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# Catalogue of Fish and Stream Resources of East Central Yukon Territory

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PAC/T - 74 - 4

Northern Operations Branch  
Pacific Region



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## FOREWORD

This catalogue is a historical record and information source concerning fish species and their habitats in the Selwyn Mountains of East Central Yukon. It has been assembled for the use of those people involved in fisheries management and environmental protection and is one of a series covering the major drainage basins in the Northern B.C. and Yukon Division.

The rapidity with which unnatural change now takes place in the north makes it essential that managers be able to control such developments or changes so that environmental damage is avoided or at least minimized. Harvest of the fishery resources must be controlled by sensible management based on biologically sound facts; this catalogue provides a tool towards these ends.

A. Gibson, Chief,  
Northern B.C. and  
Yukon Division.

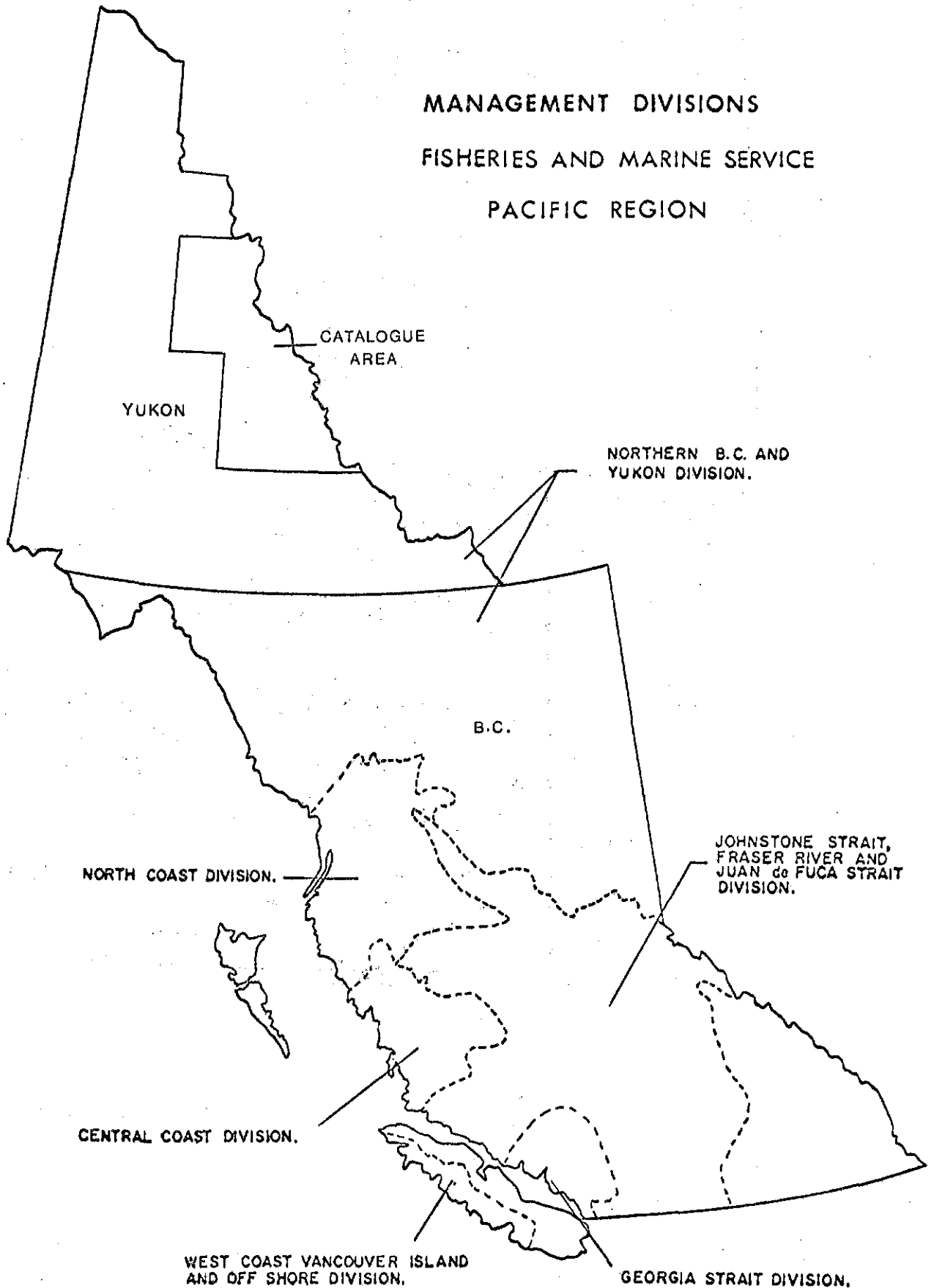
## ABSTRACT

Sixteen freshwater fish species and four anadromous species are represented in three major river systems of east central Yukon Territory. Physical, chemical and biological data on streams and lakes within this 35000-square-mile area are presented. Available specific biological information on fish stocks in the region is limited.

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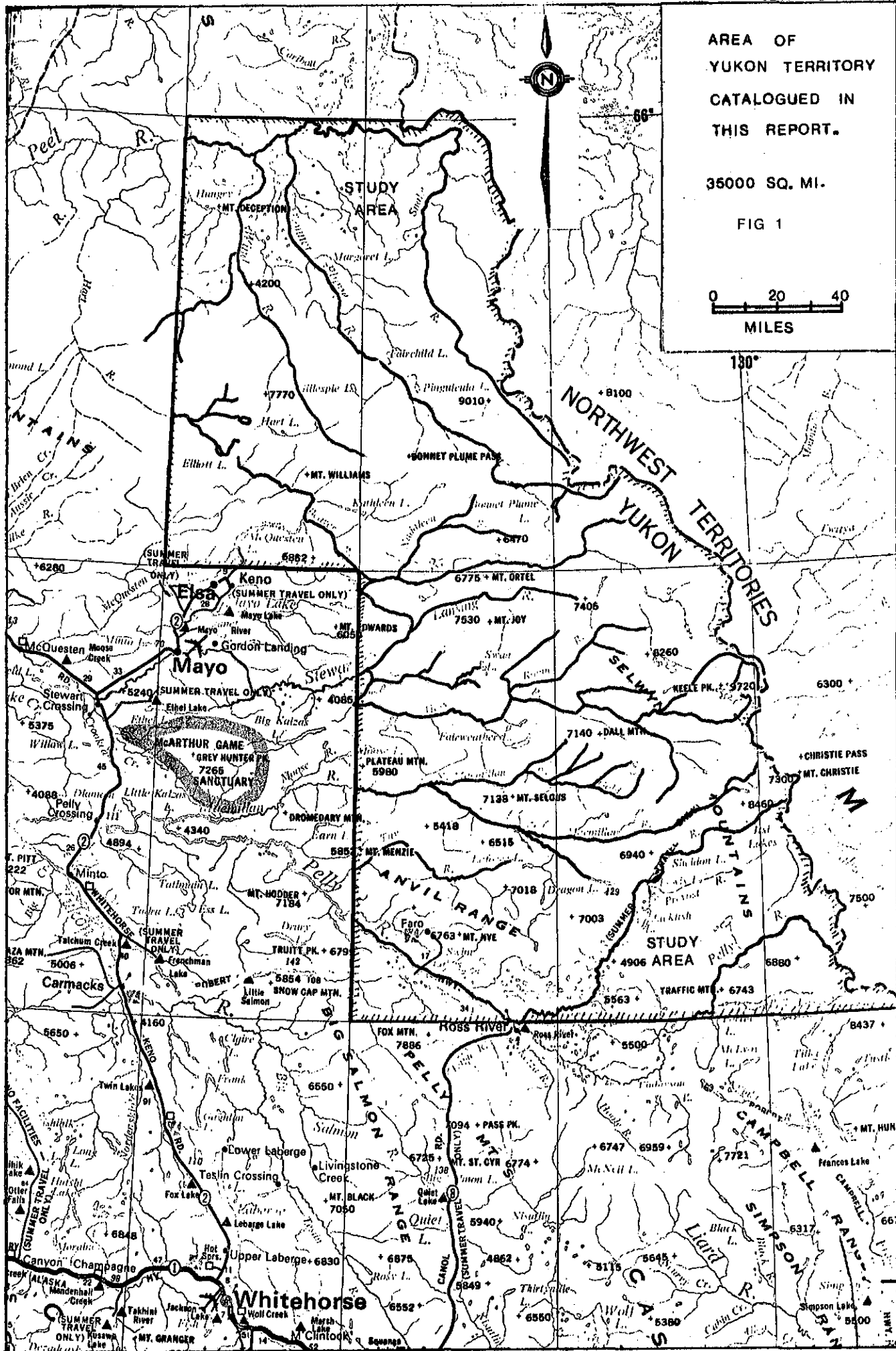
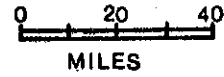
MANAGEMENT DIVISIONS  
FISHERIES AND MARINE SERVICE  
PACIFIC REGION



AREA OF  
YUKON TERRITORY  
CATALOGUED IN  
THIS REPORT.

35000 SQ. MI.

FIG 1



## INTRODUCTION

Most of the information contained in this catalogue was obtained from Fisheries Service surveys funded by the Arctic Land Use Research Program (ALUR) in the summer of 1973. ALUR was established by the Department of Indian and Northern Affairs in order to generate baseline information and provide research support for the application of regulations designed to protect the northern resources. As part of the ALUR program, a series of land use information maps is being prepared. The maps summarize information on renewable resources and related human activities.

The collection of fisheries data for the 1973 ALUR program was focused on an area of approximately 35,000 square miles in East Central Yukon. This region is bounded on the East by the Yukon/NWT border and on the West by the 134th and 136th meridians of longitude. The Northern boundary was the 66th parallel and the Southern boundary the 62nd parallel (Fig. 1). It includes the head-water drainages of three major river systems: the Peel, Stewart and Pelly Rivers and their tributaries. These streams all originate near the Yukon/NWT border in the Selwyn and Hess Mountains, peaks of which attain an elevation of over 8000' above sea level. In the southern one-half of the study area the Yukon/NWT border represents the watershed divide between Pacific (Yukon River) drainage and Arctic (Mackenzie River) drainage. This border in the northern one-half of the study area is the divide between the Peel and Arctic Red Rivers, two major tributaries of the Mackenzie. The mountains throughout are composed of sedimentary rocks, generally limestones and dolomites. Forest cover is essentially confined to the river valleys at lower elevations (2000' - 3000'). Black and white spruce, poplar and minor amounts of pine are the predominant tree species. Willow and alder are present throughout the area, the former thriving even at higher elevations.

The climate is rigorous with long, cold winters. Freeze-ups and break-ups on the larger lakes range from October to June respectively. Large areas of permafrost exist in most of the study area. Air temperatures and precipitation for the months of June and January 1973 for locations near the study area are as follows:-

### June 1973

Location	Mean Max. Air Temp.	Mean Min. Air Temp.	TOTAL Precipitation
Mayo	62.7° F	43.1° F	3.20 in.
Ross River	64.2° F	35.3° F	1.95 in.
Sheldon Lake	62.6° F	33.1° F	1.86 in.

### January 1973

Mayo	-15.1° F	-37.4° F	1.14 in.
Ross River	-14.2° F	-36.7° F	1.03 in.

There is almost continual daylight during the months of June and July and as little as 3 hours of daylight in January. No permanent settlements now exist in the area and the only road is a summer-only road from the town of Ross River to the Yukon/NWT border at

Macmillan Pass. Access to most of the area is restricted to boat or aircraft travel.

The fishery resources of the area have been only very superficially assessed. No commercial fishing ventures have been conducted in the area and recreational fishing has not been extensive. Non-anadromous fish species which have been identified from waters within the area are:- humpback whitefish (*Coregonus clupeaformis*), broad whitefish (*Coregonus nasus*), least cisco (*Coregonus sardinella*), round whitefish (*Prosopium cylindraceum*), inconnu (*Stenodus leucichthys*), Arctic grayling (*Thymallus arcticus*), lake trout (*Salvelinus namaycush*), longnose sucker (*Catostomus catostomus*), northern pike (*Esox lucius*), burbot (*Lota lota*), slimy sculpin (*Cottus cognatus*) and Dolly Varden char. Fish species from the rivers which drain to the Arctic also include (in addition to the above) the anadromous Arctic cisco and Arctic char. Flathead chub (*Platygobio gracilis*), lake chub (*Couesius plumbeus*), longnose dace (*Rhinichthys cataractae*), and trout-perch (*Percopsis omiscomaycus*) inhabit the Peel River and some of its tributaries. Chinook salmon (*Oncorhynchus tshawytscha*) and chum salmon ascend the Pelly and Stewart River systems from the Bering Sea for spawning in late summer and fall. At least twenty species are found in the study area and others may be identified.

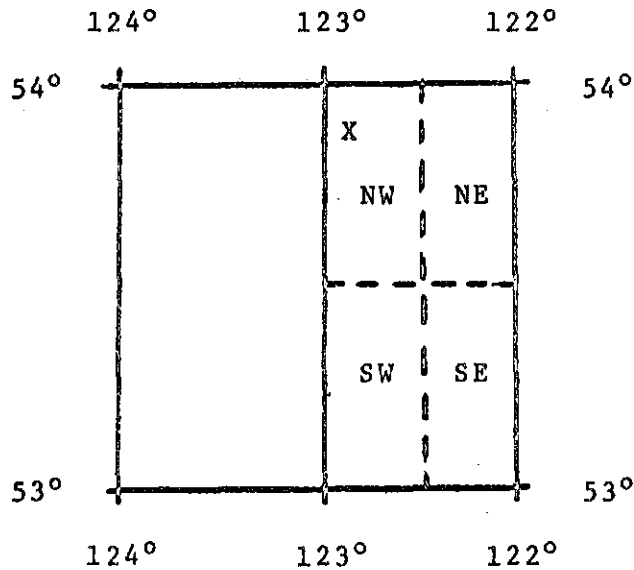
Capture methods during the 1973 survey were restricted to beach-seining, gill-netting and angling. Information on specific biology, relative and absolute abundance and spawning times and locations is limited. Other sources of information for the catalogue were records of Fisheries Service in Whitehorse, Alaska Department of Fish and Game records and interviews with residents of the Yukon Territory. The text of the report is presented in three sections, one for each of the three major river systems draining the study area.



STANDARDS USED

NAME OF STREAM: Name given in Gazetteer of Canada - Yukon; other names are added in lower case type.

LOCATION AND POSITION: Defined by quadrant indexing. Each geographical quadrilateral of the earth's surface of 1 degree in extent in latitude and longitude is divided into the SE, SW, NE and NW quarters. The south-east corner of each quadrilateral gives the initial point for the figures of reference (Gazetteer of Canada).



LENGTH: Mainstem only.

WIDTH: Average width, estimated to nearest foot.

DRAINAGE: Area in square miles of the entire drainage basin feeding the stream

Stream bed category definitions

Bedrock	bedrock
Boulder	>256 mm (>10")
Coarse	50.9 - 256 mm (2 - 10")
Fine	3.37 - 50.8 mm (1/8 - 2")
Sand & Silt	<3.37 mm

Distance references are from mouth of stream, unless stated otherwise.

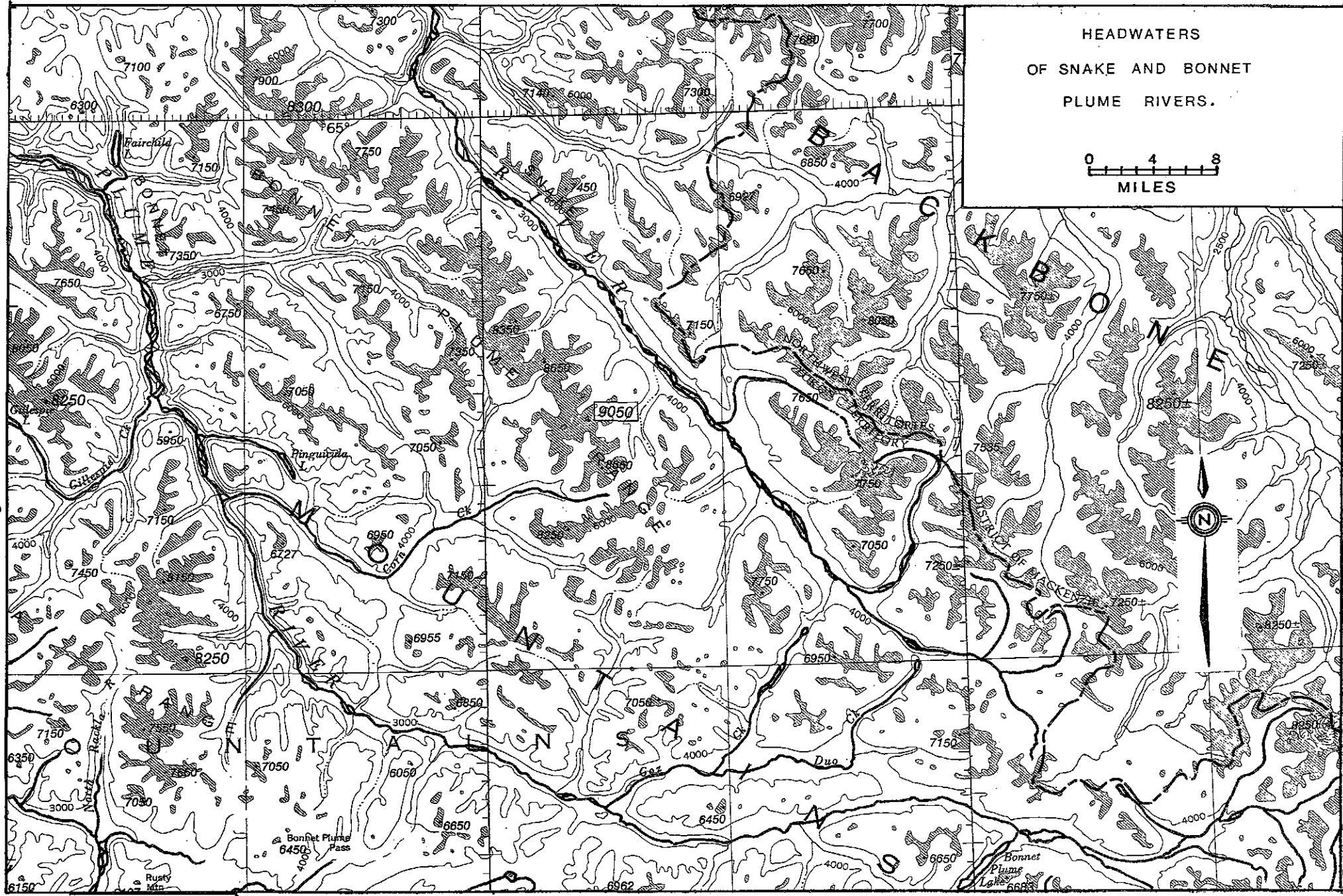
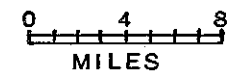
## I. The Peel River Drainage

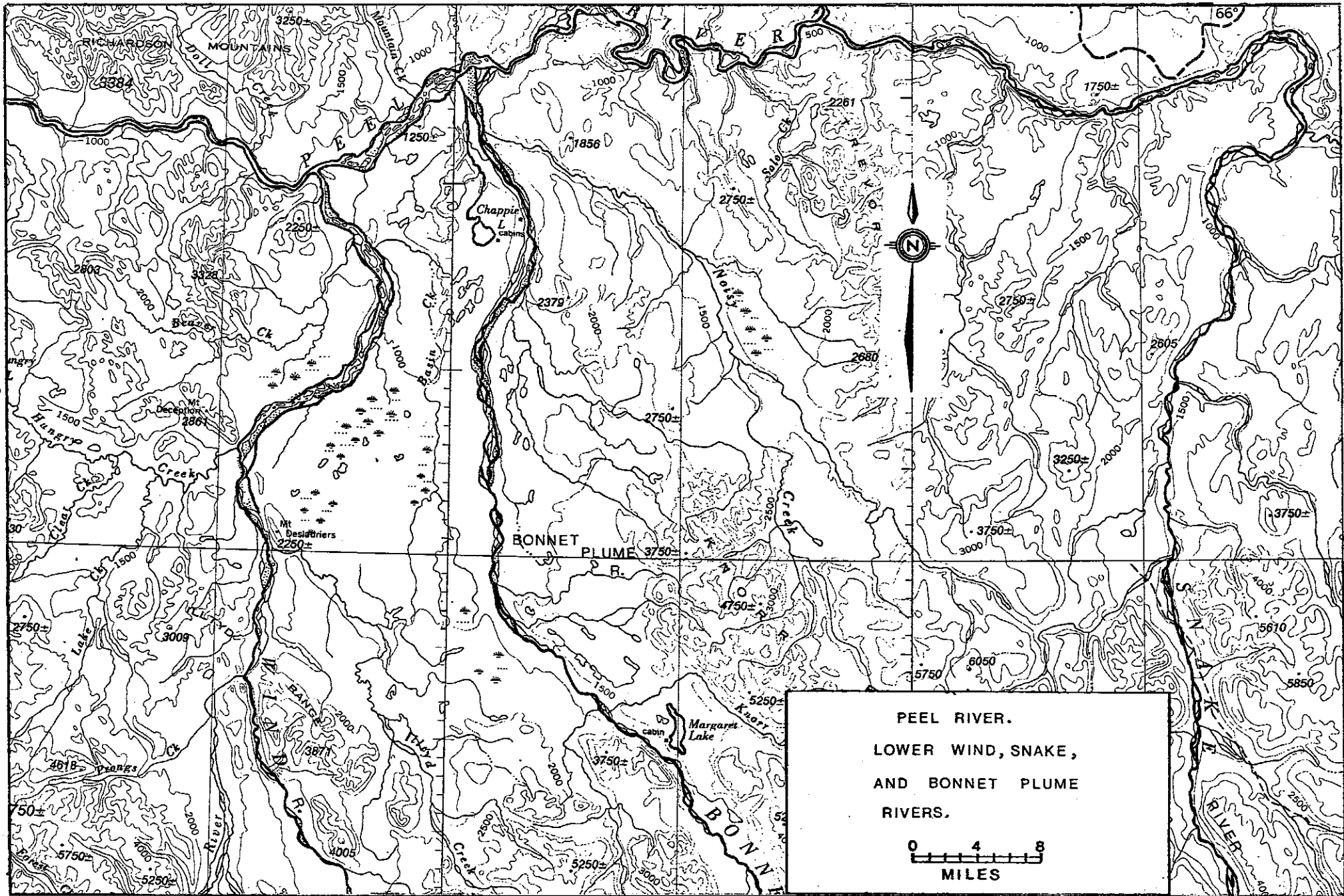
The Peel River drains the eastern slopes of the Richardson Mountains and the northern slopes of the Ogilvie and Wernecke Mountains north of the Stewart River drainage basin. It cuts a deep valley through sedimentary rocks of the Porcupine and Peel Plateaux until the banks attain a maximum height of 1000 feet. The Peel enters the Mackenzie River Delta below Fort MacPherson at an elevation of fifty feet above sea level, approximately 100 miles south of the Arctic Ocean. The total length of the river is approximately 320 miles. The total drainage area is over 30,000 square miles.

A water level recorder maintained by the Water Resources Board of Canada at Fort MacPherson near the mouth of the Peel recorded a mean discharge of 52,900 cfs in July. Maximum discharge was 106,000 cfs. The mean discharge was 2790 cfs in April with a maximum of 2970 cfs.

The Peel supports more than a dozen species of freshwater fish and serves as a migration route for spawning runs of anadromous Arctic cisco and Arctic char. The spawning grounds for these anadromous species have not been delineated.

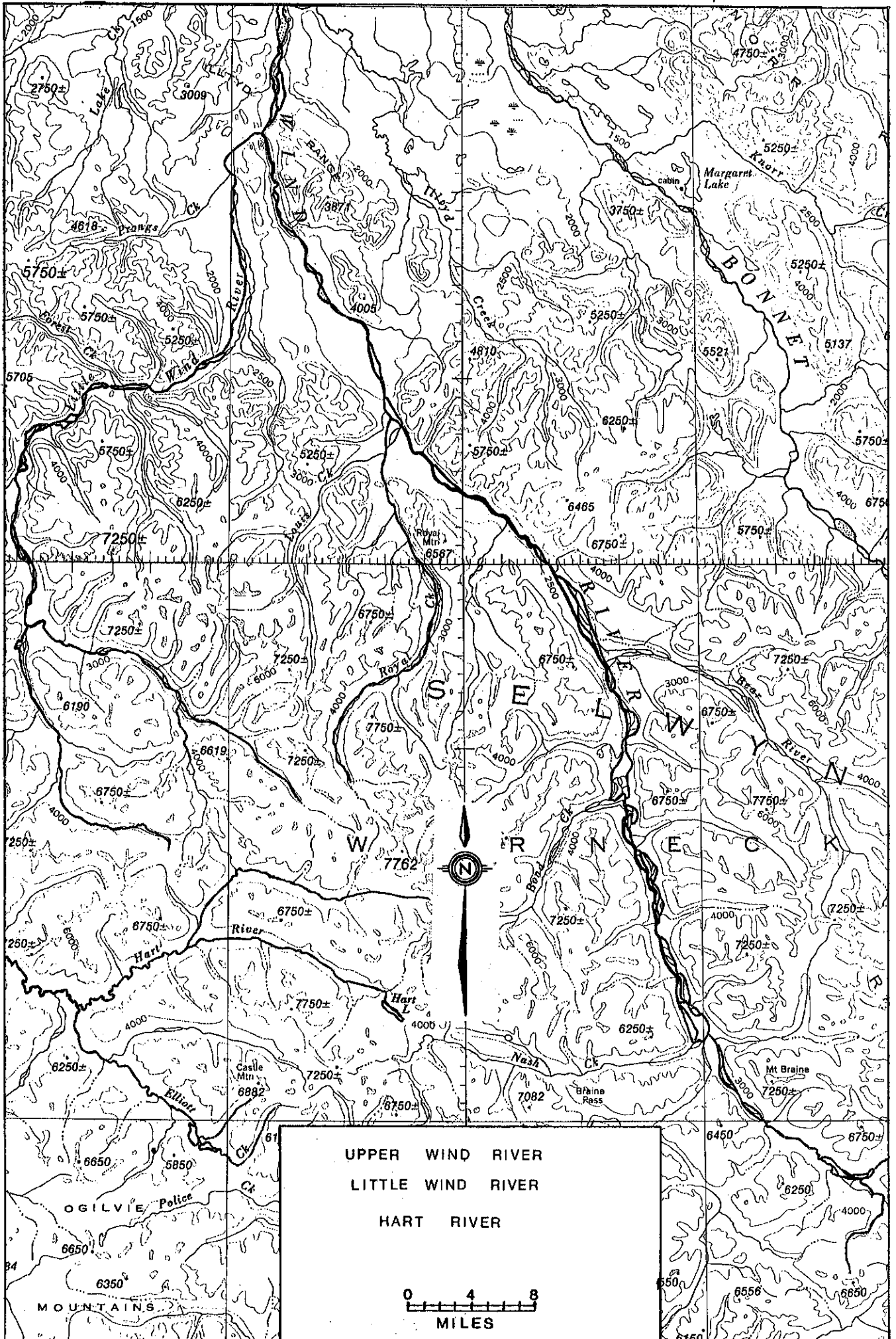
HEADWATERS  
OF SNAKE AND BONNET  
PLUME RIVERS.





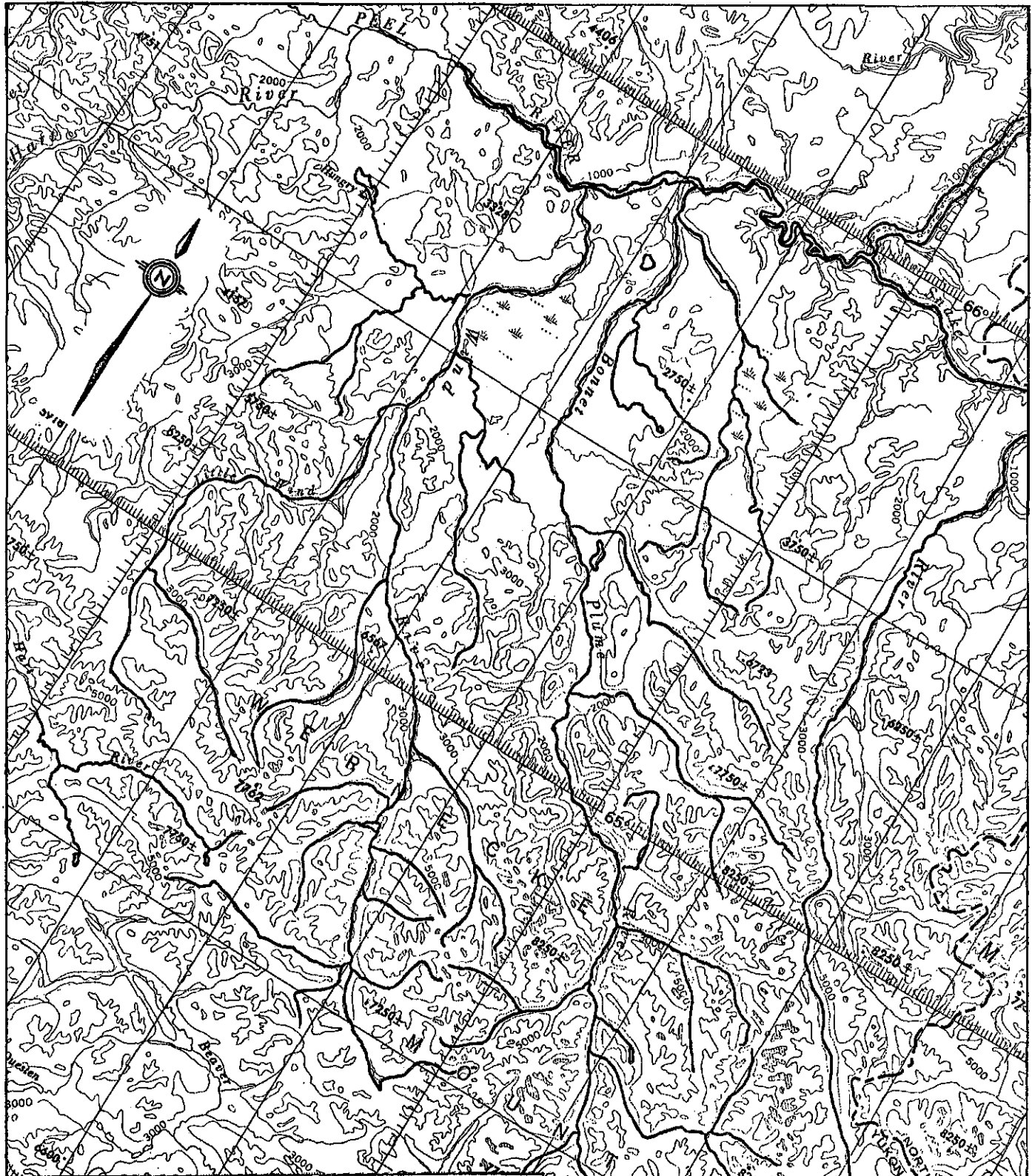
PEEL RIVER.  
LOWER WIND, SNAKE,  
AND BONNET PLUME  
RIVERS.





UPPER WIND RIVER  
 LITTLE WIND RIVER  
 HART RIVER





PEEL RIVER  
AND TRIBUTARIES



Yadareen (Mtn)  
NORTHWESTERN TERRITORY  
YUKON TERRITORY  
YUKON RIVER

Name of Stream	Tributary to	River System
PEEL RIVER	MACKENZIE RIVER	MACKENZIE

**LOCATION** Flows ENE through extreme NW corner of the study area.

<b>LENGTH</b> 36 miles in study area	<b>WIDTH</b> to 1000 feet	<b>POSITION</b> 67°42', 134°32'	<b>DRAINAGE</b> 12,352 sq. mi. in study-area
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From the western limit of the study area to the mouth of the Wind River the Peel is incised through vertical shale rock bluffs up to 100 ft. in height. Several rapids exist in this area, but none are a problem to small-boat navigation or to the passage of migrating fish. A mile below the Wind the canyon gives way abruptly to a flat, low basin with many islands and gravel bars covered with willow, poplar and spruce. Current strength in this stretch is estimated at 6-8 mph.

Below the mouth of the Bonnet Plume River the Peel again constricts in width and strong rapids exist. These rapids do not constitute a barrier to the passage of fish. One mile above the mouth of the Snake River the Peel is confined by five-hundred-foot vertical cutbanks of soft shales and sandstones. The current is strong (to 9 mph) and swells and turbulence exist.

Gravel bars in the vicinity of the junction of the Peel and Snake consist of 75% coarse and 25% fine material.

A water level recorder is maintained on the Peel at 65°53', 136°02' by the Water Resources Board of Canada. This location is on the extreme Western edge of the study area and measures the discharge of 10,200 square miles outside the study area. The mean daily discharge in 1970 was 6420 cfs. Maximum discharge was 65,500 cfs on May 27 and the minimum was 530 cfs on March 4, 1970.

Water temperature in the Peel at the mouth of Snake River was 56°F on 29/06/73. The river carried a high silt load at this time due to run-off from heavy rains.

Water chemistry: 4/07/73 (Hach kit)  
 Alkalinity: 8 grains/gal.  
 CO<sub>2</sub>: 15 ppm  
 pH: 8.5  
 DO: 9 ppm.

**Fish observed:**

Seining  $\frac{1}{4}$  mile above the mouth of the Snake River with an 80'x12'x $\frac{1}{2}$ " mesh beach seine-net from a gravel bar on the North side of the Peel River captured the following species:

Inconnu (to 12 pounds), lake chub, burbot, Arctic grayling, longnose sucker, round whitefish, slimy sculpin, longnose dace, flathead chub and Arctic cisco. Numerous Arctic cisco were captured in the seining operations, probably indicating that a spawning or feeding migration of this species was in progress.

Gill-netting in the Peel River to a distance of 8 miles upstream of the mouth of the Snake River captured the following species: Arctic cisco,



Inconnu, pike, round whitefish, longnose sucker, Arctic char (one) and Arctic grayling. Gill nets were 50' x 8' with mesh sizes of 2", 3" and 4". Approximately 10 nets of various size mesh were fished for 6 days and were checked every 24 hours.

Name of Stream	Tributary to	River System
BONNET PLUME R.	PEEL RIVER	MACKENZIE

LOCATION Flows N. into Peel River.

LENGTH	198 miles	WIDTH	150' at mile 50	POSITION	65°54', 134°57'
		DRAINAGE			4130 sq. mi.

The source of the Bonnet Plume River is in the Hess Mountains of the Selwyn Range near the Yukon/NWT border at an elevation of nearly 8000 feet above sea level. It flows westerly for approximately 80 miles, then NNW for approximately 100 miles and enters the Peel at an elevation of approximately 500 feet above sea level. The river is very highly braided for the first 70 miles from its mouth, with constantly changing channels through gravels estimated at 70% coarse and 30% fine particles. Gradients are high throughout the length of the river but strong rapids and barriers to fish are nowhere present. Water is very clear throughout except at times of heavy rain and spring run-off. Excellent habitat exists throughout the river for Arctic grayling, round whitefish and Dolly Varden char. Water temperatures decrease with increasing distance from the mouth.

Major tributaries include Knorr Creek at mile 48, Rapitan Creek at mile 64 and Goz Creek at mile 148. Margaret Lake is at mile 52 and Bonnet Plume Lake at mile 172. All creeks entering the Bonnet Plume are very high gradient mountain streams flowing for the most part over boulder and coarse gravel beds. Fish life is limited to very small populations of round whitefish and Arctic grayling.

Water temperature was 47°F on 29/06/73 at mile 60 on the Bonnet Plume River. Discharge was estimated at 800 cfs at this point. Bottom composition was 70% coarse and 30% fine gravels.

Water chemistry 29/06/73 (Hach kit) at mile 60:-

Alkalinity: 5 gn/gal.  
 CO<sub>2</sub>: 10  
 pH: 8.5  
 DO: 10 ppm

Beach seining with an 80'x12x½" mesh seine net at miles 24, 48, 60, 96, 126 and 172 produced the following species: Arctic grayling, slimy sculpin, round whitefish and Dolly Varden char (at mile 172).

Margaret Lake, one mile East of the Bonnet Plume River at mile 52 but not connected with the river, was sampled with various



mesh size gill nets. Species captured included lake whitefish, northern pike and lake trout. Very large pike (over 20 lb.) are present. Water temperature was 58°F on 21/06/73. Water chemistry on 21/06/73:-

Alkalinity: 4 grains/gal.  
 CO<sub>2</sub>: 10  
 pH: 7.5  
 DO: 10 ppm.

Bonnet Plume Lake at mile 172 on the Bonnet Plume River and connected by a 2-mile-long stream was sampled with two 50'x8' gill nets (2" mesh, 3" mesh) set for 24 hours. Species captured were lake trout, Arctic grayling, and round whitefish. Other species are probably present. The lake is 5 miles long by ½ mile wide. Water temperature was 53°F on 9/07/73. Water chemistry on 9/07/73:-

Alkalinity: 5 gn/gal.  
 CO<sub>2</sub>: 15  
 pH: 8.5  
 DO: 9 ppm.

Name of Stream	Tributary to	River System
SNAKE RIVER	PEEL RIVER	MACKENZIE

LOCATION Flows West into Peel River

		POSITION <u>65°58', 134°12'</u>
LENGTH <u>172 miles</u>	WIDTH <u>200' at mouth</u>	DRAINAGE <u>3541 sq. miles</u>

The headwaters of the Snake River are at the Yukon/N.W.T. border (131°50', 64°30') at an elevation of approximately 7000' asl. The river flows NNW through mountains to 8000' of the Selwyn Range for approximately 120 miles, then bends almost due west and empties into the Peel River at an elevation of 500' asl. Average gradient is approximately 7'/1000' throughout the river length, but higher in the mountainous headwater region.

Mile 0-40. Riffles and occasional stream braiding alternating with long pools of low current strength. Numerous gravel bars (50% coarse, 50% fine). Numerous stagnant backwaters with mud bottom, some caused by the work of beavers. Water muddy and silt-laden at time of survey.

Mile 40 - headwaters. High gradient, heavily braided stream with changing channels over coarse gravel bed. Many steep riffles approaching rapids classification, no barriers to fish passage.

Tributaries to the Snake are short, high-gradient mountain streams over coarse gravel and boulder. Fish life is probably absent. An exception is a creek entering from the East at mile 38 which is more gentle in gradient, has organic colored water and drains a flat plain to the East.

Water clarity improves with increasing distance from the mouth, and water temperatures correspondingly decrease. Water tempe-

ratures on 30/06/73 were 53°F at mile 15, 52.5°F at mile 38, 50.5°F at mile 62, 48°F at mile 112, 46°F at mile 144, and 45°F at mile 168.

Water chemistry at mile 15 with a Hach kit on 30/06/73:-

Alkalinity: 6 grains/gal  
CO<sub>2</sub>: 10  
pH: 8.5  
DO: 11 ppm.

Discharge at mile 15 was estimated at 650 cfs on 30/06/73, water was muddy colored and silt-laden and the bottom consisted of gravels of 20% boulder, 40% coarse and 40% fines.

Beach seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net at mile 15, mile 38, mile 62, mile 112, mile 144 and mile 168 produced the following species:

Longnose sucker, slimy sculpin, lake chub, burbot, Arctic grayling, round whitefish and Dolly Varden char. Seining stations upstream of mile 62 produced only Arctic grayling, round whitefish and Dolly Varden.

Gill-netting with 50'x8' nets of 2", 3" and 4" mesh within 8 miles of the mouth produced Arctic grayling, longnose sucker, pike and inconnu. Four nets were set for 24-hour periods on each of four successive days.

Name of Stream	Tributary to	River System
WIND RIVER	PEEL RIVER	MACKENZIE

LOCATION Flows N. into Peel River.

		POSITION 65°49', 135°18'
LENGTH 128 miles	WIDTH 60' at mouth	DRAINAGE 3399 sq. miles
		(including Little Wind R.)

The Wind River originates on a height of land (4000' asl) between the Pacific and Arctic watersheds at 64°25', 134°00' in the Wernecke Mountains and flows into the Peel River at an elevation of approximately 500' asl. The river is very highly braided throughout much of its length, with constantly changing channels over coarse gravel and silt-bottomed backwaters. Average gradient is 4'/1000', higher in the headwater region. Current is strong, riffles are common and pools restricted except near the mouth. The water is very clear in the headwaters but milky and silt-laden near the mouth. Good gravels are found throughout the length of the river, usually in the ratio of approximately 50% coarse to 50% fine. Water temperatures decrease with increasing distance from the mouth and corresponding increase in altitude. Excellent habitat (for spawning and rearing) for Arctic grayling, round whitefish and Dolly Varden char exists throughout the river. Barriers to the passage of fish are not present, but parts of the river may not contain water during winter.

Major tributaries in the lower drainage are the Little Wind River at mile 40, Hungry Creek at mile 24 and Illyd Creek at mile 31. Royal Creek, Bear River and Bond Creek join the Wind further upstream. These last three are very high gradient mountain streams flowing over boulders and coarse gravel. Fish are probably absent. Hungry Creek is a low gradient, silt-laden stream (50 cfs in July) draining Hungry Lake on the edge of the study area. Pike have been observed spawning in Hungry Lake in early June, and probably inhabit Hungry Creek as well.

The Little Wind River (65°23', 135°29') joins the Wind at mile 40. It is 60 miles long with a discharge of approximately 150 cfs in early July. Water temperature was 49°F on June 29/73, water is very clear and the river provides excellent habitat for Arctic grayling and round whitefish. Gravels are approximately 40% coarse and 50% fine.

Water temperatures in the Wind River on 29/06/73 were 48°F at mile 54, 54°F at mile 24, 49°F at mile 34 and 48°F at mile 84.

Water chemistry (Hach kit) on 29/06/73 at mile 54:-

Alkalinity:	6 gn/gal.
CO <sub>2</sub> :	17
pH:	8.5
DO:	9 ppm.

Water chemistry (Hach kit) on 29/06/73 at mile 24:-

Alkalinity:	5 gn/gal.
CO <sub>2</sub> :	10
pH:	7.5
DO:	9 ppm .

Discharge at mile 24 on 29/06/73 was estimated at 1000 cfs. Bottom composition was 50% coarse gravels, 30% fine and 20% silt and mud.

Seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net at mile 24, mile 34, mile 54 and mile 84 produced Arctic grayling, round whitefish, slimy sculpin and Dolly Varden char (at mile 84). Pike are probably present below Hungry Creek, and various species of whitefish may be present in the lower reaches of the river. The upper 100 miles of the river provide excellent spawning and rearing habitat for Arctic grayling, round whitefish and Dolly Varden char.

Name of Stream HART RIVER	Tributary to PEEL RIVER	River System MACKENZIE
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LOCATION Flows North into Peel River.

		POSITION <u>65°51', 136°22'</u>
LENGTH <u>32 mi. in</u>	WIDTH <u>25' near head-</u>	DRAINAGE <u>582 sq.mi. in</u>
study area	waters	study area

The source of the Hart River is Hart Lake in the northern Wernecke Mountains at 64°36', 135°09' and an elevation of approximately 4000' asl. Elliott Creek draining Elliott Lake at 64°29', 135°35' joins the Hart River from the South approximately 25 miles downstream from Hart Lake. Only the extreme headwaters of the Hart River were surveyed. Water is clear, 49°F on July 11, 1973, bottom composition was 80% fine gravels and 20% coarse at the junction of Elliott Creek and Hart River. Discharge here was approximately 100 cfs on 11/07/73.

Water chemistry with a Hach kit 11/07/73 at confluence of Elliott Creek and Hart River:-

Alkalinity: 8.0 grains/gal.  
CO<sub>2</sub>: 10  
pH: 8.5  
DO: 9 ppm.

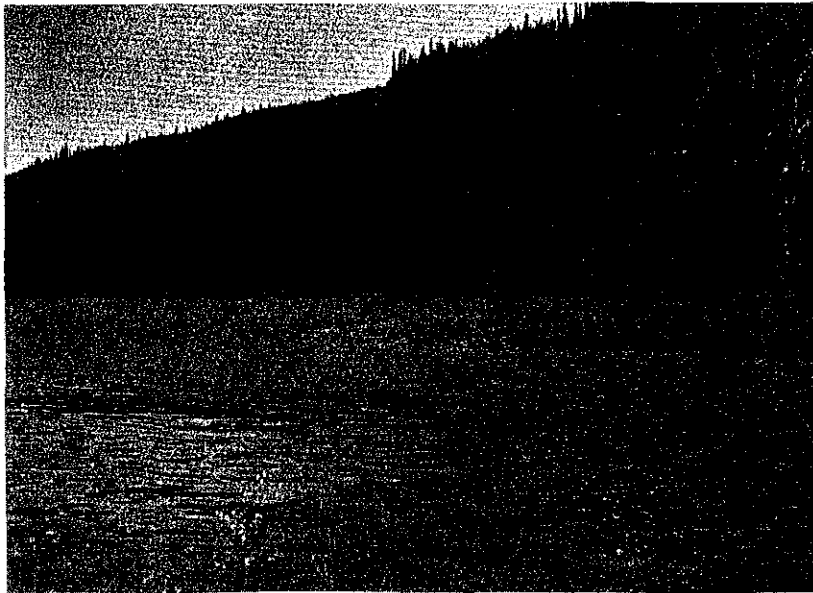
Beach seining with an 80'x12'x½" mesh seine net produced Arctic grayling and round whitefish.

One 50'x8'x2" mesh and one 50'x8'x3" mesh gill net set for 24 hours in each of Hart and Elliott Lakes produced longnose sucker, Arctic grayling, lake trout and round whitefish. Hart Lake is 2 miles long x 1000' wide and Elliott Lake is 2 miles long x ½ mile wide. Both are high altitude lakes with sparse vegetation along their shores.

Water chemistry 9/07/73 with a Hach kit:-

	Hart Lake	Elliott Lake
Alkalinity:	7 grains/gal.	7 grains/gal.
CO <sub>2</sub> :	15	15
DO:	10 ppm	10 ppm
pH:	8.5	8.5
Temperature:	55°F	

PEEL RIVER  
DRAINAGE



1. Peel River  
10 miles  
downstream of  
confluence with  
Snake River.

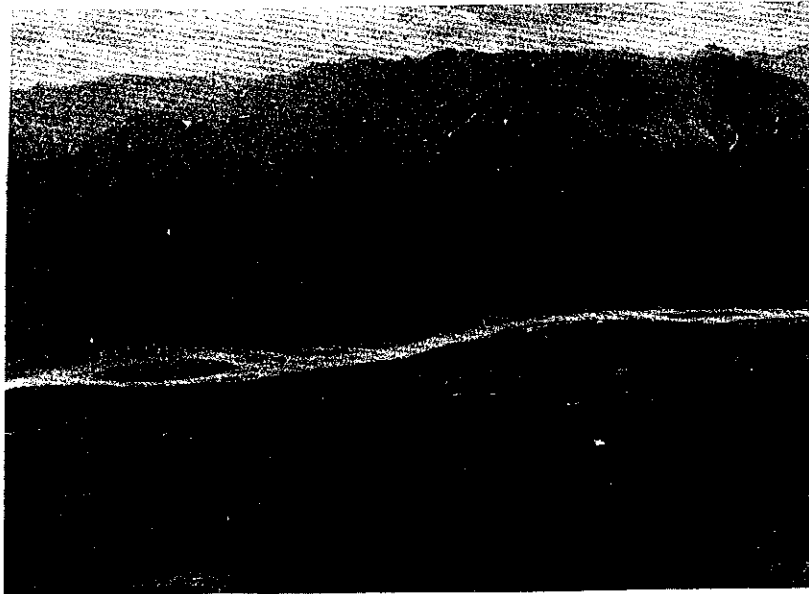


2. Confluence of  
Peel and Snake  
Rivers.

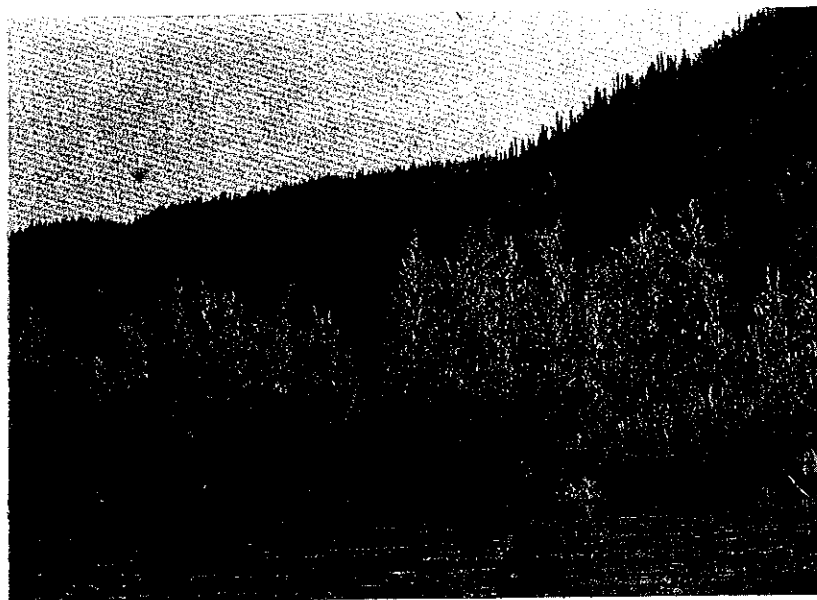


3. Looking downstream  
on Peel River at  
confluence with  
Snake.

4. Wind River at  
Mile 100.



5. Snake River  
at Mile 8.



6. Bonnet Plume  
River at  
Mile 60.

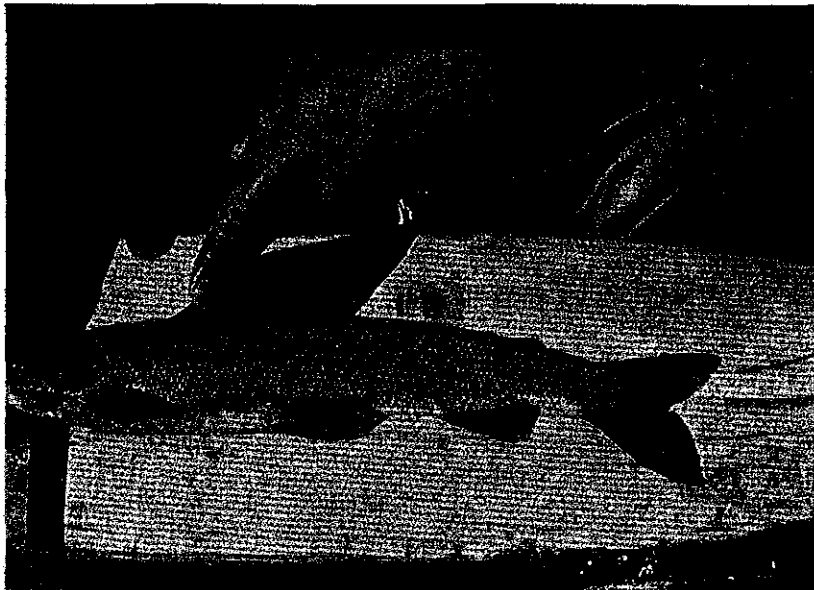




7. Wind River at  
Mile 60.

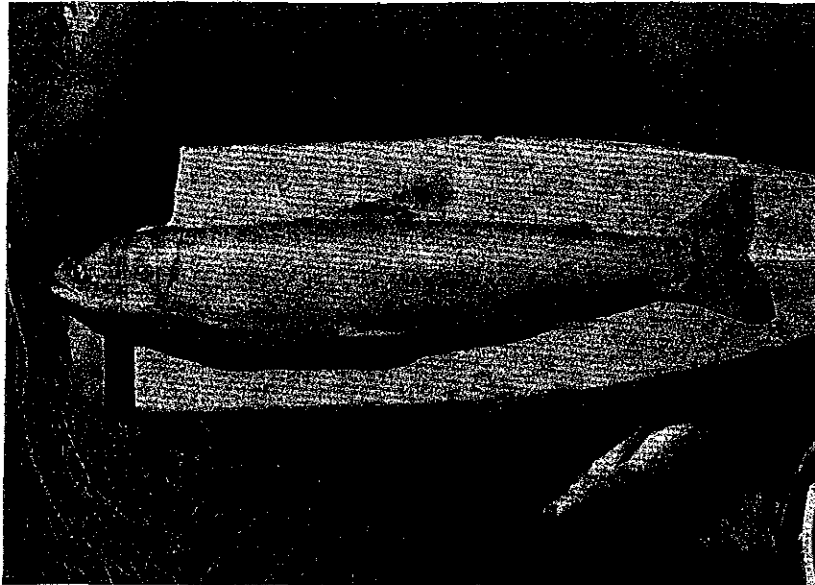


8. Peel River at  
confluence  
with Snake.



9. Arctic grayling  
from Peel River.

10. Arctic char  
from Peel River.



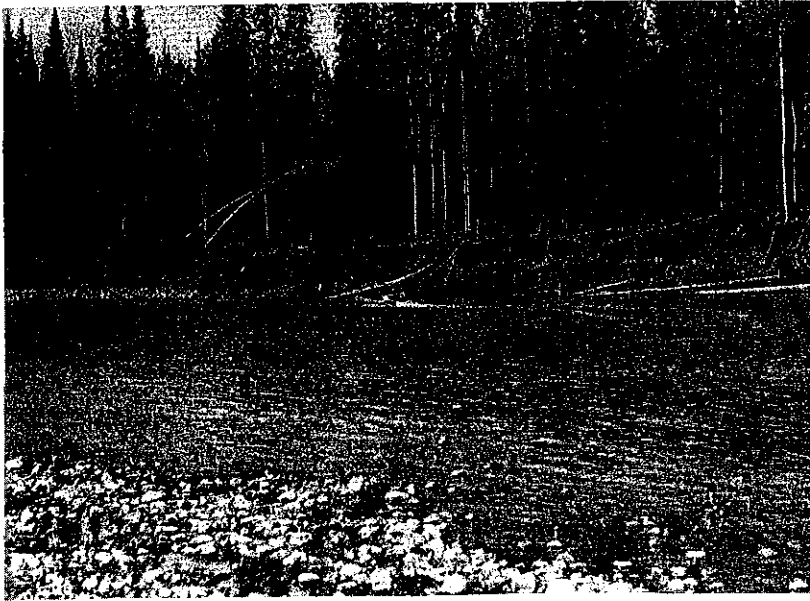
11. Beach seining  
on Peel River.



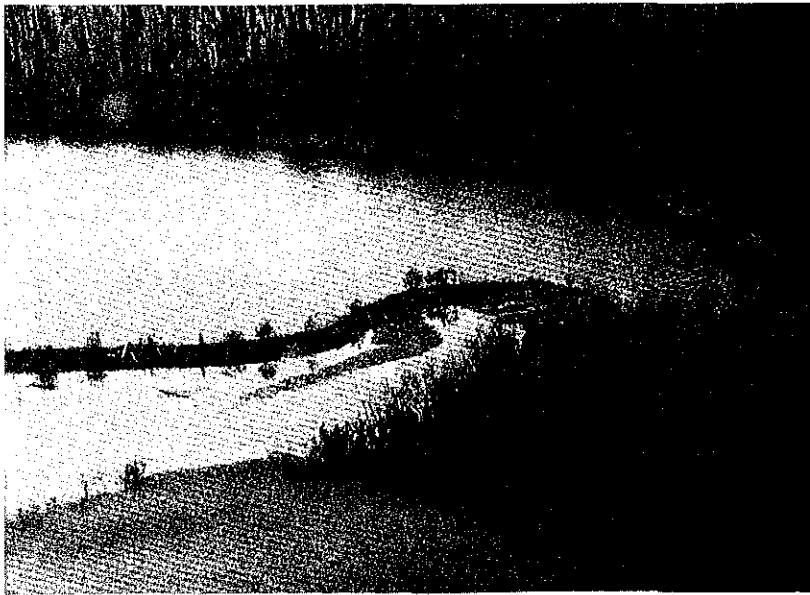
12. Beach seining  
on Wind River.



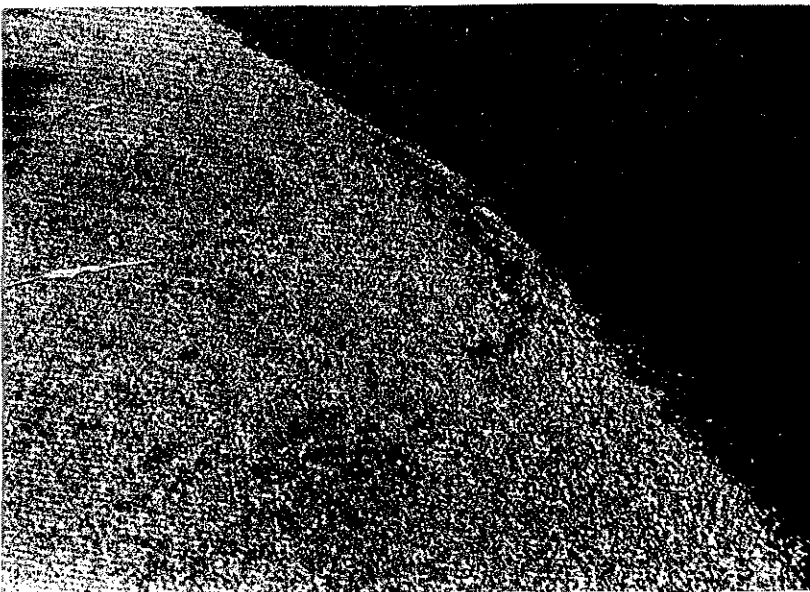




13. Snake River  
at Mile 10.



14. Beaver dam in  
backwater of  
Snake River.



15. Bonnet Plume  
River  
indicating  
gravel  
composition.

16. Headwater  
terrain of  
Wind River.

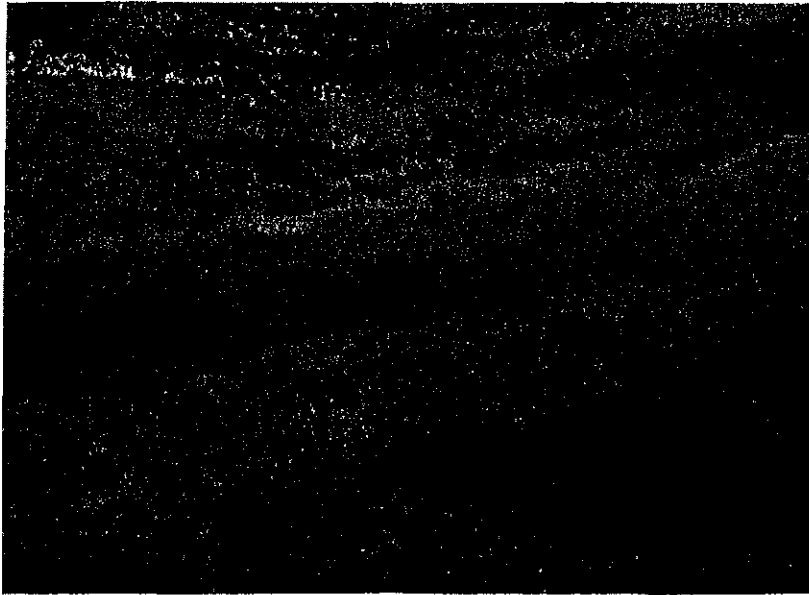


17. Snake River  
at Mile 12.



18. Bonnet Plume  
River at  
Mile 90.

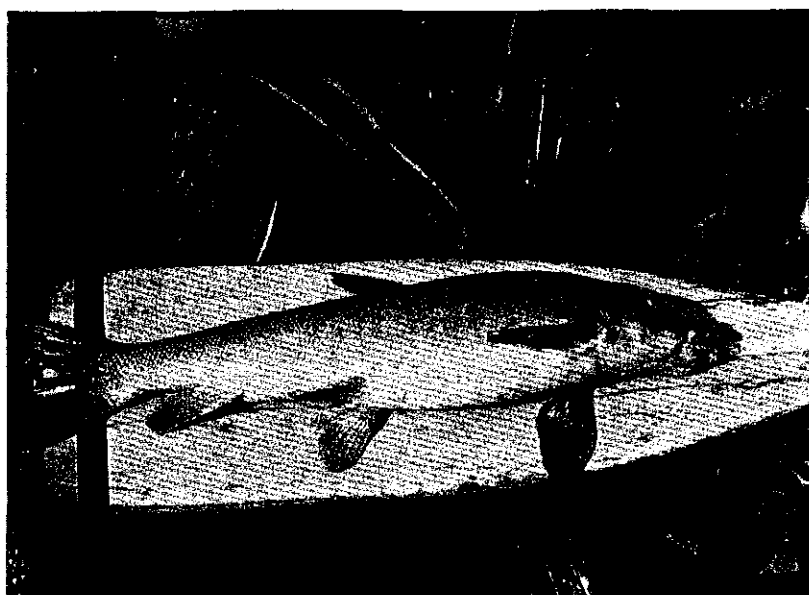




19. Bonnet Plume  
River at  
Mile 110.



20. Inconnu from  
Peel River.



21. Longnose sucker  
from Peel River.

22. Peel River  
near confluence  
with Snake.



23. Margaret Lake  
near Bonnet  
Plume River.



24. Margaret Lake  
with Bonnet  
Plume River in  
background.



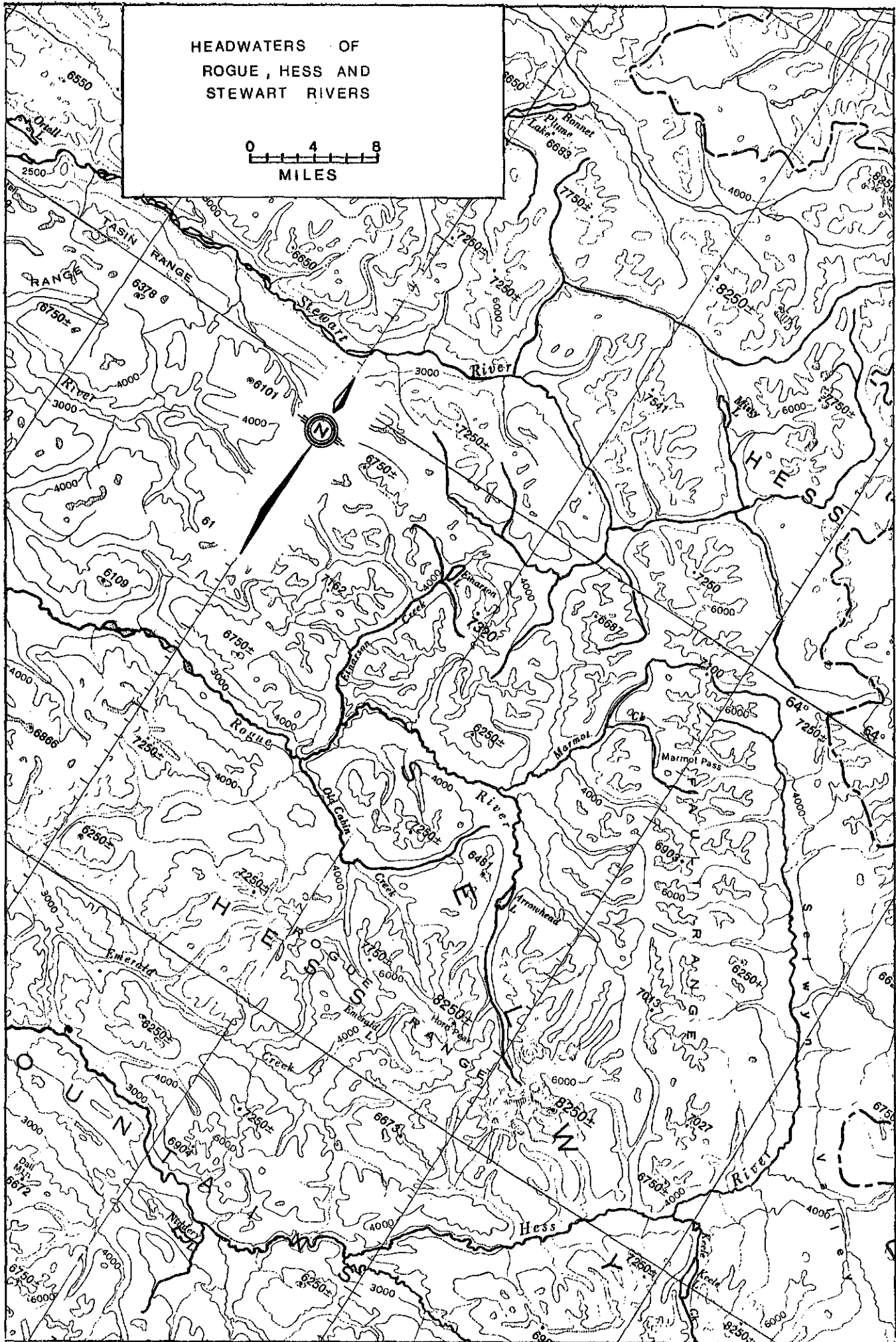
## II. The Stewart River Drainage

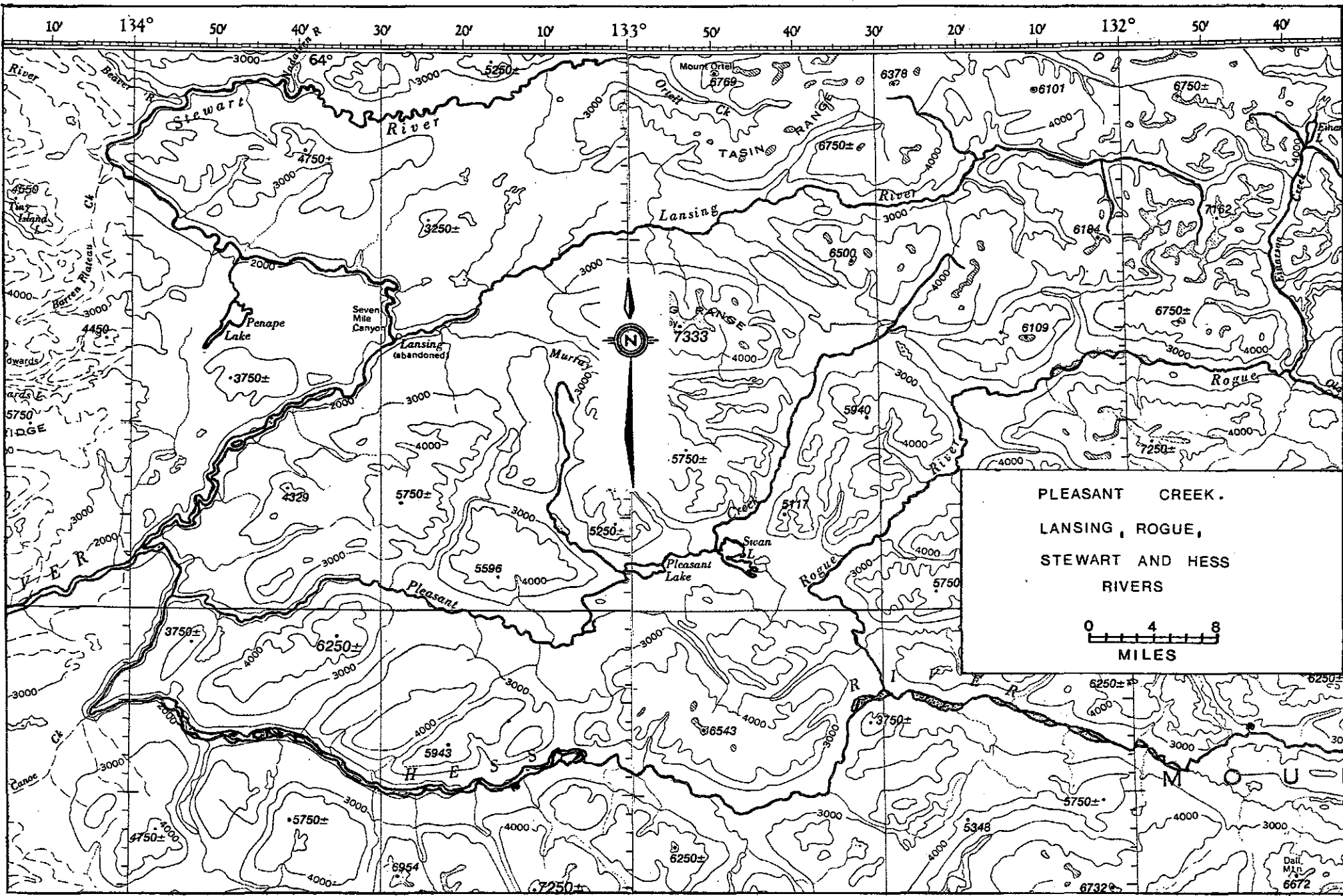
The Stewart River drains the regions north of the Pelly River basin to the south, and south of the Peel River basin to the north. It has cut its way through the Stewart Plateau and various mountain ranges. Total length of the river is approximately 400 miles and total drainage is approximately 20,000 square miles.

A water level recorder at 63°16', 139°14' at the confluence of the Stewart and Yukon Rivers indicated a mean discharge in 1970 of 17,100 cfs with a maximum of 104,000 cfs on June 9 and a minimum of 2050 cfs on March 22.

The Stewart supports resident populations of approximately 10 species of freshwater fish and serves as a migration route for anadromous chinook salmon which spawn in the headwater regions. In some years at low water volume, Fraser Falls located approximately 35 miles above the town of Mayo may present a barrier to migrating chinook salmon.

# HEADWATERS OF ROGUE, HESS AND STEWART RIVERS

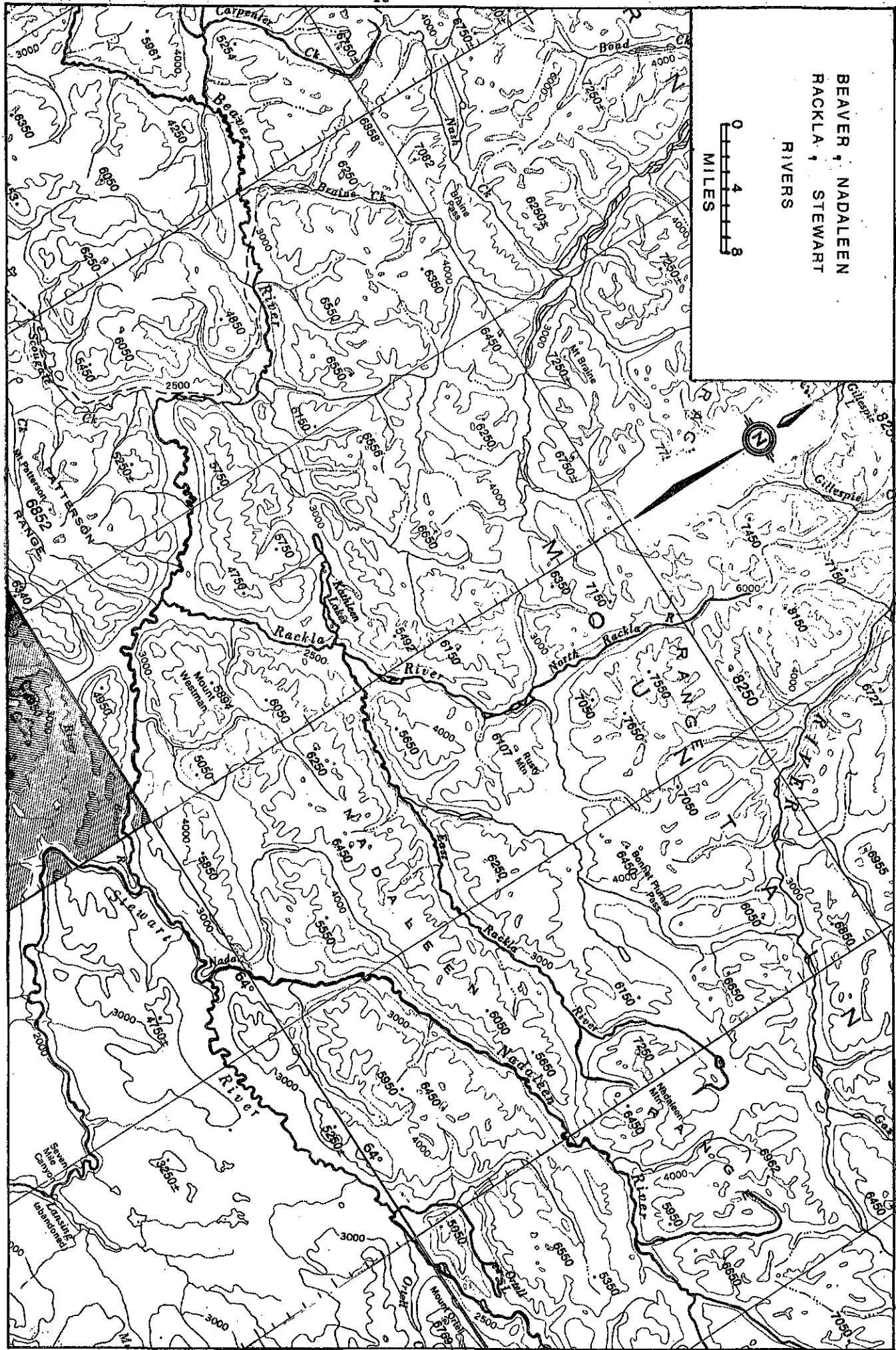
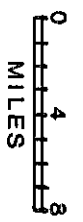




PLEASANT CREEK.  
 LANSING, ROGUE,  
 STEWART AND HESS  
 RIVERS



BEAVER, NADALEEN  
RACKLA, STEWART  
RIVERS





Name of Stream	Tributary to	River System
STEWART RIVER	YUKON RIVER	YUKON

LOCATION Flows WSW into Yukon River

LENGTH	<u>178 miles in</u>	WIDTH	<u>300' at W. side</u>	POSITION	<u>63°19', 139°26'</u>
	study area		of study area	DRAINAGE	<u>10,229 in study</u>
					area

The Stewart River originates near the NWT/Yukon border at 64°20', 131°10' in the Hess Mountains at an elevation of approximately 6000' asl. Only 178 miles of the river are present in the 1973 study area, flowing generally WSW. High gradients exist in the headwater areas, substratum is mainly boulder and coarse gravel and the water is clear. Good gravels exist in the river through much of the study area with compositions in the approximate ratio of 50% coarse to 50% fine. No major rapids or barriers to fish exist within the study area.

Major tributaries entering the Stewart within the study area include the Nadaleen, Beaver, Lansing and Hess Rivers in downstream order. Lakes draining into the mainstem of the Stewart are Penape and Ortell.

Water temperatures were lower in headwater areas: 46°F on 23/08/73 at mile 140 (from edge of study area), 49°F - 50°F on 14/07/73 at junction of Stewart and Hess Rivers.

Water chemistry with a Hach kit on 23/08/73 at mile 140:-  
 Alkalinity: 3 grains/gal  
 CO<sub>2</sub>: 10  
 pH: 7.5  
 DO: 10 ppm.

Gravels at this point were 20% boulder, 50% coarse and 30% fine with an estimated discharge of 150 cfs.

Beach seining with an 80'x12'x½" mesh seine net at the confluence of the Hess and Stewart and at the confluence of the Beaver and Stewart on 14/07/73 produced the following species: Juvenile chinook salmon, Arctic grayling, humpback whitefish and slimy sculpin.

Gill-netting with various mesh size (2", 3", 4") 50'x8' gill nets within 6 miles upstream of the confluence of the Hess and Stewart Rivers in mid-July produced the following species: pike, inconnu, burbot, humpback whitefish, round whitefish, least cisco, Arctic grayling and longnose sucker. Nets were for 24-hour periods.

Ortell Lake at 64° 04', 132° 51' is 2 miles long and 1 mile wide and drains by Ortell Creek into the Stewart River at 133° 04'. It is a shallow, warm lake. One hundred feet of 2" and 3" mesh gill net set for 24 hours in early July produced two five-pound pike. Water chemistry on 9/07/73 with a Hach kit:-  
 Alkalinity: 8  
 CO<sub>2</sub>: 10  
 pH: 8.5  
 DO: 9 ppm  
 Temperature: 63°F.

Name of Stream BEAVER RIVER	Tributary to STEWART RIVER	River System YUKON
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LOCATION Flows SE into Stewart River.

POSITION 63°57', 133°54'  
 LENGTH 82 miles WIDTH 120' at mouth DRAINAGE 1903 sq. miles

The Beaver originates in the SE Ogilvie Mountains at 135°46', 64°20' at an elevation of 4500' asl. Headwater gradients are extreme but the lower 60 miles are generally slow-moving and meandering. From the mouth to the junction with the Rackla River (22 miles) the Beaver is a silt-laden, generally mud-bottomed stream with oxbow bends and extensive meandering. Excellent habitat exists for pike and whitefish. Gradients become steeper above the confluence with the Rackla and pool-riffle characteristics are more prevalent but the meandering pattern still predominates. Above mile 38 there are stretches of good gravel and the water becomes clearer.

Major tributaries are the South McQuesten River at mile 66 (not surveyed) and the Rackla River at mile 22.

Water temperatures in the Beaver on 11/07/73 were 56°F at mouth, 54°F at mile 22, 43°F at mile 38 and 45°F at mile 66. Water chemistry with a Hach kit on 11/07/73 at mile 66:-

Alkalinity: 7 grains/gal.  
 CO<sub>2</sub>: 10  
 DO: 9 ppm  
 pH: 8.5

Bottom composition at mile 66 was 60% coarse gravels and 40% fine. Discharge at this point was estimated at 250 cfs.

Beach seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net at the mouth produced juvenile chinook salmon, slimy sculpin, round whitefish and Arctic grayling. Other species are probably present. Beach seining at mile 22, mile 38 and mile 66 on 11/07/73 produced Arctic grayling and round whitefish.

The Rackla River (64°07', 134°20') is formed by the junction of the East Rackla (40 miles long) and the N. Rackla (28 miles long). The Rackla flows SSW into the Beaver River at mile 22. The lower 10 miles are generally slow-moving and meandering, and carried a high silt load at the time of survey. The N. and E. Rackla rivers are clearer, with higher gradients and predominantly coarse gravel substrates. Water temperature was 49°F at mile 20 (on the E. Rackla) on 11/07/73. The water was clear and discharge was estimated at 200 cfs. Gravels were mainly coarse. Water chemistry at this point with a Hach kit on 11/07/73:-

Alkalinity: 9 grains/gal.  
 CO<sub>2</sub>: 10  
 DO: 9 ppm  
 pH: 7.5

Beach seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net at mile 20 produced Arctic grayling juveniles. Most of both the N. and E. Rackla Rivers provide excellent habitat for Arctic grayling and round whitefish.

Kathleen Lakes (64°15', 134°13') are a group of 3, the largest (central) being 6 miles long by  $\frac{1}{2}$  mile wide. They drain via an unnamed 3/4-mile-long creek into the Rackla River at mile 12. Water temperature in the central lake on 9/07/73 was 59°F. This lake is very deep (over 100') and is reported to contain large lake trout. Water chemistry on 9/07/73 with a Hach kit:-

Alkalinity: 15 gn/gal.  
CO<sub>2</sub>: 20  
DO: 4 ppm  
pH: 8.5

A 50'x8'x3" mesh gill net set for 24 hours on 9/07/73 in a depth of 70' in Kathleen Lake captured lake trout, lake whitefish and burbot. Other species are probably present.

Name of Stream	Tributary to	River System
HESS RIVER	STEWART RIVER	YUKON

LOCATION Flows generally West into Stewart River.

POSITION 63°33', 133°58'

LENGTH 198 miles WIDTH 200' at mouth DRAINAGE 3383 sq. miles

The Hess originates at the NWT/Yukon border (130° 59', 64° 00') in the Selwyn Mountains at an elevation of approximately 7000' asl. Gradients in the extreme headwaters are very high but much lower over the major length of the river. Water color is generally milky and silt-laden, reflecting the glacial origin of the stream. The river is braided through much of its central length, gravels are good (approximately 50% coarse and 50% fine) except in headwater region where boulders predominate. A two-mile-long canyon exists near the mouth but poses no problem to the passage of fish.

Major tributaries are Pleasant Creek at mile 6, and Rogue River at mile 75. Niddery Lake outlet is at mile 116, Keele Lake outlet at mile 144 and Fairweather Lake outlet at mile 56.

Water temperatures were 50°F at confluence with Stewart on 14/07/73, 52°F at mile 40 on 2/08/73 and 52°F at mile 160 on 23/08/73.

Water chemistry with a Hach kit:-

		Alkalinity	DO <sub>2</sub>	CO	pH
23/08/73	Mile 160	5 gn/gal.	8	5	7.5
2/08/73	Mile 40	5	10	10	8.0
14/07/73	Mile 1	3	10	10	8.5

Discharge at mile 40 on 2/08/73 was estimated at 2000 cfs with a bottom composition of 60% coarse and 40% fine gravels.

Beach seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net at mile 160 produced Arctic grayling and round whitefish on 23/08/73. Beach seining at mile 40 produced juvenile chinook salmon, Arctic grayling, round whitefish, and slimy sculpin on 2/08/73.

Gill-netting within 4 miles of the mouth of the Hess River with various mesh-sized 50'x8' gill nets produced pike, lake whitefish, inconnu, Arctic grayling, least cisco and round whitefish.

Fairweather Lake drains via a 13-mile-long creek into the Hess River at mile 56. Coordinates are 63°13', 132°26'. It is 7.5 miles long by 2 miles wide. A 50'x8'x3" mesh gill net set for 24 hours on July 9/1973 failed to capture fish.

Keele Lake (63°30', 129°25') drains via a 3-mile-long creek into the Hess River at mile 144 from the South. It is 4 miles long by  $\frac{1}{2}$  miles wide. A 50'x8'x3" mesh gill net set for 24 hours on August 8, 1973, produced lake trout and round whitefish.

Niddery Lake at 131°20', 63°18' drains via a 2-mile-long stream into the Hess River at mile 116. Chinook salmon have been known to spawn in August and September at the lake outlet, but it is believed none spawned in 1973.

Water chemistry with a Hach kit:-

	Temperature	Alkalinity	CO <sub>2</sub>	DO	pH
Fairweather Lake	59°	4	10	9 ppm	7.5

Name of Stream	Tributary to	River System
LANSING RIVER	STEWART RIVER	YUKON RIVER

LOCATION Flows West into Stewart River.

POSITION 63°45', 133°28'

LENGTH 60 miles      WIDTH 150' at mouth      DRAINAGE 608 sq. miles

The source of the Lansing River is in the Selwyn Mountains at 63°50', 131°50' at an elevation of approximately 4500' asl. It enters the Stewart River at the abandoned settlement of Lansing at an elevation of approximately 2000' asl. Average gradient is 8'/100', but the river drops 1000' in the first 5 miles. Gradient in the lower 50 miles is approximately 5'/1000'. Rapids are frequent, but it is believed that no barriers exist to the passage of migrating fish. Waters are clear in the headwater regions, silt load increases with decreasing distances from the mouth.

Water temperature on 23/08/73 at mile 40 (approximate) was 52°F. Water chemistry at this point on 23/08/73 with a Hach kit:-

Alkalinity:	5 grains/gal.
CO <sub>2</sub> :	10
DO:	9 ppm
pH:	7.5

Gravels at mile 40 were approximately 50% coarse, 10% boulder and 40% fine.

Beach seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net at mile 40 on 23/08/73 produced only round whitefish and slimy sculpin. It is possible that chinook salmon utilize the lower reaches of the river for spawning purposes in late fall.

Name of Stream	Tributary to	River System
NADALEEN RIVER	STEWART RIVER	YUKON

LOCATION Flows SSW into Stewart River.

POSITION 63°58', 133°49'  
 LENGTH 59 miles WIDTH 50' at mouth DRAINAGE 530 sq. miles

The Nadaleen is a clear-water stream originating in the Selwyn Mountains at an elevation of approximately 4500' asl and joining the Stewart River at approximately 2000' asl. Gradients from the mouth to mile 25 are approx. 4'/1000', and current strength is approx. 4 m.p.h. The headwater areas are extremely precipitous, almost a continual rapid with gradients up to 24'/1000'.

Water temperature at mile 16 on 11/07/73 was 46°F, water was very clear, and gravels were in the ratio of 30% coarse and 70% fine. Discharge at this point was estimated at 200 cfs. Beach seining with an 80'x12'x½" mesh seine net produced only Arctic grayling juveniles.

Water chemistry with a Hach kit on 11/07/73 at mile 16:-

Alkalinity: 8 gn/gal.  
 CO<sub>2</sub>: 10  
 DO: 3 (this low measurement is suspect)  
 pH: 8.5

Name of Stream	Tributary to	River System
PLEASANT CREEK	HESS RIVER	YUKON

LOCATION Flows West into Hess River.

POSITION 63°30', 133°55'  
 LENGTH 68 miles WIDTH 30' at mouth DRAINAGE 600 sq. miles

Pleasant Creek drains through Swan and Pleasant Lakes (63°33', 132°48' and 63°32', 132°58' respectively) and follows a low-gradient, meandering course into the Hess River at mile 6, entering from the East. It is a clear water stream with silty and fine gravel bottom, no barriers exist to the passage of fish.

Water temperature was 57° F on 2/08/73 between Swan and Pleasant Lakes. Discharge at this point was estimated at 100 cfs.

Beach seining with an 80' x 12' x ½" mesh seine net produced only slimy sculpin, but excellent habitat exists for Arctic grayling and round whitefish. Chinook salmon spawn in some years at the outlet of Pleasant Lake, but none spawned there in 1973.

Gill-netting with 2 50'x8'x3" mesh nets set for 24 hours in Swan Lake on 9/07/73 produced pike, lake whitefish, lake trout, Arctic grayling, lake whitefish and inconnu. Water temperature was 63°F. Water chemistry with a Hach kit on 9/07/73:-

Alkalinity: 4 grains/gal.  
 CO<sub>2</sub> 10  
 DO 8 ppm  
 pH 7.5

Name of Stream ROGUE RIVER	Tributary to HESS RIVER	River System YUKON
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LOCATION Flows South into Hess River at mile 75.

LENGTH	89 miles	WIDTH	120' at mouth	POSITION	63°26', 132°30'
				DRAINAGE	1375 sq. mi.

The Rogue River heads in glacial mountains of the Selwyn Range at 8000' asl. The waters are milky throughout, reflecting the glacial origins. Gradient is high in the headwater areas. Excellent spawning gravels for chinook salmon exist in the lower 40 miles of river, but the milky coloration of the stream prevents their visual location. A possible barrier to the passage of migrating fish exists at mile 24 in the form of a 15' semi-cascade.

The origin of the Rogue is in a glacier on an unnamed peak. Initial gradients are extremely high, approximately 100 feet/mile. The river drops approximately 1200 feet from mile 75 to the mouth. Constrictions at mile 10 and mile 20 may represent barriers to the passage of fish at certain water levels, resulting in rapids and falls. Good gravels (50% coarse, 50% fine) are present through the first 60 miles, and may be used by spawning chinook salmon. The milky (glacial) coloration of the water makes visual location of salmon very difficult, and ground surveys would be the best methods of location of spawning populations.

Arrowhead lake at 131°12', 63°42' is 2 miles long by ½ mile wide. It was not surveyed in 1973. Tributaries to the Rogue are Old Cabin Creek at mile 50, Einarson Creek at mile 54 and Marmot Creek at mile 66 (approx.). Old Cabin and Marmot Creeks are clear-water, high-gradient streams with coarse gravel to bouldery bottom.

Water chemistry in the Rogue at the junction with Old Cabin Creek on 24/08/73 with a Hach kit:-

Alkalinity: 2 grains/gal.  
CO<sub>2</sub>: 5  
DO: 10 ppm  
pH: 8  
Temperature: 44°F.

Beach seining with an 80'x12'x½" mesh seine net at mile 50 produced round whitefish, slimy sculpin and Arctic grayling.

Name of Stream	Tributary to	River System
SOUTH McQUESTEN RIVER	STEWART RIVER	YUKON

LOCATION Flows South from McQuesten Lake.

		POSITION	63°50', 136°19'
LENGTH	8 miles in study area	WIDTH	20' at source
		DRAINAGE	250 sq. miles in study area

Only the area of the S. McQuesten River at the outlet of McQuesten Lake was surveyed. Discharge at the outlet was estimated at 300 cfs on 19/06/73. Gravels were 50% fine and 50% coarse. Water temperature was 55°F and water chemistry with a Hach kit on 19/06/73:-

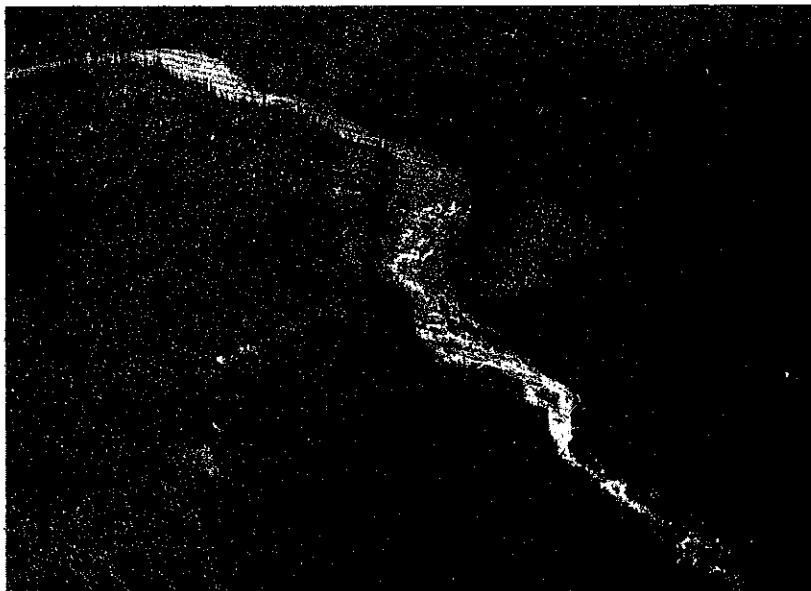
Alkalinity: 5 gn/gal.  
CO<sub>2</sub>: -  
DO: 8  
pH: 7.5

A 50'x8'x3" mesh gill net set for 12 hours in a back eddy 200' below the outlet of the lake produced only lake whitefish, but it is probable that Arctic grayling are also present.

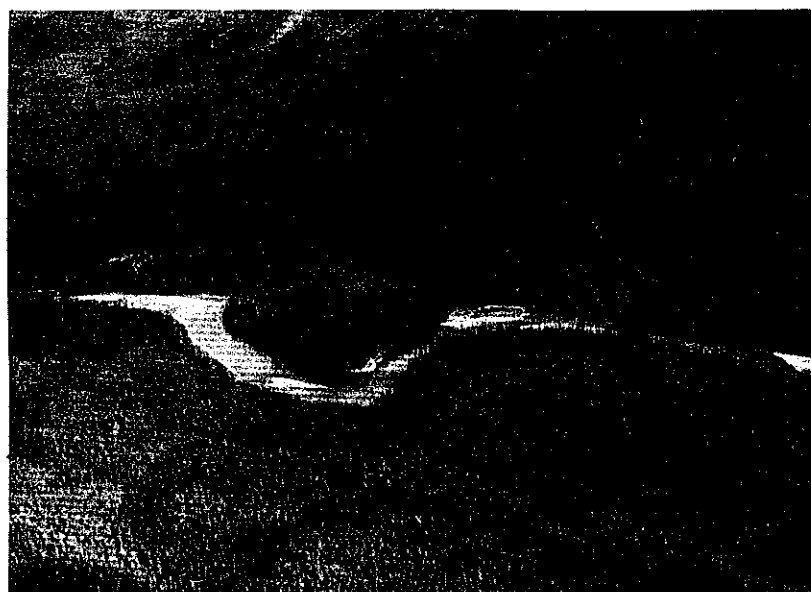
McQuesten Lake is 12 miles long by a maximum of 2 miles wide located at 64°07', 135 19'. It is generally a warm, shallow lake; water temperatures were in the 55°F range in mid-June, 1973. Gill nets (50' long x 8' deep) of 2", 3" and 4" mesh set for 24-hour periods in mid-June produced only lake whitefish and pike. The lake whitefish were infested with cysts of the cestode parasite *Triaenophorous*. Local reports suggested the presence of lake trout, but none were caught.

A 2" mesh 50' x 8' gill net set for 24 hours in Hanson Lake (64°01', 135°21') caught only two small pike. Rainbow trout eggs were planted in the inlet to the lakes in 1965, 1966 and 1968. Some survived but it is not known if any are still alive.

STEWART RIVER  
DRAINAGE



1. Lansing River  
at Mile 15.



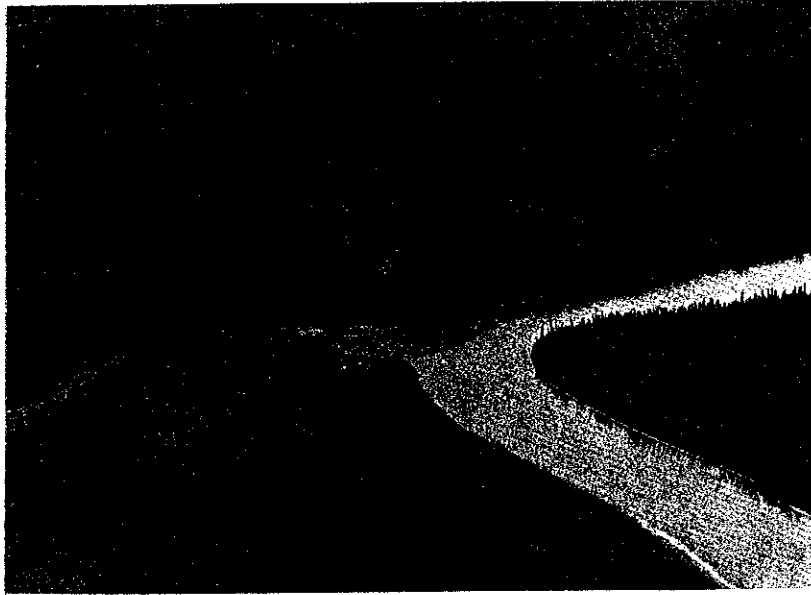
2. Hess River



3. Mining town of  
Keno Hill.



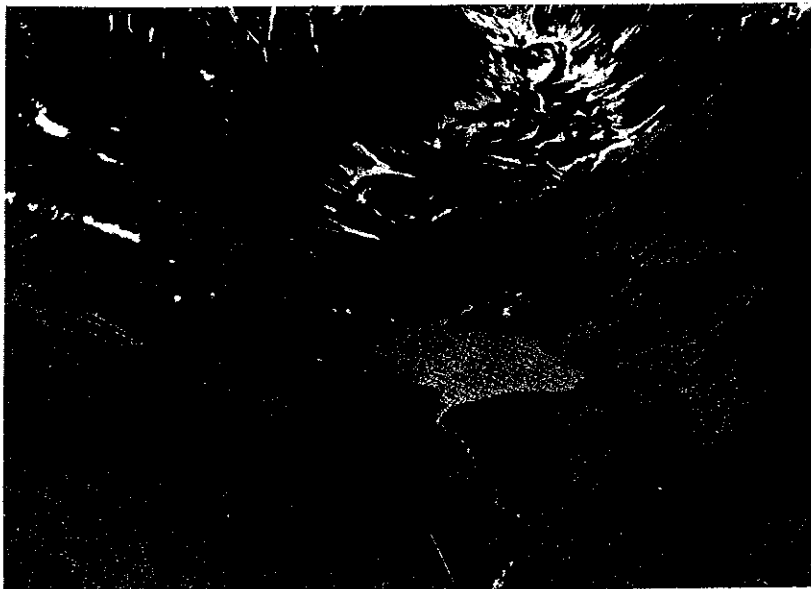
4. Confluence of  
Lansing and  
Stewart Rivers.

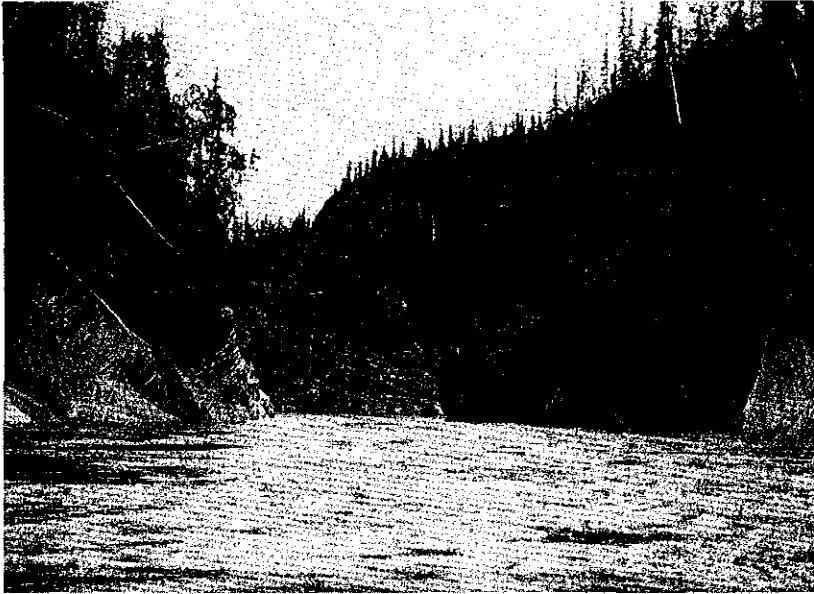


5. Moose in  
Ortel Lake.



6. Cirque Lake  
North of  
Keno Hill.





7. Canyon on  
Hess River at  
Mile 4.

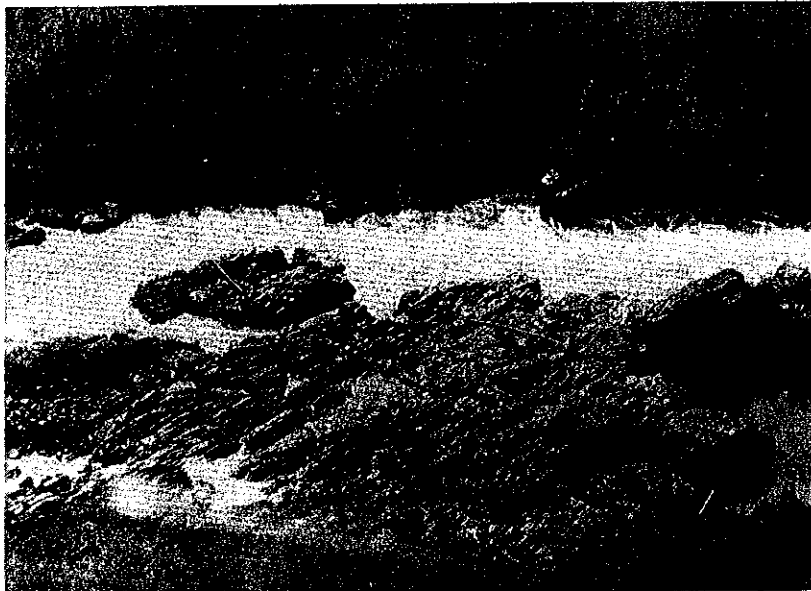


8. Confluence of  
Braine Creek  
and Beaver River.



9. McQuesten Lake

10. Rapids on  
Stewart River.



11. Stewart River  
at town of Mayo.



12. Source of  
Rogue River.

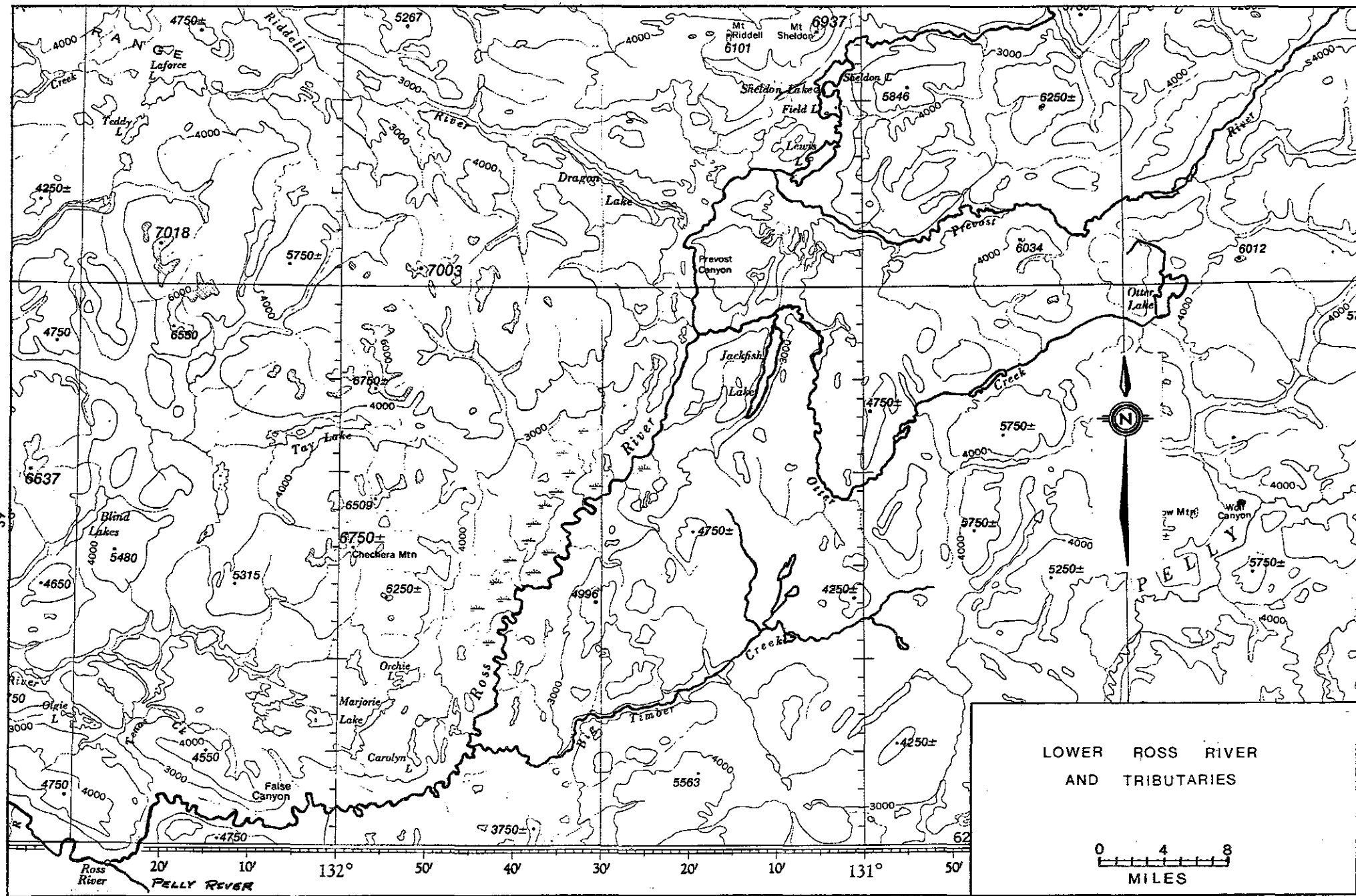


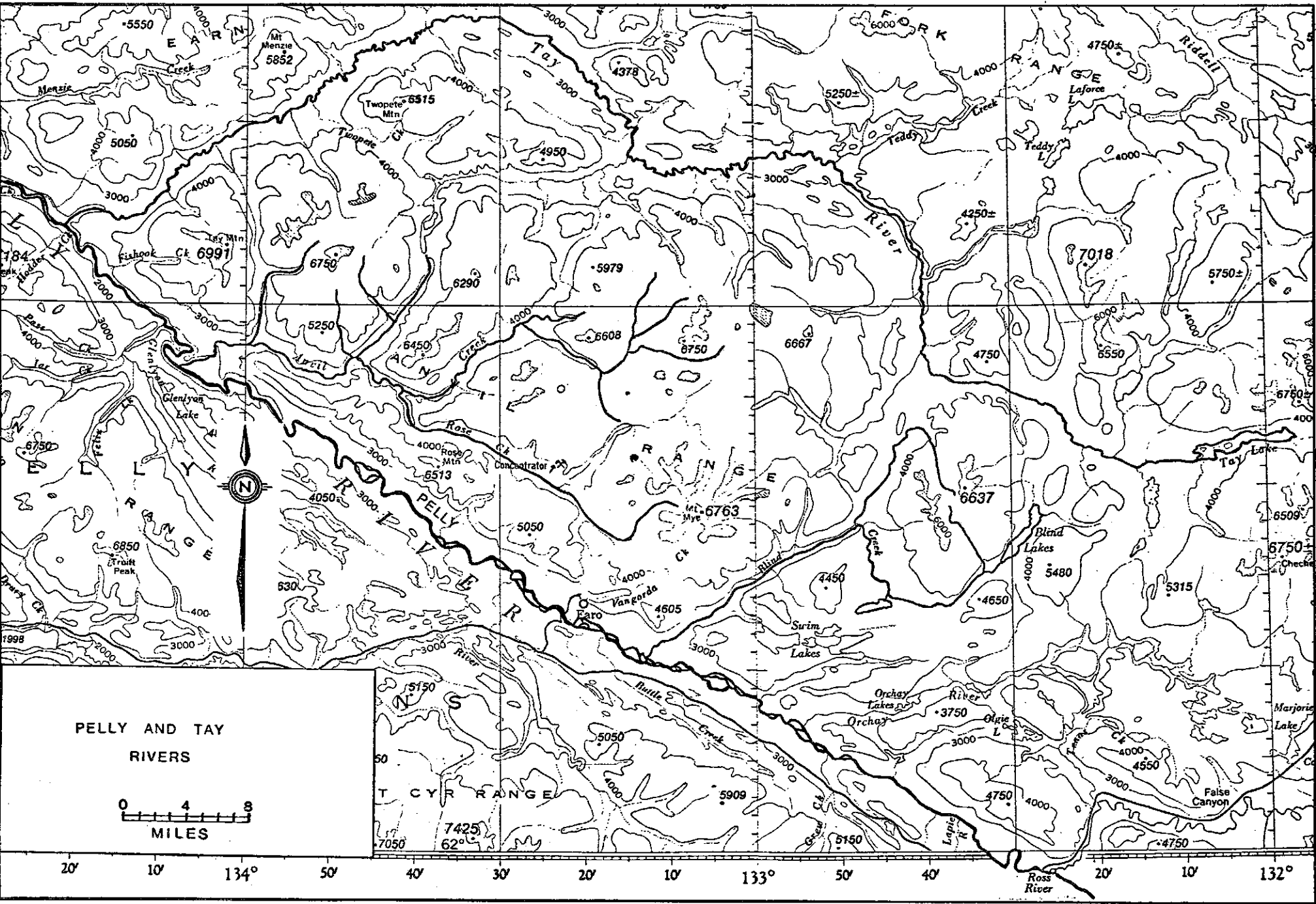
### III. The Pelly River Drainage

The Pelly River, with a total length of over 500 miles, is historically significant as a travel route for early fur traders in the mid-nineteenth century. The total drainage area is approximately 20,000 square miles. A water level recorder maintained by the Water Resources Board of Canada at 62°49', 136°34' (near the mouth) indicated a mean discharge of 13,700 cfs for 1970. The maximum discharge was 79,900 cfs on June 10 and the minimum was 1770 on March 21. The mean annual precipitation of the Pelly River area is less than 10 inches, with less than 5 inches of rain falling during the summer months of June, July and August.

The Pelly River lies in the Boreal Forest region. The dominant tree species are black spruce (*Picea mariana*), white spruce (*Picea glauca*) and balsam poplar (*Populus balsamifera*). Shrubs such as willow (*Salix*) and alder (*Alnus*) grow along the river banks. Wildlife is abundant.

The Pelly River supports resident populations of approximately 10 species of fresh water fish and serves as a migration route for anadromous chum and chinook salmon. It is believed that only chinook salmon ascend the river as far as the 1973 study area.

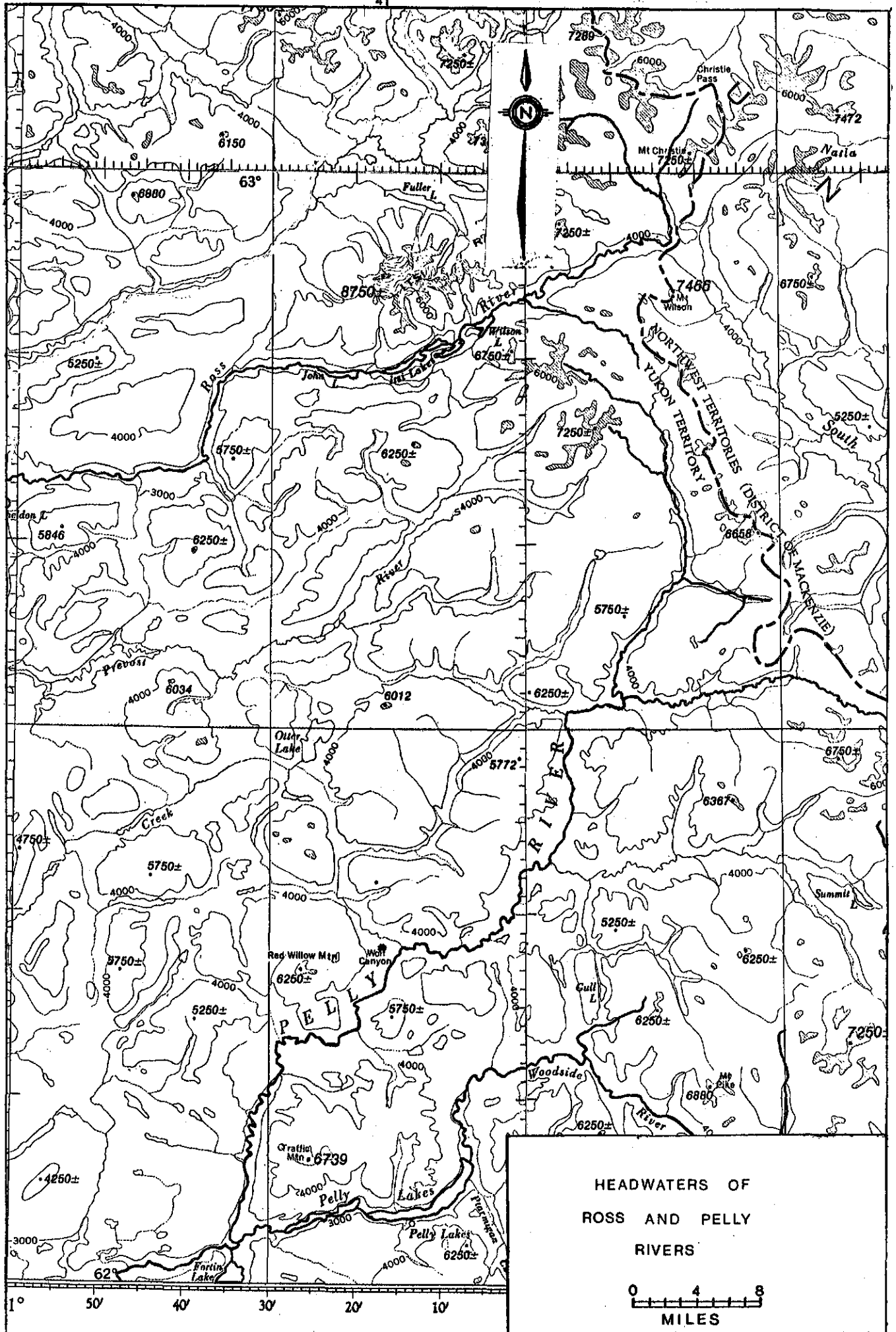




PELLY AND TAY  
RIVERS

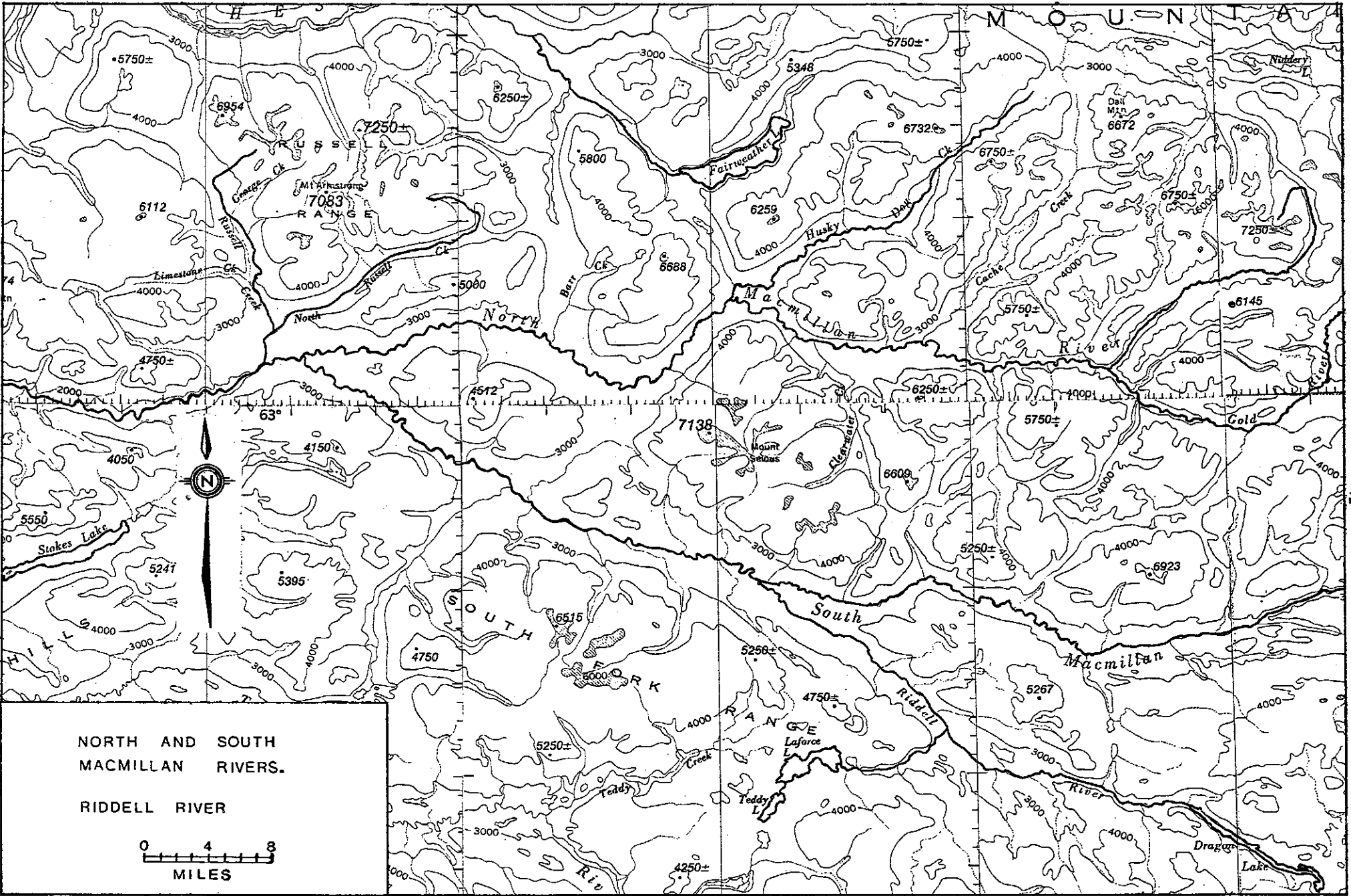


20' 10' 134° 50' 40' 30' 20' 10' 133° 50' 40' 30' 20' 10' 132°



HEADWATERS OF  
ROSS AND PELLY  
RIVERS







Name of Stream	Tributary to	River System
PELLY RIVER	YUKON RIVER	YUKON

LOCATION Flows generally West into Yukon River.

		POSITION <u>62°47', 137°20'</u>
LENGTH <u>176 miles in</u>	WIDTH <u>250' at Western</u>	DRAINAGE <u>7514 sq. miles</u>
study area	edge of study area.	in study area

The Pelly originates as a clear mountain stream at 62°50', 129°50' in the Selwyn Mountains near the NWT/Yukon border. Headwater gradients are high, but much lower in the 60 miles of river in the study area above the town of Ross River. This section of the river is characterized by pool/riffle stream type. Gravel bars predominate, some rapids exist but none pose a problem to the passage of fish. Water temperature on 20/07/73 was 53°F at mile 60 on this section (from the S. edge of the study area). Beach seining with an 80'x12'x½" mesh seine net at this point produced Arctic grayling juveniles. Bottom composition was 70% fine gravels and 30% coarse. Chinook salmon spawn at the outlets of Pelly Lakes in most years. It is not known if any spawned in 1973. A 50'x8'x3" mesh gill net set for 24 hours on August 9 in Pelly Lake (62°05', 130°17') produced lake trout, lake whitefish and longnose sucker. This lake is 8 miles long by 1½ miles wide and water temperature was 57°F on 9/08/73.

That section of the Pelly River in the study area below the town of Ross River is 88 miles long. The 43-mile section between Ross River and the Faro Bridge is characterized by sand and clay banks rising to 125'. The water in mid-July was silty; temperature was 60° on 26/07/73. Meanders are long, with gravel bars on the slip-off slopes and eroding cutbanks. Below Anvil Creek to the edge of the study area the river is single-channeled with few islands. Gill-netting in late July 25 miles downstream from the town of Ross River with 50'x8'x2" and 3" gill nets set for 24 hours produced Arctic grayling, longnose sucker, round whitefish, inconnu, pike and broad whitefish. Adult chinook salmon (20) were taken in 4" mesh 50'x8' gill nets 4 miles downstream of the town of Ross River in late August. Beach seining with an 80'x12'x½" mesh seine net at various points between Ross River town and the Faro Bridge produced juvenile chinook salmon, Arctic grayling, round whitefish, slimy sculpin and pike. Unidentified juvenile whitefish were also captured.

Several creeks flowing into the Pelly from the North-east were surveyed in late August 1973 in attempts to locate populations of spawning chinook salmon.

- (1) Orchay Creek - drains Orchay Lake. Very rocky and boulders at outlet; good spawning gravel near Pelly. Good grayling stream. This low-volume stream is 10 miles long. Temperature 55°F, Alkalinity 4, CO<sub>2</sub> 10, DO 9 and pH 7.5.
- (2) Blind Creek - drains Blind Lake (62°15', 132°30'). Boulders and coarse gravels below outlet of lake for 20 miles; 6 miles of good spawning gravel starting at mile 15. Eleven chinook salmon spawned in late August in 1973 in this area. Temperature 54°F, Alkalinity 4, CO<sub>2</sub> 10, DO 9 ppm and pH 7.5.

- (3) Tay River - 112 miles long. Drains Tay Lake at 62°20', 132°09'. From Tay Lake to Teddy Creek (30 miles) the river has excellent spawning gravels for chinook salmon (60% coarse) but only one was seen in August 1973. Below Teddy Creek visibility is poor. Temperature on 13/08/73 was 52°F, Alkalinity 4 gm/gal., CO<sub>2</sub> 10, DO 9 ppm, pH 7.5. The Tay River has a drainage area of 1420 sq. miles.
- (4) Anvil Creek - very muddy, rock bottom, high current speed. Temperature on 13/08/73 was 47°F, Alkalinity 6, CO<sub>2</sub> 10 and DO 10.

The Swim Lakes are a series of 4 connected basins at 62°13', 133°00' draining by a 3-mile-long creek into Blind Creek 4½ miles from the Pelly. Water temperature was 60°F on 7/08/73. A 50'x8'x3' mesh gill net set overnight had disappeared by morning.

Tay Lake (62°23', 132°03') is 6 miles long by 1 mile wide. Water temperature was 57°F on 8/08/73. A 3" mesh 50'x8' gill net set for 24 hours on 8/08/73 captured lake whitefish, round whitefish, Arctic grayling and lake trout.

Stokes Lake (62°52', 133°47') is 8 3/4 miles long by 3/4 mi. wide. A 3" mesh 50'x8' gill net set for 24 hours on 8/08/73 captured pike and lake whitefish.

Name of Stream	Tributary to	River System
ROSS RIVER	PELLY RIVER	YUKON
LOCATION Flows SSW into Pelly River at the town of Ross River.		
LENGTH 174 miles		WIDTH 160' at mouth
POSITION 61°59', 132°26'		DRAINAGE 2644 sq. miles
including Prevost River.		

The Ross River originates in high mountains of the Selwyn Range near the Yukon/NWT border. Headwater areas are clear with high gradients for approx. 40 miles to Wilson Lake. John, Itsi and Wilson lakes are a string of long shallow lakes joined by swift shallow streams with canyon-like topography. The first 12 miles below John Lake drop an estimated 20 feet/mile; the river is 40'-50' wide with a boulder and shelve bottom. A canyon exists 16 miles above Sheldon Lake in the form of a constriction of the river, but it does not represent a barrier to the passage of fish. Gravel bars (50% coarse, 50% fine) predominate in a pool/riffle situation from this canyon to Sheldon Lake. A strong rapid (Prevost Canyon) exists 15 miles below Lewis Lake with vertical rock walls to 125' high and rocks, shelves and boulders directly in the current. Fairly strong rapids exist in the vicinity of the confluence with Otter Creek. Gradients from Lewis Lake to Otter Creek average 10'/mile. From Otter Creek confluence to a point 6 miles above its entry into the Pelly River the Ross is characterized by undercut banks, mud slides, pebble bars and long, slow-moving meanders. Gradients in the last 6 miles are approximately 12'/mile through a pool/riffle stream type.

Major tributaries of the Ross River are Big Timber Creek at mile 36, Otter Creek at mile 81, and Prevost River at mile 95. All distances are from the mouth and all enter from the East. The river flows through Lewis Lake at mile 97, Field Lake at mile 103, Sheldon Lake at mile 105, John Lake at mile 136, Itsi Lake at mile 140 and Wilson Lake at mile 148.

Water chemistry in the Ross River system:

Location	Date	Temp.	Alkalinity	CO <sub>2</sub>	DO	pH
Mile 160 Ross River	20/07/73	56.5° F	1 gn/gal.	5	8	6.5
Sheldon Lake	23/07/73	54° F				
Field Lake	23/07/73	58° F				
Mile 106 Ross River	23/07/73	60° F				
Mile 104 Ross River	23/07/73		2 gn/gal.	10	9	7.0
Itsi Lake	8/08/73	54° F				
Otter Lake	8/08/73	58° F				
Mile 1 Ross River	26/07/73	61° F				

## Physical characteristics of lakes in the Ross River system:

<u>Name</u>	<u>Location</u>	<u>Length</u>	<u>Width</u>	<u>Drainage</u>
Jackfish	62° 26', 131° 12'	6 mi.	1 mi.	Drains into Otter Creek (at mile 5)
Lewis	62° 35', 131° 05'	3 mi.	1 mi.	Ross River
Field	62° 90', 131° 03'	1½mi.	1½mi.	Ross River
Sheldon	62° 42', 131° 03'	2½mi.	1 mi.	Ross River
John	62° 49', 130° 23'	2½mi.	½mi.	Ross River
Itsi	62° 48', 130° 15'	4 mi.	½mi.	Ross River
Wilson	62° 50', 130° 03'	2 mi.	1 mi.	Ross River
Otter	62° 30', 130° 24'	3 mi.	1 mi.	Otter Creek at mile 48

The Prevost River is 52 miles long with generally low gradients except in headwaters. Gravels are mainly coarse and water is brackish near the mouth. Water temperature was 54°F on 23/08/73; Alkalinity 4 gn/gal., CO<sub>2</sub> 5, DO 10 and pH 7.5. One chinook salmon was seen on 23/08/73 at mile 15.

Otter Creek is 52 miles long, water is brackish and organic colored, gravels are sandy in upper regions, coarse to bouldery in the first 10 miles.

## Fish resources:

Chinook salmon utilize the Ross River and some of its tributaries for spawning purposes in late summer and fall. One thousand six hundred spawners were counted in 1968 from Big Timer Creek to Field Lake by Alaska Department of Fish and Game personnel. A domestic fishery is conducted by natives of the town of Ross River in the lower ten miles of the river for chinook salmon. The fish are captured in gill nets. Spawning locations include the Ross River proper, the outlet of Field and Lewis Lakes, a small creek flowing into the East side of Field Lake, and the Prevost River.

Beach seining with an 80'x12'x½" mesh seine net in the Ross River above Sheldon Lake and between Field and Lewis Lakes produced the following species (mostly fry and juveniles): least cisco, broad whitefish, lake (humpback) whitefish, round whitefish, inconnu, Arctic grayling, lake trout, burbot, slimy sculpin, longnose sucker, pike, and chinook salmon. These areas of the Ross River are important nursery and rearing areas for the above species.

Intensive gill-netting with 50'x8' nets with 2", 3" and 4" mesh in Sheldon, Field and Lewis lakes produced broad whitefish (predominant), lake whitefish, pike and lake trout in late July, 1973.

A 3" mesh 50'x8' gill net set for 24 hours in Itsi Lakes on 9/08/73 produced large (10-lb.) lake trout, round whitefish and broad whitefish.

A 2" mesh 50'x8' gill net set for 24 hours in Otter Lake on 9/08/73 produced lake trout, round whitefish and Arctic grayling.

Name of Stream	Tributary to	River System
SOUTH MACMILLAN	PELLY RIVER	YUKON

LOCATION Flows generally West into Macmillan River.

POSITION 63°03', 133°18'

LENGTH 159 miles      WIDTH 100' at mouth      DRAINAGE 2096 sq. miles

The South Macmillan heads in mountains of the Selwyn Range at 63°10', 129°55' at elevation to 6000' above sea level. Headwater gradients are very high, and lessen only gradually to the confluence with the Riddell River at mile 32. Water is clear to this point. Water temperature was 52°F at mile 70 on 22/08/73. Water chemistry with a Hach kit at this point was Alkalinity 3, CO<sub>2</sub> 10, DO 9 ppm, and pH 8.0. Gill-netting with 2" and 3" mesh gill nets 50'x8' in the vicinity of mile 120-125 on 29 and 30 July 1973 captured Arctic grayling, round whitefish, slimy sculpin and lake trout (one). The sculpins were in the stomach of the lake trout. Chinook salmon ascend the South Macmillan River in late August to spawn. One chinook was seen from a helicopter on 23/08/73 at mile 120. Beach seining with an 80'x12'x $\frac{1}{2}$ " mesh seine net on 2/08/73 at mile 21 produced juvenile chinook salmon, Arctic grayling and round whitefish. Discharge at this point was estimated at 400 cfs, gravels were 75% fine and the water was silt-laden and organically colored.

Dragon Lake (62°35', 131°30') is 12 miles long by  $\frac{1}{2}$  mile wide. It drains via the Riddell River into the S. Macmillan at mile 32. Gill nets of 2" and 3" mesh (50'x8') produced lake trout, burbot and least cisco on 24/07/73. The least ciscos (to 430 mm long) are much larger than previous records indicate. Water temperature on 24/07/73 was 66°F.

The Riddell River (40 miles long) is an organic colored, low gradient meandering stream with generally excellent spawning gravels for chinook salmon. Discharge on 2/08/73 at mile 2 was estimated at 100 cfs. Temperature was 54°F and water chemistry with a Hach kit was Alkalinity 6, CO<sub>2</sub> 10, DO 8 ppm and pH 7.5. Chinook salmon spawn near the outlet of Dragon Lake (and possibly in other locations on the river) in most years. Beach seining with an 80'x12' by  $\frac{1}{2}$ " mesh seine net at mile 2 captured juvenile chinook salmon and juvenile Arctic grayling on 2/08/73.

Name of Stream	Tributary to	River System
N. MACMILLAN RIVER	PELLY RIVER	YUKON

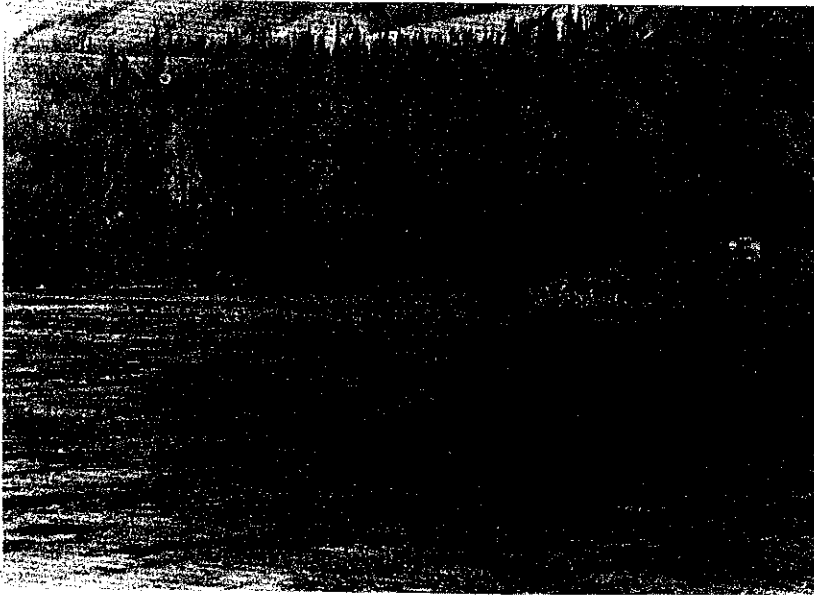
LOCATION Flows W. into Macmillan River.

		POSITION	63°03', 133°18'
LENGTH	85.5 miles	WIDTH	65' at mouth
		DRAINAGE	1176 sq. miles

The North Macmillan River heads in the Hess Mountains at 63°10', 131°15' at an elevation of approximately 5500' asl. The river drops 2000' in the first 15 miles from the source, gradients become more gentle from here to the confluence with Husky Dog Creek (mile 34). Waters are very clear upstream of Husky Dog Creek; rapids and riffles predominate, pools are few, good spawning gravels exist as does excellent habitat for round whitefish and Arctic grayling. Water temperature on 23/08/73 at mile 60 (approx.) was 46°F, Alkalinity 4, CO<sub>2</sub> 10, DO 10 and pH 7. Water temperature at mile 34 on 2/08/73 was 49.5°F, Alkalinity 7, CO<sub>2</sub> 10, DO 9 and pH 7.5. Current speed was very fast at this point, gravels were 80% fines. No fish were captured but it is probable that Arctic grayling and round whitefish are present.

Gradients from the mouth to mile 34 are low, gravel bars are frequent and pool/riffle stream type predominates. Waters are less clear downstream of the confluence with Husky Dog Creek. Water temperature 4 miles below the confluence of the N. and S. Macmillan Rivers was 55°F on 2/08/73. Beach seining with an 80'x12'x½" seine net on 2/08/73 produced juvenile Arctic grayling and round whitefish. Adult chinook salmon ascend the N. Macmillan River in late August. Precise location of spawning grounds are not established. Reports indicate that spawning (unknown numbers) occur in some years in Husky Dog Creek and near the mouth of Russel Creek. None were seen in 1973.

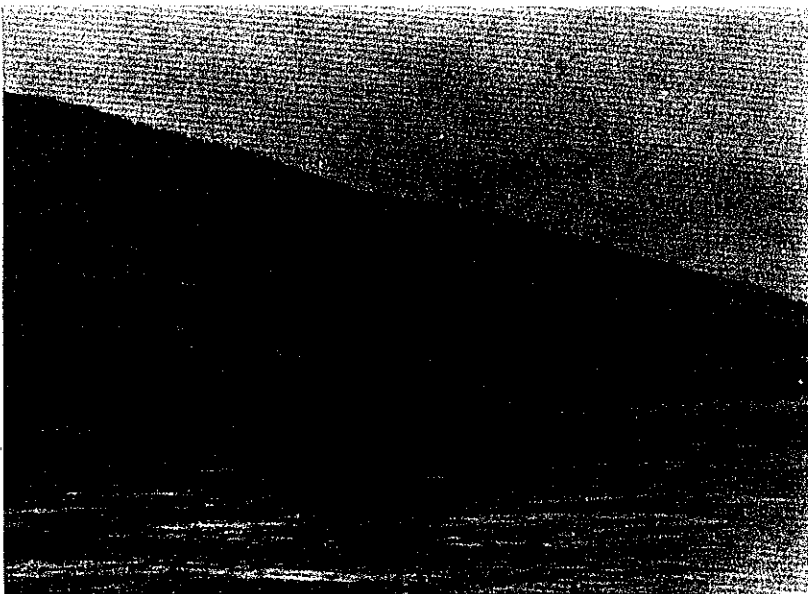
Major tributary from the North is Husky Dog Creek at mile 34. Russell Creek joins the Macmillan River 4 miles below the confluence of the N. and S. Macmillan. Husky Dog Creek is a low volume (200 cfs), muddy-colored, meandering stream. Russell Creek has good spawning gravels (for chinook salmon) near the mouth but a narrow canyon exists 5 miles upstream which may at certain water levels present a barrier to the passage of migrating fish. Above the canyon gradients are high and bottom composition is mainly bedrock and boulder.



PELLY RIVER

DRAINAGE

1. Pelly River at the town of Ross River.

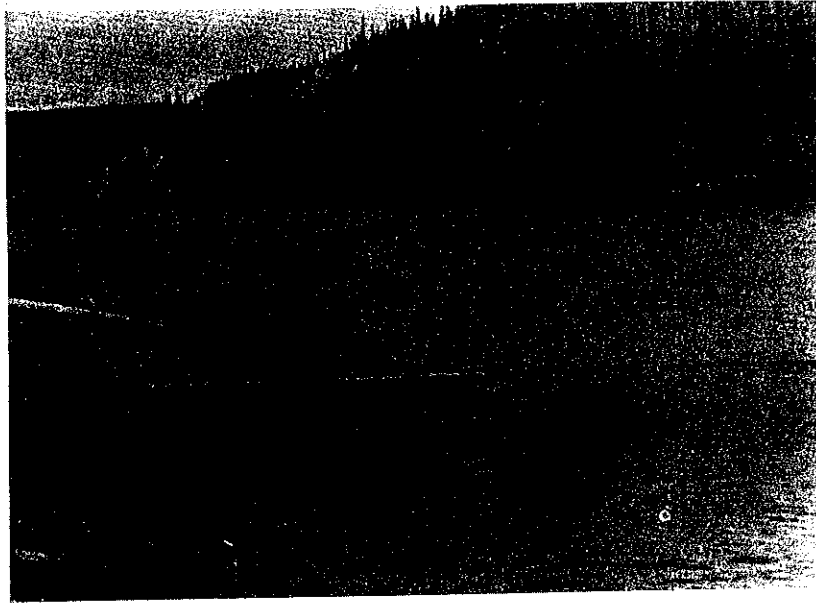


2. Pelly River 10 miles downstream of Ross River.

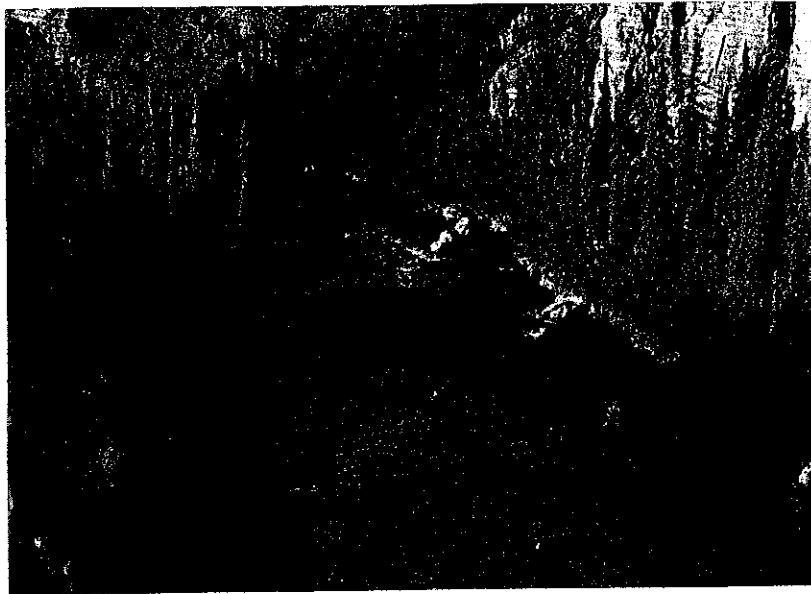


3. Pelly River 30 miles downstream of town of Ross River.

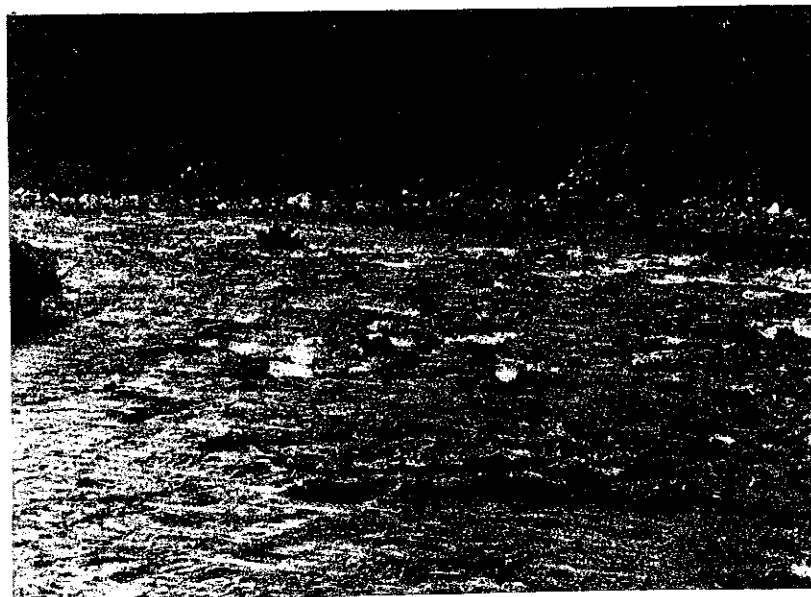
4. Gill net in  
Pelly River.



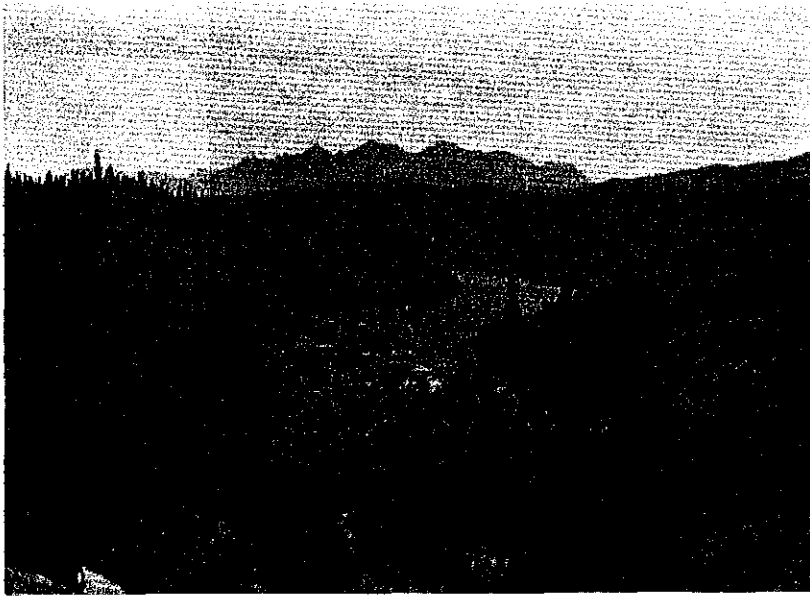
5. South Macmillan  
River at  
Mile 110.



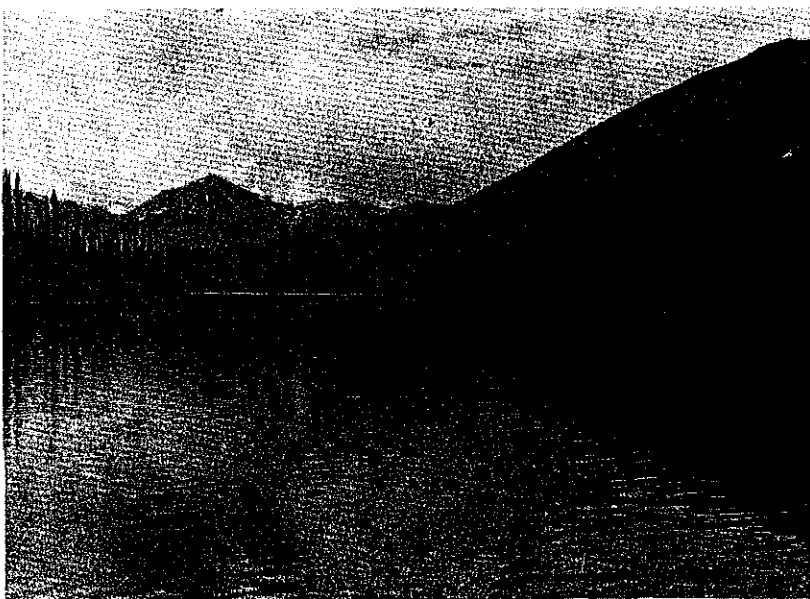
6. South Macmillan  
River at  
Mile 120.







7. South Macmillan  
River at  
Mile 121.

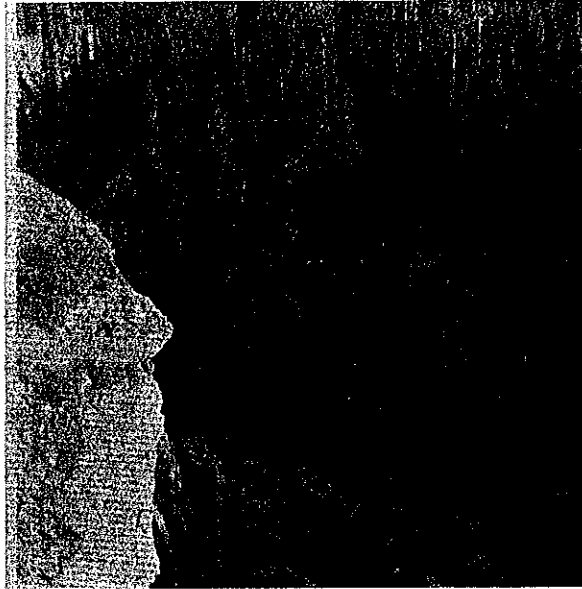


8. Sheldon Lake  
on Ross River.



9. Itsi Lake on  
Ross River.

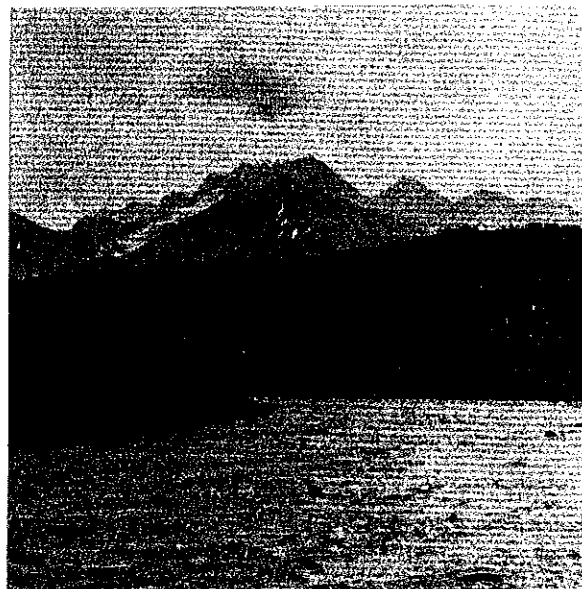
10. Lapie River  
canyon.



11. Canyon on  
Russel Creek.



12. S. Macmillan R.  
at Mile 120.



METRIC EQUIVALENTS

<u>Length</u>			<u>Area</u>				
Cm.	=	0.3937	In.	Sq. Cm.	=	0.1550	Sq. In.
Meter	=	3.28	Ft.	Sq. M.	=	10.76	Sq. Ft.
Meter	=	1.094	Yd.	Sq. M.	=	1.196	Sq. Yd.
Kilom.	=	0.621	Mile	Sq. Kilom.	=	.386	Sq. Mi.
In.	=	2.54	Cm.	Sq. In.	=	6.45	Sq. Cm.
Ft.	=	0.3048	Meter	Sq. Ft.	=	.0929	Sq. M.
Yd.	=	0.9144	Meter	Sq. Yd.	=	.836	Sq. M.
Mile	=	1.61	Kilom.	Sq. Mi.	=	2.59	Sq. Kilom.
				Acre	=	0.405	Hectare
				Hectare	=	2.47	Acres
				Acre	=	43560	Sq. Ft.

<u>Volume</u>			<u>Capacity</u>				
Cu. Cm.	=	.061	Cu. In.	Liter	=	.0353	Cu. Ft.
Cu. M.	=	35.315	Cu. Ft.	Liter	=	.21998	Gal. (Br.)
Cu. M.	=	1.308	Cu. Yd.	Liter	=	61.023	Cu. In.
Cu. In.	=	16.38	Cu. Cm.	Cu. In.	=	.0164	Liter
Cu. Ft.	=	.028	Cu. M.	Cu. Ft.	=	28.32	Liter
Cu. Yd.	=	.7645	Cu. M.	Gal.	=	4.5459	Liter (Br.)

Degrees Centigrade =  $\frac{5}{9}$  (Degrees Fahr. - 32)  
 Degrees Fahrenheit =  $\frac{9}{5}$  (Degrees Cent.) + 32.

WATER QUANTITIES AND FLOW MEASUREMENTS

1 cubic foot per second (cfs) or second foot	=	373.2 gallons per min. (gpm)
1 cubic foot per second (cfs) or second foot	=	.537408 million gallons
1 second foot	=	approximately 2 acre-feet per day
1 second foot	=	86,400 cubic feet per day
1 million gallons per day	=	1.86 cfs.
1 acre-foot	=	43,560 cubic feet or 271,379 ga.
1 cubic foot of water	=	6.23 ga. and weighs 62.4 pounds.

## ACKNOWLEDGEMENT

Thanks are due the Fisheries Service staff of the Whitehorse office for logistical support of the 1973 field surveys. Obert Sweitzer provided valuable information on the location of known spawning grounds for chinook salmon within the study area, and records of the Whitehorse office were of value in providing information on the historical utilization of fish stocks in the Pelly River system.

Appreciation is extended for the efforts of E. E. Smyth and C. W. Brandt in the collection of data used in the compilation of this catalogue. Miss E. Nolting did the typing.