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Catalogue of Rivers in Insular Newfoundland

Volume A

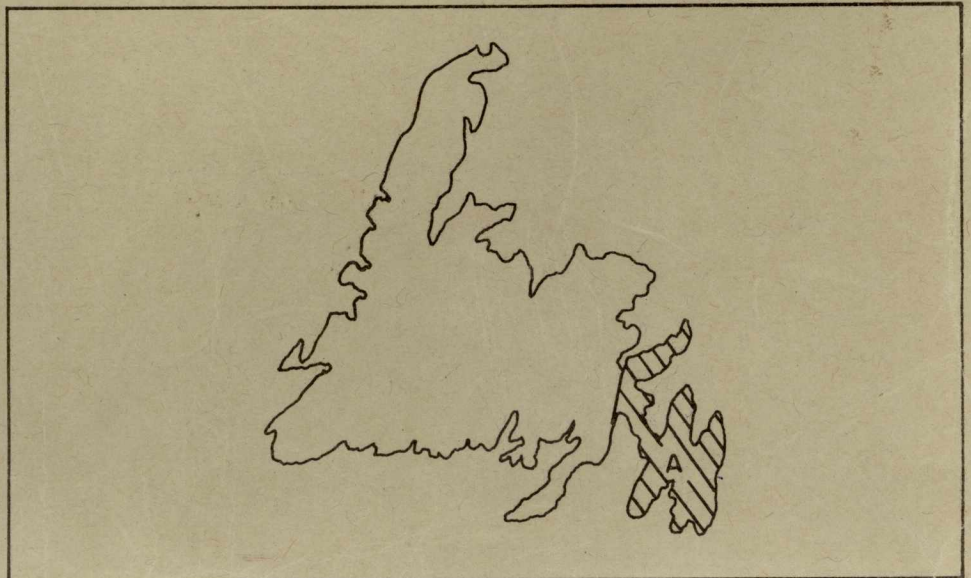
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by

T.R.Porter, L.G.Riche and G.R.Traverse

Data Record Series No. NEW/D-74-9

Resource Development Branch
Newfoundland Region



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DATA REPORT SERIES NO. NEW/D-74-9
VOLUME A

CATALOGUE OF RIVERS IN
INSULAR NEWFOUNDLAND

by

T.R. Porter, L.G. Riche and G.R. Traverse

RESOURCE DEVELOPMENT BRANCH
FISHERIES & MARINE SERVICE
DEPARTMENT OF THE ENVIRONMENT

OCTOBER, 1974

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GLOSSARY OF TERMS

Drainage basin:	the area drained by a stream and all its tributaries (Murray and Harmon 1969).
Axial length:	the length of the long axis of the basin measured from the mouth to the most distant point on the perimeter.
Mean width:	the average of a number of widths taken at right angles to the axial length.
Relief:	difference in elevation between the basin mouth and the highest point on basin perimeter.
Gene frequency:	frequency of Tf ⁴ (TfA) transferrin allele (Payne 1974).
Mouth of river:	downstream end of the stream where it has confluence with another river, lake, estuary or sea.
Obstructions:	natural or man-made barriers to salmon migration. A complete obstruction is impassable to salmon migrants. A partial obstruction is passable at only certain water levels or is a barrier to a portion of the migrants during either all or part of the spawning run.
Population estimates:	number of adult salmon produced by a river system prior to exploitation by the commercial fishery. This is usually based on the estimate that each accessible 100 square yards of parr rearing area can potentially produce 1-2 smolt. The sea survival has been calculated to be 10-15% of total smolt production. In this report the generally accepted range in values for the estimate adult salmon production is enclosed by dotted lines.

INTRODUCTION

In the early 1960's the Program Working Party on Atlantic Anadromous Fishes requested the compilation of a catalogue of base line data on all river systems in insular Newfoundland. These data would be used to identify river systems with the potential to expand or develop Atlantic salmon (Salmo salar) populations. A program to compile the data from all possible sources was initiated as well as a helicopter river reconnaissance survey program. The terms of reference for the survey were: (1) to provide a general description of each river basin (2) to locate and identify obstructions in river systems, drainage area greater than 25 miles², that are barriers to salmon migration (3) to obtain an estimate of potential parr rearing habitat in accessible and inaccessible areas of the river and to estimate potential adult salmon production. Riche (1972) describes the methods used in stream surveys and estimation of salmon production.

The compilation of physical and chemical data on Newfoundland rivers prior to 1967 was presented by Murray and Harmon (1969). The authors emphasized parameters that affected salmon production; however, the report failed to provide an easy reference for identification of rivers with the potential for development to enhance salmon populations.

This report is a compendium of all available data on each river system in insular Newfoundland. It includes: the data reported by Murray et al. (1969); a summary of the stream surveys and estimates of adult salmon production reported by Mercer (1961, 1962, 1963, 1967), Riche (1966a, 1966b, 1969a, 1969b), Riche and Traverse (1969, 1971, 1972),

Traverse (1971, 1972) and Porter et al. (1974); a summary of salmon angling data provided by the Conservation & Protection Branch; water quality data provided primarily by the Water Resources Group of Resource Development Branch (Jamieson 1974a, 1974b); gene frequencies for Atlantic salmon (Payne 1974); information on accessibility of stream to anglers and salmon redd counts provided by Conservation & Protection Branch and Resource Development Branch; references to studies conducted on the river system; and unauthenticated reports (clearly marked) by anglers and local residents. Photographs of sections of each river or activities on the river are kept on file by the Newfoundland River Development Unit, Resource Development Branch, St. John's. Reference to photos on file are indicated in the catalogue.

The report is published in four volumes, A, B, C and D. Each volume corresponds in number to the present district set-up of the Conservation and Protection Branch (Fig. 1). All information on rivers that occur with District A, B, C and D are included in Volume A, B, C and D respectively.

This catalogue has multiple uses. It has been used by government agencies to identify rivers for salmon enhancement programs; by researchers to obtain base data for aquatic studies; by federal, provincial and private agencies involved in impact of development projects on the aquatic resources; by Provincial Department of Tourism and Parks Canada to obtain information on the history of the sport fishery and the recreational potential of selected river systems.

The authors apologize for the inconsistencies in style and format. The length of time required to re-write and re-type the manuscript did not outweigh the benefits gained by an early publication.

It is the authors' intent that the catalogue be updated annually and another edition be published every five years.

Anyone with pertinent information which has not been included in the report, please send it to the authors.

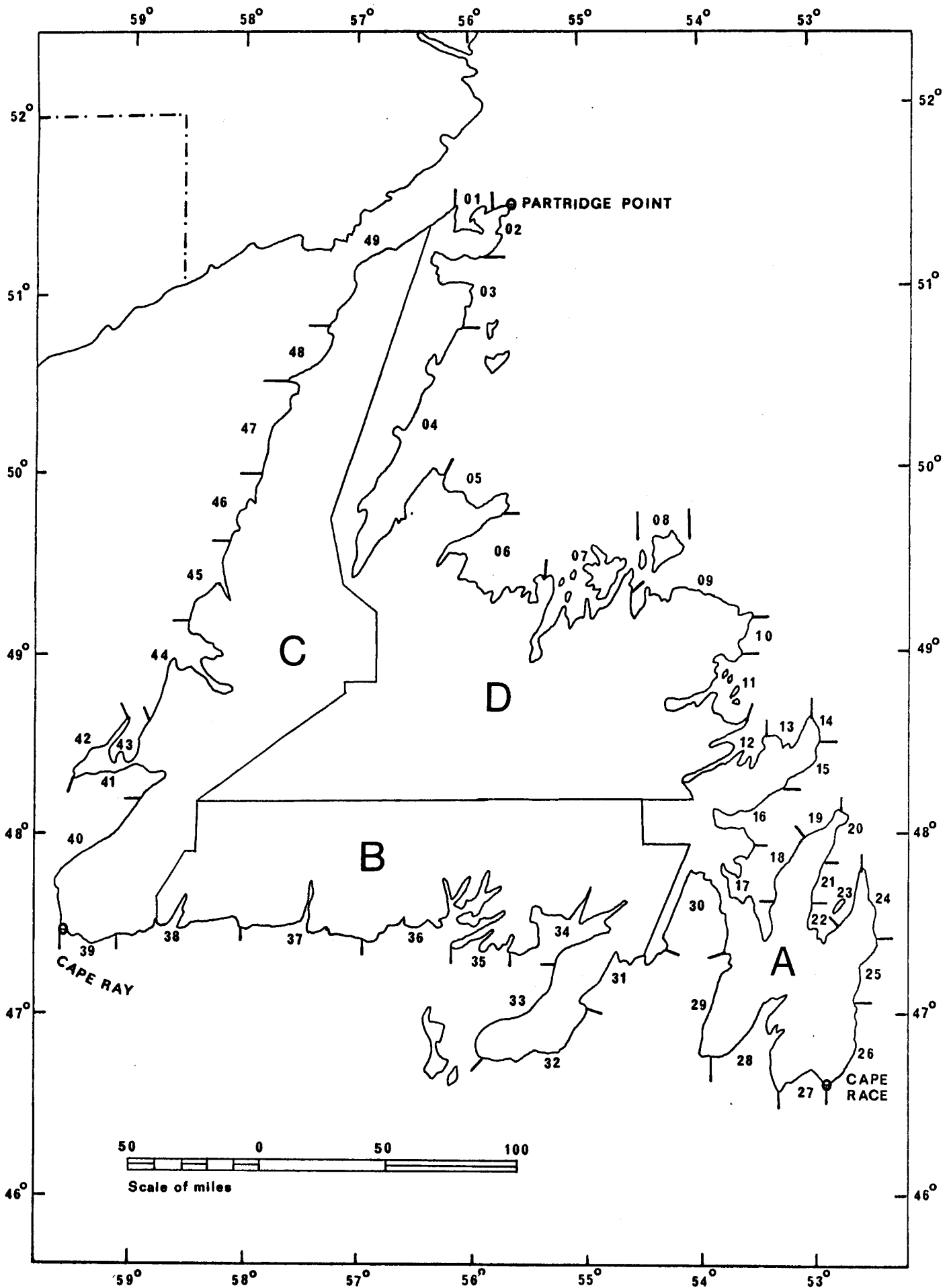


FIG. 1 OUTLINE MAP OF NEWFOUNDLAND SHOWING STATISTICAL SECTIONS AND CONSERVATION AND PROTECTION BRANCH DISTRICTS

EXPLANATION OF RIVER CODES

Each of the 4,404 river systems in insular Newfoundland (39,928 miles²) has been assigned a seven digit code. The purpose of the code is for quick identification and location of each river, and computer coding for comparison of sport and commercial fisheries.

The first digit is a letter indicating the coast on which the mouth of the river is located. East coast rivers (E) are located between Partridge Point and Cape Race; south coast rivers (S) between Cape Race and Cape Ray and west coast rivers (W) between Cape Ray and Partridge Point (Fig. 1). The second and third digits correspond to the statistical sections (Fig. 1) developed by Economics and Intelligence Branch in 1968 (Waldron 1974). The last four digits is the number given to each river system. The rivers were numbered consecutively and clockwise on each coast. In the larger system the tributaries have also been identified by the addition of two digits. Example: Harpoon Brook, tributary of the Exploits River has been coded E-07-0779-78. The E indicates the river system is on the east coast; the mouth of the Exploits River system is in statistical area 07; the river is number 0779 from Partridge Point and Harpoon Brook is tributary 78 of the Exploits River system (E-07-0779).

SOUTHWEST BROOK

Location: 48°19'55' N. 54°09' 35" W. Clode Sound, Bonavista Bay.

Map Reference: Port Blandford. 2 D/8 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 189.6 miles², (491.06 km²). Mean width, 6.8 miles, (10.94 km).

Perimeter, 85.9 miles, (138.21 km). Axial length, 23.5 miles, (37.81 km).

Maximum basin relief, 1,150 feet, (350.52 m).

Geology:

Predominantly Precambrian volcanic with the remainder consisting of Precambrian sedimentary and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls at mile 4.3 (6.9 km): 50'-60' (15.3-18.3 m) high, 3 vertical drops: lower drop 20' (6.1 m) vertical; second drop 10'-15' (3.1-4.6 m) vertical; third drop 20' (6.1 m) vertical; complete obstruction.

Drop of 7'-8' (2.1-2.4 m) vertical located 100 yds. (84.80 m) upstream from the main obstruction.

Falls at mile 7.5 (12.06 km) 30' (9.15 m) high; passable at medium to high water levels. Three vertical drops of 4'-5' (1.2-1.5 m) each separated by a pool or channel are located in a run-around on the right hand side. Passable at medium to high water levels.

Photographs on file: Nos. 550

Water Quality Data, Sample Collected July 1972, August 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.85	6.5	6.5	0.74	4.0	25.0	1.5	7.9

FISH POPULATIONS

Species Present: Atlantic salmon, ouananiche, brook trout.

Atlantic Salmon Angling Record - Southwest Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1963	5	3	12	5.4	-	-	-	3	12	5.4
1964 ¹	10	2	9	4.1	-	-	-	2	9	4.1
1965	14	16	64	29.1	1	7	3.2	17	71	32.3
1966	6	15	22	10.0	-	-	-	5	22	10.0
1967	9	3	13	5.9	-	-	-	3	13	5.9
1968	24	36	146	66.3	-	-	-	36	146	66.3
1969	22	19	77	35.0	-	-	-	19	77	35.0
1970	18	19	78	35.4	-	-	-	19	78	35.4
1971	154	21	84	38.1	2	15	6.8	23	99	44.9
1972	8	10	40	18.2	-	-	-	10	40	18.2
1973	156	94	384	174.3	3	20	9.1	97	404	183.4
1974										
1975										
1976										
1977										
MEAN										
1964-68	13	14	51	23.1	0.2	1.4	0.6	13	52	23.7
1969-73	72	33	133	60.2	1	7	3.2	34	140	63.6

¹Angling data 1964-73 estimated to be 90% accurate. (T. Curran, personal communication).

Estimated Atlantic salmon smolt production and adult sea survival Southwest River and tributaries above falls #1 (6071 units).

If smolt production per

100 yd² (83.7 m²) is:

Smolts produced

1
6,071

2
12,142

3
18,213

Adult return if sea survival is:	5%	10%	15%	20%	25%
		304	607	911	1,214
	607	1,214	1,821	2,428	3,036
	911	1,821	2,732	3,643	4,553

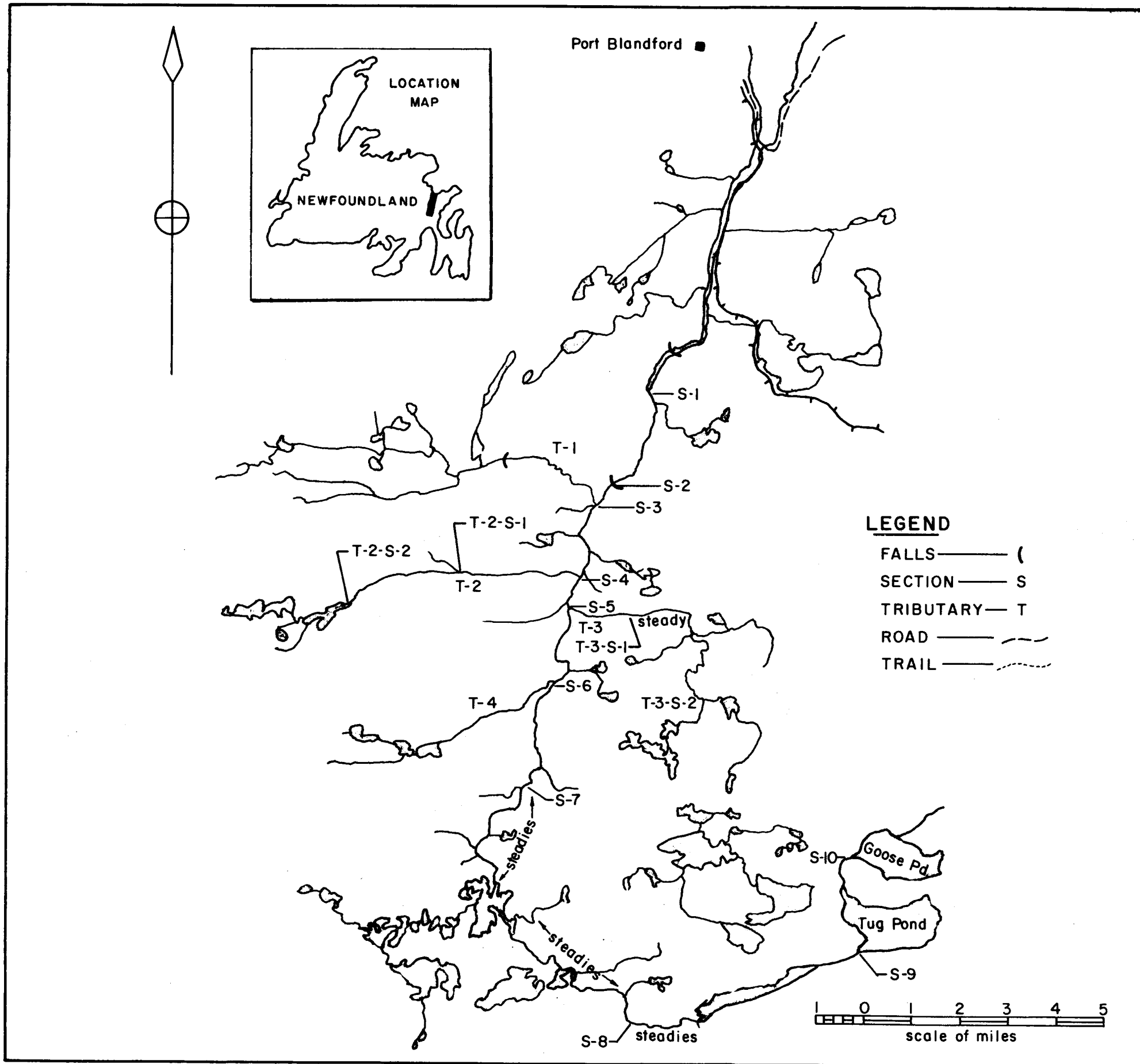


FIG. 2 OUTLINE MAP OF SOUTHWEST BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	July 7 - 13	August 11 - 17	July 20 - 27 (1968)

Accessibility to Anglers:

Accessible by trails and T.C.H. runs parallel to river.

Surveys: Stream Inventory.

Redd Counts: None to date.

References:

- Anonymus. 1943. Nfld. Dept. Nat. Res., Res. Bull. No. 12.
St. John's, Newfoundland.
- Riche, L. & Traverse G. 1971. River Investigations 1969-1970.
East and West Coast - An Inventory. Progress Rept.
No. 72. Res. Dev. Br. Fisheries & Marine Service,
St. John's, Newfoundland.

SOUTH WEST BROOK (Goose Bay)

Location: 48°21'20" N. 53°54'01" W. Goose Bay, Bonavista Bay.
 Map Reference: Sweet Bay. 2 C/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 69.7 miles², (180.52 km²). Mean width, 9.8 miles,
 (15.76 km).

Perimeter, 45.3 miles, (72.88 km). Axial length, 5.5 miles,
 (8.84 km).

Maximum basin relief, 1,382 feet, (421.23 m).

Geology:

Predominantly Precambrian sedimentary with the remainder consisting
 of Precambrian volcanic and Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (µ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: No completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

PORT UNION RIVER

Location: 48°29'50" N. 53°05'30" W. Catalina Harbour,
Trinity Bay.

Map Reference: Trinity. 2 C/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 28.0 miles², (45.05 km²). Mean width, 4.0 miles,
(6.43 km).

Perimeter, 28.4 miles, (45.69 km). Axial length, 7.1 miles,
(11.42 km).

Maximum basin relief, 650 feet, (198.12 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Total length of main river is 10 miles, (16.09 km).

Barriers to Fish Migration:

Main river:

Dam at forebay of power house, at mile point 0.25, (0.40 km),
complete obstruction.

Dam, at mile point 1, (1.60 km), (Whirl Pool Pond), partial
obstruction.

Photographs on file; Nos.

Water Quality Data, Sample Collected July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.20	2.0	6.0	1.0	5.5	31.0	0.6	-

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

CHAMPNEYS BROOK (Salmon Cove River)

Location: 48°23'35" N. 53°18'20" W. Champneys, Trinity Bay.
 Map Reference: Trinity. 2 C/6 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 28.7 miles², (74.33 km²). Mean width, 4.8 miles,
 (7.72 km).

Perimeter, 27.8 miles, (44.73 km). Axial length, 6.4 miles,
 (10.29 km).

Maximum basin relief, 500 feet, (152.40 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil

Photographs on file; Nos.

Water Quality Data, Sample Collected July 1973.

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH	4.0	5.0	0.8	6.5	35.0	1.2	4.88

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, eels.

Summary, angling data, Champneys Brook (Salmon Cove Brook).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1961	245	9	30	13.6	-	-	-	9	30	13.6
1962	217	17	53	24.1	-	-	-	17	53	24.1
1963	335	40	146	66.2	1	7	3.2	41	153	69.4
1964 ¹	499	57	197	89.4	-	-	-	57	197	89.4
1965	399	44	159	72.2	3	19	8.6	47	178	80.8
1966	481	39	133	60.4	-	-	-	39	133	60.4
1967	768	43	142	64.5	-	-	-	43	142	64.5
1968	518	48	160	72.6	-	-	-	48	160	72.6
1969	566	56	186	84.4	-	-	-	56	186	84.4
1970	580	67	250	113.5	3	19	8.6	70	269	122.1
1971	398	41	141	64.0	1	6	2.7	42	147	66.7
1972	429	52	174	79.0	-	-	-	52	174	79.0
1973	587	63	227	103.1	-	-	-	63	227	103.1
1974										
1975										
1976										
1977										
MEAN										
1964-68	533	46	158	71.9	.6	3.8	1.7	47	162	73.6
1969-73	512	56	196	88.9	.8	5.0	2.3	57	201	91.2

¹Angling data, 1964-73 estimated to be 85% accurate. (B. Paul, personal communication).

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics).

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 18-24	September 3-9	July 20-27 (1968)

Accessibility to Anglers:

The river is accessible at the mouth by road. Upper sections to mile 5 (8.04 km) can be reached by foot trails.

Surveys:

None to date.

Redd Counts:

None to date.

References:

Anonymous. 1943. Nfld. Dept. Nat. Res., Res. Bull. No. 12.
St. John's, Newfoundland.

LOCKSTON RIVER

Location: 48°23'50" N. 53°22'28" W. Northeast Arm, Trinity Bay.
 Map Reference: Trinity . 2 C/6 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 27.3 miles², (70.70 km²) Mean width, 3.2 miles,
 (5.14 km).

Perimeter, 32.4 miles, (52.14 km). Axial length, 7.6 miles,
 (12.22 km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Main river:

Falls at mile point 2.5, (4.02 km), 8 ft. (2.43 m), 10'
 (3.04 m) long at 50° angle; partial obstruction.

In 1972, boulder and some ledge rock was blasted at falls.

Hydro power house and dam forms complete obstruction on tributary which
 enters main river at mile point 0.5 (0.8 km).

Hydro power house constructed in 1955.

Photographs on file; Nos 42, 545

Water Quality Data, Sample Collected July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25° C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.0	2.0	5.0	1.0	5.5	28.0	0.6	2.44

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, eels.

No angling data available on this stream.

A small number of fish angled on this river each year.

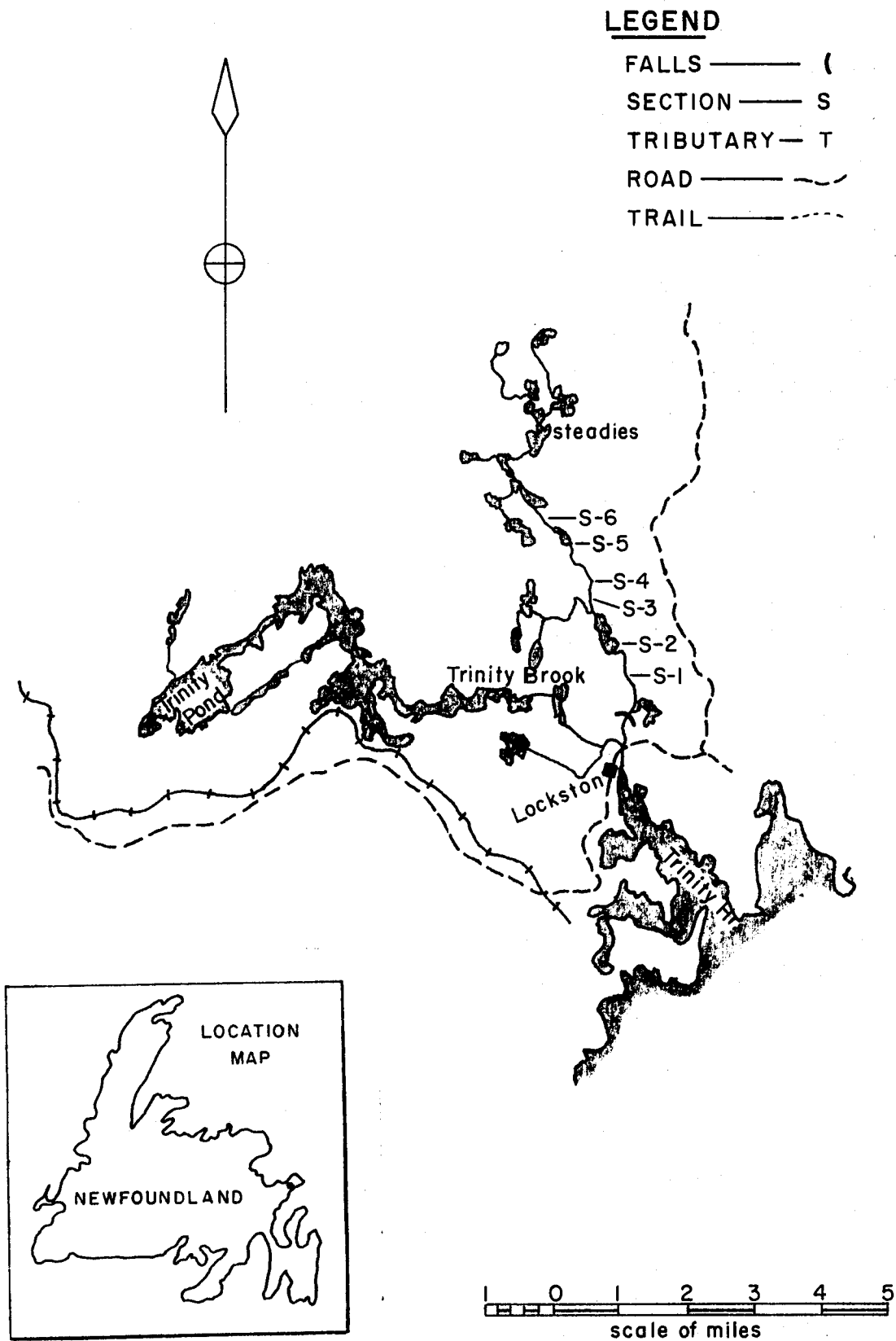


FIG. 3 OUTLINE MAP OF LOCKSTON BROOK SHOWING OBSTRUCTION LOCATION AND SECTIONS SURVEYED .

Estimated Atlantic salmon smolt production and adult sea survival,
Lockston Brook above obstruction.

If smolt production per 100 yds. ² (83.7 meters ²) is:		<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced		157	314	471
Adult return if sea survival is:	5%	8	16	24
	10%	16	31	47
	15%	24	47	71
	20%	31	63	94
	25%	39	79	118

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Accessible at mouth from highroad. Fully accessible by old road and trails.

Surveys: Biological 1969 - Stream Survey

Redd Counts: None to date.

References:

Riche, L.G. and G.R. Traverse. River Investigations
1969-1970 - An Inventory. Prog. Rept. No. 72.
Resource Dev. Br. Fisheries & Marine Service,
St. John's, Newfoundland.

TROUTY BROOK

Location: 48°19'40" N. 53°23' 15" W. Trouty, Trinity Bay.
 Map Reference: Trinity Bay. 2 C/6 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 34.6 miles², (89.61 km²). Mean width, 3.7 miles,
 (5.95 km).

Perimeter, 30.4 miles, (48.91 km). Axial length, 8.7 miles,
 (13.99 km).

Maximum basin relief, 850 feet, (259.08 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Channelling carried out in 1973 to ease migration at low discharge.

Photographs on file. Nos. 119.

Water Quality Data, Sample Collected July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.55	<1.0	4.0	0.9	5.0	25.0	0.6	-

FISH POPULATIONS

Species Present: Atlantic salmon, sea trout, brook trout, eels.

Atlantic Salmon Angling Summary - Trouty Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1954	2,236	23	76	34.5	-	-	-	23	76	34.5
1955	329	33	102	46.3	-	-	-	33	102	46.3
1956	-	38	130	59.0	-	-	-	38	130	59.0
1957	337	31	108	49.0	-	-	-	31	108	49.0
1958	154	40	145	65.8	-	-	-	40	145	65.8
1959	150	31	110	49.9	-	-	-	31	110	49.9
1960	151	12	35	15.9	-	-	-	12	35	15.9
1961	254	8	25	11.4	-	-	-	8	25	11.4
1962	273	23	73	33.1	-	-	-	23	73	33.1
1963	379	40	140	63.6	-	-	-	40	140	63.6
1964 ¹	363	30	94	42.7	-	-	-	30	94	42.7
1965	312	29	97	44.0	-	-	-	29	97	44.0
1966	342	34	112	50.8	-	-	-	34	112	50.8
1967	518	38	116	52.7	-	-	-	38	116	52.7
1968	408	52	170	77.2	-	-	-	52	170	77.2
1969	351	50	147	66.7	-	-	-	50	147	66.7
1970	70	17	45	20.4	-	-	-	17	45	20.4
1971	194	8	22	10.0	-	-	-	8	22	10.0
1972	480	30	95	43.1	-	-	-	30	95	43.1
1973	712	66	210	95.3	-	-	-	66	210	95.3
1974										
1975										
1976										
1977										
MEAN										
1964-68	389	37	118	53.6	-	-	-	37	118	53.6
1969-73	361	34	104	47.2	-	-	-	34	104	47.2

¹

Angling data, 1964-73 estimated to be 90% accurate. (B. Paul, personal communication).

Gene Frequency: Not completed.

Timing of Run: (Based on angling Statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	July 7 - 13	September 8 - 15	July 20 - 27 (1968)

Accessibility to Anglers:

This river is accessible by road at the mouth in the community of Trouty. Logging roads lead upstream to New Castle Pond a distance of approximately 1.5 miles (2.41 kilometers).

Surveys: None to date.

Redd Counts: None to date.

References:

Anonymus. 1943. Nfld. Dept. Nat. Res., Res. Bull. No. 12,
St. John's, Newfoundland.

POPES HARBOUR RIVER

Location: 48°14'15" N. 53°33'30" W. Smith Sound, Trinity Bay.

Map Reference: Random Island. 2 C/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 51.0 miles², (132.09 km²). Mean width, 5.8 miles, (9.33 km).

Perimeter, 37.5 miles, (60.33 km). Axial length, 8.0 miles, (12.87 km).

Maximum basin relief, 800 feet, (243.84 m).

Geology:

Almost entirely Ordovician sedimentary with some Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Sawmill dam at mouth of the main river; partial obstruction.

(This sawmill dam is equipped with fishway, but there is insufficient water for it to work efficiently when sawmills are in operation or at low water levels). Dam removed by C & P personnel 1973.

Photographs on file; Nos.

Miscellaneous Information:

Twelve sawmills in the area in 1943.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present: Atlantic salmon and brook trout, sea trout.

Atlantic Salmon Angling Record - Popes Harbour River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1962	24	13	42	19.1	-	-	-	13	42	19.1
1963	46	5	15	6.8	-	-	-	5	15	6.8
1964 ¹	44	2	6	2.7	-	-	-	2	6	2.7
1965	44	6	18	8.2	-	-	-	6	18	8.2
1966	34	5	14	6.4	-	-	-	5	14	6.4
1967	64	5	14	6.4	-	-	-	5	14	6.4
1968	66	10	30	13.6	-	-	-	10	30	13.6
1969	No report									
1970	No report									
1971	38	-	-	-	-	-	-	-	-	-
1972	84	16	52	23.6	-	-	-	16	52	23.6
1973	84	3	11	5.0	-	-	-	3	11	5.0
1974										
1975										
1976										
1977										
MEAN										
1964-68	50	6	16	7.5	-	-	-	6	16	7.5
1971-73	69	6	21	7.9	-	-	-	6	21	7.9

¹Angling data, 1964-73 estimated to be 95% accurate (B. Paul, personal communication).

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1965-1968	July 11-17	August 4-10	July 20-27 (1968)

Accessibility to Anglers:

This river is accessible at mouth by boat only. Footpaths lead upstream along river banks for about 1 mile (1.61 km). A woods road leads to the headwaters from Burgoynes Cove, a distance of about 15 miles (24.13 km).

Surveys: None to date.

Redd Counts: None to date.

References:

Anonymous. 1943. Nfld. Dept. Nat. Res., Res. Bull. No. 12,
St. John's, Newfoundland.

HICKMAN'S HARBOUR RIVER

Location: 48°12'55" N. 53°34'55" W. Smith Sound, Trinity Bay.
 Map Reference: Random Island. 2 C/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 39.4 miles², (102.04 km²). Mean width, 3.8 miles,
 (6.11 km).

Perimeter, 43.0 miles, (69.18 km). Axial length, 10.9 miles,
 (17.53 km).

Maximum basin relief, 800 feet, (243.84 m).

Geology:

Almost entirely Precambrian sedimentary with some Cambrian
 sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Three dams and seven sawmills between mouth and mile 1.5, (2.41 km),
 on the main river: partial obstruction. (Dams equipped with fish-
 ways but water insufficient at times). Dams removed by C & P
 personnel 1973.

Photographs on file; Nos.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.

FISH POPULATIONS

Species Present: Atlantic salmon and brook trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Anononyous. 1943. Nfld. Dept. Nat. Res., Res. Bull.
No. 12., St John's, Newfoundland.

RYDERS BROOK

Location: 48°14'10" N. 53°56'25" W. Smith Sound, Trinity Bay.
 Map Reference: Random Island. 2 C/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 26.2 miles², (67.85 km²). Mean width, 6.3 miles,
 (10.13 km).

Perimeter, 27.1 miles, (43.60 km). Axial length, 3.4 miles,
 (5.47 km).

Maximum basin relief, 600 feet, (182.88 m).

Geology:

About half Ordovician sedimentary with the remainder consisting of
 Cambrian sedimentary, Precambrian sedimentary and Precambrian
 volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

No obstructions.

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present: Brook trout.

No angling data available on this stream.

Gene Frequency:

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

GEORGES BROOK

Location: 48°14'15" N. 53°57'30" W. Smith Sound, Trinity Bay.
 Map Reference: Random Island. 2 C/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 17.1 miles², (44.28 km²). Mean width, 2.2 miles,
 (3.53 km).

Perimeter, 24.8 miles, (39.90 km). Axial length, 7.2 miles,
 (11.58 km).

Maximum basin relief, 1,382 feet, (421.23 m).

Geology:

Almost entirely Precambrian volcanic with some Cambrian
 sedimentary and Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Dam and sawmill at mile 2, (3.21 km), on the main river;
 partial obstruction.

Photographs on file: Nos.

Water Quality Data, Sample Collected July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.80	4.0	7.0	0.7	4.5	24.0	1.5	4.88

FISH POPULATIONS

Species Present: No information.

Angling Data: Nil

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Rec'd Counts: None to date.

References:

Anononyous. 1943. Nfld. Dept. Nat. Res., Res. Bull.
No. 12., St. John's, Newfoundland.

SHOAL HARBOUR RIVER

Location: 48°10'59" N. 53°59'15" W. Northwest Arm, Trinity Bay.
 Map Reference: Random Island. 2 C/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 49.9 miles², (129.24 km²). Mean width, 4.6 miles,
 (7.40 km).

Perimeter, 35.9 miles, (57.76 km). Axial length, 10.7 miles,
 (17.21 km).

Maximum basin relief, 1,000 feet, (304.80 m).

Geology:

Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

In 1972, channel blasted in rock at top of falls above Shoal
 Harbour road and boulders removed in channel at foot of falls.

Photographs on file: Nos.

Water Quality Data, Sample Collected August 1972, July 1973.

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.	
pH	6.87	6.0	11.5	0.75	8.0	40.0	2.1	7.4

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, rainbow trout.

Summary, angling data, partial count, Shoal Harbour River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1971	80	6	19	8.6	-	-	-	6	19	8.6
1972	352	21	62	28.1	-	-	-	21	62	28.1
1973	125	22	74	33.6	-	-	-	22	74	33.6
1974										
1975										
1976										
1977										

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Accessible by road at mouth and 2 miles (3.21 km) upstream where the Trans-Canada Highway crosses. Foot paths lead from the mouth along the river banks to the Trans-Canada Highway. The upper section is isolated.

Surveys: None to date.

Redd Counts: None to date.

References:

Anononyous. 1943. Nfld. Dept. Nat. Res. Res. Bull. No. 12
St. John's, Newfoundland.

NORTHWEST BROOK

Location: $48^{\circ} 01' 47''$ N. $53^{\circ} 57' 30''$ W. South West Arm,
Trinity Bay.

Map Reference: Random Island. 2C/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 21.4 miles², (55.42 kilometers²). Mean width, 3.2 miles,
(5.14 kilometers).

Perimeter, 23.4 miles, (37.65 kilometers). Axial length, 6.4 miles,
(10.29 kilometers).

Maximum basin relief, 1,200 feet, (365.76 meters).

Geology:

About equal amounts of Precambrian volcanic and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Obstructions, main stem of Northwest Brook

Obst. No.	Obst. Type	Location from mouth	Description	Degree of Obstruction
1	falls	mouth of river	6' high (low tide) 8' long at 80° overhanging lip	Holdup low tide, easily passable high tide.
In 1971, large rocks at top of falls removed by blasting.				
2	rapids	2.3 miles 3.7 kilometers	6' high, 50' long	Easily passable all water levels.
3	falls	2.4 miles 3.9 kilometers	5' high, vertical on left, 15' long on right. 80° angle on left. 45° on right.	Holding at low water
4	falls	3.4 miles 5.5 kilometers	5' high, 80° angle run-around on RHS not visible in photo.	Easily passable at all water levels.
5	falls	3.6 miles 5.8 kilometers	60' overall height 90' long, 5 vertical drops	Complete at all water levels.
6	falls	4.8 miles 7.7 kilometers	50' high, 75' long, 3 drops; 2 upper drops 10' high at 80° , lower drop 22' vertical.	Complete all water levels.
7	falls	4.9 miles 7.9 kilometers	5' high shute 12' long at 45°	Holdup only at extreme low water

Water Quality Data, Sample Collected August 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.76	5.0	7.5	0.9	7.0	39.0	1.2	6.1

FISH POPULATIONS

Species Present: Brook trout.

No angling data available on this stream.

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and sea survival Northwest Brook from mouth to first complete obstruction.

If smolt production per

$100 \text{ yds}^2 (83.7 \text{ m}^2)$ is:

Smolts produced

1
698

2
1,396

3
2,094

Adult return if sea survival is:	5%	35	70	105
	10%	70	140	209
	15%	105	209	314
	20%	140	279	419
	25%	175	349	524

Estimated Atlantic salmon smolt production and adult sea survival for Northwest Brook and tributary #1 between complete obstructions.

If smolt production per

$100 \text{ yd}^2 (83.7 \text{ m}^2)$ is:

Smolts produced

1
219

2
438

3
657

Adult return if sea survival is:	5%	11	22	33
	10%	22	44	66
	15%	33	66	99
	20%	44	88	131
	25%	55	110	164

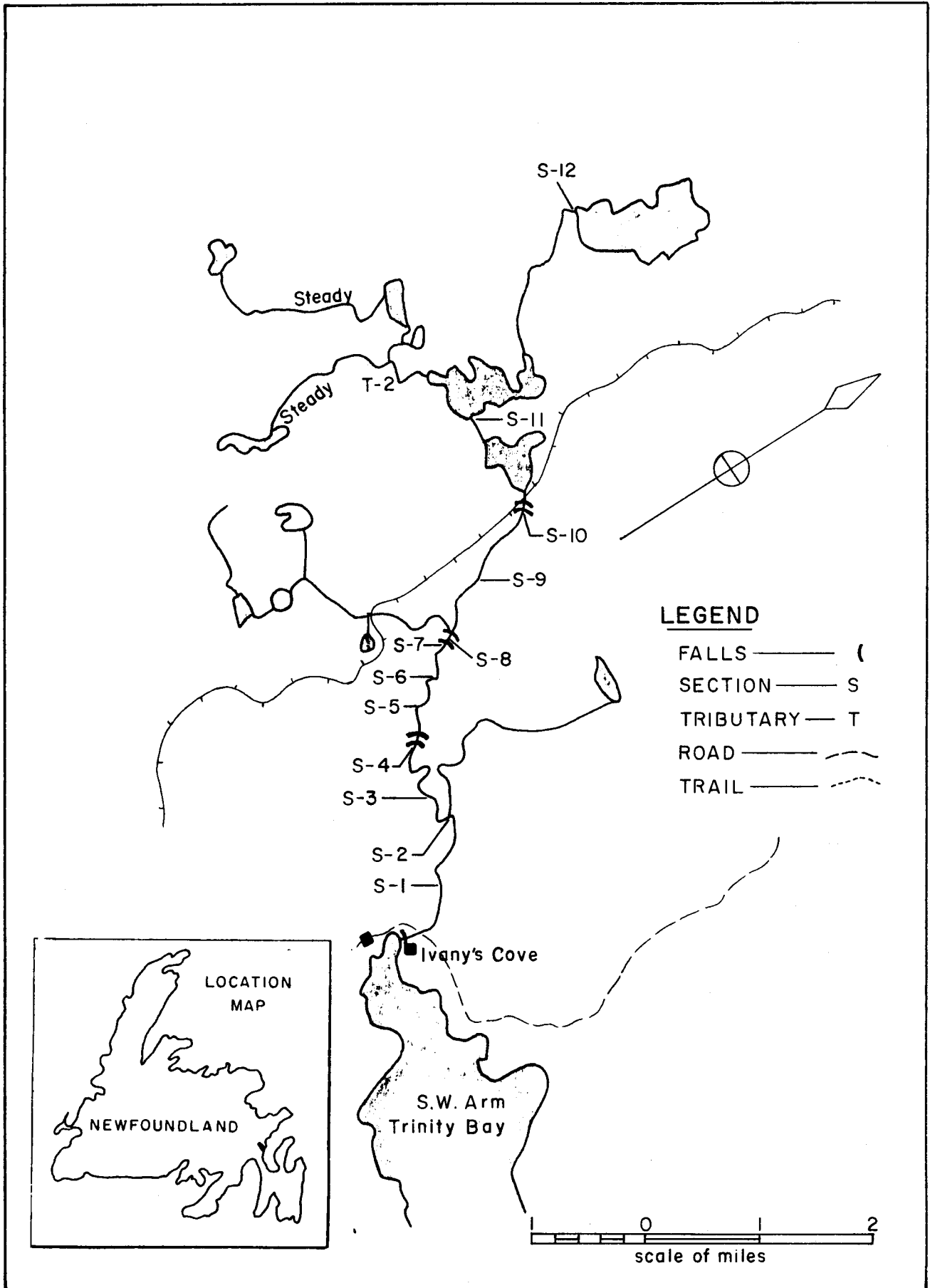


FIG. 4 OUTLINE MAP OF NORTHWEST BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED.

Estimated Atlantic salmon smolt production and sea survival Northwest Brook above the upper complete obstruction.

If smolt production per				
100 yd ² (83.7 m ²) is:				
Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>
		85	170	255
Adult return if sea survival is:	5%	4	9	13
	10%	9	17	26
	15%	13	26	38
	20%	17	34	51
	25%	21	43	64

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Accessible by road only at the mouth. Foot paths lead upstream for 2-3 miles (3.21-4.82 km) close to the river banks. The upper section of this river is isolated.

Surveys: Biological: Stream Inventory 1969.

Redd Counts: None to date.

References:

Anonymus. 1943. Nfld. Dept. Nat. Res., Res. Bull. No. 12.

St. John's, Newfoundland.

Riche, L.G. and G.R. Traverse 1970. River Investigations 1969-1970. An Inventory. Prog. Rept. No. 72. Resource Dev. Br. Fisheries and Marine Service, St. John's, Newfoundland.

LITTLE HEARTS EASE BROOK

Location: 48°00'20" N. 53°42'30" W. South West Arm,
Trinity Bay.

Map Reference: Random Island. 2 C/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 7.0 miles², (18.13 km²). Mean width, 1.5 miles,
(2.41 km).

Perimeter, 13.0 miles, (20.91 km). Axial length, 4.5 miles,
(7.24 km).

Maximum basin relief, 850 feet, (259.08 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil.

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Anononyous: 1943. Nfld. Dept. Nat. Res., Res. Bull No. 12,
St. John's, Newfoundland

DEER HARBOUR BROOK

Location: 47°54'25" N. 53°48'42" W. Deer Harbour, Trinity Bay.
 Map Reference: Sunnyside. 1 N/13 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 25.8 miles², (66.82 km²). Mean width, 3.6 miles,
 (5.79 km).

Perimeter, 28.8 miles, (46.33 km). Axial length, 6.5 miles,
 (10.45 km).

Maximum basin relief, 1,133 feet, (345.33 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river:

Bottom type, rubble and boulder. Velocity range, medium to fast.

Barriers to Fish Migration:

Main river, nil. Tributary, impassable falls.

Photographs on file: Nos.

Miscellaneous Information:

It is believed that this river supports only a limited number of salmon (not exceeding 200 fish). The lack of (1) resting pools (2) known spawning areas and (3) accessible tributaries combined with vast fluctuations in water levels indicate that this river has a low potential.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present: Atlantic salmon, sea trout

Atlantic salmon angling record. - Deer Harbour Brook

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kilograms	No.	lbs.	kilograms	No.	lbs.	kilograms
1952	46	12	52	23.6	-	-	-	12	52	23.6
1953	35	9	33	15.0	-	-	-	9	33	15.0
1955	20	2	6	2.7	-	-	-	2	6	2.7
1958	36	4	13	5.9	-	-	-	4	13	5.9
1960	8	2	6	2.7	-	-	-	2	6	2.7
1961	13	2	8	3.6	-	-	-	2	8	3.6
1962	61	-	-	-	-	-	-	-	-	-
1963	77	8	28	12.7	-	-	-	8	28	12.7
1964	72	3	9	4.1	-	-	-	3	9	4.1
1965	116	6	22	10.0	-	-	-	6	22	10.0
1966	28	6	19	8.6	-	-	-	6	19	8.6
1967	130	3	9	4.1	-	-	-	3	9	4.1
1968	134	10	31	14.1	-	-	-	10	31	14.1
1969	No Report									
1970	No Report									
1971	No Report									
1972	No Report									
1973	No report									
1974										
1975										
1976										
1977										

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1965-1968	July 10 - 16	August 15 - 21	August 3 - 10 (1968)

Accessibility to Anglers:

Accessible only by boat and on foot. Foot trails lead to the headwaters of this river from the Goobies area, 2 - 3 miles (3.21-4.82 kilometers).

Surveys: None to date.

Redd Counts: None to date.

References:

BELLEVUE BROOK (Trout Brook)

Location: 47°36'30" N. 53°46'05" W. Bellevue, Trinity Bay.

Map Reference: Dildo. 1 N/12 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 19.1 miles², (49.46 km²). Mean width, 1.6 miles, (2.57 km).

Perimeter, 33.5 miles, (53.90 km). Axial length, 11.0 miles, (17.69 km).

Maximum basin relief, 800 feet, (243.84 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river, from mouth to headwaters:

Average width, 25 ft., (7.62 m). Average depth, 18 inches, (0.45 m).

Velocity, fast. Bottom type, gravel and boulder.

Many pools throughout river.

Spawning Areas:

Main river, from mouth to mile 2, (3.21 km). Suitable gravel (no redds observed during 1965 survey).

Barriers to Fish Migration: No serious obstructions.

Photographs on file: Nos. 907,

Miscellaneous Information: Logging activity and beaver dams had an adverse effect on the salmon run in 1965. Scheduled salmon angling brook in 1974.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon and brook trout.

Atlantic Salmon Angling Record - Bellevue Brook (Trout Brook).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1966	50	6	20	9.1	-	-	-	6	20	-
1967	No report									
1968	No report									
1969	No report									
1970	No report									
1971	No report									
1972	No report									
1973	175	87	316	143.6	-	-	-	87	316	143.6
1974										
1975										
1976										
1977										

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
1966	July 24-30	July 24-30	-

Accessibility to Anglers:

Except for the old Trinity Bay Highway and the Trans-Canada Highway which crosses at a point 6 miles (9.65 km), access is by foot only. Limited access can be had by all terrain vehicle.

Surveys: None to date.

Redd Counts:

1966, 130 redds located all along river.

References:

SPREAD EAGLE BROOK

Location: 47°31'40" N. 53°36'30" W. Spread Eagle Bay,
Trinity Bay.

Map Reference: Dildo. 1 N/12 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 22.1 miles², (57.23 km²). Mean width, 2.0 miles,
(3.2 km).

Perimeter, 29.7 miles, (47.78 km). Axial length, 11.9 miles,
(19.14 km).

Maximum basin relief, 693 feet, (211.22 m).

Geology:

Almost entirely Precambrian sedimentary with some Cambrian
sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river:

Average width, 20 feet, (6.09 m), depth range, 1' to 20', (0.3-6.09 m).

Velocity, slow. Bottom type, predominantly rubble, interspersed with
gravel and boulder.

Barriers to Fish Migration:

Falls on main river. 7.5 miles, (12.06 km), from mouth, 5-1/2 feet
(1.67 m) high, over 15 feet (4.57 m) horizontal, (this falls is up-
stream from the Trans-Canada Highway). May be complete obstruction
at low water. Removed section of falls and drained dead water pool
fish trap by blasting, 1971. Rubble in pool needed to be cleared, 1973.

Photographs on file: nos. 227, 385.

Water Quality Data, Sample Collected 1973 (4 samples)

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.38	4.0	6.0	1.58	6.0	31.0	1.4	5.2

FISH POPULATIONS

Species Present: brook trout, brown trout.

No angling data available on this stream.

Estimated Atlantic Salmon smolt production and adult sea survival -
Spread Eagle River.

If smolt production per
100 yds² (83.7 meters²) is:

	<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced	1368	2736	4104
Adult return if sea survival is:	2%	28	54
	5%	69	137
	10%	137	272
	15%	205	411

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Except for old road bridge at mouth, access for first five miles (8.04 kilometers) by foot or terrain vehicle only. T.C.H. crosses at this point, from there on, access by foot or terrain vehicle only.

Surveys:

Engineering survey of falls at mile point 7.5 (12.06 kilometers), in 1968.

Redd Counts:

1963 - section approximately 1.5 miles, (2.41 kilometers) upstream from mouth, 60 redds.

1963 - section approximately 1 mile, (1.61 kilometers) above highway, 50 redds observed.

1966 - 30 redds located in section 2 miles (3.21 kilometers) above road, at Spread Eagle, 70 redds located immediately above and below T.C.H.

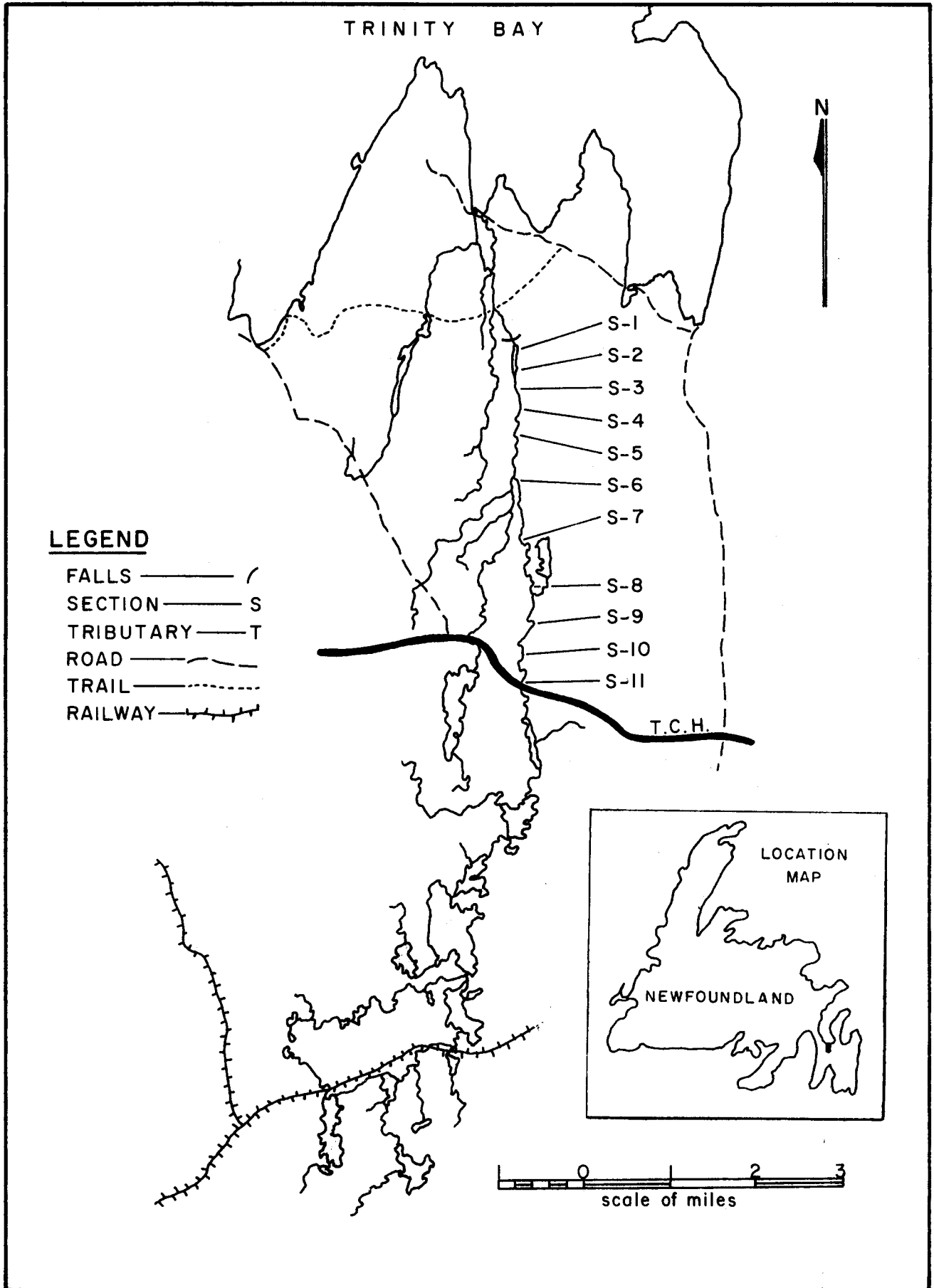


FIG 5

OUTLINE MAP OF SPREAD EAGLE BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

References:

Riche, L.R. and Traverse, G.R. 1969. River Investigations 1968, Avalon Peninsula. Prog. Rept. No. 57. Fisheries and Marine Service, St. John's, Newfoundland.

DILDO BROOK

Location: $47^{\circ} 31' 07''$ N. $53^{\circ} 33' 30''$ W. Dildo Arm,
Trinity Bay.

Map Reference: Dildo. 1 N/12 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 20.4 miles², (52.83 kilometers²). Mean width, 2.6 miles,
(4.18 kilometers).

Perimeter, 21.7 miles, (34.91 kilometers). Axial length, 7.9 miles,
(12.71 kilometers).

Maximum basin relief, 500 feet, (152.40 meters).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Length of stream from the sea to Dildo Pond is 0.8 miles, (1.28 kilometers).

Dildo Pond (morphometric data)

Max. length, 3.6 miles, (5.79 kilometers). Max. width, 0.6 miles,
(0.96 kilometers).

Max. depth, 70 ft., (21.33 meters). Mean depth, 32.7 ft. Area, 1.5 miles²,
(3.88 kilometers²).

Drainage area, 24.3 miles², (62.93 kilometers²). Shoreline development
index, 2.07.

Mean length, 2.5 miles, (4.02 kilometers). Mean width, 0.42 miles,
(0.67 kilometers). Area, 4.21×10^6 ft.²

Barriers to Fish Migration:

Main river:

Falls, near mouth, complete obstruction

Dam, near mouth, complete obstruction. (Dam supplies water for the fish
plant at South Dildo.)

Photographs on file; Nos. 306, 313, 318, 1105

Water Chemistry (Dildo Pond):

pH 6.9 (1961). T.D.S. 29.1 ppm (1961)

(The presence of the town of Blaketown, tourists camps and mink ranches

add a certain amount of soluble materials to the water of this pond).

Water Temperatures: (Dildo Pond)

76°F July 4, 1961.

Water Quality Data, Sample Collected June 1972, July 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.64	2.5	7.5	.68	9.3	38.0	1.6	3.1

FISH POPULATIONS

Species Present: Brook trout, brown trout and ouananiche.

No angling data available on this stream.

Miscellaneous Information:

Dildo Pond:

Highway #4 skirts the western shore of the lake. The lake is elongate in shape. It is moderately deep and contains two islands located in the southern end. A causeway spans the narrow bay at the south end of the lake. Beyond this point the lake is shallow, 8 feet (2.43 m), with a sandy bottom. The bottom at the north and south ends of the lake is covered with black mud. In the shallow water on the eastern shore rock and boulders are most common. Bottom materials on the western benches and shallow water areas consist of gravel and till.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First Fish</u>	<u>Last Fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Seabrook, W. D. 1962. A Survey of Nine Lakes on the Island of Newfoundland. MS report, Fisheries Service, St. John's, Newfoundland.

HEARTS DELIGHT BROOK

Location: 47°46'22" N. 53°27'50" W. Hearts Delight, Trinity Bay.

Map Reference: Hearts Content. 1 N/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 17.2 miles², (44.52 km²). Mean width, 2.1 miles, (3.37 km).

Perimeter, 21.7 miles, (34.91 km). Axial length, 6.8 miles, (10.94 km).

Maximum basin relief, 650 feet, (198.12 m).

Geology:

Almost entirely Precambrian sedimentary with some Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river from mouth to mile 3, (4.82 km). Average width, 15 feet, (4.57 m). No. of pools, 3 (small) average depth, 8 in. (.20 m). Water velocity, fast. Bottom type, mostly boulder.

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected June 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.06	2.0	6.0	.42	7.8	31.0	1.0	2.4

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, brown trout
No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

HEARTS CONTENT RIVER

Location: 47°51'50" N. 53°22'35" W. Hearts Content,
Trinity Bay.

Map Reference: Hearts Content. 1 N/14 West half

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 18.4 miles², (47.65 km²). Mean width, 2.2 miles,
(3.53 km).

Perimeter, 22.9 miles, (36.84 km). Axial length, 7.1 miles,
(11.42 km).

Maximum basin relief, 935 feet, (284.98 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Hydro dam (wooden) at mile 1.25 (2.01 km), on the main river,
6 feet, (1.82 m), high, length (bank to bank) 75 feet, (22.86 m)
complete obstruction.

Photographs on file: Nos.

Water Quality Data, Sample Collected June 1972.

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.
6.34	2.0	5.0	.27	5.75	19.5	.7	-

FISH POPULATIONS

Species Present: Brown trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

NEW PERLICAN RIVER

Location: 47°54'35" N. 53°21'30" W. Trinity Bay.

Map Reference: Hearts Content. 1 N/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 16.2 miles², (41.95 km). Mean width, 2.4 miles, (3.86 km).

Perimeter, 19.3 miles, (31.05 km). Axial length, 6.5 miles, (10.45 km).

Maximum basin relief, 850 feet, (259.08 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected June 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.3	1.0	5.5	.5	7.3	30.0	.9	1.2

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

NEW CHELSEA RIVER

Location: 48°01'50" N. 53°12'37" W. New Chelsea, Trinity Bay.

Map Reference: Old Perlican. 2 C/3 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 18.8 miles², (48.69 km²). Mean width, 2.0 miles, (3.21 km).

Perimeter, 24.1 miles, (38.77 km). Axial length, 8.6 miles, (13.83 km).

Maximum basin relief, 800 feet, (243.84 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Main river:

Falls, 500 feet, (152.40 m), upstream from mouth, 20 feet (6.09 m), high, 40 feet, (12.18 m) wide, angle 90°; complete obstruction.

Falls, 600 feet (182.88 m), upstream from mouth, 20 feet (6.09 m) high, 40 feet, (12.18 m) wide, angle 90°; complete obstruction.

Photographs on file; Nos.

Water Quality Data, Sample Collected June 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.25	1.0	10.0	.47	11.5	38.0	.7	

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

WESTERN BAY BROOK

Location: 47°53'10" N. 53°05'08" W. Conception Bay.
 Map Reference: Hearts Content. 1 N/14 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 11.2 miles², (29.00 km²). Mean width, 1.5 miles,
 (2.41 km).

Perimeter, 20.9 miles, (33.62 km). Axial length, 8.3 miles,
 (13.35 km).

Maximum basin relief, 850 feet, (259.08 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected July 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.4	2.0	3.0	.7	6.0	28.0	.6	2.44

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

BLACKHEAD BROOK

Location: 47°50'50" N. 53°05'33" W. Conception Bay.
 Map Reference: Hearts Content. 1 N/14 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 4.3 miles², (11.13 km²). Mean width, 0.8 miles,
 (1.28 km).

Perimeter, 11.1 miles, (17.8 km). Axial length, 4.8 miles,
 (7.72 km).

Maximum basin relief, 700 feet, (213.36 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Date, Sample Collected July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.8	4.0	3.0	.6	7.0	34.0	.9	4.88

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

BROAD COVE BROOK

Location: 47°50'23" N. 53°05'52" W. Conception Bay.

Map Reference: Hearts Content. 1 N/14 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 12.1 miles², (31.31 km²). Mean width, 1.6 miles, (2.57 km).

Perimeter, 18.9 miles, (30.41 km). Axial length, 8.1 miles, (13.03 km).

Maximum basin relief, 950 feet, (289.56 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected August 1972, July 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.70	4.0	6.0	.65	7.5	35.0	1.1	4.9

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

SPOUT COVE BROOK

Location: 47°49'03" N. 53°07'35" W. Conception Bay.
 Map Reference: Hearts Content. 1 N/14 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 6.0 miles², (15.51 km²). Mean width, 1.2 miles,
 (1.93 km).

Perimeter, 11.9 miles, (19.14 km). Axial length, 5.1 miles,
 (8.20 km).

Maximum basin relief, 900 feet, (274.32 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file. No.s

Water Quality Data, Sample Collected August 1972, July 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
6.70	4.0	8.0	.58	6.2	31.0	1.4	4.9

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

SALMON COVE RIVER

Location: 47°46'55" N. 53°10'00" W. Conception Bay.

Map Reference: Hearts Content. 1 N/14 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 26.3 miles², (68.12 km²). Mean width, 2.9 miles, (4.66 km).

Perimeter, 26.4 miles, (42.47 km). Axial length, 8.8 miles, (14.15 km).

Maximum basin relief, 950 feet, (289.56 m).

Geology :

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river, from mouth to mile 5, (8.04 km), (Victoria Village):

Average width, 15 feet, (4.57 m). Average depth, 1 foot, (0.30 m).

Velocity, slow. Bottom type, mostly boulder.

Spawning Areas:

Approximately one acre located around head of Beaver Pond and a small area at the head of Salmon Pond.

Barriers to Fish Migration:

Piles of boulder on the main river pose obstructions when water levels are low.

Photographs on file: Nos.

Miscellaneous Information:

Spout Brook, a tributary flowing into Salmon Cover Pond, used for hydro power.

Water Quality Data, Sample Collected July 1973.

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.	
pH	7.0	1.0	6.0	.7	6.0	34.0	1.5	-

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	July 12 - 18	August 15 - 21	July 13 - 20 (1968)

Accessibility to Anglers:

Access is just about 100% as river flows through village and is paralleled by roads in almost all sections.

Surveys: None to date.

Redd Counts: 1963, 40 salmon redds observed at head of Beaver Pond.

References:

SOUTH RIVER

Location: 47°40'05" N. 53°15'32" W. Conception Bay.
 Map Reference: Harbour Grace. 1 N/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 14.6 miles², (37.81 km²). Mean width, 1.8 miles,
 (2.89 km).

Perimeter, 21.0 miles, (33.78 km). Axial length, 8.2 miles,
 (13.19 km).

Maximum basin relief, 838 feet, (255.42 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected, July 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.0	< 1.0	6.0	.6	6.5	34.0	1.5	

FISH POPULATIONS

Species Present: Atlantic salmon.

Atlantic Salmon Angling Record - South River

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kilograms	No.	lbs.	kilograms	No.	lbs.	kilograms
1957	12	4	12	5.4	-	-	-	4	12	5.4
1961	54	7	33	15.0	2	12	5.4	9	45	20.4
1963	46	9	40	18.2	-	-	-	9	40	18.2
1964	315	30	130	59.0	-	-	-	30	130	59.0
1965	285	40	143	64.9	1	7	3.2	41	150	68.1
1966	226	33	117	53.1	-	-	-	33	117	53.1
1967	280	7	25	11.4	-	-	-	7	25	11.4
1968	157	4	16	7.3	-	-	-	4	16	7.3
1969	No Report									
1970	No Report									
1971	No Report									
1972	No Report									
1973	No report									
1974										
1975										
1976										
1977										

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 2 - 8	August 2 - 8	June 8 - 15 (1968)

Accessibility to Anglers:

Surveys:

Engineering survey of falls on Goulds Brook, tributary of South River, at old mill site in 1967.

Redd Counts: None to date.

References:

RYANS BROOK

Location: 47°36'20" N. 53°17'20" W. Conception Bay.

Map Reference: Harbour Grace. 1 N/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 9.1 miles², (23.56 km²). Mean width, 1.6 miles, (2.57 km).

Perimeter, 15.7 miles, (25.26 km). Axial length, 6.4 miles, (10.29 km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.6	5.0	7.0	.5	6.0	34.0	1.5	6.10

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

SHEARSTOWN BROOK

Location: 47°35'22" N. 53°18'10" W. Shearstown, Conception Bay.

Map Reference: Harbour Grace. 1 N/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 12.0 miles², (31.08 km²). Mean width, 1.5 miles, (2.41 km).

Perimeter, 21.3 miles, (34.27 km). Axial length, 8.8 miles, (14.15 km).

Maximum basin relief, 550 feet, (167.64 m).

Geology:

Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected June 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.79	7.0	7.0	6.7	7.0	39.0	1.9	8.5

FISH POPULATIONS

Species Present: Atlantic salmon.

No angling data available on this stream.

Miscellaneous Information:

This river has a small run of salmon. Spawning area is limited. Considerable dumping by residents who live nearby has spoiled the area. Upstream the river disappears into barren country and has no large natural reservoirs.

Small schools of salmon frequent a section of the river near the mouth but it is believed that most of these fish leave to spawn elsewhere. Angling activity occurs in this section during July and August.

Gene Frequency:

Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys:

None to date.

Redd Counts:

1963, 12 redds located in the Butler-Ville area.

References:

NORTH RIVER

Location: $47^{\circ} 33' 00''$ N. $53^{\circ} 16' 00''$ W
 Clarke's Beach, Conception Bay.
 Map Reference: Harbour Grace. 1N/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 23.6 miles², (61.12 kilometers²). Mean width, 2.4 miles, (3.84 kilometers).

Perimeter, 28.8 miles, (46.33 kilometers). Axial length, 12.5 miles, (20.11 kilometers).

Maximum basin relief, 600 feet, (182.88 meters).

Geology:

Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river, above North River Pond:

Average width, 12', (3.65 meters). Average depth, 8", (0.20 meters).

Velocity, medium. Bottom type, mainly rubble with boulders scattered throughout.

Spawning Areas:

One mile gravel section between Snow's Pond and "the Pond the feeds the brook".

Barriers to Fish Migrations:

Main River: Falls at mile point 3.8 (6.1 kilometers), 7' (2.13 meters) high in two drops, 4' (1.21 meters) and 3' (0.9 meters) with a small pool separating them. In 1971, rock blasted and water channelized to make passage easier for salmon.

Channel was bulldozed at the mouth of river in 1959 through beach gravel to allow salmon and other species of fish to enter river.

Photographs on file; Nos. 230, 1106

Water Quality Data, Sample Collected July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.25	2.0	3.0	.8	7.5	32.0	.6	2.4

FISH POPULATIONS

Species Present: Atlantic salmon and brook trout.

Atlantic Salmon Angling Record, Partial count - North River (Clarke's Beach).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1957	6	3	9	4.1	1	8	3.6	4	17	7.7
1963	72	11	47	21.3	-	-	-	11	47	21.3
1964	195	9	31	14.1	-	-	-	9	31	14.1
1965	242	6	20	9.1	-	-	-	6	20	9.1
1966	120	1	5	2.3	-	-	-	1	5	2.3
1967	412	11	33	15.0	-	-	-	11	33	15.0
1968	420	7	24	10.9	-	-	-	7	24	10.9
1969	557	17	45	20.4	-	-	-	17	45	20.4
1970	495	13	51	23.2	-	-	-	13	51	23.2
1971	733	33	115	52.2	-	-	-	33	115	52.2
1972	445	48	151	68.6	-	-	-	48	151	68.6
1973	569	83	279	126.8	-	-	-	83	279	126.8
1974										
1975										
1976										
1977										

Estimated Atlantic salmon smolt production and adult sea survival of North River (Clarke's Beach).

Smolt production per

100 yd² (83.7 m²) is:

Smolts produced

1
1552
3103
465Adult return
if sea
survival is:

2%

3

6

9

5%

8

16

23

10%

16

31

47

15%

23

47

70

LEGEND

- FALLS ——— /
- SECTION ——— S
- TRIBUTARY ——— T
- ROAD ——— - - - -
- TRAIL ——— ·····

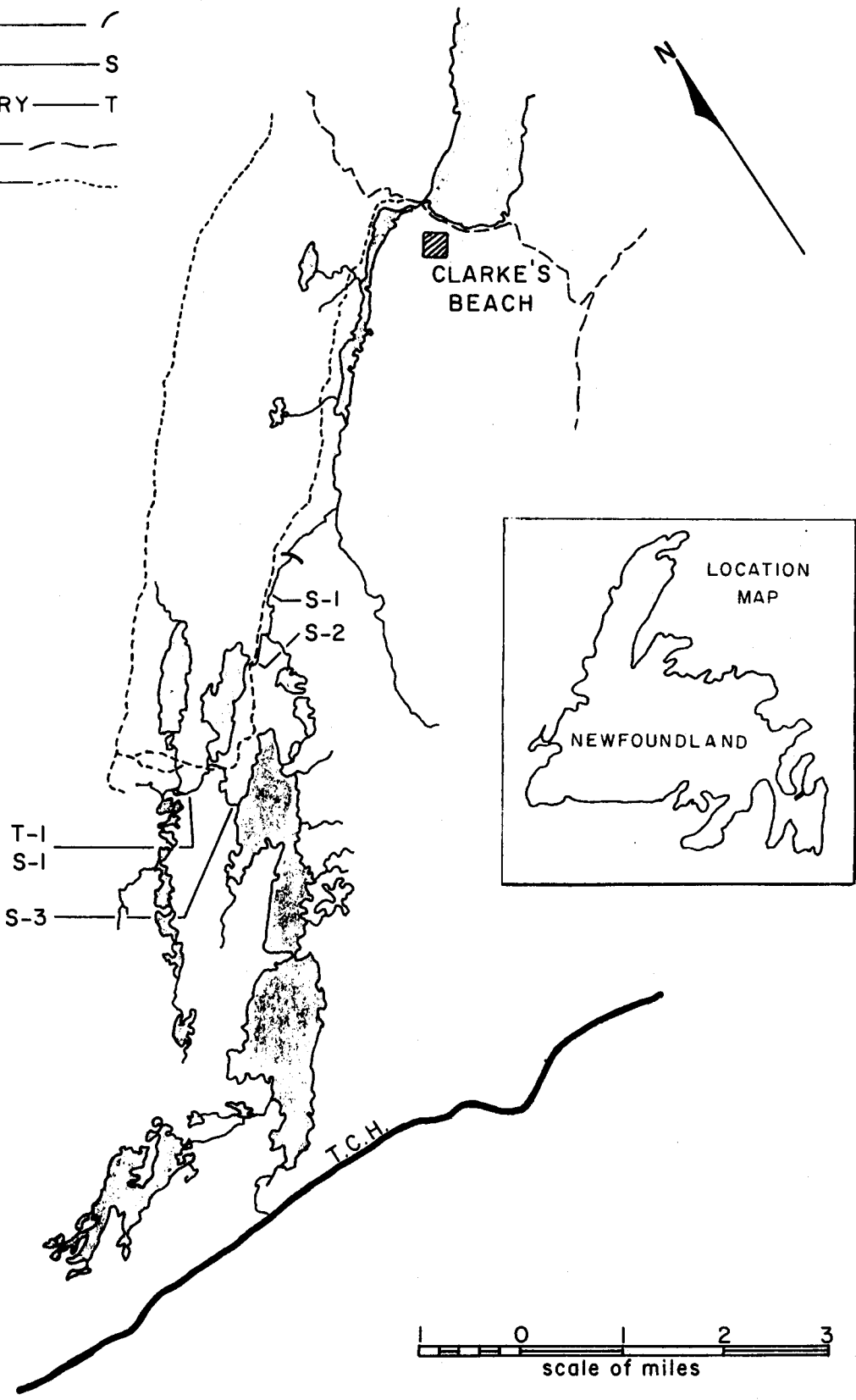


FIG 6

OUTLINE MAP OF NORTH RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Gene Frequency:

Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969,	July 2-8	September 1-6	July 20-27 (1968)

Accessibility to Anglers:

Old road parallels river from mouth to T.C.H. 5 miles (8.04 km) upstream, from mile 5 access is by foot or terrain vehicle only.

Surveys:

None to date.

Redd Counts:

1966, section located 3 miles (4.82km) upstream, 100 redds observed.

References:

Riche, L.G. and Traverse, G.R. 1969. River Investigations 1968, Avalon Peninsula. An Evaluation. Prog. Rept. No. 57. Resource Dev. Br. Fisheries & Marine Service, St. John's, Newfoundland.

SOUTH RIVER

Location: 47°32'30" N. 53°16'25" W.
 Clarke's Beach, Conception Bay.
 Map Reference: Harbour Grace. 1 N/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 26.0 miles², (67.34 km²). Mean width, 2.4 miles,
 (3.86 km).

Perimeter, 34.9 miles, (56.15 km). Axial length, 12.5 miles,
 (20.11 km).

Maximum basin relief, 600 ft., (182.88 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Bottom types:

Bottom composition consists mainly of gravel with small sections
 of rubble and boulder scattered throughout the system.

Spawning areas:

Main river, between mile points 1.8 and 2.5, (2.89 - 4.02 km).

Barriers to Fish Migration:

Series of three falls at mile 2.5 (4.02 km).

(1) 7' (2.13 m). high, at 70° angle over 20' (6.09 m). length.

(2) 12' (3.65 m). high in two drops 6' (1.82 m). and 6' (1.82m).
 at 40° and 60° angles.

(3) 8' (2.43 m). high in two drops 5' (1.5 m). vertical and 3'
 (0.9 m). at 50° angle. Partial obstruction.

Photographs on file; Nos. 262, 329, 556

Water Quality Data, Sample Collected May 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25° C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.89	2.7	6.3	.77	6.5	36.0	1.5	3.3

FISH POPULATIONS

Species Present: Atlantic salmon and brook trout.

Summary angling data, partial count, South River (Clarke's Beach).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1956	-	1	3	1.4	-	-	-	1	3	1.4
1957	13	8	27	12.3	-	-	-	8	27	12.3
1958	5	2	7	3.2	-	-	-	2	7	3.2
1959	38	4	13	5.9	-	-	-	4	13	5.9
1963	40	-	-	-	-	-	-	-	-	-
1964	56	1	2	0.9	-	-	-	1	2	0.9
1965	235	119	360	163.4	-	-	-	119	360	163.4
1966	301	63	198	89.9	-	-	-	63	198	89.9
1967	305	60	161	73.1	-	-	-	60	161	73.1
1968	245	18	58	26.3	1	7	3.2	19	65	29.5
1969	412	12	38	17.3	-	-	-	12	38	17.3
1970	408	2	9	4.1	1	6	2.7	3	15	6.8
1971	350	3	11	5.0	-	-	-	3	11	5.0
1972	269	6	20	9.1	-	-	-	6	20	9.1
1973	356	28	101	45.9	-	-	-	28	101	45.9
1974										
1975										
1976										
1977										

Estimated Atlantic salmon smolt production and adult sea survival.

If smolt production per
 100 yds² (83.7 m²) is:
 Smolts produced

	1	2	3
	860	1,720	2,580
Adult return if sea survival is:	2% 17	34	52
	5% 43	86	129
	10% 86	172	258
	15% 129	258	387

LEGEND

- FALLS ——— /
- SECTION ——— S
- TRIBUTARY ——— T
- TRAIL ——— - - - - -
- ROAD ——— - - - - -
- RAILWAY ——— + + + + +

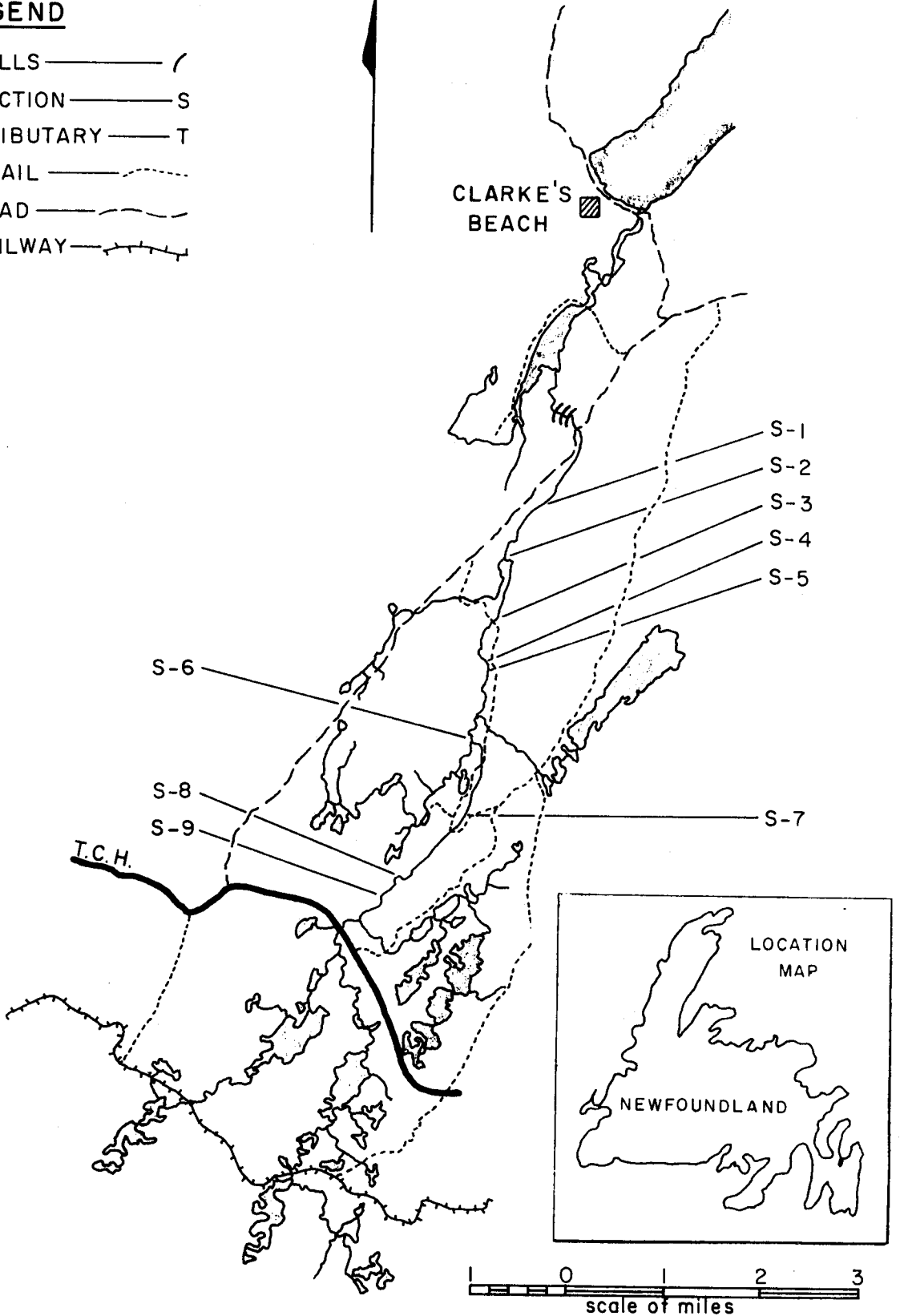


FIG 7

OUTLINE MAP OF SOUTH RIVER SHOWING
OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Gene Frequency:

Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 8-15	August 1-7	June 8-15 (1968)

Accessibility to Anglers:

Accessibility is almost 100% for the first 5 miles (8.04 km).
From the point where T.C.H. crosses river, accessibility is
by foot or terrain vehicle only.

Surveys:

None to date.

Redd Counts:

1963: Section near old woolen mills approximately 1.5 miles
(2.41 km) from mouth, 85 redds observed.

References:

Riche, L.G. & Traverse G.R. 1969. River Investigations, 1968.
Avalon Peninsula. An Evaluation. Prog. Rept. No. 57.
Resource Dev. Br. Fisheries & Marine Service, St. John's,
Newfoundland

COLLIERS RIVER

Location: 47°27'14" N. 53°13'33" W. Conception Bay.

Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 24.7 miles², (63.97 km²). Mean width, 2.8 miles, (4.50 km).

Perimeter, 28.0 miles, (45.05 km). Axial length, 9.5 miles, (15.28 km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

Almost entirely Precambrian sedimentary with some Precambrian volcanic and Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected May 1972, February 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.05	1.0	5.0	.53	7.5	26.0	.9	1.2

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

SALMON RIVER

Location: 47°25'12" N. 53°12'05" W. Conception Bay.

Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 23.9 miles², (61.90 km²). Mean width, 2.0 miles, (3.22 Km).

Perimeter, 34.4 miles, (55.34 km). Axial length, 11.4 miles, (18.34 Km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

Almost entirely Precambrian sedimentary with some Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected June 1972, February 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.29	3.0	7.0	.44	7.25	29.0	1.4	3.7

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

MALONEYS RIVER

Location: 47°25'58" N. 53°09'40" W. Conception Bay.
 Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 9.0 miles², (23.31 kilometers²). Mean width, 1.1 miles,
 (1.76 kilometers).

Perimeter, 19.0 miles, (30.57 kilometers). Axial length, 8.8 miles,
 (14.15 kilometers).

Maximum basin relief, 500 feet, (152.40 meters).

Geology:

Almost entirely Precambrian volcanic with some Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected, May 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.79	4.0	7.0	.4	6.5	28.0	1.5	4.9

FISH POPULATIONS

Species Present: Brown trout, brook trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

NORTH ARM RIVER

Location: 47° 23' 37" N. 53° 09' 30" W.
Holyrood, Conception Bay.
Map Reference: Holyrood. 1N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 33.2 miles², (85.98 kilometers²). Mean width, 3.4 miles, (5.47 kilometers).
Perimeter, 29.8 miles, (47.94 kilometers). Axial length, 10.8 miles, (17.37 kilometers).
Maximum basin relief, 1,050 feet, (320.04 meters).

Geology:

Predominantly Precambrian volcanic with some Precambrian sedimentary and acidic intrusive rocks.

Vegetational Cover:

Young forest. Most of the forest area is protected. No cutting is permitted.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river,
Channel width, 30', (9.14 meters). Channel depth, 1', (.30 meters).
Water velocity, 10 m.p.h.
Bottom type, mainly rubble with some large boulder and sections of gravel scattered throughout.

Spawning Areas:

Main river, 123 units; tributaries, 55 units; estimated, 113 units; total, 291 units.

Barriers to Fish Migration:

Falls, 100 yds., (91.44 meters) from mouth, 6' (1.82 meters), high in 2 drops, 30' (9.14 meters) long. Partial obstruction at low water.
In 1972, boulders and ledgerock blasted to make fish passage easier.

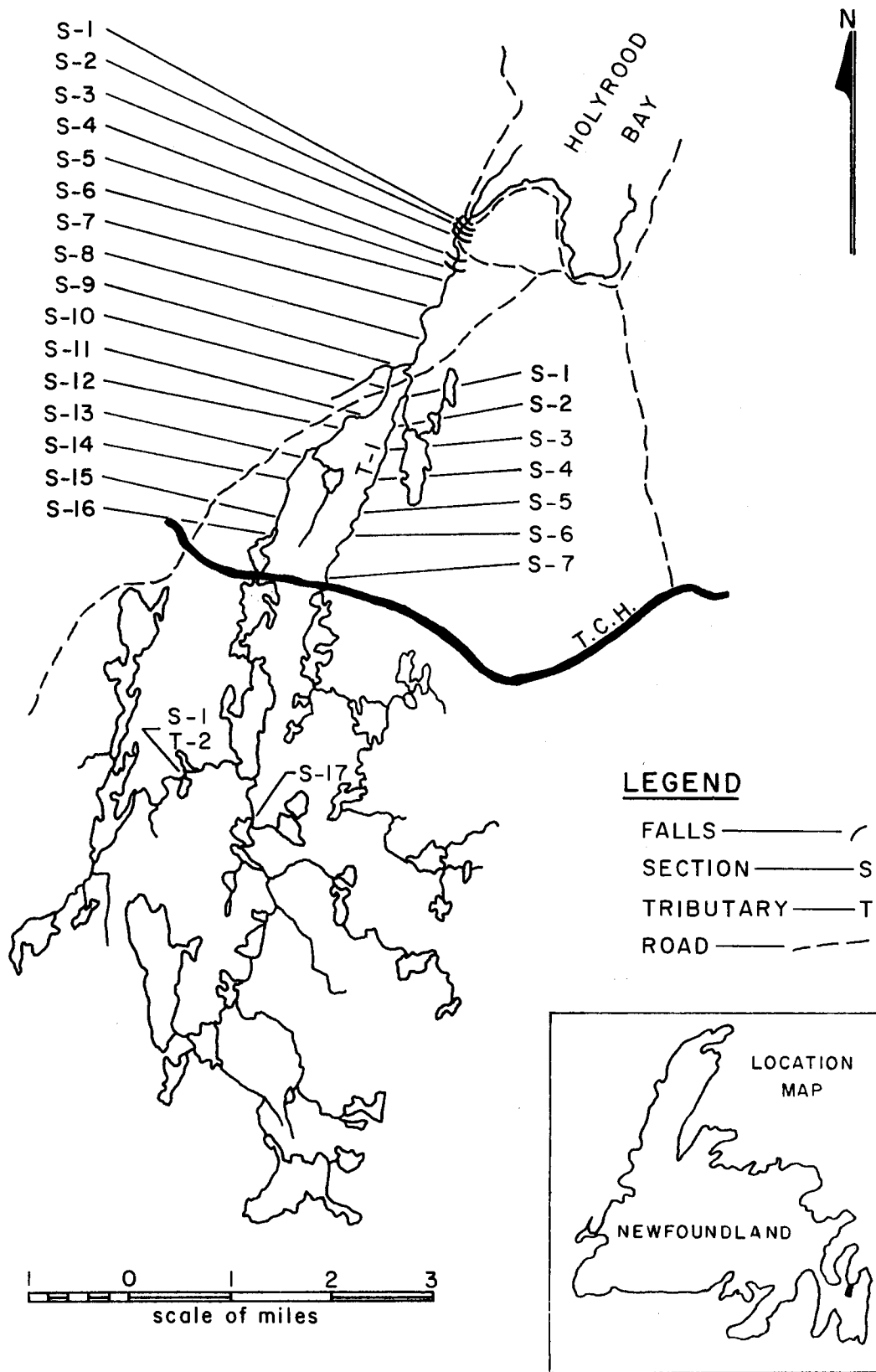


FIG 8

OUTLINE MAP OF NORTH ARM RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Estimated Atlantic Salmon smolt production and adult sea survival

Smolt production

per 100 yds² (83.7 meters²) is:

<u>1</u>	<u>2</u>	<u>3</u>
1,301	2,602	3,903

Smolts produced

Adult return if sea survival is:	2%	26	52	78	
	5%	66	130	196	
	10%	130	260	390	
	15%	196	390	586	

Miscellaneous Information:

Beyond the falls near the mouth the river flows through flat country.

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
1968	June 23 - 29	June 23 - 29	-

Accessibility to Anglers:

Road runs parallel to river from mouth to a point 1 mile (1.61 kilometers) upstream, from here access only by foot to old Salmonier Road where the river is crossed by bridge. For the next 3 miles (4.82 kilometers) access is by foot only as far as the T.C.H. Remainder of river accessible by foot or terrain vehicle.

Surveys: None to date.

Redd Counts:

1966, 300 redds observed in section 1.5 miles (2.41 kilometers) from mouth.

References:

- Riche, L.G. & Traverse, G.R. 1969. River Investigation 1968.
Avalon Peninsula - An Evaluation. Prog. Rept. No. 57.
Resource Dev. Br. Fisheries & Marine Service, St. John's,
Newfoundland

SOUTH RIVER

Location: 47°23'35" N. 53°07'33" W. Conception Bay.
 Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 14.3 miles², (37.03 km²). Mean width, 2.1 miles,
 (3.37 km).

Perimeter, 19.2 miles, (30.89 km). Axial length, 6.8 miles,
 (10.94 km).

Maximum basin relief, 1,050 feet, (320.04 m).

Geology:

Predominantly Precambrian volcanic with some acidic intrusive
 rocks and Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos. 329

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.54	5.0	6.0	.5	3.5	29.0	1.2	-

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Reel Counts: None to date.

References:

QUARRY BROOK

Location: 47°27'08" N. 53°05'40" W. Conception Bay.
 Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 4.7 miles² (12.17 km²). Mean width, 1.0 miles,
 (1.60 km).

Perimeter, 12.8 miles, (20.59 km). Axial length, 5.2 miles,
 (8.36 km).

Maximum basin relief, 1,000 feet, (304.80 m).

Geology:

Almost entirely acidic intrusive rocks with some Cambrian
 sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos. 387, 466.

Water Quality Data, Sample Collected April, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.35	2.0	8.0	0.7	7.5	33.0	1.2	2.44

FISH POPULATIONS

Species Present: Smelt, brook trout, brown trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

SEAL COVE BROOK

Location: 47°28'17" N. 53°05'00" W. Conception Bay.
 Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 33.2 miles², (53.41 km²). Mean width, 3.4 miles,
 (5.47 km).

Perimeter, 35.8 miles, (57.60 km). Axial length, 8.7 miles,
 (13.99 km).

Maximum basin relief, 950 feet, (289.56 m).

Geology:

About half gneissis with the remainder consisting of acidic
 intrusive rocks and Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Hydro dams throughout basin; complete obstruction.

Photographs on file; Nos.

Water Quality data, Sample Collected, May 1972, April 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.19	2.5	6.0	0.66	5.8	28.0	1.1..	3.1

FISH POPULATIONS

Species Present: Brook trout, ouananiche, brown trout.

No angling data available on this stream.

Miscellaneous Information:

River used for power by the United Towns Electric Co. since 1923.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Dept. of Northern Affairs and Nat. Res. 1958.

Water Resources of Canada.

Queen's Printer, Ottawa.

LOWER GULLIES RIVER

Location: 47°29'45" N. 53°02'06" W. Conception Bay.
 Map Reference: Holyrood. 1 N/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 8.0 miles², (20.72 km²). Mean width, 1.5 miles,
 (2.41 km).

Perimeter, 16.9 miles, (27.19 km). Axial length, 5.7 miles,
 (9.17 km).

Maximum basin relief, 850 feet, (259.08 m).

Geology:

Predominantly acidic intrusive rock with some Cambrian sedimentary
 and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos. 327

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
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FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

MANUELS RIVER

Location: 47°32'05" N. 52°57'26" W. Manuels, Conception Bay.
 Map Reference: St. John's. 1 N/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 26.3 miles², (68.11 km²). Mean width, 2.5 miles,
 (4.02 km).

Perimeter, 34.9 miles, (56.15 km). Axial length, 10.9 miles,
 (17.53 km).

Maximum basin relief, 802 feet, (244.45 m).

Geology:

Predominantly gneissis with some Precambrian volcanic and Cambrian
 sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls at mile 1, (1.60 km), on the main river, complete obstruction.

Photographs on file; Nos.

Water Quality Data, Sample Collected May 1972, March 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.25	4.0	5.5	0.55	9.5	32.0	1.3	4.9

FISH POPULATIONS

Species Present: Brown trout, brook trout, ouananiche.

No angling data available on this stream.

Miscellaneous Information:

In 1956, dams were constructed on the main river to divert some of the water from this watershed to Topsail River watershed (Code E-22-1637) for hydro development.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

TOPSAIL RIVER

Location: 47°32'30" N. 52°55'13" W. Conception Bay.
 Map Reference: St. John's. 1 N.10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 4.6 miles², (11.91 km²). Mean width, 1.3 miles,
 (2.09 km).

Perimeter, 9.8 miles, (15.76 km). Axial length, 3.0 miles,
 (4.82 km).

Maximum basin relief, 750 feet, (231.41 m).

Geology:

Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected May 1972, May 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.19	1.5	6.0	0.85	11.3	39.0	1.4	1.8

FISH POPULATIONS

Species Present: Brown trout, brook trout, ouananiche.

No angling data available on this stream.

Miscellaneous Information:

River used for hydro power.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

HORSE COVE BROOK

Location: 47°34'22" N. 52°54'23" W. Conception Bay.
 Map Reference: St. John's. 1 N/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 1.5 miles², (3.88 km²). Mean width, 1.0 miles
 (1.60 km).

Perimeter, 6.1 miles, (9.81 km). Axial length, 2.1 miles,
 (3.37 km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

Predominantly gneissis with some Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected May, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.0	2.0	10.0	1.3	14.5	56.0	1.2	2.44

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

BROAD COVE BROOK

Location: 47°35'32" N. 52°53'10" W. Conception Bay.
 Map Reference: St. John's. 1 N/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 6.5 miles², (16.83 km²). Mean width, 1.7 miles,
 (2.73 km).

Perimeter, 12.5 miles, (20.11 km). Axial length, 3.9 miles,
 (6.27 km).

Maximum basin relief, 725 feet, (220.98 m).

Geology:

Almost entirely Precambrian volcanic with some Precambrian
 sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

BEACHY COVE BROOK

Location: 47° 37' 05" N. 52° 52' 22" W. Beachy Cove,
Conception Bay.

Map Reference: St. John's. 1 N/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 11.7 miles², (30.30 kilometers²). Mean width, 2.1 miles,
(3.37 kilometers).

Perimeter, 18.7 miles, (30.36 kilometers). Axial length, 6.7 miles,
(10.78 kilometers).

Maximum basin relief, 750 feet, (228.60 meters).

Geology:

About half gneiss and about half Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Morphometric Data: Hogan's Pond:

Mean length, 0.27 miles, (0.43 kilometers). Max. length, 1.1 miles,
(1.76 kilometers). Max. width, 0.9 miles, (1.44 kilometers).

Mean width, 0.22 miles, (0.35 kilometers). Max. depth, 35 ft., (10.66
meters). Area, 0.24 miles², (0.62 kilometers²).

Mean depth, 16.3 ft., (4.96 meters).

Bottom Type: Hogan's Pond: Varies from rubble and boulder around the
shore to deep mud in the regions below 10 ft. (3.04 meters), depth.

This mud is interspersed with numerous large rocks.

Barriers to Fish Migrations: The main river has a series of precipitous
water falls which block the passage of anadromous fish.

Photographs on file; Nos.

Water Chemistry: Hogan's Pond:

pH, 6.3 (1961) TDS, 37.3 ppm (1961).

Farms and cottages in the area add soluble materials to this pond.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present: Lake whitefish, rainbow trout, brown trout, brook trout,
No angling data available on this stream.

Miscellaneous Information:

Hogan's and Mitchell's Pond were one body of water connected by a shallow narrows. This narrows has been spanned by a causeway. A culvert is now the only communication between these two lakes.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Seabrook, W.D. 1961. A Survey of Nine Lakes on the Island of Newfoundland. MS report, Fisheries Service, St. John's, Newfoundland.

PICCOS BROOK

Location: 47°42'30" N. 52°42'25" W. Flat Rock.
 Map Reference: St. John's. 1 N/10 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 8.0 miles², (20.72 km²). Mean width, 1.2 miles,
 (2.00 km).

Perimeter, 16.0 miles, (25.74 km). Axial length, 7.2 miles,
 (11.58 km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

About half Precambrian sedimentary and about half Precambrian
 volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected May, 1973.

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.	
pH	5.75	1.0	11.0	1.2	11.0	42.0	1.0	-

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

QUIDI VIDI RIVER (Rennies River)

Location: 47°34'59" N. 52°40'42" W. Quidi Vidi Harbour.
 Map Reference: St. John's. 1 N/10 East.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Geology:

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Length: Main River (Quidi Vidi, Rennies River) from mouth to Juniper Pond is 5-1/4 miles, (8.44 km).

Barriers to Fish Migration:

Main river:

Falls, near mouth, overall height 40-45 feet, (12.19-13.71 m) high, divided into three sections; lower section consists of rapids, middle section is a 10 foot (3.04 m) falls made up of several steps, third section is a 10 foot (3.04 m) falls made up of several steps, partial obstruction.

Dam at outlet of Quidi Vidi Lake 3 to 3-1/2 feet, (0.91-1.06 m) high; small fishway constructed in dam by St. John's City Council to permit sea run brown trout to enter the lake.

Photographs on file; Nos. 1058.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	at 25°C (μmhos/cm)	ppm.	ppm.
<hr/>							

FISH POPULATIONS

Species Present: brook trout and brown trout
No angling data available on this stream.

Miscellaneous Information:

This river flows through the city of St. John's. Sewage and street drainage etc. have caused a certain degree of pollution to the system.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

WATERFORD RIVER

Location: 47°33'18" N. 52°42'46" W. Bottom St. John's Harbour.

Map Reference: St. John's. 1 N/10 East.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area 23.5 miles² (60.87 km²). Mean width 2.6 miles, (4.19 km).

Perimeter 25.7 miles, (41.38 km). Axial length 8.4 miles, (13.52 km).

Maximum basin relief 850 feet, (259.08 m).

Geology:

Hadrynian siltstone, arkose, conglomerate, slate and acidic to intermediate volcanic rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Channel length: From mouth of main river to Bremigens Pond (not including standing water) is 8.8 miles, (14.15 km).

Barriers to Fish Migration:

Main River:

Dam at boat pond in Bowring Park; complete obstruction.

Falls in Bowring Park, approx. 12 to 15 feet, (3.65-4.57 m) high; partial obstruction.

Falls at Dunn's Pond near Mount Pearl Park; partial obstruction.

Falls in Mount Pearl Park: complete obstruction.

Tributary, South Brook:

Dam in Bowring Park for swimming pool during summer months; complete obstruction.

Falls, approx. one mile, (1.60 km), above swimming pool area, complete obstruction.

Photographs on file. Nos.

Water Quality Data, Sample Collected March, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
7.05	5.0	20.0	3.4	41.5	150.0	6.5	6.10

FISH POPULATIONS

Species Present: Brook trout, brown trout and eels.

Miscellaneous Information:

River flows through the City of St. John's, Bowring Park and industrial and residential areas outside the city. The dams in this river are usually not in place early in the spring when any sea run brown trout might be using the river.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Location: 47°28'25" N. 52°42'09" W. Petty Harbour.
 Map Reference: Bay Bulls. 1 N/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Geology:

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present: Brown trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

PETTY HARBOUR RIVER

Location: 47°27'50' N. 47°42'38" W. Petty Harbour, Motion Bay.

Map Reference: Bay Bulls. 1 N/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 52.5 miles², (135.97 km²). Mean width, 6.2 miles, (9.97 km).

Perimeter, 32.8 miles (52.77 km). Axial length, 9.1 miles, (14.64 km).

Maximum basin relief, 802 feet (244.45 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Hydro dam at mile 1 (1.60 km), on the main river; complete obstruction.

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present: Brown trout, ouananiche and brook trout.

No angling data available on this stream.

Miscellaneous Information: River used for power by Newfoundland Light
and Power since 1900.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date:

Redd Counts: None to date.

References:

Dept. of Northern Aff. and Nat. Res. 1959. Water Resources of
Canada. Queen's Printers, Ottawa.

BAY BULLS RIVER

Location: 47°19'00" N. 52°48'55" W. Bay Bulls.
 Map Reference: Bay Bulls. 1 N/7 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 14.6 miles² (37.81 km²). Mean width, 2.4 miles,
 (3.86 km).

Perimeter, 19.7 miles (31.69 km). Axial length, 6.9 miles
 (11.10 km).

Maximum basin relief, 887 feet (270.35 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present: Brown trout and brook trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

PIERRES BROOK

Location: 47°17'15" N. 52°49'15" W. Witless Bay.
 Map Reference: Bay Bulls. 1 N/7 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 39.3 miles², (101.78 km²). Mean width, 3.3 miles,
 (5.30 km).

Perimeter, 33.1 miles, (53.25 km). Axial length, 10.3 miles,
 (16.57 km).

Maximum basin relief, 950 feet, (289.56 m).

Geology:

About half Precambrian sedimentary with the remainder consisting
 of Precambrian volcanic and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river, from mouth to mile one, (1.60 km), (highroad bridge):

Bottom types (% of total area): Boulder 37%, bedrock 59%, rubble
 and gravel 4%.

Width range, 35 - 70 feet, (10.66-21.32 m). Depth range, 1 - 4 feet,
 (0.9-1.21 m).

Velocities, medium.

Spawning Areas:

Scattered gravel patches in the lower section of the main river.

Barriers to Fish Migrations:

Main river:

Falls at mile 0.5, (0.80 km). complete obstruction.

Hydro dam at outlet of Gull Pond; complete obstruction.

Photographs on file: Nos.

Water Quality Data, Sample Collected

	Total	Total			Conductivity		
pH	Alkalinity	Hardness	Turbidity	Cl	at 25°C	Ca	HCO ₃
	ppm.	ppm.	JTU	ppm.	(μmhos/cm)	ppm.	ppm.

Miscellaneous Information:

River used for power by the Newfoundland Light & Power Co since 1932.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Dept. of Northern Affairs and Nat. Res. 1958.

Water Powers of Canada. Queens Printers, Ottawa.

WITLESS BAY BROOK

Location: 47°48'40" N. 52°50'06" W. Witless Bay.

Map Reference: Bay Bulls. 1 N/7 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 10.3 miles², (26.67 km²). Mean width, 1.7 miles, (2.73 km).

Perimeter, 16.7 miles, (26.87 km). Axial length, 6.9 miles, (11.10 km).

Maximum basin relief, 850 feet, (259.08 m).

Geology:

About equal amounts of Precambrian sedimentary and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected May, 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
6.60	4.0	6.0	0.4	6.5	28.0	0.8	4.9

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of Peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

MOBILE RIVER

Location: 47°14'51" N. 52°50'35" W. Mobile Bay.
 Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 47.6 miles², (123.28 km²). Mean width, 3.8 miles,
 (6.11 km).

Perimeter, 41.5 miles, (66.77 km). Axial length, 13.5 miles,
 (21.72 km).

Maximum basin relief, 1,050 feet, (320.04 m).

Geology:

About half acidic intrusive rocks with the remainder consisting
 of Precambrian sedimentary and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Several hydro dams through system.

Photographs on file; Nos.

Water Quality Data, Sample Collected May 1972, March 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
6.24	2.0	4.5	0.53	7.0	27.0	1.1	2.4

FISH POPULATIONS

Species Present: Arctic char, ouananiche, and brook trout.

No angling data available on this stream.

Miscellaneous Information;

River used for power by the Newfoundland Light and Power Co. since 1949.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Dept. Northern Aff. and Nat. Res. 1958. Water Powers of Canada.
Queen's Printers, Ottawa.

TORS COVE RIVER

Location: 47°12'35" N. 52°51'02" W.
 Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 17.2 miles² (44.54 km²). Mean width, 2.6 miles, (4.18 km).

Perimeter, 22.2 miles (35.71 km). Axial length, 7.4 miles, (11.90 km).

Maximum basin relief, 750 feet, (228.60 m).

Geology:

Predominantly Precambrian sedimentary with some acidic intrusive rocks and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Several hydro dams throughout basin.

Photographs on file: Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present: Brook trout.

No angling data available on this stream.

Miscellaneous Information:

River used for power by the Newfoundland Light & Power Company since 1942. Power houses located at Rocky Pond and river mouth.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Dept. Northern Aff. and Nat. Res. 1958. Water Power of Canada.

Queen's Printer, Canada.

LA MANCHE RIVER

Location: 47°09'59" N. 52°52'07" W. La Manche (North of Cape Broyle).

Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 60.3 miles², (156.17 km²). Mean width, 3.0 miles, (4.82 km).

Perimeter, 60.1 miles, (96.70 km). Axial length, 19.5 miles, (31.37 km).

Maximum basin relief, 1,000 feet, (304.80 m).

Geology:

About half Precambrian sedimentary with the remainder consisting of acidic intrusive rocks and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls, 17 feet, (5.18 m), high, at mouth of the main river; complete obstruction. During the 1930's a structure of steps, to form small pools was built to aid fish over the falls at mouth. This was unsuccessful.

Photographs on file: Nos. 426.

Water Quality Data, Sample Collectd, May 31, 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.44	3.0	7.0	.31	7.0	24.0	1.1	3.7

FISH POPULATIONS

Species Present: Brook trout, ouananiche.

No angling data available on this stream.

Miscellaneous Information:

Headwaters diverted to Tors Cove River (E-25-1721) for

hydro power. A provincial park is located at mouth of LaManche River.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

HORSE CHOPS RIVER

Location: 47°05'49" N. 52°55'55" W. Cape Broyle Harbour.

Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area 3.3 miles² (8.55 km²). Mean width 2.9 miles,
(4.67 km).

Perimeter 36.7 miles, (60.70 km). Axial length 11.9 miles,
(19.16 km).

Maximum basin relief

Geology:

Hadrynian slate, siltstone, greywacke, conglomerate and minor
volcanic rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Hydro dams.

Photographs on file; Nos.

Water Quality Data, Sample Collected March, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.6	1.0	4.0	0.7	6.0	24.0	0.5	

FISH POPULATIONS

Species Present: Brook trout.

No angling data available on this stream.

Miscellaneous Information:

River used for power by Newfoundland Light & Power Company since 1952.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Dept. of Northern Affairs and Nat. Res. 1958. Water Resources
of Canada. Queens Printer, Ottawa.

CAPE BROYLE RIVER

Location: $47^{\circ} 05' 30''$ N. $52^{\circ} 57' 26''$ W. Cape Broyle Harbour.

Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 25.3 miles², (65.52 kilometers²). Mean width, 2.3 miles, (3.70 kilometers).

Perimeter, 33.0 miles, (53.09 kilometers). Axial length 12.3 miles, (19.79 kilometers).

Maximum basin relief, 800 feet, (243.84 meters).

Geology:

About equal amounts of Precambrian sedimentary and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Main River:

Falls at mouth of river consisting of two drops 6' & 6' (1.82 meters), at 40° and 60° ; partial obstruction.

Falls 1500', (457.20 meters) from mouth consisting of two drops 5' & 4', (1.52 meters), 70° and 90° ; partial obstruction.

Falls 1.6 miles, (2.57 kilometers) from mouth. Falls 8', (2.43 meters) vertical with small run-around on left bank; complete obstruction at low water.

Falls 1.6 miles, (2.57 kilometers) from mouth. Falls 5' (1.52 meters) high at 40° angle; partial obstruction.

Falls 1.6 miles, (2.57 kilometers) from mouth. Falls 6', (1.82 meters), vertical; partial obstruction.

Falls 1.6 miles, (2.57 kilometers), from mouth. Falls 5', (1.52 meters), high at 65° angle; partial obstruction.

Falls 1.7 miles, (2.73 kilometers) from mouth. Falls 6', (1.82 meters), high at 80° angle; partial obstruction.

Falls 1.7 miles, (2.73 kilometers), from mouth. Falls 8', (2.43 kilometers) vertical; complete obstruction at low water.

Photographs on file; Nos. 249, 415.

Water Quality Data, Sample Collected May 1972, March 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.20	2.0	4.5	0.7	5.8	24.0	0.6	2.4

FISH POPULATIONS

Species Present: Atlantic salmon.

Atlantic Salmon Angling Record Partial count, Cape Broyle River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1973	4	1	3.5	1.6	-	-	-	1	3.5	1.6
1974										
1975										
1976										
1977										

Estimated Atlantic salmon smolt production and adult sea survival Cape Broyle River.

If smolt production per

100 yd² (83.7 m²) is:

Smolts produced

1
1162
2323
348Adult return if
sea survival
is:

2% 2 5 7

5% 6 12 17

| 10% 12 23 | 35

| 15% 17 35 | 52

Gene Frequency: Not completed.

Timing of Run:

YearFirst fishLast fishWeek of
peak run

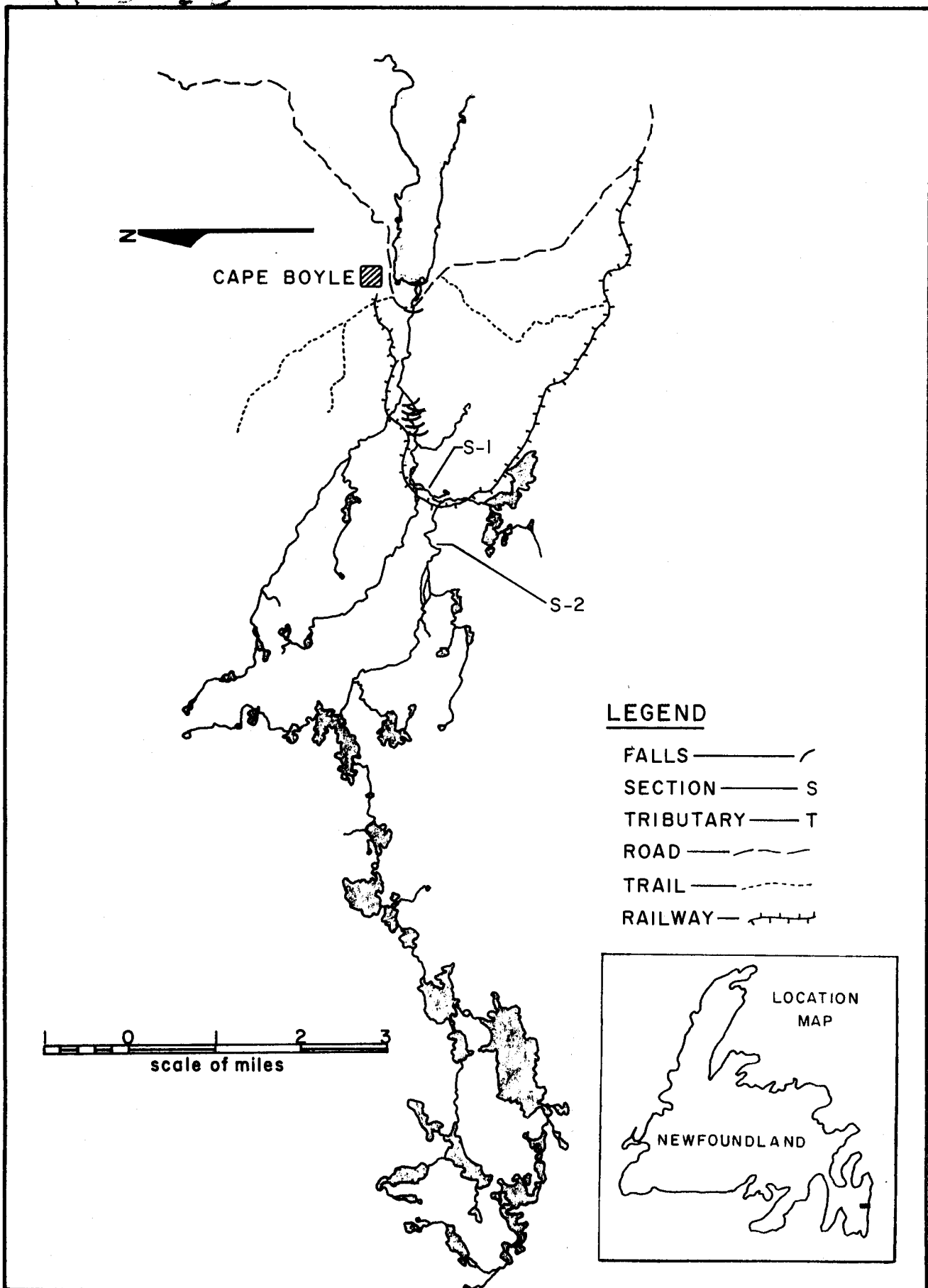


FIG 9

OUTLINE MAP OF CAPE BROYLE RIVER SHOWING
OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Accessibility to Anglers:

Surveys:

None to date.

Redd Counts:

None to date.

References:

Riche, L.G. & Traverse, G.R. River Investigations 1968 - Avalon Peninsula - An Evaluation. Prog. Rept. No. 57. Fisheries and Marine Service, St. John's, Newfoundland

Location: 47°00'39" N. 52°55'36" W. Aquaforte Harbour.
 Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 47.0 miles², (121.73 km²). Mean width, 3.0 miles,
 (4.82 km).

Perimeter, 47.0 miles, (75.72 km). Axial length, 17.8 miles,
 (28.64 km).

Maximum basin relief, 870 feet, (265.17 m).

Geology:

About equal amounts of Precambrian sedimentary and Precambrian
 volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

AQUAFORTE RIVER

Location: 47°00'39" N. 52°58'35" W. Aquaforte Harbour.
 Map Reference: Ferryland. 1 N/2 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 23.3 miles², (60.34 km²). Mean width, 1.4 miles,
 (2.25 km).

Perimeter, 30.5 miles, (49.07 km). Axial length, 13.0 miles,
 (20.91 km).

Maximum basin relief, 800 feet, (243.84 m).

Geology:

About equal amount of Precambrian sedimentary and Precambrian
 volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file: nos.

Water Quality Data, Samples Collected May 31, 1972, July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.24	1.0	5.0	0.58	8.5	23.0	0.8	1.2

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

RENEWS RIVER

Location: 46°56'03" N. 52°57'15" W. Renewes
 Map Reference: Renewes. 1 K/15 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 29.5 miles², (76.40 km²). Mean width, 3.5 miles,
 (5.63 km).

Perimeter, 37.5 miles, (60.33 km). Axial length, 7.3 miles,
 (11.74 km).

Maximum basin relief, 804 feet, (245.05 m).

Geology:

About equal amounts of Precambrian sedimentary and Precambrian
 volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Two falls on the main river. The lower falls passable at high water
 levels. The upper falls easily passable all water levels. In 1970
 diversion dams constructed to divert flow from runarounds at falls.
 In 1971, boulder at top of falls blasted.

Spawning Areas:

Scattered throughout river.

Photographs on file: Nos. 357.

Water Quality Data, Sample Collected May 31, 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.25	-	5.5	0.55	5.8	24.0	0.9	-

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic Salmon Angling Record. - Renew's River

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kilograms	No.	lbs.	kilograms	No.	lbs.	kilograms
1965	17	44	184	83.5	6	45	20.4	50	229	103.9
1966	100	32	120	54.5	2	15	6.8	34	135	61.3
1968	166	22	66	30.0	-	-	-	22	66	30.0
1969	16	12	50	22.7	-	-	-	12	50	22.7
1970	No Report									
1971	290	25	101	45.9	9	74	33.6	34	175	79.5
1972	270	28	98.5	44.7	-	-	-	28	98.5	44.7
1973	406	93	393	178.6	4	27.5	12.5	97	420.5	191.1
1974										
1975										
1976										
1977										

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1965, 1966, 1969	June 19 - 25	July 24 - 30	-

Accessibility to Anglers:

The main highway crosses the river at the mouth. A branch road from the highway intersects the river at mile 1 (1.61 km). A 4 - 5 mile (6.43 - 8.04 km) section upstream is accessible from mile 1 (1.61 km), by foot.

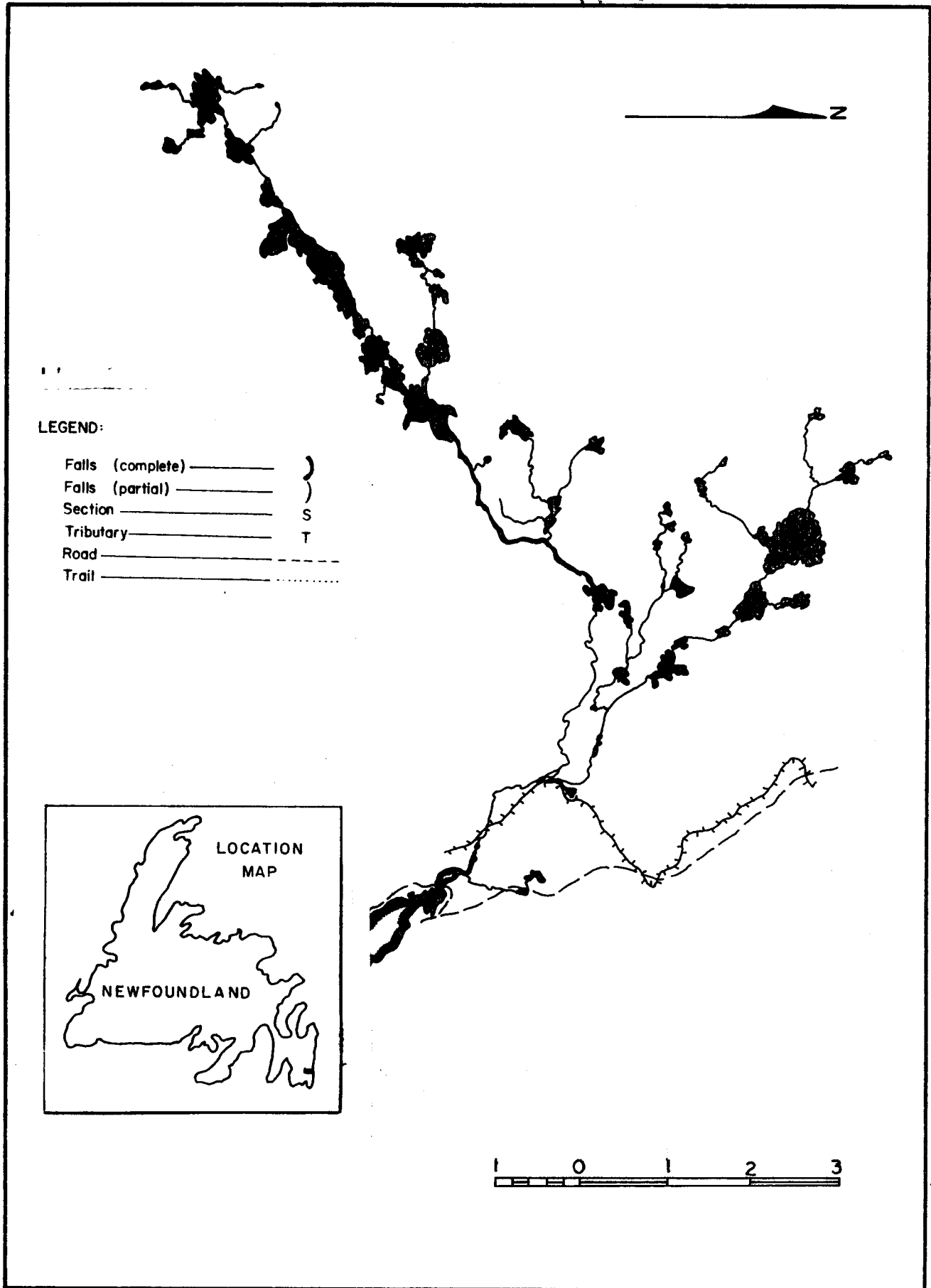


FIG. 10

OUTLINE MAP OF RENEWS RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Surveys: None to date.

Redd Counts: 1970, Nov. 9 - 10, 35 redds observed on main stem of river.

References:

CHANCE COVE BROOK

Location: 46°45'58" N. 53°00'30" W. (near Trepassey Bay)

Map Reference: Biscay Bay River. 1 K/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 33.9 miles², (87.80 km²). Mean width, 3.2 miles, (5.14 km).

Perimeter, 36.5 miles, (58.72 km). Axial length, 10.2 miles, (16.41 km).

Maximum basin relief, 800 feet, (243.84 m).

Geology:

Predominantly Precambrian sedimentary with some Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main river: From mouth to falls at mile point 4, (6.43 km).

Average width, 50 feet, (15.24 m). Average depth, 12 inches, (0.91 m).

Number of pools in section 2. Water velocity, fast.

Barriers to Fish Migration:

Falls, 25 feet, (7.62 m), high at mile 4, (6.43 km) on the main river: complete obstruction.

Photographs on file; Nos.

Water Quality Data, sample collected, September 25, 1972. July, 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.15	2.5	6.0	2.60	6.3	27.0	0.9	3.1

FISH POPULATIONS

Species Present: Atlantic salmon (below falls), brook trout.
No angling data available on this stream.

Miscellaneous Information:

Apparently, the salmon which frequent the lower part of this river move to other rivers to spawn, as they cannot reach the spawning grounds which are above the falls.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date

References:

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Location: $46^{\circ} 37' 52''$ N. $53^{\circ} 11' 20''$ W.

Map Reference: Trepassey. 1 K/11 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 15.7 miles² (40.66 kilometers²). Mean width, 1.9 miles, (3.05 kilometers).

Perimeter, 21.9 miles, (35.23 kilometers). Axial length 9.4 miles, (15.12 kilometers).

Maximum basin relief, 550 feet, (167.64 meters).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

PORTUGAL COVE BROOK

Location: 46°43'20" N. 53°15'45" W.
 Map Reference: Trepassey. 1 K/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 15.3 miles² (39.62 km²). Mean width, 2.3 miles (3.70 km).
 Perimeter, 21.7 miles (34.91 km). Axial length, 8.5 miles (13.67 km).
 Maximum basin relief, 611 feet (186.23 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected September 25, 1972. July 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
6.43	3.5	5.0	1.95	6.3	29.0	0.9	4.3

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

BISCAY BAY RIVER

Location: 46° 46' 20" N. 53° 16' 55" W. Biscay Bay, Trepassey Bay.

Map Reference: Biscay Bay River, 1 K/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 92.1 miles² (238.53 kilometers²). Mean width, 4.2 miles (6.75 kilometers).

Perimeter, 66.9 miles (107.64 kilometers). Axial length, 19.0 miles (30.57 kilometers).

Maximum basin relief, 804 feet (245.05 meters).

Geology:

Almost entirely Precambrian sedimentary with some Precambrian volcanic.

Vegetational Cover:

River bank is slightly wooded; the remainder of watershed is barren.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main River: Channel Width, 70 ft. (23.81 meters). Channel Depth, shallow. Water velocity, swift. Channel length, 22 miles (35.39 kilometers).

Spawning Areas:

Main River: Many good gravel patches scattered throughout channel.

Black River: 0.25 miles (.40 kilometers), of spawning ground between mile points 0.75 and 1.0 (1.20 - 1.60 kilometers).

Barriers to Fish Migration:

Two small falls at mile 8 (12.87 km). Height: 4 feet (1.21 m). Length: 30 feet (9.15 m). Slope: 45°. These may form a partial obstruction at low flow periods but should not interfere with salmon migration during normal water conditions.

Photographs on file; Nos. 266, 356.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

Miscellaneous Information:

Black River enters 10 miles (16.09 km) from the mouth. In a few sections, the bottom consists of large boulders, most sections contain good spawning gravel.

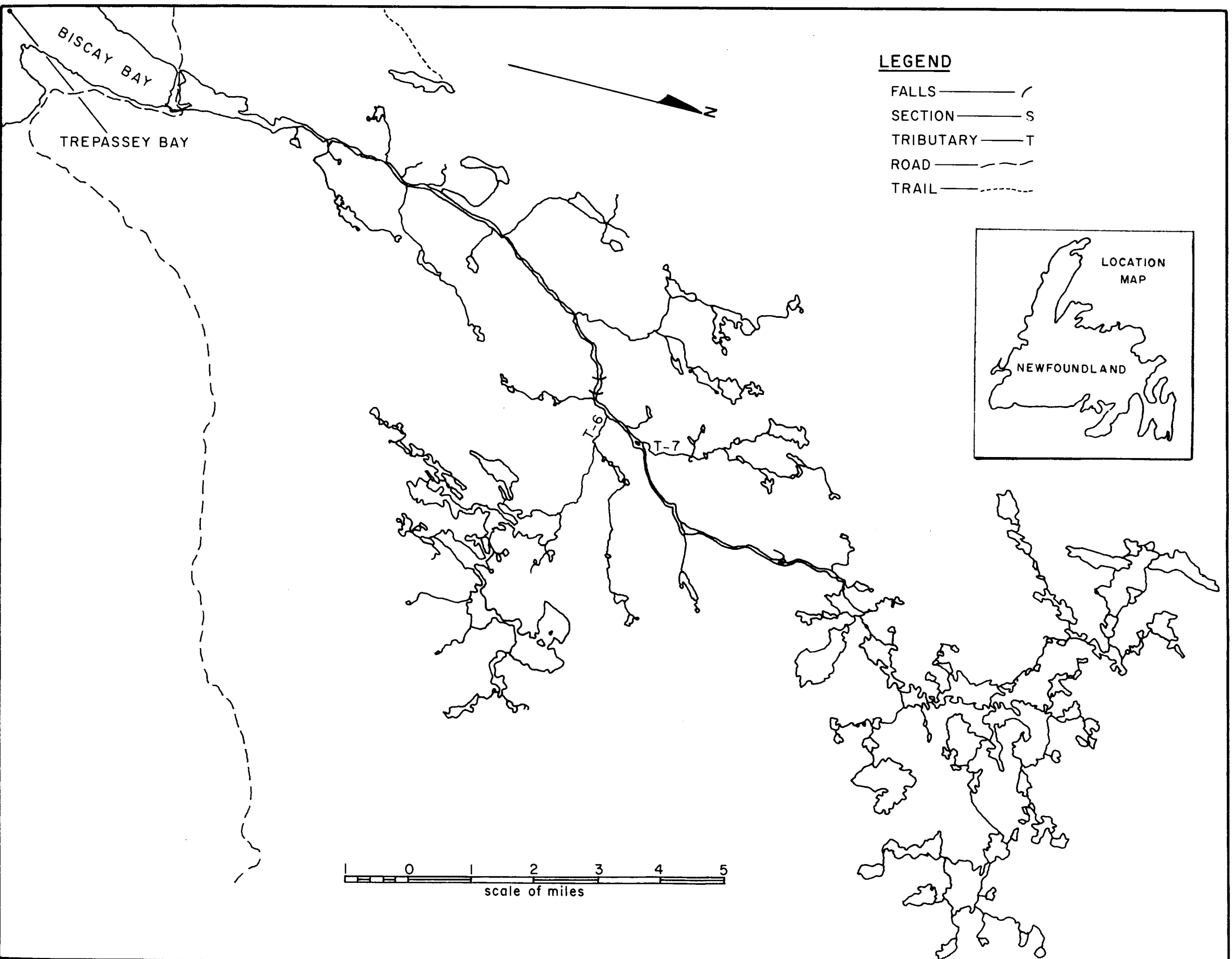


FIG 11

OUTLINE MAP OF BISCAY BAY RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - Biscay Bay River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	159	93	417	189.3	14	108	49.0	107	525	238.3
1953	124	82	474	215.2	3	24	10.9	85	498	226.1
1954	47	19	90	40.9	-	-	-	19	90	40.9
1955	113	36	103	46.8	2	18	8.2	38	121	55.0
1956	-	105	416	188.9	1	10	4.5	106	426	193.4
1957	219	165	533	242.0	-	-	-	165	533	242.0
1958	486	195	802	364.0	6	54	24.5	201	856	388.5
1955	551	415	1689	766.8	6	51	23.2	421	1740	790.0
1960	959	295	1138	516.7	9	79	35.9	304	1217	552.6
1961	585	174	674	306.0	-	-	-	174	674	306.0
1962	659	193	725	329.2	-	-	-	193	725	329.2
1963	663	320	1231	558.9	20	145	65.8	340	1376	624.7
1964 ¹	1522	151	604	274.2	1	8	3.6	152	612	277.8
1965	1272	346	1345	610.6	25	190	86.3	371	1535	696.9
1966	715	123	503	228.4	-	-	-	123	503	228.4
1967	3239	206	824	374.1	7	56	25.4	213	880	399.5
1968	798	141	571	259.2	-	-	-	141	571	259.2
1969	1326	148	505	229.3	-	-	-	148	505	229.3
1970	960	149	591	268.3	-	-	-	149	591	268.3
1971	743	217	806	365.9	4	31	14.1	221	837	380.0
1972	564	66	225	102.2	-	-	-	66	225	102.2
1973	888	190	714	324.5	-	-	-	190	714	324.5
1974										
1975										
1976										
1977										
MEAN										
1964-68	1574	193	769	349.5	6.6	50.8	23.1	200	820	372.8
1969-73	896	154	568	258.3	.8	6.2	2.8	155	574	260.9

¹Angling data 1964-73, estimated to be 75% accurate. (B. Davis, personal communication).

Estimated Atlantic salmon smolt production and adult sea survival -
Biscay Bay River (above first obstruction).

If smolt production per 100 yds ² (83.7 m ²) is:		1	2	3
Smolts produced		4,445	8,890	13,335
Adult return if sea survival is:	2%	89	178	267
	5%	222	445	667
	10%	445	890	1,334
	15%	667	1,334	2,000

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 14-20	September 3-9	July 13-20 (1968)

Accessibility to Anglers:

The highway crosses the river approximately 1/8 mile (0.2 km) above river mouth. There is a large salt water pond, 2 miles (3.21 km) long, immediately above the highway. A boat has to be used to get to the upper river, and pools can only be reached on foot from the upper end of the salt water pond.

Surveys: Biological Survey, 1968.

Redd Counts: 1961, 1,200 redds observed on main river, and 150 redds on Black River.

References:

- Anonamous. Nfld. Dept. Nat. Resources 1943, Res. Bull. No. 12,
St. John's, Newfoundland.
- Riche. L.G. and Traverse, G. 1969. River Investigations 1968 Avalon Peninsula. MS report, Fisheries Service, St. John's, Newfoundland.

NORTH EAST BROOK

Location: $46^{\circ} 46'$ N. $53^{\circ} 21' 10''$ W. Trepassey Bay.

Map Reference: Biscay Bay River, 1 K/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 8.2 miles² (21.23 kilometers²). Mean width, 1.7 miles (2.73 kilometers).

Perimeter, 14.8 miles (23.81 kilometers). Axial length, 5.5 miles (8.84 kilometers).

Maximum basin relief, 605 feet (184.40 meters).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Section: Main river from mouth to mile point 2 (approx.) (3.21 kilometers).

Average width: 12 feet (3.65 meters). Depth range: 6 to 12 inches (.15 - .30 meters).

Number of pools in section: 4

Spawning Areas: Main River; near pools in section examined.

Barriers to Fish Migration: Falls mile 0. Height: 7 feet (2.13 m).

Length: 25 feet (7.62 m). Slope: 40° .

Partial obstruction to salmon at low water.

Photographs on file; Nos. 240, 410, 423.

Water Quality Data, Sample Collected Sept. 1972, July 1973

pH	Alkalinity Total ppm	Total Hardness ppm	Turbidity J.T.U.	Chlorides ppm	Spec. Cond. @ 25°C in (μ mhos/cm)	Calcium ppm	HCO ₃ Biocarbonate ppm
6.18	3.5	6.5	1.65	7.3	35.0	0.7	4.3

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, sea trout.

Summary, angling data, North East Brook.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No.	lbs	kg	No	lbs.	kg
1970 ¹	13	3	12	5.4	-	-	-	3	12	5.4
1971	40	9	32	14.5	-	-	-	9	32	14.5
1972	-	-	-	-	-	-	-	-	-	-
1973	47	3	11	5.0	-	-	-	3	11	5.0
1974										
1975										
1976										
1977										

¹ Angling data, 1970-73, estimated to be 80% accurate. (B. Davis, personal communication)

Estimated Atlantic salmon smolt production and adult sea survival for North East River from 262 units.

If smolt production is
per 100 yds² (83.70 M²)
Smolts produced

	1	2	3
	262	524	786
Adult return if sea survival is:	2%	5	11
	5%	13	26
	10%	26	52
	15%	39	79
			118

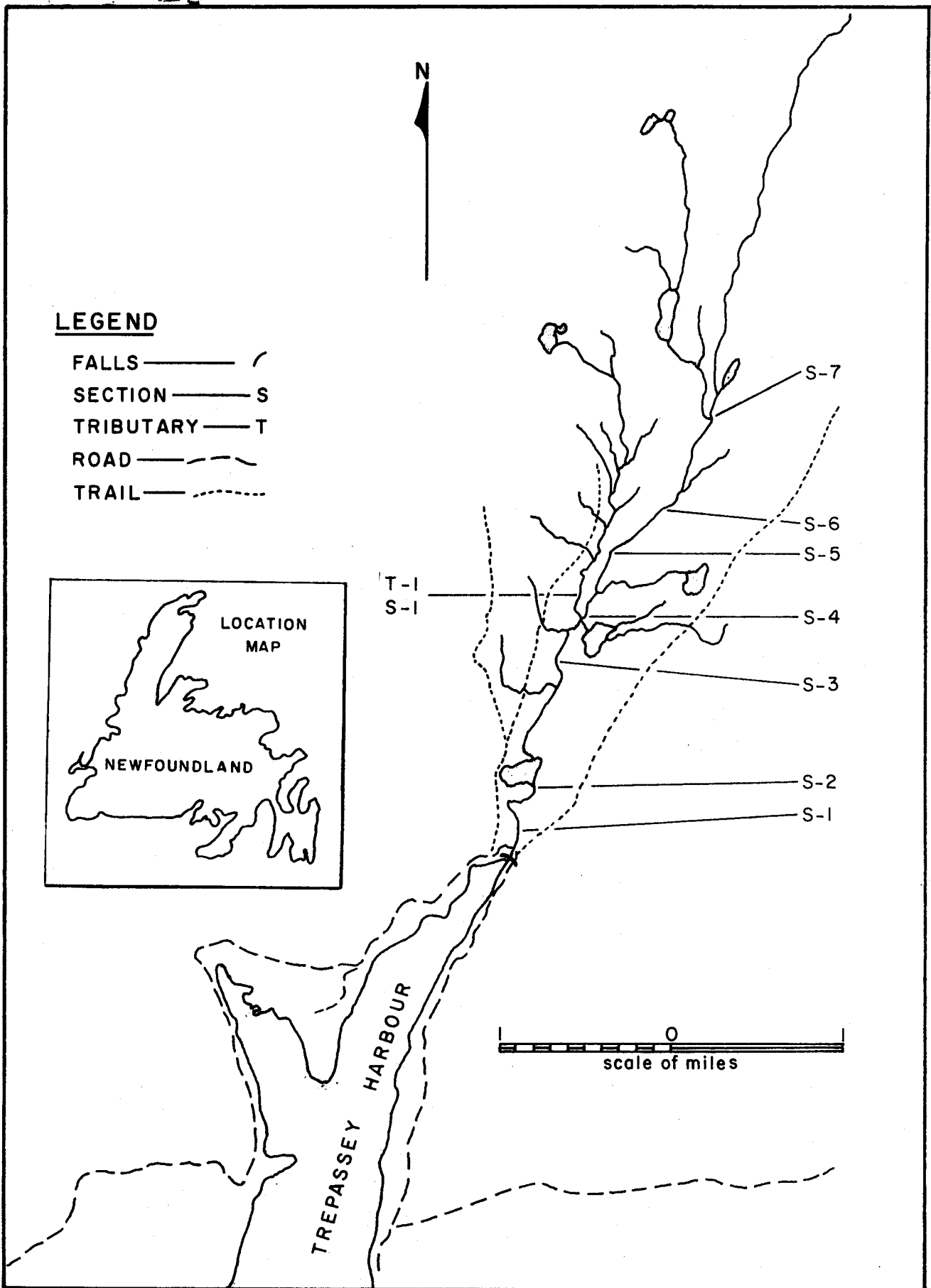


FIG 12

OUTLINE MAP OF NORTHEAST BROOK SHOWING
OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

The highway crosses this river approximately 25 yards (21.2 m) above tidal water. Most fishing is done in this area, primarily for sea trout.

Surveys: Biological Survey, 1968.

Redd Counts:

Redd count November, 1960 by C. & P. personnel. Forty redds located four miles from mouth.

References:

Riche, L.G. and Traverse, G. 1969. River Investigations 1968 Avalon Peninsula. MS report, Fisheries Service, St. John's, Newfoundland.

NORTH WEST BROOK

Location: 46°45'40" N. 53°23'30" W. Trepassey Harbour,
Trepassey Bay.

Map Reference: Biscay Bay River, 1 L/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 68.7 miles² (177.93 km²). Mean width, 3.5 miles
(5.63 km).

Perimeter, 57.8 miles (93.00 km). Axial length, 18.7 miles
(30.08 km).

Maximum basin relief, 850 feet (259.08 m).

Geology: Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Mean width 90 feet (27.43 m), mean depth 13 inches (0.33 m).

Velocity - fast.

Bottom type:

Bottom composition consists mainly of rubble with a fair amount of
boulder interspersed throughout the main stem. Not great amount of
good spawning area on main stream.

Barriers to Fish Migration on the Main Stream:

Rapids-falls at mile 1 (1.61 km). Height: 4 feet (1.21 m). Slope: 65°.

Partial obstruction at low water.

Falls at mile 1.1 (1.76 km). Height: 2 drops, 4 feet (1.21 m) each.

Length: 30 feet (9.14 m). Slope: 45°. Partial obstruction.

Falls at mile 1.3 (2.09 km). Height: 12 feet (3.65 m). Slope: 90° on
one side, 45° on other side. Partial obstruction.

Falls at mile 1.5 (2.40 km). Height: 10 feet (3.04 m). Length: 20 feet (6.05 m). Slope: 45°. Partial obstruction.

Falls at mile 1.6 (2.57 km). Height: 5 feet (1.52 m). Length: 15 feet (4.56 m). Slope: 45°. Partial obstruction.

Falls at mile 1.8 (2.89 km). Height: 20 feet (6.09 m). Length: 40 feet (12.18 m). Slope: 45°. Partial obstruction.

Falls at mile 9 (14.48 km). Consisting of 4 drops and rapids.

Height: 2 to 6 feet (0.6 - 1.82 m). Slope: 45,. Partial obstruction.

Dam at mile 17 (27.35 km); rock-clay fill; complete obstruction.

Stream improvements for Fisheries purposes:

In 1963 Rock cutting - a waterfall by-pass "run around" with a series of resting pools was blasted from one side of the falls at mile 2 on the main river.

Photographs on file; 116, 118, 271, 663.

Water Quality Data, Sample Collected September 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.95	2.0	5.5	1.95	7.0	27.0	0.7	2.5

LEGEND

- FALLS ——— /
- SECTION ——— S
- TRIBUTARY ——— T
- ROAD ——— - - -
- TRAIL ——— ·····

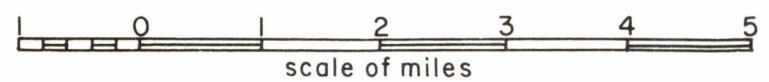
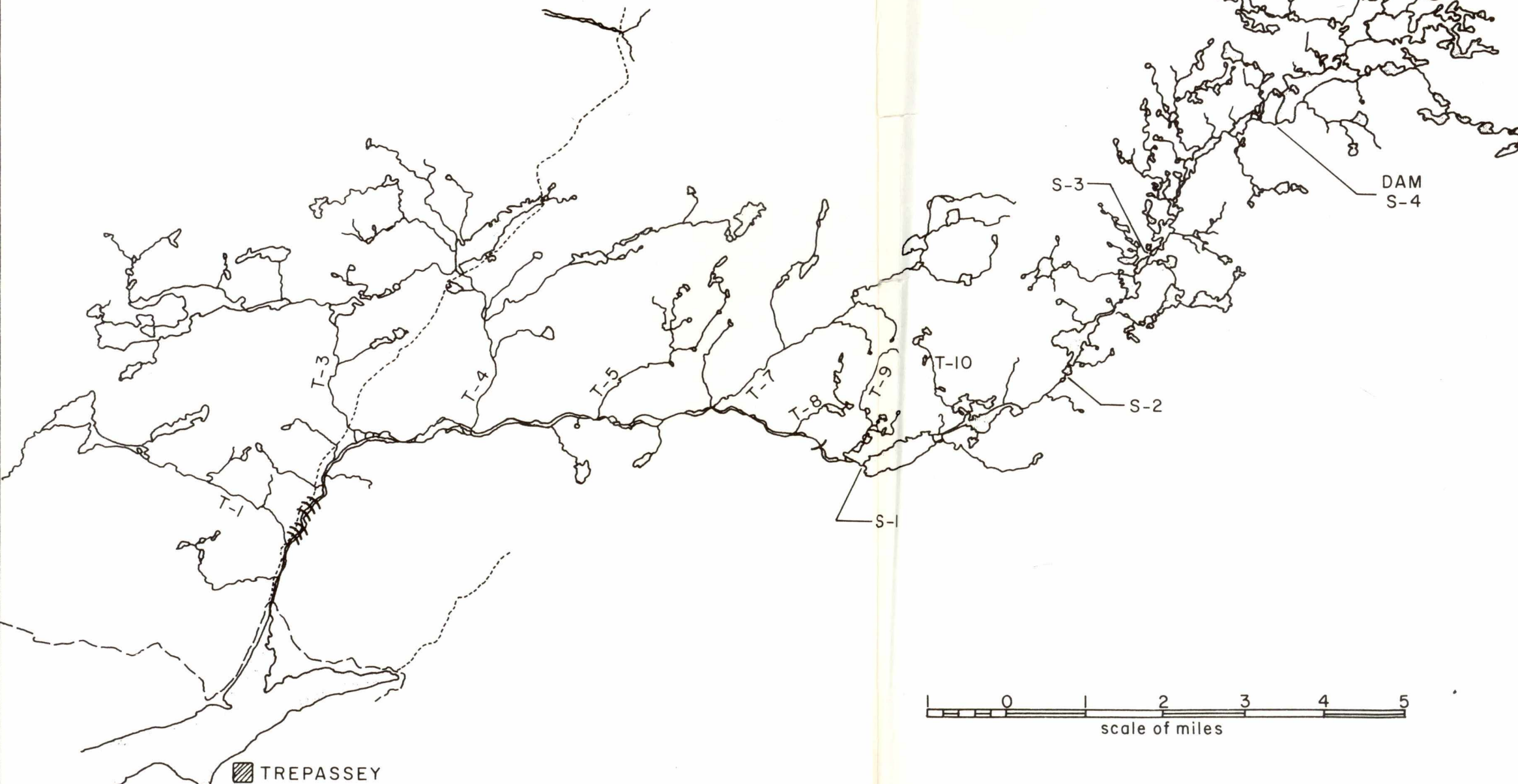
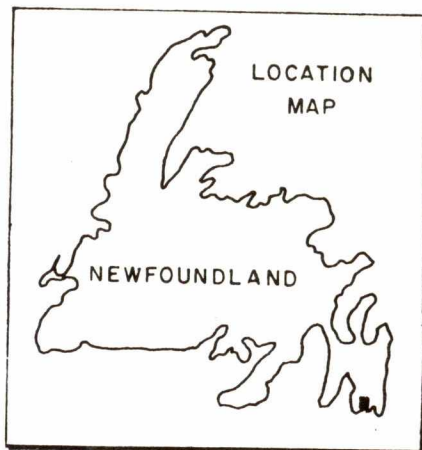


FIG 13

OUTLINE MAP OF NORTHWEST BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - North West Brook.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No.	lbs	kg	No.	lbs.	kg
1952	358	179	715	324.6	10	66	30.0	189	781	354.6
1953	331	153	596	270.6	3	21	9.5	156	617	280.1
1954	170	90	364	165.3	1	7	3.2	91	371	168.5
1955	328	143	423	192.0	3	27	12.3	146	450	204.3
1956	-	259	1031	468.1	2	21	9.5	261	1052	477.6
1957	461	347	1144	519.4	8	56	25.4	355	1200	544.8
1958	1007	475	1981	899.4	28	231	104.9	503	2212	1004.3
1959	449	159	616	279.7	2	16	7.3	161	632	287.0
1960	872	223	884	401.3	2	17	7.7	225	901	409.0
1961	484	109	433	196.6	-	-	-	109	433	196.6
1962	398	191	681	309.2	-	-	-	191	681	309.2
1963	593	294	1167	529.8	11	80	36.3	305	1247	566.1
1964 ¹	723	193	773	350.9	2	15	6.8	195	788	357.7
1965	694	356	1431	649.7	23	178	80.8	379	1609	730.5
1966	449	123	502	227.9	-	-	-	123	502	227.9
1967	865	154	608	276.0	4	26	11.8	158	634	287.8
1968	461	231	892	405.0	-	-	-	231	892	405.0
1969	937	258	933	423.6	3	21	9.5	261	954	433.1
1970	942	364	1416	642.9	4	38	17.3	368	1454	660.2
1971	988	293	1049	476.2	6	41	18.6	299	1090	494.8
1972	600	99	342	155.3	-	-	-	99	342	155.3
1973	892	327	1261	573.2	9	57	25.9	336	1318	599.1
1974										
1975										
1976										
1977										
MEAN										
1964-68	638	211	841	382.4	5.8	43.8	19.9	217	885	402.3
1969-73	872	268	1000	454.6	4.4	31.4	14.3	273	1032	468.9

¹Angling data, 1964-73, estimated to be 85% accurate. (B. Davis, personal communication).

Estimated Atlantic salmon smolt production and adult sea survival,
North West Brook.

If smolt production per
100 yds² (83.70 meters²) is:

	<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced	8923	17846	26769
Adult return if sea survival is:	2%	178	357
	5%	446	892
	10%	892	1785
	15%	1338	2677
			535
			1338
			2677
			4015

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 14 - 20	August 25 - 31	July 13 - 20 (1968)

Accessibility to Anglers:

The highway crosses the river a short distance from mouth. The pools lie in an area from tidal water to 2 miles (3.21 kilometers) upstream and can only be reached on foot.

Surveys: Biological Survey, 1968.

Redd Counts: 1969, 66 redds located on one section of main river.

121 redds located on upper section of Stoney Brook.

1966, 30 redds located on Stoney Brook, and 160 redds located on main river.

References:

- Anononyous. Summary of Stream Obstructions. MS report, Fisheries Service, St. John's, Newfoundland.
- Anononyous. 1963. Salmon and Trout Management Program. MS report, Fisheries Service, St. John's, Newfoundland.
- Riche, L. G. and Traverse, G. 1969. River Investigations 1968 Avalon Peninsula. MS report, Fisheries Service, St. John's, Nfld.

BROOM RIVER

Location: 46°42'10" N. 53°25'00" W. Trepassey Harbour.
 Map Reference: Trepassey, 1 K/11 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 7.02 miles² (18.3 km²). Mean width, 1.8 miles
 (2.89 km).

Perimeter, 12.0 miles (19.30 km). Axial length, 4.1 miles
 (6.59 km).

Maximum basin relief, 648 feet (197.51 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected September 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.75	1.0	4.5	2.5	6.8	29.0	0.7	1.2

FISH POPULATIONS

Species Present:

No angling data available on **this** stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

ST. SHOTT'S RIVER

Location: 46°37'55" N. 53°35'40" W. St. Shott's, St. Mary's Bay.

Map Reference: St. Shott's, 1 K/12 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 37.5 miles² (97.12 km²). Mean width, 3.1 miles (4.98 km).

Perimeter, 36.1 miles (58.08 km). Axial length, 12.6 miles (20.27 km).

Maximum basin relief, 650 feet (190.12 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Section: Main River mile 0 to mile 3 (4.82 km). Mean width: 45 feet (13.71 m). Mean Depth: 1.0 feet (0.31 m). Velocity: Slow.

Spawning Area:

Section: Main River from mile 0 to mile 3 (4.82 km). Frequent gravel patches ideal for spawning throughout this section.

Barriers to Fish Migration:

Falls at mile 2.5 (4.02 km). Height: 8 feet (2.43 m). Length: 10 feet (3.04 m). Slope: 80°. Partial obstruction.

Falls at mile 3.5 (5.63 km). Height: 5 feet (1.52 m). Slope: 90°. Partial obstruction.

Falls at mile 3.5 (5.63 km). Height: 6 feet (1.82 m). Length: 10 feet (3.04 m). Slope: 80°. Partial obstruction.

Falls at mile 4 (6.43 km). Two drops with small pool between. First drop height 9 feet (2.74 m). Length: 12 feet (3.65 m). Slope: 70°.

Second drop height 8 feet (2.43 m). Slope 90°. Complete obstruction at low water.

Falls at mile 7 (11.26 km). Two drops with small pool between. Height 8 feet (2.43 m) and 7 feet (2.13 m). Slope: 90°; complete obstruction at low water.

Photographs on file: Nos. 242, 916.

Water Quality Data, Sample Collected July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.8	2.0	4.0	1.3	7.0	28.0	0.6	2.44

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

No angling data available on this stream.

Estimated Atlantic salmon smolt production and adult sea survival, main stem above obstruction #1.

If smolt production per 100 yds ² (83.7 m ²) is:		1	2	3
Smolts produced		1,058	2,116	3,174
Adult return if sea survival is:	2%	21	42	63
	5%	53	106	159
	10%	106	212	317
	15%	159	317	476

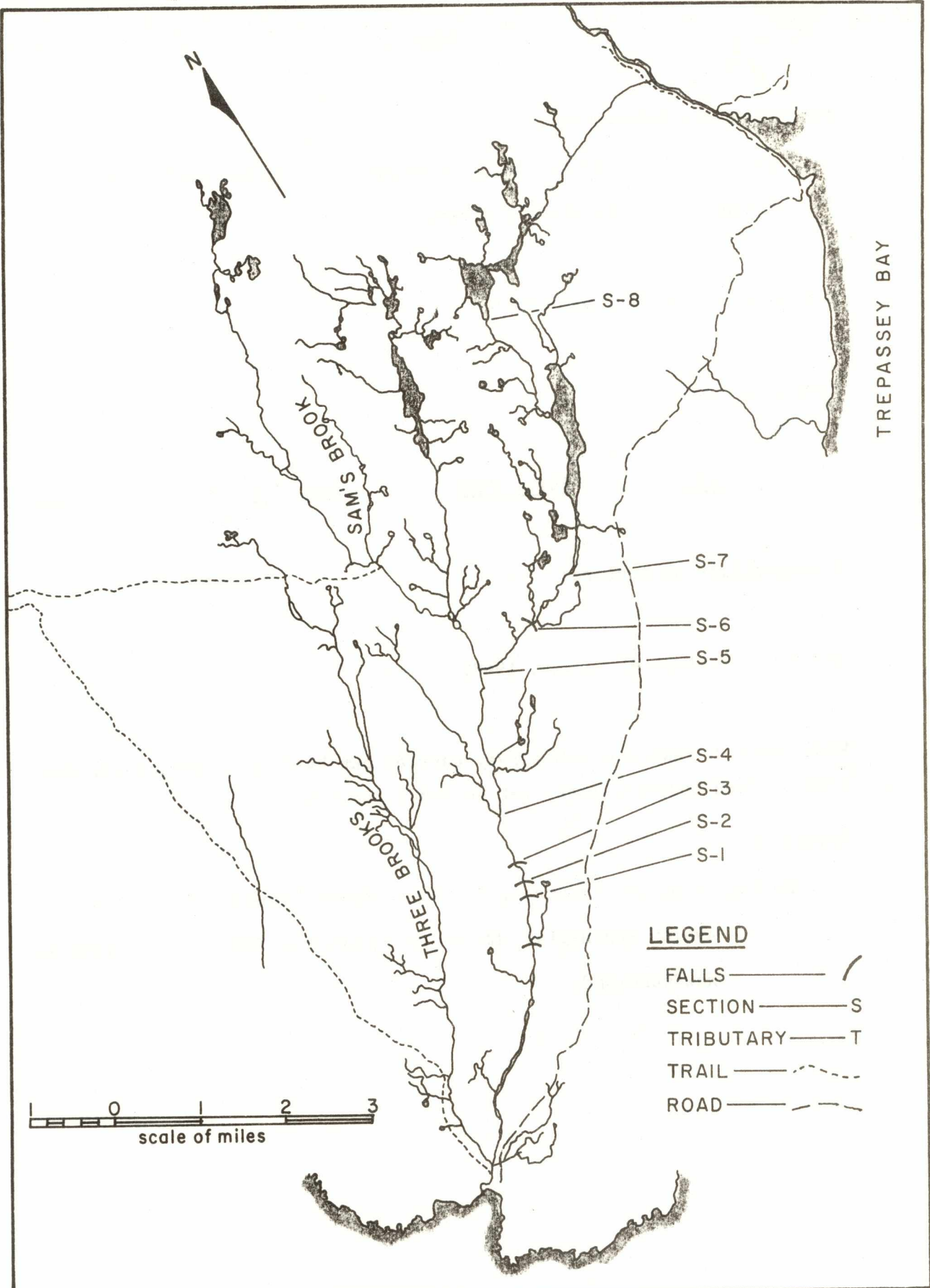


FIG 14

OUTLINE MAP OF ST. SHOTTS RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Miscellaneous Information:

St. Shott's River has ideal spawning conditions. Sam's River is a tributary to St. Shott's River.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: Biological Survey, 1968.

Redd Counts: Spawning bed survey carried out by C. & P. personnel, Nov. 1963. Good spawning area, but no redds reported.

References:

Riche, L. G. and Traverse, G. 1969. River Investigations 1968
Avalon Peninsula. MS report, Fisheries Service, St. John's,
Newfoundland.

ST. SHORES RIVER

Location: 46°39'47" N. 53°37'40" W. St. Mary's Bay.

Map Reference: St. Shott's, 1 K/12 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 8.3 miles² (21.49 km²). Mean width, 1.4 miles (2.25 km).

Perimeter, 16.1 miles (25.90 km). Axial length 7.0 miles (11.26 km).

Maximum basin relief, 620 feet (188.97 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected September, 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
5.75	1.0	6.0	3.2	7.0	24.0	0.5	

FISH POPULATIONS

Species Present:

No angling data on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

PETER'S RIVER

Location: 46°45'28" N. 53°36'40" W. St. Mary's Bay.
Map Reference: St. Mary's. 1 K/13 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 55.5 miles² (143.74 km²). Mean width, 3.4 miles (5.47 km).
Perimeter, 51.8 miles (83.34 km). Axial length, 20.7 miles (33.26 km).
Maximum basin relief, 850 feet (259.08 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Above Peter's Pond, mean width 45 feet (13.71 m), mean depth 0.9 feet (0.27 m).

Barriers to Fish Migration:

Shifting gravel beach frequently blocks mouth of river. Extensive shallow areas appear during periods of low flow.

Falls at mile 0.25 (6.4 km), above Laden field tributary. Height: 10 feet (3.04 m); falls sloping; partial obstruction.

2.5 miles (4.02 km) of suitable rearing area available for salmon above the obstruction. A number of salmon redds were observed above the falls in 1969.

Photographs on file; Nos. 345, 662.

Water Quality Data, Sample Collected September 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.27	3.0	6.0	2.0	7.8	32.0	1.1	3.7

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic Salmon Angling Record - Peter's River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1954	17	7	31	14.1	-	-	-	7	31	14.1
1955	10	1	5	2.3	-	-	-	1	5	2.3
1956	-	2	8	3.6	-	-	-	2	8	3.6
1958	56	8	36	16.3	2	21	9.5	10	57	25.8
1959	42	16	80	36.3	-	-	-	16	80	36.3
1960	39	7	31	14.1	1	9	4.1	8	40	18.2
1962	3	-	-	-	-	-	-	-	-	-
1964	2	4	20	9.1	-	-	-	4	20	9.1
1968	36	-	-	-	-	-	-	-	-	-
1969	No report									
1970	No report									
1971	No report									
1972	No report									
1973	No report									
1974										
1975										
1976										
1977										

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

The highway runs parallel with the river for approximately 0.5 miles (0.8 kilometers) from the mouth. The river is accessible by footpaths for 9 miles (14.48 kilometers) upstream.

Surveys: Engineering survey of blockage at mouth of river, 1960.

Redd Counts: 1969, 50 redds observed above Peter's Pond, 25 of these were found above the Laden field tributary and 25 between Laden field tributary and Peter's Pond. One redd observed below Peter's Pond.

References:

DEER RIVER

Location: $46^{\circ} 48' 55''$ N. $53^{\circ} 35' 58''$ W. Holyrood Pond, St. Mary's Bay.

Map Reference: St. Mary's. 1 K/13 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 8.5 miles² (22.01 kilometers²). Mean width, 1.4 miles (2.25 kilometers).

Perimeter, 14.6 miles (23.49 kilometers). Axial length, 5.7 miles (9.17 kilometers).

Maximum basin relief, 500 feet (152.40 meters).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

CROSSING PLACE RIVER

S-28-0105

Location: 46° 55' 45" N. 53° 27' 50" W. Holyrood Pond, St. Mary's Bay.

Map Reference: Biscay Bay River. 1 K/14 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 83.4 miles² (216.00 kilometers²). Mean width, 4.5 miles, (7.24 kilometers).

Perimeter, 57.2 miles (92.03 kilometers). Axial length, 15.8 miles, (25.42 kilometers).

Maximum basin relief, 850 feet (259.08 meters).

Geology:

Almost entirely Precambrian sedimentary with some Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls, 3 miles (4.82 kilometers) upstream from Holyrood Pond; partial obstruction.

Photographs on file; Nos.

FISH POPULATIONS

Species Present: brook trout.

No angling data available on this stream.

Gene Frequency: Not completed

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Anonmyous. Summary of Stream Obstructions. MS report, Fisheries Service, St. John's, Newfoundland.

MALL BAY BROOK

Location: 46° 59' 35" N. 53° 34' 10" W.

Map Reference: St. Mary's. 1 K/3 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 9.1 miles² (23.56 kilometers²). Mean width, 1.8 miles (2.89 kilometers).

Perimeter, 16.3 miles (26.22 kilometers). Axial length, 5.5 miles (8.84 kilometers).

Maximum basin relief, 627 feet (191.10 meters).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

LITTLE HARBOUR RIVER

Location: 47°08'00" N. 53°28'40" W. Salmonier Arm, St. Mary's Bay.

Map Reference: St. Catherine's. 1 N/3W.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 71.2 miles² (184.40 km²). Mean width, 4.8 miles (7.72 km).
Perimeter, 54.7 miles (88.01 km). Axial length 16.9 miles (27.19 km),
7 miles of which are standing water.
Maximum basin relief, 800 feet (243.84 m).

Geology:

Predominantly Precambrian sedimentary with some Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls at mile 0.5 (.80 km). Height: 15 feet (4.57 m). Slope 90°. Complete obstruction.

Falls at mile 1.5 (2.40 km). Height: 40 to 50 feet (12.19-15.24 m). Slope 90°. Complete obstruction.

Several other smaller falls from 2 to 4 feet (0.60-1.20 m) are located along the main stream. However, these are not considered serious obstructions.

Photographs on file; Nos. 226, 235, 414.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
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FISH POPULATIONS

Species Present:

No angling data available on this stream.

Estimated Atlantic Salmon smolt production and adult sea survival
Little Harbour River

If smolt production per
 100 yds² (83.7 meters²) is:

	<u>1</u>	<u>2</u>	<u>3</u>
	9375	18750	28125
Smolts produced			

Adult return if sea survival is:	2%	188	375	563
	5%	467	938	1406
	[10%]	938	1875	2813
	[15%]	1406	2813	4219

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: Biological Survey, 1968

Redd Counts: None to date.

References:

Riche, L. G. and Traverse, G. 1969. River Investigations 1968, Avalon Peninsula. MS report, Fisheries Service, St. John's, Newfoundland.

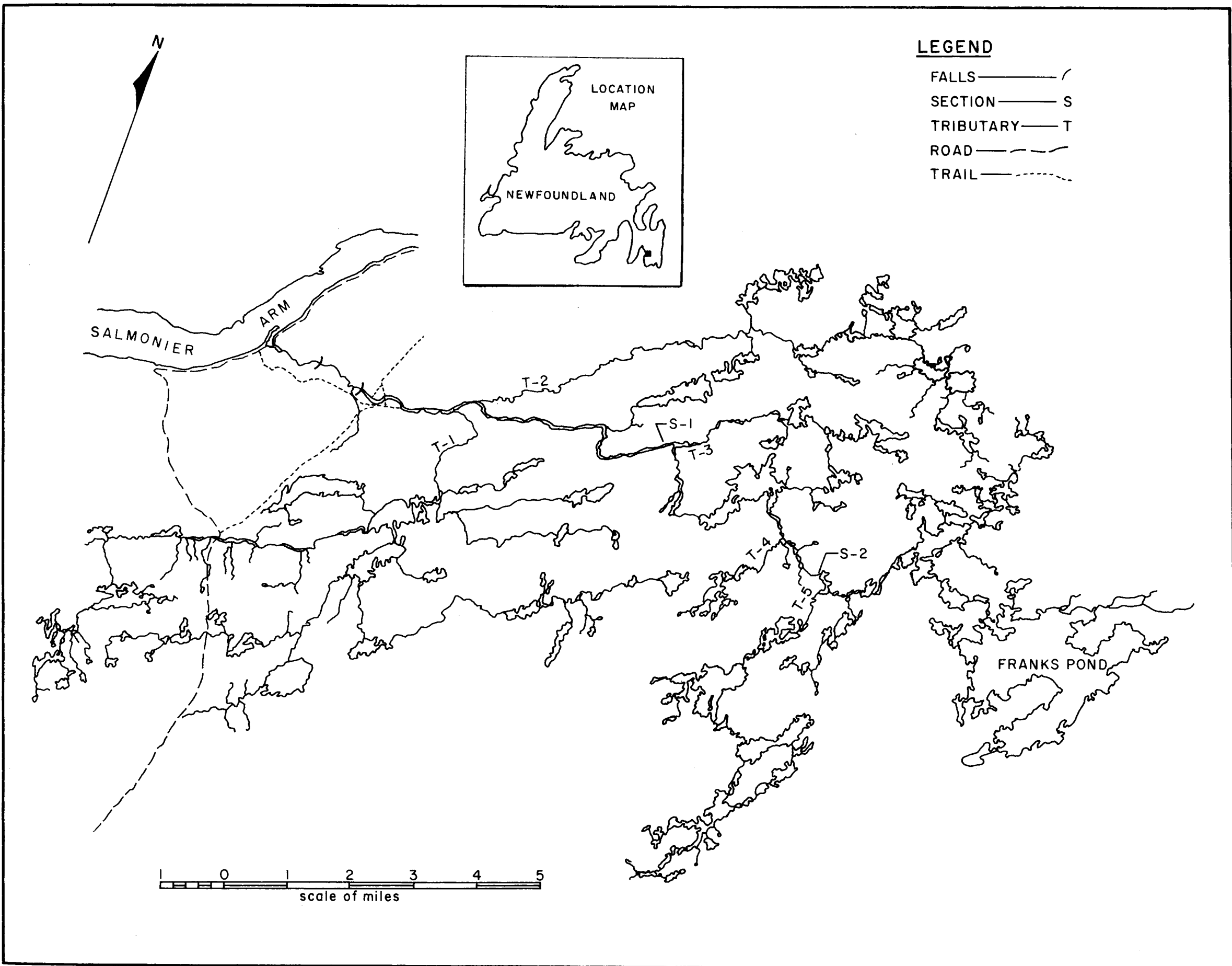


FIG 15

OUTLINE MAP OF LITTLE HARBOUR RIVER SHOWING
OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

SALMONIER RIVER

Location: 47°10'40" N. 53°24'15" W. Salmonier, St. Mary's Bay.
 Map Reference: St. Catherine's. 1 N/3W.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 99.2 miles² (256.92 km²). Mean width, 6.3 miles (10.13 km).

Perimeter, 61.6 miles (99.11 km). Axial length, 16.8 miles (27.03 km).

Maximum basin relief, 1,050 feet (320.04 m).

Geology:

Predominantly Precambrian sedimentary with some Precambrian volcanic and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Main River:

Governor's Falls at mile 4 (6.4 km). First drop height: 4 feet (1.21 m).

Second drop height: 5 feet (1.52 m). Partial obstruction.

Pinsent's Falls at mile 5 (8.04 km). First drop height 4.5 feet (1.37 m).

Second drop height: 5 feet (1.52 m). Partial obstruction.

Butler's Falls at mile 8 (12.9 km). Height: 8.5 feet (2.59 m). Partial obstruction.

Murphy's Falls at mile 9 (14.5 km). Height: 5 feet (1.52 m). Partial obstruction.

Metcalf's Falls, location unavailable: 1971, increased water flow by blasting at centre run at top of falls. Removed two large boulders from pool below falls and a boulder at hangup below falls.

Photographs on file; Nos. 102, 1230.

Water Quality Data, Sample Collected January 1972,
March and July 1973.

pH	Total Alkalinity	Total Hardness	Turbidity J.T.U.	Chlorides ppm	Spec. Cond. @ 25°C in μ mhos/cm	Calcium ppm	HCO ₃ Biocarbonate ppm
6.29	3.8	7.5	1.09	6.5	32.0	1.9	4.6

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, brown trout, American smelt .

Atlantic salmon Angling Record - Salmonier River

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No.	lbs.	kg
1952	1867	1056	3655	1659.4	4	30	13.6	1060	3685	1673.0
1953	2015	1471	4066	1846.0	4	30	18.2	1475	4106	1864.2
1954	889	388	1114	505.8	5	38	17.3	393	1152	523.1
1955	881	390	1112	504.8	-	-	-	390	1112	504.8
1956	-	764	2414	1096.0	-	-	-	764	2414	1096.0
1957	1053	494	1469	666.9	1	15	6.8	495	1484	673.7
1958	991	480	1649	748.6	4	38	17.3	484	1687	765.9
1959	1641	663	2015	914.8	-	-	-	663	2015	914.8
1960	1471	237	723	328.2	2	16	7.3	239	739	335.5
1961	949	261	784	355.9	-	-	-	261	784	355.9
1962	1318	448	1348	612.0	1	7	3.2	449	1355	615.2
1963	1662	865	2508	1138.6	-	-	-	865	2508	1138.6
1964 ¹	2104	793	2180	989.7	-	-	-	793	2180	989.7
1965	1945	929	2268	1029.7	-	-	-	929	2268	1029.7
1966	1278	469	1366	620.2	-	-	-	469	1366	620.2
1967	1909	371	974	442.2	-	-	-	371	974	442.2
1968	2123	618	815.4		-	-	-	618	1796	815.4

Atlantic salmon Angling Record - Salmonier River (cont'd.)

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1969	2508	888	2658	1206.7	3	19	8.6	891	2677	1215.3
1970	3271	1096	3291	1494.1	-	-	-	1096	3291	1494.1
1971	3024	848	2405	1091.9	-	-	-	848	2405	1091.9
1972	3042	786	1915	869.4	-	-	-	786	1915	869.4
1973	3796	1334	3328	1512.7	-	-	-	1334	3328	1512.7
1974										
1975										
1976										
1977										
Mean 1964-68	1872	636	1717	780.4	-	-	-	636	1717	780.4
Mean 1969-73	3128	990	2719	1236.1	0.6	3.8	1.7	991	2723	1237.8

¹Angling data, 1964-73, estimated to be 95% accurate. (B. Davis personal communication).

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 11 - 17	August 23 - 29	July 6 - 13 (1968)

Accessibility to Anglers:

Accessible for 3 miles (4.82 kilometers) above tidal water by highway. It can be reached by foot from the highway between Salmonier and Holyrood in three different places; Pinsent Falls, Butler's & Murphy's Falls, and Metcalf's Falls.

Surveys: None to date.

Redd Counts: 1961, 200 redds located near the headwaters.
1965, 950 redds located in 3 miles (4.82 kilometers) section,
5 miles (8.04 kilometers) above tidal water.

References:

Anononyous. Nfld. Dept. Nat. Res. 1943, Res. Bull. No. 12,
St. John's, Newfoundland.

HARICOT RIVER

Location: 47°10'37" N. 53°31'30" W. Haricot Bay, St. Mary's Bay.
 Map Reference: Placentia. 1 N/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 10.7 miles² (27.71 km²). Mean width, 1.9 miles (3.05 km).

Perimeter, 17.8 miles (28.64 km). Axial length, 6.2 miles (9.97 km).

Maximum basin relief, 650 feet (198.12 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected May, 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.06	2.0	8.0	070	9.0	30.0	1.0	

FISH POPULATIONS

Species Present: brook trout

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Palmer, C.H. 1928. The Salmon Rivers of Newfoundland. Farrington
Printing Co. Boston.

COLINET RIVER

Location: 47°13'10" N. 53°33'08" W. Colinet Harbour, St. Mary's Bay.

Map Reference: Placentia. 1 N/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 61.1 miles² (158.24 km²). Mean width, 3.7 miles (5.95 km).

Perimeter, 42.2 miles (67.89 km). Axial length, 15.2 miles (24.45 km).

Maximum basin relief, 550 feet (167.64 m).

Geology:

Precambrian sedimentary.

Vegetational Cover:

Abundant spruce and fir alternating with bog.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main River:

Mean channel width, 70 feet (21.33 m). Mean channel depth, 1.2 feet (0.37 m).

Velocity, moderately swift.

Bottom type:

Mixture of coarse and fine gravel with some large stones.

Spawning Areas: Various sections throughout the river.

Barriers to Fish Migration: None observed.

Photographs on file; Nos. 379.

FISH POPULATIONS

Species Present: Atlantic Salmon, brook trout, brown trout.

Atlantic Salmon Angling Record - Colinet River

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kgms
1952	88	75	338	153.5	30	233	105.8	105	571	259.3
1953	63	33	154	69.9	7	46	20.9	40	200	90.8
1954	18	10	44	20.0	-	-	-	10	44	20.0
1955	18	11	47	21.3	1	10	4.5	12	57	25.8
1956	-	15	56	25.4	1	8	3.6	16	64	29.0
1957	92	34	159	72.2	3	23	10.4	37	182	82.6
1958	97	28	127	57.7	1	8	3.6	29	135	61.3
1959	259	80	335	152.1	17	121	54.9	97	456	207.0
1960	257	20	94	42.7	10	86	39.0	30	180	81.7
1961	45	5	23	10.4	1	8	3.6	6	31	14.0
1962	176	14	59	26.8	16	140	63.6	30	199	90.4
1963	166	12	53	24.1	5	44	20.0	17	97	44.1
1964 ¹	257	24	108	49.0	8	64	29.1	32	172	78.1
1965	168	18	72	32.7	1	7	3.2	19	79	35.9
1966	115	16	68	30.9	6	48	21.8	22	116	52.7
1967	132	12	51	23.2	2	16	7.3	14	67	30.5
1968	169	7	31	14.1	-	-	-	7	31	14.1
1969	200	19	81	36.8	3	23	10.4	22	104	47.2
1970	148	23	106	48.1	8	67	30.4	31	173	78.5
1971	199	18	74	33.6	1	8	3.6	19	82	37.2
1972	254	25	102	46.3	2	13	5.9	27	115	52.2
1973	174	68	170	77.3	1	8	3.6	69	178	80.9
1974										
1975										
1976										
1977										
Mean 1964-68	168	15	66	30.0	3.4	27.0	12.3	19	93	42.3
Mean 1969-73	195	31	107	48.5	3.0	23.8	10.8	34	130	59.3

¹ Angling data, 1964-73, estimated to be 75% accurate. (B. Davis, personal communication).

Water Quality Data, Sample Collected July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.62	4.0	8.0	0.8	7.0	37.0	1.5	4.88

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-69)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-69	July 7-13	September 1-7	August 3-10 (1968)

Accessibility to Anglers:

Accessible by road at the mouth in Colinet. The lower and middle sections are accessible by foot paths only, distance from road to river varies in sections from 0.75-3 miles (1.21-4.82 km). Upper section accessible by foot paths only, distances vary from 3.5-5 miles (5.63-8.04 km). The headwaters area accessible by road and boat in the Middle Gull Pond and Fox Marsh areas.

Surveys: None to date.

Redd Counts:

1965. 400 redds located on the East and North Branches, lower sections, and 200 redds location in the middle and lower sections of the main river.

Miscellaneous Information:

Construction of logging dams without fishway, and log driving on all streams in the system have reduced fish stocks considerably.

References:

ROCKY RIVER

Location: $47^{\circ} 13' 05''$ N. $53^{\circ} 33' 50''$ W. Colinet Harbour, St. Mary's Bay.

Map Reference: 1 N/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 114.3 miles² (296.03 kilometers²), Mean width, 4.7 miles (7.56 kilometers).

Perimeter, 105.7 miles (170.07 kilometers). Axial length, 23.0 miles (37.00 kilometers).

Maximum basin relief, 1,000 feet (304.80 meters).

Geology:

Almost entirely Precambrian sedimentary with some Cambrian Sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Section: Upstream from mouth to Whitbourne area.

Average width 100 ft. (30.48 meters). Average depth, 0.8 feet (.30 meters).

Velocity, moderately swift.

Section: Ocean Pond at headwaters of Rocky River.

Max. length, 4.0 miles (6.43 kilometers). Mean length, 3.2 miles (5.14 kilometers).

Max. width, 0.4 miles (.6 kilometers). Mean width, 0.32 miles (.5 kilometers).

Max. depth, 32 feet (9.75 meters). Mean depth, 14.9 feet (4.54 meters).

Area, 1.6 sq. miles (4.14 sq. kilometers).

Bottom Type:

The river has a predominantly rubble bottom with all other types well represented and well interspersed.

Spawning Areas:

Along entire main river many areas appear suitable for salmonid spawning.

Barriers to Fish Migration:

Falls at mouth of main river; complete obstruction.

Concrete fishway built in 1940 by F.R.B.C. Fishway apparently did not work. No salmon have been observed using fishway or above the falls. Fishway is partially fallen down. There are no plans to repair it.

Falls a few hundred feet from mouth of river; partial obstruction at normal water levels.

Water Chemistry: Ocean Pond: ph 6.65 (1961).

Total dissolved solids 316 (1961).

Water temperature 25°C (June 25, 1961).

Water Quality Data, Sample Collected May 1972, May 1973.

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH	6.15	1.0	6.0	0.85	6.8	30.0	1.2
						1.2	1.2

Photographs on file; Nos. 237, 239, 248, 378, 390, 473, 79.

FISH POPULATIONS

Species Present: Brook trout, and ouananiche. No run of anadromous fish.

No angling data available.

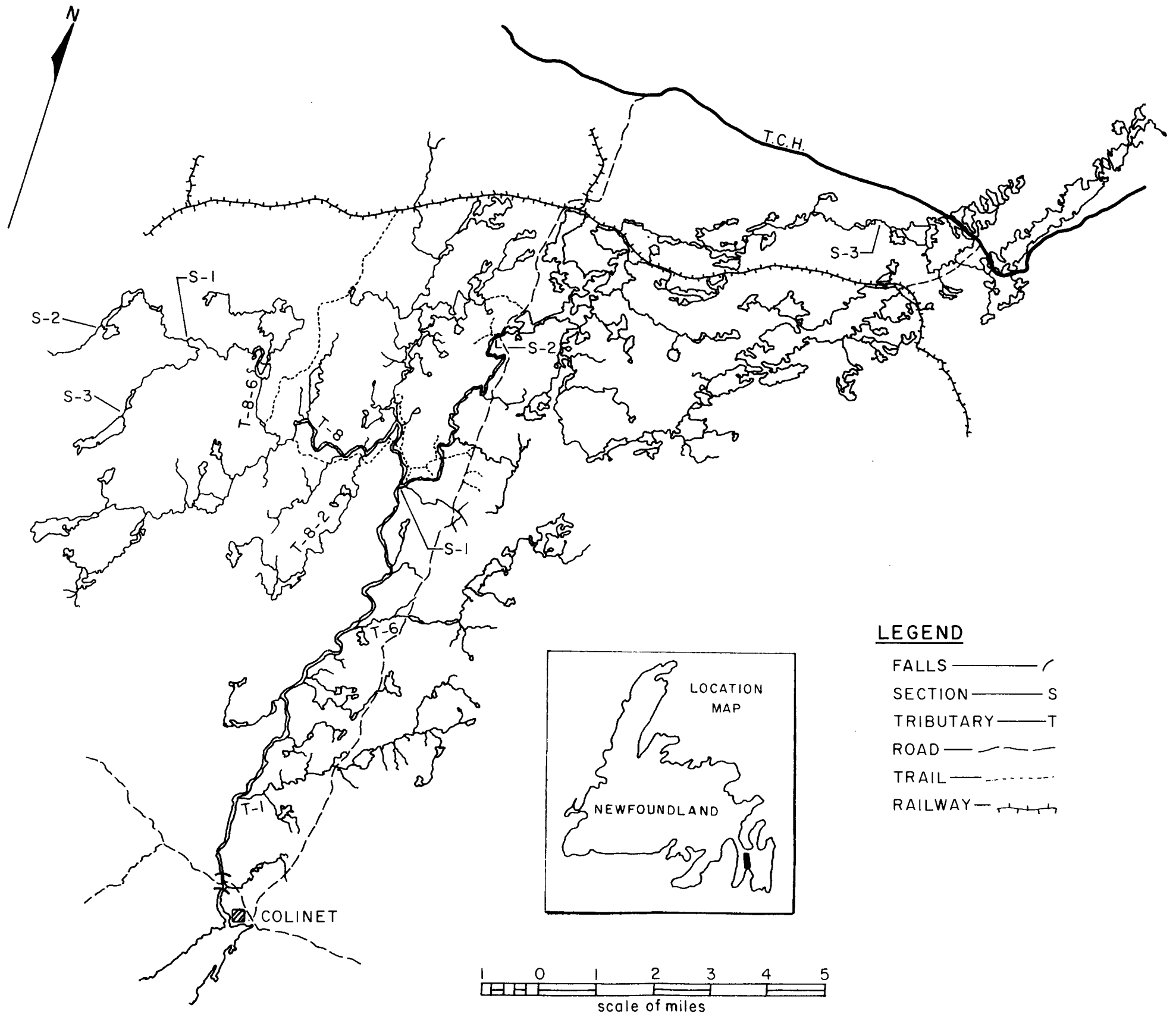


FIG 16

OUTLINE MAP OF ROCKY RIVER SHOWING
OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Estimated Atlantic salmon smolt production and adult sea survival
Rocky River.

If smolt production per 100 yds ² (83.7 m ²) is:				
Smolts produced		1	2	3
		11,388	22,776	34,164
Adult return if sea survival is:	2%	228	456	683
	5%	569	1,139	1,708
	10%	1,139	2,278	3,416
	15%	1,708	3,416	5,125

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: Engineering survey of fishway in 1962.
Biological survey, 1968.

Redd Counts: None to date.

References:

- Anonymous: 1962. Salmon and Trout Management Program, 1961. MS Report, Fisheries Service, St. John's, Newfoundland.
- Riche, L.S. and Traverse, G. 1969. River Investigations 1968 Avalon Peninsula. MS Report, Fisheries Service, St. John's, Newfoundland.
- Seabrook, W. 1962. A Survey of Nine Lakes on the Island of Newfoundland. MS Report, Fisheries Service, St. John's, Newfoundland.

NORTH HARBOUR RIVER

Location: 47°11'20" N. 53°37'30" W. North Harbour, St. Mary's Bay.
 Map Reference: Placentia. 1 N/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 28.0 miles² (72.52 km²). Mean width, 3.8 miles (6.11 km).

Perimeter, 27.1 miles (43.60 km). Axial length, 8.0 miles (12.87 km).

Maximum basin relief, 842 feet (256.64 m).

Geology:

Almost entirely Precambrian sedimentary with some Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Gull Pond Brook, Tributary of North Harbour River.

Falls approximately 0.5 miles (0.80 km) below Burin Peninsula Highway Bridge. In 1972, rock blasted at top of falls and water confined at rapids above falls.

Photographs on file; Nos. 908, 909, 910, 911, 951, 397, 450

Water Quality Data, Sample Collected May, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.7	1.0	6.0	0.9	6.5	29.0	.9	

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, three spined stickleback,
pink salmon, smelt, eels, brown trout, gaspereau

Atlantic salmon angling record - North Harbour River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	250	11	48	21.8	15	100	45.4	26	148	67.2
1953	21	5	26	11.8	4	32	14.5	9	58	26.3
1954	367	20	70	31.8	14	96	43.6	34	166	75.4
1955	84	8	31	14.1	16	108	49.0	24	139	63.1
1956	-	16	60	27.2	6	52	23.6	22	112	50.8
1957	288	16	65	29.5	16	109	49.5	32	174	79.0
1958	95	10	48	21.8	1	7	3.2	11	55	25.0
1959	319	14	60	27.2	27	237	107.6	41	297	134.8
1960	163	7	34	15.4	2	18	8.2	9	52	23.6
1961	100	2	10	4.5	1	10	4.5	3	20	9.1
1962	467	7	33	15.0	2	14	6.4	9	47	21.4
1963	442	13	60	27.2	1	8	3.6	14	68	30.8
1964 ¹	496	8	29	13.2	4	36	16.3	12	65	29.5
1965	515	4	19	8.6	1	8	3.6	5	27	12.2
1966	244	6	29	13.2	1	7	3.2	7	36	16.4
1967	488	37	148	67.2	-	-	-	37	148	67.2
1968	366	9	38	17.3	-	-	-	9	38	17.3
1969	324	2	8	3.6	-	-	-	2	8	3.6
1970	Closed									
1971	Closed									
1972	Closed									
1973	125	1	3	1.4	-	-	-	1	3	1.4
1974										
1975										
1976										
1977										
MEAN										
1964-68	422	13	53	23.9	1.2	10.2	4.6	12	63	28.5
1969-73										

¹ Angling data, 1964-68, estimated to be 80% accurate. (B. Davis, personal communication).

Note: River closed to angling, August 1, to September 31, 1968-73.

Summary, counting fence data, North Harbour River.

Year	Salmon					Smelt	Shad	Eels	Trout			
	Atlantic	Pink	Smolt	Parr	Kelt				Brook	Brown		Alewife
1961	26	1	1495			27		44	6640 ¹	2204 ¹		
1962	52	-	2708		1	58		86	4099 ¹	1301 ¹		
1963	-	-	1810			10		47	1799 ¹	1161 ¹	1	
1964	2	25	2511			2		38	2678 ¹	837 ¹	1	
1965	-	-	423		1	7		27	3275 ¹	979 ¹		
1966	2	419	977			5		193	2048 ¹	691 ¹		
1967	2	5334	790			11		1	1453 ¹	730 ¹	1	
									Up Stream	Down stream	Up Stream	Down stream
1968	3	1353	655			5		4	44	1298	318	520
1969	39	1116	-			46		1	735	-	465	-
1970	13	1489	-			1			1478	-	919	-
1971	25	468	671			449		178	1590	2135	1119	1045
1972	6	58	660			273 ¹		57		2718 ¹		1258 ¹
1973	4	60	648			233		84	1399	1513	1287	1215

¹ Combined total, upstream and downstream.

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	July 19 - 25	August 21 - 27	August 10 - 17 (1968)

Accessibility to Anglers:

Accessible by road at the mouth and again upstream at approximately mile 5 (8.04 kilometers) from its mouth. Foot paths lead from the road to the river at various sections on the lower 5 miles (8.04 kilometers). The upper section is accessible by foot path only, distance varying from 1 - 5 miles (1.61-8.04 kilometers). A narrow winding road leads to the river, 2 miles (3.21 kilometers) upstream from the main road.

Surveys:

Engineering survey of **falls**, 1968.

Redd Counts: None to date.

References:

FLINN RIVER

Location: 47° 09' 40" N. 53° 39' 15" W. North Harbour, St. Mary's Bay.

Map Reference: Placentia. 1 N/4 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 4.9 miles² (12.69 kilometers²). Mean width, 1.3 miles (2.09 kilometers).

Perimeter, 13.3 miles (21.39 kilometers). Axial length, 4.3 miles (6.91 kilometers).

Maximum basin relief, 842 feet (256.64 meters).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration.

Photographs on file; Nos.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

LITTLE SALMONIER RIVER

Location: 47°02'20" N. 53°45'00" W. St. Mary's Bay.
 Map Reference: Placentia. 1 N/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 47.4 miles² (122.76 km²). Mean width, 2.3 miles (3.70 km).

Perimeter, 53.3 miles (85.75 km). Axial length, 20.7 miles (33.30 km).

Maximum basin relief, 950 feet (289.56 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main River: Mean channel width, 60 feet (3.93 m). Mean channel depth, 18 inches (.45 m).

Spawning Areas: Abundant throughout.

Barriers to Fish Migration:

Falls at mile 0 of river. Three vertical drops. 2, 3 and 2 feet (0.6, 0.9, 0.6 m) high. Total length 20 feet (6.09 m). Partial obstruction at low water.

Falls, 50 feet (15.24 m) from mouth. Height: 12 feet (3.65 m). Length: 40 feet (12.19 m). Slope: 45°. Partial obstruction at low water.

Three falls, at mile 2.5 (4.02 km). Height: 15, 8 and 4 feet (4.57, 2.43 1.21 m). Total length: 100 feet (30.48 m). Slope: 45°-60°.

Blasting carried out in 1956. Reports indicate channel working well.

Falls at mile 5.5 (8.88 km). Height in three drops: 7, 3 and 4 feet (2.13, 0.9, 1.21 m). Total length 100 feet (30.48 m). Slope: 45°. Partial obstruction, no work required.

Falls at mile 6 (9.65 km). Height: 4 feet (1.21 m). Length: 70 feet (21.33 m). Slope 30°. Partial obstruction.

Photographs on file; Nos. 30, 265, 661, 401.

FISH POPULATIONS

Species Present: Atlantic salmon.

Atlantic Salmon Record - Little Salmonier River

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	81	69	294	133.5	-	-	-	69	294	133.5
1953	170	113	460	208.8	-	-	-	113	460	208.8
1954	80	37	122	55.4	-	-	-	37	122	55.4
1955	78	55	232	105.3	-	-	-	55	232	105.3
1956	-	98	489	222.0	1	14	6.4	99	503	228.4
1957	203	187	747	339.1	-	-	-	187	747	339.1
1958	162	30	139	63.1	-	-	-	30	139	63.1
1959	95	39	155	70.4	-	-	-	39	155	70.4
1960	45	29	132	59.9	-	-	-	29	132	59.9
1961	42	13	56	25.4	-	-	-	13	56	25.4
1962	78	18	75	34.1	-	-	-	18	75	34.1
1963	110	47	215	97.6	-	-	-	47	215	97.6
1964 ¹	116	40	161	73.1	-	-	-	40	161	73.1
1965	136	72	302	137.1	-	-	-	72	302	137.1
1966	74	26	113	51.3	1	6	2.7	27	119	54.0
1967	114	25	100	45.4	-	-	-	25	100	45.4
1968	174	39	163	74.0	1	6	2.7	40	169	76.7
1969	134	16	67	30.4	-	-	-	16	67	30.4
1970	108	37	148	67.2	-	-	-	37	148	67.2
1971	182	42	174	79.0	-	-	-	42	174	79.0
1972	322	89	316	143.5	2	14	6.4	91	330	149.9
1973	105	109	488	221.8	-	-	-	109	488	221.8
1974										
1975										
1976										
1977										
Mean 1964-68	123	40	168	76.3	.4	2.4	1.1	41	170	77.4
Mean 1969-73	170	59	239	108.5	.4	2.8	1.3	59	239	108.5

¹ Angling data, 1964-73, estimated to be 80% accurate. (B. Davis, personal communication).

LEGEND

- FALLS ——— /
- SECTION ——— S
- TRIBUTARY ——— T
- ROAD ——— ~~~~

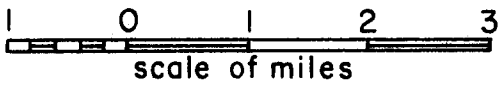
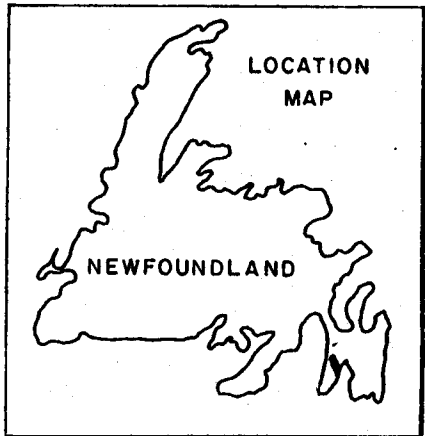
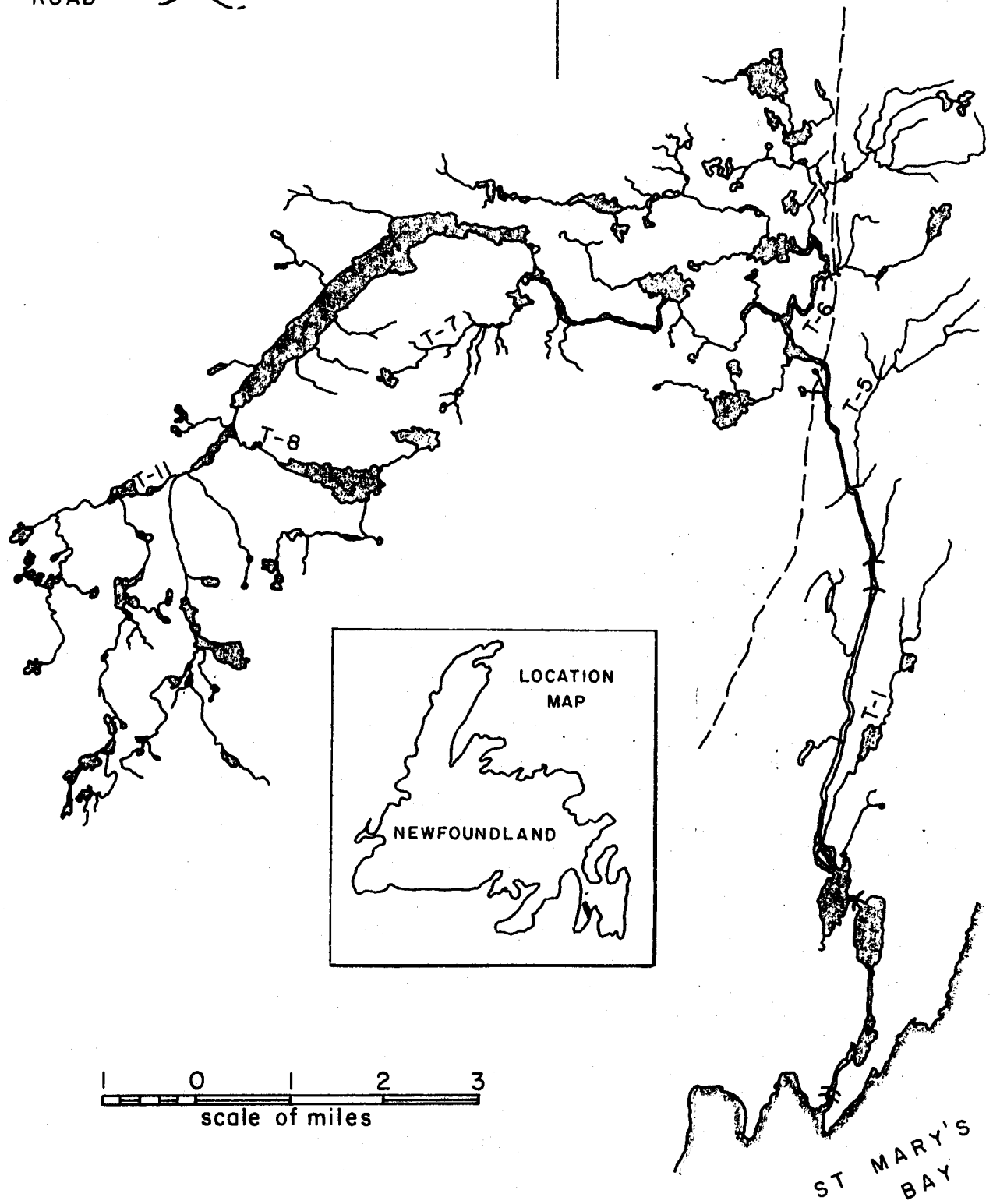


FIG 17

OUTLINE MAP OF LITTLE SALMONIER RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Water Quality Data, Sample Collected, May, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.0	2.0	5.0	1.5	5.0	30.0	1.2	2.44

Estimated Atlantic salmon smolt production and adult sea survival

If smolt production per 100 yds ² (83.7 m ²) is:		1	2	3
Smolts produced		5,368	10,736	16,104
Adult return if sea survival is:	2%	107	215	322
	5%	268	537	805
	10%	537	1,074	1,610
	15%	805	1,610	2,415

Gene Frequency: Not completed

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 28-July 4	August 14-20	July 20-27 (1968)

Accessibility to Anglers:

Surveys: Biological Survey, 1968.

Redd Counts: 1965, 1,300.

References:

Riche, L.G. and Traverse, G. 1969. River Investigations 1968 Avalon Peninsula. MS report, Fisheries Service, St. John's, Newfoundland.

BIG BARACHOIS RIVER

Location: 47°03'03" N. 53°46'35" W. St. Mary's Bay.
 Map Reference: Placentia. 1 N/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 31.9 miles² (82.62 km²). Mean width, 4.3 miles (6.91 km).

Perimeter, 24.7 miles (39.74 km). Axial length, 7.2 miles (11.58 km).

Maximum basin relief, 850 feet (259.08 m).

Geology:

Precambrian sedimentary.

Vegetational Cover:

Some large timber among small scrub spruce.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

West Branch: Mean width: 25 feet (7.62 m). Mean depth: 0.8 feet (0.24 m). Velocity: Fast.

East Branch: Mean width: 30 feet (9.14 m). Mean depth: 0.8 feet (0.24 m). Velocity: fast.

Upper section: Mean width 14 feet (4.3 m). Mean depth: 1.1 feet (0.34 m).

Spawning Areas: East Branch: Good sections of spawning gravel for salmon and trout above Barachois Pond and in upper sections of the river.

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
6.57	4.0	9.0	1.1	6.0	35.0	1.5	4.88

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - Big Barachois River

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	473	19	85	38.6	-	-	-	19	85	38.6
1953	60	9	38	17.3	-	-	-	9	38	17.3
1954	9	2	6	2.7	-	-	-	2	6	2.7
1955	57	-	-	-	-	-	-	-	-	-
1957	30	6	24	10.9	-	-	-	6	24	10.9
1959	21	9	35	15.9	-	-	-	9	35	15.9
1960	111	15	60	27.2	0	0	-	15	60	27.2
1961	101	38	160	72.6	-	-	-	38	160	72.6
1962	73	11	44	20.0	-	-	-	11	44	20.0
1963	70	5	23	10.4	-	-	-	5	23	10.4
1964 ¹	69	7	28	12.7	-	-	-	7	28	12.7
1965	3	2	9	4.1	-	-	-	2	9	4.1
1966	30	2	9	4.1	1	7	3.2	3	16	7.3
1967	43	19	76	34.5	-	-	-	19	76	34.5
1968	102	8	35	15.9	-	-	-	8	35	15.9
1969	333	7	28	12.7	-	-	-	7	28	12.7
1970	230	77	326	148.0	-	-	-	77	326	148.0
1971	145	27	109	49.5	-	-	-	27	109	49.5
1972	231	24	97	44.0	-	-	-	24	97	44.0
1973	35	52	226	102.7	-	-	-	52	226	102.7
1974										
1975										
1976										
1977										
Mean 1964-68	49	8.	31.	14.3	.2	1.4	.6	8	33	14.9
Mean 1969-73	195	37	157.	71.5	-	-	-	37	157	71.5

¹Angling data, 1964-73, estimated to be 80% accurate. (B. Davis, personal communication).

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-69	June 21-27	August 1-7	July 6-13 (1968)

Accessibility to Anglers:

The highway crosses the river 1 mile (1.61 km) from Little Salmonier River. The pools can be reached by foot either from the highway or from the river mouth which is accessible only by boat.

Surveys:

C & P Surveys in 1965, 1968 and 1969

Miscellaneous Information:

Good pools on the lower section of the river for trout and salmon angling.

Redd Counts:

1965, West Branch 30 trout redds observed; East Branch 106 salmon redds observed.

1968, 200 redds observed on upper section of main river.

1969, 80 redds observed approximately 1 mile (1.61 km) below the highway.

1969, 500-600 redds observed in section approximately 6 miles (9.65 km) above highway.

References:

LITTLE BARACHOIS RIVER

Location: 47°00'55" N. 53°47'50" W. Little Barachois,
St. Mary's Bay.

Map Reference: Placentia, 1 N/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 19.3 miles² (49.98 km²). Mean width, 3.2 miles
(5.14 km).

Perimeter, 22.4 miles (36.04 km). Axial length, 6.1 miles
(9.81 km).

Maximum basin relief, 950 feet (289.56 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls at mile 1.5 (2.41 km). Height: 25 feet (7.62 m). Length: 200
feet (60.96 m). Considered a complete obstruction.

Two falls at mile 3.5 (5.63 km). Height: 2 feet and 3 feet (0.6 and
0.9 m). Slope: 60° and 45°. Partial obstruction.

Photographs on file; Nos. 1; 858.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.3	4.0	14.0	3.3	10.0	41.0	1.5	-

FISH POPULATIONS

Species Present: Atlantic salmon, sea trout.

No angling data available on this stream.

LEGEND

- FALLS ——— /
- SECTION ——— S
- TRIBUTARY ——— T
- ROAD ——— - - -

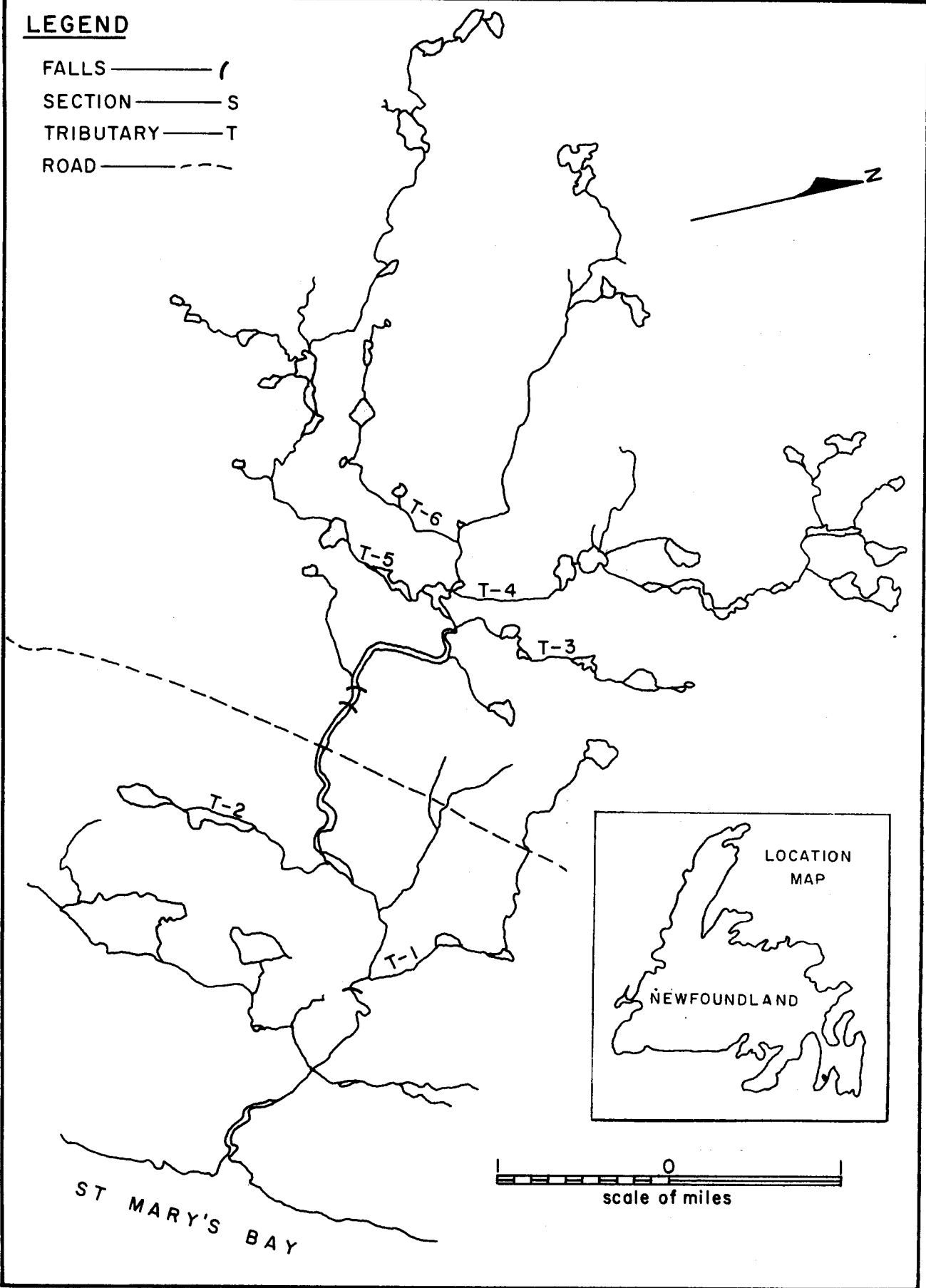


FIG 18

OUTLINE MAP OF LITTLE BARCHOIS RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Estimated Atlantic salmon smolt production and adult sea survival, Little Barachois River and tributaries.

If smolt production per					
100 yds ² (83.7 m ²) is:					
Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>	
	Adult return if sea survival is:	2%	52	105	157
		5%	131	262	393
		10%	262	524	786
		15%	393	262	1,179

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers: Accessible only by boat.

Surveys: Biological Survey, 1968.

Redd Counts: None to date.

References:

- Anonmyous. Nfld. Dept. Nat. Res. 1943. Res. Bull. No. 12, St. John's, Newfoundland.
- Palmer, C.H. 1928. The Salmon Rivers of Newfoundland. Farrington Printing Co. Boston.
- Riche, L.G. and Traverse, G. 1969. River Investigations 1968 Avalon Peninsula. MS report, Fisheries Service, St. John's, Newfoundland.

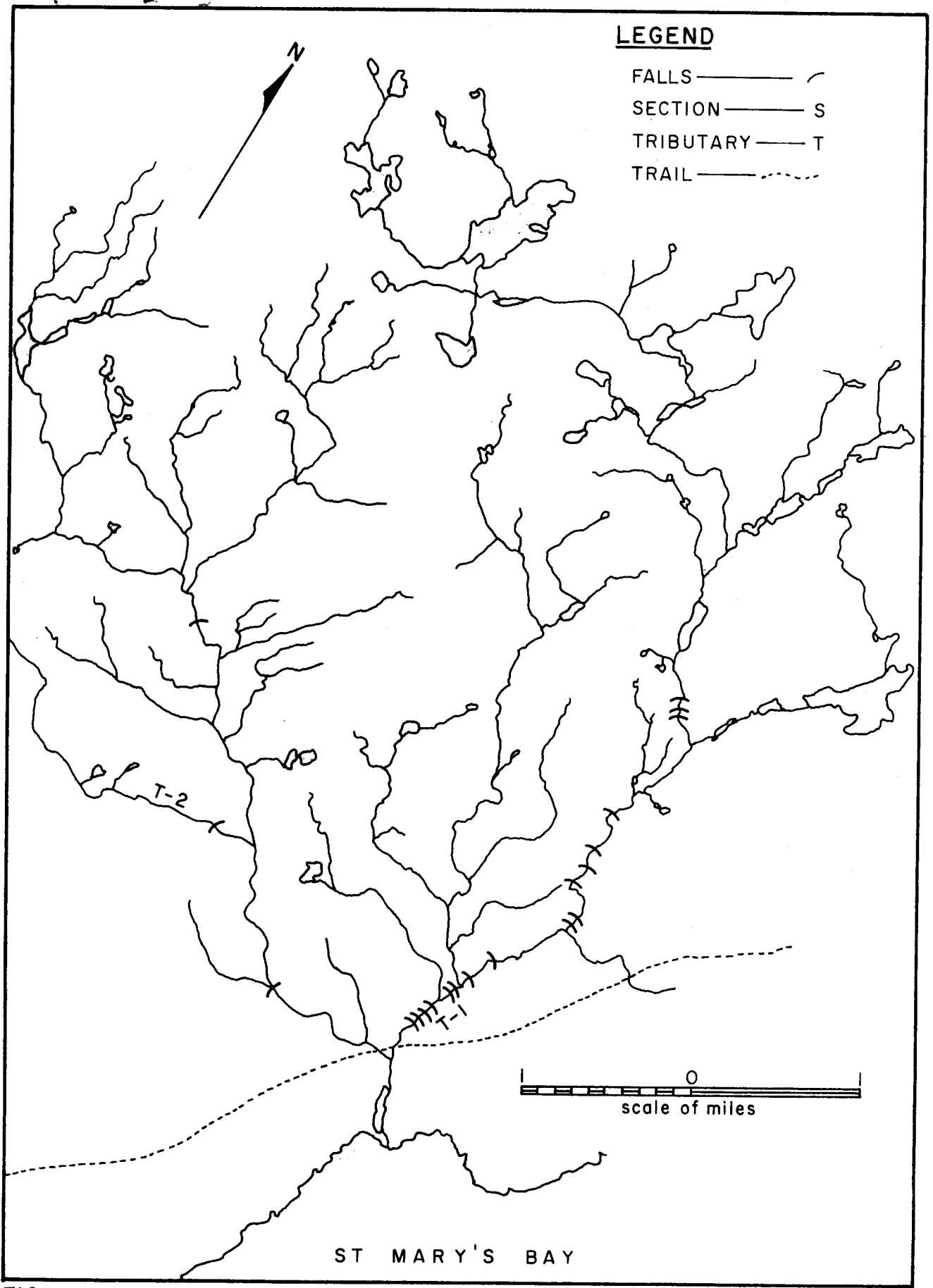


FIG 19.

OUTLINE MAP OF RED HEAD RIVER SHOWING
OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Estimated Atlantic salmon smolt production and adult sea survival,
Red Head River (606 units).

If smolt production per 100
yds² (83.7 meters²) is:

	<u>1</u>	<u>2</u>	<u>3</u>
	606	1212	1818
Smolts produced			
Adult return if sea survival is			
2%	12	24	36
5%	30	61	91
10%	61	121	182
15%	91	182	271

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
-------------	-------------------	------------------	-------------------------

Accessibility to Anglers:

Surveys: Biological Survey, 1968

Redd Counts: None to date.

References:

Riche, L. G. and Traverse, G. 1969. River Investigations 1968

Avalon Peninsula, MS report, Fisheries Service, St. John's, Nfld.

BECKFORD RIVER

Location: 46°53'10" N. 53°55'15" W. Near Branch, St. Mary's Bay.

Map Reference: St. Mary's. 1 K/13 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 16.6 miles² (42.99 km²). Mean width, 2.1 miles (3.37 km).

Perimeter, 20.5 miles (32.98 km). Axial length, 7.2 miles (11.58 km).

Maximum basin relief, 750 feet (228.60 m).

Geology:

Almost entirely Cambrian sedimentary with some Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: None.

Photographs on file; Nos.

Water Quality Data, Sample Collected May, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.9	2.0	7.0	0.8	7.5	34.0	1.2	2.44

FISH POPULATIONS

Species Present: Sea trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Road crosses the river at approximately mile 0.75 (1.21 km).

Foot paths lead upstream to sections of the river and tributaries for a distance up to 3 miles (4.82 km).

Surveys: None to date.

Redd Counts: None to date.

References:

Anonymus. 1943. Nfld. Dept. Natural Resources, Resource Bulletin, No. 12, St. John's, Newfoundland.

Palmer, C.H. 1928. The Salmon Rivers of Newfoundland. Farrington Co. Boston.

BRANCH RIVER

Location: 46°53'15" N. 53°58'05" W. Branch, St. Mary's Bay.

Map Reference: St. Mary's. 1 K/13 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 45.6 miles² (118.10 km²). Mean width, 3.1 miles (4.98 km).

Perimeter, 44.6 miles (71.76 km). Axial length, 14.0 miles (22.52 km).

Maximum basin relief, 850 feet (259.08 m).

Channel Characteristics:

Mile 0-10 (16.09 km). Mean width: 70 feet (21.33 m). Mean depth: 1.5 feet (0.45 m). Velocity: fast.

Mile 10 - headwaters. Mean width: 25 feet (7.62 m). Mean depth: 1.2 feet (0.35 m). Velocity: fast.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls at mile 5.5 (8.84 km). Height: 8 feet (2.43 m). Width: 3 feet (0.91 m) gorge. Slope: 45°. Partial obstruction. Gorge may be a prime poaching area.

Several small falls and rapids at various points along river. Not considered serious obstructions.

Photographs on file; Nos. 225,

Water Quality Data, Sample Collected September 1972, June 1973.

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH	4.0	6.0	4.35	6.8	34.0	1.2	4.9

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

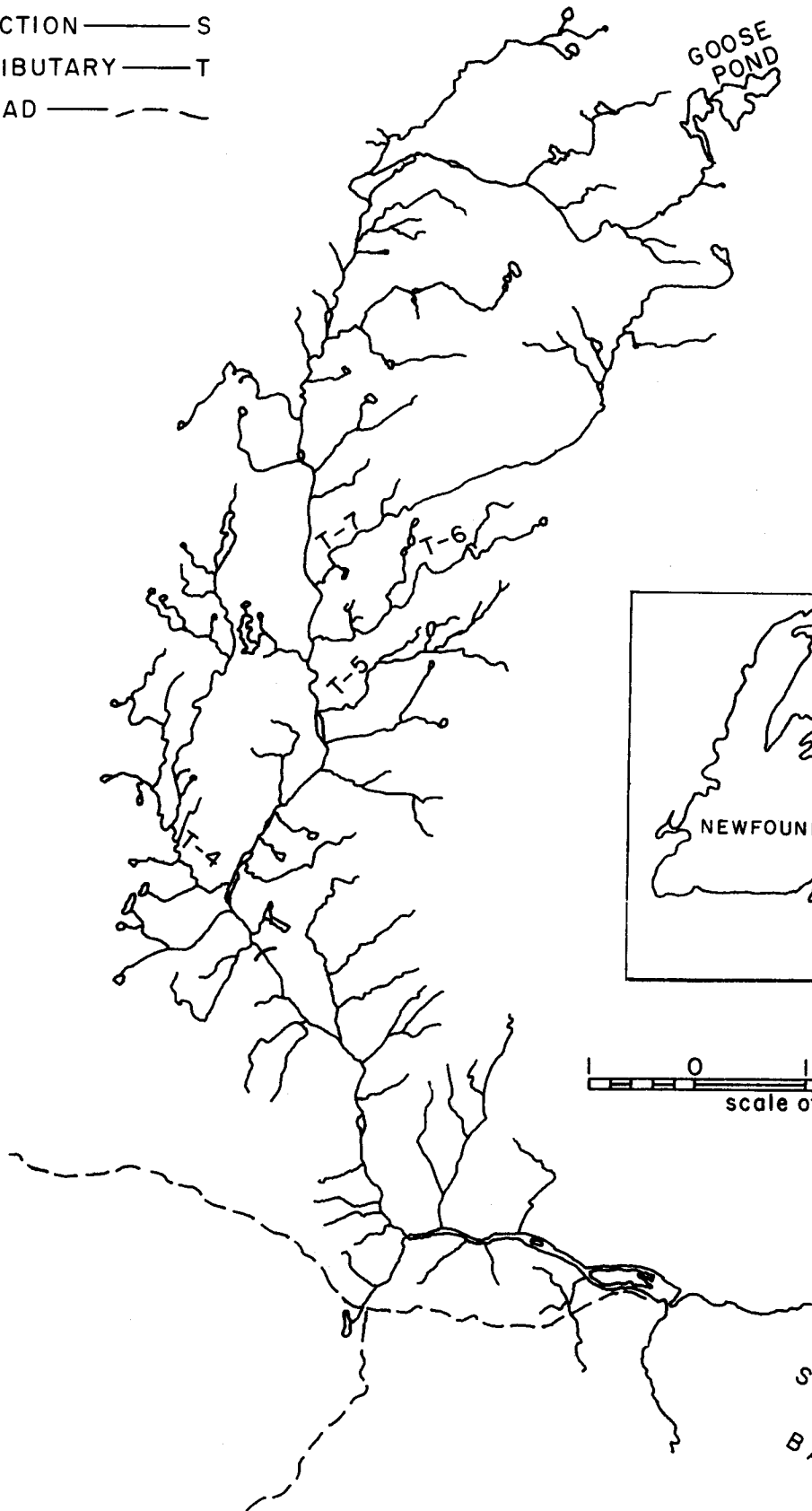
Atlantic Salmon Angling Record - Branch River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	109	101	445	202.0	20	156	70.8	121	601	272.8
1953	228	88	402	182.5	23	174	79.0	111	576	261.5
1954	115	44	200	90.8	12	87	39.5	56	287	130.3
1955	132	29	135	61.3	14	106	48.1	43	241	109.4
1956	-	60	266	120.8	11	87	39.5	71	353	160.3
1957	256	106	448	203.4	20	154	69.9	126	602	273.3
1958	200	125	519	235.6	9	74	33.6	134	593	269.2
1959	180	52	236	107.1	-	-	-	52	236	107.1
1960	306	104	467	212.0	20	149	67.6	124	616	279.6
1961	375	103	485	220.2	15	117	53.1	118	602	273.3
1962	513	120	550	249.7	19	155	70.4	139	705	320.1
1963	605	64	298	135.3	11	87	39.5	75	385	174.8
1964 ¹	755	75	365	165.7	8	61	27.7	83	426	193.4
1965	481	125	585	265.6	26	202	91.7	151	787	357.3
1966	511	57	263	119.4	4	29	13.2	61	292	132.6
1967	631	76	341	154.8	4	32	14.5	80	373	169.3
1968	1035	52	248	112.6	-	-	-	52	248	112.6
1969	1214	84	360	163.4	-	-	-	84	360	163.4
1970	1626	144	552	250.6	-	-	-	144	552	250.6
1971	1081	166	738	335.1	8	62	28.1	174	800	363.2
1972	620	57	226	102.6	4	25	11.4	61	251	114.0
1973	984	64	245	111.4	3	20	9.1	67	265	120.5
1974										
1975										
1976										
1977										
MEAN										
1964-68	683	77	360	163.8	8.4	65	29.5	85	425	193.3
1969-73	1105	103	424	192.8	3.0	21.4	9.7	86	446	202.5

¹Angling data, 1964-73, estimated to be 80% accurate. (B. Davis, personal communication).

LEGEND

- FALLS ——— /
- SECTION ——— S
- TRIBUTARY ——— T
- ROAD ——— - - -



GOOSE POND

T-6

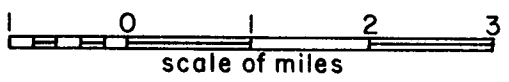
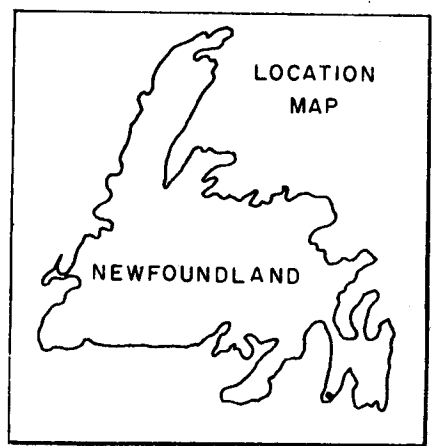


FIG 20

OUTLINE MAP OF BRANCH RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

Estimated Atlantic Salmon Smolt production and adult sea survival

If smolt production				
per 100 yds ² (83.7 m ²) is:				
Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>
		7,670	15,340	23,010
Adult return If sea survival is:	2%	153	307	460
	5%	384	767	1,151
	10%	767	1,534	2,301
	15%	1,151	2,301	3,452

Miscellaneous Information:

Illegal exploitation is a major problem in upper sections and headwaters.

Timing of Run: (Based on angling statistics 1966-1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 21-27	August 14-20	July 20-27 (1968)

Accessibility to Anglers:

Accessible at the mouth only. Foot paths lead upstream from the mouth along the river banks for distances from 6 - 8 miles (9.65 - 12.87 km). Foot paths lead from the Cape Shore Road, which runs parallel to the river, in a number of areas and from several communities.

Surveys: Biological Survey, 1968.

Redd Counts:

1969, 400 redds observed:

From mile 2 (3.21 km) to falls, 105 redds.

From falls to "Buckets", approximately 6 miles (9.65 km). 155 redds.

From "Buckets" to 1.5 miles (2.41 km) below Goose Pond, 140 redds.

References:

- Anononyous 1943. Nfld. Dept. Nat. Res. Res. Bull. No. 12,
St. John's, Newfoundland.
- Palmer, C.H. 1928. The Salmon Rivers of Newfoundland.
Farrington Publishing Co. Boston, Mass.
- Riche, L.G. and Traverse, G. 1969. River Investigations 1968
Avalon Peninsula, MS report, Fisheries Service, St. John's,
Newfoundland.

LANCE RIVER

Location: 46°48'25" N. 53°04'15" W. Lance Cove.
 Map Reference: St. Bride's. 1 L/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 20.4 miles² (52.83 km²). Mean width, 2.7 miles (4.34 km).
 Perimeter, 25.8 miles (41.51 km). Axial length, 8.0 miles (12.87 km).
 Maximum basin relief, 500 feet (152.40 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected September 1972, July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
5.58	0.5	7.5	2.45	7.9	35.0	1.5	

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Accessible by road at its mouth, where road runs parallel for about 0.75 miles (1.20 kilometers) and then crosses it. Trails lead from the road to the lower section of the river in various sections. The remainder of this river is isolated except for a couple of tributaries which cross the Cape Shore Road.

Surveys: None to date.

Redd Counts: None to date.

References:

CUSLETT BROOK

Location: 46°57'25" N. 54°10'10" W. Placentia Bay.
 Map Reference: St. Bride's. 1 L/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 13.9 miles² (36.00 km²). Mean width, 2.9 miles
 (4.66 km).
 Perimeter, 17.4 miles (27.99 km). Axial length, 5.0 miles
 (8.04 km).
 Maximum basin relief, 800 feet (243.84 m).

Geology:

About equal amounts of Cambrian sedimentary and Precambrian
 sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected May, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.3	6.0	9.0	0.8	10.5	50.0	1.9	7.32

Fish Populations

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date

Redd Counts: None to date

References:

GREAT BARASWAY BROOK

Location: 47°07'40" N. 54°04'00" W. Great Barasway,
Placentia Bay.

Map Reference: Ship Cove. 1 M/1 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 26.2 miles² (67.85 km²). Mean width, 3.4 miles
(5.47 km).

Perimeter, 25.4 miles (40.86 km). Axial length, 8.9 miles
(14.32 km).

Maximum basin relief, 950 feet (289.56 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.15	5.0	10.0	3.0	8.0	35.0	1.3	

FISH POPULATIONS

Species Present: Atlantic salmon.

Atlantic salmon angling record - Great Barasway (Placentia Bay).

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1961	No report									
1962	182	1	5	2.3	-	-	-	1	5	2.3
1963	249	24	111	50.4	3	24	10.9	27	135	61.3
1964 ¹	186	41	193	87.6	2	16	7.3	43	209	94.9
1965	230	46	212	96.2	6	43	19.5	52	255	115.8
1966	271	42	190	86.3	10	70	31.7	52	260	118.0
1967	326	10	43	19.5	-	-	-	10	43	19.5
1968	352	29	131	59.5	-	-	-	29	131	59.5
1969	148	25	102	46.3	1	7	3.2	26	109	49.5
1970	473	15	57	25.9	-	-	-	15	57	25.9
1971	134	17	70	31.7	-	-	-	17	70	31.7
1972	363	43	176	79.9	-	-	-	43	176	79.9
1973	268	34	145	65.9	-	-	-	34	145	65.9
1974										
1975										
1976										
1977										
MEAN										
1964-68	273	34	154	70.0	3.6	25.8	11.7	37	180	81.5
1969-73	277	27	110	50.0	.2	1.4	.6	27	111	50.6

¹Angling data, 1964-73, estimated to be 75-80% accurate. (B. Davis, personal communication).

Miscellaneous Information:

This was reported as a good fishing stream; Palmer, 1928.

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	July 9 - 15	August 18 - 24	July 13 - 20 (1968)

Accessibility to Anglers:

Accessible at the mouth only by road, the upper sections are isolated. Foot paths lead upstream from the mouth close to the river bank for approximately 5 miles (8.04 kilometers).

Surveys: None to date.

Redd Counts: None to date.

References:

Palmer, C. H. 1928. The Salmon Rivers of Newfoundland.
Farrington Co., Boston.

LT. BARACHOIS RIVER

Location: 47°10'55" N. 54°02'40" W. Placentia Bay.
 Map Reference: Ship Cove. 1 M/1 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 15.1 miles² (39.10 km²). Mean width, 2.4 miles (3.86 km).
 Perimeter, 17.9 miles (28.80 km). Axial length, 7.1 miles (11.42 km).
 Maximum basin relief, 700 feet (213.36 m).

Geology:

About equal amounts of Precambrian sedimentary and Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected September 1972, May 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.33	5.5	13.0	2.1	10.3	50.0	1.9	6.7

FISH POPULATIONS

Species Present:

No angling data available on this stream

Gene Frequency: Not completed

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date

Redd Counts: None to date

References:

SOUTH EAST RIVER

Location: 47°13'15" N. 53°54'35" W. South East Arm,
Placentia Bay.

Map Reference: Placentia. 1 N/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 54.1 miles² (140.11 km²). Mean width, 3.5 miles
(5.63 km).

Perimeter, 51.7 miles (83.18 km). Axial length, 13.5 miles
(21.72 km).

Maximum basin relief, 1,000 feet (304.80 m).

Geology:

Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls at mile 6 (9.66 km) on the main river. Fish by-pass, "run around",
blasting to ensure easy passage at low water levels.

Beaver Falls River, tributary of South East River in 1953 series of
pools blasted in Beaver Falls, works well but more blasting required.

Photographs on file; Nos. 664, 624, 432.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μmhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - South East River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	591	281	1264	573.9	34	272	123.5	315	1536	697.4
1953	727	201	927	420.9	30	253	114.9	231	1180	535.8
1954	397	91	431	195.7	21	171	77.6	112	602	273.3
1955	605	110	495	224.7	23	183	83.1	133	678	307.8
1956	-	133	576	261.5	10	80	36.3	143	656	297.8
1957	855	176	734	333.2	26	228	103.5	202	962	436.7
1958	1104	299	1394	632.9	33	276	125.3	332	1670	758.2
1959	800	198	899	408.1	19	192	87.2	217	1091	495.3
1960	824	126	566	257.0	15	117	53.1	141	683	310.1
1961	315	39	183	83.1	2	15	6.8	41	198	89.9
1962	1142	257	1232	559.3	10	75	34.1	267	1307	593.4
1963	1073	177	805	365.5	24	196	89.0	201	1001	454.5
1964 ¹	832	146	677	307.4	5	37	16.8	151	714	324.2
1965	1300	174	870	395.0	29	212	96.2	203	1082	491.2
1966	606	68	304	138.0	8	63	28.6	76	367	166.6
1967	1044	49	216	98.1	-	-	-	49	216	98.1
1968	816	107	472	214.3	2	21	9.5	109	493	223.8
1969	178	85	347	157.5	20	125	56.8	105	472	214.3
1970	157	65	295	133.9	3	21	9.5	68	316	143.4
1971	817	108	484	219.7	6	46	20.9	114	530	240.6
1972	897	43	165	74.9	-	-	-	43	165	74.9
1973	1154	131	619	281.4	-	-	-	131	619	281.4
1974										
1975										
1976										
1977										
Mean 1964-68	920	109	508	230.9	8.8	66.6	30.3	118	574	261.1
Mean 1969-73	641	86	382	173.6	5.8	38.4	17.5	92	420	191.1

¹ Angling data, 1964-73, estimated to be 85% accurate. (B. Davis, personal communication).

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics).

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 21-27	August 25-31	July 20-27 (1968)

Accessibility to Anglers:

Surveys: Spawning Surveys 1961, 1965 and 1969 by Conservation and Protection Branch.

Redd Counts:

Beaver Brook; 1961, 600 redds located in area of headwaters and 50 redds located in the lower middle section.

1965, 700 redds located in upper and middle section of main river, and 100 in lower section.

A spawning survey in 1969 during high water conditions showed 410 redds at various points along the main river.

References:

Seabrook, W. 1960. A Preliminary Study of Salmon Redds in S.E. Placentia River. MS report, Fisheries Service, St. John's, Newfoundland.

NORTH EAST RIVER

Location: 47°16'15" N. 53°50'52" W. Placentia, Placentia Bay.
Map Reference: Argentina. 1 N/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 36.2 miles² (93.75 km²). Mean width, 2.2 miles (3.53 km).

Perimeter, 40.2 miles (64.68 km). Axial length, 14.6 miles (23.50 km).

Maximum basin relief, 1,000 feet (304.80 m).

Geology:

Almost entirely Precambrian sedimentary with some Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Sections: from mouth of river to headwaters.

Average width; 40 feet (12.19 m). Average depth; one foot (0.30 m).

Number of pools; 2. Bottom type: Rock and gravel.

Barriers to Fish Migration:

On main river, falls at mile 6 (9.65 km). Height: 21 feet (6.40 m).

In 1955, three pools were blasted in falls. In 1965 six concrete baffles were placed in the falls. These baffles with the aid of the natural rock sides formed pools. A counting fence was operated in 1968 above the fishway for two weeks and 68 fish were counted through the trap. Indications are that this fishway is working quite well. 1972, ledgerrock was blasted above falls to confine more water over baffles.

Photographs on file; Nos. 43, 45, 297, 377, 599, 824, 826.

Miscellaneous Information:

The construction of the road from Argentinia to Trans Canada Highway has made most of the river accessible to the angling public. The road construction in 1966 has caused considerable silting on the main river spawning areas. A retaining wall was constructed in 1970 and the silting problem was remedied.

Water Quality Data, Sample Collected April 1972, May 1973.

pH	Alkalinity (total) ppm	Total Hardness ppm	Turbidity J.T.U.	Chlorides ppm	Spec. cond. @ 25°C in μ mhos/cm	Calcium ppm	HCO ₃ Biocarbonate ppm
6.27	2.0	6.5	.48	6.3	28.0	1.15	2.4

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic Salmon Angling Record - North East River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	175	57	196	89.0	-	-	-	57	196	89.0
1953	219	24	86	39.0	3	38	17.3	27	124	56.3
1954	137	28	119	54.0	8	62	28.1	36	181	82.1
1955	153	61	237	107.6	5	38	17.3	66	275	124.9
1956	-	83	301	136.7	-	-	-	83	301	136.7
1957	649	196	689	312.8	2	15	6.8	198	704	319.6
1958	175	79	307	139.4	14	105	47.7	93	412	187.1
1959	292	118	432	196.1	-	-	-	118	432	196.1
1960	399	80	295	133.9	-	-	-	80	295	133.9
1961	310	54	220	100.0	-	-	-	54	220	100.0

Atlantic Salmon Angling Record - North East River (cont'd.)

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1962	1135	46	180	81.7	-	-	-	46	180	81.7
1963	340	61	253	114.9	-	-	-	61	253	114.9
1964 ¹	345	66	257	116.7	5	38	17.3	71	295	134.0
1965	296	38	145	65.8	-	-	-	38	145	65.8
1966	282	163	568	257.9	-	-	-	163	568	257.9
1967	504	62	259	117.6	3	21	9.5	65	280	127.1
1968	1467	125	520	236.1	-	-	-	125	520	236.1
1969	130	66	255	115.8	2	12	5.4	68	267	121.2
1970	111	77	302	137.1	3	19	8.6	80	321	145.7
1971	740	148	549	249.2	4	25	11.4	152	574	260.6
1972	588	49	189	85.8	-	-	-	49	189	85.8
1973	1910	263	578	262.7	-	-	-	263	578	262.7
1974										
1975										
1976										
1977										
Mean 1964-68	579	91	350	159.0	1.6	11.8	5.4	92	362	164.4
Mean 1969-73	696	121	375	170.3	1.8	11.2	5.1	122	386	175.4

¹Angling data, 1964-73, estimated to be 85% accurate. (B. Davis, personal communication).

Summary, Fishway Counting Trap Data, North East River

Year	Grilse		Salmon	Total No. Fish
	Under 6 lbs. (2.7 kilograms)	6 lbs. and over	6 lbs. and over	
1972	68		-	68
1973	399		64	463
1974				

Summary, Counting Fence Data, North East River (upstream fence)

Year	Salmon		Brook Trout					
	Under 6 lbs. (2.7 kilograms)	6 lbs. & over	Smolt	Parr	Kelt	Smelt	Shad Eels	Adult Parr
1969	57	11						
1971	150	21						

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

Year	First fish	Last fish	Week of peak run
Average 1966-1969	June 23 - 29	July 28 - August 3	July 6 - 13 (1968) (58 fish)

Accessibility to Anglers:

Accessible from the mouth to the headwaters by road, boat and on foot. Road crosses river at mouth and runs parallel to the river to its headwaters area crossing it a second time approximately 9 miles (14.48 kilometers) upstream from the mouth. Foot paths leading to various sections of the river from the road are up to 1 mile (1.61 kilometers) long.

Surveys:

Engineering survey of falls at mile point 6 (9.65 kilometers), 1963.
Spawning surveys 1963, 1966, 1969 by C & P staff.

Redd Counts:

1963, 500 redds observed on main river between Junction Pond and Healeys Pond, a distance of 0.75 miles (1.20 km); 15 redds observed between Fitzgerald's Pond and Island Pond. From mile 2.5 (4.02 km) to mile 6 (9.65 km), 15 redds observed. Immediately above mile 6 (9.65 km), 15 redds observed. 1966, 315 redds located on whole river system, 8 redds located in 2 mile (3.21 km) section below falls. In 1969, spawning survey by C & P showed 260 redds in 1 mile (1.60 km) section above Argentia access road. Approximately 5 miles (8.05 km) of stream below the access road was checked and only 6 redds were found.

References:

- Anononyous. Summary of Stream Obstruction. MS report, Fisheries Service, St. John's, Newfoundland.
- Anononyous. 1962. Salmon and Trout Management Program. MS report, Fisheries Service, St. John's, Newfoundland.

SHALLOWAY POND BROOK

Location: 47° 17' 43"N 53° 54' 20W. Shalloway Cove, Placentia Sound.
 Map Reference: Argentia. 1 N/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Geology:

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Falls between first and second ponds; complete obstruction.

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present: Arctic char, rainbow trout.

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date

Redd Counts: None to date

References.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: Survey of obstructions, 1955.

Redd Counts: None to date

References:

SHIP HARBOUR BROOK

Location: 47° 21' 03" N. 53° 52' 30" W. Placentia Bay

Map Reference: Argentina. 1 N/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 13.1 miles² (33.92 kilometers²). Mean width, 1.7 miles (2.73 kilometers).

Perimeter, 22.4 miles (36.04 kilometers). Axial length, 8.2 miles (13.19 kilometers). Maximum basin relief, 800 feet (243.84 meters).

Geology:

About half Precambrian sedimentary with the remainder consisting of Precambrian volcanic and Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migrations:

Section: Main river from mouth to mile point 2, (3.21 kilometers).

Several rapids and small falls, partial obstruction.

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.
No angling data available on this stream.

Gene Frequency: Not completed

Timing of Run:

Year

First fish

Last fish

Week of
peak run

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References.

LITTLE RATTLING BROOK

Location: 47° 22' 40" N. 53° 52' 40" W. Ship Harbour,
Placentia Bay.

Map Reference: Argentia. 1 N/5 West half.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Dimensions:

Length of main river: 1 mile, (1.60 kilometers).

Average channel width: 30 feet, (9.14 meters).

Barriers to Fish Migrations:

Falls at mile point 0.5 (0.8 meters), on the main river;
complete obstruction.

Photograph on file; Nos. 311

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	(μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed

Timing of Run:

Year

First fish

Last fish

Week of
peakrun

Accessibility to Anglers:

Surveys: None to date

Redd Counts: None to date

References:

MATURIN BROOK

Location: 47° 25' 42" N. 53° 49' 50" W. Placentia Bay.

Map Reference: Argentina. 1 N/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 9.5 miles² (24.60 kilometers²). Mean width, 1.5 miles, (2.41 kilometers).

Perimeter, 17.5 miles (28.15 kilometers). Axial length, 7.0 miles, (11.26 kilometers).

Maximum basin relief, 800 feet (243.84 meters).

Geology:

Almost entirely Precambrian sedimentary with some Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity	Ca	HCO ₃
pH	ppm.	ppm.	JTU	ppm.	at 25°C (μ mhos/cm)	ppm.	ppm.

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>

Accessibility to Anglers:

Surveys: None to date

Redd Counts: None to date

References:

COME-BY-CHANCE

Location: 47°50'40" N. 53°59'25" W.
 Map Reference: Sunnyside. 1 N/13 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors

Basin area, 24.7 miles² (63.97 km²). Mean width, 2.3 miles (3.70 km).

Perimeter, 32.0 miles (51.48 km). Axial length, 10.7 miles (17.21 km).

Maximum basin relief, 900 feet (274.32 m).

Geology:

Predominantly Precambrian sedimentary with some Cambrian sedimentary, acidic intrusive rocks and intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main River: Range of channel width; 30-200 feet (9.14-60.96 m).

Range of channel depth; 3-4 feet (0.9-1.21 m). Water velocity range; sluggish - rapid. Bottom types: (% of total length).

Rubble 25%; boulders 20%; gravel 40%, sand 10%; mud 5%.

Barriers to Fish Migration:

No serious obstructions.

Miscellaneous Information:

The absence of suitable tributaries for rearing areas; wide fluctuations in water levels and limited spawning areas, indicate limited salmon producing potential. Most of the daily flow from the basin will be used by a proposed pulp and paper industry.

Not utilized yet (1974).

Photographs on file; Nos. 300, 444, 445, 447, 1101.

Water Quality Data, Sample Collected July, 1972.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.85	6.0	12.0	5.5	3.0	38.0	1.4	

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, two spined stickleback,
 three spined stickleback, four spined stickleback,
 American smelt, American eel.

Atlantic salmon angling record - Come-by-Chance

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	53	6	23	10.4	-	-	-	6	23	10.4
1953	138	10	54	24.5	7	44	20.0	17	98	44.5
1954	101	4	18	8.2	-	-	-	4	18	8.2
1955	49	11	36	16.3	-	-	-	11	36	16.3
1956	-	14	44	20.0	1	7	3.2	15	51	23.2
1957	14	5	23	10.4	-	-	-	5	23	10.4
1958	26	3	10	4.5	-	-	-	3	10	4.5
1959	16	9	46	20.9	-	-	-	9	46	20.9
1960	15	4	20	9.1	-	-	-	4	20	9.1
1962	64	11	36	16.3	-	-	-	11	36	16.3
1963	228	18	67	30.4	1	7	3.2	19	74	33.6
1964 ¹	162	17	60	27.2	-	-	-	17	60	27.2
1965	200	4	14	6.4	-	-	-	4	14	6.4
1966	175	6	20	9.1	-	-	-	6	20	9.1
1967	348	6	21	9.5	-	-	-	6	21	9.5
1968	232	14	44	20.0	-	-	-	14	44	20.0
1969	307	34	126	57.2	-	-	-	34	126	57.2
1970	229	7	25	11.4	-	-	-	7	25	11.4
1971	192	9	35	15.9	-	-	-	9	35	15.9
1972	528	8	27	12.3	-	-	-	8	27	12.3
1973	432	44	150	68.2	1	8	3.6	45	158	71.8
1974										
1975										
1976										
1977										
MEAN										
1964-68	223	9	32	14.5	-	-	-	9	32	14.5
1969-73	338	20	73	33.0	.2	1.6	.7	21	74	33.7

¹ Angling data, 1964-73, estimated to be 60% accurate. (B. Lynch, personal communication).

Summary, counting fence data, Come-by-Chance River

Year	Salmon		Smolt	Parr	Kelt	Smelt	Shad	Eels	Brook Trout		Sea Trout
	under 6 lbs. (2.7 kgms.)	6 lbs. and over							Adult	Parr	
1971	20	2	3592	359	2	8	-	14	-		3355
1972	9	-	8374	3	12	2	100	19	85		2354
1973	No count	No count	1207	18	1	14	13	22	68		413
1974											
1975											

Note: 2 pink salmon, under 6 lbs. were counted through the counting fence in 1972.
Fence not in operation June 23, 1972 and October 10, 1972.

Gene Frequency:

Number Sampled	Tf1 (TFC)	Tf1/Tf4 (TFA/TFC)	Tf4 (TFA)	Frequency of Tf4(TFA) transferrin allele
196	80	90	26	.36

Timing of Run: (Based on angling statistics)

Year	First fish	Last fish	Week of peak run
Average 1966-1969	July 2-8	August 1-7	July 20-27 (1968)

Accessibility to Anglers:

Accessible by road at mouth in community of Come-By-Chance and the Trans-Canada runs parallel to it for approximately 8 miles (12.87 km). The Burin Peninsula Highway crosses this river at Goobies. A number of foot paths lead from the roads to the river, with distance varying up to 1 mile (1.61 km).

Surveys: Engineering survey on river gradient and profile below proposed dam site, 1968.

Biological surveys, 1963, 1971.

Redd Counts:

In 1972 a redd count in selected areas found 13 salmon redds and 49 trout redds.

In 1973, a redd count found 35 salmon redds and 98 trout redds.

References:

- Harmon, T.J. 1966. A proposal for the Integrated Development of the Black and Come-By-Chance River Basins. MS report, Fisheries Service. St. John's, Newfoundland.
- Mercer, K.M. 1963. Report on a survey of 1. Come-By-Chance River. 2. North Harbour River. MS report, Fisheries Service, St. John's, Newfoundland.

NORTH HARBOUR RIVER

Location: 47°52'52" N. 54°04'45" W. North Harbour,
Placentia Bay.

Map Reference: Sound Island. 1 M/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 37.1 miles² (96.08 km²). Mean width, 3.9 miles
(6.27 km).

Perimeter, 28.8 miles (46.33 km). Axial length, 9.0 miles
(14.48 km).

Maximum basin relief, 950 feet (289.56 m).

Geology:

Predominantly Precambrian sedimentary with some Cambrian sedi-
mentary, acidic intrusive rocks and intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Section: from mouth to headwaters.

Width range: 25 to 150 feet (7.62 - 45.72 m). Depth range: 1 to
2 feet, (0.3-0.6 m).

Water velocity range: sluggish to medium.

Bottom types: by per cent; Bedrock: 10%, boulder 45%, rubble 40%,
sand 1%, mud 1%, gravel, 3%.

Spawning areas:

In area surveyed, an estimated 24,795 yd² (20,753 m²).

Barriers to Fish Migration:

No serious obstructions, 2 low falls at mile 0.5 (0.80 km), may
delay fish at extremely low water.

Photographs on file; Nos. 450, 397, 908-911, 951.

Water Quality Data, Sample Collected May, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.05	2.0	6.0	1.8	4.5	15.0	1.0	2.44

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - North Harbour River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	219	31	122	55.4	3	20	9.1	34	142	64.5
1953	139	48	188	85.4	1	8	3.6	49	196	89.0
1954	184	3	14	6.4	1	6	2.7	4	20	9.1
1955	93	19	71	32.2	-	-	-	19	71	32.2
1956	-	4	18	8.2	-	-	-	4	18	8.2
1957	61	16	63	28.6	-	-	-	16	63	28.6
1958	163	37	120	54.5	-	-	-	37	120	54.5
1959	300	57	209	94.9	-	-	-	57	209	94.9
1960	246	13	42	19.1	1	12	5.4	14	54	24.5
1961	134	6	19	8.6	-	-	-	6	19	8.6
1962	89	26	85	38.6	-	-	-	26	85	38.6
1963	344	41	155	70.4	-	-	-	41	155	70.4
1964 ¹	194	105	372	168.9	2	13	5.9	107	385	174.8
1965	327	12	43	19.5	1	7	3.2	13	50	22.7
1966	329	23	71	32.2	-	-	-	23	71	32.2
1967	111	9	27	12.3	-	-	-	9	27	12.3
1968	425	42	138	62.7	-	-	-	42	138	62.7
1969	388	17	64	29.1	-	-	-	17	64	29.1
1970	270	21	65	29.5	-	-	-	21	65	29.5
1971	184	26	89	40.4	-	-	-	26	89	40.4
1972	498	32	114	51.8	-	-	-	32	114	51.8
1973	520	62	206	93.6	-	-	-	62	206	93.6
1974										
1975										
1976										
1977										
MEAN										
1964-68	277	38	130	59.2	.6	4	1.8	39	134	60.9
1969-73	372	32	108	48.9	-	-	-	32	108	48.9

¹Angling data, 1964-73, estimated to be 75-80% accurate. (B.Lynch, personal communication).

Miscellaneous Information:

Estimated sea run Brook Trout population (based on 30% of angling catch) is 4,500.

This river is subject to a wide range of water levels, which could act as a limiting factor to anadromous species.

Stream flow regulation might improve conditions.

It is estimated that a run of 1,500 Atlantic salmon could be supported in this river.

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

	<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average	1966-1969	June 16-22	August 28-Sept. 3	July 13-20 (1968)

Accessibility to Anglers:

Surveys: Biological surveys 1963 and 1966.

Redd Counts: 1970, mile point 3 (4.82 kilometers) to 1st pond, 130 redds observed; 1st to 2nd pond, 30 redds observed; 1 mile (1.61 kilometers) above 2nd. pond, 4 redds observed.

1971, 120 redds located in middle section of river and 36 located in the area between the first two ponds on the river at and near the old road crossing.

1972, 40 redds located above the second pond (Goobies Pond).

References:

Mercer, K.M. 1963. A Stream Survey Report of North Harbour River. M.S. report, Fisheries Service, St. John's, Newfoundland.

Riche, L.G. 1966. A Stream Survey Report of Black and North Harbour Rivers. MS report, Fisheries Service, St. John's, Newfoundland.

WATSONS BROOK

Location: 47° 52' 55" N 54° 05' 00" W. North Harbour,
Placentia Bay.

Map Reference: Sound Island. 1 M/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 3.6 miles², (9.32 kilometers²). Mean width, 1.0 miles,
(1.60 kilometers).

Perimeter, 9.1 miles, (14.64 kilometers). Axial length, 3.2 miles,
(5.14 kilometers).

Maximum basin relief, 650 feet, (198.12 meters).

Geology:

Predominantly Cambrian sedimentary with some Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected

	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (µ mhos/cm)	Ca ppm.	HCO ₃ ppm.
pH							

FISH POPULATIONS

Species Present:

No angling data available on this stream.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

This river is isolated and is accessible only by boat from North Harbour, a distance of approximately 1 mile (1.61 kilometers). Foot paths lead upstream from the river mouth on the lower section for a couple of miles.

Surveys: None to date.

Redd Counts: None to date

References:

BLACK RIVER

Location: 47°52'50" N. 54°10'08" W. Swift Current,
Placentia Bay.

Map Reference: Sound Island. 1 M/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 77.2 miles² (199.94 km²). Mean width, 5.6 miles
(9.01 km).

Perimeter, 44.6 miles (71.76 km). Axial length 13.9 miles
(22.36 km).

Maximum basin relief, 1,150 feet (350.52 m).

Geology:

Almost entirely acidic intrusive rocks with some Precambrian
sedimentary.

Vegetational Cover:

Alders, birch, fir and spruce; also some muskeg.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Main River: Range of channel width: above mile 2.8 (4.50 km), 75 to
300 feet (22.86-91.44 m). Below mile 2.8 (4.50 km) 40 to 150 feet
(12.19-45.72 m). Range of channel dept: 1-3 feet (0.3-0.9 m).

Velocity range: slow - medium.

Bottom Types:

Main river (% of total area)

Mud; 5%, sand 10%, gravel 40%, rubble 25%, boulder 20%,
bedrock trace.

Spawning areas:

At the mouth of a tributary which joins the main river at mile 2.5
(4.02 km).

Barriers to Fish Migration:

Falls at mile 2.8 (4.50 km). Height: 4 feet (1.21 m). Partial
obstruction.

Falls at mile 3 (4.82 km). Height: 40 feet (12.19 m). Complete
obstruction.

Falls between third and fourth pond on the main river. Height: 6-8 feet (1.8-2.4 m). Partial obstruction.

Falls at mile 0.5 (0.80 km) of tributary entering main river at mile 2.5 (4.02 km). Complete obstruction.

Dam at mouth of river removed in 1948. Previous to 1948 this dam was a complete obstruction.

Photographs on file; Nos. 673

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - partial count - Black River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1965	55	15	50	22.7	-	-	-	15	50	22.7
1967	35	4	14	6.4	-	-	-	4	14	6.4
1968	60	20	78	35.4	-	-	-	20	78	35.4
1970	28	5	16	7.3	-	-	-	5	16	7.3
1971	18	9	42	19.1	2	13	5.9	11	55	25.0
1972	61	26	100	45.4	-	-	-	26	100	45.4
1973	320	61	260	118.2	-	-	-	61	260	118.2
1974										
1975										
1976										
1977										

Miscellaneous Information:

Headwaters of Black River are to be diverted for use at a proposed industrial development.

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1967-1968	July 14-20	August 11-17	July 20-27 (1968)

Accessibility to Anglers:

Surveys: Biological survey, 1965.

Redd Counts: None to date.

References:

Harmon, T.J. 1966. A proposal for the Integrated Development of the Black and Come By Chance River Basins. MS report, Fisheries Service, St. John's, Newfoundland.

PIPERS HOLE RIVER.

Location: 47°55'00" W. 54°16'15" W. Swift Current,
Placentia Bay.

Map Reference: Sound Island. 1 M/16 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 301.7 miles² (781.40 km²). Mean width, 10.7 miles
(17.21 km).

Perimeter, 99.9 miles (160.73 km). Axial length, 25.0 miles
(40.22 km).

Maximum basin relief, 1,250 feet (381.00 m).

Geology:

About half acidic intrusive rocks with the remainder consisting of
Precambrian volcanic and Precambrian sedimentary.

Vegetational Cover:

Area recovering from forest fire.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Channel Characteristics:

Total length of all streams in system, 160 miles (257.44 km).

Total length of all tributaries to the main river, 140 miles
(225.26 km).

Bottom Types:

Main River: (% of total area).

Mud and sand; 20%, Gravel; 10%, Rubble; 40%, Boulders; 20%,
Bedrock; 10%.

Barriers to Fish Migration:

Main River.

Falls at mile 5.0 (8.04 km). Complete obstruction.

Falls at mile 11.2 (18.02 km). Height: 30 feet (9.14 m). Slope: 90°.
Complete obstruction at all water levels.

Falls #3 is located several hundred feet (100 feet = 30.48 m) above
#2. The height left hand side is 15 feet (4.57 m). Slope: 75°.

This section is not passable. The centre has two steps. The
lower has a height of 10 feet (3.05 m). Slope: 90°. The upper
step has a height of 5 feet (1.52 m) and length of 20 feet (6.09 m).

This part may be passable. The right hand side has a height of 15 feet (4.57 m) and is a complete obstruction at all water levels.

Flow of water in runaround at second falls increased in 1971.

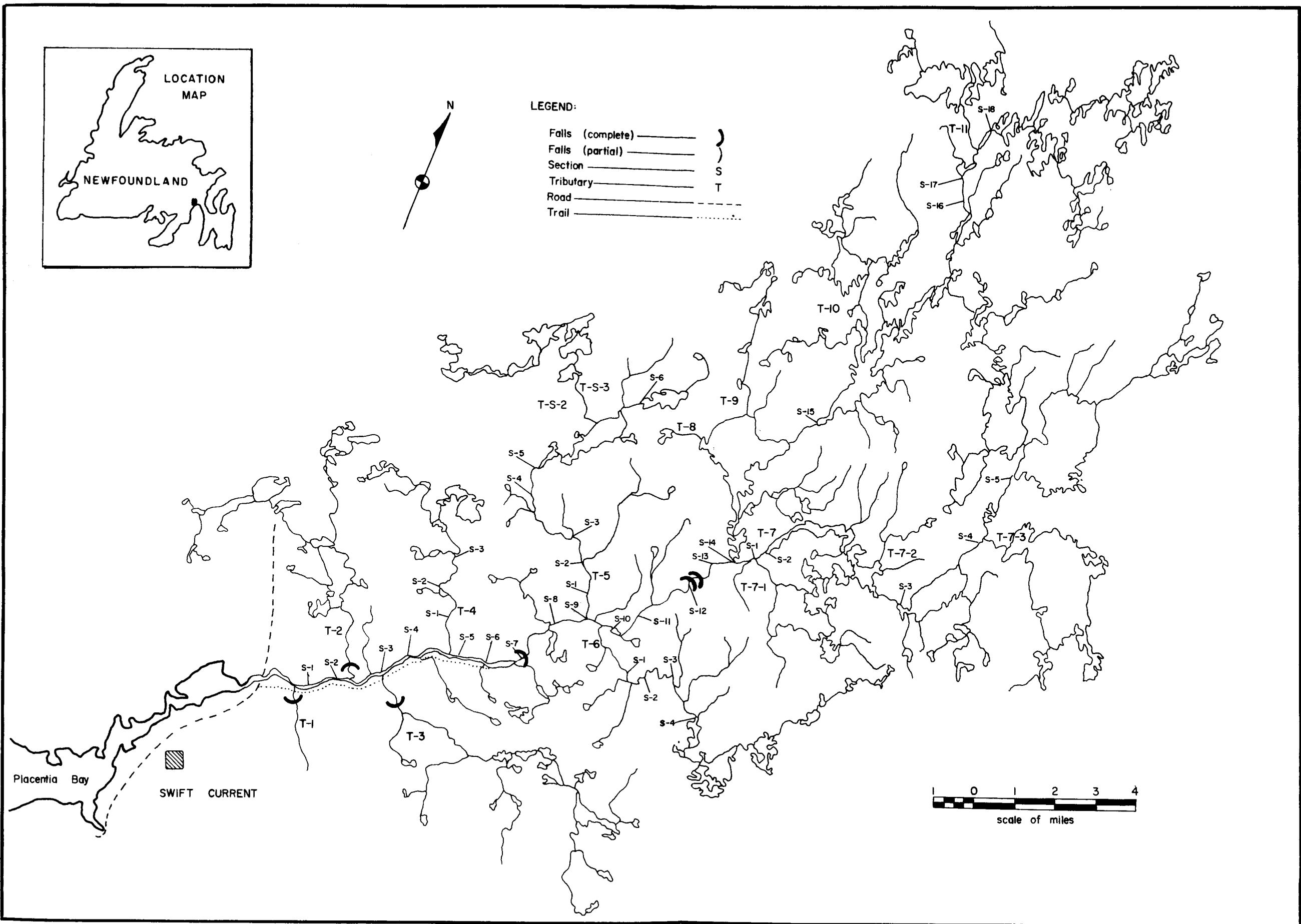


FIG. 21 OUTLINE MAP OF PIPER'S HOLE RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED.

Photographs on file: Nos. 843, 1166, 1167, 1169, 1165, 1168

Water Quality Data, Sample Collected May, 1973.

pH	Alkalinity Total ppm	Total Hardness ppm	Turbidity J.T.U.	Chlorides ppm	Spec. Cond. @ 25°C in μ mhos/cm	Calcium ppm	HCO ₃ Biocarbonate ppm
6.15	2.0	6.0	0.8	2.5	11.0	1.0	6.34

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - Pipers Hole River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	98	10	42	19.1	1	10	4.5	11	52	23.6
1953	280	64	278	126.2	-	-	-	64	278	126.2
1954	376	13	53	24.1	-	-	-	13	53	24.1
1955	99	9	25	11.4	-	-	-	9	25	11.4
1956	-	21	74	33.6	1	9	4.1	22	83	37.7
1957	149	48	177	80.4	-	-	-	48	177	80.4
1958	142	44	168	76.3	-	-	-	44	168	76.3
1959	194	16	62	28.1	3	25	11.4	19	87	39.5
1960	43	3	13	5.9	2	12	5.4	5	25	11.3
1961	111	6	21	9.5	-	-	-	6	21	9.5
1962	124	76	301	136.7	1	7	3.2	77	308	139.9
1963	288	37	141	64.0	-	-	-	37	141	64.0
1964 ¹	112	31	128	58.1	-	-	-	31	128	58.1
1965	191	10	32	14.5	-	-	-	10	32	14.5
1966	331	23	91	41.3	-	-	-	23	91	41.3
1967	252	10	36	16.3	-	-	-	10	36	16.3
1968	437	133	471	213.8	2	17	7.7	135	488	221.5
1969	379	83	316	143.5	1	8	3.6	84	324	147.1
1970	371	41	166	74.5	1	7	3.2	42	173	78.6
1971	328	27	101	45.9	2	13	5.9	29	114	51.8

Atlantic salmon angling record - Pipers Hole River. (cont'd.)

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1972	535	28	101	45.9	2	145	6.6	30	115.5	52.5
1973	740	197	765	-	2	12	-	199	777	-
1974										
1975										
1976										
1977										
MEAN										
1964-68	265	41	152	69.1	.4	3.4	1.5	42	155	70.5
1969-73	471	75	290	131.7	1.6	10.9	5.0	77	301	136.7

¹Angling data, 1964-73, estimated to be 80-90% accurate. (R. Morris, Personal communication)

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt and adult sea survival, Pipers Hole River,
below obstruction #1.

If smolt production per 100 yds ² (81.7 meters ²) is:		<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced		3054	6108	9162
Adult return if sea survival is:	5%	153	305	458
	10%	305	611	916
	15%	458	916	1,374
	20%	611	1,222	1,832
	25%	764	1,527	2,291

Estimated Atlantic salmon smolt and adult sea survival, Pipers Hole River
and tributaries between obstructions #1 and #2.

If smolt production per 100 yds ² (81.7 meters ²) is:		<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced		3808	7616	11,424
Adult return if sea survival is:	5%	190	381	571
	10%	381	762	1,142
	15%	571	1,142	1,714
	20%	762	1,523	2,285
	25%	952	1,904	2,856

Estimated Atlantic salmon smolt and adult sea survival, Pipers Hole River and
tributaries above obstruction #3.

If smolt production per 100 yds ² (81.7 meters ²) is:		<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced		2646	5292	7938
Adult return if sea survival is:	5%	132	265	397
	10%	265	529	794
	15%	397	794	1,191
	20%	529	1,058	1,588
	25%	662	1,323	1,985

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 16-22	August 4-10	July 6-13 (1968)

Accessibility to Anglers:

Accessible at the mouth where the highroad crosses. A good trail runs parallel to the river upstream for a distance of approximately 3 miles (4.82 km). The river beyond this point is isolated and its watershed is well inland.

Surveys:

Biological surveys 1965 and 1971.

Ridd Counts: None to date.

References:

L.G. Riche & G.R. Traverse 1972. River Investigations 1971
Burin Peninsula - an inventory - MS report, Fisheries
Service, St. John's, Newfoundland.

SANDY HARBOUR RIVER

Location: 47°42'17" N. 54°21'05" W. Great Sandy Harbour,
Placentia Bay.

Map Reference: Harbour Buffett. 1 M/9 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 178.3 miles² (461.79 km²). Mean width, 6.4 miles
(10.29 km).

Perimeter, 83.6 miles (134.51 km). Axial length, 27.0 miles
(43.44 km).

Maximum basin relief, 1,076 feet (327.96 m).

Geology:

About half acidic intrusive rocks with the remainder consisting of
Precambrian volcanic and Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Spawning Areas:

On main river, one small area below Wigwam Brook at mile 12.5 (20.11 km).

Barriers to Fish Migration:

Main River:

Falls at mile 0. Height: 5 feet (1.52 m). Sloping falls is a temporary
holdup during low tide. In 1972, ledgerrock blasted at top of falls
to allow more water to flow at more favourable migration route.

Falls at mile 2.5 (4.02 km). Height: 18 feet (5.48 m). Slope: 90°. Width:
5 feet (1.52 m) across the top. Complete obstruction.

Falls at mile 5 (8.04 km). The right hand side has a 10 foot (3.05 m)
vertical drop with an overhanging lip and a 15 foot (4.57 m) chute
at 60° slope. This side is a complete obstruction at all water levels.
The left hand side has 3 drops; drop #1 height: 5 feet (1.52 m) and
slope 50°; drop #2, height: 6 feet (1.82 m) and slope 55°; drop #3
height: 2 feet (0.60 m). There is a pool between each drop.

Above this there is a pool that leads to a 20 foot (6.09 m) long, 2 feet
(0.60 m), wide chute at a slope of 15°-20°. There is a 7 foot (2.1 m)
vertical falls at the top of this chute. This side is estimated to
be passable with difficulty at low and medium water levels.

Photographs on file; Nos. 700, 1170-1173.

Water Quality Data, Sample Collecte May, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO ₃ ppm.
6.2	2.0	4.0	0.8	3.5	12.0	1.0	2.44

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

No angling data available on this stream.

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival, Sandy Harbour River below complete obstruction.

If smolt production per
100 yd² (81.7 m²) is:

Smolts produced	1	2	3
	914	1,828	2,742

Adult return if sea survival is:	5%	46	91	137
	10%	91	183	274
	15%	137	274	411
	20%	183	366	548
	25%	229	457	686

Estimated Atlantic salmon smolt production and adult sea survival, Sandy Harbour River and accessible tributaries above complete obstruction.

If smolt production per
100 yd² (81.7 m²) is:

Smolts produced	1	2	3
	6,549	13,098	19,647

Adult return if sea survival is:	5%	327	655	982
	10%	655	1,310	1,965
	15%	982	1,965	2,947
	20%	1,310	2,620	3,929
	25%	1,637	3,275	4,912

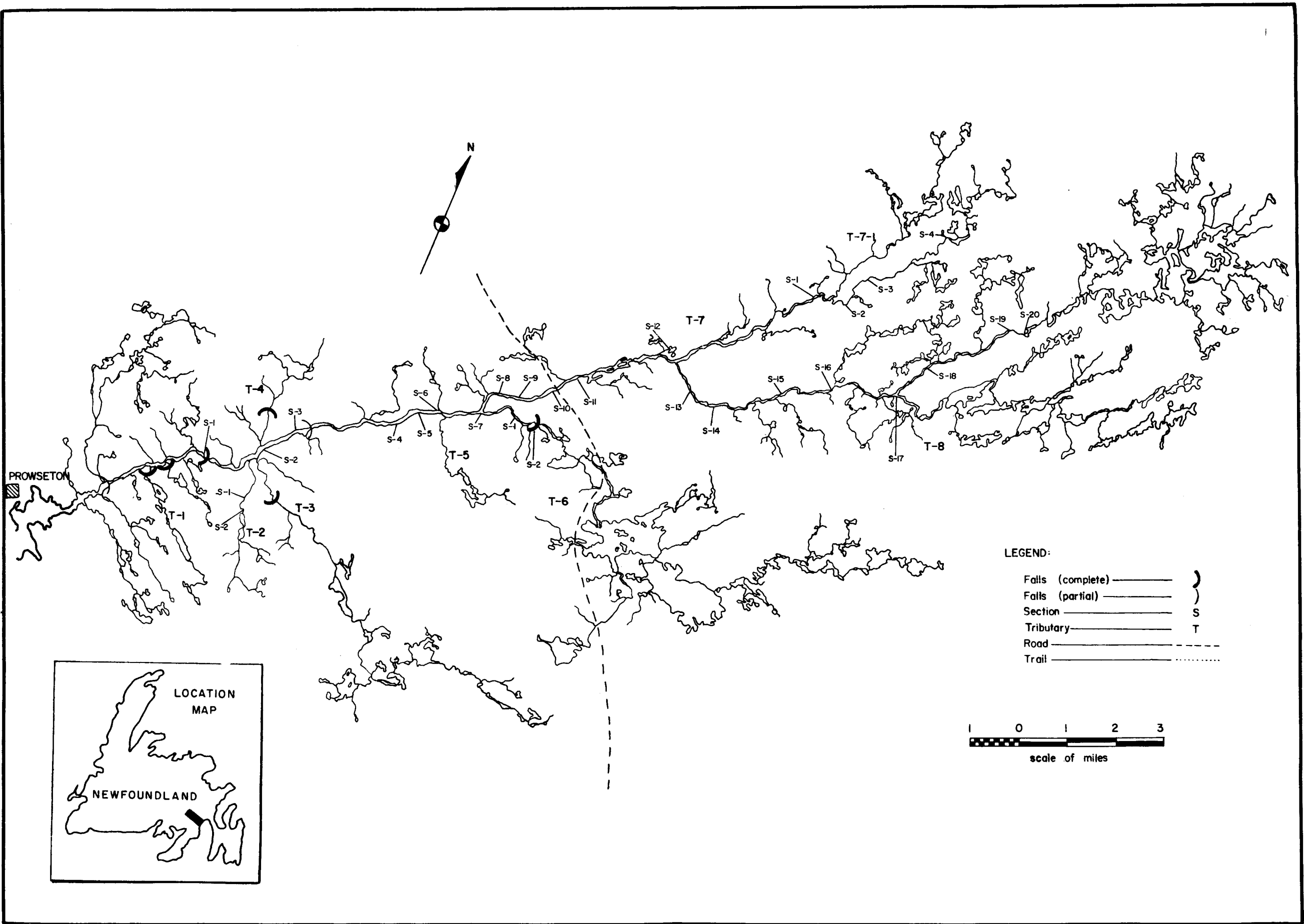


FIG. 22 OUTLINE MAP OF SANDY HARBOUR RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED.

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
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Accessibility to Anglers:

Surveys: Biological survey, 1971.

Redd Counts: None to date.

References:

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John's, Newfoundland.

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