

Special Publication No. SP1995-002

**Minto Subsistence Pike and Whitefish Harvest
Assessment, 1995 [DRAFT]**

by

James R. Marcotte

1995

Alaska Department of Fish and Game

Division of Subsistence



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the reports by the Division of Subsistence. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g			base of natural logarithm	e
hectare	ha			catch per unit effort	CPUE
kilogram	kg	all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	coefficient of variation	CV
kilometer	km			confidence interval	CI
liter	L	at	@	correlation coefficient (multiple)	R
meter	m	compass directions:		correlation coefficient (simple)	r
milliliter	mL	east	E	covariance	cov
millimeter	mm	north	N	degree (angular)	$^\circ$
		south	S	degrees of freedom	df
Weights and measures (English)		west	W	expected value	E
cubic feet per second	ft ³ /s	copyright	©	greater than	>
foot	ft	corporate suffixes:		greater than or equal to	≥
gallon	gal	Company	Co.	harvest per unit effort	HPUE
inch	in	Corporation	Corp.	less than	<
mile	mi	Incorporated	Inc.	less than or equal to	≤
nautical mile	nmi	Limited	Ltd.	logarithm (natural)	ln
ounce	oz	District of Columbia	D.C.	logarithm (base 10)	log
pound	lb	et alii (and others)	et al.	logarithm (specify base)	log ₂ , etc.
quart	qt	et cetera (and so forth)	etc.	minute (angular)	'
yard	yd	exempli gratia (for example)	e.g.	not significant	NS
		Federal Information Code	FIC	null hypothesis	H_0
Time and temperature		id est (that is)	i.e.	percent	%
day	d	latitude or longitude	lat. or long.	probability	P
degrees Celsius	°C	monetary symbols (U.S.)	\$, ¢	probability of a type I error (rejection of the null hypothesis when true)	α
degrees Fahrenheit	°F	months (tables and figures)	first three letters (Jan.,...,Dec)	probability of a type II error (acceptance of the null hypothesis when false)	β
degrees kelvin	K	registered trademark	®	second (angular)	"
hour	h	trademark	™	standard deviation	SD
minute	min	United States (adjective)	U.S.	standard error	SE
second	s	United States of America (noun)	USA	variance	
		U.S.C.	United States Code	population	Var
Physics and chemistry		U.S. state	two-letter abbreviations (e.g., AK, WA)	sample	var
<i>all atomic symbols</i>					
alternating current	AC	Measures (fisheries)			
ampere	A	fork length	FL		
calorie	cal	mid-eye-to-fork	MEF		
direct current	DC	mid-eye-to-tail-fork	METF		
hertz	Hz	standard length	SL		
horsepower	hp	total length	TL		
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

SPECIAL PUBLICATION NO. SP1995-002

**MINTO SUBSISTENCE PIKE AND WHITEFISH HARVEST
ASSESSMENT, 1995 [DRAFT]**

by

James R. Marcotte

Alaska Department of Fish and Game, Division of Subsistence, Juneau

Alaska Department of Fish and Game
Division of Subsistence
1255 West 8th Street, Juneau, AK 99802-5526

1995

The Division of Subsistence Special Publications series was established for the publication of techniques and procedure manuals, special subject reports to decision-making bodies, symposia and workshop proceedings, application software documentation, in-house lectures, and other documents that do not fit in another publications series of the Division of Subsistence. Most Special Publications are intended for readers generally interested in fisheries, wildlife, and the social sciences; for natural resource technical professionals and managers; and for readers generally interested the subsistence uses of fish and wildlife resources in Alaska.

Special Publications are available through the Alaska State Library and on the Internet: <http://www.subsistence.adfg.state.ak.us/>.

*James R. Marcotte
Alaska Department of Fish and Game, Division of Subsistence,
1255 West 8th Street, Juneau, AK 99802-5526, USA*

This document should be cited as:

Marcotte, J.R. 1995. Minto subsistence pike and whitefish harvest assessment, 1995 [DRAFT]. Alaska Department of Fish and Game Division of Subsistence, Special Publication No. SP1995-002, Juneau.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK, 99811-5526

U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, MS 2042, Arlington, VA, 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW, MS 5230, Washington DC 20240

The department's ADA Coordinator can be reached via phone at the following numbers:

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD)

907-465-3646, or (FAX) 907-465-6078

For information on alternative formats and questions on this publication, please contact:

ADF&G Division of Subsistence at www.subsistence.adfg.state.ak.us.

DRAFT
**Minto Subsistence Pike and
Whitefish Harvest Assessment, 1995**
by
James R. Marcotte

Division of Subsistence
Alaska Department of Fish and Game
Juneau, Alaska
August 1995

ABSTRACT

Minto households were interviewed between January 18 and February 2, 1995 about their harvest and use of northern pike and whitefish during 1994. Thirty-four of the 58 community households (58.6 percent) were active in harvesting pike or whitefish. A total of 2,997 northern pike, 415 humpback whitefish, 115 least ciscos ("shiners"), and 479 broad whitefish were reported taken. Ninety percent of the harvest came from fishing sites close to Minto in the northern portion of Minto Flats, although harvests also took place near Minto Lakes and the lower Tolovana River. The number of northern pike taken in 1994 was nearly identical with that reported for 1983, while the number of whitefish taken in 1994 was dramatically lower than that reported for 1983 (1,009 whitefish in 1994 compared to 6,072 whitefish in 1983). This information provides a point of comparison for the harvest data now collected through two different ADF&G permit systems.

TABLE OF CONTENTS

	<u>page</u>
ABSTRACT	x
LIST OF FIGURES AND TABLES	x
ACKNOWLEDGEMENTS	x
INTRODUCTION	x
BACKGROUND	x
METHODS	x
FINDINGS	x
DISCUSSION	x
REFERENCES	x
APPENDIX 1.	x
APPENDIX 2.	x
APPENDIX 3.	x
APPENDIX 4.	x

LIST OF FIGURES AND TABLES

	<u>page</u>
Figure 1. Minto Flats fishing areas.....	x
Table 1. Number of Households Harvesting and Using Pike and Whitefish	x
Table 2. Harvest Quantity of Pike and Whitefish, 1994	x
Table 3. Pike and Whitefish Harvest by Location, 1994	x
Table 4. Pike and Whitefish Harvest by Gear Type, 1994	x
Table 5. Use of Pike and Whitefish, 1994	x
Table 6. Number of Households Reporting Change in Pike and Whitefish Harvest, 1994	x

ACKNOWLEDGMENTS

This project was a cooperative effort between the Division of Sport Fisheries and the Division of Subsistence, Alaska Department of Fish and Game. I would like to thank Alan Burkholder for initiating the project and Jerry Hallberg for seeing it through to its completion. Gary Pearse served as project biologist and prepared the operational plan. I would especially like to thank Peggy Merrit for working diligently on the research design, identifying the specific data needs, and contributing to the survey instrument. Charles Utermohle also provided useful suggestions for the survey instrument and Elizabeth Andrews provided project supervision. Clarence Alexander and Cheryl Scott ably conducted a number of household interviews.

Luke Titus and Ken Charlie of Minto helped secure community approval through the Minto Village Council. Cheryl Charlie of the Minto Village Council helped schedule community visits and meetings, and assisted by updating the community map and household list. Finally, I would especially like to thank all the residents of Minto for their cooperation and interest during this study.

INTRODUCTION

[intro]

Minto Flats supports a major subsistence fishery and a major sport fishery. need for good management, protection of sustained yield, and subsistence priority. Fishery managers have wanted harvest numbers..... Missing component (for managing sport fishery on sustained yield) is: accurate ^{reporting} harvest of subsistence harvest by species. This was the purpose of this study.

[Sport]

The Minto Flats pike fishery largest pike fishery in the state 12 of last 16 years (ADF&G 1994). The 1981-84 average sport harvest was 2,279 pike annually. A new sport fishery developed in 1985 on overwintering concentrations of pike in Chatanika River. The resulting sport harvest level increased from an estimated 2,349 in 1984, 4,665 in 1985, 4,903 in 1986. Many of the fish taken were prespawning females.

add information on whitefish

[Subsistence]

Pike and whitefish harvests make an important contribution to the community's food supply. These fisheries supply a source of fresh food during late fall and in early spring.

Gill nets during open water and hook and line (jigging) through ice; locations documented by Andrews (1988); 1984 harvest estimate was 3,003 northern pike (July 1983-June 1984) Andrews (1988) last subsistence harvest survey.

add information on whitefish

BACKGROUND

1 Community of Minto

Minto is an Athabaskan Indian community about 60 miles (100 km) north and west of Fairbanks with a 1990 population of 218 (Alaska Department of Labor 1991).

2 Description of area

(like info from Shepard + Matthews 1985 report?)

The
A

Minto Flats lies about 31 miles (50 km) west of Fairbanks (Figure 1). It is a large wetland complex of about 500,000 acres (200,000 ha) in size consisting of marsh, lakes, and interconnected by numerous sloughs and rivers. Five drainages flow into the flats from rolling hills to the east: the Tolovana River, Tatalina River, Washington Creek, Chatanika River, and Goldstream Creek. To the southern end of Minto Flats, the Tanana River flows in a westward direction and provides the primary water source for Grassy Slough and Swanneck Slough. Rolling hills reaching 1,000 to 1,500 feet (300 to 450 m) also bound the flats on the west and north. Rivers are slow flowing and meandering and lakes are generally shallow with large areas of dense aquatic vegetation.

3 Fish-biology (summer)

Much of the water on Minto Flats provides good summer habitat for northern pike and whitefish. Northern pike (*Esox lucius*), humpback whitefish (*Coregonus pidschian*), least cisco (*Coregonus sardinella*) known locally as "shiners," broad whitefish (*Coregonus nasus*), round whitefish (*Prosopium cylindraceum*) populate the area in ice free months. Sheefish, Arctic grayling, burbot, longnose suckers, blackfish, and lake chub can also be found and chinook salmon and chum salmon migrate through area to spawning areas in the upper Chatanika River.

4 Fish-biology (winter)

Overwintering areas for pike include the Chatanika River above Goldstream Creek, the Lower Tolovana River, and the Tanana River (ADF&G 1991). Studies of radio-tagged northern pike indicated overwintering in the lower Chatanika river above the confluence of the Chatanika and Tolovana River (Burkholder and Bernard 1994). The limited number of areas deep enough to remain unfrozen and oxygenated is thought to be a limiting factor limiting winter pike distribution on Minto Flats. Little is known about overwintering area for whitefish.

ee

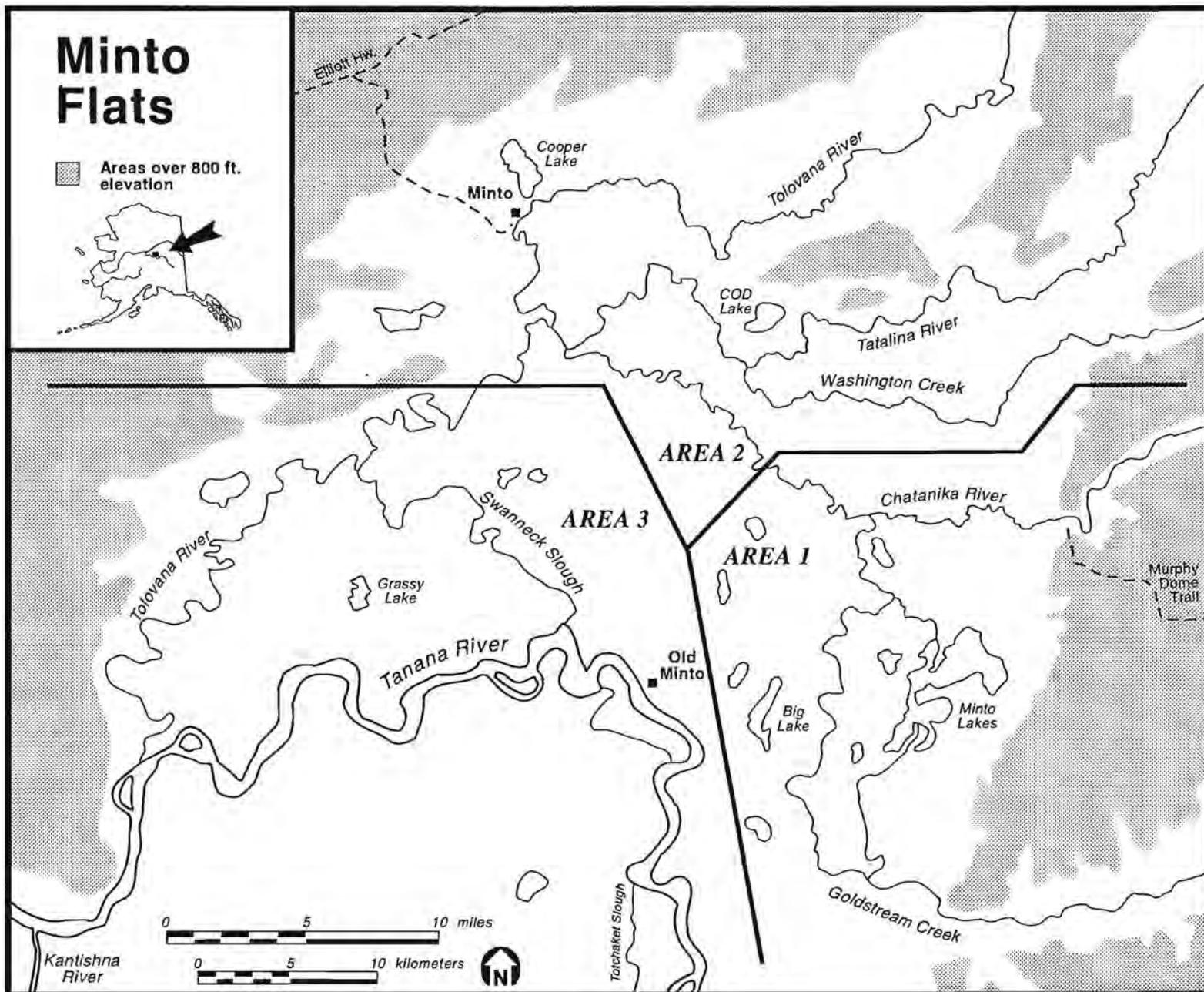
5 Fish-biology (abundance)

1994 estimates for pike abundance _____



Minto Flats

■ Areas over 800 ft. elevation



mark-recapture studies of northern pike

1994 estimates for whitefish abundance _____ 7

humpback whitefish and least cisco migrate into Chatanika during summer and early fall to spawn.

Minto Flats also ^o ³ provide important habitat for whitefish species, serving as rearing and feeding areas for humpback whitefish and least cisco. Less is known about populations of broad whitefish and round whitefish.

mark-recapture studies of whitefish

Humpback whitefish and least cisco mark-recapture studies along 125 km section of Chatanika River

Radio-telemetry study scheduled for 1994 and 1995 to describe movements of humpback whitefish which spawn in the Chatanika River (and migrate to Minto Flats).

What is the extent to which whitefish Chatanika River spawning whitefish are subject to subsistence harvesting. Distribution of stocks spawning in Chatanika River is unknown.

6 Subsistence fishery

Pike and whitefish fisheries have long been a part of Minto's subsistence economy. Indigeneous inhabitants of the Minto Flats area harvested a variety of fish and wildlife resources and ^{resided in} ~~inhabited~~ a wide variety of seasonal settlements. Minto residents ~~have~~ continued to fish for freshwater fish at four historic settlements – "Cache," "Four-Cabin," "Chatanika," and "North Fork." Traditional fishing gear includes a fish fence with a trap, a long-handled dip net, short gill nets, and occasional use of bows and arrows for whitefish (Andrews 1988:135). Contemporary fishing continues to take place at these historic locations.

"Cache," located at the confluence of the outlet of Minto Lakes and Chatanika River, continued to be an important fishing locality used for set gill nets in June and late August. Jigging, fishing through the ice with a hook and line, and fishing with a rod and reel also

map location
places 4
sites?

DRAFT

takes place. This is also a summer destination for sport fishermen flown to the site by air charter companies. Minto residents also continue to use nearby "Four-Cabin" and "Chatanika" fishing sites, particularly in late fall and early winter. "North Fork" includes fishing sites up and down the Tolovana River within about seven river miles⁹ above and below the community of Minto. Here set gill nets, rod and reel, and jigging gear^{are} is used. Many Minto residents fish near the community and downriver at Rock Island Slough and "Big Eddy." Other known fishing sites on Minto Flats are used intermittently by Minto residents.

Minto residents fish for pike and whitefish generally from late April through November (Andrews 1988:143). Use of rod and reel takes place by children and middle-aged men at sites close to Minto along the Tolovana River and at "Cache." Jigging with hook and line, often by elderly people and middle-aged women, is done through the ice after freeze-up in the fall near the boat landing in Minto. Both men and women participate in using set gill nets at a variety of locations.

Minto residents continued to use gill nets.

Subsistence baseline: estimate of 6,072 whitefish in 1984 (Andrews 1988)

7 Sport fishery

Annual statewide sport harvest survey offers estimates on sport harvest.

Plus creel surveys on Chatanika River whitefish spear fishery shows harvest and effort by species annually since 1986.

1994 creel survey initiated on northern pike taken in Area 1 of Minto Flats.

Sport fishing of spawning migration

Sport fishing harvest peaked at 25,074 in 1987 (both species?)

1988 new regulations: bag limit reduced to 15 whitefish per day

1991 emergency closure

1992-93 sport fishing reopend under time and area restrictions

8 Sport-subsistence relationship, regulations, and management

The pike overwintering area on the Chatanika River was subject to a sport harvest in the mid-1980s prior to harvest restrictions which were implemented to address conservation problems.

Permit requirements:

Subsistence permit required from Commercial Fisheries Management and Development division (CFMD) for northern pike in the Tolovana River drainage. Pike fishing is open seven days a week.

Pike harvest data also collected on the Tanana River district 6B subsistence salmon permit. Note that the permit reporting area includes the Tanana River, so pike reported may have taken from areas other than Minto Flats.

Incidental pike harvests without a permit are OK.

In 1993:

31 Tolovana River pike permits issued to Minto residents; 22 returned

32 Tanana River 6B permits issued to Minto residents; 32 returned but 14 missing data on pike harvests.

Subsistence permits to non-Minto residents

three issued in 1994 (none in 1990-93) (authorized since 1990)

Permit compliance:

In 1993, about 25 percent of Minto households did not apply for any type of fishing permit. One of the rationales for the study was to use a complete household survey to achieve a more accurate subsistence harvest by correcting for fishing by non-permit holders and incomplete or unreturned permits.

? Sustained yield issues

Winter sport fishery for pike closed by emergency order in January 1987.

DRAFT

Spring 1988 new regulations:

Sport fish season to June 1 through October 14

bag limit reduced to 5 per day, only 1 over 30 inches

Under these regulations, sport harvest has averaged 1,631 pike (res plan)

???????

} DRAFT

OBJECTIVES

This project was designed to collect current subsistence harvest information necessary to manage the northern pike and whitefish sport and subsistence fisheries in the Minto Flats area. The following study objectives were identified by Division of Sport Fisheries staff in the initial operational plan:

1. determine the subsistence harvest of northern pike and whitefish (humpback whitefish, least cisco, round whitefish, and broad whitefish) in Minto Flats; and
2. determine the proportion of the subsistence harvest for pike and whitefish (humpback whitefish, least cisco) occurring in each of three identified harvest areas.

Additional objectives were identified by staff from the Division of Subsistence in order to insure that harvest data were in a format compatible with the department's Community Profile Database, a comprehensive state-wide subsistence harvest database.

1. determine rates of household use and sharing;
2. determine the proportion of the subsistence harvest of pike and whitefish (humpback whitefish, least cisco) taken by different gear types;
3. describe the uses of pike and whitefish harvested; and
4. assess how the 1994 harvest year compared with other years.

METHODS

We contacted community leaders and attempted to schedule a meeting with the Minto Village Council. Although a meeting was not ^{able to be scheduled} able to take place because of other activities in the community, approval for conducting the survey was ^{provided} expressed by the village council through Chief Luke Titus.

Because of the relatively small number of households in the community (58) and the limited scope of the survey (pike and whitefish harvesting) ^{staff} it was determined that a census approach should be undertaken rather than sampling a portion of the community. We were able to contact and interview 53 of 58 households directly. Households not able to be

contacted were away from the community during the interview period. Harvest ^{information} participation for the remaining five households was obtained by asking family members in other households. The result was the collection of harvest information for 58 of 58 households.

Household interviews were conducted between January 18 and February 2, 1995. The harvest period covered was the calendar year 1994 (January through December). The survey instrument consisted of a two-page questionnaire (**Appendix 1**) which was followed during the interviews. Harvest numbers were obtained by asking about the number caught, with the term "catch" synonymous with "harvest" since catch-and-release fishing practices are not typically used by Minto fishers. A whitefish identification chart depicting four different species of whitefish was used during the interviews to reduce errors in species identification and harvest reporting (Appendix __). A map was used to depict the three harvest counting areas on Minto Flats (Appendix __). Individual household information was kept confidential and only presented in the aggregate.

A meeting was held in Minto at the completion of the household interviews to briefly present ~~out~~ study findings and to ^{evaluate} have Division of Sport Fisheries staff ^{to review} present findings of recent biological studies in the Chatanika and Tolovana river drainages. Community turnout for the meeting was light but there was good discussion of the apparent high abundance of pike and the low abundance of whitefish. Observations from the biological studies and observations ^{by} from local fishers were generally consistent ^{with each other} and possible explanations for the low whitefish numbers were explored.

Harvest numbers were compiled using Microsoft's Excel spreadsheet program and a harvest table listing household harvest by species and by location was ^{provided to the} given to Jerry Hallberg (Area Manager, Division of Sport Fisheries) for inclusion in management reports.

what were these?

Division of Sport Fisheries

FINDINGS

Harvest and use rates

The use rate was higher for pike than for whitefish (**Table 1**). Pike were used by 50 of 58 Minto households (86.2 percent) during 1994. The use rate for pike was higher than the four species of whitefish. Humpback whitefish (*kholekhga*), and broad whitefish (*netsoolook'a*) were used by 43.1 percent of households and broad whitefish (*netsoolook'a*) were used by 31.0 percent of households. Only one household (1.7 percent) reported using round whitefish (*dradlaya*), though none reported actually harvesting round whitefish during 1994.

Harvest rates were also higher for pike than for whitefish. Thirty three of 58 households (56.9 percent) participated in harvesting pike. Humpback whitefish were harvested by 14 of 58 households (24.1 percent) and broad whitefish were harvested by 12 of 58 households (20.7 percent). Only five of 58 households (8.6 percent) harvested least cisco and none reported harvesting round whitefish during 1994. The number of households harvesting either pike or whitefish was 34 of the 58 community households (58.6 percent).

In addition to obtaining fish by a household's own harvest effort, many households received fish from members of other households. Pike were widely distributed throughout the community with 23 of 58 households (39.7 percent) receiving pike, and many households received or gave away whitefish species to others. All households that harvested least cisco gave a portion of their harvest to other households.

TABLE 1. NUMBER OF HOUSEHOLDS HARVESTING AND USING PIKE AND WHITEFISH, 1994 (n=58)

	Using		Harvesting		Receiving		Giving	
northern pike	50	86.2%	33	56.9%	23	39.7%	18	31.0%
humpback whitefish	25	43.1	14	24.1	12	20.7	7	12.1
least cisco	18	31.0	5	8.6	14	24.1	5	8.6
broad whitefish	25	43.1	12	20.7	13	22.4	7	12.1
round whitefish	1	1.7	0	0.0	1	1.1	0	0.0

Harvest quantities

A total of 2,997 northern pike were harvested by 33 Minto households in 1994 (Table 2). The average harvest for those households harvesting northern pike was 90.9 fish. The range of household harvest was 5 to 450 northern pike. Eleven households harvested 100 or more northern pike.

A total of 415 humpback whitefish were harvested by 14 Minto households in 1994 (Table 2). The average harvest for those households harvesting humpback whitefish was 29.6 fish. The range of household harvest was 3 to 70 humpback whitefish. Four households harvested 15 or more humpback whitefish.

A total of 115 least cisco were harvested by 5 Minto households in 1994 (Table 2). The average harvest for those households harvesting least cisco was 23.0 fish. The range of household harvest was 2 to 70 least cisco.

A total of 479 broad whitefish were harvested by 12 Minto households in 1994 (Table 2). The average harvest for those households harvesting broad whitefish was 39.1 fish. The range of household harvest was 3 to 150 broad whitefish. Four households harvested 50 or more broad whitefish.

No households reported harvesting round whitefish in 1994 (Table 2), although one household did report receiving round whitefish from another household.

TABLE 2. HARVEST QUANTITY OF PIKE AND WHITEFISH, 1994 (58 households)

	Total Number harvested	Number of households harvesting	Average household harvest ¹	Range of household harvests
northern pike	2,997	33	90.8	5 - 450
humpback whitefish	415	14	29.6	3 - 70
least cisco	115	5	23.0	2 - 70
broad whitefish	479	12	39.1	3 - 150
round whitefish	0	0	0	0

¹ For fishing households

Harvest locations

Minto residents harvested pike and whitefish at a variety of fishing sites in Minto Flats. Three generalized large areas were identified by Division of Sport Fisheries staff and shown on a map used during the household interviews (**Figure 1**).

Area 1 includes the Chatanika River drainage upstream of a point south of COD Lake, and includes the Goldstream River drainage and the area around Minto Lakes. Located within this area are several historic settlement locations, particularly around Minto Lakes, and the traditional fishing sites of “Four-cabin,” “Chatanika,” and “Cache.”

Area 2 includes the lower portion of the Chatanika River, Washington Creek, Tatalina River, the upper portion of the Tolovana River, and Rock Island Slough. Located within this area is the community of Minto which lies along the west bank of the Tolovana River. *Area 2* includes the historic fishing area of “North Fork” which is where the present day community of Minto is located.

Area 3 includes the lower portion of the Tolovana River, Swanneck Slough, and a portion of the Tanana River. Located within this area is the former Minto village site along the north bank of the Tanana River (shown on Figure 1 as Old Minto). The community relocated to the present day site of Minto between 1969 and 1971 after repeated flooding and riverbank erosion at Old Minto necessitated a move. Old Minto is still used by Minto residents as a Native culture education camp and periodic travel destination.

Most of the fishing activity took place close to Minto within *Area 2*, including 92.0 percent of the northern pike harvested, 60.5 percent of the humpback whitefish, and 93.9 percent of the least cisco (**Table 3**). The survey instrument was not intended to collect data on harvest location for broad whitefish and round whitefish.

TABLE 3. PIKE AND WHITEFISH HARVEST BY LOCATION, 1994

	Pike		Humpback whitefish		Least cisco	
<i>Area 1</i>	146	4.9%	37	8.9	0	0
<i>Area 2</i>	2,758	92.0	251	60.5	108	93.9
<i>Area 3</i>	93	3.1	127	30.6	7	6.1
total	2,997	100	415	100	115	100

Harvest gear

Minto residents used a variety of fishing gear in harvesting pike and whitefish (**Table 4**). Most of the pike harvested were taken with set gill nets in open water (63.1 percent of harvest) or rod and reel (35.0 percent). Jigging accounted for the remaining 1.9 percent of pike harvested. Twelve of the 50 households which fished for pike used more than one gear type during the year. Whitefish were mostly taken with set gill nets in open water. Nets accounted for all of the least ciscos harvested and 97.1 percent of humpback whitefish, with the remaining 2.9 percent of humpback whitefish caught in fishwheels incidental to salmon harvesting. The survey instrument was not intended to collect data on gear type for broad whitefish and round whitefish, however, we found that at least 313 of the total 479 broad whitefish (65.3 percent) were taken were caught in set gill nets in open water. No other gear types were reported for broad whitefish.

TABLE 4. PIKE AND WHITEFISH HARVEST BY GEAR TYPE, 1994

	Pike		Humpback whitefish		Least cisco	
jigging	58	1.9%	0	0%	0	0%
set gill net	1,890	63.1	403	97.1	115	100
rod and reel	1,049	35.0	0	0	0	0
fishwheel	0	0	12	2.9	0	0
total	2,997	100	415	100	115	100

Uses of pike and whitefish

Pike and whitefish were ^{consumed} (used for table food) within the household, ^{shared} (for sharing) with other households, and ^{fed to} (for feeding) dogs (**Table 5**). Two-thirds of the whitefish taken were used as table food within the household and one-quarter was used for sharing with other households. The whitefish includes humpback whitefish, least cisco, and broad whitefish. The pike use reported was about equal between use as table food within the household and use for feeding to dogs. Sharing included giving fish to other households in Minto, taking fish to community potlatches, and taking fish to relatives in other communities.

TABLE 5. USE OF PIKE AND WHITEFISH, 1994

	Pike		Whitefish	
Table food	1,213	40.5%	684	67.8%
Dog food	1,222	40.8	82	8.1
Sharing	562	18.8	243	24.1
total	2,997	100	1,009	100

Context for 1994 harvest year

Respondents were asked if the number of pike and whitefish caught by their household during the previous year was more, less, or about the same as in the past few years, as a way of identifying any possible reasons the harvest year may not be typical or representative. About half (45.5 percent) of pike harvesting households reported that their harvest quantities were consistent with the previous few years, while 59.1 percent of whitefish harvesting households reported similar harvest levels (**Table 6**). When changes did occur, reasons cited included both resource abundance and individual household circumstances. Pike fishing households with increased catches mentioned their greater fishing effort, their need for more pike because of lower salmon catches in 1994, and greater pike abundance as reasons for their increase. The three households reporting an increase in their whitefish harvest attributed the increase to greater effort and not resource availability. Households catching fewer whitefish mostly cited lower whitefish fish abundance. One ^{man} said that his household was less active in net fishing for salmon in the Tanana River in 1994 and consequently obtained fewer whitefish as incidental catch and another resident mentioned higher water levels on the Tolovana River which made local net fishing less effective. Another respondent commented that Minto residents may have had a lower participation in fishing through the ice in October and November than the previous year because of participating in potlatches. Lower whitefish abundance appeared to be a primary factor influencing the 1994 Minto fishery.

TABLE 6. NUMBER OF HOUSEHOLDS REPORTING CHANGE IN PIKE AND WHITEFISH HARVEST, 1994

	Pike harvest		Whitefish harvest	
More	8	24.2 %	3	13.6 %
Less	10	30.3	6	27.3
About the same	15	45.5	13	59.1
total	33	100	22	100

*?The contacts with residents also provided an opportunity to discuss whitefish and pike abundance in the Minto Flats, needs of local fishers, and department research efforts.
?Examples of sharing in household # 112: He pilots boat for his mother. They share cache (harvest reported on household #113)*

DRAFT

DISCUSSION

Comparison with 1983

The number of pike taken in 1994 was nearly identical with that reported for 1983 when households took 3,003 pike. The range of household pike harvests was similar: 2-500 fish in 1983 compared with 5-450 fish in 1994. The average pike harvest for those households fishing for pike was down from 111.2 fish in 1983 to 90.8 fish in 1994. This reflects the increased number of participating households, up from 27 in 1983 to 33 in 1994. This may

The number of whitefish taken in 1994 (1,009 whitefish) was dramatically lower than that reported for 1983 (6,072 whitefish).

Whitefish abundance

This low 1994 harvest of whitefish (one-sixth of that taken in 1983) can be attributed to low whitefish abundance on Minto Flats. A number of survey respondents commented about the low abundance and smaller size of the fish caught. A species comparison with 1983 is not possible because the earlier survey enumerated whitefish species in the aggregate.

% of all resources (from 1983)

Because this study only looked at pike and whitefish harvests, a comprehensive summary of all wild food harvested in 1994 by Minto residents is not available. Andrews (1998) documented harvest subsistence harvests in Minto for the period of July 1983 through June 1984 and found that pike and whitefish accounted for 14.4 percent of the total edible pounds of wild food harvested. Pike accounted for 7.6 percent and whitefish accounted for 6.8 percent. A similar proportion for pike in 1994 is likely, given the similarity in the number of fish taken, while a lower proportion for whitefish could be anticipated given that only one-sixth of the amount of whitefish were taken.

Summary

Pike and whitefish are important subsistence resources in the Minto Flats area and information provided by Minto residents through the household surveys is essential. We appreciate the efforts....

REFERENCES CITED

Alaska Department of Fish and Game

1991 Minto Flats State Game Refuge Management Plan, Public Review Document. Habitat Division, Fairbanks.

1994 Operational Plan, Determination of the subsistence harvest of northern pike and whitefish in Minto Flats. Project No. F-10-10, Study R, Job 3-4 (d), Division of Sport Fish, Fairbanks.

Alaska Department of Labor

1991 Alaska Population Overview, 1990 Estimates. Juneau, Alaska Department of Labor.

Andrews, Elizabeth F.

1988 The Harvest of Fish and Wildlife for Subsistence by Residents of Minto, Alaska. Alaska Division of Subsistence, Department of Fish and Game, Juneau, Technical Paper No. 137.

1989 A Low-Profile Subsistence Fishery: Pike Fishing in Minto Flats, Alaska. *Arctic*, the Arctic Institute of North America, Vol. 42, No. 4, p. 357-361.

Olsen, Wallace M.

1981 Minto, Alaska. *In* Subarctic. June Helm, ed. pp 704-711. Handbook of North American Indians, Vol. 6. William C Sturtevant, gen. ed. Smithsonian Institution, Washington, D. C.

Minto Community Pike and Whitefish Harvest Assessment
Harvest Year January through December 1994
household interview form

Community: Minto Household ID: _____ Interviewer: _____ Date: _____

Pike and whitefish are important subsistence resources in the Minto area. I would like to ask you a few questions about your household's use of pike and whitefish in 1994 to help us better understand how Minto residents use these fish.

- How many people lived in your household in 1994? _____
- Did anyone in your household *use* pike or whitefish in 1994? Did anyone in your household *harvest, receive, or give away* any pike or whitefish in 1994? [if no, skip to 6 and 8]

	Used?	Harvest?	Receive?	Gave away?
pike (<i>ch'ulkoya</i>)	y / n	y / n	y / n	y / n
humpback whitefish (<i>kholekhga</i>)	y / n	y / n	y / n	y / n
least cisco (<i>tokobedza</i>)	y / n	y / n	y / n	y / n
broad whitefish (<i>netsoolook'a</i>)	y / n	y / n	y / n	y / n
round whitefish (<i>dradlaya</i>)	y / n	y / n	y / n	y / n

- Did other households help this household in fishing for pike or whitefish?

No other households

Other households [indicate name or HHID] _____

- We would like to know how many pike and whitefish were caught for your household last year, where they were caught, and the type of gear used. Do not include the fish that were given to the households that you mentioned above.

[Please record only the fish caught for this household. If people from other households fished with this household, the fish caught for the other household should be recorded on the other household's form.]

Total number caught for this HH ¹	Number caught by area ²			Number caught by gear type				
	Area 1	Area 2	Area 3	Ice fishing (igging)	Fish net (under ice)	Fish net (open water)	Rod & reel (open water)	Fish-wheel
pike (<i>ch'ulkoya</i>)								
humpback whitefish (<i>kholekhga</i>)								
least cisco (<i>tokobedza</i>)								
broad whitefish (<i>netsoolook'a</i>)								
round whitefish (<i>dradlaya</i>)								

¹ Catch synonymous with harvest. Record harvest in number of fish harvested. Convert any harvest reported by volume or other unit of measure into number of fish.

² Please refer to area map.

Household ID _____

Pike

5. What did you do with the pike caught for your household last year?

Number used for table food? _____

Number used for dog food? _____

Number used for sharing? _____

6. Was the number of pike caught for your household during the past year more , less , or about the same as in the past few years?
If different, why? (resource abundance, regulatory, effort, other)

Whitefish

7. What did you do with the whitefish caught for your household last year?

Number used for table food? _____

Number used for dog food? _____

Number used for sharing? _____

8. Was the number of whitefish caught for your household during the past year more , less , or about the same as in the past few years?
If different, why? (resource abundance, regulatory, effort, other)

Comments

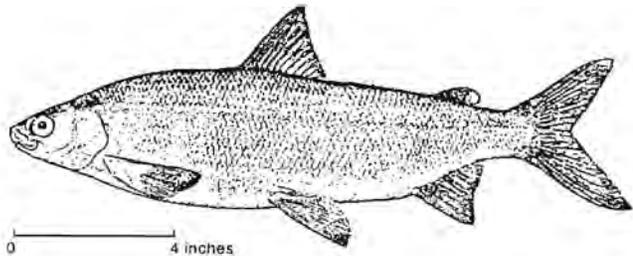
9. Do you have any comments or concerns about pike or whitefish fishing in this area?

WHITEFISH IDENTIFICATION

Minto Area

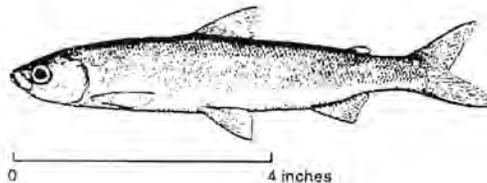
HUMPBACK WHITEFISH *KHOLEKHGA*

Humpback whitefish (*Coregonus pidschian*) average 2 1/2 to 3 1/2 pounds, and can reach up to 22 inches and 5 pounds in 8 years. Color typically dark brown to midnight blue on the back, with silver sides and a white belly. Humpback differ from broad whitefish by having pronounced hump just behind head, especially in larger fish, and by having a larger mouth (mouth underneath).



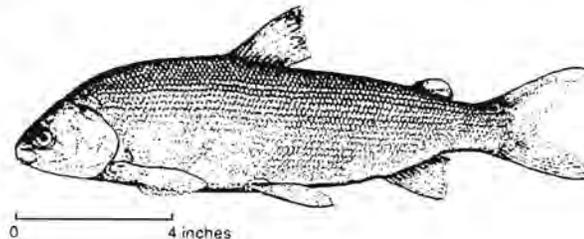
LEAST CISCO *TOKOBEDZA*

Least cisco (*Coregonus sardinella*) average 1 1/2 to 2 pounds and 9 to 18 inches in length. Rarely exceeding 24 inches, these slender shaped fish have large eyes and large scales. Bottom fin color is dusky to black. Lower jaw projects slightly beyond upper jaw.



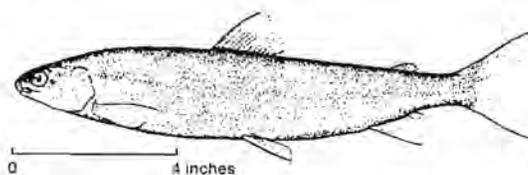
BROAD WHITEFISH *NETSOOLOOK'A*

Broad whitefish (*Coregonus nasus*) average 4 to 5 pounds with a maximum size of 28 inches and 15 pounds. The largest of whitefish, they tend to be olive brown to black on the back with silvery sides and a white to yellow belly. They differ from humpback whitefish by having a larger size, blunt snout, deeper head, shorter gill rakers, and absence of pronounced hump. Scales are large and forehead is rounded to flat. Mouth is underneath.



ROUND WHITEFISH *DRADLAYA*

Round whitefish (*Prosopium cylindraceum*) average less than one pound in weight and rarely exceed 15 inches and 2 pounds in weight. They have a rounded "cigar-shaped" body, small pointed snout, and small very regular scales. Color can be bronze on the back with silvery sides and orange to reddish bottom fins. Upper jaw overlaps with lower jaw (mouth underneath).



Appendix __

Comments from Question #9

"Mining - lakes are filling in with mud - no more muskrats, fish, etc."

"Leave us alone. We don't take that much."

"Hardly get whitefish. Concerned."

"Compared with 1945, the abundance of fish is not the same as now. No muskrats, lakes are getting filled with silt and sand. No muskrat."

"Fishing conditions all depend on water level. High water - fish all go into lakes; low water - fish go into rivers."

"Rely on whitefish when not caught. Keep it open to fishing here."

"Problems with weekly fishing periods"

"In the last 3-4 years, more people coming to Minto to fish with rod and reel. Coming in with cars to fish at boat landing; tell people to leave the land clean and if they don't want the fish, to bring it to people in the village, not to waste it. Most people we tell this to are cooperative, a few are not. Whitefish seem to be getting smaller."

"About the same every year."

"Pike at Four-cabin area and Minto area are larger than in the past few years."

"Pike looked good. Whitefish numbers are way down."

"More pike. Whitefish and late run dog salmon available this last year."

"Broad whitefish caught in May during short time period. Whitefish numbers way down from past few years."

"Caught 30 sheefish late summer, Large, 36-inch, within two week time period along the Tolovana above the Chatanika."

"Last few years have been able to catch more pike. Found more pike in the Chatanika during fall 1993 than previous several years."

"Don't like permits or paperwork. There should be a bounty for beaver."

"In low water it is easier for pike to eat whitefish."

"It seems like a few more Minto people rod and reel fish for pike right by Minto."

"Many people get pike at Four-cabin in late spring. They travel out on snow-go, then use fish nets in open water."

"Department is doing a fair job; no complaints."

"During fall time migration - after freeze, at the big bend - sometime the water recedes too fast and the fish get stranded and die."

"Plenty of pike out there. You can get whatever you need."

"Catching mostly younger fish (pike), harvested averaged 5 pounds, few 15 pounds."

"Lots of outside fishing pressure at Cache for pike; saw 15 boats in same area."

"Pike fishing site by Minto silting in, more shallow now and smaller pike being caught there."

"There is getting to be more pike than whitefish now."

"Water level very low in early summer (1994)."

"Size of fish depends on where you go fishing."

"Likes eating fresh fish."

"We get it as it comes; and catch what we eat."

"Don't see as many large pike while fishing right by Minto."

"Whitefish doing OK."

"Minto people did less fall fishing through the ice in October and November last year because of potlatches."

"Number of fish still there."

"Fish were fat this fall."

Appendix __

SELECTED SUBSISTENCE AND SPORT FISHING REGULATIONS IN 1994

Selected subsistence fishing regulations:

5 AAC 01.010 METHODS, MEANS, AND GENERAL RESTRICTIONS

(h) Each subsistence fisherman shall plainly and legibly inscribed his first initial, last name, and address on his fishwheel, or on a keg or buoy attached to gill nets and other unattended subsistence fishing gear.

5 AAC 01.220 LAWFUL GEAR AND GEAR SPECIFICATIONS

(f) Unless otherwise specified in this section, fish other than salmon and halibut may be taken only by set gill net, drift gill net, beach seine, fishwheel, long line, fyke net, dip net, jigging gear, spear, or lead.....

(4) a gill net may obstruct not more than one-half the width of any fish stream; a stationary fishing device may obstruct not more than one-half width of any salmon stream.

(h) Pike may not be taken with gill nets in the waters of the Tolovana River drainage from October 15 through April 14.

5 AAC 01.221 IDENTIFICATION OF GEAR

(2) for all gill nets and unattended gear that fished under the ice, the first initial, last name, and address of the operator must be plainly and legibly inscribed on a stake incerted in the ice and attached to the gear.

5 AAC 01.230 SUBSISTENCE FISHING PERMITS

(b) a subsistence fishing permit is required as follows: (7) for the taking of pike in waters of the Tolovana River drainage upstream of its confluence with the Tanana River.

(d) Only one subsistence fishing fishing permit will be issued to each household per year.

Selected sport fishing regulations:

5 AAC 70.022 Bag limits, possession limits, and size limits

(2) All flowing waters not listed below

pike: open season June 1 through March 31, 5 per day, 5 in possession, only 1 over 30 inches in length.

whitefish: open season entire year, 15 per day, 15 in possession, no size limit.

Chatanika River (downstream from a department marker approximately 1 mile upstream from the Elliot Highway bridge)

pike: open season June 1 through October 14, 5 per day, 5 in possession, only 1 over 30 inches in length.

whitefish: May 1 through September 30, 15 per day, 15 in possession, no size limit.

5 AAC 70.030 METHODS, MEANS, AND GENERAL PROVISIONS – FINFISH.

(c) ...Unless prohibited in 5 AAC 70.022, northern pike and whitefish, except sheefish, may be taken by spear or bow and arrow from September 1 through April 30.

Household ID _____