Canada/Newfoundland Cooperation Agreement for Salmonid Enhancement and Conservation

Habitat Restoration and Improvement Program
Summary Reports: 1992 - 1997

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Table of Contents

I. CASEC: An Introduction 1

II. Habitat Restoration and Improvement Program Review 1

III. Habitat Restoration and Improvement Yearly Reports. 2

IV. Geographic Distribution 2

Appendix A - Proposal Evaluation Criteria/ Rating Form

Appendix B - Statistics

I. CASEC: An Introduction

On October 9, 1992, a five year, $21 million Cooperative Agreement for Salmonid Enhancement and Conservation (CASEC) was signed by Canada and the province of Newfoundland and Labrador. The principle objective of the Agreement consisted of maximising the economic benefits to the province and to the recreational salmonid fishery (by improving and maintaining stocks), and improving the overall angling experience.

Funding for the Agreement consists of the following five programs. The programs are intended to rebuild and develop the salmonid resource and its habitat:

(1) Stock Assessment
(2) Salmonid Enhancement
(3) Cooperative Enforcement
(4) Planning and Industry Development
(5) Habitat Restoration and Improvement

CASEC consists of government expertise and funding, in combination with public participation. The projects are sponsored and delivered by third-party groups, such as conservation organizations, community and regional development associations, and Native groups.

The leading agencies for the administration of the Agreement are the federal and provincial Department of Fisheries and Oceans. These departments, together with the Atlantic Canada Opportunities Agency and the provincial Department of Tourism and Culture, have formed a joint management committee to develop and implement projects under the Agreement.

II. Habitat Restoration and Improvement Program Review

1. Introduction

The Habitat Restoration and Improvement program of CASEC has a funding allocation of $2.9 million. The main object of this program is to increase the size of salmonid stocks for use in the recreational fishery by **restoring** and **developing** the habitats that support salmonids.

There are five basic elements of the Habitat Restoration and Improvement Program, including:

(1) Habitat Inventory

- for the identification of restoration and improvement opportunities; after completion, an evaluation of the area will be completed.

(2) Habitat Restoration

- evaluation of damages to habitat due to historic foresting operations and appropriate corrective measures will follow if necessary

(3) Stream Obstruction Removal

- partial and complete obstructions to fish migration will be removed to open up new habitat to migrating fish and to reduce poaching during low water levels

(4) Stream Improvement Activities

- a variety of improvement techniques are used in streams that have been altered or degraded

(5) Habitat Maintenance and Awareness

- various methods are used to maintain existing habitat and both specific groups and the general public will be informed of the value of habitat and its linkages to fish production

(6) Support Requirements

- the planning, co-ordination, delivery, and evaluation of habitat improvement and restoration

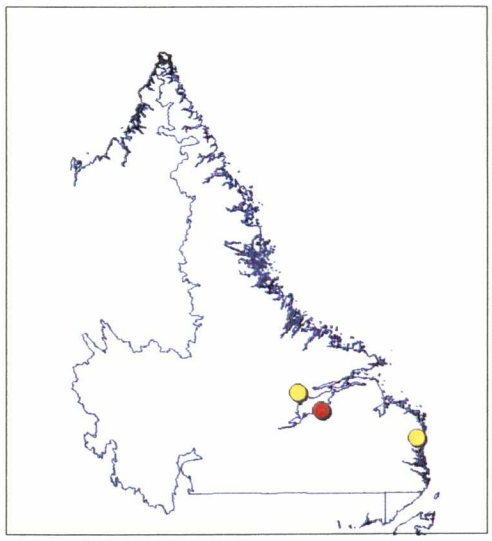
III. Habitat Restoration and Improvement Yearly Reports

This report is broken up into separate units, each unit comprising the activities of the fiscal year in question. Each section contains information on the proposal evaluation and approvals for the given year, administration and delivery, statistics, and a review each of the sponsor groups final report.

IV. Geographic Distribution

The projects funded under the Habitat and Restoration Program were widely distributed throughout the province of Newfoundland and Labrador. The figures in this section illustrate the general location of the CASEC projects since 1992. In addition, each year report has its own map, highlighting the general locations for the specific year in question.

CASEC
Habitat Restoration and Improvement Projects



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- 1992-1994
- 1994/1995
- 1995-1996
- 1996-1997

Canada/Newfoundland Cooperation Agreement for Salmonid Enhancement and Conservation

Habitat Restoration and Improvement Program
Summary Report- 1993/1994

Submitted by: Sherry Nugent
CASEC Program Coordinator
Salmonid Association of Eastern Newfoundland

Table of Contents

I. Habitat Restoration and Improvement Program Review 1
1. Proposal Evaluation and Approval
2. Program Administration and Delivery

II. Habitat Improvement and Restoration Project Summaries 3

IV. Geographic Distribution 17

Appendix A - List of Project Reports

I. Habitat Restoration and Improvement Program Review

1. Proposal Evaluation and Approval

The Habitat Restoration and Improvement Program received 30 applications for CASEC funding in 1993. Approximately 83% of the proposals received originated from development associations and conservation groups. The remaining 17% were produced by government agencies, native councils, outfitters, or other groups. The proposals fell under the following program elements:

Habitat Inventory (identification of opportunities)	- 8
Restoration Related to Historic Forest Harvesting	- 3
Stream Obstruction Removal	- 2
Stream Improvement Activities	- 13
Stream maintenance and Awareness	- 3
Technical and Administrative Support Requirements	- 1
Total:	**30**[1]

The proposals were reviewed as per established application criteria (see Appendix 1 at the end of this report) by both federal and provincial government personnel. All proposals underwent a review by the corresponding Area Habitat Coordinators and by the Regional Office staff of the Marine Environment and Habitat Management Division, Science Branch, DFO. Following the review, 15 applications were deemed ineligible. A further review was undertaken by the Coordinating Committee and the Management Committee of CASEC. The program budget for 1993 consisted of funding for 15 proposals.

2. Program Administration and Delivery

The CASEC Management Committee approved a program budget of $449,842. Of this budget allocation, $390,447 was allotted for direct sponsor funding. The remaining $59,395 was used for various program delivery expenses; including travel, helicopter rentals, printed materials, habitat database development, etc.

Once the approved list of proposals was released, meetings were held with successful sponsor groups to develop budgets and discuss project activities. Project sponsors were required to sign a Contribution Agreement which highlighted project strategies, funding allocation, and requirements of the sponsor group.

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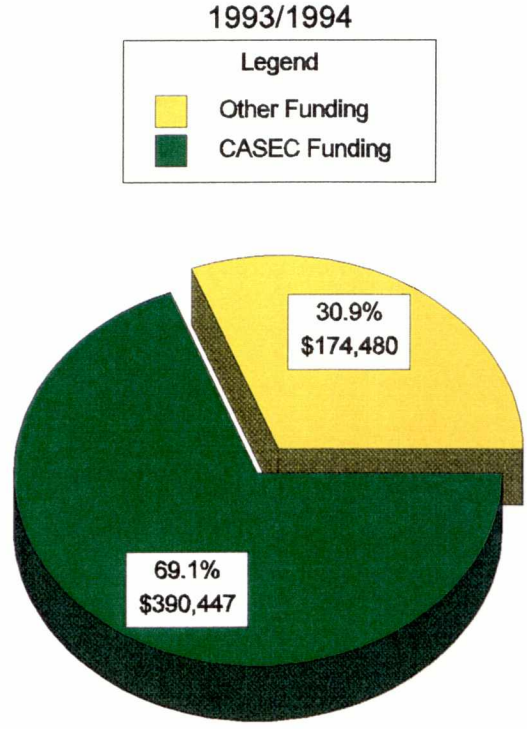
[1]In the 1992/1993 FY, only one project was approved (#3001). This report will be included in the 1993/1994 report summary.

Progress reports and financial reports were required on a monthly basis and a detailed final report (including relevant pictures, maps, etc) was required at project completion. The final reports were circulated to federal and provincial personnel for comments and approval. If the report met the criteria established in the Contribution Agreement, final payment was released.

Project sponsors were encouraged to secure funding from sources other than CASEC. If this was not possible, sponsors were asked to make an "in-kind" or voluntary project contribution (usually in the form of project administration or equipment donation). Approximately 31% of the total project costs were provided by sources outside CASEC.

Habitat Restoration and Improvement



II. Habitat Improvement and Restoration Project Summaries

The following final report summaries provide general information on the work preformed by the proponents. Waldron's River Codes have also been included. Detailed accounts of project activities, results, recommendations, etc. can be found in the original final reports (See Appendix A for list of final reports). Further information can be obtained from the Marine Environment and Habitat Management Branch, DFO or the provincial Department of Fisheries and Aquaculture.

3002 Abitibi-Price Northwest Gander River # 09086100

In 1993, Abitibi-Price Co. Ltd. received funding to identify areas on the Northwest Gander River that were in need of habitat restoration and improvement. The program also consisted of the creation of a demonstration site to educate forest workers on the need to reduce erosion and sedimentation around water bodies, and make them aware of the mitigative measures required.

The officials identified nine sites on the Northwest Gander that required restoration of existing bridges and/or culverts to ensure sedimentation and erosion would be controlled. These included sites on: Fudges Brook, Bear Brook, Great Gull River, Eastern Pond Brook, Unknown Brook, South West Branch, Small Brook, and Southwest Gander.

The sites were individually evaluated for potential negative impacts due to the flow of sedimentation into the waterways of the Northwest Gander. Various mitigation techniques were used to alleviate such situations.

The final report entitled Northwest Gander River Restoration and Demonstration Project was written by Donald Brian, coordinator of planning for Abitibi-Price Co. Ltd. The report describes the exact work performed at each site, and includes maps with the labelled location of each of the nine sites. CASEC Funding: $ 50,000.

#3004 Central Development Association Bound's Brook #47046600

The sponsor group had planned to conduct remediation at the mouth of Bound's Brook in Bellburns to improve fish passage. The local residents opposed the work however, and the project was subsequently cancelled. CASEC funding originally allocated for this project: $9,000.

#3006 Environmental Resources Management Association Survey of Tributaries of the Exploits River # 07077900

The Exploit's River watershed is the largest in insular Newfoundland covering an area of approximately 12,000 square kilometres. The watershed is approximately 75 km wide and 280 km long with the longest axis aligned in a southwest to northeast orientation.

Abitibi-Price Co. Inc. is a major logging company located in the Grand Falls-Windsor area. In the past, before the habitat provisions of the Fisheries Act were strengthened, the company used the local brooks and streams to transport logs from cutting areas to the Exploits River. To facilitate this, brooks and tributaries were often channelized or diverted, and bridges, dams, and culverts were constructed. Since such practices can cause serious damage to salmonid populations, the Environmental Resources Management Association (ERMA) believed that many areas of the Exploits River were in need of habitat restoration.

In 1993, ERMA completed an in depth survey to identify and evaluate stream obstructions for future habitat restoration work. The tributaries included in the survey were South Twin Brook, North Twin Brook, Mary Ann Brook, Harpoon Brook, and Pamehac Brook.

ERMA discovered that South Twin Brook, North Twin Brook, and Mary Ann Brook did not have any major obstructions. However, a fish ladder on Mary Ann Brook had some structural deterioration and accumulation of debris. There were several obstructions on Harpoon Brook and Pamehac Brook including beaver dams, fallen trees, old wooden dams, and pulpwood accumulation which caused serious blockages in some culverts.

Future recommendations included the removal of fallen trees, old beaver dams, unused wooden dams, and the continued monitoring of pulpwood accumulation in culverts and fish ladders.

The final report entitled Habitat Restoration Survey - Tributaries of the Exploits River contains detailed reports of the survey, labelled maps, slides, photos, tables of stream dimensions, and was written by Kimberley Penney and David Seaward. CASEC Funding: $20,000.

Pulpwood accumulation on Harpoon Brook.

#3007 Gander River Management Association
Gander River #09086100

The Gander River watershed is approximately 96 miles in length, and represents one of the most prominent salmon rivers in Newfoundland and Labrador. This river system has provided considerable economic and social benefits to the people of the province, particularly those in the central region.

In 1993, the Gander River Management Association (GRMA) submitted a proposal to do a detailed habitat assessment survey of the Gander River watershed and make corresponding recommendations for habitat restoration and improvement. These suggestions were used as the basis for future habitat improvement work and became an important component of the overall Gander River Management Strategy.

The committee surveyed and inventoried approximately 85% of the watershed, including various tributaries of the main stem of the Gander River, tributaries flowing into Gander Lake, Southwest Gander River and tributaries, and Northwest Gander River and tributaries.

During the survey, several significant obstructions were observed, such as bank and soil erosion around river and stream edges, major waterfalls, old and/or improperly placed dams and culverts, and damaged or collapsed bridges.

Among the resulting recommendations included monitoring for high levels of soil erosion and replanting of vegetation, removal or blasting of falls creating problems, total or partial removal of dams and reinstallation of culverts, installation of siltation filters in logging areas, stream channelization in eroded areas, and removal and channelization of stream blockages.

The final report entitled Gander River Habitat Study: A Study To Identify Restoration And Improvement Opportunities For Salmonoid Habitat was written by Melvin Wheaton. The report gives descriptions of each site and corresponding problems or obstacles, as well as the proposed recommendations for habitat improvement. Also included are photos of the obstructions to fish passages, maps of the various areas surveyed on the Gander River, as well as statistics on bottom composition, rearing and spawning areas. CASEC Funding: $ 30,000

Collapsed Bridge on Clarkes Brook

#3008 Greater Lamaline Area Development Association Habitat Restoration/Conservation Project

The Greater Lamaline Area Development Association (GLADA) is a volunteer, non-profit organization that represents various communities on the Burin Peninsula from Point May to Little St. Lawrence. In 1993, the Association was successful in obtaining funding to carry out habitat restoration work in several salmon rivers in the Greater Lamaline area; including Piercy Brook, Salmonier River (# 32075200), Taylor's Bay River (# 32075200), White Horse Brook (a tributary of Taylor's Bay River), and North East Brook, Little St. Lawrence.

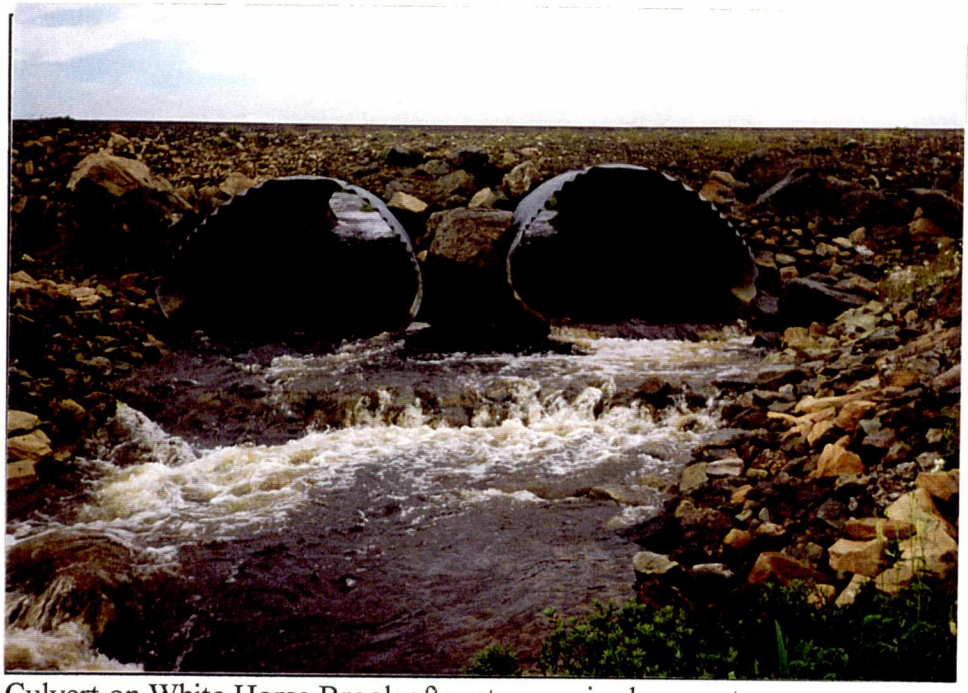
Most of the work performed involved manual labour, with the exception of the removal of automobile motors and other car parts from Piercy Brook, Salmonier River, and Taylor's Bay River, at which time a tractor was employed.

The restoration also involved blasting at a waterfalls on Taylor's Bay River to allow salmonid passage during low water levels, construction of a stone weir to raise water levels on two existing culverts on White Horse Brook, clearing of a blocked channel passage on Salmonier River, and general clean up and boulder removal (where required) on other rivers and tributaries.

Future recommendations included continued maintenance of the rivers and clean up and restoration of other river systems in the Greater Lamaline area.

The final report entitled Habitat Restoration/Conservation Project was written by the project supervisor Donald Clarke. The report includes summaries of the rivers surveyed, before and after colour photos, and labelled maps of the rivers. CASEC Funding: $ 28,000.

Culvert on White Horse Brook before stone weir was completed.



Culvert on White Horse Brook after stone weir placement.

#3010 Newfoundland and Labrador Environment Association Habitat Improvement On Various Cape Shore Rivers

In 1993 the Newfoundland and Labrador Environmental Association (NLEA) was successful in receiving funding for habitat improvement on several rivers in the Cape Shore area. The purpose of this project was the restoration of salmonid habitat damaged by accumulation of natural or man made debris and by bank erosion. Restoration work was completed on seven rivers and numerous tributaries on Placentia Bay's east side.

A complete clean up was performed on Great Barasway River and three of its tributaries. The job included debris removal resulting from logs jams and blown down trees. River flow was restored at the river's headwaters where gradual diversions had made some areas too shallow to appropriate salmonid migration.

The NLEA performed major habitat improvement work on Little Barasway River. In addition to debris removal, there was severe bank erosion on several parts of the river. Bank stabilization measures were utilized to minimise future erosion in rock slide sites.

Debris removal and general river improvement was also executed on Patrick's Cove River, Cuslett River, Ship Cove River, Gooseberry Cove River, and Glenscove River.

The final report entitled A Report From the Newfoundland and Labrador Environmental Association on the Cape Shore Restoration Work, was written by Stan Tobin. The report includes details of the work completed during the project, photos, and a public awareness commentary. CASEC Funding: $30,000.

#3016 Salmonid Association of Eastern Newfoundland Salmonier River # 28016900 / Colinet River # 28019200

The Salmonid Association of Eastern Newfoundland (SAEN) successfully received funding in 1993 to survey and carry out remedial projects on both Salmonier River and Colinet River. The lower sections of both these rivers showed limited habitat diversity. These areas provided little in the way of shelter, shade, or food for salmonids. The proposed remedial activity was intended to increase the heterogeneity of the holding pools.

Due to its proximity to a main thoroughfare, Salmonier River is very accessible to anglers, and has become the most heavily fished salmon river per unit length in Newfoundland. Colinet River, also a scheduled salmon river, was closed to angling at the time of this project due to habitat restoration work. Prior to commencing work, a small public meeting was held to inform the public of the intended remedial work.

Six pools on Salmonier River were surveyed, characterized, and habitat profiles were drawn. However, due to public concern, remedial work was not completed on this river. However, the pathways and river banks were cleared of garbage and debris, and fish activity was monitored.

Three pools in Colinet River were surveyed and mapped. Remedial work was conducted on two of the pools, locally known as Cat House Island Pool and First Island Pool. The pools required backing up the water flow to increase the availability of cover and shelter areas for fish.

SAEN made several future recommendations, including 1) completion of the planned remediation for the pools surveyed in Salmonier River, provided a public consensus is met. 2) removal of any obstacles identified in the surveys, and 3) conduct further surveys and remediation on other tributaries in the area.

The final report entitled Report of the Salmonid Association of Eastern Newfoundland on Remedial Work and Surveys Carried Out on St. Mary's Bay North Rivers, was written by John Patey, Project Supervisor and Richard Whitaker, Program Director. The report includes explanations of surveys and remedial work completed, maps, aerial photographs, reconnaissance and topographic surveys, colour photos of river sections, work schedules, and copies of remediation permits and reference documents.
CASEC Funding: $30,000.

#3017 Salmonid Association of Eastern Newfoundland Habitat Improvement Videos

The Salmonid Association of Eastern Newfoundland (SAEN) was successful in receiving funding to complete a series of videos on habitat improvement. The videos were produced to provide comprehensive, instructional guidelines for groups considering, or already undertaking habitat improvement projects.

In 1993, SAEN completed the first of the habitat improvement video series. This video consists of comprehensive descriptions of low head dams, boulder placement, and bank stabilization. The programme provides significant information on the precautions, requirements, installation, and future considerations associated with each described habitat improvement technique.
CASEC Funding: $28,000.

#3022 White Bay North Development Association
Pinsent's Brook #01056200

In 1993, the White Bay North Development Association submitted a proposal to remove debris and blockages from Pinsent's Brook. The Association worked closely with Fisheries Officers to ensure that proper techniques were used and fish habitat was not damaged.

The work crew had developed following guidelines to ensure habitat improvement activities were completed properly. The problem area was located and photographed and blockages were removed. Lastly, photos were taken of the finished work.

The proponents made several recommendations, including the removal of beaver dams, enforcement of forestry laws to prevent log cutting close to rivers banks, and also an annual river clean up, consisting of a student program to record and clear up problem areas in the river.

The final report entitled Pinsent's Brook Salmonid Enhancement Program was written by the project supervisor Kirby Decker. The report includes detailed explanations of work activities, photographs, and labelled maps of Pinsent's Brook. CASEC Funding: $15,000.

Woody debris accumulation on Pinsent's Brook before removal.

After woody debris was removed from Pinsent's Brook.

#3023 White Bay Central Development Association Salmon River # 03008500

In 1993, the White Bay Central Development Association (WBCDA) received funding to monitor the effectiveness of stream remedial procedures. The monitoring study was developed jointly by WBCDA and the Habitat Management Division and Science Branch at DFO.

The scientific study determined the stability of various remedial structures, the effective changes resulting from installation of such structures in relation to instream width, depth, channel configuration, stream cover, and bottom substrate. The WBCDA also determined changes in the species composition, age class composition, juvenile density, and the biomass due to habitat rehabilitation.

The procedures examined installation of low head dams, the reintroduction of boulders and boulder groupings, and various revegetation strategies. Biological sampling conducted in this study illustrates the effectiveness of habitat restoration procedures.

Future recommendations included further electrofishing in 1994 along the same test sites and collect the same physical cross-sectional data as collected in 1993. In addition, a velocity profile should be collected across the same cross-sectional transect lines.

The final report entitled Effect of Instream Structures on Salmonid Habitat and Populations on The Salmon River, Newfoundland was written by M.C. van Zyll de Jong. The report includes descriptions of the methods and protocols followed, summary tables of sampling and electrofishing results, an explanation of the restoration plan, and a bibliography of the works cited. CASEC Funding: $ 35,000.

Installation of low head dams on Salmon River.

#3024 White Bay Central Development Association Big Pond Brook #04015600

The White Bay Central Development Association (WBCDA), under the guidance of the federal Department of Fisheries and Oceans, conducted a stream survey on Big Pond Brook (also known as Compton's Brook). Observations were made in 100 meter stream units to estimate and identify bottom composition and stream habitat types. Levels of bank vegetation and erosion were also measured.

The WBCDA made several recommendations on completion of the stream survey including: 1) the development of habitat rehabilitation strategy with the Department of Fisheries and Oceans, 2) commencement of habitat rehabilitation in the field season of 1994, and 3) development of a technical/educational centre in Big Pond Brook to serve as an outreach centre for all projects in the White Bay Central area.

The final report entitled Big Pond Brook: Stream Survey and Recommendations for Habitat Rehabilitation; White Bay Central Development Association; Newfoundland, Canada was written by Howard Canning and includes details of the stream survey; statistics of stream habitat characteristics, bank vegetation, bottom substrate, and bank stability; and colour slides.
CASEC Funding: $17,600.

#3027 Corner Brook Stream Development Committee Corner Brook Stream #44024200

Corner Brook Stream is located partially in the City of Corner Brook on the West Coast of Newfoundland. The stream is 17 km long and winds through the valley and empties into the Humber Arm of the Bay of Islands.

In July 1993, the Corner Brook Stream Development Committee (CBSDC) developed a management plan to restore the fish habitat of Corner Brook Stream. This strategy included an in depth habitat survey and creation of urban greenspaces through the development of river side walkways.

Corner Brook Stream was surveyed from its mouth in the Bay of Islands to Three Mile Dam (a distance of approximately 5.6 km). The stream was surveyed according to procedures in the Department of Fisheries and Oceans manual Small Stream Surveys for Public Sponsored Habitat Improvement and Enhancement Projects.

The CBSDC discovered numerous physical alterations in the stream which occurred through the construction of dams, poor construction practises infringing on sensitive buffer zones, chemical alterations from mill activities, insufficient waste management, and the general attitude that streams are disposal sites for garbage.

The CBSDC found that although Corner Brook Stream does not currently provide the necessary habitat for Atlantic Salmon, it does provide suitable habitat for resident Brook Trout. It is hence recommended that biologists and engineers be consulted on the appropriate course of action to improve upon the current quality of stream habitat.

The final report entitled Corner Brook Stream Feasibility Survey for Salmonid Enhancement was written by Tracey Freeman; Project Supervisor, and by Project Assistants Ray Humber and Leanne McCarthy. It included a detailed description of the survey results, labelled maps, tables of statistics, colour photographs, lists of materials, and the life cycle of Salmonids.
CASEC Funding: $ 16,000.

#3028 White Bay South Development Association
White Bay South Area Stream Survey

The White Bay South Development Association (WBSDA) was successful in receiving funding to conduct a detailed habitat survey of streams and rivers in the White Bay South area. The survey included Big Arm Brook, Corner Brook, Natlin's Brook, Little Chouse Brook, and Hampden River (# 04033600).

The survey consisted of data collection until the proponent reached the headwaters of a stream, or until they came to an impassable obstruction in the stream, at which time the work was discontinued. The sponsor group observed bank erosion, siltation, poaching, and lack of stream bank vegetation. They collected environmental information on water velocity, temperature, and depth.

Based on their findings, WBSDA made several future recommendations including the continued monitoring of the identified problem areas, clean up of siltation resulting from logging activities, and the continuation of the habitat survey of other rivers and streams in the White Bay South area.

The final report entitled Technical Report for the Enhancement and Conservation of Small Streams in the White Bay South Area of Newfoundland was written by Philip Osmond. The report includes a glossary of terms, a reference section, labelled maps, colour photos, and detailed results of each river survey. CASEC Funding: $ 20,000.

Siltation; a result of indiscriminate logging practises on Natlin's Brook.

#3029 Habitat Database Development
River Habitat Database Development

The Contribution Agreement recognised the need for the development of database software to assist in the computerization of stream survey data collected by the sponsor groups funded under the agreement. The database would allow groups participating in CASEC projects to easily enter stream data compiled during their surveys, and conduct summarization and interpretation as a component of their project. This may aid in the identification of additional habitat improvement opportunities. The database, after completion, was turned over to the federal and provincial components of the agreement to assist in project evaluation and the development of stream habitat databases. CASEC Funding: $ 10,000.

#3993 Habitat Coordination Project Coordinator

A program coordinator was employed by CASEC to serve as the contact person for the project sponsors and for both the federal and provincial departments of the cooperative agreement. In delivering the Habitat Restoration and Improvement Program, the coordinator provided the technical and managerial assistance required by the sponsor groups. This consisted of the development of appropriate budgets with the potential sponsors, setting up the corresponding Contribution Agreement, assessment of financial claims submitted by the proponents, and the continued monitoring of the projects. Training sessions were set up by the coordinator to inform the sponsor groups of proper habitat improvement techniques. Visits were also made to each site (approximately 3 per year) to insure that the Contribution Agreement was properly executed. CASEC Funding: $ 53,250.

III. Geographic Distribution

The projects funded under the Habitat Restoration and Improvement Program from 1992-94 were widely distributed throughout the province of Newfoundland and Labrador. The general location of the proponents is highlighted on the following map. Projects such as database development and program coordination are not included on this map.

CASEC
Habitat Restoration
Improvement Projects

APPENDIX A

List of Project Reports

BRIAN, DONALD. 1993. Northwest Gander River Restoration and Demonstration Project. Abitibi-Price Inc., Grandfalls-Windsor, NF. 5 p.

CANNING, HOWARD. 1993. Big Pond Brook: Stream Survey and Recommendations for Habitat Rehabilitation; White Bay Central Development Association. White Bay Central Development Association, Main Brook, NF. 10 p.

CLARKE, DONALD. 1993. Habitat Restoration/Conservation Project. Greater Lamaline Area Development Association, Lamaline, NF. 15 p. + appendices.

DECKER, KIRBY. 1993. Pinsents Brook Salmonid Enhancement Program. White Bay North Development Association, St. Anthony, NF. 6. + appendices.

FREEMAN, TRACEY, HUMBER, RAY, AND MCCARTHY, LEANNE. 1993. Corner Brook Stream Feasibility Survey for Salmonid Enhancement. Corner Brook Stream Development Committee, Corner Brook, NF. 50 p. + appendices.

OSMOND, PHILIP. 1993. Technical Report for the Enhancement and Conservation of Small Streams in the White Bay South Area of Newfoundland. White Bay South Development Association, Pollard's Point, NF. 39 p. + appendices.

PATEY, JOHN AND RICHARD WHITAKER. 1993. Report of the Salmonid Association of Eastern Newfoundland on Remedial Work Carried Out on St. Mary's Bay North Rivers. Salmonid Association of Eastern Newfoundland, St. John's, NF. 144p.

PENNEY, KIMBERLEY AND SEAWARD, DAVID. 1993. Habitat Restoration Survey-Tributaries of the Exploits River. Environmental Resources Management Association, Grandfalls-Windsor, NF. 36 p.

TOBIN, STAN. 1993. A Report From the Newfoundland and Labrador Environmental Association on the Cape Shore Restoration Work. Newfoundland and Labrador Environmental Association, St. John's, NF. 4 p.

WHEATON, MELVIN . 1993. Gander River Habitat Study: A Study To Identify Restoration and Improvement Opportunities for Salmonid Habitat. Gander River Management Association, Carmanville, NF. 40 p. + appendices.

VAN ZYLL DE JONG, MICHAEL. 1993. Effect of Instream Structures on Salmonid Habitat and Populations on the Salmon River, Newfoundland. White Bay Central Development Association. Main Brook, NF. 29 p.

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Submitted by: Sherry Nugent
CASEC Program Coordinator
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Table of Contents

II. Habitat Restoration and Improvement Program Review.....1
1. Proposal Evaluation and Approval
2. Program Administration and Delivery

II. Habitat Improvement and Restoration Project Summaries.....2

III. Geographic Distribution.....20

Appendix A - List of Project Reports

Appendix B - Workshop Agenda

I. Habitat Restoration and Improvement Program Review

1. Proposal Evaluation and Approval

In 1994, the Habitat Restoration and Improvement Program received 47 applications for CASEC funding. Approximately 72% of proposals originated from development associations and conservation groups. The remaining 28% originated from government agencies, native councils, outfitters, or other groups. The proposals fell under the following program elements:

Habitat Inventory (identification of opportunities)	- 14
Restoration Related to Historic Forest Harvesting	- 6
Stream Obstruction Removal	- 4
Stream Improvement Activities	- 19
Stream Maintenance and Awareness	- 3
Technical and Administrative Support Requirements	- 1
Total:	**47**

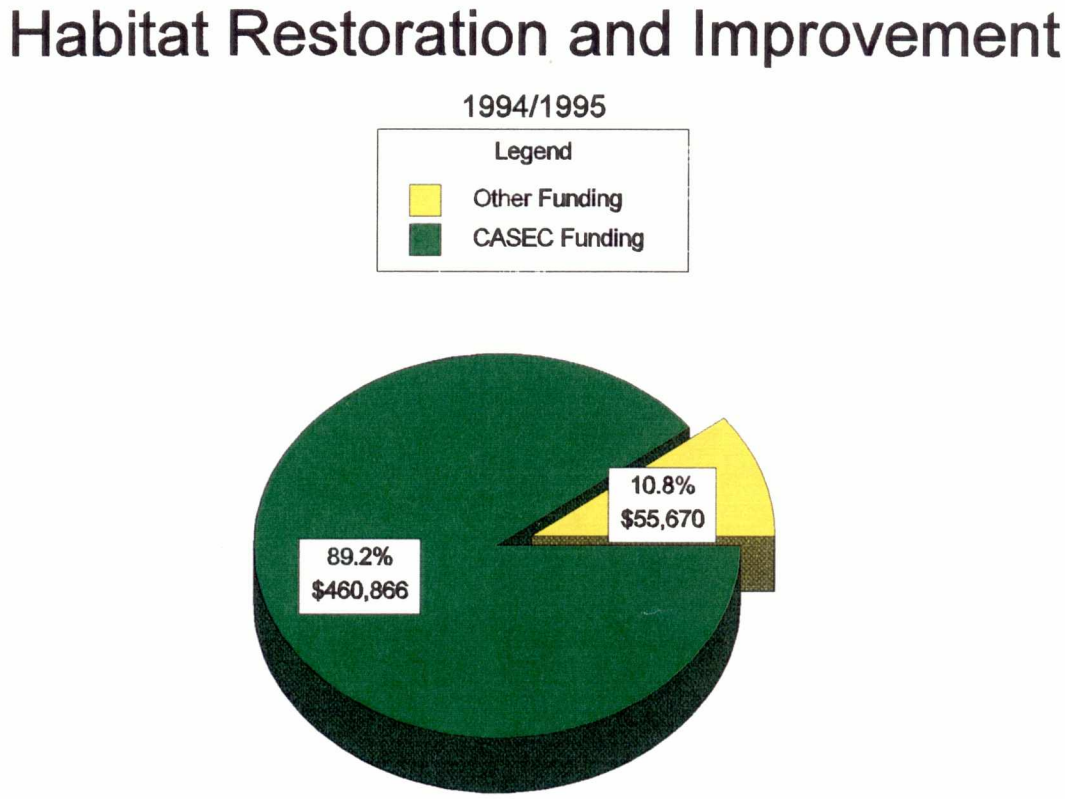
The proposals were reviewed as per the established application criteria (see Appendix 1) by both federal and provincial government personnel. All proposals underwent a review by Area Habitat Coordinators and by the Regional Office staff of the Marine Environment and Habitat Management Division, Science Branch, DFO. Following the review, 10 applications were deemed ineligible for funding. An additional 19 applications were considered eligible but were dropped because of budget restrictions. A further review was undertaken by the Coordinating Committee and the Management Committee of CASEC. The CASEC program budget provided funding for a total of 18 proposals.

2. Program Administration and Delivery

The CASEC Management Committee approved $501,866 for the Habitat Restoration and Improvement Program. Of the total budget funding, approximately $460,866 was allocated for direct sponsor group funding. The remaining $41,000 was used for various program delivery expenses such as travel, training manual production, helicopter rentals, etc.

Once the list of approved proposals was released, meetings were held with successful sponsor groups to develop budgets and discuss project activities. Project sponsors were required to sign a Contribution Agreement which highlighted project strategies, funding allocation, and the requirements of the sponsor group. Progress reports and financial reports were required on a monthly basis and a detailed final report (including relevant pictures, maps, etc) was required upon project completion. The final reports were circulated to federal and provincial personnel for comments and approval. If the report met the criteria established in the Contribution Agreement, final payment was released.

Project sponsors were encouraged to secure funding from sources other than CASEC. If this was not possible, sponsors were asked to make an "in-kind" or voluntary project contribution (usually in the form of project administration or equipment donation). Approximately 11% of the total project costs were provided by sources outside CASEC.



II. Habitat Improvement and Restoration Project Summaries

The following summaries provide general project information on the work performed by the proponents. Waldron's River Codes have also been included. Detailed accounts of project activities, results, recommendations, etc. can be found in the original final reports (See Appendix A for the list of final reports). Further information can be obtained from the Marine Environment and Habitat Management Branch, DFO or the Provincial Department Fisheries and Aquaculture.

#3101 Gander Bay-Hamilton Sound Development Association Ragged Harbour River 09088200

Twenty-six years ago, a diversion dam was build in Ragged Harbour River. The dam was constructed from a river bank to a point approximately 15-20 feet downstream from an island. Over the years, severe erosion on the end of the island resulted in the collapse of part of the bridge. The dam deterioration caused pooling below a falls on one side of the island. Migrating salmon became trapped in the pools during low water levels.

The Gander Bay-Hamilton Sound Development Association (GBHSDA) successfully received funding to remove the dam and replace it with a new one. GBHSDA used the existing structure as a temporary cofferdam while construction was completed immediately behind it. The sponsor group recommended extending the new diversion dam across the front of the island to avoid future erosion and bridge collapse.

The final report is entitled Ragged Harbour River Project; Building of Dam and was written by Allan Hicks, project foreman. The report includes detailed work schedules; recommendations for bridge improvement; various sketches; and photos. CASEC Funding: $29,000.

Old diversion dam before construction (downstream).

The old dam was used as a cofferdam as new dam was constructed.

New Diversion dam (upstream).

#3102 Bay St. George South Development Association
Little Crabbes River

Little Crabbes River begins in Ocean Pond and flows approximately 22 km before entering the main stem of Crabbes River. Little Crabbes River is one of the major tributaries of Crabbes River (#40008600).

In 1994, the Bay St. George South Development Association (BSGDA) received funding to make more habitat accessible to salmonids and to reduce erosion problems wherever possible. BSGDA removed several obstructions to fish migration including abandoned and occupied beaver dams, naturally occurring obstructions (such as blown down trees and debris), collapsed bridges, and obstructions resulting from indiscriminate logging practises.

The final report entitled Habitat Improvement, Obstruction Removal, Little Crabbes River was written by John MacPherson. It includes details of habitat improvement; colour photos; CASEC final report from 1993; letters of request; news letters; and maps. CASEC Funding: $ 24,331.

Woody obstruction on Little Crabbes River.

Little Crabbes River after woody obstruction has been removed.

#3104 White Bay Central Development Association Salmon River # 03008500

Salmon River is the site of a five year study implemented by the White Bay Central Development Association (WBCDA). The study is aimed at testing the effectiveness of habitat restoration techniques. Six monitoring stations were installed on Salmon River and pretreatment data was collected on various biological, physical, and riparian stream parameters.

The scientific study will determine the stability of various remedial structures and the effective changes resulting from installation of such structures in relation to instream width, depth, channel configuration, stream cover, and bottom substrate. The WBCDA also determined changes in the species composition, age class composition, juvenile density, and the biomass after habitat rehabilitation. The remedial procedures include: low head dams, reintroduction of boulders and boulder groupings, and various revegetation strategies. Biological sampling conducted in this study illustrates the effectiveness of habitat restoration procedures.

The main objectives of the project are: 1) test the effectiveness of restoration procedures by assessing juvenile production prior to and after remediation has taken place, 2) compare salmonid populations in restored brooks with those of unaltered control brooks, 3) map physical habitat changes in restored streams, and 4) act as a model; this project will provide the information on the most rationale approaches to habitat restoration in salmonid streams and provide guidelines for future projects.

Two years of data has been collected and preliminary results show significant changes to the population structure of residential species. It is thus recommended by WBCDA to continue this study through the life of CASEC to fully evaluate the stability and the long term effects of the remedial structures.

The final report entitled Salmon River Habitat Restoration Project Interim Report 1995 was written by Michael van Zyll de Jong, and includes details of methods and work areas, statistics tables, fish sampling statistics, labelled maps, and colour photos. CASEC Funding: $ 35,680.

#3109 Mokami Regional Development Association Smiths Brook (River code unavailable)

Smiths Brook is one of the tributaries of the Goose River watershed. Smiths Brook is approximately 25 km long, with widths of 30 ft at most points along the river.

The Mokami Regional Development Association (MRDA) received funding to remove a large timber bridge from Smiths Brook. MRDA also removed log jams and debris to facilitate salmonid migration. Most obstructions were removed manually with a chain saw. When channelization was necessary, it was accomplished by cutting a wide corridor through the obstruction to create passage.

Future recommendations included: 1) a complete habitat inventory survey of Smiths Brook, 2) bank stabilization procedures along several sections of Smiths Brook to prevent further erosion, and 3) installation of coffer dams along various sections of the brook.

The final report entitled Smiths Brook Habitat Enhancement Project was written by Wendell Hamel; Project Manager and includes a description of work performed; future recommendations; before and after photographs; and reference section. CASEC Funding: $ 19,500.

#3111 Gander River Management Association
Big Dead Wolf Brook

In 1996, the Gander River Management Association (GRMA) received funding to make existing habitat more available to salmonid stocks. There were a series of four falls on Big Dead Wolf Brook; a tributary of Gander River (# 09086100); which constituted a major obstruction to salmon migration.

GRMA lengthened naturally occurring pools, made channels concentrating water flow, and created other pools both at the top of and below the falls. The proponent also drilled and blasted an eight ton boulder which unclogged and lengthened a naturally occurring pool. During medium to high water levels, GRMA performed remediation on other areas of the river. A bridge on Clarkes Brook was removed and river banks in the area were stabilized with rock and vegetation to prevent ice damage. Bridges on Dead Wolf Brook and on Joe's Feeder were also removed.

The Gander River Management Association recommended 1) blasting holes in the first falls and in the second pool to make them deeper, 2) falls #4 should be viewed at low water level to ensure the water level is of sufficient depth, and 3) channel creation around the current waterfalls.

The final report is entitled Report on Work Done As Recommended by Gander Habitat Study Salmon Enhancement Project for Tributaries of the Gander River System and was written by Derrick Richards. The final report includes descriptions of remediation; colour photos; labelled maps; and sketches of the recommended channelization around the fourth falls.
CASEC Funding: $ 52,750.

Drilling rock on Big Dead Wolf Brook prior to blasting.

#3115 Grand Bank Recreation Committee
Grand Bank Brook # 33080400

Grand Bank Brook is located an the tip of the Burin Peninsula. There are 29 tributaries draining into the main stem, contributing to the system. The river system has only one use, which is to provide the town of Grand Bank with water.

In 1994, the Grand Bank Recreation Committee (GBRC) conducted a survey to determine the fish habitat, spawning areas, stream capacities, and the effect of man made obstacles and how they affect migrating fish populations.

The GBRC made several recommendations upon completion of the survey, including: 1) analyzing the survey data to determine the productive capacity of the brook; 2) clear a spillway in section 7 of debris and cement blockages; 3) check and clear the fish ladder on section 20 for debris accumulation on a regular basis; 4) construction of rock walls and/or replant vegetation on areas with bank erosion; 5) construction of a counting fence for salmonid assessment; 6) construction of low head dams in the flat upper areas of the river; and 7) upgrade an improperly placed culvert on tributary #3.

The final report entitled Grand Bank Brook Stream Survey was written by Harold Thornhill; project supervisor, and Wayne Bolt; representative of Grand Bank Recreation and includes written details of the survey; list of obstructions; labelled maps; stream survey statistics; tables; future recommendations; references; copies of letters; and colour photos.
CASEC Funding: $ 15,000.

#3116 Port au Port Indian Band Council Romaine's River #41013000

The Port au Port Indian Band Council (PPIBC) successfully received funding to complete obstruction removal on Romaines River and its tributaries. The PPIBC removed several inactive and active beaver dams, boulders, accumulations of woody debris, and they created channels through obstructions where necessary.

The association made several future recommendations including: 1) debris and woody removal in other areas of the river; 2) construction of fish ladders on large bridges and falls; 3) annual checks to ensure stability of structures and to monitor debris accumulation; 4) removal of dams that may have arose during the spring; 5) continued monitoring of beaver activities; 6) supplement spawning areas with gravel; and 7) bank stabilization measures to disallow any future loss of spawning areas.

The final report is entitled Romaine's River (1994) Salmonid Habitat Improvement and was written by Edward Felix. It includes detailed lists of obstructions; recommendations; permits; labelled maps; and colour photos. CASEC Funding: $ 17,000.

#3123 Bonne Bay Development Association Lomond River # 45039200

The Lomond River is situated partially within the boundaries of Gros Morne National Park on the west coast of Newfoundland. The Bonne Bay Development Association (BBDA) received funding to remove obstructions to migration on the tributaries located above the fishway on the Lomond River.

The BBDA removed several obstructions from the Lomond River including blown down trees, woody debris accumulations, inactive and active beaver dams, and man-made dams and structures. The association noted there does not seem to be much man-made or livestock interference with the river system with the exception of a few structures which were removed.

The group made several future recommendations including 1) replantation of streambed vegetation on Three Tom Brook (T2) to stabilize bank erosion; 2) preventative measures should be taken to facilitate fish passage through a culvert on tributary T7; 3) continued monitoring of remedial sites along the river to ensure no major obstructions develop in the future; and 4) assessment of the trout and salmon populations.

The final report entitled Lomond River Habitat Restoration and Improvement Program Final Report was written by Bob Taylor and includes detailed accounts of the obstructions removed on each tributary of the Lomond River; labelled maps; photos; and references.
CASEC Funding: $ 10,370.

#3124 Humber Valley Development Association Humber River # 44024300

The Humber River is located on the West Coast of Newfoundland and flows into the Humber Arm of the Bay of Islands. It is the largest Atlantic salmon producing river in Western Newfoundland. The Humber Valley Development Association (HVDA) successfully received funding to complete a review of the water retention dams constructed by Corner Brook Pulp and Paper. A comprehensive survey of the habitat problems on the Humber River system was also completed and included an inventory of habitat degradation, obstructions, (both natural and man-made), and sources of pollution.

The HVDA discovered many of the diversion dams have little or no effect on the salmonid population in the area. There was need for remediation in some areas and other areas were not assessed. The association felt the falls and rapids, beaver dams, stream bank erosion, and poor foresting activities were the greatest sources of obstructions on the Humber river.

HVDA made several future recommendations, including: 1) removal of more stable dams that are obstructing fish migration; 2) bank stabilization techniques in areas of severe bank erosion; 3) improperly constructed forest access roads should be removed and culverts correctly installed; 4) future foresting activity in the area should be closely monitored; and 5)maintain intense surveillance of the more accessible holding pools on Dead Wolf Brook.

The final report entitled A study to Identify Habitat Problems and to Identify Future Restoration and Improvement Opportunities was written by Tony Turner. The report includes descriptions of obstructions; labelled maps; recommendations for improvement; descriptions of habitat improvement and restoration techniques; colour photos; glossary; and references.
CASEC Funding: $ 15,000.

Old logging dam on Humber River.

Improper forest road construction along the Humber River

#3125 Burin Peninsula Association for Salmon Enhancement Eastern Black Brook

Eastern Black River is located on the upper most section of Garnish River (#33084400), and is situated on the Fortune Bay Side of the Burin Peninsula. Eastern Black Brook is a popular river for Atlantic Salmon and trout anglers in the area.

The salmon migration had been partially obstructed by Red Cliff falls. During low water levels, salmon became trapped in pools below these falls, subjecting the fish to high temperatures. The Burin Peninsula Association for Salmon Enhancement (BASE) performed remedial work with the Department of Fisheries and Oceans to make the falls more accessible to migrating salmon.

At Red Cliff falls water flowed over flat areas causing the low water levels. BASE drilled and blasted the bedrock to appropriate sufficient flow. The association also completed remedial work on large boulders below the falls to create several holding pools only 2-3 feet apart with ample water supply to serve as holding pools.

BASE recommended a revisit to the site the following year to ensure that blockages had not occurred during the winter. In the event of obstructions, additional removal was recommended. The final report entitled Eastern Black River Salmonoid Enhancement Program was written by Clyde Roul; project supervisor, and contains descriptions of remediation; recommendations; colour photos; and labelled maps. CASEC Funding: $ 43,000.

#3126 Isthmus Area Development Association Trout River # 45035200

Trout River is a licensed salmon river which flows into Broad Lake in Bellevue Beach. Woody debris from domestic cutting had entered the river and accumulations were posing obstructions to migrating sea run brook trout and Atlantic salmon. The Isthmus Area Development Association removed obstructions on Trout River between its mouth and the TCH bridge; a distance of approximately 4 km. Under the supervision of Environmental Committee Members, with technical advise from DFO biologists and the local fisheries officers, the river was successfully cleared of obstructions.

The final report is entitled Trout Brook River Restoration and Improvement and was written by Dean George. It includes details of remediation; colour photos; acknowledgements; references; and labelled maps. CASEC Funding: $ 15,000.

Woody debris obstruction to fish migration on Trout River.

Trout River after woody debris is removed.

#3127 Branch River Improvement Committee Branch River # 28023800

In 1994, the Branch River Improvement Committee (BRIC) successfully received funding to complete a comprehensive survey of Branch River. The survey categorized areas with obstructions and BRIC took measurements throughout the river. The study concentrated on the tributaries of Branch river, in areas where blockages were known to occur. The committee also studied an area known as the "Flats" where very low waters levels commonly occur.

The BRIC removed both naturally occurring and man-made debris, and large amounts of rock and gravel from the Flats to create a deep channel to encourage Atlantic salmon migration.

The Branch River Improvement Committee made several future recommendations, including: 1) channelization of the Flats on an annual basis; 2) creation of log channels or other remedial structures to prevent river dry up in some sections of the river under low water conditions; and 3) closure of the salmon fishery in Gull Pond.

The final report entitled Branch River Enhancement Project: Project Results and Recommendations was written by Michael Gregory and includes description of work completed; colour photos; future recommendations; and labelled maps. CASEC Funding: $ 15,000.

#3128 Placentia Area Rod and Gun Club Northeast River # 29030700

In 1994, the Placentia Area Rod and Gun Club (PARGC) successfully received funding to complete a survey of the Northeast Placentia River system.

PARGC made several recommendations on completion of the survey, including: 1) stabilization of the river banks with gabions or rip-rap to discontinue erosion and future loss of habitat due to debris and silt run off; 2) reduce the amount of lost spawning habitat by installing spawning gravels or deep substrate incubation boxes; 3) installation of low head barriers or wing deflectors for pool creation in the lower sections of the river; 4) removal of an ATV crossing by installing gabion or rip-rap and revegetation; and 5) survey the area to determine the species and extent of those fish present in the river.

The final report entitled Survey of the Northeast River was written by Sean Nicks and includes descriptions of the observations made; colour photos; labelled maps and diagrams; and future recommendations. CASEC Funding: $ 18,000.

#3131 Salmonid Association of Eastern Newfoundland Video Production

In 1994, the Salmonid Association of Eastern Newfoundland (SAEN), with the MUN Division of Educational Technology and the Department of Fisheries and Oceans developed the second in a series of Salmonid Habitat Improvement Techniques videos. The topics discussed on this comprehensive video include obstruction removal and stream survey techniques.

The obstruction removal segment identifies an obstruction, what should be removed, and what should be left in place. A step by step description of where and when obstructions should be removed is also discussed. The second segment describes the typical first step to habitat improvement, the stream survey. Various types of stream surveys are discussed, including aerial surveys, redd surveys, cursory walk throughs, and detailed comprehensive surveys. As each survey is discussed, the information that can be gathered from each type is highlighted. CASEC Funding: $ 18,000.

#3133 Salmonid Association of Eastern Newfoundland Program Coordinator

A program coordinator was hired by the Salmonid Association of Eastern Newfoundland (SAEN) to serve as the contact person for the project sponsors and for both the federal and provincial departments of the cooperative agreement. The position included working with potential sponsor groups to develop proposals and, for approved projects, facilitate the development of project budgets and set up the corresponding Contribution Agreements, process financial reports and monitor project activities. An average of 3 visits per year were held with each sponsor group. Other responsibilities included development of training material and organization and delivery of training workshops. CASEC Funding: $53,250

#3140 Virginia River Conservation Society Virginia River # 24168100

The Virginia River Conservation Society (VRCS) successfully received funding to conduct a stream survey on the Virginia River system. The survey consisted of generic habitat mapping/ river survey, water and discharge sampling, and invertebrate sampling for compilation of a biotic index. These measurements were monitored from Quidi Vidi Lake to the river's headwaters in Airport Heights.

There were some interesting discoveries made during the survey, such as the large biomass of the trout in the stream. VRCS measured live fish samples using an electro-fisher. The data was then used to calculate the biomass of the trout in the Virginia River. The proponent discovered the fish in this river have a biomass of approximately 67g/m2, which is quite substantial considering the normal biomass for stream trout is about 2 g/m2.

The final report is entitled Annual Report 1994/95 and was written by Ken Hannaford. It includes descriptions of the survey; labelled maps; and colour photos. CASEC Funding: $ 9,100.

#3141 Rotary Club of Clarenville
Shoal Harbour River # 16130600

In 1994, the Rotary Club of Clarenville was successful in receiving funding to perform a cursory stream survey of the Shoal Harbour River. The survey was a compilation of river and substrate data; stream width; ice scour height; instream vegetation; canopy and instream cover; and stream depth.

The proponent made several future recommendations on completion of the survey, including: 1) bank stabilization on the main stem and its tributaries; 2) removal and/or upgrading of existing in place dilapidated structures; 3) installation of low head dams to create pools and increase the oxygen content in various sections of the river; 4) monitor the salmonid population, before and after any future projects; 5) creation of riffle areas in large steadies in the main stem of the river; 6) pool creation in the main stem and its tributaries; 7) development of a stock assessment project; 8) implementation of a restocking project to ensure a responsible seeding rate; and 9) introduction of other species of fish in the river to increase the tourism potential of the area.

The final report entitled Shoal Harbour River Survey was written by Jim Sharpe and includes survey results; methods of data collection; labelled maps; future recommendations; photos; summary tables and charts; and a references section. CASEC Funding: $ 12,500.

#3145 Penguin Area Development Association
Top Pond Brook

Top Pond Brook is one of the most important tributaries of Grandy's Brook (#38178900). Atlantic salmon swim up through Grandy's Brook and into Top Pond Brook to spawn.

During the construction of Route 480, a gravel pit was created next to Top Pond Brook. Erosion caused the brook to flow back through this gravel pit. During low water levels, fish became trapped in shallow pools in the pit and were more accessible to predators and elevated water temperatures.

In 1993, the Penguin Area Development Association (PADA) hired an engineering company to solve this problem. It was determined that a 60 m gabion wall placed across the end of the pit would ensure all water remain in the original stream bed. In 1994, PADA implemented the construction of a gabion wall. Once constructed, the wall was successful in diverting the river water from the gravel pit back into the original stream bed.

The final report entitled Top Pond Brook Restoration Project #3145 was written by Stacey Ingram; project foreman, and includes description of the construction; before and after colour photos; labelled maps; and blue prints. CASEC Funding: $ 33,038.

Stretching and placement of gabions on Top Pond Brook.

Upstream view of completed gabion wall on Top Pond Brook.

#3146 Department of Fisheries and Oceans Training/Monitoring

Training workshops were held in June 1994 for representatives of successful sponsor groups. There were approximately 45 people in attendance for the sessions, including federal and provincial personnel. Each workshop lasted a day and half, and covered information pertaining to CASEC, basic salmonid and habitat biology; habitat improvement and restoration techniques, stream survey techniques, and habitat protection/mitigation. The workshops included information exchanges where groups could present information on past, present, and/or future projects. In addition to these activities, there was a field training session where proponents were shown a stream survey and electrofishing demonstration.
CASEC Funding: $ 25,000.

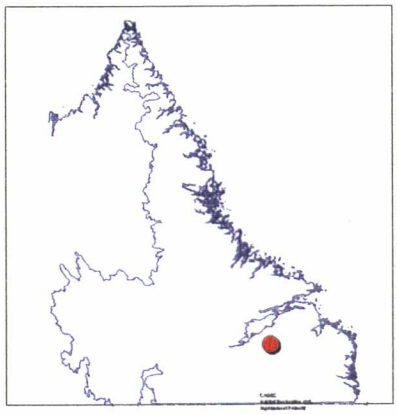
#3149 Department of Fisheries and Oceans Training Manual

A contractor was hired to write the Habitat Improvement and Restoration Training Manual. The manual is a concise text which includes information on the Cooperative Agreement for Salmonid Enhancement and Conservation (CASEC), basic salmonid biology and habitat requirements, habitat improvement and restoration techniques, stream surveys, fisheries regulations, crew safety, final report preparation, and glossary of terms. The training manual was written by Annette Power and Peter Gard. CASEC Funding: $3,500.

III. Geographic Distribution

The projects approved in 1994-95 were widely distributed throughout the province of Newfoundland and Labrador. The following map illustrates the general location of each of the projects. Projects considered province wide (such as training and monitoring) are considered province wide and have not been included.

CASEC
Habitat Restoration and Improvement Projects



1994/1995

APPENDIX A

List of Project Reports

FELIX, EDWARD. 1994. Romaine's River (1994) Salmonid Habitat Improvement. Port au Port Indian Band Council, Port au Port, NF. 8 p. + appendices.

GREGORY, MICHEAL. 1994. Branch River Enhancement Project: Project Results and Recommendations. Branch River Improvement Committee, Branch, NF. 5 p. + appendices.

GEORGE, DEAN. 1994. Trout Brook River Restoration and Improvement. Isthmus Area Development Association, Bellevue, NF. 6 p. +appendices.

HAMEL, WENDELL. 1994. Smiths Brook Habitat Enhancement Project. Mokami Regional Development Association, Happy Valley-Goose Bay, Lab. 8 p. + appendices.

HANNAFORD, KEN. 1995. Annual Report 1994/95. Virginia River Conservation Society, St. John's, NF. 25 p + appendices.

HICKS, ALLAN. 1994. Ragged Harbour River Project; Building of Dam. Gander Bay-Hamilton Sound Development Association, Carmanville, NF. 8 p. + appendices.

INGRAM, STACEY.Top Pond Brook Restoration Project #3145. Penguin Area Development Association, Burgeo, NF. 14 p. + appendices.

MACPHERSON, JOHN. 1994. Habitat Improvement, Obstruction Removal, Little Crabbes River. Bay St. George South Development Association, McKays, NF. 23 p. + appendices.

NICKS, SEAN. 1994. Survey of the Northeast River. Placentia Area Rod and Gun Club, Jerseyside, NF. 21 p.

RICHARDS, DERRICK. 1994. Report on Work Done as Recommended by Gander Habitat Study Salmon Enhancement Project for Tributaries of the Gander River System. Gander River Management Association, Carmanville, NF. 45 p.

ROUL, CLYDE. 1994. Eastern Black River Salmoniod Enhancement Program. Burin Peninsula Association for Salmon Enhancement, Mary's Town, NF. 5 p. + appendices.

SHARPE, JIM. 1994. Shoal Harbour River Survey. Rotary Club of Clarenville, Clarenville, NF. 82 p.

TAYLOR, BOB. 1994. Lomond River Habitat Restoration and Improvement Program Final Report. Bonne Bay Development Association, Woody Point, NF. 5 p. + appendices.

THORNHILL, HAROLD AND BOLT, WAYNE. 1994. Grand Bank Brook Survey. Grand Bank Recreation Committee, Grand Bank, NF. 10 p. + appendices.

TURNER, TONY. 1994. A Study to Identify Habitat Problems and to Identify Future Restoration and Improvement Opportunites. Humber Valley Development Association, Deer Lake, NF. 54 p. + appendices.

VAN ZYLL DE JONG, MICHAEL. 1995. Salmon River Habitat Restoration Project Interim Report 1995. White Bay Central Development Association, Main Brook, NF. 29 p.

APPENDIX B

COOPERATION

AGREEMENT FOR SALMONID ENHANCEMENT/CONSERVATION

ENTENTE POUR LA MISE EN VALEUR/CONSERVATION DES SALMONIDÉS

HABITAT RESTORATION AND IMPROVEMENT WORKSHOP 1994/95

Holiday Inn, Corner Brook
June 23 - 24, 1994

Agenda

Thursday - June 23

9:00 am - 9:30 am	Registration
9:30 am - 9:45 am	Introduction
9:45 am - 10:00 am	Cooperation Agreement for Salmonid Enhancement & Conservation
10:00 am - 10:30 am	Basic Salmonid and Habitat Biology
10:30 am - 10:45 am	Coffee Break
10:45 am - 11:30 am	The Importance of the Riparian Zone
11:30 am - 12:30 pm	Obstruction Removal
12:30 pm - 1:30 pm	Buffet Lunch
1:30 pm - 3:00 pm	Habitat Improvement Techniques
3:00 pm - 3:15 pm	Coffee Break
3:15 pm - 3:45 pm	Stream Survey Techniques
3:45 pm - 4:30 pm	Reporting Requirements
4:30 pm - 5:00 pm	Habitat Protection / Mitigation
5:00 pm - 7:00 pm	Dinner Break
7:00 pm - 8:30 pm	Information Exchange - This is an opportunity for all groups to present information, slideshows, etc. on past, present or future activities of their projects.

Canada

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

COOPERATION

AGREEMENT FOR SALMONID ENHANCEMENT/CONSERVATION

ENTENTE POUR LA MISE EN VALEUR/CONSERVATION DES SALMONIDÉS

Friday - June 24

9:00 am - 12:00 pm	Stream Survey Demonstration / Electrofishing Demonstration
12:00 pm - 1:00 pm	Dinner Break
1:00 pm - 2:00 pm	Workshop Wrap-up Final Comments / Questions

Workshop attendees are responsible for making their own accommodation and travel arrangements. Hotel reservations should be made as soon as possible to ensure availability. Travel will not be prepaid. Expense claims will be completed and processed after the workshop. Eligible travel expenses include hotel accommodations (2 nights if required), meal allowance and vehicle mileage.

Sponsors are asked to bring along A Technical Manual for Small Stream Improvement and Enhancement in Newfoundland and Labrador if they have a copy. If not, one will be available at the workshop.

Appropriate rain gear and boots will be required for field demonstrations.

Canada

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

Canada/Newfoundland Cooperation Agreement for Salmonid Enhancement and Conservation

Habitat Restoration and Improvement Program
Summary Report- 1995/1996

Submitted by: Annette Hoddinott
CASEC Program Coordinator
Salmonid Association of Eastern Newfoundland

Canada/ Newfoundland Cooperation Agreement for Salmonid Enhancement and Conservation

Habitat Restoration and Improvement Program
Summary Report - 1995/ 96

submitted by: Annette Hoddinott
CASEC Program Coordinator
Salmonid Association of Eastern Newfoundland

Table of Contents

I. CASEC: An Introduction..... 1

II. Habitat Restoration and Improvement Program Review..... 1
1. Introduction
2. Proposal Evaluation and Approval
3. Program Administration and Delivery

III. Habitat Restoration and Improvement Project Summaries..... 4

IV. Geographic Distribution..... 28

Appendix A - Proposal Evaluation Criteria/ Rating Form

Appendix B - Workshop Agenda

Appendix C - List of Project Reports

I. CASEC: An Introduction

On October 9, 1992 the Government of Canada and the Province of Newfoundland signed a five-year, $21 million Cooperation Agreement for Salmonid Enhancement and Conservation. The objective of CASEC is to improve the economic and recreational potential of the province's salmonid stocks. Funding is provided for projects under the following programs:

(1) Stock Assessment
(2) Salmonid Enhancement
(3) Cooperative Enforcement
(4) Planning and Industry Development
(5) Habitat Restoration and Improvement

II. Habitat Restoration and Improvement Program Review

1.Introduction

Operations under the Habitat Restoration and Improvement Program are directed at increasing the size of salmon and trout stocks for use in the recreational fishery by **restoring** and **developing** the habitats that support salmonid fishes. Habitat improvement includes:

-the **restoration** of fish habitats that have been previously altered, disrupted or degraded; and

-the **development** of existing fish habitats that are limited by natural barriers or conditions.

2. Proposal Evaluation and Approval

In 1995, the program received 48 applications for funding. Approximately 68% of proposals were generated by development associations and conservation groups while the remaining 32% were produced by government agencies, native councils, outfitters, etc.

Proposals were reviewed as per established application selection criteria (see Appendix A) by both federal and provincial government personnel. Within the Department of Fisheries & Oceans, all proposals were reviewed by Area Habitat Coordinators and Regional Office staff of the Marine Environment and Habitat Management Division, Science Branch. Selected proposals were forwarded to other divisions of Science Branch for review. Five proposals did not meet program objectives and were considered ineligible for funding, and three were referred to other CASEC programs. The remaining 40 proposals fell under the following program elements:

Habitat Inventory (identification of opportunities)	-11
Restoration Related to Historic Forest Harvesting	- 4
Stream Obstruction Removal	-12
Stream Improvement Activities	- 7
Stream Maintenance and Awareness	- 5
Technical and Administrative Support Requirements	- 1

Further review was undertaken by the Coordinating Committee and Management Committee of CASEC. Program budgets allowed funding of 24 proposals. Six of these projects were delivered provincially and 18 were delivered by DFO.

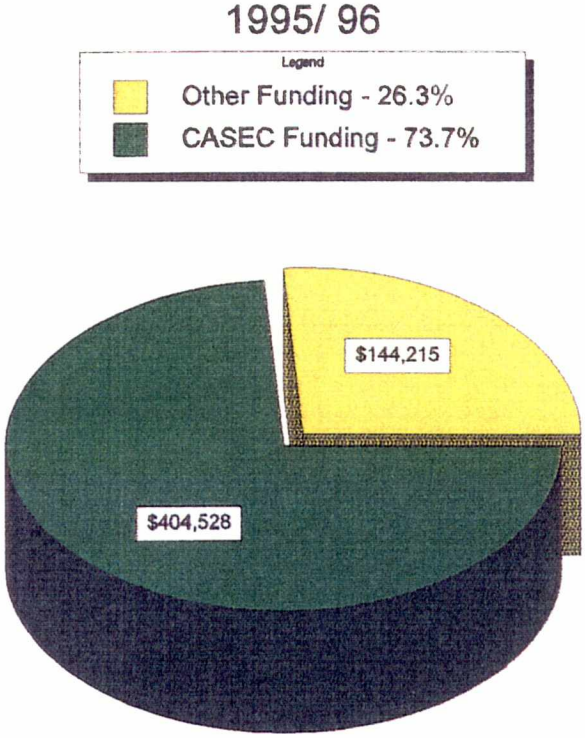
3. Program Administration and Delivery

Of the program budget of $483,528 approved by the Management Committee of CASEC, approximately $404,528 was allocated for direct sponsor funding .The remaining $79,000 was used for program delivery related expenses such as travel, helicopter rental, the development of a River Habitat Database System, etc. Also included in program delivery expenses were costs associated with training workshops and monitoring (see Project Summaries - #3242 and #3243).

A list of proposals which had been approved for funding was released in May 1995. Meetings were arranged with the successful sponsor groups to develop project budgets and coordinate activities. Project sponsors were required to enter into a Contribution Agreement which outlines not only the scope of the project and funding levels, but the role and responsibilities of the sponsor. A monthly progress and financial report was required as well as a detailed final report including relevant pictures, maps, etc. Final project reports were circulated to federal and provincial personnel for comments. If satisfactory, release of a 15% funding holdback was approved.

Project sponsors were encouraged to secure funding from other agencies. If this was not possible, sponsors were asked to make an "in-kind" or voluntary project contribution, usually in the form of project administration or equipment donation. Approximately 26.3% of total project costs were provided by sources outside CASEC.

Habitat Restoration and Improvement



In 1995, workshops were held in Deer Lake (June 15-16) and Clarenville (June 29-30) for groups involved in the program. Two representatives from each sponsoring group were invited to attend, with approximately 50 individuals participating in both workshops. (see Project Summaries - #3243)

Project activities were monitored regularly and additional technical support was provided for select projects. Administrative functions included the processing of claims as per Contribution Agreements, expenditure tracking and the preparation of quarterly reports for the Coordinating Committee of CASEC. (see Project Summaries - #3242 and #3227)

III. Habitat Restoration and Improvement Project Summaries

The following summaries provide general project information. Waldron's River Codes have also been included. More detailed accounts of project activities, results, recommendations, etc. can be found in final reports. Additional information can also be obtained from the Marine Environment and Habitat Management Branch, DFO or Wildlife Division, Provincial Department of Natural Resources.

#3201 Powell's Outfitters Ltd.
Gilbert River (river code not available)

Gilbert River is located on the southeast coast of Labrador. This project involved assessment of a falls at the mouth of the river to determine if it was technically and monetarily feasible to provide upstream fish passage by blasting. A site assessment was conducted and the project appeared to be feasible, however, high water levels in August and September prevented any instream work.

#3202 Isthmus Area Development Association
Trout Brook #17146800

Trout Brook (Bellevue Brook) is a scheduled salmon river which empties into Broad Lake near Bellevue Beach Provincial Park, Trinity Bay. In 1994, the Isthmus Area Development Association received funding to remove woody debris obstructions on the middle section of the brook between the bridge on Route 201 and the TCH. Phase II was undertaken in 1995 to complete the middle section and begin work in other areas.

The project crew also conducted similar work from the bridge to the mouth of the brook. Woody debris was removed and rip rap from an adjacent gravel pit was used to stabilize eroding banks. Very few problems were encountered above the TCH. An old ATV bridge and some windfalls were removed.

The final report entitled Trout Brook River Restoration and Improvement - Phase II was written by Edward Griffin, the project supervisor and contains color pictures and a map of the watershed. Future recommendations include increased monitoring to deter poaching and additional bank stabilization, particularly in the middle section of the brook. CASEC Funding: $15,000

#3203 Alexander Bay - Terra Nova Development Association
Northwest Brook #11101300

Northwest Brook is a scheduled salmon river which empties into Clode Sound, Bonavista Bay near the community of Glovertown and Terra Nova National Park. The only major tributary of the watershed is Boatswains Brook.

In 1994 a provincially funded Green Team worked under the supervision of the Alexander Bay - Terra Nova Development Association in launching a detailed survey of the system. During that year the team collected data from the mouth of the brook upstream to the TCH crossings. In 1995 the survey was completed above the highway to the headwaters. A report on the results of this survey has not been developed to date. The association plans to prepare a report when resources permit.

Habitat concerns identified in this survey formed the basis of a proposal for which the association received CASEC funding. A public meeting was held before habitat improvement work began to address concerns and answer questions. The association handed out information packages and those in attendance viewed the SAEN Salmonid Habitat Improvement Techniques videos. Public response was positive.

Habitat improvement work was concentrated in the six kilometre section downstream of the TCH crossings. In addition, some activity took place above the highway in the Mill Pond, First Pond and Second Pond areas. Woody debris obstructions and inactive beaver dams were removed. Two low head dams were also installed in Boatswains Brook. Several other areas were considered for the installation of instream structures, but materials were not readily available or the substrate was not conducive to such restoration techniques. In general, the project crew found the brook to be quite diverse with ample pools and riffles, instream cover and stable, vegetated banks.

The association also identified three culverts that are not countersunk and pose a barrier to upstream fish migration. In 1980, the Trans Canada Highway was upgraded and culverts at the Northwest Brook and Boatswains Brook crossings were installed improperly. A similar problem exists at a Boatswains Brook crossing on the older highway. The Department of Works, Services and Transportation has been contacted and discussions concerning remediation are ongoing. It is suggested that these barriers prevent the access of migrating salmonids to 50% of the watershed.

Color pictures and a labelled map are included in the final report written by the project supervisor, Tom Budgell entitled Habitat Restoration of Northwest Brook and Boatswains Brook. The report recommends that additional habitat improvement activities, including obstruction removal and diversification, be concentrated upstream of the TCH crossings. CASEC Funding: $15,000

#3205 Rotary Club of Clarenville
Shoal Harbour River #16130600

Shoal Harbour River is a scheduled river which empties into Northwest Arm, Trinity Bay. The river has a diverse abundance of salmonids including Atlantic salmon, brown trout, brook trout and rainbow trout. The Rotary Club of Clarenville received funding in 1994 to conduct a survey of Shoal Harbour River and identify and document any habitat concerns arising from historic harvesting of pine in the area and recent increased ATV access. The resulting catalogue of habitat restoration and improvement opportunities formed the basis of a proposal submitted the following year.

In 1995, woody debris was removed at three sites on tributary T-8, a low head dam was installed and an

old swimming pool removed. Electrofishing data and detailed habitat information (water velocity, substrate composition, etc.) was collected at each treatment site for input and comparison in two habitat evaluation models, one of which was developed in Wales, Great Britain. The comparative analysis was not available at the time of writing; it is expected in the near future.

Future recommendations include further habitat improvement, continued stock assessment, and water quality monitoring. Detailed explanations of activities and labelled maps can be found in the final report entitled CASE/C - 1995 Shoal Harbour River written by the project manager, Jim Sharpe. CASEC Funding: $22,000

#3212 Codroy Valley Area Development Association Little Codroy River #40001400

Little Codroy River is a scheduled salmon river which flows into the Gulf of St. Lawrence near the community of St. Andrews and Mummichog Provincial Park located on the southwest coast. In 1995, the Codroy Valley Area Development Association submitted a proposal to remove beaver dams and woody debris obstructions within the watershed.

The project crew began work at the mouth of the river. Tributaries T-1 (Black Duck Brook), T-3 (Campbells Brook), T-4 (Loch Lomond Brook) and T-9 (Big John's Brook - labelled T-5 in the final report) were completely cleared of obstructions. A 3-4 kilometre section of tributary T-2 (Doyles Brook) remains to be cleared. The crew noted most of the brush and woody debris accumulations had resulted from domestic wood cutting. Several collapsed ATV and snowmobile bridges were also removed and woodlot users have agreed to be more cognizant of maintaining unobstructed fish passage. Obstructions have been identified in three other tributaries; the status of the remainder is unknown.

A middle portion of a culvert at the mouth of T-4 has rusted and water flows under the remaining section, impeding fish passage. The Department of Works, Services and Transportation has been notified and agreed to assess the problem this spring. Other culverts on the system are not countersunk. A letter accompanied by a labelled map was also sent to the Department of Natural Resources, Wildlife Division, identifying the locations of active beaver dams.

The final report entitled Salmon Habitat Improvement & Restoration on Little Codroy River was written by Mary Anderson and contains maps, color pictures, etc. CASEC Funding: $17,000

#3214 St. Barbe Development Association St. Genevieve River #49051700

The St. Genevieve River flows into the Gulf of St. Lawrence approximately 9 km north of Plum Point, a community on the Northern Peninsula. The watershed is comprised of all the streams which empty into Ten Mile Lake and Round Pond, and eventually into the lower main stem of St. Genevieve River.

The St. Genevieve watershed is a site of historic forest harvesting. Man-made dams were left intact after harvesting operations ceased and abandoned access bridges have since collapsed. Numerous beaver dams and large accumulations of woody debris also block many of the tributaries. All of these obstructions restrict migration and prevent fish from utilizing all of the available habitat.

The St. Barbe Development Association sponsored a survey in October, 1994, to catalogue obstructions and other habitat improvement opportunities on the St. Genevieve watershed. During the summer of 1995, they sponsored a habitat restoration project aimed at correcting problems previously identified .

Former employees of the harvesting companies were interviewed. The information they provided helped the project crew in locating previously productive habitat and gave them an idea of the types and abundance of species present within the system years ago.

All the information collected was used to prioritize the streams on which obstruction removal work was to take place. Important streams identified within the St. Genevieve system include Manuals Brook, Kellys Brook, Franks Brook, West Roses Feeder, Eight Brook, Muskrat Brook and the two main spawning tributaries - Manuals Feeder and Roses Brook.

Work was primarily completed manually with the aid of pick poles and axes but occasionally chainsaws were required. Approximately 48 abandoned beaver dams were located. The centre of each dam was removed to allow fish migration and the stable sides left intact to help pool water above and maintain trout rearing habitat. Active beaver dams were observed on Roses Feeder at Stn. 7580m and at the mouth of Franks Brook, and the project supervisor has requested that a local trapper remove the beavers in season.

Man-made dams and collapsed bridges were approached in a similar manner. The centre logs and ballast were removed to allow migration and scour gravels while cribbing along the banks was left untouched to prevent erosion. Approximately five logging dams and two collapsed bridges were removed in this manner.

Numerous large accumulations of woody debris had also been identified as obstructions to fish passage. Windfalls, logs, stumps, etc. were removed from approximately 43 sites on the St. Genevieve River system. The crew was careful not to disturb the riparian zone or destroy valuable fish cover.

A waterfalls on upper Kelly's Brook was also identified at Stn. 1754m. It has not been determined if this constitutes a partial or complete migration barrier. Tributary T2 of Roses Brook was also traced to an underground source.

Recommendations for future consideration included 1) extending the period in which river monitors work to include fall spawning, 2) improving access to and around the river by constructing trails, 3) a spawning survey, 4) a detailed stream survey, and 5) a fish enumeration project.

A final report entitled The St. Genevieve River Watershed Habitat Restoration Project was written by the project supervisor, Alphonsus Pittman, on behalf of the St. Barbe Development Association. This