

**East Coast Vancouver Island Salmon Carcass  
Program Implementation**



*by:*

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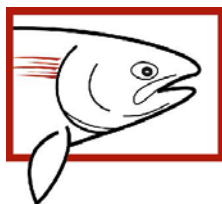
*prepared for:*

Ministry of Water, Land and Air Protection  
Nanaimo, BC

*and*

Habitat Conservation Trust Fund  
Victoria, BC (project #2978125)

March 2004



GREATER GEORGIA BASIN  
**STEELHEAD** Recovery Plan  
[www.SteelheadRecoveryPlan.ca](http://www.SteelheadRecoveryPlan.ca)

# HABITAT CONSERVATION TRUST FUND PROJECT REPORT

1. **PROJECT NAME** - ECVI Salmon Carcass Program Implementation
2. **HCTF PROJECT FILE**        #2978125
3. **TYPE OF REPORT**             Progress                     Annual                     Final
4. **FISCAL YEAR**        2003/04
5. **LOCATION** - East coast Vancouver Island (ECVI) steelhead streams between Nanaimo and Campbell River (Oyster, Puntledge, Big Qualicum, Little Qualicum, and Nanaimo).
6. **PROJECT OVERVIEW**
  - a) *Project Executive Summary*

The majority of wild steelhead stocks in the Greater Georgia Basin are now in decline, or persisting at low levels. Snorkel surveys in five primary streams between Parksville and Campbell River have produced peak counts averaging 5.0 adults/km from 1998 to 2003. Studies at the Province's Keogh River Research Station point to significant declines in marine survival of steelhead since the early 1990's. To recover ECVI stocks that are currently estimated at 10 to 30% of capacity, freshwater productivity must be increased (Wightman et al. 1998, Lill 2002).

A community based program to redistribute and improve retention of carcasses from current salmon escapements will improve nutrient levels and increase primary productivity (periphyton growth), ultimately leading to increased food supplies (macro- invertebrates) and higher survival for stream rearing juveniles, particularly steelhead.

BC Conservation Foundation (BCCF) fisheries technicians and volunteers from local stream stewardship groups distributed a total of 9,225 salmon carcasses into upper reaches of the Puntledge (Cruikshank), Big Qualicum, Little Qualicum, and Nanaimo watersheds (Appendix A). Limited labour and supplies were also provided to stewardship groups doing independent carcass distribution projects on Oyster River and Nunns, Casey, and Woods creeks.

Following recommendations from a salmon carcass workshop in 2002, a user-friendly procedures booklet was developed that will be distributed to stream stewardship groups and community hatcheries on ECVI. This instructional booklet should assist local groups in gaining necessary approvals and distributing carcasses effectively.

## *b) Issue*

Reduced marine survivals have contributed to a decline in the number of salmon returning to many ECVI rivers, resulting in a reduced annual influx of marine derived nutrients. Distribution and retention of carcasses is further limited by the following factors:

- Past harvesting of riparian old growth conifers resulting in a reduction of LWD recruitment into the streams;
- Increased severity of flood events caused by logging of hill-slopes and climate changes; and
- Tendency for salmon to return to the lower reaches of systems where hatcheries are located.

During salmon spawning season, high numbers of post-spawn broodstock from hatcheries and dead-pitched carcasses from manmade side channels are available for redistribution. This is also the busiest period for hatchery operations, making it difficult for managers to co-ordinate carcass distribution projects. For this reason, keen volunteer support and/or additional funding is required to distribute carcasses and get the most benefit from marine derived nutrients.

### *c) Project Objectives*

1. Create a user friendly “carcass planting procedure booklet” and distribute 300 copies to ECVI stewardship groups and community hatcheries.
2. A waterproof field data sheet for collection of carcass project data to be produced and 500 pieces copies printed and distributed.
3. Through instructional/training sessions, ECVI stewardship groups will receive information on the carcass program and be offered assistance (on-site training and materials in the fall of 2003) to develop, with their Community Advisor, a local version tailored to members’ sponsorship of small streams in their areas.
4. Working with federal hatchery staff, a facility-specific carcass plan will be implemented on larger rivers in the fall of 2003 using local stewardship and volunteer personnel, where available.

## **7. ACTIVITIES/TECHNIQUE(S)**

In August 2003, a standard presentation was developed to identify the importance of marine derived nutrients and the ecological role carcass distributions have within the Greater Georgia Basin Steelhead Recovery Plan. Much of the content was derived from the ‘marine derived nutrient’ presentation by stream enrichment expert Dr. K. Ashley (UBC Fisheries Research Section). The presentation was given to the Oyster River Enhancement Society, Campbell River Stewardship Advisory Council, BC Wildlife Federation, and Nanaimo Fish and Game Club.

In early fall, hatchery managers and stewardship groups were contacted to confirm carcass sources, gain support, and develop tentative carcass distribution logistics. Proposals to redistribute carcasses in Oyster, Cruickshank, Big Qualicum, Little Qualicum, and North Nanaimo rivers were submitted to Carol Cross, of the DFO Introductions and Transfers Committee (Appendix B). All of the proposals were approved as submitted. Each proposal included the following details:

- Proponent/co-ordinator contact information
- Brief rationale
- Carcass source
- Carcass planting locations – including a map with sites and access points identified
- Loading rate – number of carcasses of each species
- Number of carcasses placed in the stream vs. riparian zone
- Anchoring method used (i.e., tethering, placement amongst woody debris) if applicable
- Letters/emails indicating support for each project

A separate proposal was submitted to the Introductions and Transfers Committee to transplant chinook carcasses from the Big Qualicum to the Englishman River. Although there were no concerns regarding disease transfer, permission was not granted because hatchery operations limited carcass availability.

Oyster River Enhancement Society had already initiated carcass distribution programs in the past using post spawn pink salmon broodstock. Following the 'marine derived nutrient' presentation, one day of labour and technical assistance was provided to volunteers on a carcass distribution day. Storey Creek Enhancement Society in Campbell River also initiated an independent pink salmon carcass distribution project. The local Community Advisor gained approval through DFO's Introductions and Transfers Committed to distribute Quinsam River pink salmon into local creeks; namely Nunns, Casey, and Woods. For this project, BCCF provided volunteers with waders, peugh sticks, and a plastic tote for carcass transport.

Except for the small stream projects mentioned above, chum salmon were the primary species used for carcass distribution. In all cases, carcasses were transported to the sites by pick-up truck and distributed using peugh sticks. Salmon carcasses were pitched directly from the truck to the stream when access permitted. When the truck could not get within approximately close range of the site, the carcasses were pitched twice or three times to reach the streambank. A BCCF technician and 1-3 volunteers were involved on each distribution day. The following descriptions outline procedures for the individual projects.

#### Cruickshank River

A total of 2,212 Puntledge River chum salmon were distributed into the Cruickshank River watershed between November 7 and 18, 2003 (Appendix A). Post spawn hatchery broodstock were kept in plastic totes at Puntledge Hatchery for a few days, or until 400+ fish were available for distribution. Totes were loaded into the back of pick-ups and transported into the Cruickshank River watershed via Comox Lake and Cruickshank mainlines. VHF radio communication was required while on TimberWest logging roads to avoid incidents with logging trucks. The turn-around time from Puntledge Hatchery to the Cruickshank was approximately 2.5 hours.

Carcasses were dumped in three locations on the mainstem, and six locations on Rees Creek. Dead chum were placed in off-channel habitat to maximize retention as well as mainstem habitat to promote natural distribution during moderate to high water events. Carcasses were intended for Eric Creek as well, but access was limited due to a road wash-out. Courtenay Fish and Game Club members and Puntledge River Hatchery staff provided labour support while loading trucks and distributing the carcasses. The South Coast Steelhead Coalition assisted with logistical planning, as well as carcass distribution.

#### Big Qualicum River

A total of 2,677 chum salmon from a flow-controlled side channel were distributed at four locations in upper Big Qualicum River watershed between November 20 and 25, 2003 (Appendix A). Pick-up trucks were loaded by conveyor belts that are operated during the annual spawning channel dead-pitch. This allowed for very quick loading and did not interfere with regular hatchery operations. A total of 1,083 carcasses were placed in a small wetland/tributary 5 km upstream of the hatchery, 604 were placed in Hunts Creek, 543 were placed in mainstem pool habitat at km 8, and 447 were placed in an off-channel wetland at km 8. Volunteers from Parksville/Qualicum Streamkeepers provided support loading and distributing carcasses.

#### Little Qualicum River

A total of 3,905 chum salmon from a flow-controlled side channel were distributed at seven locations in the Little Qualicum River watershed between November 14 and 25, 2003 (Appendix A). Carcasses were loaded into truck by conveyor belts during the regular spawning channel dead-pitch operations. Similar to Big Qualicum, the conveyor belt system used for removing

chum from the spawning channel allowed for quick loading. A total of 1,394 carcasses were placed into mainstem pool habitat (Ozero Bridge, Glory Hole), 620 into woody debris structures on the mainstem (Waring's Farm), 950 into the riparian zone along the mainstem (Hwy 19), 175 into off-channel habitat adjacent the mainstem (near Glory Hole), 388 into Whisky Creek, and 375 into Kinkadee Creek. Qualicum Beach Streamkeepers provided support loading and distribution the carcasses.

#### Nanaimo River

A total of 431 chum, coho, and chinook salmon were transported to the North Nanaimo River (a.k.a. Deadwood Creek) watershed (Appendix A). Post-spawn broodstock were stored in a freezer at the Nanaimo River hatchery and distributed once the freezer was full. Carcasses were distributed at four different locations off logging roads that paralleled the North Nanaimo River. The majority were placed directly into mainstem habitat, where high flows would distribute carcasses into woody debris downstream. Sixty-two carcasses were tethered to woody debris to increase retention and demonstrate anchoring techniques. Ninety-one carcasses were placed into the Blackjack Creek tributary from a logging bridge access. Relatively few carcasses were available, because the hatchery does a fairly small brood program, and there are no man-made channels with annual dead-pitch operations. Nanaimo Fish and Game Club members and Nanaimo River Hatchery staff assisted with carcass distributions.

#### Oyster River

Although originally considered, the proposal to tether 350 chum and chinook in the mainstem Oyster was not carried out as ample nutrients were distributed in the watershed via pink carcasses in September.

The draft carcass planting procedures booklet from 2002 was revised and reviewed by a DFO member of the Introductions and Transfers Committee. Following the edits, 300 copies were published to be distributed to stream stewardship groups, community hatcheries, and DFO Community Advisors. This 'user-friendly' booklet is divided into three sections:

1. Factors to consider when deciding if a carcass program is appropriate and feasible in the target watershed.
2. Contact lists, restrictions, and steps involved in making a proposal to DFO.
3. Carcass planting techniques and methodology.

Additionally, waterproof field forms were produced to promote accurate data recording that is compatible with DFO's ENPRO system. The data sheets were edited by a DFO hatchery technician experienced with ENPRO, and were used during the 2003 carcass distributions. Copies will be distributed with the carcass planting procedures booklet.

## **8. MEASURES OF RESULTS**

All objectives of the ECVI Carcass Distribution Implementation Project were met. Three hundred copies of the procedures booklet were produced, following a review from DFO staff experienced with carcass distributions. ENPRO compatible data sheets were produced and used for 2003 carcass distributions. Through meetings and presentations the importance of marine derived nutrients was expressed. Presentations were given at venues with large attendance, and much interest was received for future carcass programs. No new independent carcass distributions on small streams were developed strictly as

a result of the ECVI Carcass Implementation Project, but two local stewardship groups were assisted on their independent projects. Fall carcass distributions on larger ECVI rivers were very successful with nearly 10,000 salmon carcasses being distributed in four different watersheds.

## **9. BENEFITS/RISKS**

There are tremendous positive side effects of this program. Salmon directly affect the ecology of many terrestrial and aquatic consumers, and indirectly affect the entire food web (Cederholm et al. 2000). As a result, benefits to wildlife populations are expected as salmon and steelhead populations increase. Cederholm documented 83 wildlife species that predate and/or scavenge salmon carcasses in the Pacific Northwest.

There are virtually no negative side effects from this project. Odour associated with rotting carcasses may be unpleasant, but the public generally recognizes the salmon cycle and accepts the seasonal inconvenience. Also, most sites are in remote locations with little human activity. Distributions of carcasses will avoid domestic water withdrawal facilities, as required in current DFO guidelines.

## **10. EXTENSION/PUBLIC INFORMATION/PARTICIPATION/PARTNERS**

A total of 13 individual volunteers were involved and much interest was expressed to continue next year. Groups directly involved with this year's carcass distributions include; Parksville Streamkeepers, Qualicum Beach Streamkeepers, Oyster River Enhancement Society, Storey Creek Enhancement Society, Nanaimo Fish and Game Club, Courtenay Fish and Game Club, and the South Coast Steelhead Coalition. Federal and community hatcheries were co-operative and assisted with carcass distributions on local streams. DFO Community Advisors and Technicians were consulted and reviewed final draft documents. Carcass distribution data recorded on the new field forms will be entered into the ENPRO system, allowing DFO staff to access the data.

## **11. CONTRACTOR PERFORMANCE**

N/A

## 12. PHOTOGRAPHIC RECORD



Chum and coho carcasses tethered to woody debris, North Nanaimo River.



Staging chum carcasses at streamside on Rees Creek, tributary to the Cruickshank River.



Pitching carcasses directly into Rees Creek, tributary to the Cruickshank River.



Loading the conveyor belt in the Little Qualicum spawning channel.



Loading a pick-up by conveyor belt at Little Qualicum spawning channel.



Chum salmon carcasses in off-channel habitat near the Glory Hole, Little Qualicum River.

### **13. BUDGET DETAILS**

The total project budget approved by HCTF was \$13,905. A total of \$7,318 was spent on wages, \$3,881 on site/project costs, and \$2,706 on overhead. The most expensive equipment purchased was two plastic fish totes at \$500 per. A total of \$1,161 from the overhead covered the cost of printing 300 copies of the salmon carcass distribution procedures booklet. The remaining \$1,545 overhead cost covered the BCCF administration fee of 12.5%. **More detailed budget information can be found in the attached Project Financial Report.**

### **14. LITERATURE CITED**

- Cederholm, C.J., D.H. Johnson, R.E. Bilby, L.G. Dominguez, A.M. Garrett, W.H. Graeber, E.L. Greda, M.D. Kunze, B.G. Marcot, J.F. Palmisano, R.W. Plotnikoff, W.G. Percy, C.A. Simenstad, and P.C. Trotter. 2000. Pacific salmon and wildlife – ecological contexts, relationships and implications for management. Special edition technical report prepared for D.H. Johnson and T.A O’Neil (managing directors), Wildlife-Habitat Relationships in Oregon and Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 136 pp.
- Lill, A.F. 2002. Greater Georgia Basin steelhead recovery action plan. Prepared for the Pacific Salmon Foundation and the Province of British Columbia. 107 pp.
- Wightman, J.C. et al. 1998. A recovery plan for east coast Vancouver Island steelhead trout. Draft. Ministry of Environment, Lands and Parks and Ministry of Fisheries. Nanaimo, B.C. 131 pp plus appendices.

# Project Financial Report

Proponent / Project Leader: J.C. Wightman/H.M. Wright HCTF Proj. #: 2978125

HCTF Approved Budget Amount: \$13,905

Project Name: ECVI Salmon Carcass Program Implementation

Reporting Period: 04/01/03 to 03/31/04  
mm/dd/yy mm/dd/yy

Reporting Purpose:  Progress Report  
 Annual Report  
 Final Report

## PART 1. BUDGET DETAILS (HCTF MONIES ONLY)

For Progress and Annual Reports, report year-to-date expenditures related to HCTF funding. For Final Reports, report expenditures related to HCTF funding for ALL years of the project.

### A. Labour Costs

#### i. Human Resources – Wages & Salaries (include Youth employment as a separate line)

Position	# of Crew	# of Work Days	Rate/day	HCTF Amount
Project co-ordinator	1	34	\$193	\$6,558
Technician	1	4	\$193	\$760
Person Days (# of crew x work days)		38	Subtotal i	\$7,318

#### ii. Subcontractors & Consultants (provide details in text)

Contractor	# of Crew	# of Work Days	Rate/day	HCTF Amount
			Subtotal ii	\$0
<b>A. Total Labour Costs</b>				<b>\$7,318</b>

### B. Site / Project Costs

Details		HCTF Amount
Travel	Fuel, accom., per diem	\$543
Small Tools & Equipment		
Site Supplies & Materials	2 fish totes, waders, peughs	\$2,494
Equipment Rental		
Vehicle Rental (incl. Helicopters)	Truck rental	\$686
Work & Safety Supplies		
Repairs & Maintenance		
Permits		
Technical Monitoring		
Other Site / Project Costs		
GST @ 3.5%	Non-profit society taxed 3.5%	\$158
<b>B. Total Site / Project Costs</b>		<b>\$3,881</b>

### C. Overhead

Details		HCTF Amount
Office space, utilities, etc.		
Insurance		
Office supplies		
Telephone & long distance		
Photocopies & printing	300 procedure booklets	\$1,161
Administration fees	BCCF @ 12.5% on total	\$1,545
Other overhead costs		
<b>C. Total Overhead Costs</b>		<b>\$2,706</b>

### PART 2. SUMMARY OF EXPENDITURES FROM ALL FUNDING SOURCES (Please list all partnership funding for the project and identify the partner)

	HCTF Funding Amount	Other Funding			Total
		Source	In-kind	Cash	
A. Labour Costs	\$7,318	DFO hatchery staff labour	\$750		\$8,068
B. Project / Site Costs	\$3,881	DFO biologist	\$100		\$3,981
C. Overhead Costs	\$2,706				\$2,706
<b>Total Costs</b>	<b>\$13,905</b>		<b>\$850</b>		<b>\$14,755</b>

### PART 3. EQUIPMENT PURCHASE SUMMARY

Equipment (list items >\$1000 purchased and quantity)	Serial Number	Dollar Value	Location Stored	Contact

Certified that the project has been satisfactorily completed and all purchases and equipment over \$1000 per item have been returned in satisfactory condition.

Project Proponent Signature	MARCH 31, 2004 Date	J.C. WIGHTMAN Print Name
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HCTF USE ONLY – Financial Report accepted by:

Comptroller, Habitat Conservation Trust Fund	Date
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**APPENDIX A**

**2003 SALMON CARCASS DISTRIBUTION SUMMARY**

Watershed	Date	BCCF Crew	Volunteer Crew	Species	Source	Destination	Sex				Totals	Notes
							female	male	unknown	jack		
<b>Big Qualicum</b>	20-Nov-03	B. Smith, H. Wright	P. Drummond, C. Sloan	Chum	Spawning Channel	Off-channel (left bank) 5 km u/s hatchery	224	201	158		583	
				Chum	Spawning Channel	Off-channel (left bank) 5 km u/s hatchery	88	87	325		500	
	22-Nov-03	H. Wright	C. Sloan, K. Eno	Chum	Spawning Channel	Hunts Creek	179	425			604	
				Chum	Spawning Channel	Pool @ km 8	264	279			543	
	25-Nov-03	H. Wright	P. Dawe	Chum	Spawning Channel	Wetland u/s Mundies (@ km 8)	214	233			447	
										<b>TOTAL</b>	<b>2677</b>	
<b>Cruikshank</b>	07-Nov-03	H. Wright	B. Allen, G. Scott, N. Strussi	Chum	Puntledge Brood	5 km up Rees Creek-off tributary			117		117	
	08-Nov-03	H. Wright	B. Allen, C. Berg, M. Harris, N. Strussi	Chum	Puntledge Brood	Mainstem @ 4 km log jam			230		230	
				Chum	Puntledge Brood	Mainstem @ 7 km			230		230	
				Chum	Puntledge Brood	Rees Creek (d/s wetland)			320		320	
				Chum	Puntledge Brood	Rees Creek (wetland)			200		200	
	14-Nov-03	H. Wright	M. Harris, N. Strussi	Chum	Puntledge Brood	Rees Creek			220		220	
				Chum	Puntledge Brood	Mainstem			200		200	
	18-Nov-03	H. Wright	C. Berg, N. Strussi	Chum	Puntledge Brood	Rees Creek @ lower bridge			400		400	
				Chum	Puntledge Brood	Rees Creek @ bottom of swamp			50		50	
				Chum	Puntledge Brood	Cruikshank @ road			120		120	
				Chum	Puntledge Brood	Mainstem @ 4 km log jam			125		125	
										<b>TOTAL</b>	<b>2212</b>	
<b>Little Qualicum</b>	14-Nov-03	M. McCulloch, B. Smith		Chum	Spawning Channel	Glory Hole	210	406			616	
				Chinook	Spawning Channel	Glory Hole	2				2	
				Chum	Spawning Channel	Off-channel u/s Glory Hole	50	25			75	
				Chum	Spawning Channel	Ozero Bridge	181	207			388	
	18-Nov-03	B. Smith	K. Eno, P. Drummond	Chum	Spawning Channel	Ozero Bridge	128	263			391	
				Chum	Spawning Channel	Hwy 19 Bridge crossing	282	668			950	
	25-Nov-03	H. Wright	P. Dawe	Chum	Spawning Channel	LWD @ Warings	253	124	243		620	
	25-Nov-03	B. Smith	K. Eno, P. Drummond	Chum	Spawning Channel	Whiskey Creek	170	218			388	
				Chum	Spawning Channel	Kinkade Creek			375		375	
				Chum	Spawning Channel	Off-channel near Glory Hole			100		100	
										<b>TOTAL</b>	<b>3905</b>	
<b>Nanaimo</b>	01-Nov-03	H. Wright	S. Pendergast	Chum	Nanaimo Brood	North Fork Nanaimo River @ km 2			65		65	
	04-Nov-03	H. Wright	Chris Riddler	Chum	Nanaimo Brood	North Fork Nanaimo River @ km 4			110		110	
				Chinook	Nanaimo Brood	North Fork Nanaimo River @ km 4			10		10	
	13-Nov-03	H. Wright	A. Brown	Chum	Nanaimo Brood	North Fork Nanaimo River @ km 11			55		55	45 carcasses were tethered to LWD
	21-Nov-03	H. Wright	W. Hamilton	Chum	Nanaimo Brood	North Fork Nanaimo River @ km 3			40		40	
				Chum	Nanaimo Brood	North Fork Nanaimo River @ km 11			20		20	
	01-Dec-03	H. Wright		Chum	Nanaimo Brood	North Fork Nanaimo River @ km 3			30		30	17 carcasses were tethered to LWD
				Coho	Nanaimo Brood	North Fork Nanaimo River @ km 3			20		20	
	04-Dec-03	H. Wright		Chinook	Nanaimo Brood	Blackjack Creek bridge, 5.8 km up powerlines			1		1	
				Chum	Nanaimo Brood	Blackjack Creek bridge, 5.8 km up powerlines			50		50	
			Coho	Nanaimo Brood	Blackjack Creek bridge, 5.8 km up powerlines			30		30		
										<b>TOTAL</b>	<b>431</b>	

**APPENDIX B**

**SAMPLE PROPOSAL SUBMISSION AND APPROVAL FOR  
BIG QUALICUM RIVER SALMON CARCASS DISTRIBUTION**

**Attention: Carol Cross**  
**Fisheries and Oceans Canada**  
**Vancouver, BC**

**Project Proposed:** Big Qualicum Project (LQP) Chum Carcass Distribution

**Proponent:** Harlan Wright, Fisheries Technician  
BC Conservation Foundation (BCCF)  
3-1200 Princess Royal Avenue,  
Nanaimo, BC V9S 3Z7  
Ph. (250) 716-8776  
Fax. (250) 716-0126  
email: hwright@bccf.com

**Target Date:** November 17-28, 2003 (approximate)

**Objective:** Involve the local community stewardship group in increasing wild fish production (primarily steelhead, coho) in the Big Qualicum watershed through improved use of chum carcasses from spawning channel deadpitch operations.

**Background:** This small project is part of a larger program funded by the Habitat Conservation Trust Fund in 2003/04. The "Salmon Carcass Stream Planting Program" was proposed by BCCF to better utilize marine derived nutrients (spawning salmon) in east coast Vancouver Island watersheds. The aim of the project is to improve freshwater survival rates of stream rearing salmonids, particularly depressed winter steelhead stocks. A smaller seed project was funded in 2002/03, which included a salmon carcass stream planting workshop, as well as a pilot stream plant on the Little Qualicum River.

BCCF has been under contract by the province since 1998 conducting steelhead stock assessment and habitat restoration primarily on the east coast of Vancouver Island.

#### **Proposed Activities:**

This project will only deal with carcasses within the Big Qualicum watershed. NO TRANSFERS OUT OF THE WATERSHED WILL OCCUR, AND NO CARCASSES WILL BE DISTRIBUTED ABOVE ANADROMOUS BARRIERS. As a result, no disease issues need be considered. As chum carcasses pitched from the BQP's spawning channel are natural, post-spawn mortalities, there are no chemical and/or medical treatment issues. There are no potential impacts on the quality of water withdrawals beyond what normally occurs in these streams during the salmon season. Access will be gained along DFO private road that parallels the Big Qualicum River upstream of the hatchery facility.

Chum carcasses will be moved from the BQP spawning channel and placed in off-channel habitat in the upper 3 km downstream of the anadromous barrier at river km 10.

Over three to four days, carcasses will be loaded onto a 4x4 pick up truck, 250 at a time (1,125 kg), using the facility's conveyor belt system and/or by hand. BQP staff believe this procedure will have minimal or nil impact on their normal dead-pitch operation. Qualicum Beach Streamkeepers as well as local members of the South Coast Steelhead Coalition will supply labour for loading and off loading/distribution. Loading will average 15 minutes and distribution will range from ¾ to 1.5 hours. Over three to four days we hope to distribute 14 loads. BCCF will supervise, document, supply necessary equipment/materials (extra waders, gloves, pew sticks, safety/first aid, tethers, etc) and report results to FOC stock assessment, habitat, hatchery and CA staff.

As there is likely to be a reasonable number of fish in the stream channel, our distribution efforts will focus on **improving retention** in the upper watershed. In all cases, these sites are relatively high in the watershed (still below barriers) where natural salmon distribution has been relative low. At least 50% of the carcasses will be placed in the riparian corridor just off the stream channel to provide nutrients through hyporehic zone ground water. The other half will only be placed in off-channel wetted areas, and in the channel near LWD to increase retention. Carcasses will be spread out spatially as much as possible, given the low number of accesses available. Where carcasses are placed instream, a loading density of 14 fish/unit (unit=100m<sup>2</sup>) will be strived for (*Guidelines for In-stream*

*Placement of Hatchery Carcasses, DRAFT, Sept 2002*). Some tethering may occur if time permits, and the success of this will be monitored. The upper river downstream of the barrier sees high use by steelhead and resident trout, as documented by extensive adult surveys and juvenile assessments (MWLAP files, Nanaimo).

There are no costs to FOC. BCCF will cover all expenses for the operation, and will be responsible for all coordination and reporting.

Page 3 is an NTS map showing the proposed carcass placement area and the mainstem anadromous falls.



Proposed stream planting area @ river km 6-10

Anadromous Falls @ river km 10



Fisheries  
and Oceans

Pêches  
et Océans

October 31, 2003

Mr. Harlan Wright  
BC Conservation Foundation  
3-1200 Princess Royal Avenue,  
Nanaimo, BC V9S 3Z7

Dear Harlan:

**Subject: Transfer of Salmon Carcasses from Big Qualicum Spawning Channel**

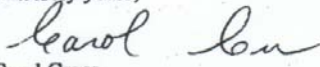
This letter will confirm that you and individuals designated under your authority may transport 2003 brood chum salmon carcasses from Big Qualicum spawning channel for deposition in the Big Qualicum River watershed for stream nutritive enrichment. Carcass collection, transport, and distribution must be conducted according to draft guidelines for instream placement of hatchery carcasses and in accordance with your project proposal. As per carcass guidelines, do not distribute fish that have evidence of disease or that have been medicated. If tethers will be used, ensure that they are bio-degradable or that they are removed from the river when carcasses have decomposed.

Please ensure that all relevant federal and provincial staff in the area are advised of the program before it proceeds and that deposited carcasses are cut in half or otherwise clearly marked to distinguish them for stock assessment purposes.

Please provide a summary of carcass placements when the project is completed.

Thank you.

Sincerely yours,

  
Carol Cross

cc.

B. Anderson  
D. Kieser

G. Ladouceur  
A. Gould

Canada