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Stream Surveys of 31 Rivers in Labrador

Volume I: English River to Fraser River

by
H. P. Murphy and T. R. Porter

Internal Report Series No. New/1-74-8

Resource Development Branch
Newfoundland Region

DEPARTMENT OF THE ENVIRONMENT
FISHERIES AND MARINE SERVICE
NEWFOUNDLAND REGION

INTERNAL REPORT SERIES NO. NEW/1-74-8

STREAM SURVEYS OF 31 RIVERS IN LABRADOR

VOLUME I: ENGLISH RIVER TO FRASER RIVER

by

H.P. Murphy[1] and T.R. Porter

Resource Development Branch
Fisheries and Marine Service
St. John's, Newfoundland

1974

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INTRODUCTION

During August 1973, as part of the Stream Inventory Program initiated in 1970 aerial surveys were conducted on 31 rivers from English River (Index 900) north to Eclipse River (Index 2924). Data were collected on physical characteristics of each river system, namely; bottom composition, obstructions to Atlantic salmon (Salmo salar) or Arctic char (Salvelinus alpinus) migration, and water chemistry. The collection of information on fish populations was limited to conversations with local residents and occasional angling effort. Water samples were sent to St. John's laboratory for chemical analysis by the Water Resources Group, Resource Development Branch.

Potential population estimates of Atlantic salmon, based on estimated rearing area, was calculated for all rivers except those north of Kingurutik R (Index 2142). Rivers north of Nain support mainly Arctic char populations.

In tables throughout the report the bottom type was coded: R, represents rubble; B, boulders; G, gravel and S, sand.

A "Hughes 500" helicopter was used for the survey and was quite adequate for the operations. Bases of operations were Saglek, Nain, and Hopedale.

This report is published in two volumes. Volume I contains information on rivers from English R (L 900) to Fraser R (L 2116). Volume II contains information on rivers from Kamanatsuk Brook (L 2140) to Eclipse R (L 2924).

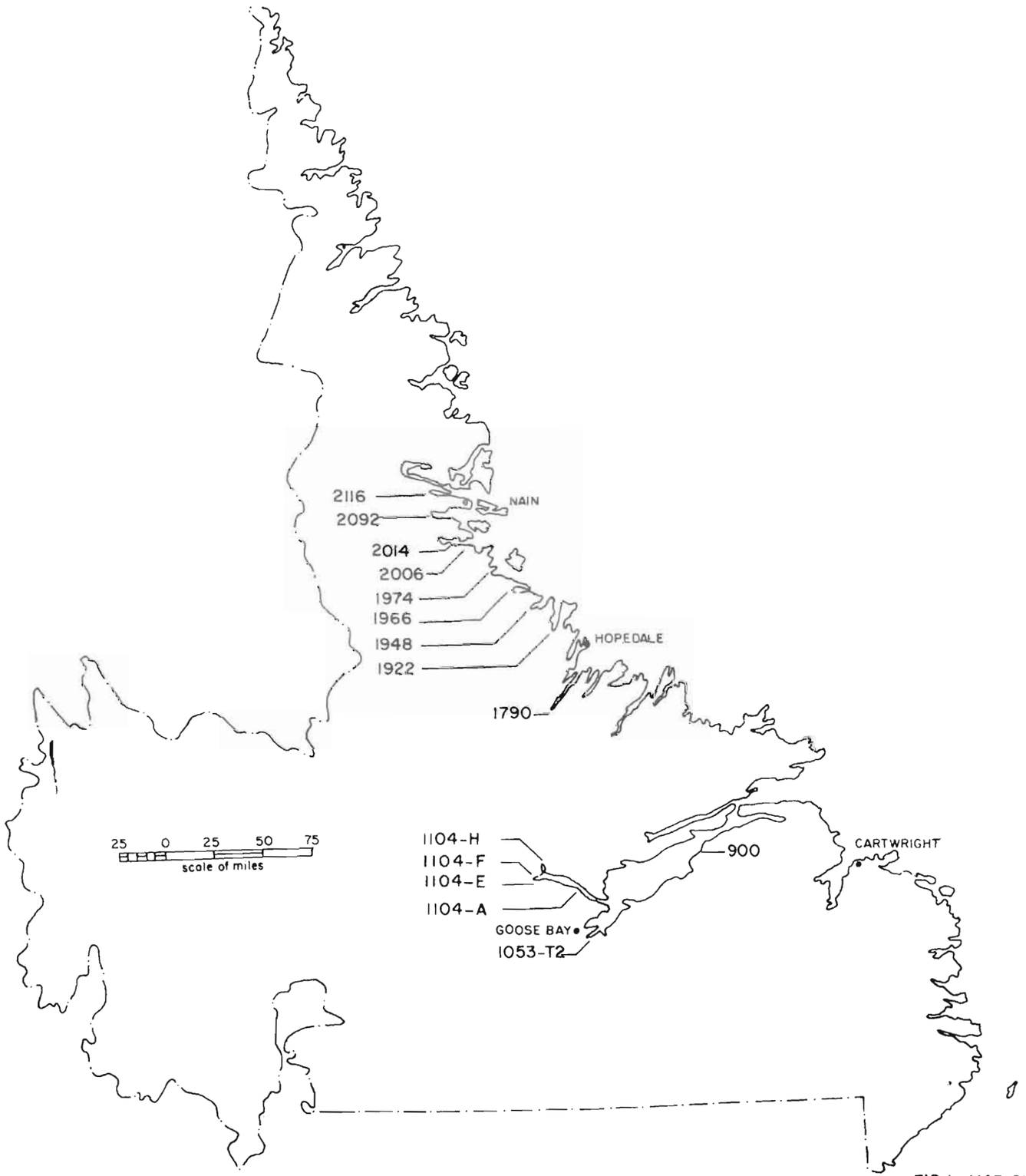


FIG.1 : MAP SHOWING LOCATIONS OF RIVERS SURVEYED
1973

English River - Index 900

Position of Mouth:	53°53'00" N. Latitude 58°51'00" W. Longitude
Location of Mouth:	Lake Melville
Map Reference:	Lake Melville 13F

GENERAL DESCRIPTION

Drainage Area: 247 square miles
Mean Width of Drainage Basin: 15 miles
Axial Length of Basin: 27 miles
Perimeter of Basin: 100 miles
Maximum Basin Relief: 3,400 feet
Length of Main Stem (including standing water): 39 miles
Number of Major Tributaries: 4
Total Length of all Tributaries (including standing water: 229 miles

Fish Populations

No information available.

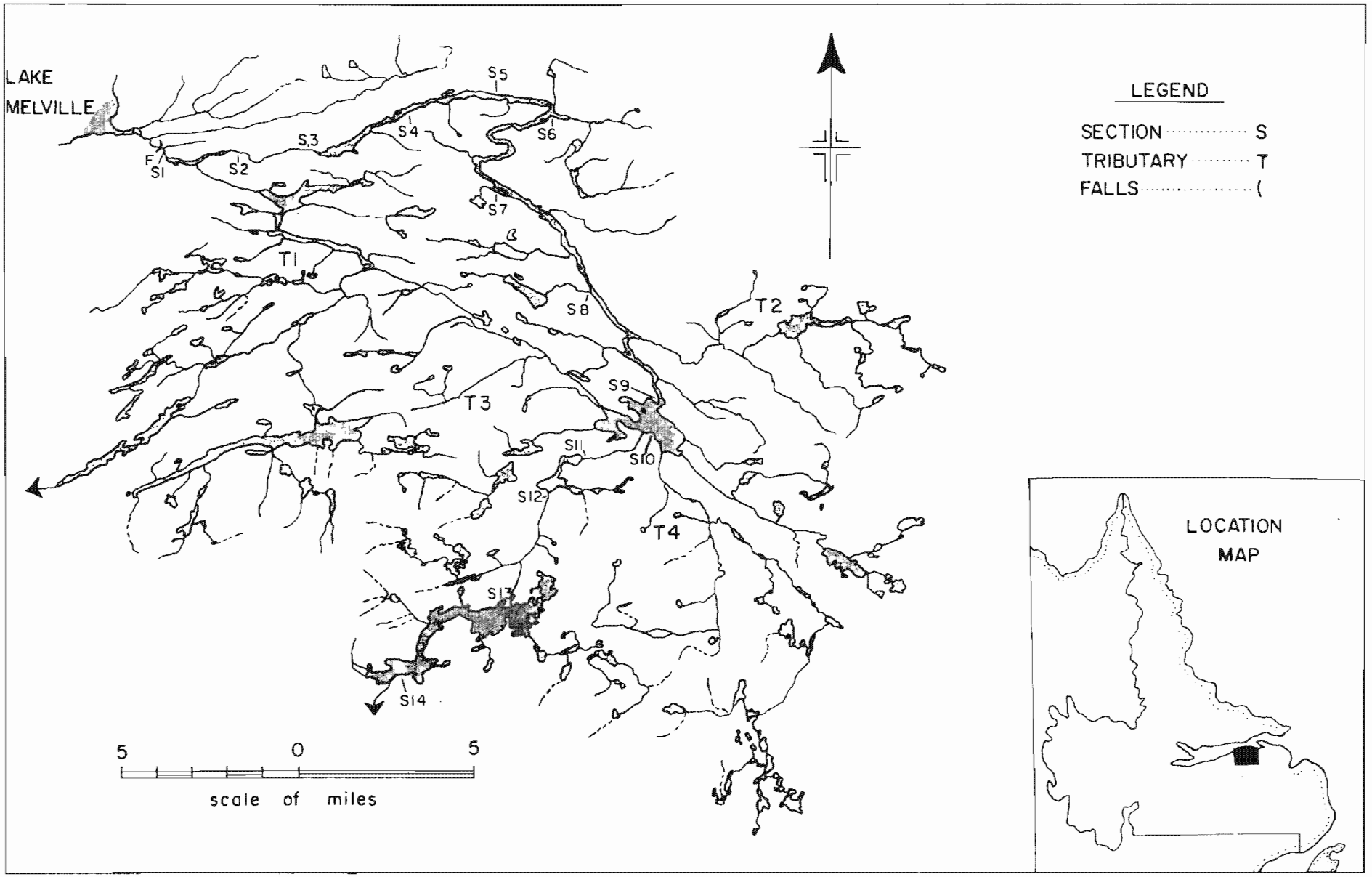


FIG. 2 : MAP OF ENGLISH RIVER, INDEX 900, SHOWING SECTIONS SURVEYED

Obstructions

Table 1. Obstructions on main stem of English River - Index 900.

Type of Obstruction	Location (mile)	Degree of Obstruction	Description
Falls	1	Complete	Vertical height 20' Angle 90° 40' wide

There is one complete obstruction, a twenty-foot falls at mile 1 of the main stem. Due to this obstruction, the four major tributaries were not surveyed. Estimation from topographic maps shows these tributaries contain 4,000 rearing units suitable for Atlantic salmon.*

*Note: This figure was not included in bottom composition figures.

Water Chemistry

Water sample taken on August, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.5	6.0 ppm	13.0 micromhos	5.7 JTU	4.0 ppm	0.8 ppm	2.0 ppm

Table 2 Bottom composition of accessible areas of the main stem - English River

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq. yds (per unit)	Bottom Type	Rearing % units	Spawning % units
L	0 - 1	1760 (1)	50	880	Rubber/ Boulder	90	792
Total				880			792

Table 3. Bottom Composition of Inaccessible Areas of the main stem, English River - Index 900.

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total Units	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
2	1 - 4	5280 (3)	50	2640	Bedrock/ Boulder	50	1320			Pool: Riffle Area.
3	4 - 6	3520 (2)	65	1232	Boulder/ Rubble	75	924			Pool: Riffle Area.
4	6 - 9	5280 (3)	135	7128	Sand					Steady
5	9 - 12	5280 (3)	100	5280	Sand					Steady
6	12 - 14	3520 (2)	65	2288	Rubble/ Boulder	100	2288			
7	14 - 19	8800 (5)	65	5720	Sand/ Rubble	50	2860			Pool: Riffle Area.
8	19 - 24	8800 (5)	65	5720	Rubble/ Boulder	80	4576			
9	24 - 25	7040 (4)	50	3520	Boulder/ Pubble/ Bedrock	80	2816			
10	25 - 27	3520 (2)								Lake
11	27 - 30	5280 (3)	20	1056	Boulder	80	845			
12	30 - 32	3520 (2)								Lake
13	32 - 33	5280 (3)	10	528	Boulder	100	528			
14	35 - 39	7040 (4)								Lake
Total				35112			16157			

POTENTIAL POPULATION ESTIMATION

Table 4 . Summary of bottom composition of English River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	880	35,112	35,992
Rearing units	792	16,157	16,949
Spawning units			

Table 5 . Estimated Atlantic salmon smolt production and adult sea survival of English River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		792	1,584	2,376
Adult return if sea survival is:	5%	40	79	119
	10%	79	158	238
	15%	119	238	356
	20%	158	317	475
	25%	198	396	594

PHOTOS ON FILE

	File No.
Falls on main stem at mile 1, English River	13 (3 slides)
Typical sections, main stem, English River	13 (3 slides)
Falls in Headwater section	13 (2 slides)
Headwater area	13 (1 slide)

Fig. 3 Falls on English River at mile 1.

TRAVERSPINE RIVER - INDEX 1053 - 2

Position of Mouth:	53°16'00" N. Latitude 60°17'00" W. Longitude
Location of Mouth:	Tributary to Churchill River at Mile 6.
Map Reference:	Goose Bay 13F. Minipi 13C.

GENERAL DESCRIPTION

Drainage Area: 281 square miles

Mean Width of Drainage Basin: 11 miles

Axial Length of Basin: 30 miles

Perimeter of Basin: 92 miles

Maximum Basin Relief: 1,700 feet

Length of Main Stem (including standing water): 59 miles

Number of major tributaries: 4

Total length of all tributaries (including standing water): 229 miles.

Fish Populations

No data available.

Obstructions

A series of small falls were located between mile 32 and 35. These were partial obstructions. A complete obstruction was found at mile 38. The falls is 12 feet vertical height and about 20 feet wide (Fig. 6).

Bottom Composition

The four main tributaries, T1, T2, T3, and T4, of Traverspine River were not surveyed. There were 1,000 rearing units estimated from topographic maps. The bottom composition of the main stem is shown in Tables 6 and 7 .

Table 6. Bottom composition of accessible areas of the main stem Traverspine River - Index 1053 - 2.

Section	Location (mile)	Distance yds. (miles)	Av. width yds.	Total units 100 sq. yds (per unit)	Bottom Type	Rearing %	Rearing units	Spawning %	Spawning units
1	0 - 5	8800 (5)	70	6160	Sand/Mud	10	626		
2	5 - 21	28160 (16)	50	14080	Rubble/ Boulder	90	12672		
3	21 - 23	3520 (2)	50	1760	Rubble/ Boulder	90	1584		
4	23 - 29	10560 (6)	50	5280	Rubble/ Gravel/ Boulder	100	5280	10	528
5	29 - 32	5280 (3)	20	1056	Gravel/ Rubble/ Boulder	100	1056	10	106
6	32 - 35	5280 (3)	20	1056	Rubble/ Boulder	90	950	10	106
7	35 - 38	5280 (3)	25	1320	Rubble/ Boulder	100	1320		
Total				30712			23478		740

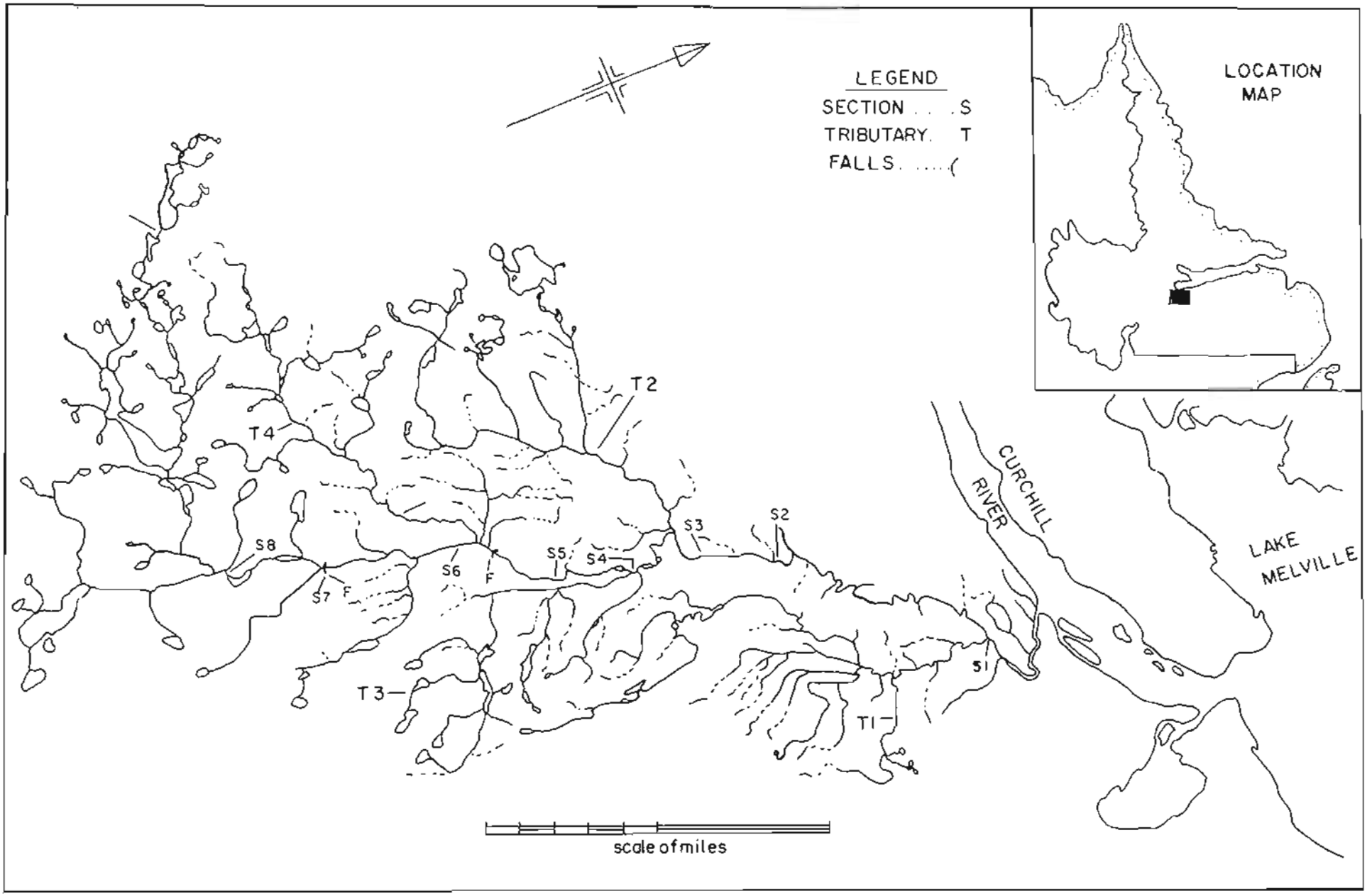


FIG. 4 : MAP OF TRAVERSPINE RIVER, INDEX 1053-2, SHOWING SECTIONS SURVEYED

Table 7. Bottom Composition of Inaccessible Areas of the main stem, Traverspine River - Index 1053 - 2.

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total units 100 sq. yds (per unit)	Bottom Type	Rearing %	Rearing units	Spawning %	Spawning units
8	38 - 41	5280 (3)	25	1320	Pubble/ Boulder	100	1320		
9	41 - 59	31680 (18)	20	6336	Rubble/ Boulder	50	3168		
Total				7656			4488		

POTENTIAL POPULATION ESTIMATION

Table 8. Summary of bottom composition of Traverspine River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	30712	7656	38368
Rearing units	24478*	4488	28966
Spawning units	740		740

* Note: 1,000 units based on estimation from topographic maps unsurveyed tributary.

Table 9 . Estimated Atlantic salmon smolt production and adult sea survival of Traverspine River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is: Smolt produced		1 24,478	2 48,956	3 73,434
Adult return if sea survival is:	5%	1,224	2,448	3,672
	10%	2,448	4,896	7,343
	15%	3,672	7,343	11,015
	20%	4,896	9,791	14,687
	25%	6,120	12,239	18,359

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of Traverspine River	713
Area in section 1, Traverspine River	713
Falls at mile 38	713

Fig. 5 Mouth of Traverspine River

Fig. 6 Falls at Mile 38. Traverspine River.

Cape Caribou River - Index 1104 - A

Position of Mouth: 53°36'30" N. Latitude
Longitude

Location of Mouth: Grand Lake

Map Reference: Goose Bay 13F

GENERAL DESCRIPTION

Drainage Area: 211 square miles

Mean Width of Drainage Basin: 8 miles

Axial Length of Basin: 28 miles

Perimeter of Basin: 78 miles

Maximum Basin Relief: 1,300 feet

Length of Main Stem (including standing water): 34 miles

Number of Major Tributaries: 2

Total Length of all Tributaries (including standing water): 175 miles

Fish Populations

No information available.

Obstructions

Table 10. Obstructions on the main stem of Cape Caribou River.

Type of Obstruction	Location (miles)	Degree of Obstruction	Description
Falls	8	Partial (good "run-around")	Vertical Height 15 Ft. Angle 60° 60 ft. wide

Table 11. Bottom Composition of the Main Stem, Cape Caribou River - Index 1104 - A

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total Units 100 sq. yds (per unit)	Bottom type	Rearing %	Rearing units	Spawning %	Spawning units
1	0 - 7	12320 (7)	50	6160	Rubble/ Boulder/ Gravel	100	6160	5	308
2	7 - 11	7040 (4)	50	3520	Rubble/ Boulder	80	2816		
3	11 - 15	7040 (4)	25	1760	Boulder/ Rubble/ Gravel	100	1760	5	88
4	15 - 20	8800 (5)	20	1760	Rubble/ Boulder	100	1760	5	88
5	20 - 34	24640 (14)	15	3696		60	2218		
Total				16896			14714		484

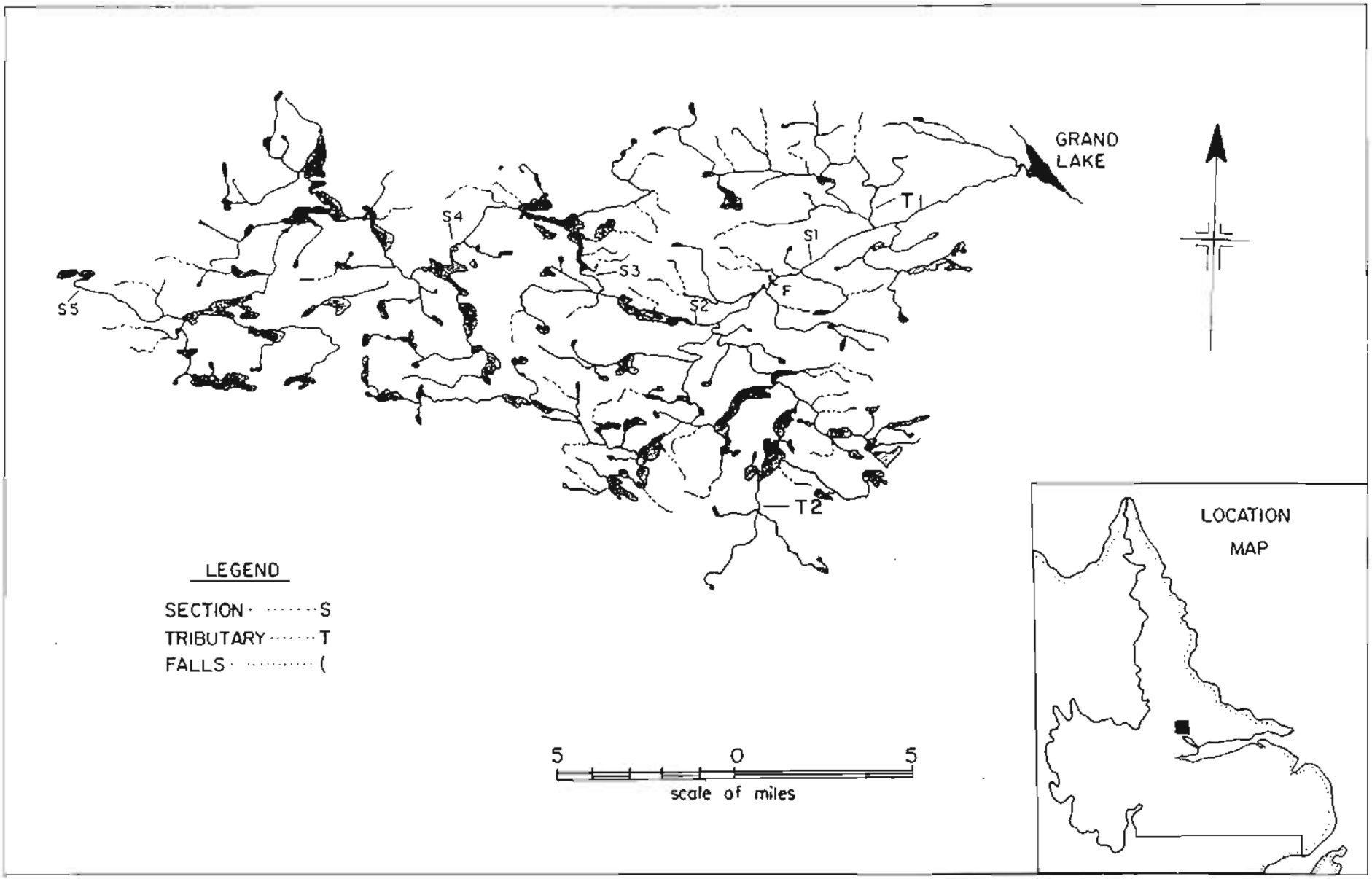


FIG. 7: MAP OF CAPE CARIBOU RIVER, INDEX 1104-A, SHOWING SECTIONS SURVEYED

Table 12. Estimated bottom composition of tributaries, Cape Caribou River - Index 1104-A.

Section	Location	Distance yds (miles)	Av. width yds.	Total Units 100 sq.yds. (per unit)	Bottom Type	Rearing		Spawning	
						%	Units	%	Units
T1	Entire stream	14,080 (8)	10	1,408	Not surveyed	80	1,126		
T2	Entire stream	24,640 (14)	10	2,464		80	1,971		
Total				3,872			3,097		

POTENTIAL POPULATION ESTIMATION

Table 13. Summary of bottom composition of Cape Caribou River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	20,768		
Rearing units	17,811*		
Spawning units	484		

* Note: 3,097 units estimated, not surveyed.

Table 14. Estimated Atlantic salmon smolt production and adult sea survival of Cape Caribou River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is: Smolt produced		1 17,811	2 35,622	3 53,433
Adult return if sea survival is:	5%	891	1,781	2,672
	10%	1,781	3,562	5,343
	15%	2,672	5,343	8,015
	20%	3,562	7,124	10,687
	25%	4,453	8,906	13,358

PHOTOS ON FILE

Description (55 mm slides)	File No.
Mouth of Main Stem, Cape Caribou River	1371
Falls at mile 8, Cape Caribou River	1372

Fig. 8 Falls on Main Stem at Mile 8. Cape Caribou River.

Beaver River - Index 1104 - E

Position of Mouth:	53°42'00" N. Latitude 60°57'00" W. Longitude
Location of Mouth:	Grand Lake
Map Reference:	Goose Bay 13F Winokapaw Lake 13E, Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 725 square miles

Mean Width of Drainage Basin: 13 miles

Axial Length of Basin: 55 miles

Perimeter of Basin: 168 miles

Maximum Basin Relief: 2,200 feet

Length of Main Stem (including standing water): 64 miles

Number of major tributaries: 1

Total Length of all tributaries (including standing water): 466 miles

Fish Population

Water Chemistry:

A water sample taken on August, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.63	8.0ppm	14.0 micromhos	3.8 JTU	8.0 ppm	1.1ppm	2.0ppm

Obstructions

Table 15.Obstructions on Beaver River.

Type of Obstruction	Location (miles)	Degree of Obstruction	Description
Falls	Main River	Partial	Vertical height: 8 - 10 ft. Angle 60°; 100 ft. wide
Falls	Tributary 1 Mile 12	Partial	Vertical height: 8 ft. Angle 80° 50 ft. wide
Falls	Tributary 1-1 Main mouth	Complete	Vertical height: 15 ft. Angle 90° 100 ft. wide

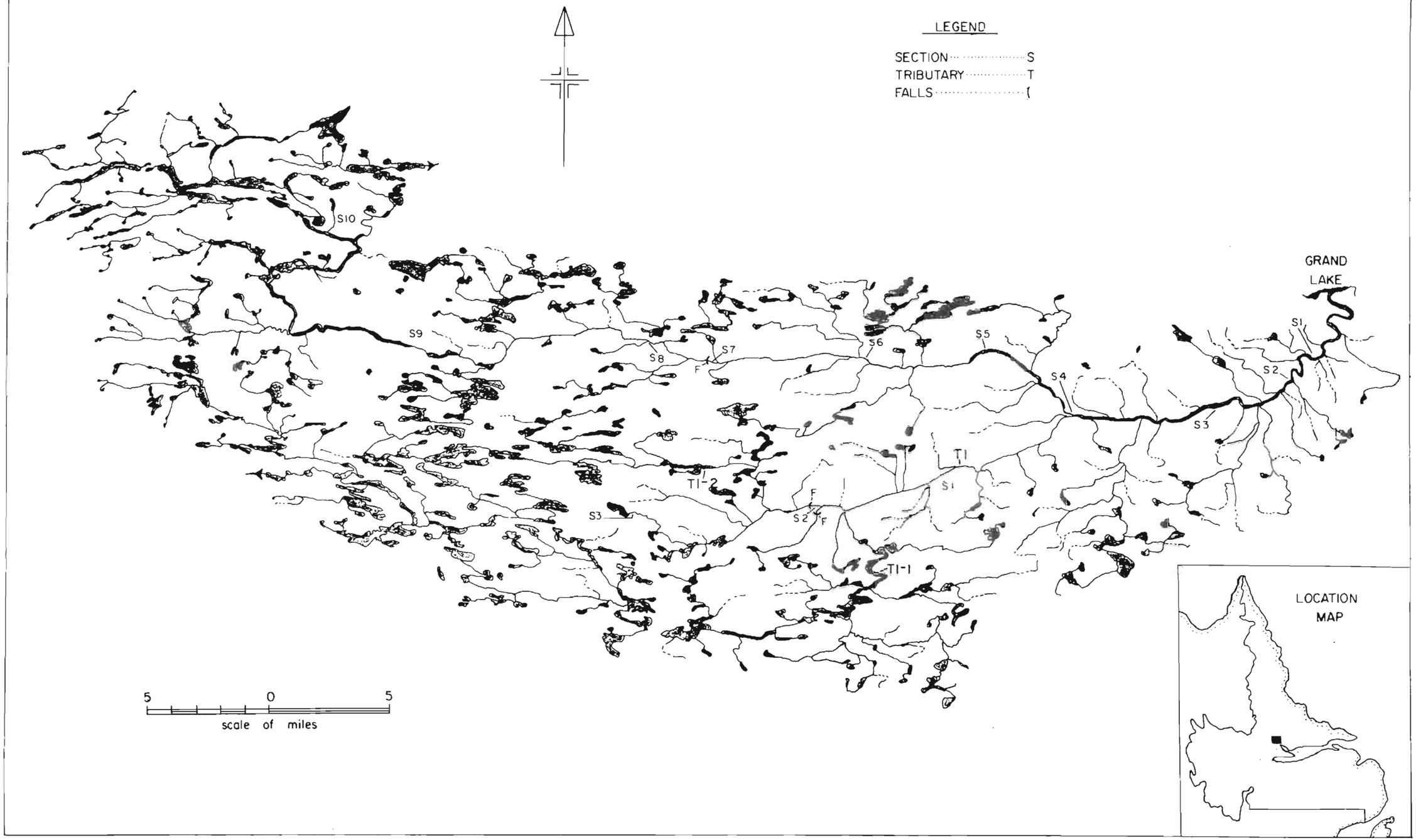


FIG.9: MAP OF BEAVER RIVER, INDEX 1104-E, SHOWING SECTIONS SURVEYED

Table 16. Bottom Composition of the Main Stem, Beaver River - Index 1104 - 1

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total Units 100 sq. yds per unit	Bottom type	Rearing %	Rearing units	Spawning %	Spawning units
1	0 - 5	8800 (5)	100	8800	Sand	50	4400		
2	5 - 9	7040 (4)	65	4576	Gravel/ Sand	75	3432	10	458
3	9 - 12	5280 (3)	65	3432	Gravel/ Rubble	75	2574	10	343
4	12 - 20	14080 (8)	50	7040	Rubble	100	7040		
5	20 - 24	7040 (4)	50	3520	Rubble/ Boulder	100	3520		
6	24 - 31	12320 (7)	35	4312	Rubble/ Boulder	100	4312		
7	31 - 38	12320 (7)	50	6160	Rubble/ Boulder	100	6160		
8	38 - 40	3520 (2)	50	1760	Rubble/ Boulder	100	1760		
9	40 - 52	21120 (12)	50	10560	Rubble/ Gravel/ Sand	75	7920		
10	52 - 64	21120 (12)	50	10560	Sand				
Total				60711			41118		801

Table 17. Bottom Composition of accessible tributaries, Beaver River - Index 1104 - F.

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total Units 100 sq. yds (per unit)	Bottom type	Rearing %	Rearing units	Spawning %	Spawning units
T1 - S1	0 - 6	10560 (6)	50	5280	Rubble/ Sand	100	5280	20	1056
- S2	6 - 12	10560 (6)	50	5280	Rubble/ Boulder	100	5280		
- S3	12 - 20	14080 (8)	25	3520		25	2640		
T1 - 2	Entire Stream	26400 (15)	10	2640	Rubble/ Boulder	100	2640		
Total				16720			15840		1056

Note: Remaining tributaries are relatively small streams.

Table 18. Bottom Composition of Inaccessible Tributaries, Beaver River - Index 1104 - E.

Section	Location	Distance yds. (miles)	Av. width yds.	Total Units 100 sq. yds (per unit)	Bottom type	Rearing %	Rearing units	Spawning %	Spawning units
T1 - 1	Entire Stream	88000 (50)	20	17,600		50	8800		
Total				17,600			8800		

Potential Population Estimation

Table 19. Summary of bottom composition of Beaver River and tributaries accessible and inaccesssible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	77,431	17,600	95,031
Pearing units	56,958	8,800	65,758
Spawning units	1,857		1,857

Table 20. Estimated Atlantic salmon smolt production and adult survival of Beaver River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is: Smolts produced		1 56,958	2 113,916	3 170,874
Adult return if sea survival is:	5%	2,848	5,696	8,544
	10%	5,696	11,392	17,087
	15%	8,544	17,087	25,632
	20%	11,392	22,783	34,175
	25%	14,240	28,479	42,719

PHOTOS ON FILE

Description (35 mm slide)	File No.
Area at Main Stem at Section 1	1362
Area of Main Stem at Section 8	1362
Area of Main Stem at Section 6	1362
Area of Main Stem at Section 4	1362
Typical Section of Headwater Area	1362
Falls on Main Stem at mile 38	1363
Tributary 1, Area near Mouth	1364
Falls near mouth on Tributary 1 - 1	1364

Fig.10 Falls on Main Stem at Mile 38.

Fig. 11 Falls on Tributary 1 - 1.

Fig. 12 Main Stem near mouth.

Susan River - Index 1104 - F

Position of Mouth:	53°45'00" N. Latitude 60°54'00" W. Longitude
Location of Mouth:	Grand Lake
Map Reference:	Goose Bay 13F

GENERAL DESCRIPTION

Drainage Area: 140 miles square

Mean Width of Drainage Basin: 5 miles

Axial Length of Basin: 32 miles

Perimeter of Basin: 74 miles

Maximum Basin Relief: 1,600 feet

Length of Main Stem (including standing water): 36 miles

Number of Major Tributaries:

Total Length of all Tributaries (including all standing water): 107 miles

Fish Population

No information available.

Obstructions

There are no serious obstructions on Susan River.

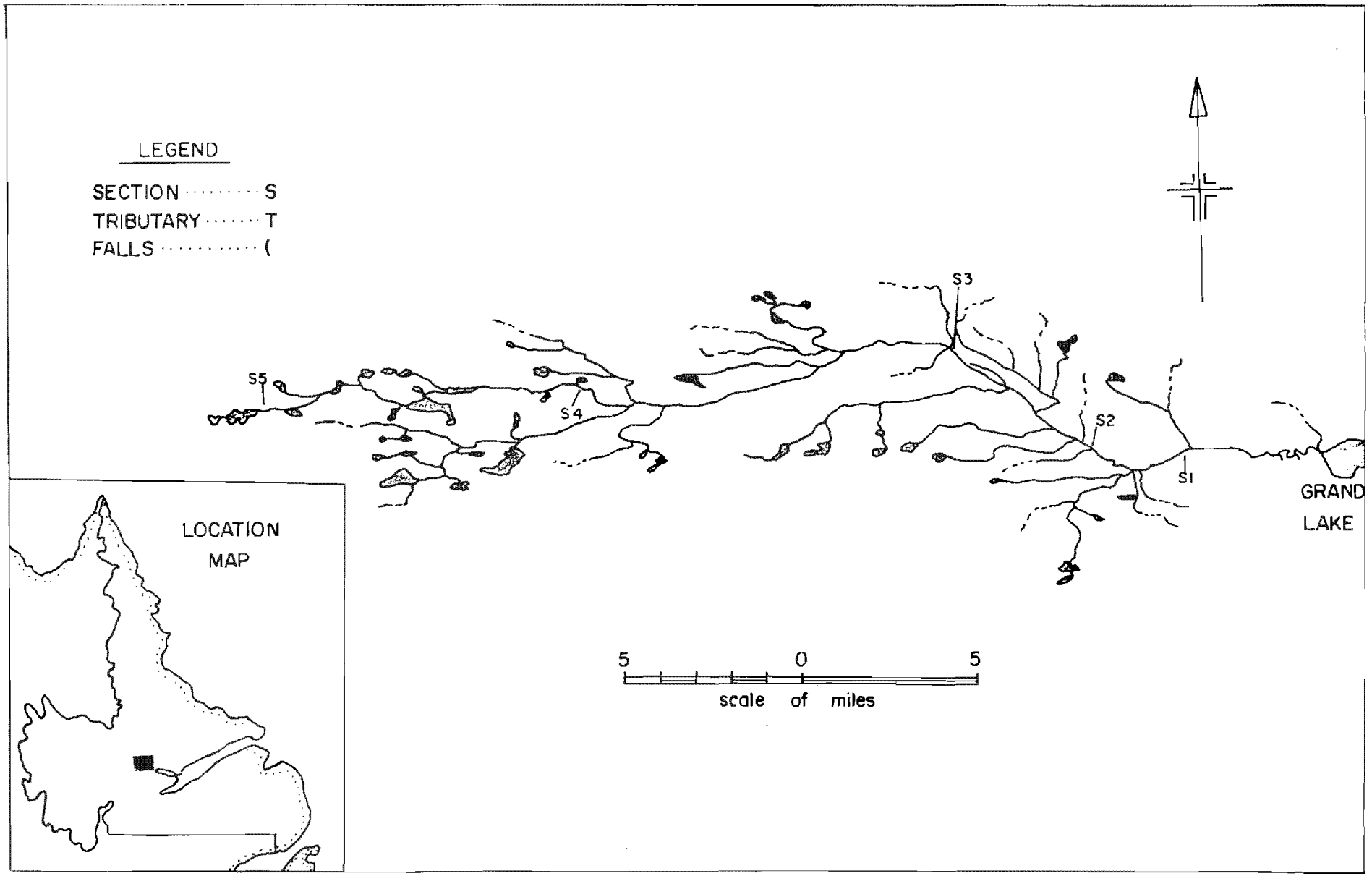


FIG.13 MAP OF SUSAN RIVER, INDEX 1104-F, SHOWING SECTIONS SURVEYED

Table 21. Bottom composition of the Main Stem, Susan River - Index 1104 - F.

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total Units 100 sq. yds per unit	Bottom Type	Rearing %	Rearing units	Spawning %	Spawning units
1	0 - 6	10,560 (6)	50	5280	Sand/ Gravel	50	2640	5	264
2	6 - 9	5280 (3)	35	1848	Rubble/ Boulder	100	1848	10	185
3	9 - 14	8800 (5)	25	2200	Rubble/ Boulder	90	1980		
4	14 - 26	21,120 (12)	25	5280	Boulder/ Rubble	100	5280	5	264
5	26 - 36	17,600 (10)	10	1760	Rubble	90	1584		
Total				16,368			13,332		713

Potential Population Estimation

Table 22. Summary of bottom composition of Susan River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	16,368		
Rearing units	13,332		
Spawning units	713		

Table 23. Estimated Atlantic salmon smolt production and adult sea survival of Susan River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is: / Smolts produced		1 / 13,332	1½ / 26,664	3 / 39,996
Adult return if sea survival is:	5%	6,666	1,333	2,000
	10%	1,333	2,666	4,000
	15%	2,000	4,000	5,999
	20%	2,666	5,333	7,999
	25%	3,333	6,660	9,999

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of Main Stem, Susan River	1365
Area in Section 4, Susan River	1366

Fig. 14 Mouth of Susan Piver - Index 1104 - F.

Crooked River - Index 1104-H

Position of Mouth:	53°47'00" N. Latitude 60°50'00" W. Longitude
Location of Mouth:	Grand Lake
Map Reference:	Goose Bay 13,F Snegamook 13,K

GENERAL DESCRIPTION

Drainage Area: 923 square miles

Mean Width of Drainage Basin: 19 miles

Axial Length of Basin: 47 miles

Perimeter of Basin: 164 miles

Maximum Basin Relief: 1,400 feet

Length of main stem (including standing water): 34 miles

Number of Major Tributaries: 11

Total Length of all Tributaries (including standing water): 308 miles

Fish Populations

Riche (1965) reports 15 fish species in the adjacent Naskaupi watershed which are listed below. In addition, a survey in Grand Lake by Memorial University in 1969 added three additional species. Microgadus tomcod, Rhinichthys cataractae and Cottus bairii. During 1971 an impact study of Naskaupi River by Resource Development, Fisheries and Marine Service added one more to the list - Cottus cognatus, the slimy sculpin. The following is a list of species found in this area:

Common name	Scientific name
Smelt	Osmerus mordax
Lake Chub	Couesius plumbeus
Shorthead red horse	Moxostoma macrolepidotum
Northern hog sucker	Hypentelium nigricans
White sucker	Catostomus commersoni
Longnose sucker	C. catostomus
Round whitefish	Prosopium cylindraceum
Lake whitefish	Coregonus clupeaformis
Lake trout	Salvelinus namaycush
Northern pike	Esox lucius
Burbot	Lota lota
Threespine stickleback	Gasterosteus aculeatus
Arctic char	Salvelinus alpinus
Brook trout	S. fontinalis
Atlantic salmon	Salmo salar
Tomcod	Microgadus tomcod
Longnose dace	Rhinichthys cataractae
Mottled sculpin	Cottus bairdi
Slimy sculpin	C. cognatus

Obstructions

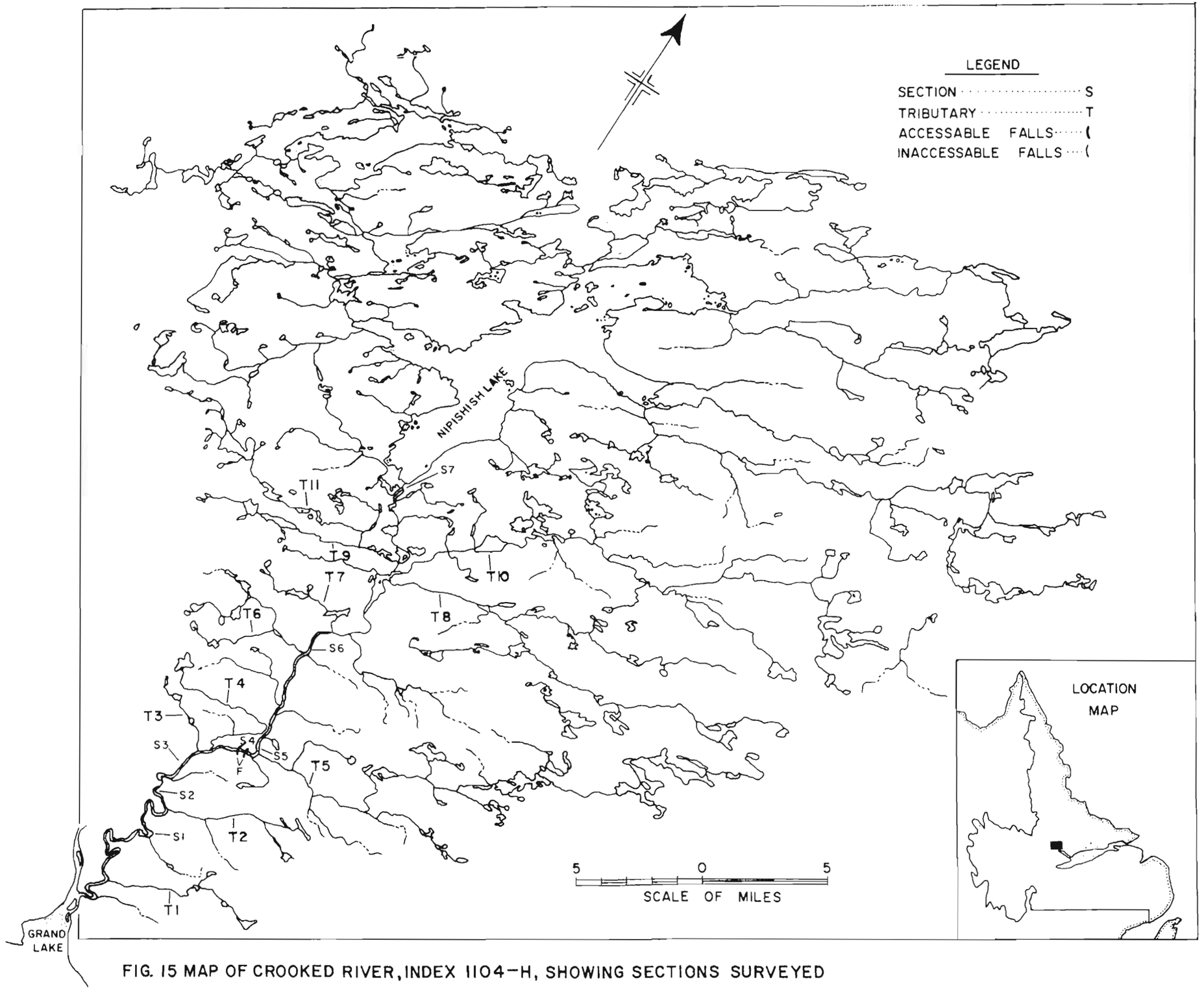


FIG. 15 MAP OF CROOKED RIVER, INDEX 1104–H, SHOWING SECTIONS SURVEYED

Table 24 . Obstructions on main stem of Crooked River, Index 1104-H.

Type of obstruction	Location (mile)	Degree of obstruction	Description	Remarks
Falls[1]	19	Partial	Vertical height 12' Angle 45° 100' wide	Fig. 17
Falls[2]	19	Partial	Vertical height 12' Angle 45° 100' wide	

Table 25 . Bottom composition of the main stem, Crooked River, Index 1104-H.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing units	Spawning %	Spawning units
1	0 - 9	15840 (9)	65	10296	Sand	10	1030	-	-
2	9 -14	8800 (5)	50	4400	Sand	10	440	-	-
3	14 -16	3520 (2)	33	1162	Rubble/ boulder/G.	90	1046	10	116
4	16 -19	5280 (3)	40	2112	R/boulder	100	2112	-	-
5	19 -20	1760 (1)	50	880	R/boulder	100	880	-	-
6	20 -26	10560 (6)	65	6864	B/rubble	100	6864	-	-
7	26 -34	14080 (8)	60	8448	R/boulder	80	6758	-	-
Total				34162			19128		116

Table 26. Bottom composition of tributaries, Crooked River, Index 1104-H.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
T1	Entire stream	12320 (7)	10	1232	R/B	90	1109	-	-
T2	Entire stream	12320 (7)	10	1232	R/B	90	1109	-	-
T3	Entire stream	5280 (3)	10	528		90	475	-	-
T4	Entire stream	14080 (8)	10	1408	R/B	90	1267	-	-
T5-S1	0 - 5	8800 (5)	20	1760	R/B	100	1760	-	-
-S2	5 - 8	5280 (3)	15	792	R/B	100	792	5	396
*-S3	8 - 13	8800 (5)	20	1760	R/B	50	880	-	-
T6	Entire stream	10560 (6)	10	1056		50	528	-	-
T7	Entire stream	8800 (5)	10	880	R	50	440	-	-
T8-S1	0 - 6	10560 (6)	50	5280	B/R	90	4752	-	-
-S2	6 - 18	21120 (12)	20	4224					
T9*	Entire stream	7040 (4)	20	1408	B/R	90	1267	-	-
T10	Entire stream	42240 (24)	20	8448		80	6758	-	-
T11	Entire stream	35200 (20)	10	3520		90	3168	-	-
Tributaries of Nipishish Lake**				15000			13000		
Total				92974			37305		396

* Section not completely surveyed.

** Approximately 100 miles of Headwater stream flows into Nipishish Lake not included in this survey. Estimated - approximately 15,000 total units and 13,000 rearing units

POTENTIAL POPULATION ESTIMATION

Table 27. Summary of bottom composition of Crooked River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	127,136		
Rearing units	56,433		
Spawning Units	512		

Note: 15,000 total units and 13,000 rearing units not included in this survey. 100 miles of stream in headwaters flows into Nipishish Lake.

Table 28. Estimated Atlantic salmon smolt production and adult sea survival of Crooked River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		56,433	112,866	169,299
Adult return if sea survival is:	5%	2,822	5,643	8,465
	10%	5,643	11,287	16,930
	15%	8,465	16,930	25,395
	20%	11,287	22,573	33,860
	25%	14,108	28,217	42,325

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of Crooked River	1367
Typical area of section 1	1368
Typical area of section 3	1368
Typical area of section 6	1368
Falls[1] with falls[2] in background at mile 19	1369
Falls[2] at mile 19	1370

Fig. 16. Mouth of Crooked River, Index 1104-H.

Fig. 17. Falls[1] and falls[2] at mile 19, Crooked River, Index 1104-H.

Fig. 18. Falls[2] at mile 19, Crooked River, Index 1104-H.

Adlatok (Ugutok) River - Index 1790

Position of Mouth:	55°08'30" N. Latitude 60°38'00" W. Longitude
Location of Mouth	Adlatok Bay and Ugutok Bay
Map Reference:	Hopedale, 13 N, 1:250,000 Snegamook, 13 K, 1:250,000 Mistastin Lake, 13 M, 1:250,000 Snegamook Lake 13 K, 1:250,000 Kasheshibow Lake 13 L, 1:250,000

GENERAL DESCRIPTION

Drainage Area: 4,288 square miles

Mean Width of Drainage Basin: 33 miles

Axial Length of Basin: 122 miles

Perimeter of Basin: 481 miles

Maximum Basin Relief: 2,200 feet

Length of main stream (including standing water): 160 miles

Number of Major Tributaries: 10

Total Length of all tributaries (including standing water): 2,816 miles.

The main river flows out into Adlatok and Ugutok Bay; however, only the Adlatok Bay outlet is accessible to anadromous fish. The Ugukok fork is obstructed near the mouth. The main river is mainly a smooth flow through a deep channel. The surrounding countryside is scrub forest except in the headwater area.

Fish Populations

At the mouth of the river in Adlatok Bay there is a fishing lodge

which reports good catches of Atlantic salmon. It is assumed that brook trout, Arctic char and pike are also present throughout this system.

Water Chemistry

A water sample collected on August 21, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.92	12.0 ppm.	24.0 micromhos	3.6 JTU	12.0 ppm.	2.2 ppm.	0.5 ppm.

Obstructions

Table 29. Obstructions on Adlatok River, Index 1790.

Type of obstruction	(mile) Location	Degree of Obstruction	Description	Remarks
Gorge	1	Partial		
Falls	33	Partial	Vertical height 8' Angle 60° 100' wide	Fig. 22
Falls	44	Partial	Vertical height 10' Angle 60° 300' wide (natural "run-around" left hand side)	Fig. 23
Falls	83	Partial	Vertical height 7'	Fig. 24
Falls	130	Complete	Vertical height 12' Angle 80° 30' wide	
Falls	Tributary 2 Mile 1	Partial	Vertical height 15' Angle 60° 200' wide ("Run-around" at high water levels)	Fig. 25
Falls	Tributary 2 Mile 5	Partial	Vertical height 6-8' Angle 80° 30' wide	Fig. 26
Falls	Tributary 2-2 Mile 5	Partial	Vertical height 6' Angle 90° 50' wide	Fig. 27
Falls	Tributary 5 near mouth	Complete	Vertical height 15' Angle 60° 15' wide	Fig. 28
Falls	Tributary 6 at mouth	Complete		
Falls	Tributary 8 at mouth	Complete		Fig. 29
Falls	Tributary 3-I-2 Mile 4	Partial	Vertical height 10' Angle 45° 20' wide	
Falls	Tributary 3-I-2 Mile 6	Complete	Vertical height 10-15' Angle 90° 20' wide	Fig. 30
Falls	Tributary 3-I-3 Mile 6	Complete	Vertical height 10' Angle 90° 10' wide	

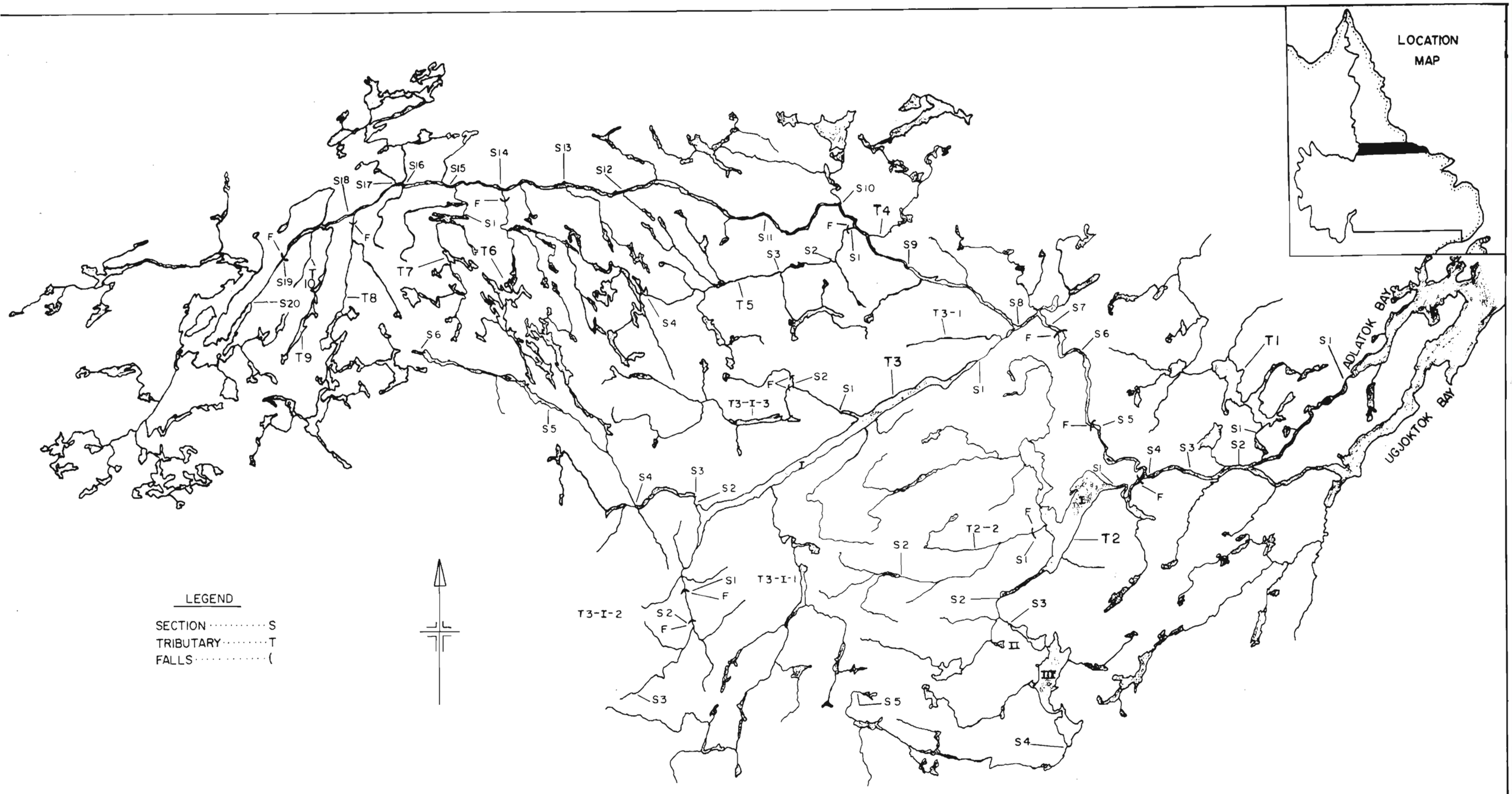


FIG. 19 : MAP OF ADLATOK RIVER, INDEX 1790 SHOWING SECTIONS SURVEYED

Table 30 . Bottom composition accessible and inaccessible areas of main stem, Adlatok River - Index 1790.

Section	Location (mile)	Distance yds (miles)	Ave. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
~~Accessible Areas~~									
1	0 - 1	1760 (1)	25	440	B/R/BR	100	440	-	-
2	1- 13	21120 (12)	100	21120	S/G	10	2112	10	2112
3	13- 19	10560 (6)	100	10560	S	10	1056	10	1056
4	19-23	7040 (4)	100	7040	S	10	704		
5	23-33	17600 (10)	100	17600	B/R/G	80	14080	10	1760
6	33-39	10560 (6)	80	8448	R/B	80	6758		
7	39-44	8800 (5)	100	8800	S/G	50	4400	10	880
8	44-49	8800 (5)	130	11440	G	90	10296	20	2288
9	49-58	15840 (9)	130	20592	G/R	100	20592	90	18533
10	58-68	17600 (10)	100	17600	G/R	90	15840	75	13200
11	68-71	5280 (3)	70	3696	G/R	90	3326	60	2218
12	71-83	21120 (12)	50	10560	B/R	90	9504		
13	83-100	29920 (17)	300	89760					
14	100-106	10560 (6)	50	5280	G/R	90	4752	10	528
15	106-112	10560 (6)	100	10560	G/R	90	9504	10	1056
16	112-117	8800 (5)	50	4400	G	100	4400	100	4400
17	117-119	3520 (2)	40	1408	R/B	80	1126		
18	119-126	12320 (7)	50	6160	R/B	80	4928		
19	126-130	7040 (4)	50	3520	B/R	80	2816		
Total				258984			116634		48031

Table30 . (cont'd.)

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
Inaccessible Areas									
20	130-134	7040 (4)	50	3520	R/B	80	2816		
	Streams off Lake I	88000 (50)	50	44000		50	22000		
Total				47520			24816		

Table 31. Bottom composition accessible and inaccessible tributaries, Adlatok River, Index 1790.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
T1-S1	0-2	3520 (2)	35	1232	R/G	100	1232	10	123
-S2	Streams off Lake I	35200 (20)	25	8800		90	7920		
T2-S1	0-6	10560 (6)	100	10560	B/R/S	75	7920		
T2-S2	6-21	26400 (15)			Shapio Lake (I)				
T2-S3	21-25	7040 (4)	20	1408	G/R	90	1267	50	704
T2-S4	25-39	(14)			Lake II and III				
T2-S5	39-69	52800 (30)	20	10560		75	7920		
T2-2-S1	0-3	5280 (3)	20	1056	B/R/G	100	1056	10	106
T2-2-S2	3-17	24640 (14)	20	4928	R/B	100	4928		
T3-S1	0-5	8800 (5)	50	4400	R	100	4400		
T3-S2	5-35	(30)			Harp Lake (I)				
T3-S3	35-36	1760 (1)	20	352	G/R	100	352	10	35

Table 31. (cont'd.)

Section	Location (mile)	Distance yds (miles)	Av. width yds	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
T3-I-2-S1	0-4	7040 (4)	20	1408	R/B	100	1408		
T3-I-2-S2	4-6	3520 (2)	20	704	R/B	100	704		
Total				45408			39107		968
Inaccessible Areas									
T3-S4	36-43	12320 (7)	75	9240	S	10	924		
T3-S5	43-55	21120 (12)	25	5280	R/G	100	5280	10	528
T3-S6	55-67	21120 (12)	20	4224	R/B	50	2112		
T3-I-2-S3	6-12	10560 (6)	10	1056		100	1056		
T5-S2	0.5-4.5	7040 (4)	25	1760	G/R	90	1584		
T5-S3	4.6-10	9680 (5.5)	30	2904	S/G	50	1452	10	290
T5-S4	Entire stream beyond S3	44000 (25)	25	8800			*5000(estimated)		
T6	Entire Stream			*5000			*3000 (estimated)		
T8	Entire Stream	35200 (20)		*7040			*2000 (estimated)		
T3-I-3-S1	0-4	7040 (4)	50	3520	G	10	352	10	352
S2	4-6	3520 (2)	20	704	G/R	100	704	50	352
T5-S1	0-0.5	880 (0.5)	20	176	R/B	100	176		
T7-S1	0-4	7040 (4)	8	563	B/R	100	563		
S2	remaining stream			*5000			*3000 (estimated)		
T9	entire stream	12320 (7)	20	2464	B/R	70	1725		
T10	entire stream	17600 (10)	10	1760	R	80	1408		
Total				59595			47035		1672

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of Adlatok River and site of USAF camp	514
Adlatok Bay	1233
Main river near mouth (Adlatok Bay Branch)	1234
Main river - typical section	1235 (4 slides)
Falls at mile 1 on tributary 2	1236
Falls at mile 2 on tributary 2	1237
Falls at mile 5 on tributary 2	1238
Shapio Lake	1239
Typical section of tributary 2-2	1240
Falls at mile 5 on tributary 2-2	1241
Falls on main river at mile 33	1242
Falls on main river at mile 44	1243
Main river at sections 10, 15, 19	1244 (3 slides)
Falls on main river at mile 83	1245
Mouth of tributary 5	1247
Falls at tributary 5	1248
Falls on tributary off Harp Lake	1249
Falls on tributary 8 near mouth	1250
Falls on section 19 mile 130	1251
Harp Lake	1252
Mouth of T2 off Harp Lake (falls T3-I-2 mile 6)	1253
Headwater lake	1255

POTENTIAL POPULATION ESTIMATION

Table 32. Summary of bottom composition of Adlatok River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	304,392	107,115	411,507
Rearing units	155,741	71,851	227,592
Spawning units	48,999	1,672	50,671

Table 33. Estimated Atlantic salmon smolt production and adult sea survival of Adlatok River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		155,741	311,482	467,223
Adult return if sea survival is:	5%	7,787	15,574	23,361
	10%	15,574	31,148	46,722
	15%	23,361	46,722	70,083
	20%	31,148	62,296	93,445
	25%	38,935	77,871	116,806

SUMMARY

1. The drainage area of Adlatok River is 4,288 square miles.
2. The total length of the main stem is 160 miles and is totally obstructed at mile 130.
3. There are 10 major tributaries to the main stem.

Fig. 20. Main river at section 2, Adlatok River.

Fig. 21. Harp Lake.

Fig. 22. Falls on main stem at mile 33, Adlatok River.

Fig. 23. Falls on main stem at mile 44, Adlatok River.

Fig. 24. Falls on main stem at mile 83, Adlatok River.

Fig. 25. Falls on tributary 2 at mile 1, Adlatok River

Fig. 26. Falls on tributary 2 at mile 5, Adlatok River.

Fig. 27. Falls on tributary 2-2 at mile 5, Adlatok River.

Fig. 28. Falls on tributary 5 near mouth, Adlatok River.

Fig. 29. Falls on tributary 8 near mouth, Adlatok River.

Fig. 30. Falls on tributary 3-I-2 at mile 6,

Hunt River - Index 1922

Position of Mouth:	55°33'00" N. Latitude 60°38'00' W. Longitude
Location of Mouth:	Big Bay
Map Reference:	Hopedale 13N.

GENERAL DESCRIPTION

Drainage Area: 519 square miles

Mean Width of Drainage Basin: 14 miles

Axial Length of Basin: 39 miles

Perimeter of Basin: 130 miles

Maximum Basin Relief: 1,200 feet

Length of main stem (including standing water): 36 miles

Number of Major Tributaries: 6

Total length of all tributaries (including standing water): 246 miles

This system lies in a relatively level country and consequently the main river is smooth flowing and consists of many lakes and steadies. There are 6 major tributaries, all of which are accessible to salmon. The surrounding vegetation is scrub forest except in the headwater area.

Fish Populations

There is a salmon run to this river and a sport fishery is carried out from two separate camps, located on the main stem at miles 4 and 12. Arctic char and brook trout are also present.

Obstructions

There are no obstructions throughout this system.

Water Chemistry

A water sample collected from this river on August 22, 1973, shows the following results:

pH	(Total) Alkalinity	Total Hardness	Turbidity	Chlorides	Specific Conductance	Calcium
6.86	12.0 ppm.	12.0 ppm.	3.6 JTU	3.0 ppm.	29.0 micromhos	2.0 ppm.

Table 34. Bottom composition of the main stem, Hunt River, Index 1922.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
1	0-10	17600 (10)	100	17600	R/B	80	14080		
2	10-19	15840 (9)			(Lake)				
3	19-21	3520 (2)	50	1760	R/B	100	1760		
4	21-29	14080 (8)			(Lake)				
5	29-36	12320 (7)	30	3696	G/R/B	75	2772	20	740
Total				13056			5612		740

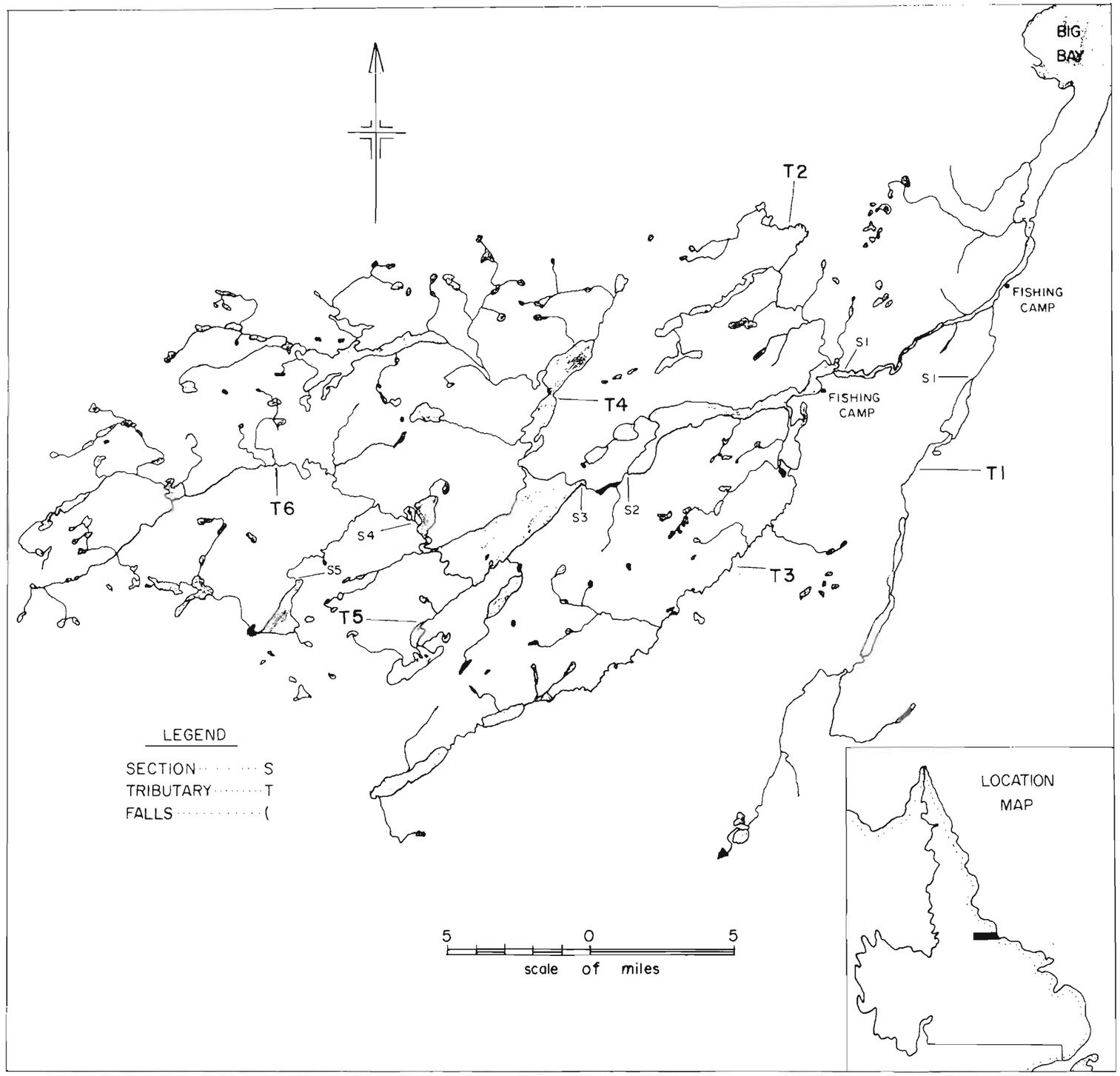


FIG. 31 : MAP OF HUNT RIVER, INDEX 1922, SHOWING SECTIONS SURVEYED

Table 35. Bottom composition of tributaries, Hunt River, Index 1922.

Section	Location (mile)	Distance yds. (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
T1-S1	0-4	7040 (4)	35	2464	G/S	50	1232	25	616
-S2	remaining stream	28160 (16)	10	2816	R/G	75	2112	10	282
T2	entire stream						1500		
T3	entire stream						2000		
T4	entire stream						2000		
T5	entire stream						200		
T6	entire stream						2000		
Total				5280			11044		898

POTENTIAL POPULATION ESTIMATION

Table 36. Summary of bottom composition of Hunt River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	18,336		
Rearing units	16,656		
Spawning units	1,638		

Table 37. Estimated Atlantic salmon smolt production and adult sea survival of Hunt River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		16,656	33,312	49,968
Adult return if sea survival is:	5%	833	1,666	2,498
	10%	1,666	3,331	4,997
	15%	2,498	4,997	7,495
	20%	3,331	6,662	9,994
	25%	4,164	8,328	12,492

PHOTOS ON FILE

Description (35 mm slides)	File No.
Looking downstream at Price (Nfld.) Ltd. Fishing camp - Hunt River	1257

Fig. 32. Looking downstream at Price (Nfld.) Ltd. fishing camp, Hunt River.

Flower River - Index 1948

Position of Mouth:	55°43'00" N. Latitude 60°56'00" W. Longitude
Location of Mouth:	Flower's Bay
Map Reference:	Hopedale 13 N. Mistastin Lake 13 M.

GENERAL DESCRIPTION

Drainage Area: 557 square miles

Mean Width of Drainage Basin: 10 miles

Axial Length of Basin: 58 miles

Perimeter of Basin: 146 miles

Maximum Basin Relief: 1,800 feet

Length of main stem (including standing water): 70 miles

Number of Major Tributaries: 7

Total length of all tributaries (including standing water): 292 miles

Fish Populations

A fishing camp owned and operated by Bowater's Pulp & Paper Mill Ltd. is located on the main stem at mile 15 and reports good catches of Atlantic salmon. There is also a camp at the mouth of the river engaged in the salmon sport fishery.

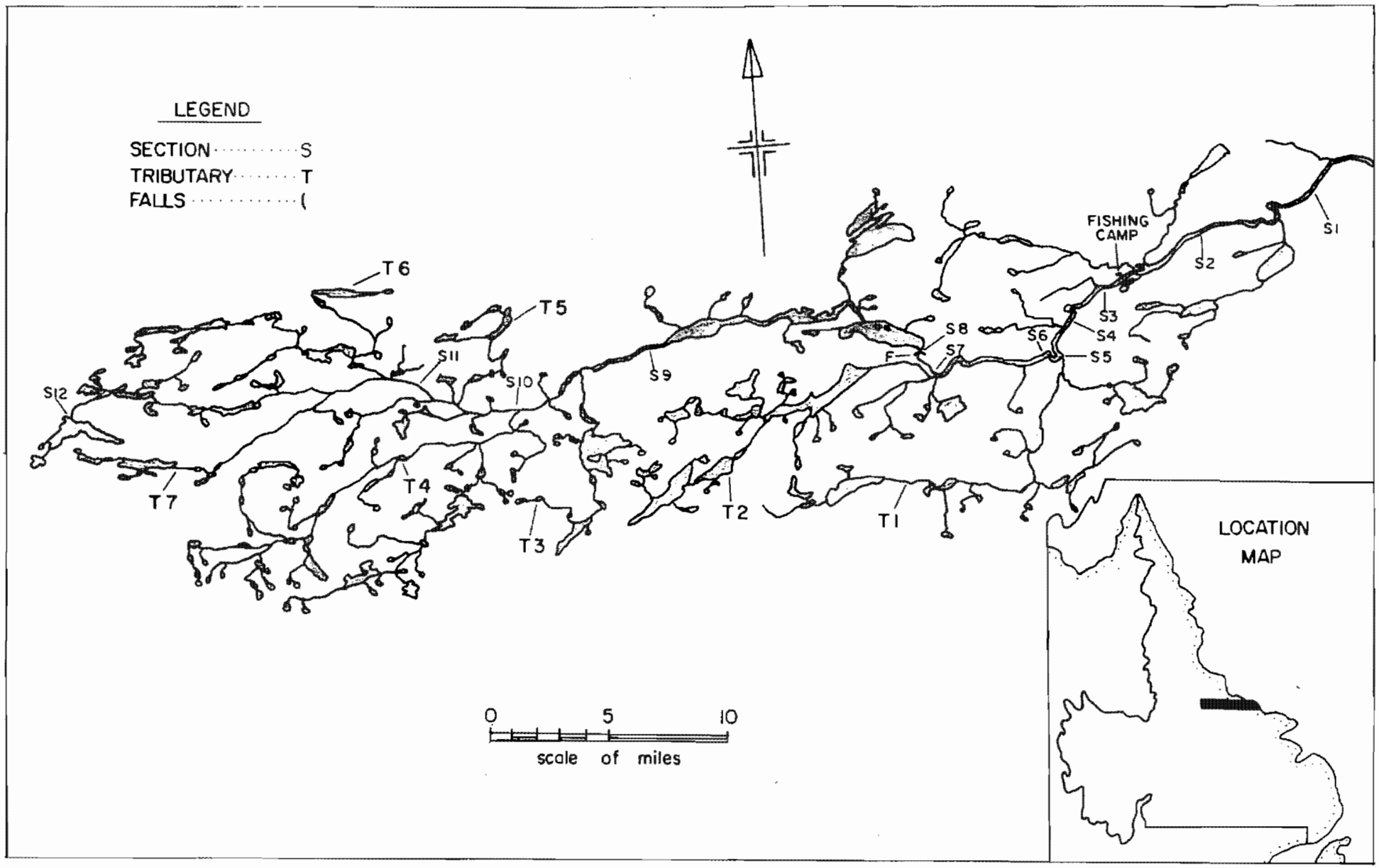


FIG.33: MAP OF FLOWERS RIVER, INDEX 1948, SHOWING SECTIONS SURVEYED

Obstructions

The only major obstruction on this system is located at mile 29 of the main stem. The total height is approximately 14 feet, divided into two steps, each approximately 6-8 feet and 75 feet wide. This is considered a partial obstruction; however, work to alleviate this barrier especially during dry periods, is required.

Water Chemistry

A water sample taken on August 23, 1974, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.73	8.0 ppm.	15.0 micromhos	2.9 JTU	8.0 ppm.	1.0 ppm.	1.0 ppm.

Table 38. Bottom composition of the main stem, Flowers River, Index 1948.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
1	0-4	7040 (4)	50	3520	R/B/S	80	2816		
2	4-10	10560 (6)	50	5280	S/R	50	1640		
3	10-15	8800 (5)	50	4400	G/S	90	3960	50	2200
4	15-19	7040 (4)	65	4576	Steadies				
5	19-21	3520 (2)	50	1760	G	50	880	25	440
6	21-22	1760 (1)	50	880	Steadies				
7	22-28	10560 (6)	50	5280	B/R	100	5280		
8	28-30	3520 (2)	35	1232	B/R	90	1109		
9	30-44	24640 (14)			Steadies				

Table 38 . (cont'd.)

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
10	44-50	10560 (6)	40	4224		50	2114		
11	50-55	8800 (5)	35	3080	R/B	100	3080		
12	55-71	28160 (16)	25	7040	R/B	100	7040		
Total		41272					27919		2640

Table 39. Bottom composition of tributaries, Flowers River, Index 1948.

Section	Location (mile)	Distance yds. (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
T1	0-10	17600 (10)	10	1760	R/B/G	90	1584	50	880
T2	entire stream	21120 (12)	10	2112	R/B	70	1478		
T3	entire stream						500		
T4	entire stream						1000		
T5	entire stream						200		
T6-7	entire stream						1000		
Total		3872					5762		880

POTENTIAL POPULATION ESTIMATION

Table 40. Summary of bottom composition of Flowers River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	45,144		
Rearing units	33,681		
Spawning units	3,520		

Table 41. Estimated Atlantic salmon smolt production and adult sea survival Flowers River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		33,681	67,362	101,043
Adult return if sea survival is:	5%	1,684	3,368	5,052
	10%	3,368	6,736	10,104
	15%	5,052	10,104	15,156
	20%	6,736	13,472	20,209
	25%	8,420	16,841	25,261

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of main stem	1258 (2 slides)
Main stem at section 3	1259
Main stem at section 10	1259
Tributary 6	1260

Fig. 34. Mouth of main stem, Flowers River.

Fig. 35. Typical area of section 10, Flowers River.

Sango Bay Brook - Index 1966

Position of Mouth:	55°53'00" N. Latitude 61°11'00" W. Longitude
Location of Mouth:	Sango Bay
Map Reference:	Hopedale 13 N. Mistastin Lake 13 M.

GENERAL DESCRIPTION

Drainage Area: 311 square miles

Mean Width of Drainage Basin: 7.4 miles

Axial Length of Basin: 42 miles

Perimeter of Basin: 116 miles

Maximum Basin Relief: 1,600 feet

Length of main stem (including standing water): 48 miles

Number of Major Tributaries:

Total Length of all Tributaries (including standing water): 100 miles.

Fish Populations

There is no information available on fish populations. However, salmon and char are common species in this area.

Obstructions

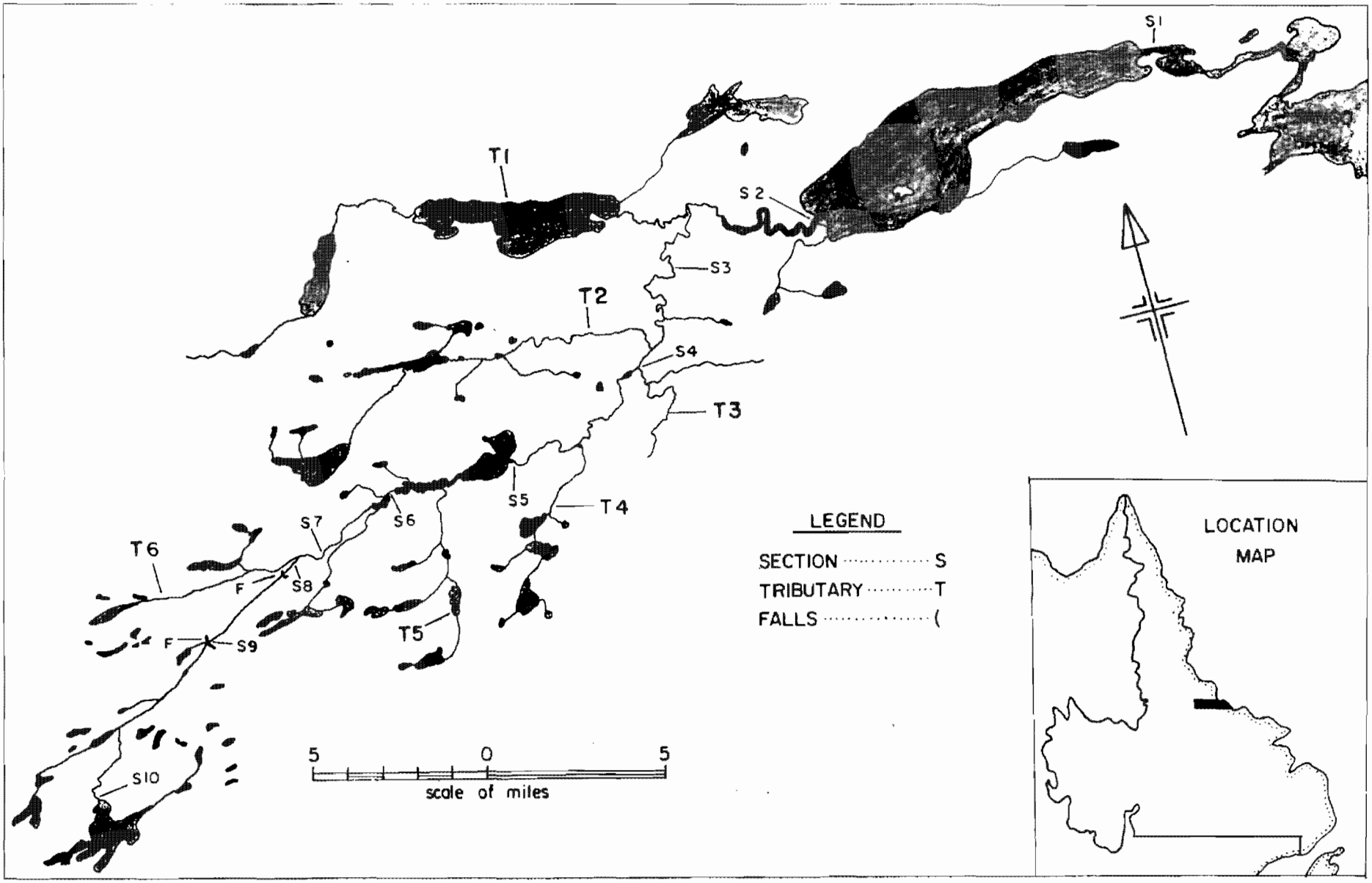


FIG.36: MAP OF SANGO BAY BROOK, INDEX 1966, SHOWING SECTIONS SURVEYED

Table 42. Obstructions on main stem of Sango Bay Brook, Index 1790.

Type of obstruction	Location (mile)	Degree of obstruction	Description	Remarks
Falls	53	Complete	Vertical height 15' Angle 80° 75' wide	
Falls	58	Complete	Vertical height 15' Angle 90° 50' wide	Fig.37

Water Chemistry

A sample taken on August 22, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.66	12.0 ppm	25.0 micromhos	2.6 JTU	12.0 ppm.	2.0 ppm.	3.5 ppm.

Table 43. Bottom composition accessible and inaccessible areas of the main stem.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
1	0-7	12320 (7)	100	12320	S/mud	50	6160		
2	7-18	19360 (11)			(Lake)				
3	18-28	17600 (10)	50	8800	R/G	75	6600	10	880
4	28-36	14080 (8)	25	3520	S/R/G	50	1760	10	352
5	36-44	14080 (8)	25	3520	G	75	2640	50	1760
6	44-48	7040 (4)			(Lake)				
7	48-51	5280 (3)	10	528	R/G	100	528	10	53
8	51-53	3520 (2)	25	880	B/R	100	880		
Total				29568			18568		3045

Table 43. (cont'd.)

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
Inaccessible areas									
9	53-58	8800 (5)	30	2640	B/R	100	2640		
10	58-62	7040 (4)	10	704	R/B	100	704		
Total				3344			3344		

POTENTIAL POPULATION ESTIMATION

Table 44. Summary of bottom composition of Sango Bay Brook and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	29,568	3,344	32,912
Rearing units	18,568	3,344	21,912
Spawning Units	3,045		3,045

Table 45. Estimated Atlantic salmon smolt production and adult sea survival of Sango Bay Brook. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		18,568	37,136	55,704
Adult return if sea survival is:	5%	928	1,857	2,785
	10%	1,857	3,714	5,570
	15%	2,785	5,570	8,356
	20%	3,714	7,427	11,141
	25%	4,642	9,284	13,926

PHOTOS ON FILE

Description (35 mm slides)	File No.
Falls on main river, mile 58	1261
Falls on main river, mile 53	1262
Typical area in section 4	1263
Typical area in section 5	1263

Fig. 37. Falls on main stem at mile 58, Sango Bay Brook.

Fig. 38. Typical area in section 4, Sango Bay Brook.

Notakwanon River - Index 1974

Position of Mouth:	56°02'30" N. Latitude 61°30'00" W. Longitude
Location of Mouth:	Merrifield Bay
Map Reference:	Nain 14C, Hopedale 13N, Mistastin 13M, Tasisvak 14D.

GENERAL DESCRIPTION

Drainage Area: 1,930 square miles

Mean Width of Drainage Basin: 19 miles

Axial Length of Basin: 96 miles

Perimeter of Basin: 307 miles

Maximum Basin Relief: 2,000 feet

Length of main stem (including standing water): 140 miles

Number of Major Tributaries: 25

Total Length of all tributaries (including standing water): 1,037 miles

Fish Populations

There are no angling camps on this system and very little is known about the fish populations. During the helicopter survey fish were seen throughout the accessible areas and were identified as Arctic char. This species may be predominant in this system; however, Atlantic salmon may also be present.

Obstructions

Table 46. Obstructions on Notakwanon River.

Type of obstruction	Location	Degree of obstruction	Description	Remarks
Falls	81	Complete	Vertical height 30' Angle 70° 100' wide	Fig. 40
Falls	Tributary 5 Mile 7	Complete	Vertical height 30' Angle 80° 100' wide	Fig. 41
Falls	Tributary 7 Mile 4	Partial	Vertical height 6-8'	
Falls	Tributary 10 near mouth	Complete	Vertical height 15' Angle 80° 75' wide	Fig. 42
Falls	Tributary 11 near mouth	Complete	Vertical height 15'	

Water Chemistry

A water sample taken on August 27, 1974 shows the following results:

Sample #1	pH	Total hardness	Specific conductance	Turbidity	Total Alkalinity	Calcium	Chloride
	6.66	8.0 ppm	15.0 micromhos	4.6 JTU	6.0 ppm.	1.4 ppm.	1.5 ppm.
Sample #2	6.48	6.0 ppm.	12.0 micromhos	6.1 JTU	4.0 ppm.	0.9 ppm.	1.0 ppm.

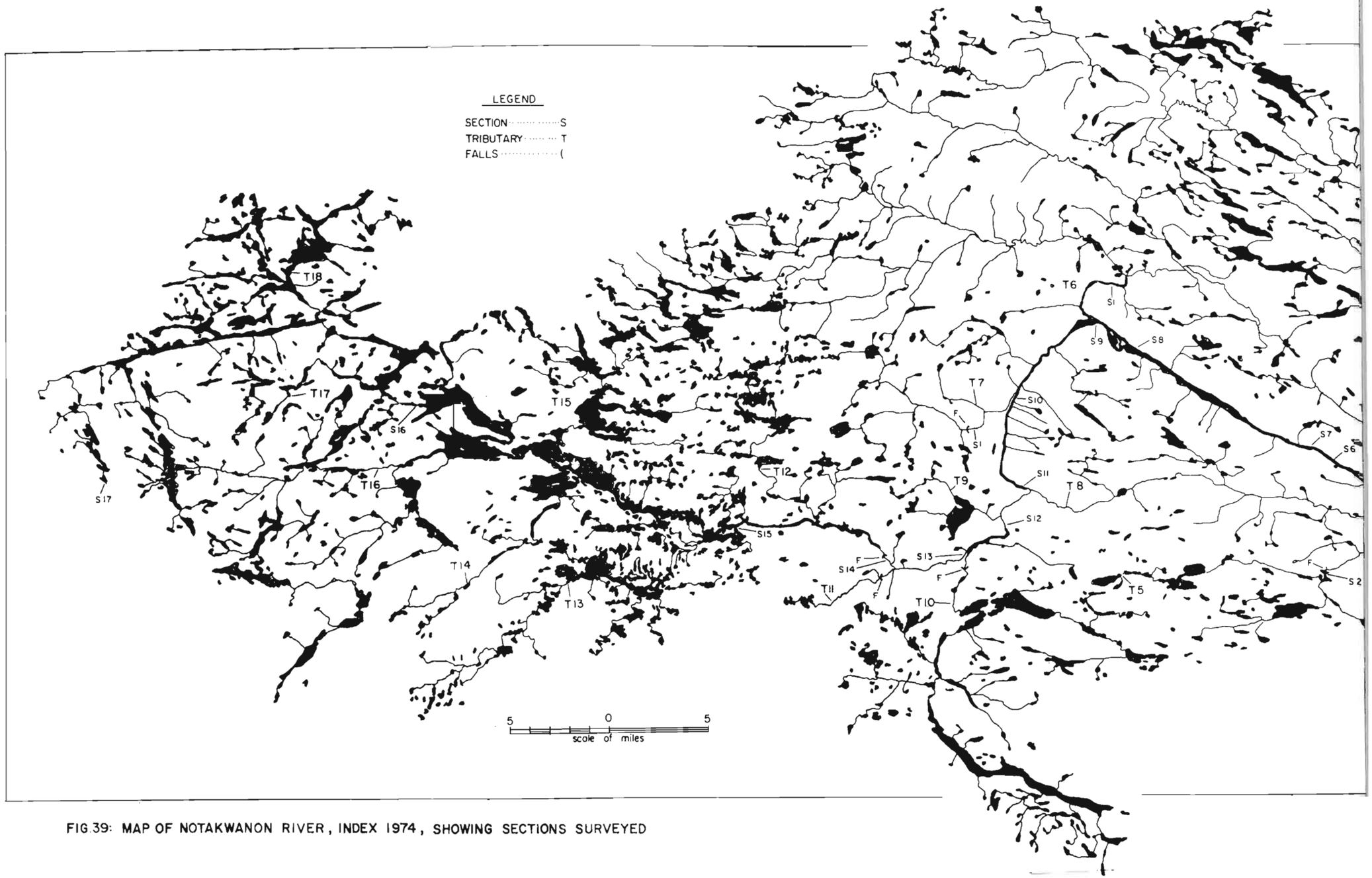


FIG.39: MAP OF NOTAKWANON RIVER, INDEX 1974, SHOWING SECTIONS SURVEYED

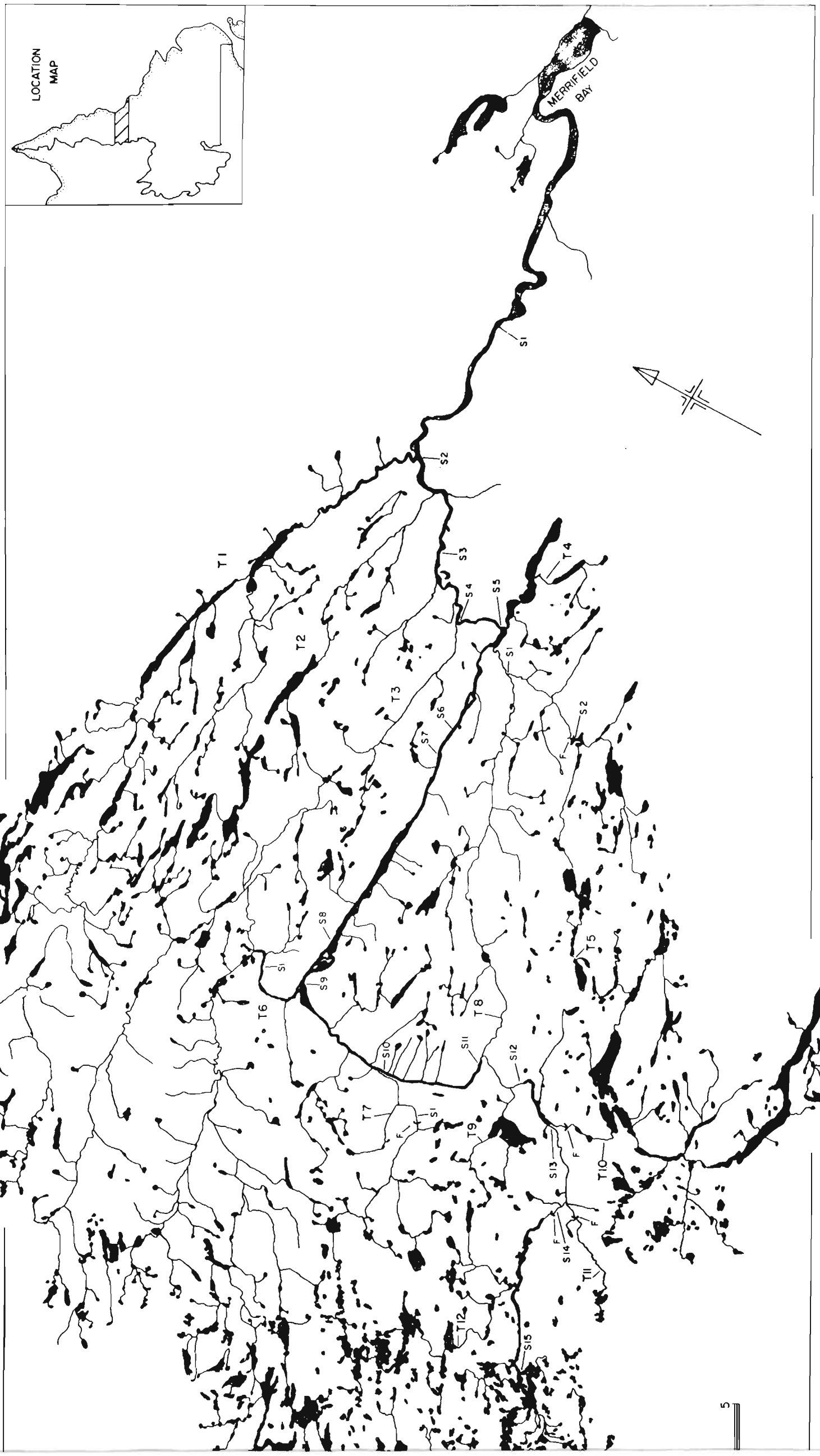

LOCATION MAP
MERRIFIELD BAY
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
F
5

Table 47. Bottom composition of accessible and inaccessible areas of the main stem, Notakwanon River, Index 1974.

Section	Location (mile)	Distance yds. (miles)	Av. width yd.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
1	0-15	26400 (15)	150	39600	Sand	20	7920		
2	15-23	14080 (8)	100	14080	Sand	10	1408		
3	23-29	10560 (6)	80	8448	G/Sand	20	1690	10	845
4	29-34	8800 (5)	75	6600	Gravel	75	4950	10	660
5	34-36	3520 (2)	50	1760	B/R	100	1760		
6	36-42	10560 (6)	60	6336	G	75	4752	75	4752
7	42-45	5280 (3)	50	2640	R/B	90	2376		
8	45-55	17600 (10)	170	29920	Steadies				
9	55-57	3520 (2)	400	14080	G	100	14080	100	14080
10	57-63	10560 (6)	50	5280	R	100	5280		
11	63-69	10560 (6)	40	4224	B/R	100	4224		
12	69-72	5280 (3)	35	1848	R/B	100	1848		
13	72-75	5280 (3)	65	3432	Steadies				
14	75-81	10560 (6)	35	3696	R/B	90	3326		
Total				141944			53614		20337
Inaccessible Areas									
15	81-89	14080 (8)	50	7040	R/B	90	6336		
16	89-111	38720 (22)	400	154880	Steadies				
17	111-139	49280 (28)	100	49280		10	4928		
Total				211200			11264		

Table 48. Bottom composition of accessible and inaccessible tributaries, Notakwanon River, Index 1974.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
Accessible Areas									
T1-S1	0-5	8800 (5)	20	1760	S/G	95	1320	20	352
-S2	5-10	8800 (5)	20	1760	R/G	100	1760	20	352
-S3	10-22	21120 (12)			Steady				
	remaining stream						5000 (estimated)		
T2,3 & 4	very small streams								
T5-S1	0-3	5280 (3)	10	528	G/R	90	475	50	264
-S2	3-7	7040 (4)	20	1408	R/B	100	1408		
T6-S1	0-4	7040 (4)	20	1408	S	10	140		
	remaining stream						3000 (estimated)		
T7-S1	0-4	7040 (4)	10	704	R/B	100	704		
-S2	4-14	17600 (10)	10	1760	R/G	100	1760	10	176
T8	entire stream	21120 (12)	10	2112	R/B	100	2112		
T9	entire stream	17600 (10)	10	1760	R/B	100	1760		
Total				13200			19438		1144
Inaccessible Areas									
T5-S3	7-19	21120 (12)	50	10560		50	5280	10	1056
T10	entire stream	(86)					5000		
T11	entire stream	(8)					500		
*T12-18		(256)					10000		
Total				10560			20780		1056

*Tributaries above falls on main stem at mile 80.

POTENTIAL POPULATION ESTIMATION

Table 49. Summary of bottom composition of Notakwanon River and tributaries accessible and inaccessible to anadromous fish.

Units	Accessible	Inaccessible	Total
Total system	155,144	221,760	376,904
Rearing units	73,052	32,044	105,096
Spawning units	21,481	1,056	22,537

Table 50. Estimated Atlantic salmon smolt production and adult sea survival of Notakwanon River. Area enclosed includes most accepted values for production.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		73,052	146,104	219,156
Adult return if sea survival is:	5%	3,653	7,305	10,958
	10%	7,305	14,610	21,916
	15%	10,958	21,916	32,873
	20%	14,610	29,221	43,831
	25%	18,263	36,526	54,789

PHOTOS ON FILE

Description (35 mm slides)	File No.
Main river at section 1	1264
Mouth of main river	1264
Main river at sections 7, 9, and 10	1265
Falls on main river at mile 81	1266 (2 slides)
Tributary 5 near mouth	1267
Falls on tributary 5, mile 7	1268
Tributary 6 near mouth	1269
Tributary 6 typical section	1270
Tributary 10, falls	1271
Headwater area	1272

Fig. 40. Falls on main stem at mile 81, Notakwanon River.

Fig. 41. Falls on tributary 5 at mile 7, Notakwanon River.

Fig. 42. Falls on tributary 10 at mouth, Notakwanon River.

Fig. 43. Mouth of main river, Notakwanon River.

KOGALUK RIVER INDEX 2006

Position of Mouth: 61° 43' 00" W Longitude

56° 13' 00" N Latitude

Location of Mouth: Voisey Bay

Map Reference: Nain 14C; Tasisuak Lake, 14D; Mistastin Lake 13M

Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 2,098 square miles

Mean Width of Drainage Basin: 20 miles

Axial Length of Basin: 100 miles

Perimeter of Basin: 458 miles

Maximum Basin Relief: 1,800 feet

Length of Main Stem (including standing water): 80 miles

Number of Major Tributaries: 4

Total Length of all tributaries (as measured from topographic maps and including standing water): 1,300 miles

Area of Lakes: Cabot Lake 9.4 square miles, Mistastin Lake, 60.3 square miles.

This river empties out into the south side of Voisey Bay. The channel from the mouth to mile 4 is approximately 400 feet wide, slow moving stream over sand and gravel bottom. At the end of this section is a falls posing a complete barrier to migrating fish. Beyond the falls the river is approximately 300-400 feet wide and is a relatively deep steady area reaching all the way to Cabot Lake at mile point 26.

Cabot Lake is 12 miles long bounded on each side by high rising mountains. Immediately beyond the lake the channel quickly narrows to 150 feet with gravel comprising much of the bottom type. At mile point 75 is a second falls considered to be a complete obstruction. Beyond the falls the river is 75 feet wide with rubble/boulder bottom to mile point 79 (Section 10). Beyond section 10 the system is a network of ponds and steadies.

The entire main river lies in a narrow valley bounded by high mountains, consequently, in addition to the main river being obstructed many of the tributaries have major water falls.

Fish Populations

Sollows et al during their 1954 survey reported sea run speckled trout (presumably Salvelinus fontanelis) in abundance below the falls at mile point 4. It is also possible that a run of Arctic char used this system to the falls including tributary 1 . There is no information on fish fauna above the falls.

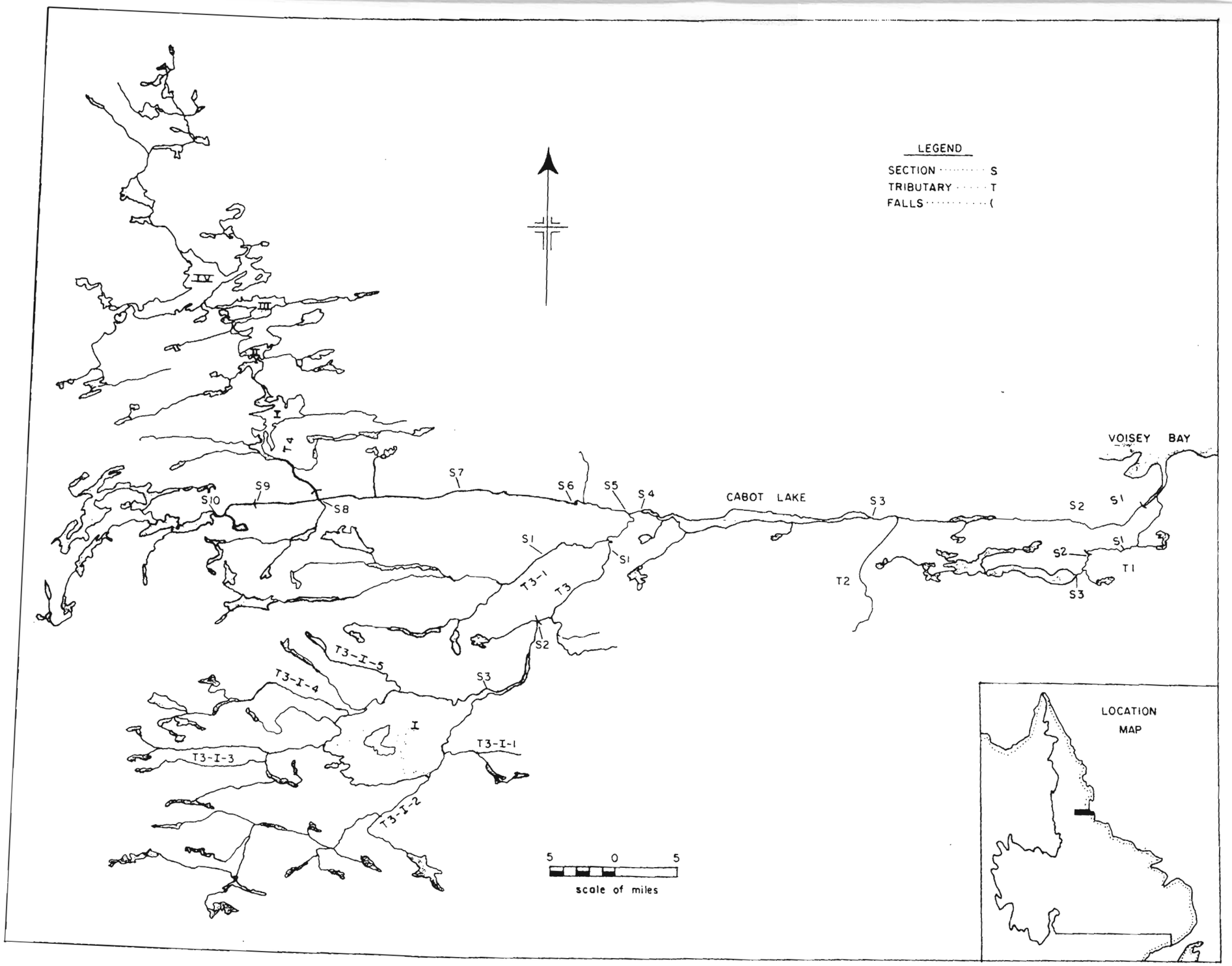


Fig. 44 Map of Kogaluk River, Index 2006, Showing Sections Surveyed

Table 51. Obstructions on Kogaluk Brook, Index 2006

Type of obstruction	Location	Degree of obstruction	Description	Remarks
Falls	Main stem; mile point 4	complete	Vertical ht. 30' Angle 60° & 90° 200' wide	Photo Fig. 46
Falls	Main stem; mile point 75	complete	2 Sections, each 20' high. Angle 90°, 150' wide	
Falls	Trib. 1, mile point 15	partial	Vertical ht. 20' Angle 45°, 30' wide	Photo Fig. 50
Falls	Trib. 3, mile point 14	complete	Vertical ht. 15-20' Angle 90°, 50' wide	Photo Fig. 51
Falls	Trib. 3-1, mile point 10	complete	Vertical ht. 15-20' Angle 90°	
Falls	Trib. 4, mile point 1	complete	Vertical ht. 50' Angle 90°	

Water Chemistry

A water sample taken from this river August 15, 1973, showed the following results:

pH	Alkalinity (total)	Total Hardness	Turbidity	Chlorides	Specific Conductance	Calcium
6.6 ppm.	4.0 ppm.	6.0 ppm.	0.72 JTU	1.0 ppm.	15.0 micromhos	1.4 ppm.

Table 52. Bottom composition, accessible areas of the main stem of Kogaluk River, Index 2006

Section	Location	Distance Yds. (miles)	Av.width yds.	Total Units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
1	Mouth-mile 4	7,040 (4)	130	9,152	Sand/gravel	50	4,576	10	915	Falls at mile 4. Complete obst.
Total				9,152			4,576		915	

Table 53. Bottom composition, inaccessible areas of the main stem, Kogaluk River, Index 2006

Section	Location	Distance Yds. (miles)	Av.width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
2	miles 4 - 10	10,560 (6)	110	11,616		50	5,808	-	-	Deep, steady sections
3	miles 10 - 26	28,160 (16)	120	33,792		25	8,448	-	-	
4	miles 26 - 38	21,120 (12)								Cabot Lake
5	miles 38 - 42	7,040 (4)	70	4,928	rubble	50	2,464	-	-	
6	miles 42 - 48	10,560 (6)	50	5,280	gravel	50	2,640	90	4,752	Winding stream.
7	miles 48 - 56	14,080 (8)	50	7,040	gravel	75	5,280	50	3,520	Winding stream.
8	miles 56 - 70	24,640 (14)	50	12,320	rubble/gravel	100	12,320	10	1,232	
9	miles 70 - 75	8,800 (5)	25	2,200	rubble/boulder	100	2,200	-	-	Falls at mile 75. complete obstruction.
10	miles 75 - 79	7,040 (4)	25	1,760	rubble/boulder	100	1,760	-	-	
Total				78,936			40,920		9,504	

Table 54. Bottom composition, accessible areas of tributary streams, Kogaluk River, Index 2006

Tributary	Location	Distance Yds. (miles)	Av.width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T1-S1	Mouth-mile 7	12,320 (7)	20	2,464	Sand/gravel	50	1,232	10	246	Winding stream
-S2	miles 7 - 15	14,080 (8)	20	2,816	Sand	10	282	-	-	Falls at mile 15.
-S3	miles 15 - 19	7,040 (4)	10	704	Sand	10	70	-	-	
Total				5,984			1,584		246	

Table 55. Bottom composition of inaccessible tributaries, Kogaluk River, Index 2006

Tributary	Location	Distance Yds. (miles)	Av.width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T2	Entire system						500			
T3-S1	Mouth-mile 6	10,560 (6)	60	6,336	gravel/rubble	90	5,702	20	1,267	
-S2	miles 6 - 14	14,080 (8)	50	7,040	boulder/rubble	75	5,280	-	-	Rugged canyon. Falls at mile 14, complete obstruction
-S3	miles 14 - 22	14,080 (8)					5,000	-	-	
							5,000*			*estimated rearing units for the 5 major streams of Mistastin Lake.
T3-1-S1	Mouth-mile 6	10,560 (6)	20	2,112	gravel/sand	90	1,900	20	422	
-S2	miles 6 - 10	7,040 (4)	15	1,056	gravel/rubble	100	1,056	20	211	Falls at end of this section. Complete obst
T4							3,000			Network of lakes; complete obst.at mouth.
Total				16,544			27,438		1,900	

POTENTIAL ATLANTIC SALMON POPULATION ESTIMATES

Table 56. Estimated Atlantic salmon smolt production and adult sea survival, Kogaluk River, based on 6,160 accessible units of rearing area.

If smolts produced per 100 yds^2 is:		1	2	3
Smolts produced		6,160	12,320	18,480
Adult return if sea survival is:	5%	308	616	924
	10%	616	1,232	1,848
	15%	924	1,848	2,772
	20%	1,232	2,464	3,696
	25%	1,540	3,080	4,620

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of Main River	1273 (2 slides)
Main River at Section 5	1274
Falls on Main Stem at Mile Point 4	1275 (2 slides)
Main River at Mile Point 5	1276
Main River at Mile Point 50	1277
Main River at Mile 70-75	1278
Steady Area below Cabot Lake	1279
Downstream end of Cabot Lake	1279
Cabot Lake	1279

PHOTOS ON FILE

Description (35 mm slides)	File No.
Tributary 1, Section 2	1280
Tributary 1, Typical Section	1280
Tributary 1, Falls at Mile 15	1281
Tributary 3, Section Near Mouth	1282
Tributary 3, Falls at Mile Point 14	1283 (2 slides)
Tributary 3, Canyon Area at S1	1284
Tributary 3-1, Area Near Mouth	1285
Tributary 4, Falls Near Mouth	1286

SUMMARY

1. This system drains approximately 2,098 sq.miles with a large portion being made up of a maze of ponds and lakes in the Headwater region.
2. The length of the main stem is 80 linear miles with a total tributary mileage of 1,362 linear miles.
3. There are 4 major tributaries to the main stem. The remaining streams are relatively small and dried up in summer.
4. The river is completely barred to anadromous fish by a falls at mile point 4.
5. The accessible and inaccessible units are as follows:

	Accessible			Inaccessible		
	Total Units	Rearing Units	Spawning Units	Total Units	Rearing Units	Spawning Units
Main River	9,152	4,576	915	78,936	40,920	9,504
Trib.	5,984	1,584	246		27,439	1,900
Total	15,136	6,160	1,161		68,359	11,404

RECOMMENDATIONS

1. In view of the fact that very little is known about the fish populations in this area it would not be wise to carry out extensive engineering surveys on these falls. However, it is recommended that preliminary engineering surveys be made at least on the falls at mile point 4 of the main stem.
2. Cabot Lake and the long steady below is a potential recreational area and a study of the resident fish populations would be of great value in managing a sport fishery in this area. This also applies to such an area as Mistastin Lake.

REFERENCES

Sollows, et al (1954). Preliminary Survey of the Rivers and Commercial Fishery of Northern Labrador. Rept. for Dept. of Fish. of Can.

Fig. 45 Mouth of main stem, Kogaluk River, Index 2006.

Fig.46. Falls on main stem at mile point 4, Kogaluk River, Index 2006.

Fig.47. Section of main stem mile point 39, Kogaluk River.

Fig.48. Downstream end of Cabot Lake, Kogaluk River.

Fig.49. Typical Section of tributary 1, Kogaluk River.

Fig.50. Tributary 1, falls at mile point 15, Kogaluk River.

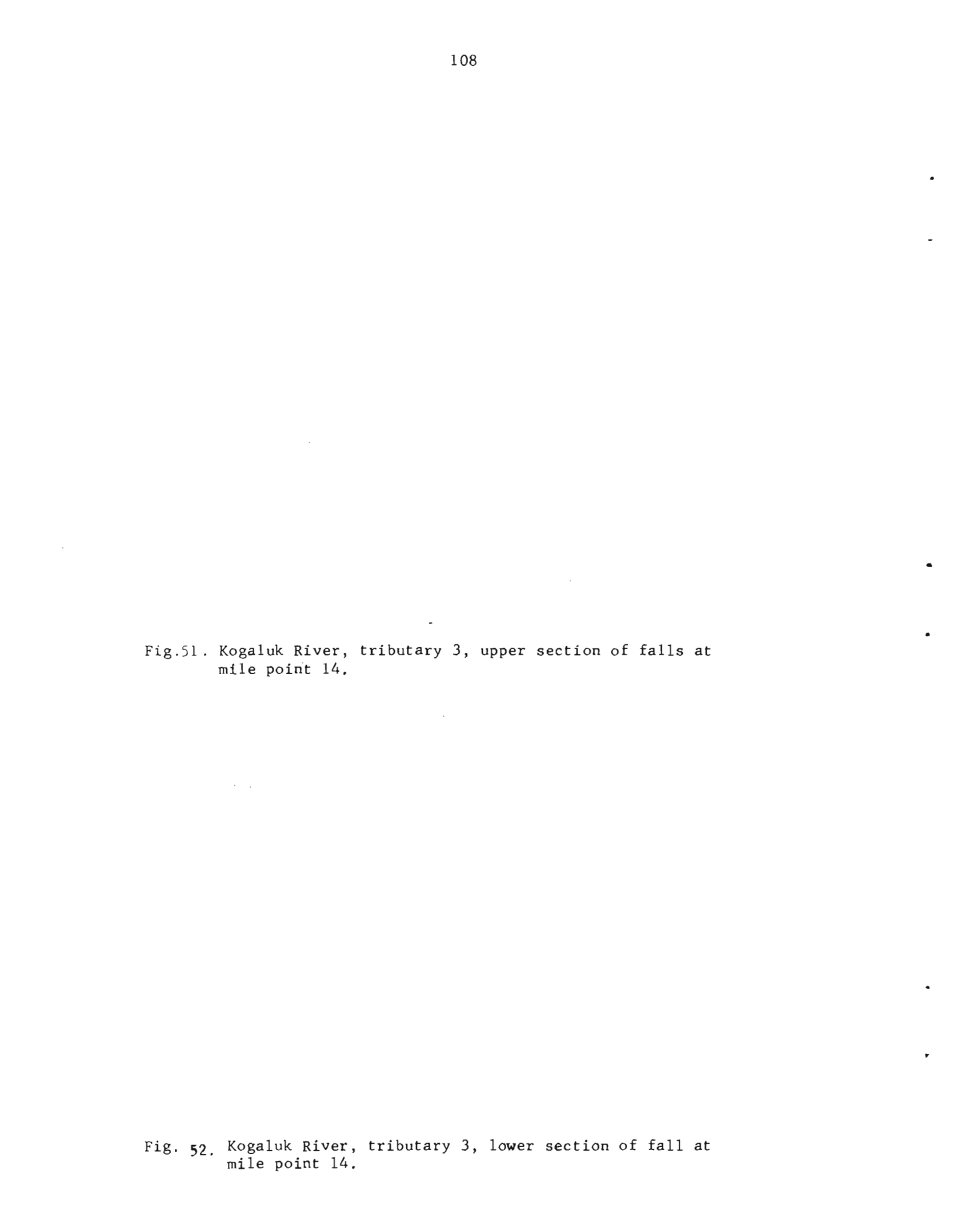


Fig.51. Kogaluk River, tributary 3, upper section of falls at mile point 14.

Fig. 52. Kogaluk River, tributary 3, lower section of fall at mile point 14.

Konrad Brook, Index 2014

Location of Mouth: 56° 13' 00" N
61° 55' 00" W

General Description

Drainage Area.....220 sq.miles

Main Stream..... 57 linear miles

Tributary mileage.....100 linear miles

This stream flows into the south side of Voisey Bay. The estuary is shallow with many gravel and sand bars. The main channel for the first 2 miles is approximately 150 feet wide, slow moving flow, over sand and gravel bottom; at the end of this section is a falls posing a serious barrier to fish migration. However, salmon may be able to ascend with much difficulty at certain flood levels.

From the falls to Lake I at mile point 32 the winding channel is comprised mainly of sand/gravel.

Above the lake the river flow is faster with mostly a rubble/boulder bottom. Similar to neighbouring streams, tributaries flowing to the main stream are obstructed.

Fish Populations

There is no data available on fish populations in this system; however it is evident that the falls at mile 2 would adversely affect any sea run species. Accessible streams in this area are known to have a predominant sea run char population and it may be concluded that this stream is no exception, at least to mile 2.

FIG.53: MAP OF KONRAD RIVER, INDEX 2014, SHOWING SECTIONS SURVEYED

Table 57 . Bottom composition, main stream, Konrad River, Index 2014.

Section	Location	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
1	Mouth-Mile 2	3,520 (2)	50	1,760	sand/gravel	50	880	10	176	Falls-complete obstruction
2	Mile 2-7	8,800 (5)	50	4,400	gravel/rubble	90	3,960	50	2,200	
3	Mile 7-15	14,080 (8)	30	4,224	gravel/sand	90	3,801	50	2,114	
4	Mile 15-27	21,120 (12)	25	5,280	gravel/sand	75	3,960	20	1,056	
5	Mile 27-32	8,800 (5)	20	1,760	gravel	75	1,320	20	352	winding stream.
6	mile 32-39	12,320 (7)	-	-	-	-	-	-	-	Lake I
7	Mile 39-45	10,560 (6)	20	2,112	gravel/rubble	80	1,690	50	1,056	
8	Mile 45-50	8,800 (5)	20	1,760	boulder/rubble/ gravel	100	1,760	10	176	Falls-complete obstruction
9	Mile 50-57	12,320 (7)	10	1,232	rubble/boulder	100	1,232	-	-	small stream-meandering
Total				22,528			18,603	7,130		

Table 58 . Bottom composition, tributaries Konrad River, Index 2014.

Section	Location	Distance yds (miles)	Av. Width yds.	Total Units (100 sq.yds per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T-1	Entire stream	8,800 (5)	10	880	-		500*			estimated.
T2,3,4 5 & 6	-	-	-	-	-		500*			tributaries 2-6 obstructed by falls.
Total				880			1,000*			estimated from

Potential Population Estimation

Table 59 . Estimated Atlantic salmon smolt production and adult sea survival, Konrad River based on 880 accessible units of rearing area.

If smolts produced per 100 yds.^{2} is: Smolts produced		1 880	2 1,760	3 2,640
Adult return if sea survival is:	5%	44	88	132
	10%	88	176*	264
	15%	132	264	396
	20%	176	352	528
	25%	220	440	660

*Encircled figures most probable

Table 60 . Estimated Atlantic salmon smolt production and adult sea survival, Konrad River based on approximately 17,400 units of rearing area from mouth to falls at mile 50.

If smolts produced per 100 yds.^{2} is: Smolts produced		1 17,400	2 34,800	3 52,200
Adult return if sea survival is:	5%	870	1,740	2,610
	10%	1,740	3,480	5,220
	15%	2,610	5,220	7,830
	20%	3,480	6,960	10,440
	25%	4,350	8,700	13,050

Water Chemistry

The following data is derived from a water sample taken on August 8, 1973.

P_h	Alkalinity (total)	Total Hardness	Turbidity	Chlorides	Specific Conductance	Calcium
6.35	6.0 ppm.	12.0 ppm.	0.66 JTU	1.0 ppm.	22.0 micromhos	1.9 ppm.

Table 61 . Obstructions on Konrad River, Index 2014

Type of obstruction	Location	Degree of obstruction	Description	Remarks
Falls	Main stem mile pt. 2	Complete	Vertical height 30' Two main steps 12 & 18 feet high	Photo Fig. 55
Falls	Main stem mile pt. 50	Complete	Vertical height 10'	

Photos on file

Description	File No.
Mouth of main stem (35 mm Kodacolor prints)	757
Voisey Bay (35 mm Kodacolor prints)	757
Section near mouth of main stem (35 mm Kodacolor prints)	757
Below outlet of Lake I (35mm Kodacolor prints)	758
Typical of section 4, main river (35 mm Kodacolor prints)	758
Falls at mile point 2, Konrad River	762
Looking downstream from mile point 50 (35 mm slide)	1288
Lake I (35 mm slide)	1287

SUMMARY

Table 62. Summary of accessible and inaccessible spawning and rearing habitat of Konrad River system.

Units	Accessible	Inaccessible	Total
Total system	23,480		23,480
Rearing units	19,603*		19,603*
Spawning units	7,130		7,130

* 1,000 rearing units were estimated from topographic maps. (These figures are different than ones used to compute salmon potential).

At mile point 2 a complete obstruction bards further migration of anadromous fish. A complete obstruction is also located at mile 50 of the main stem.

Fig. 54. Estuary of Konrad River.

Fig. 55. Falls at mile point 2.

ANAKTALIK RIVER - Index 2092

Position of Mouth: 56° 28' 30" N. Latitude
62° 05' 00" W. Longitude

General Description:

Drainage Area	700 square miles
Main River	77 Linear Miles
Tributaries	624 Linear Miles

The estuary of this river is 1/4 mile wide,relatively shallow, with mostly sandy bottom. From the mouth to the end of section 2 is approximately 300 feet wide, smooth flow, over sandy bottom. The surrounding country is low rolling, barren hills, with tree covered river valley. Section 3 to Lake I is a relatively deep channel, smooth flow in a more mountainous region. The river bottom mainly sand and gravel bounded in several places by 20' high sand banks. There are no rapids or falls on the main river to this point.

The lake is a long narrow stretch of water nestled between high mountains. Above the lake the flow becomes swift with boulder/rubble bottom. At mile point 62 is a falls, posing a complete barrier to fish migration. Beyond this point the stream branchs in several directions to a maze of ponds and steadies.

The main river flows through a narrow valley, approximately 1/4 mile wide, and along the edge of this valley is an abrupt rise to a plateau, resulting in the majority of tributaries cut off from sea run

fish by falls cascading over this "valley wall".

Fish Populations

Reports from local residents, Arctic char and brook troup; also a report of one Atlantic salmon being netted in Lake I was documented.

Table 63. Obstructions on Anaktalik Brook, Index 2092.

Type of obstruction	Location (mile)	Degree of obstruction	Description	Remarks
Falls	Main stem 62	Complete	Vertical height 50" Angle 90° 30' wide	Fig.59
Falls	Tributary 2 5	Complete	Vertical height 75' Angle 60° 30' wide	Fig.60
Falls	Tributary 3 4	Complete	Vertical height 25' "3 steps". 25' wide	Fig.61
Falls	Tributary 4 2	Complete	Vertical height 15' Angle 30' wide.	
Falls	Tributary 4 8	Complete	Vertical height 15' Angle 90° 20' wide.	Fig.62
Falls	Tributary 5 near mouth	Complete		
Falls	Tributary 6 near mouth	Complete		
Falls	Tributary 7 near mouth	Complete		
Falls	Tributary 8 near mouth	Complete		
Falls	Tributary 9 near mouth	Complete		
Falls	Tributary 10 near mouth			

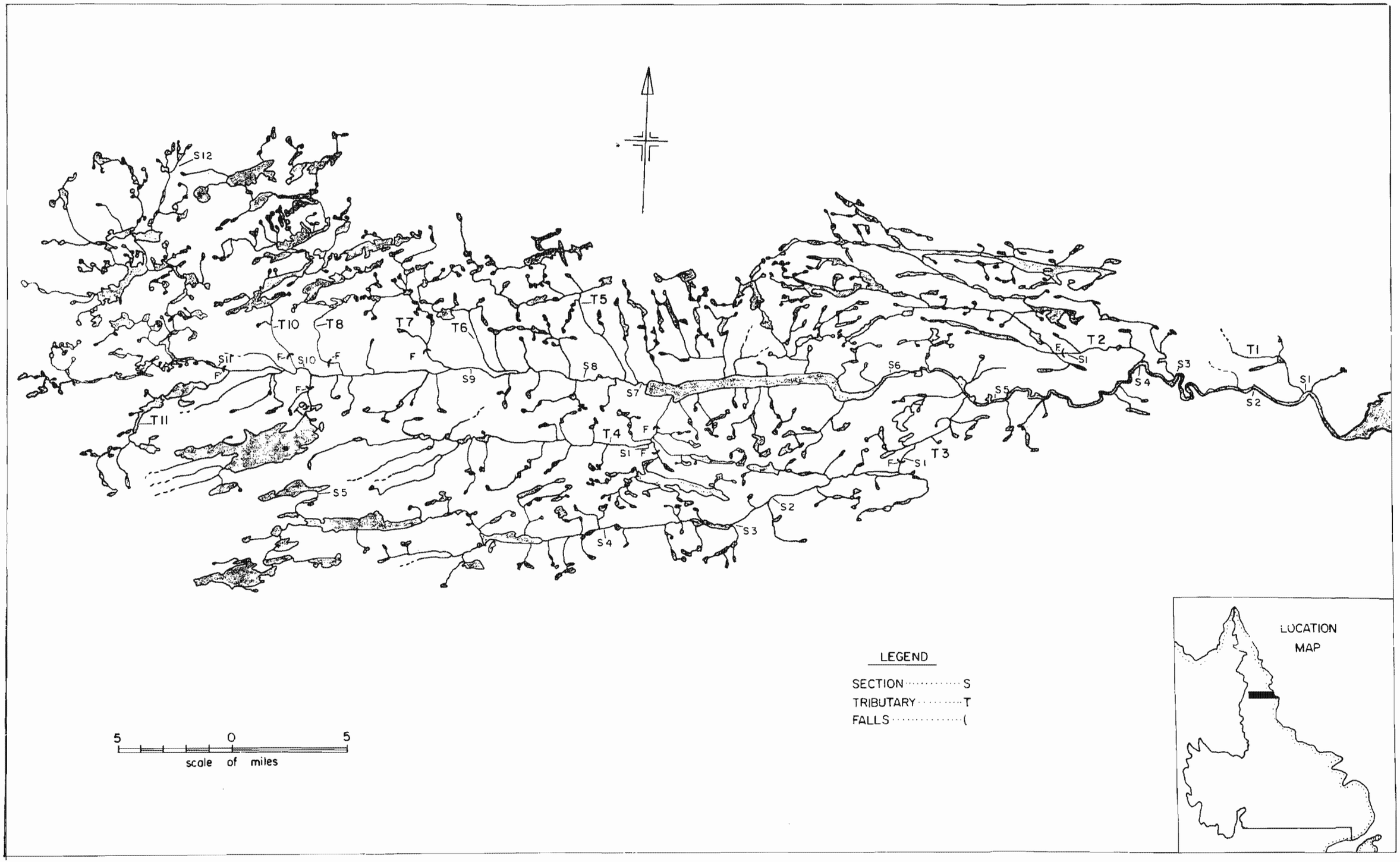


FIG.56 MAP OF ANAKTALIK RIVER, INDEX 2092, SHOWING SECTIONS SURVEYED

Water Chemistry

A water sample taken on August 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.63	10.0 ppm.	22.0 micromhos	3.7 JTU	6.0 ppm.	1.7 ppm.	2.5 ppm.

Table 64. Bottom composition, Main Stream, Anaktalik Brook. Index 2092.

Section	Location (mile)	Distance yds. (miles)	Av. width yds.	Total units 100 sq.yd. (per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units
1	0 - 3	5280 (3)	100	5280	S	10	528	-	-
2	3 - 6	5280 (3)	85	4488	S	10	449	-	-
3	6 -12	10560 (6)	67	7075	S/G	10	708	-	-
4	12-14	3520 (2)	67	2358	S/G	20	472	20	472
5	14-24	17600 (10)	60	10560	S/G	20	2112	-	-
6	24-30	10560 (6)	60	6336	G/S	50	3168	10	634
7	30-40	17600 (10)	-	-	(Lake)	-	-	-	-
8	40-44	7040 (4)	25	1760	R/G	90	1584	10	176
9	44-49	8800 (5)	35	3080	R/G	100	3080	5	154
10	49-57	14080 (8)	25	3520	B/R/G	100	3520	10	352
11	57-62	8800 (5)	25	2200	R/B	100	2200	-	-
12	62-77	26400 (15)					1000		
Total				46657			18821		1788

Table 65. Bottom composition, accessible and inaccessible tributaries, Anaktalik River. Index 2092

Section	Location (mile)	Distance yds. (miles)	Av. width yds.	Total units 100 sq.yd. (per unit) Access.	Inaccess.	Bottom type	Rearing Access. %	Rearing Access. Units	Rearing Inaccess. %	Rearing Inaccess. Units	Spawning Access. %	Spawning Access. Units	Spawning Inaccess. %	Spawning Inaccess. Units
T1	entire stream	8800 (5)	8	704			100	704						
T2-S1	0-5	8800 (5)	30	2640		S/G/R	50	1320			50	1320		
T2-S2	headwaters 5	8800 (5)	20		1760	R			50	880				
T3-S1	0-4	7040 (4)	20	1408		B/R	100	1408						
T3-S2	4-12	14080 (8)	25		3520	S/G			75	2640			50	1320
T3-S3	12-14	3520 (2)	25		880	R/B			100	880				
T3-S4	14-18	7040 (4)	25		1760	R/B/G			100	1760			20	352
T3-S5	headwater area	28160 (16)	20		5632				50	2816				
T4-S1	0-2	3520 (2)	20	704		R	100	704						
T4-S2	2-8	10560 (6)	20		2112	B/R			100	2112				
T4-S3	8-18	17600 (10)	20		3520	R/G			100	3520			5	176
T5	entire stream	26400 (15)	10		2640				100	2640				
T6	entire stream	17600 (10)	10		1760				90	1584				
T7	entire stream	14080 (8)	10		1408				100	1408				

Table 65. (cont'd.)

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yd. (per unit) Access.	Inaccess.	Bottom type	Rearing Access. %	Rearing Access. Units	Rearing Inaccess. %	Rearing Inaccess. Units	Spawning Access. %	Spawning Access. Units	Spawning Inaccess. %	Spawning Inaccess. Unit
T8	entire stream	10560 (6)	5		528				100	528				
T9	entire stream	3520 (2)	8		282				100	282				
T10	entire stream	5280 (3)	10		528				100	528				
Total				5456	26330			4136		21578		1320		1848

POTENTIAL POPULATION ESTIMATION

Table 66. Estimated Atlantic salmon smolt production and adult sea survival Anaktalik River, Index 2092. Based on 21,957 accessible units of rearing area.

If smolts produced per 100 yds^2 is:		1	2	3
Smolts produced		21,957	43,914	65,871
Adults return if sea survival is:	5%	1,098	2,196	3,294
	10%	2,196	4,392*	6,587
	15%	3,294	6,488	9,881
	20%	4,391	8,782	13,174
	25%	5,489	10,978	16,468

*Encircled figures most probable.

SUMMARY

The following summarizes the accessible and inaccessible rearing units:

	Accessible	Inaccessible
Main River	17,821	1,000
Tributaries	4,136	21,578
Total	21,957	22,578

Photos on File:

Description	File No.
Mouth of main river. (35mm slides)	1373
Main River at Section 2 (35mm slides)	1374
Main River at Section 5. (35 mm kodacolor film)	765
Main River at Section 6. (35mm kodacolor film)	765
Lake I (35mm kodacolor film)	765
Main River at Section 8. (35mm kodacolor film)	793
Main River - Gorge in Section 11 (35mm kodacolor film)	793
Main River - Falls at Mile Point 62. (35mm kodacolor film)	791
Tributary 2 - Falls at Mile Point 5 . (35mm kodacolor film)	785
Tributary 3 - River mouth. (35mm kodacolor film)	787
Tributary 3 - Falls at Mile Point 4. (35mm kodacolor film)	787
Tributary 4 - River mouth. (35mm kodacolor film)	788
Tributary 4 - Section near mouth. (35mm kodacolor film)	788
Tributary 4 - Below falls #1. (35mm kodacolor film)	788
Tributary 4 - Portion of Falls #1 (35mm kodacolor film)	788
Tributary 4 - Falls at Mile Point 8. (35mm kodacolor film)	789

Summary and Recommendations

(1) The main stem from mouth to Lake I is a smooth flowing river through a sand and gravel channel.

(2) Beyond Lake I river flow is faster over rubble boulder bottom.

(3) The main stem is free of any obstructions as far as mile 62.

(4) The majority of tributaries drop from the plateau into the river valley below causing barriers to fish migrations.

(5) Owing to the size and number of falls and the amount of area cut off to sea run fish populations no work regarding stream clearance is recommended.

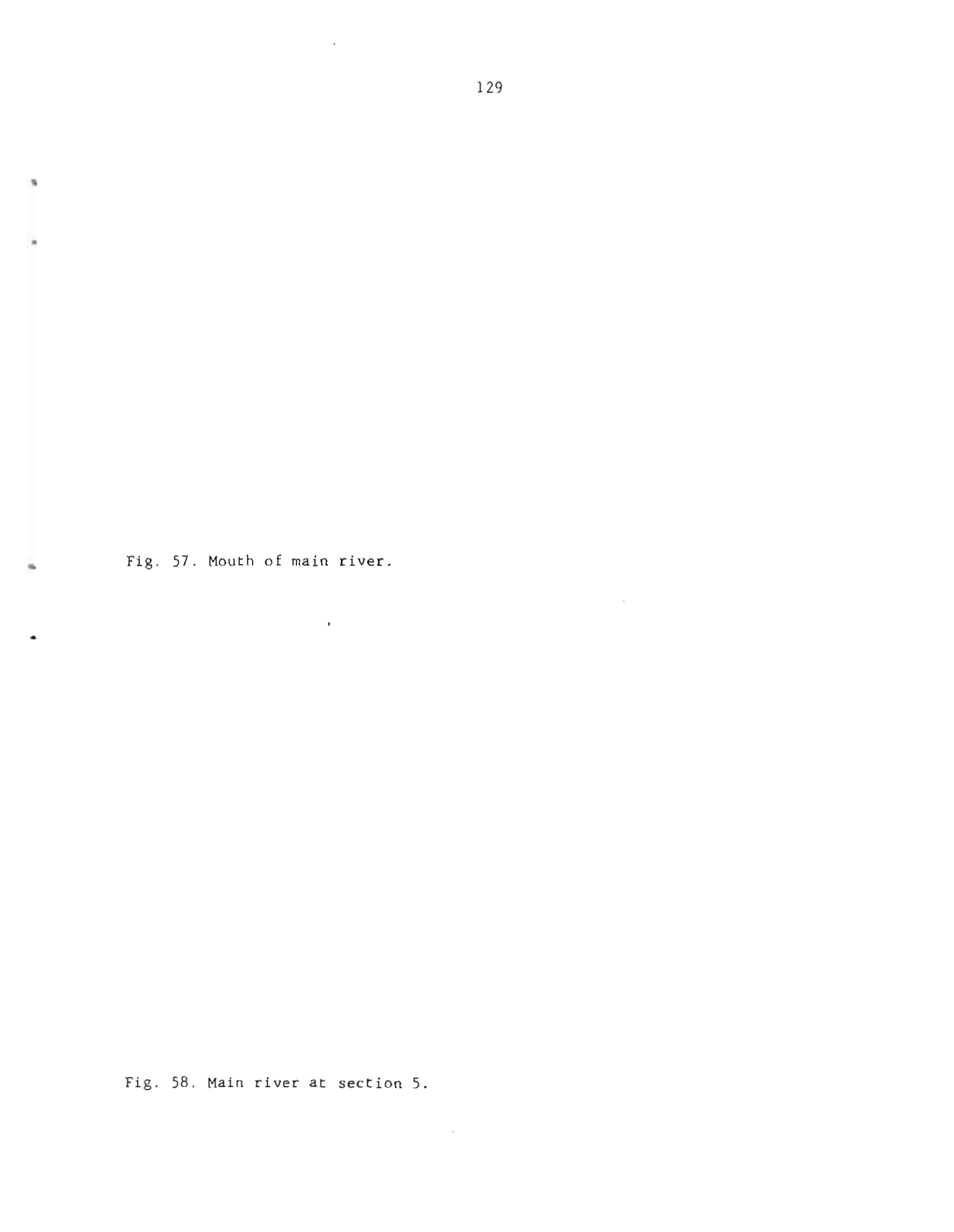


Fig. 57. Mouth of main river.

Fig. 58. Main river at section 5.

Fig. 59. Falls on main river at mile 62.

Fig. 60. Falls on tributary 2 at mile 5.

Fig. 61. Falls on tributary 3, at mile 4.

Fig. 62. Falls on tributary 4, at mile 8.

Fraser River, Index 2116

Location of Mouth: 56° 37' 00" N Latitude
62° 15' 00" W Longitude

General Description

Drainage Area.....620 sq.miles

Main River..... 72 linear miles

Tributaries.....500 linear miles

At the bottom of Nain Bay, a narrow inlet known as Tasisuak Lake reaches inland for a distance of 35 miles. From the bay this inlet consists of shallow areas which become rapids at certain tide levels. Beyond this narrow section the lake is relatively deep and bounded on each side by steep mountains. The immediate shore line is mainly boulder and bedrock covered in most areas by scrub, black spruce. This narrow band of vegetation gives way to barren mountains.

The mouth of the river is approximately 100 feet wide winding channel through sandy terrain. At mile point 14 swifter flow result in rubble/boulder bottom. In the upper half the river banks are lined with large boulders and in one section the river is completely blocked off with large boulders causing an underground stream.

Beyond section eight the river rises on to the plateau and at the time of survey was completely dry.

The main river to mile point 31 lies in a geological fault; tributaries are relatively small (dry during the summer months), cascade over the edge of the canyon wall and are completely obstructed to any fish migration.

Fish Populations

Arctic char, salmon and brook trout are the main fish species in this system; and it is felt that Arctic char may be the predominant species.

Water Chemistry

A water sample taken on August 1973 shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.47	6.0 ppm.	10.0 micromhos	0.58 JTU	4.0 ppm.	0.8 ppm.	1.0 ppm.

POTENTIAL POPULATION ESTIMATION

Table 67. Estimated Atlantic salmon smolt production and adult sea survival, Fraser River, Index 2116, based on 10,400 accessible units of rearing area.

If smolt produced per 100 yds^2 is: Smolt produced		1 10,400	2 20,800	3 31,200
Adult return if sea survival is:	5%	520	1,040	1,560
	10%	1,040	2,080*	3,120
	15%	1,560	3,120	4,680
	20%	2,080	4,160	6,240
	25%	2,600	5,200	7,800

*Encircled figures most probable.

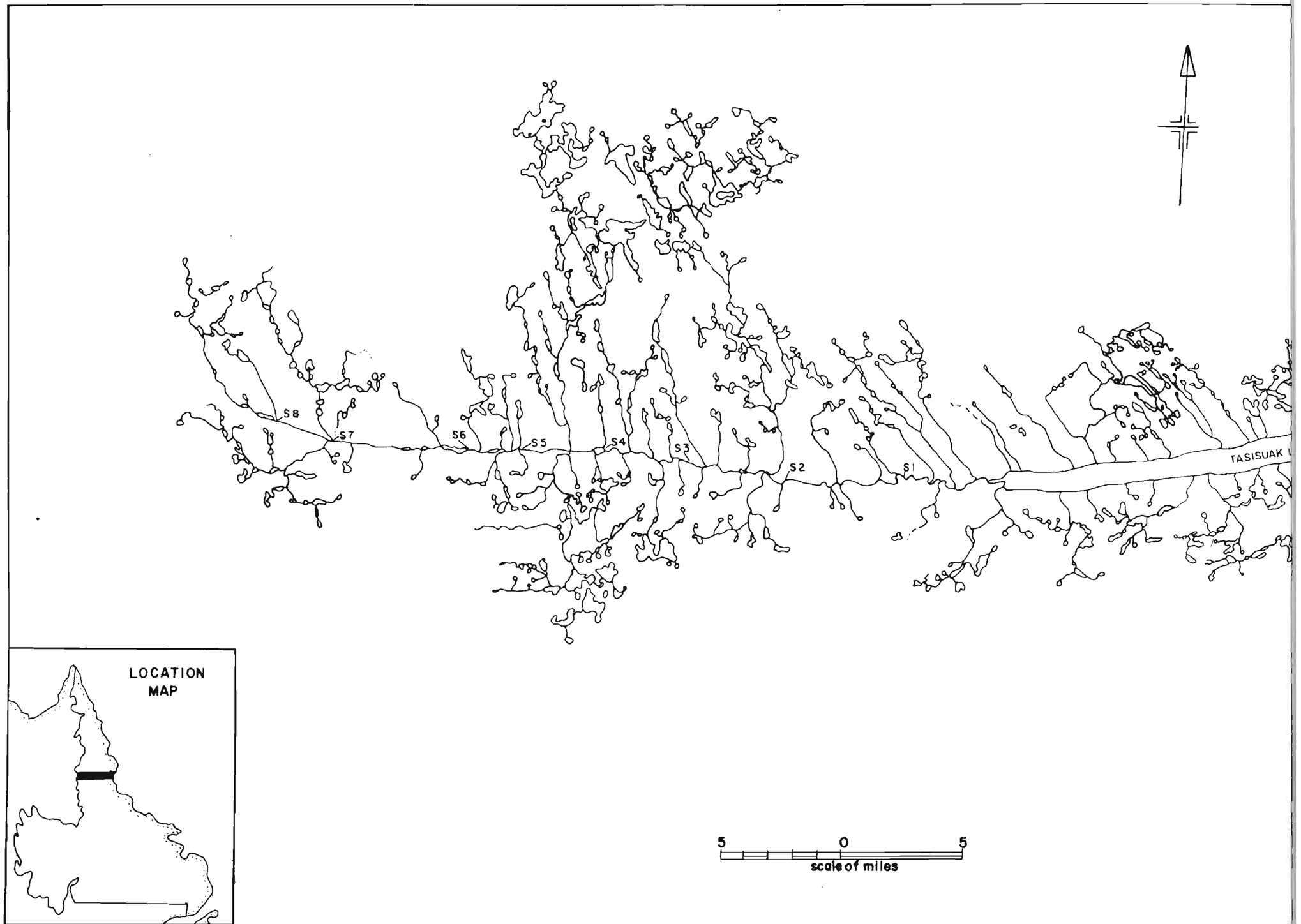
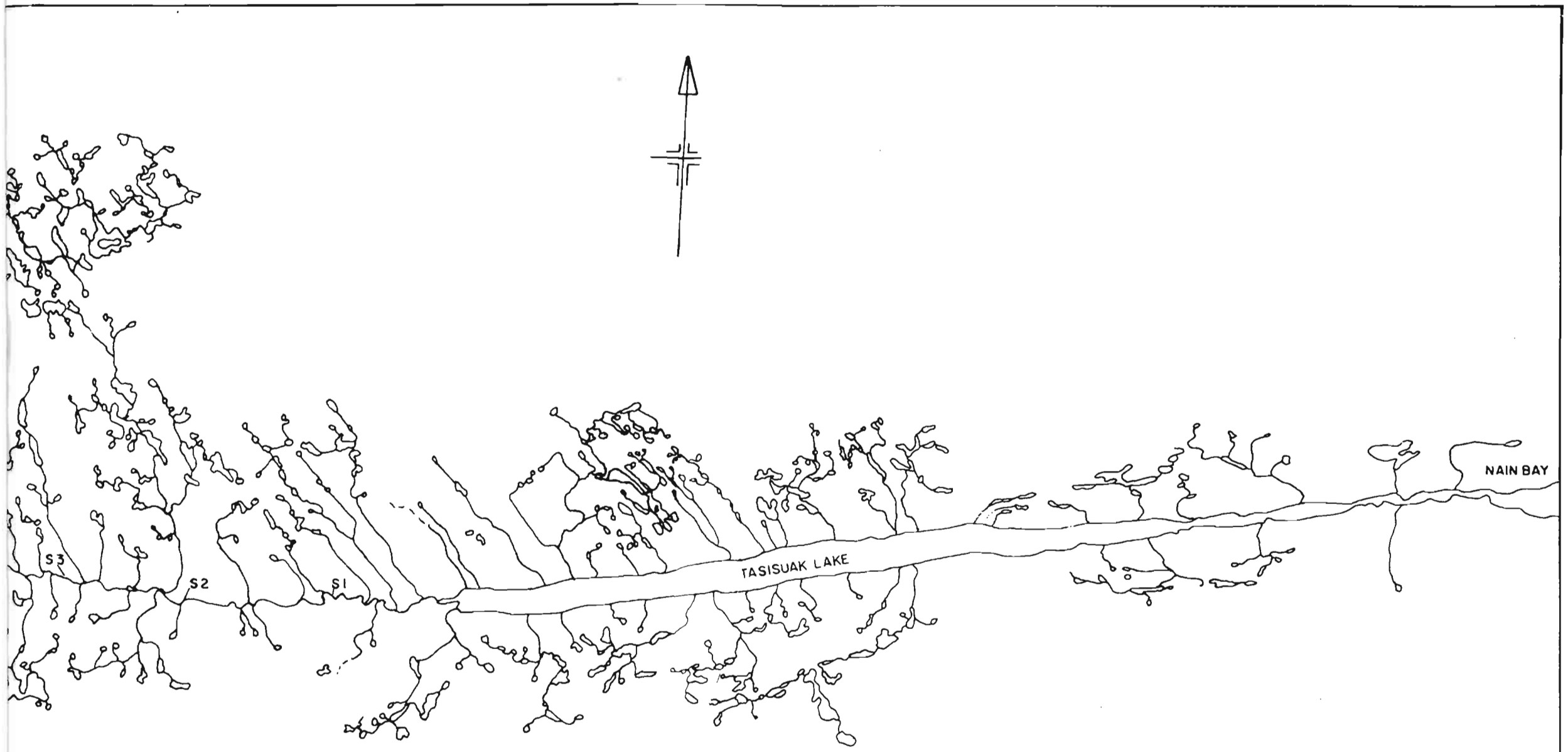


FIG. 63 MAP OF FRASER RIVER, INDEX 2116, SHOWING SECTIONS SURVEYED



LEGEND

SECTION.....S
TRIBUTARY.....T
FALLS.....(

5 0 5
scale of miles

URVEYED

Table 68 . Bottom Composition main stream, Fraser River, Index 2116

Section	Location	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds. per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units.	Remarks
1	Mouth-mile 5	8,800 (5)	35	3,080	Sand/gravel	20	616	10	208	Winding channel
2	Mile 5-10	8,800 (5)	25	2,200	Gravel	90	1,980	90	1,980	
3	Miles 10-14	7,040 (4)	33	2,323	Gravel/rubble	90	2,090	90	2,090	
4	Miles 14-18	7,040 (4)	30	2,112	rubble/gravel	90	1,800	50	1,056	
5	Miles 18-21	5,280 (3)	30	1,584	Boulder/rubble	75	1,188	-	-	Several large steadies
6	Miles 21-23	3,520 (2)	30	1,056	Boulder/rubble	90	950	-	-	
7	Miles 23-29	10,560 (6)	20	2,112	Boulder	75	1,584	-	-	Stream underground in this section
8	Miles 29-31	3,520 (2)	10	352	Rubble/gravel/ boulder	50	176	-	-	River bed dry beyond this pt.
Total				14,819			10,384		5,434	

Table 69 . Obstructions on main stem of Fraser River, Index 2116.

Type of obstruction	Location (mile)	Degree of Obstruction	Description	Remarks
Boulder	24	Complete at low water	Underground stream	Fig.

PHOTOS ON FILE

Description	File No.
Entrance to Tasisuak Lake	796
Mouth of main river	794
Main river near mouth	794
Main river at section 2	795
Main river at section 6	795
Main river at section 4	795
Tasisuak Lake	796
Main river, Lake I	797
Main river at section 7	798
Dry river bed at headwaters	799

SUMMARY

Table 70. Summary of accessible and inaccessible spawning and rearing habitat of Fraser River system.

Units	Accessible	Inaccessible	Total
Total system	14,819		14,819
Rearing units	10,384		10,384
Spawning units	5,434		5,434

References·

Sollows, G.C., et al. Salmon Investigations - 1954. Preliminary Survey of the Rivers and Commercial Fishery of Northern Labrador.

Fig.64. Mouth of Fraser River at head of Tasisuak Lake.

Fig. 65. Tasisuak Lake

Fig. 66. Dry river bed at mile point 23.

ACKNOWLEDGMENTS

The authors thank Messrs. V.R. Taylor, J.D. Pratt, and G.M. Hare for their direction and encouragement in carrying out the program. The authors are indebted to the staff of the Conservation and Protection Branch, District E, for their field support. Thanks are also extened to Mr. J. Burdett for compilation of the tables, the Engineering Group for providing the maps and Mmes. J. McGrath and C. Barrett for typing the manuscript.