

# **Reconnaissance (1:20,000) Fish and Fish Habitat Stream Inventory of Tributaries to Carrigan Creek**

**Watershed Code: 400-519600**

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## **Kispiox Forest District Fish and Fish Habitat Inventory Project**

### *Final Report*

*Prepared for:*

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**TRITON**

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**PROJECT REFERENCE INFORMATION**

<b>Project Code:</b>	06-KISP-3068-0002-1998
<b>Proponent:</b>	Ministry of Environment, Lands and Parks
<b>Inventory Program:</b>	Forest Renewal BC
<b>Contract Number:</b>	Section of CSK 3068, Skeena Region
<b>FRBC Project Number:</b>	SB96120

**WATERSHED INFORMATION**

<b>Stream Names:</b>	Unnamed tributaries to Carrigan Creek
<b>Watershed Codes:</b>	400 519600
<b>TRIM map sheet</b>	93M.061
<b>Total Number of Reaches:</b>	7
<b>Number of Reaches/Sites Sampled:</b>	3
<b>Fish Species Present:</b>	No Fish Present
<b>Biogeoclimatic Zone(s):</b>	ICH
<b>Survey Dates:</b>	August 27, 1997.
<b>MELP Region:</b>	Skeena Region (6)
<b>Management Units:</b>	6-30
<b>Forest District:</b>	Kispiox Forest District
<b>Forest Licensee:</b>	Skeena Cellulose Inc.

**CONTRACTOR INFORMATION**

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<b>Field Crew:</b>	Arne Lorenz, B.Sc., Morris Shaw, Lloyd Dallyn and Chris Collins
<b>Data Entry:</b>	Lloyd Dallyn and Sam Buchanan, D. Tech.
<b>Inventory Mapping:</b>	Shannon Shields, B.A., and Michele Patterson, D. Tech.

## **DISCLAIMER**

The Province has not accepted the contents of this product for the purposes of the Forest Practices Code, and reserves the right to dispute the validity of summarized results. The Province does not necessarily agree with the classification assigned to any individual stream reach, for use in logging plans, silviculture prescriptions or any other application.

## **ACKNOWLEDGMENTS**

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We would like to thank Todd Mahon, Skeena Cellulose Inc. representative who was the contract administrator and provided valuable input throughout the contract, and Paul Giroux, Fisheries Inventory Specialist, Ministry of Environment, Lands and Parks, Skeena Region, who acted as contract monitor and provided technical expertise as well as valuable input throughout the project.

**TABLE OF CONTENTS**

1. INTRODUCTION ..... 1

1.1 Project Objectives ..... 1

1.2 Study Area ..... 1

1.3 Review of Existing Information..... 4

2. METHODS ..... 4

2.1 Changes To Methodology ..... 5

    2.1.1 Phase 2 ..... 5

    2.1.2 Phase 4 ..... 5

    2.1.3 Phase 5 ..... 5

    2.1.4 Phase 6 ..... 5

2.2 Field Assessments ..... 6

3. INVENTORY DATA ..... 7

3.1 Survey Information ..... 7

    3.1.1 Problems ..... 7

3.2 Fish Distribution ..... 7

3.3 Fish Habitat ..... 7

3.4 Rehabilitation/Enhancement Opportunities ..... 7

3.5 Follow-up Sampling..... 7

3.6 Other Concerns/Interest Points ..... 8

3.7 Non-Fish Bearing Reaches ..... 8

4. REFERENCES ..... 10

**LIST OF FIGURES**

Figure 1. Project overview map ..... 3

**LIST OF TABLES**

Table 1. Watershed working areas within the Kispiox Forest District..... 2

Table 2. Non-Fish Bearing Reach Reports for Carrigan Creek Tributaries ..... 9

**APPENDICES**

- Appendix A - Inventory Map
- Appendix B - Stream Site Data from FDIS and Fish Collection Data
- Appendix C - Photograph Captions and Contact Sheets

## **1. INTRODUCTION**

### **1.1 Project Objectives**

Triton Environmental Consultants Ltd. was contracted by the British Columbia Ministry of Environment, Lands and Parks, Fisheries Branch to conduct stream inventories in select watersheds within the Kispiox Forest District. Information was collected on the biological and physical stream characteristics, fish species assemblage, and fish distribution. The purpose of the Reconnaissance (1:20 000) Fish and Fish Habitat Inventory is to describe watershed-wide fish distributions and habitat characteristics for the project area.

### **1.2 Study Area**

The project area is within the Kispiox Forest District in northwestern central British Columbia (Figure 1). The project area covered 11 discrete working areas (Table 1). This report includes Project Working Area #7, tributaries to Carrigan Creek (Table 1). Carrigan Creek flows east into the Skeena River approximately 105 km north of Smithers (Figure 1). Access to this area was by helicopter from Hazelton, B.C..

**Table 1. Watershed working areas within the Kispiox Forest District**

<b>Working Area #</b>	<b>Working Area</b>	<b>Stream Network</b>	<b>Watershed Code</b>
<b>1</b>	Shedin Creek	Unnamed Creeks, Sperry Creek, Rosenthal Creek, Damsumlo Creek ⇒ Shedin Creek ⇒ Babine River ⇒ Skeena River ⇒ Pacific Ocean	480 027800
<b>2</b>	Goathead Creek	Unnamed Creeks ⇒ Goathead Creek ⇒ Shedin Creek ⇒ Babine River ⇒ Skeena River ⇒ Pacific Ocean	480 027800 11600
<b>3</b>	West Kitsuns Creek Tributary	Unnamed Creeks ⇒ Unnamed Creek ⇒ Kitsuns Creek ⇒ Kitseguecla River ⇒ Skeena River ⇒ Pacific Ocean	450 318200 18200 45700
<b>4</b>	Kitsuns Creek	Unnamed Creek ⇒ Kitsuns Creek ⇒ Kitseguecla River ⇒ Skeena River ⇒ Pacific Ocean	450 318200
<b>5</b>	Larkworthy Creek	Unnamed Creeks ⇒ Larkworthy Creek ⇒ Skeena River ⇒ Pacific Ocean	400 593800
<b>6</b>	Cranberry River Tributaries	Unnamed Creeks ⇒ Cranberry River ⇒ Nass River ⇒ Pacific Ocean	530-000000
<b>7</b>	Carrigan Creek Tributaries	Unnamed Creeks ⇒ Carrigan Creek ⇒ Skeena River ⇒ Pacific Ocean	400 519600
<b>8</b>	Skeena River Tributaries (S. of Larkworthy Cr.)	Unnamed Creeks ⇒ Skeena River ⇒ Pacific Ocean	400-
<b>9</b>	Deep Canoe Creek	Unnamed Creeks ⇒ Deep Canoe Creek ⇒ Skeena River ⇒ Pacific Ocean	400 574200
<b>10</b>	Skeena River Tributaries (S. of Sicintine R.)	Unnamed Creeks ⇒ Skeena River ⇒ Pacific Ocean	400
<b>11</b>	Moonlit Creek	Unnamed Creeks ⇒ Moonlit Creek ⇒ Kitwanga River ⇒ Skeena River ⇒ Pacific Ocean	400 694900 48600

**Figure 1. Project overview map**

### 1.3 Review of Existing Information

The Fisheries Information Summary System (FISS) Map 93M/12 has no fisheries information for Carrigan Creek or its tributaries. Cutthroat trout (*Oncorhynchus clarki*) were reported in Carrigan Creek in the vicinity of the study area (Mahon and Hopcraft 1995).

## 2. METHODS

Standard methodology as outlined in Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures (RIC 1997) for performing stream inventories were followed. The reconnaissance level fish and fish habitat inventory is a sample-based survey covering whole watersheds as defined from 1:20,000 scale maps and air photos. The project includes 6 phases as listed below:

- Phase 1: Data Review: A review of all available background information was completed. All known fisheries information is summarized in this report; new data were transcribed onto the 1:20,000 TRIM maps, and 1:50,000 NTS maps to update Fisheries Information Summary System (FISS) database (DFO).
- Phase 2: Classification and Sampling Design: A comprehensive map and air photo review was completed for all waterbodies identified on 1:20,000 TRIM maps. Reach characteristics (gradient, order, pattern, confinement) were recorded for all streams within the project area and recorded on the Reach Table (RIC,1997). The Reach Table was used to generate a sample size (a subset of reaches to be sampled) within the working area based on RIC guidelines. The Reach Totals and Sample Size Sheet (RIC, 1997) was generated which provides a summary of the number of reaches of each type (based on gradient class, size and pattern/confinement) to be sampled. Detailed Reach Forms were completed for selected reaches to be sampled.
- Phase 3: Project Plan: A field sampling plan was developed to sample sites in a variety of stream gradients and stream orders. The purpose of the plan was to describe watershed wide fish distribution, not necessarily to sample all potential fish bearing reaches. Data from Phases 1 and 2, and the Project Plan were presented to and approved by Paul Giroux, MELP Fisheries Inventory Specialist.
- Phase 4: Field Inventory: Field sampling of selected sites was completed on August 27, 1997.



- Phase 5: Data Entry and Analysis: Field sampling data (including site cards, fish cards, and photodocumentation) were entered into the FDIS database. 1:50,000 scale NTS maps of the study area were updated with new information as per the FISS Data Compilation and Mapping Procedures (DFO, 1997).
- Phase 6: Reporting and Final Mapping: Field and office data were mapped using Arc View and Arc Info software, photographs were scanned and printed, and draft and final reports were completed.

## **2.1 Changes To Methodology**

### **2.1.1 Phase 2**

The required number of sample sites as determined by the Reach Sampling Summary were chosen with bias (rather than randomly) to incorporate biological concerns (fish distribution) and access issues.

### **2.1.2 Phase 4**

All sample site locations (except for no visible channel sites) were marked in the field with flagging tape and with the ILP and site numeric identifier (NID) on a steel tag fixed to a blaze on a tree.

### **2.1.3 Phase 5**

Photographic data were edited when entered into FDIS from the original field data forms to reduce duplication of photographs and to eliminate poor quality photographs. Field data forms remain unaltered as a permanent record for the sample site. All photos were taken with 35mm slide film, and scanned using a Nikon LS-1000 film scanner. Slides were scanned at 300 dpi, and saved as \*.JPG files (.8 compression). Stored photo files are about 300kb, and uncompress to about 5mg each. Digital photos were printed as thumbnails using Corel Mosaic. All site photos were copied to CD, 2 copies have been sent to MELP Smithers, and Triton will retain 1 copy on file.

### **2.1.4 Phase 6**

The inventory and interpretative maps were combined to produce one map. The working area is indicated by blue coloured stream lines. Fish presence is represented by light red highlighting over stream lines (sampled: solid or inferred: dashed) and no fish presence is represented by light blue highlighting over stream lines (sampled: solid or inferred: dashed).

Stream classifications are provided for sampled reaches only. Stream summary symbols provide the following information for each sampled site:

- sample site ID,
- fish species presence, not sampled or no fish caught,
- stream or wetland,
- reach confinement,
- reach gradient,
- reach pattern,
- site gradient,
- site channel width,
- site morphology,
- site dominant substrate type,
- site disturbance(s) if applicable, and
- stream classification.

## 2.2 Field Assessments

The 3 tributaries to Carrigan Creek were surveyed on August 27, 1997. Field assessments followed procedures outlined in Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures (RIC, 1997). Generally, the process we followed in the field was to:

- assess the watershed during a helicopter overflight to confirm reach boundaries, identify access points, and photograph reaches at a watershed scale.
- assess each reach on the ground by completing a standard site card, sampling for fish presence, completing a fish collection card and photographing representative habitats.
- identify key features such as barriers to fish migration, spawning locations and bridges; photograph and recorded features on site cards with a unique numeric identifier (NID).

Sample site lengths were equal to the greater of 100m or 10 bankfull widths. Stream widths were determined by measuring the channel width with a tape measure, or by visual estimate. At least 6 channel width measurements were made within each reach, each one at least one channel width distance apart. These measurements were averaged to determine the average channel width. Stream gradients were measured using a clinometer. Stream morphology was determined using the *Channel Assessment Procedures Guidebook* (MOF 1996). Habitat quality was assessed for rearing, spawning, overwintering and cover, each of these habitat types was rated as either Good, Fair, Moderate or Poor. Wildlife observations were noted.

### **3. INVENTORY DATA**

#### **3.1 Survey Information**

A total of 7 reaches were identified within the project area. A total of 3 sample sites, all reaches less than 30% gradient, were visited for inventory purposes.

Project inventory maps are presented in Appendix A - Inventory Map. Individual site card information and fish collection data is presented in Appendix B - Stream Site Data from FDIS and Fish Collection Data. Individual site photographs and contact sheets are presented in Appendix C - Photograph Captions and Contact Sheets.

##### **3.1.1 Problems**

Watershed codes were not available at the time of mapping and have therefore not been included. All streams were identified with a numeric interim locational point (ILP), ILP's are used throughout this report to identify specific streams.

#### **3.2 Fish Distribution**

No fish sampling was attempted as no habitat existed in any of the stream reaches that were sampled. Two mapped streams were determined to be no visible channels and one stream was dry at the time of the survey. A Fisheries Sensitive Zone was noted that is contiguous with the left bank of Carrigan Creek in the area of the sampled streams. Cutthroat trout occur in the mainstem of Carrigan Creek (Mahon and Hopcraft 1995) .

#### **3.3 Fish Habitat**

Fish habitat exists in the form of a Fisheries Sensitive Zone adjacent to Carrigan Creek. The sampled reaches are not fish habitat due to no access from the mainstem (Carrigan Creek) and no suitable habitat.

No critical fish habitats were encountered during the field sampling.

#### **3.4 Rehabilitation/Enhancement Opportunities**

There are no rehabilitation or enhancement opportunities for the Carrigan Creek Tributaries.

#### **3.5 Follow-up Sampling**

No follow-up sampling is recommended for Carrigan Creek. The sampling rate and locations of sites was sufficient to determine fish distribution at the 1:20,000 level for the entire watershed. Every potential fish bearing stream reach was sampled.

### **3.6 Other Concerns/Interest Points**

There are no concerns or points of interest in this working area.

### **3.7 Non-Fish Bearing Reaches**

Non-fish bearing reach reports are provided for relevant reaches including intermittent streams (Table 2). The most downstream reach of a stream which was determined to be non-fish bearing is identified in the report. All subsequent reaches upstream are non-fish bearing by default and are not identified separately. No reports are provided for the TRIM anomaly of a no visible channel - a channel that appears on a TRIM map but was not found in the field.

Table 2. Non-Fish Bearing Status Report for the Carrigan Creek Tributaries

Initial Sampling Date	Follow-up Sampling Date	Watershed Code or ILP Number	Stream Name	Reach Number	Site Number	Map Sheet Number	Capture Method (electrofishing settings)	Area Covered (m)	Sampling Effort	Cond. (µS)	Water Temp. (deg. Celsius)	Flow Stage (VO)	Turbidity (VO)	Known Fish Presence (u/s-d/s)	Obstructions to Fish Migration	Seasonal Habitat Availability	Seasonal Fish Use
27/08/1997	-	3	Unnamed	1	3001	93M.061	Dewatered stream, no habitat to sample for fish	-	-	-	-	-	-	CT downstream in Carrigan Creek	Dewatered stream, flows over fan at mouth with no continuous banks	None	None

#### **4. REFERENCES**

Department of Fisheries and Oceans. 1997. Fisheries Information Summary System Data Compilation and Mapping Procedures.

Mahon, Todd and Grant Hopcraft. 1995. Stream Classification Report Carrigan Cr. and Upper Tributaries. Prepared for Skeena Cellulose Inc. - Carnaby.

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Ministry of Forests. 1995. Fish Stream Identification Guidebook.

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Province of British Columbia, Resources Inventory Committee. 1997. Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures.

## **Appendix A - Inventory Map**

## **Appendix B - Stream Site Data from FDIS and Fish Collection Data**



## **Appendix C - Photograph Captions and Contact Sheets**

Photo Date	Watershed/ Working area	Stream Name or ILP	ILP Mapsheets	Card Site #	Site or Feature NID	NID Mapsheets #	Roll #	Frame #	CD#	Folder	Image	Focal Length (St, Wd, Te)	Dir (Up, Dn, Xs, Fish, Ae)	Comments ( Description and/or scale item)
97-Aug-27	Carrigan	Carrigan	93M.061	3001	03001	93M.061	3	2	KISPIOX	3	2	Ae	Up	Shot of valley.
97-Aug-27	Carrigan	00001	93M.061	3001	03001	93M.061	3	3	KISPIOX	3	3	St	Up	Dry channel, anode pole and bucket foreground.
97-Aug-27	Carrigan	00001	93M.061	3001	03001	93M.061	3	4	KISPIOX	3	4	St	Up	Dry channel, anode pole and bucket foreground.
97-Aug-27	Carrigan	00001	93M.061	3001	03001	93M.061	3	5	KISPIOX	3	5	St	Dn	Dry channel, person on right.
97-Aug-27	Carrigan	Carrigan	93M.061	3003	03003	93M.061	3	6	KISPIOX	3	6	St	Up	FSZ adjacent to Carrigan
97-Aug-27	Carrigan	00002	93M.061	3002	03002	93M.061	3	7	KISPIOX	3	7	St	Dn	No visible Channel