



State of Alaska  
Department of Fish and Game  
Division of Sport Fish

Nomination Form  
Anadromous Waters Catalog

E

Region: Southwest USGS Quad: \_\_\_\_\_  
 Fish Distribution Database Number of Waterway: N/A Status: Cataloged  
 Name of Waterway: Chauekuktuli, Nuyakuk, and Tikchik Lakes  USGS Name  Local Name  
 Addition  Deletion  Correction  Backup Information

For Office Use

Nomination # <u>100874</u>	_____	_____
Revision Year: <u>2011</u>	Fisheries Scientist	Date
Revision to: Atlas _____ Catalog _____	<i>[Signature]</i> Habitat Operations Manager	Date <u>8/22/10</u>
Both _____	AWC Project Biologist	Date
Revision Code: <u>F-1</u>	Cartographer	Date

**Site Information** Station: FSN1001D01 Date Observed: 9/29/2010 Legal Desc.: Sec., T., R., S. Latitude: Longitude: Datum:  
 Stream Depth (m) Width (m) Water Temp. (C):  
 Parameters: OHW Stream Stage:  
 Wetted Dominant Substrate:

Rosgen Channel Type:  
 Station Comments: Taylor Mountains, Dillingham, Bethel, and Goodnews Bay quads

**Observation Information**

Life History: Anadromous  
 Species/Lifestage: sockeye salmon juvenile Samp. ID (# Fish):

**Key to Samp. ID**  
 325-30-10100-2249-3190-0010 Taylor Mtn-B  
 325-30-10100-2249-0020 Dillingham D-B  
 325-30-10100-2249-0010 Dillingham D-F

*Supports inclusion of sockeye salmon in area lakes*

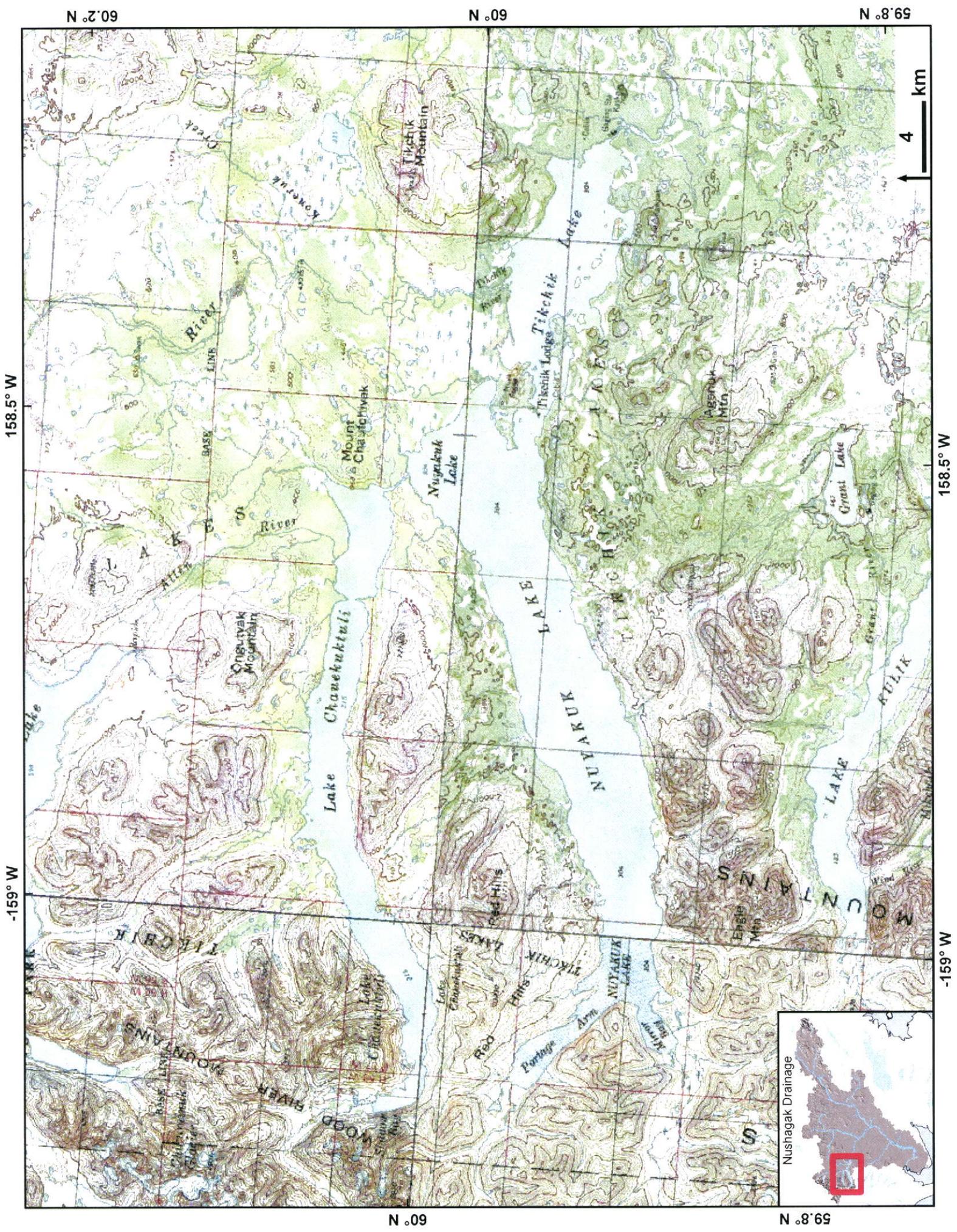
*Observations made thru 40 years old*

**Additional Comments:** Tikchik Lakes sockeye salmon rearing was documented by Burgner et al. 1965 (see Table 7, attached). Generally, sockeye salmon rearing should be added to all Bristol Bay sockeye salmon producing lakes.

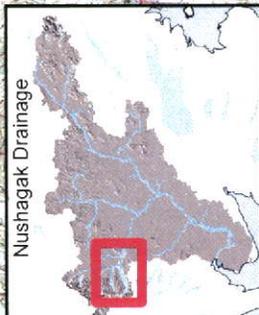
Name of Observer: Michael Wiedmer Phone: (907) 243-7005 Date Printed: 9/29/2010  
 Signature: *[Signature]*  
 Address: FRESC, USGS  
 2500 Susitna Drive  
 Anchorage, AK 99-517

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Anadromous Waters Catalog.

Signature of Area Biologist: \_\_\_\_\_ Date: \_\_\_\_\_



4 km



60.2° N

60° N

59.8° N

158.5° W

158.5° W

159° W

159° W

N.09

59.8° N

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OBSERVATIONS ON RESIDENT FISHES IN  
WOOD RIVER LAKE SYSTEM

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by

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and Jerry Reeves

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Submitted February 26, 1965

OBSERVATIONS ON RESIDENT FISHES IN THE TIKCHIK AND  
WOOD RIVER LAKE SYSTEMS

INTRODUCTION

During the last two weeks of July, 1964, Fisheries Research Institute personnel conducted an ecological survey of three sockeye-producing lakes in the Tikchik system -- Chauekuktuli, Nuyakuk, and Tikchik to gain information on resident fish populations and limnological characteristics of the lakes. The survey was part of a study to determine factors limiting salmon production in the Tikchik system. The Tikchik lakes are presently the poorest salmon-producing lakes per unit area in Bristol Bay.

This summary report on the relative abundance of fish species in the Tikchik and Wood River systems is prepared because of the interest expressed by Alaska residents in the potential of these lakes for resident freshwater fisheries. Data included for the Wood River lakes were compiled from studies in previous years.

PROCEDURES

Sampling to determine the relative abundance and distribution of fishes in the Tikchik lakes was conducted during July 17-July 23, 1964. A total of 29 beach seine hauls and 20 gill net sets were made at sites distributed around the shores of the lake system. Beach seine and gill net sites are shown in Fig. 1. Beach seine hauls were made with a 120-ft beach seine with a bunt of 1/4-inch mesh. Gill net catches were made with variable mesh, monofilament nylon nets. The nets were weighted to fish on the lake bottom. Specifications of the gill nets are given in Table 1.

Table 1. Specifications for 220-ft x 9-ft gang net used for gill net sampling

Mesh size (Stretched meas.)	Panel length (Hung meas.)	Twine size (Filament diam., mm)	Meshes deep
1"	20'	.15	150
1 3/4"	20'	.20	120
1 5/8"	20'	.25	100
2"	40'	.25	75
2 1/2"	40'	.30	60
3"	40'	.30	50
4"	40'	.50	37

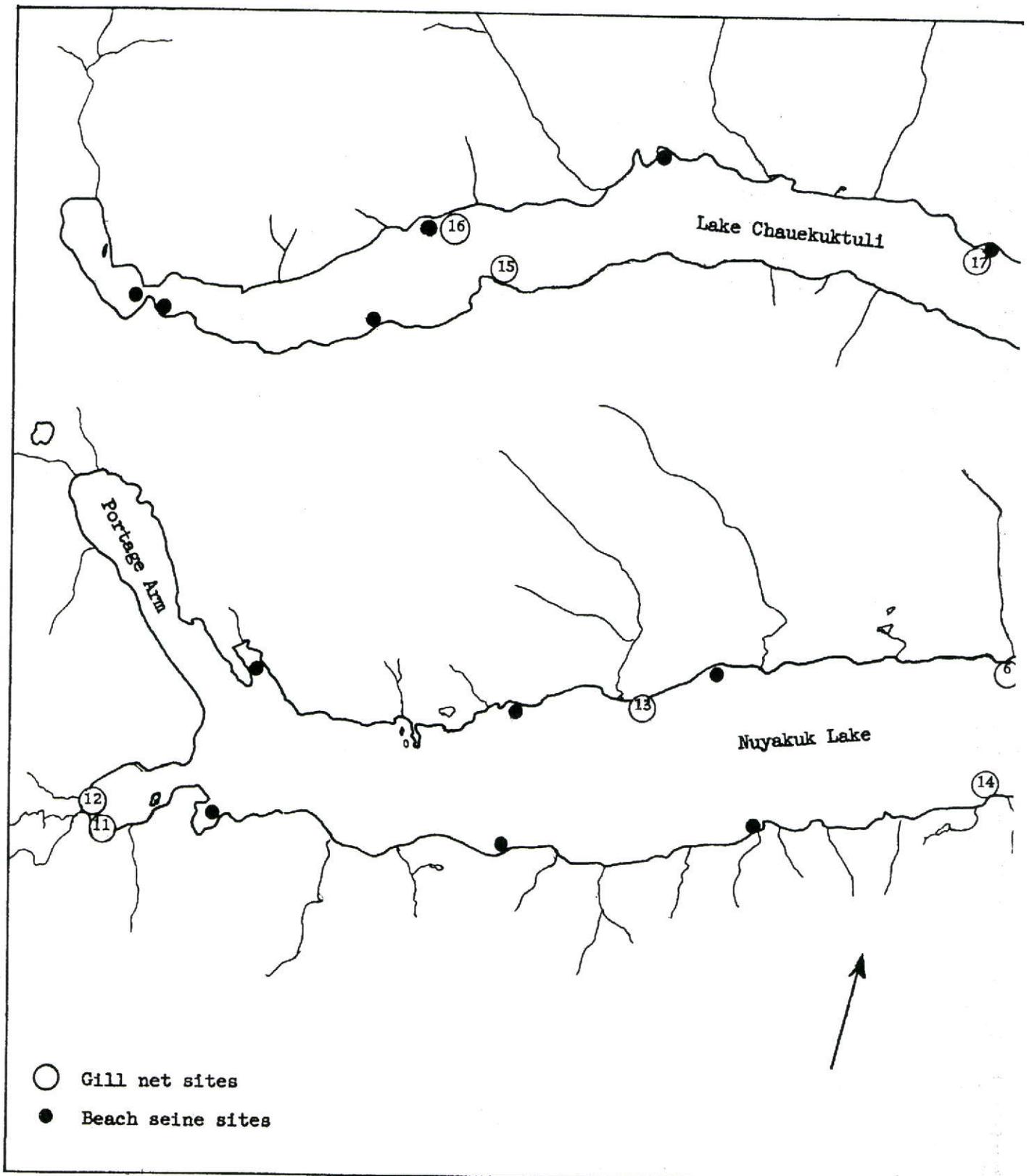
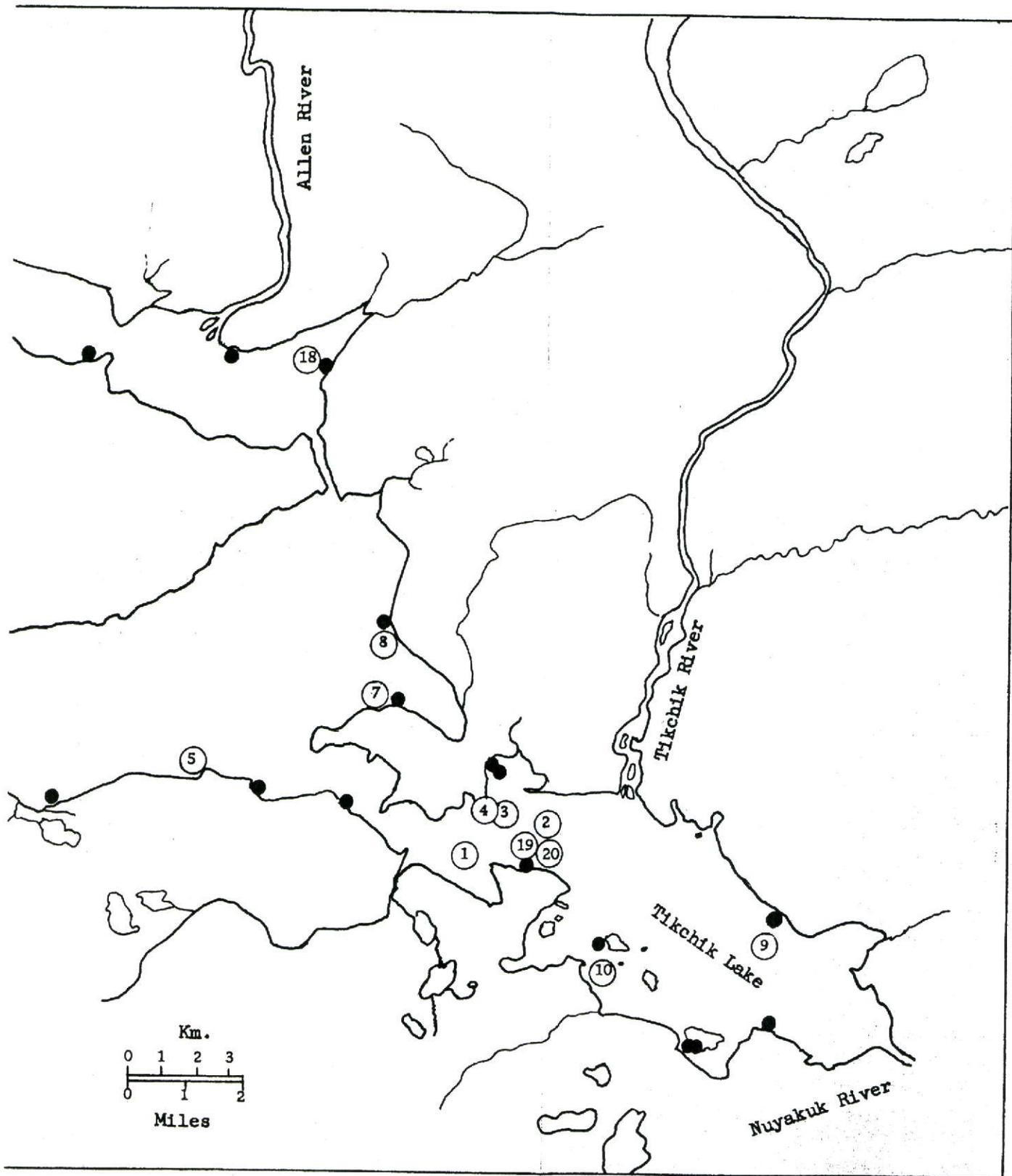


FIG. 1. Sampling localities in Tikchik lakes, July, 1964.



All catches were enumerated by species. The fishing gear and methods were identical to those used in Lake Aleknagik of the Wood River chain in 1962 so that direct comparisons could be made between the two lake systems.

The smaller fish, caught by beach seine, were preserved in 10% formalin and measured for length. The larger fish, caught by gill net, were examined in more detail; data were taken on length, weight, sex, and stomach contents.

Common and scientific names of fishes we have collected in the Wood River and Tikchik lakes are listed in Table 2. Common names used are those adopted by the American Fisheries Society (1960). We would welcome any reports or specimens of species not listed from these areas.

## RESULTS

### Gill Net Catch Data

The gill net catch data for the Tikchik lakes are summarized in Table 3 along with 1962 data for Lake Aleknagik. Some restrictions on the interpretation of the Tikchik data should be noted. The sampling was not equally representative of all habitat types in the lake system. In addition, seasonal changes in distribution can not be accounted for in these data and the efficiency of the gear is likely to be different for each species. No attempt was made to seek out probable areas of concentration of fish species. The 1962 sampling in Lake Aleknagik was more extensive and was done at regular intervals from mid-June to early September. A detailed report on this sampling is in preparation.

All species caught in the Tikchik lakes occur in Lake Aleknagik except lake trout and least cisco. However, the relative abundance of species in the gill net catches are markedly different in the two lake systems. The Arctic char constituted over 80% of gill net catches in Lake Aleknagik; round whitefish was next in abundance at about 10%. In the Tikchik lakes, Arctic char never ranked higher than third in abundance in any catch. Lake trout, humpback and round whitefish were important, and no one species preponderated in the catches.

Table 4 gives the catch in number of fish per hour at each fishing site shown in Fig. 1. The distribution within the Tikchik lake system varied for each species caught by gill net. The lake trout was the most widespread fish; it occurred in all of the 20 gill net catches. The humpback whitefish occurred in 16 catches, the Arctic char in 11, and the round whitefish in 8.

The average weights of the major species caught by gill net in the Tikchik lakes are given in Table 5.

Table 2. List of common and scientific names of fishes collected by Fisheries Research Institute personnel in the Wood River and Tikchik lake systems

Common name	Scientific name	Occurrence		Other common names used locally
		Wood River lakes	Tikchik lakes	
Arctic lamprey	<i>Lampetra japonica</i>	x		
Pacific lamprey	<i>Lampetra tridentata</i>	x		
Least cisco	<i>Coregonus sardinella</i>		x	
Humpback whitefish	<i>Coregonus pidschian</i>	x	x	
Pygmy whitefish	<i>Prosopium coulteri</i>	x	x	
Round whitefish	<i>Prosopium cylindraceum</i>	x	x	
Pink salmon	<i>Oncorhynchus gorbuscha</i>	x	x	Humpy
Chum salmon	<i>Oncorhynchus keta</i>	x	x	Dog salmon
Coho salmon	<i>Oncorhynchus kisutch</i>	x	x	Silver salmon
Snakey salmon	<i>Oncorhynchus nerka</i>	x	x	Red salmon
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	x	x	King salmon
Rainbow trout	<i>Salmo gairdneri</i>	x	x	
Arctic char	<i>Salvelinus alpinus</i>	x	x	Dolly
Dolly Varden	<i>Salvelinus malma</i>	x		
Lake trout	<i>Salvelinus namaycush</i>	x		
Arctic grayling	<i>Thymallus arcticus</i>	x	x	
Pond smelt	<i>Hypomesus olidus</i>	x		
Arctic smelt	<i>Osmerus dentex</i>	x		
Alaska blackfish	<i>Dallia pectoralis</i>	x		
Northern pike	<i>Esox lucius</i>	x	x	
Burbot	<i>Lota lota</i>	x	x	Ling, lush
Threespine stickleback	<i>Gasterosteus aculeatus</i>	x	x	
Ninespine stickleback	<i>Pungitius pungitius</i>	x	x	
Slimy sculpin	<i>Cottus cognatus</i>	x	x	
Starry flounder	<i>Platichthys stellatus</i>	x		

Table 3. Percentage composition of resident fishes in gill net catches<sup>1</sup>

Species	Gill net			
	Tikchik	Nuyakuk	Chauekuktuli	Aleknagik (1962)
Humpback whitefish	52.3	28.3	6.8	2.3
Pygmy whitefish	2.2	0.5		
Round whitefish	0.8	19.2	33.9	11.3
Rainbow trout				0.3
Arctic char (adults)	2.2	8.1	5.9	82.6
Dolly Varden				0.3
Lake trout	40.3	42.9	53.4	
Arctic grayling		0.5		+
Pond smelt				0.5
Alaska blackfish				1.7
Northern pike				0.9
Burbot	2.2	0.5		0.1
Slimy sculpin				+
Total number of fish	134	198	118	2,826
Total net hours	106	106	59	1,824

<sup>1</sup>A + in column indicates species was less than 0.1 per cent of total catch.

Table 4. Gill net catch data, Tikchik lakes, July, 1964

Site no.	Lake	Date	Distance from end of net to shore (m)	Depth inshore end of net (m)	Catch per hour			Arctic cbar
					Lake trout	Whitefish	Round	
1	Tikchik	7-17	50	7	0.5	0.7		0.1
2	"	7-17	1,000	33	0.2			
3	"	7-18	500	25	0.5	0.2		0.1
4	"	7-18	300	10	1.2	0.6	0.1	
5	Nuyakuk	7-19	50	10	0.3	0.1		
6	"	7-19	30	3	1.0	0.5		0.5
7	"	7-19	30	5	1.1	0.9		0.1
8	"	7-20	50	3	0.5	0.1		
9	Tikchik	7-22	1,200	9	0.4	0.8		
10	"	7-22	700	10	0.2	1.3		
11	Nuyakuk	7-23	10	3	3.1	0.4	4.8	0.4
12	"	7-23	30	12	0.7			0.2
13	"	7-23	50	4	0.9	0.7	0.1	0.1
14	"	7-23	10	5	0.8	1.0		0.4
15	Chauekuktuli	7-25	10	2	1.3		1.0	
16	"	7-25	20	3	3.8		1.5	0.8
17	"	7-25	10	2	1.3	0.04	0.5	0.2
18	"	7-25	100	3	0.6	0.3	0.8	
19	Tikchik	7-27	1,000	12	0.6	0.2		
20	"	7-27	1,200	30	1.6	0.3		0.2

Table 5. Average weights (lb) of fish caught by gill net

	Tikchik	Nuyakuk	Chauekuktuli
Humpback whitefish	3.8	4.2	5.5
Round whitefish	-	1.2	1.4
Lake trout	4.3	3.6	2.9
Arctic char	-	2.7	2.4
All species	4.0	3.0	2.5
Catch per hour	1.27	1.87	2.00
Pounds per hour	5.1	5.6	5.0

The average catch in pounds per hour was similar for the three lakes and was about twice the value for Lake Aleknagik (1962, 2.6 lbs/hr).

Length frequencies of lake trout and whitefish from 1964 gill net catches are presented in Figs. 2 and 3.

Summer gill net catch data are available for the Wood River lakes from earlier years (Table 6). The gill nets used were of different materials and mesh size, hence data on catch per hour are not directly comparable with data for 1962 and 1964 abovementioned. Gill nets used in 1952-54 were 270 ft long and consisted of 30-ft panels of 1 1/2-in., 1 3/4-in., 2-in., 2 1/4-in., 2 1/2-in., 2 3/4-in., 3-in., 4-in., and 5-in. mesh linen web, stretched measure. Gill nets used at Lake Nerka in 1955-57 were 150 ft long and consisted of 30-ft panels of 1 1/2-in., 2-in., 2 1/2-in., 3-in., and 4-in. multifilament nylon web. Sampling in 1955-57 was restricted to the period from lake ice breakup to early July.

Arctic char preponderated in catches in all five of the Wood River lakes. Catch of round whitefish were higher in lakes Kulik and Beverley than in the lower three lakes in the chain. Catches of other species were insignificant in number. Catch per net hour among lakes ranged from 0.77 to 1.30 in the years 1952-54, but was influenced by time and location of sampling within each lake.

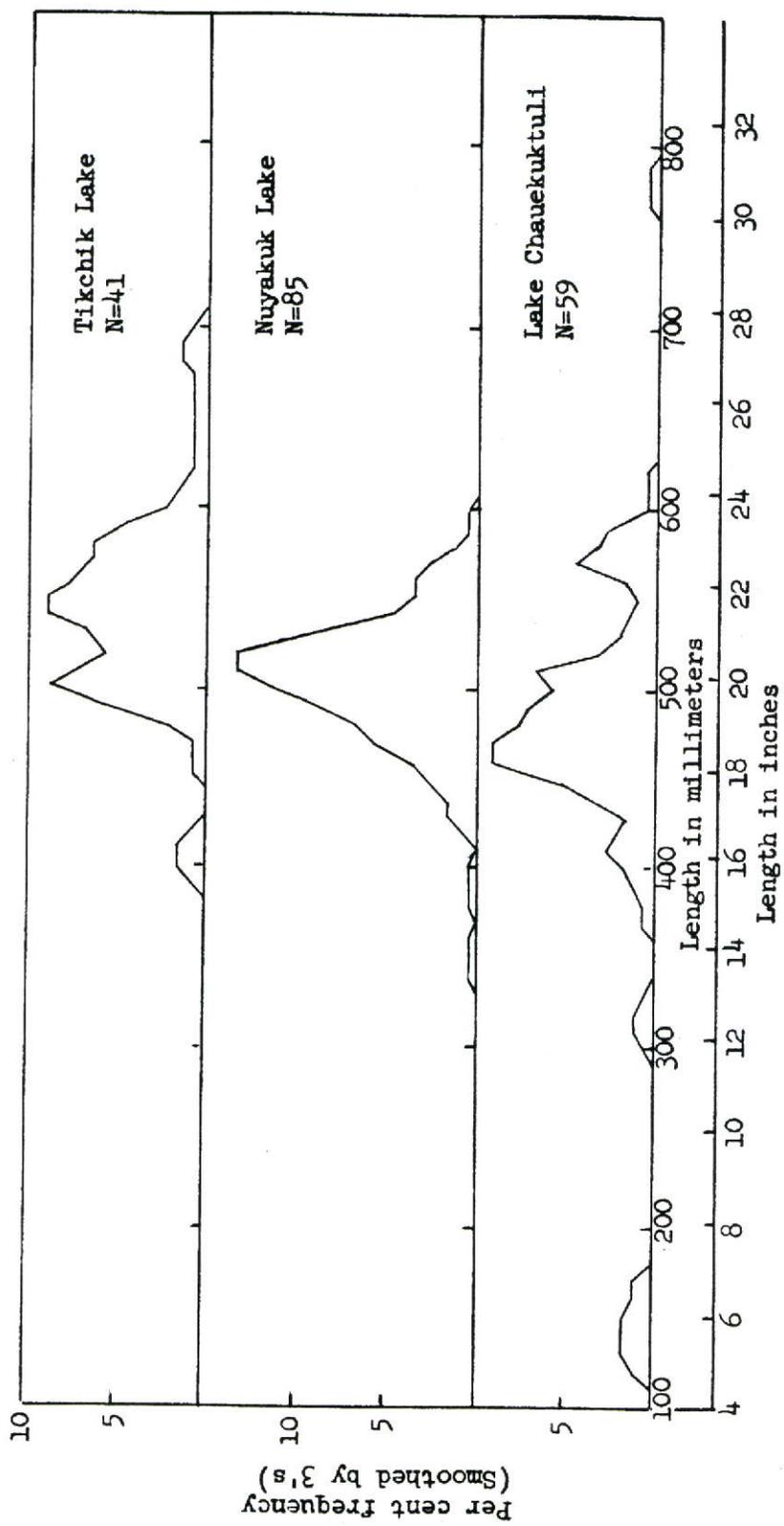


FIG. 2. Length frequencies of lake trout in gill net catches, Tikchik lakes, July, 1964.

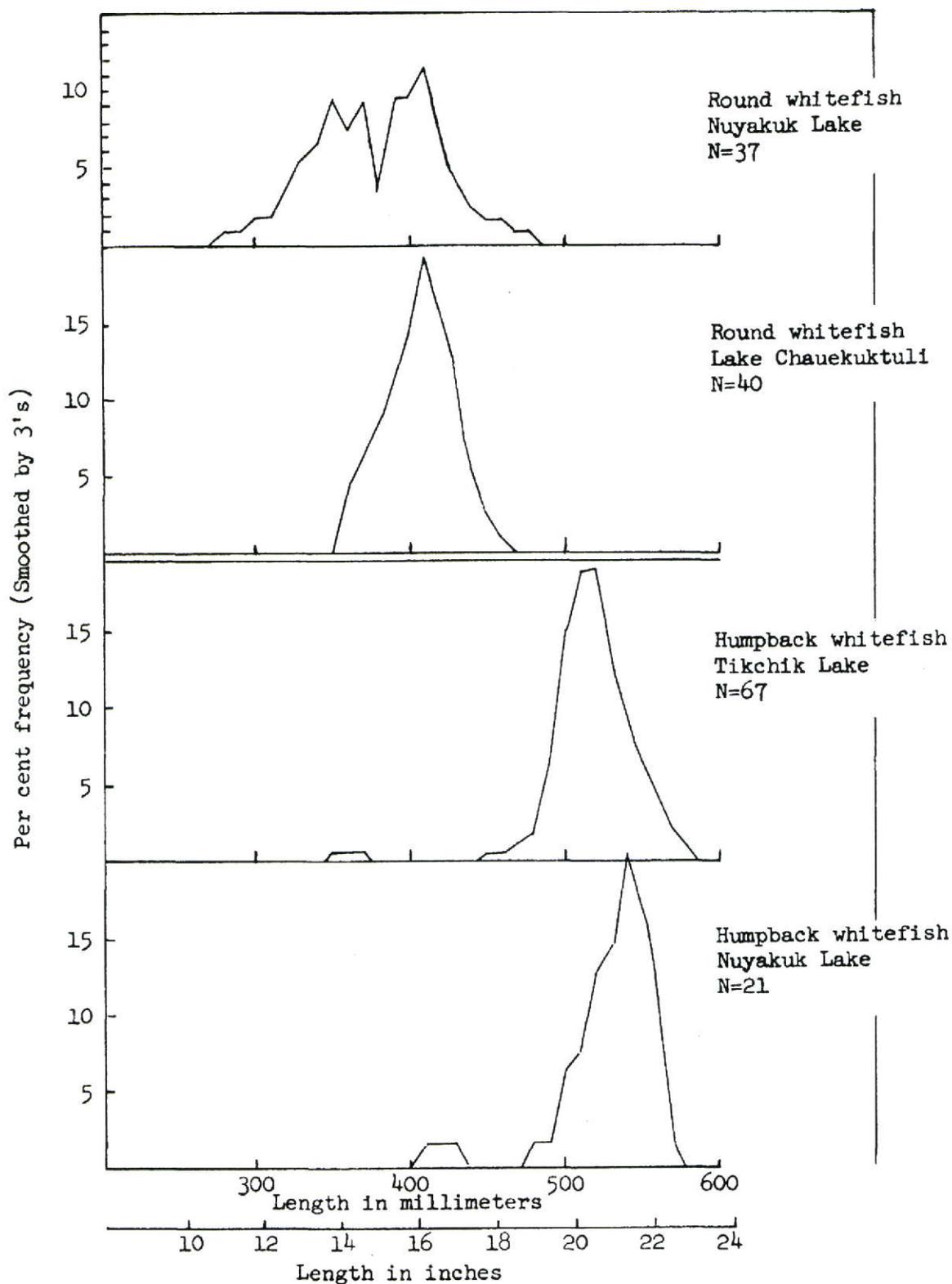


FIG. 3. Length frequencies of whitefish in gill net catches, Tikchik lakes, July, 1964.

Table 6. Percentage composition of gill net catches of resident fishes in the Wood River lakes, 1952-54 and 1955-57

Species	1952-54					1955-57
	Lake Aleknagik	Lake Nerka	Little Togiak Lake	Lake Beverley	Lake Kulik	Lake Nerka
Humpback whitefish	1.6					
Round whitefish	4.9	0.4	0.1	13.9	23.5	0.7
Rainbow trout	1.0	0.7	0.1	0.7	1.8	0.3
Arctic char	90.7	95.8	99.1	83.6	70.1	98.4
Dolly Varden	0.5	0.3	0.1			
Arctic grayling	0.6	0.7	0.1	1.6	1.9	0.2
Northern pike	0.6	2.1	0.5	0.1	2.7	0.4
Burbot	0.1			0.1		
Total number caught	2,820	3,555	876	447	776	1,779
Total net hours	3,647	3,867	731	506	596	2,832
Catch/net hour	0.77	0.92	1.12	0.88	1.30	0.63

Beach Seine Catch Data

A comparison of species composition of catches made by beach seine haul in the Tikchik lakes in 1964 and Lake Aleknagik in 1962 is presented in Table 7.

Table 7. Percentage composition of fish in beach seine hauls<sup>1</sup>

Species	Tikchik	Nuyakuk	Chauekuktuli	Aleknagik 1962
Sockeye salmon (age 0 and I)	40.0	54.4	87.8	39.9
Threespine stickleback	54.1	27.2	6.3	51.7
Ninespine stickleback	2.4	5.9	0.5	2.2
Slimy sculpin	0.5	10.3	3.6	3.8
Arctic char (age 0)		0.7	1.6	2.3
Round whitefish	1.2	1.3	0.2	+
Humpback whitefish	1.6			
Least cisco	0.2	+		
Arctic grayling		+	+	+
Rainbow trout	+			+
Dolly Varden				+
Northern pike	0.1			+
Alaska blackfish				0.2
Total number of fish	8,760	4,013	10,540	238,912
Total hauls	8	12	9	190

<sup>1</sup>A + in column indicates species was less than 1 per cent of total catch.

The species composition of beach seine catches is quite similar for the two lake systems. There were some notable differences in the distribution throughout the Tikchik lakes for the four preponderant species. Sockeye fry, highest in average catch, showed the greatest variability; catches ranged from 0 to 7,130. The distribution of sockeye was somewhat correlated with the known distribution of spawning in the lake system. Both stickleback species were particularly abundant where the littoral zone was extensive, and were scarce inshore along the deep western part of the system. The sculpin was the most widespread fish, occurring in 25 of the 29 beach seine hauls with rather low variability.

The relative abundance of sockeye fry is largely determined by the size of the parent spawning population. The 1963 escapement to the Tikchik lakes (166,000) was over twice the size of the average escapement for the past eight years. Therefore, the relative abundance of sockeye fry in the beach seine

catches is probably atypical of their relative abundance in recent years. The relative abundance of the other species is unlikely to fluctuate as greatly from year to year. The average beach seine catches, excluding sockeye, were: Tikchik - 658, Nuyakuk - 152, and Chauekuktuli - 143. The average beach seine catch (excluding sockeye) in Lake Aleknagik during July, 1964 was 1,170.

#### Feeding Habits

The lake trout is the principal piscivore in the Tikchik system. Fish were the major food item in lake trout stomachs from Tikchik Lake and ranked second in volume to insects in the other two lakes. The fish composition in lake trout stomachs was similar to the composition of beach seine catches with the exception of sockeye fry, which preponderated greatly in beach seine catches but constituted a minor part of lake trout food (Table 8).

Arctic char caught in the Tikchik lakes had been feeding primarily on insects and snails. Humpback whitefish stomachs contained primarily snails, small freshwater clams and insects. Round whitefish stomachs contained primarily insects and snails.

#### Condition of Fish

The humpback and round whitefish caught in the Tikchik lakes during July, 1964 were fat and in excellent condition. The fish were not sectioned to examine in detail for flesh parasites; however, no evidence was seen of cysts of Triaenophorus crassus, the cestode parasite limiting marketability of whitefish in some Canadian lakes. If the parasite is present, its incidence is too low to present marketing problems.

Lake trout caught in Tikchik lakes also were in good condition and presumably would present no marketing problems. Arctic char in the Wood River lakes were generally in good condition during summer; heavy parasitism in the body cavity appeared to be the cause of poor condition of occasional specimens. Pleurocercoid cysts of Triaenophorus crassus were found in the flesh of Arctic char, but incidence is probably too low to affect marketability. The parasite offers no danger of infection in humans.

The abovementioned species spawn in late summer or fall. The humpback whitefish apparently spawns earlier than the round whitefish. Some humpback whitefish taken in July had loose eggs.

Table 8. Percentage composition of identifiable fish in stomachs of lake trout from Tikchik lakes

Species	Tikchik	Nuyakuk	Chauekuktuli
Sockeye salmon (age 0 and I)	7	2	3
Threespine stickleback	51	16	3
Ninespine stickleback	22	3	
Slimy sculpin	9	67	60
Arctic char (adults)		2	
Round whitefish	1	7	34
Humpback whitefish	3		
Burbot	2	3	
Lamprey(s)	5		
Total number of fish	103	58	72
Total stomachs examined	40	85	57

## CONCLUSION

The fish communities in the two lake systems differ mainly in that (1) lake trout occupy a niche similar to Arctic char in the Wood River lakes, (2) whitefish, which feed primarily on snails, insects, and clams, are much more abundant in the Tikchik system, (3) the ratio in abundance between large fish and small (catches by gill net and beach seine) is greater in the Tikchik system. These results indicate major differences in the trophic nature and food chains of these two adjacent lake systems.

The above studies were not made for the purpose of evaluating the resident fishery potential of the two lake systems, but rather to gain information on general species composition and abundance within the lake systems. Concentrations of species were not sought out, and netting was restricted to early summer in the Tikchik system. Our impression is, however, that on the basis of species composition and apparent abundance, the Tikchik lakes offer considerably more potential for a resident fishery than do the Wood River lakes.

## ACKNOWLEDGMENTS

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## REFERENCE CITED

American Fisheries Society. 1960. A list of common and scientific names of fishes from the United States and Canada. Second ed. Special Publication 2. Ann Arbor, Michigan. 102 p.