

Salmon Carcass Planting Procedures
for
Vancouver Island Public
Stream Stewardship Groups



INTRODUCTION

This booklet was designed to assist stream stewardship groups, small community hatcheries and non-government organizations on Vancouver Island with salmon carcass planting programs. Much of the content is based on the draft Fisheries and Oceans Canada document ***Guidelines for In-stream Placement of Hatchery Carcasses for Nutritive Enrichment***. Section 1 outlines factors that must be considered in deciding if a carcass program is appropriate and feasible in the target watershed. If so, all stakeholders must be advised in advance and approval must be obtained from Fisheries and Oceans Canada. Section 2 lists contacts and outlines the steps involved in making a proposal. Section 3 describes carcass planting techniques and methodology.

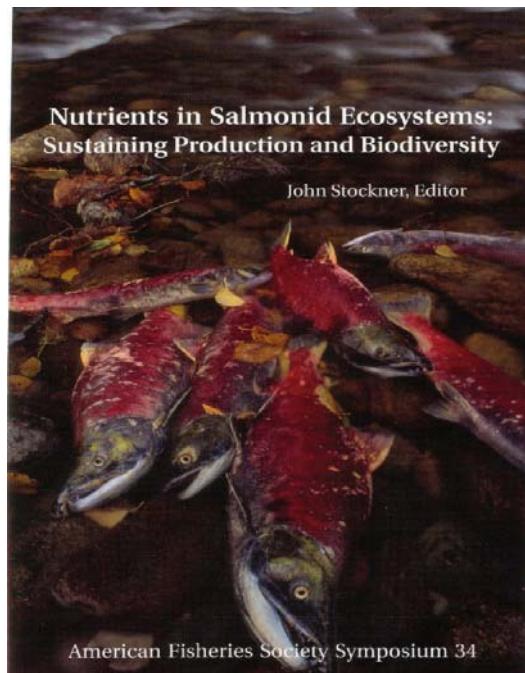
SECTION 1: IS SALMON CARCASS PLANTING APPROPRIATE AND FEASIBLE IN YOUR AREA OR TARGET WATERSHED?

Before starting a carcass planting program, consider the following issues:

1. Does the target stream need nutrient enhancement?

Salmon carcass programs are generally intended to improve distribution and retention in areas that had stronger salmon runs historically. Carcasses should not be placed upstream of barriers where salmon were not historically present and carcasses should only be placed in areas where existing densities are low.

A good description of the benefits salmon carcasses provide to freshwater ecosystems can be obtained through the following publication:



Stockner, J. 2003. Nutrients in Salmonid Ecosystems: Sustaining Production and Biodiversity, American Fisheries Society Symposium 34.

2. Is there a source of salmon carcasses in your area?

Transporting salmon carcasses from one watershed to another is discouraged and requires special approval. This approval can be gained through the Federal-Provincial Introductions and Transfers Committee. Transfer may be considered if the donor and treatment streams are geographically proximate and within the zone of influence (i.e., adults may be straying from donor to treatment stream). Generally, there should be a source of carcasses within the target watershed. Typical sources include:

- a. DFO and community hatcheries,
- b. man-made spawning channels.

Salmon carcasses intended for planting must not have:

- a. received chemical treatments, medications, or anesthetics (exceptions are external treatments that don't require withdrawal periods and anesthetics such as clove oil or CO₂). Contact DFO's Nanaimo diagnostic lab if in doubt.
- b. obvious evidence of serious disease.

3. Other concerns:

- a. Can access be gained to the target area by vehicle?
Loading rates can require high numbers of carcasses be placed in or near the stream. Therefore, vehicle access to the placement sites is usually necessary.
- b. Are there enough workers/volunteers available?
Carcass planting can require significant manual labour and co-ordination to be successful.
- c. What level of public use occurs in the target areas?
Rotting salmon carcasses are unsightly and have a strong odour. Site selection must consider these factors.

SECTION 2: NOTIFICATION/APPROVAL

Once it is decided that a carcass program is appropriate and feasible the following steps should be taken before submitting a proposal to DFO.

- 1. Confirm a carcass source.** Consult with either a DFO hatchery manager, local community hatchery manager, and/or a local Community Advisor, to confirm that a source of carcasses is available.
- 2. Develop proposal logistics.** Determine a rough timeline, carcass loading areas, transportation, and organize a crew.
- 3. Notify/consult relevant groups and government agencies.** Seek support from water licencees, First Nations, and other relevant groups (**SEE THE FOLLOWING CONTACT LIST**).
- 4. Finalize logistics and submit a complete proposal to the Introductions and Transfers Committee for approval (SEE PAGE 9 FOR PROPOSAL DETAILS).**

CONTACT LIST

Water Licensees

Downstream water users must be advised of activities that may potentially impact water quality of their withdrawals. Therefore, water licensees on treatment streams should be notified to alleviate concerns. Information on community water use can be obtained through the local municipal office.

Other Relevant Groups

Local First Nations, community stewardship groups, landowners, and other affected groups should be advised of carcass planting activity. If there is available funding, signage may be posted informing people of the carcass placement activity and its benefits.

A representative for the area from each of the following government agencies should be consulted:

1. Department of Fisheries and Oceans Community Advisors

Aleria Ladwig – Northern Vancouver Island, Tsitika River on east coast to Gold River on west; mainland, Knight Inlet to Cape Caution
PO Box 2159, Unit 10, 9250 Trustee Road, Port Hardy, BC V0N 2P0
Tel: (250) 949-2647 Fax: (250) 902-0674
Email: LadwigA@pac.dfo-mpo.gc.ca

Barry Peters – Campbell River area
150-1260 Shoppers Row, Campbell River, BC V9W 2C8
Tel: (250) 286-5823 Fax: (250) 286-5896 Cellular: (250) 230-2113.
Email: PetersB@pac.dfo-mpo.gc.ca

Dave Davies – Central portion, east coast of Vancouver Island and adjacent mainland inlets
148 Port Augusta Street, Comox, BC V9N 7Z4
Tel: (250) 339-0431 Fax: (250) 339-4612 Car: (250) 338-3325
Email: DaviesD@pac.dfo-mpo.gc.ca

Barry Cordocedo – Central west coast of Vancouver Island, east to Nanaimo, south to Chemainus
3225 Stephenson Point Road, Nanaimo, BC V9T 1K3
Tel: (250) 756-7263 Fax: (250) 756-7020
Email: CordocedoB@pac.dfo-mpo.gc.ca

Tom Rutherford – Lower Vancouver Island, including southern Gulf Islands & Cowichan River
Box 241-5653 Club Road, Duncan, BC V9L 3X3
Tel: (250) 746-5137 Fax: (250) 746-8397
Email: RutherfordT@pac.dfo-mpo.gc.ca

2. Department of Fisheries and Oceans Habitat Restoration Biologists

Mel Sheng, South Coast Habitat Restoration Biologist
4166 Departure Bay Road, Nanaimo, BC V9T 4B7
Tel: (250) 756-7016 Fax: (250) 756-7088
Email: ShengM@pac.dfo-mpo.gc.ca

Shannon Anderson, Central Coast Habitat Restoration Biologist
150-1260 Shoppers Row, Campbell River, BC V9W 2C8
Tel: (250) 286-5807 Fax: (250) 286-5898
Email: AndersonS@pac.dfo-mpo.gc.ca

3. Department of Fisheries and Oceans Salmon Stock Assessment

Kent Simpson, Program Head, South Coast Area Salmon Stock Assessment (Oyster River south)
3225 Stephenson Point Road, Nanaimo, BC V9T 1K3
Tel: (250) 756-7180 Fax: (250) 756-7162
Email: SimpsonK@pac.dfo-mpo.gc.ca

Pieter VanWill, Johnstone Strait Salmon Stock Assessment
Coordinator (Campbell River north)
PO Box 2159, Unit 10, 9250 Trustee Road, Port Hardy, BC V0N 2P0
Tel: (250) 949-9273 Fax: (250) 902-0674
Email: VanWillP@pac.dfo-mpo.gc.ca

4. Fisheries and Oceans Conservation and Protection Officers

Federal fisheries officers should be notified before embarking on carcass distributions. Contact may be made through the local Community Advisor or habitat biologist.

5. Ministry of Water, Land and Air Protection

Craig Wightman, Senior Fisheries Biologist, Vancouver Island Region
2080-A Labieux Road, Nanaimo, BC V9T 6J9
Tel: (250) 751-3230 Fax: (250) 751-3103
Email: Craig.Wightman@gems4.gov.bc.ca

CONTACTS FOR PROPOSAL SUBMISSION

Introductions and transfers committee members:

Mark Higgins
3190 Hammond Bay Road
Nanaimo, BC V9R 5K6
Tel: (250) 756-7072 Fax: (250) 756-7053
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The proposal should include the following details:

1. Proponent/co-ordinator contact information
2. Brief rationale – describe why carcass retention/distribution is applicable to the target area
3. Carcass source
4. Carcass planting locations – include a map with sites and access points identified
5. Loading rate – number of carcasses of each species
6. Number of carcasses placed in the stream vs. riparian zone
7. Anchoring method used (i.e., tethering, placement amongst woody debris) if applicable
8. People and/or organizations in support of the proposal (attach letters or emails of support)

Proposal authorization must be carried by individuals undertaking any carcass plant.

SECTION 3: CARCASS PLANTING PROCEDURES

When distributing carcasses, there are several factors that must be considered. Loading rates should be based on fish size and historic escapements. Also, vehicle access and stream flows can play a large role in spatial and temporal distribution.

Loading Densities:

The following guidelines should be applied when calculating the number of carcasses to be placed in an area:

1. Ideally, maximum historical escapement densities should be used to determine loading rates in the treatment stream. In coho bearing streams, a standard loading rate of 100 fish/km can be applied.
2. Multi-species streams – loading rates for each species must be calculated separately based on historic escapement data (except for coho, where a standard 100 fish/km may be applied). The cumulative total is the total carcass loading biomass.
3. In streams where estimates of natural spawning escapement are routinely made, the carcass loading biomass should be reduced by the recent 5-year moving average for natural escapement.
4. Specific species may be substituted for another by first calculating the total biomass required and dividing by the average weight of the substitute species. If stock specific average weights are not available, the following average weights may be used for these calculations:

Pink	1.5 kg	Steelhead	4.0 kg
Sockeye	2.5 kg	Chum	4.5 kg
Coho	3.0 kg	Chinook	8.5 kg

5. Often carcass availability will be the limiting factor when determining loading rates.
6. Loading rates may be adjusted downward based on site-specific conditions including low flows and greater potential for carcass retention (high abundance of woody debris).

Distribution Guidelines:

1. When access is good, plant carcasses throughout the treatment reach. For stream placement – carcasses should be placed in backwater areas, pools, and amongst woody debris to increase retention. For riparian placement – keep within 20 m of the stream, and load at a maximum density of approximately 5 carcasses per 100 m². Excessive riparian planting is not recommended, and natural predators will typically move carcasses from the stream into the riparian zone.
2. When access is poor, a small number of locations may be used for regular carcass dumping. These sites should be monitored to ensure carcasses are being distributed downstream. If carcasses are not being distributed, then reduce the loading rate. Confirm there is low public use in the dumping area.
3. If there are escapement enumeration programs on the treatment stream, stock assessment staff may require carcasses to be cut in half to differentiate them from natural spawners.

Anchoring:

Anchoring carcasses is recommended in high-flow areas, and when low numbers of carcasses are available.

Carcasses can be secured with biodegradable tethers and/or placed amongst large woody debris to increase retention.

Data Recording:

Records of carcass numbers and species should be maintained in annual data summaries. A standard data sheet that is compatible with DFO's ENPRO database is included with this booklet.

