HRSEP

HABITAT RESTORATION & SALMON ENHANCEMENT PROGRAM

1998/99 Summary Report

Fisheries and Oceans Canada
Pêches et Océans Canada

Canada

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EXECUTIVE SUMMARY

The Habitat Restoration and Salmon Enhancement Program (HRSEP) was established in 1996/97 to complement the Pacific Salmon Revitalization Strategy. The main objective of the federally funded HRSEP is to revitalize salmonid populations in British Columbia through habitat restoration, stock rebuilding, and resource and watershed stewardship. Other important goals are to develop and strengthen partnerships at the community level and (where feasible) train/employ displaced fishery workers. The projects are run by a variety of community groups and agencies.

The 1998/99 fiscal year was the third and final year of the initial HRSEP, with $10 million spent on over 160 projects throughout British Columbia. Program results included over 10 million adult and juvenile salmon enumerated, nearly 1,000,000 sq. metres of riparian area replanted, over 400,000 linear metres of habitat mapped, nearly 200,000 sq. metres of channel and estuarine habitat restored/created, approximately 250 km of stream made available to fish, and over 20 km of streamside fencing constructed. As well, numerous media releases and public presentations were made, and thousands of landowners contacted ensuring extensive public involvement. This report summarizes the 1998/99 program results and highlights several projects.

DESCRIPTION OF HRSEP

The Habitat Restoration and Salmon Enhancement Program (HRSEP) was established in 1996/97 as part of the Pacific Salmon Revitalization Strategy, in response to concerns over declining Pacific salmonid populations, particularly coho. Declines were attributed to a number of factors including overfishing, habitat loss, and changes in climate and marine conditions. HRSEP aims to help restore the health of Pacific salmonid populations by engaging the efforts of many different groups throughout British Columbia. Since its inception, this federally-funded $15 million program has involved hundreds of community groups and agencies in numerous salmon conservation projects. Activities focus on habitat restoration, stock rebuilding, and resource and watershed stewardship.

Fisheries and Oceans Canada has allotted $10 million to fund the third and last year of the original HRSEP. This report summarizes the 1998/99 program results.

HRSEP FOCUS

The primary focus of HRSEP is to address stock conservation concerns, and improve the quality and quantity of habitat available for salmon. The projects fall into the following three categories:

A. Habitat Restoration

Habitat restoration activities focus on improving salmon habitat in both freshwater and estuary systems. Project objectives and activities include:

- Increasing stream habitat complexity to improve salmonid habitat by strategically placing large woody debris (LWD) and boulders,
- Stabilizing eroding banks by planting riparian vegetation, adding rip-rap, and constructing log-crib walls,
- Creating additional spawning and rearing habitat by constructing side-channels, adding spawning gravel, and placing in-stream large organic debris,
- Restricting livestock access to salmon streams and protecting riparian stability by installing fencing,
- Improving water flows by constructing water-storage dams in upper watersheds, and
- Improving/extending fish access to suitable habitat by modifying barriers to fish passage.

B. Salmon Stock Rebuilding

Salmon stock rebuilding focuses on intensive stock assessment and enhancement strategies. Activities include hatchery operations, adult enumeration, juvenile production studies, collection of DNA and other biological samples, creel surveys, coho by-catch monitoring and other programs.

C. Resource and Watershed Stewardship

Resource and watershed stewardship activities encourage community-based stewardship of salmon streams. Projects include habitat mapping, stream inventories, watershed planning and educational programs (community presentations, workshops, brochures, publications, media releases and field trips, etc.).

QUICK FACTS

Personnel Involved and Work Accomplished — Totals

Persons Involved

Persons Trained	882
Persons Employed	1,528
Person-days of Employment Created	29,769
Volunteers Involved	1,312
Volunteer Hours	49,753

Stewardship & Community Planning

Public Presentations / Media Releases	369
Landowners Contacted	57,270

Stock Rebuilding

Adult Salmon Enumerated	1,920,543
Juvenile Salmon Enumerated	7,857,543
Salmon Marked, Tagged or Released	457,430

Mapping and Habitat Restoration

Mapping (linear m)	408,785
Fencing (m^2 protected)	26,345
Fencing (km protected)	20
Riparian Replanting (# plants, trees)	169,331
Riparian Replanting (m^2 area)	945,704
In-channel Habitat (m^2 area restored)	32,162
Off-channel Habitat (m^2 area created/restored)	60,440
Estuarine Habitat (m^2 area created/restored)	105,990
Lake Habitat (m^2 area created/restored)	12,100,000
Lake Area Fertilized (m^2)	138,000,000
Fish Access (m^2 habitat made available)	155,325
Fish Access (km habitat made available)	247

Species Addressed — # Projects

Coho	102
Chum	48
Sockeye	32
Pink	35
Chinook	58
Steelhead	23
Other	50
All species	4

Total Projects with that information 125*

** Many projects addressed several or all species in target streams.*

Habitat Addressed — # Projects

In-Channel (mainstem)	67
Off-Channel	49
Riparian	37
Lake	15
Estuarine-Marine	18
Other	5

Total Projects with that information 110 *

** Many projects addressed several habitat types.*

HRSEP PARTICIPANTS

Numerous individuals, local communities, corporations, First Nations, fishing interests, and all levels of government (municipal, provincial, federal) participated in the 1998/99 program. Many projects employed and trained displaced fishery workers including First Nations. All these groups worked in partnership with the Department, which provided technical assistance for many projects.

LOCATION OF HRSEP PROJECTS

The 1998/99 HRSEP projects were distributed among three major geographic areas within British Columbia — North & Central Coast, Vancouver Island & South Coast, and Lower Mainland & Fraser River Basin. The individual projects are listed by geographical area (see Maps & Lists - pages 8-12).

EVALUATION OF PROPOSALS

Community groups, stakeholders and technical staff from Fisheries and Oceans submitted proposals to the HRSEP for the 1998/99 fiscal year. In early 1998, technical review committees that included representatives from Fisheries and Oceans, the provincial government and the Pacific Salmon Foundation reviewed all proposals and selected the final projects. Altogether, approximately 250 proposals valued at over $18 million were submitted for evaluation. The selected projects demonstrated a combination of HRSEP priorities, including:

- Addressing stocks at risk, and targeting those areas with high priority for stock conservation and/or habitat restoration issues,
- Involving, developing and strengthening partnerships with local communities and other groups,
- Demonstrating appropriate support, permits and approvals (where required), and garnering additional funding from other partners, and
- Showing a high likelihood of project success, and meeting all objectives within the proposed budget by end of March 1999.

Projects that best met the above priorities, and employed displaced fishery workers in communities affected by fleet rationalization, were given added consideration.

HRSEP FUNDING

Fisheries and Oceans funds all HRSEP projects, with additional funding provided by other partners. For the 1998/99 fiscal year, a total of $10 million was allocated in two separate installments — $7 million announced in May of 1998 and an additional $3 million announced in July under the Canadian Fisheries Adjustment and Restructuring Program. The total funding for HRSEP from 1997 to 1999 was $15 million. This is in addition to the $33 million that Fisheries and Oceans spends annually for fish habitat management and salmon enhancement in the Pacific Region.

Fisheries and Oceans provides funding to proponents through a contractual agreement that covers project description, budget and in-kind contributions, and payment schedule. The document also provides legal direction including right to credit, property ownership, equipment purchase and termination rights. As well, all proponents are required to submit a final report in a standardized format.

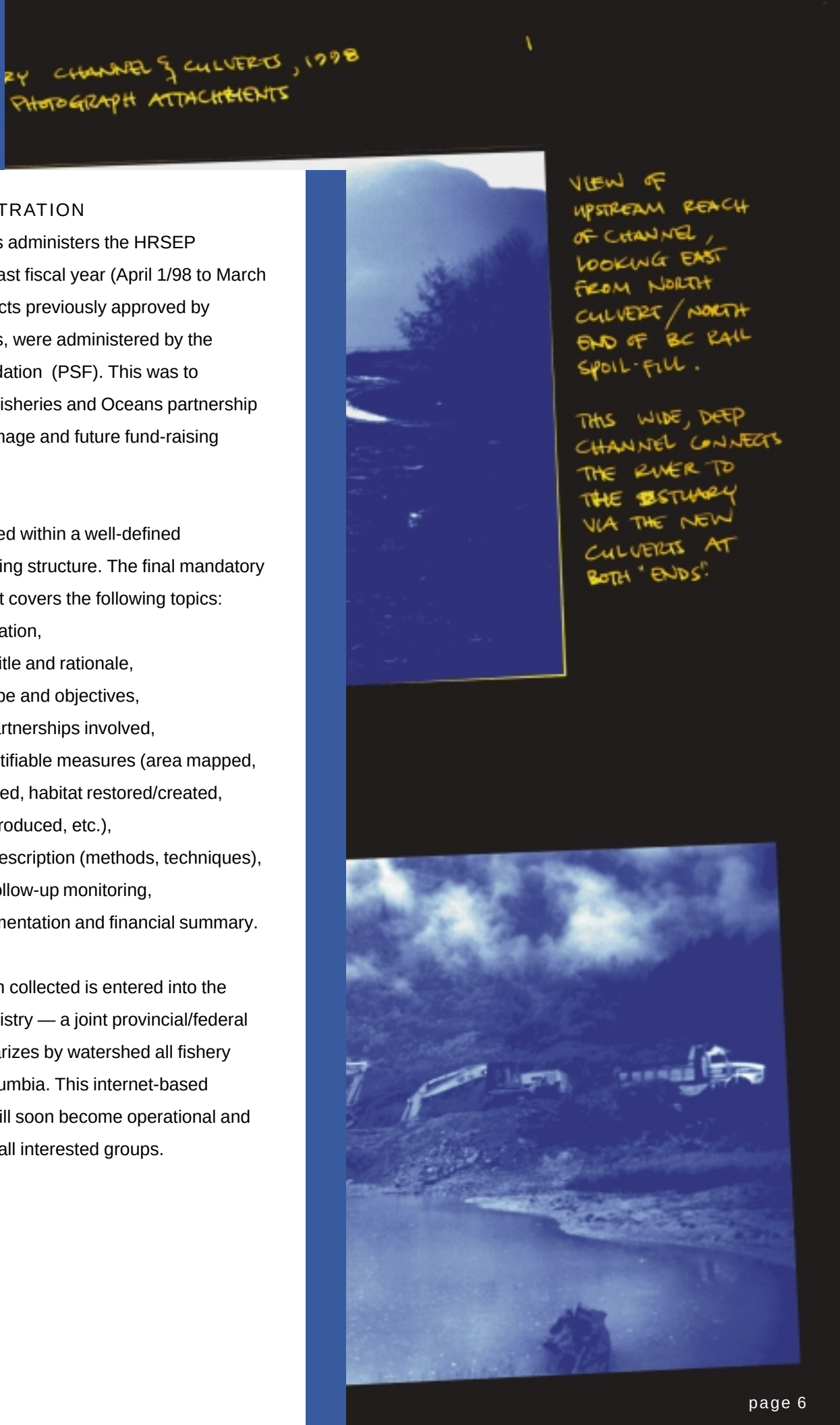
HRSEP ADMINISTRATION

Fisheries and Oceans administers the HRSEP projects. During this last fiscal year (April 1/98 to March 31/99), a dozen projects previously approved by Fisheries and Oceans, were administered by the Pacific Salmon Foundation (PSF). This was to strengthen the PSF-Fisheries and Oceans partnership and promote PSF's image and future fund-raising potential.

HRSEP is administered within a well-defined monitoring and reporting structure. The final mandatory report for each project covers the following topics:

1. Proponent information,
2. Project location, title and rationale,
3. Project activity type and objectives,
4. Personnel and partnerships involved,
5. Results and quantifiable measures (area mapped, salmon enumerated, habitat restored/created, media releases produced, etc.),
6. General project description (methods, techniques),
7. Recommended follow-up monitoring,
8. Supporting documentation and financial summary.

Part of the information collected is entered into the Fisheries Project Registry — a joint provincial/federal database that summarizes by watershed all fishery projects in British Columbia. This internet-based information registry will soon become operational and allow easy access to all interested groups.



		end of LWD into creek
		Roped lower end to R. bank
	0+150	Removed SWD from jam
	0+170	Tied LWD in stream to L
	0+170- 0+235	Removed dead overhangin
	0+178	Constru oyne
	0+	r in

	See fig
	See fig
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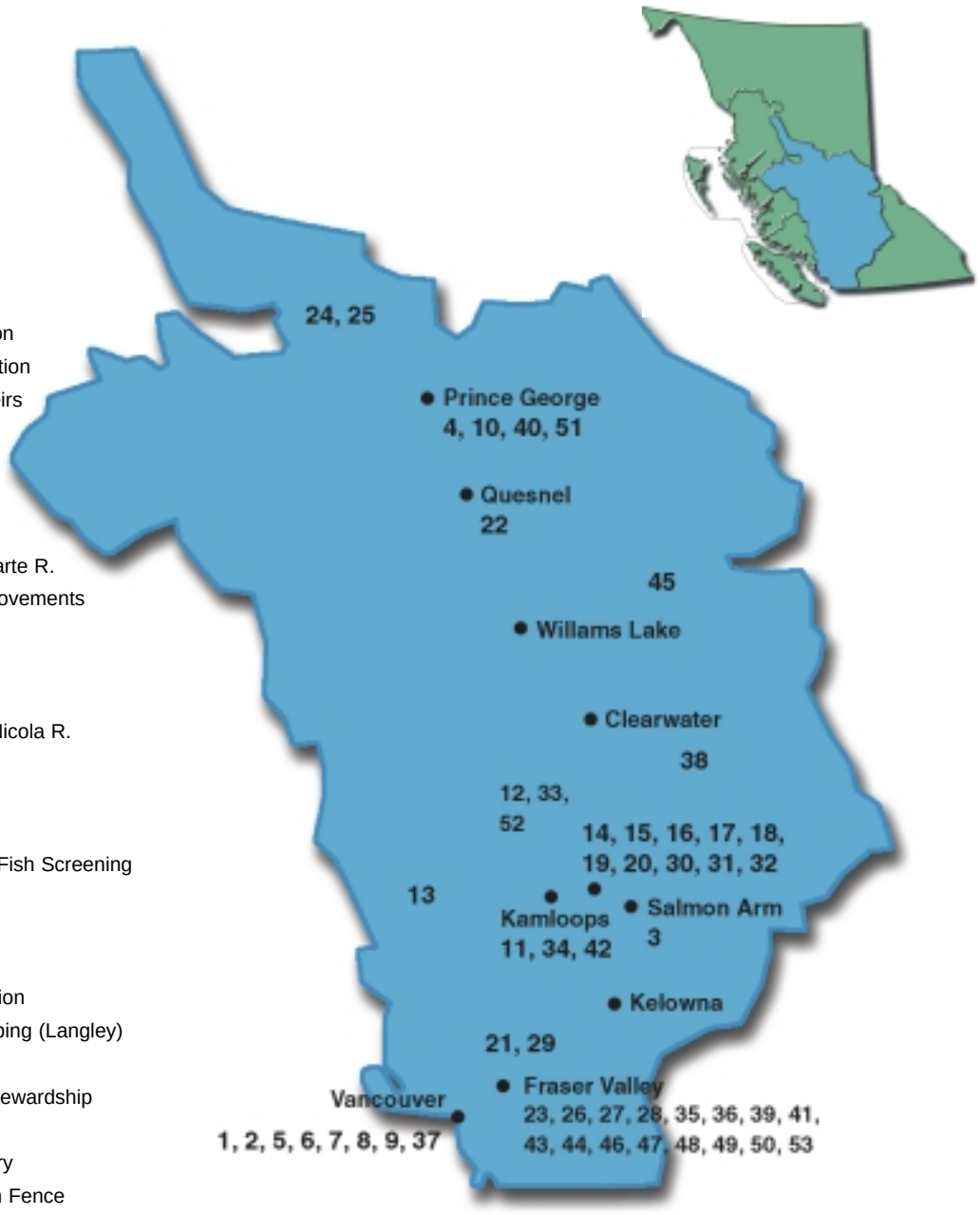
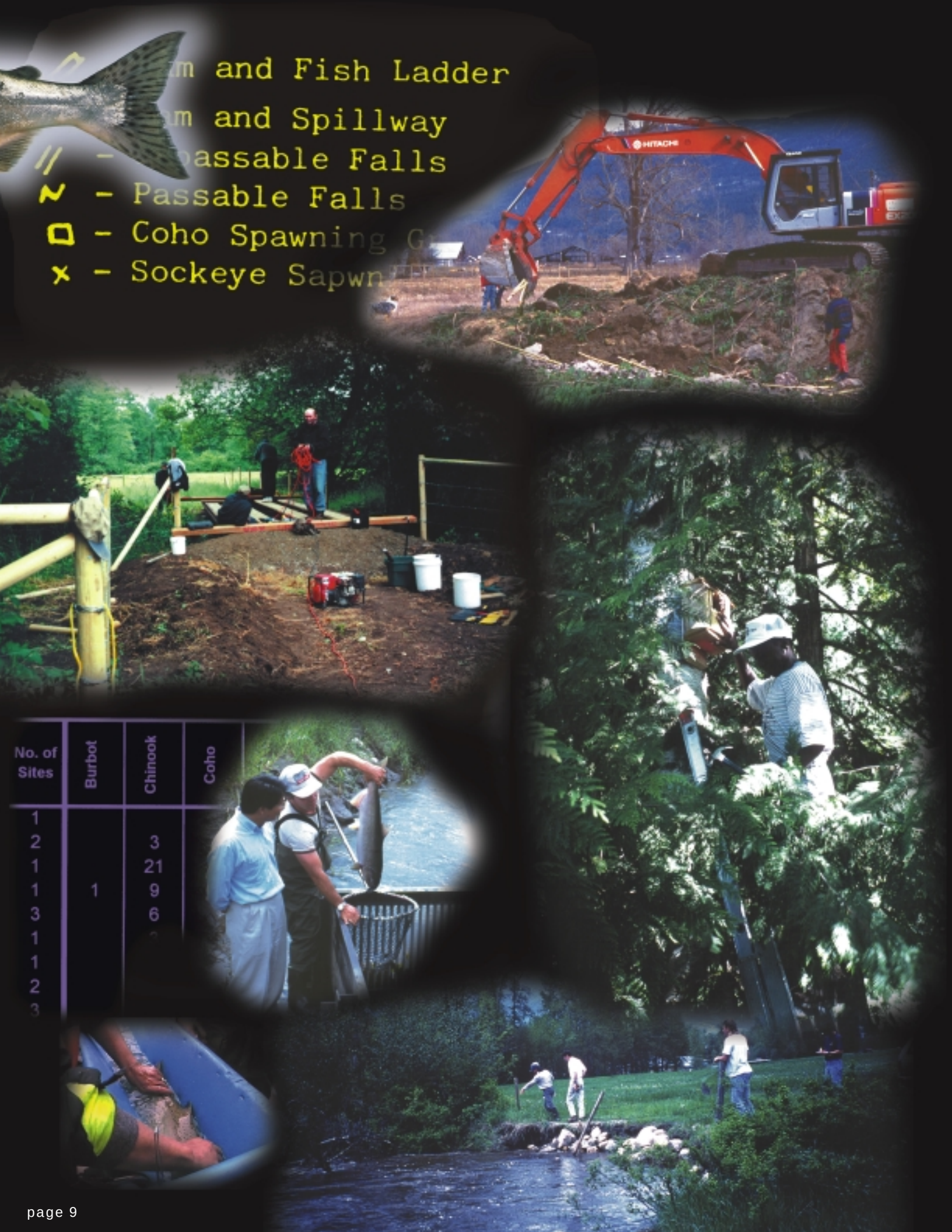
h	See fig secure

$3.35 million

Lower Mainland & Fraser River Basin



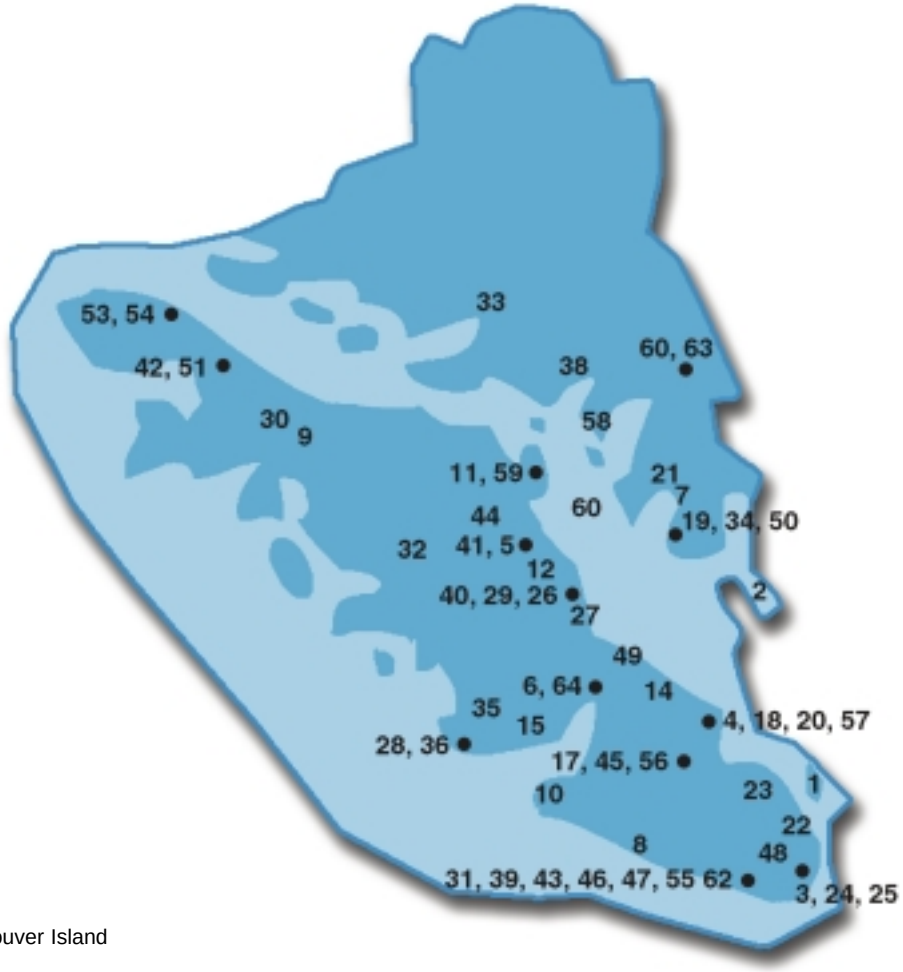
#	Project Name (53 Projects)
1.	S. Fraser Wood Removal
2.	Community Riparian Nursery
3.	Salmon River Watershed Project
4.	Baker Creek Habitat Restoration
5.	Langley Salmon Habitat Restoration
6.	Agriculture/Range Habitat Restoration
7.	Brunette R. & Nelson Cr. Rock Weirs
8.	Lower Mainland Estuary Work
9.	Johnson Ponds, Mosquito Creek
10.	Placer Mining Restoration
11.	Kamloops Habitat Restoration
12.	Ellis Riparian Restoration - Bonaparte R.
13.	D'Arcy Creek Fish Passage - Improvements
14.	Lange Channel
15.	Lemieux Creek
16.	Mann Creek Planting
17.	McDonald Riparian Restoration - Nicola R.
18.	Pony Creek - Sediment Control
19.	Raft River Channel
20.	Upper River Riparian Restoration
21.	Clapperton Fish Passage / Nicola Fish Screening
22.	Moffat Creek Restoration
23.	Fishery Zone ID & Mapping
24.	Tl'azt'en Fisheries Centre
25.	Stuart-Takla Fish Forestry Interaction
26.	Watercourse Classification & Mapping (Langley)
27.	Coquitlam/Alouette Restoration
28.	Chilliwack R. Trails/ Community Stewardship
29.	Coldwater Coho Counting Fence
30.	Thompson R. Coho Stock Recovery
31.	Bessette Creek Coho Enumeration Fence
32.	Multi-Stream Coho Assessment
33.	Bonaparte R. Fishway Coho Enumeration
34.	Thompson R. Basin-Wild Smolt Feasibility Study
35.	Salmon River Fence (FRFS)
36.	Salmon River Coho
37.	Okanagan Sockeye
38.	Adams Lake Fertlization
39.	Alouette River Mgmt Society Work
40.	Urban Planning/ Municipal Mapping
41.	Lower Fraser Restoration & Stewardship Activities
42.	Middle Fraser Restoration & Stewardship Activities
43.	Lower Mainland Riparian Planting & Fencing in Ag. Areas
44.	Lower Mainland Flood Control Assessment & Upgrade
45.	North Thomspon - Little Hell's Gate
46.	Lower Fraser Creel Survey
47.	Upper Pitt River Coho Assessments
48.	Beach Seine, Fishwheel Training
49.	Fraser Basin Council
50.	FREMP/BIEAP
51.	N. Thompson Tribs. (Bonaparte Restoration)
52.	Fraser Aboriginal Fisheries Secretariat
53.	Horsefly (Black Creek Ranch) Land Purchase



No. of Sites	Burbot	Chinook	Coho
1			
2		3	
1		21	
1	1	9	
3		6	
1			
1			
2			
3			

$4.65 million

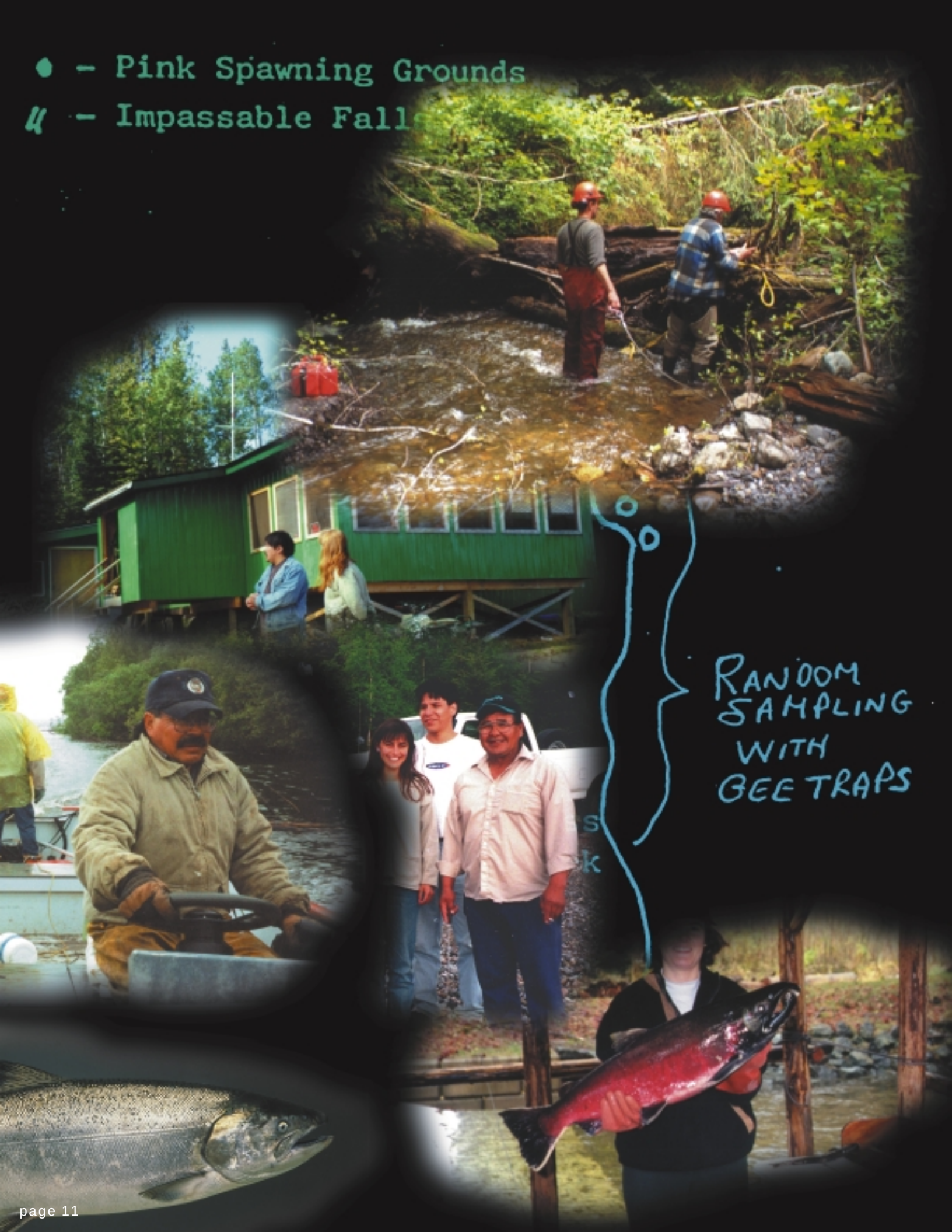
Vancouver Island & South Coast



#	Project Name (64 Projects)
1.	Salt Spring Island Habitat Restoration
2.	Rewatering Squamish Estuary
3.	Reay Creek Restoration & Water Quality
4.	Englishman River & ShoreKeepers
5.	Miller Creek Water Storage
6.	Plestid/Rogers/Kitsuckus Restoration
7.	Anderson Creek Over-wintering Pond
8.	Gordon R. Side & Back Channels
9.	Woss Community Hatchery
10.	Bamfield Streamkeepers Work
11.	Campbell River Discovery Coast Wetland
12.	Tsolum River Restoration
13.	Vancouver Island Habitat Restoration
14.	Chef Creek Ponds
15.	Cypre Channel 23
16.	(Recon, Feasibility Design & Constr'n), Vancouver Island
17.	Lamb Sidechannel 98S14 (completion)
18.	MacBlo Channel 98E2
19.	McNab Creek Goundwater Channel Extension
20.	Rose Park Bank Stabilization
21.	Vancouver Bay Side Channel
22.	Tseycum & Airport Creeks
23.	Cowichan Watershed Council
24.	Urban Streams Inventory & Mapping
25.	Veins of Life
26.	Comox Valley Watershed Inventory
27.	Millard/Piercy Watershed Mgmt Plan
28.	WCVI Watershed Projects
29.	Tsolum River (Courtenay R. Estuary Plan)
30.	Nimpkish River Adult Assessment
31.	Kirby Creek Coho Enumeration
32.	Gold River Chinook Project
33.	Klinaklini KFFC Labour
34.	Sunshine Coast Stream Surveys
35.	Kennedy Lake Sockeye
36.	WCVI Adult Escapement Surveys
37.	Klinaklini R. Stock Assessment
38.	Homathko River, Bute Inlet Stock Assessment
39.	T'souke Selective Harvest Trap
40.	Tsolum River Seal Evaluation
41.	Black Creek Inventory

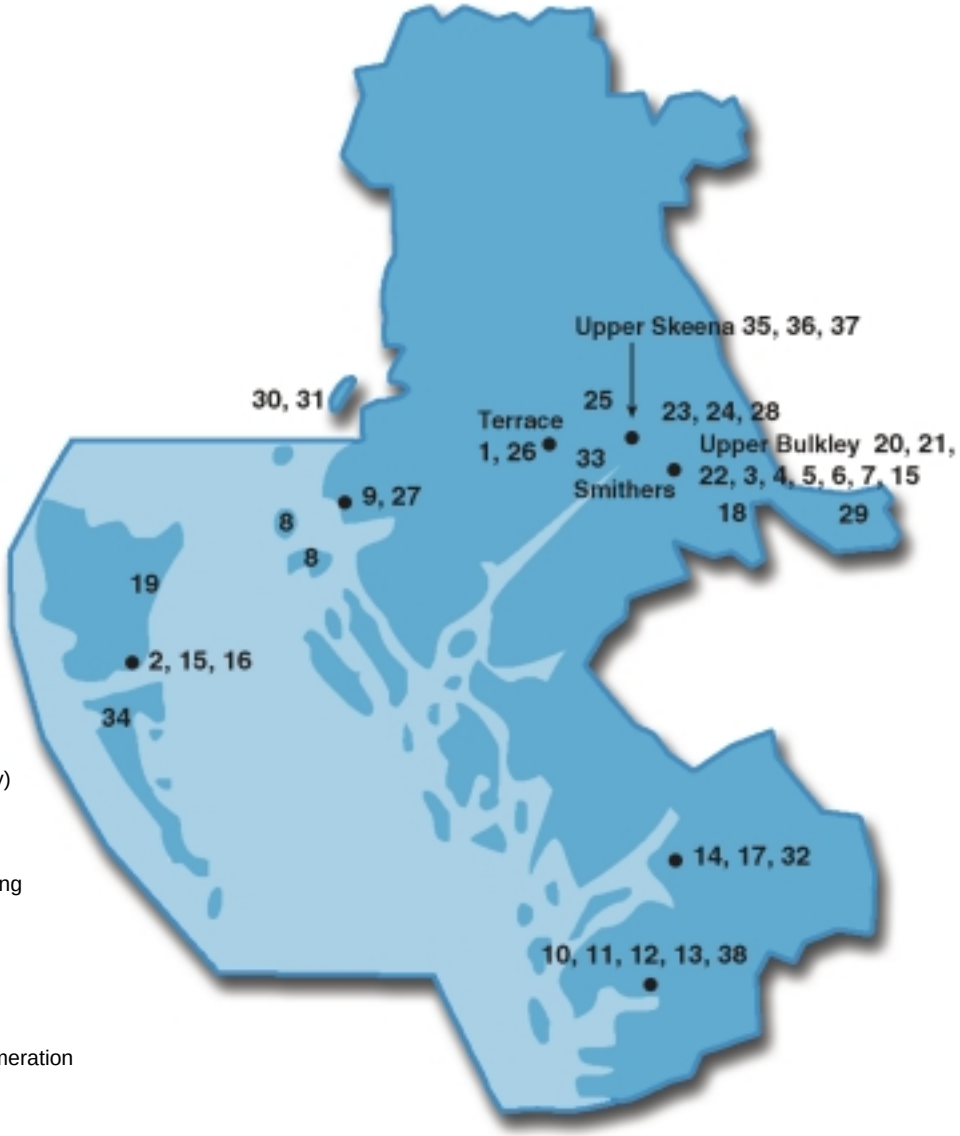
West Coast Sustainability Association #42 thru #51

42.	Marble River Channel Completion
43.	Ayum Creek Habitat Restoration
44.	Restoration of Off-channel Habitat
45.	Small Scale Habitat Rest'n Work - Lake Cowichan Area
46.	Sooke Salmon Enh. Society Public Awareness Program
47.	Sooke Salmon Enh Society Hatchery Ops Upgrade
48.	Goldstream River Adult Counting Fence Improvements
49.	Replacement of Electric Counting Fence at Rosewall Creek
50.	Intake & Outflow Channels, Chapman Creek Hatchery
51.	Marble River Rearing Channel
52.	Vancouver Island Restoration Shortfall
53.	Salmon Enumeration on Keogh (SEEK)
54.	Kwakiutl District Council, (KDC), Tsulquate River Project
55.	Water Management Plan Development
56.	Somenos Plan
57.	Salmon in the City (Nanaimo)
58.	Heydon Creek Juvenile and Adult Fence
59.	Habitat Evaluations of Historical Coho Streams
60.	Coho Assessments in Johnstone Strait, Mainland Inlets
61.	Coho By-Catch Monitoring
62.	Ayum Creek Preservation
63.	(97/98) NIFI
64.	Somass Estuary


● - Pink Spawning Grounds
// - Impassable Fall
RANDOM SAMPLING WITH GEE TRAPS

$1.96 million

North & Central Coast



#	Project Name (37 Projects)
1.	Spring Creek Habitat Restoration
2.	Skidegate Inlet Habitat Restoration
3.	Toboggan Creek Water Quality
4.	Upper Bulkley Projects
5.	1998 Beaver Management Program (Upper Bulkley & Morice R.)
6.	Upper Bulkley River Roundtable
7.	Water Quality Monitoring (Upper Bulkley)
8.	Oona River Survey
9.	Juvenile Salmonid Surveys (N. Coast)
10.	Kilbella/Chuckwalla Downstream Trapping
11.	River's Inlet Restoration
12.	Kilbella/Chuckwalla Early Run Chinook
13.	Sheemahant River Escapement
14.	Bella Coola R. Juvenile Evaluation
15.	Toboggan Creek Wild Coho Smolt Enumeration
16.	Yakoun River Counting Station
17.	Bella Coola Valley Coho Initiative
18.	Morice River Coho Program
19.	Tlell River Counting Fence
20.	Upper Bulkley Water Study
21.	Water Quality Monitoring-staff gauge, core sampling
22.	Fry Salvage - Upper Bulkley
23.	Upper Bulkley Coho Release Pond
24.	Kalum R. Escapement (Lower Skeena Coho)
25.	Kitwanga River Coho Salmon Recovery
26.	Facilitation of Adult Coho Passage
27.	Sportfishing Creel Survey - Tidal, Skeena
28.	Upper Bulkley River Coho Assessment
29.	Babine Fence Extension
30.	North Coast Troll Encounter Monitoring
31.	North Coast Seine - Coho Encounter Monitoring
32.	Central Coast Juvenile Coho Survey
33.	Sportfishing Creel Survey - Kitimat
34.	QCI Juvenile Coho Survey
35.	Upper Skeena Adult Coho Surveys
36.	Skeena River Juvenile Coho Synoptic Survey
37.	Skeena Coho Escapement Stock Composition

Funding by Geographic Area

Funding allocation for the 1998/99 program is shown by geographic area in Figure A below. Of the $10 million spent, $4.6 million was allotted to the Vancouver Island & South Coast projects, $3.3 million to the Lower Mainland & Fraser River Basin projects, and $2 million to the North & Central Coast projects.

Vanc. Is. & South Coast $4,648,754

Lower Mainland & Fraser R. Basin $3,349,559

North & Central Coast $1,964,059

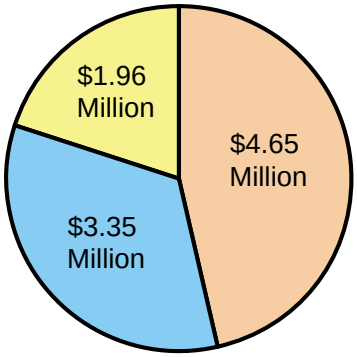


Figure A.

Funding by Project Category

Funding allocation by project category is shown in Figure B below. Stock rebuilding projects received 43% of the total funding, habitat restoration projects received 31% of the funds, and resource and watershed stewardship projects received 21%. The remaining 5% of the funds were spent on items associated with operating the 1998/99 program (i.e., administration, technical support and travel expenses involved with program audit).

Stock Rebuilding $4,235,261 (43%)

Habitat Restoration $3,135,148 (31%)

Res. & Wat. Steward. $2,063,863 (21%)

Admin./Tech./Travel $528,100 (5%)

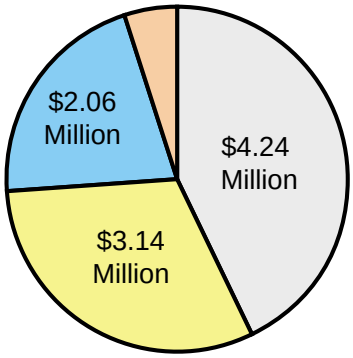


Figure B.

Personnel Involved and Work Accomplished

Project results are summarized in Quick Facts, page 4. These totals are conservative because not all final project reports were available at the time of this writing. The available data show that a vast scope of work was accomplished during the 1998/99 HRSEP including:

- over 10 million adult and juvenile salmon enumerated,
- nearly 1,000,000 sq. metres of area planted with riparian vegetation,
- over 400,000 linear metres of habitat mapped,
- nearly 200,000 sq. metres of channel and estuarine habitat restored/created,
- approximately 250 km of stream habitat made available through improved fish access, and
- over 20 km of streamside fencing constructed.

Numerous media releases and public presentations were also made (see Quick Facts, page 4), and thousands of landowners were contacted, ensuring a broad educational base and extensive public involvement. As well, HRSEP was responsible for employing and training hundreds of displaced fishery workers, including First Nations.

Species and Habitat Addressed

HRSEP projects addressed all five species of Pacific salmon (coho, chinook, chum, sockeye, pink), as well as steelhead trout. Likewise, all habitat types (in-channel, off-channel, riparian, lake, estuarine-marine) were addressed. The greatest effort was directed toward coho salmon and their freshwater habitat (mainstem and off-channel) which is so critical to rearing coho juveniles (see Quick Facts, page 4).

EXAMPLES OF COMPLETED HRSEP PROJECTS

The following examples of completed HRSEP projects illustrate the scope of work in the 1998/99 program.

LOWER MAINLAND & FRASER RIVER BASIN

The Baker Creek Enhancement Society in Quesnel received $110,000 to improve salmon habitat in urban areas of its watershed. The group hired unemployed fishers and youths to build two channels for salmon rearing. They also collected fisheries data to help plan future habitat restoration, and determine the potential for increasing salmon production in the area.

The Shuswap Nation Fisheries Commission and affiliated bands received $170,000 to collect information on declining coho salmon stocks from a variety of streams in the Thompson River system. The information will assist stock conservation, fisheries management, and habitat protection and restoration. An additional $120,000 was spent on a juvenile recovery program.

The Salmon River Watershed Roundtable in Salmon Arm received $100,000 to restore stream habitat. Projects included stabilizing eroding streambanks and re-establishing healthy streamside vegetation to help declining coho, chinook and sockeye stocks. The Roundtable includes landowners, First Nations, the District of Salmon Arm, other government agencies, industry and citizen groups.

The Township of Langley received $107,800 to hire fishers to map and classify streams and ditches which represents important fish habitat, particularly for coho salmon. The results will help protect these areas during land-use planning, and identify additional habitat restoration projects.

The Abbotsford Stream Conservation Committee received $92,500 to map and identify habitat and fish presence in priority watersheds in the Sumas and Matsqui areas. The goal is to help protect environmentally sensitive areas in the face of increasing land development. Partners included the City of Abbotsford, local developers, businesses, farmers and environmentalists.

The Nicola Watershed Stewardship and Fisheries Authority received $124,500 to build a salmon counting fence on the Coldwater River, a major producer of wild coho. The fence will provide information on coho abundance, population characteristics and migration timing. These data will assist in the conservation and enhancement of the declining Thompson River coho stocks.

VANCOUVER ISLAND & SOUTH COAST

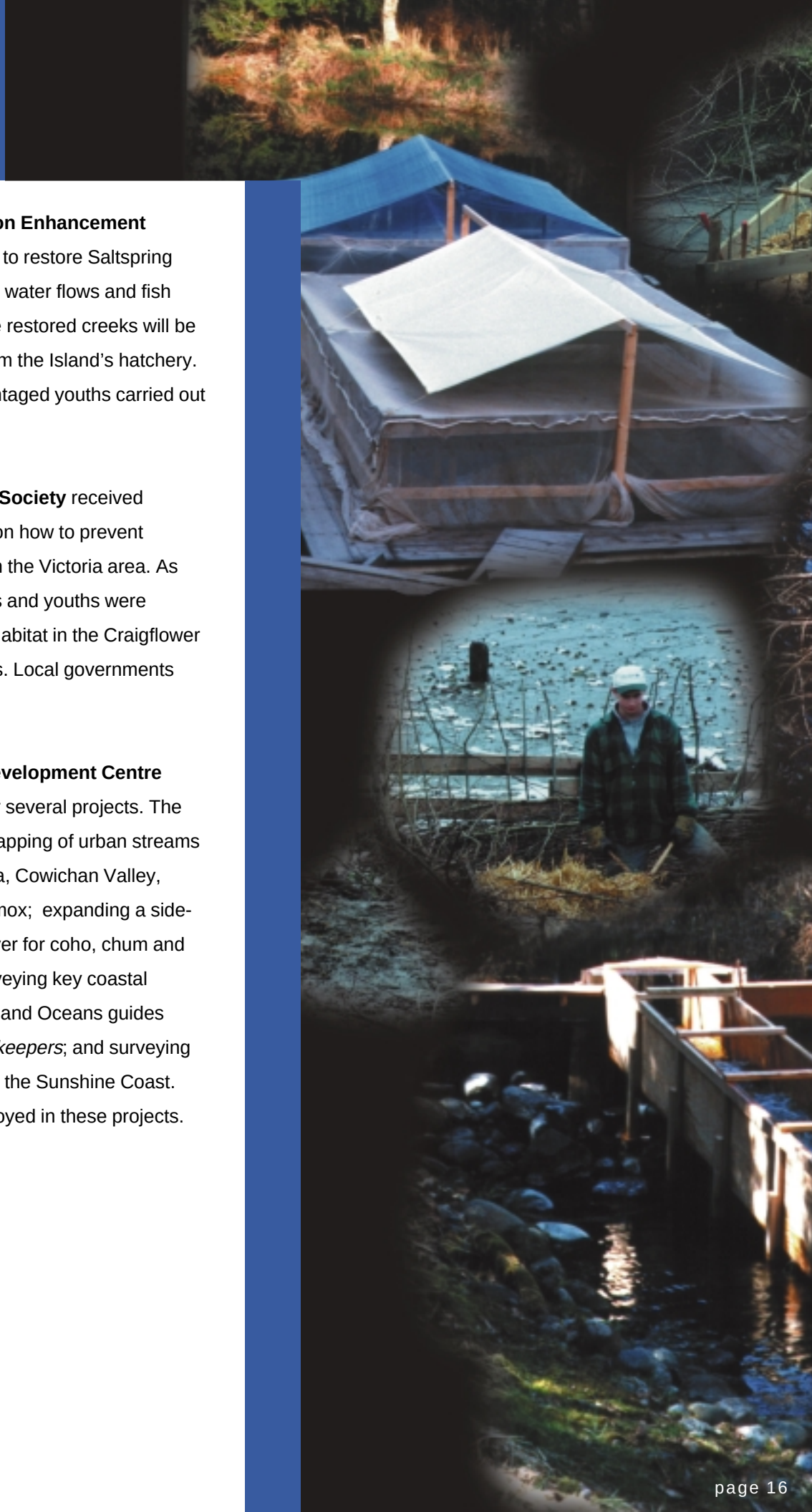
The Oyster River Enhancement Society near Campbell River received $60,000 to construct a channel to create spawning and rearing habitat for wild salmon (including coho), where floods and siltation have damaged the Oyster River. Partners included the University of B.C., Raven Forest Products Ltd., Carihi Secondary High School, and Campbell River Youth Program.

The Squamish River Watershed Committee received $99,950 to install a culvert to improve salmon access from the Squamish River to the estuarial habitat, where a dyke has restricted water flows. The watershed committee includes the Squamish Nation, local industry, government agencies and community groups. Local fishers were employed in this project.

The Island Stream and Salmon Enhancement Association received $48,820 to restore Saltspring Island fish habitat by improving water flows and fish access in several streams. The restored creeks will be stocked with coho juveniles from the Island's hatchery. Displaced fishers and disadvantaged youths carried out much of the work.

The Veins of Life Watershed Society received $90,000 to educate the public on how to prevent pollution in stormwater runoff in the Victoria area. As well, teams of displaced fishers and youths were employed to restore and map habitat in the Craigflower and Colquitz Creek watersheds. Local governments were partners in the project.

The Community Fisheries Development Centre received a total of $309,300 for several projects. The work included inventory and mapping of urban streams in communities such as Victoria, Cowichan Valley, Nanaimo, Port Alberni and Comox; expanding a side-channel on the Englishman River for coho, chum and pink salmon; mapping and surveying key coastal salmon habitat using Fisheries and Oceans guides called *Shorekeepers and Reefkeepers*; and surveying streams and coho migration on the Sunshine Coast. Fishers were trained and employed in these projects.



EXAMPLES OF COMPLETED HRSEP PROJECTS

The Sooke Salmon Enhancement Society received $38,000 to upgrade its operation of the Jack Brookes Hatchery. The goal was to improve coho and chinook runs in the Sooke River system. This volunteer society also promoted public awareness and education about the importance of the local salmon resource through brochures and interpretive signs.

The Society for the Protection of Ayum Creek received $31,300 to restore coho and chum salmon habitat that has been impacted by industrial development and urbanization. The society members built weirs, deepened pools, and rebuilt gravel spawning beds. Partners in the work included CFDC-South Island Streams, University of Victoria and Camosun College.

NORTH & CENTRAL COAST

The Community Futures of Nadina in Houston received a total of $26,200 for projects that addressed declining coho stocks in the Upper Bulkley River. Funding was used to assist a community roundtable — involving forest, farming, fishing, environmental, First Nations and government interests — to improve the health of the River. The work also included breaching beaver dams to ensure upstream access to coho and chinook spawners, and monitoring water quality.

The Oona River Community Association, south of Prince Rupert, received $95,000 to conduct extensive stream assessment and habitat mapping of salmon streams in and around Porcher Island. The information will be used to rebuild the area's coho stocks. The group also restored habitat on several streams.

The Community Fisheries Development Centre in Prince Rupert received $67,000 to survey the distribution of young salmon in the foreshore areas of Prince Rupert and Port Edward where habitat has been impacted by development. The results will help protect high-use habitat during foreshore planning.

The River's Inlet Restoration Society received $282,500 to collect information that will assist with salmon management and conservation. Projects included tracking juvenile sockeye in the Wannock River estuary, surveying early-run chinook in the Chuckwalla/Kilbella River system, and estimating adult sockeye and coho spawning escapement in the Sheemahant River. The group also received $188,200 to monitor juvenile salmon populations.

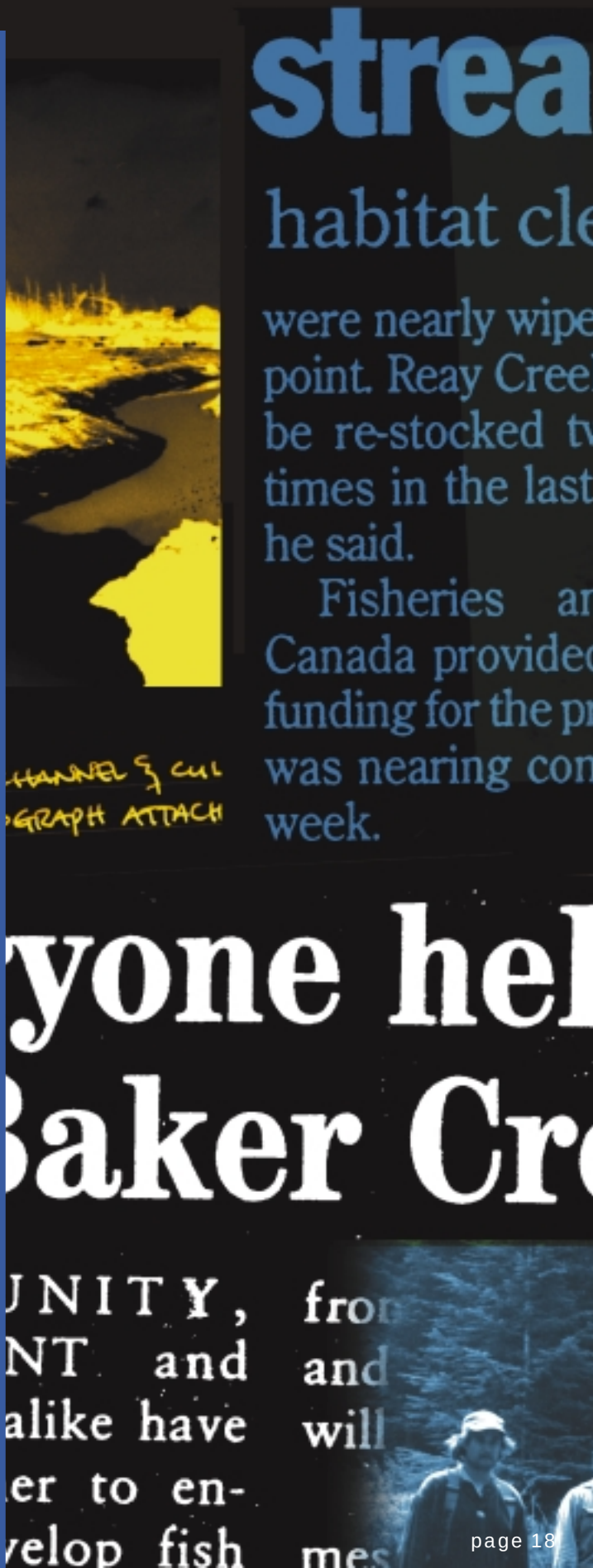
The Toboggan Creek Salmon and Steelhead Enhancement Society of Smithers received $20,200 to use its hatchery to enhance the declining coho stocks in several Morice River tributaries. The group also monitored water quality in Toboggan Creek which is heavily affected by agriculture and logging. An additional $13,000 was spent on monitoring juvenile coho from the Skeena watershed.

DETAILS ON SELECTED PROJECTS

Six projects were selected randomly to represent the three project categories in three geographic areas within the 1998/99 HRSEP. These projects are listed and profiled below :

1. Skidegate Inlet Habitat Restoration (North Coast),
2. Reay Creek Restoration and Water Quality Monitoring (Vancouver Island),
3. Kirby Creek Adult Coho Enumeration (Vancouver Island),
4. Salmon Escapement Enumeration on the Keogh River (Vancouver Island),
5. Tl'azt'en Fisheries Centre / Stewardship Program (Fraser River Basin),
6. Langley Salmon Habitat Restoration (Fraser River Basin).

The following 12 pages provide details on these six projects.



PROJECT 1: SKIDEGATE INLET HABITAT RESTORATION $58,881.00

Category & Area: Habitat Restoration — North Coast

Partners: Hecate Strait Streamkeepers, Northern Trollers Association, Coastal Patrolman's, Association Lawn Hill Residents' Enhancement Group, Bearskin Bay Streamkeepers, Gowgaia Institute, Community Involvement Program, Living and Learning School, Queen Charlotte Enhancement Group, Fisheries and Oceans Canada.

INTRODUCTION

All streams in Skidegate Inlet have been heavily impacted by forest activities during the past 50 years. Most streams have been logged to their banks, and high winds and rainfall continue to degrade the exposed habitat. Habitat degradation has impacted salmonid populations and has contributed to significant stock declines, especially among coho salmon. An additional concern is the loss of access to historic spawning sites for chum and pink salmon.

The 1998/99 restoration program focused on 21 streams within the Skidegate Inlet. These streams have small (<10 km^2) watersheds and are typical of most streams on the Queen Charlotte Islands (QCI) / Haida Gwaii. They originate in gullies located on steep, unstable slopes, before reaching broader, low gradient flood plains.

The Hecate Strait Streamkeepers are a group of proactive residents of the QCI / Haida Gwaii committed to restoring health to the aquatic ecosystems throughout this region. The stream restoration work benefits salmonid populations, promotes local stewardship of the resource, serves to train and employ local residents, and benefits local communities by increasing the potential harvest of salmon.

METHODS

The restoration techniques used in this project were labour intensive, cost-effective and non-obtrusive (i.e., allowed minimal peripheral impact on aquatic and riparian areas). The goal was to provide immediate and measurable benefits for spawning and rearing salmonids and other fish species utilizing the streams.

Major objectives and strategies are listed below:

a) Prevent further channel degradation and loss of salmon spawning and rearing habitat. Strategies included placing large woody debris (LWD) complexes and weighing down small logs along streambeds. Boulders were cabled together to form a linear or circular groyne to help stabilize existing gravel and modify stream hydrology.

b) Create pools and in-stream or off-channel structures to provide protection and nutrient sources for rearing coho juveniles. Strategies included adding LWD to create pool habitat, enhancing off-channel habitat and modifying water flow with additional complexing, and creating debris catchers to increase nutrient supply and provide cover for rearing juveniles.

c) Ensure access to spawning areas for all salmonids. Strategies included manipulating LWD and creating rock groynes to modify water flow and stream gradient.

d) Promote public awareness of the value of maintaining healthy in-stream and riparian ecosystems. The public and students were encouraged to participate directly in the projects, and regular field trips to active sites were conducted.

e) Other activities included planting conifers in riparian areas, and clearing access trails adjacent to those streams being monitored.

RESULTS

A total of 21 streams benefited from this restoration project. All salmonid species utilizing the streams (and especially coho and chum) were addressed during the program. Measurable results included over 11,000 m^2 of in-channel habitat restored, 1,200 m^2 of juvenile coho habitat created, and over 6,400 m of fish access made available. As well, over 150 LWD structures were placed in the streams and over 75 boulder-lines were constructed. Changes were observed almost immediately in terms of increased gravel recruitment and bank stabilization.

The Outdoor Education Program at the Queen Charlotte Secondary School provided hands-on experience for elementary and high school students. As well, access trails were built adjacent to stream reaches that demonstrate various habitat restoration techniques. In addition, a four-day “Fish Habitat Assessment and Rehabilitation Procedures” course was conducted in Queen Charlotte City in 1998.

FUTURE EFFORTS

Similar future projects will continue, utilizing the most effective techniques developed during the 1998/99 program (a follow-up analysis completed over the 1998/99 winter helped determine the effectiveness of various restoration techniques). As well, the Hecate Strait Streamkeepers are currently developing a community-based demonstration/training site on a stream adjacent to Queen Charlotte City. This site will provide a learning opportunity for local residents, students and tourists. Coupled with trails and signage, this project will demonstrate the full range of restoration and mitigation options for negatively impacted streams.

Employ/Train: 226 person-days, 200 volunteer-hours; under-employed local fishers and volunteers, forestry workers, First Nations, local communities and students.

PROJECT 2: REAY CREEK RESTORATION & WATER QUALITY $14,120.00

Category & Area: Habitat Restoration — Vancouver Island

Partners: Coastal Environmental Restoration Cooperative Association (CERCA), Sidney anglers, Town of Sidney, Public Works and Parks.

INTRODUCTION

Reay Creek is a small urban stream located in North Saanich on Vancouver Island. Historically this stream supported coho salmon and cutthroat trout. Urbanization of Reay Creek has altered its channel and reduced fish habitat diversity. In addition, a dam on the Creek approximately 1.6 km upstream, in the Town of Sydney, has created a pond which prevents trapped sediment from moving downstream. Coho fry have been observed in this pond. Lack of stream complexity and reduced summer flows in the lower stream reaches, and unknown water quality in the upper reaches, have prompted this project. Program objectives were twofold:

a) Increase habitat diversity and in-stream cover for coho and cuttthroat juveniles rearing in the lower reaches, and
b) Determine whether water quality upstream of the dam is suitable for rearing salmonids, particularly juvenile coho. Based on the latter results, potential stocking of the upper stream reaches may be considered.

METHODS

Three main activities were undertaken at Reay Creek:

1) Placement of large woody debris (LWD), cobbles and boulders in the lower reaches to armour unstable banks, increase habitat diversity and provide cover for salmonid juveniles. A four-person crew spent three weeks cleaning up debris along the Creek, and placing boulders and fallen trees in the stream to create deeper pools for fish.
2) Monitoring water quality in the upper reaches (upstream of dam) during June to December of 1998 to assess whether water conditions were adequate for future salmonid stocking. Measurements included dissolved oxygen, temperature, pH, turbidity and water flows.
3) Designing, constructing and installing a metal grate at the culvert located at the mouth of Reay Creek to prevent woody debris from blocking fish access.

RESULTS

In total, approximately 150 m^2 habitat area was restored in the lower Reay Creek. Water quality data for the upper Creek showed that, with some exceptions, this segment is suitable for use by anadromous salmonids, provided this stream segment is restored and enhanced. Water temperatures were generally within the acceptable range, rarely exceeding the upper limit of 18 degrees Celsius. However, some Creek sections showed low and sluggish flows during summer months. Also, low dissolved oxygen levels were reported at some sites, particularly in the “duck pond” where oxygen levels frequently dipped below 6 mg/L (ppm).

Since the completion of the project, coho fry were observed within the installed LWD complexes. As well, stream observations during November 1998, indicated that at least a dozen coho adults entered Reay Creek to spawn. The metal grate installed at the culvert opening has provided adult coho and cutthroat trout with unobstructed access to the upstream spawning area.

FUTURE EFFORTS

Future plans for Reay Creek include installation of weirs and planting riparian vegetation in the upper stream reaches. This should improve water oxygenation and reduce water temperatures. Optimal sites for riparian planting were identified, particularly along the mainstem on the north side of Norseman Road. Spawning gravel and log/rock weirs will also be added in both channels off Norseman Road. Finally, it is hoped that fish passage can be provided over the duck-pond spillway. These activities will contribute to strengthen the existing runs of coho and cutthroat in Reay Creek. The Reay Creek project represents the first of many projects that the CERCA hopes to complete in the coming years.

Employ/Train: 90 person-days, 25 volunteer-hours; underemployed fishers.

PROJECT 3: KIRBY CREEK ADULT COHO ENUMERATION $100,000.00

Category & Area: Stock Rebuilding — Vancouver Island

Partners: Community Fisheries Development Centre-South Island Streams (CFDC-SIS), Kirby Creek farm owners, Timberwest, local fishers, Sooke Salmon Enhancement Society, Fisheries and Oceans Canada.

INTRODUCTION

Kirby Creek flows south into the Juan de Fuca Strait, and is an important indicator stream for wild coho populations on southwestern Vancouver Island. The CFDC-SIS in partnership with Fisheries and Oceans, has been estimating wild coho escapements to Kirby Creek since 1997. This adult enumeration program provides valuable information for Fisheries and Oceans to assist in the active management of West Coast coho salmon. The program also provides training and employment for displaced fishers, and promotes local stewardship of the resource. Two other nearby creeks (Tugwell and Muir) were also assessed during the 1998/99 program. All three streams support populations of coho and chum salmon.

Primary objectives of this program were as follows:

a) Provide escapement estimates for Kirby Creek coho and chum salmon, and
b) Collect standard biological information from all fish species passing though the Kirby enumeration fence.

METHODS

The 1998/99 spawner enumeration program included fence counts, wade counts (i.e., in-stream walks) and snorkel counts. A Japanese-style counting fence designed to collapse during periods of high flows and heavy debris build-up, was operated on Kirby Creek. The trap was checked daily between September and December 1998, and salmon adults counted by species. Fish were also sampled for fork-length, age (scales), sex and any visible marks (e.g., predator marks, net marks, adipose clips).

Kirby Creek coho and chum adults were tagged using Floy anchor tags, and the fish were operculum-punched on the gill cover to indicate they were tagged. Operculum tissue was retained for DNA analysis. Periodic wade surveys on Kirby Creek provided live counts and carcass recovery data. A daily fence log was maintained to record water temperatures and levels, air temperatures, weather conditions, fence cleaning frequency and any other operational events.

For Tugwell and Muir Creeks, visual estimates of spawners were obtained from wading and snorkel surveys conducted during October 1998 to January 1999. The collected information included live and dead counts of adults and jacks, distance covered, percent coverage, fish countability and a reliability measure. These data were entered into the Stream Inspection Logs (SIL) introduced by Fisheries and Oceans in an attempt to standardize salmon escapement assessments.

For Kirby Creek, mark-recapture data and the adjusted Petersen formula were used to estimate coho and chum escapements; the area-under-the-curve (AUC) method based on live counts, was also used. For Tugwell and Muir Creeks, coho and chum escapements were estimated by applying the AUC method to the information recorded in the Stream Inspection Logs.

RESULTS

A total of 1,868 adult salmon were enumerated at peak count, and 35 adult coho were tagged and released for recapture during the program. The results provided valuable indicator-stock data for Kirby Creek, and useful information on spawning distribution in Tugwell and Muir Creeks. For example at Muir Creek, a large tidal pool held over 200 chum and coho adults in the fall of 1998, and heavy bear predation was evident in the lower stream reaches.

Adult escapement estimates were as follows: Kirby Creek — approximately 300 coho; Tugwell Creek — approximately 90 to 150 coho and 60 to 100 chum; Muir Creek — approximately 600 to 1,000 coho and 2,300 to 3,800 chum (range based on “stream life” of an average fish).

FUTURE EFFORTS

The counting fence on Kirby Creek needs to be modified to improve its stability during heavy rains. Exposed rip-rap around the trap needs to be reinforced and covered with topsoil. As well, a smaller simplified version of the standardized Stream Inspection Logs would be more user-friendly to the field crew.

Future efforts on Kirby Creek include a juvenile program in the spring of 1999. Juvenile coho will be coded-wire-tagged and recaptured to provide estimates of juvenile production. These data, together with the adult spawning data, will be used to estimate ocean survival, exploitation rates and catch distribution for this indicator stock. This information is vital for the management and conservation of wild coho populations on the West Coast.

Employ/Train: 480 person-days, 160 volunteer-hours; Fisheries and Oceans personnel and displaced fishers.

PROJECT 4: SALMON ENUMERATION ON KEOGH RIVER $177,883.00

Category & Area: Stock Rebuilding — Vancouver Island

Partners: MELP, North Vancouver Island Salmonid Enhancement Association (NVISEA), Pacific Pride Enterprises, UFAWV / Native Brotherhood, Keogh River Watershed Restoration Project (WRP), UBC, Fisheries and Oceans Canada.

INTRODUCTION

Keogh River, located on the northeastern tip of Vancouver Island, is the only indicator stream for wild coho salmon between Campbell River and Prince Rupert. Keogh River has been an important site for steelhead enumeration since 1976. In addition, for the last four years the River has been the site of a large-scale watershed restoration program aimed at improving salmon habitat. The extensive database collected on this system so far, makes it an ideal candidate for further research.

Major objectives of the 1998/99 HRSEP project were as follows:

a) Provide escapement estimates for coho and pink salmon, as well as steelhead trout, in the Keogh River,
b) Improve the enumeration techniques for salmon escapements by assessing the electronic fish counter as an enumeration tool,
c) Conduct coded-wire tagging of wild coho smolts outmigrating from Keogh River, and
d) Provide training and employment opportunities for local fishery technicians and displaced fishery workers.

METHODS

The project rationale was to assess the electronic enumeration method for salmon adults. Electronic counts were obtained using a Logie 2100C resistivity counter installed in the fish fence. Additional escapement estimates for coho and pink salmon were made using the traditional visual methods (area-under-the-curve or AUC). The work was conducted between August 1998 and March 1999, and involved counter calibration, video validation, visual counts during stream walks, adult mark-recapture experiments, and collection of biological data for adult salmon.

RESULTS

Electronic counts for the season totaled 8,246 coho adults, 8,505 pink adults and 96 steelhead trout. As well, 350 adult salmon were tagged. Video validation data indicated that the efficiency of the electronic counter generally exceeded 90% and showed good species identification. Nearly half of the total coho escapement to Keogh River passed through the counter in one 24-hour period, following a dry early autumn. Given the high flow conditions experienced during this study, fish counts would have been impossible with traditional fence/swim enumeration methods.

Compared to the above electronic counts, escapement estimates for coho using the traditional AUC method were highly variable (range 5,400 - 13,000 adults). In addition, the in-stream surveys that provided the AUC data were hampered by high water conditions experienced during much of the peak spawning period. Clearly, poor escapement estimates would be obtained without the electronic counting method. Based on the electronic escapement counts, marine survival to escapement for Keogh River coho was estimated at 12.7%. This was higher than expected possibly due to greatly reduced exploitation rates on coho stocks and/or improved marine survival.

In the juvenile program conducted during the spring of 1999, over 37,000 wild coho smolts were trapped and coded-wire tagged. Returning tagged adults will be recovered to provide survival data.

FUTURE EFFORTS

The 1998/99 operation of the electronic counter on the Keogh River has led to significant progress in the remote collection of escapement data. The next step is to improve the efficiency of the electronic counter. While video validation showed acceptable count efficiencies under all flows, species breakdown through body size and run timing requires fine-tuning, especially during periods of high flows. An improved site design should increase fish-sizing accuracy to within +/-20% of true fish length, thereby providing more accurate species identification, and hence more reliable counts of coho and pink species.

Total site investment in the Keogh River infrastructure is $45,000. Additional minor alterations will allow year-on-year escapement enumeration of coho, pink and steelhead adults. This program, together with the continued juvenile enumeration program for coho and steelhead, will allow a measure of marine survival for these species. In addition, coded-wire-tagging of wild coho juveniles will greatly improve coho population estimates, and provide much needed marine survival data to catch and escapement. The above information is vital for the effective management of Pacific salmon, especially the depleted coho populations.

Employ/Train: 503 person-days, 155 volunteer-hours; local fishery technicians and displaced fishery workers.

PROJECT 5: TL'AZT'EN FISHERIES CENTRE (STEWARDSHIP PROGRAM) $60,000.00

Category & Area: Resource and Watershed Stewardship — Fraser River Basin

Partners: Tl'azt'en Nation, Carrier-Sekani Tribal Council, Fisheries and Oceans Canada, existing STFFIS partners (Min. Forests, MELP, Env. Canada, Univ. Northern BC, UBC, SFU, Canadian Forest Products Ltd.).

INTRODUCTION

Fishing the Early Stuart sockeye salmon run has always been an integral part of the Tl'azt'en Nation's heritage. The declining salmon stocks and the loss of native traditional fisheries, have forced many Tl'azt'en out of their traditional occupations as fishers within their communities. The Tl'azt'en Fisheries Centre was established in the fall of 1997 at Tache (Stuart Lake) to:

- Increase Tl'azt'en participation in the research, management and stewardship of salmon resource in the Stuart-Takla system of the upper Fraser River watershed, and
- Conduct collaborative fisheries research, stream inventory, education, training, and extension projects.

The 1998/99 HRSEP funding allowed the continued operation of the Fisheries Centre. Major objectives were as follows:

a) Develop a Fisheries Education Program for the public, students and Tl'azt'en Nation,
b) Conduct a community-based research program to inventory salmon habitat, document habitat damage, and identify potential habitat restoration projects, and
c) Coordinate and increase participation in the Stuart-Takla Fish - Forestry Interaction Study (STFFIS) to determine how current forest practices are affecting salmon stocks in the upper Fraser River.

METHODS

The project encompassed a wide variety of tasks including:

1) Developing the Tl'azt'en Fisheries Educational Program that would include field tours, audio-visual material, publications, school and community presentations, and public meetings. Fisheries and Oceans personnel would assist by providing materials, advice and technical support.
2) Compiling current scientific and local First Nations knowledge on salmon stocks, biology and habitat in the area,
3) Surveying a variety of salmon habitats to identify habitat quality and damage, and subsequently identify potential restoration sites,
4) Collaborating with STFFIS research groups on field projects involving stream surveys, fish counting and tagging, and monitoring of aquatic physical parameters, and
5) Collaborating on a joint Fisheries and Oceans / Tl'azt'en study of the early life history of Takla sockeye fry. The field crew would collect fish, sort and identify sockeye fry and other fish species, and take samples for gut-content analysis and length-weights.

The above collaborative efforts would provide training to the participating Tl'azt'en members.

RESULTS

The Fisheries Centre Program provided education and training to a variety of groups. An inventory of all STFFIS research studies was established, and information compiled on the effects of logging on salmon habitat. In addition, a database was developed listing community concerns regarding actively logged areas. Another database was designed to deal with all fisheries-related information in the T'azt'en Nation traditional-use study. This information was cross-referenced with the Five-Year Development Plan and with Pesticide Permits by Licensee to help focus on the sensitive stream areas and improve the protection of

fish and their habitat. The above databases will assist the T'azt'en Nation in managing the salmon resource in this region.

During the Takla sockeye fry study, six beach seining surveys extending from the lower Middle River to Takla Lake, were conducted between May and September of 1998. Results showed that sockeye fry utilized many of the littoral zones throughout the study area until mid-July before recruiting offshore. The warm spring of 1998 led to faster growth and an earlier departure for off-shore regions. This work has implications both for sockeye lake-shore management and protection, and for climate effects on the early life stages of sockeye.

During the Takla sockeye study, the Tl'azt'en trainees gained experience in beach seining, fish identification, fish stomach content analysis, invertebrate collection and general habitat classification. The Tl'azt'en members also participated in various other research projects, and attended Technical Working Groups, conferences, and forestry/fisheries meetings.

FUTURE EFFORTS

The operation of the Tl'azt'en Fisheries Centre is essential for meeting the training and employment needs of the Tl'azt'en Nation, and for promoting the collaboration in fisheries-related projects in this region. Future plans include continued education and training, as well as undertaking fisheries projects that address fish habitat and stock rebuilding issues. The collaborative efforts of Tl'azt'en Nation with other agencies will benefit all groups involved, and assist in the recovery of salmon populations in the region.

Employ/Train: 7 persons trained, 8 persons employed; trainee students, local Tl'azt'en community, Fisheries and Oceans.

PROJECT 6: LANGLEY SALMON HABITAT RESTORATION $97,965.00

Category & Area: Habitat Restoration — Fraser River Basin

Partners: Langley Environmental Partners Society (LEPS), Township of Langley, MELP, MAFF, local communities, streamside landowners.

INTRODUCTION

Salmonid habitat in the Langley area of the lower Fraser basin has been severely damaged by urban development and improper agricultural practices. Resulting impacts on salmonid habitat include pollution, high rates of sedimentation, infilling, stream bank erosion, lack of habitat complexity and reduced riparian vegetation. Objectives of this program were as follows:

a) Improve salmon habitat in several streams, while increasing public awareness of salmon-bearing streams and stream enhancement activities in the Langley area, and

b) Provide displaced fishery workers with hands-on training and marketable work experience in stream restoration and habitat assessment.

METHODS

The targeted watersheds were located primarily in the Langley area, and included Salmon River, Nicomekl River, Yorkson Creek, Bertrand Creek, Little Campbell River, Latimer Creek and lower Fraser River. These projects were selected on the basis of greatest ecological need, as well as landowner support and cooperation. Habitat problems were addressed by replanting riparian zones, stabilizing eroding streambanks, removing barriers to fish passage, and increasing habitat complexity. As well, the crew worked with farmers to design and complete fencing projects to restrict livestock access to salmon streams, and build bridges at livestock crossing points. Newly fenced areas were then replanted with indigenous vegetation.

RESULTS

The enthusiastic participation of streamside landowners and community volunteers in the stewardship projects made this program an overwhelming success. Time, materials and equipment were contributed and many volunteer-hours expended, especially on riparian planting projects. Fishery workers employed in the program received training and experience in habitat restoration techniques, and completed a wide variety of projects. These included streamside tree planting and stabilization, livestock exclusion fencing, construction of overhanging banks, and creation of off-channel habitat by adding weirs, rip-rap, boulders, LWD and aquatic plants to side-channels. In addition, several culverts were removed to improve fish access in the Nicomekl River, and several V-shaped groynes were constructed to stabilize the lower Fraser foreshore areas.

In total, over 6 km of degraded salmon habitat was enhanced. This includes 4,000 m^2 of fenced area protected, approximately 2,000 m^2 of in-channel and off-channel habitat restored/created, nearly 7,000 trees and shrubs planted along stream banks, and 2 km of stream made accessible to fish. As well, over 250 landowners were contacted to provide information on salmon habitat and stream stewardship techniques.

This project made a significant contribution toward restoring salmon habitat in Langley streams. Perhaps more importantly, the program has helped raise the profile of salmon habitat issues and local stewardship initiatives within the community. The increased public awareness should help protect the Langley salmon streams into the future.

FUTURE EFFORTS

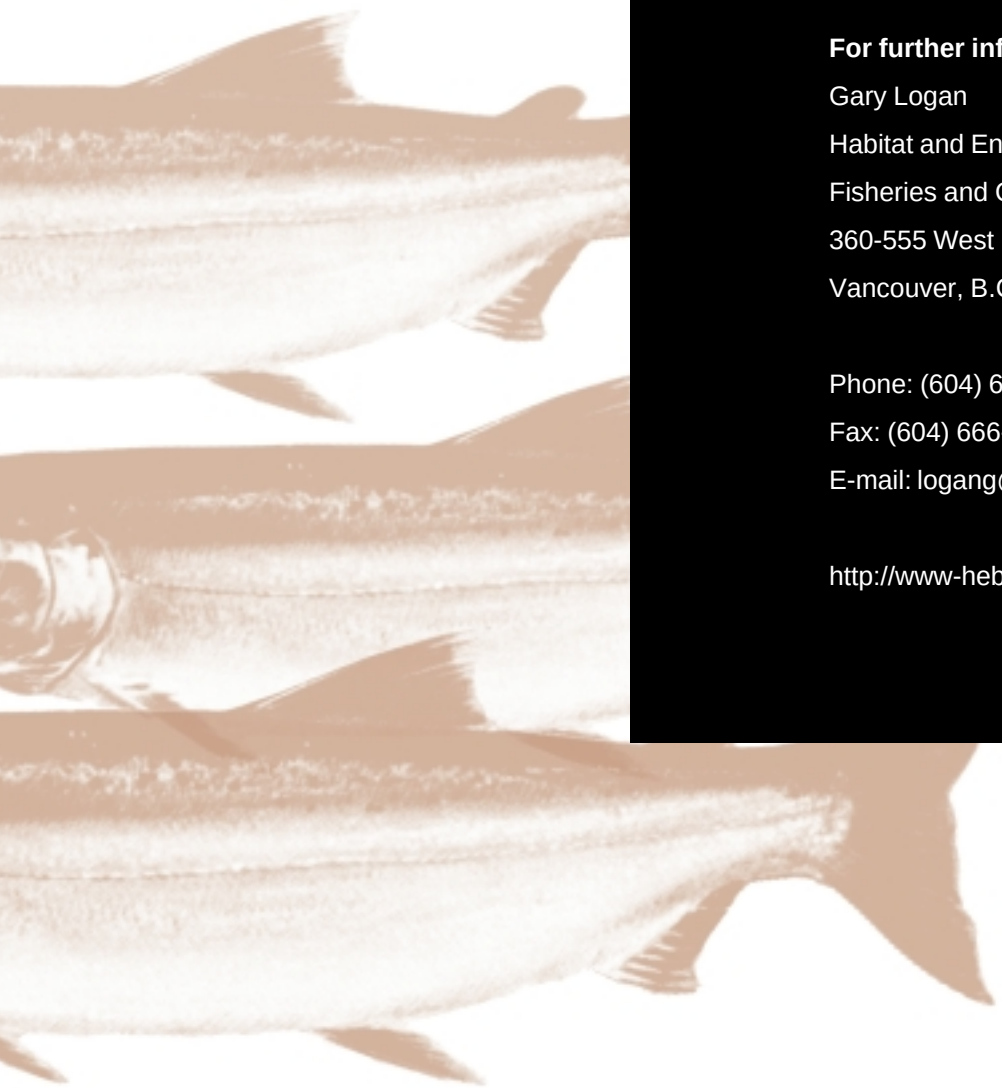
LEPS staff and volunteers will monitor and maintain the present rehabilitated sites over the next 5 years to ensure project stability and success of riparian planting. Habitat structures damaged during high flows will be rebuilt, and areas showing low vegetative survival will be replanted. As well, surveying and habitat inventory remain to be completed on the Little Campbell River and Pepin Brook. LEPS crew also plan a variety of future habitat restoration work on the salmon-bearing streams in the Langley area, among them Bertrand Creek, Salmon River and Little Campbell River. Further rehabilitation work will persist as salmon habitat continues to be compromised by increasing urbanization and improper agricultural practices. Surveying and mapping of streams also remains a high priority item, given the large area under development pressure in this region.

Public education and awareness regarding the importance of salmon bearing streams are also a high priority. It is staggering to see the damage to watercourses caused by private landowners who are not aware of salmon habitat issues. Accordingly, LEPS plans to conduct field trips to demonstrate the various rehabilitation strategies to those landowners who may consider stewardship projects on their properties. LEPS will target members of the agricultural community for the field trips, as it is particularly important to show that farming and fisheries interests can indeed co-exist.

Employ/Train: 725 person-days, 2,750 volunteer-hours; displaced fishery workers, LEPS members.

PROGRAM SUMMARY

The Habitat Restoration and Salmon Enhancement Program has demonstrated for the third successive year that the committed and joint effort of local communities, corporate groups, government agencies and non-government organizations can make a significant difference in the overall health of salmonid populations and their habitat. Appropriate agency assistance, funding and well-defined parameters have resulted in major improvements in the quality and quantity of salmon habitat, and effectively assisted stock rebuilding. The program has also generated valuable information for managing the salmon resource in this province, fostered a cooperative approach to watershed management, provided training and employment to displaced fishery workers, bolstered local economies, and raised hopes for the future of our salmon resource.



ACKNOWLEDGEMENTS

The HRSEP coordinators wish thank all proponents for their project submissions, and all the groups and individuals involved in the 1989/99 HRSEP (list of partnerships provided below). The enthusiasm, commitment and the many hours of labour provided by employed workers and volunteers alike, made this program a great success. We hope to encourage further cooperative efforts and provide more funding for future activities dedicated to the restoration of the salmon resource in British Columbia.

For further information, contact:

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HRSEP PARTNERSHIPS

Fisheries and Oceans would like to thank all HRSEP partners for their contribution to the program.

Federal Government Agencies

Burrard Inlet Environmental Action Plan (BIEAP)
Canadian National Railway
Canadian Wildlife Service
Community Futures Development Corporation (CFDC)
Indian Affairs and Northern Development
Environment Canada
Fisheries and Oceans Canada
Fraser Basin Council
Fraser River Estuary Management Program (FREMP)
Human Resources Development Canada (HRDC)
Parks Canada
Public Works and Government Services
Western Economic Diversification Canada

Provincial Government Agencies

Agricultural Land Commission
BC Parks
BC Gaming Commission
Fisheries Renewal BC (FsRBC)
Forest Renewal BC (FRBC) / WRP
Min. Agriculture, Food & Fisheries (MAFF)
Min. Environment, Land & Parks (MELP)
Min. Forests (MoF)
Min. Transportation & Highways (MOTH)
Urban Salmon Habitat Program

Municipal Government Agencies

Alberni-Clayoquot Regional District
Capital Regional District (Victoria)
Central Coast Regional District
City of Abbotsford
City of Burnaby
City of Chilliwack
City of Courtenay
City of Kamloops
City of Merritt
City of Nanaimo
City of Surrey
City of Victoria
CRD Parks
District of Campbell River
District of Highlands
District of Kent
District of Mission
District of North Vancouver
District of Salmon Arm
Greater Vancouver Regional District (GVRD)
Kalamalka Research Station
Municipality of Colwood
Municipality of Esquimalt
Municipality of Highlands
Municipality of Langford
Municipality of Saanich
Municipality of View Royal
Nanaimo Harbour Commission
Nanaimo Parks, Recreation and Culture Commission
Nanaimo Regional District
Pemberton Dyking District
Pitt Meadows
Queen Charlotte / Skidegate Landing Advisory Planning- Commission
Regional District of Comox-Strathcona
Skeena Queen Charlotte Regional District
Sunshine Coast Regional District
Tourism Nanaimo
Town of Comox
Town of Gibsons
Town of Sidney - Public Works and Parks
Township of Langley
Victoria Airport Authority (VAA)
Victoria Esquimalt Harbour Environmental Action Plan
Village of Cumberland
Village of Harrison Hotsprings

First Nations Bands / Organizations

Adams Lake Band
Ahousaht First Nation
Bonaparte Band
Campbell River Band
Canadian Columbia River Inter-Tribal Fisheries Commission
Carrier-Sekani Tribal Council
Comox Indian Band
Ditidaht First Nation
Dze L K'ant Friendship Centre Society
Fraser Aboriginal Fisheries Secretariat
Gitanyow Fisheries Authorities (GFA)
Gitanyow Independent School
Gowgaia Institute
Gwa-Sala-'Nakwaxda'xw Band
Gwa'ni Hatchery
Haida Fisheries Program
Haida Tribal Society
Homalco First Nation
Hupacasath First Nation
Huu-ay-aht First Nation
Kamloops Indian Band
Katzie First Nation
Kitselas Band
Kitsumkalum Indian Band
Ko'p thut Society
Kwakiutl Band
Kwakiutl District Council (KDC)
Kwakiutl Territorial Fisheries Commission (KTFC)
Lake Babine Nation
'Namgis First Nation
Nanaimo First Nation
Nicola Tribal Fisheries

Nicola Watershed Stewardship & Fisheries Authority (NWSFA)
N. Thompson Indian Band
N. Vancouver Island Aboriginal Management Society (NVIAMS)
Nuu-chah-nulth Tribal Council (NTC)
Okanagan Nation Fisheries Commission (ONFC)
Owikeno First Nation
Pacheedaht First Nation
Seabird Band
Sechelt Indian Band
Shuswap Bands
Shuswap Nation Fisheries Commission (SNFC)
Skeetchestn Indian Band
Skidegate Band Council
Spallumcheen Indian Band
Squamish Nation
Sto:lo Nation
Sumas Band
T'Sou-ke First Nation
Tl'azt'en Nation and Tl'azt'en Fisheries Centre
Tla-o-qui-aht First Nation
Tsawwassen First Nation
Ucluelet First Nation
UFAWV / Native Brotherhood
Wet'suwet'ten Fisheries
WSIKEM Band of the WSANEC First Nation

Non-Government Organizations
Abbotsford Stream Conservation Committee (ASCC)
Abbotsford Streamkeepers (ASK)
Alberni Valley Enhancement Association
Alouette Communications Task Team (ACTT)
Alouette River Management Society (ARMS)
Baker Creek Enhancement Society
Bamfield Community School
Bamfield Marine Station
Bamfield Streamkeepers
BC Conservation Foundation
BC Environment Youth Team
BC Lake Stewardship Society
BC Salmon Farmers' Association
Bearskin Bay Streamkeepers
Bella Coola Rod & Gun Club
Bertrand Creek Enhancement Society (BCES)
Boy Scouts
Britannia Shipyards Heritage Society
British Columbia Institute of Technology (BCIT)
Bulkley Valley Steelhead Group
Burnside Gorge Community Association
Camosun College
Campbell River Lodge
Campbell River Youth Program
Canada Trust - Friends of the Environment
Capilano College
Carihi Secondary High School
Cecilia Cleanup Committee
Central Coast Fishermen's Protective Association (CCFPA)
Central West Coast Forest Society
Centre for Coastal Health
Chilliwack River Action Committee
Clayoquot Central Region Board
Coastal Communities Conservation Society
Coastal Environmental Restoration Co-operative Association (CERCA)
Coastal Patrolman's Association
Combined North Island Fisheries Centre
Community Fisheries Adjustment Centre, Courtney
Community Fisheries Development Centres (CFDC)— Fraser River Estuary Stewardship, Nanaimo, Prince Rupert, Richmond, Sechelt, South Island Streams, Surrey, Vancouver
Como Watershed Group
Comox Valley Flyfishers
Comox Valley Naturalist Society
Comox Valley Project Watershed Society
Comox Valley Unitarian Fellowship
Coquitlam Hatchery
Coquitlam River Watershed Society
Courtland-Hastings Agricultural Preservation Society
Courtnay and District Fish and Game Protective Association
Cowichan Community Land Trust
Cowichan Lake Salmon Enhancement Society
Cowichan Watershed Council
Craigflower Management Forum
Cumberland Wetlandkeepers
Delta Living Society
Delta Streams
Dove Creek Streamkeepers
Ducks Unlimited
Englishman River Enhancement Group
Fanny Bay Salmonid Enhancement Society
Federation of BC Naturalists (FBCN)
Finlay Creek Streamkeepers
FishAmerica Foundation
Fisherman's Transition Centre
Fraser River Fishermen Society (FRFS)
Friends of the Environment Foundation
Friends of the Marble River
Friends of Tugwell Creek
Girl Guides of Canada
Gold River Chinook Project Society
Goldstream Volunteer Salmonid Enhancement Association
Gorge Waterway Action Society
Habitat Conservation Trust (HCT)
Harewood Family of Community Schools
Headquarters Creek Streamkeepers
Hecate Strait Streamkeepers (HSS)
Heritage Forests Society

Hixon Community Association
Hoy Creek Hatchery
Hyde Creek Hatchery
Hyde Creek Streamkeepers
Island Stream and Salmon Enhancement Association
John Howard Society
Keogh River Watershed Restoration Project
Kirby Creek Farm owners
Kwantlen College
Labour Community Fisheries Habitat Development Society
Langley Environmental Partners Society (LEPS)
Langley Field Naturalists Society
Lawn Hill Residents' Enhancement Group
Lions Club
Little Campbell Watershed Society (LCWS)
Little River Enhancement Society
Living and Learning School
Long Beach Model Forest (Cdn. Forest Services)
Malaspina University-College
Maple Creek Streamkeepers
Mennonite Central Committee (MCC)
Mill Bay & District Conservation Society
Millard/Piercy Watershed Stewards
Morrrison Creek Streamkeepers
Mosom Creek Hatchery
Nanaimo Area Land Trust
Nanaimo Fish & Game Club
Nanaimo River Salmonid Enhancement Project
Nanaimo Rotary Clubs
Nature Trust of BC
Nicomekl Enhancement Society
Nile Creek Enhancement Society
Nimpkish Resource Management Board
North Island College
North Island Fisheries Initiative (NIFI)
North Shore Streamkeepers
North Vancouver Island Salmonid Enhancement Association (NVISEA)
Northern Trollers Association
Northwest Community College(NWCC)
Northwest Ecosystem Institute
Oona River Community Association
Oyster Bay Streamkeepers
Oyster River Enhancement Society
Pacific Salmon Foundation
Pacific Streamkeepers Federation
Pemberton Sportsmens Wildlife Association
Pender Harbour & District Wildlife Society
Pender Harbour Branch - Royal Canadian Legion
Port Hardy High School
Port Kells Community Association
Portuguese Creek Watershed Stewards
Quatsino Sound Salmon Enhancement Society
Queen Charlotte Enhancement Group
Quesnel River Watershed Alliance
Ravine Park Salmon Enhancement Society Hatchery
Regional Aquatic Management Society
River Spring Hatchery
River's Inlet Restoration Society
River's Inlet/Hakai Pass Sortfishing Association
Salmon River Enhancement Society (SRES)
Salmon River Watershed Society
San Juan Salmonid Enhancement Society
Sapperton Fish & Game Club
Sidney Anglers' Association
Sierra Club of BC
Simon Fraser University (SFU)
Society for the Protection of Ayum Creek
Sooke B&B Association
Sooke Lions Club
Sooke Museum
Sooke Salmon Enhancement Society
Sooke Watershed Society
Sooke Watershed Steering Committee
South Island Aquatic Stewardship Society
SPAC Volunteers
Sproat Salmonind Enhancement Society
Squamish Estuary Conservation Society
Squamish River Estuary Society
Squamish River Watershed Committee
Squamish Trails Society
Steelhead Society of BC
Streamkeepers Federation
Sunshine Coast Salmonid Enhancement Society (SCSES)
T. Buck Suzuki Environmental Foundation
Terrace Enhancement Society
Thornton Creek Enhancement Society
Tlell Watershed Society (TWS)
Toboggan Creek Salmon and Steelhead Enhancement Society
Tofino Salmonid Enhancement Society
Trout Unlimited
Tsolum Oxbow Streamkeepers
Tsolum River Restoration Society (TRRS)
Tsolum River Task Force
Turtle Island Earth Stewards
UBC Research Farm
University of Alaska
University of British Columbia (UBC)
University of Northern BC
University of Victoria
Veins of Life Watershed Society
West Coast Fishing Club
West Coast Sustainability Association
Wildlife Forever - USA
World Fisheries Trust
Woss Community Hatchery
Yorkson Watershed Stewardship Committee

Corporate Groups
Alan Thomson & Associates
Alberni Specialties Ltd.
BC Hydro & Power Authority
BHP Island Copper
Canada Trust
Canadian Forest Products
Confluence Environmental Consulting
Cowichan Hydraulics Ltd.
Dave Clough Consulting Ltd.
Discovery Foods
Dolans Concrete
Don Sinclair & Associates
Ecosophy Consulting
ECL Envirowest Consultants
Elk Falls Pulp Mill
Enlightening Communications
Envirowest/Coast River Environmental Consultants
Equinox Fishing Co.
Erosion Control Inc.
Fields Sawmill
FishTech
Fletcher Challenge Elk Falls
Gawley & Sons Contracting
Harmac Pacific
Hydroxyl Systems Ltd.
Interfor Forest Products
Islands Trust
J. Morrison and Associates
J.A. Taylor & Associates of Sydney
J.D.J. Pole & Piling
J.S. Jones Timber
Killer Whale Consultants Ltd.
Lanarc Consultants Ltd.
LB Woodchoppers
Letts Marine Services
LGL Ltd.
Lightly Biological Consulting Ltd.
MacMillan Bloedel Ltd.
MC Wright and Associates
Naito Environmental
Netloft Ltd.
Norkan Constuction
Nucreek Development
Pacific Pride Enterprises
Pisces Research Corps
Pitt Lake Resort Ltd.
Port McNeil Enterprises
R.L. & L. Environmental
Raven Forest Products Ltd.
Redden Net Ltd.
REM Contracting
Roy Parker Marine
Sealand Tackle Ltd.
Shell Canada
SKR Environmental Consultants
Timberwest
Trees Canada
Triton Environmental Consultants Ltd.
VanCity Environ Fund
Westcoast Energy
Western Forest Products Ltd.