H R S E P

HABITAT RESTORATION & SALMON ENHANCEMENT PROGRAM

1999/2000 Summary Report

Fisheries and Oceans Canada
Pêches et Océans Canada
Canada

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 salmon 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 1999-2000 fiscal year was the fourth consecutive year of the HRSEP, with $7 million invested in over 100 projects throughout British Columbia and the Yukon Territory. Program results included over 34 million adult and juvenile salmon enumerated, over 511,000 linear metres of habitat mapped, over 308,000 sq. metres of channel and estuarine habitat restored/created, nearly 700,000 sq. metres of riparian area replanted, approximately 180 km of stream access made available to fish, and 38 km of streamside fencing constructed. As well, numerous media releases and public presentations were made, and thousands of landowners were contacted to ensure extensive public involvement. This report summarizes the 1999-2000 program results and highlights several projects.

DESCRIPTION OF HRSEP

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

The second phase of the HRSEP commenced in 1999 when Fisheries and Oceans Canada allocated $7 million to fund the 1999-2000 HRSEP — the fourth successive year since the program's inception. The 1999 HRSEP fund is a vital component of the $100 million Resource Rebuilding fund allotted over a five-year period to protect and restore fish habitat and rebuild threatened Pacific salmon stocks. The Resource Rebuilding fund is a component of the federally funded Pacific Fisheries Adjustment and Restructuring Program — a five-year, $400 million program launched in 1998 to assist individuals and communities in rebuilding Pacific salmon. This report summarizes the 1999-2000 HRSEP program results.

HRSEP FOCUS

The primary focus of HRSEP is to revitalize salmon populations in the Pacific Region through habitat restoration, stock rebuilding, and resource and watershed stewardship. The projects fall into three major categories:

A. HABITAT RESTORATION

Habitat restoration activities focus on improving or creating fish habitat in local streams, rivers and estuaries to improve salmon survival and increase their production. Project objectives and activities include:

- Increasing stream habitat complexity to improve salmon 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 building 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 or extending fish access to suitable habitat by modifying barriers to fish passage.

B. SALMON STOCK REBUILDING

Salmon rebuilding projects focus on intensive stock assessment and enhancement activities. Projects include hatchery operations, adult enumeration, juvenile production studies, collection of DNA and other biological samples, and other programs.

C. RESOURCE AND WATERSHED STEWARDSHIP

Watershed stewardship involves community-based initiatives that help promote sustainable salmon populations through improved land management practices. Projects include stream inventories, habitat mapping, watershed planning, and development of educational programs (community presentations, workshops, brochures, public signage, field trips, etc.).

HRSEP PARTICIPANTS

Numerous individuals, local communities, corporations, First Nations, fishing interests, and all levels of government (municipal, provincial, federal) participated in the 1999-2000 program. Many projects employed and trained displaced fishery workers including First Nations. All these groups worked in partnership with Fisheries and Oceans Canada which provided technical assistance for many projects.

LOCATION OF HRSEP PROJECTS

The 1999-2000 HRSEP projects were located throughout the four major geographic areas of British Columbia and the Yukon — Fraser River Basin & Lower Mainland, Vancouver Island & South Coast, North & Central Coast and the Yukon Territory. The individual projects are listed below by geographical area (see maps & lists, pages 9 -15).

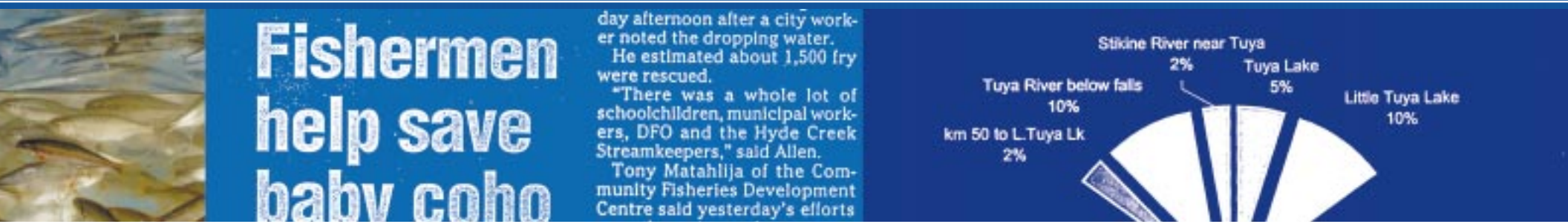
QUICK FACTS — PERSONNEL INVOLVED AND WORK ACCOMPLISHED

Persons Involved	Totals
Persons Trained	1,293
Persons Employed	970
Person-days of Employment Created	32,830
Volunteers Involved	4,528
Volunteer Hours	57,087

Stewardship & Community Planning	Totals
Public Presentations / Media Releases	501
Landowners Contacted	16,970

Stock Rebuilding	Totals
Adult Salmon Enumerated	1,588,457
Juvenile Salmon Enumerated	32,546,241
Salmon Marked, Tagged or Released	531,415

Mapping and Habitat Restoration	Totals
Mapping (linear m)	511,654
Fencing (m^2 protected)	667,153
Fencing (km protected)	38
Riparian Replanting (# plants, trees)	218,398
Riparian Replanting (m^2 area)	675,039
In-channel Habitat (m^2 area restored)	113,563
Off-channel Habitat (m^2 area created/restored)	168,347
Estuarine Habitat (m^2 area created/restored)	26,305
Lake Habitat (m^2 area created/restored)	23,800
Fish Access (m^2 habitat made available)	232,230
Fish Access (km habitat made available)	182



Species Addressed	# Projects
Coho	95
Chum	54
Sockeye	30
Pink	28
Chinook	58
Steelhead	23
Other	67

Total projects with that information 114*
* Many projects addressed several or all species in target streams.

Habitat Addressed	# Projects
In-Channel (mainstem)	83
Off-Channel	47
Riparian	53
Lake	13
Estuarine-Marine	12
Other	6

Total projects with that information 114*
* Many projects addressed several habitat types.

EVALUATION OF PROPOSALS

Community groups, stakeholders and technical staff from agencies including Fisheries and Oceans Canada submitted proposals to the HRSEP for 1999-2000 fiscal year. Project proposals were reviewed in early 1999, and final projects were selected by technical committees that consisted of Fisheries and Oceans staff, First Nations, the Pacific Salmon Foundation, and representatives of provincial agencies such as Fisheries Renewal BC. Of the approximately 500 proposals valued at $35 million submitted for evaluation, nearly 120 were approved for a total of $7 million.

The selected projects addressed a combination of HRSEP priorities, including:

· Focusing on 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 agencies,

· 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 the end of March 2000.

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

HRSEP FUNDING

The federal contribution of $7 million to the 1999-2000 HRSEP was in addition to the $33 million that Fisheries and Oceans spends annually on fish habitat management and salmon enhancement in the Pacific Region. The HRSEP also received funds and in-kind support from other partners.

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 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, numbers of salmon enumerated, habitat area restored or created, media releases issued, etc.),
6. General project description (methods, techniques),
7. Recommended follow-up monitoring, and
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 all fishery projects in British Columbia by watershed. This internet-based information registry is operational and allows easy access to all interested groups.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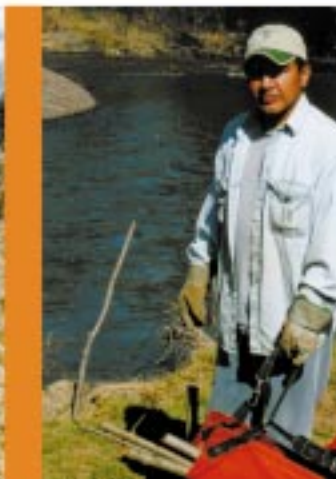


Fraser River Basin & Lower Mainland Projects

Map # Project Title

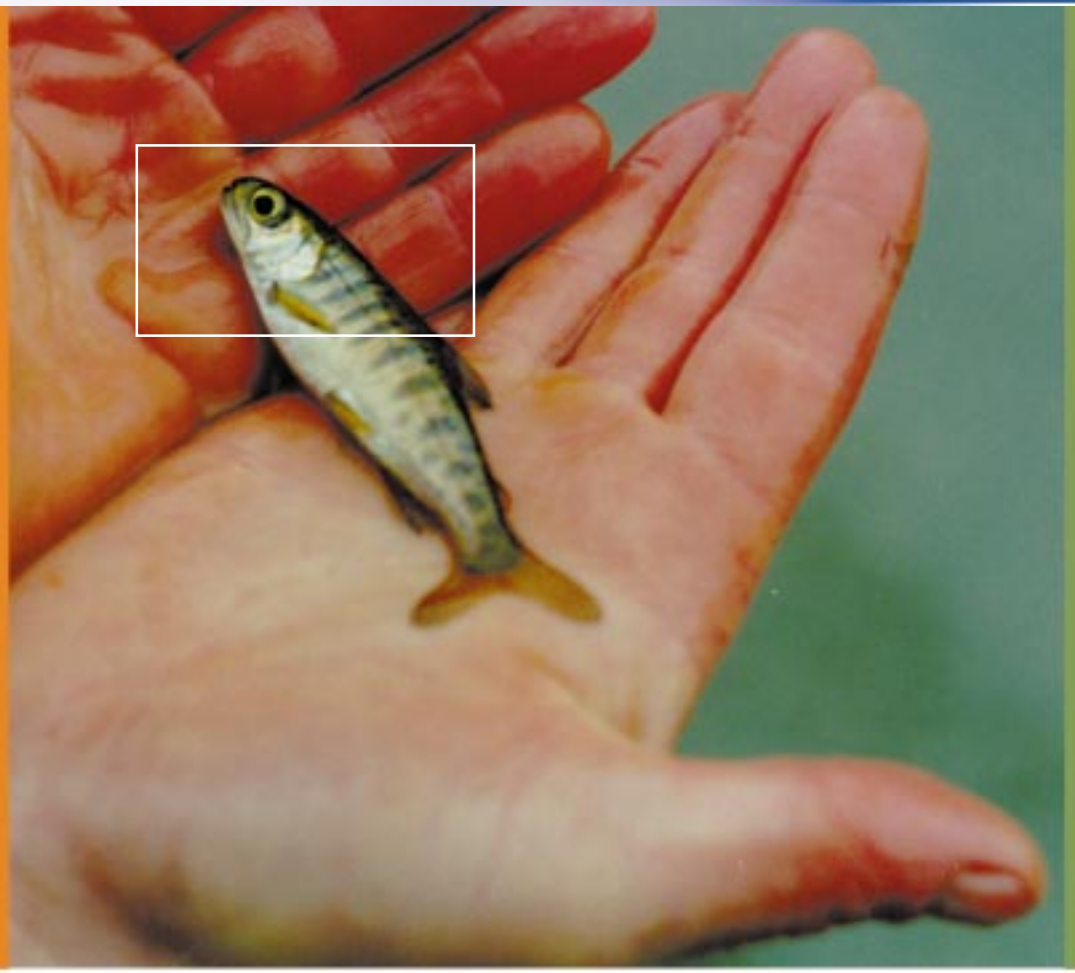
1 ..... Alouette Watershed Stewardship
2 ..... Avola Creek Rearing/Spawning Habitat Development
3 ..... "Baker/Naver/Narcosli Creeks Planting, Monitoring and Fencing"
4 ..... Beecher Creek Habitat Restoration
5 ..... Bessette Creek Riparian Restoration
6 ..... Bonaparte River Habitat Enhancement
7 ..... Bridge River Channel Restoration
8 ..... Burnaby Lake System Stewardship and Watershed Pledge Program
9 ..... Chester Creek Fencing
10 ..... Chilako River Stranding Survey and Riparian Restoration Project
11 ..... Coldwater River Coho Counting Fence
12 ..... Coquitlam/Alouette & Como Salmon Habitat Restoration
13 ..... Deadman River Restoration
14 ..... Fraser Basin Council Agassiz Debris Trap
15 ..... Fraser Basin Management Council
16 ..... FREMP/BIAEP
17 ..... Horsefly River Watershed Riparian Restoration and Fencing
18 ..... Hoy Scott Creek Rearing Pond Restoration/Enhancement
19 ..... Hyde Creek Restoration
20 ..... Kingfisher Area Streamside Rehabilitation
21 ..... Langley Stream Mapping and Salmon Habitat Restoration
22 ..... Loggers Lane Creek Enhancement
23 ..... Louis Creek Riparian Restoration
24 ..... Lower Mainland Small Stream Restoration
25 ..... Lower Yorkson Creek Fish Habitat Rehabilitation
26 ..... Mann Creek Enumeration
27 ..... Maple Creek Ponds
28 ..... Maria Slough Fish Fence and Spawning Channel
29 ..... Maria Slough/Hicks Creek Restoration
30 ..... Middle Nicola Restoration
31 ..... Musqueam Creek Flow Augmentation Project
32 ..... Musqueam Watershed Restoration
33 ..... North Shore Small Stream Enhancement
34 ..... Okanagan Sockeye Spawner Enumeration
35 ..... Operation Creeksave
36 ..... Osoyoos and Skaha Lakes Carrying Capacity
37 ..... Rohb Creek Habitat Restoration
38 ..... Salmon River (Langley) Wild Coho Assessment
39 ..... Salmon River (Langley) Wild Coho Assessment
40 ..... Salmon River Watershed Habitat Restoration
41 ..... Silvermere Lake Fishway Repair
42 ..... South Thompson River Riparian Protection
43 ..... Spanish Banks Creek Restoration
44 ..... Squamish Estuary Fish Access Improvements
45 ..... Squamish Estuary Wood Debris Removal
46 ..... Steveston Island Habitat Restoration and Clean-up
47 ..... Stoney Creek Watershed Bio-engineering and Mapping
48 ..... T. Buck Suzuki Community Riparian Nursery
49 ..... Tl'azt'en Fisheries Centre and Fry Enumeration
50 ..... "Upper Nicola River, Quilchena Restoration"
51 ..... Willow River Chinook Enhancement Feasibility Study (Phase 2)
52 ..... Yale Fishwheel Project

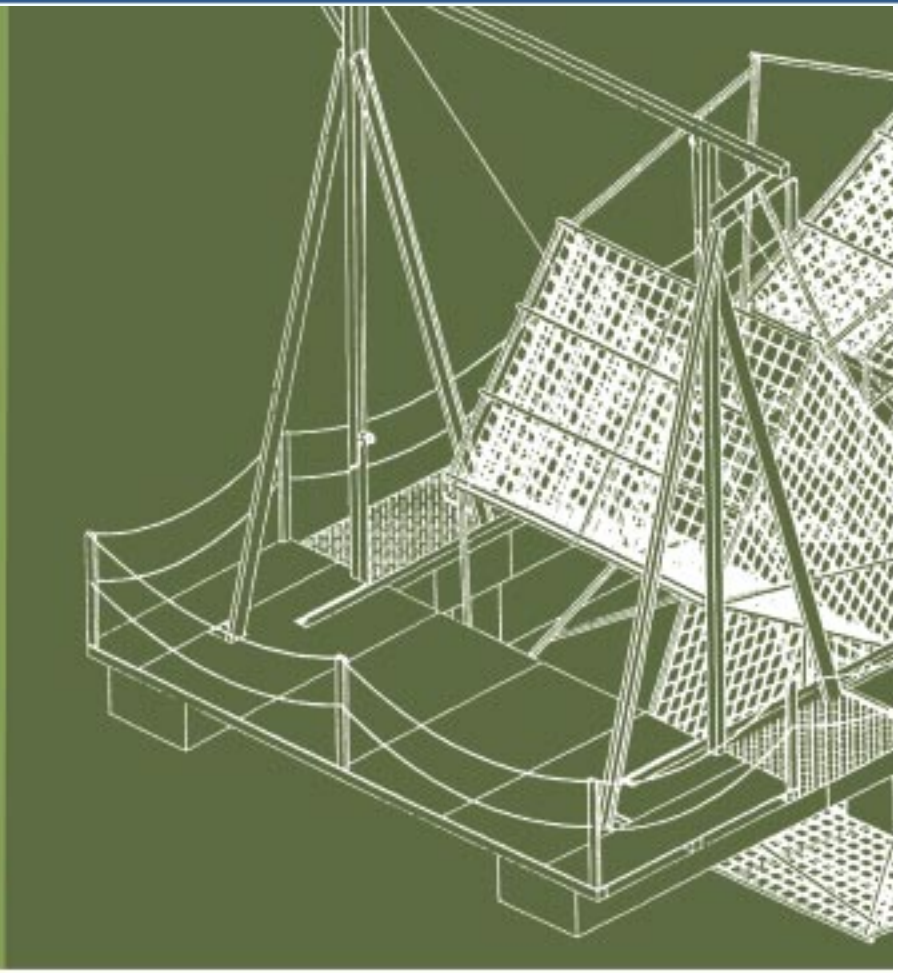
FIGURE 27
Coho salmon, 10 cm long.

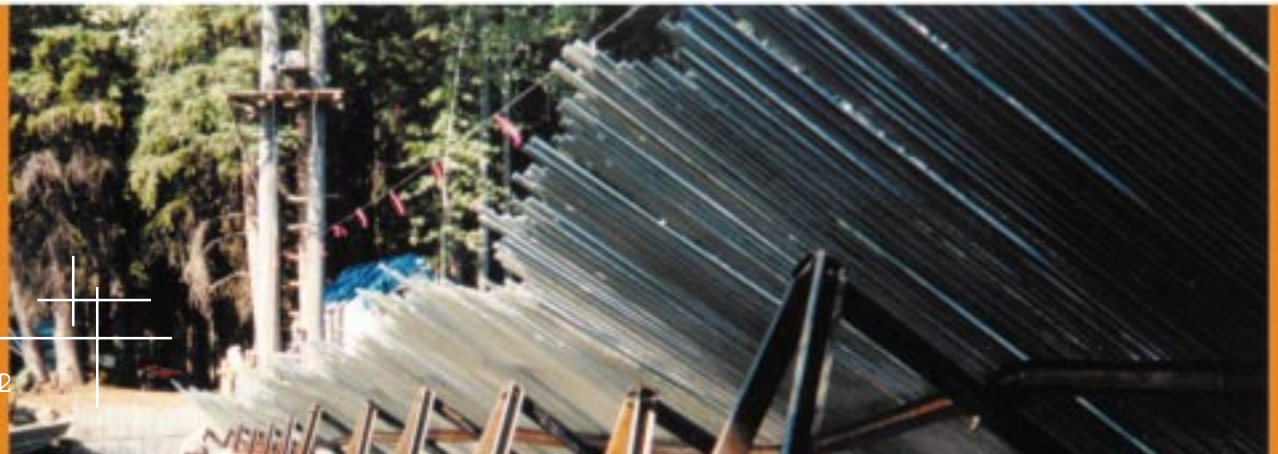
FIGURE 26

North and Central Coast Projects

Map #	Project Title
53	Atnarko Sockeye Enhancement Feasibility Study: Phase 2
54	Bella Coola Valley Coho Fry and Spawner Surveys
55	Bella Coola Valley Watershed Restoration
56	Chown River Fence Upgrading
57	Chuckwalla River Adult Chinook Enumeration
58	Haida Gwaii Coho Escapement Monitoring
59	Moricetown Coho Conservation and Tagging
60	North Coast Stream Inventory Program
61	Oona River Hatchery
62	Owikeno Lake Sockeye Assessment
63	Rennell Sound Fish Habitat Assessment and Inventory
64	Skeena Tributaries Adult Coho Enumeration
65	Skidegate Inlet and West Skidegate Channel Fish Habitat Restoration
66	Spring Creek Rehabilitation
67	Tlell River Adult Salmon Counting Fence Installation and Operation
68	Upper Bulkley River Roundtable
69	Upper Bulkley River Water Quality Monitoring



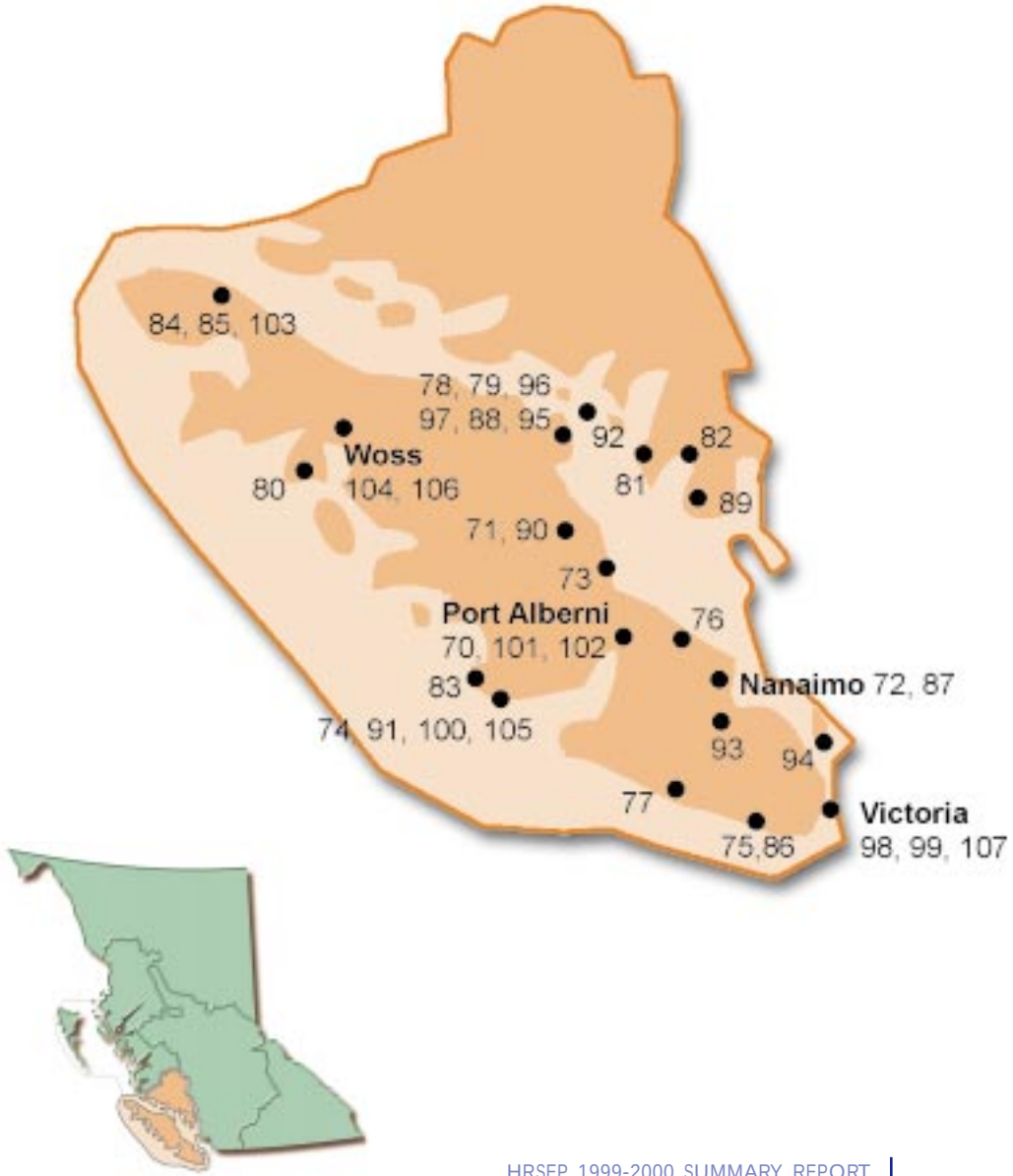




Vancouver Island & South Coast Projects

Map # Project Title

70 ..... Alberni Valley Urban Stream Mapping and Inventory
71 ..... Black Creek Coho Spawning Distribution Study
72 ..... Cat Stream Stewardship and Habitat Restoration - Phase 1
73 ..... Comox Valley Watershed Inventory and Mapping
74 ..... Cypre River Groundwater Channel Creation
75 ..... Demamiel Creek Water Storage
76 ..... Englishman River Coho Smolt Survey
77 ..... Gordon River Lost Kingdome Channel Enhancement
78 ..... Heydon Creek Salmon Enumeration
79 ..... Homathko River/Bute Inlet Salmon Stock Assessment
80 ..... Jansen Lake Habitat Restoration
81 ..... Jervis Inlet Side-channel Development
82 ..... Katherine Lake Stream Repair
83 ..... Kennedy Watershed Stock Genetics Mapping
84 ..... Keogh River Coho Smolt Tagging
85 ..... Keogh River Salmon Escapement Enumeration (SEEK)
86 ..... Kirby Creek Coho Smolt Assessment
87 ..... Nanaimo River Land Acquisition
88 ..... Orford Hatchery Capacity Increase
89 ..... Ouilet Creek Restoration
90 ..... Oyster River Assessment of Man-Made Channels
91 ..... Production Planning for Habitat and Stock Restoration Priorities
92 ..... Quadra Island Hatchery Upgrades and Fry Release
93 ..... Salmon in the City - Phase II
94 ..... Salt Spring Island Watershed Restoration
95 ..... Simms and Willow Creek Fish Fences
96 ..... Simms Creek Coho Fry and Adult Distribution and Abundance Study
97 ..... Small Creek Downstream Stock Assessment
98 ..... South Island Pollution Prevention and Watershed Renewal
99 ..... South Vancouver Island Streamkeepers Coordinator
100 ..... Southwest Coast Vancouver Island Stock Assessment
101 ..... Taylor River Habitat Mapping
102 ..... Tsuk-si-tay Side Channel Project (Caycuse River)
103 ..... Tsulquate River Barrier Removal and Habitat Enhancement
104 ..... Vernon Lake/ Sebalhall River Side Channel
105 ..... WCVI Escapement Assessment to "Wild Rivers"
106 ..... Woss Community Hatchery
107 ..... Wsikem (Tseycum) and Tenten (Airport) Creeks Stewardship




REACH 1
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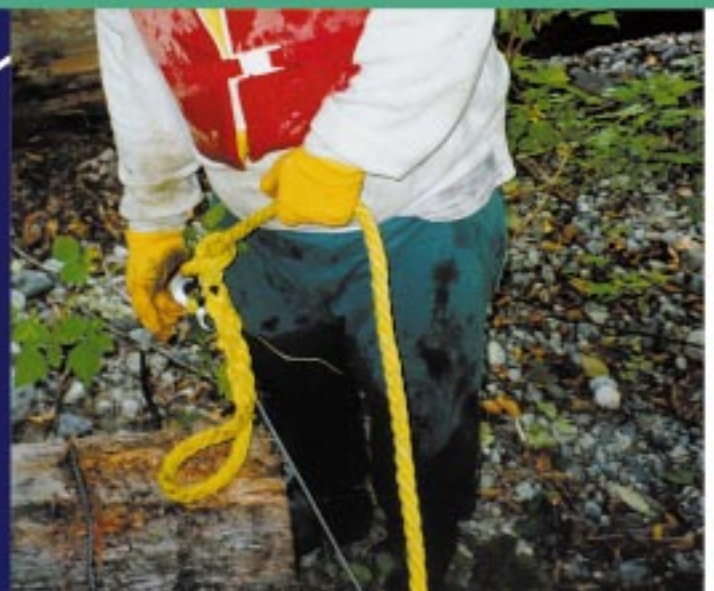
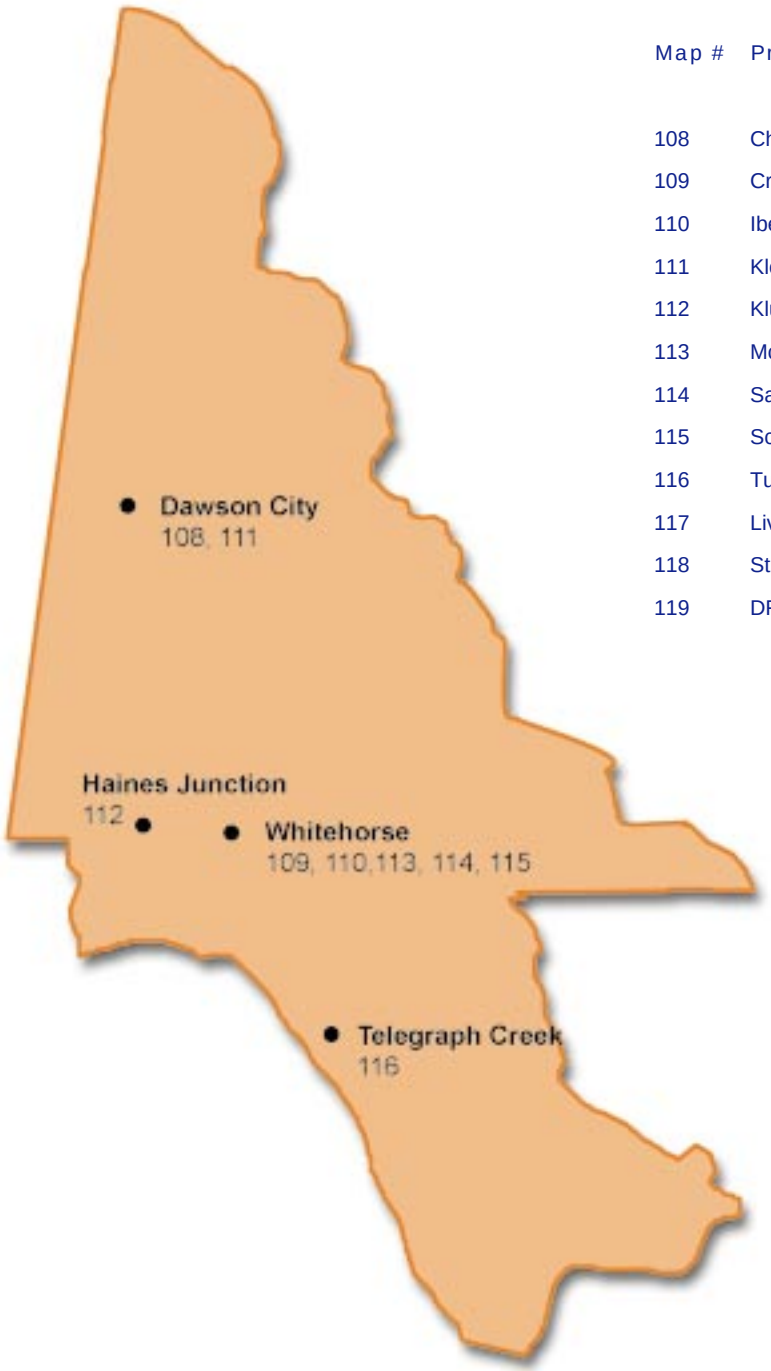
CROUCHER C
REACH


STATION 3
REACH 3
STATION 4



Yukon Territory Projects

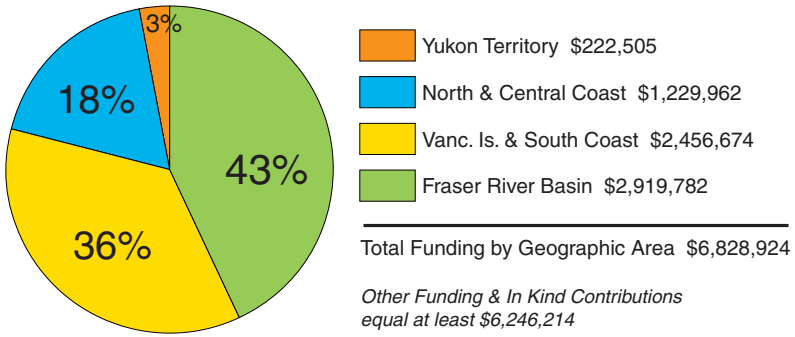


Map #	Project Title
108	Chandindu River Salmon Enumeration Weir
109	Croucher Creek Juvenile Chinook Salmon Migration Study
110	Ibex River Watershed Stewardship and Stock Enhancement
111	Klondike River Chinook Surveys
112	Klukshu Mapping and Beaver Dam Removal
113	McIntyre Creek Salmon Incubation
114	Salmon Emergence Monitoring
115	School Fry Release Field Trips
116	Tuya Lake Enhancement
117	Living By Water Project — BC and Yukon
118	Streamkeepers Program Coordinator
119	DFO Technical Support and HRSEP Administration

PROGRAM RESULTS

FUNDING BY GEOGRAPHIC AREA

Funding allocation for the 1999-2000 program is shown by geographic area in Figure A below. Of the $6.8 million spent, $2.9 million were allotted to the Fraser River Basin & Lower Mainland, $2.5 million to the Vancouver Island & South Coast, $1.2 million to the North & Central Coast and $223,000 to the Yukon.

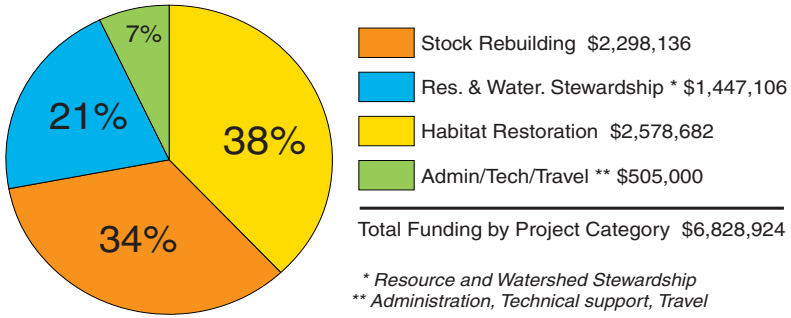


Other Funding & In Kind Contributions equal at least $6,246,214

Figure A

FUNDING BY PROJECT CATEGORY

Funding allocation by project category is shown in Figure B below. Habitat restoration projects received 38% of the total funding, followed by the stock rebuilding projects (34% of total funds) and resource and watershed stewardship projects (21% of funds). The remaining 7% of the funds were spent on items associated with operating the 1999-2000 program (i.e., administration, technical support and travel expenses involved with program audit).



** Resource and Watershed Stewardship*
*** Administration, Technical support, Travel*

Figure B

PERSONNEL INVOLVED AND WORK ACCOMPLISHED

Project results are summarized in Quick Facts (pages 4-5). 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 1999-2000 HRSEP including:

- over 34 million adult and juvenile salmon enumerated,
- nearly 700,000 sq. meters of area planted with riparian vegetation,
- over 511,000 linear meters of habitat mapped,
- over 308,000 sq. meters of channel and estuarine habitat restored/created,
- approximately 180 km of stream habitat made available through improved fish access, and
- over 38 km of streamside fencing constructed.

Numerous media releases and public presentations were also made (see Quick Facts, pages 4-5), 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

The HRSEP projects addressed all species of Pacific salmon (coho, chinook, chum, sockeye, pink and 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 which is so critical to rearing coho juveniles (see Quick Facts, pages 4-5).

EXAMPLES OF COMPLETED HRSEP PROJECTS

The following examples of completed HRSEP projects illustrate the scope of work in the 1999-2000 program.

FRASER RIVER BASIN & LOWER MAINLAND

Spanish Banks Creek (Vancouver) — The Vancouver Salmon and Stream Society received $37,000 to restore a portion of the creek that was paved over and return it to its former natural state with a series of pools and native plants. The group hopes to re-establish a run of salmon and demonstrate an example of urban stream restoration.

Lower Mainland / Surrey — T. Buck Suzuki Environmental Foundation received $49,700 to continue the development of a community riparian nursery in Surrey as a source of native streamside plants for restoration projects. The group and its partners also created an education program.

Salmon River (Salmon Arm) — The Salmon River Watershed Society received $95,000 to re-establish a healthy riparian corridor on private lands along the river in order to improve habitat for coho, chinook and sockeye salmon. Community participation and awareness of watershed stewardship are also major elements of the project.

Bonaparte River — The Bonaparte Indian Band received $60,500 to restore a 2.5 km stretch of the riparian zone by stabilizing eroding banks, planting vegetation and erecting livestock fences. The Bonaparte River is an important habitat for Thompson Basin coho and steelhead.

Fraser Canyon (Yale) — The Yale Fisheries Stewardship Authority (Yale First Nation) received $60,000 to operate a fishwheel to obtain data on the abundance of adult salmon migrating up the Fraser. The project targets all salmon species and the information collected will assist fisheries management.

Stuart/Takla Lakes and Middle River (Fort St. James) — The Tl'azt'en Nation received $125,000 to continue its fisheries training, public education, fish habitat surveys and stewardship programs through the Tl'azt'en Fisheries Centre. The work included assessing fry abundance for key Early Stuart sockeye salmon.

VANCOUVER ISLAND & SOUTH COAST

Millstone River Watershed (Nanaimo) — The Community Futures Development Corp. (Central Island) received $90,000 for spearheading the Salmon in the City program to encourage a stable coho population in this large urban watershed through habitat restoration, education

and stewardship. The community partners monitored the small numbers of existing coho through radio-tagging and smolt trapping. This information will assist with a fishway design and help identify needed habitat improvements.

DeMamiel Creek (Sooke) — The Sooke Salmon Enhancement Society received $60,000 to repair and upgrade the Bill James Dam to improve water storage. This will benefit wild coho, steelhead and cutthroat trout populations during low summer water flows. DeMamiel Creek is one of the most productive coho streams in the Sooke area.

Cypre River (Ucluelet) — The Ahousaht First Nation and Nuu-chah-nulth Tribal Council received $60,400 to build a groundwater-fed side-channel. This project will provide spawning habitat for chum and rearing habitat for coho and trout in a watershed that has been impacted by logging. Displaced and under-employed Ahousaht fishers supplied the labour.

Saltspring Island Streams — The Island Stream and Salmon Enhancement Association received $40,000 to improve habitat on several creeks, including Bullocks, Cusheon, Mansell, Okano, Harris and Stowe. The work included improving low summer water flows, building ponds for juvenile fish, cleaning out logging debris, and educating the public and property owners about stream and watershed health. This program will benefit coho, chum and cutthroat trout.

Quadra Island — The Quadra Island Salmon Enhancement Society received $30,500 to assess coho, chum and sockeye returning to local streams, as well as produce and release coho fry into the Village Bay Lakes system and Hyacinthe Creek.

NORTH & CENTRAL COAST

Moresby/Graham Island Coho Streams (Queen Charlotte Islands) — The Haida Fisheries Program received $75,000 to obtain accurate estimates of coho spawners on several key streams to assist coho conservation. Information on stream residence time for several salmon stocks was also collected.

Bella Coola River Watershed — The Central Coast Regional District received $55,000 to complete work to improve several streams by breaching dams, creating pools and removing barriers. All salmon species will benefit.

Spring Creek (Terrace) — Triton Environmental Consultants, with the City of Terrace and Northwest Community College, received $80,000 to improve habitat for coho, pink and chinook salmon by stabilizing banks, adding clean spawning gravel, removing garbage and planting streamside trees.

Upper Bulkley River (Smithers) — The Nadina Community Futures Development Corporation received $36,000 to monitor water quality to determine the effects of nutrients, sediments and temperature on salmon stocks such as coho, that have serious conservation concerns. The project included identifying sources of pollution and informing the landowners and industries of ways to reduce harmful discharge.

YUKON TERRITORY

Klukshu Creek/Lake (Haines Junction) — The Champagne and Aishihik First Nations received $25,000 to map habitat to identify areas suitable for spawning and rearing salmon. The project also included assessment and removal of selected beaver dams to improve fish access to the spawning grounds.

McIntyre Creek (Whitehorse) — The Whitehorse Correctional Centre and McIntyre Creek Hatchery received $20,400 to develop and test small-scale chinook salmon incubation and rearing technology that will work well in the Yukon area. This project will increase our knowledge of fry-to-adult survival and serve to educate the students and public.

Croucher Creek (Whitehorse) — The Kwanlin Dun First Nation and Yukon Conservation Society received $50,000 to monitor the migration of juvenile chinook to determine their abundance, timing and other characteristics. The project will increase our understanding of the importance of small streams and will assist in habitat protection efforts.



DETAILS ON SELECTED PROJECTS

Six projects were selected randomly to represent the three project categories in the four major geographic areas within the 1999-2000 HRSEP:

1. Coquitlam / Alouette & Como Salmon Habitat Restoration (Lower Mainland)
2. Yale Fishwheel Program (Middle Fraser River)
3. South Island Pollution Prevention & Watershed Renewal (Vancouver Island)
4. Salmon in the City — Phase II (Vancouver Island)
5. Bella Coola Valley Coho Initiative (Central Coast)
6. Croucher Cr. Juvenile Chinook Study (Yukon Territory)

The six projects are profiled on the following pages.

PROJECT 1: COQUITLAM / ALOUETTE & COMO HABITAT RESTORATION $75,000

Category & Area: Habitat Restoration — Lower Mainland

Partners: North Fraser Salmon Assistance Project, Alouette River Management Society, Como Watershed Group, Hoy Creek Hatchery, Coquitlam Hatchery, River Springs Salmon Enhancement, Hyde Creek Hatchery, Hyde Creek Streamkeepers, Maple Creek Streamkeepers, Coquitlam River Watershed Society, Katzie First Nation, BC Hydro, Human Resources Development Canada, Fisheries Renewal BC, Fisheries and Oceans Canada.

Employ / Train: 1,263 person-days, 960 volunteer-hours; First Nations, under-employed fishers and shoreworkers, local communities.

INTRODUCTION

The North Fraser Salmon Assistance Project (NFSAP) is a non-profit organization created to aid fishing industry workers affected by restructuring of the fishing industry. The project was prompted by the lack of salmon assessment data for the area (Coquitlam, Alouette and Kanaka rivers), the lack of available people with appropriate skills to collect the required information, and the need to address the stream rehabilitation work previously identified in a pre-assessment study.

Major program objectives were:

1. To rehabilitate a significant area of salmon habitat in several watersheds (Alouette, Como, Coquitlam, Kanaka and Pitt rivers), and
2. To create a community-based partnership to protect the local salmonid resource now and into the future.

The project encompassed a wide variety of activities that included stream inventory and mapping, stock assessment, stock enhancement, habitat restoration and public awareness programs.

METHODS

Stream inventory and mapping data were collected according to the DFO-HEB guidelines and were submitted in digital format. Stock assessment work involved downstream fry trapping in the Alouette, Coquitlam and Como watersheds using standard Gee-type minnow traps and a rotary trap; chum adult enumeration at Kanaka and Silverdale creeks using a fish fence; chum adult seining in the Alouette River; and visual surveys for fish presence in the Coquitlam and Como watersheds. Stock enhancement work encompassed broodstock collection in the Alouette River, Coquitlam River and Kanaka Creek for use at the Coquitlam, Hoy, Hyde, Kanaka and River Springs facilities, as well as egg-takes at the Chilliwack RIver and Weaver Creek facilities for use at the Allco Hatchery.

Habitat enhancement activities included stream complexing in selected reaches using boulders and large woody debris, bank stabilization at Millionaire Creek, creation of a new pond at Maple Creek, restoration of a coho pond at

Agassiz, extension of Grist Creek, and beaver dam removal between Tri-City and Whonnock Lake. In addition, extensive tree planting was carried out along the river banks by the First Nation participants and by the commercial fishers and shoreworkers from the Vancouver, Burnaby, Tri-City and Maple Ridge areas.

Public awareness and education programs were conducted at the Rivers Day in Coquitlam and Maple Ridge, and during the Salmon Come Home event at Coquitlam River and Hoy Creek. These events attracted several thousand people, and included photo displays, nature walks, brochure hand-outs, games and crafts.

RESULTS

The project succeeded in rehabilitating extensive areas of stream habitat and building a strong partnership with the local community. The restoration activities addressed all salmon species present in the area (coho, chum, pink and chinook), as well as different types of habitat (mainstem, off-channel and riparian). Altogether, approximately 55,000 linear metres of area were mapped, 19 million chum fry and nearly 50,000 chum adults were enumerated, 500 metres of stream length were protected with fencing, 330,000 sq. metres were replanted with trees and other vegetation, and 44,000 sq. metres of habitat were created or restored.

FUTURE EFFORTS

The projects are monitored regularly with some upgrading being conducted on the large woody debris in streams. Further assessment work is required especially in the mapping of local streams and in juvenile trapping throughout the Tri-City area. As well, silt problems in the Coquitlam River and erosion problems (slides) in the Or Creek and Tower Creek must be addressed.

PROJECT 2: YALE FISHWHEEL PROGRAM $60,000

Category & Area: Stock Rebuilding — Fraser River Basin

Partners: Yale First Nation Fisheries Stewardship Authority (YFNFSA), Yale First Nation (YFN), YFN Government Centre, Musqueam Fisheries, Fraser River Aboriginal Fisheries Secretariat (FRAFS), Fraser River Rafting, Riverboat Adventures, Hope Search & Rescue, Fraser Valley Regional Watersheds Coalition, LGL Ltd., Pacific Salmon Commission (PSC), Ministry of Environment, Lands & Parks, Fisheries and Oceans Canada.

Employ / Train: 810 person-days, 246 volunteer-hours; First Nations, LGL personnel, local communities.

INTRODUCTION

The Yale First Nation Fisheries Stewardship Authority received financial support from the 1999-2000 HRSEP to operate a fishwheel in the Fraser Canyon at Yale. The fishwheel technology represents an important species-selective harvesting method, as well as a tool for assessing adult abundance. The project targeted all salmon species and was aimed at obtaining data on the abundance of adults migrating up the Fraser River above Hope. The collected information will assist in the management of Fraser salmon stocks.

Major program objectives were:

1. To obtain an index of abundance for all upstream migrating salmon at the fishwheel site,
2. To increase the role and responsibility of the Fraser First Nations in the annual and in-season assessment of Fraser River salmon stocks,
3. To test the fishwheel as a selective harvest method in the Fraser Canyon, and
4. To apply tags to chinook as part of a larger tagging program implemented in the Fraser watershed in 1999.

METHODS

The Yale fishwheel operated during 1999 from February 12 to April 13 and again from August 7 to October 4. The considerable down-time was due to needed repair work on the fishwheel and extremely high water conditions in the Fraser Canyon until July. Due to periods of large salmon runs (mostly sockeye), night operations were suspended and extra crews were hired during the peak run to remove fish from live wells.

Fishwheel catch information was recorded in two databases: the Catch Summary included catch dates and times, hours fished, water conditions, species caught and catch numbers by sex; the Biosampling Data records included species, length, sex, marks, tag codes and biosampling data (e.g., DNA and fish scales). During the program, numerous personnel from DFO, FRAFS, PSC and MELP visited the site and provided the crew with valuable hands-on training and advice regarding fish handling, tagging and biosampling, as well as basic fishwheel operations.

RESULTS

All major objectives were achieved. The two databases — Catch Summary and Biosampling Data — recorded all catch information for the captured species (coho, chum, pink, chinook, sockeye, steelhead, sturgeon and others). Altogether, 25,876 adult salmon and 161 juveniles were enumerated, and 225 chinook were tagged, sexed, and sampled for length, scales and DNA. An additional 113 fish received other marks and 425 non-salmonids were counted and released.

Other tagging, biosampling and fish handling operations were also carried out at the request of various government and research agencies, and included scale sampling of sockeye, fin-punching of coho and steelhead for DNA analysis, fin-clipping of suckers, live capture of pinks for a telemetry study, and record-keeping of tagged pinks for another study. As well, the harvesting selectivity of the fishwheel was successfully tested by targeting harvestable chinook. The collected data were made available to the DFO, MELP and the Pacific Salmon Commission for use in fisheries management of Fraser stocks.

This program provided direct employment to local people and fostered a cooperative network between First Nations and various government and non-government agencies. In addition, documentary films, media releases and numerous walking tours stimulated public awareness and interest in the fishwheel operation and its importance in the management of Fraser River salmon stocks.

FUTURE EFFORTS

The ongoing conservation concerns for Fraser salmon (especially coho, steelhead and some chinook stocks), and also for the Fraser sturgeon, require the continued gathering of reliable data on these populations to ensure effective fisheries management and enhancement. Such data could be collected through an expanded fishwheel project using up to four fishwheels for mark/recapture programs, and working in conjunction with other agencies (DFO, MELP, First Nations, etc.). This approach is particularly important because no other reliable central station exists to monitor Fraser salmon stocks returning to spawning areas upstream of Mission.

PROJECT 3: SOUTH ISLAND POLLUTION PREVENTION & WATERSHED RENEWAL $90,000

Category & Area: Resource & Watershed Stewardship — Vancouver Island

Partners: Veins of Life Watershed Society (VOLWS), BC Environment Youth Team, BC Hydro, Camosun College, Canada Trust - Friends of the Environment, Capital Regional District (CRD), CRD Parks, Cecilia Creek Clean-up Committee, City of Victoria, Courtland-Hastings Agricultural Preservation Society, Craigflower Management Forum, District of Highlands, District of Saanich, Goldstream Hatchery, Environmental Tech Coop program, Burnside Gorge Community Association, Gorge Tillicum Community Association, Gorge Waterway Action Society, Millstream Management Forum, Mountain Equipment Coop, Municipality of Esquimalt, PacificSport, SRM Levelton, Restoration of Natural Systems Program (UVic), Royal Roads University, Stone Crop Alpaca Farm, Times Colonist, Victoria Esquimalt Harbours Environment Action Plan, Victoria Natural History Society, volunteers and former fishers, Ministry of Environment, Lands & Parks, Fisheries and Oceans Canada.

Employ / Train: 4,257 person-days, 945 volunteer-hours; VOLWS personnel, Environmental Tech Coop program members, Environment Youth Team, volunteers.

INTRODUCTION

The focus of this HRSEP project was to reduce pollution and restore damaged habitat in the Greater Victoria area and the surrounding municipalities. The work was based on recommendations from the various groups and agencies, including Saanich, Victoria and Esquimalt engineering departments, CRD's stormwater quality surveys, and local forums and committees. The program was conducted between June 1999 and April 2000, and included dye-testing programs to improve the water quality, stream inventory and mapping, habitat restoration projects, public awareness initiatives, fund-raising events, and stewardship and community planning.

METHODS

Dye-testing teams contacted residents in the Victoria, Esquimalt and Saanich areas, and tested for sewer-storm cross-connections. The teams alerted municipal drainage engineers to any problems, then re-tested the sites once the problems were corrected. Mapping and inventory work was conducted on the Craigflower Creek and the entire shoreline of the Gorge Waterway on the Saanich side, using sensitive habitat inventory and mapping techniques. The Gorge was also videotaped to record information on marine shoreline habitat. In addition, the stream team supervised and/or conducted several habitat restoration projects (see below) and assisted in the Goldstream Hatchery operations.

RESULTS

Over 1,800 homes were dye-tested during the program and numerous problems were identified with storm drains and sanitary systems. In addition, 15,000 linear metres of area were mapped, 500 sq. metres of stream area were restored, and 120,000 coho fry were coded-wire

tagged and released from the Goldstream Hatchery. Restoration projects included the removal of an unused BC Hydro bridge crossing Craigflower Creek (a silt-control fence was installed for removal of the bridge). Debris jams and bank stabilization on Craigflower Creek were also addressed. As well, the team monitored and maintained several previously restored streams, such as Teanook, Durrell and Jail creeks where plant survivability and flow blockage were the issues of concern.

Educational initiatives included approximately 120 public presentations and media releases, as well as numerous events such as picnics, displays in malls and educational skits to raise public awareness and seek funding for habitat restoration projects. The society also helped organize the Great BC Beach Clean-up, which recruited over 1,300 volunteers, and launched a new education program — the Adopt-An-Outfall Program. The latter was designed to empower local community groups of all ages to take action in the watershed to identify and reduce pollutants. A new VOWLS website (www.islandnet.com/~volws) was also created, providing information on stream restoration techniques, inventory methodology, plant and animal identification data (complete with a native plant photo-library) and information on the permitting process. This website represents an excellent resource for groups starting out in aquatic stewardship.

FUTURE EFFORTS

The dye-testing program is on-going and new projects are being undertaken each year. The society also plans to expand its role in watershed management in order to increase the cooperation between aquatic stewardship groups, government and industry. Planned inventory and restoration projects include mapping of the Craigflower Creek tributaries, planting native vegetation to stabilize the creek's eroding banks, and removing sill logs at the BC Hydro bridge site to improve water flow. Much additional stream restoration work is also needed on private property. To facilitate access to these sites, continued public awareness is necessary to promote the importance of streamside habitat to fish.

The society also continues to seek new methods for fundraising. For example, the Gorge International Swim Challenge and another Rubber-Duck Race were planned for the summer of 2000. The goal is to provide year-round funding for the projects, achieve better-quality results and retain skilled personnel. The society also seeks funding for the publication of its resource binder for the newly launched Adopt-An-Outfall Program. As well, VOLWS recently submitted a proposal to create an Aquatic Stewardship Centre that would support all local stewardship groups by providing them with a resource library, training, workshops, and a centre to house equipment and conduct meetings.

PROJECT 4: SALMON IN THE CITY PHASE II $90,000

Category & Area: Resource & Watershed Stewardship — Vancouver Island

Partners: Community Futures Development Corporation of Central Island, BC Conservation Foundation, BC Hydro, BC Wildlife Federation, Centra Gas BC Inc., City of Nanaimo, Enlightening Communications, Harewood Family of Community Schools, Harmac Pacific, Howard Johnson Harbourside Hotel, Human Resources Development Canada, Iverson Forest Management, Ko'p thut Society, Lanarc Consultants Ltd., LGL Ltd., Malaspina University-College, Ministry of Agriculture, Food & Fisheries; Ministry of Environment, Lands & Parks; Nanaimo Area Land Trust, Nanaimo City Centre Association, Nanaimo First Nation, Nanaimo Fish & Game Club, Nanaimo Port Authority, Nanaimo Parks, Recreation & Culture Commission; Nanaimo River Salmonid Enhancement Project, Nanaimo Rotary Clubs, Pacific Salmon Foundation, Regional District of Nanaimo, Sierra Club of BC, TimberWest Forest Products, Tourism Nanaimo, Trout Unlimited, Western Economic Diversification, Fisheries & Oceans Canada.

Employ / Train: 415 person-days, 1,500 volunteer-hours; BC Land Surveyor, Landowner Environmental Assistance Program Coordinator, A. McNaughton (fisheries technician), Georgia Basin Ecological Assessment & Restoration Society, Nanaimo Youth Services Association, E-Team Work Crew, radio-tagging research assistant, Salmon in the City Schools Coordinator, students and local community services (see also the HRSEP Partnerships list at the back).

INTRODUCTION

This program focused on the Millstone River watershed near Nanaimo. Major program objectives were:

1. To revitalize and restore fish habitat and fish stocks in this large urban watershed to create a sustainable and thriving coho population,
2. To develop greenways, trails, interpretive sites and centres that can fully explore the environmentally friendly tourism potential of this watershed, and
3. To actively engage the various local communities and agencies in the above projects, and enhance public awareness of fish habitat issues though active participation, hands-on training and educational events.

METHODS

The stock assessment and enhancement work in the Millstone River included installing two downstream smolt traps to determine the river's productive capacity, radio-tagging and tracking coho adults to identify fish barriers hindering upstream migration, and transporting 403 coho adults from nearby streams into the Millstone River (under the guidance of agency technical staff), as a continued effort to restore the historic coho runs in this system. In addition, habitat restoration work was conducted using specialized equipment (Spider Hoe) to distribute various materials (gravel, boulders, logs, etc.) in-stream and along the banks of the Millstone River Estuary to enhance the spawning and rearing habitat.

RESULTS

Over 1,900 juveniles were enumerated, 20 coho adults were radio-tagged and tracked, and 403 coho adults were transported and released into the Millstone River. As well, 3,000 sq. metres of the Millstone estuarine habitat were restored for spawning and rearing salmon, and water quality testing from Phase I was completed. The downstream smolt trapping program provided information on habitat productivity, preferred coho rearing areas, spawning success of transplanted coho adults, fish abundance and condition, and fry-to-smolt survival. Preliminary radio-tagging results suggested that the Millstone River waterfalls act as a barrier to upstream coho migration. The ongoing transplant program is expected to produce up to 2,000 adult coho returns to the Millstone system in the fall of 2000.

The Salmon in the City educational program included hands-on training for students from the Malaspina University-College, BCIT and School District #68, as well as about 30 public presentations and media releases. The newly developed plan — Salmon Viewing in Downtown Nanaimo — details the construction of a series of viewing platforms, boardwalks, and interpretive signs, as well as the future development of an interpretive habitat stewardship centre (Phase I of construction to begin in fall of 2000).

FUTURE EFFORTS

Many of the ongoing Salmon in the City programs and initiatives will continue. For example, future work in the Millstone River Estuary will include planting native vegetation and reseeding the surrounding riparian area to stabilize banks and slopes, and ensure adequate vegetation for all forms of estuary wildlife (fish, birds, etc.). It is also hoped that the field-trip program — Salmon In the City Schools — piloted in 1998-99, will be implemented district-wide allowing younger students to gain first-hand knowledge of runoff problems in the local watersheds and ways to maintain clean water and healthy fish habitat.

A community-directed Landowner Environmental Assistance Program with its own funding mechanism is also being developed. This program will assist all groups utilizing the Millstone Watershed to obtain the necessary tools for environmental improvements such as foreshore stabilization, cattle fencing and containment of manure. In addition, two new long-term projects will be pursued: (1) the development of a Millstone Watershed Management and Business Plan and (2) the Coho Barrier Migration Program. The latter will assist the “first” returning coho spawners originating from the seeding efforts in the Millstone River. Other plans include starting construction of the Millstone Estuary viewing platforms and boardwalks; these will become an integral part of the Nanaimo section of the Trans-Canada Trail.

PROJECT 5: BELLA COOLA VALLEY COHO INITIATIVE $53,144

Category & Area: Stock Rebuilding — Central Coast

Partners: Central Coast Fisherman's Protective Association (CCFPA), Sir Alexander Mackenzie Secondary School (SAMMS) forestry class, Bella Coola Watershed Restoration Partnership, Interfor, Sport Fish Advisory Board, MidCoast Aquatics, Bella Coola Valley landowners, Pacific Salmon Foundation, Fisheries Renewal BC / Central Coast Partner Group, Fisheries and Oceans Canada.

Employ / Train: 285 person-days, 572 volunteer-hours; CCFPA members, Bella Coola Valley residents, Nuxalk Band members, volunteers from local communities, SAMMS students.

INTRODUCTION

This project focused on lower Bella Coola coho stocks and was a continuation of the 1998/99 HRSEP program. The overall goal was to gather fishery information to help guide future management decisions on the Central Coast. Major program objectives were:

1. To provide escapement and survival estimates for coho stocks in the lower Bella Coola system, and develop a coho escapement index for 1999/2000 based on the two years of HRSEP data, and
2. To assess juvenile densities, distribution, age composition and habitat use for Bella Coola coho stocks and other selected indicator systems on the Central Coast.

METHODS

Coho Juveniles: Hagensborg Creek is a wild coho system and a key monitoring site for salmon abundance in the lower Bella Coola River tributaries. A permanently installed fence on this creek is used to monitor adult and juvenile abundance, and evaluate the utilization of restored fish habitat. During fence operation (March to June 1999), juveniles captured in the upstream and downstream traps were counted, identified by species, and sub-sampled for age, length and weight. Caudal clipping was conducted to index the fence.

Juvenile density surveys were conducted on 13 systems using total removal methods (electrofisher or electrofisher / seine combination). Mark / recapture methods were used at two other sites. Additional activities included incubation of coho eggs, and juvenile tagging and release. Fry salvage operations and beaver dam management were also conducted throughout the program.

Coho Adults: Streamwalk surveys were used to estimate adult escapements for 12 index streams. Information collected included weather and water conditions, counts of live and dead fish, and distribution of adult spawners. Drifts in the Atnarko River and aerial surveys of larger systems such as the Atnarko, Talchako and Nusatsum were also compiled. Upstream coho

adult migration at the Hagensborg fish fence was monitored between September and December, 1999. Adults were counted, sexed, and sub-sampled for length and weight. The spawning portion of the stream was walked on four occasions in order to index the counting fence.

For Thorsen Creek and its tributaries, tagging and area-under-the-curve surveys were conducted from September to December, 1999. Beach-seined coho adults were operculum-punched and floy-anchor tagged, and sampled for sex, presence of marks and relative fish condition. A different tag colour was used for each tagging session. Marks were recovered during regular walking surveys. Standard recorded information included spawner counts, number and colour of tags sighted and recovered, and location of redds. The counting efficiency for the observers was estimated at 85 percent, based on the comparison of fish counts from each observer against counts from an experienced swimmer.

RESULTS

Over 8,800 coho adults and 16,500 juveniles were enumerated, 488 downstream juvenile migrants were sampled and 97 adults were floy-tagged. Other activities included a release of 58,149 coho smolts, coded-wire tagging of approximately 40,000 coho fry, and collection and incubation of some 50,000 eggs. The residence time of adult coho in Thorsen Creek was estimated at 14 days for the creek and 9-16 days for the tributaries. Other data showed that the Alaskan commercial fishery exploitation rate for Snootli Creek coho averaged 44 percent.

Additional work included installing a fishpass at the outlet dam of Hagensborg Slough North, salvaging over 9,000 coho fry and monitoring eight beaver dams to provide 1.5 km of stream access to juvenile coho. Public awareness was promoted through media releases and the active participation of landowners, students and other community volunteers.

FUTURE EFFORTS

This project has significantly expanded our knowledge of the Central Coast coho stocks. A follow-up program is required in the 2000/2001 season to allow management decisions to be based on one full coho cycle. Collection of time-series data will continue, including visual adult and juvenile density surveys, fish enumeration, and sampling of migrants at the Hagensborg fish fence and fishway. Other ongoing work includes small-scale enhancement of the 2000 brood coho escapement and fish marking for assessment purposes, as well as salvaging of juveniles during low flows and managing of beaver dams. Public awareness will be promoted with the fourth Coho Festival scheduled for May 2000.

PROJECT 6: CROUCHER CREEK JUVENILE CHINOOK MIGRATION STUDY $50,000

Category & Area: Stock Rebuilding — Yukon Territory

Partners: Kwanlin Dun First Nation, Yukon Conservation Society (YCS), Fisheries and Oceans Canada.

Employ / Train: 183 person-days, 16 volunteer-hours; Kwanlin Dun members, YCS personnel.

INTRODUCTION

Croucher Creek is a small tributary of the upper Yukon River. Although this creek does not support spawning adults, a 1993 survey conducted by the Yukon Conservation Society indicated that newly hatched chinook fry migrate from the Yukon River into the creek to overwinter. The preservation value of streams is currently based on their spawning importance to salmon, making no allowance for non-natal Yukon streams where juveniles overwinter. This is a serious omission as overwintering habitat is as crucial to the salmon life cycle as spawning habitat. The 1999 project highlighted the importance of small, non-natal streams to the overwintering survival of juvenile chinook salmon in the Yukon River watershed.

Major study objectives for 1999 were:

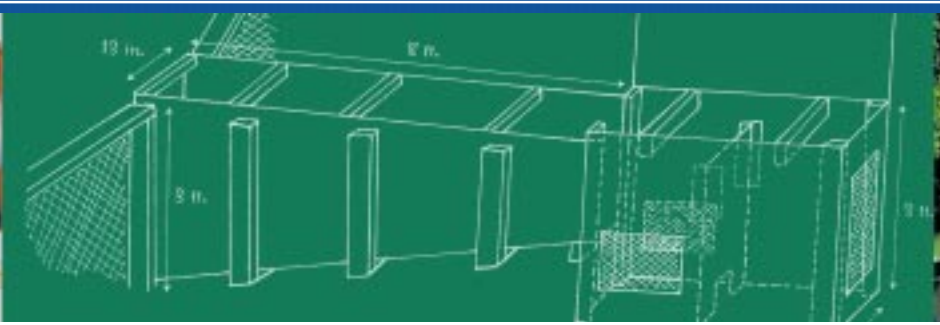
1. To document the timing, magnitude and characteristics of in-migrating (0+) and out-migrating (1+) chinook juveniles in Croucher Creek, and
2. To study the effects of chinook juvenile size on overwintering survival.

METHODS

The 1999 study was a follow-up of the 1998 tagging program on juvenile chinook in Croucher Creek, using a fluorescent polymer injection just under the skin. In the spring of 1999, two counting fences (upstream and downstream) were set up near the mouth of Croucher Creek to capture migrating chinook juveniles. These were counted, checked for tags, weighed and measured for length. The out-migrating (1+) smolts were released below the downstream fence, while the in-migrating (0+) fry were first marked with a non-toxic dye, then released upstream. Gee-type minnow traps were also used throughout the creek to capture juveniles. Other fish species caught in the traps were also identified and counted. Fence trapping was conducted daily between May 1 and mid-August, 1999, and minnow-trapping was conducted periodically during that time.

RESULTS

A total of 1,658 fish were captured in the two migration traps in 1999. Of these, 578 were chinook juveniles and the remainder included rainbow trout, slimy sculpin, longnose sucker, lake chub and other species. Of the juvenile chinook tagged in Croucher Creek the previous year, 15 percent were recaptured in the downstream trap in 1999. Comparison of the



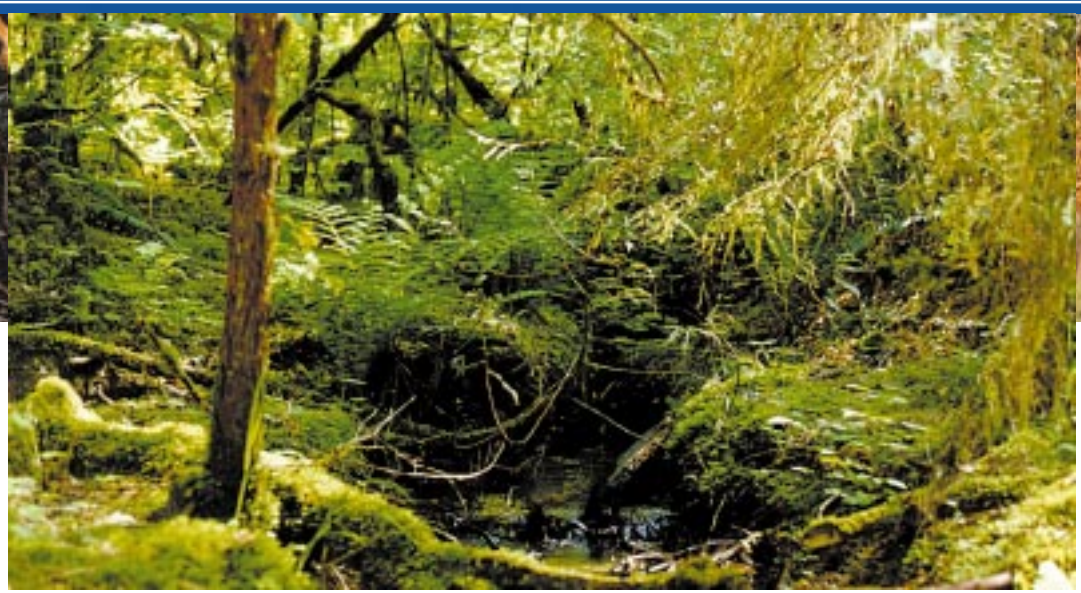
1993 and 1999 data showed a later migration timing (mid-June to early July) for the (1+) downstream migrants and a significant overlap between the downstream (1+) and upstream (0+) migrants in 1999.

Mean sizes of sampled chinook were 51 mm and 1.4 g for (0+) fry, and 89 mm and 7.2 g for (1+) smolts. Larger-sized juveniles tagged the previous year generally showed higher overwintering survival rates than smaller-sized juveniles, suggesting a size-related advantage to survival. The larger fish were also the first to outmigrate in 1999. Counts of juvenile chinook entering and leaving Croucher Creek provided a quantitative measure of the numbers of juveniles that can utilize such habitat for overwintering.

FUTURE EFFORTS

Not all (1+) juveniles migrated out of Croucher Creek by August 1999, suggesting that some may overwinter twice. This hypothesis should be explored and biological data obtained for such juveniles. As well, due to the low abundance of migrating (0+) fry in 1999, this migration study should be repeated in a more typical production year. It is also recommended that less intrusive sampling methodology be used in the future (multiple tagging, recapture and fish handling used in 1999 may have biased the study results).

The 1999 results were likely influenced by the unusually cold and late spring season. Accordingly, further work is required to better define the influence of environmental variables (water temperature, flows, oxygen content) on the growth, migration and distribution of juvenile chinook. This information could be crucial for predicting appropriate release timing for out-planting programs. As well, the information will help develop windows of opportunity for in-stream work and thereby reduce the impact of future development in Croucher Creek and other similar drainages. Lastly, a year-round monitoring of the health of salmon streams in the Yukon River Basin should be undertaken. For example, the slimy sculpin population, widely distributed throughout the Basin, should be investigated as a potential indicator species of the overall health of the Yukon River streams.



PROGRAM SUMMARY

The 1999-2000 Habitat Restoration and Salmon Enhancement Program has demonstrated for the fourth successive year that the committed and joint efforts of local communities, corporate groups, First Nations, fishing interests, government agencies and non-government organizations can make a significant difference in the overall health of salmon populations and their habitat. With appropriate agency assistance, funding and well-defined parameters, this program has resulted in major improvements in the quality and quantity of salmon habitat, and assisted in salmon stock rebuilding. The program has also generated valuable information for managing the salmon resource in BC and the Yukon, fostered a cooperative approach to watershed management, provided training and employment to displaced fishery workers, strengthened local economies, and promoted a healthy future for our salmon resource.

ACKNOWLEDGEMENTS

The HRSEP coordinators wish to thank all proponents for their project submissions, and all the groups and individuals involved in the 1999-2000 HRSEP (list of partnerships is provided below). The enthusiasm, commitment and 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.

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HRSEP PARTNERSHIPS

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

Federal Government Agencies

Burrard Inlet Environmental Action Plan (BIEAP)
Coast Guard Canada
Community Futures Development Corporation (CFDC)
Department of Indian Affairs and Northern Development (DIAND)
Department of National Defence (DNF)
DFO-Canada / US Funding
Environment Canada
Fisheries and Oceans Canada (DFO), Institute of Ocean Sciences (IOS), Pacific Biological Station (PBS) and Federal Hatcheries
Fraser Basin Council
Fraser River Aboriginal Fisheries Secretariat (FRAFS)
Fraser River Estuary Management Program (FREMP)
Human Resources Development Canada (HRDC)
Katimavik
Pacific Salmon Commission
Transport Canada
Western Economic Diversification Canada

Provincial Government Agencies

BC Corrections Centre
BC Council
BC Environment Youth Team
BC Gaming Commission
BC Rail Corporation
Fisheries Renewal BC (FsRBC)
Forest Renewal BC (FRBC) / WRP
Min. Agriculture, Food & Fisheries (MAFF)
Min. Attorney General
Min. Environment, Land & Parks (MELP)
Min. Forests (MoF)
Min. Transportation & Highways (MOTH)
Salmon Renewal Program
Urban Salmon Habitat Program (USHP)

Municipal Government Agencies

Alberni-Clayoquot Regional District
Capital Regional District (CRD) and CRD Parks
Central Coast Regional District
City of Abbotsford
City of Burnaby
City of Chilliwack
City of Coquitlam Parks Department
City of Merritt
City of Nanaimo
City of North Vancouver
City of Port Alberni
City of Port Coquitlam
City of Surrey
City of Terrace
City of Victoria
Community of Avola
Dawson District Renewable Resources Council (DDRRC)
District of Campbell River
District of Chilliwack
District of Highlands
District of Maple Ridge
District of North Saanich
District of North Vancouver
District of Port Hardy
District of Saanich
District of Squamish
Fraser Valley Regional District
Greater Vancouver Regional District (GVRD)
Municipality of Coldwater
Municipality of Esquimalt
Municipality of Lumby
Municipality of Kelowna
Nanaimo Harbour Commission
Nanaimo Parks, Recreation & Culture Commission
Nanaimo Port Authority
North Saanich Environmental Commission
Regional District of Comox-Strathcona
Regional District of Nanaimo
Skeena Queen Charlotte Regional District
Squamish-Lillooet Regional District
Sunshine Coast Regional District
Tourism Nanaimo
Township of Langley
Victoria Airport Authority (VAA)
Village of Cumberland
Village of Ucluelet

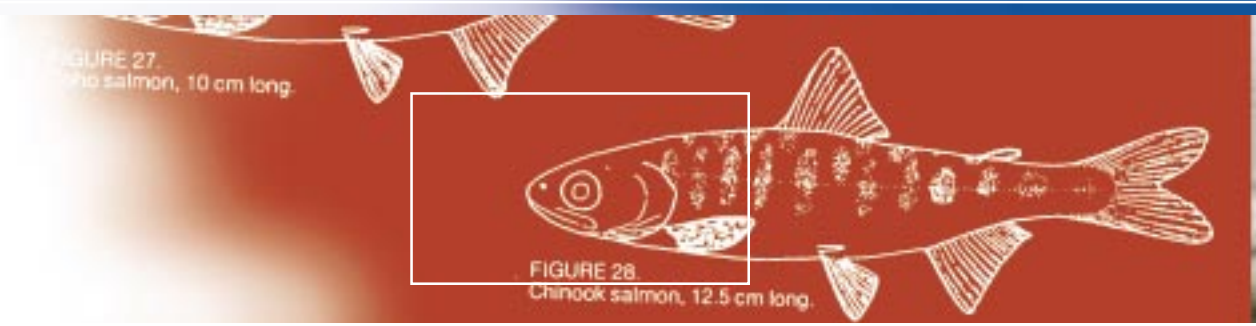
First Nations Bands / Organizations

Adams Lake Band
Ahousaht First Nation
Bonaparte Indian Band
Campbell River Indian Band
Cape Mudge Indian Band
Cariboo Tribal Council (CTC)
Champagne and Aishihik First Nations (CAFN)
Ditidaht First Nation
Fort Rupert Band
Gwa-Sala-'Nakwaxda'xw Band
Haida Fisheries Program
Haida Tribal Council
Homalco First Nation
Hupacasath First Nation
Huu-ay-aht First Nation
Kitasoo Band

Katzie First Nation
Kitselas Indian Band
Kitsumkalum Indian Band
Ko'p thut Society
Kwakiutl Band
Kwakiutl District Council (KDC)
Kwanlin Dun First Nation (KDFN) and Atsa Ku Camp
Kwantlan Indian Band
Kyuquot Band
Kyuquot Management Board
Lheidli T'enneh First Nation
Mowachat First Nation
Musqueam Fisheries
Musqueam Indian Band
Nanaimo First Nation
Nanoose First Nation
Nicola Tribal Council
Nimpkish Resource Management Board (NRMB)
North Thompson Indian Band (NTIB)
Nuu-chah-nulth Tribal Council (NTC)
Nuxalk Band
Okanagan First Nation
Okanagan Nation Fisheries Commission (ONFC)
Osoyoos Indian Band
Owikeno First Nation (OFN)
Pacheedaht First Nation
Penticton Indian Band
Seabird Island Band
Sechelt Indian Band (SIB) and Res. Management Division
Shuswap Bands
Shuswap Nation Fisheries Commission (SNFC)
Skeena Native Development Society
Skeetchestn Indian Band
Soowahlie Band
Spallumcheen First Nation
Squamish Nation
Stl'atl'imx First Nation
T'Souke First Nation
Tahltan First Nation
Tl'azt'en Nation and Tl'azt'en Fisheries Centre
Tla-o-qui-aht First Nation (TFN)
Tr'on dek Hwech'in (TH) First Nation
Tseycum Band of the WSANEC First Nation
Upper Nicola Indian Band
Wet'suwet'en First Nation
Wet'suwet'en Fisheries
WSIKEM and TENTEN Creeks Stewardship Project
Yale First Nation (YFN)
YFN Fisheries Stewardship Authority
YFN Government Centre

Non-Government Organizations

Abbotsford Streamkeepers (ASK)
Alberni Valley Enhancement Association (AVEA)
Allouette River Correctional Centre
Alouette Communications Task Team (ACTT)
Alouette River Management Society (ARMS)
Backyard Habitat
Baker Creek Enhancement Society (BCES)
Bamfield Marine Station (BMS)
Bamfield Streamkeepers (BSK)
BC Conservation Foundation (BCCF)
BC Environment Youth Team
BC Lake Stewardship Society
BC Salmon Farmers' Association
BC Wildlife Federation
Bearskin Bay Streamkeepers
Beecher Creek Streamkeepers
Bella Coola Rod & Gun Club
Bella Coola Watershed Restoration Partnership
Bertrand Creek Enhancement Society (BCES)
Bilston Watershed Habitat Protection Association
Britannia Heritage Shipyard Society
British Columbia Institute of Technology (BCIT)
Bulkley Morice Salmonid Preservation Group
Burnaby Lake Systems Project (BLSP)
Burnaby Mountain Community Corporation
Burnside Gorge Community Association
Camosun College & Youth Options
Campbell River Community Fisheries Committee
Campbell River Lodge
Canada Tree Foundation
Canada Trust - Friends of the Environment
Canadian Columbia River Inter-Tribal Fisheries Commission (CCRITFC)
Canadian Wildlife Service
Capilano College
Carihi Secondary High School
Cattlemen's Association
Cecilia Creek Clean-up Committee
Central Coast Fisherman's Protective Assoc. (CCFPA)
Chilliwack River Action Committee
Chown Brook Salmon Enhancement Group
Christina Lake Stewardship Society
Coastal Communities Conservation Society
Coastal Environmental Restoration Co-operative Assoc. (CERCA) & Coastal Enterprise & Resource Centre
Coastal Patrolman's Association
Colquitz Stewardship Education Project



Community Fisheries Development Centres
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 (CRWS)
Council of Marine Carriers
Courtland-Hastings Agricultural Preservation Society
Craigflower Management Forum
David Suzuki Foundation
Denman Conservancy Association
Discovery Coast Greenways Land Trust
Discovery Coast Wetlands Restoration Project
Dove Creek Streamkeepers
Ducks Unlimited
Eagle Creek Streamkeepers
Earl Marriott Secondary School
Environmental Tech Coop Program
Fanny Bay Salmonid Enhancement Society
Federation of BC Naturalists (FBCN)
Finlay Creek Streamkeepers
Fish & Wildlife Club (Simms Creek Streamkeepers)
Fish, Wildlife & Recreation (FWR) Program
FishAmerica Foundation - USA
Fisheries Renewal Partnership - Comox Valley Group
Fraser River Estuary Stewardship
Fraser River Fishermen Society (FRFS)
Fraser Valley Regional Watersheds Coalition
Friends of Bowker Creek
Friends of Cat Stream Community Group
Friends of Mt. Douglas Park Society
Ganges Fishermen's Association
Georgia Basin Ecological Assessment & Restoration Society
Girl Guides of Canada
G-N School
Gold River Chinook Project Society
Goldstream Hatchery
Goldstream Volunteer Salmonid Enhancement Association (GVSEA)
Gorge Tillicum Community Association
Gorge Waterway Action Society
Gowgaia Institute
Habitat Conservation Trust Fund (HCTF)
Hagen / Kennes Stewardship Group
Hagen Creek Kennes Watershed Project
Haida Gwaii Marine Resources Group Association
Harewood Family of Community Schools
Hart (Washer) Creek Watershed Stewards
Hartley Bay Community
Headquarters Creek Streamkeepers
Hecate Strait Streamkeepers (HSS)
Hope Search & Rescue
Horsefly Board of Trade
Hoy Creek Hatchery
Hoy Scott Creek Streamkeepers
Hyde Creek Hatchery
Hyde Creek Streamkeepers
Inlet Navigation
Island Stream and Salmon Enhancement Association
Iverson Forest Management
John Howard Society
Kennedy Lake Watershed Stewardship Committee
Keogh River Watershed Restoration Project (WRP)
Kincolith Community
Kingfisher Environmental Interpretive Center Society
Kitasoo Community
Kitkatla Community
Landowner Environmental Assistance Program
Langley Environmental Partners Society (LEPS)
Lawn Hill Residents' Enhancement Group
Little Campbell Watershed Society (LCWS)
Little River Enhancement Society
Living and Learning School
Malaspina University-College
Maple Creek Streamkeepers
Maple Ridge Community Organizations
McIntyre Creek Hatchery
Mennonite Central Committee (MCC) - Ecoworks
Metlakatla Community
Millard/Piercy Watershed Stewards
Millstream Management Forum
Morrrison Creek Streamkeepers
Mountain Equipment Coop
Musqueam Watershed Restoration Project
Nanaimo Area Land Trust
Nanaimo City Centre Association
Nanaimo Fish & Game Club
Nanaimo Harbour Commission
Nanaimo Parks, Recreation and Culture Commission
Nanaimo River Salmonid Enhancement Project
Nanaimo Rotary Clubs
Narcosli Community
Nicola Watershed Stewardship & Fisheries Authority (NWSFA)
North Coast Fisheries Renewal Council
North Fraser Salmon Assistance Project (NFSAP)
North Graham Island Streamkeepers
North Island College
North Island Fisheries Initiatives (NIFI)
North Shore Streamkeepers
North Vancouver Island Aboriginal Management Society (NVIAMS)
North Vancouver Island Salmonid Enhancement Association (NVISEA)

North West Point Grey Residents' Group
Northcoast Fisheries Renewal Council
Northern Trollers Association
Northwest Brigade Canoe Club
Northwest Community College (NWCC)
Northwest Ecosystem Institute
Oona River Community Association (ORCA)
Oyster Bay Streamkeepers
Oyster River Enhancement Society (ORES)
Oyster River Watershed Management Committee (ORWMC)
Pacific Initiatives
Pacific Salmon Foundation (PSF)
Pacific Streamkeepers Federation (PSkF)
PacificSport
Parksville Lions Club
Parksville Qualicum Fish & Game Association
Pemberton Sportsmen's Wildlife Association (PSWA)
Pemberton Valley Sportsmen's Association
Pender Harbour District Wildlife Society
Point Grey Residents' Association
Port Hardy High School
Port Kells Community Association
Port Simpson Community
Portuguese Creek Watershed Stewards
Prince Rupert Community
Punchaw Cattleman's Association
Quadra Fishing Guides
Quadra Island Salmon Enhancement Society (QISES)
Quadra Seniors
Quatse River Fish Hatchery
Queen Charlotte Enhancement Group
Queen Charlotte Islands (QCI) Salmon Unlimited Society
Queen Elizabeth Secondary School
Quesnel River Watershed Association
Ravine Park Hatchery
Real Estate Foundation
Regional Aquatic Management Society (RAMS)
Restoration of Natural Systems Program (UVic)
River Springs Salmon Enhancement
Rivers Heritage Center
Rivers Inlet Partnership Group
Rivers Inlet Restoration Society (RIRS)
Rivers Inlet Watershed Stewardship Partners & Associates
Rivers Inlet/Hakai Pass Sortfishing Association (RIHPSA)
Royal Roads University
Salmon in the City
Salmon River Enhancement Society (SRES)
Salmon River Watershed Society (SRWS)
Salt Spring Centre
Salt Spring Island Parks & Recreation Commission
San Juan Salmonid Enhancement Society
School Districts
Scouts Canada
Shorekeepers Stewardship Group
Sierra Club of BC
Sir Alexander Mackenzie Secondary School (SAMMS) Forestry Class
Smith Inlet Partnership Group
Society for the Protection of Ayum Creek
Sooke Salmon Enhancement Society
South Island Aquatic Stewardship Society (SIASS)
South Thompson Watershed Council
South Vancouver Island Streamkeepers
Sport Fish Advisory Board
Spruce City Wildlife Association
Squamish Estuary Conservation Society
Squamish River Watershed Society
Squamish Trails Society
SRM Levelton
Steelhead Society of BC
Stoney Creek Environmental Committee (SCEC)
Stoney Creek Environmental Work Group (SCEWG)
Stoney Creek Stormwater Plan Steering Committee
Storie Creek Streamkeepers
Streamkeepers North Society
Stuart/Takla Fish-Forestry Interactions Study (STFFIS)
T. Buck Suzuki Environmental Foundation
Tahsis Salmonid Enhancement Society
Tatchun Weir Staff
Terrace Kitimat Partners for Salmonids Group
Terrace Salmonid Enhancement Society
Thompson Basin Fisheries Council (TBFC)
Thornton Creek Enhancement Society
TLC The Land Conservancy of BC
Tlell Watershed Society (TWS)
Toboggan Creek Salmon & Steelhead Enhancement Society
Tofino Creek Hatchery
Tofino Salmonid Enhancement Society
Tombstone Steering Committee
Trout Unlimited Canada (TUC)
Tsolum River Restoration Society (TRRS)
Tsolum River Streamkeepers
Tsolum River Task Force
Turtle Island Earth Stewards
UBC Research Farm
Unemployed Fishermen

United Fishermen and Allied Workers' Union
University of Victoria (UVic)
Upper Bulkley River Roundtable (UBRR)
Upper Island Youth Services
Vancouver Foundation
Vancouver Urban Streams Committee
Veins of Life Watershed Society (VOLWS)
Victoria Esquimalt Harbours Environment Action Plan
Victoria Natural History Society
Walnut Grove Senior Secondary School
West Coast Sustainability Association
Whitehorse Correctional Centre (WCC) & Inmate Fund
Whitevalley Comminity Resource Centre
Wildlife Together - USA
Willow Creek Streamkeepers
Wolf Ranch
Wood Street Centre Experiential Programs
Wood Street School
World Fisheries Trust (WFT)
Woss Community Hatchery
Yale Fishwheel Winter Project
Yukon College
Yukon Conservation Society (YCS)
Yukon River Commercial Fishing Association (YRCFA)
Yukon River Panel's Restoration and Enhancement Fund
Yukon Salmon Committee (YSC)
Yukon Schools
Yukon Youth Conservation Corps (Y2C2)

Corporate Groups

Alpine Backhoe Services Ltd.
Aquatic Techniques Consulting
BC Hydro
Big Bin Rentals
Bowman & Associates
Brocor Contracting
Canada Trust - Friends of Environment
Canadian Forest Products Ltd. (CFP)
Canfor Ltd.
Centra Gas BC Inc.
Coastal Forest Industry
Cowichan Hydraulics Ltd.
Discovery Foods
DNA Enterprises
D.R. Clough Consulting
EBA Engineering Consultants Ltd.
Elk Falls Pulp Mill
Enlightening Communications
FishTech Consulting
Fraser Port
Fraser River Rafting
Gawley & Sons Contracting
Hanna Construction
Harbour City Dive Co.
Harmac Pacific
HCI Stanchem
Howard Johnson Harbourside Hotel
Hub City Paving
Imagecraft Ltd.
International Forest Products Ltd. (Interfor)
Island Truss Ltd.
J.A. Taylor & Associates
J.C. Lee & Associates
J.S. Jones Timber
Jones Construction Ltd.
Ken Grieve Excavating Ltd.
Klassen Advertising & Design
Lanarc Consultants Ltd.
Larry Tucker Logging
LGL Ltd.
M.C. Wright & Associates
MidCoast Aquatics
Milner Trucking & Excavating
MTE Inc. Consultants
NorthWest Naturescapes
NW Hydraulics
PacificSport
Patagonia
Port North Fraser
Port of Vancouver
R.C. Case & Associates
Raven Forest Products Ltd.
Redden Net Ltd.
Regen Contracting
REM Contracting Ltd.
Renewal Investment Corp.
Riverboat Adventures
Savona Enterprises
SeaStar Biotech Inc.
SRM Levelton
Stone Crop Alpaca Farm
Summit Environmental Consultants
Sunset Environmental Services
Sunshine Coast Partner Group
Symbios Restoration Ltd.
T-Buck Suzuki Nursery
Terminal Forest Products
TimberWest Forest Products
Times Colonist
Triton Environmental Consultants Ltd.
VanCity Enviro Fund
Western Forest Products (WFP) Ltd.
Weyerhaeuser Ltd.