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# Catalogue of Rivers in Insular Newfoundland

## Volume D

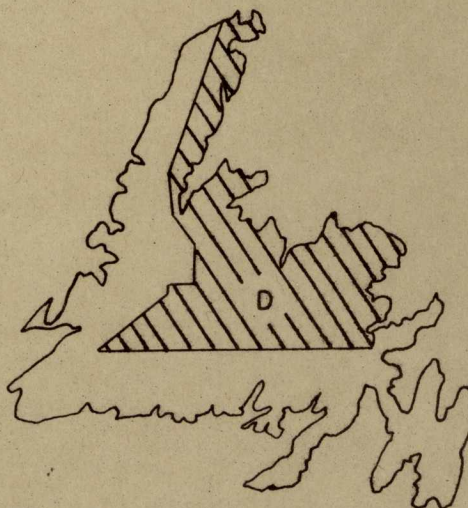
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by

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 D

CATALOGUE OF RIVERS IN  
INSULAR NEWFOUNDLAND

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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 Tf4(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 miles<sup>2</sup>, 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.

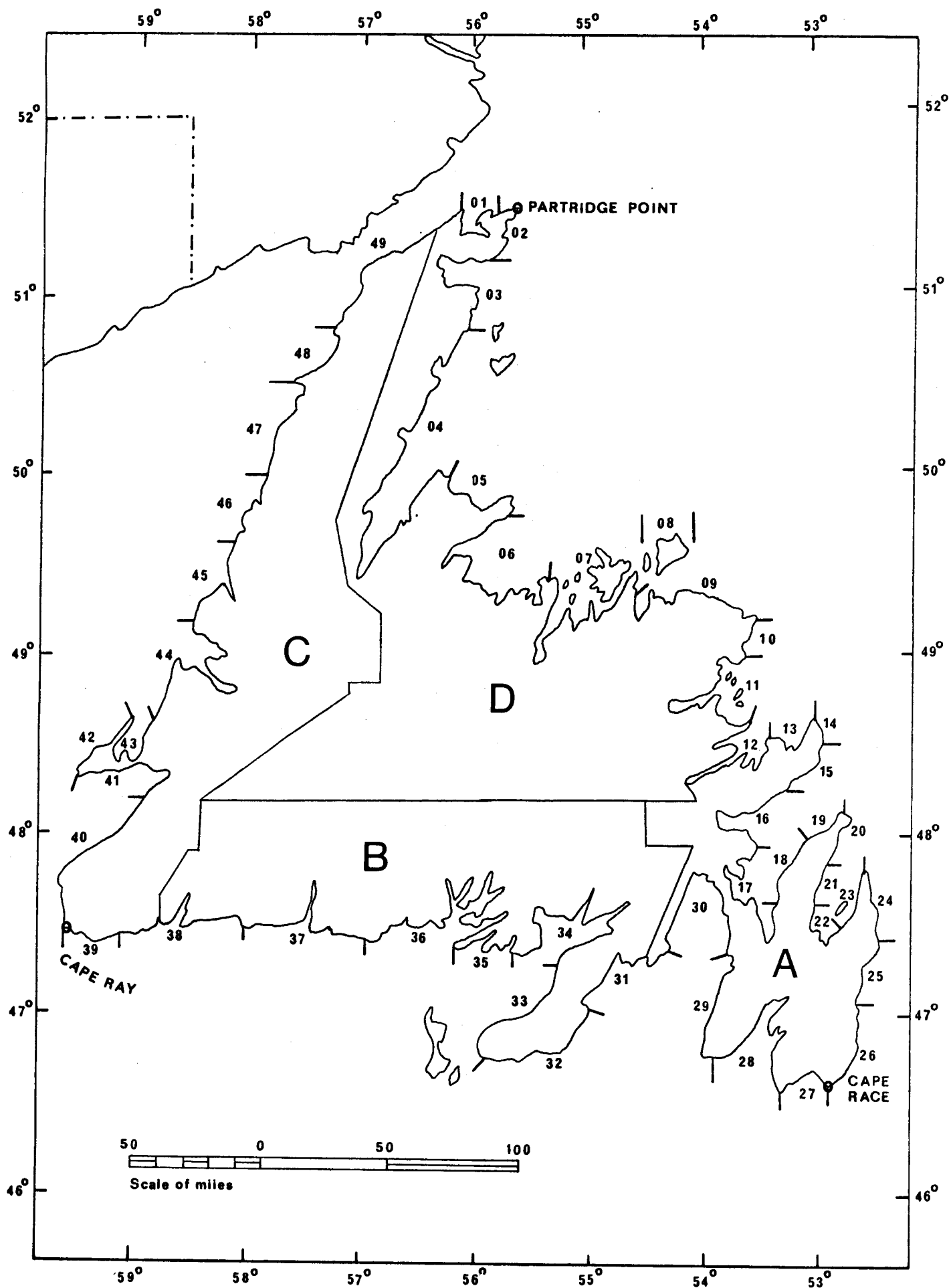


FIG. 1 OUTLINE MAP OF NEWFOUNDLAND SHOWING STATISTICAL SECTIONS  
AND CONSERVATION AND PROTECTION BRANCH DISTRICTS

## EXPLANATION OF RIVER CODES

Each of the 4,404 river systems in insular Newfoundland (39,928 miles<sup>2</sup>) 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).



Location: 51°34'25" N. 56°00'25" W. Open Bay, Strait of Belle Isle.

## CHARACTERISTICS OF DRAINAGE BASIN

Basin area, 36.6 miles<sup>2</sup>, (94.79 km<sup>2</sup>). Mean width, 2.1 miles, (3.37 km).

Perimeter, 39.3 miles, (63.23 km). Axial length 17.5 miles, (28.15 km).

**Geology:**

## CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

None to headwaters.

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic Salmon Angling Record - Watts Bight Brook (Watson's Brook).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1953	16	7	21	9.5	-	-	-	7	21	9.5
1959	107	34	155	70.4	9	90	40.9	43	245	111.3
1960	180	17	69	31.3	1	8	3.6	18	77	34.9
1961	84	6	28	12.7	2	14	6.4	8	42	19.1
1962	61	-	-	-	-	-	-	-	-	-
1963	99	3	16	7.3	19	153	69.5	22	169	76.8
1964 <sup>1</sup>	236	54	295	133.9	19	135	61.3	73	430	195.2
1965	236	61	225	102.2	-	-	-	61	225	102.2
1966	117	37	171	77.6	-	-	-	37	171	77.6
1967	358	49	220	100.0	1	11	5.0	50	231	105.0
1968	196	30	141	64.0	1	8	3.6	31	149	67.6
1969	171	25	105	47.7	-	-	-	25	105	47.7
1970	188	15	65	29.5	-	-	-	15	65	29.5
1971	106	20	105	47.7	-	-	-	20	105	47.7
1972	220	79	311	141.2	9	63	28.6	88	374	169.8
1973	309	21	109	49.5	-	-	-	21	109	49.5
1974										
1975										
1976										
1977										
MEAN										
1964-68	229	46	210	95.5	4	31	14.0	50	241	109.5
1969-73	198	32	139	63.1	2	13	5.7	34	152	68.8

<sup>1</sup> Angling data 1964-73 estimated to be 90% accurate (T. Curran, 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	July 3-9	Sept. 1-7	July 20-27 (1968)

Accessibility to Anglers: Accessible by trails and logging roads for approximately 3 miles (4.82 kilometers) from mouth.

Surveys: None to date.

Redd Counts: None to date.

References:





## PARKER RIVER

Location: 51° 29' 50" N. 55° 44' 01" W. Pistolet Bay,

Map Reference: St. Anthony, 2 M/5 East half and 2 M/6 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 17.8 miles<sup>2</sup> (46.10 kilometers<sup>2</sup>). Mean width, 2.4 miles, (3.86 kilometers).

Perimeter, 21.7 miles (34.91 kilometers). Axial length, 7.5 miles, (12.06 kilometers).

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

## Geology:

About equal amounts of Ordovician volcanic and Ordovician sedimentary with a small amount of ultrabasic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Total length of all streams in system, not including standing water, 12 miles (19.30 kilometers).

## Main River:

From mouth to mile point 2.5 (4.02 kilometers).

Width range, 20 to 70 ft. (6.09 to 23.87 meters). Velocity range, medium to rapid.

Bottom types: Gravel, rubble, small boulders.

## Barriers to Fish Migration:

On the main river, no serious obstructions.

Photographs on file; Nos.

LEGEND

FALLS ————— (

SECTION ————— S

TRIBUTARY ————— T

ROAD ————— - - - - -

TRAIL ————— . . . . .

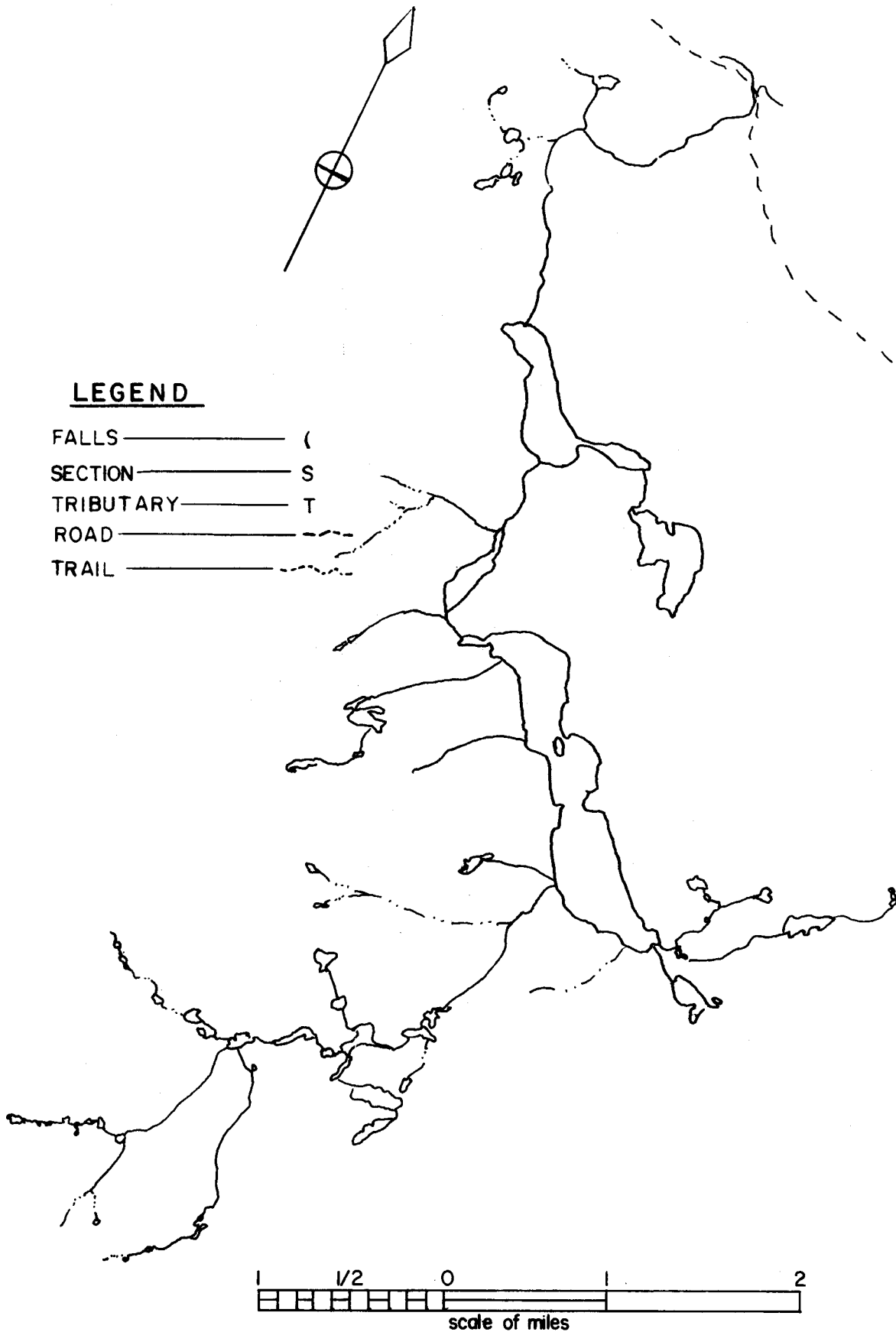


FIG. 2 OUTLINE MAP OF PARKER RIVER SHOWING OBSTRUCTION

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C micromhos μ/cm	Ca ppm.	HCO <sub>3</sub> ppm.
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## FISH POPULATIONS

Species present: Atlantic salmon, brook trout (sea run and resident),  
anadromous Arctic char, three spined sticklebacks.

## Atlantic Salmon Angling Record - Parker River.

[illegible]

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:

Accessible for approximately 3 miles (4.82 kilometers)  
from mouth by trails and logging roads.

Surveys: None to date.

Redd Counts: None to date.

References:

Mercer, K. M. 1962. Report on A Reconnaissance Survey of Nine  
Important Streams on the Great Northern Peninsula.  
MS report, Fisheries Service, St. John's, Newfoundland.

## BARTLETT'S RIVER

Location: 51°28'26" N. 51°39'50" W. Milan Arm, Pistolet Bay.  
Map Reference: St. Anthony. 2 M/5 East half and 2 M/6 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 15.4 miles<sup>2</sup>, (39.9 km<sup>2</sup>). Mean width, 1.8 miles,  
(2.89 km).  
Perimeter, 24.5 miles, (39.42) km). Axial length, 8.1 miles,  
(13.03 km).  
Maximum basin relief, 850 feet, (259.08 m).

## Geology:

About equal amounts of Ordovician volcanic and ultrabasic  
intrusive rocks with a small amount of Ordovician sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Complete obstruction 5 miles upstream from mouth.

Photographs on file; Nos. 1050

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon.

Atlantic Salmon Angling Record - Bartlett's River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg.
1958	116	10	45	20.4	-	-	-	10	45	20.4
1959	100	27	101	45.9	-	-	-	27	101	45.9
1960	75	24	86	39.0	1	11	5.0	25	97	44.0
1961	19	4	19	8.6	2	15	6.8	6	34	15.4
1962	121	3	15	6.8	-	-	-	3	15	6.8
1963	248	11	47	21.3	-	-	-	11	47	21.3
1964 <sup>1</sup>	234	44	203	92.2	-	-	-	44	203	92.2
1965	205	26	99	44.9	-	-	-	26	99	44.9
1966	64	13	53	24.1	-	-	-	13	53	24.1
1967	328	26	125	56.8	-	-	-	26	125	56.8
1968	372	25	105	47.7	-	-	-	25	105	47.7
1969	491	10	44	20.0	-	-	-	10	44	20.0
1970	254	12	51	23.2	-	-	-	12	51	23.2
1971	175	17	87	39.5	-	-	-	17	87	39.5
1972	102	10	43	19.5	-	-	-	10	43	19.5
1973	194	14	70	154.2	-	-	-	14	70	154.2
1974										
1975										
1976										
1977										
MEAN										
1964-68	240	27	117	53.1	-	-	-	27	117	53.1
1969-73	243	13	59	26.8	-	-	-	13	59	26.8

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

Gene Frequency: Not completed.

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

<u>Year</u>	<u>First Fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	July 9-15	Aug. 14-20	July 27 - Aug. 3 (1968)

Accessibility to Anglers:

Accessible to obstructions by trails and logging roads.

Surveys: None to date.

Redd Counts: None to date.

References:





Location: 51°28'45" N. 55°38'08" W. Milan Arm, Pistolet Bay.  
Map Reference: St. Anthony. 2 M/5 East half and 2 M/6 West half.

### Geomorphological Factors:

Basin area, 15.0 miles<sup>2</sup> (38.85 km<sup>2</sup>). Mean width, 2.3 miles, (3.70 km).

Perimeter, 20.9 miles, (33.62 km). Axial length, 6.0 miles, (9.65 km).

Maximum basin relief, 350 feet, (106.68 m).

**Geology :**

Ordovician sedimentary.

**Barriers to Fish Migration: None.**

Photographs on file; Nos.

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

Species Present: Atlantic salmon, brook trout (resident and sea run).

Atlantic Salmon Angling Record - Upper Brook; Pistolet Bay.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1965	60	4	14	6.4	-	-	-	4	14	6.4
1966	76	8	35	15.9	-	-	-	8	35	15.9
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 1966)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
1966	July 31-August 6	August 14-20	-

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:

Location: 51°32'42" N. 55°42'45" W. Carpon Cove, Pistolet Bay.

Map Reference: Raleigh. 2 M/12 East half.

### Geomorphological Factors:

Maximum basin relief, 250 feet, (76.20 m).

Ordovician sedimentary.

Barriers to Fish Migration: None.

Photographs on file; Nos.

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

Species Present: Atlantic salmon.

Atlantic Salmon Angling Record - East Brook

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1966	336	64	310	140.7	7	64	29.1	71	374	169.8
1967	117	5	25	11.4	-	-	-	5	25	11.4
1969	281	7	29	13.2	-	-	-	7	29	13.2
1970	307	15	57	25.9	-	-	-	15	57	25.9
1971	No Report									
1972	63	12	40	18.2	-	-	-	12	40	18.2
1973	231	16	84	38.1	-	-	-	16	84	38.1
1974										
1975										
1976										
1977										

Gene Frequency: Not completed.

Timing of Run: (Based on angling statistics 1966-67, 1969)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-67, 1969	July 9 - 15	July 23 - 29	-

Accessibility to Anglers:

Accessible for approximately 3 miles (4.82 kilometers) from mouth  
by trails and logging roads.

Surveys: None to date.

Redd Counts: None to date.

Miscellaneous Information: Run of smelt to the river, October-December.

**References:**



Map Reference: St. Anthony. 2 M/5 East half.

Ordovician sedimentary.

Photographs on file Nos. 1054

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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Species Present: Atlantic salmon.

## Atlantic Salmon Angling Record - Northwest Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1960-64- 65		7	26	11.8	-	-	-	7	26	11.8
1966										
1967										
1968										
1969										
1970										
1971										
1972										
1973										
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:

Surveys: None to date.

Redd Counts: None to date.

References:



## IRELANDS BROOK

Location: 51°20'35" N. 55°45'30" W. Hare Bay.

Map Reference: St. Anthony. 2 M/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 24.2 miles<sup>2</sup>, (62.67 km<sup>2</sup>). Mean width, 3.0 miles, (4.82 km).

Perimeter, 24.4 miles (39.25 km). Axial length, 8.0 miles, (12.87 km).

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

## Geology:

Predominantly Ordovician sedimentary with some ultrabasic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Partial obstruction at mile 0.25 - obstruction on both branches - all obstructions serious but passable at some water levels.

Photographs on file: Nos.

## Water Quality data, sample collected.

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

FISH POPULATIONS

Species Present: Atlantic salmon, sea run 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:

## NORTHEAST BROOK (Hare Bay)

Location: 51°22'15" N. 56°01'00" W. Hare Bay.

Map Reference: Eddies' Cove. 12 P/8 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area 17.0 miles<sup>2</sup> (44.03 km<sup>2</sup>). Mean width, 2.1 miles, (3.37 km).

Perimeter, 24.2 miles, (38.93 km). Axial length 6.5 miles, (10.45 km).

Maximum basin relief, 800 feet, (243.86 m).

## Geology:

Predominantly Ordovician sedimentary with some acidic intrusive rocks and ultrabasic intrusive rocks.

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 <sub>3</sub>
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: Engineering survey of proposed fence sites in 1966.

Redd Counts: None to date.

References:

## NORTHWEST BROOK

Location: 51°22'40" N. 56°02'30" W. Northern Arm, Hare Bay.

Map Reference: Eddies' Cove. 12 P/8 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 3.5 miles<sup>2</sup>, (9.06 km<sup>2</sup>). Mean width, 1.4 miles, (2.25 km).

Perimeter, 7.5 miles, (12.06 km). Axial length, 2.4 miles, (3.86 km).

Maximum basin relief, 100 feet, (30.48 m).

## Geology:

Ordovician sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos.

## Water Quality Data, Sample Collected

	Total	Total			Conductivity		
	Alkalinity	Hardness	Turbidity	Cl	at 25°C	Ca	HCO <sub>3</sub>
pH	ppm.	ppm.	JTU	ppm.	( $\mu$ 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:



Location: 51°13'15" N. 56°04'55" W. Windy Bay, Hare Bay.

Map Reference: Salmon River. 12 P/1 East half.

### Geomorphological Factors:

Basin area, 97.9 miles<sup>2</sup>, (253.56 km<sup>2</sup>). Mean width, 5.6 miles, (9.01 km).

Perimeter, 48.1 miles, (77.39 km). Axial length, 17.3 miles, (27.83 km).

Maximum basin relief, 350 feet, (106.68 m).

Ordovician sedimentary.

### Barriers to Fish Migration:

Photographs on file: Nos.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon

No 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 RIVER

Location: 51° 10' 10" N. 56° 01' 25" W. Ariege Bay, Hare Bay.

Map Reference: Salmon River, 12 P/1 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 281.9 miles<sup>2</sup>, (730.12 kilometers<sup>2</sup>). Mean width, 7.1 miles, (11.42 kilometers).

Perimeter, 89.6 miles, (144.16 kilometers). Axial length, 29.3 miles, (47.14 kilometers).

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

## Geology:

Predominantly Ordovician sedimentary with some acidic intrusive rocks and gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Length of all streams in system not including standing water is 100 miles, (160.90 kilometers).

## Main River:

From mouth to mile point 0.75, (1.20 kilometers), (outlet of Southwest Brook);

Width range: 200 - 300 ft., (60.96 - 91.44 meters).

Bottom type: Boulder and rubble.

## Southwest Brook (Tributary):

From mouth to 300 yds. (254.40 meters) upstream.

Width range: 20 - 30 ft., (6.08 - 9.14 meters).

Bottom type: Rubble.

## Spawning Areas:

## Main river:

Length of main stem 42 miles (67.57 kilometers).

2.8 miles, (4.50 kilometers), section between First and Second Salmon ponds.

### Barriers to Fish Migration:

Southwest Brook (Tributary):

Wooden dam, 150' (45.72 meters), long (bank to bank)

5-6' (1.52-1.82 meters), high at outlet to little pond, passable,  
gates kept open during salmon run - Photo #

Wooden dam, 150', (45.72 meters) long (bank to bank) at mile point 5.6, (9.01 kilometers), passable.

Wooden dam, 150', (45.72 meters), long (bank to bank) 5' (1.52 meters) high at mile point 6.0 (9.65 kilometers), passable when gate open.

Wooden dam, 250' (76.20 meters), long (bank to bank) at mile point 10.4, (16.78 kilometers).

Impassable at low water.

Wooden dam at mile point 13.6 (21.88 kilometers) passable.

Wooden dam at mile point 14.0, (22.52 kilometers) impassable at low water. Photo #

Wooden dam at mile point 14.5 (23.33 kilometers), impassage at low water. Photo #

Photographs on file: Nos. 18-21, 23-26, 113, 517, 522, 527, 601, 1045.

Miscellaneous Information:

As a result of logging operating, there are eight logging dams on Southwest Brook tributary, bark deposit on stream bottom and bulldozing of stream bottom.

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C, micromhos $\mu$ /cm	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run), Arctic char.

Atlantic salmon angling record - Salmon River, Hare Bay.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1952	4	6	27	12.3	1	6	2.7	7	33	15.0
1953	50	28	122	55.4	-	-	-	28	122	55.4
1954	66	7	28	12.7	-	-	-	7	28	12.7
1955	36	11	45	20.4	-	-	-	11	45	20.4
1956	-	48	188	85.4	-	-	-	48	188	85.4
1957	33	22	92	41.8	-	-	-	22	92	41.8
1958	34	15	58	26.3	-	-	-	15	58	26.3
1959	27	3	11	5.0	-	-	-	3	11	5.0
1960	6	2	9	4.1	-	-	-	2	9	4.1
1961	21	4	15	6.8	1	12	5.5	5	27	12.3
1962	33	7	27	12.3	-	-	-	7	27	12.3
1963	56	51	190	86.3	-	-	-	51	190	86.3
1964 <sup>1</sup>	54	27	108	49.0	-	-	-	27	108	49.0
1965	46	55	200	90.8	-	-	-	55	200	90.8
1966	50	85	333	151.2	-	-	-	85	333	151.2
1967	241	130	483	219.3	-	-	-	130	483	219.3
1968	62	132	449	203.8	-	-	-	132	449	203.8
1969	37	118	462	210.0	-	-	-	118	462	210.0
1970	43	129	465	211.1	-	-	-	129	465	211.1
1971	143	172	665	301.9	1	9	4.1	173	674	306.0
1972	222	135	506	229.7	-	-	-	135	506	229.7
1973	418	398	1521	691.3	4	24	10.9	402	1545	702.2
1974										
1975										
1976										
1977										
Mean 1964-68	91	86	315	142.8	-	-	-	86	315	142.8
Mean 1969-73	173	190	724	328.8	1	6.6	3.	191	730	331.8

<sup>1</sup> Angling data estimated to be 70% accurate. (T. Curran, personal communication).  
1964-73.

## Summary, Counting Fence Data, Salmon River, Hare Bay

Year	Salmon								Brook Trout	
	Under 6 lbs. (2.7 kilograms)	6 lbs. & over	Smolt	Parr	Kelt	Smelt	Shad	Eels	Adult	Parr
1967	605	29							39	
1968	691	21	27,411	1218	792	7	-	275	600	72
1969	553	12	74	186	-	14	-	19	58	-
1970	887	54								

Note - Only partial counts obtained in 1967, 1969. Salmon count only in 1967 and 1970.

## Summary, Counting Fence Data, South West Brook, Tributary of Salmon Brook

Year	Salmon								Brook Trout	
	Under 6 lbs. (2.7 kilograms)	6 lbs. & over	Smolt	Parr	Kelt	Smelt	Shad	Eels	Adult	Parr
1967	60	3	-	-	-	-	-	-	39	-

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 3 - 9	September 4 - 10	July 20 - 27 (1968)

## Accessibility to Anglers:

Accessible for approximately 10 miles (16.09 kilometers) on main river  
and some tributaries fully accessible by logging roads.

Surveys: Survey of fence sites in 1966.

Redd Counts: None to date.

## References:

Mercer, K. M. 1962. Report on a Reconnaissance Survey of Nine  
Important Streams on the Great Northern Peninsula.

## FRESHWATER CREEK

Location: 51°03'15" N. 55°50'40" W.

Map Reference: St. Julien's. 2 M/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 29.0 miles<sup>2</sup>, (75.11 km<sup>2</sup>). Mean width, 5.7 miles, (9.17 km).

Perimeter, 30.9 miles, (49.71 km). Axial length, 6.5 miles, (10.45 km).

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

## Geology:

Ordovician 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 <sub>3</sub>
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:



## NORTH EAST RIVER

Location: 50°54'45" N. 56°07'00" W. Chimney Bay, Canada Bay.

Map Reference: Roddickton. 12 1/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 99.1 miles<sup>2</sup>, (256.66 km<sup>2</sup>). Mean width, 6.4 miles, (10.29 km).

Perimeter, 48.8 miles, (78.51 km). Axial length, 12.9 miles, (20.75 km).

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

## Geology:

Ordovician sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Two dams on the main river equipped with fishways. Dams have been removed prior to 1974. They are no longer barriers to salmon migration.

Photographs on file: Nos. 43, 559

## Miscellaneous Information:

Saw logs, pulp and pit props are driven on this brook.

## 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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run).

Atlantic Salmon Angling Record - North East River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1956		19	68	30.9	-	-	-	19	68	30.9
1959	11	4	17	7.7	-	-	-	4	17	7.7
1960	30	16	66	30.0	-	-	-	16	66	30.0
1961	21	28	95	43.1	-	-	-	28	95	43.1
1962	26	20	77	35.0	-	-	-	20	77	35.0
1963	22	18	71	32.2	-	-	-	18	71	32.2
1964 <sup>1</sup>	27	27	101	45.9	-	-	-	27	101	45.9
1965	29	57	204	92.6	-	-	-	57	204	92.6
1966	46	101	345	156.6	1	10	4.5	102	355	161.1
1967	111	79	293	133.0	1	8	3.6	80	301	136.7
1968	47	75	275	124.9	-	-	-	75	275	124.9
1969	32	54	157	71.4	-	-	-	54	157	71.4
1970	43	61	213	96.7	-	-	-	61	213	96.7
1971	113	71	264	119.9	-	-	-	71	264	119.9
1972	60	45	179	81.3	-	-	-	45	179	81.3
1973	120	142	498	226.7	-	-	-	142	498	226.7
1974										
1975										
1976										
1977										
MEAN										
1964-68	52	68	244	110.6	.4	4	1.62	68	247	112.2
1969-73	74	75	262	119.2	-	-	-	142	498	226.7

<sup>1</sup> Angling data estimated to be 80% accurate. (T. Curran, personal communication), 1964-73.

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 1965-68	July 1 - 7	September 1 - 7	July 13 - 20 (1968)

Accessibility to Anglers:

Accessible for most of length of river by trails and logging roads.

Surveys: None to date.

Redd Counts: None to date

References:

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



## BEAVER BROOK (WESTERN BROOK)

Location: 50°54'15" N. 56°09'02" W. Chimney Bay, Canada Bay.

Map Reference: Roddickton. 12 1/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 93.3 miles<sup>2</sup>, (241.64 km<sup>2</sup>). Mean width, 3.3 miles, (5.30 km).

Perimeter, 78.5 miles, (126.30 km). Axial length, 27.7 miles, (44.59 km).

Maximum basin relief, 1,400 feet, (426.72 m).

## Geology:

Ordovician sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Main river becomes an underground stream for about 1,000', (304.80 m) at mile 6.0, (9.65 km); obstruction at low water levels; passable at high water levels.

Photographs on file: Nos. 377, 548.

## 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 <sub>3</sub> ppm.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

## Atlantic salmon angling record - Beaver Brook (Western Brook)

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	3	5	26	11.8	2	13	5.9	7	39	17.7
1953	5	15	67	30.4	1	9	4.1	16	76	34.5
1962	1	-	-	-	-	-	-	-	-	-
1968	25	87	321	145.7	1	9	4.1	88	330	149.8
1969	23	30	105	47.7	-	-	-	30	105	47.7
1970	25	83	283	128.5	-	-	-	83	283	128.5
1971	67	83	295	133.9	-	-	-	83	295	133.9
1972	43	28	92	41.8	-	-	-	28	92	41.8
1973	100	163	577	262.3	-	-	-	163	577	262.3
1974										
1975										
1976										
1977										
Mean										
1969-73	52	77	270	122.8	-	-	-	77	270	122.8

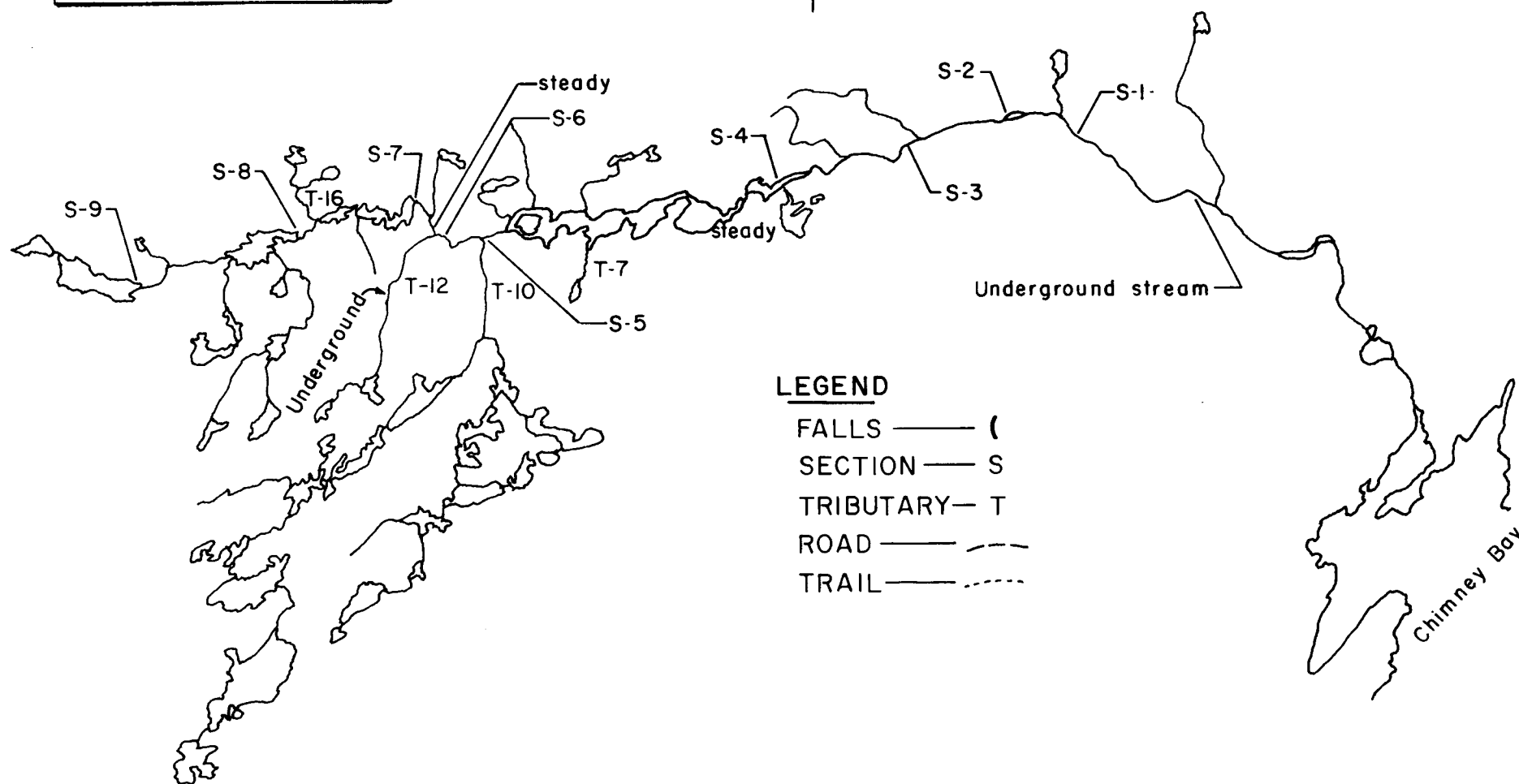
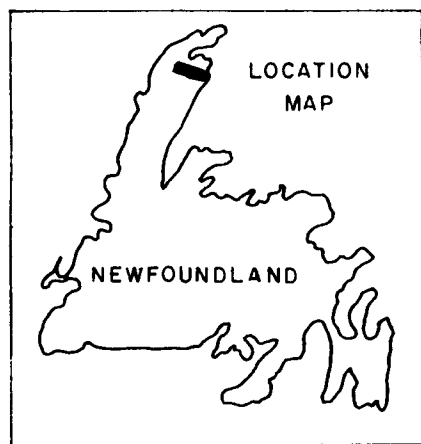


FIG. 3 OUTLINE MAP OF BEAVER BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival, Beaver Brook, from 4,375 units.

If smolt production

per 100 yds<sup>2</sup> (83.7 meters<sup>2</sup>) is:

	<u>1</u>	<u>2</u>	<u>3</u>
Smolts produced	4,375	8,750	13,125

Adult return if sea survival is:	5%	219	438	656
	10%	438	875	1,312
	15%	656	1,313	1,969
	20%	875	1,750	2,625
	25%	1,094	2,188	3,281

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 4-10	August 20-26	July 13-20(1968)



Accessibility to Anglers:

Accessible by roads and trails for most of the length of river.

Surveys: None to date.

Redd Counts: None to date.

References:

## SHOAL BROOK

Location: 50°54'25" N. 56°15'55" W. Northwest Arm, Chimney Bay.

Map Reference: Roddickton. 12 1/16 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 16.8 miles<sup>2</sup>, (43.5 km<sup>2</sup>). Mean width, 1.9 miles, (3.05 km).

Perimeter, 23.7 miles, (38.13 km). Axial length, 8.6 miles, (13.83 km).

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

## Geology:

About equal amounts of gneissis and Cambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos.

## Water Quality Data, Sample Collected

	Total	Total	Turbidity	Cl	Conductivity	Ca	HCO <sub>3</sub>
pH	Alkalinity	Hardness			at 25°C		
	ppm.	ppm.	JTU	ppm.	( $\mu$ 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:

Location: 50°53'50" N. 56°16'20" W. Northwest Arm, Chimney Bay.

### CHARACTERISTICS OF DRAINAGE BASIN

Basin area, 41.9 miles<sup>2</sup>, (108.52 km<sup>2</sup>). Mean width, 4.0 miles, (6.43 km).

Perimeter, 30.8 miles, (49.55 km). Axial length, 10.7 miles, (17.21 km).

Maximum basin relief, 1,400 feet, (426.72 m).

Predominantly gneissis with some Cambrian sedimentary and acidic intrusive rocks.

### CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Photographs on file Nos.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic Salmon Angling Record - Partial count-Northwest Brook.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1960	2	2	9	4.1	-	-	-	2	9	4.1
1964	2	4	14	6.4	-	-	-	4	14	6.4
1965	2	1	3	1.4	-	-	-	1	3	1.4
1966	11	27	92	41.8	-	-	-	27	92	41.8
1968	1	-	-	-	-	-	-	-	-	-
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>
1966	July 4-10	August 1-7	-

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

## CLOUD RIVER

Location: 50° 50' 00" N. 56° 13' 15" W. Chimney Bay, Canada Bay.

Map Reference: Roddickton. 121/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 206.0 miles<sup>2</sup>, (533.54 kilometers<sup>2</sup>). Mean width, 5.6 miles, (9.01 kilometers).

Perimeter, 86.0 miles, (138.37 kilometers). Axial length, 27.7 miles, (44.56 kilometers).

Maximum basin relief, 1,850', (563.88 meters).

## Geology:

Predominantly gneiss with some acidic intrusive rocks and small amount of cambrian sedimentary.

## Vegetational Cover:

Forest in the lower part of the watershed, with barrens and scattered patches of forest in the upper regions.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Total length of all streams is 100 miles, (160.9 kilometers).

## Main river:

Mouth: Mouth of the main river is divided into shallow channels.

Velocity - medium

Bottom type - Gravel and rubble.

Between mile point 1 and 2, (1.60-3.21 kilometers).

Excellent salmon pools.

Velocity - Medium

Bottom type - bedrock and boulder.

Between mile point 2 and 3½, (3.21-5.63 kilometers).

Width range - 20 to 30', (6.09-9.12 meters).

Velocity: Swift and turbulent over rapids and falls.

## Spawning Areas:

Main River: One mile (1.60 kilometers), section near mouth. Topographic maps indicate large stretches of wide streams above the falls where good gravel areas possibly exist.

## Barriers to Fish Migration:

Main River:

Series of falls at mile point 2 (3.21 kilometers), total distance from lower to upper falls is roughly 2.5 miles (4.01 kilometers). Lower falls is a partial obstruction at all water levels, total overall height is approximately 18' (5.49 meters) over a length of 40' (12.18 meters). The falls consists of two drops and a chute. The downstream end has a drop of 6' (1.82 meters) overhung. Above this, there is a chute 6' (1.82 meters) at a 45° angle, the upper portion is 5' (1.54 meters) vertical. The upper falls consists of a 20' overhanging falls which is a complete obstruction at all water levels. In addition, there are seven other smaller falls in this 2.5 mile (4.01 kilometers) section: all are estimated to be passable.

Falls at mile point 5 (8.04 kilometers) would cause extreme difficulty to salmon at all water levels. This falls is 12'-14' (3.65-4.62 kilometers) high, 20' (6.08 kilometers) long at 75° angle.

Photographs on file: Nos. 406-408, 553, 554, 600, 828.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C, micromhos /cm	Ca ppm.	HCO <sub>3</sub> ppm.
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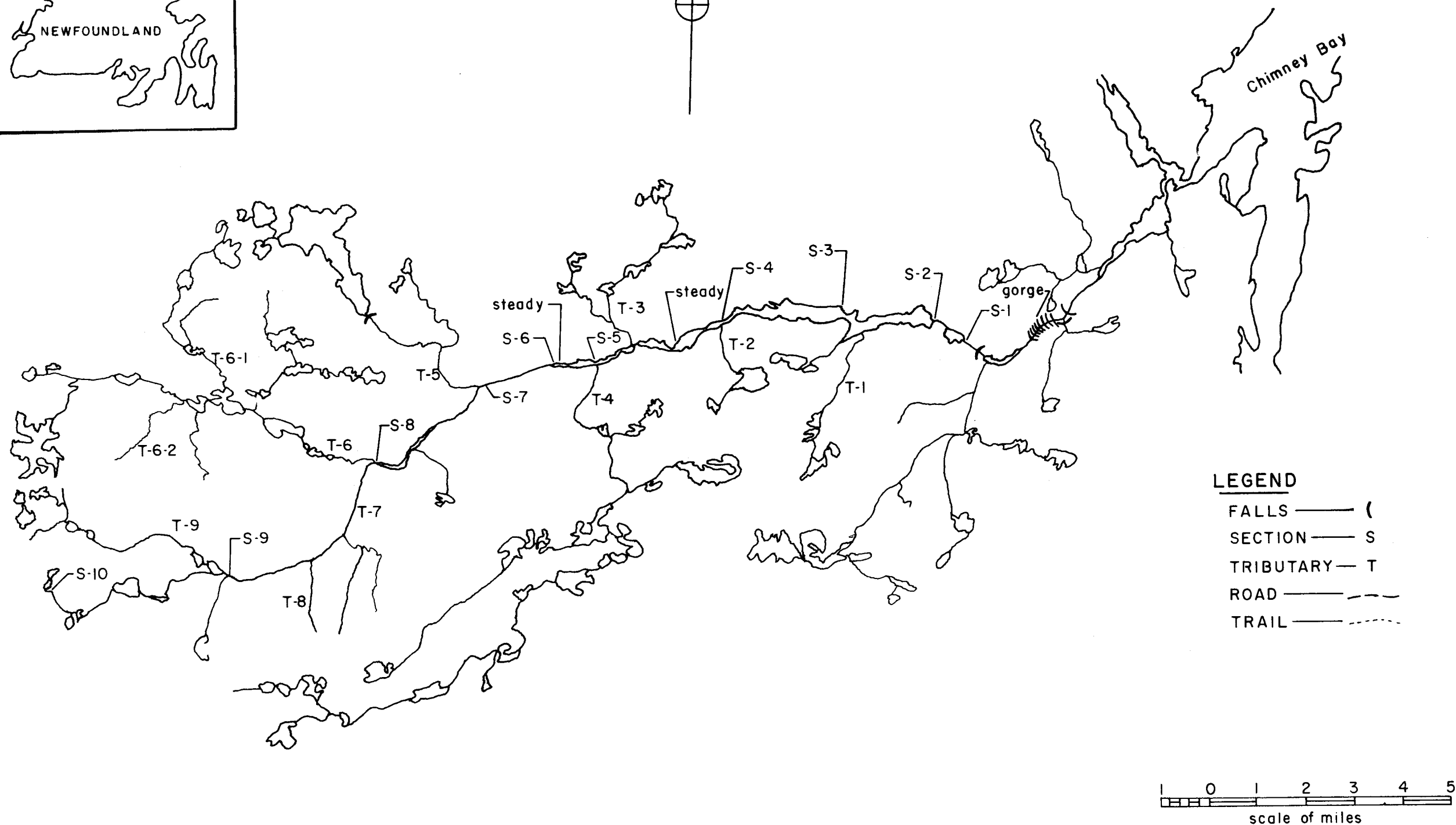
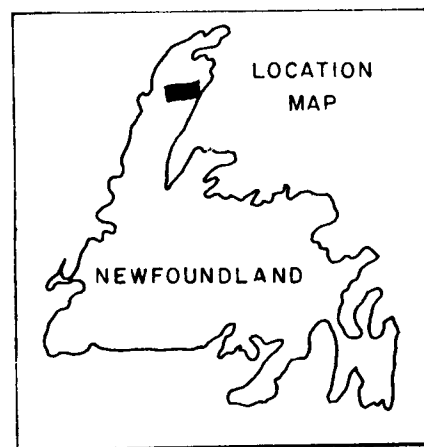


FIG. 4 OUTLINE MAP OF CLOUD RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED



Atlantic salmon angling record - Partial count - Cloud River.

[illegible]

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival -  
Cloud River and tributaries above upper obstruction.

If smolt production  
 per 100 yds<sup>2</sup> (83.7 meters<sup>2</sup>) is:

	<u>1</u>	<u>2</u>	<u>3</u>
	5605	11,210	16,815

Smolts produced

Adult return if sea survival is:	5%	280	561	841
	10%	561	1,121	1,682
	15%	841	1,682	2,522
	20%	1,121	2,242	3,363
	25%	1,401	2,803	4,204

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 1965-68	July 3 - 9	August 1 - 7	July 20 - 27 (1968)

Accessibility to Anglers:

Accessible only by boat.

Surveys: Engineering survey on first falls - 1965.

Redd Counts: None to date.

References:

Mercer, K.M. 1962. Report on a Reconnaissance Survey of Nine  
 Important Streams on the Great Northern Peninsula. MS  
 report, St. John's, Newfoundland.

Location: 50°37'05" N. 56°12'25" W. Eastern Arm, Hooping Harbour.

Map Reference: Englee. 12 1/9 East half.

#### CHARACTERISTICS OF DRAINAGE BASIN

##### Geomorphological Factors:

Basin area, 72.9 miles<sup>2</sup>, (188.81 km<sup>2</sup>). Mean width, 3.4 miles, (5.47 km).

Perimeter, 51.2 miles, (82.38 km). Axial length, 16.8 miles, (27.03 km).

Maximum basin relief, 1,400 feet, (426.72 m).

##### Geology:

Gneissis.

#### 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 <sub>3</sub>
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:

## SOFFLETS BROOK

Location: 50°25'05" N. 56°30'40" W. Orange Bay.

Map Reference: Harbour Deep. 12 1/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 151.8 miles<sup>2</sup>, (393.16 km<sup>2</sup>). Mean width, 7.2 miles, (11.58 km).

Perimeter, 88.8 miles, (142.87 km). Axial length, 19.7 miles, (31.69 km).

Maximum basin relief, 1,650 feet, (502.92 m).

## Geology:

Gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

No complete obstructions, several partial obstructions.

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 <sub>3</sub> ppm.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (sea-run, resident)

Summary - angling data, partial count - Soufflets River.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1972	2	5	17	7.7	-	-	-	5	17	7.7
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:

Can be reached only by boat from Harbour Deep. Fished only at mouth and upstream for 3 miles (4.82 kilometers).

Surveys: None to date.

Redd Counts: None to date.

References:

## CASCADE RIVER

Location: 50°23'20" N. 56°31'20" W. Orange Bay.

Map Reference: Harbour Deep. 12 1/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 81.5 miles<sup>2</sup>, (131.13 km<sup>2</sup>). Mean width, 4.0 miles, (6.43 km).

Perimeter, 54.4 miles, (87.52 km). Axial length, 17.0 miles, (27.35 km).

Maximum basin relief, 1,750 feet, (533.40 m).

## Geology:

Gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos.

## Water Quality Data, Sample Collected

	Total	Total	Turbidity	Cl	Conductivity	Ca	HCO <sub>3</sub>
pH	Alkalinity	Hardness			at 25°C		
	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 DEEP RIVER

Location: 50°14'30" N. 56°34'10" W.

Map Reference: Cat Arm River. 12 1/2 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 188.7 miles<sup>2</sup>, (488.73 km<sup>2</sup>). Mean width, 8.4 miles, (13.51 km).

Perimeter, 84.0 miles, (135.15 km). Axial length, 23.0 miles, (37.00 km).

Maximum basin relief, 1,950 feet, (594.36 m).

## Geology:

Gneiss with small amount of acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Several serious obstructions at mile 7.

These are believed to be impassable to salmon.

Photographs on file: Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

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 boat only from Harbour Deep.

Surveys: None to date.

Redd Counts: None to date.

References:

## CAT ARM RIVER

Location: 50° 07' 50" N. 56° 44' 40" W. Great Cat Arm, White Bay.

Map Reference: Cat Arm River. 12 1/2 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 287.5 miles<sup>2</sup>, (744.62 km<sup>2</sup>). Mean width, 10.0 miles, (16.09 km).

Perimeter, 96.4 miles, (155.10 km). Axial length, 24.5 miles, (39.42 km).

Maximum basin relief, 2,150 feet (655.32 m).

## Geology:

Gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Main River: Falls at mouth, 20' to 25' (6.09-7.62 m) wide, 40' (12.18 m) vertical height; complete obstruction. Falls at mile 3.5 (5.63 km): 15'-20' high (4.56-6.09 m) complete obstruction.

Photographs on file; Nos. 36, 37, 546, 547, 1163.

## 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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

## Atlantic Salmon Angling Record - Cat Arm River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1963	17	5	15	6.8	-	-	-	5	15	6.8
1972	No report									
1973	No report									
1974										
1975										
1976										
1977										

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival, Cat Arm River and tributaries (11,343 units).

If smolt production per

100 yd<sup>2</sup> (83.7 m<sup>2</sup>) is:

Smolts produced

1  
11,343

2  
22,686

3  
34,029

Adults return if sea survival is:	5%	567	1,134	1,701
	10%	1,134	2,269	3,403
	15%	1,701	3,403	5,104
	20%	2,269	4,537	6,806
	25%	2,836	5,672	8,507

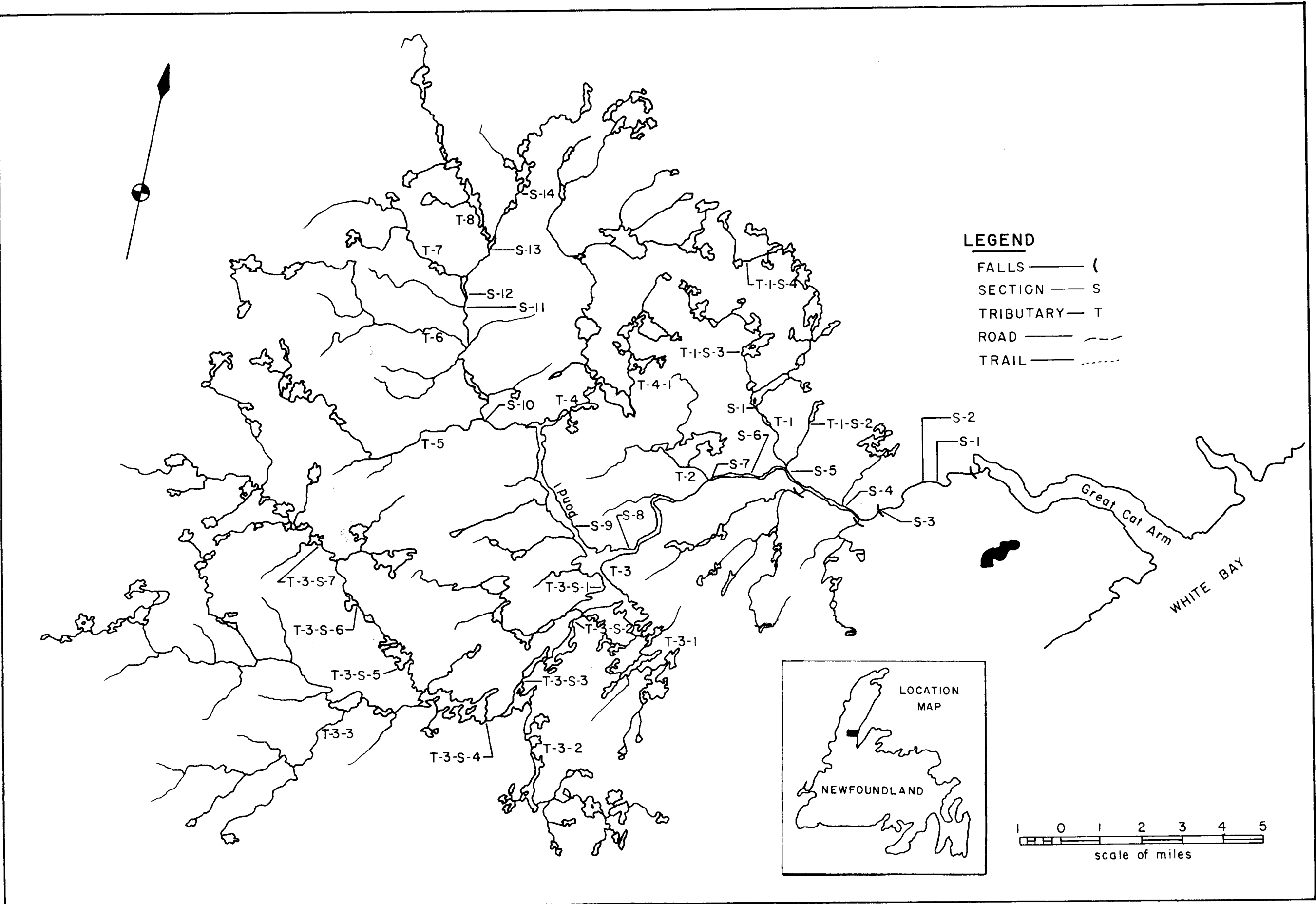


FIG. 5 OUTLINE MAP OF CAT ARM RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

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: By boat from Jackson's Arm, Harbour Deep or Seal Cove area, upstream for approximately one-half mile.

Surveys: None to date.

Redd Counts: None to date. However, salmon and trout are known to spawn at base of first complete obstruction.

References:

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



## CONEY ARM BROOK

Location: 49°57'35" N. 56°47'30" W. White Bay.

Map Reference: Jackson's Arm. 12 H/15 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 12.6 miles<sup>2</sup>, (32.63 km<sup>2</sup>). Mean width, 2.0 miles, (3.21 km).

Perimeter, 22.9 miles, (36.84 km). Axial length, 5.4 miles, (8.68 km).

Maximum basin relief, 1,600 feet, (487.72 m).

## Geology:

Predominantly gneissis with about half as much Cambrian Sedimentary and some acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil.

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon.

No angling data available on this stream.



Core 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:

## CONEY ARM RIVER (Coney Arm, West Arm Brook)

Location: 49°55'10"N. 56°47'40"W. Great Coney Arm, White Bay.

Map Reference: Jackson's Arm. 12 H/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 56.4 miles<sup>2</sup>, (146.07 km<sup>2</sup>). Mean width, 4.8 miles, (7.72 km).

Perimeter, 52.5 miles, (84.47 km). Axial length, 10.0 miles, (16.09 km).

Maximum basin relief, 1,800 feet, (548.64 m).

## Geology:

About half gneissis with about equal amounts of Cambrian sedimentary and acidic intrusive rocks and some Ordovician volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Main River: From mouth to mile 0.5, (0.80 km);

Channel width: 100 ft. (30.48 m), Water velocity: slow.

Bottom types: Coarse sand and gravel suitable for spawning.

Barriers to Fish Migration: Nil.

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (sea-run and resident).

Atlantic salmon angling record - Coney Arm River (Coney Arm, West Arm Brook)

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1954	20	1	4	1.8	-	-	-	1	4	1.8
1963	43	12	41	18.6	-	-	-	12	41	18.6
1964 <sup>1</sup>	53	10	37	16.8	-	-	-	10	37	16.8
1966	174	27	90	40.9	-	-	-	27	90	40.9
1967	288	36	113	51.3	-	-	-	36	113	51.3
1968	197	57	164	74.5	-	-	-	57	164	74.5
1969	274	24	75	34.1	-	-	-	24	75	34.1
1970	255	34	98	44.5	-	-	-	34	98	44.5
1971	132	10	33	15.0	1	8	3.6	11	41	18.6
1972	165	4	12	5.4	-	-	-	4	12	5.4
1973	222	33	99	45.0	-	-	-	33	99	45.0
1974										
1975										
1976										
1977										
Mean 1964-68	178	33	101	45.0	-	-	-	33	101	45.0
Mean 1969-73	210	21	63	31.8	.2	1.6	.7	21	65	32.5

<sup>1</sup> Angling data 1964-73, estimated to be 90-95% accurate. (T. Curran, 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 1967-69	July 1-7	August 11-17	July 7-20 (1968)

Accessibility to Anglers:

Accessible by boat from Jackson's Arm and Seal Cove area by trail for approximately 3 miles upstream.

Surveys: None to date.

Redd Counts: None to date.

References:



## MAIN RIVER

Location: 49°46'00" N. 56°54'10" W. Sops Arm, White Bay.

Map Reference: Jackson's Arm. 12 H/15 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 404.7 miles<sup>2</sup>, (1,048.17 km<sup>2</sup>). Mean width, 9.7 miles, (15.60 km).

Perimeter, 124.3 miles, (199.99 km). Axial length, 27.8 miles, (44.73 km).

Maximum basin relief, 2,421 feet, (737.92 meters).

## Geology:

Gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Main River: From mouth to mile 2, (3.21 km). Average width: 150 ft., (45.72 m). Depth range: 2 to 3 ft., (0.60-0.90 m). Bottom type: Rubble and gravel.

Spawning Areas: Gravel areas dispersed throughout river.

Barriers to Fish Migration: Main River: Falls at mile 13.5 (21.72 km).., 5 ft., (1.52 m). Sloping falls. Passable at all water levels.

Photographs on file: Nos. 555, 557.

## 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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (sea-run and resident).

Atlantic salmon angling record - Main River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1953	17	10	48	21.8	1	7	3.2	11	55	25.0
1954	48	25	100	45.4	-	-	-	25	100	45.4
1957	4	2	6	2.7	-	-	-	2	6	2.7
1958	10	3	11	5.0	-	-	-	3	11	5.0
1959	40	5	15	6.8	-	-	-	5	15	6.8
1960	5	2	7	3.2	-	-	-	2	7	3.2
1961	110	24	98	44.5	-	-	-	24	98	44.5
1962	112	60	235	106.7	-	-	-	60	235	106.7
1963	164	89	299	135.7	-	-	-	89	299	135.7
1964 <sup>1</sup>	465	284	974	442.2	-	-	-	284	974	442.2
1965	666	538	1781	808.6	4	28	12.7	542	1809	821.3
1966	1350	911	3284	1490.9	20	155	70.4	931	3439	1561.3
1967	891	128	428	194.3	1	8	3.6	129	436	197.9
1968	771	634	2018	916.2	10	74	33.6	644	2092	949.8
1969	1585	682	2100	953.4	44	344	156.2	726	2444	1109.6
1970	832	472	1635	742.3	1	8	3.6	473	1643	745.9
1971	713	405	1272	577.5	9	63	28.6	414	1335	606.1
1972	703	281	861	390.9	-	-	-	281	861	390.9
1973	669	692	2370	1077.3	-	-	-	692	2370	1077.3
1974										
1975										
1976										
1977										
Mean 1964-68	829	499	1697	1109.8	7	53	24.1	506	1750	794.5
Mean 1969-73	900	506	1648	748.3	11	83	37.7	517	1731	786

<sup>1</sup> Angling data 1964-73, estimated to be 80% accurate. (T. Curran, personal communication).

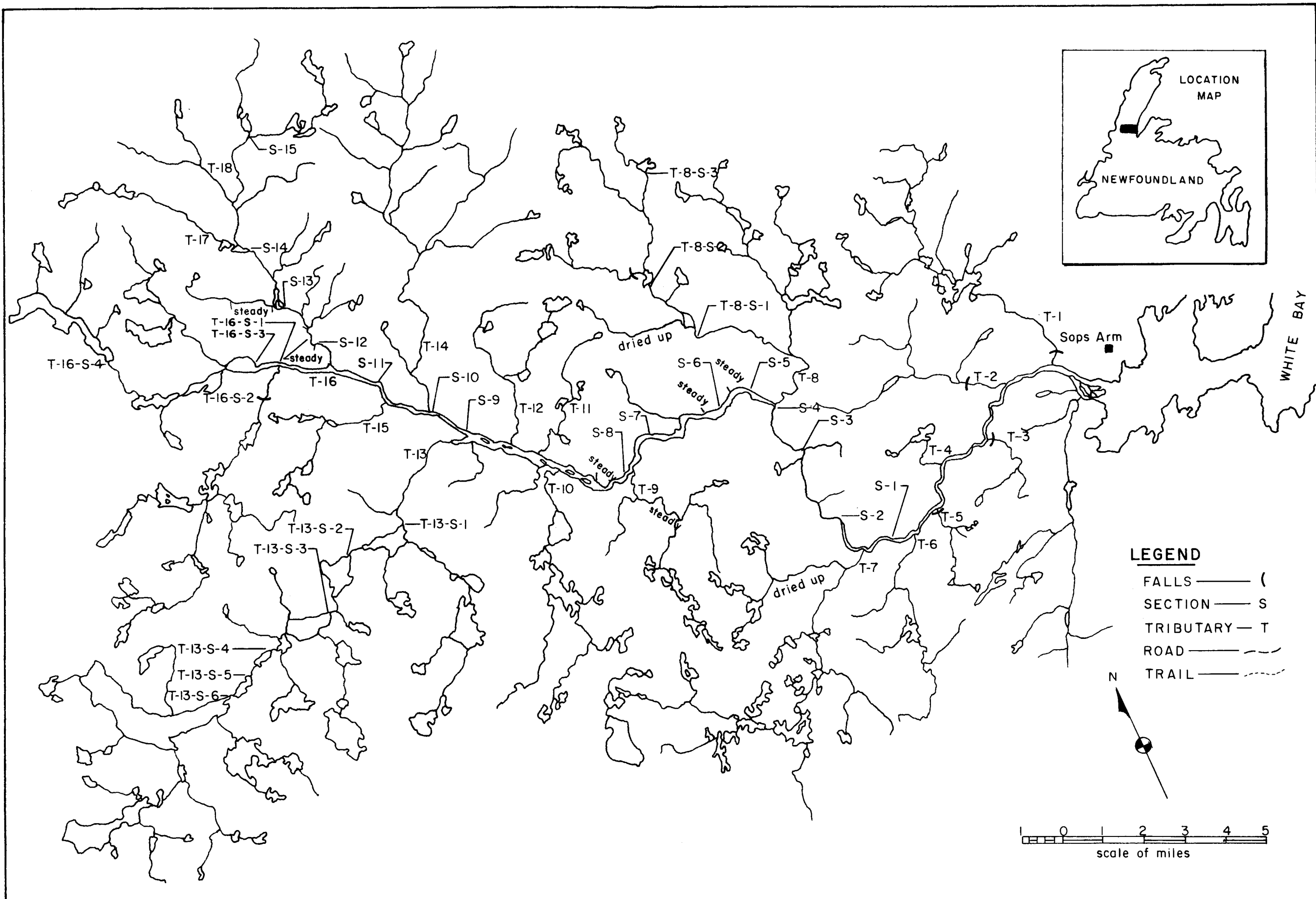


FIG. 6 OUTLINE MAP OF MAIN RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED



POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival, Main River and tributaries.

If smolt production per 100 yds <sup>2</sup> , (83.7 meters <sup>2</sup> ) is:				
	<u>1</u>	<u>2</u>	<u>3</u>	
Smolts produced	20,547	41,094	61,641	
Adult return if sea survival is:	5%	1,032	2,055	3,082
	10%	2,055	4,109	6,164
	15%	3,082	6,164	9,246
	20%	4,109	8,219	12,328
	25%	5,137	10,273	15,410

Gene Frequency: Not completed.

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 12 - 18	Sept. 11 - 15	July 6 - 13 (1968)

Accessibility to Anglers: By road, by trails, and by boat. Several tourist camps are utilized near headwaters.

Surveys: Biological survey, 1969-1970.

Redd Counts: None to date.

References:

Riche, L.G. and Gerald R. Traverse. River Investigations 1969-1970 -  
An Inventory - Progress Rept. #72. Resource Dev. Br., Fisheries  
and Marine Service, St. John's, Nfld.



## CORNER BROOK

Location: 49°44'35" N. 56°54'38" W. Sops Arm, White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 18.9 miles<sup>2</sup>, (48.95 km<sup>2</sup>). Mean width, 2.5 miles, (4.02 km).

Perimeter, 23.7 miles, (38.13 km). Axial length, 8.5 miles, (13.67 km).

Maximum basin relief, 1,430 feet, (435.86 m).

## Geology:

About half Ordovician volcanic with the remainder consisting of acidic intrusive rocks with a small amount of silurian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Dam on the main river, passable.

Photographs on file: Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

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:

## NATLINS BROOK

Location: 49°44'45" N. 56°51'55" W. White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 10.3 miles<sup>2</sup>, (26.67 km<sup>2</sup>). Mean width, 1.6 miles, (2.57 km).

Perimeter, 17.4 miles, (27.99 km). Axial length, 6.3 miles, (10.13 km).

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

## Geology:

Almost entirely silurian sedimentary and some acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

## Species Present:

No angling data available on this stream.

Gene Frequency: Not complete.

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:

## SALTWATER BROOK

Location: 49°40'35" N. 56°49'30" W. White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 21.8 miles<sup>2</sup>, (56.46 km<sup>2</sup>). Mean width, 2.7 miles, (4.34 km).

Perimeter, 25.2 miles, (40.54 km). Axial length, 7.4 miles, (11.90 km).

Maximum basin relief, 1,430 feet, (435.86 m).

## Geology:

Almost entirely acidic intrusive rocks with some silurian sedimentary and a little Mississippian 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 <sub>3</sub> 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:



## RATTLING BROOK

Location: 49°36'30" N. 56°49'35" W. White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 11.8 miles<sup>2</sup>, (30.56 km<sup>2</sup>). Mean width, 1.5 miles, (2.41 km).

Perimeter 22.1 miles, (35.55 km). Axial length, 6.6 miles, (10.61 km).

Maximum basin relief, 1,163 feet, (354.48 m).

## Geology:

About half acidic intrusive with the remainder consisting of Mississippian sedimentary and a little silurian 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 <sub>3</sub> 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:

## HAMPDEN RIVER

Location: 49°32'30" N. 56°52'20" W. White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 48.7 miles<sup>2</sup>, (126.13 km<sup>2</sup>). Mean width, 4.5 miles, (7.24 km).

Perimeter, 41.8 miles, (67.25 km). Axial length, 11.2 miles, (18.02 km).

Maximum basin relief, 1,163 feet, (354.48 m).

## Geology:

About half gneiss with the remainder consisting of Mississippian sedimentary and some intermediate intrusive rocks and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Several obstructions are found near the headwaters.

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

## Atlantic Salmon Angling Record - Hampden River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1961	5	1	3	1.4	-	-	-	1	3	1.4
1962	9	5	18	8.2	-	-	-	5	18	8.2
1963	38	12	42	19.1	-	-	-	12	42	19.1
1964	44	14	50	22.7	-	-	-	14	50	22.7
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 1963-64	July 12-18	August 25-31	-

Accessibility to Anglers: By road from the T.C.H., by trails along river  
for approximately 5 miles.

Surveys: None to date.

Redd Counts: None to date.

References:



## BIG CHOUSE BROOK

Location: 49°36'42" N. 56°47'30" W. White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 43.3 miles<sup>2</sup>, (112.14 km<sup>2</sup>). Mean width, 3.0 miles, (4.82 km).

Perimeter, 31.9 miles, (51.32 km). Axial length, 10.6 miles, (17.05 km).

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

## Geology:

About half gneissis and about half acidic intrusive rocks.

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 <sub>3</sub> 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:



## LITTLE CHOUSE BROOK

Location: 49°37'48" N. 56°46'35" W. White Bay.

Map Reference: Hampden. 12 H/10 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 15.5 miles<sup>2</sup>, (40.14 km<sup>2</sup>). Mean width, 2.5 miles, (4.02 km).

Perimeter, 17.0 miles, (27.35 km). Axial length, 6.0 miles, (9.65 km).

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

## Geology:

Predominantly acidic intrusive rocks with the remainder consisting of gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos.

## Water Quality Data, Sample Collected

	Total	Total	Turbidity	Cl	Conductivity	Ca	HCO <sub>3</sub>
pH	Alkalinity	Hardness			at 25°C		
	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:

## PURBECKS BROOK

Location: 49°44'40" N. 56°38'55" W. White Bay.

Map Reference: Hampden. 12 H/10 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 23.3 miles<sup>2</sup>, (60.34 km<sup>2</sup>). Mean width, 2.1 miles, (3.37 km).

Perimeter, 27.3 miles, (43.92 km). Axial length, 10.4 miles, (16.73 km).

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

Geology:

Predominantly acidic intrusive rocks with the remainder consisting of gneissis.

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 <sub>3</sub>
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:

## WILD COVE BROOK

Location: 49°49'12" N. 56°35'10" W. White Bay.

Map Reference: Jackson's Arm. 12 H/15 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 51.2 miles<sup>2</sup>, (132.60 km<sup>2</sup>). Mean width, 2.9 miles, (4.66 km).

Perimeter, 42.7 miles, (68.70 km). Axial length, 15.8 miles, (25.42 km).

Maximum basin relief, 1,250 feet, (381.00 m).

## Geology:

Predominantly acidic intrusive rocks with the remainder consisting of gneiss.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: None in lower reaches.

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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species present: Atlantic salmon

Atlantic Salmon Angling Record - Partial Count - Wild Cove Brook.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1965	2	1	5	2.3	-	-	-	1	5	2.3
1966	132	4	16	7.3	-	-	-	4	16	7.3
1967	23	3	11	5.0	-	-	-	3	11	5.0
1968	30	10	36	16.3	-	-	-	10	36	16.3
1969	10	2	7	3.2	-	-	-	2	7	3.2
1970	No Report									
1971	No Report									
1972	No Report									
1973										
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 14-20	August 15-21	July 20-27 (1968)

Accessibility to Anglers: By boat and trails leading upstream.

Surveys: None to date.

Redd Counts: None to date.

References:

## WESTERN ARM RIVER

Location: 49°49'10" N. 56°30'30" W. White Bay.

Map Reference: Jackson's Arm. 12 H/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 28.7 miles<sup>2</sup>, (74.33 km<sup>2</sup>). Mean width, 2.7 miles, (4.34 km).

Perimeter, 28.5 miles, (45.85 km). Axial length 8.6 miles, (13.83 km).

Maximum basin relief, 1,108 feet, (337.71 m).

## Geology

Almost entirely gneissis with small amount of acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migrations:

Main River: Falls, each 440, 540 and 640 yds., (373.1, 457.9, 542.7), upstream from mouth; complete obstruction. Falls at mile 6, (9.65 km) partial obstruction.

Photographs on file: Nos.

Miscellaneous Information: In 1958, a survey showed logs littering the shoreline and above six mile falls, (9.65 km), a log jam completely blocked the river.

## 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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, (resident and sea run).

Atlantic Salmon Angling Record - Partial count - Western Arm River.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1965	3	1	4	1.8	-	-	-	1	4	1.8
1966	110	5	21	9.5	-	-	-	5	21	9.5
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 1965-66	June 19-25	August 15-21	-

Accessibility to Anglers:

Surveys: None to date.

Redd Counts: None to date.

References:



## MIDDLE ARM BROOK

Location: 49° 1' 15" N. 56° 26' 10" W. Middle Arm, White Bay.  
Map Reference: Baie Verte. 12 H/16 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphologic 1 Factors:

Basin area, 126.7 miles<sup>2</sup>, (328.15 kilometers<sup>2</sup>). Mean width, 6.1 miles, (9.81 kilometers).

Perimeter, 63.7 miles, (102.49 kilometers). Axial length, 17.4 miles, (27.99 kilometers).

Maximum basin relief, 1,350 feet, (411.18 meters).

## Geology:

Predominantly gneiss with the remainder consisting of Ordovician volcanic and small amounts of ultrabasic intrusive rocks and acidic intrusive rocks.

## Vegetational Cover:

Forest in the upper part of watershed was destroyed by fire in 1979. Forest remains standing, primarily spruce with some birch, along the river from Freshwater Pond to the sea.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Length of the main river from Freshwater Pond to the sea is 8 miles, (12.87 kilometers).

Flatwater Pond (oligotrophic lake):

Surface area: 2.8 sq. miles, (4.50 sq. kilometers) Mean depth 42 ft. (12.80 meters). Max. depth 110' (33.52 meters).

## Bottom Type:

Small rocks and gravel in areas where water goes to a depth of 20' (6.09 meters). The bottom in deeper areas is covered by a layer of black organic muck. The southwest corner of the lake has fine sand, washed into it by a stream entering at that point.

## Water Chemistry:

Surface water temperature: 7°C - June 1963, 17°C - September, 1963.

Lowest dissolved oxygen in 1963 - 8 ppm.

## Spawning Areas:

Flatwater Pond: Southwest Inlet stream contains excellent spawning gravel for a distance of 2 miles, (3.21 kilometers), above river mouth.

## Barriers to Fish Migration:

Falls 3 miles, (4.82 kilometers), from mouth of river. Partial obstruction. Falls 3.5 miles, (5.62 kilometers), from mouth of river. 20' (6.09 meters) high, 60' (18.27 meters) long at 45° angle, natural fishway blocked by old bridge, long section of rapids below. Complete obstruction except at peak water level. Falls 6.9 miles, (11.10 kilometers), from mouth 6' (1.82 meters) high, 30' (9.14 meters), long at 30° angle. Partial obstruction at low water only. Falls 7.0 miles (11.26 kilometers), from mouth. 10' (3.04 meters) high 13' (3.96 meters) long at 75° angle. Complete obstruction except at peak water levels. Falls 7.3 miles, (11.74 kilometers), from mouth. 10' (3.04 meters) high, 50' (15.24 meters) long at 30° angle. Partial obstruction. Falls 7.5 miles, (12.06 kilometers) from mouth. 8' (2.43 meters) high, 25' (7.62 meters) long at 60° angle. Partial obstruction. Falls 16 miles, (25.74 kilometers), from mouth. 10' (3.04 meters) high, 10' (3.04 meters) long at 80° angle. Complete obstruction.

Photographs on file Nos. 93, 560, 563.

## Water Quality Data, Sample Collected

	Total	Total			Specific		
pH	Alkalinity	Hardness	Turbidity	Cl	Conductance @	Ca	HCO <sub>3</sub>
	ppm.	ppm.	JTU	ppm.	25°C micromhos	ppm.	ppm.
					M/cm		

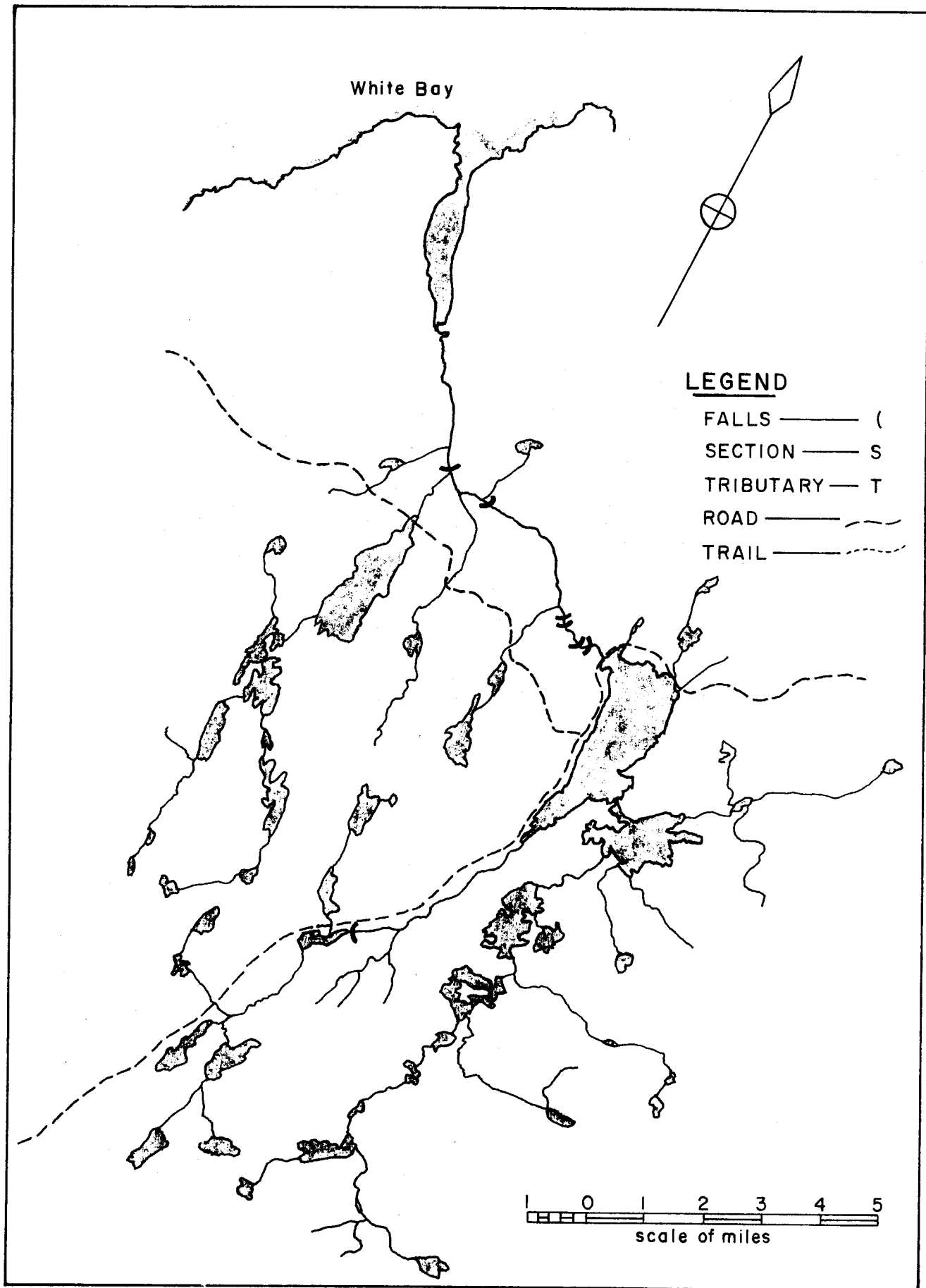


FIG. 7 OUTLINE MAP OF MIDDLE ARM BROOK SHOWING OBSTRUCTION LOCATIONS

FISH POPULATIONS

Species Present: Atlantic salmon, Arctic char, brook trout, ouananiche and American eels.

No angling data available on this stream.

Note: Flatwater Pond supports a large population of brook trout and ouananiche.

Miscellaneous Information:

This system is very rocky and, according to local residents, a very poor salmon 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: By boat from Seal Cove, by trails from Flatwater Pond.

Surveys: None to date.

References:

- Leggett, William, C. 1965. The Effect of Environment on the Food Growth Reproduction and Survival of Ouananiche in Eastern Canada. Masters Thesis, University of Waterloo, Waterloo, Ontario.
- Mercer, K. 1956. Biological Survey. MS report, Fisheries Service, St. John's, Nfld.
- Riche, L.G. and Gerald R. Traverse. River Investigations 1969-1970 - An Inventory - Progress Rept. #72, Resource Dev. Br., Fisheries and Marine Service, St. John's, Nfld.

## FLEUR DE LYS RIVER

Location: 50°07'02" N. 59°09'10" W.

Map Reference: Fleur de Lys. 12 I/1 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 12.9 miles<sup>2</sup>, (33.41 km<sup>2</sup>). Mean width, 2.1 miles, (3.37 km).

Perimeter, 16.6 miles, (26.70 km). Axial length, 5.7 miles, (9.17 km).

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

## Geology:

Gneisses.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos.

## Water Quality Data, Sample Collected

	Total	Total			Conductivity		
	Alkalinity	Hardness	Turbidity	Cl	at 25°C	Ca	HCO <sub>3</sub>
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:

## RATTLING BROOK

Location: 49°55'50" N. 56°12'15" W. Baie Verte.

Map Reference: Baie Verte. 12 H/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 9.3 miles<sup>2</sup>, (24.08 km<sup>2</sup>). Mean width, 2.3 miles, (3.70 km).

Perimeter, 14.6 miles, (23.49 km). Axial length, 4.5 miles, (7.24 km).

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

## Geology:

Predominantly gneissis with the rest consisting of Ordovician sedimentary and a small amount of ultrabasic intrusive rocks.

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 <sub>3</sub> 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:



## BAIE VERTE BROOK

Location: 49°55'35" N. 56°12'37" W. Baie Verte, White Bay.

Map Reference: Baie Verte. 12 H/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 75.3 miles<sup>2</sup>, (195.02 kilometers<sup>2</sup>). Mean width, 7.2 miles (11.58 kilometers).

Perimeter, 45.0 miles, (75.40 kilometers). Axial length, 9.8 miles, (15.76 kilometers).

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

## Geology:

About half gneiss with the remainder consisting of Ordovician sedimentary and a small amount acidic intrusive rocks and intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

North West Branch at a point 200 ft., (60.96 meters) from junction:

Falls consisting of two drops, 7 ft and 5 ft., (2.13-1.52 meters) high.

In the event that salmon can't get over the falls, there is on the right side of the falls a natural fishway which can be used at high water levels. Logging dams reported on this river at mile points 6 and 8, (9.65-12.87 kilometers) partial obstructions.

1973 South West Brook and Fishway: 16 stop water dams and 8 beaver dams.

North West Brook: 1 stop water dam and 1 diversion dam at headwaters

Southern Arm Pond.

## Water Quality data, Sample Collected July, 1973

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C $\mu$ /cm	Ca ppm.	HCO <sub>3</sub> ppm.
6.70	6.0	12.0	8.0	4.0	34.0	3.5	7.32



### LEGEND

- FALLS ——— (
- SECTION ——— S
- TRIBUTARY ——— T
- ROAD ——— ———
- TRAIL ——— - - - -

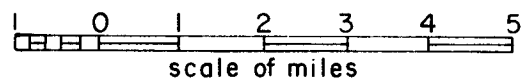
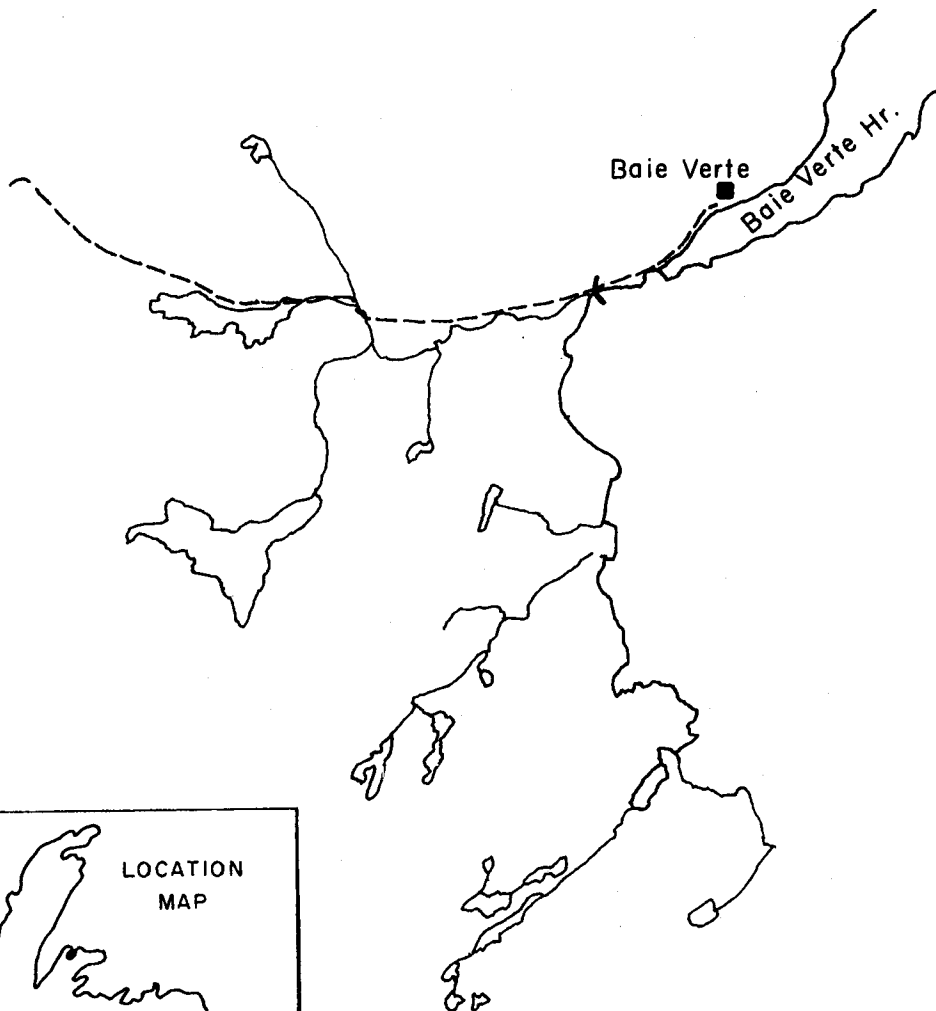


FIG. 8 OUTLINE MAP OF BAIE VERTE BROOK SHOWING OBSTRUCTION LOCATIONS

FISH POPULATIONS

Species Present: Atlantic salmon, and brook trout.

No angling data available on this stream.

Miscellaneous Information:

This river is composed of two branches, Northwest and Southwest Brook which join at a point 1 mile, (1.60 kilometers), from the mouth. Both brooks good for small salmon and sea run brook trout.

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: By road and trails

Surveys: None to date.

Redd Counts: None to date.

References:



## SOUTH BROOK

Location: 49°57'05" N. 56°08'30" W. Baie Verte, White Bay.

Map Reference: Baie Verte. 12 H/6 East half.

## CHARACTERISTICS OF DRAINAGE BASIN

### Geomorphological Factors:

Basin area, 47.7 miles<sup>2</sup>, (123.54 km<sup>2</sup>). Mean width, 3.5 miles, (5.63 km).

Perimeter, 38.3 miles, (61.62 km). Axial length, 9.5 miles, (15.28 km).

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

**Geology:**

Predominantly gneiss with the remainder consisting of acidic intrusive rocks.

## CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Main river: Falls at mile 0.5 (.80 km), 40 ft. (12.19 m) high; at 80° angle; complete obstruction. Falls mile 3, (4.82 km), passable.

Photographs on file: Nos. 790,569, 833

Miscellaneous Information: This river receives waste material from a base metal mining operation in the area (Rambler Mines).

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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# LEGEND

FALLS ——— (   
SECTION — S   
TRIBUTARY- T   
ROAD ——— - - -   
TRAIL ——— - - -

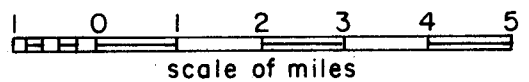
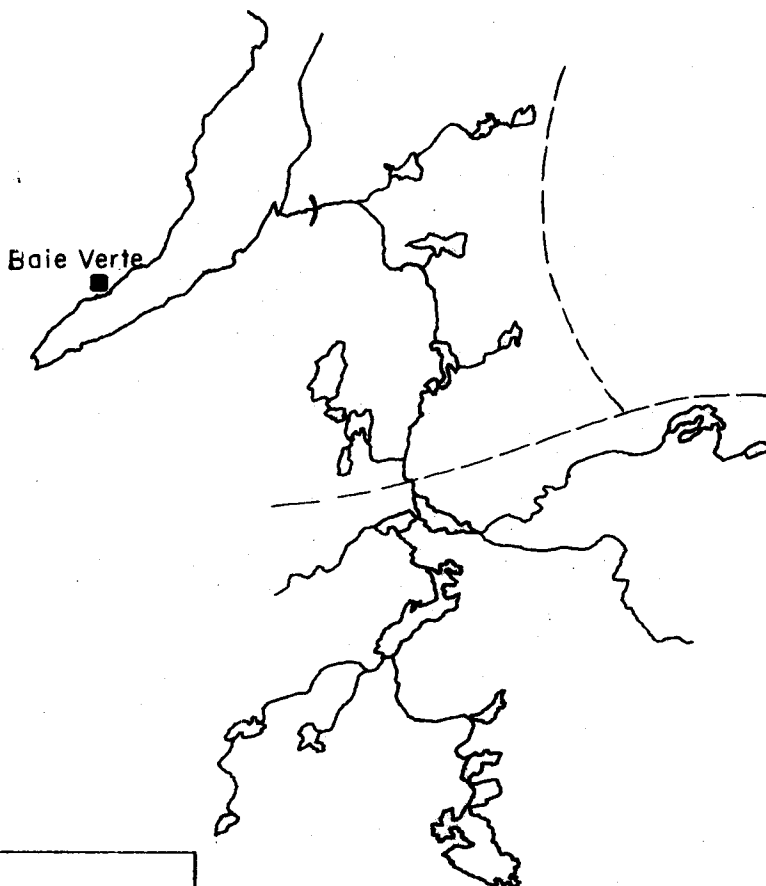


FIG.9 OUTLINE MAP OF SOUTH BROOK SHOWING OBSTRUCTION LOCATION

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:

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





Location: 49°57'52" N. 55°52'58" W.

Map Reference: Nipper's Harbour. 2 E/13 West half.

### Geomorphological Factors:

Basin area, 46.1 miles<sup>2</sup>, (119.39 km<sup>2</sup>). Mean width, 3.9 miles, (6.27 km).

Perimeter, 35.0 miles, (56.31 km). Axial length, 10.2 miles, (16.41 km).

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

**Geology:**

Predominantly acidic intrusive rocks with the remainder consisting of Ordovician volcanic.

Barriers to Fish Migration: Falls at mouth complete obstruction at low discharge.

Photographs on file: Nos.

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Summary, angling data, Pacquet Brook (Woodstock River) Partial count.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1965	22	3	12	5.4	-	-	-	3	12	5.4
1966	387	59	257	116.7	-	-	-	59	257	116.7
1967	70	15	54	24.5	-	-	-	15	54	24.5
1968	93	31	118	53.6	-	-	-	31	118	53.6
1969	310	60	203	92.2	2	15	6.8	62	218	99.0
1970	114	87	335	152.1	-	-	-	87	335	152.1
1971	231	47	169	76.7	-	-	-	47	169	76.7
1972	130	29	90	40.9	-	-	-	29	90	40.9
1973	123	20	73	33.2	-	-	-	20	73	33.2
1974										
1975										
1976										
1977										
MEAN										
1965-68	143	27	29	50.1	-	-	-	27	29	50.1
1969-73	182	49	174	79.0	.4	3	1.4	49	177	80.4

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: By trail from Baie Verte, LaScie road, and from Woodstock.

Surveys: None to date.

Redd Counts: None to date.

References:

Location: 49°45'10" N. 56°01'25" W. Green Bay, Notre Dame Bay.  
Map Reference: Baie Verte. 12 H/16 East half.

### Geomorphological Factors:

Perimeter, 44.7 miles, (71.92 km). Axial length, 8.5 miles, (13.67 km).

### Geology:

## CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Depth range: 3-4 ft. (0.91-1.21 m). Bottom type: Small gravel with mud in small pond and steadies.

Photographs on file: Nos. 84, 85, 86.

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

Species Present: Atlantic salmon, brook trout.

Atlantic salmon angling record - East Brook (Burlington River).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1964 <sup>1</sup>	48	10	37	16.8	-	-	-	10	37	16.8
1965	22	3	12	5.4	-	-	-	3	12	5.4
1966	387	59	257	116.7	-	-	-	59	257	116.7
1967	210	71	220	99.9	-	-	-	71	220	99.9
1968	93	31	118	53.6	-	-	-	31	118	53.6
1969	310	60	203	92.2	2	15	6.8	62	218	99.0
1970	114	87	335	152.1	-	-	-	87	335	152.1
1971	189	44	158	71.7	-	-	-	44	158	71.7
1972	193	44	134	60.8	-	-	-	44	134	60.8
1973	177	25	86	39.1	-	-	-	25	86	39.1
1974										
1975										
1976										
1977										
Mean 1964-68	152	35	129	58.5	-	-	-	35	129	58.5
Mean 1969-73	197	52	183	83.2	.4	3	1.4	52	186	84.5

<sup>1</sup>Angling data 1964-73, estimated to be 75% accurate. (T. Curran, personal communication.)

#### Miscellaneous Information:

The main river from mouth to mile point 2 (3.21 kilometers) is a continuation of small ponds and steadies. The river is wide and has good spawning areas, deep pools and no bad obstructions.

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 20 - 27	September 1 - 7	July 13 - 20 (1968)

Accessibility to Anglers:

Accessible for approximately 4 miles (6.43 kilometers) upstream by trails.

Surveys: None to date.

Redd Counts: None to date.

References:



## SOUTH BROOK

Location: 49°35'12" N. 55°09'10" W. Southwest Arm, Green Bay.

Map Reference: Kings Point. 12 H/O East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 11.7 miles<sup>2</sup>, (30.30 km<sup>2</sup>). Mean width, 1.5 miles, (2.41 km).

Perimeter, 24.1 miles, (38.77 km). Axial length, 6.8 miles, (10.94 km).

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

## Geology:

Ordovician volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file. Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

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: By road and trails.

Surveys: None to date.

Redd Counts: None to date.

References:



## INDIAN RIVER

Location: 49°29'30" N. 56°05'15" W. Halls Bay, Notre Dame Bay.  
 Map Reference: Springdale, 12/8 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 487.0 miles<sup>2</sup>, (1261.33 km<sup>2</sup>). Mean width, 8.0 miles, (12.87 km).

Perimeter 176.2 miles (283.5 km.). Axial length, 34.0 miles, (54.70 km.).

Maximum basin relief 1,400 feet, (426.72 m).

## Geology:

About half acidic intrusive rocks with about equal amounts of Ordovician volcanic, gneissis, Devonian sedimentary and some ultrabasic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Length of all streams in drainage basin, not including standing water: 190 miles (305.71 km.).

North Brook: Length 10.5 mi. (16.91 km.), drainage area 9 sq.mi. (23.32 km<sup>2</sup>)

Little Black Brook: Length 6.4 mi. (10.30 km.), drainage area 3 sq. mi. (7.77 km<sup>2</sup>).

Black Brook between Indian Pond, Black Lake and Micmac Lake: Length 20.0 mi.. (32.20 km.), drainage area 24 miles<sup>2</sup> (62.18 km<sup>2</sup>).

Oxfords Brook: Length 3.6 miles (5.80 km.), drainage area 2 miles<sup>2</sup> (5.18 km<sup>2</sup>).

23 Mile Brook: Length 6.9 miles (11.11 km.), drainage area 5 miles<sup>2</sup> (12.95 km<sup>2</sup>).

Whitehan's Brook: Length 4.0 miles (6.44 km), drainage area 7 miles<sup>2</sup> (18.13 km<sup>2</sup>).

Shoal Pond Brook: Length 4.4 miles (7.08 km.), drainage area 11 miles<sup>2</sup> (28.50 km<sup>2</sup>).

Burnt Berry Brook: Length 60.0 miles (96.60 km.), drainage are 78 miles<sup>2</sup> (202.07 km<sup>2</sup>).

## Areas of standing water in system:

Upper Indian Pond 6.2 miles<sup>2</sup> (16.06 km<sup>2</sup>).

Black Lake: 4.7 miles<sup>2</sup> (12.18 km<sup>2</sup>).

Micmac Lake 3.9 miles<sup>2</sup> (10.10 km<sup>2</sup>).

Gull Pond: 4.7 miles<sup>2</sup> (12.18 km<sup>2</sup>).

Gillards Lake: .9 miles<sup>2</sup> (2.33 km<sup>2</sup>).

Indian Pond: 1.7 miles<sup>2</sup> (4.40 km.<sup>2</sup>).

Shoal Pond: 1.3 miles<sup>2</sup> (3.37 km.<sup>2</sup>).

Lower Burnt Berry Pond: 1.1 miles<sup>2</sup> (2.85 km.<sup>2</sup>).

Upper Burnt Berry Pond: .9 miles<sup>2</sup> (2.33 km.<sup>2</sup>).

#### Bottom Types:

##### Section:

Main stream to mile 22 (35.29 km.), 256,000 yds.<sup>2</sup> (214,048.6 m.<sup>2</sup>) of .5" to 2.5" (.13 cm. to 6.4 cm.) diameter gravel, 918,000 yds.<sup>2</sup> (767,558.5 m.<sup>2</sup>) of 2.5" to 4.0" (1.3 cm to 10.2 cm) diameter gravel

Main stream, Indian Pond to channel, 3 miles, (4.83 km), 70,800 yds.<sup>2</sup> (59197.3 m.<sup>2</sup>) of .5" to 2.5" (.13 cm. to 6.4 cm.) diameter gravel, 22,200 yds.<sup>2</sup> (18,561.9 m.<sup>2</sup>) of 2.5" to 4.0" (1.3 cm. to 10.2 cm.) diameter gravel.

Black Brook, from mouth to mile 1.5 (2.4 km.), 8,300 yds.<sup>2</sup> (6,939.8 m.<sup>2</sup>) of .5" to 2.5" (1.3 cm. to 6.4 cm.) diameter gravel, 61,000 yds.<sup>2</sup> (51,003.3 m.<sup>2</sup>) of 2.5" to 4.0" (1.3 cm. to 10.2 cm.) diameter gravel.

Shoal Pond Brook, from mouth to mile point 1.5 (2.4 km.) 6,000 yds.<sup>2</sup> (5,016.7 m.<sup>2</sup>) to .5" to 2.5" (1.3 cm. to 6.4 cm.) diameter gravel, 8,000 yds.<sup>2</sup> (6,689.0 m.<sup>2</sup>) of 2.5" to 4.0" (1.3 cm. to 10.2 cm.) diameter gravel.

Burnt Berry Brook, from mouth to mile point 10.0 (16.1 km) 171,400 yds.<sup>2</sup> (143,311.0 m.<sup>2</sup>) of gravel.

#### Rearing Areas:

From the channel to Indian Pond, 2.8 miles (4.51 km) there are 885 rearing units. From Indian Pond to the counting fence, 11.6 miles (18.7 km) there are 7,140 rearing units. From Indian Pond to Black Brook Falls, 1.3 miles (2.1 km) there are 460 rearing units. There are 1,200 rearing units above the channel and 4,540 rearing units above Black Brook Falls, inaccessible to salmon

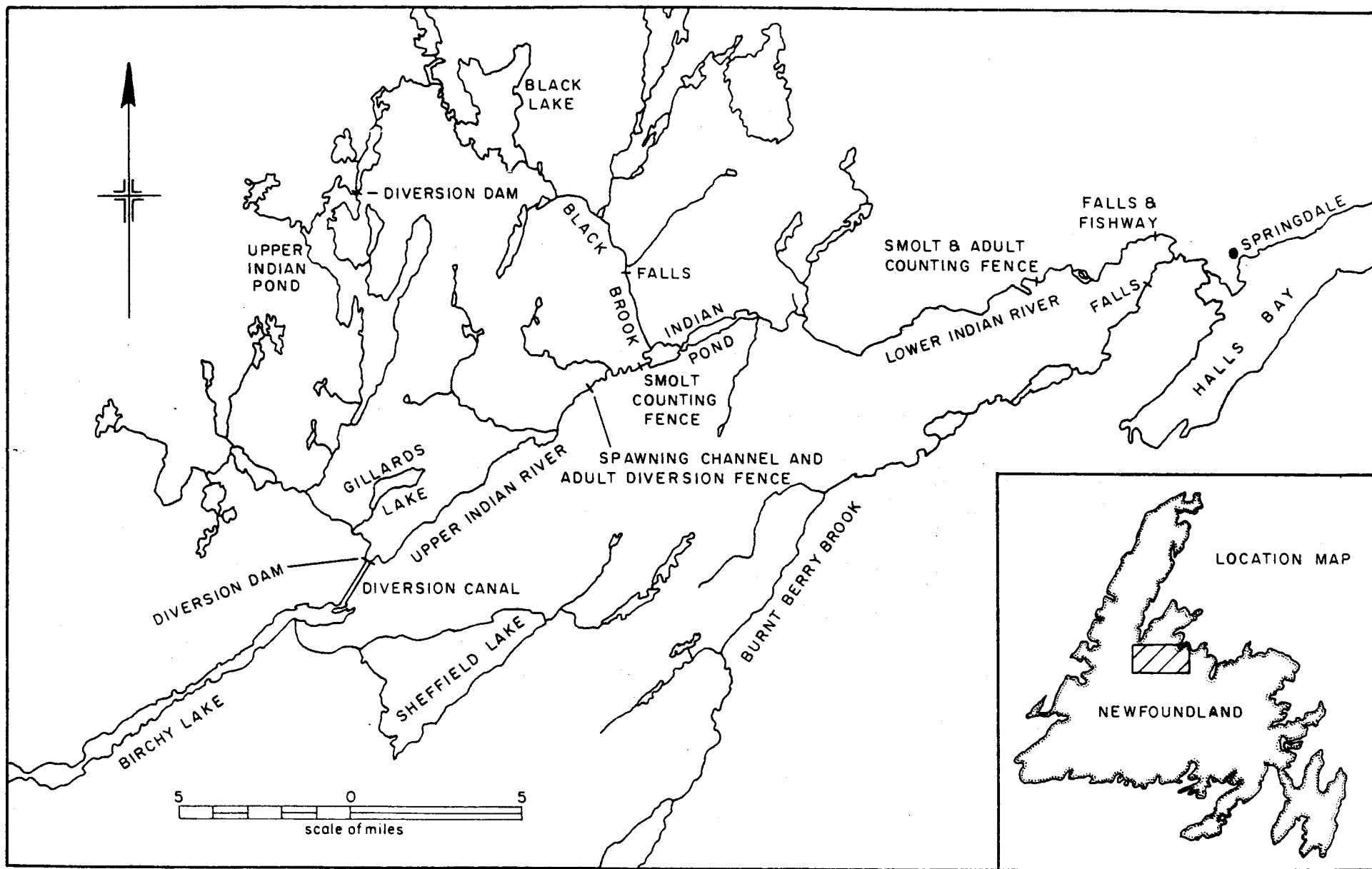


FIG. 10 OUTLINE MAP OF INDIAN RIVER SHOWING OBSTRUCTION LOCATIONS

## Barriers to Fish Migration:

## Main River:

Falls at mile 3.25 (5.22 km) partial obstruction. Fishway built along side of falls in 1957. Chain link fence erected around fishway in 1957. Trap repaired in 1971. Smolt counting platforms installed 1969; repair work done in 1971.

Spillway at mile 22 (35.39 km), immediately above Control Flow Spawning Channel; complete barrier.

Hydro diversion dam at mile 33, (53.09 km); complete obstruction. 28' (8.53 m) vertical and approximately 190' (57.91 m) horizontal in left bank, maximum slope of approximately 7.5' to 7.5'. (2.28 m) horizontal. Right bank has a vertical drop from bedrock into a trough containing the main flow of water and the steepest slope.

## Burnt Berry Brook (Tributary):

Falls at mile 1.5 (2.41 km) 26.5' high, consists of 3 rises; complete obstruction.

Falls at mile 2 (3.21 km) 5' high; complete obstruction

Falls at mile 3 (4.8 km), 5' high.

Falls at mile 4 (6.4 km), height 10'. Below falls there is a 100' long gorge with a series of shallow drops.

Falls at mile 12 (19.3 km), height 6'.

Falls at mile 14 (22.5 km) height, 15'.

## Black Brook (Tributary):

Falls at mile 1.3 (2.09 km); complete obstruction.

Photographs on file Nos. 130, 196, 289, 319, 325, 328, 370, 328, 413, 420, 425, 577, 427, 428, 590, 631, 640, 645, 646, 906, 917, 1061, 1064, 1108, 1109, 1110, 641, 678, 899, 902, 904, 905, 914, 1031, 1032, 1137, 1138, 1139, 1040, 1055, 1061

## Water Quality Data, Sample Collected October, 1972

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C micromhos $\mu/cm$	Ca ppm.	HCO <sub>3</sub> ppm.
6.54	8.0	14.0	3.4	4.0	26.0	1.0	9.8

#### Water Temperatures:

29°F January, 1964; 32.5°F January, 1956;  
69°F July, 1964; 74°F June, 1965.

#### Miscellaneous Information:

A minimum base flow of 20 cubic feet per second has been guaranteed in the main river below the diversion dam at mile 33 (53.09 k.) by Bowater's Pulp and Paper Co. The fishway at mile 3.25 (5.33 km) becomes inoperative at very low flows. A large portion of salmon negotiate the falls at high flows. The artificial spawning channel has facilitated egg to fry survival of:

29% in 1963; 40% in 1964; 65% in 1965; 38% in 1966; 33% in 1967;  
40% in 1968; 14% in 1969; 67% in 1970; 12% in 1971; 69% in 1972

The main fence is a straight wooden fence 372' long situated 9 miles upstream. Installed in 1967 it is a combined smolt and adult fence having 3 smolt traps and 4 adult traps. During its first year of operation there was a high smolt mortality due to smolt being pinned on the straight fence. In 1968 "V"s were constructed upstream on the fence thus diverting the flow of water into the traps. Since then no serious mortalities have been reported. There have been no recorded washouts or other abnormalities at the fence, thus ensuring fairly accurate counts.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, American smelt, sticklebacks, eels.

Atlantic salmon angling record - Indian River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1852	358	232	959	435.4	12	103	46.8	244	1062	482.2
1953	640	178	671	304.6	4	32	14.5	182	703	319.1
1955	499	219	798	362.3	2	15	6.8	221	813	369.1
1956	-	312	1086	493.0	-	-	-	312	1086	493.0
1957	515	350	1425	647.0	-	-	-	350	1425	647.0
1958	601	422	1589	721.4	7	44	20.0	429	1633	741.4
1959	516	281	1136	515.7	-	-	-	281	1136	515.7
1960	565	172	603	273.8	8	57	25.9	180	660	299.7
1961	478	176	662	300.5	1	7	3.2	177	669	303.7
1962	617	361	1302	591.1	5	36	16.3	366	1338	607.4
1963	601	218	906	411.3	6	41	18.6	224	947	429.9
1964 <sup>1</sup>	646	566	2248	1020.6	9	62	28.1	575	2310	1048.7
1965	729	254	981	445.4	4	28	12.7	258	1009	458.1
1966	616	253	818	371.4	4	28	12.7	257	846	384.1
1967	520	125	452	205.2	2	15	6.8	127	467	212.0
1968	622	350	1272	577.5	1	8	3.6	351	1280	581.1
1969	534	154	580	263.3	1	7	3.2	155	587	266.5
1970	482	191	650	295.1	-	-	-	191	650	295.1
1971	555	266	977	443.6	1	7	3.2	267	984	446.8
1972	390	102	311	141.2	-	-	-	102	311	141.2
1973	720	372	1137	516.8	2	16	-	374	1153	524
1974										
1975										
1976										
1977										
Mean 1964-68	627	310	1154	524.0	4.0	28.2	12.8	314	1182	536.8
Mean 1969-73	536	217	731	332.3	.8	6	1.3	218	737	335.0

<sup>1</sup> Angling data 1964-73, estimated to be 80% accurate. (T. Curran personal communication).

## Summary, Counting Fence, Indian River.

Year	Salmon		Smolt	Parr	Kelt	Smelt	Shad	Eels	Brook trout		Frost Fish
	Under 6 lbs. (2.7 kg)	6 lbs. & over							Adult	Parr	
1967	300	3	4654	777	41	12	-	170	618	-	-
1968	682	11	13128	912	5	2	-	70	762	-	-
1969	188	9	12263	584	1	26	-	81	1043	-	-
1970	205	1	11604	780	24	-	-	226	1224	-	-
1971	453	0	9622	1499	27	29	-	205	2128	-	-
1972	109	0	13481	997	207	6	-	205	1132	-	-
1973	703	12	9219	1282	40	-	-	213	918	-	-
1974											
1975											
1976											
1977											
MEAN	377	5	10567	976	49	11	-	167	1118	-	-

## Summary, Fishway Counting Trap Data, Indian River.

Year	Grilse	Salmon	Total No. Fish
	Under 6 lbs. (2.7 kilograms)	6 lbs. and over	
1958	843	80	923
1959	438	18	456
1960	494	25	519
1961	153	1	154
1962	-	-	-
1963	267	22	289
1964	1,199	45	1,244
1965	394	-	394
1966	292	3	295
1967	116	-	116
1968	682	-	682
1969	222	3	225
1970	443	-	443
1971	364	-	364
1972	112	-	112
1973	714	3	717
1974			
1975			
1976			
1977			
MEAN			
1958-1973	421	13	433

## Gene Frequency:

Timing of Run: (Based on fishway counting trap data)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1968-1971	June 28	October 8-15	July 19-25

## Accessibility to Anglers:

Fully accessible by roads along full course of river to obstructions.

## Surveys:

Topographic Survey, Indian River Falls, 1956.

Plan, Profile and Water Velocities of 8.5 miles of river above and below Baie Verte Highway, 1961.

Stadia Survey site 2 Indian River Spawning Channel - April-June 1962.

Stadia Survey of Indian River below Baie Verte Road Bridge, April-June 1962.

Stadia Survey of Indian River from Bowater's Woods Bridge to diversion dam upstream, April-June 1962.

Profile of access road and channel layout - April-June, 1962.

Engineering Survey of No. 1 and No. 2 pond dams in 1965.

Counting Fence Site Survey - Indian River - May-August, 1965.

Topo Survey of Black Brook Falls - 1967.

Water Line Survey of Burnt Berry Brook, 1968.

Complete Survey of Falls - Burnt Berry Brook - 1971

Burnt Berry Brook Survey, 1971.



## Redd Counts:

Year	No. Redds Channel to Pond	Black Brook	Main River Pond to Fence	Shoal Pond Brook	Main River Below Fence	Total
1963	123	NS <sup>1</sup>	NS	NS	NS	123
1964	240	25	17	0	NS	282
1965	130	30	37	NS	NS	197
1966	85	NS	NS	NS	NS	85
1967	NS	NS	NS	NS	NS	NS
1968	115	8	17	43	40	223
1969	NS	NS	NS	NS	NS	NS
1970	66	70	15	25	50	226
1971	37	11	26	2	31	107
1972	NS	NS	NS	ns	NS	NS
1973	80	17	101	4	49	251
1974						
1975						
1976						
1977						

<sup>1</sup> Not surveyed.

## References:

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## WEST RIVER (Riverhead Brook)

Location: 49° 25' 45" N. 56° 08' 10" W. Halls Bay, Notre Dame Bay.

Map Reference: Springdale. 12 H/8 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 186.9 miles<sup>2</sup>, (484.07 kilometers<sup>2</sup>). Mean width, 4.9 miles, (7.88 kilometers).

Perimeter, 95.5 miles, (153.65 kilometers). Axial length, 37.1 miles, (59.69 kilometers).

Maximum basin relief, 1,822 feet, (555.34 meters).

## Geology:

About half Ordovician sedimentary with the remainder consisting of about equal amounts of gneiss and Devonian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Total length of all streams, not including standing water, equals 25 miles, (40.22 kilometers).

## Barriers to Fish Migration:

## Main river:

Falls, 6 miles (9.65 kilometers) upstream from head of West Pond, 15' (4.57 meters) vertical; complete obstruction.

Logging dam at mile point 1.3 (2.09 kilometers) (outlet of West Pond), partial obstruction.

In 1953, two wooden fishways constructed over dam at mile point 1.3 (2.09 kilometers) did not function well at high water, dam gates removed by A.N.D. since 1960; no holdup at present, dams removed prior to 1973. Barney's Brook (Tributary flowing into West Pond);

Falls at mile point 2.8 (4.50 kilometers) from West Pond; partial obstruction. In 1955, one section of falls lowered from 8' (2.62 meters) to 4' (1.26 meters).

## Water Temperature:

54°F., June 23, 1956. 61°F. average temperature June 14-21, 1956.

## Water Quality Data, Sample Collected August, September, October, 1972

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C micromhos $\mu$ /cm	Ca ppm.	HCO <sub>3</sub> ppm.
6.8	7.3	9.3	1.84	2.3	22.0	1.3	8.9

## BARNEYS BROOK (TRIBUTARY OF WEST RIVER)

## Water Quality Data, Sample Collected, September, October, 1972

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Specific Conductance @ 25°C micromhos $\mu$ /cm	Ca ppm.	HCO <sub>3</sub> ppm.
7.16	10.0	12.0	.32	3.0	29.0	1.8	12.2

FISH POPULATIONS

Species Present: Atlantic salmon, eastern brook trout.

Atlantic salmon angling record - West River (Riverhead Brook).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	509	129	490	222.5	-	-	-	129	490	222.5
1953	624	140	544	247.0	-	-	-	140	544	247.0
1954	490	179	645	292.8	7	59	26.8	186	704	319.6
1955	519	231	846	384.1	1	8	3.6	232	854	387.7
1956	-	468	1622	736.4	4	29	13.2	472	1651	749.6
1957	1187	233	844	383.2	2	14	6.4	235	858	389.6
1958	193	386	1389	630.6	-	-	-	386	1389	630.6
1959	743	166	516	234.3	-	-	-	166	516	234.3
1960	250	88	239	108.5	1	8	3.6	89	247	112.1
1961	187	35	115	52.2	-	-	-	35	115	52.2
1962	309	218	882	400.4	-	-	-	218	882	400.4
1963	340	265	959	435.4	-	-	-	265	959	435.4
1964 <sup>1</sup>	403	303	904	410.4	-	-	-	303	904	410.4
1965	568	329	1083	491.7	-	-	-	329	1083	491.7
1966	826	518	1592	722.8	2	23	10.4	520	1615	733.2
1967	541	160	491	222.9	1	9	4.1	161	500	227.0
1968	779	567	1722	781.8	-	-	-	567	1722	781.8
1969	707	307	924	419.5	1	12	5.4	308	936	424.9
1970	1121	600	1788	811.8	-	-	-	600	1788	811.8
1971	877	416	1423	646.8	-	-	-	416	1423	646.8
1972	429	189	567	257.4	-	-	-	189	567	257.4
1973	768	554	1650	750.	-	-	-	554	1650	750.
1974										
1975										
1976										
1977										
Mean 1964-68	623	375	1169	525.9	.6	6.4	2.9	376	1165	528.8
Mean 1969-73	780	413	1270	577.1	.2	2.4	1.1	413	1273	578.2

<sup>1</sup>Angling data 1964-73, estimated to be 75% accurate (T. Currnan, personal communication).

Summary, Counting fence data, West River (Riverhead Brook).

Year	Salmon		Smolt	Parr	Kelt	Smelt	Shad	Eels	Brook trout	
	Under 6 lbs. (2.6 kilograms)	6 lbs. or over							Adult	Parr
1956	1265	73	-	-	-	-	-	-	-	-

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 1966-69	June 18 - 24	Sept. 4 - 10	July 13 - 20 (1968)

Accessibility to Anglers:

Fully accessible by trails to Barneys Falls. Upper areas  
accessible by crossing watershed by foot from South Pond.

Surveys: None to date.

Redd Counts: None to date.

References:

Anonymymous. 1956. Counting Fence and Counting Trap Data, MS report,  
Fisheries Service, St. John's, Newfoundland.

Anonymymous. Summary of Stream Obstruction. MS report, Fisheries  
Service, St. John's, Newfoundland.

Location: 49°25'35" N. 56°05'30" W. Hall's Bay.

Map Reference: Springdale. 12 H/8 East half.

### Geomorphological Factors:

Basin area, 259.5 miles<sup>2</sup>, (672.10 km<sup>2</sup>). Mean width, 7.3 miles, (11.74 km).

Perimeter, 127.0 miles, (204.34 km). Axial length, 35.4 miles, (56.95 km).

Maximum basin relief, 1,822 feet, (555.34 meters).

About equal amounts of gneissis, Devonian sedimentary.

Devonian volcanic and some intermediate intrusive rocks.

Barriers to Fish Migration: Main River: Falls at mile 10.4 (16.73 km) from mouth. 40' (12.2 m) vertical, overall length 150' (45.75 m), complete obstruction. Gull Pond Brook - accessible to headwaters.

Photographs on file. Nos.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run).

Atlantic salmon angling record - South Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	318	132	560	254.2	4	30	13.6	136	590	267.8
1953	552	185	701	318.3	2	14	6.4	187	715	324.7
1954	203	108	431	195.7	7	58	26.3	115	489	222.0
1955	199	137	606	275.1	1	7	3.2	138	613	278.3
1956	-	152	561	254.7	1	8	3.6	153	569	258.3
1957	137	32	99	44.9	-	-	-	32	99	44.9
1958	136	85	273	123.9	-	-	-	85	273	123.9
1959	173	50	175	79.5	1	14	6.4	51	189	85.9
1960	224	64	206	93.5	3	23	10.4	67	229	103.9
1961	98	18	57	25.9	1	7	3.2	19	64	29.1
1962	143	95	357	162.1	1	9	4.1	96	366	166.2
1963	204	188	615	279.2	3	21	9.5	191	636	288.7
1964 <sup>1</sup>	226	135	408	185.2	-	-	-	135	408	185.2
1965	293	224	721	327.3	-	-	-	224	721	327.3
1966	392	142	434	197.0	-	-	-	142	434	197.0
1967	275	68	208	94.4	-	-	-	68	208	94.4
1968	233	207	627	284.7	-	-	-	207	627	284.7
1969	245	81	243	110.3	-	-	-	81	243	110.3
1970	554	248	752	341.4	-	-	-	248	752	341.4
1971	398	218	687	311.9	-	-	-	218	687	311.9
1972	176	82	246	111.7	-	-	-	82	246	111.7
1973	605	314	942	428.2	-	-	-	314	942	428.2
1974										
1975										
1976										
1977										
Mean 1964-68	284	155	480	217.7	-	-	-	155	480	217.7
Mean 1969-73	396	189	574	260.7	.2	1.8	.8	189	574	260.9

<sup>1</sup>Angling data 1964-73, estimated to be 75-80% accurate. (T. Curran, 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 18 - 24	July 20 - 27 (1968)

Accessibility to Anglers:

Fully accessible by roads and trails as T.C.H. runs in valley of river.

Surveys: None to date.

Redd Counts: None to date.

References:



## TOMMY'S ARM RIVER

Location: 49°28'00"N. 55°48'10" W. Tommy's Arm, Notre Dame Bay.

Map Reference: Robert's Arm. 2E/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 93.5 miles<sup>2</sup>, (242.16 km<sup>2</sup>). Mean width, 3.5 miles, (5.63 km).

Perimeter, 71.0 miles, (114.23 km). Axial length, 26.0 miles, (41.83 km).

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

## Geology:

About half Ordovician volcanic with the remainder consisting of Ordovician sedimentary, acidic intrusive rocks and a small amount of intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Falls, three miles, (4.82 km) upstream from Crescent Lake, series of drops total height about 15', (4.57 m). Partial obstruction. Artificial channel, 16 miles, (25.74 km), from the mouth, artificial channel blasted around log jam, downstream end has a drop of 6', (1.82 m), over 15', (4.57 m), 50°. Partial obstruction. Falls, 19 miles, (30.57 km), from mouth. 15', (4.57 m), vertical, left side about 3', (0.91 m) lower. Complete obstruction. Logging dam, outlet of Crescent Lake. Partial obstruction (minor) Several logging dams on system. The future of these dams is uncertain since logging ceased here in 1968.

Photographs on file; Nos. 8, 9, 126-129, 364, 574, 607, 475-477, 479, 637.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run)

Summary - Atlantic salmon angling record - Tommy's Arm River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1953	27	22	102	46.3	4	32	14.5	26	134	60.8
1954	66	43	175	79.5	-	-	-	43	175	79.5
1956	-	17	68	30.9	-	-	-	17	68	30.9
1957	113	54	217	98.5	-	-	-	54	217	98.5
1958	159	105	358	162.5	-	-	-	105	358	162.5
1959	40	11	36	16.3	-	-	-	11	36	16.3
1961	44	5	17	7.7	-	-	-	5	17	7.7
1962	90	33	120	54.5	-	-	-	33	120	54.5
1963	46	21	71	32.2	-	-	-	21	71	32.2
1964 <sup>1</sup>	399	204	725	329.2	-	-	-	204	725	329.2
1965	121	28	101	45.9	-	-	-	28	101	45.9
1966	391	138	474	215.2	-	-	-	138	474	215.2
1967	368	81	268	121.7	-	-	-	81	268	121.7
1968	440	88	275	124.9	-	-	-	88	275	124.9
1969	1037	128	380	172.5	-	-	-	128	380	172.5
1970	605	99	337	153.0	-	-	-	99	337	153.0
1971	625	148	486	220.6	-	-	-	148	486	220.6
1972	524	82	247	112.1	-	-	-	82	247	112.1
1973	362	180	538	244.5	-	-	-	180	538	244.5
1974										
1975										
1976										
1977										
Mean 1964-68	344	108	369	167.4	-	-	-	108	369	167.4
Mean 1969-73	631	127	398	180.5	-	-	-	127	398	180.5

<sup>1</sup>Angling data 1964-73, estimated to be 80% accurate. (T. Curran, personal communication).

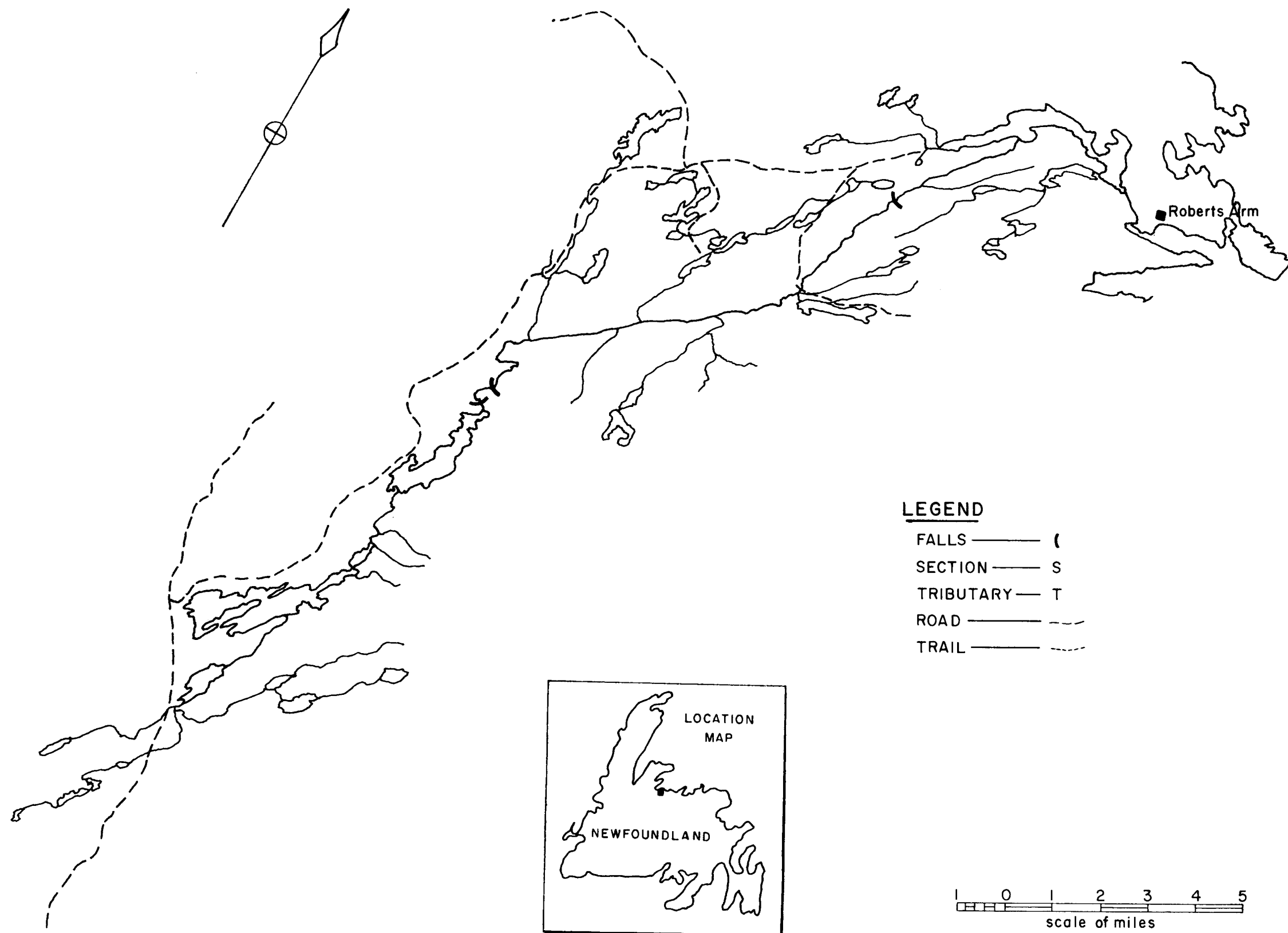


FIG.11 OUTLINE MAP OF TOMMY'S ARM RIVER SHOWING OBSTRUCTION LOCATIONS

Gene Frequency: Not completed.

Timing of Run: (Based on angling data)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1966-1969	June 19-25	August 23-29	July 20-27 (1968)

Accessibility to Angers:

Full accessible by old Bowater logging roads to source.

Surveys: None to date.

Redd Counts: None to date.

References:

Anonymous. 1962. Summary of Stream obstructions. Progress Report #13. Resource Dev. Br., Fisheries & Marine Service, St. John's, Nfld.

Riche, L.G. and Gerald R. Traverse, 1971. River Investigations 1969-1970. Resource Dev. Br., Fisheries & Marine Service, St. John's, Nfld.



Location: 49°26'25" N. 55°48'35" W. Sops Arm, Notre Dame Bay.

### CHARACTERISTICS OF DRAINAGE BASIN

Basin area, 23.8 miles<sup>2</sup>, (61.64 km<sup>2</sup>). Mean width, 2.2 miles, (3.53 km).

Perimeter, 27.8 miles, (44.73 km). Axial length, 9.7 miles, (15.60 km).

**Geology:**

## CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Photographs on file: Nos.

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

Species Present: Atlantic salmon, brook trout (sea run and resident).

Atlantic Salmon Angling Record - Partial count-Sops Arm Brook.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kilograms	No.	lbs.	kilograms	No.	lbs.	kilograms
1954	15	1	4	1.8	-	-	-	1	4	1.8
1962	3	1	4	1.8	-	-	-	1	4	1.8
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:

Accessible by foot for three miles (4.80 kilometers) upstream.

Surveys: None to date.

Redd Counts: None to date.

References:

## SHOAL ARM BROOK

Location: 49°24'35" N. 55°44'50" W. Badger Bay.

Map Reference: Roberts Arm. 2 E/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 33.6 miles<sup>2</sup>, (87.02 km<sup>2</sup>). Mean width, 2.2 miles, (3.53 km).

Perimeter, 34.8 miles, (55.99 km). Axial length, 14.3 miles, (23.00 km).

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

## Geology:

About half Ordovician sedimentary with the remainder consisting of gneiss and small amounts of ordovician volcanic and acidic intrusive rocks.

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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Brook trout, small run of Atlantic salmon.

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:

## PENNY'S BROOK

Location: 49°23'36" N. 55°41'40" W. Badger Bay.

Map Reference: Roberts Arm. 2 E/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 22.2 miles<sup>2</sup>, (57.49 km<sup>2</sup>). Mean width, 2.8 miles, (4.50 km).

Perimeter, 22.6 miles, (36.36 km). Axial length, 8.3 miles, (13.35 km).

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

## Geology:

Almost entirely Ordovician sedimentary with small amounts of Ordovician volcanic and intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration

Photographs on file Nos.

## Water Quality Date, Sample Collected

	Total	Total			Conductivity		
pH	Alkalinity	Hardness	Turbidity	Cl	at 25°C	Ca	HCO <sub>3</sub>
	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.

Red Counts: None to date.

References:

## BADGER BAY BROOK

Location: 49°23'22" N. 55°39'45" W. Badger Bay.

Map Reference: Roberts Arm. 2 E/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 20.0 miles<sup>2</sup>, (51.80 km<sup>2</sup>). Mean width, 2.3 miles, (3.70 km).

Perimeter, 24.8 miles, (39.90 km). Axial length, 7.9 miles, (12.71 km).

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

## Geology:

Almost entirely Ordovician sedimentary with small amounts of Ordovician volcanic and intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos. 205, 215, 217, 218, 548, 815, 951, 955.

## Water Quality Data, Sample Collected

	Total Alkalinity	Total Hardness	Turbidity	Cl	Conductivity at 25°C	Ca	HCO <sub>3</sub>
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:

## SEAL BAY BROOK

Location: 49°21'20" N. 55°35'00" W.

Map Reference: Roberts Arm. 2 E/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 24.3 miles<sup>2</sup>, (62.93 km<sup>2</sup>). Mean width, 2.4 miles, (3.86 km).

Perimeter, 25.1 miles, (40.38 km). Axial length, 9.6 miles, (15.44 km).

Maximum basin relief, 1,177 feet, (358.75 m).

## Geology:

Almost entirely Ordovician sedimentary with some intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file: Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Brook trout (sea run).

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:



FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (sea-run and resident),  
ouananiche, reports of sea-run Arctic char.

Atlantic salmon angling record - West Arm Brook (Western Arm Brook).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1955	29	18	67	30.4	-	-	-	18	67	30.4
1956	-	40	157	71.3	-	-	-	40	157	71.3
1957	64	25	95	43.1	-	-	-	25	95	43.1
1959	3	1	4	1.8	-	-	-	1	4	1.8
1960	5	1	4	1.8	-	-	-	1	4	1.8
1961	34	9	44	20.0	1	8	3.6	10	52	23.6
1962	464	41	194	88.1	1	7	3.2	42	201	91.3
1963	701	110	467	212.0	16	111	50.4	126	578	262.4
1964 <sup>1</sup>	973	210	858	389.5	3	26	11.8	213	884	401.3
1965	1041	269	1014	460.4	2	15	6.8	271	1029	467.2
1966	735	117	463	210.2	12	80	36.3	129	543	246.5
1967	465	23	80	36.3	-	-	-	23	80	36.3
1968	480	149	509	231.1	-	-	-	149	509	231.1
1969	561	73	250	113.5	-	-	-	73	250	113.5
1970	1047	98	381	173.0	-	-	-	98	381	173.0
1971	427	58	215	97.6	1	7	3.2	59	222	100.8
1972	220	29	126	57.3	-	-	-	29	126	57.3
1973	637	126	453	205.9	-	-	-	126	453	205.9
1974										
1975										
1976										
1977										
Mean 1964-68	739	154	585	265.5	3.4	24.2	11.	157	609	276.5
Mean 1969-73	578	77	285	129.5	.2	1.4	1.5	77	286	130.2

<sup>1</sup> Angling data 1964-73, estimated to be 85% accurate. (T. Curran, 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 1966-1969	June 21-27	September 1-7	July 6-13 (1968)

Accessibility to Anglers:

Accessible by trails for several miles upstream from mouth.

Surveys: None to date.

Redd Counts: None to date.

References:



Location: 49°19'13" N. 55°24'25" W. Southwest Arm, New Bay.

Map Reference: Point Leamington. 2 E/6 West half.

#### CHARACTERISTICS OF DRAINAGE BASIN

##### Geomorphological Factors:

Basin area, 15.8 miles<sup>2</sup>, (40.92 km<sup>2</sup>). Mean width, 2.4 miles, (3.86 km).

Perimeter, 17.4 miles, (27.99 km). Axial length, 6.2 miles, (9.97 km).

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

##### Geology:

About half intermediate intrusive rocks with the remainder consisting of Ordovician sedimentary and a small amount of Ordovician volcanic.

#### 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 (μmhos/cm)	Ca ppm.	HCO <sub>3</sub> 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:

## NEW BAY RIVER (LEAMINGTON RIVER)

Location: 40° 19' 21" N. 55° 24' 00" W.

New Bay, Notre Dame Bay.

Map Reference: Point Leamington. 2E/6 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 79.2 miles<sup>2</sup>, (205.12 kilometers<sup>2</sup>). Mean width, 3.7 miles, (5.95 kilometers).

Perimeter, 56.4 miles, (90.74 kilometers). Axial length, 21.5 miles, (34.95 kilometers).

Maximum basin relief, 1,004 feet, (306.01 meters).

## Geology:

About half Ordovician sedimentary with the remainder consisting of acidic intrusive rocks and a small amount of intermediate intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

## Main River:

Falls and rapids at mouth of river. Approximately 50' (15.24 meters) high and 200' (60.96 meters) long at 30° angle. Partial obstruction. Two sections of falls at mouth were lowered from 10' (3.04 meters) to 6' (1.82 meters) and a run around cut in the top section in 1955.

Falls 0.25 miles (0.4 kilometers) from mouth; 6' (1.82 meters) high, 10' (3.04 meters) long at 75° angle. Partial obstruction. Enlarged pool below falls and blasted large rock at top of falls in 1971.

Falls 0.4 miles (0.64 kilometers) from mouth; 4' (1.21 meters) vertical. Partial obstruction.

Falls 9.25 miles (14.88 kilometers) from mouth; 11' (3.35 meters) high, 35' (10.66 meters) long at 50° angle. Partial obstruction.

Falls 10.4 miles (16.73 kilometers) from mouth; 8' (2.43 meters) high in two drops at 40° and 80° angles. Partial obstruction at low water.

Falls 11 miles (17.69 kilometers) from mouth;

10' (3.04 meters) high, 20' (6.08 meters) long at 80° angle. Passable but difficult. In 1971 rock was removed by blasting at top of falls.



Falls 11.1 (17.85 km) from mouth; 4' (1.21 m) vertical. Partial obstruction at low water.

Falls 11.2 miles (18.02 km) from mouth; 4' (1.21 m) high, 10' (3.04 m) long at 60° angle. Partial obstruction at low water.

In 1957, logging dam, 2 miles (3.21 km) above Indian Pond was removed, also dam at outlet of Indian Pond was removed.

Photographs on file: Nos. 33, 572, 578, 667.

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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# LEGEND

FALLS ——— (

SECTION ——— S

TRIBUTARY ——— T

ROAD ——— - - - - -

TRAIL ——— ······

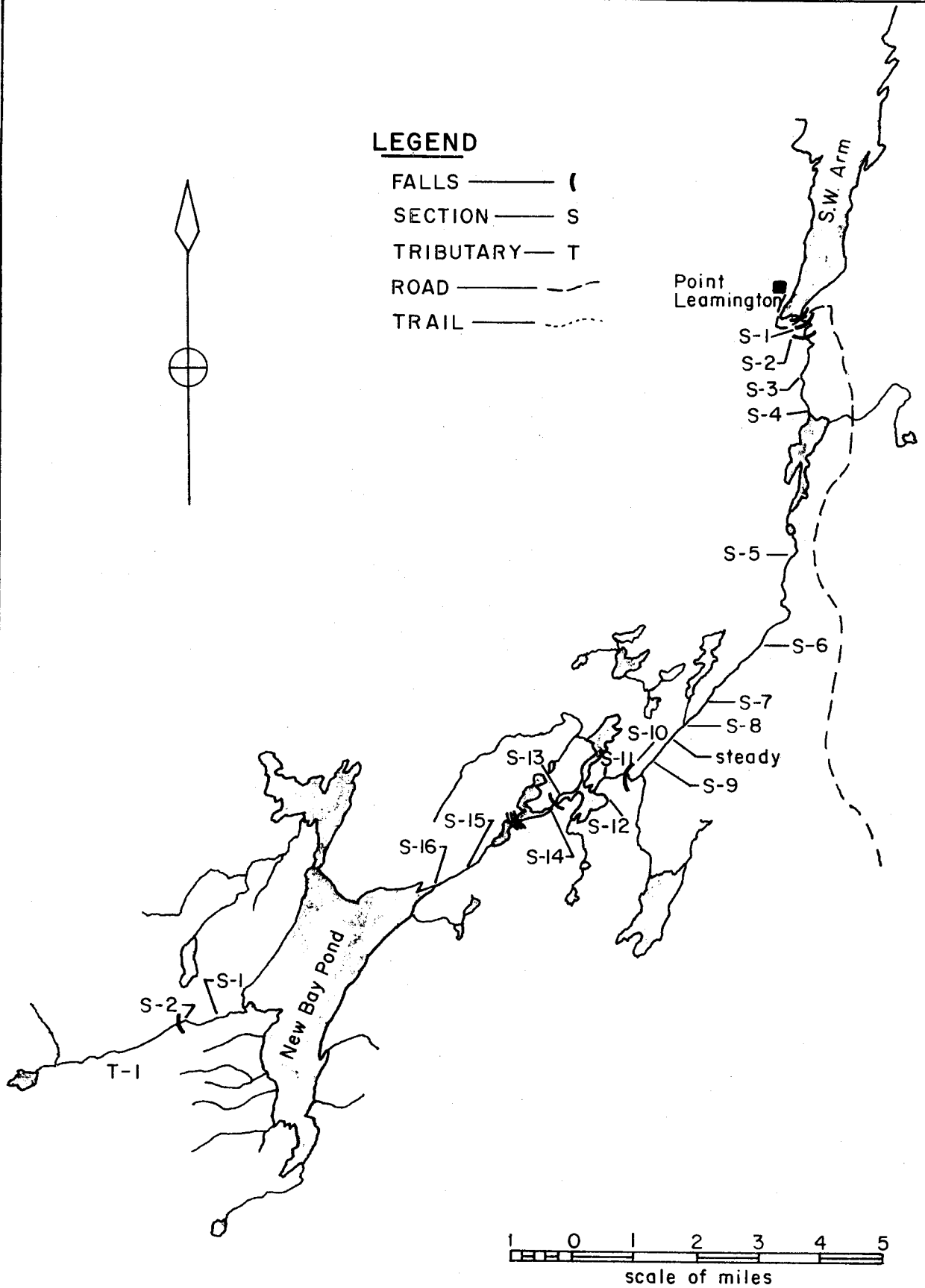


FIG. 12 OUTLINE MAP OF NEW BAY RIVER SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run).

Atlantic salmon angling record - New Bay River (Leamington River).

Year	Rod days	Grilse - Wt.			Salmon - Wt.			Total - Wt.		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	219	116	405	183.9	26	230	104.4	142	635	288.3
1953	356	180	594	269.7	33	196	89.0	213	790	358.7
1954	176	93	343	155.7	9	66	30.0	102	409	185.7
1955	266	192	577	262.0	6	44	20.0	198	621	282.0
1956	-	229	844	383.2	8	59	26.8	237	903	410.0
1957	1006	204	692	314.2	19	151	68.6	223	843	382.8
1958	461	152	598	271.5	29	201	91.3	181	799	362.8
1960	260	77	272	123.5	3	23	10.4	80	295	133.9
1961	296	74	250	113.5	9	68	30.9	83	318	144.4
1962	779	154	573	260.1	1	7	3.2	155	580	263.3
1963	792	168	537	243.8	1	9	4.1	169	546	247.9
1964 <sup>1</sup>	965	238	724	328.7	1	7	3.2	239	731	331.9
1965	1160	242	713	323.7	-	-	-	242	713	323.7
1966	1401	312	896	406.8	1	8	3.6	313	904	410.4
1967	1071	172	574	260.6	-	-	-	172	574	260.6
1968	1299	199	690	313.3	6	45	20.4	205	735	333.7
1969	1068	186	578	262.4	-	-	-	186	578	262.4
1970	1455	277	1094	496.7	-	-	-	277	1094	496.7
1971	986	148	450	204.3	-	-	-	148	450	204.3
1972	634	60	176	79.9	-	-	-	60	176	79.9
1973	1394	126	453	205.9	-	-	-	126	453	205.9
1974										
1975										
1976										
1977										
Mean 1964-68	1179	233	719	326.6	1.6	12	5.4	234	731	332.5
Mean 1969-73	1107	159	550	250.1	-	-	-	159	550	250.1

<sup>1</sup> Angling data, 1964-73, estimated to be 85% accurate. (T. Curran personal communication).

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival, New Bay River.

If smolt production per

100 yd<sup>2</sup> (83.7 m<sup>2</sup>) is:

Smolts produced		1	2	3
		2,835	5,670	8,505
Adult return if sea survival is:	5%	142	284	425
	10%	284	567	851
	15%	425	851	1,276
	20%	567	1,134	1,701
	25%	709	1,418	2,126
	30%	851	1,701	2,551

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 1965-1969	June 12-18	August 22-28	July 20-27 (1968)

Accessibility to Anglers:

Accessible by trails and logging road for several miles upstream from mouth. Also by logging roads (Price Nfld.) from T.C.H. at weigh scales near Bishop's Falls.

Surveys: Biological survey 1969-1970.

Redd Counts: None to date.

References:

Riche, L.G. and Gerald R. Traverse, 1971. River Investigations 1969-1970. Resource Dev. Br., Fisheries & Marine Service, St. John's, Nfld.



## NORTHERN ARM RIVER (Brook)

Location: 49°09'07" N. 55°23'20" W. Bay of Exploits. Notre Dame Bay.

Map Reference: Botwood. 2 E/3 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 69.9 miles<sup>2</sup>, (181.04 km<sup>2</sup>). Mean width, 3.2 miles, (5.14 km).

Perimeter, 48.4 miles, (77.87 km). Axial length, 18.5 miles, (29.76 km).

Maximum basin relief, 1,004 feet, (306.01 m).

## Geology:

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

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Main River: Falls at mile 0.25 (0.4 km)

12' (3.6 m) high, no problem to migrating fish except at low discharge. Falls at mile 12.2 (19.6 km) 15' (4.6 m) causes problem to migrating fish at all water levels. All logging dams removed from this system. In 1971 at upper falls (1/2 mile, (.80 km) below New Bay Road) flow of water was channelized above falls and pocket in falls was enlarged to concentrate water at periods of low flow.

Photographs on file: Nos. 588, 589, 591.

## 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 <sub>3</sub> ppm.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run)

Atlantic salmon angling record - Northern Arm River (Brook).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	13	3	9	4.1	-	-	-	3	9	4.1
1953	203	67	284	128.9	-	-	-	67	284	128.9
1954	44	14	54	24.5	-	-	-	14	54	24.5
1955	183	47	192	87.2	-	-	-	47	192	87.2
1956	-	66	276	125.3	-	-	-	66	276	125.3
1957	163	26	101	45.9	-	-	-	26	101	45.9
1959	213	20	70	31.8	1	6	2.7	21	76	34.5
1960	29	14	60	27.2	-	-	-	14	60	27.2
1961	37	11	37	16.8	-	-	-	11	37	16.8
1962	70	2	9	4.1	-	-	-	2	9	4.1
1963	310	17	67	30.4	-	-	-	17	67	30.4
1964 <sup>1</sup>	371	32	138	62.7	-	-	-	32	138	62.7
1965	321	54	182	82.6	-	-	-	54	182	82.6
1966	567	49	163	74.0	-	-	-	49	163	74.0
1967	1027	102	325	147.6	-	-	-	102	325	147.6
1968	561	119	405	183.9	-	-	-	119	405	183.9
1969	770	209	843	382.7	-	-	-	209	843	382.7
1970	695	109	394	178.9	5	39	17.7	114	433	196.6
1971	235	20	98	44.5	10	70	31.8	30	168	76.3
1972	497	151	473	214.7	18	124	56.3	169	597	271.0
1973	1125	191	705	320.5	-	-	-	191	705	320.5
1974										
1975										
1976										
1977										
Mean 1964-68	569	71	243	110.2	-	-	-	71	243	110.2
Mean 1969-73	664	136	503	228.6	6.6	46.6	21.2	143	549	249.6

<sup>1</sup>Angling data, 1964-73, estimated to be 75% accurate. (T. Curran, personal communication).

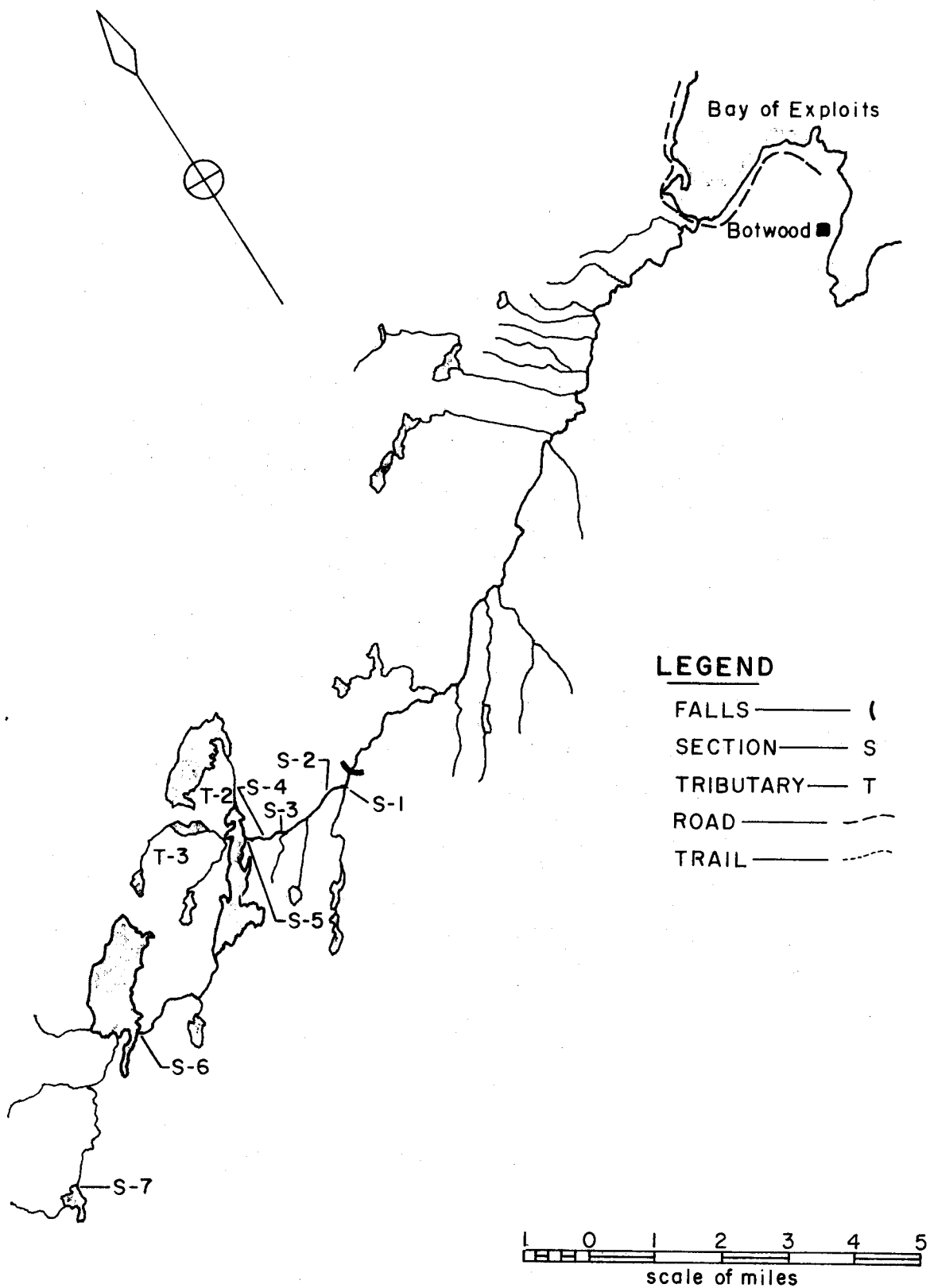


FIG. 13 OUTLINE MAP OF NORTHERN ARM BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED .



POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival, Northern Arm Brook, above second falls.

If smolt production per				
<u>100 yd<sup>2</sup> (83.7 m<sup>2</sup>) is:</u>				
Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>
		646	1,292	1,876
Adult return if sea survival is:	2%	13	26	38
	5%	32	65	94
	10%	65	129	188
	15%	97	184	281
	20%	129	258	375
	25%	162	323	469

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 28-July 4	August 21-27	July 20-27 (1968)

Accessibility to Anglers: Accessible by trails and logging roads for several miles upstream from mouth, and by logging road from T.C.H. at weigh scales near Bishop's Falls.

Surveys: Biological Survey, 1969-1970

Redd Counts: None to date.

References:

- Anonymous. 1943. Nfld. Dept. Nat. Res. Bull. No. 12, St. John's, Newfoundland.
- Riche, L.G. and Gerald R. Traverse, 1971. River Investigations 1969-1970. Resource Dev. Br., Fisheries & Marine Service, St. John's Nfld.

Location: 49°07'15" N. 55°21'58" W. Bay of Exploits.

## CHARACTERISTICS OF DRAINAGE BASIN

Basin area, 72.0 miles<sup>2</sup>, (32.68 km<sup>2</sup>). Mean width, 3.6 miles, (5.79 km).

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

About half Devonian sedimentary with the remainder consisting of acidic intrusive rocks and some Ordovician volcanic.

Barriers to Fish Migration: Minor obstructions near headwaters.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HC0 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea-run) brown trout.

Atlantic salmon angling record - Peters Arm Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	10	3	7	3.2	1	7	3.2	4	14	6.4
1953	194	76	318	144.4	1	7	3.2	77	325	147.6
1954	61	10	45	20.4	-	-	-	10	45	20.4
1955	189	38	152	69.0	-	-	-	38	152	69.0
1956	-	26	103	46.7	-	-	-	26	103	46.7
1957	176	25	101	45.9	1	8	3.6	26	109	49.5
1960	13	4	13	5.9	1	8	3.6	5	21	9.5
1961	70	7	31	14.1	-	-	-	7	31	14.1
1962	151	11	46	20.9	-	-	-	11	46	20.9
1963	265	11	39	17.7	-	-	-	11	39	17.7
1964 <sup>1</sup>	274	49	176	79.9	-	-	-	49	176	79.9
1965	283	30	95	43.1	-	-	-	30	95	43.1
1966	37	42	139	63.1	-	-	-	42	139	63.1
1967	399	26	78	35.4	-	-	-	26	78	35.4
1968	248	28	92	41.8	-	-	-	28	92	41.8
1969	407	50	205	93.1	-	-	-	50	205	93.1
1970	539	32	114	51.8	-	-	-	32	114	51.8
1971	237	13	56	25.4	-	-	-	13	56	25.4
1972	93	15	50	22.7	-	-	-	15	50	22.7
1973	142	13	44	20.	1	8	3.6	14	52	23.6
1974										
1975										
1976										
1977										
Mean 1964-68	248	35	116	52.7	-	-	-	35	116	52.7
Mean 1969-73	284	25	94	42.6	.2	1.6	.7	25	95	43.4

<sup>1</sup>Angling data 1964-73, estimated to be 85% accurate. (T. Curran, 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 9 - 15	August 22 - 28	July 27 - August 3 (1968)

Accessibility to Anglers:

Accessible by trails and old logging roads for several miles  
upstream from mouth.

Surveys: None to date.

Redd Counts: None to date.

References:



## EXPLOITS RIVER

Location: 49° 04' 40" N. 55° 19' 40" W. Bay of Exploits,  
Notre Dame Bay.  
Map Reference: Botwood. 2 E/3 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 4,352.3 miles<sup>2</sup>, (11,272.45 kilometers<sup>2</sup>). Mean width, 29.7 miles, (47.78 kilometers).

Perimeter, 608.1 miles, (978.43 kilometers). Axial length, 147.4 miles, (237.16 kilometers).

Maximum basin relief, 2,150 feet, (655.32 meters).

## Geology:

About half Ordovician volcanic with the remainder consisting of acidic intrusive rocks with small amounts of Ordovician sedimentary, Devonian sedimentary, intermediate intrusive rocks and basic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Total length of all streams in system, including standing water, is 966 to 1,066 miles, (1554.29 to 1,715.19 kilometers). Length of tributaries is 800 to 900 miles, (1,287.2-1,448.1 kilometers).

Main river: From mouth to mile point 70, (112.63 kilometers), (Exploits Dam):

Width range, 550 to 1,500 ft., (167.64-457.2 meters).

Bottom type, fine rubble, boulder and bedrock.

## Spawning Areas:

Main river; From mouth to mile point 70, (112.63 kilometers), (Exploits Dam): Good to excellent spawning conditions from log boom landing to Badger Chute, distance 11.5 miles, (18.50 kilometers), presently inaccessible. Other sections along river bank.

## Barriers to Fish Migration:

Main river: From mouth to mile point 70, (112.63 kilometers), (Exploits Dam): Falls and dam (Bishop's Falls) at mile point 3.4, (5.47 kilometers). Concrete dam 810 ft. (246.88 meters) long (bank to bank). Height of downstream side at east bank, 4 ft., (1.22 meters) at midsection and west bank, 35 ft. (10.66 meters).

Falls, (mostly rapids) 300 ft. (91.44 m) long, 19 ft. (5.79 m) high.

Dam located at top of falls. Passable with difficulty.

Falls, at mile 15.6 (25.10 km), 6 - 10 ft. (1.82-3.04 m) high, 600 to 700 ft. (182.88 - 213.36 m) wide; partial obstruction.

Falls. (Grand Falls) mile 15.8 (25.42 km) first falls, 25-30 ft. (7.62-9.14 m) high, 95 to 110 ft. (28.95-33.52 m) wide; complete obstruction. Second falls 500 ft. (152.40 m), further upstream 20 ft. (6.09 m) high; complete obstruction.

Dam, (Grand Falls dam) at mile 16.0 (25.74 km). Height range of downstream side, 14 to 20 ft. (4.26-6.09 m); length, bank to bank, 850 ft; complete obstruction.

Falls, at mile 16.5 (26.54 km), consists of three parts; partial obstruction. ("Run around" at east bank).

Falls (Goodyear Falls) at mile 17.9 (28.80 km), consists of two parts, west bank falls 4 to 8 ft. (1.21-2.42 m) high; east bank rapids 15 to 20 ft. (4.57-6.1 m) high, 700 ft. (213.36 m) long; partial obstruction.

Log boom landing at mile 19.9 (32.01 km), periodically passable.

Badger Chute Rapids at mile 31.6 (50.84 km), 10 to 12 ft. (3.04-3.65 m) high, 55 ft (16.76 m) long, 110 to 140 ft. (33.52-48.76 m) wide; partial obstruction.

Badger Chute Rapids at mile 31.7 (51.00 km), 15 ft. (4.57 m) high, 500 to 600 ft. (152.40-182.88 m) long, 500 to 600 ft (152.5-183.0 m) wide; partial obstruction.

Falls (Red Indian Falls) at mile 48.4 (77.87 km), 25 to 28 ft (7.62-8.53 m) high, 425 to 450 ft. (129.62-137.25 m) long, 300 to 500 ft. (91.5-152.4 m) wide; partial obstruction.

Dam (Exploits dam at outlet of Red Indian Lake) at mile 69.9 (112.46 km), height of downstream side 28 ft. (8.53 m). Length, bank to bank, 630 ft. (192.02 m); complete obstruction.

Stoney Brook, channel blasted over falls at mouth of river in 1959.

Sandy Brook, two logging dams constructed on this brook by A.N.D. Co. opening left in each dam for future fishway, 1958.

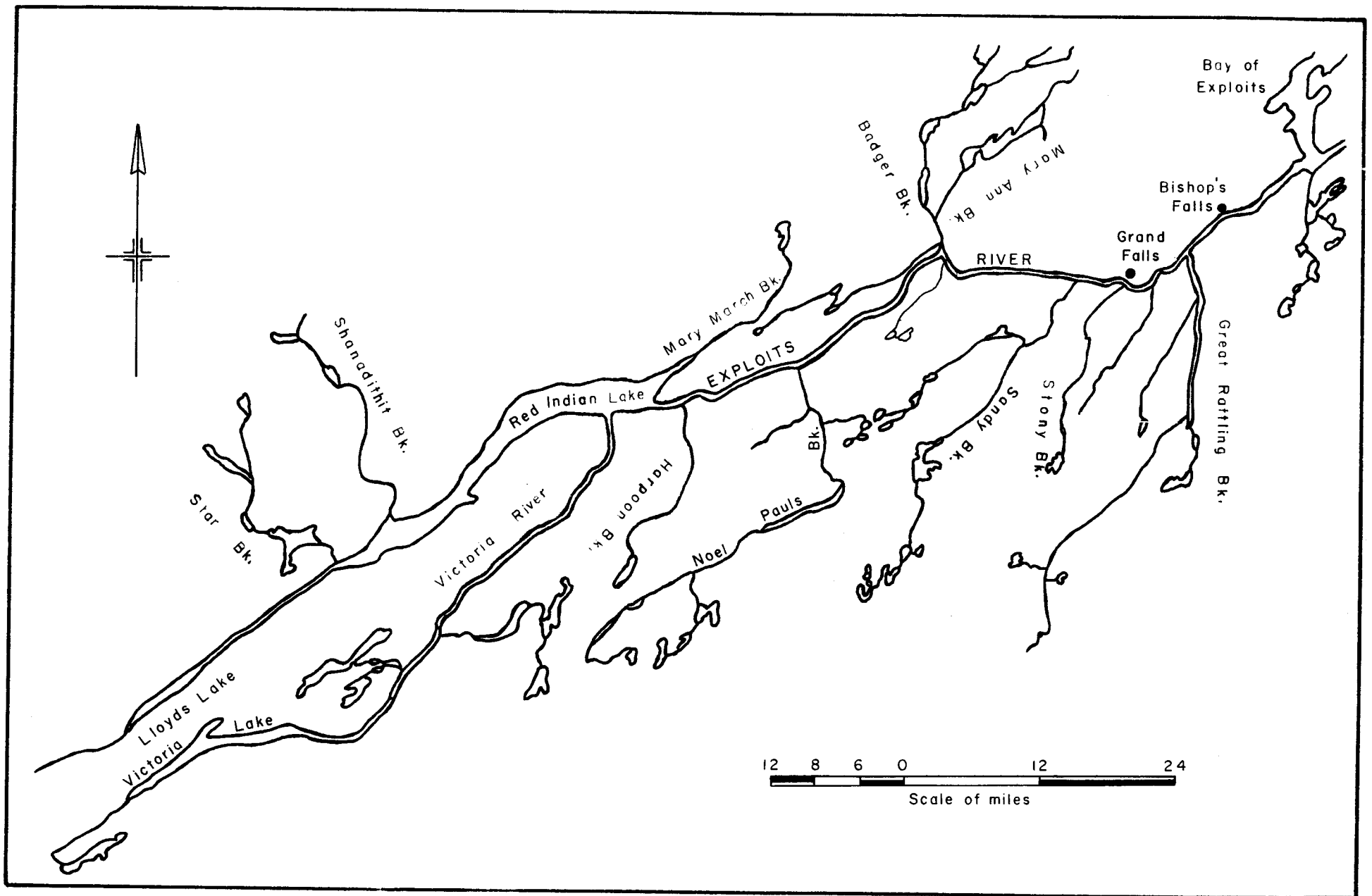


FIG. 14 LOCATION MAP, EXPLOITS RIVER SYSTEM





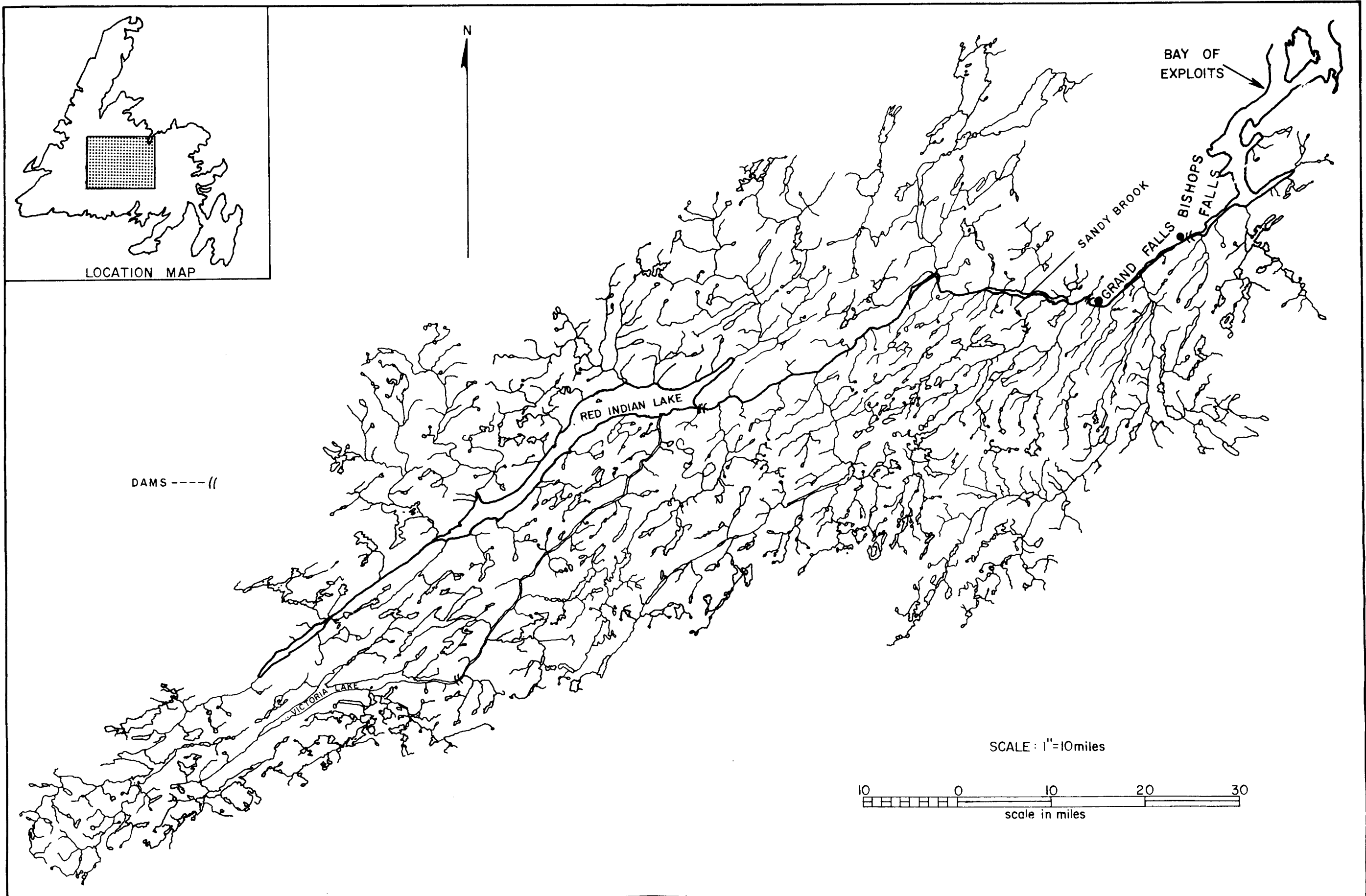


FIG. 15 EXPLOITS RIVER DRAINAGE AREA

Photographs on file: Nos. 20, 23, 51, 80, 135, 170, 172, 174, 202-207, 210, 212, 215, 217-219, 221, 223, 224, 228, 229, 231-234, 241, 243, 254-261, 263, 264, 269, 270, 272-276, 279-281, 283-287, 292, 301, 303, 307, 308, 317, 322, 332-336, 340, 342-344, 351-353, 358, 359, 360-363, 365, 366, 376, 419, 430, 434, 436, 437, 439, 449, 452-454, 456-458, 461-465, 478, 480, 483, 484, 489-492, 494, 497-499, 503, 549, 566, 568, 570, 571, 573, 614, 615, 618-623, 625, 626, 629, 638, 639, 671, 672, 675, 677, 679-681, 726, 729, 730, 733, 738, 761, 815, 816, 818, 819, 827, 881, 912, 913, 918, 919, 931, 933, 937, 942, 947-949, 951, 955-959, 961-963, 965-968, 970, 971, 993, 994, 1062, 1067-1073, 1080, 1085, 1095, 1103, 1104, 1107, 1111, 1115-1117, 1132, 1133, 1135, 1136, 1144, 1147-1152, 1158-1162, 1223-1225, 1225A, 1228.

#### Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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#### Stream Improvements for Fisheries Purposes:

A proposed development program is directed towards establishing Atlantic salmon in the 1,400 mi<sup>2</sup>, (3,626.0 km<sup>2</sup>) (1/3 of drainage area) between Grand Falls and Exploits Dam at outlet of Red Indian Lake. Program includes an artificial spawning channel which was constructed on Noel Paul Brook in 1966. Program also includes construction of a fishway at Bishop's Falls which was completed in 1971. Fishway at Grand Falls to be completed in 1973, construction began in 1972.

Communities in the Drainage Basin:

Bishop's Falls at mile 3 - 4, (4.82-6.43 km), pop. 1961, 4,099.

Grand Falls and Windsor at mile 15, pop. 1961, 6,606.

Badger, at junction of Badger Brook with main river, pop. 1961, 1,036.

Millertown on Red Indian Lake, pop, 1961, 365.

Buchans on Buchans Brook, pop. 1961, 2,463.

Industries and Pollutions in the Drainage Basin:

Pulp and paper mill at Grand Falls, dump waste into the main river.

Log driving on the river, gives rise to organic decomposition of bark and log deposits.

Base metal mining at Buchans, base metal tailings (dissolved zinc and copper) flow into Red Indian Lake.

Sewage from the various communities add soluble materials to the river.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, ouananiche, Arctic char, sticklebacks, eels.

Atlantic salmon angling record - Exploits River System.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	323	107	425	193.0	2	12	5.4	109	437	198.4
1953	806	616	2635	1196.3	45	403	183.0	661	3038	1379.3
1954	1685	131	542	246.1	188	1761	799.5	319	2303	1045.6
1955	1730	530	2083	945.7	21	178	80.0	551	2261	1026.5
1956	-	612	2407	1092.8	123	959	435.4	735	3366	1528.2
1957	1655	697	2892	1313.0	11	81	36.8	708	2973	1349.8
1958	420	477	1892	859.0	81	628	285.1	558	2520	1144.1
1959	717	258	1070	485.8	59	419	190.2	317	1489	676.0
1960	1703	555	2338	1061.5	80	543	246.5	635	2881	1308.0
1961	1127	249	1081	490.8	14	99	44.9	263	1180	535.7
1962	2079	754	2875	1305.3	56	390	177.1	810	3265	1482.4
1963	1840	458	1753	795.9	59	473	214.7	517	2226	1010.6
1964 <sup>1</sup>	4459	1135	4641	2107.0	182	1562	709.1	1317	6203	2816.1
1965	2678	394	1620	735.5	29	240	109.0	423	1860	844.5
1966	3189	697	2849	1293.4	32	262	118.9	729	3111	1412.3
1967	1960	368	1458	661.9	13	97	44.0	381	1555	705.9
1968	3332	848	3306	1500.9	51	297	134.8	899	3603	1635.7
1969	735	414	1902	863.5	101	681	309.2	515	2583	1172.7
1970	1595	429	2075	942.1	35	256	116.2	464	2331	1058.3
1971	1081	515	1980	898.9	9	68	30.9	524	2048	929.8
1972	1419	463	1897	861.2	-	-	-	463	1897	861.2
1973	2352	423	1731	786.8	1	8	3.6	424	1739	790.5
1974										
1975										
1976										
1977										
Mean 1964-68	3124	688	2775	1261.3	61	492	223.6	750	3266	1484.7
Mean 1969-73	1436	449	1917	871.4	29	203	92.1	478	2120	963.5

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

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

Atlantic salmon angling record - Lower Exploits River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1961	1023	241	1053	478.1	14	99	44.9	255	1152	523.0
1962	1354	626	2350	1066.9	48	326	148.0	674	2676	1214.9
1963	1446	417	1600	726.4	52	423	192.0	469	2023	918.4
1964 <sup>1</sup>	3958	964	3927	1782.9	182	1562	709.1	1146	5489	2492.0
1965	2247	336	1375	624.3	27	221	100.3	363	1596	724.6
1966	2472	546	2234	1014.2	32	262	118.9	578	2496	1133.1
1967	1575	319	1256	570.2	13	97	44.0	332	1353	614.2
1968	2432	619	2413	1095.5	30	217	98.5	649	2630	1194.0
1969	688	397	1824	828.1	95	633	287.4	492	2457	1115.5
1970	1311	342	1640	744.6	31	228	103.5	373	1868	848.1
1971	1001	484	1830	830.8	8	60	27.2	492	1890	858.0
1972	1031	399	1659	753.2	-	-	-	399	1659	753.2
1973	1834	312	1345	611.4	1	8	3.6	313	1353	615
1974										
1975										
1976										
1977										
Mean 1964-68	2537	557	2241	1018.6	57	472	214.2	614	2713	1233.1
Mean 1969-73	1173	393	1660	754.5	27	186	84.5	414	1845	838.8

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

## Summary Counting fence data, Stony Brook, Tributary Exploits River

Year	Salmon								Brook Trout	
	Under 6 lbs. (2.7 kilograms)	6 lbs. & over	Smolt	Parr	Kelt	Smelt	Shad	Eels	Adult	Parr
1969	-	1	-							
1970	3	-	2386					3	17	
1971	-	-	787						16	
1972	3	-	-							
1973	-		4157					13	11	

Note: 1969; fence in operation from July 26 - September 27.

1970; 2 fences were operated approximately 0.25 mile (0.40 kilometers) upstream from the mouth. Smolt fence was operated from May 22 - June 25. June 3 - 6 the fence was washed out, only a partial smolt count was obtained for the peak count occurred on the first day of operation.

1971; the peak of the run occurred during the second day (May 19); this would indicate only a partial count was obtained.

1972; trap in operation from July 22 - October 7.

1973; fence in operation May 17 - June 8.

Summary, Fishway Counting Trap Data, Exploits River (Bishop's Falls)

Year	Grilse	Salmon	Total No. Fish
	Under 6 lbs. (2.7 kilograms)	6 lbs. and over	
1959	886	119	1005
1960	1013	157	1170
1961	839	118	957
1962	-	-	-
1963	1203	65	1267
1964	-	-	-
1965	1228	203	1431
1966	829	506	1335
1967	1372	710	2082
1968	-	-	-
1969	979	498	1477
1970	-	-	-
1971	961	300	1261
1972	794	113	907
MEAN	1010	279	1289
1973	No count		
1974			
1975			

Summary, Counting trap data, Bishop Falls Forebay, Exploits River

[illegible]



## Gene Frequency:

Frequency of Tf4 transferrin allele .13

## 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 24-30	August 20-26	July 20-27 (1968)

## Accessibility to Anglers:

Upper Exploits areas fully accessible by high roads and logging roads to complete obstruction. All tributary streams can be reached by old logging roads.

## Surveys:

Biological Survey and Engineering Survey, Bishop's Falls Dam, 1959.  
Stony Brook, engineering survey of falls and mouth of Brook, 1958.  
Grand Falls, engineering survey in 1956 and 1959; crossections of river below falls in 1971.

Goodyear's dam, engineering survey in 1960.

Red Indian Falls, engineering survey in 1960.

Red Indian Lake dam, engineering survey in 1960.

Mill Pond dam, engineering survey in 1960.

Access road constructed to fishway in 1971.

## Redd Counts:

Stony Brook 1969. 121 redds observed in section approximately 2 miles (3.21 km) above the highway.

## References:

Anonymous. Counting Trap and Counting Trap Data 1959-1965. MS report, Fisheries Service, St. John's, Newfoundland.

anonymous. Salmon and Trout Management Program, 1960-1962. MS report, Fisheries Service, St. John's, Newfoundland.

## Gene Frequency:

Number sampled	Tf1 (TFC)	Tf1/Tf4 (TFA/TFC)	Tf4 (TFA)	Frequency of Tf4 (TFA) transferrin allele.
100	76	21	3	.13

## 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 24-30	August 20-26	July 20-27 (1968)

Accessibility to Anglers: Upper Exploits areas fully accessible by high roads and logging roads to complete obstruction. All tributary streams can be reached by old logging roads.

## Surveys:

Biological Survey and Engineering Survey, Bishop's Falls dam in 1959.  
Stony Brook, engineering survey of falls and mouth of Brook in 1958.  
Grand Falls, engineering survey in 1956 and 1959; crossections of river below falls in 1971.

Goodyear's dam, engineering survey in 1960.

Red Indian Falls, engineering survey in 1960.

Red Indian Lake dam, engineering survey in 1960.

Mill Pond dam, engineering survey in 1960.

Access road constructed to fishway in 1971.

## Redd Counts:

Stony Brook 1969, 121 redds observed in section approximately 2 miles (3.21 km) above the highway.

## References:

Anonymus: Counting Trap and Counting Trap Data 1959-1965. MS report, Fisheries Service, St. John's, Newfoundland.

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## RED INDIAN LAKE

Location:

Map Reference:

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 70.3 miles<sup>2</sup>, (182.08 km<sup>2</sup>), (second largest body of water in insular Newfoundland). Mean width, 1.9 miles (3.05 km). Mean length, 20.1 miles (32.34 km). Maximum width, 3.5 miles (5.63 km). Maximum length, 37.5 miles (60.33 km). Average depth, 200 feet. (60.96 m). Maximum depth, 480 feet (146.30 m).

Drainage:

The lake drains an area of 2,200 mi<sup>2</sup> (5,698 km<sup>2</sup>). Main drainages from the south are Victoria and Lloyd's River; from the west Shanandithit Brook, Buchans Brook and Star River, and from the north Mary March Brook.

Geography:

The lake lies in a north east-south west direction at an altitude of 500 feet (152.5 m). It has a regular shoreline.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Rearing areas of selected tributaries are shown below:

	Linear		Width		Rearing Area	
	Miles	Kilometers	Yds.	M.	Sq.yd.	Sq.m.
Shanadidit Brook	3	4.8	100	91.4	528000	441471.6
(tributary)	17	27.4	30	27.3	897600	750501.7
(tributary)	80	128.8	10	9.1	140800	117725.8
Star Brook	28	45.1	30	27.3	1478400	1236120.4
(tributary)	56	90.2	10	9.1	985000	824080.3
Clench Brook	16	25.8	10	9.1	281600	235451.5

	Linear		Width		Rearing Area	
	Miles	Kilometers	Yds.	M.	Sq.yd.	Sq.m.
Buchans Brook	5	8.1	20	18.2	176000	147157.2
(tributary)	44	70.8	10	9.1	774400	647491.6
Mary March Brook	16	25.8	25-100	22.8-91.4	836000	698996.7
(tributary)	100	161.0	10	9.1	1760000	1471571.9
Miscellaneous trib.	65	104.7	5	4.5	572000	478260.9
Lloyd's River	202	325.2	43	39.1	7794900	6517474.9
Victoria River	295	475.0	27	24.6	13264300	11090551.0

#### Barriers to Fish Migration:

Star Brook; series of 5 falls within one mile of mouth, totally impassable to fish.

Shanadidit Brook; some rapids and falls indicated on the smaller tributaries.

Clench Brook; series of falls near mouth completely obstruct river to migrating fish. Falls considered very severe.

Buchans Brook; flows on this Brook during summer may not be great enough to allow migrating fish to pass.

The entire system is inaccessible to anadromous runs of fish because of Red Indian Dam.

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 ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
5.6	4.0	7.0	1.9	2.5	21.0	1.9	4.88

#### Water Chemistry:

pH 6.5 (1961). Total dissolved solids: 26.7 and 86.0, (1961).

## Water Temperature:

76°, August (1961).

## Pollution:

The American Smelting and Refining Company operates a base metal mine and concentrating mill at Buchans, 3.5 miles (5.63 km) west of Red Indian Lake. Tailings and mill effluent, as well as townsite sewage are emptied into Buchans Brook which flows into the lake.

FISH POPULATIONS

Species Present: Ouananiche, brook trout.

No angling data available on this lake.

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: By road from Trans-Canada Highway at Badger.

## Surveys:

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.

Mercer, K.M. 1974. Resource Potential of the Exploits River for Atlantic salmon. Internal Report 1-74-3, Fisheries Service, St. John's, Newfoundland.



## LLOYD'S RIVER

Location: 48°32'50" N. 57°13'25" W.

Map Reference: Star Lake. 12 A/11 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area 184 miles<sup>2</sup>, (476.6. km<sup>2</sup>).

## Geology:

Sedimentary and volcanic rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Main river drains into upper end of Red Indian Lake, draining a large area of the Annieopsquotch Mountains.

Main River, from mouth to mile 15 (24.2 km), average width 100 yds. (91.4 m), estimated 2,640,000 sq.yds. (2,207,357.8 sq.m.) of rearing area.

Lloyd's River, tributary #1, mouth to mile 16 (28.8 km), average width 6 yds. (5.5 m), estimated 168,900 sq.yd. (141,220.7 sq.m). of rearing area.

Tributary #2, mouth to mile 4 (6.4 km), average width 100 yds. (91.4 m), estimated 704,000 sq.yd. (588,628.8 sq.m) of rearing area.

Main river. Lloyd's Lake to King George IV Lake, 20 miles (32.2 km) average width 50 yds. (45.7 m); estimated 1,408,000 sq.yd. (1,177,257.5 sq.m) of rearing area.

Tributary #3, mouth to mile 50 (80.5 km), average width 10 yds. (9.1 m), estimated rearing area of 880,000 sq.yd. (735,785.0 sq.m).

King George IV Lake to 29 miles (46.7 km) upstream, average width 25-30 yds (22.9-27.4 m), estimated rearing area of 1,276,000 sq.yd. (1,066,889.6 sq.m).

Estimated Atlantic salmon smolt production and adult sea survival, Lloyd's River.

If smolt production per

100 yd<sup>2</sup> (83.7 m<sup>2</sup>) is:

Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>
		77,949	155,898	233,847
Adult return if sea survival is:	5%	3,898	7,795	11,694
	10%	7,795	15,590	23,385
	15%	11,694	23,385	35,082
	20%	15,590	31,180	46,770
	25%	19,487	38,975	58,482

Gene Frequency: Not completed

Timing of Run:

Year

First fish

Last fish

Week of  
peak run

Accessibility to Anglers:

Surveys:

Redd Counts:

References:

Mercer, K.M. 1974. Resource Potential of the Exploits River for Atlantic salmon. Internal Report 1-74-3, Fisheries Service, St. John's, Newfoundland.

Tributary #4, mouth to mile 68 (109.5 km), average width 6 yds.  
(5.5 m), estimated rearing area of 718,000 sq.yd. (600,334.4 sq.m).

Photographs on file; Nos. 457, 458, 614, 615, 618, 619, 621-623, 625, 626,  
994, 1148, 1158.

Water Quality Data, Sample Collected

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

Species Present: Brook trout, landlocked Atlantic salmon.

No angling data available on this stream.

Miscellaneous Information:

The upper area of this watershed was scheduled to be diverted for hydroelectrical use, but plans were cancelled at the last moment. Logging has recently been carried out around the watershed area, and there is some concern within the Department about the methods being used.

There are no serious obstructions on the main river or larger tributaries, but many of the smaller tributaries cascade down over steep mountains, making them totally impassable.

This river is totally inaccessible to Atlantic salmon, due to the obstructions on the lower Exploits and Red Indian Lake Dam.



## VICTORIA RIVER

Location: 48°44'40" N. 56°40'50" W.

Map Reference: Lake Ambrose 2 A/10 East

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area 337 miles<sup>2</sup> (872.8 km<sup>2</sup>).

## Geology:

Ordovician volcanic rocks, granites and granodiorites.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Lower Victoria River, mouth to mile 40 (64.4 km) average width 100 yds. (91.4 m), estimated 7,004,000 sq.yds. (5,856,187.2 sq.m) of rearing area.

Tributary #1, mouth to mile 24 (38.6 km), average width 5 yds. (4.6 m), estimated 21,100 sq.yd. (17,642.1 sq.m) of rearing area.

Quinn Brook, (tributary) mouth to mile 20 (32.2 km), average width 16 yds. (14.6 m), estimated 563,200 sq.yd. (470,903.0 sq.m) of rearing area.

Rodeross Brook (tributary) mouth to mile 18 (29.0 km), average width 10 yds. (9.1 m), estimated 316,800 sq.yd. (264,882.0 sq.m) of rearing area.

Long Brook (tributary) mouth to mile 1 (1.6 km), average width 15 yds (14.6 m), estimated 26,400 sq.yd. (22,073.6 sq.m) of rearing area.

Long Brook Tributary, mouth to mile 7 (11.3 km), average width 5 yds. (4.6 m), estimated rearing area of 61,600 sq.yd. (51,505.0 sq.m).

Bobby's Brook (tributary), mouth to mile 5 (8.1 km), average width 5 yds. (4.6 m), estimated 44,000 sq.yd. (36,789.3 sq.m) of rearing area.

Hydro dam 40 miles (64.4 km) from mouth diverts remainder of river and Victoria Lake to another watershed for reservoir. It is estimated that 5,227,200 sq.yd. (4,370,568.5 sq.m) of rearing area are above the dam.

Photographs on file; Nos.

Water Quality Data, Sample Collected August, September 1972  
(6 samples)

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
5.87	2.5	7.0	3.85	2.5	15.0	1.3	3.1

Species Present: Brook trout, landlocked Atlantic salmon, Arctic char, three spined stickleback.

No angling data available on this stream.

Miscellaneous Information:

This entire river is inaccessible to Atlantic salmon due to control dam at Red Indian Lake where it enter the Exploits River. Logging has been carried out on this river leaving many areas bulldozed and cut to the water's edge.

Victoria Lake, before the diversion had a maximum length of 18.5 miles (29.8 km), a mean width of .89 miles (1.4 km) and an area of 16.4 miles<sup>2</sup> (42.5 km<sup>2</sup>).

Estimated Atlantic salmon smolt production and adult sea survival, Victoria River, below hydro dam.

If smolt production per

100 yd<sup>2</sup> (83.7 m<sup>2</sup>) is:

Smolts produced

1  
80,371

2  
160,742

3  
241,113

Adult return if sea survival is:	5%	4,019	8,037	12,055
	10%	8,037	16,074	24,111
	15%	12,055	24,111	36,165
	20%	16,074	32,148	48,222
	25%	20,092	40,186	60,278

Gene Frequency: Not completed.

Timing of Run:

Year

First fish

Last fish

Week of  
peak run

Accessibility to Anglers:

Surveys:

Redd Counts:

References:

Mercer, K.M. 1974. Resource Potential of the Exploits River for Atlantic salmon. Internal Report 1-74-3, Fisheries Service, St. John's, Newfoundland.

Pippy, J.H.C. 1966. A Biological and Ecological Study of the Salmonidae of Victoria Lake. MS report, Fisheries Service, St. John's, Newfoundland.





## GREAT RATTLING BROOK

Location: 58° 58' 08" N. 55° 32' 43" W.

Map Reference: 2 D/13 East Half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Geology:

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Spawning Areas:

One of the major spawning areas is Tote Brook, (Code # 779-12-19).

Barriers to Fish Migration:

Main River:

Falls and dam at mile point 5 (8.04 kilometers), falls 19' (5.8 meters) high, dam 12' (3.7 meters) high. Accessible by fishway which was completed in 1959. Fishway made approximately 522 sq. miles (1351 sq. kilometers) accessible to salmon. Dam partially removed.

LeDrew's Dam, South Branch, fishway installed by A.N.D. Co. - 1964.

Counting trap installed 1964. Dam has since been removed.

Tote Lake Dam Fishway, Tote Brook, constructed by A.N.D. Co. in 1959, has since been removed. Cannings Lake Dam, Tote Brook, removed by A.N.D. Co. in 1964.

Upper Twin Lake Dam, removed by A.N.D. Co. in 1964. Lower Twin Lake Dam, removed by A.N.D. Co. in 1964. Nugents Lake Dams, Three Brooks, four dams removed by A.N.D. Co. in 1964.

Eagle Lake Dam, Three Brooks, removed by A.N.D. Co. in 1964.

Mud Pond Dam, Three Brooks, removed by A.N.D. Co. in 1964.

Peters Lake Dam, Three Brooks, removed by A.N.D. Co. in 1964.

Carey Lake Dam, Three Brooks, removed by A.N.D. Co. in 1964.

Three Brooks Steady Dam, Three Brooks, removed by A.N.D. in 1964.

Loan Lake Dam, Three Brooks, removed by A.N.D. Co. in 1964.

Luffs Lake Dam, Three Brooks, removed by A.N.D. Co. in 1964.

New Years Lake Dam, Three Brooks, removed by A.N.D. Co. in 1964.

Steve's Lake Dam, Crooked Knife Brook, removed by A.N.D. in 1964.  
 Moses Lake Dam, Crooked Knife Brook, removed by A.N.D. Co. in 1964.  
 Curlew's Lake Dam, Crooked Knife Brook, removed by A.N.D. Co. in 1964.

Long Lake Dam, Crooked Knife Brook, removed by A.N.D. Co. in 1964.  
 Lee's Lake Dam, Crooked Knife Brook, removed by A.N.D. Co. in 1964.  
 Harvey's Falls, natural run around improved by blasting around 12' (3.64 m) falls in 1957.

Salmon Falls, channel blasted around falls in 1959.

North Branch, Camp 45 dam fishway, installed by A.N.D. Co. in 1964; counting trap installed in 1964; has since been removed.

Camp One Lake dam fishway, chain link fence built around fishway in 1959. Wooden dam through dam rebuilt in 1962. Fishway repaired in 1971. 1972 will be the last year fishway will be operating over old dam. New fishway and control dam to be constructed in 1973.

Photographs on file; Nos. 52, 170, 340, 344, 366, 419, 461-465, 503, 566, 738, 957, 959, 966, 967, 172, 174, 301, 303, 307, 308, 317, 332, 335, 336, 342, 343, 353, 430, 1073, 1144, 1161, 1225A.

Water Quality Data, Sample Collected June, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.3	<1.0	7.0	.8	2.0	17	1.5	

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and Sea-run) eels, sticklebacks, ouananiche.

## Atlantic salmon angling record - Great Rattling Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1961	No report	-	-	-	-	-	-	-	-	-
1962	356	83	324	147.1	3	28	12.7	86	352	159.8
1963	204	34	127	57.7	3	22	10.0	37	149	67.7
1964 <sup>1</sup>	501	171	714	324.2	-	-	-	171	714	324.2
1965	289	46	189	85.8	-	-	-	46	189	85.8
1966	681	136	561	254.7	-	-	-	136	561	254.7
1967	385	49	202	91.7	-	-	-	49	202	91.7
1968	900	229	893	405.4	21	80	36.3	250	973	441.7
1969	47	17	78	35.4	6	48	21.8	23	126	57.2
1970	284	87	435	197.5	4	28	12.7	91	463	210.2
1971	80	31	150	68.1	1	8	3.6	32	158	71.7
1972	388	64	238	108.1	-	-	-	64	238	108.1
1973	497	109	379	172.3	-	-	-	109	379	172.3
1974										
1975										
1976										
1977										
Mean 1964-68	551	126	512	232.6	4.2	16	7.3	130	528	239.9
Mean 1969-73	259	62	256	116.4	2.2	16.8	7.6	64	273	124.0

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

## Miscellaneous Information:

From 1957-1964, salmon were transferred to this river from Rattling Brook, INDEX #E-780.

Summary, Counting Fence, Tote Brook (Trib. of Great Rattling Brook)

Year	Salmon								Brook Trout	
	Under 6 lbs. (2.7 kilograms)	6 lbs. & over	Smolt	Parr	Kelt	Smelt	Shad	Eels	Adult	Parr
1960	157	44	-	-	-	-	-	-	-	-
1961	8	3	1122	947	-	-	-	17	302	-
1962	167	13	3361	666	-	-	-	136	71	-
1963	91	8	5980	512	-	-	-	41	95	-
<p>Note: 1961; fence in operation from June 6/61 - June 21/61.</p> <p>1963; fence in operation from May 24/63 - June 27/63.</p>										

Summary, Counting Fence, Three Brooks (Trib. of Great Rattling Brook)

[illegible]

Summary, Fishway Counting Trap Data, Great Rattling Brook

Year	Grilse	Salmon	Total No. Fish
	Under 6 lbs. (2.7 kilometers)	6 lbs. and over	
1960	94	9	103
1961	319	53	372
1962	1037	31	1068
1963	491	37	528
1964	1752	116	1868
1965	587	190	777
1966	942	470	1412
1967	822	382	1204
1968	1334	687	2021
1969	892	290	1182
1970	1023	199	1222
1971	902	261	1163
1972	495	234	729
MEAN	822	227	1049
1973	No count		
1974			
1975			

Summary, no. salmon transferred from Rattling Brook to Great Rattling Brook

Year	No. of adults transferred
1957	627
1958	808
1959	336
1960	682
1961	254
1962	144
1963	50
1964	18
Total	2919

Gene Frequency: Not completed.

Timing of Run: (Based on fishway counting trap statistics)

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1968-71	July 1 - 6	September 23-26	July 25 - 31

Accessibility to Anglers: By Bay d'Espoir Road, and by logging roads near headwaters.

#### Surveys:

Engineering survey of Ledrew's Dam, South Branch in 1962.  
 Engineering survey of Camp 45 Dam, North Branch in 1962.  
 Engineering survey of Hynes Lake Dam, Tote Brook, dams reported out, - 1966.  
 Engineering survey of Cannings Dam, Tote Brook, dam reported out, - 1966.

#### Redd Counts:

1960; 100 redds observed on tributary joining Burnt Lake River from Sunday Lake.  
 10 - 15 redds observed on section flowing out of Crowe Lake.  
 3 redds observed at mouth of Tote Brook.

#### References:

- Mercer, K.M. 1959. The Rattling Brook Adult Salmon Transfer, 1956-58. MS report, Fisheries Service, St. John's, Newfoundland.
- Ducharme, L.J.A. 1962. Rattling Brook Salmon Transfer Project 1961. MS report, Fisheries Service, St. John's, Newfoundland.
- Pratt, J.D. 1963. Rattling Brook Salmon Transfer Project Smolt Enumeration, 1962. MS report, Fisheries Service, St. John's, Newfoundland.
- Sturge, C. 1966. The Rattling Brook Transfer 1957-1965. MS report, Fisheries Service, St. John's, Newfoundland.
- Mercer, K.M. 1967. A Preliminary Biological Survey of four Exploits River tributaries. MS report, Fisheries Service, St. John's, Newfoundland.

## BADGER BROOK (Tributary of Exploits River)

Location: 48°58'30" N. 56°02'00" W.

Map Reference: Flows into Exploits River 30 miles (48.27 km) downstream from outlet of Red Indian Lake.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Drainage Area: 275 miles<sup>2</sup>, (712.25 km<sup>2</sup>).

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

The main river is 15 linear miles, (24.13 km); feeder streams 40 linear miles, (64.36 km); standing water, 45 miles<sup>2</sup> (116.55 km<sup>2</sup>).

## Channel Characteristics:

Main River: From mouth upstream to Joes Lake, river is wide and mainly slow moving. Fast water section located within one mile (1.61 km) of outlet of Joes Lake.

## Bottom Types:

The bottom, generally rock and mud, however, in some areas bark deposits cover bottom to depth of 4' (1.21 m).

## Rearing Area:

There are 1,432,800 sq.yd. (1,197,993.3 sq.m) of rearing area.

## Barriers to Fish Migration:

Dam at outlet of Joes Lake periodically in use causing obstruction.

Photographs on file: Nos. 205, 215, 217, 218, 815, 951, 955.

## Water Quality Data, Sample Collected

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

Species Present: Brook trout, ouananiche.

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: By Trans-Canada Highway, trails and boats.

Surveys: None to date.

Redd Counts: None to date.

References:



## MARY ANN BROOK (Tributary of Exploits River)

Location: 49°00'45" N. 56°02'15" W.

Map Reference:

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Drainage area 70 miles<sup>2</sup>, (181.30 km<sup>2</sup>).

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Stream length not including standing water 10 miles, (16.09 km);

Tributaries 22 miles, (35.39 km);

Intermittent streams 18 miles, (28.96 km).

Drop in elevation from Mary Ann Lake to mouth, 150' (45.72 m).

## Channel Characteristics:

Main River: From mouth to mile 3 (4.82 km), stream meanders continually. Bottom is generally mud and sand with some short areas of gravel. From mile 3 (4.82 km) to mile 6 (9.64 km), velocity medium.

## Bottom types:

Gravel and Rubble.

Depth range 6 to 12 inches, (0.15-0.30 m). Several rapid areas in this area. From mile 6, (9.65 km) to Mary Ann Lake (Aerial survey). Velocity; fast, bottom types, rubble, bedrock, boulder.

## Spawning Areas:

On main river, not surveyed. Mary Ann Brook (tributary), 138 (100 yd<sup>2</sup> units) (91.44 m<sup>2</sup>), of good gravel, and 391 (100 yd<sup>2</sup> units) (91.44 m<sup>2</sup>) of medium condition gravel.

## Rearing Area:

There are 448,700 yd<sup>2</sup> (375,167.2 m<sup>2</sup>) of rearing area.

Barriers to Fish Migration: Main River: Dam; exit Joes Lake, partial obstruction. (gates removed); has since been removed.

Dam, exit Rocky Lake, partial obstruction. (gates removed); has since been removed.

Dam, outlet Mary Ann Lake partial obstruction; has since been removed.

Photographs on file: Nos. 219, 912, 1080, 827.

## 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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Brook trout, ouananiche.

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 RED INDIAN BROOK (Tributary of Exploits River)

Location: 48° 58' 25" N. 56° 02' 20" W.

This tributary drains in a NE direction into the Exploits near South end of Badger which is 30 miles (48.27 kilometers), downstream from outlet of Red Indian Lake.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Drainage Area: 50 sq. miles, (80.45 sq. kilometers).

CHARACTERISTICS OF STREAMS TO DRAINAGE BASIN

Main Stream Length: 12 linear miles, (19.30 kilometers); Tributaries 16 linear miles, (25.74 kilometers). Intermittent streams 9 linear miles, (14.48 kilometers).

Standing water 2 sq. miles, (5.18 sq. kilometers).

## Channel Characteristics:

Main River: From Little Red Indian Pond to the mouth there is a drop in elevation of 220 feet, (67.05 meters), the descent being on the whole, gradual. There are several rapid areas. The river width varies from 60 feet to 20 feet, (18.30-6.09 meters). In the section from Little Red Indian Pond downstream to next pond - the flow is slow because of grass and bog interference, and this also causes muddy water in places.

Above Little Red Indian Pond: 10-15 ft., (3.04-4.57 meters), in width with 50% gravel. Riffle areas in lower section and slow moving water in upper section.

Tributary at 7.5 mile, (12.06 kilometers), from mouth contains 9 linear miles (14.48 kilometers), of stream, contributes 1/3 volume of stream at point of entry. From mouth upstream flow fast over rubble and boulder bottom. Above this, river is 10-20', (3.04-6.08 meters), wide and flows for short stretches between ponds and steadies.

## Barriers to Fish Migration: Logging dams are the only obstructions

Dam #1 - 9.5 miles, (15.28 kilometers), upstream from mouth on outlet of 1st pond - Total obstruction.

Dam #2 - 10.3 miles, (16.57 kilometers), upstream from mouth at outlet of Cox's Lake - Partial obstruction.

Dam #3 - Outlet of Little Sand Lake, mile point 12, (19.30 kilometers), Total obstruction.

Dam #4 - 1.5 miles, (2.41 km) upstream from mouth of tributary - total obstruction.

Dam #5 - 2.5 miles, (4.02 km) upstream from mouth of tributary - partial obstruction believed.

Photographs on file; Nos. 942, 261.

Water Quality Data, Sample Collected

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

Spawning Areas:

Mostly in upstream area - approximately 1/2 mile, (0.80 km) (between Red Indian Pond and Little Sandy Pond).

Tributaries have good bottom for spawning but during summer would have water level lowered, reducing available spawning gravel.

Considering both the stream and its tributaries, approximately 134.5 yd<sup>2</sup> (112.57 m<sup>2</sup>) units are good spawning areas - 394.5 yd<sup>2</sup>, (330.19 m<sup>2</sup>), are medium spawning areas, and 2,791. yd<sup>2</sup>, (2,336.06 m<sup>2</sup>), of rearing area.

FISH POPULATIONS

Species Present: Eastern brook trout, ouananiche.

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:

Mercer, K.M. 1967. A Preliminary Biological Survey of Four Exploits River Tributaries. MS report, Fisheries Service, St. John's, Newfoundland.



## NOEL PAUL BROOK (Tributary of Exploits River)

Location: 48° 49' 13" N. 56° 18' 35" W.

Flows into Exploits River fourteen miles (22.52 kilometers), downstream from outlet of Red Indian Lake.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 410 miles<sup>2</sup>, (106.19 kilometers<sup>2</sup>). (Approx. one-tenth of the whole Exploits drainage system).

## Vegetational Cover:

The soil is one of the most fertile on the Island of Newfoundland. Thick tree growth and tall grass cover the greater part of the surrounding country and extends down to the shoreline.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

The main river is 55 miles, (88.49 kilometers), long (including standing water) and feeding into it are 20 streams averaging 5 - 10 miles, (8.04 - 16.08 kilometers), long for a total of 120 tributary miles.

## Main river:

From mouth to Lake Douglas; 3/4 distance upstream the river is wide and has a medium velocity flow. From Lake Douglas upstream, river is narrow with a somewhat fast velocity flow. Width range - 100 to 400 ft. - (est.), (30.48 - 122.0 meters).

## Spawning Areas:

Main river below John Pauls Dam 1757 (100 sq. yd. units) (83.7 sq. meter units), of good condition gravel and 335 (100 sq. yd. units), (83.7 sq. meter units), of medium condition gravel.

Main river above John Pauls Dam 248 (100 sq. yd. units), (83.7 sq. meter units), of good condition gravel and 563 (100 sq. yd. units), (83.7 sq. meter units), of medium condition gravel.

## Barriers to Fish Migration:

## Main river:

Dam, at outlet of John Paul Steady height downstream side, 20 ft. (6.09 meters), length bank to bank 250 ft. (76.20 meters), number of gates 4. No obstruction when gates are opened. Dam was removed by attrition prior to 1974.

Falls (Pine Falls) mile 21, (33.78 km), the falls is a series of drops with an overall height of 30 feet, (9.14 m), and a length of 150 feet, (45.72 m). The highest drop is 5 feet, (1.52 m), considered passable to Atlantic salmon.

Dam, 5-1/2 miles, (8.84 km), upstream from Pine Falls. An abandoned dam is a state of disrepair, a partial obstruction.

Dam, at outlet of Haven Steady, presently passable, however, the pileup of debris at dam face could cause it to become a barrier to fish.

Dam, outlet of Lake Douglas, not presently in use, one gate is missing, no obstruction.

Falls, approximately 1/2 mile, (0.80 km), upstream from Lake Douglas. This is a series of falls and rapids with a length of 250 feet, (76.2 m). Lower fall - 10 feet, (3.04 M), high 70° angle.

2nd Fall - Island at centre forming 6 feet, (1.82 m), drop on right and 15 feet, (5.71 m), drop on left side.

Rapids, turbulent rapids and low falls, flowing through 121 feet (36.88 m), gorge.

3rd Fall - Sloping 15 feet, (5.71 m), high.

4th Fall - 12 feet, (3.64 m), high almost vertical, complete obstruction.

5th Fall - 150 feet, (45.72 m) above 4th Falls, 6 to 8 feet, (1.82 - 2.43 m), high, pasable.

Dam, outlet Snowshoe Pond, a complete obstruction when gates closed.

### Tributary

Tributary obstructions are almost wholly limited to unused logging dams, which are in a generally decaying condition.

Many prohibit free fish movement.

Photographs on file: Nos. 23, 135, 376, 434, 436, 439, 478, 480, 484, 489-492, 494, 497, 639, 672, 677, 681, 961-963, 965, 970, 991, 1095, 1115, 1135, 1149, 1150, 1151, 1160, 1228, 254-259, 629, 638, 816-818, 933, 937, 947, 948, 971, 1062, 1067-1072, 1107, 1111, 1116, 1117, 1133, 1152.



## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Brook trout, ouananiche and threespined stickleback.

No angling data available on this stream.

## Miscellaneous Information:

In relation to a spawning channel which has been established on this river, survey have revealed the following conditions; this river has characteristics indicative of an excellent Atlantic salmon spawning and rearing stream.

No logging operations are contemplated for at least 20 years. A total of 20 feeder streams would be available as good rearing areas. Only one natural total obstruction on the main river.

It is estimated that the system is capable of supporting 3,000 adult salmon annually.

## Summary. Counting Fence Data, Veneer Brook, Tributary of Noel Paul.

Year	Salmon		Smolt	Parr	Kelt	Smelt	Shad	Eels	Brook trout	
	Under 6 lbs. (2.7 kilograms)	6 lbs. and over							Adult	Parr
1969	—	—	—	39	—	—	—	—	—	—
1970	—	—	3	777	—	—	—	—	30	—
1971	—	—	—	65	—	—	—	—	6	—
1972	—	—	4	115	—	—	—	—	48	—
1973	—	—	—	426	—	—	—	—	54	—

## Summary, Counting Fence Data, Lower Noel Paul.

Year	Salmon		Smolt	Parr	Kelt	Smelt	Shad	Eels	Brook trout	
	Under 6 lbs. (2.7 kilograms)	6 lbs. and over							Adult	Parr
1970			1000							
1971			4400							
1972			468							
1973			8400	1400	10				30	

Note: 1970, 1971, a total count was not obtained; the numbers of smolt are the estimated runs.

## Gene Frequency:

Frequency of Tf4 Transferrin Allele in landlock population 0.81

## 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: By Bay d'Espoir Road and logging roads.

## Surveys:

Engineering survey of water line of falls above Lake Douglas in 1966.

Engineering survey of John Paul Steady dam in 1966.

Engineering survey of Pine Falls in 1966.

Engineering survey of channel sites above Mill Pond Steady in 1965.

Redd Counts: None to date.

## References:

Mercer, K.M. 1967. A Preliminary Biological Survey of Four Exploits River Tributaries. MS report, Fisheries Service, St. John's, Newfoundland.

Pond, Stephen. 1968. A Report on the Noel Paul's Brook Electrofishing Census, 1966-1967. MS report, Fisheries Service, St. John's, Newfoundland.

## HARPOON BROOK (Tributary of Exploits River)

Location: 48°46'00" N. 56°32'55" W.

This tributary drains into the Exploits River 2.5 mile (4.02 km), downstream from the outlet of Red Indian Lake.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Drainage Area: 165 miles<sup>2</sup> (265.48 km<sup>2</sup>).

Other Topographical Information: Length of main river 30 miles (48.27 km); tributary length - 24 miles (38.61 km);

Intermittent streams - 12 miles (19.30 km); standing water 10 miles<sup>2</sup> (25.90 km<sup>2</sup>).

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

(a) Mouth - 5 mile steady (8.04 km), varies from 50-80' (15.24-24.38 m), in width and is approximately 6" (.15 m) in depth.

(These are not normal readings as dam gates were closed when readings made). A large portion of bottom is of bedrock and boulder constituency, although upstream rubble is present.

Along stream bottom in the 1/2 mile (0.80 km), before the dam, bark was present along with some pulpwood. Pulpwood also present near shore. This area is wider than the other and is about 4 ft. (1.21 m) in depth, with pools being limited.

(b) Mile 5 (8.04 km), Junction Harpoon Brook and East Brook Stream width varies from 20-70 ft. (6.09-21.33 m) in width, but averages about 30-50' (9.14-15.24 m). For first three miles (4.82 km) bottom contains gravel and small rubble, with the last two miles (3.21 km) having a predominance of rubble and boulder. This section has a faster flow. The first section has a good spawning potential with a depth ranging from 1/2" to 1 ft. (0.1-0.3 m). The latter section has several possible spawning areas, for salmon.

(c) Junction East Brook - Outlet Rogerson Lake. 9 miles (14.48 km) in length, with a width from 100-120 ft. (30.48-36.57 m), in the quiet sections, and a width of 25-50 ft. (7.62-15.24 m), in the medium-fast flowing areas. Water depths from 1/2-2 ft. (0.15-.60 m) with 3-4 ft. (.91-1.21 m), in some areas. First five miles (8.04 km), predominantly boulder composition in bottom. Some rubble areas

present, but on the whole, this section has little spawning and rearing area.

N.B. Throughout the brook, shade from overhanging trees provides good protection for the fish.

Spawning and Rearing Areas:

Estimated that 24 miles, (38.61 km) of stream would be suitable rearing areas, for a total of 5,280 (100 yd<sup>2</sup>), 83.7 m<sup>2</sup>), units) and 390 (100 yd<sup>2</sup> units) (83.7 m<sup>2</sup>), of suitable spawning area.

### Barriers to Fish Migration:

Intensive logging activity has resulted in presence of logging dams.

- (1) Outlet of 5 mile, (8.04 km), steady - with gates closed - a total obstruction.
- (2) 12-13 miles, (19.30-22.52 km), upstream from mouth - an abandoned dam, filled with debris - total obstruction.
- (3) 19 miles, (30.57km), upstream - no barrier to fish.
- (4) Log dam - (Outlet Lake Ambrose on East Brook)with gates closed - a total obstruction.

Photographs on file; Nos. 241, 243, 913, 931, 949, 968.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.

Miscellaneous Information:

Industrial activity - extensive logging is carried out with many dams being operated. Manipulation of flow through the dam causes scouring of the bottom during log drives and very high temperature when the flow is reduced to a mere trickle.

NB. It is presumed that, prior to water control through the construction of the dams, the river originated at Hospital Pond, flowed into Wilding Lake, Rogerson Lake and down through Harpoon Brook.

FISH POPULATIONS

Species Present: Brook trout, ouananiche.

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: By logging roads from Millertown

Surveys: None to date.

Redd Counts: None to date.

References:



## RATTLING BROOK

Location: 49°04'18" N. 55°18'25" W. Norris Arm, Notre Dame Bay.

Map Reference: Botwood. 2 E/3 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 148.6 miles<sup>2</sup>, (384.87 km<sup>2</sup>). Mean width, 6.7 miles, (10.78 km).

Perimeter, 67.5 miles, (108.60 km). Axial length, 19.5 miles, (31.37 km).

Maximum basin relief, 1,400 feet, (426.72 m).

## Geology:

Predominantly intermediate intrusive rocks with the remainder consisting of acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Total length of all streams, not including standing water, is 30 miles, (48.27 km).

Barriers to Fish Migration: Main river: Hydro dam at a point 400 feet, (121.92 m) upstream; complete obstruction. Hydro dam located on two of the major lakes; complete obstruction.

Photographs on file; Nos. 12, 15, 17, 19, 32, 438, 455, 459, 460, 542.

Water Temperature: 56°F, June 26, 1956; 53°F, June 16, 1957; 57°F, June 8, 1959.

## 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 <sub>3</sub> ppm.

FISH POPULATIONS

Species present: Atlantic salmon, brook trout, sticklebacks, eels.

Atlantic salmon angling record - Rattling Brook

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kilograms	No.	lbs.	kilograms	No.	lbs.	kilograms
1952	458	162	768	348.7	31	274	124.4	193	1042	473.1
1953	810	269	1332	604.7	23	171	77.6	292	1503	682.3
1961	77	4	14	6.4	-	-	-	4	14	6.4
1962	282	22	106	48.1	3	22	10.0	25	128	58.1
1963	128	6	22	10.0	4	28	12.7	10	50	22.7
1965	42	2	12	5.4	2	19	8.6	4	31	14.0
1966	6	4	12	5.4	-	-	-	4	12	5.4
1967-1972	No Report									
MEAN	257	67	323	146.9	9	73.4	33.3	76	396.4	180.2
1973	No report									
1974										
1975										

Summary, Counting fence data, Rattling Brook

Year	Salmon								Brook trout	
	Under 6 lbs. (2.72 kilograms)	6 lbs. and over	Smolt	Parr	Kelt	Smelt	Shad	Eels	Adult	Parr
1956	372	224								
1957	439	188								
1958	690	130								
1959	308	67								
1960	600	112								
1961	212	51								
1962	130	21								
1963	44	7								
1964	19	3								
1965	5	-								



From 1957 - 1964, the total salmon run to this river was transferred to a tributary on the Exploits River (E-07-0779-12) because of hydro power barriers which prevent salmon from utilizing spawning and rearing areas on this basin. Figures show a decrease from 820 salmon in 1958 to 22 salmon in 1964.

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: By logging roads, by boat.

Surveys: None to date.

Redd Counts: None to date.

References:

Anonymymous, 1956. Counting Fence and Counting Trap Data. MS. report, Fisheries Service, St. John's, Newfoundland.

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Ducharme, L.J.A., 1961. Age and Size Distribution of the Spawning Escapement of Atlantic Salmon to three Newfoundland Streams. MS report, Fisheries Service, St. John's, Newfoundland.

Ducharme, L.J.A., 1962. Rattling Brook Salmon transfer project, 1961. MS report, Fisheries Service, St. John's, Newfoundland.

Mercer, K.M., 1959. The Rattling Brook Adult Salmon Transfer Project, 1956-58. MS report, Fisheries Service, St. John's, Newfoundland.

Pratt, J.D., 1963. Rattling Brook Salmon Transfer Project Smolt Enumeration, 1962. MS report, Fisheries Service, St. John's, Newfoundland.

Sturge, C., 1966. The Rattling Brook Transfer, 1957-1965. MS report, Fisheries Service, St. John's, Newfoundland.

Taylor, V.R. 1956. The Rattling Brook Power Development and Maintenance of the Salmon Run. MS report, Fisheries Service, St. John's, Newfoundland.

## NORRIS ARM BROOK

Location: 49°07'50" N. 55°11'03" W. Bottom of Norris Arm,  
Bay of Exploits.

Map Reference: Botwood. 2 E/3 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area 18.3 miles<sup>2</sup> (47.4 km<sup>2</sup>). Mean width 4.7 miles,  
(7.6 km).

Perimeter 17.0 miles (27.4 km). Axial length 5.6 miles,  
(.90 km).

Maximum basin relief, 400 feet, (1,312 m).

## Geology:

Silurian sandstone, conglomerate, and acidic to mafic volcanic rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: American smelt, 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: By trails from Norris Arm North highroad.

Surveys: None to date.

Redd Counts: None to date.

References:

## SOUTHWEST BROOK

Location: 49°13'00" N. 55°03'04" W. Burnt Bay, Notre Dame Bay.

Map Reference: Botwood. 2 E/3 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 16.9 miles<sup>2</sup>, (43.77 km<sup>2</sup>). Mean width, 1.5 miles, (2.41 km).

Perimeter, 26.4 miles, (42.47 km). Axial length, 10.6 miles, (17.05 km).

Maximum basin relief, 350 feet, (106.68 m).

## Geology:

Predominantly Ordovician sedimentary with some intermediate intrusive rocks and a small amount of Ordovician volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Several partial obstructions to headwaters.

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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Brook trout, small run of Atlantic salmon.

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: By trail from mouth of river and from  
the Notre Dame Junction to Lewisporte road.

Surveys: None to date.

Redd Counts: None to date.

References:

## INDIAN ARM BROOK (Campelton River)

Location: 48°16'45" N. 54°55'25" W. Bay of Exploits, Notre Dame Bay.

Map Reference: Comfort Cove. 2 E/7 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 114.1 miles<sup>2</sup>, (295.51 km<sup>2</sup>). Mean width, 4.6 miles, (7.40 km).

Perimeter, 71.0 miles, (114.23 km). Axial length, 25.0 miles, (40.22 km).

Maximum basin relief, 1,250 feet, (381.00 m).

## Geology:

About half intermediate intrusive rocks with the remainder consisting of Ordovician sedimentary, Ordovician volcanic and a small amount of acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Main River: Nil.

Photographs on file; Nos. 120

## Stream Improvements for Fisheries Purposes:

On the main river and Nyles Brook (Tributary) 22 logging dams removed by Price (Nfld.) Ltd., under supervision of Fisheries Department personnel in 1966.

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 <sub>3</sub> ppm.
6.7	6.0	7.0	.8	3.0	23.0	1.5	7.32

FISH POPULATIONS

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

Atlantic salmon angling record - Indian Arm Brook (Campelton River).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1952	313	47	177	80.4	8	57	25.9	55	234	106.3
1953	346	126	500	227.0	-	-	-	126	500	227.0
1954	587	101	383	173.9	1	8	3.6	102	391	177.5
1955	56	61	258	117.1	-	-	-	61	258	117.1
1956	-	119	432	196.1	-	-	-	119	432	196.1
1957	291	103	457	207.5	2	14	6.4	105	471	213.9
1958	592	387	1504	682.8	60	457	207.5	447	1961	890.3
1959	325	291	1161	527.1	12	91	41.3	303	1252	568.4
1960	313	263	1053	478.1	2	17	7.7	265	1070	485.8
1961	209	146	557	252.9	-	-	-	146	557	252.9
1962	397	140	564	256.1	4	50	22.7	147	614	278.8
1963	1242	397	1778	807.2	24	181	82.2	421	1959	889.4
1964 <sup>1</sup>	1066	485	2208	1002.4	11	88	40.0	496	2296	1042.4
1965	647	451	2024	918.9	17	141	64.0	468	2165	982.9
1966	881	688	2655	1205.4	1	8	3.6	689	2663	1209.0
1967	815	487	1768	802.7	-	-	-	487	1768	802.7
1968	1577	685	3132	1421.9	58	391	177.5	743	3523	1599.4
1969	992	497	1817	824.9	1	10	4.5	498	1827	829.4
1970	660	436	1498	680.1	1	7	3.2	437	1505	683.3
1971	622	298	994	451.3	1	6	2.7	299	1000	454.0
1972	452	208	793	360.0	2	13	5.9	210	806	365.9
1973	848	634	1286	584.5	5	43	19.5	639	2339	1063.2
1974										
1975										
1976										
1977										
Mean 1964-68	997	559	2357	1070.3	17.4	125.6	57.1	577	2483	1128.6
Mean 1969-73	715	415	1278	580.7	2	15.8	7.2	417	1495	679.7

<sup>1</sup>Angling data, 1964-73, estimated to be 85% accurate. (T. Curran, 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 1964-1969	June 20-26	September 4-10	July 13-20 (1963)

Accessibility to Anglers:

Accessible by foot, small boats, logging roads and trails from Campelton to Indian Arm Pond. Upper reaches of Indian Arm Pond and Nyles Brook accessible by old logging roads.

Surveys: None to date.

Redd Counts: None to date.

References:

Anononyous. Summary of Stream Obstruction. MS report,  
Fisheries Service, St. John's, Newfoundland.



## JUMPER BROOK

Location: 49°12'15" N. 54°44'38" W. Birchy Bay, Notre Dame Bay.

Map Reference: Comfort Cove. 2 E/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 17.6 miles<sup>2</sup>, (45.58 km<sup>2</sup>). Mean width, 1.2 miles, (1.93 km).

Perimeter, 29.4 miles, (47.30 km). Axial length, 13.6 miles, (21.88 km).

Maximum basin relief, 350 feet, (106.68 m).

## Geology:

Almost entirely Ordovician sedimentary with the remainder consisting of a small amount of acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Photographs on file; Nos.

Water Quality Data, Sample Collected August, 1972.

	Total	Total			Conductivity		
pH	Alkalinity	Hardness	Turbidity	Cl	at 25°C	Ca	HCO <sub>3</sub>
	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:

## DOG BAY RIVER (Horwood River)

Location: 49°25'20" N. 54°34'10" W. Horwood Bay, Notre Dame Bay.

Map Reference: Comfort Cove. 2 E/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 140.7 miles<sup>2</sup>, (364.41 km<sup>2</sup>). Mean width, 3.9 miles, (6.27 km).

Perimeter, 81.0 miles, (130.32 km). Axial length, 31.8 miles, (51.16 km).

Maximum basin relief, 400 feet, (121.92 m).

## Geology:

Almost entirely Ordovician sedimentary with small amount of Ordovician volcanic and silurian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Main River: One small rapids at mile 10, (16.09 km). No problem to migrating fish at any water level.

Tributary #2, one small rapids; no problem to migrating fish at any water level.

Photographs on file; Nos. 551, 552

## 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 <sub>3</sub> ppm.
6.95	6.0	7.0	1.0	4.0	28.0	1.9	7.32

FISH POPULATIONS

Species Present: Atlantic salmon, sea trout, brook trout, sea-run smelt.

Atlantic salmon angling record - Dog Bay River (Horwood River).

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg.	No.	lbs.	kg.	No.	lbs.	kg.
1954	4	2	9	4.1	-	-	-	2	9	4.1
1955	12	7	32	14.5	-	-	-	7	32	14.5
1957	22	9	39	17.7	-	-	-	9	39	17.7
1958	12	6	22	10.0	-	-	-	6	22	10.0
1962	46	17	71	32.2	-	-	-	17	71	32.2
1963	448	73	319	144.8	2	11	5.0	75	330	149.8
1964 <sup>1</sup>	536	219	956	434.0	3	20	9.1	222	976	443.1
1965	1062	132	562	255.1	-	-	-	132	562	255.1
1966	712	156	618	280.6	-	-	-	156	618	280.6
1967	669	190	767	348.2	-	-	-	190	767	348.2
1968	825	291	1215	551.6	-	-	-	291	1215	551.6
1969	999	240	918	416.8	-	-	-	240	918	416.8
1970	1203	294	1162	527.5	-	-	-	294	1162	527.5
1971	714	163	640	290.6	-	-	-	163	640	290.6
1972	665	161	626	284.2	-	-	-	161	626	284.2
1973	1165	254	971	441.4	-	-	-	254	971	441.4
1974										
1975										
1976										
1977										
Mean 1964-68	761	198	824	374.4	.6	4.0	1.8	198	828	376.2
Mean 1969-73	949	222	863	392.5	-	-	-	222	863	392.5

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

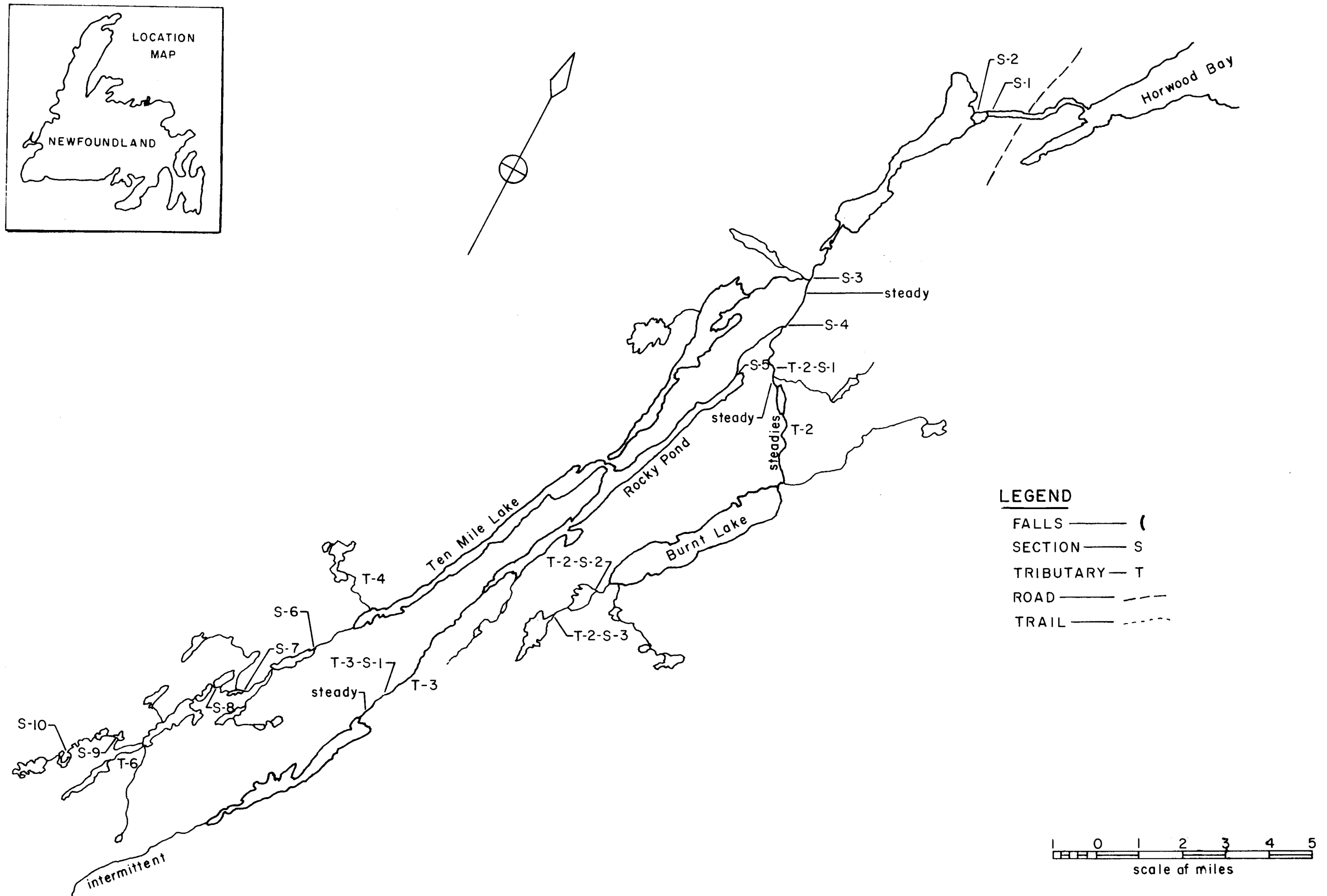


FIG. 16 OUTLINE MAP OF DOG BAY RIVER SHOWING SECTIONS SECTIONS SURVEYED

## Summary, Counting Trap Data, Horwood River.

Year	Grilse	Salmon	Total No. fish
	Under 6 lbs. (2.7 kg)	6 lbs. and over	
1972	390	207	597
1973	No count		
1974			
1975			

Estimated Atlantic salmon smolt production and adult sea survival, Dog Bay River and tributaries above obstruction.

If smolt production per				
100 yd <sup>2</sup> (83.7 m <sup>2</sup> ) is:				
Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>
		2,046	4,092	6,138
Adult return if sea survival is:	5%	102	205	307
	10%	205	409	614
	15%	307	614	921
	20%	409	814	1,228
	25%	516	1,023	1,534

## Gene Frequency:

Frequency of Tf4 Transferrin Allele 0.23

## 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 8-14	September 8-15	July 20-27 (1968)

## Accessibility to Anglers:

Accessible by boat and trails for approximately 8 miles (12.87 km) to Rocky Lake. Upper areas fished by anglers using light planes.



Surveys: None to date.

Redd Counts: None to date.

Miscellaneous Information:

Smelt enters river in September.

References:

Anonymus. 1964. Nfld. Dept. Nat. Res., Res. Bull. No. 12,  
St. John's, Newfoundland.

## SOUTHWEST BROOK

Location: 49°26'55" N. 54°33'30" W. Horwood Bay, Notre Dame Bay.

Map Reference: Comfort Cove. 2 E/7 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Geology:

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil.

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

FISH POPULATIONS

Species Present: Arctic char, brook trout (resident and sea run), sea run smelt.

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: By trails from Gander Bay and Horwood  
Highway.

Surveys: None to date.

Redd Counts: None to date.

References:

## GANDER RIVER

Location: 49°15'00" N. 54°30'00" W. Gander Bay, Notre Dame Bay.

Map Reference: Carmanville. 2 E/8 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 2,470.2 miles<sup>2</sup>, (6,397.81 km<sup>2</sup>). Mean width, 17.8 miles, (28.64 km).

Perimeter, 350.9 miles, (564.59 km). Axial length, 97.4 miles, (156.71 km).

Maximum basin relief, 1,400 feet, (426.72 m).

## Geology:

About half Ordovician sedimentary with some acidic intrusive rocks and small amounts of Devonian sedimentary, ultrabasic intrusive rocks. Ordovician volcanic and basic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Main River: Extends from Gander Lake to Gander Bay, 27 miles, (43.44 km).

No. of tributaries, 16.

North West Gander: Length 60 miles, (96.54 km), No. of tributaries, 36. The river mouth is wide and has several islands.

South West Gander: Length 48 miles, (77.23 km), No. of tributaries, 17. The river mouth is wide.

Both the Northwest and Southwest Gander flow into Gander Lake.

River flowing from South West Pond: 50 feet wide, (15.24 m).

Big Dead Wolf Brook: (one of the main tributaries of the South West Gander): 70 feet, (21.33 m) wide, at mouth and has a steady flow.

Boulder and gravel beds are abundant.

Caribou Brook: (Main tributary of Big Dead Wolf Brook):

Drains from Caribou Lake, 20 feet, (6.09 m) wide, at its upper end with some gravel bottom.

Big Carless Brook: (Tributary flowing into Gander Lake): Channel width, 15 feet, (4.57 m). Good gravel bottom mile 0 to mile 2 (3.21 km) beyond this boulders and bedrocks are common.

Salmon Brook: (Largest tributary on the main river): Lower section is mostly bedrock with a few gravel patches and large boulders. Upper section is Salmon Pond which leads into a large system of ponds and streams.

Joe Batt's Brook: (Tributary to the main river): Channel width 25 feet, (7.62 m) from mile 0 to mile 2 (3.21 km), upstream. Bottom types, mostly gravel.

Millers Brook (Tributary of the main river): Channel width 15-20 feet, (4.57-6.09 m). Bottom type, mostly gravel.

Note: Even flowing water, between banks heavily grown with alders.

Johnathans Brook (Tributary to the main river): The mile 0-1 of streams flows through a level marsh, then widens to 30 or 40 feet, (9.14-12.18 m), with many rapids, boulders and bedrocks.

Island Pond Brook: (Tributary to the main river): Channel width 30 feet, (9.14 m). Bottom type, shallow gravel riffles with much boulder and bedrock.

Weirs Brook (Tributary to the main river): Channel width, 50 feet, (15.24 m). Bottom type, many gravel patches.

Bellmans Brook: (Tributary to the main river): Channel width, 35 feet, (10.66 m). Bottom type, bedrock with many rapids.

#### Spawning Areas:

Main River: Mile 19 to mile 20, (30.57-32.18 km), and other smaller sections in various parts of the main river - approximate total 2.5 miles, (4.02 km).

North West Gander: Mouth area has good spawning ground.

Good spawning on many of the tributary streams.

South West Gander: Gravel beds mile 0-10, (16.09 km). River flowing from South West Pond: Good spawning and nursery area.

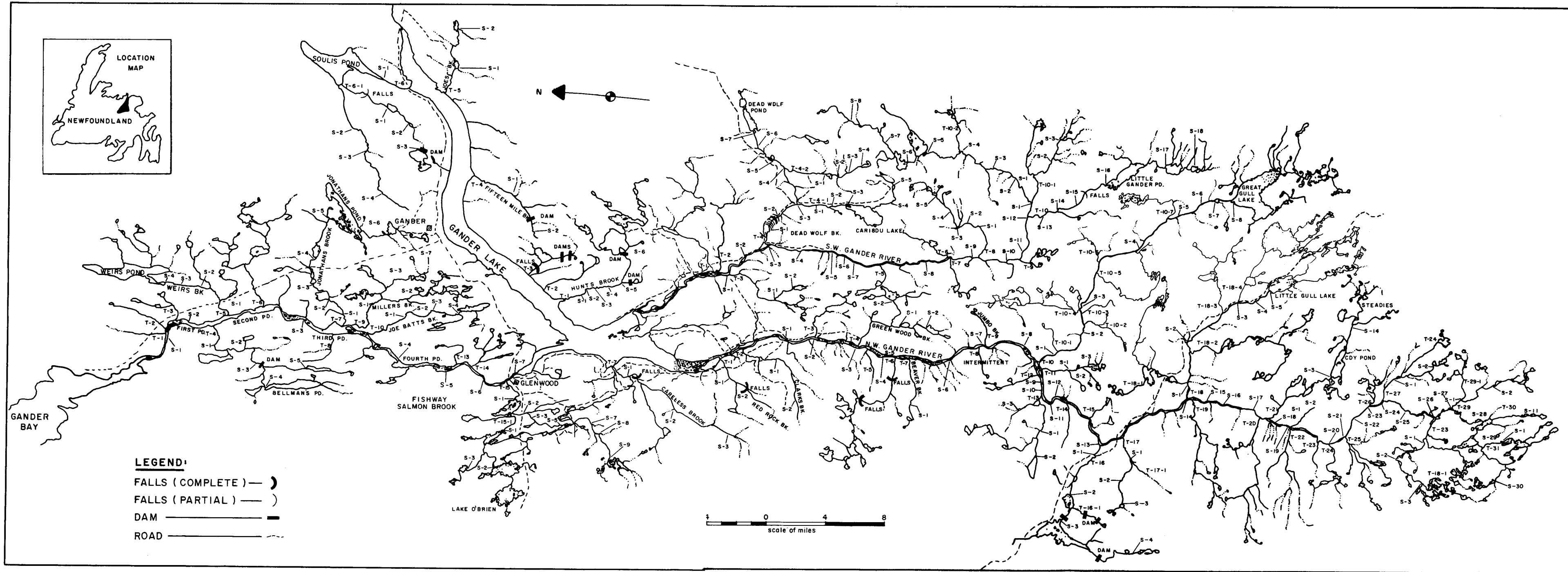


FIG. 17 OUTLINE MAP OF GANDER RIVER, SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED.

Big Dead Wolf Brook: Abundant gravel beds.  
 Caribou Brook: Gravel bottom in upper regions.  
 Big Carless Brook: Gravel bottom mile 0-2, (3.21 km).  
 Salmon Brook: Few gravel patches.  
 Joe Batt's Brook: Mostly gravel bottom.  
 Millers Brook: Mostly gravel bottom.  
 Island Pond Brook: Shallow gravel riffles in this area.  
 Weirs Brook: Many gravel patches.

#### Barriers to Fish Migration:

No major obstructions on two main water courses; main river and North West Gander river.

Main Southwest Gander River: Falls at mile 13 (20.91 km), 10'-12' (3.05-3.66 m) high, sloping 50°-60°. There is a run around on the left bank with a drop of from 6'-8', (1.83-2.44 m). Partial obstruction.

T-5-Weirs Brook: Falls, 3'-4', (0.91-1.21 m) high, at mile 1 (1.61 km) partial obstruction. Culverts under the Gander Bay Road present a temporary holdup since installation in 1965. Some rock removal and a temporary wood baffle installed at end of one culvert in 1966. Situation deteriorated in 1967. This problem is currently under investigation by the Engineering section.

T-6-Island Pond Brook: Falls, 4 feet, (1.21 m) high, at mile 2 (3.21 km), partial obstruction. Falls, 10'-12', (3.04-3.65 m) high, at mile 4 (6.44 km). Culverts under the Gander Bay Road present a temporary holdup since installation in 1965. Wood shute built at end of culvert by Department of Highways in 1966. This problem is currently under investigation by the Engineering section.

T-9-Millers Brook: Falls, 6 feet, (1.82 m) high, at mile 2-3 (3.21-4.83 km), partial obstruction.

T-15-Salmon Brook: Falls, 12'-15', (3.65-4.57 m) high, at mile 1.5 (2.41 km). Fishway built around falls in 1955. Chain link fence erected around fishway in 1959. In 1971 trap installed and pool at falls blasted to obtain more attraction of water at fishway entrance.

#### Tributaries of Northwest Gander River:

T-1-Red Rock Brook: Falls, 30'-40', (9.15-12.2 m) high, at mile 3 (4.82 km), complete obstruction. Little, if any rearing area is available above.

T-6-Coopers Brook: Falls, 40' vertical (12.2 m), complete obstruction.

There is an insufficient amount of rearing area above to justify any further work here.

T-10-Great Gull River: A series of 3 falls approximately 100' (30.5 m) apart in a gorge at mile 1.5 (2.41 km) form a temporary holdup.

Falls #1 is 6' (1.82 m) high, 15' (4.58 m) long at 60° angle.

Removal of bedrock lip by blasting is required.

Falls #2 is 12' (3.76 m) high sloping 75° on flat bedrock on L.H.S.

This side is not passable. The right hand side consists of an 8' (2.44 m) vertical drop. This side is passable but difficult at medium and high water levels. Improvements should consists of deepening the pool below and removing rock outcrop from the base of the falls.

Falls #3 is 7' (2.13 m) high, 15' (4.58 m) long at 45°. There is a run-around on left bank which requires rock clearing.

Falls, 4' (1.22 m) high, 10' (3.05 m) long at mile 12 (19.3 km) presents no problem at any water level.

T-16-Miguels Brook: Several old logging dams completely halt fish movement. These dams are in extremely poor condition and have not been used for several years.

#### Tributaries of Southwest Gander River:

##### T-4-Dead Wolf Brook

Obstruction number	Type of obstruction	Distance from the mouth	Description	Degree of obstruction
1	Falls	2.0 mi (3.21 km).	9' (2.8 m) high 15' (4.6 m) long	Passable only at high water
2	Falls	2.0 mi (3.21 km).	5' (1.5 m) high 8' (2.4 m) long at 70°	Passable all levels
3	Falls	2.0 mi (3.21 km)	8' (2.4 m) vertical	Passable medium and high water levels
4	Falls	2.1 mi (3.4 km)	5' (1.5 m) high at 75°	Holdup low water
5	Falls	2.2 mi (3.5 km)	20' (6.1 m) high 50' (15.3 m) long bedrock shute 50°-60° slope	Complete all water levels



Obstruction number	Type of obstruction	Distance from the mouth	Description	Degree of obstruction
6	Falls	3.5 mi (5.6 km)	9' (2.7m) in 2 drops, lower 5' (1.5 m) vertical, upper 4' (.12 m) vertical, deep pool between	Holdup at low water

Tributaries around Gander Lake:

T-1-Hunt's Brook: Two wooden dams at outlet of Hunt's Pond complete block fish passage.

T-3-Winter Brook: Falls, 40' (12.2 m) vertical near the mouth, complete obstruction. Insufficient rearing capacity above eliminates the need for any further work. Two old wooden dams located on this stream block fish passage.

T-4-Fifteen Mile Brook: Two old wooden dams located on this stream completely halt fish movement.

T-6-Soulis Brook: Falls, 4' (1.22 m) vertical at mile 1 (1.61 km) upstream from Soulis Pond. This falls acts as a temporary holdup.

T-6-1-tributary flowing into Soulis Pond: Falls at mile 1 (1.61 km) requires some blasting to improve fish passage at low water.

T-7-Careless Brook: Falls, 7'-8' (2.13-2.44 m) high, a mile 2 (3.21 km) acts as a partial obstruction. Blasting and channelling carried out in 1973 at falls and rapids to ease salmon migration at all discharges.

Photographs on file Nos. 121, 647-653, 656, 657, 13, 122, 288, 295, 330, 383, 485, 488, 1036-1038.

Water Quality Data, Sample Collected August 18, 1973, (Gander River, Glenwood)

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.50	4.0	8.0	2.2	4.0	21.0	1.2	4.9

Summary, Fishway Counting Trap Data, Salmon Brook - Gander

Year	Grilse Under 6 lbs. (2.7 kg.)	Salmon 6 lbs. and over	Total No. Fish
1957	642	323	965
1958	1072	502	1574
1959	591	290	881
1960	291	183	474
1961	41	15	56
1971	714	494	1208
1972	540	54	594
1973	970	135	1105
1974			
1975			
1976			
1977			

Note - The fishway counting trap was operated from 1957-1961 when it was discontinued. In 1971 a trap was placed in the fishway and counting has once again resumed.

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic Salmon smolt production and adult sea survival - accessible areas of Gander River and tributaries.

If smolt production

per 100 yds<sup>2</sup> (83.7 meters<sup>2</sup>) is:

		1	2	3
		190,886	381,772	572,658
Smolts produced				
Adult return if sea survival is:	5%	9,544	19,089	28,633
	10%	19,089	38,177	57,266
	15%	28,633	57,266	85,899
	20%	38,177	76,354	114,532
	25%	47,722	95,443	143,165

Water Quality Data (Soulis Brook) Sample Collected August 1972 and July 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.68	3.5	6.5	0.75	4.0	23.0	1.5	4.3

### FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, ouananiche, Arctic char, American smelt, three-spined stickleback, sea trout.

#### Atlantic Salmon Angling Record - Gander River.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1952	1452	678	2788	1265.8	368	3133	1422.4	1046	5921	2688.2
1953	2430	976	4112	1866.8	382	2866	1301.2	1358	6978	3168.0
1954	1831	370	1513	686.9	207	1416	642.9	577	2929	1329.8
1955	1010	738	3098	1406.5	206	1649	748.6	944	4747	2155.1
1956	-	1617	6718	3050.0	303	2251	1022.0	1920	8969	4072.0
1957	2815	2374	10347	4697.5	473	4035	1831.9	2847	14382	6529.4
1958	2751	1950	8144	3697.4	417	3671	1666.6	2367	11815	5364.0
1959	2391	2273	10537	4783.8	409	3357	1524.1	2682	13894	6307.9
1960	2466	1785	7402	3360.5	368	3285	1491.4	2153	10687	4851.9
1961	1794	1035	4267	1937.2	107	796	361.4	1142	5063	2298.6
1962	2042	1847	7811	3546.2	345	2605	1182.7	2192	10416	4728.9
1963	1972	1044	4266	1936.8	167	1416	642.9	1211	5682	2579.7
1964 <sup>1</sup>	2762	2731	12346	5605.1	436	3398	1542.7	3167	15744	7147.8
1965	2310	1171	5227	2373.1	253	2037	924.8	1424	7264	3297.9
1966	2322	2034	8197	3721.4	127	959	435.4	2161	9156	4156.8
1967	2096	1348	4921	2234.1	32	215	97.6	1380	5136	2331.7
1968	1913	1111	4295	1949.9	63	462	209.7	1174	4757	2159.6
1969	2680	858	3821	1734.7	3	26	11.8	861	3847	1746.5
1970	2388	1308	5309	2410.3	3	24	10.9	1311	5333	2421.2
1971	2142	1048	5089	2310.4	33	243	110.3	1081	5332	2420.7
1972	3197	1267	5990	2719.5	3	37	16.8	1270	6027	2736.3
1973	3199	1829	8570	3890.8	-	-	-	1829	8570	3890.8
1974										
1975										
1976										
1977										
MEAN										
1964-68	2281	1679	7017	3176.6	182	1414	642.0	1861	8411	3818.8
1969-73	2721	1262	5756	2613.1	8	64	29.1	1270	5822	2643.1

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

Estimated Atlantic Salmon smolt production and adult sea survival - Dead Wolf Brook above complete obstruction.

If smolt production				
per 100 yds <sup>2</sup> (83.7 meters <sup>2</sup> ) is:				
Smolts produced		<u>1</u>	<u>2</u>	<u>3</u>
		2861	5722	8583
Adult return if sea survival is:	5%	143	281	429
	10%	286	572	858
	15%	429	858	1287
	20%	572	1144	1717
	25%	715	1430	2146

Gene Frequency:

Frequency of transferrin allele Tf4 0.07

Timing of Run:

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Based on fishway counts, Salmon Brook:			
Average 1957-1961, 1971	June 19 - 26	September 24 - 30	July 26-August 2
Based on angling statistics:			
Lower Gander			
Average 1966-1969	June 23 - 29	September 8 - 15	August 1 - 7 (1968)
Upper Gander			
Average 1966-1969	June 19 - 25	September 3 - 10	July 20 - 27 (1968)
Northwest Gander			
Average 1966-1969	July 8 - 15	September 1 - 7	August 3 - 10 (1968)
Southwest Gander			
Average 1968, 1969	July 8 - 15	August 23 - 30	August 3 - 10 (1968)

Accessibility to Anglers:

Main River: Completely accessible by boats and trails.

Northwest Gander: 80% accessible by boat, trails, logging roads and highroads. Bowater logging roads run parallel to river for approximately 25 miles (40.2 kilometers). Bay D'Espoir highway crosses river at Miguel Brook, thereby opening up several miles of main river and tributary streams of Miguel and Little Gull Brook.

Southwest Gander: 75% accessible by boat and logging roads. Approximately 4 miles (6.4 km) upstream from mouth can be reached by boat.

Main Gander tributaries: Tributaries such as Bellman's, Barry's, Weirs, Island Pond, Jonathans, Millers, Joe Batt's and Salmon Brook are accessible by boat to mouth and by trails from Gander Bay road and Bowater logging roads.

#### Surveys:

A stream survey of the complete Gander River system done in 1972.

#### Redd Counts:

Northwest Gander, 1966.

Salmon redds were found on the following tributaries but the number of redds is not known; Coy Brook, Little Gull River, Miguel Brook, Rolling Brook, Great Gull River, and several sections of the main Northwest Gander River.

In 1973 redd counts conducted on Joe Batt's Brook - 17 redds; Jonathans Brook - 230 redds; Weirs Brook - 0 redds; Miller's Brook - 25 redds Bellman's Brook - 132 redds;

#### Miscellaneous Information:

Sea trout frequent Jonathans, Millers and Joe Batt's Brooks.

#### References:

Traverse, G.R. 1972. Gander River, A Stream Inventory. MS report, Fisheries Service, St. John's, Newfoundland.



## BARRY'S BROOK

Location: 49° 16' 10" N. 54° 29' 20" W. Gander Bay,  
Notre Dame Bay.

Map Reference: Carmanville. 2 E/8 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 28.5 miles<sup>2</sup>, (73.81 kilometers<sup>2</sup>). Mean width, 2.5 miles,  
(4.02 kilometers).

Perimeter, 30.1 miles, (48.43 kilometers). Axial length, 9.1 miles,  
(14.64 kilometers).

Maximum basin relief, 350 feet, (106.68 meters).

## Geology:

Almost entirely Ordovician sedimentary, the remainder consisting  
of small amounts of Ordovician volcanic, ultra basic intrusive  
rocks and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

## Main river:

From mouth to mile point 1.5, (2.41 kilometers).

Bottom type: Mainly bedrock. Velocity: Swift.

Upstream from mile point 1.5, (2.41 kilometers).

Channel width: 25 - 30 ft., (7.62-9.14 meters) Bottom type: Mostly gravel.

Velocities: slow:

## Spawning Areas:

Gravel bottom in the upper regions of the river.

## Barriers to Fish Migration:

Obstructions, main stem of Barry's Brook.

Obstruction number	Type of obstruction	Location from mouth	Description	Degree of obstruction
1	Falls	1500' (457.5 m)	7' (2.1 m) high 20' (6.1 m) long at 45° angle.	Holdup at low water
2	Falls	2000' (610 m)	12' (3.7 m) high 24.92' (7.6 m) long, 45° angle.	Serious hold-up at low water.
3	Falls	2400' (732 m)	10' (3.1 m) high 60' (18.3 m) long 30° angle overall	Complete at very high and very low levels. Passable with difficulty.
4	Falls	1.0 miles (1.60 km)	8' (2.4 m) in 2 drops; 3' and 5' (.9-1.5 m) 40' (12.2 m) long overall.	No serious holdup at any water level.
5	Falls	6.0 miles (9.65 km)	17' (5.2 m) vertical.	Complete obstruction all water levels.

In 1971, channeling and general clearing of the stream was done from mouth to, and including obstruction no. 3. This now presents no holdup problem at any water level. Five dams built by lumber company during the early 1950's were removed by Department personnel in 1966.

Photographs on file; Nos. 594, 595, 596, 974.

## 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 <sub>3</sub> ppm.
6.6	2.0	7.0	1.0	5.0	29.0	1.2	2.44



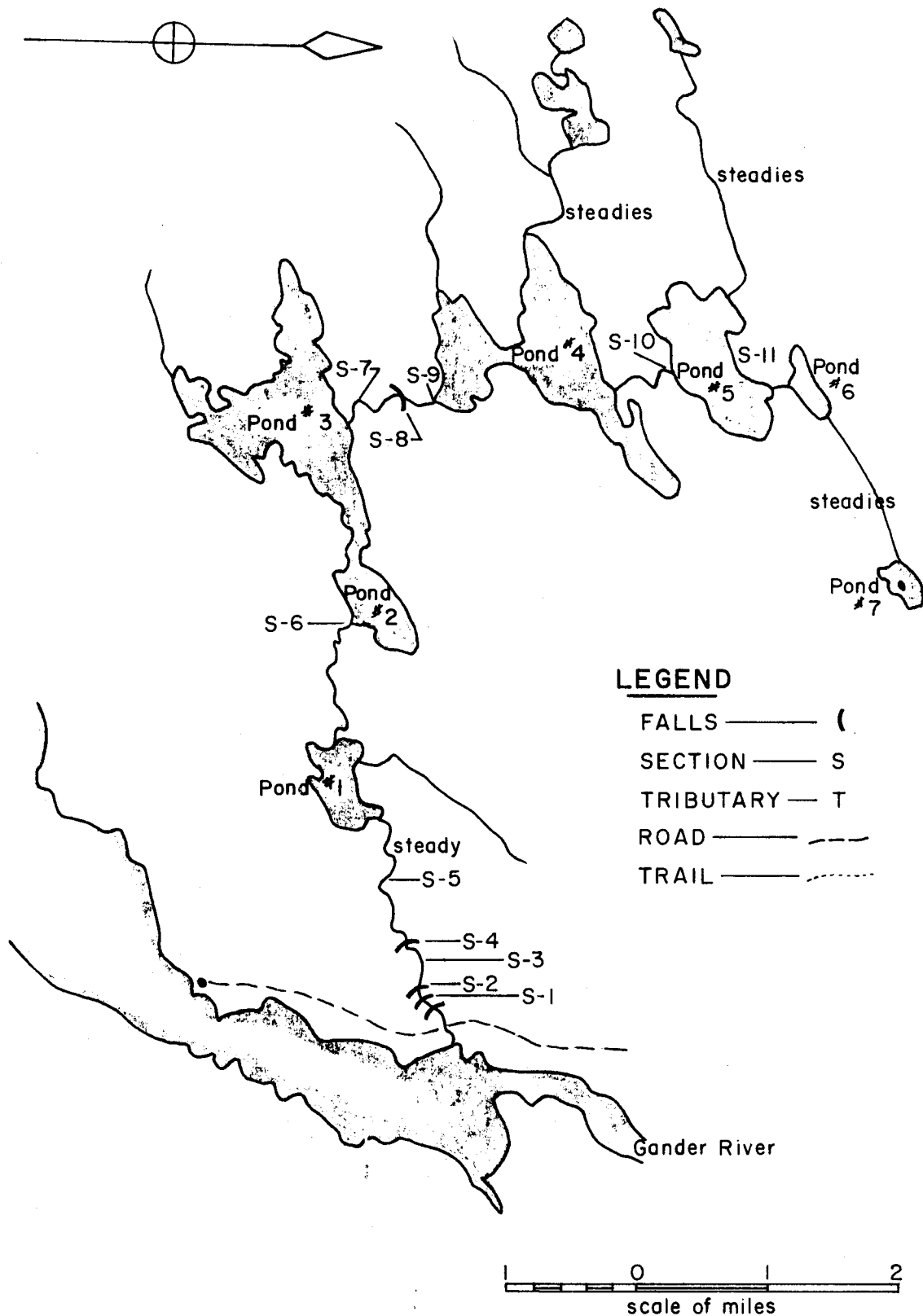


FIG.18 OUTLINE MAP OF BARRY'S BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

No angling data available on this stream.

POTENTIAL POPULATION ESTIMATION

Estimated Atlantic salmon smolt production and adult sea survival Barry's Brook, above obstruction #1.

If smolt production per 100 yd <sup>2</sup> (83.7 m <sup>2</sup> ) is:				
Smolts produced		1	2	3
		385	770	1155
Adult return if sea survival is:	5%	19	38	58
	10%	39	77	116
	15%	58	115	173
	20%	77	154	231
	25%	96	193	289

Estimated Atlantic salmon smolt production and adult sea survival, Barry's Brook, above complete obstruction #5.

If smolt production per 100 yd <sup>2</sup> (83.7 m <sup>2</sup> ) is:				
Smolts produced		1	2	3
		69	138	207
Adult return if sea survival is:	5%	4	7	10
	10%	7	14	21
	15%	10	21	31
	20%	14	28	41
	25%	18	35	52

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:

By foot from Gander Bay Highway and logging trails to ponds further upstream.

## Surveys:

Engineering Survey on Obstructions, 1966.

Stream Inventory 1969-1970.

## Redd Counts:

None to date.

## References:

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

Riche, L. and Traverse, G. 1971. River Investigations 1969-1970, An Inventory. Resource Dev. Branch Fisheries & Marine Service, St. John's.



## RAGGED HARBOUR RIVER

Location: 49°25'35" N. 54°02'50" W. Ragged Harbour, Notre Dame Bay.

Map Reference: Carmanville. 2 E/8 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 169.7 miles<sup>2</sup>, (439.52 km<sup>2</sup>). Mean width, 6.9 miles, (11.10 km).

Perimeter, 67.1 miles, (107.96 km). Axial length, 22.4 miles, (36.04 km).

Maximum basin relief,

## Geology:

Almost entirely Ordovician with small amounts of Ordovician volcanic, ultrabasic intrusive rocks and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Main River: Falls at mile 0.5 (0.80 km), 10' (3.04 m) high (sloping) passable.

1969, wooden barrier and diversion dam constructed at falls.

Falls, location unavailable, 4' (1.22 m) high, passable.

Falls, location unavailable, 8' (2.42 m) high, passable.

Salmon holdup at obstruction during periods of low water.

Photographs on file; Nos. 341

## 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 <sub>3</sub> ppm.
6.7	5.0	7.0	0.9	5.0	28.0	1.2	6.1

FISH POPULATIONS

Species Present: Atlantic salmon (sea run), brook trout (resident and sea run)

Atlantic salmon angling record - Ragged Harbour River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1952	342	94	399	181.1	5	42	19.1	99	441	200.2
1953	513	64	292	132.6	4	32	14.5	68	324	147.1
1954	34	12	45	20.4	2	7	3.2	14	52	23.6
1955	23	11	49	22.2	3	24	10.9	14	73	33.1
1956	-	40	178	80.8	-	-	-	40	178	80.8
1957	65	39	174	79.0	2	14	6.4	41	188	85.4
1958	95	75	345	156.6	2	15	6.8	77	360	163.4
1959	139	77	362	164.3	4	30	13.6	81	392	177.9
1960	212	92	389	176.6	2	18	8.2	94	407	184.8
1961	219	59	238	108.1	-	-	-	59	238	108.1
1962	340	125	544	247.0	3	25	11.4	128	569	258.4
1963	370	174	738	335.1	2	15	6.8	176	753	341.9
1964 <sup>1</sup>	657	312	1197	543.3	7	57	25.9	319	1254	569.3
1965	802	295	1058	480.3	-	-	-	295	1058	480.3
1966	1164	825	2755	1250.8	10	81	36.8	835	2836	1287.6
1967	1600	516	1701	772.3	2	15	6.8	518	1716	779.1
1968	1102	608	2098	952.5	1	8	3.6	609	2106	956.1
1969	774	347	1123	509.8	1	10	4.5	348	1133	514.3
1970	1507	409	1466	665.6	-	-	-	409	1466	665.6
1971	940	303	993	450.8	3	22	10.0	306	1015	460.8
1972	923	429	1428	648.3	-	-	-	429	1428	648.4
1973	1161	763	2768	1256.7	26	134	60.8	789	2902	1317.5
1974										
1975										
1976										
1977										
MEAN										
1964-68	1065	511	1762	813.6	4	32	14.5	515	1794	814.5
1969-73	1061	450	1556	706.4	6	33	15.0	456	1588	721.3

<sup>1</sup> Angling data 1964-1973 estimated to be 85% accurate. (T. Curran, 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 1966-69	June 4 - 10	September 10 - 15	July 20 - 27 (1968)

Accessibility to Anglers:

Fully accessible by old logging roads and trails.

Surveys: None to date.

Redd Counts: None to date.

References:

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





## ANCHOR BROOK

Location: 49° 22' 35" N. 53° 44' 15" W. Near Deadman's Bay,  
at the entrance to Sir Charles Hamilton Sound.

Map Reference: Musgrave Harbour. 2 F/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 5.2 miles<sup>2</sup>, (13.46 kilometers<sup>2</sup>). Mean width, 2.5 miles,  
(4.02 kilometers).

Perimeter, 12.6 miles, (20.27 kilometers). Axial length, 1.6 miles,  
(2.57 kilometers).

Maximum basin relief, 176 feet, (53.64 meters).

## Geology:

Acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

Nil.

Photographs on file; Nos.

## Miscellaneous Information:

This is a wide flat brook with numerous ponds on the main stream  
and its tributaries. Topographic maps show this stream draining  
from the same region as Deadman's Brook. Deadman's Brook enters  
the sea 6.5 miles, (10.45 kilometers) east of Anchor Brook.

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 <sub>3</sub> ppm.
6.35	3.0	4.0	1.2	4.0	22.0	0.9	3.66

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout.

Atlantic Salmon Angling Record - Anchor Brook.

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No	lbs	kg	No	lbs	kg
1953	8	1	3	1.4	-	-	-	1	3	1.4
1954	34	8	29	13.2	-	-	-	8	29	13.2
1955	60	19	64	29.1	-	-	-	19	64	29.1
1956	-	16	57	25.9	2	12	5.4	18	69	31.3
1957	66	39	150	68.1	4	27	12.3	43	177	80.4
1958	148	110	432	196.1	19	140	63.6	129	572	259.7
1959	345	65	283	128.5	7	60	27.2	72	343	155.7
1960	341	81	335	152.1	10	81	36.8	91	416	188.9
1961	143	51	217	98.5	2	12	5.4	53	229	103.9
1962	499	183	824	374.1	14	95	43.1	197	919	417.2
1963	620	192	862	391.3	1	8	3.6	193	870	394.9
1964 <sup>1</sup>	861	307	1386	629.2	9	68	30.9	316	1454	660.1
1965	715	108	475	215.7	-	-	-	108	475	215.7
1966	621	134	555	252.0	1	7	3.2	135	562	255.2
1967	785	128	536	243.3	2	17	7.7	130	553	251.0
1968	496	130	508	230.6	1	7	3.2	131	515	233.8
1969	704	133	559	253.8	2	15	6.8	135	574	260.6
1970	462	47	196	89.0	-	-	-	47	196	89.0
1971	241	31	117	53.1	-	-	-	31	117	53.1
1972	290	28	119	54.0	-	-	-	28	119	54.0
1973	384	47	207	94.0	-	-	-	47	207	94.0
1974										
1975										
1976										
1977										
MEAN										
1964-68	696	161	692	314.2	3	20	9.0	164	712	323.2
1969-73	416	57	240	108.8	0.4	3	0	57	243	110.3

<sup>1</sup> Angling data 1964-1973 estimated to be 95% accurate. (T. Curran, 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 12 - 18	September 8 - 15	July 13 - 20 (1968)

Accessibility to Anglers:

Accessible for approximately 4 miles (6.43 kilometers) from mouth by trails and boat. Upper areas of Ten Mile Pond and Anchor Brook Pond can be reached by old logging roads from Indian Bay.

Surveys: None to date.

Redd Counts: Spawning is reported to occur in small streams at head of 10 mile pond and in brook between 10 mile pond and Deadman's Pond.

Miscellaneous Information: Anchor Brook and Deadman's Brook drain same river system.

References:



## DEADMAN'S BROOK (Deadman's Bay River)

Location: 49°20'22" N. 53°42'30" W. Deadman's Bay.

Map Reference: Musgrave Harbour. 2 F/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 128.6 miles<sup>2</sup>, (333.07 km<sup>2</sup>). Mean width, 6.2 miles (9.97 km).

Perimeter, 56.8 miles, (91.39 km). Axial length, 20.2 miles, (32.50 km).

Maximum basin relief, 528 feet, (160.93 m).

## Geology:

Acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migrations:

No obstructions on this system except low water conditions near the mouth during dry seasons.

At mile 0.5 (.80 km) there is a section of rapids; 6' (1.82 m) over a length of 30'-40' (9.14-12.19 m); consists of large boulders closely packed together. Obstruction only at low water levels.

## Miscellaneous Information:

Topographic map shows this stream draining from the same region as Anchor Brook (E-09-894). Anchor Brook enters the sea 6.5 miles (10.45 km), west of Deadman's Brook.

Photographs on file; Nos. 567

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity J.T.U.	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.15	2.0	4.0	0.9	4.5	22.0	0.9	2.4

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (sea run and resident).

## Atlantic Salmon Angling Record - Deadman's Brook (Deadman's Bay River).

Year	Rod days	Grilse			Salmon			Total		
		No	lbs	kg	No.	lbs.	kg	No	lbs	kg
1952	1	1	5	2.3	1	10	4.5	2	15	6.8
1953	477	28	115	52.2	3	23	10.4	31	138	62.6
1954	308	27	107	48.6	2	14	6.4	29	121	55.0
1955	74	31	121	55.0	-	-	-	31	121	55.0
1956	-	52	192	87.2	6	42	19.1	58	234	106.3
1957	184	112	450	204.3	4	34	15.4	116	484	219.7
1958	141	112	459	208.4	3	23	10.4	115	482	218.8
1959	311	96	389	176.6	8	58	26.3	104	447	202.9
1960	214	63	270	122.6	15	114	51.8	78	384	174.4
1961	150	58	277	125.8	9	63	28.6	67	340	154.4
1962	391	202	917	416.3	22	163	74.0	224	1080	490.3
1963	508	158	645	292.8	23	151	68.6	181	796	361.4
1964 <sup>1</sup>	357	124	550	249.7	5	38	17.3	129	588	267.0
1965	409	109	452	205.2	1	8	3.6	110	460	208.8
1966	254	90	341	154.8	-	-	-	90	341	154.8
1967	444	121	470	213.4	2	13	5.9	123	483	219.3
1968	457	228	860	390.4	-	-	-	228	860	390.4
1969	486	129	575	261.1	1	8	3.6	130	583	264.7
1970	376	68	272	123.5	-	-	-	68	272	123.5
1971	363	34	134	60.8	-	-	-	34	134	60.8
1972	186	54	216	98.1	1	7	3.2	55	223	101.3
1973	288	116	462	209.7	-	-	-	116	462	209.7
1974										
1975										
1976										
1977										
MEAN										
1964-68	384	134	535	242.9	2	12	5.4	136	546	248.1
1969-73	340	80	332	150.6	0.4	3	1.4	80	335	152.0

<sup>1</sup> Angling data 1964-73 estimated to be 95% accurate. (T. Curran, Personal communication).

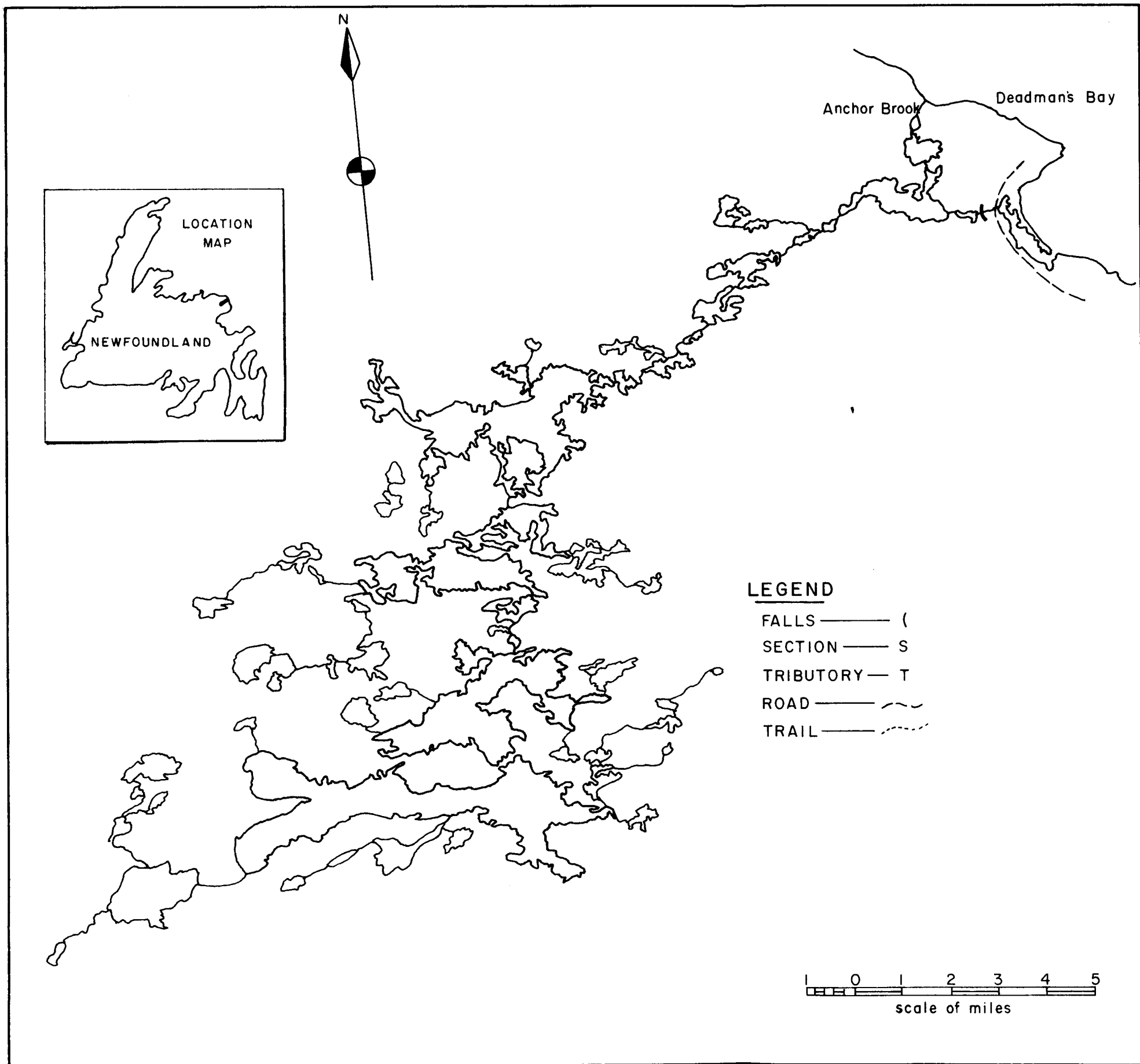


FIG. 19 OUTLINE MAP OF DEADMAN'S BAY BROOK SHOWING OBSTRUCTION LOCATION

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 20-July 4	Sept. 4-10	July 20-27 (1968)

Accessibility to Anglers:

Accessible from mile 0-4 (6.43 km) upstream from mouth.

Upper areas of Ten Mile Pond and Anchor Brook Pond can be reached by old logging roads from Indian Bay.

Surveys:

Obstruction assessment 1969-1970

Redd Counts:

None to date. Spawning is reported to occur in brook between Deadman's Pond and 10 Mile Pond and in streams at head of 10 Mile Pond.

References:

Palmer, C.H. 1928. The Salmon Rivers of Newfoundland.

Boston Farrington Co.

Riche, L. & Traverse, G. River Investigations 1969-1970.

An Inventory. Progress Report.





## WINDMILL BROOK

Location: 49°16'50" N. 53°33'58" W.

Map Reference: Musgrave Harbour. 2 F/5 East half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 4.5 miles<sup>2</sup>, (11.65 km<sup>2</sup>). Mean width, 1.4 miles, (2.25 km).

Perimeter, 9.1 miles, (14.64 km). Axial length, 2.7 miles, (4.34 km).

Maximum basin relief, 150 feet, (45.72 m).

Geology.

Acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Nil, except for several minor partial obstructions near headwaters.

Photographs on file. Nos.

Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity J.T.U.	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.50	2.0	3.0	0.9	5.0	22.0	0.6	2.44

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

## Atlantic Salmon Angling Record - Windmill Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1953	644	56	218	99.0	-	-	-	56	218	99.0
1954	1806	73	307	139.4	5	36	16.3	78	343	155.7
1955	276	88	328	148.9	9	61	27.7	97	389	176.6
1956	-	96	398	180.7	10	74	33.6	106	472	214.3
1957	330	101	403	183.0	9	71	32.2	110	474	215.2
1958	179	97	405	183.9	19	139	63.1	116	544	247.0
1959	405	111	456	207.0	19	130	59.0	130	586	266.0
1960	453	182	699	317.3	16	119	54.0	198	818	371.3
1961	391	185	760	345.0	18	122	55.4	203	882	400.4
1962	422	210	816	370.5	30	202	91.7	240	1018	462.2
1963	651	216	865	392.7	28	189	85.8	244	1054	478.5
1964 <sup>1</sup>	605	177	705	320.1	14	95	43.1	191	800	363.2
1965	588	140	511	232.0	12	85	38.6	152	596	270.6
1966	754	179	659	299.2	4	27	12.3	183	686	311.5
1967	670	177	695	315.5	9	59	26.8	186	754	342.3
1968	793	280	1096	497.6	19	122	55.4	299	1218	553.0
1969	798	122	434	197.0	1	6	2.7	123	440	199.7
1970	956	117	436	197.9	3	22	10.0	120	458	207.9
1971	747	60	241	109.4	-	-	-	60	241	109.4
1972	490	80	324	147.1	-	-	-	80	324	147.1
1973	572	277	1037	470.8	11	67	30.4	288	1104	501.2
1974										
1975										
1976										
1977										
MEAN										
1964-68	682	191	733	332.9	12	78	35.4	202	811	368.1
1969-73	713	131	494	224.5	3	19	8.6	134	513	233.1

<sup>1</sup> Angling data 1964-73 estimated to be 95% accurate. (T. Curran 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 11 - 17	September 8 - 15	July 20 - 27 (1968)

Accessibility to Anglers:

Accessible for approximately 4 miles (6.43 kilometers) upstream  
from mouth by trails.

Surveys: None to date.

Redd Counts: None to date.

References:



SOUTH WEST ARM VALLEYFIELD

Location: 49°06'03" N. 53°41'48" W. Bonavista Bay.

Map Reference: Wesleyville. 2 F/4 East half.

## CHARACTERISTICS OF DRAINAGE BASIN

### Geomorphological Factors:

Basin area, 38.0 miles<sup>2</sup>, (98.42 km<sup>2</sup>). Mean width, 4.8 miles, (7.72 km).

Perimeter, 31.2 miles, (50.20 km). Axial length, 8.2 miles, (13.19 km).

Maximum basin relief, 734 feet, (223.72 m).

**Geology:**

Acidic intrusive rocks.

### CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

### Barriers to Fish Migration:

Nil

Photographs on file Nos.

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity J.T.U.	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

Atlantic Salmon Angling Record - South West Arm Valleyfield.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1966	12	5	10	4.5	-	-	-	5	10	4.5
1967	No report									
1968	No report									
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:

Year

First fish

Last fish

Week of  
peak run

Accessibility to Anglers:

By boat from Valleyfield area and by trails to source.

Surveys:

None to date.

Redd Counts:

None to date.

References:

## INDIAN BAY BROOK

Location: 49°02'20" N. 53°52'45" W. Indian Bay, Bonavista Bay.

Map Reference: Wesleyville. 2 F/4 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 271.3 miles<sup>2</sup>, (702.66 km<sup>2</sup>). Mean width, 6.4 miles (10.29 km).

Perimeter, 95.2 miles (153.17 km). Axial length, 24.4 miles (39.25 km).

Maximum basin relief, 571 feet (174.04 m).

## Geology:

Predominantly Ordovician sedimentary with small amounts of acidic intrusive rocks and gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Spawning Area:

Upper and Lower end of Wings Brook to Little Wings Brook.

## Barriers to Fish Migration:

## Main River:

Falls at mile 8.5 (13.67 km); forms holdup at extreme low water.

Lower portion has a total drop of 9' (2.74 m) over a length of 12' (3.65 m) at 70° angle. A low spot in the centre of this drop approximately 15' long (4.57 m) at 30°. Total width of the falls is about 80' (24.38 m). Approximately 50' (15.24 m) above this obstruction there is a smaller falls separated by an island in the centre. The left side has a height of 2.5' (0.76 m) and the right side has a drop of 4' (1.21 m). Logging activity in this area terminated. Dam at mile 4.5 (7.24 km) removed, no obstruction to salmon. Dam at mile 9 (14.48 km) has gates removed. No obstruction to salmon.

Photographs on file; Nos. 564, 565.



## Water Quality Data, Sample Collected July, 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.65	3.0	5.0	0.7	4.5	25.0	1.2	3.66

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run), Arctic char.

## Atlantic Salmon Angling Record - Indian Bay Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1952	351	56	214	97.2	1	8	3.6	57	222	100.8
1953	649	259	932	423.1	12	84	38.1	271	1016	461.2
1954	337	141	475	215.7	12	93	42.2	153	568	257.9
1955	195	184	654	296.9	1	9	4.1	185	663	301.0
1956	-	167	580	263.3	3	22	10.0	170	602	273.0
1957	156	183	699	317.3	-	-	-	183	699	317.3
1958	353	395	1601	726.9	15	108	49.0	410	1709	775.9
1959	460	438	1805	819.5	-	-	-	438	1805	819.5
1960	687	263	944	428.6	2	16	7.3	265	960	435.9
1961	347	70	252	114.4	2	12	5.4	72	264	119.8
1962	390	146	578	262.4	6	43	19.5	152	621	281.9
1963	829	410	1629	739.6	10	68	30.9	420	1697	770.5
1964 <sup>1</sup>	1157	772	3185	1446.0	8	54	24.5	780	3239	1470.5
1965	1622	576	2036	924.3	2	23	10.4	578	2059	934.7
1966	1119	426	1550	703.7	1	7	3.2	427	1557	706.9
1967	688	422	1480	671.9	19	134	60.8	441	1614	732.7
1968	247	720	2942	1335.7	10	93	42.2	730	3035	1377.9
1969	583	940	3798	1724.3	10	75	34.1	950	3873	1758.4
1970	572	682	2508	1138.6	5	35	15.9	687	2543	1154.5
1971	714	519	1886	856.2	8	58	26.3	527	1944	882.5
1972	579	720	2490	1130.5	-	-	-	720	2490	1130.5
1973	539	603	2368	1075.1	-	-	-	603	2368	1075.1

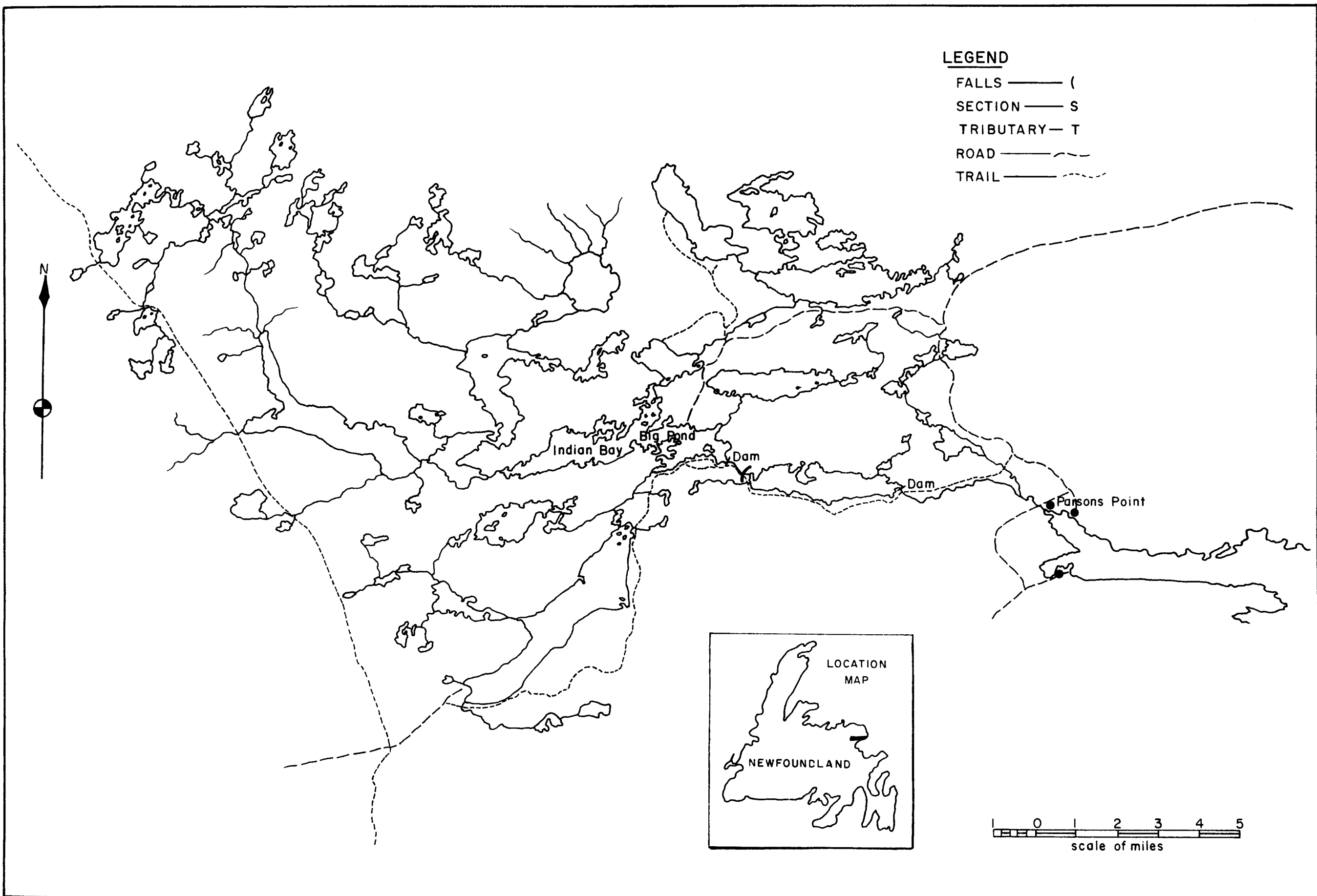


FIG. 20 OUTLINE MAP OF INDIAN BAY BROOK SHOWING OBSTRUCTION LOCATION

## Atlantic Salmon Angling Record (cont'd). - Indian Bay Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1974										
1975										
1976										
1977										
MEAN										
1964-68	967	583	2219	1007.2	8	622	28.2	591	2301	1044.7
1969-73	610	774	2610	1184.9	5	34	15.3	697	2644	1200.2

<sup>1</sup>Angling data 1964-73 estimated to be 90% accurate.(T. Curran, 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 7 - 13	September 8 - 15	July 20 - 27 (1968)

Accessibility to Anglers:

Complete accessibility by roads to all tributaries except Wings Pond  
which is usually reached by anglers by aircraft.

Surveys: None to date.

Redd Counts: None to date.

References:

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

## TRAVERSE BROOK

Location: 48°50' N. 54°04'56" W. Freshwater Bay, Bonavista Bay.

Map Reference: Gambo. 2 D/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 156.0 miles<sup>2</sup>, (404.04 km<sup>2</sup>). Mean width, 5.4 miles, (8.68 km).

Perimeter, 77.2 miles, (124.2 km). Axial length, 24.3 miles, (39.09 km).

Maximum basin relief, 469 feet, (142.95 m).

## Geology:

About half acidic intrusive rocks with the remainder consisting of about equal amounts of gneiss and Ordovician sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

No natural obstructions.

## Stream Improvements for Fisheries purposes:

On this river system, in 1966, 13 logging dams were removed by Bowater's Pulp and Paper Ltd. under supervision of Fisheries Department personnel. Another dam was removed in 1967. All dams have now been removed from this river system.

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 <sub>3</sub> ppm.
6.4	4.0	7.0	1.0	4.0	22.0	1.5	4.88

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run), smelt (sea run).

## Atlantic Salmon Angling Record - Traverse Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1952	652	121	440	199.8	1	7	3.2	122	447	203.0
1953	1318	302	1095	497.1	1	6	2.7	303	1101	499.8
1954	707	99	361	163.9	-	-	-	99	361	163.9
1955	381	140	523	237.4	3	18	8.2	143	541	245.6
1956	-	115	413	187.5	1	10	4.5	116	423	192.0
1957	395	203	681	309.2	6	39	17.7	209	720	326.9
1958	452	318	1265	574.3	1	8	3.6	319	1273	577.9
1959	355	180	645	292.8	1	10	4.5	181	655	297.3
1960	192	83	303	137.6	3	33	15.0	86	336	152.6
1961	260	83	319	144.8	-	-	-	83	319	144.8
1962	376	215	763	346.4	2	14	6.4	217	777	352.8
1963	465	218	871	395.4	3	20	9.1	221	891	404.5
1964 <sup>1</sup>	665	249	958	434.9	-	-	-	249	958	434.9
1965	567	130	456	207.0	-	-	-	130	456	207.0
1966	398	164	526	238.8	-	-	-	164	526	238.8
1967	351	278	1096	497.6	-	-	-	278	1096	497.6
1968	155	404	1616	733.7	-	-	-	404	1616	733.7
1969	348	300	1258	571.1	1	12	5.4	301	1270	576.5
1970	207	279	928	421.3	7	54	24.5	286	982	445.8
1971	188	141	579	262.9	-	-	-	141	579	262.9
1972	240	193	672	305.1	1	6	2.7	194	678	307.8
1973	176	312	1035	470.0	-	-	-	312	1035	470.0
1974										
1975										
1976										
1977										
MEAN										
1964-68	427	245	930	422.2	-	-	-	245	930	422.2
1969-73	232	245	894	406.1	2	14	6.5	247	909	412.6

<sup>1</sup> Angling data 1964-73 estimated to be 75% accurate. (T. Curran, 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 23 - 29	September 4 - 10	July 20 - 27 (1968)

Accessibility to Anglers:

Accessible by trail and boat from mouth to Round Pond. To headwaters of Home Pond and Gull Pond from Soulis Pond and Benton by old logging road and by boat.

Surveys: None to date.

Redd Counts: None to date.

Miscellaneous Information: Escapement of smelt into Traverse Brook occurs 1st October - November.

References:

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





## MIDDLE BROOK

Location: 48° 48' 25" N. 54° 12' 30" W. Freshwater Bay, Bonavista Bay.

Map Reference: Gambo. 2 D/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 106.4 miles<sup>2</sup> (275.57 kilometers<sup>2</sup>). Mean width, 3.7 miles, (5.95 kilometers).

Perimeter, 65.5 miles, (105.38 kilometers). Axial length, 26.0 miles, (41.83 kilometers).

Maximum basin relief, 850 feet, (261.25 meters).

## Geology:

Predominantly acidic intrusive rocks with the remainder consisting of gneissis.

## Vegetational Cover:

Well forested with black spruce, areas of birch where the spruce has been cut over. Bog areas occur along the whole drainage basin.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

Total length of all streams, not including standing water, equals 15 miles.

## Bottom types:

Section: Butt's Pond: Rubble, gravel, sand, mud and muck.

## Spawning areas:

- (1) Between Square Pond and 1st Burnt Pond, mile points 10 - 11.5 (16.09 - 18.50 kilometers);
- (2) between 1st Burnt Pond and 2nd Burnt Pond, mile points 15 to 20, (24.13 to 32.18 kilometers).

## Barriers to Fish Migrations:

Falls at mile point 1.5 (2.41 kilometers), on main river;

Fishway built along side of falls in 1954. Fishway fenced in 1958.

Twelve foot (3.64 meters) section of abandoned dam blasted out, 200 yds.

(182.8 meters) upstream from Butts Pond; poses no problem to salmon at any water levels - 1957. Dam constructed at falls below fishway to divert water from runarounds, blasted at falls and at outlet of pools below falls in 1971. In 1972 a small amount of ledgerock blasted in front of falls.

Photographs on file: Nos. 154, 88, 89, 92, 291, 346, 416, 418, 561.

Water Chemistry:

Water temperatures: 60°F June 25, 1956; 60°F June 25, 1957;  
58°F July 8, 1958; 63°F July 7, 1959.

Butt's Pond: pH 6.7 (1961): TDS 19.6 ppm. (1961).

Square Pond: pH 6.95 (1961): TDS 19.6 ppm. (1961).

Water Quality Data, Samples collected July, August 1973.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.20	2.0	4.5	0.75	3.3	15.0	0.9	2.4

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, brown trout, Arctic char  
(landlocked), smelt and ouananiche.

## Atlantic Salmon Angling Record - Middle Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1952	894	71	270	122.6	1	7	3.2	72	277	125.8
1953	710	116	398	180.7	-	-	-	116	398	180.7
1954	360	57	248	112.6	-	-	-	57	248	112.6
1955	134	29	109	49.5	1	6	2.7	30	115	52.2
1956	-	95	343	155.7	7	52	23.6	102	395	179.3
1957	289	144	520	236.1	-	-	-	144	520	236.1
1958	459	172	676	306.9	2	14	6.4	174	690	313.3
1959	427	160	667	302.8	4	30	13.6	164	697	316.4
1960	334	58	191	86.7	-	-	-	58	191	86.7
1961	208	30	106	48.1	2	12	5.4	32	118	53.5
1962	459	174	676	306.9	-	-	-	174	676	306.9
1963	638	350	1399	635.1	-	-	-	350	1399	635.1
1964 <sup>1</sup>	1266	570	2363	1072.8	-	-	-	570	2363	1072.8
1965	1568	454	1659	753.2	2	18	8.2	456	1677	761.4
1966	1197	244	888	403.2	-	-	-	244	888	403.2
1967	464	178	594	269.7	-	-	-	178	594	269.7
1968	1379	304	1090	494.9	-	-	-	304	1090	494.9
1969	1704	389	1378	625.6	2	14	6.4	391	1392	632.0
1970	1111	323	1189	539.8	2	17	7.7	325	1206	547.5
1971	491	135	498	226.1	-	-	-	135	498	226.1
1972	287	224	788	357.8	-	-	-	224	788	357.8
1973	210	283	994	451.3	-	-	-	283	994	451.3
1974										
1975										
1976										
1977										
MEAN										
1964-68	1175	350	1319	600.0	0.4	4	1.8	350	1322	600.4
1969-73	760	271	969	440.1	0.8	6	2.8	272	976	442.9

<sup>1</sup> Angling data 1964-73 estimated to be 80% accurate. (T. Curran personal communication).

## Summary Fishway Counting Trap Data, Middle Brook.

Year	Grilse	Salmon	Total No. fish
	Under 6 lbs. (2.7 kg)	6 lbs. and over	
1956	324	56	380
1957	28	2	30
1958	332	231	563
1959	295	13	308
1972	838	10	848
1973	1079	9	1088

Note: No count done in 1960-1971.

## Miscellaneous Information:

## Gene Frequency:

Frequency of Tf4 transferrin allele      0.09

Timing of Run: (Based on fishway counting trap statistics).

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1956-1959	June 25-July 1	September 1-7	July 12-18

## Accessibility to Anglers:

Accessible from mouth to Butt's Pond by trail and from Square Pond to 1st Burnt Pond by boat and trail. Rodney Pond accessible only by aircraft.

Surveys: None to date.

Redd Counts: None to date.

References:

- Anonymus. Counting Fence and Counting Trap Data, 1956-1959.  
MS report, Fisheries Service, St. John's, Newfoundland.
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report, Fisheries Service, St. John's, Newfoundland.
- Ducharme, L.J.A. 1961. Age and Growth Distribution of the  
Spawning Escapement of Atlantic Salmon to three Newfound-  
land Rivers. MS report, Fisheries Service, St. John's,  
Newfoundland.
- Seabrook, W.D. 1961. A Preliminary Survey on the Biology of  
the Non-Migratory Arctic char, of Butt's Pond, Gambo.  
MS report, Fisheries Service, St. John's, Newfoundland.
- Seabrook, W.D. 1962. A Survey of nine Lakes on the Island of  
Newfoundland. MS report, Fisheries Service, St. John's,  
Newfoundland.
- Taylor, V.R. 1959. Middle Brook Proposed Hydro Development.  
MS report, Fisheries Service, St. John's, Newfoundland.



## GAMBO RIVER

Location:  $48^{\circ} 45' 50''$  N.  $54^{\circ} 13' 30''$  W. Gambo, Bonavista Bay.

Map Reference: Gambo. 2 D/16 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 444.8 miles<sup>2</sup>, (1152.03 kilometers<sup>2</sup>). Mean width, 9.0 miles, (14.4 kilometers).

Perimeter, 129.6 miles, (208.52 kilometers). Axial length, 40.0 miles, (64.36 kilometers).

Maximum basin relief, 1,100 feet, (335.28 meters).

## Geology:

Predominantly acidic intrusive rocks with the remainder consisting of Ordovician sedimentary and a small amount of gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

## Main river:

This is that part of the system from the outlet of Gambo Pond north to the sea. Total distance, 1 mile (1.60 kilometers). Width range, 50 to 150 yds., (45.72 to 137.16 meters). Bottom type, mostly boulder.

## Gambo Pond North:

Max. width, 0.6 miles, (0.96 kilometers). Mean width, 0.4 miles, (0.64 kilometers). Max. length, 9.2 miles, (14.80 kilometers).

Mean length, 6.5 miles, (10.45 kilometers). Max. depth, 46 ft. (14.02 meters). Mean depth, 21.5 ft., (6.55 meters).

Area, 5.0 miles<sup>2</sup>, (12.9 kilometers<sup>2</sup>). Bottom type, mud.

Shoreline; boulder, rock and rubble.

## Gambo Pond South:

Max. width, 1.0 miles, (1.60 kilometers). Mean width, 0.6 miles, (0.96 kilometers). Max. length, 8.0 miles, (12.87 kilometers).

Max. length, 4.7 miles, (7.56 kilometers). Max. depth, 140 ft. (42.67 meters). Mean depth, 65.4 ft., (19.9 meters).

Area, 6.0 miles<sup>2</sup>, (15.54 kilometers<sup>2</sup>). Bottom type, gravel and rock.

Shoreline, boulder and rubble.

### Spawning areas:

#### Main River:

Gravel beds located 200 yds. (182.88 m), upstream from mouth.

Gravel beds located downstream from outlet of Gambo Pond South.

"The Narrows" (Narrow channel separating Gambo Pond South from Gambo Pond North): Good gravel beds. Salmon observed spawning in this area in 1961

#### Triton Brook (Tributary flowing into Gambo Pond South):

It has been estimated by Departmental personnel in this area that 60% of the salmon and sea trout entering Gambo River travel up this tributary to spawn. Good pools and spawning areas from the road junction to the mouth of Triton Brook. Very little spawning area on Upper Triton Brook.

#### Mint Brook (Tributary flowing into Gambo Pond North):

It has been estimated that 40% of the total run of salmon and sea trout spawn in this brook.

Salmon have been reported in Parson's Brook (Tributary of Gambo Pond North). Spawning is suspected to occur here.

### Barriers to Fish Migration:

Main River: No obstructions.

Riverhead Brook (Tributary flowing into Gambo Pond South): Falls at mile 2.5, (4.02 km) complete obstruction.

North West Branch of Triton Brook: Falls at mouth; complete obstruction.

Blood Brook (Tributary of Triton Brook): Falls near mouth, complete obstruction.

Dam: Upper Triton Brook. Two holes cut in dam to allow access to fish.

North Pond Dam Fishway rebuilt in 1962, now presents no problem to migrating fish.

Parson's Brook: Series of falls 0.5 to 1.0 miles upstream, serious partial obstruction.

Photographs on file; Nos. 34, 433, 1083.



## Water Chemistry:

Gambo Pond South:

pH, 6.6 (1961). TDS, 24.5 ppm. (1961). Water temperature,  
76°F (July 7, 1961).

## Water Quality Data, Sample Collected June, 1972 - Mint Brook.

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°F ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.73	4.5	15.0	0.38	0.8	17.0	0.8	5.5

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run),  
Ninespined sticklebacks, ouananiche, (resident), and  
smelt (resident and sea run).

## Atlantic Salmon Angling Record - Gambo River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1952	735	127	516	234.3	30	214	97.2	157	730	331.5
1953	1552	237	917	416.3	8	67	30.4	245	984	446.7
1954	475	54	206	93.5	2	24	10.9	56	230	104.4
1955	631	215	851	386.4	14	103	46.8	229	954	433.2
1956	-	364	1331	604.3	33	241	109.4	397	1572	713.7
1957	557	151	613	278.3	34	287	130.3	185	900	408.6
1958	690	286	1344	610.2	10	87	39.5	296	1431	649.7
1959	736	166	767	348.2	18	160	72.6	184	927	420.8
1960	390	145	658	298.7	-	-	-	145	658	298.7
1961	556	101	483	219.3	18	139	63.1	119	622	282.4
1962	573	180	871	395.4	29	231	104.9	209	1102	500.3
1963	538	159	701	318.3	11	83	37.7	170	784	356.0
1964 <sup>1</sup>	880	298	1363	618.8	43	288	130.8	341	1651	749.6
1965	495	168	669	303.7	1	14	6.4	169	683	310.1
1966	769	180	806	365.9	30	240	109.0	210	1046	474.9
1967	1045	255	1142	518.5	4	32	14.5	259	1174	533.0
1968	984	231	924	419.5	14	133	60.4	245	1057	479.9
1969	1409	233	940	426.8	6	50	22.7	239	990	449.5
1970	768	311	1260	572.0	3	24	10.9	314	1284	582.9
1971	595	190	835	379.1	14	107	48.6	204	942	427.7
1972	242	143	651	295.6	6	44	20.0	149	695	315.6
1973	289	286	1280	581.1	1	7	-	287	1287	584.3
1974										
1975										
1976										
1977										
MEAN										
1964-68	835	326	981	445.4	18	141	64.0	245	1122	509.5
1969-73	661	233	993	451.0	6	46	21.1	239	1040	472.0

<sup>1</sup> Angling data 1964-73 estimated to be 75% accurate. (T. Curran 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 1-6	September 8-15	July 20-27 (1968)

## Accessibility to Anglers:

Fully accessible by means of road, boat and trails. Mint Brook - fully accessible by Price Company logging roads. Triton Brook - accessible by boat or trail for approximately 3 miles (4.82 km) upstream except at very high water levels.

## Surveys:

None to date.

## Redd Counts:

None to date.

## References:

- Anonymous. 1943. Nfld. Dept. Nat. Res., Res. Bull. No. 12, St. John's, Newfoundland.
- Anonymous. 1961. Salmon and Trout Management Program, MS report, Fisheries Service, St. John's, Newfoundland.
- Seabrook, W.D. 1961. A Survey of Nine Lakes on the Island of Newfoundland. Office Report. MS report, Fisheries Service, St. John's, Newfoundland.
- Scott, W.B. and E.J. Crossman. 1964. Fishes Occurring in the Freshwaters of Insular Newfoundland. Queen's Printers, Ottawa.



## NORTHWEST BROOK

Location: 48°44'30" N. 54°03'10" W. Alexander Bay,  
Bonavista Bay.

Map Reference: Glovertown. 2 D/9 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 37.5 miles<sup>2</sup>, (97.12 km<sup>2</sup>). Mean width, 3.1 miles,  
(4.98 km).

Perimeter, 32.7 miles, (52.61 km). Axial length, 11.5 miles,  
(18.50 km).

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

## Geology:

Almost entirely acidic intrusive rocks with a small amount of  
Precambrian volcanic.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil

Photographs on file: Nos. 133, 134, 338, 339, 903, 1084.

## 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 <sub>3</sub> ppm.
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FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (resident and sea run).

Atlantic Salmon Angling Record - Northwest Brook.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1954	56	7	22	10.0	1	8	3.6	8	30	13.6
1960	54	14	45	20.4	-	-	-	14	45	20.4
1961	10	1	3	1.4	-	-	-	1	3	1.4
1962	64	4	13	5.9	-	-	-	4	13	5.9
1963	57	8	25	11.4	-	-	-	8	25	11.4
1965	7	3	12	5.4	-	-	-	3	12	5.4
1966	No report									
1967	No report									
1968	No report									
1969	No report									
1970	No report									
1971	17	3	12	5.4	-	-	-	3	12	5.4
1972	6	4	16	7.3	-	-	-	4	16	7.3
1973	81	4	16	7.3	-	-	-	4	16	7.3
1974										
1975										
1976										
1977										
MEAN										
1960-65	38	6	20	9.1	-	-	-	6	20	9.1
1971-73	34	4	15	6.8	-	-	-	4	15	6.8

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 1961-1963	July 14-20	August 17-23	-

**Accessibility to Anglers:**

By boat from Glovertown and by trails from Trans-Canada Highway.

**Surveys:**

None to date.

**Redd Counts:**

None to date.

**References:**

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





## TERRA NOVA RIVER

Location: 48° 40' 15" N. 50° 00' 20" W. Alexander Bay,  
Bonavista Bay.

Map Reference: Glovertown. 2 D/9 East half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 727.1 miles<sup>2</sup>, (1883.18 kilometers<sup>2</sup>). Mean width, 9.9 miles,  
(15.92 kilometers).

Perimeter, 198.5 miles, (319.38 kilometers). Axial length 65.5 miles,  
(105.38 kilometers).

Maximum basin relief, 1,234 feet, (376.12 meters).

## Geology:

About half Ordovician sedimentary, the remainder consisting of  
acidic intrusive rocks and smaller amounts of gneissis, Precambrian  
volcanic and Ordovician sedimentary.

## Vegetational Cover:

Forest, with the exception of its extreme headwaters. Most of the  
area has been cut over for pulpwood.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Channel Characteristics:

The length of all streams not including standing water is 150 miles,  
(241.35 kilometers).

Main River: Below Terra Nova Lake has sections of fast velocity over  
bedrock and very slow velocity in the area of steadies.

## Tirbutaries:

Pinsent's Brook; Velocity, fast to medium. Shallow depths.

Dewey's Brook: The mouth and shoreline of the brook is marshy and  
heavily sedimented. Water depth, 6 to 8 in., (.15 - .20 meters),  
becoming shallower upstream.

Maccles Brook: This is the largest brook flowing into the Terra Nova  
River. It arises from Maccles Lake and flows into the river about  
4 miles, (6.43 kilometers), above the sea. The mouth of Maccles Brook  
is wide and shallow. Farther upstream the brook narrows to about 50 feet,  
(15.24 meters), and flows fast and clear with a depth up to 2 feet,

(0.60 m), in many areas. The bottom consists of large numbers of boulders with very little sediment. Large numbers of salmon parr are there. Land-locked salmon up to 3 pounds have been reported in Maccles Lake.

Spar Brook: This brook is about 10 to 15 feet, (3.04 to 4.57 m), wide and its deepest place 12 to 15 inches, (.30 to .38 m). This brook is slow moving. The bottom sedimented. There are some trout in this brook.

#### Spawning Areas:

Between Lake St. John and Kepenkeck Lake and on Pinsents Brook.

From Pinsents downstream to Terra Nova Lake.

#### Barriers to Fish Migration:

Falls at mile 5 and 14, (8.04 - 22.52 km), on the main river.

Fishway built around falls at mile 5 (8.04 km) in 1954 and mile 14 (22.52 km) in 1952. Dam built at top of falls at mile 5 (8.04 km) to raise pool and put more water through fishway at low water in 1959.

Three pools added to upper fishway at mile 14 (22.52 km) in 1961. Falls, 21 fet. (6.40 m) high, on the main river 10 miles (16.1 km) above west end of Terra Nova Lake, accessibility questionable, Mollyguajeck falls.

Maccles Brook, construction of a wooden diversion dam and cleaning out of a natural run around, 1.5 miles (2.4 km) from mouth, completed in 1953. There are no logging dams remaining on this river or tributaries which constitute an obstruction to salmon. Any remaining dams are above complete natural obstructions and all gates are open.

George's Brook, Butt's Brook, Pinsents Brook - no obstructions.

Photographs on file; Nos. 175-178, 180, 181, 277, 324, 326, 369, 783, 786, 792, 803, 804, 806, 151, 152, 344, 347, 392, 393, 470, 481, 630, 831, 832.

#### Water Quality Data, Sample collected July 1973, August 1972

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C (μ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.30	1.5	3.5	2.35	3.5	15.0	0.7	1.8

## Water Temperature:

At fishway at mile 5 falls (8.04 km). 50°F June 26, 1956;

65°F July 8, 1957; 60°F June 27, 1960.

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout, ouananiche, Arctic char,  
American smelt, three-spined sticklebacks.

## Atlantic Salmon Angling Record - Terra Nova River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kgms.	No.	lbs.	kgms.	No.	lbs.	kgms.
1952	1421	119	543	246.5	23	170	77.2	142	713	323.7
1953	1706	151	641	291.0	13	109	49.5	164	750	340.5
1954	1003	72	291	132.1	13	126	57.2	85	417	189.3
1955	335	178	717	325.5	16	113	51.3	194	830	376.8
1956	-	198	775	351.9	18	142	64.5	216	917	416.4
1957	569	73	283	128.5	3	31	14.1	76	314	142.6
1958	590	123	510	231.5	12	77	35.0	135	587	266.5
1959	959	120	465	211.1	20	156	70.8	140	621	281.9
1960	463	157	596	270.6	8	65	29.5	165	661	300.1
1961	623	117	413	187.5	14	103	46.8	131	516	234.3
1962	777	254	955	433.6	25	197	89.4	279	1152	523.0
1963	1160	274	1027	466.3	29	230	104.4	303	1257	570.7
1964 <sup>1</sup>	699	334	1292	586.6	5	42	19.1	339	1334	605.7
1965	787	327	1305	592.5	10	76	34.5	337	1381	627.0
1966	117	224	959	435.4	2	15	6.8	226	974	442.2
1967	557	337	1430	649.2	2	18	8.2	339	1448	657.4
1968	143	319	1246	565.7	12	92	41.8	331	1338	607.5
1969	211	523	2063	936.6	-	-	-	523	2063	936.6
1970	285	443	1778	807.2	18	118	53.6	461	1896	860.8
1971	1458	402	1606	729.1	11	76	34.5	413	1682	763.6
1972	456	467	1734	787.2	11	70	31.8	478	1804	819.0
1973	1058	334	1247	566.1	1	7	3.2	335	1254	569.3
1974										
1975										
1976										
1977										
MEAN										
1964-68	460	308	1246	565.9	6	49	22.1	314	1295	587.9
1969-73	694	434	1686	765.3	8	54.	24.6	442	1740	789.9

<sup>1</sup>Angling data 1964-73 estimated to be 90% accurate. (T. Curran, personal communications.)

Summary, Fishway Counting Trap Data, Upper Terra Nova Fishway

Year	Grilse Under 6 lbs. (2.74 kilograms)	Salmon 6 lbs. and over	Total No. Fish
1955	53	24	77
1956	32	44	76
1957	21	1	22
1958	10	-	10
1959	120	20	140
1960	86	-	86
1961	74	1	75
1962	284	4	288
1963	372	35	407
1964	246	18	264
1965	334	51	385
1966	134	2	136
1967	373	42	415
1968	409	28	437
1969	463	136	599
1970	563	170	733
1971	316	121	437
1972	330	202	552
1973	340	222	562
1974			
1975			
1976			
1977			

Summary, Fishway Counting Trap Data, Lower Terra Nova Fishway

Year	Grilse	Salmon	Total No. Fish
	Under 6 lbs. (2.74 kilograms)	6 lbs. and over	
1956	558	36	594
1957	141	41	182
1958	677	195	872
1959	394	67	461
1960	490	217	707
1961	318	99	417
1962	496	275	771
1963	551	320	871
1964	419	297	716
1965	474	254	728
1966	368	220	588
1967	613	359	972
1968	715	374	1089
1969	658	393	1051
1970	754	470	1224
1971	580	277	857
1972	603	347	950
1973	455	299	754
1974			
1975			
1976			
1977			

Gene Frequency: Not Completed.

Timing of Run: (Based on fishway counting trap statistics).

<u>Year</u>	<u>First fish</u>	<u>Last fish</u>	<u>Week of peak run</u>
Average 1968-1971	June 14-20	Sept.27-Oct. 4	July 18-24

Accessibility to Anglers:

Lower Terra Nova accessible by boat and trails to approximately 1 mile (1.61 km) above lower falls.

Upper Terra Nova accessible to a point a few miles downstream from upper falls by boat and trails.

Terra Nova Lake and river to Mollyguaheck falls accessible by boat and old logging roads to Pinsents Brook.

Maccles Brook accessible by foot trails to Maccles Lake.

North West Alexander Bay accessible by boat at mouth and by trails from mouth or from Trans-Canada Highway.

Surveys:

Biological 1952. Blair. Counting Fence.

Engineering survey of Mollyguaheck falls in 1964.

Engineering survey of Mollyguaheck falls dam in 1964.

Redd Counts: None to date.

Miscellaneous Information: Salmon escapement occurs in Pinsents Brook, George's Brook and Butt's Brook. Large run of salmon occurs in Maccles Brook.

References:

Anononyous. Counting Trap and Counting Fence Reports, 1955-1965.

MS report, Fisheries Service, St. John's, Newfoundland.

Anononyous. 1962. Salmon and Trout Management Program. MS report, Fisheries Service, St. John's, Newfoundland.

Blair, 1952. F.R.B. Annual Report.

Tulk, E.L. 1964. Reconnaissance Survey Report of Terra Nova  
River and Associated Tributaries. MS report, Fisheries  
Service, St. John's, Newfoundland.





## BIG BROOK

Location: 48°32'15" N. 53°38'20" W. Newmans Sound, Bonavista Bay.

Map Reference: Eastport. 2 C/12 West half.

CHARACTERISTICS OF DRAINAGE BASIN

Geomorphological Factors:

Basin area, 23.2 miles<sup>2</sup>, (60.08 km<sup>2</sup>). Mean width, 2.5 miles, (4.02 km).

Perimeter, 20.9 miles, (33.62 km). Axial length, 8.2 miles, (13.19 km).

Maximum basin relief, 709 feet, (216.10 m).

Geology:

Predominantly Precambrian volcanic with the remainder consisting of Precambrian sedimentary.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration:

Nil.

Photographs on file: Nos. 1053

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 <sub>3</sub> ppm.
6.9	6.0	8.0	0.9	4.5	28.0	1.2	7.32

FISH POPULATIONS

Species Present: Atlantic salmon, brook trout (sea run and resident).

Atlantic Salmon Angling Record - Big Brook.

Year	Rod days	<u>Grilse</u>			<u>Salmon</u>			<u>Total</u>		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1952	48	1	4	1.8	-	-	-	1	4	1.8
1953	177	14	49	22.2	-	-	-	14	49	22.2
1954	181	4	12	5.4	1	6	2.7	5	18	8.1
1955	45	-	-	-	-	-	-	-	-	-
1956	-	6	22	10.0	-	-	-	6	22	10.0
1957	125	10	31	14.1	-	-	-	10	31	14.1
1958	No report									
1959	No report									
1960	No report									
1961	No report									
1972	No report									
1973	No report									
1974										
1975										
1976										
1977										
MEAN										
1952-57	115	6	24	10.7	-	-	-	7	25	11.3

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: By trails from Trans-Canada Highway.

Surveys: None to date.

Redd Counts: None to date.

References:

Map Reference: Eastport. 2 C/12 West half.

### Geomorphological Factors:

Maximum basin relief, 400 feet, (121.92 m).

Precambrian sedimentary.

### Barriers to Fish Migration:

## Water Quality Data, Sample Collected

pH	Total Alkalinity ppm.	Total Hardness ppm.	Turbidity JTU	Cl ppm.	Conductivity at 25°C ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.

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:

## BREAD COVE BROOK

Location: 48°28'55" N. 53°55'30" W. Clode Sound, Bonavista Bay.

Map Reference: Sweet Bay. 2 C/5 West half.

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 28.4 miles<sup>2</sup>, (73.55 km<sup>2</sup>). Mean width, 2.0 miles, (3.21 km).

Perimeter, 31.6 miles, (50.84 km). Axial length, 10.7 miles, (17.21 km).

Maximum basin relief, 1,050 feet, (320.04 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 <sub>3</sub> ppm.
6.6	4.0	4.0	0.9	3.5	20.0	1.2	48.8

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:

## NORTHWEST RIVER

Location: 48°23'30" No. 54°11'45" W. Port Blandford, Bonavista Bay.

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

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 266.1 miles<sup>2</sup>, (689.19 km<sup>2</sup>). Mean width, 5.8 miles, (9.33 km).

Perimeter, 118.5 miles, (190.66 km). Axial length, 37.3 miles, (60.01 km).

Maximum basin relief, 950 feet, (289.66 m).

## Geology.

Predominantly acidic intrusive rocks with the remainder consisting of gneissis.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

Barriers to Fish Migration: Nil.

In 1948, channel blasted around falls at mile 2 (3.21 km), on the main river. In 1956, channel improved by widening and deepening. Improvements considered effective. Several small rapids near the mouth do not present problems for migrating fish at any water level. In 1972 diversion dams at previously blasted fish passage repaired.

Photographs on file: Nos. 543, 544, 1102

Water Quality Data, Samples 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 <sub>3</sub> ppm.
6.45	2.5	6.5	0.43		26.0	0.8	3.1

FISH POPULATIONS

Species Present: Atlantic salmon and brook trout, ouananiche.

Atlantic Salmon Angling Record - Northwest River.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1956	-	30	135	61.3	-	-	-	30	135	61.3
1959	84	47	178	80.8	-	-	-	47	178	80.8
1960	450	44	165	74.9	1	12	5.4	45	177	80.3
1961	181	7	30	13.6	-	-	-	7	30	13.6
1963	784	118	488	221.6	8	57	25.9	126	545	247.5
1964 <sup>1</sup>	182	142	555	252.0	7	59	26.8	149	614	278.8
1965	159	123	489	222.0	16	110	49.9	139	599	271.9
1966	231	154	645	292.8	2	16	7.3	156	661	300.1
1967	129	52	221	100.3	-	-	-	52	221	100.3
1968	131	96	425	193.0	6	40	18.2	102	465	211.2
1969	198	180	719	326.4	7	44	20.0	187	763	346.4
1970	202	142	572	259.7	-	-	-	142	572	259.7
1971	1949	187	749	340.0	3	23	10.4	190	772	350.4
1972	175	118	519	235.6	2	17	7.7	120	536	243.3
1973	888	119	483	219.3	5	42	19.1	124	525	238.4
1974										
1975										
1976										
1977										
MEAN										
1964-68	166	113	468	212.5	6	45	20.4	119	512	232.4
1969-73	682	149	608	276.0	3	25	11.4	152	634	287.7

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

Estimated Atlantic salmon smolt production and adult sea survival, Northwest River and tributaries.

If smolt production per

100 yd<sup>2</sup> (83.7 m<sup>2</sup>) is:

	Smolts produced:			
		1	2	3
		4,718	9,436	14,154
Adult return if sea survival is:	5%	236	472	708
	10%	472	944	1,415
	15%	708	1,415	2,123
	20%	944	1,887	2,831
	25%	1,180	2,359	3,539



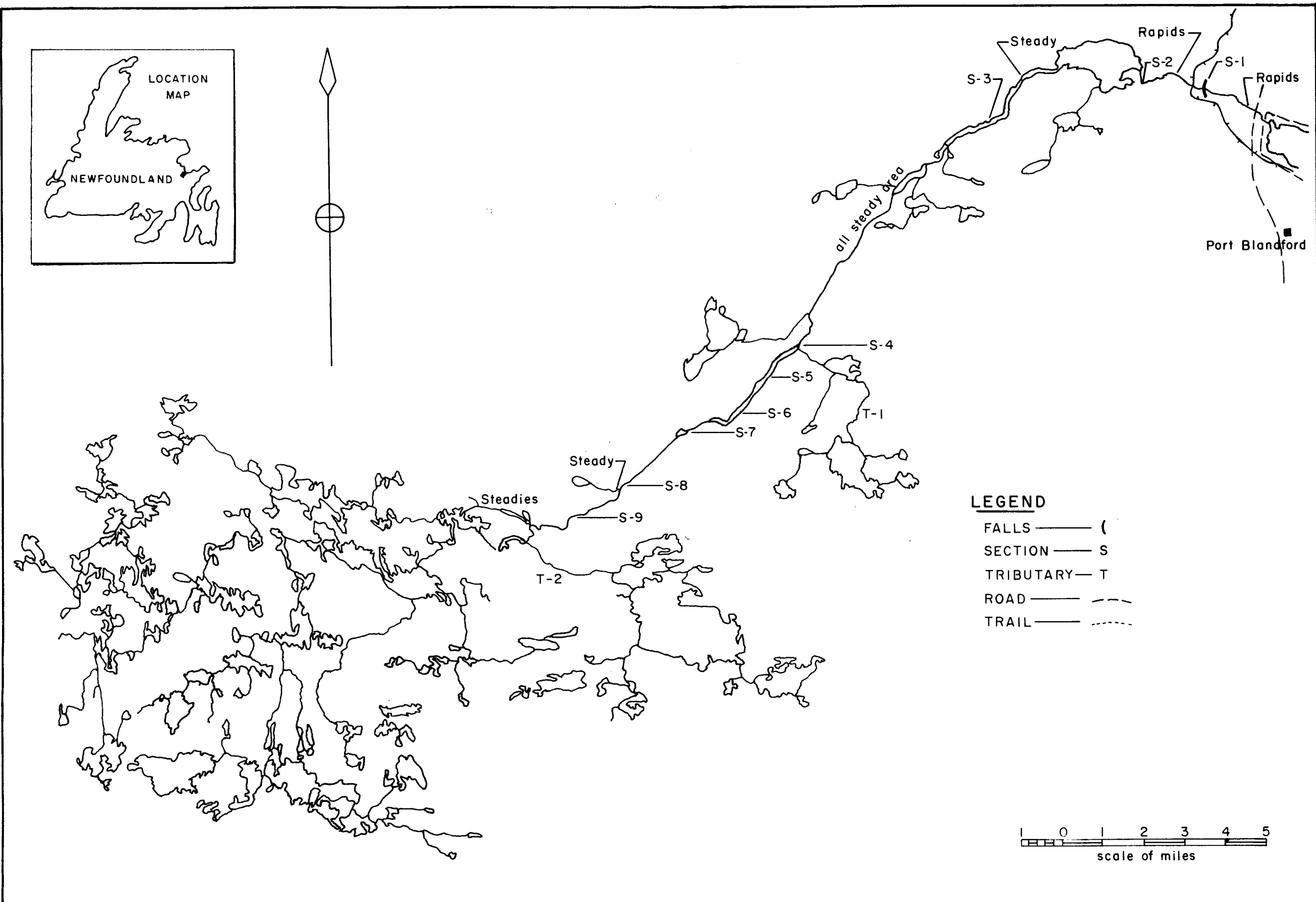


FIG. 21 OUTLINE MAP OF NORTHWEST BROOK SHOWING OBSTRUCTION LOCATIONS AND SECTIONS SURVEYED

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	June 21 - 27	September 8 - 15	July 20 - 27 (1968)

Accessibility to Anglers:

Accessible by trails for approximately 4 miles (6.43 kilometers)  
upstream from mouth. Upper reaches above CNR is inaccessible.

Surveys: Biological  
Stream Inventory 1969-1970

Redd Counts: None to date.

References:

Riche, L. & Traverse, G. 1971. River Investivation 1969-1970  
An Inventory.



## SALMON BROOK

Location: 48°23'15" N. 54°11'55" W. Clode Sound,  
Bonavista Bay.

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

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 42.5 miles<sup>2</sup>, (110.07 km<sup>2</sup>). Mean width, 3.2 miles,  
(5.14 km).

Perimeter, 34.4 miles, (55.34 km). Axial length, 13.4 miles,  
(21.56 km).

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

## Geology:

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

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

## Main River:

In 1972, boulders in and at bottom of falls just above highway  
bridge blasted. Old dam at first steady that had become blocked  
with debris and logs opened up.

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 ( $\mu$ mhos/cm)	Ca ppm.	HCO <sub>3</sub> ppm.
6.23	3.0	4.5	0.95	2.8	14.0	1.2	3.7

FISH POPULATIONS

Species Present: Atlantic salmon.

Atlantic Salmon Angling Record - Salmon Brook.

Year	Rod days	Grilse			Salmon			Total		
		No.	lbs.	kg	No.	lbs.	kg	No.	lbs.	kg
1952	35	17	68	30.9	-	-	-	17	68	30.9
1953	54	18	73	33.1	3	20	9.1	21	93	42.2
1954	183	65	243	110.3	-	-	-	65	243	110.3
1955	43	69	293	133.0	-	-	-	69	293	133.0
1956	-	132	482	219.3	-	-	-	132	482	219.3
1957	235	58	205	93.1	1	7	3.2	59	212	96.3
1958	175	90	328	148.9	-	-	-	90	328	148.9
1959	42	14	53	24.1	-	-	-	14	53	24.1
1960	10	3	12	5.4	-	-	-	3	12	5.4
1963	43	6	26	11.8	-	-	-	6	26	11.8
1964 <sup>1</sup>	18	9	36	16.3	-	-	-	9	36	16.3
1965	12	6	26	11.8	1	7	3.2	7	33	15.0
1966	2	1	4	1.8	-	-	-	1	4	1.8
1967	10	5	21	9.5	-	-	-	5	21	9.5
1968	34	46	193	87.6	2	13	5.9	48	206	93.5
1969	28	21	82	37.2	1	7	3.2	22	89	40.4
1970	26	27	109	49.5	-	-	-	27	109	49.5
1971	226	32	134	60.8	-	-	-	32	134	60.8
1972	22	16	67	30.4	-	-	-	16	67	30.4
1973	422	94	384	174.3	3	20	9.1	97	404	183.4
1974										
1975										
1976										
1977										
MEAN										
1964-68	15	13	56	25.4	0.6	4	1.8	14	60	27.7
1969-73	145	38	155	70.5	0.8	5	2.3	39	161	72.1

<sup>1</sup> Angling data 1964-73 estimated to be 90% accurate. (T. Curran, 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 12 - 18	August 20 - 26	July 20 - 27 (1968)

Accessibility to Anglers:

Accessible by trails for approximately 4 miles (6.43 kilometers)  
from mouth. T.C.H. crosses river 1 mile (1.61 kilometers) upstream  
from mouth.

Surveys: None to date.

Redd Counts: None to date.

References:



## MIDDLE BROOK

Location: 48°21'25" N. 54°09'50" W. Clode Sound, Bonavista Bay.

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

CHARACTERISTICS OF DRAINAGE BASIN

## Geomorphological Factors:

Basin area, 24.3 miles<sup>2</sup>, (62.93 km<sup>2</sup>). Mean width, 2.2 miles, (3.53 km).

Perimeter, 28.7 miles, (46.17 km). Axial length, 11.3 miles, (18.18 km).

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

## Geology:

Almost entirely Precambrian volcanic with small amounts of Precambrian sedimentary and acidic intrusive rocks.

CHARACTERISTICS OF STREAMS IN DRAINAGE BASIN

## Barriers to Fish Migration:

No major obstructions.

Photographs on file; Nos.

## Water Quality Data, Sample Collected

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

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.

Reed Counts: None to date.

References:

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