoundment and allowing the watershed to stabilize and rebuild and protect high value fish habitat.
Project Costs 2017/18
LBIS: \$50,000
Project Results – Year One
Initial work began on the project in 2017/18 (Year One) with intent to complete the work in 2018/19 (Year Two). Project delivery thanks to Mike McCulley, BC Timber Sales, Port McNeill, BC, for managing the project.