## 2008 - 2017 Program Highlights

- **Fish Passage Technical Working Group**
- **B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development**
  - David Maloney (Chair)
  - Resource Practices Branch
- **Engineering Branch**
  - Elizabeth Easton
  - Resource Practices Branch
- **BC Timber Sales**
  - Dave Hamilton
  - BC Timber Sales
- **Resource Practices Branch**
  - Lisa Nordin
  - Resource Practices Branch
- **B.C. Ministry of Environment and Climate Change Strategy**
  - Craig Mount
  - Knowledge Management Branch
- **Ecosystems Branch**
  - Richard Thompson
  - Ecosystems Branch
  - Peter Tschaplinski
  - Ecosystems Branch
- **B.C. Ministry of Transportation and Infrastructure**
  - Sean Wong
  - Environmental Management Branch
  - Andrew Anderson
  - Environmental Management Branch
- **Fisheries and Oceans Canada**
  - Lindsay Gardiner
  - Recreational Fisheries Conservation Partnership Program

### Program Highlights

#### 757 kilometres of fish habitat
#### 18,400 crossing assessments
#### 161 crossings remediated
#### 139 habitat confirmations

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### Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>2</td>
</tr>
<tr>
<td>Acronym Index</td>
<td>3</td>
</tr>
<tr>
<td>2008-2017 Accomplishments</td>
<td>4</td>
</tr>
<tr>
<td>2008-2017 Remediation Projects Summary</td>
<td>4</td>
</tr>
<tr>
<td>Location of 2015-2017 Fish Passage Remediation Projects</td>
<td>6</td>
</tr>
<tr>
<td>1. O’Cook River Tributary</td>
<td>8</td>
</tr>
<tr>
<td>2. Cypre River/Clayquot</td>
<td>9</td>
</tr>
<tr>
<td>3. Tranquil Creek/Clayquot – Year One</td>
<td>10</td>
</tr>
<tr>
<td>4. Lemon Creek – Year One</td>
<td>11</td>
</tr>
<tr>
<td>5. Rock Creek – Year One</td>
<td>12</td>
</tr>
<tr>
<td>6. Dead Horse Lake/Kuldo FSR Site 23 - Year One</td>
<td>13</td>
</tr>
<tr>
<td>7. Shuttleworth Creek/Kilmer FSR - Year One</td>
<td>14</td>
</tr>
<tr>
<td>8. Coast South 700 Main</td>
<td>15</td>
</tr>
<tr>
<td>9. Jamieson Creek – Year One</td>
<td>16</td>
</tr>
<tr>
<td>10. Maxan Creek</td>
<td>17</td>
</tr>
<tr>
<td>11. Date 1200</td>
<td>18</td>
</tr>
<tr>
<td>12. Copper Creek – Skidegate Lake</td>
<td>19</td>
</tr>
<tr>
<td>13. Clint Creek</td>
<td>20</td>
</tr>
<tr>
<td>14. Honna River</td>
<td>21</td>
</tr>
<tr>
<td>15. Shelley Creek</td>
<td>22</td>
</tr>
<tr>
<td>16. Plumbob Creek</td>
<td>23</td>
</tr>
<tr>
<td>17. Linklater FSR – Purcell Creek</td>
<td>24</td>
</tr>
<tr>
<td>19. Kispiox River – Helen FSR</td>
<td>26</td>
</tr>
<tr>
<td>20. Cherry Creek – North Fork FSR</td>
<td>27</td>
</tr>
<tr>
<td>21. Bench FSR – Year One</td>
<td>28</td>
</tr>
</tbody>
</table>
Background

British Columbia is the most biologically diverse of Canada’s provinces and territories. In turn, this has created rich diversity and geographic distribution in our aquatic ecosystems and resulting fish species. The ability for fish and other aquatic organisms inhabiting streams to move freely (upstream and downstream) throughout their natural environment is an essential component of sustaining fish populations, along with healthy and resilient aquatic ecosystems.

In addition to their ecological importance, British Columbia’s fish play an important role culturally, socially, and economically. Indigenous communities located in the northwest are among the oldest known fishing cultures in the world. With freshwater and salmon species ranging across the province, fish are foundational to the cultural, traditional, and ceremonial foundations, both historically and in current practice. Wild fish are an important food source for many British Columbians. Fishing is a commonly enjoyed practice among the young and old, including catch-and-release fishing for recreation. British Columbia also supports a world renowned, and economically important, guided-fishery.

A fish passage barrier is anything that hinders any life-stage of fish from moving through its natural range. The primary barriers are some of the culverts installed before 1995, before the legislation was enacted to protect fish passage. These culverts may allow water to flow but may not provide conditions that fish can actually swim through. The water that flows through culverts may also block fish migration because the flow is too swift, too shallow, or has a waterfall into or out of the culvert.

A single removed barrier can deliver impressive benefits, improving fish access for kilometres both upstream and downstream. When rivers and streams are connected, fish can better access the habitat they need. This is an important component of protecting and restoring fish populations.

The Fish Passage Remediation Program was established in 2007, and is delivered in collaboration between the partners listed on the outside back cover. Funding is primarily provided by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development through the Land Based Investment Strategy.

The program has identified approximately 140,000 stream crossings on approximately 800,000 km of road in British Columbia. To date, the program has remediated over 150 road stream crossings resulting in fully restored access to over 750 kilometres of fish habitat (See 2008 – 2017 Accomplishments table, page 4).

The following information provides a summary update of the remediation projects undertaken in the 2-year period from 2015/16 to 2016/17.

For more information about the Fish Passage Program please visit both: www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/fish/fish-passage and www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/land-based-investment/investment-categories/fish-passage

Opposite from left to right: Edwin Blewett (consultant), Brian Chow (FLNRORD, Engineering Branch, Chief Engineer), Richard Thompson (ENV, Ecosystems Branch, Unit Head), Lisa Nordin (FLNRORD, Resource Practices Branch, Aquatic Resource Stewardship Evaluation Officer), Craig Mount (ENV, Knowledge Management Branch, Aquatic Habitat Geomorphologist), Elizabeth Easton (FLNRORD, Resource Practices Branch, Strategic Resource Management Analyst), Dave Maloney (FLNRORD, Resource Practices Branch, Forest Water Management Officer), Peter Tschantzki (ENV, Ecosystems Branch, Unit Head, Ecosystems Science)

Acronym Index

BCTS  B.C. Timber Sales
CMP  corrugated metal pipe
DFO  Department of Fisheries and Oceans
ENV  B.C. Ministry of Environment and Climate Change Strategy
FLNRORD  B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development
FIS  Forest Service Road
GA  Gitanyow Fisheries Authority
LBIS  Land Based Investment Strategy
LWD  large woody debris
PSF  Pacific Salmon Foundation
RFCPP  Recreational Fisheries Conservation Partnership Program
TWG  Technical Working Group
WBC  wood box culvert
WFP  Western Forest Products
### 2008 - 2017 Accomplishments

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Expenditure (millions)</th>
<th>Crossing Assessments</th>
<th>Installed Culverts</th>
<th>Installed Bridges</th>
<th>Deactivations</th>
<th>Total Crossings Remediated</th>
<th>Kilometres of Fish Habitat Recovered</th>
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<tbody>
<tr>
<td>2008/09</td>
<td>$6.1 *</td>
<td>4,683</td>
<td>28</td>
<td>17</td>
<td>44</td>
<td>158</td>
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<td>2009/10</td>
<td>$3.6 *</td>
<td>4,594</td>
<td>23</td>
<td>11</td>
<td>34</td>
<td>184</td>
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<td>2010/11</td>
<td>$2.4</td>
<td>8,171</td>
<td>14</td>
<td>17</td>
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<td>305</td>
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<td>2011/12</td>
<td>$0.8</td>
<td>1,987</td>
<td>1</td>
<td>2</td>
<td>2</td>
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<tr>
<td>2012/13</td>
<td>$2.0</td>
<td>3,000</td>
<td>3</td>
<td>11</td>
<td>18</td>
<td>27</td>
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<tr>
<td>2013/14</td>
<td>$0.5</td>
<td>1,954</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>18</td>
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<tr>
<td>2014/15</td>
<td>$1.1 **</td>
<td>1,416</td>
<td>4</td>
<td>20</td>
<td>25</td>
<td>11.8</td>
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<td>2015/16</td>
<td>$1.4 **</td>
<td>16</td>
<td>6</td>
<td>4</td>
<td>11 ***</td>
<td>22.3</td>
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<td>2016/17</td>
<td>$1.0 **</td>
<td>34</td>
<td>3</td>
<td>4</td>
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<td>6.3</td>
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</table>

### 2015 - 2017 Remediation Projects Summary

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>LOCATION</th>
<th>2016/17 COSTS</th>
<th>RESTORATION</th>
<th>HABITAT GAIN</th>
<th>FISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Coast South 700 Main</td>
<td>Vancouver Island</td>
<td>$150,000</td>
<td>Habitat Confirmation, Site Plan, Structure Purchase, and Installation</td>
<td>750 m 1875 m²</td>
<td>Coho, Chum, Pink, and Chinook salmon, Cutthroat trout and Steelhead, and Dolly Varden</td>
</tr>
<tr>
<td>9. Jamieson Creek Weir Removal</td>
<td>Kamloops</td>
<td>$85,000</td>
<td>Groundwater well drilled with pump and power installed in 2016/17. The dam leveling will occur in 2017/18.</td>
<td>9,250 m in 17/18; 2,900 m in 17/18.</td>
<td>Rainbow trout, Bull trout, and Coho salmon</td>
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<tr>
<td>10. Mawson Creek Derelict Bridge Removal</td>
<td>Nadina</td>
<td>$28,800</td>
<td>Derelict Stibboid Bridge removed. Fish barrier at some flows removed.</td>
<td>Chinook, Coho, and Sockeye salmon, Rainbow trout and Steelhead, Dolly Varden and Mountain whitefish</td>
<td></td>
</tr>
<tr>
<td>11. Date Creek 1,200 Backwater weir</td>
<td>Skeena</td>
<td>$6,200</td>
<td>Backwater weir installed and four upstream abandoned beaver dams breached.</td>
<td>275 m</td>
<td>Cutthroat trout</td>
</tr>
<tr>
<td>12. Copper Creek – Skidegate Lake</td>
<td>Haida Gwaii</td>
<td>$149,400 (Year 2 costs)</td>
<td>Dam removal. NEST2 embedded structure.</td>
<td>1,700 m gain 530 m gain</td>
<td>Coho, and Sockeye salmon</td>
</tr>
<tr>
<td>13. Clint Creek</td>
<td>Haida Gwaii</td>
<td>$107,200</td>
<td>Dam removal. Habitat enhanced.</td>
<td>1,300 m gain 375 m gain</td>
<td>Coho, Chum, and Pink salmon, Steelhead, and Dolly Varden</td>
</tr>
<tr>
<td>14. Honna River</td>
<td>Haida Gwaii</td>
<td>$69,000</td>
<td>Habitat enhanced.</td>
<td>325 m enhanced</td>
<td>Coho, Chum, and Pink salmon, Steelhead and Dolly Varden</td>
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<tr>
<td>15. Shelley Creek</td>
<td>Haida Gwaii</td>
<td>$83,400</td>
<td>Habitat enhanced.</td>
<td>285 m enhanced</td>
<td>Coho and Chum salmon, Cutthroat trout, and Dolly Varden</td>
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<tr>
<td>16. Plumbob Creek</td>
<td>East Kootenays</td>
<td>$198,500</td>
<td>Bridge installed.</td>
<td>7,000 m gain</td>
<td>Cutthroat, Eastern Brook, and Bull trout</td>
</tr>
<tr>
<td>17. Linklater FSR – Purcell Creek</td>
<td>East Kootenays</td>
<td>$195,600</td>
<td>Bridge installed.</td>
<td>7,600 m gain</td>
<td>Cutthroat, Eastern Brook, and Bull trout</td>
</tr>
<tr>
<td>18. Nass River Brown Bear FSR</td>
<td>Skeena</td>
<td>$99,200 (Year 2 costs)</td>
<td>Two embedded structures.</td>
<td>350 m gain</td>
<td>Rainbow trout</td>
</tr>
<tr>
<td>19. Kispiox River – Helen FSR</td>
<td>Skeena</td>
<td>$177,700</td>
<td>Two embedded structures.</td>
<td>2,300 m gain</td>
<td>Bull and Rainbow trout</td>
</tr>
<tr>
<td>20. Cherry Creek – North Fork FSR</td>
<td>Okanagan -Columbia</td>
<td>$146,400</td>
<td>Bridge installed.</td>
<td>&gt;500 m gain (up to 2,500 m)</td>
<td>Rainbow and Bull trout</td>
</tr>
<tr>
<td>21. Bench FSR</td>
<td>Chilliwack</td>
<td>$211,500</td>
<td>Embedded structure. Habitat restored.</td>
<td>1,000 m gain</td>
<td>Cutthroat and Rainbow trout, Coho salmon, and Dolly Varden</td>
</tr>
</tbody>
</table>

### 2015 - 2017 Remediation Projects Summary (Continued)

- **Crossings**: 2,391
- **Embedded structures**: 1,771
- **Habitat restored and confirmed**: 445
- **Fish Passages**: 240
- **Habitat gain**: >137,000 m³
- **FISCAL YEAR EXPENDITURE (millions)**: 2009/10 $3.6, 2010/11 $2.4, 2011/12 $0.8, 2012/13 $2.0, 2013/14 $0.5, 2014/15 $1.1, 2015/16 $1.4, 2016/17 $1.0
- **Note**: From 2002/03 to 2007/08, a further $18.5 MM was expended from Forest Investment Account (FIA)
Location of 2015 - 2017 Fish Passage Remediation Projects

Project Page
1. O’Cock River Tributary 8
2. Cypre River 9
3. Tranquil Creek 10
4. Lemon Creek 11
5. Rock Creek 12
6. Dead Horse Lake Tributary 13
7. Kilmer FSR 14
8. Coast South Main S700 15
9. Jamieson Creek 16
10. Maxan Creek Strimbold Bridge 17
11. Date 1200 18
12. Copper Creek/Skidegate Lake 19
13. Clint Creek 20
14. Honna River 21
15. Shelley Creek 22
16. Plumbob Creek 23
17. Linklater FSR / Purcell Creek 24
18. Nass River/Brown Bear FSR 25
19. Kispox River/Helen FSR 26
20. Cherry Creek/North Fork FSR 27
21. Bench FSR 28
The project objectives were to:

1. Remove a collapsed wood box culvert (WBC) and a corrugated metal pipe (CMP), located at two CYP-3001 crossings, that were a barrier to fish passage access to upstream habitat including an off-channel habitat restoration site (Channel 23) on the Cypre River,

2. Restore the streambed and streambank at the CYP-3001 crossing sites following removal of the WBC and CMP, and

3. Remove a collapsed WBC that was discovered at the restoration site during the deactivation work; this was included as an additional objective.

The project objectives were achieved with:

1. The removal of the two WBCs and the CMP, and the restoration of the streambed and streambank.

2. The deactivation of the CYP-3001 road crossing.

3. The Cypre River Fish Passage Restoration Project now provides fish access to 550 linear metres, and 4,675 square metres, of upstream habitat for utilization by:
   - Chinook salmon (*Oncorhynchus tshawytscha*),
   - Coho salmon (*O. kisutch*),
   - Chum salmon (*O. keta*),
   - Pink salmon (*O. gorbuscha*),
   - Cutthroat trout (*O. clarkii*), and
   - Rainbow trout (*O. mykiss*).

Before: Closed bottom structure that impeded fish passage that was removed

After: Open bottom bridge that provides for fish passage that was installed

Project Objectives

1. Remove the existing closed bottom crossing structure that was impeding fish passage, located at km 3.5 on the O’Cock Forest Service Road (also referred to as Crossing OCOC 001), and

2. Replace it with an open bottom structure that restores fish passage to high quality fish habitat.

Project Results

1. The project objective was achieved with the removal of the closed bottom structure, and installation of an open bottom bridge. With the crossing structure replacement, the O’Cock River Tributary Fish Passage Restoration Project now provides fish access to at least 5,000 linear metres of high quality upstream rearing and over-wintering habitat for:
   - Rainbow trout (*Oncorhynchus mykiss*), and likely for
   - Coho salmon (*O. kisutch*),
   - Cutthroat trout (*O. clarkii*), and
   - Dolly Varden trout (*Salvelinus malma*).

Before: Looking upstream toward the collapsed wood box culvert outlet

After: Looking upstream after removal of the collapsed wood box culvert

Project Delivery

Thanks to
Daniel Braun and Ken Yortson
BC Timber Sales
Stuart Nechako

Project Costs

<table>
<thead>
<tr>
<th></th>
<th>LBIS 2014-2015</th>
<th>LBIS 2016-17</th>
<th>PSF 2016-17</th>
<th>RFCPP 2016-17</th>
<th>Total 2016/17</th>
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<tr>
<td>LBIS 2015/16</td>
<td>$86,034</td>
<td>$106,645</td>
<td>$2,500</td>
<td>$53,500</td>
<td>$192,679</td>
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<tr>
<td>Total</td>
<td>$192,679</td>
<td>$106,645</td>
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</table>

Note: This includes access to a 1999 fish habitat rehabilitation project where a groundwater-fed channel (Channel 23) was constructed along the right bank of the Cypre River.
1. Restore access to 5,000 metres of fish habitat for rainbow and bull trout by replacing a culvert that impedes fish passage with an open bottom structure (arch culvert or bridge) on a tributary to Lemon Creek located in the Slocan Valley of British Columbia. This project will address two of three limiting factors.

2. Bull trout are classified as blue-listed by the British Columbia Conservation Data Centre as populations are declining throughout its global range due to habitat degradation, disruption of migration patterns, and overfishing.

3. Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy.

In 2016/17 (Year One),
1. The site plan was prepared.
2. The replacement bridge structure was purchased and delivered – with installation planned for 2017/18.

**Fish Passage Remediation Project Number Four**

**Lemon Creek**

**Project Costs**
- LBIS 2016/17 $73,187
- PSF 2016/17 $2,500
- RFCPP 2016/17 $40,000
- **Total 2016/17** $115,687

1. Restore 225 linear metres of high value habitat for coho salmon and cutthroat trout on Tranquil Creek by replacing a road crossing (TNQ-0005) culvert that is a barrier to fish passage with a fish-friendly crossing structure that provides for safe fish passage.

2. The restoration of high value fish habitat should result in increased opportunities for recreational and aboriginal fisheries. The Clayquot Sound area where the Caycute River is located is important to several First Nations.

In 2014/15, fish passage assessments and habitat confirmations were undertaken.
In 2016/17 (Year One):
1. A site plan was prepared.
2. The replacement bridge structure was purchased and delivered – with installation planned for 2017/18.

**Fish Passage Remediation Project Number Three**

**Tranquil Creek / Clayquot**

**Project Costs**
- RFCPP 2014/15 $30,068
- LBIS 2016/17 $39,639
- PSF 2016/17 $2,500
- RFCPP 2016/17 $40,000
- **Total 2016/17** $82,139

1. Restore 225 linear metres of high value habitat for coho salmon and cutthroat trout on Tranquil Creek by replacing a road crossing (TNQ-0005) culvert that is a barrier to fish passage with a fish-friendly crossing structure that provides for safe fish passage.

2. The restoration of high value fish habitat should result in increased opportunities for recreational and aboriginal fisheries. The Clayquot Sound area where the Caycute River is located is important to several First Nations.

In 2014/15, fish passage assessments and habitat confirmations were undertaken.
In 2016/17 (Year One):
1. A site plan was prepared.
2. The replacement bridge structure was purchased and delivered – with installation planned for 2017/18.
1. Restore access to 1,500 metres of moderate value spawning habitat for rainbow trout by replacing a culvert that impedes fish passage with a fish-friendly structure on a tributary of Dead Horse Lake located in the Skeena region of British Columbia.

2. Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy.

In 2016/17 (Year One), habitat confirmation work verified that the crossing was a priority for remediation.

1. A site plan was prepared.
2. The replacement bridge structure was purchased and delivered.
3. In 2017/18 (Year Two funding $136,373) bridge installation was completed.

Rainbow trout are a prized recreational sport fish and angling for them contributes to the local economy.

Project Costs

<table>
<thead>
<tr>
<th></th>
<th>LBIS 2016/17</th>
<th>PSF 2016/17</th>
<th>RFCPP 2016/17</th>
<th>Total 2016/17</th>
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<td>LBIS 2016/17</td>
<td>$8,838</td>
<td>$2,500</td>
<td>$10,000</td>
<td>$21,338</td>
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<td>Total 2016/17</td>
<td>$20,138</td>
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</table>

Project Delivery

Thanks to
Alan Harrison and Gail Campbell
BC Timber Sales Skeena
Fish Passages Remediation Project Number Seven

Shuttleworth Creek / Kilmer

Project Objectives

1. Restore at least 6.6 km of spawning and rearing habitat for:
   - Rainbow trout (Oncorhynchus mykiss),
   - Longnose dace (Rhinichthys cataractae),
   - Redside shiner (Richardsonius balteatus) and
   - Slimy sculpin (Cottus cognatus) on Shuttleworth Creek which is a tributary of the Okanagan River located in the Southern Interior of British Columbia near Penticton.

Project Results

In 2016/17 (Year One),
1. Habitat confirmation work and a site plan was prepared.

Project Costs

<table>
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<tr>
<th>Project Costs</th>
<th>LBIS 2016/17</th>
<th>BCTS 2016/17</th>
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<tbody>
<tr>
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<td>$11,613</td>
<td>$60,000</td>
<td>$150,000</td>
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Fish Passages Remediation Project Number Eight

Coast South
700 Main

Project Objectives

1. Replace the existing road crossing with rip rap that restricts upstream fish access to high value fish habitat to times of high and moderate flow with a clear span bridge that enables a diversity of salmon and other species to have access to 1,875 m² of fish habitat.

Project Results

1. The habitat confirmation work, site plan, structure purchase and installation were all completed in 2016/17.
2. BCTS provided additional funding to augment and partner with LBIS Fish Passage investments to help complete the project.

Project Costs

<table>
<thead>
<tr>
<th>Project Costs</th>
<th>LBIS 2016/17</th>
<th>BCTS 2016/17</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$90,000</td>
<td>$60,000</td>
<td>$150,000</td>
</tr>
</tbody>
</table>
1. To remove the derelict Strimbold Bridge that is impacting fish habitat and likely a barrier to fish passage at some flows, and may pose an environmental risk if washed downstream due to flood event. Fish species present include:

- Chinook salmon (Oncorhynchus tshawytscha)
- Coho salmon (O. kisutch)
- Sockeye salmon (O. nerka)
- Steelhead (O. mykiss)
- Rainbow trout (O. mykiss)
- Dolly Varden (Salvelinus malma), and
- Mountain whitefish (Prosopium williamsoni).

An Environmental Mitigation Plan was prepared in fall 2015 and commented on by ENV, DFO, and FLNRORD to determine work windows, acceptable procedures, and disposal. The derelict bridge was removed in 2016/17 at a lower than expected cost ($40,000 was original cost estimate). An Environmental Monitoring Report was prepared in July 2016.

### Project Costs

<table>
<thead>
<tr>
<th></th>
<th>LBIS 2016/17</th>
<th>LBIS 2017/18</th>
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<tbody>
<tr>
<td>LBIS</td>
<td>$85,000</td>
<td>$11,280</td>
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</table>

### Project Objectives

1. Remove a dam (weir) that is a barrier to fish passage.
2. Restore 9,250 m of habitat for:
   - Rainbow trout (Oncorhynchus mykiss)
   - Bull trout (Salvelinus confluentus).
3. Restore 2,900 m of habitat for:
   - Coho salmon (Oncorhynchus kisutch).
4. Before removing the dam, alternative sources of water need to be provided to water licence holders; this will be accomplished by drilling to provide access to groundwater, and the installation of a pump and power.

### Project Delivery

- Groundwater well was drilled with pump and power installed.
- The dam (weir) removal occurred in 2017/18

### Project Results

Before: Cross view of weir

After: Wier removed

### Before:
- With derelict bridge

### After:
- Removal of derelict bridge

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## Fish Passage Remediation Project Number Nine

### Jamieson Creek

**Project Objectives**

1. Remove a dam (weir) that is a barrier to fish passage.
2. Restore 9,250 m of habitat for:
   - Rainbow trout (Oncorhynchus mykiss)
   - Bull trout (Salvelinus confluentus).
3. Restore 2,900 m of habitat for:
   - Coho salmon (Oncorhynchus kisutch).
4. Before removing the dam, alternative sources of water need to be provided to water licence holders; this will be accomplished by drilling to provide access to groundwater, and the installation of a pump and power.

### Project Delivery

- Thanks to Drew Alway
  Southern Engineering Group
  Engineering Branch, FLNRORD

### Project Results

- Groundwater well was drilled with pump and power installed.
- The dam (weir) removal occurred in 2017/18

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## Fish Passage Remediation Project Number Ten

### Maxan Creek

**Project Objectives**

1. To remove the derelict Strimbold Bridge that is impacting fish habitat and likely a barrier to fish passage at some flows, and may pose an environmental risk if washed downstream due to flood event. Fish species present include:

- Chinook salmon
- Coho salmon (O. kisutch),
- Sockeye salmon (O. nerka),
- Steelhead (O. mykiss),
- Rainbow trout (O. mykiss),
- Dolly Varden (Salvelinus malma), and
- Mountain whitefish (Prosopium williamsoni).

### Project Results

- An Environmental Mitigation Plan was prepared in fall 2015 and commented on by ENV, DFO, and FLNRORD to determine work windows, acceptable procedures, and disposal. The derelict bridge was removed in 2016/17 at a lower than expected cost ($40,000 was original cost estimate). An Environmental Monitoring Report was prepared in July 2016.

### Project Costs

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<tr>
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<th>LBIS 2016/17</th>
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<td>LBIS</td>
<td>$28,800</td>
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Project Objectives

1. To restore fish passage to 275 m of upstream habitat for cutthroat trout by installing a backwater weir and breaching four abandoned beaver dams. Project outcomes were achieved by installing the backwater weir to allow fish passage through a culvert that was a barrier to fish passage, and by breaching four abandoned beaver dams. The Gitanyow Fisheries Authority (GFA) undertook the habitat confirmation field work in 2015 that confirmed that the fish-stream crossing at Date 1200 was a barrier to fish passage, and GFA was commissioned to carry out the remediation project in 2016 and prepare a report on the weir installation and beaver dam breaching work.

Project Delivery

Thanks to Alan Harrison and Gail Campbell
BC Timber Sales Skeena

Spur 30-1 Before and After

NES 2 Before and After

Project Objectives

1. The project objective was achieved with the installation of a bridge at Spur 30-1 and an embedded open bottom culvert at NES2 (also referred to as South Bay Mainline).
2. The Copper Creek project restored fish access to 1,700 m of high value spawning and rearing habitat at Spur 30-1 for coho salmon, and 530 m of high value spawning and rearing habitat at NES 2 for coho salmon and sockeye salmon.

Project Results

The project objective was to replace two crossing structures (Spur 30-1 and NES2) that impeded fish passage with two fish-friendly crossing structures that provide for safe fish passage.

Project Delivery

Thanks to Larry Duke
Haida Gwaii District, FLNRORD and Dave Hamilton
BC Timber Sales Strait of Georgia

Date 1200

Fish Passage Remediation Project Number Eleven

Fish Passage Remediation Project Number Twelve

Copper Creek – Skidegate Lake Project

Project Funding

LBIS 2016/17 $6,200

Project Funding

Year 2 $149,400

British Columbia Fish Passage Program

British Columbia Fish Passage Program
Fish Passage Remediation Project Number Thirteen

Clint Creek Project

Project Objectives
1. To remove a small dam (weir) that is no longer needed and that impeded fish passage on Clint Creek in order to restore fish passage, and
2. To remediate key areas surrounding the lower 375 m of Clint Creek to improve and restore fish habitat quality through the installation of large woody debris structures.

Project Results
1. The project objectives were achieved with the dam removal increasing access to at least 1,300 m of high and moderate value habitat for:
   - Coho salmon (Oncorhynchus kisutch),
   - Chum salmon (O. keta), and
   - Dolly Varden (Salvelinus malma); and 375 m of habitat restoration completed with installation of LWD structures.

Fish Passage Remediation Project Number Fourteen

Honna River Project

Project Objectives
The project objective was to enhance fish habitat by installing large woody debris (LWD), the lack of which was limiting salmon production.

Project Results
1. The project objective was achieved with the installation of nine LWD structures along 325 m of channel as prescribed in the report "2015 Instream Habitat Enhancement Prescriptions: Clint Creek, Shelley Creek, and Honna River" that was prepared as part of this project.
2. The project enhanced 325 m of high value fish habitat for:
   - Coho salmon (Oncorhynchus kisutch),
   - Chum salmon (O. keta),
   - Pink salmon (O. gorbuscha),
   - Steelhead (O. mykiss),
   - Cutthroat trout (O. clarkii), and
   - Dolly Varden (Salvelinus malma).
Fish Passage Remediation Project Number Fifteen

**Shelley Creek Project**

**Project Objectives**

The project objective was to enhance fish habitat by installing large woody debris (LWD), the lack of which was limiting salmon production.

**Project Results**

1. The project objective was achieved with the installation of 12 LWD structures along 285 m of channel as prescribed in the report “2015 Instream Habitat Enhancement Prescriptions: Clint Creek, Shelley Creek, and Honna River” that was prepared as part of this project.
2. The project enhanced 285 m of high value fish habitat for:
   - Coho salmon (Oncorhynchus kisutch),
   - Chum salmon (O. keta),
   - Cutthroat trout (O. clarkia), and
   - Dolly Varden (Salvelinus malma).

**Project Delivery**

Thanks to Larry Duke
Haida Gwaii District, FLNRORD

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Fish Passage Remediation Project Number Sixteen

**Plumbob Creek Project**

**Project Objectives**

The project objective was to restore fish passage by replacing an undersized, perched culvert on Plumbob Creek, which flows into the Koocanusa Reservoir. The culvert was located on the Teepee Forest Service Road (FSR) in the East Kootenay area of British Columbia. The culvert was an impassable barrier for fish.

**Project Results**

The project objective was achieved with the installation of a clear span bridge. With the removal of the old culvert and installation of the bridge, the Plumbob Creek Fish Passage restoration project now provides fish access to 7,000 linear metres of upstream habitat for utilization by:

- Westslope cutthroat trout (Oncorhynchus clarki lewisi),
- Eastern Brook trout (Salvelinus fontinalis), and
- Bull trout (S. confluentus).

**Project Delivery**

Thanks to Phil MacDonald
BC Timber Sales Kootenay and
Jasbir Naul, Engineering Branch
Southern Engineering Group
FLNRORD
The project objective was to replace two crossing structures (Site 262 and Site 264) that impeded fish passage with two fish-friendly crossing structures that provide for safe fish passage.

1. The project objective was achieved with the installation of embedded open bottom culverts at both Sites 262 and 264.

2. The Nass River – Brown Bear FSR project restored fish access to 350 m of high quality fish habitat for spawning, rearing, and overwintering habitat use by rainbow trout.

3. First Nations involvement: The Gitanyow Fisheries Authority was subcontracted to prepare the environmental management plan for the two culvert replacements.

Project Delivery
Thanks to Phil MacDonald
BC Timber Sales Kootenay and
Jasbir Naul, Engineering Branch
Southern Engineering Group, FLNRORD

Project Results
The project objective was to replace two crossing structures (Site 262 and Site 264) that impeded fish passage with two fish-friendly crossing structures that provide for safe fish passage.

1. The project objective was achieved with the installation of embedded open bottom culverts at both Sites 262 and 264.

2. The Nass River – Brown Bear FSR project restored fish access to 350 m of high quality fish habitat for spawning, rearing, and overwintering habitat use by rainbow trout.

3. First Nations involvement: The Gitanyow Fisheries Authority was subcontracted to prepare the environmental management plan for the two culvert replacements.

Project Delivery
Thanks to Stephen Hales
Alan Harrison and Gail Campbell
BC Timber Sales Skeena and
Howard DeBeck, Engineering Branch
Northern Engineering Group, FLNRORD

Project Objectives
The project objective was to restore fish passage by replacing two undersized, perched culverts on Purcell Creek, which flows into the Koocanusa Reservoir. The crossing is located on the Linklater FSR in the East Kootenay area of British Columbia. The culverts were an impassable barrier for fish.

Project Results
The project objective was achieved with the installation of a clear span bridge. With the removal of the perched culverts and installation of the bridge, the Linklater FSR-Purcell Creek Fish Passage restoration project now provides fish access to 7,600 linear metres of upstream habitat for utilization by:
- Westslope cutthroat trout (Oncorhynchus clarkii lewisi),
- Eastern Brook trout (Salvelinus fontinalis), and possibly also
- Bull trout (S. confluentus).

Project Delivery
Thanks to Phil MacDonald
BC Timber Sales Kootenay and
Jasbir Naul, Engineering Branch
Southern Engineering Group, FLNRORD

Project Objectives
The project objective was to replace two crossing structures (Site 262 and Site 264) that impeded fish passage with two fish-friendly crossing structures that provide for safe fish passage.

1. The project objective was achieved with the installation of embedded open bottom culverts at both Sites 262 and 264.

2. The Nass River – Brown Bear FSR project restored fish access to 350 m of high quality fish habitat for spawning, rearing, and overwintering habitat use by rainbow trout.

3. First Nations involvement: The Gitanyow Fisheries Authority was subcontracted to prepare the environmental management plan for the two culvert replacements.

Project Delivery
Thanks to Stephen Hales
Alan Harrison and Gail Campbell
BC Timber Sales Skeena and
Howard DeBeck, Engineering Branch
Northern Engineering Group, FLNRORD
The project objective was to restore fish passage by replacing an undersized, perched closed bottom culvert on an unnamed tributary of Cherry Creek. The culvert was located on the North Fork FSR in the Okanagan-Columbia area of British Columbia. The culvert was an impassable barrier for fish.

The project objective was achieved with the installation of a clear span bridge. With the removal of the perched culvert and installation of the bridge, the Cherry Creek – North Fork FSR Fish Passage restoration project now provides fish access to at least 500 linear metres of upstream habitat for:

- Bull trout (*Salvelinus confluentus*)
- Rainbow trout (*Oncorhynchus mykiss*)

Based on TRIM data, there is the potential for up to 2,500 metres of habitat gain.

1. The project objective was to replace two crossing structures (Site 5 and Site 6) that impeded fish passage with two fish-friendly crossing structures that provide for safe fish passage.

2. The project objective was achieved with the installation of embedded open bottom culverts at both Sites 5 and 6. In tandem with the project, BCTS deactivated a crossing at Site 5b that increased fish access to above Site 5 to 1,300 m.

3. The Kispiox River – Helen FSR project restored fish access to 2,300 m (1,300 m for Site 5 and 1,000 m for Site 6) of high and moderate value habitat for:

- Bull trout (*Salvelinus confluentus*)
- Rainbow trout (*Oncorhynchus mykiss*)

First Nations involvement: The Gitanyow Fisheries Authority prepared the habitat confirmation report that led to this site being identified as a priority for remediation.

Before: Kispiox River tributary Site 6 on Helen FSR
After: Kispiox River tributary Site 6 on Helen FSR

Before: Tributary to Cherry Creek crossing
After: Tributary to Cherry Creek crossing

Project Objectives
The project objective was to restore fish passage by replacing an undersized, perched closed bottom culvert on an unnamed tributary of Cherry Creek. The culvert was located on the North Fork FSR in the Okanagan-Columbia area of British Columbia. The culvert was an impassable barrier for fish.

Project Results
The project objective was achieved with the installation of a clear span bridge. With the removal of the perched culvert and installation of the bridge, the Cherry Creek – North Fork FSR Fish Passage restoration project now provides fish access to at least 500 linear metres of upstream habitat for utilization by:

- Bull trout (*Salvelinus confluentus*)
- Rainbow trout (*Oncorhynchus mykiss*)

Based on TRIM data, there is the potential for up to 2,500 metres of habitat gain.

Project Delivery
Thanks to Warren Yablonski and Jock McArthur
BC Timber Sales Okanagan-Columbia

British Columbia Fish Passage Program
The project objective was to replace a corrugated metal pipe (CMP) on km 4 of the Bench Forest Service Road (FSR) that impedes fish passage with a fish-friendly structure.

1. The project objective was achieved with the installation of an open bottom arch culvert. The project also addressed stream flooding of the FSR by raising the road, undertaking bank restoration, restoring thalweg, and restoring riparian area by re-routing the ATV trail to prevent future bank failure.

2. The Chilliwack Bench project restored fish access to 1,000 m of high value habitat for:
   - Cutthroat trout (*Oncorhynchus clarki*)
   - Rainbow trout (*O. mykiss*),
   - Coho salmon (*O. kisutch*), and
   - Dolly Varden (*Salvelinus malma*).

3. First Nations involvement: Seven Generations Environmental Services were hired to provide First Nations environmental monitoring for the project, and Chilliwack First Nations were hired for cultural heritage monitoring through Ts‘elxwéyeqw Tribe Management Ltd.
Partnering Organizations

The British Columbia Fish Passage Program is a partnership between the following organizations:

- BC Ministry of Environment and Climate Change Strategy
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
- BC Ministry of Transportation and Infrastructure
- British Columbia Timber Sales
- Recreation Fisheries Conservation Partnership Program (RFCPP) / Programme de partenariats relatifs à la conservation des pêches récréatives

and

Pacific Salmon Foundation.