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RC 9

Customary and Traditional Use Worksheet:

Salmon, Chitina Subdistrict, Prince William Sound Management Area

Prepared by

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Alaska Department of Fish and Game
Division of Subsistence
For the March 2010 Anchorage Board of Fisheries meeting

March 2010

Alaska Department of Fish and Game **Division of Subsistence**

Symbols and Abbreviations

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols

alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

all commonly-accepted abbreviations e.g., Mr., Mrs., AM, PM, etc.

all commonly-accepted professional titles e.g., Dr., Ph.D., R.N., etc.

Alaska Administrative Code	AAC
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures):	first three letters (Jan,...,Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$log_{2,}$ etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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CUSTOMARY AND TRADITIONAL USE WORKSHEET: SALMON, CHITINA SUBDISTRICT, PRINCE WILLIAM SOUND MANAGEMENT AREA

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Preface to the March 2010 Revision to the Chitina Subdistrict Salmon Customary and Traditional Use Worksheet

At its March 2010 statewide meeting in Anchorage, the Alaska Board of Fisheries (BOF) will consider Proposal 201, which, if adopted, would establish a positive customary and traditional use finding for the salmon *Oncorhynchus* stocks of the Chitina Subdistrict of the Prince William Sound Management Area, and, consequently, change the classification of the Chitina Subdistrict dip net fishery from a personal use fishery to a subsistence fishery.

The Alaska Department of Fish and Game (ADF&G) Division of Subsistence has prepared this 8 criteria worksheet as background for the BOF deliberations on Proposal 201. It is an updated version of the worksheet prepared for the January 2003 BOF meeting, which was also provided, without modifications, at the December 2005 and December 2008 BOF meetings. For the most part, the content of this worksheet is identical to the 2003 worksheet. The formatting has been updated for readability and to follow the guidelines of the *ADF&G Writer's Guide* (ADF&G 1999).

Content changes include updated permit data on harvests and participation levels in the fisheries of the Chitina and Glennallen subdistricts, and comparative harvest data for other subsistence and personal use salmon fisheries in Alaska as background for the BOF deliberations on Criterion 8 and Criterion 1.

Preface to the 2008 reprinting of the 2003 Chitina Subdistrict Salmon Customary and Traditional Use Worksheet Report

At its December 2008 meeting in Cordova, the Alaska Board of Fisheries will consider Proposal 1, which, if adopted, would establish a positive customary and traditional use finding for the salmon stocks of the Chitina Subdistrict, and, consequently, change the classification of the Chitina Subdistrict dip net fishery from a personal use fishery to a subsistence fishery.

The Division of Subsistence, ADF&G, prepared this eight criteria worksheet for the January/February 2003 meeting of the Alaska Board of Fisheries (which had been postponed from December 2002). At that meeting, the Board adopted Proposal 42, making a negative customary and traditional use finding for the salmon stocks of the Chitina Subdistrict.

At its December 2005 meeting in Valdez, the Board considered Proposal 3, which also would have reclassified the Chitina Subdistrict salmon fishery from a personal use fishery to a subsistence fishery through a positive customary and traditional use finding for the salmon stocks of the subdistrict. At that meeting, the Board determined that it had received no significant new information relevant to the eight criteria as they apply to the Chitina Subdistrict salmon stocks and fishery and, therefore, left in place the negative customary and traditional use finding from the February 2003 meeting.

The Division of Subsistence has collected no new information on the uses of the salmon stocks of the Chitina Subdistrict since the Board's February 2003 negative customary and traditional use finding, and we have no other new information to provide for a customary and traditional use analysis of these stocks. Therefore, we have made available to the Board the 2003 customary and traditional use report in its entirety. It has not been modified in any way. We believe that this 2003 staff report remains an accurate summation of the relevant information pertaining to the eight criteria for the state-managed Chitina Subdistrict fishery.

Preface to the 2005 reprinting of the 2003 Chitina Subdistrict Salmon Customary and Traditional Use Worksheet Report

At its December 2005 meeting in Valdez, the Alaska Board of Fisheries will consider Proposal 3, which, if adopted, would establish a positive customary and traditional use finding for the salmon stocks of the Chitina Subdistrict, and change the classification of the Chitina Subdistrict dip net fishery from a personal use fishery to a subsistence fishery.

The Division of Subsistence, ADF&G, prepared this eight criteria worksheet for the January/February 2003 meeting of the Alaska Board of Fisheries (which had been postponed from December 2002). At that meeting, the Board adopted Proposal 42, making a negative customary and traditional use finding for the salmon stocks of the Chitina Subdistrict.

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CUSTOMARY AND TRADITIONAL USE WORKSHEET:

SALMON: CHITINA SUBDISTRICT,

PRINCE WILLIAM SOUND MANAGEMENT AREA

GENERAL BACKGROUND

Proposal 201, a board-generated proposal that the Alaska Board of Fisheries (BOF) will consider at its March 2010 meeting, would change the negative customary and traditional use (C&T) finding for the salmon *Oncorhynchus* stocks of the Chitina Subdistrict of the Upper Copper River District in the Prince William Sound Management Area to a positive finding. A fish stock "means a species, subspecies, geographic grouping or other category of fish manageable as a unit" (AS 1605.940[16]). The BOF follows the Joint Boards of Fisheries and Game Subsistence Procedures (5 AAC 99.010; AS 16.05.258[a]) to "identify fish stocks. . . or portions of those stocks . . . that are customarily and traditionally taken or used by Alaska residents for subsistence uses." The list of the kinds of information required for this procedure is called "the 8 criteria." The BOF adopts regulations allowing for subsistence uses only of stocks that are found to support customary and traditional uses. Noncommercial, nonrecreational harvest opportunities for stocks with negative C&T findings can be provided through personal use regulations.

Figure 1 depicts the Upper Copper River District and the location of the Glennallen and Chitina subdistricts. Figure 2 provides more detail on the geographic features of the Chitina Subdistrict.

Following is an overview of previous BOF actions on the customary and traditional use status of the salmon stocks of the Chitina Subdistrict. Figure 3 depicts the classification of the Chitina Subdistrict fishery as "subsistence" or "personal use" from prestatehood through 2009.

- During its February 1984 meeting in Anchorage, the BOF determined that the salmon stocks of the Chitina Subdistrict of the Upper Copper River District do not support customary and traditional uses. At the same meeting, the BOF made a positive customary and traditional use determination for the salmon stocks of the Glennallen Subdistrict. Accordingly, the BOF amended its Copper River Subsistence Salmon Fisheries Management Plan to include provisions for subsistence salmon fishing only in the Glennallen Subdistrict. While the Chitina Subdistrict was closed to subsistence fishing, a personal use fishery was authorized. A Division of Subsistence technical paper (Fall and Stratton 1984; cf. Stratton 1982) was prepared to provide background information on these fisheries relevant to the 8 criteria. In 1984 (and through 1989), customary and traditional use determinations also identified qualifying rural communities. Participation in the Glennallen Subdistrict subsistence salmon fishery was limited to residents of the Copper River Basin and certain upper Tanana communities.
- In 1985, following the Alaska Supreme Court decision in the *Madison* case, regulations governing subsistence fishing in the Copper River reverted to those in effect prior to 1984, for 1985 only. This change eliminated the distinction between the personal use and subsistence fisheries (everything operated under subsistence regulations) and removed the limitation on participation in subsistence fisheries to rural residents only.
- In 1986, following the passage of a new state subsistence statute that included a rural preference, the regulations in effect in 1984 were reinstated. Again, there was a personal use fishery open to all Alaska residents in the Chitina Subdistrict, and a subsistence fishery, open only to residents of qualifying communities and areas, in the Glennallen Subdistrict.
- In 1990, following the Alaska Supreme Court decision in the *McDowell* case in late 1989, the subsistence fishery in the Glennallen Subdistrict was again open to all Alaska residents. This

decision had no direct effect on the classification of the fishery in the Chitina Subdistrict as personal use.

- In 1993, following the adoption of an amended state subsistence statute in 1992, the BOF determined that the regulations in place for the Upper Copper River District (including both the Glennallen and Chitina subdistricts) were consistent with the requirements of the new statute. This action affirmed the previous customary and traditional use findings for salmon in all of the Prince William Sound Management Area. ADF&G prepared a customary and traditional use worksheet to assist the BOF in making this consistency determination (ADF&G 1993).
- At the December 1996 meeting in Cordova, the BOF rejected (by a vote of 0–6) Proposal 50 to make a positive customary and traditional use finding for the Chitina Subdistrict fishery in order to reopen the subdistrict to subsistence fishing. The fishery remained a personal use fishery.
- At the December 1999 meeting in Valdez, the BOF adopted (by a vote of 4–2) Proposal 44 to make a positive customary and traditional use finding for the Chitina Subdistrict salmon fishery. The BOF also adopted regulations changing the status of the Chitina Subdistrict dip net fishery from personal use to subsistence.
- At the January 2003 meeting in Cordova, following a determination that new information was available, the BOF adopted (by a vote of 4–3), Proposal 42, which reestablished a negative C&T finding for the salmon stocks of the Chitina Subdistrict. The BOF also adopted regulations changing the status of the Chitina Subdistrict dip net fishery from subsistence back to personal use.
- At the December 2005 meeting in Valdez, the BOF reviewed Proposal 3, which would have established a positive C&T finding for the salmon stocks of the Chitina Subdistrict. The BOF determined (by a vote of 2–5), that no significant new information was available, thus leaving the 2003 negative C&T finding in place.
- At the December 2008 meeting in Cordova, the BOF reviewed Proposal 1, which would have established a positive C&T finding for the salmon stocks of the Chitina Subdistrict. The BOF determined (by a vote of 1–5 [one absent]), that no significant new information was available, thus leaving the 2003 negative C&T finding in place.
- On December 31, 2009, the Alaska Superior Court in Fairbanks, in *Alaska Fish and Wildlife Conservation Fund v. State of Alaska, Board of Fisheries*, ruled that the BOF did not articulate an objective standard when interpreting 5 AAC 99.010(b)(8) in its January 2003 deliberations on Proposal 42. The court directed the BOF to define the term "subsistence way of life," provide the public with an opportunity to provide additional information to supplement the record in light of the definition, and reapply the 8 criteria in consideration of the new definition and supplemental information. The BOF scheduled a reconsideration of the C&T status of the salmon stocks of the Chitina Subdistrict, as Proposal 201, at its March 2010 meeting in Anchorage.

When the Federal Subsistence Board (FSB) began adopting subsistence fishing regulations for federal lands and waters in the 1990s, it initially adopted the state's C&T findings for the Glennallen and Chitina subdistricts. However, in 2002, the FSB adopted a proposal that established a positive C&T finding for the salmon stocks of the Chitina Subdistrict in federal regulations. Although the "8 factors" that the FSB reviews in its C&T determinations resemble the "8 criteria" used by the BOF, the federal process only considers use patterns established by rural Alaska residents. In the case of the Chitina Subdistrict, the FSB noted that residents of the Copper Basin obtained state permits to fish in the subdistrict (about 0.5% of state permits are issued annually to Copper Basin residents—see Table 7, below) and that before being displaced by the rapidly growing dip net fishery, Ahtna Athabascans and other local residents had since the 1910s operated fish wheels, and before that, dip nets in the Chitina Subdistrict. Since 2002, the National Park Service (NPS) has issued federal subsistence salmon permits to qualified local rural

residents to fish with fish wheels, dip nets, or rod and reel in the Chitina and Glennallen subdistricts. Residents of Copper Basin and Upper Tanana communities are eligible for these permits.

SOME BACKGROUND ON PROCEDURES

[The following paragraph and associated appendix tables were included in the original 1999 C&T worksheet to demonstrate that since 1984 there had been no significant changes in the kinds of data the BOF used to evaluate the 8 criteria and make customary and traditional use findings.]

> The criteria used by the BOF to make its customary and traditional use findings in 1984 (these criteria were adopted in 1982) are presented in Appendix Table 1 and the state statute in effect at that time (adopted in 1978) appears in Appendix Table 2. The procedures adopted in 1986 are reported in Appendix Table 3 and the 1986 subsistence statute appears in Appendix Table 4. The 8 criteria themselves which formed the core of the Joint Boards' procedures from 1984 and 1986 are very similar to those applied in 1996 and 1999 and are in effect presently (see below for each present criterion). In each case, the criteria were used to identify customary and traditional uses of "fish resources" (language used in 1982) or "fish stocks" (language used in 1986 statute). Prior to the Alaska Supreme Court decision in *McDowell*, subsistence uses were defined as "customary and traditional uses by rural Alaska residents," and the criteria in effect in 1982 and 1986 were also used to identify the rural communities or areas whose residents would be eligible to participate in the subsistence fishery. Although before 1989, the 8 criteria identified communities or areas whose residents were qualified to participate in particular subsistence fisheries, the 8 criteria have not been applied to qualify or disqualify particular individuals from participation in subsistence fisheries. In other words, the C&T process has not been directed towards identifying specific "subsistence users" based on an individual's or family's particular history or pattern of use. The key factor for eligibility prior to *McDowell* was residency in a qualifying rural community or area whose use pattern met the C&T criteria, and not a person's or family's particular history of use of the stock. (Individual criteria are applied only in a "Tier II situation" but there were no Tier II fisheries prior to *McDowell*.) Since *McDowell*, all Alaska residents are eligible to participate in subsistence fisheries, which are still identified by the 8 criteria, as discussed below. In other words, since *McDowell*, individuals do not need to live in the rural community or area that has established the C&T use pattern for the stock in order to participate.

[The following paragraphs were added in to the worksheet for the 2003 BOF meeting.]

> As just noted, using the 8 criteria, the Board identifies C&T uses of fish stocks by examining a use pattern with a set of criteria (characteristics). It is important to note however that it not possible to describe a use pattern of a fish stock for purposes of a C&T determination without describing how particular groups of people (such as residents of particular communities or members of sociocultural groups) use that stock. Groups of people and communities establish the use pattern through their activities and sustain the traditional use of the stock over time. As the first director of the Division of Subsistence, Thomas Lonner (ADF&G Division of Subsistence 1980:4), advised the Joint Board in 1980 when the state subsistence law was first being implemented:
>
>> It is suggested that customary and traditional use, uses, and users are inseparable from one another; that is, if one attempts to describe the use or the uses (what, where, how, and how much), a significant part of the description includes an analysis of who is using and for what purposes.

> Again, this process does not entail determining who qualifies for participation in the subsistence fishery (determining who the "C&T users" are) but rather discussing the characteristics of particular groups of people and /or communities to determine whether the use pattern of the stock meets the C&T criteria.

[These paragraphs were added to the updated worksheet for the 2003 BOF meeting.]

As added background on the 8 criteria and board procedures for making customary and traditional use determinations, it should be noted that the Board of Fisheries first developed the criteria (originally 10) in 1980 to identify customary and traditional uses of Cook Inlet salmon. For the first time, the 1978 state subsistence statute defined subsistence uses as "customary and traditional uses" and the board needed a procedure for distinguishing between the use patterns associated with particular fish stocks to determine which would be classified as subsistence fisheries. In assisting the Board in developing its procedures Lonner (ADF&G Division of Subsistence 1980:3; see also Lonner 1980) wrote:

> The Department encourages the Boards to recognize that while subsistence is characterized as the direct uses or barter of Alaska wild resources, customary and traditional uses actually vary greatly area-by-area, species-by-species, and over time. Subsistence uses may be analyzed along a continuum whose extreme ends, based on current examples, are displayed below:

Long	TIME DEPTH	Short
Rural	COMMUNITY BASE	Urban
Kinship	SOCIAL ROLE	Individual/family
Community and regional economic and regional self-sufficiency	ECONOMIC ROLE	Personal use
Food, clothing, fuel, tools, shelter, handicraft, barter, etc.	ACTUAL USES	Primarily food
Many resources (fish, game, fowl, vegetation, etc.)	RANGE OF USES	Few species
More stable patterns	PATTERN OF USES	Less stable, opportunistic (area, time, species, gear, efficiency, productivity, use level, sharing/bartering, division of labor, effort level, etc.)
Due to changing economic and resource conditions, and local population growth	VARIATION IN USE LEVEL AND PATTERN	Due to high urban in-migration
Primarily extended kinship, community, intergenerational, and cultural	SOCIAL AND PSYCHOLOGICAL	Primarily individual and immediate family

ORGANIZATION OF THIS WORKSHEET AND SOURCES

This worksheet is an updated version of the ones prepared for the BOF in December 1999 and 2003, and provided to the BOF unchanged in 2005 and 2008. Under each criterion, the worksheet summarizes, in table format, the information provided to the BOF by the Alaska Department of Fish and Game (ADF&G) when the original C&T findings for the Chitina and Glennallen subdistricts were made in 1984. ADF&G provided these same summaries to the BOF in written form at the 1996 BOF meeting (Simeone and Fall 1996:40–42) and summarized them orally at that meeting as well. It should be noted that the 1984 finding was organized around a contrast between the Glennallen Subdistrict fish wheel fishery and the Chitina Subdistrict dip net fishery, in accordance with the observations, as summarized in the previous paragraphs, that characteristics of use patterns vary along a continuum.

Therefore, in this worksheet, updated information is provided when available to evaluate the strength and validity of differences between the 2 subdistricts at present. This is not to suggest, however, that the patterns of use in the Glennallen Subdistrict are the standards to be met for a positive C&T finding for the salmon stocks of the Chitina Subdistrict, or any other fish stocks. This worksheet also provides more detailed information on use patterns in the Chitina Subdistrict (and what would become the Glennallen subdistrict beginning in 1977) based upon key respondent interviews with long term dip net fishers and systematic interviews with current participants in the fishery.

Information that is new to this worksheet compared to the one prepared in 1999 fits into 3 categories:

1. Updated harvest data and participation data, based on state and federal permits, for 2000 through 2008 (and 2009, if data are available).

2. Results of a study (Simeone and Kari 2002; Simeone and Fall 2003) conducted by the ADF&G Division of Subsistence, the Copper River Native Association, the Cheesh′na Tribal Council (Chistochina), and the Chitina Tribal Council in 2000, and funded by the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM), which was designed to update information related to the 8 criteria for the fisheries of the Glennallen and Chitina subdistricts. For that study, 509 face-to-face surveys were conducted: 382 with fishers who were not residents of the Copper Basin ("nonlocal residents") and 127 with local residents who lived in the Copper Basin at the time of the study. Of the 509 people who were interviewed, 313 interviewees (308 nonlocal and 5 local) were participants in the Chitina Subdistrict subsistence fishery (recall that from 2000 to 2002, the Chitina dip net fishery was classified as a subsistence fishery under state regulations), and 196 (122 local and 74 nonlocal) were participants in the Glennallen Subdistrict subsistence fishery. A larger sample of dipnetters was targeted in order to achieve a representative sample of participants in the fishery. Nonlocal survey respondents were chosen opportunistically while they were on the fishing grounds. Local residents were selected because of their known participation in the fishery. The sampling strategy for local residents was chosen to develop results that could be compared with the conclusions of earlier research summarized in Stratton (1982), which focused on local subsistence salmon fishing patterns. Thus, local Copper Basin residents were overrepresented in the survey findings for the Glennallen Subdistrict, and so these findings may not be representative of the full range of Glennallen Subdistrict fishers, many of whom live outside the Copper Basin. Of the local residents interviewed, 109 were Ahtna from the communities of Chistochina, Gakona, Gulkana, Tazlina, and Copper Center. The survey instrument consisted of 35 questions; most required forced answer responses (see Appendix A in Simeone and Fall 2003). The questions were designed to elicit information about harvest patterns, including months fished, types of gear used, preparation of the catch, sharing, and transmission of knowledge. Also examined were employment characteristics, and opinions about the harvest and changes in the quality of salmon. Additionally, William Simeone of the ADF&G Division of Subsistence conducted 6 key respondent interviews with long term participants in the Chitina Subdistrict dip net fishery. Mr. Stan Bloom of the Chitina Dipnetters' Association helped set up

and conduct these interviews. This new information is presented, for the most part, at the end of the section on each criterion to facilitate comparisons with previously available data. Results of the survey and key respondent interviews are also discussed in the final report for the project (Simeone and Fall 2003). Another goal of the study was to the document Ahtna traditional knowledge about fish and fishing. Findings of that portion of the study are reported in Simeone and Kari 2002. Appendix B is a copy of a summary of the survey findings along with additional information that was provided to the BOF at its February 2003 meeting, as well as at its subsequent meetings in December 2005 and December 2008.

3. Added to this 2010 worksheet are comparative data on subsistence salmon fisheries in Alaska. This information is intended to assist the BOF in evaluating "reliance" on the salmon stocks under review and on "a subsistence way of life," as required by Criterion 8, and as directed by the court in the *Alaska Fish and Wildlife Conservation Fund v. State of Alaska, Board of Fisheries* case. These data may also assist the BOF when it examines Criterion 1.

Table 1 provides an overview of key state regulatory changes and other actions relating to the subsistence and personal use salmon fisheries of the upper Copper River. An emphasis is placed on actions relating to the fishery in the present Chitina Subdistrict prior to the 1984 C&T finding, as well as subsequent actions that affected the classification of the fishery as subsistence or personal use under state regulations.

Appendix C contains extracts from reports and other written materials that provide background on regulatory and management decisions relating to these fisheries, primarily from the 1950s to the early 1980s. A goal in Appendix C is to provide some "eyewitness" accounts of developments in the fisheries and other details.

POPULATION OF COPPER BASIN AND ADJACENT ROAD-CONNECTED AREAS

A major factor that has shaped patterns of use of upper Copper River salmon is the general accessibility of the Copper River Basin by road to Alaska's population centers at Fairbanks, the Matanuska–Susitna Borough, and Anchorage. Table 2 reports changes in the population of the Copper River Basin and various areas connected by road to the Copper Basin. Figure 4 illustrates the population growth of these areas in relation to population changes in Copper Basin communities themselves. Since 1980, the population of the Copper Basin has been relatively stable, while the population of the road-connected areas has grown at a faster rate than the state overall (Figure 5).

REGULATIONS

For the 2009–2010 regulatory year (5 AAC 77.5910), Alaskans with a valid sport fishing license could obtain a state personal use permit to fish with a dip net in the Chitina Subdistrict. Permits are limited to 1 per household, and holders of these permits may not also obtain a subsistence fishing permit for the Glennallen Subdistrict. Salmon may be taken during open periods between June 1 through September 30. The annual limit is 15 salmon for a household of 1 person and 30 salmon for households of 2 or more persons. Of the total annual limit, only 1 may be a Chinook salmon *O. tshawytscha*. If ADF&G determines that a weekly surplus of more than 50,000 sockeye salmon *O. nerka* will be present in the Chitina Subdistrict, permit holders who have already met their annual sockeye salmon limits may obtain supplement permits to harvest 10 additional sockeye salmon. The BOF has established a maximum harvest level for the Chitina Subdistrict personal use salmon fishery of 100,000 to 150,000 salmon, not including any salmon in excess of the inriver goal or salmon taken after August 31 (5 AAC 77.591(f)).

Alaska residents who have not chosen to obtain a Chitina Subdistrict personal use permit may obtain a state subsistence fishing permit for the Glennallen Subdistrict to fish with either a dip net or fish wheel. Only 1 type of gear may be specified on the permit. Permits are limited to 1 per household. Seasonal limits are 30 salmon, with no more than 5 Chinook salmon if taken with a dip net, for households of 1

person. Households of 2 persons may harvest 60 salmon, with no more than 5 Chinook salmon harvested by dip net. Seasonal limits increase by 10 salmon for each additional household member, except the limit of 5 Chinook salmon harvested with a dip net does not increase with household size. Upon request, households of 1 person may obtain permits for 200 salmon and households of 2 or more persons may obtain permits for 500 salmon. These permits also limit dip net harvests to 5 Chinook salmon. Fishing is open from June 1 through September 30 with no closed periods within that time period. The amount reasonably necessary for subsistence (ANS) established by the BOF for this fishery is 61,000 to 82,500 salmon, with this total apportioned to 3 subsections within the district (5 AAC 01.616(b)(1).

Table 1.–Some key changes to state regulations and other actions, upper Copper River subsistence and personal use salmon fisheries.

Year	Change or action
1960	Subsistence permit required.
1964	All tributaries of the Copper River, and the Copper River above Slana, closed to subsistence fishing.
Mid 1960s	Seasonal limits based on income and household size adopted. For incomes under $4,000 (later increased to $5,000, and still later to $6,000), allocations were 200 for an individual and 500 for a family. For incomes over the limit, allocations were 20 for an individual and 40 for a family.
1968	Upper river fishery limited to the main Copper River from the confluence of the Slana River downstream to the cable crossing one and a quarter miles below O'Brien Creek.
1975	The lower limit of the subsistence fishery extended to Haley Creek below Wood Canyon.
1977	BOF created the Chitina and Glennallen subsistence subdistricts. In the Glennallen Subdistrict, fish wheels could be operated 7 days per week. In the Chitina Subdistrict, fish wheels could only be operated from 8 p.m. Tuesday to 8 p.m. Thursday and from 8 p.m. Friday to 8 p.m. Sunday. Dip nets could be used 7 days per week.
1978	The first state subsistence law adopted, establishing subsistence as "customary and traditional uses."
1979	The BOF eliminates fish wheels from the Chitina Subdistrict for biological reasons. No dip nets allowed in Glennallen Subdistrict.
1980	"Classes" of subsistence permits created in the Copper River Management Plan, based on age, income, residency, household size, wage employment, and history of participation in the fishery.
1981	Fish wheel seasonal limits increased to 30 salmon for 1 person, 60 for 2 persons, and 10 for each additional household member; households with incomes under $12,000 eligible for 500 salmon seasonal limit.
1984	Copper River Salmon Management Plan revised, as follows:
	Personal use fishery separated from subsistence fishery;
	Positive "customary and traditional use" (C&T) determination for the Glennallen Subdistrict; negative finding for the Chitina Subdistrict;
	Subsistence permit eligibility limited to Copper Basin and upper Tanana residents;
	Low income requirement dropped as part of qualification for higher seasonal limit;
	Dip nets and fish wheels allowed in Glennallen Subdistrict; and
	25,000 salmon set aside for the subsistence fishery in the upriver goal (this has since been increased several times).
1985	*Madison* decision: all Alaskans eligible to participate in subsistence fishery.
1986	New state subsistence statute; regulations adopted for 1984 back in place.
1990	Nonlocal residents again eligible for subsistence permits in Glennallen Subdistrict following *McDowell* decision of December 1989.
1993	BOF found Upper Copper River subsistence regulations consistent with 1992 subsistence statute; affirmed positive C&T finding for Glennallen Subdistrict; 35,000 allocated to subsistence fishery.
1996	BOF affirmed negative C&T finding for Chitina Subdistrict salmon.

-continued-

Table 1. Page 2 of 2.

Year	Change or action
1999	BOF made a positive C&T determination for Chitina Subdistrict salmon; the fishery again became a subsistence fishery.
2003	BOF made a negative C&T determination for Chitina Subdistrict salmon; the fishery again became a personal use fishery.
2005	BOF determined that no significant new information was available to warrant review of C&T status of Chitina Subdistrict salmon stocks.
2008	BOF determined that no significant new information was available to warrant review of C&T status of Chitina Subdistrict salmon stocks.
2009	BOF directed by the Fairbanks Superior Court in the *Alaska Fish and Wildlife Conservation Fund v State* case to adopt a definition of "subsistence way of life" and reconsider the C&T determination for Chitina Subdistrict salmon stocks in light of the new definition and any new relevant information.

Table 2.–Population of the Copper River Basin, adjacent (road-connected) areas, and Alaska.

Year	Copper River census subarea[1]	Anchorage Municipality	Matanuska–Susitna Borough[2]	Fairbanks–North Star Borough[3]	Southeast Fairbanks census area	Valdez	Alaska
1818	567						
1839	300						
1880	250						33,426
1890	ND						32,052
1900	ND					315	63,592
1910	553		677	7,675		810	64,356
1920	511	1,856	158	2,182		466	55,036
1930	729	2,277	848	3,446		442	59,278
1940	742	3,495	2,354	5,692		529	72,524
1950	808	11,254	3,534	19,409		554	128,643
1960	2,193	54,076	2,320	15,736	605	555	226,167
1970	1,852	124,542	6,509	45,864	4,179	1,005	302,583
1980	2,721	174,431	17,816	53,983	5,676	3,079	401,851
1990	2,763	226,338	39,683	77,720	5,913	4,068	550,043
2000	3,084	260,283	59,322	82,840	6,174	4,036	626,932
2009	3,219	290,588	84,314	93,779	7,243	3,475	692,314

Sources Rollins 1978; ADOL 1991; ADLWD 2010.

1. "Mednovtze" in 1818 and 1830; "Ahtna villages" in 1880; no Copper River villages listed for 1890 and 1900; Copper Center District, 1910, 1920: Chitina District 1930, 1940, 1950.
2. Cook Inlet District (Knik and Susitna) in 1910; Knik, Susitna, and Talkeetna in 1920; Wasilla and Talkeetna districts, 1930; Palmer, Wasilla, and Talkeetna districts 1940 and 1950.
3. Fairbanks District, 1910 through 1950.

CRITERION 1

Criterion 1. A long-term consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

HISTORICAL BACKGROUND

For centuries the present-day Chitina Subdistrict was used for subsistence salmon fishing by the Ahtna Athabascan villages of the lower Ahtna regional group. Table 3 lists some of the names of Ahtna villages in the general Chitina area. Figure 6 is a map that depicts village locations and other key Ahtna place names. Chitina itself was established during the construction of the Copper River–Northwestern Railroad between 1909 and 1911. The name "Chitina" derives from *Tsedi Na'* or "copper river," the Ahtna name for the Chitina River. The community drew Ahtna from surrounding villages. When the railroad closed in 1939, most non-Native people left Chitina. By the mid 1950s, most Native people had also left, although the village remained "home" to many who returned to the area seasonally for subsistence activities and maintained seasonal dwellings there (Reckord 1983a:85–87; 1983b:101–102).

Table 3.–Historical Ahtna villages near Chitina.

Village	Location
Tats'abaelghi'aaden	East bank of Copper River, south of Canyon Creek.
Tak'a's Naghił'aaden	Tenas Creek.
Taghaelden	Taral.
Hwt'aa Cae'e	Fox Creek; "Dakah De′ nin's Village."
Tsenghaax	Mile 131.5 of Copper River–Northwest Railroad.
Nahwt'en Cae'e	Mouth of Fivemile Creek.
Tay'sdlaexden	Horse Creek.
Sdates	South of Lower Tonsina.

Source Reckord 1983b:95–117.

In the general Chitina area, the Ahtna used dip nets (Ahtna *ciisi),* operated from dip netting platforms *(nic'a'iltsiini*) to harvest salmon (de Laguna and McClellan 1981; Kari 1990; see also Simeone and Fall 1996:12) (plates 1–3). As summarized by de Laguna and McClellan (1981:647):

> In the silty waters of the Copper, Chitina, and other glacial streams, people used dip nets of willow withes. At a few places, there were rocky points from which one could easily dip into the current, but usually the men had to make short fences to deflect the salmon to the ends of dipping platforms. These platforms, poles lashed together and supported on staging that could be moved to suit changing water conditions, were "owned" by the headman of large houses who kept all the fish caught by their households. When they had enough fish, others could use the platform. Both sexes dipped fish.

In the early 1910s, fish wheels (Ahtna *ciisi nekeghalts'eɬi*) were introduced into the Copper River subsistence fishery (plates 4 and 5) and very rapidly replaced dip nets[1]; however, knowledge of how and where to use dip nets was retained by Ahtna elders into the late 20th and early 21st centuries (Simeone and Fall 1996:13,16; de Laguna and McClellan 1981:647; for a full discussion of Ahtna fishing technology see Simeone and Kari 2002:82–101). For example, in 1954, the anthropologist Frederica de Laguna photographed a dip net made by Tenas Charley at Copper Center. It was made of willow twined with

[1] The speed at which fish wheels replaced dip nets is reflected in the fact that in 1921 Shirley A. Baker (Baker 1921:13–14), who was assistant agent in the Bureau of Fisheries and was assigned to investigate the salmon escapement on the upper Copper River, does not mention the use of dip nets at all. Baker interviewed as many Native and non-Native fishers as he could, and also noted the location of fish wheels and tabulated harvests.

spruce root. The rim diameter was about 45 cm. It appears virtually identical to the dip net in Plate 1 (de Laguna and McClellan 1981:647).[2]

Appendix C provides detail on the available documentation of use of fish wheels in the Chitina area. This appendix also summarizes information from ADF&G reports documenting the development of the dip net fishery at Chitina, as well as other observations about the Copper River fisheries. In 1921, about 76 Ahtna were using fish wheels in the general Chitina area (Baker 1921). By 1955, two Ahtna had fish wheels at Chitina and another was operated at Fivemile[3] (also called the Chitina Airport site in Stratton [1982]), an area within the present Glennallen Subdistrict and still important today).

Figure 7 shows the locations of fish wheels in the general Chitina area as documented in the available National Marine Fisheries Service (NMFS) and ADF&G records for 1958, 1967, 1968, and 1974. For 1958, there are 4 fish wheels documented for the present day Chitina Subdistrict: 2 near O'Brien Creek and 2 at Chitina itself, plus 2 more at Fivemile. In 1967, 1968, and 1974, one fish wheel operated at O'Brien Creek, and 1 or 2 at Chitina. More fish wheels were used at Fivemile, including 4 in 1967 and 3 in 1974. As best as can be determined, all of the fish wheels documented prior to 1974 were owned by Copper Basin residents.

With the construction of the Richardson Highway in the early 1900s (open to automobile traffic by 1927) and the Glenn Highway in the 1940s, the Copper Basin became accessible to Alaska's growing population centers at Fairbanks, Anchorage, and the Matanuska Valley.

According to oral tradition, at least one Fairbanks resident fished at Chitina with a dip net as early as 1938. Two residents of Fairbanks interviewed for the 2000 project said that they began dipnetting at Chitina in the late 1940s and 2 others said they began fishing in the 1950s and 1960s (representing the approximately 1% of dipnetters with more than 40 years of participation in the fishery—see below, Figure 34). All said they made regular trips to Chitina after their initial visit. One of the men interviewed said, "Well, the first time I went down there was in 1949. I was working for Northern Consolidated Airlines and I got off work and my wife and I headed down there and got down there about midnight."

According to these oral traditions, when they first arrived at Chitina, the Fairbanks dipnetters fished at Salmon Point (see Figure 6), a traditional Ahtna fishing station located on the Copper River adjacent to the town of Chitina. According to testimony from two long time dipnetters, they learned about this site from Paddy King, a local Alaska Native man.[4] Then in the 1950s a road was opened, providing access to fishing spots on the Copper River between the mouths of Fox and O'Brien creeks. A favorite spot was an eddy created by a large rock located just above O'Brien Creek. In the late 1960s or early 1970s, the road into O'Brien Creek was improved and a bridge was put across the creek so that people could drive down to the creek, but because of logistical problems people seldom went further downriver. According to one long time dipnetter "in the sixties if you wanted to go any further than O'Brien Creek you had to pack, take a pack board and go down that trail." He went on to say that even if you caught 30 or 40 fish near the road "you had a major operation just packing those 30 fish….Once the fish were caught they were packed in snow and then cleaned at O'Brien Creek before they were taken home to Fairbanks."

With the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971, the situation in Chitina changed. Under ANCSA the Chitina Village Corporation claimed land between the mouths of Fox and

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[2] [Note to the 2010 edition: The 1999 C&T worksheet stated that some Ahtna use of dip nets persisted into the 1950s, but upon review of available information we find no evidence of this use.]

[3] Wallace, R. L. 1955. Report of Richard Lee Wallace, NOAA enforcement agent, regarding fish wheel harvests. Manuscript on file at the Alaska Department of Fish and Game Glennallen office. Hereinafter cited as Wallace 1955.

[4] Paddy King figures prominently in the narratives about the beginning of the dipnet fishery, but not much is actually known about him. He was born in 1905 and his family was apparently upper Tanana Athabascan from the Nabesna area (not Ahtna). When he was quite young he moved with his parents to Chitina where he lived most of his life (Saleeby 2000:88). In the late 1940s, according to the oral accounts of 2 long-term dipnetters, Paddy King operated a fish wheel at Salmon Point.

O'Brien creeks, land that was used by dipnetters. In 1985, the corporation received conveyance to that land, blocked the road to O'Brien Creek, and began to charge an access fee. Once Chitina Corporation began charging a fee, fishers started to gain access to the fishery by using private and chartered boats launched near the Chitina–McCarthy Bridge (Gray 1990:7). At this point the Chitina Dipnetters' Association became active (Gray 1990:6). According to the key respondents, once trespass on Native owned lands became an issue some people began dipnetting from boats. One man said that "the first time I noticed boats was after the trespass thing [started], people started actually using boats….And now, there's probably as many people fishing from boats as fish along the sides [of the river]."

The first official mention of the developing dip net fishery at Chitina appears in a NMFS report for 1958 (NMFS 1958) which notes dipnetting by "tourists," as well as local residents of Chitina, who harvested about 1,000 salmon. In the early years of the development of the Chitina fishery, dipnetting appears to have been almost the exclusive choice of nonlocal fishers. (As discussed below, the dip net remains the gear of choice of the large majority of people who travel to the Copper River to participate in the subsistence fisheries.) However, over time, and especially with the improvements to the Edgerton Highway and development of portable fish wheels at around 1970, some nonlocal people moved into the fish wheel fishery as well. The bridge over the Copper River at Chitina was completed in 1971.

Writing about the mid 1970s, Record (1983a:87) noted that Chitina Alaska Native residents set up fish wheels at several locations, mostly on the west side of the river:

1. "A fish camp located below the airport is used by the local residents and Glennallen and Anchorage people who belong to the Chitina Corporation but do not live in Chitina."
2. "Another site is located about 2 miles south of the Copper River bridge and is also on the west bank. This site is used by the elderly residents who live in the small cluster of cabins south of town."
3. "A third site is located on the east bank of the Copper River on either side of the Copper River bridge, but this site is not popular among the Chitina Natives."

Regarding non-Natives living at Chitina, Record (1983a: 238–239) observed that:

> The main fishing sites are located on the Copper River on both sides of the Copper River bridge. On the east bank, fish wheels and dip nets are placed north of the bridge on the bar at the mouth of the river. On the west bank, fish wheels are also placed in the river immediately south of the bridge, but most of the dip netting is also done on the west bank south of the bridge. People with riverboats travel downstream to places where fish wheels have been located. Reportedly fish wheels are sometimes placed as far south as Taral.

As shown in Figure 8, the number of fish wheels in the general Chitina area grew in 1975 to 11, with most within the accessible area near the bridge. Five were above the bridge. None were at O'Brien Creek. By 1977 and 1978 (Figure 9, Figure. 10), a new grouping at O'Brien Creek had appeared and the cluster of fish wheels at the bridge grew. Almost all of these fish wheels were operated by non-Basin residents (Kenneth Roberson, ADF&G Division of Commercial Fisheries 1999 personal communication to William Simeone, ADF&G Division of Subsistence). The Chitina Airport site remained the primary location of local Chitina residents' fish wheels.

According to testimony provided by an Ahtna resident of Chitina regarding proposed easements at O'Brien Creek (reported in Attachment A in Gray 1990), there were Alaska Native fish wheels and fish racks in the O'Brien Creek area until around the mid 1970s when non-Native people from outside the area arrived at the site and "crowded out" the Ahtna who were fishing and processing salmon there.

Native elders from Chitina interviewed in 1999 said that Ahtna residing in Chitina in the 1950s had fish wheels located just below Salmon Point (this site was also a dip net station before the introduction of the fish wheel) and further downriver, at the mouth of Fox Creek and just above the mouth of O'Brien Creek.

In the 1950s the situation changed for several reasons. First, Alaska Native people from Chitina began to move away to find jobs; second, people from Fairbanks began fishing at Chitina, mostly at O'Brien Creek; and third, some Ahtna began having problems with people stealing fish out of their fish wheels, and so moved their fish camps upriver to Fivemile near the present Chitina Airport. At the same time, other Ahtna maintained their fish camps in the vicinity of O'Brien Creek and the mouth of the Chitina River. One Ahtna family from the upper Copper River began fishing at O'Brien Creek in the 1970s after the BOF prohibited subsistence fishing at their traditional site at Tanada Creek. However, by 1978 all Ahtna had left the area around O'Brien Creek because, in the opinion of one elder, they were "crowded out" by dipnetters. (Information from interviews with Millie Buck, Maggie Eskilida, and Al Taylor, October 1999, by William Simeone, ADF&G Division of Subsistence.) In a meeting with members of the BOF held on November 7, 1996, in Glennallen, Ahtna elder Henry Bell made a similar assertion. According the Mr. Bell, the land at O'Brien Creek and the mouth of the Chitina River had belonged to Ahtna people but non-Natives "took the land over" and he was forced out of a place to fish at Chitina. Therefore he had to ask permission from a relative to put in a fish wheel at Copper Center.

In 1977, by BOF action, the Upper Copper River District was divided into 2 subdistricts, creating the Chitina and Glennallen subdistricts. The purpose was to provide ADF&G biologists with more flexibility to manage the fisheries. At the time, the BOF acknowledged differences in the use patterns between the fishery as it was developing at Chitina and the remainder of the Copper River. As reported by ADF&G, the latter area was used primarily by local families with long ties to the fishery and who used fish wheels. The Chitina fishery was characterized by ADF&G as "personal use" and "nontraditional" (Roberson 1977; Kenneth Roberson, ADF&G Division of Commercial Fisheries 1999 personal communication to William Simeone, ADF&G Division of Subsistence).

In 1979, state regulations separated subsistence dip nets and fish wheels by subdistrict. The Chitina Subdistrict became dip net only and the Glennallen Subdistrict became fish wheel only. At the time, this change reflected the geographic distribution of the gear types, in that most (but not all) fish wheels were used above (or near) the Copper River bridge at Chitina. There was also concern on the part of ADF&G biologists with the potential expansion of fish wheel use into the nontraditional area of Wood Canyon, where their harvest efficiency, based on ADF&G experience in operating fish wheels there, would be very high (Kenneth Roberson, ADF&G Division of Commercial Fisheries 1999 personal communication to William Simeone, ADF&G Division of Subsistence).

The Copper River Salmon Management Plan was adopted by the BOF in 1980 to provide further flexibility in the allocation of salmon among user groups. Four "classes" of subsistence permits were created, based on age, income, place of residence, household size, wage employment, and history of participation in the subsistence fishery.

Displacement of local fishers from fishing sites in the Cooper River by nonlocal fishers, which appears to have begun in the 1960s and 1970s, continued into the early 1980s. As just noted, beginning in 1979, fish wheels by regulation were restricted to north of the bridge. In 1982, about 32 wheels (31% of all wheels used that year) and 191 permittees (34%) fished just north of the bridge. Their owners were from 23 different communities; 70% were non-Basin residents. All the wheels were located within a three-quarter mile stretch of river. Conditions were crowded: "Some wheels were as close as five yards apart. The density gave rise to some complaints and various kinds of accommodations among the fishermen. For example, some local residents waited to run their own wheels until others had finished fishing and had pulled their own wheels" (Stratton 1982:30). In other cases, local households found new locations:

> Chitina is a site highly favored by non-Basin residents [for operating fish wheels] because of easy access from the road; vehicles are able to travel right to the riverbank. This expedites transporting and placing the fish wheel, as well as transporting the catch. It is possible that the visibility and general knowledge about the Chitina site also have contributed to the popularity of the area for non-Basin fish wheel operators. …. As a

> result of the growing use of this area, fish wheel sites with access and appropriate wind conditions for drying fish are at a premium in the Chitina area. Some local residents have given up vying for a spot at the bridge and are testing other locations. One such family now puts in a wheel near the Chitina airport, on a gravel island which is reached by crossing over two smaller channels of the river with small driftwood or dead wood bridges that are built each year. In spite of the access difficulties, the users prefer the site for its privacy and usually good conditions for drying fish in June. (Stratton 1982:31–32)

As noted in the background section, in 1984, the BOF changed the status of the Chitina Subdistrict fishery from subsistence to personal use. At the same time, the fishery in the Glennallen Subdistrict maintained its classification as a subsistence fishery. Both fish wheels and dip nets were allowed in the subsistence fishery, but in 1984, only dip nets could be used in the personal use fishery. From 1986 through 1989, the boundary of the personal use fishery was adjusted north of the bridge and was opened to personal use fish wheels. The boundary was moved back to the bridge in 1990 when all Alaska residents could again participate in the subsistence fish wheel fishery in the Glennallen Subdistrict.

Table 4 is a summary of the information relating to Criterion 1 that was provided to the BOF at its February 1984 meeting, during which the first customary and traditional use findings for the Copper River salmon stocks were developed, and as were summarized for the 1996 BOF meeting. Data pertaining to 1982 were used because they were the most complete recent data set at the time of the BOF meeting and because they had been analyzed by the ADF&G Division of Subsistence and reported in Stratton 1982.

Table 4.–Information pertaining to Criterion 1 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
In the early 1980s, most participants in the fish wheel fishery of the Glennallen Subdistrict were residents of the Copper River basin (52% in 1983). The indigenous Ahtna Athabascans had used the salmon of the Copper River for subsistence for centuries, adopting the fish wheel in the second decade of the 20th century. In 1982, over 50% of a sample of Basin-resident fish wheel users had used fish wheels for more than 20 years. As many as 75% of the households of communities near the Copper River regularly engaged in fish wheel use (Fall and Stratton 1984).	The vast majority of participants in the dip net fishery at Chitina in the early 1980s (and back to the late 1950s) were non-Copper River Basin residents. In 1982, 98% of dip net permittees were non-Basin residents, with most traveling from Fairbanks (35%), Anchorage (26%), military bases (13%), and the Mat–Su area (6%). A survey conducted in 1982 found that 41% were participating in the fishery for the first time; 72% had participated for 5 years or less; and 2% had participated more than 20 years (Stratton 1982:55). Many of those interviewed indicated that since they first dipnetted at Chitina, there had been intervening years when they had not participated due to employment, being out of state, involvement in another salmon fishery, or having enough salmon from the previous year (Stratton 1982:54).

PERMIT DATA: LEVELS OF PARTICIPATION AND HARVEST

Tables 5 through 8 and figures 11 through 31 illustrate participation rates and estimated harvests in the state-managed Chitina Subdistrict dip net fishery and the Glennallen Subdistrict subsistence salmon fishery. Recent trends can be compared with the pattern described for 1982 and with information evaluated by the BOF during previous C&T deliberations.[5] Data appearing in tables 5 through 8 and figures 11 through 31 may differ slightly from data summaries prepared by the Division of Sport Fish and

[5] [Note to the 2010 edition: Information about harvests in the federal subsistence salmon fishery in the Chitina Subdistrict is included in the figures, and is presented separately below.]

ADF&G, primarily because analyses prepared by the Division of Subsistence for the Alaska Subsistence Fisheries Database develop harvest estimates at the community level, while the Division of Sport Fish estimates are based on a single analysis for the total set of permit holders regardless of residence. The differences in harvest estimates for the fishery overall resulting from these 2 analysis methods are minor and do not affect the identification of patterns in the fishery.

As shown in Figure 11 (see also Table 5), the number of permits issued for the Chitina Subdistrict grew steadily in the 1960s, and more rapidly as road access to the subdistrict improved. The number of permits issued for dipnetting dropped from the record levels of the early 1980s during the mid and late 1980s, but had matched these levels again by the early 1990s. Record numbers of personal use dip net permits were issued in 1998 and 1999, at about 10,000. In short, trends of growth in the dip net fishery, first noted in the 1960s and intensifying in the early 1980s, continued into the late 1990s, and for much the same reasons: accessibility, communications among fishery participants about run strength, and the opportunity to harvest a high quality product for home use. Since 2001, the number of permits issued for the Chitina Subdistrict has dropped from record levels and appeared to have leveled off; the recent (2004 through 2008) 5-year average is 8,260 permits issued per year.

Trends in harvest levels for the Chitina Subdistrict reflect those of the number of permits issued (Figure 12; see also Table 5). Record harvests above 130,000 salmon were achieved in 7 years between 1997 and 2007. The recent 10-year average harvest is 120,133 salmon and the recent 5-year average is 121,424 salmon. From 1999 through 2008, Chitina Subdistrict permit holders harvested 14.6 salmon. From 2004 through 2008, the average harvest per permit holder was 14.7 salmon (Figure 13, Table 5).

As shown in Figure 14 (see also Table 6), the number of permits issued for subsistence fishing in the Glennallen Subdistrict also grew steadily until the early 1980s. Participation levels were lower from 1986 to 1990 compared to the early 1980s, largely due to the restriction on issuing permits to non-Basin residents. Since the fishery has been reopened to all Alaskans, growth in participation rates and harvest levels has resumed. Some of the growth in number of permits issued is a result of subsistence dip net permits being issued to non-Basin residents (see below).

Subsistence salmon harvests in the Glennallen Subdistrict were relatively steady, between 30,000 and 4,000 salmon, in the 1980s, reflecting limits on participation in the fishery to local residents (Figure 15). Since the early 1990s, the harvest has steadily increased, with the recent 10-year average at 78,881 salmon and the recent 5-year average at 83,713 salmon. Average harvests per permit in the Glennallen Subdistrict fishery have been relatively steady since the 1960s. The long term average is about 60 salmon per permit, and the recent 10-year average is 62 salmon per permit (Figure 16, Table 6).

Figures 17, 18, and 19 compare trends in the Chitina and Glennallen subdistricts. Most participants in upper Copper River fisheries continue to choose to fish in the Chitina Subdistrict with dip nets (Figure 17). Also, estimated salmon harvests in the Chitina Subdistrict are greater than those of the Glennallen Subdistrict (Figure 18). However, average harvests per permit are substantially higher in the Glennallen Subdistrict compared to the Chitina Subdistrict (Figure 19).

The patterns of choice of gear and fishing location reflecting area of residence noted in the early 1980s are still evident in the upper Copper River fisheries (Figure 20, Figure 21, Figure 22, Table 7). Over 99% of the participants in the Chitina Subdistrict dip net fishery from 1988 through 2009 have been nonlocal (non-Copper Basin) residents, compared to about 98% in 1982. In 1982, 48% of the Chitina Subdistrict dipnetters were from Fairbanks, as were 43% from 1988 to 2001, and 43% from 1988 through 2009. Anchorage residents made up 35% of the dipnetters in 1982, 35% 1988 through 2001, and 33% from 1988 through 2009. There has been an increase in the percentage of dip net permits issued to Matanuska–Susitna residents, from 6% in 1982 to 13% from 1988 through 2001, and 17% from 2005 through 2009, probably reflecting the rapid population growth in the Matanuska–Susitna Borough. These percentages have been fairly constant over the period 1988 through 2009, except that in the most recent years, the number of personal use permits issued to Matanuska–Susitna residents has increased at a more rapid rate

than for other areas, and the relative percentage of permits issued to Fairbanks residents has declined from over half the permits in the late 1980s to about 45% from 2005 through 2009 (Figure 23, Table 7).

Table 8 reports the number of permits and percentage of permits by place of residence in the Glennallen Subdistrict subsistence salmon fishery, combining type of gear and permits issued by either ADF&G or NPS. As illustrated in Figure 24, the number of permits issued to Copper Basin residents has been very consistent over the 22-year period, with a 22-year average of 395 permits and a recent 5-year average of 389 permits. In contrast, since being available to nonlocal residents beginning in 1990, the number of permits issued to nonlocal resident has grown steadily, topping 1,000 permits in 2007 and 2008; this growth accounts for all of the increase in permits in this fishery overall. Figure 25 illustrates the trend in number of permits issued for the Glennallen Subdistrict by area of residence (Copper Basin, Anchorage, Matanuska–Susitna, Fairbanks, and "other Alaska"). Until 1997, the majority of the subsistence salmon harvest in the Glennallen Subdistrict was taken by local Copper Basin residents; since 1997, most of the harvest has been by nonlocal residents (Figure 26). Over the last 5 years (2004–2008), Copper Basin residents harvested about 36% of the harvest and others about 64%. However, Copper Basin residents on average harvest more salmon: 77 per permit from 2004 to 2008 compared to 58 per permit for other participants in the Glennallen Subdistrict fishery (Figure 27).

As shown in Figure 28 and Figure 29, the percentage of permits issued by area of residence in the Glennallen Subdistrict fish wheel fishery in 1982 was also very similar to the pattern for the period 1991 through 2001. In both, just over half the permits were issued to Copper Basin residents, with the next largest group from Anchorage (17% of permits in 1982, 21% in 1991 through 2001), followed by "other Alaska" (largely Upper Tanana and Valdez) at 15% in 1982 and 11% in 1991 to 2001, the Matanuska–Susitna Borough (11% in 1982, 11% in 1991 to 2001), and Fairbanks (5% in 1982, 6% in 1991 to 2001). However, the percentage of fish wheel permits issued to Copper Basin residents declined starting in 1990 as more nonlocal residents entered the fishery, repeating the pattern that developed in the 1970s and 1980s. Since 2002, the NPS has issued subsistence permits to local rural residents. Unlike state permits, federal permits do not specify the type of gear to be used (federal regulations allow fish wheels, dip nets, or rod and reel). Analysis of data from returned permits for 2002, however, showed that of an estimated harvest of 26,093 salmon by Copper Basin residents who held either state or federal permits for the Glennallen Subdistrict, 97% were taken in fish wheels, about 3% with dip nets, and fewer than 1% with rod and reel (Fall et al. 2003:150).

The large majority of the participants in the subsistence dip net fishery of the Glennallen Subdistrict are nonlocal residents (Figure 30). For the period 1991 through 2001, Copper Basin residents received 19% of the Glennallen Subdistrict subsistence dip net permits, compared to 81% to other Alaska residents These is likely movement from the Chitina Subdistrict personal use fishery to the Glennallen Subdistrict subsistence dip net fishery as fishers take advantage of the higher seasonal limits for all salmon in the latter, or the higher limit for Chinook salmon. For example, the average harvest per Glennallen subsistence dip net permit in 1998 was about 31 salmon, compared to 14.6 in the Chitina personal use fishery. For 2001, Glennallen Subdistrict dipnetters harvested an average of 24.2 fish and Chitina Subdistrict dipnetters harvested an average of 15.1 fish. However, for the state permits issued for the Glennallen Subdistrict from 2002 through 2009 (annual average of 422 permits), the average annual harvest was 15.8 salmon, compared to 14.7 salmon in the Chitina Subdistrict from 2004 through 2008). The average harvest for holders of state fish wheel permits for the same period was 72 salmon (average of 639 state permits; an average of 322 federal permits were also issued) (Somerville 2010).

As shown in Figure 31, regardless of the subdistrict fished, in 1982 and from 1988 through 2001, most Copper Basin residents chose to fish with fish wheels: 78% in 1982 and 75% for 1988 through 2001. In contrast, most nonlocal residents who fished in the upper Copper River fisheries in 1982 (95%) and 1988–2001 (96%) chose to fish with dip nets.

Table 9 reports estimated harvests in the federal Chitina Subdistrict subsistence salmon fishery from 2002 through 2008. On average, 94 permits have been issued, all to residents of Copper Basin and Upper Tanana communities. The average annual harvest over the 7 years of the fishery has been 1,285 sockeye salmon, 49 coho salmon *O. kisutch*, and 27 Chinook salmon.

In the discussion under Criterion 8, below, salmon harvests in the Chitina Subdistrict area are compared with other personal use and subsistence fisheries in Alaska. These comparisons may inform deliberations about the extent of "reliance" exhibited by the pattern of use of Chitina Subdistrict salmon, as addressed in Criterion 1, as well as the extent of "reliance" on the "subsistence way of life" exhibited by the pattern of use of Chitina Subdistrict salmon, as addressed by Criterion 8.

FINDINGS FROM THE 2000 SURVEY RELATED TO CRITERION 1

The following figures summarize data collected from a survey conducted by the Division of Subsistence and other collaborators (see "Background," above) in summer 2000 in which 509 participants in the subsistence fisheries were interviewed. Figure 32 shows that of the 382 nonlocal residents interviewed, 81% fished in the Chitina Subdistrict, while 96% of the local residents interviewed fished in the Glennallen Subdistrict. These results show that the same patterns, noted in the 1984 study, correlating gear choice, fishing location, and area of residence, continue in the upper Copper River fisheries.

Figure 33 shows the differences in length of Alaska residency between fishery participants in the Glennallen and Chitina subdistricts. About 6% of Glennallen subdistrict sample had lived in Alaska for 5 or fewer years, compared to 16% for the Chitina Subdistrict sample. Over 24% of Glennallen Subdistrict sample had lived in the state more than 50 years, compared to 2% for Chitina Subdistrict fishers who were interviewed.

As also found in the 1984 study (see Table 4), the Glennallen Subdistrict participants surveyed in 2000 tended to have a longer history of involvement in the fishery than did Chitina Subdistrict participants (Figure 24). However, history of involvement in the fishery has increased for Chitina Subdistrict fishers compared to 1982, a finding that is not surprising given the passage of 18 years and the continuous annual opportunity to fish at Chitina over that time period. In 1982, 72% of dipnetters had fished at Chitina 5 or fewer years (Table 8); the corresponding finding in 2000 was 43% (Figure 34). Only 2% of Chitina dipnetters had participated more than 20 years in 1982, compared to 19% in 2000.

Figure 35 provides data on the frequency that respondents said they had participated in the fishery. Just over 14% of Chitina Subdistrict fishers interviewed said they were participating in the fishery for the first time, 44% said they fished every year, and 32% said they fished most years. Also, 10% were infrequent participants. In comparison, 8% of Glennallen Subdistrict fishers who were interviewed were participating in the fishery for the first time, 63% said they fished every year, and 20% said they fished most years; 10% were infrequent participants.

Table 10 reports the frequency of participation in the Copper River subsistence fishery for each subdistrict by the number of years that the respondent had first fished in the Copper River. For all 5-year cohorts, a higher percentage of Glennallen Subdistrict fishers fished every year than did Chitina Subdistrict fishers. In total (excepting respondents who were participating for the first year), 51% of Chitina Subdistrict fishers reported that they fished there every year, while 68% of Glennallen Subdistrict fishers said they fished every year.

Table 5.–Number of permits issued, estimated salmon harvests, and average harvest per permit, Chitina Subdistrict, 1960 to 2009.

Year	Number of permits issued	Estimated harvest of salmon	Average harvest of salmon per permit
1960	32	1,518	47.4
1961	307	2,279	7.4
1962	435	4,139	9.5
1963	514	2,675	5.2
1964	794	5,684	7.2
1965	982	9,314	9.5
1966	1,132	9,806	8.7
1967	1,166	8,053	6.9
1968	1,235	11,614	9.4
1969	1,415	21,767	15.4
1970	3,220	29,785	9.3
1971	4,168	36,338	8.7
1972	3,485	22,971	6.6
1973	3,840	17,546	4.6
1974	3,305	17,269	5.2
1975	2,452	8,871	3.6
1976	2,512	14,011	5.6
1977	3,526	26,738	7.6
1978	3,313	14,416	4.4
1979	2,730	16,626	6.1
1980	2,804	21,099	7.5
1981	3,555	35,573	10.0
1982	5,475	68,377	12.5
1983	6,911	79,267	11.5
1984	5,415	50,734	9.4
1985	4,153	36,328	8.7
1986	4,031	44,047	10.9
1987	4,245	46,908	11.1
1988	4,251	45,855	10.8
1989	4,584	59,681	13.0
1990	5,689	70,662	12.4
1991	6,222	85,882	13.8
1992	6,387	92,036	14.4
1993	7,914	93,716	11.8
1994	7,060	112,566	15.9
1995	6,762	105,972	15.7
1996	7,196	102,656	14.3
1997	9,086	154,650	17.0
1998	10,002	146,431	14.6
1999	9,941	150,845	15.2
2000	8,145	116,347	14.3

-continued-

Table 5. Page 2 of 2.

Year	Number of permits issued	Estimated harvest of salmon	Average harvest of salmon per permit
2001	9,458	142,905	15.1
2002	6,804	94,782	13.9
2003	6,440	89,332	13.9
2004	8,153	116,476	14.3
2005	8,232	133,546	16.2
2006	8,497	133,410	15.7
2007	8,378	135,990	16.2
2008	8,041	87,699	10.9
2009	7,859	91,868	11.7
Mean, all years	4,845	60,541	12.5
Recent (1999–2008) 10-year average	8,209	120,133	14.6
Recent (2004–2008) 5-year average	8,260	121,424	14.7

Sources ADF&G Division of Subsistence Alaska Salmon Fishing Database (ASFDB), accessed February 2010; Somerville 2010 for 2009 preliminary data.

Table 6.–Number of permits issued, estimated salmon harvests, and average harvest per permit, Glennallen Subdistrict, 1960 to 2009.

Year	Number of permits issued	Estimated harvest of salmon	Average harvest of salmon per permit
1960	26	7,285	280.2
1961	59	15,927	269.9
1962	117	14,347	122.6
1963	110	15,612	141.9
1964	158	10,656	67.4
1965	143	7,504	52.5
1966	138	12,090	87.6
1967	154	10,954	71.1
1968	143	8,769	61.3
1969	167	7,499	44.9
1970	267	12,972	48.6
1971	374	12,111	32.4
1972	205	9,497	46.3
1973	305	11,702	38.4
1974	288	8,732	30.3
1975	350	6,486	18.5
1976	451	9,612	21.3

-continued-

Table 6. Page 2 of 2.

Year	Number of permits issued	Estimated harvest of salmon	Average harvest of salmon per permit
1977	540	15,077	27.9
1978	392	7,613	19.4
1979	470	14,337	30.5
1980	399	13,982	35.0
1981	523	33,173	63.4
1982	615	41,629	67.7
1983	630	39,461	62.6
1984	562	28,617	50.9
1985	533	27,836	52.2
1986	375	28,417	75.8
1987	431	34,080	79.1
1988	416	33,469	80.5
1989	386	29,587	76.7
1990	406	32,949	81.2
1991	712	40,919	57.5
1992	655	46,900	71.6
1993	773	55,523	71.8
1994	970	71,193	73.4
1995	858	57,280	66.8
1996	850	54,305	63.9
1997	1136	86,483	76.1
1998	1010	67,275	66.6
1999	1102	80,835	73.4
2000	1251	66,032	52.8
2001	1239	86,601	69.9
2002	1308	68,161	52.1
2003	1227	68,612	55.9
2004	1212	87,557	72.2
2005	1235	94,752	76.7
2006	1239	81,743	66.0
2007	1458	91,110	62.5
2008	1455	63,404	43.6
2009	1369		
Mean, all years	624	37,361	59.9
Recent (1999–2008) 10-year average	1,273	78,881	62.0
Recent (2004–2008) 5-year average	1,320	83,713	63.4

Sources ASFDB, accessed February 2010; Somerville 2010 for 2009 preliminary data.
Note Data for 2009 are incomplete and harvest data from federal permits not available.

Table 7.–Number of personal use and subsistence dip net permits issued by area of residence, Chitina Subdistrict, 1988 to 2009.

	Number of permits						Percentage of permits				
Year	Copper Basin	Anchorage	Matanuska–Susitna	Fairbanks–NSB	Other	Total	Copper Basin	Anchorage	Matanuska–Susitna	Fairbanks–NSB	Other
1988	29	1,190	354	2,258	375	4,206	0.7%	28.3%	8.4%	53.7%	8.9%
1989	19	1,427	376	2,283	364	4,469	0.4%	31.9%	8.4%	51.1%	8.1%
1990	23	1,907	524	2,707	472	5,633	0.4%	33.9%	9.3%	48.1%	8.4%
1991	63	2,219	674	2,844	420	6,220	1.0%	35.7%	10.8%	45.7%	6.8%
1992	72	2,186	620	2,941	562	6,381	1.1%	34.3%	9.7%	46.1%	8.8%
1993	76	2,944	894	3,342	658	7,914	1.0%	37.2%	11.3%	42.2%	8.3%
1994	65	2,413	791	3,165	625	7,059	0.9%	34.2%	11.2%	44.8%	8.9%
1995	53	2,324	789	2,962	629	6,757	0.8%	34.4%	11.7%	43.8%	9.3%
1996	72	2,436	903	3,078	696	7,185	1.0%	33.9%	12.6%	42.8%	9.7%
1997	44	3,402	1,392	3,455	793	9,086	0.5%	37.4%	15.3%	38.0%	8.7%
1998	61	3,653	1,623	3,785	883	10,005	0.6%	36.5%	16.2%	37.8%	8.8%
1999	69	3,435	1,677	3,876	887	9,944	0.7%	34.5%	16.9%	39.0%	8.9%
2000	36	2,754	1,388	3,243	724	8,145	0.4%	33.8%	17.0%	39.8%	8.9%
2001	59	3,295	1,571	3,610	923	9,458	0.6%	34.8%	16.6%	38.2%	9.8%
2002	21	2,016	1,049	3,054	664	6,804	0.3%	29.6%	15.4%	44.9%	9.8%
2003	30	1,899	937	2,942	632	6,440	0.5%	29.5%	14.5%	45.7%	9.8%
2004	47	2,426	1,316	3,547	817	8,153	0.6%	29.8%	16.1%	43.5%	10.0%
2005	37	2,180	1,338	3,845	832	8,232	0.4%	26.5%	16.3%	46.7%	10.1%
2006	48	2,303	1,411	3,842	893	8,497	0.6%	27.1%	16.6%	45.2%	10.5%
2007	33	2,337	1,379	3,884	745	8,378	0.4%	27.9%	16.5%	46.4%	8.9%
2008	44	2,298	1,341	3,485	871	8,039	0.5%	28.6%	16.7%	43.4%	10.8%
2009	80	2,308	1,433	3,343	796	7,959	1.0%	29.0%	18.0%	42.0%	10.0%
22-year average	48	2,431	1,064	3,245	689	7,476	0.6%	32.5%	14.2%	43.4%	9.2%
Recent 10-year average	43	2,382	1,316	3,479	790	8,011	0.5%	29.7%	16.4%	43.4%	9.9%
Recent 5-year average	48	2,285	1,380	3,680	827	8,221	0.6%	27.8%	16.8%	44.8%	10.1%

Source for preliminary data for 2009: Somerville 2010.

Note Percentages for 2009 rounded to nearest whole number and therefore number of permits issued is approximate.

Table 8.–Number of subsistence permits issued by area of residence, Glennallen Subdistrict, 1988 to 2008.

	Number of permits						Percentage of permits				
Year	Copper Basin	Anchorage	Fairbanks–NSB	Matanuska–Susitna	Other	Total	Copper Basin	Anchorage	Fairbanks	Matanuska–Susitna	Other
1988*	402	0	1	11	2	416	96.6%	0.0%	0.2%	2.6%	0.5%
1989*	370	2	0	13	1	386	95.9%	0.5%	0.0%	3.4%	0.3%
1990	389	1	1	12	3	406	95.8%	0.2%	0.2%	3.0%	0.7%
1991	391	131	51	79	60	712	54.9%	18.4%	7.2%	11.1%	8.4%
1992	391	126	29	67	42	655	59.7%	19.2%	4.4%	10.2%	6.4%
1993	404	178	42	96	53	773	52.3%	23.0%	5.4%	12.4%	6.9%
1994	433	271	86	96	84	970	44.6%	27.9%	8.9%	9.9%	8.7%
1995	419	210	61	80	88	858	48.8%	24.5%	7.1%	9.3%	10.3%
1996	399	228	53	94	73	847	47.1%	26.9%	6.3%	11.1%	8.6%
1997	417	307	94	131	187	1,136	36.7%	27.0%	8.3%	11.5%	16.5%
1998	390	261	96	103	160	1,010	38.6%	25.8%	9.5%	10.2%	15.8%
1999	410	330	112	101	148	1,101	37.2%	30.0%	10.2%	9.2%	13.4%
2000	362	378	189	150	172	1,251	28.9%	30.2%	15.1%	12.0%	13.7%
2001	363	419	142	144	171	1,239	29.3%	33.8%	11.5%	11.6%	13.8%
2002	407	461	162	152	126	1,308	31.1%	35.2%	12.4%	11.6%	9.6%
2003	383	393	162	157	132	1,227	31.2%	32.0%	13.2%	12.8%	10.8%
2004	414	349	140	161	148	1,212	34.2%	28.8%	11.6%	13.3%	12.2%
2005	369	372	159	169	166	1,235	29.9%	30.1%	12.9%	13.7%	13.4%
2006	372	337	154	216	160	1,239	30.0%	27.2%	12.4%	17.4%	12.9%
2007	409	400	210	261	178	1,458	28.1%	27.4%	14.4%	17.9%	12.2%
2008	406	400	236	269	144	1,455	27.9%	27.5%	16.2%	18.5%	9.9%
2009											
22-year average	395	264	104	122	109	995	39.7%	26.6%	10.4%	12.3%	11.0%
Recent 10-year average	387	390	173	187	155	1,292	30.0%	30.2%	13.4%	14.4%	12.0%
Recent 5-year average	389	377	190	229	162	1,347	28.9%	28.0%	14.1%	17.0%	12.0%

Note Data on federal permits not available for 2009.

* Only residents of Copper Basin and upper Tanana areas were eligible for permits in 1984 and 1986–1989.

Table 9.–Historical subsistence salmon harvests, federal Chitina subdistrict permits, 2003–2008.

	Permits		Estimated salmon harvest					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2002	122	90	48	835	0	0	0	883
2003	99	71	33	1,316	152	0	0	1,500
2004	109	83	9	1,631	28	0	0	1,668
2005	77	64	27	1,498	0	0	0	1,526
2006	76	62	16	1,681	26	0	0	1,723
2007	97	86	29	1,095	41	0	0	1,165
2008	81	65	26	939	97	0	0	1,062
Average (2002–2008)	94	74	27	1,285	49	0	0	1,361

Source ASFDB 2009.

Table 10.–Frequency of fishing by number of years since first fished in the Copper River, by subdistrict.

	Number of years since first fished							
	1–5	6–10	11–20	21–30	31–40	41–50	51+	All
Chitina Subdistrict	n = 88	n = 44	n = 78	n = 41	n = 14	n = 0	n = 3	n = 268
Every year	75%	55%	41%	24%	21%		67%	51%
Most years	22%	34%	49%	51%	50%		33%	38%
Infrequently	3%	11%	10%	24%	29%			11%
Glennallen Subdistrict	n = 21	n = 20	n = 38	n = 29	n = 26	n = 19	n = 24	n = 177
Every year	86%	90%	63%	48%	62%	53%	88%	68%
Most years	5%	10%	24%	34%	23%	42%	13%	22%
Infrequently	10%		13%	17%	15%	5%		10%

Note This table does not include respondents who were fishing for the first time in the Copper River.

CRITERION 2

Criterion 2. A pattern of taking or use recurring in specific seasons of each year.

Table 11 presents information relating to Criterion 2 that was provided to the BOF in 1984, and as was summarized for the 1996 BOF meeting. These patterns have not changed.

Table 11.–Information pertaining to Criterion 2 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
Most Chinook and sockeye salmon are taken beginning in June through early July; coho salmon are harvested later in the year, mostly in late August and September.	Chinook and sockeye salmon are taken beginning in June and continuing into August; coho salmon are harvested later in the year, late August and September.

Figures 36 and 37 present data collected in the 2000 survey showing contrasting patterns of participation between fishery participants in the 2 subdistricts. Most Glennallen Subdistrict fishers who were interviewed (83%) fished in June, with effort tapering off gradually throughout the rest of the season. Although half of Chitina Subdistrict fishers fished in June, most Chitina Subdistrict fishing took place in July (88% fish in that month) and participation dropped quickly in August (21%) and September (4%).

Figure 36 shows that 82% of Glennallen Subdistrict fishers said they fished in June, while 82% said they fished in July and 48% fished in August. In contrast, 88% of Chitina Subdistrict fishers fished in July while 53% said they fished in June and only 21% fished in August. One long time dipnetter said that he used to fish at Chitina in June but now he goes "later in the year." He said, "Usually I try and go around the 15th of July. It seems there's more fish, the weather is warmer…" As noted below under Criterion 5, local Copper Basin residents, who mostly fish with fish wheels in the Glennallen Subdistrict, prefer to fish in June because local weather conditions are more favorable for traditional methods of preserving salmon. It should be noted that for the Chitina Subdistrict, fishing time in June has been restricted by regulation.

CRITERION 3

Criterion 3. A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.

Table 12 presents information relating to Criterion 3 that was provided to the BOF in 1984, and was summarized for the 1996 BOF meeting.

Table 12.–Information pertaining to Criterion 3 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
Due to their efficiency, fish wheels had long been the gear of choice among Copper Basin residents, most of whom fished in the Glennallen Subdistrict at sites near their homes.	Dip nets were used exclusively in this subdistrict by regulation in the early 1980s and had predominated in this area since statehood. Most participants traveled from Fairbanks (630 miles by road, round trip), the Matanuska–Susitna area (414 miles from Palmer, round trip), and Anchorage (500 miles, round trip). Of those dipnetters interviewed in 1982, 20% planned to fish one day at Chitina; one-third planned to spend a weekend; one-third planned to stay until they caught their limit; and the remainder planned to make more than one trip (Stratton 1982:56).

As noted above, fish wheels remain the gear of choice among Copper Basin residents. A household survey conducted for 1987–1988 in Copper Basin communities found that 89% of all salmon harvested for home use by Copper Basin households were taken with fish wheels, 7% with rod and reel, 3% with dip nets, and 1% with "other gear" (mostly salmon removed from commercial fisheries outside the local area). Of the estimated 1,222 Copper Basin households in that study year, 409 (34%) harvested salmon with fish wheels, 273 (23%) used rod and reel, and 49 (4%) used dip nets (Simeone and Fall 1996:81).

Copper Basin households continue to use fish wheels at traditional sites near their homes (Simeone and Fall 1996:62–68). There are relatively low travel costs associated with this use pattern.

As noted above, the vast majority of Copper River dipnetters continue to travel to Chitina from Fairbanks, Anchorage, and the Matanuska–Susitna Valley. Table 13 reports approximate distances by road, in miles, between Chitina and selected Alaska locations. For example, a round trip along the road system between Fairbanks and Chitina is approximately 628 miles, between Chitina and Anchorage, 508 miles, and between Palmer and Chitina, 424 miles. Based upon these distances, on average, permit holders in the state Chitina Subdistrict dip net fishery traveled by road approximately 550 miles (round trip) to participate in the fishery over the 10-year period from 1999 through 2008.[6]

[6] This average accounts for approximately 95% of permit holders who travel by road to Chitina and live in one of the areas listed in Table 13. The remaining 5% come from other areas of the state, primarily off the road system. The average does not account for potential vehicle pooling.

Table 14 presents an estimate of the cost of harvesting salmon in the dip net fishery compared to buying salmon in a retail market, using data from 1999. This analysis illustrates a cost efficiency for harvesting salmon in the dip net fishery in that year, consistent with the intent of personal use fisheries (as the Chitina dip net fishery was then classified) to be an efficient alternative to rod and reel fisheries. It should be noted that the cost of gasoline has risen substantially since this analysis was completed: the cost per gallon in Anchorage in February 2010 was about $3.20. (A 1969 analysis [7] found the following "cost per pound of usable fish" for the Chitina fishery: Anchorage, $1.00; Delta Junction, $0.56; Fairbanks, $0.96; Palmer, $0.66; Paxson, $0.23; Tok, $0.34; and Valdez, $1.43. It should be noted that in 1969 there was no sport fishing license requirement or access fee.)

Figures 38 shows that, consistent with permit data, local residents who were interviewed in 2000 preferred to use fish wheels (93% of local fishers used fish wheels; 7% chose dip nets), while non-Basin residents preferred dip nets (89% chose dip nets). Figure 39 presents a more detailed analysis of the data and shows a correlation between choice of gear type and place of residence.

With the introduction of the fish wheel at the beginning of the 20th century, local Alaska Natives and non-Natives alike abandoned dip nets and switched to fish wheels. According to information gathered from Fairbanks residents who began fishing at Chitina in the late 1940s, some people at Chitina were still using dip nets made from chicken wire. One long time dipnetter recollected the first time he traveled to Chitina he did not catch any fish because "…they didn't have these dip nets that they're using now. They took chicken wire and made a cone and put a pole on it and usually you couldn't reach out far enough to get any fish, unless they came in right in close." Another dipnetter said "…and it was in the period around 1950 when people started to use cloth nets."

Some dipnetters who have fished at Chitina since the 1950s or 1960s expressed the opinion when interviewed that, for a number of reasons, fish wheels were not as efficient or practical as dip nets. One person explained that he was always too busy to build a fish wheel: "Oh, I was too busy. I could get enough fish [using a dip net]. I was working six days a week with the airlines and building up the homestead." Another person said that he was thinking about using a fish wheel but that he had "such good luck" dipnetting from a boat that he had no need to use a fish wheel, except, he said "when you go down there once a year and you can use as many fish as we can, if you go fishing below the bridge like they had it this year, there really aren't enough fish for what we could like to have." A third respondent said, "I just never had the need to, you know. To me, personally it's more a pain in the rear than it would be worth, you know?" A fourth person pointed out that even though fish wheels were an "easy way" to catch fish, he was not "raised up with a fish wheel, and, to me, it's more dangerous." He went on to say, "I really prefer dipnetting. People say that it is inefficient, but when the fish are running I've pulled up to four fish out in one dip, and the last two years we hit a spot where, if dipnetting is inefficient, I question that, because we caught, last year we caught two hundred fish in less than six hours of dipping."

[7] Larson, C. 1969. Memorandum: Copper River subsistence fishery. November 14, 1969, memorandum to Ken Middleton located at ADF&G Division of Commercial Fisheries, Glennallen.

Table 13.–Distances to Chitina from selected Alaska communities.

Place	Distance in miles	
	One way	Round trip
Anchorage	254	508
Delta Junction	216	432
Fairbanks	314	628
Eagle River	241	482
Glennallen	65	130
North Pole	299	598
Palmer	212	424
Soldotna	401	802
Tok	204	408
Valdez	116	232
Wasilla	226	452

Source Graef 1999.

Table 14.–Estimate of relative cost of obtaining salmon through dipnetting at Chitina compared to purchasing salmon in a store (in 1999).

Residence	Distance to Chitina (RT)	Gas @ 18 m/g	Cost @ $1.50/g	Other costs [2]	Total cost	Average catch		Price per pound	Purchase per pound[1]		
						Fish	Pounds		Whole	Fillets	Canned
Anchorage	512 miles	28.44g	$42.67	$40.00	$82.67	15	60	$1.38	5.86	6.99	5.48
Fairbanks	604 miles	33.56g	$50.33	$40.00	$90.33	15	60	$1.51	6.18	7.93	5.79
Palmer	428 miles	23.78g	$35.67	$40.00	$75.67	15	60	$1.26	5.86	6.99	5.48

Note Assumes all harvest taken in a single trip and all processing done by permittee.

1. Average price for 2 stores. Palmer and Anchorage assumed to be equal. In Fairbanks, Copper River sockeye salmon was $13.98/pound in 1999.
2. Other costs include sport fishing license = $30 (two per permit/family); plus access fee = $10 [note that fee increased to $25 in 2000]; does not include food, lodging, camping fees, labor, equipment, or time.

CRITERION 4

Criterion 4. The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Table 15 presents information relating to Criterion 4 that was provided to the BOF in 1984, and was summarized for the 1996 BOF meeting.

Table 15.–Information pertaining to Criterion 4 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
In the early 1980s, there were about 10 "clusters" of fish wheels along the Copper River. Owners normally placed their wheels in the same general area each year. Among long term Basin residents, wheels were placed from sites that were recognized as "belonging" to certain families. This right to use a particular site appeared to be inherited through lines of kinship. Long term Basin residents tended to operate their fish wheels from camps with permanent facilities for processing the salmon. Other Basin residents transported their catch to their permanent residences, where processing and storage occurred (Stratton 1982:14; Fall and Stratton 1984:34).	Fishing took place downstream from the bridge over the Copper River at Chitina to the subdistrict boundary, approximately 200 yards upstream of Haley Creek. There was no use of privately-owned or traditional fish camps; many participants arrived in campers (Stratton 1982:56).

Use of fish wheels in the Glennallen Subdistrict remains governed by factors such as kinship relations, traditional rules of access to fishing sites, and land ownership patterns that restrict access so that fish wheels are concentrated in a few areas (Simeone and Fall 1996:69–71). Many of the fish wheel sites listed in Table 16 and shown in figures 40 and 41, such Chistochina, Gulkana, Tazlina, and Copper Center Village, have been occupied since the 1920s. Figure 40 shows the disposition of subsistence permits at major fish wheel sites along the west bank of the Copper River. Note that in only a few places along the Copper River is public property available for nonlocal fishers to put in a fish wheel. Areas with public access include the Chitina Bridge, the Chitina Airport, Gakona (which has a Bureau of Land Management easement), and Slana.

Fewer traditional fish camps are used today than in the early 1980s and before. Most people take their fish home to process rather than leave them at the fish wheel site where they might be stolen. There are a few fishing sites that "belong" to some Ahtna families and these are frequently inherited. As reported in Figure 42, in 2000 when asked if their family owned their fish site, 49% of local residents in the sample answered "yes." Correspondingly, a large percentage of interviewed Glennallen Subdistrict fish wheel users (42%; this includes any community of residence) and Glennallen Subdistrict subsistence permit holders (35%; any community of residence and either gear type) said their family owned the fishing site. No one interviewed who fished in the Chitina Subdistrict said they owned a site.

Table 16.–Percentage of total permits and location of fish wheels, Glennallen Subdistrict, 1995 and 2001.

Place	1995	2001
Batzulnetas	0.7%	none
Slana	7.0%	12.8%
Chistochina	1.9%	1.0%
Gakona	8.0%	3.5%
Gulkana	4.0%	3.0%
Copperville	22.0%	16.1%
Tazlina	5.0%	6.6%
Copper Center Village	5.0%	3.0%
Copper Center Loop	14.0%	9.8%
Chitina Airport	10.0%	13.1%
Chitina Bridge	14.0%	21.5%

Note In addition, in 2001, one federal permit was issued for the Batzulnetas fishery.

CRITERION 5

Criterion 5. A means of handling, preparing, preserving, and storing fish or game that has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

Table 17 presents information relating to Criterion 5 that was provided to the BOF in 1984, and was summarized for the 1996 BOF meeting. We had no updated systematic data on this topic for dipnetters when the BOF revisited the C&T determination in 1999. See the case studies in Simeone and Fall (1996:74–80) for examples from local fish wheel users in the mid 1990s. These case studies document patterns of preparing and preserving salmon like those earlier described by Stratton (1982).

Table 17.–Information pertaining to Criterion 5 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
Most Basin fish wheel operators used a combination of methods to preserve their salmon harvest, including canning (63%), freezing (59%), smoking (52%), drying (45%), kippering (13%), and salting (11%).	Interviews conducted in 1982 found that freezing was used most frequently by dipnetters. About 46% smoked at least a portion of their catch; only 2% dried salmon (Stratton 1982:57–58).

Figure 44 shows that participants in the Glennallen Subdistrict subsistence fishery continue to prepare their salmon in a wider variety of ways, including drying, freezing, smoking, salting, canning, and kippering, than do those participating in the Chitina Subdistrict fishery. Appendix A in Simeone and Kari 2002 is a photographic essay that illustrates traditional methods used by local subsistence fish wheel operators to process salmon. Most Chitina Subdistrict fishers, on the other hand, only freeze or smoke their fish.

In the early years of the dip net fishery, many participants in the fishery canned their fish at the fishing site. A dipnetter who fished at O'Brien Creek in the 1950s remembered canning fish at the mouth of the creek and then hauling the cans out in a duffel bag. But today, as survey data indicate, freezing has become the most popular method for preserving salmon among dipnetters. One dipnetter described how he used to can fish but now he uses vacuum packaging equipment and then freezes them.

> Two hundred fish is a lot of fish. We had, I think, twelve ice chests full of fish, and we had some of those great big ice chests that hold lots and lots of fish. It's a major amount of work to go down there and take care of two hundred fish and then bring them home. Then you've got to take them, lately we've been, several years ago I bought one of them vacuum packing things and we go out here and filet fish, vacuum pack them and freeze them. Years before I had a canner. My wife likes them primarily, and she's the main fish eater. I like salmon but she loves it, she's the main fish eater. She likes them canned in jars, in mason jars and so we have done a lot of that. And I learned early to can them in mason jars and some people even take their jars and stuff down to O'Brien Creek and sit there and process there fish right there and do it that way.

Other long time dipnetters said they still can some fish and tend to use both the meat and heads. One Fairbanks resident who has been fishing at Chitina since the 1950s said he still cans most of his salmon:

> Like last summer I did most of the canning. I did 123 pints, I did 40 of those 303 cans, and I did 18 10-ounce jars. Those are the ones that oysters come in. What I do is usually when I trim the belly or something that doesn't fit in the can, I stick them in those because I'll just take one of them out and just sit there and eat it. I like those bellies and that front part that's got the fin on it, the cheeks. That's my favorite, you know, and gosh I see people down there cutting off those cheeks and throwing them away. They're throwing the best part of the fish away.

CRITERION 6

Criterion 6. A pattern a taking or use that includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

Table 18 presents information relating to Criterion 6 that was provided to the BOF in 1984, and was summarized for the 1996 BOF meeting. Updated information for Copper Basin fish wheel users appears in the case studies summarized by Simeone and Fall (1996:74–80) and matches the information reported earlier by Stratton (1982). See also Simeone and Kari (2002) for summaries of Ahtna traditional knowledge of Copper River salmon.

Table 18.–Information pertaining to Criterion 6 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
Among Basin fish wheel operators, fishing groups tended to be composed of relatives (73% in 1982). Knowledge of fish wheel operation and salmon preservation methods was passed down within extended families (Stratton 1982:40).	As noted under Criterion 1, most dipnetters were relatively new to the fishery in the early 1980s. Frequently, their initial involvement stemmed from word-of-mouth reports in their home towns and on military bases (Stratton 1982:54).

During the gold rush of 1898–1899, thousands of prospectors poured through the Copper River basin on their way to the Klondike; several recorded their observations of Ahtna fishing techniques. Although they often viewed the Ahtna technology as primitive, some, such as Joseph Bourke in 1898 [8], caught salmon using an Ahtna dip net before moving on.

As noted previously, the Ahtna and other Copper Basin residents shifted from using dip nets to using fish wheels in the 1910s. As also noted earlier, longtime Fairbanks residents interviewed in October 2000 said that Fairbanks-based dipnetting at Chitina began in the late 1930s and they became involved through

[8] Manuscripts archived at the Valdez Museum & Historical Archive, Valdez, Alaska. http://valdezmuseum.org

word of mouth. They also reported that in the late 1940s they learned from a local Chitina Alaska Native man named Paddy King that Salmon Point was a location where salmon could be harvested with a dip net. Several key informants also said that their children and grandchildren now fish at Chitina. One man counted the number of children and grandchildren who fish at Chitina. He said all 5 of his grandchildren

> have been there, so we've got two son-in-laws and I've got two daughters, and the wife and I. So there'd be eleven of us right close, but then there's Clem and his wife, who are relatives of ours, and there are six of them. They've got four kids, so there's six of them, that's seventeen that are directly related, you know.

Figure 45 shows that many Glennallen Subdistrict fishers who were interviewed learned how to fish in the Copper River from their parents (38%) or another relative (28%). Most Chitina Subdistrict fishers said they taught themselves (43%) or learned from friends (44%). Figure 46 shows a pattern similar to that depicted in Figure 45, indicating that most Chitina Subdistrict fishers learned about the fishery through word of mouth (42%) or from friends (48%). Interviewed Glennallen Subdistrict fishers were far more likely to have learned about the fishery from relatives (41%).

CRITERION 7

Criterion 7. A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

Table 19 presents information relating to Criterion 7 that was provided to the BOF in 1984, and was summarized for the 1996 BOF meeting. The household survey pertaining to 1987–1988 conducted among Copper Basin households again found salmon to be one of the most commonly shared resources. As noted in Simeone and Fall (1996), it was very common for Copper Basin residents to share use of their fish wheels with others from local communities and from outside the Basin. Several Fairbanks residents interviewed for the 2000 project and who participated regularly in the Chitina dip net fishery said that they commonly shared salmon with family and friends. For example, one man said that he shared his fish

> with lots and lots of people in Fairbanks. And, part of that, the fish from last year were used in some potlatches and they were used by some searchers: they had a Native guy that drowned down here in the Chena River and they spent two weeks looking for him and Harry came over and told me and said "Hey, I'm using your fish for to feed those guys that are searching."

Another man said that he shared with elderly people who could not fish or hunt for themselves:

> I can remember coming in here with about maybe close to two hundred fish. I mean, you could have all you wanted, you know, and none of them went to waste. We had a lot of old timers who couldn't do it anymore. We'd give everybody fish.

Table 19.–Information pertaining to Criterion 7 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
Sharing of salmon was found to be common among Copper Basin families; salmon was an important food served at potlatches (Stickney and Cunningham 1980:13; Stratton and Georgette 1984).	A minority (44%) of nonlocal residents who participated in the Copper River fishery (most of whom fished with dip nets at Chitina) shared salmon with relatives or friends outside their household. This was likely related in part to relatively low harvests (Stickney and Cunningham 1980:13–14).

Figures 47 through 51 show the results of the 2000 survey and compare and contrast some characteristics of sharing of participants in the Copper River subsistence salmon fisheries. A majority of interviewed Glennallen Subdistrict fishers (86%) and Chitina Subdistrict fishers (80%) said they shared their catch

(Figure 47), and about the same percentages said they shared with family members outside their households: 89% for the Glennallen Subdistrict and 72% for the Chitina Subdistrict (Figure 48). Most fishers also shared with friends: 62% of Glennallen Subdistrict fishers and 71% of Chitina Subdistrict (Figure 49). When asked if they shared with other nonrelatives (for example, elders or people with whom they were not well acquainted), 27% of Glennallen Subdistrict fishers said they did, compared to 3% of Chitina Subdistrict fishers (Figure 50). When asked how much of their catch they shared, Glennallen Subdistrict fishers tended to share half or more (55%) while Chitina Subdistrict fishers tended to share less than half (74%) (Figure 51).

CRITERION 8

Criterion 8. A pattern that includes taking, use, and reliance for subsistence purposes upon a wide diversity of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

Table 20 presents information relating to Criterion 8 that was provided to the BOF in 1984, and was summarized for the 1996 BOF meeting.

Table 20.–Information pertaining to Criterion 8 provided to the BOF by ADF&G, 1984.

Glennallen Subdistrict	Chitina Subdistrict
Salmon comprised a large portion of many Basin households' supplies of food. Most fishing and hunting by Basin households took place within the Basin. Few Basin households participated in salmon fisheries in other parts of the state (Fall and Stratton 1984:39,51).	Non-Basin participants in the Copper River subsistence fishery largely harvested other resources outside the Basin; in 1982, 37% of dipnetters interviewed also used salmon fisheries outside the Basin (Fall and Stratton 1984:51).
In Copper Basin communities, the monetary sector of the local economy was largely confined to government services, tourism, and construction. Wage employment was predominately seasonal, and mean household incomes were low (Fall and Stratton 1984:48).	In 1979, nonlocal participants in the Copper River subsistence fishery (most of whom fished with dip nets at Chitina) reported more full time wage employment, more employed household members, and higher monetary incomes that did Basin residents (Stickney and Cunningham 1980:10–11).

Figure 52 shows that 74% of the interviewed Glennallen Subdistrict fishers, compared to 63% of Chitina Subdistrict fishers, said that salmon was very important in their diet. Few of those interviewed from either subdistrict ranked salmon as "not very important" to their diet. Asked about the significance of wild foods to their diet, 80% of Glennallen Subdistrict fishers said they were very important, compared to 60% of Chitina Subdistrict fishers (Figure 53).

As shown in Figure 54, 62% of the interviewed participants in the Glennallen Subdistrict subsistence fishery held some form of cash employment in 2000, 17% were retired, and the remainder (21%) had no job. Most Chitina Subdistrict fishers were employed (87%) and most of the rest were retired (11%). In both fisheries, of those who held employment, most were employed full time: 86% of interviewed Glennallen Subdistrict fishers and 93% of those fishing in the Chitina Subdistrict (Figure 55).

However, differences in the economies of the Copper River Basin and more urbanized areas of the state were reflected in responses to the 2000 survey. This is important for evaluating the relative economic importance of the Copper River fisheries, as called for under Criterion 8. As noted previously, most local residents fish in the Glennallen Subdistrict with fish wheels, and this use pattern was the basis for previous BOF findings in support of a positive C&T finding for that subdistrict; the vast majority of participants in the Chitina Subdistrict fishery live in more populous and developed areas of the state. When asked if they were employed full time, part time, or seasonal, just 53% of local residents said they were employed full time, compared to 94% of nonlocal residents. More local residents were employed

part time (18%) or seasonally (29%) than were nonlocal residents (2% part time and 4% seasonally) (Figure 56). When asked if they took time off from work to fish, 23% of local residents said yes, compared to 50% of nonlocal residents (Figure 57). When the survey responses are sorted by subdistrict, 30% of Glennallen Subdistrict fishers said yes, as did 51% of Chitina Subdistrict fishers (Figure 58). This means that most local residents did not have full time jobs from which to take time off, or, because of the proximity of their fishing sites to their homes and places of work, that taking time off was not necessary. This suggests that subsistence fishing in the Glennallen Subdistrict is integrated into the round of economic activities in the Copper River Basin, in contrast to the predominant pattern in the Chitina Subdistrict, where fishing is more likely to be a break from work activities (see Wolfe and Ellanna 1983:256).

Survey respondents were asked "How many salmon would you like to be able to harvest?" Figure 57 reports the respondents by 3 groups: participants in the Chitina Subdistrict dip net fishery, the Glennallen Subdistrict dip net fishery, and the Glennallen Subdistrict fish wheel fishery. The most frequent responses for Chitina dipnetters were 21 to 30 salmon (43%) and 31 to 40 salmon (32%). For dipnetters who chose to fish in the Glennallen Subdistrict, the most frequent responses were 41 to 50 salmon (21%), and 101 to 200 salmon (18%). Participants in the Glennallen Subdistrict fish wheel fishery had the highest harvest goals, with the largest number (38%) saying they would like to harvest 401 to 500 salmon.

Salmon harvests in the Chitina Subdistrict may be compared with those of other personal use and subsistence salmon fisheries in Alaska as one means to assess whether the use patterns of these stocks exhibit "reliance" on a "subsistence way of life." (The following information may also be relevant to Criterion 1). For this discussion, annual average harvests of salmon in pounds usable weight per fishery participant for the period 1998 through 2007 were estimated, using methods described in Appendix D.

Figure 60 depicts the average harvest of salmon in pounds dressed weight per permit for the 10-year period from 1998–2007 for subsistence and personal use fisheries. The average for the Chitina Subdistrict dip net fishery for this time period was 68 pounds per permit. This average is very similar to other personal use salmon fisheries, including Kachemak Bay (65 pounds per permit), Tanana River (65 pounds per permit), and the Kenai Peninsula (Kenai River, Kasilof River, and Fish Creek fisheries) (63 pounds per permit), as well as the federal subsistence fishery in the Chitina Subdistrict (72 pounds per permit). Most personal use salmon fisheries are subject to a statewide seasonal limit of 25 salmon for a household head and 10 salmon for each additional household member (5 AAC 77.525(c)).

The average harvest per permit for all state subsistence salmon fisheries from 1998–2007 was 332 pounds, with a range from 549 pounds per permit for the Bristol Bay fishery to 67 pounds per permit for the Copper River Flats fishery. There is a wide range of harvest limits for subsistence salmon fisheries, ranging from no limits (Bristol Bay, Kuskokwim, and Yukon, for example) to daily bag limits (portions of the Southeast Region).

All of the state subsistence salmon fisheries in Figure 60 have positive C&T determinations, as established by the BOF. The relatively low average harvests per permit for certain fisheries may be explained by local ecological or regulatory circumstances, which should be reviewed when comparing the fisheries in this figure for consideration of criteria 1 and 8. For example, the salmon fisheries in the Unalaska and Adak districts focus on relatively small local stocks, and residents of communities that use these salmon fisheries traditionally take more Pacific halibut *Hippoglossus stenolepis* than salmon. The Seldovia fishery is capped at a maximum harvest of 200 Chinook salmon (5 AAC 01.560(b)(8)(C)). Subsistence fishing openings in the Copper River Flats fishery near Cordova coincide with commercial openings. Because a large percentage of Cordova households participate in the commercial salmon fishery, they do not participate in the subsistence fishery, but rather remove salmon from their commercial harvests for home use. The BOF recognized this pattern when it established 2 ANS ranges for the subsistence fishery: a lower range when the harvestable surplus of salmon allowed for a commercial fishery, and a higher range for years when no commercial salmon fishery occurred (5 AAC 01.616(b)(2)).

The harvest estimates for Southeast Alaska include fisheries that occur under both subsistence and personal use regulations, because a single permit is issued for both categories of fishery and harvest estimates do not distinguish between the two. Also, subsistence salmon fisheries in Southeast Alaska are subject to daily bag and possession limits, and underreporting of harvests in these fisheries probably occurs (Fall et al. 2009).

In Figure 61, average salmon harvests in subsistence and personal use fisheries from 1998–2007 are reported in pounds per capita per permit in order to compare them with national food consumption data. The average harvest per capita per permit harvest for the Chitina Subdistrict dip net fishery was 25 pounds, very similar to the other 3 salmon personal use fisheries depicted in the figure. This represents about 12% of the average annual consumption of meat, fish, and poultry in the United States in 2006 (about 201 pounds per person) (U. S. Census Bureau 2010), compared to 60% for all state subsistence salmon fisheries combined (Figure 62).

FIGURES

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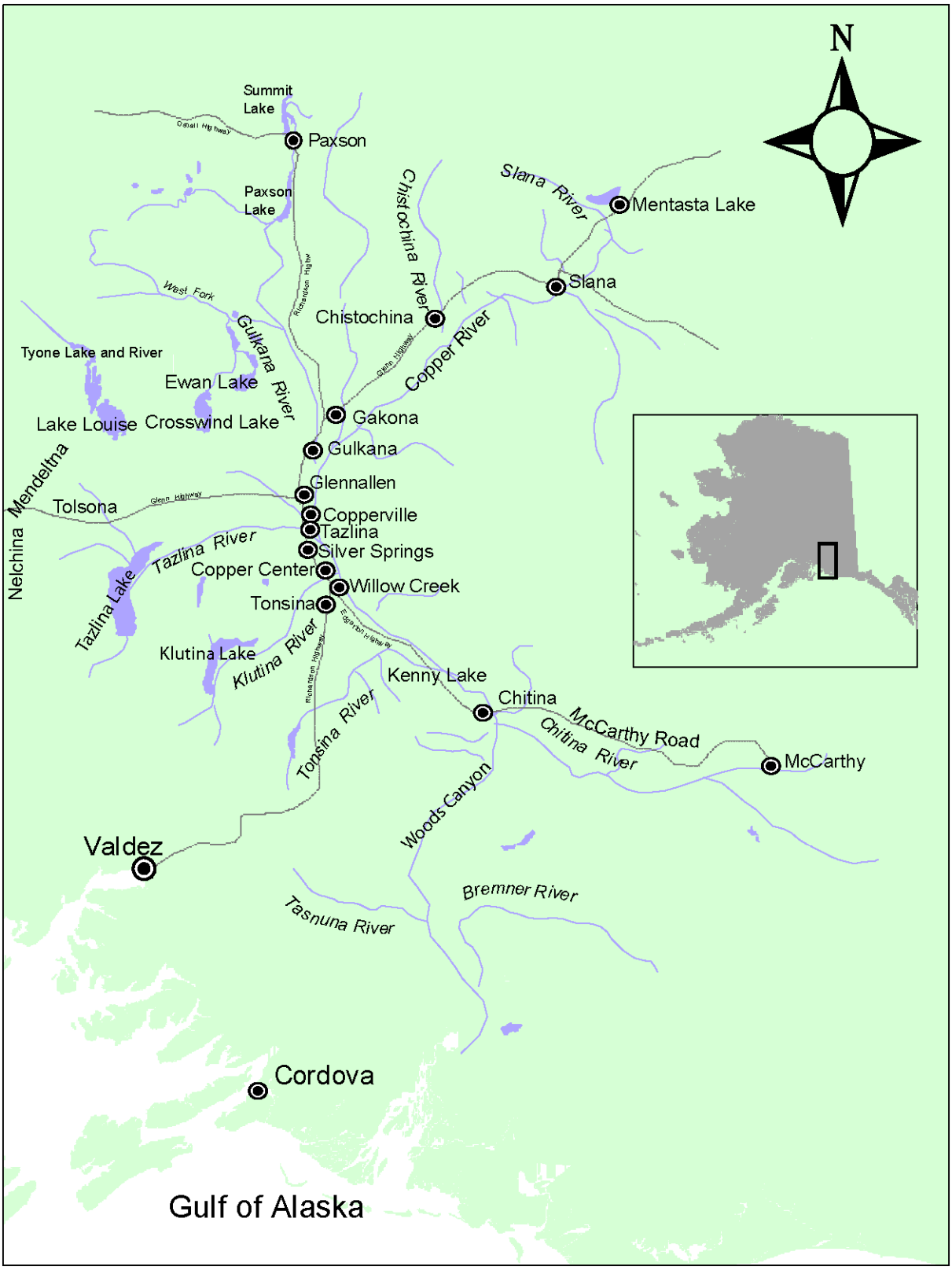


Figure 1.–Map of the Copper River drainage.

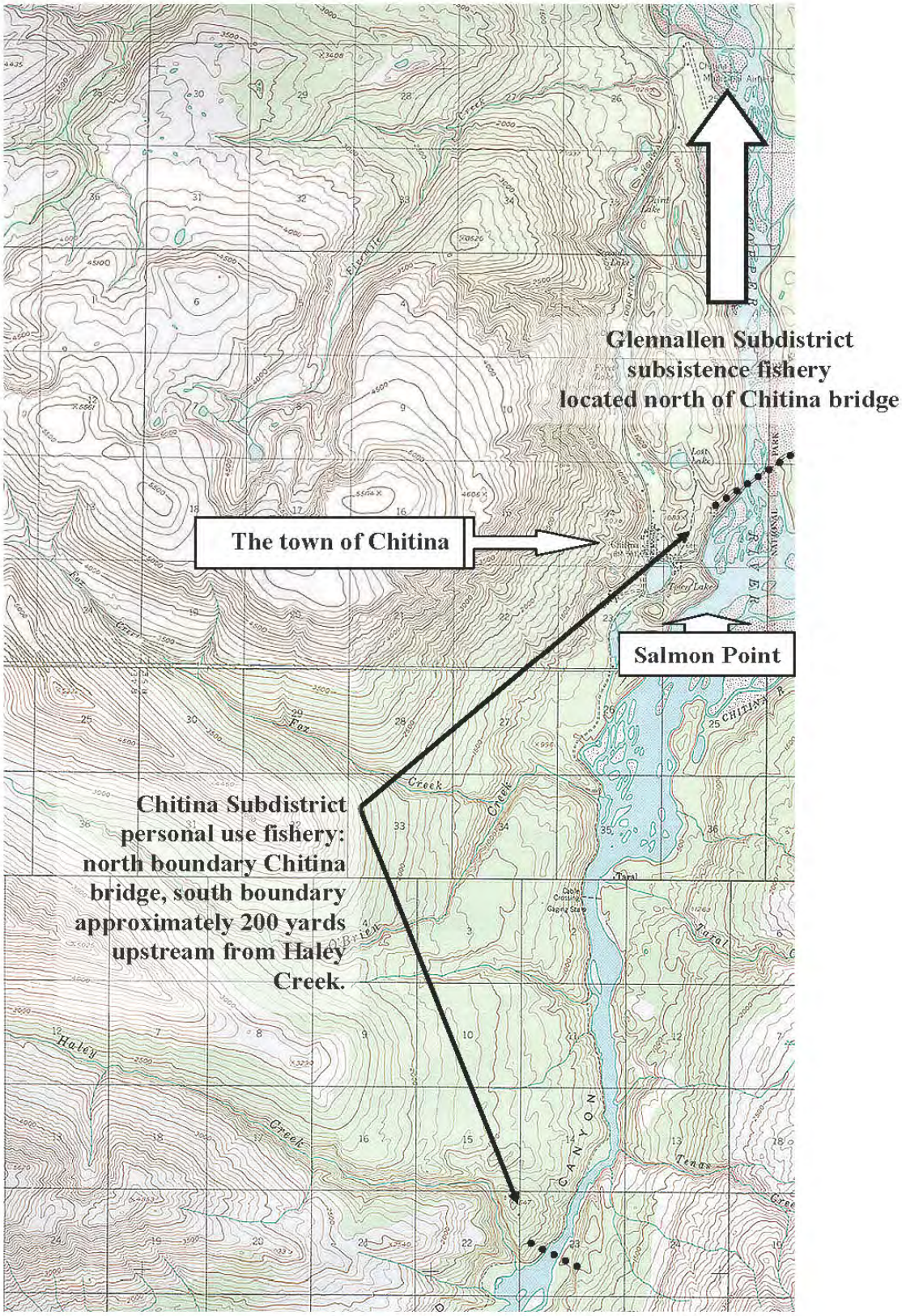
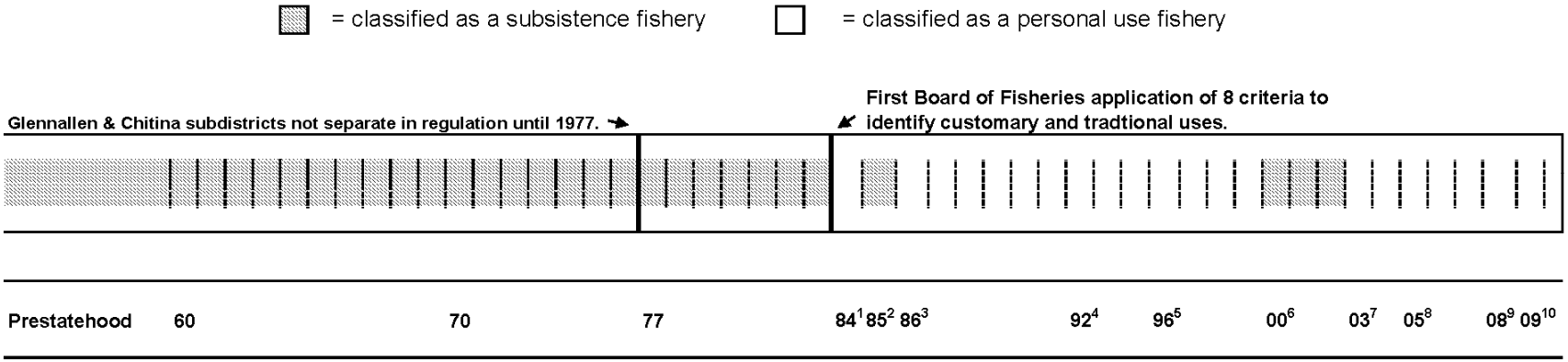


Figure 2.–Location of Glennallen and Chitina subdistricts.

Figure 3. Regulatory Classification of Chitina Subdistrict Salmon Fishery: Prestatehood to 2009



Key regulatory and court actions concerning classification of the Chitina Subdistrict salmon fishery as subsistence or personal use:

[1] 1984: Alaska Board of Fisheries found that the Chitina Subdistrict salmon stocks were not subject to customary and traditional use.
[2] Following *Madison* decision, regulations governing subsistence fishing in the Copper River reverted to those in effect prior to 1984, for 1985 only.
[3] Following passage of 1986 subsistence statute, the 1984 negative C&T finding for Chitina Subdistrict stocks was again in effect.
[4] Following passage of 1992 subsistence statute, the Board of Fisheries affirmed the negative C&T finding for Chitina Subdistrict salmon stocks.
[5] Board of Fisheries rejected Proposal 50, thus affirming 1984 negative C&T finding.
[6] December 1999, the Board of Fisheries adopted Proposal 44, finding that the Chitina Subdistrict salmon stocks were subject to customary and traditional use.
[7] Board of Fisheries adopted Proposal 42, finding that Chitina Subdistrict salmon stocks were not subject to customary and traditional use.
[8] Regarding Proposal 3, the Board of Fisheries found that no significant new information was available to warrant reexamination of C&T finding.
[9] Regarding proposals 42 and 43, the Board of Fisheries found that no significant new information was available to warrant reexamination of the C&T finding.
[10] On 12/31/09, in *Alaska Fish and Wildlife Conservation Fund v State*, the Alaska Superior Court directed the Board of Fisheries to review its 2003 finding using an objective standard to interpret 5 AAC 99.010(b)(8). This action was scheduled for the March 2010 Board of Fisheries meeting.

Prepared by ADF&G Division of Subsistence February 2003; updated December 2005, December 2008, and March 2010.

Figure 3.–Regulatory classification of Chitina subdistrict salmon fishery: prestatehood to 2009.

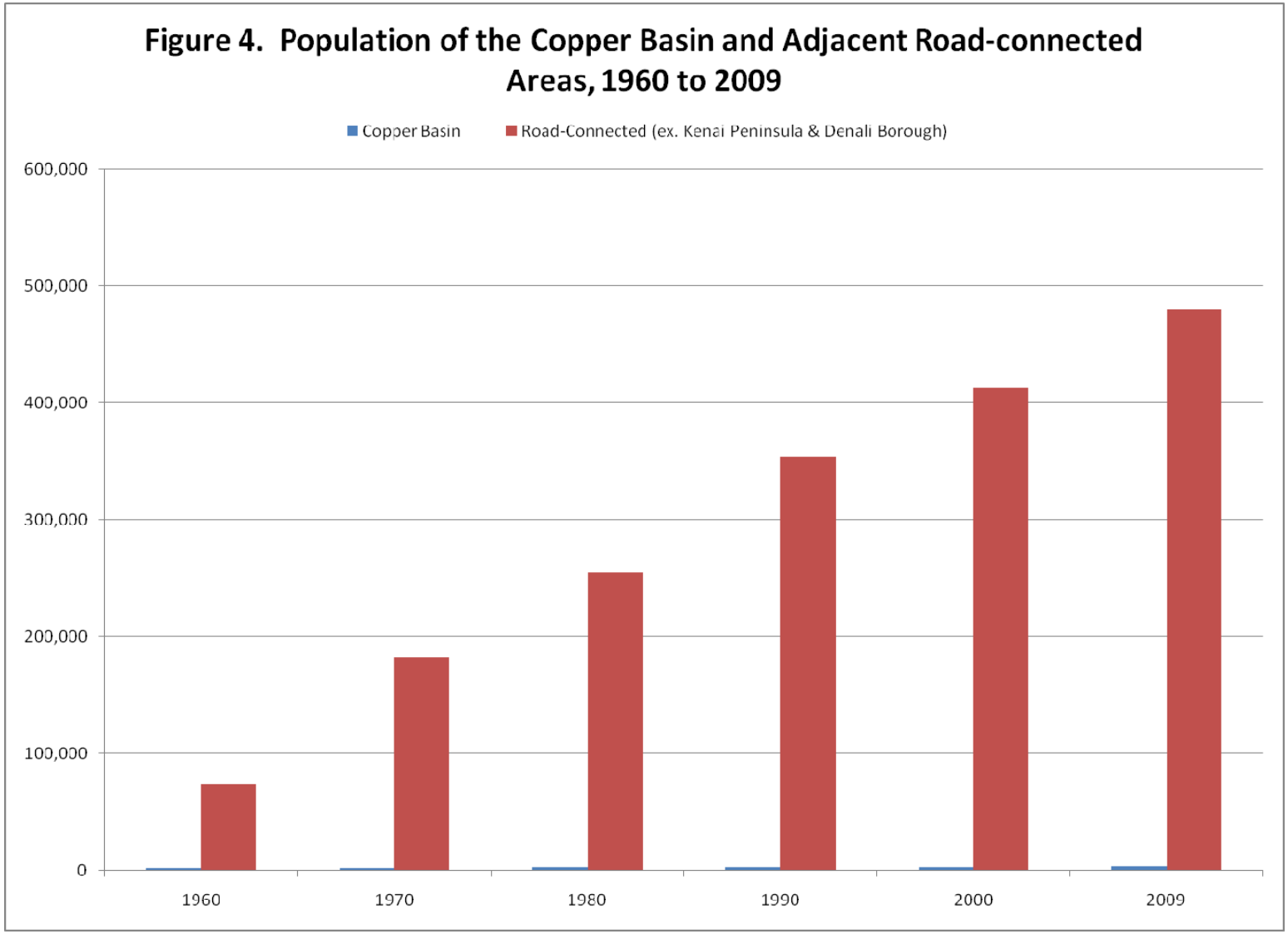


Figure 4.–Population of the Copper Basin and adjacent road-connected areas, 1960 to 2009.

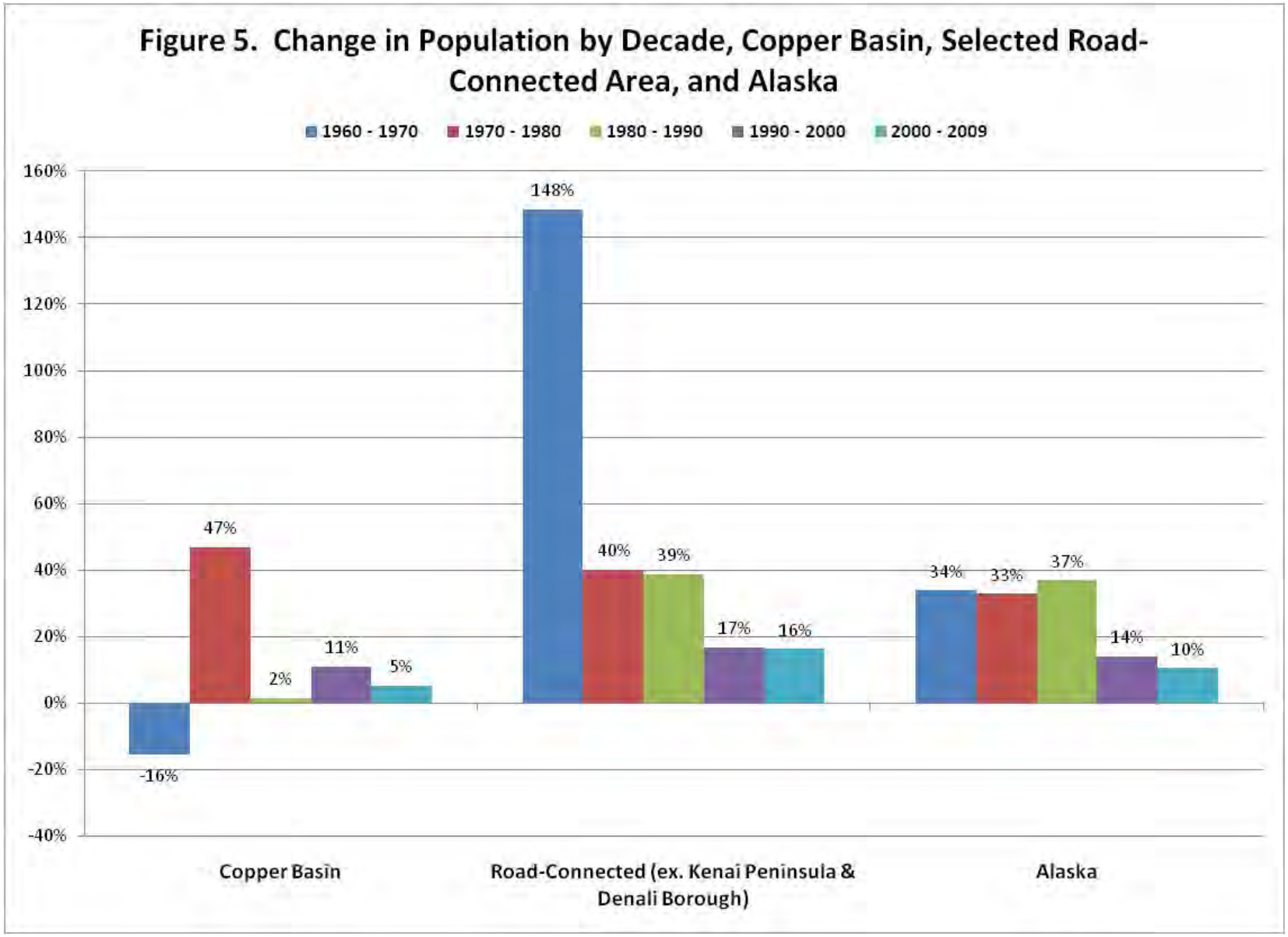


Figure 5.–Change in population by decade, Copper Basin, selected road-connected areas, and Alaska.

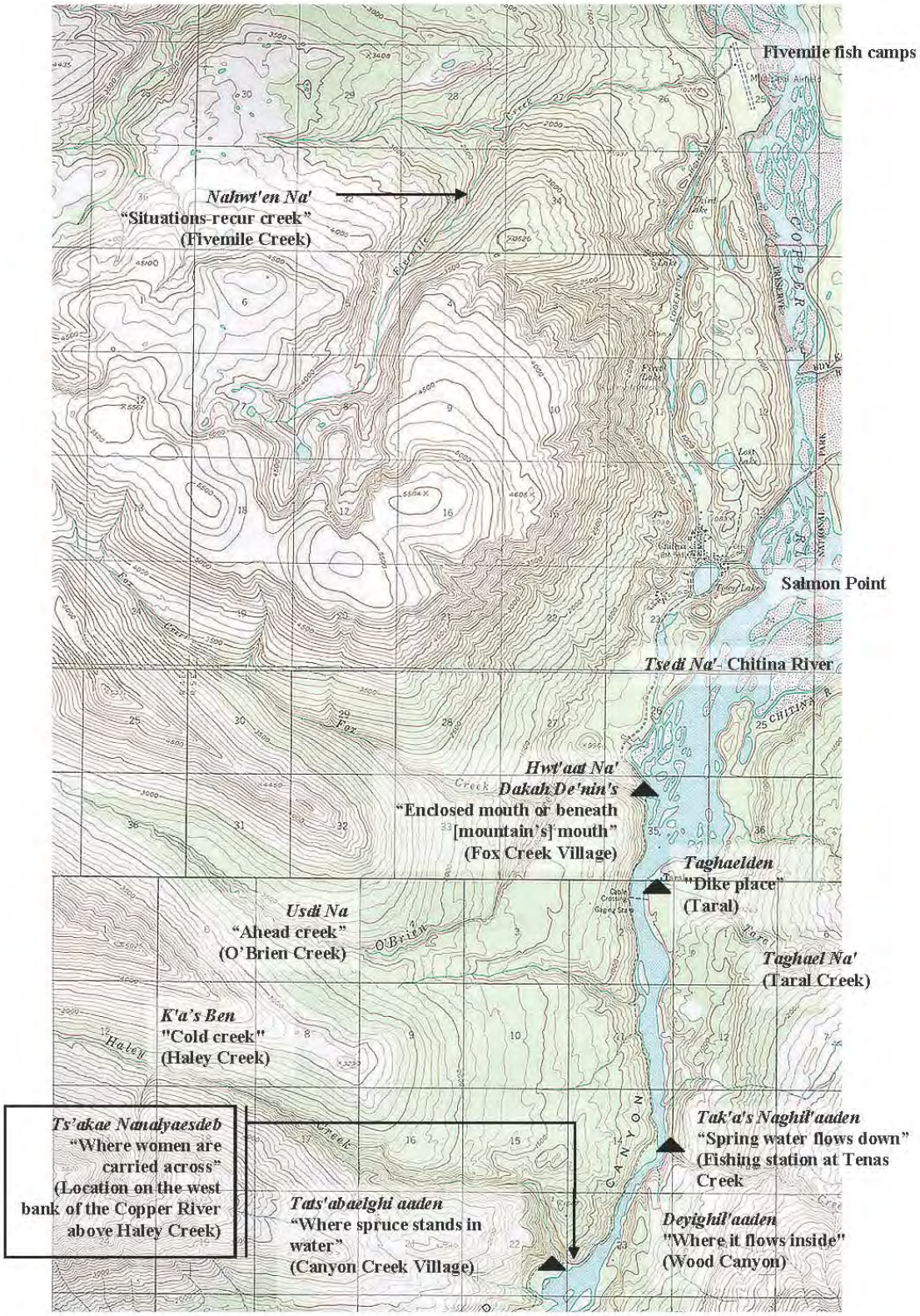


Figure 6.–Some attested Ahtna villages, fishing stations, and places, lower Copper River.

Sources Kari 1986; Reckord 1983b; Kari 1983.

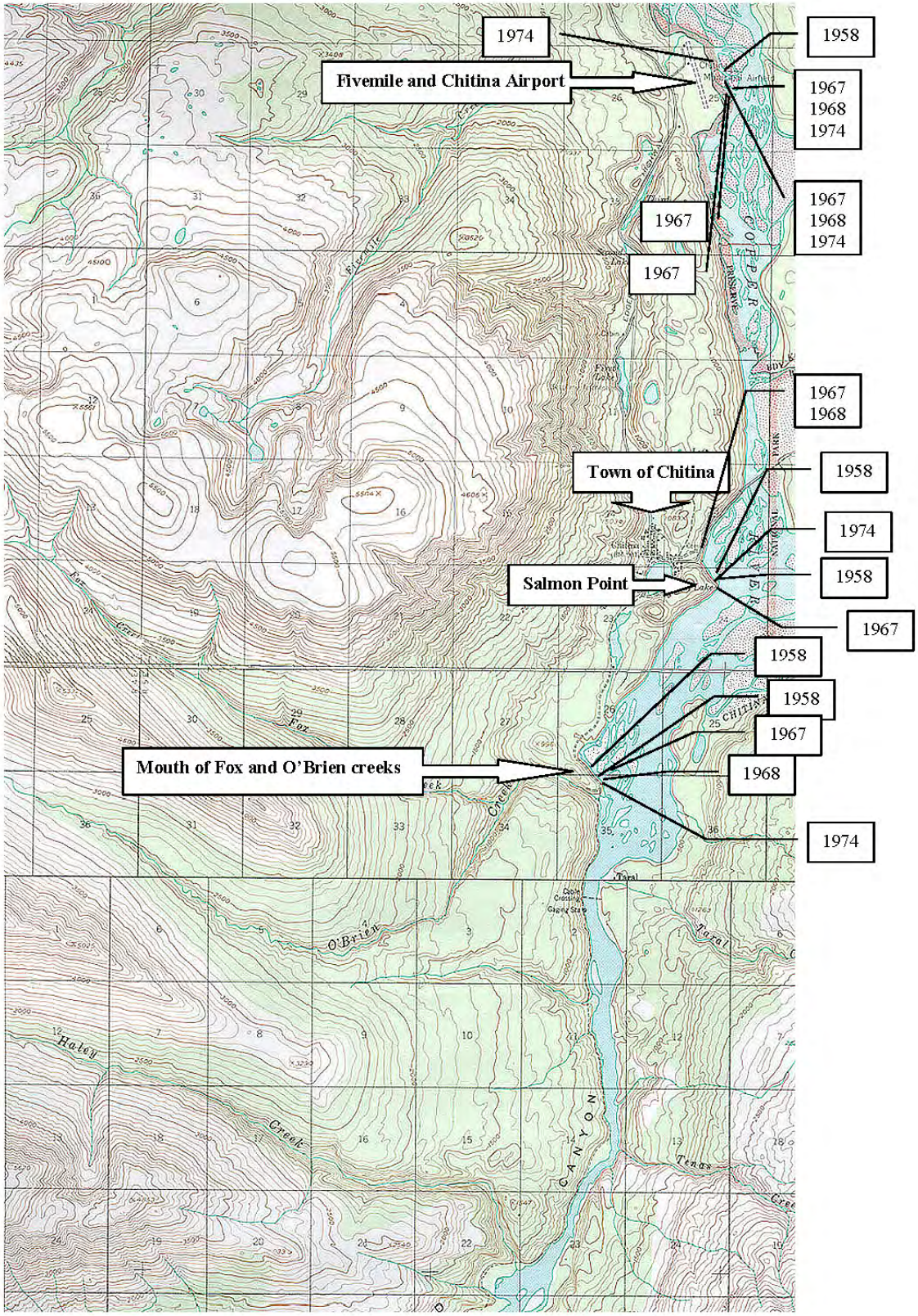


Figure 7.–Location of fish wheels in the Chitina area, 1958, 1967, 1968, and 1974.

Source ADF&G Division of Commercial Fisheries.

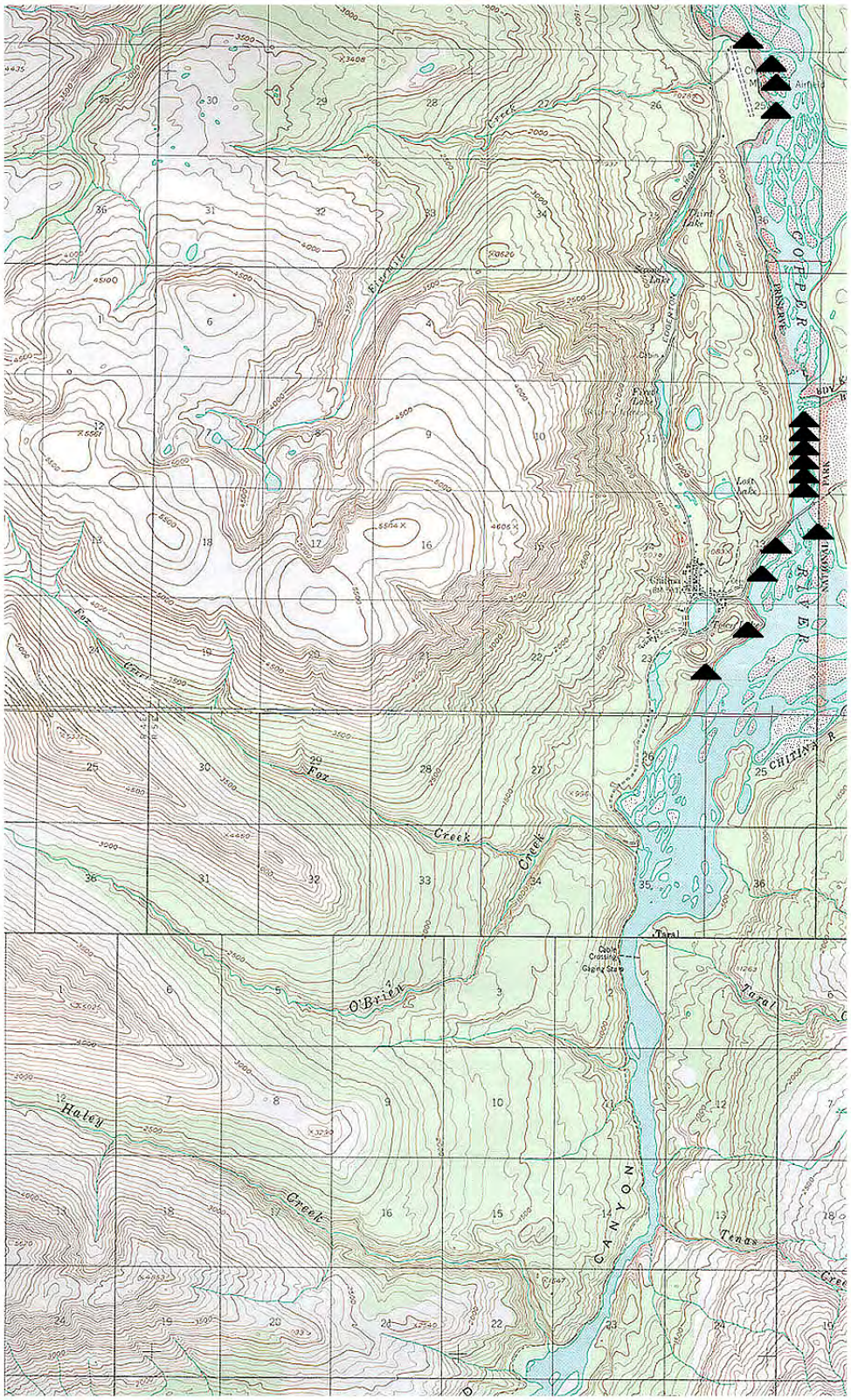


Figure 8.–1975 fish wheel locations, lower Copper River.

Source ADF&G Division of Commercial Fisheries.

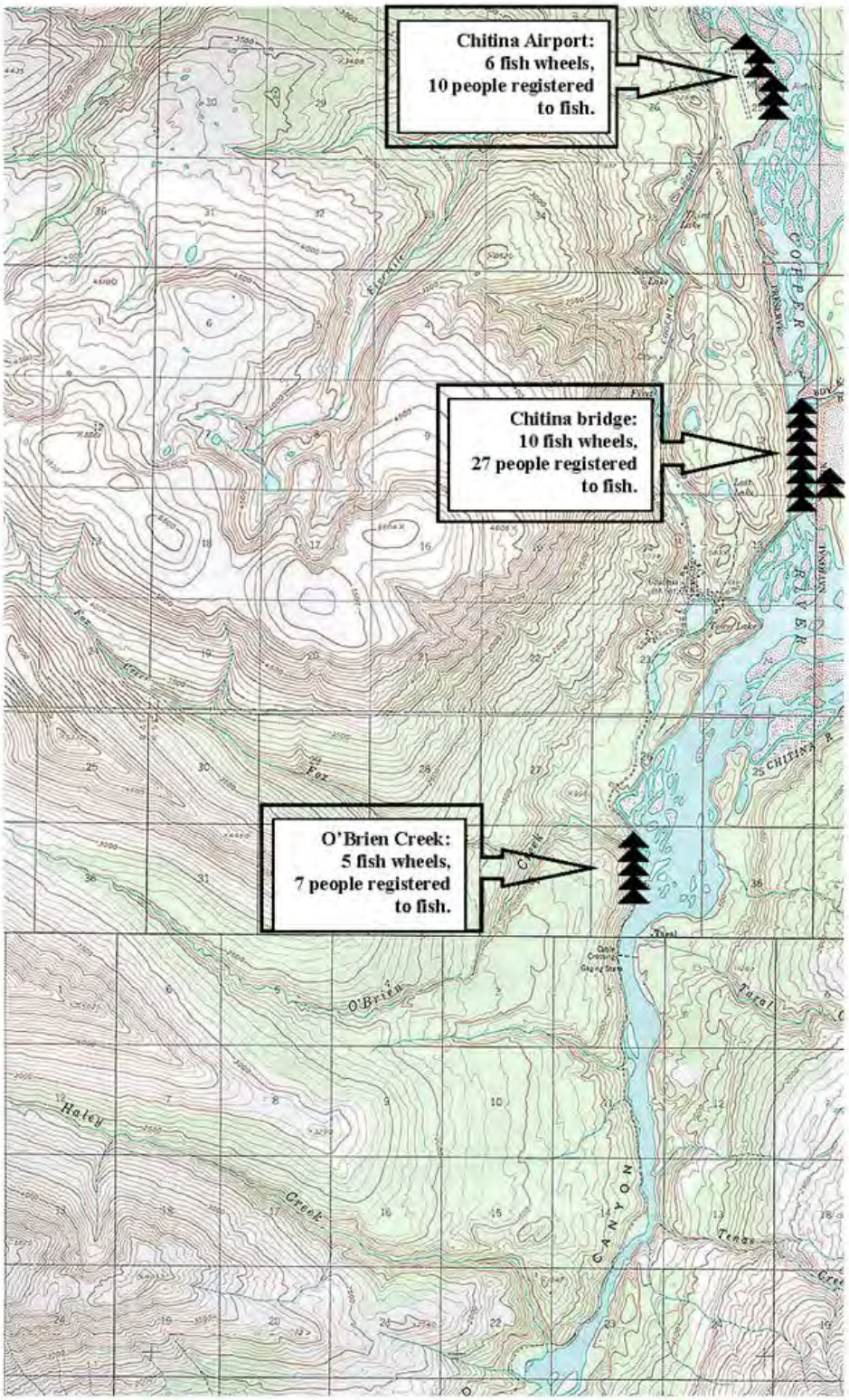


Figure 9.–1977 fish wheel locations, lower Copper River.

Source ADF&G Division of Commercial Fisheries.

Note Regulation changes: BOF creates the Chitina and Glennallen subdistricts. Limit imposed on fish wheels operating in the Chitina Subdistrict: they can fish Tuesday through Thursday and Friday through Sunday.

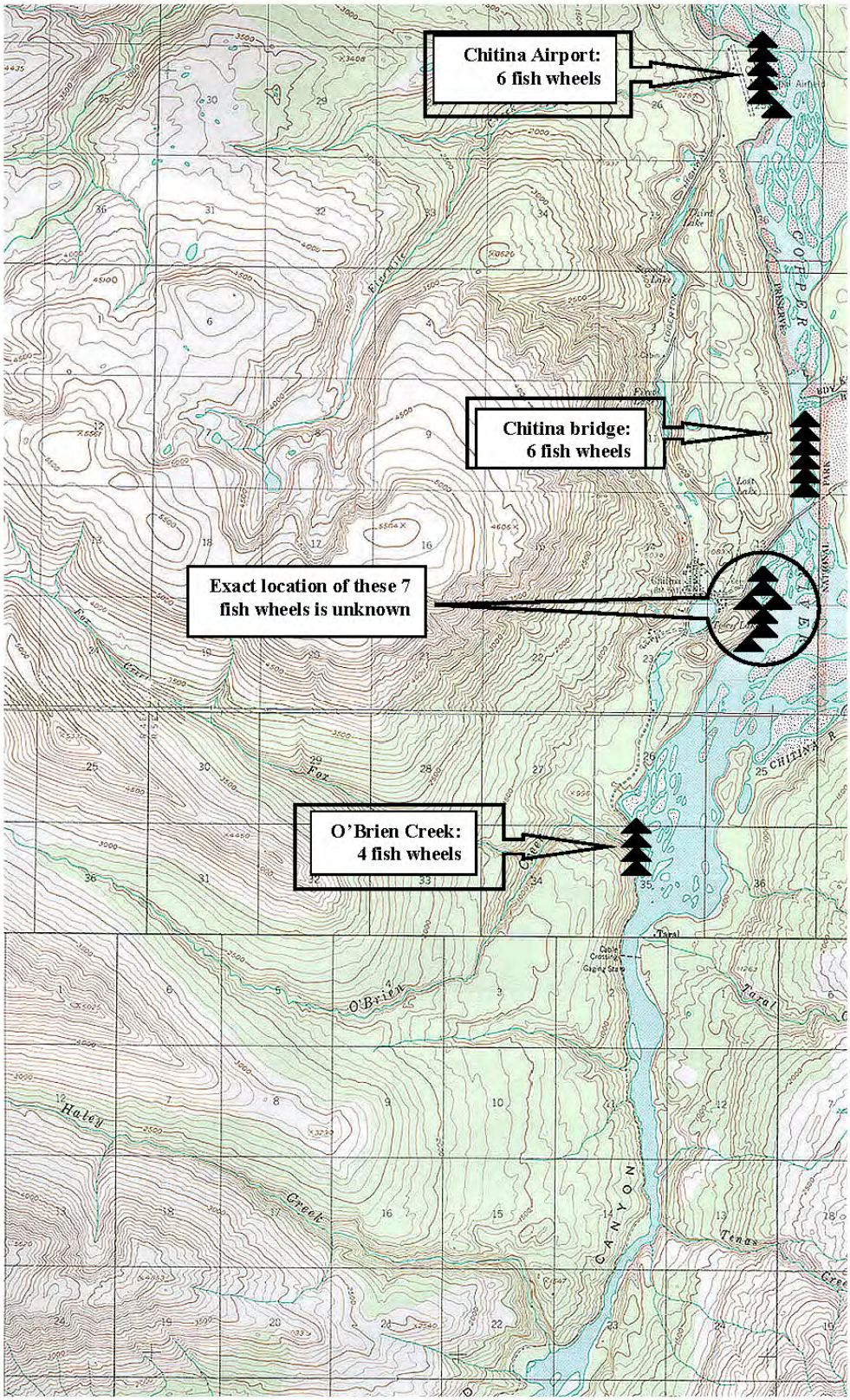


Figure 10.–1978 fish wheel locations, lower Copper River.

Source ADF&G Division of Commercial Fisheries.

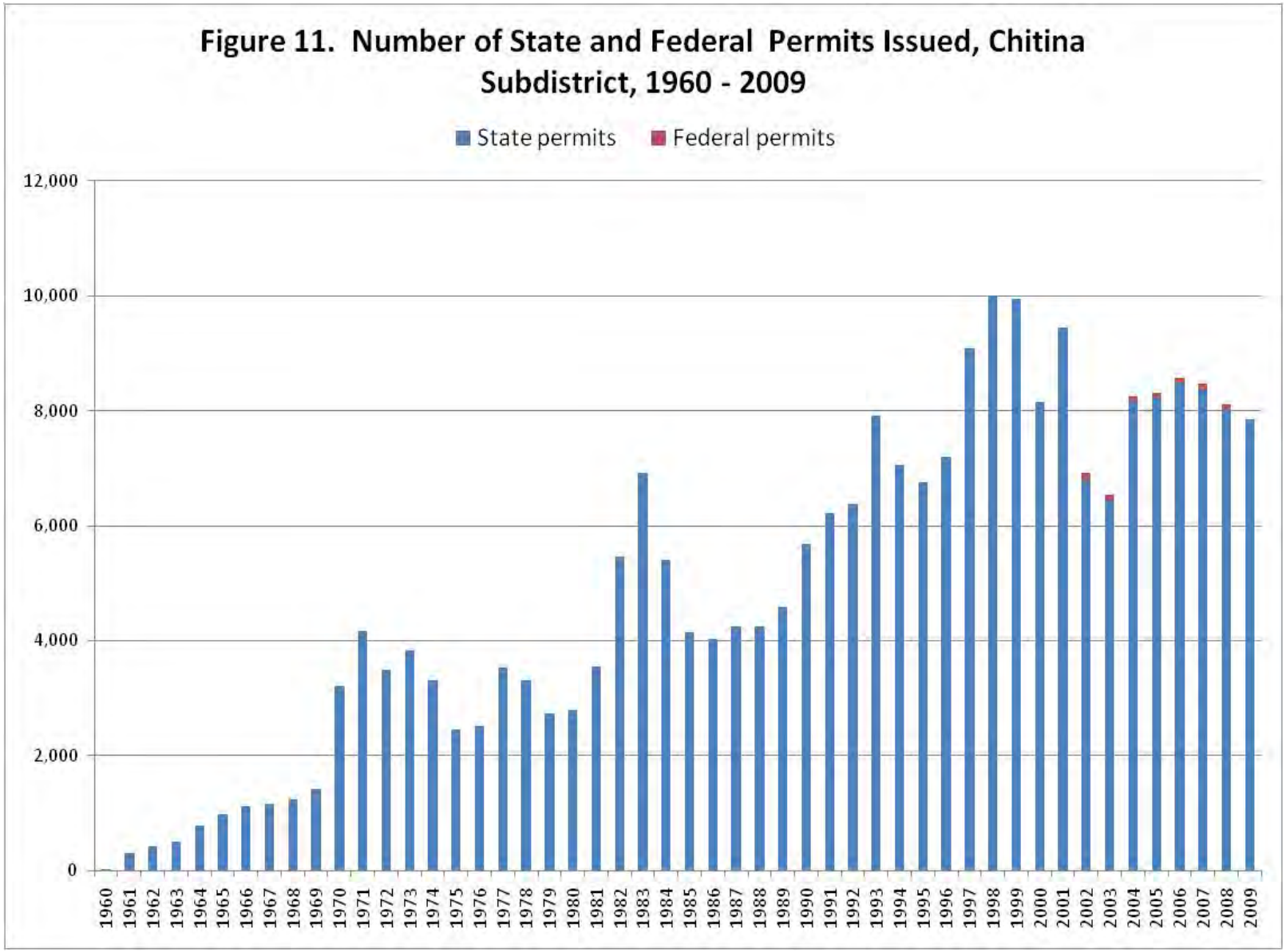


Figure 11.–Number of state and federal permits issued, Chitina subdistrict, 1960–2009.

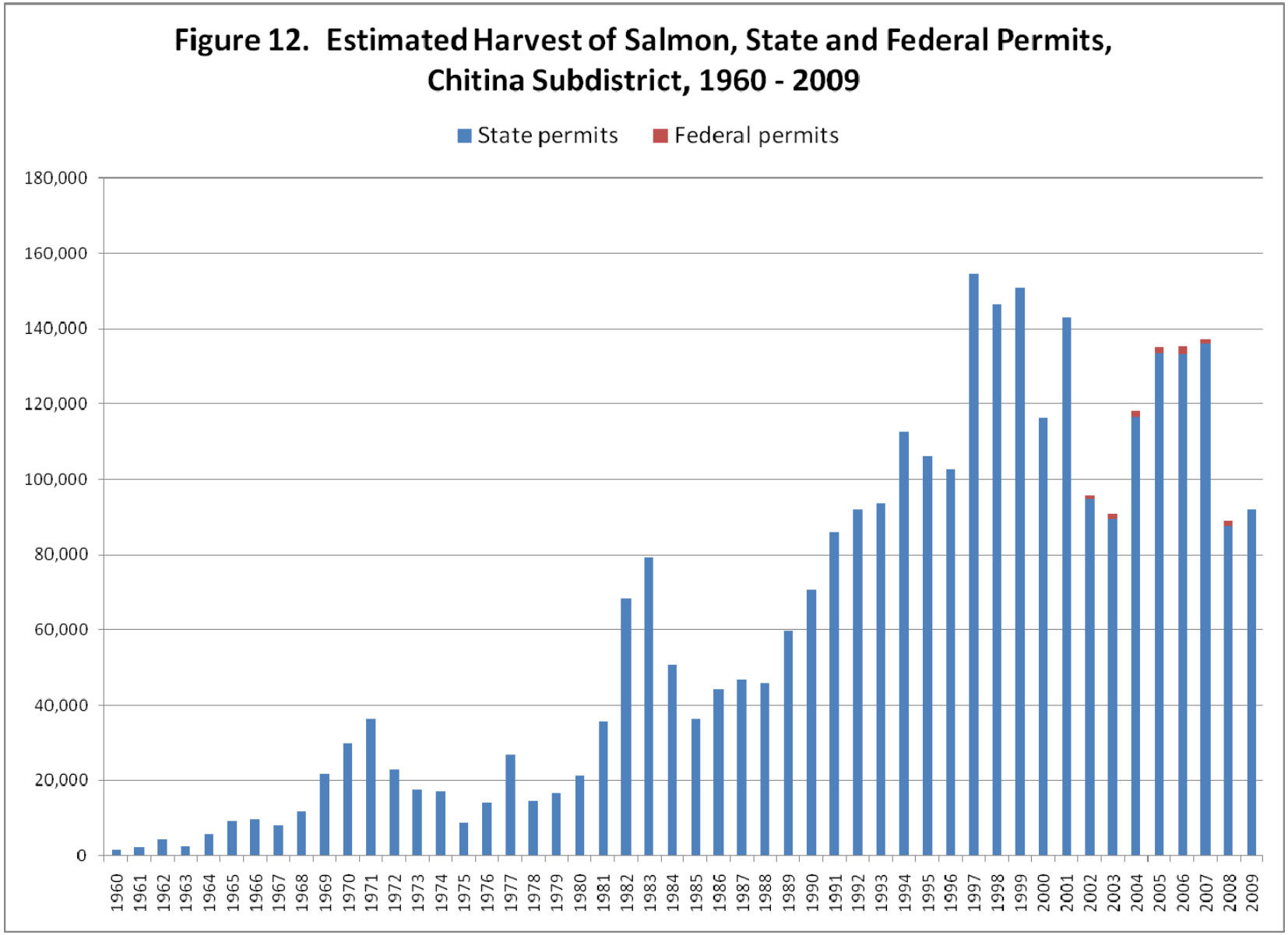


Figure 12.–Estimated harvest of salmon, state and federal permits, Chitina subdistrict, 1960–2009.

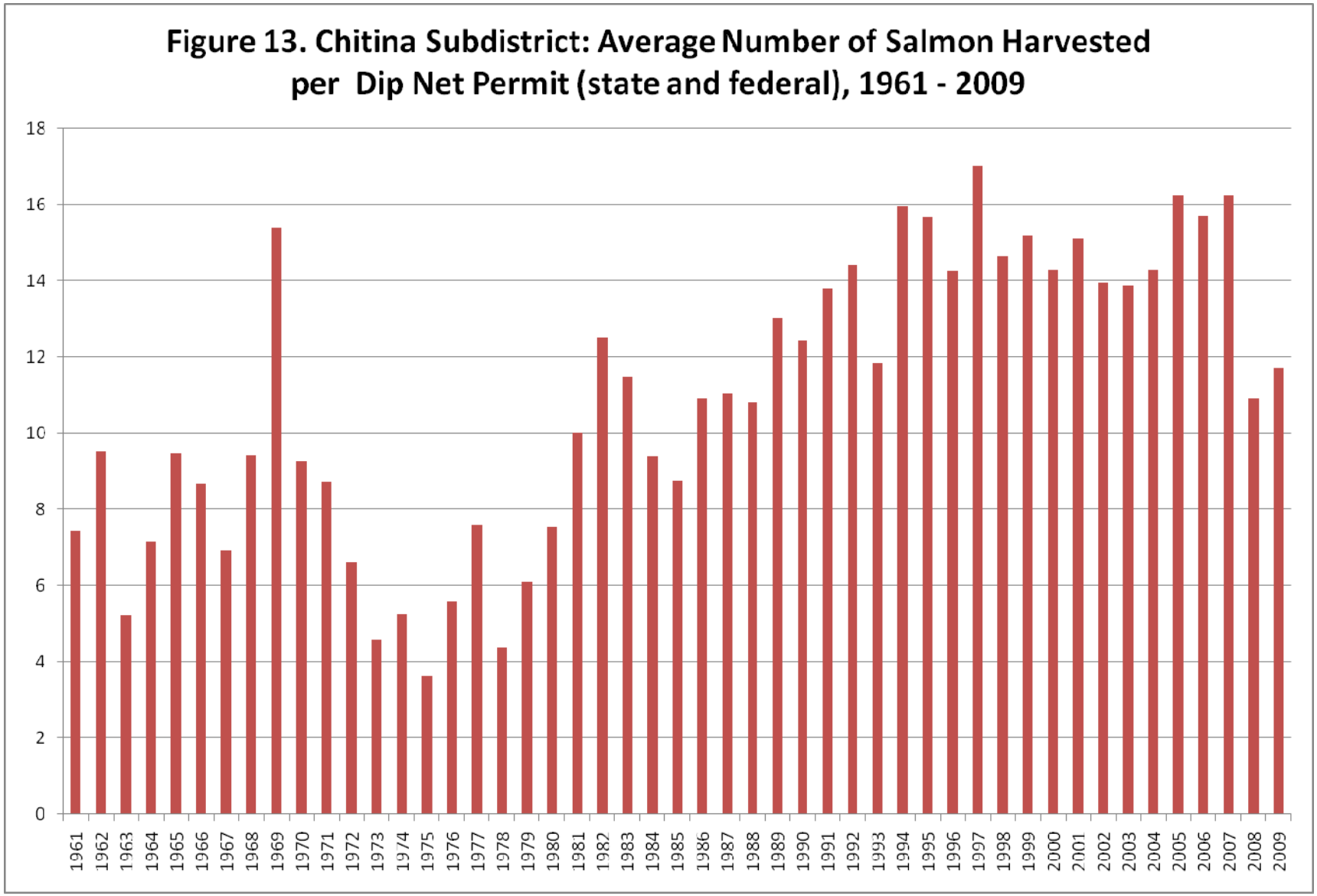


Figure 13.–Chitina subdistrict: average number of salmon harvested per dip net permit (state and federal), 1961–2009.

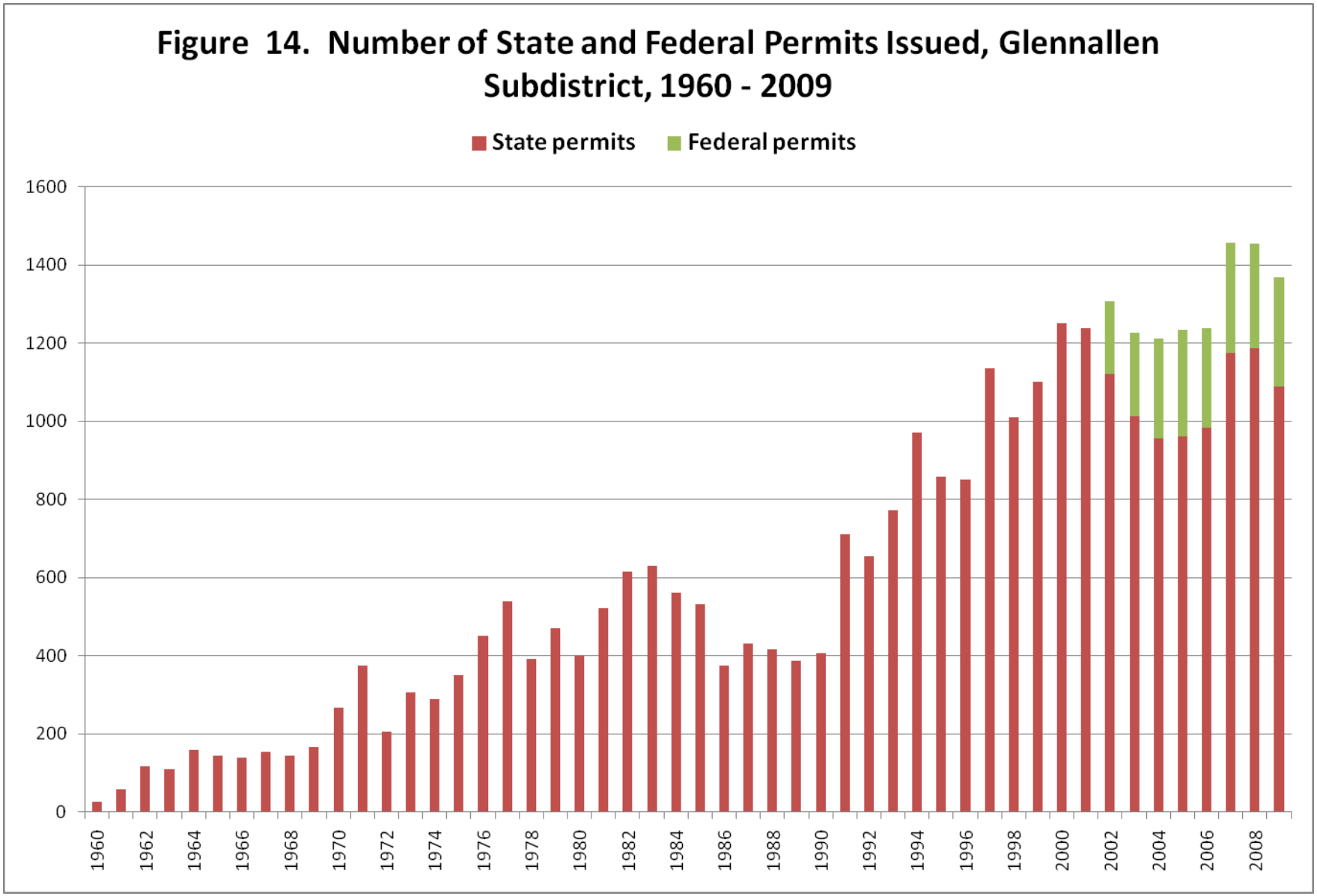


Figure 14.–Number of state and federal permits issued, Glennallen subdistrict, 1960–2009.

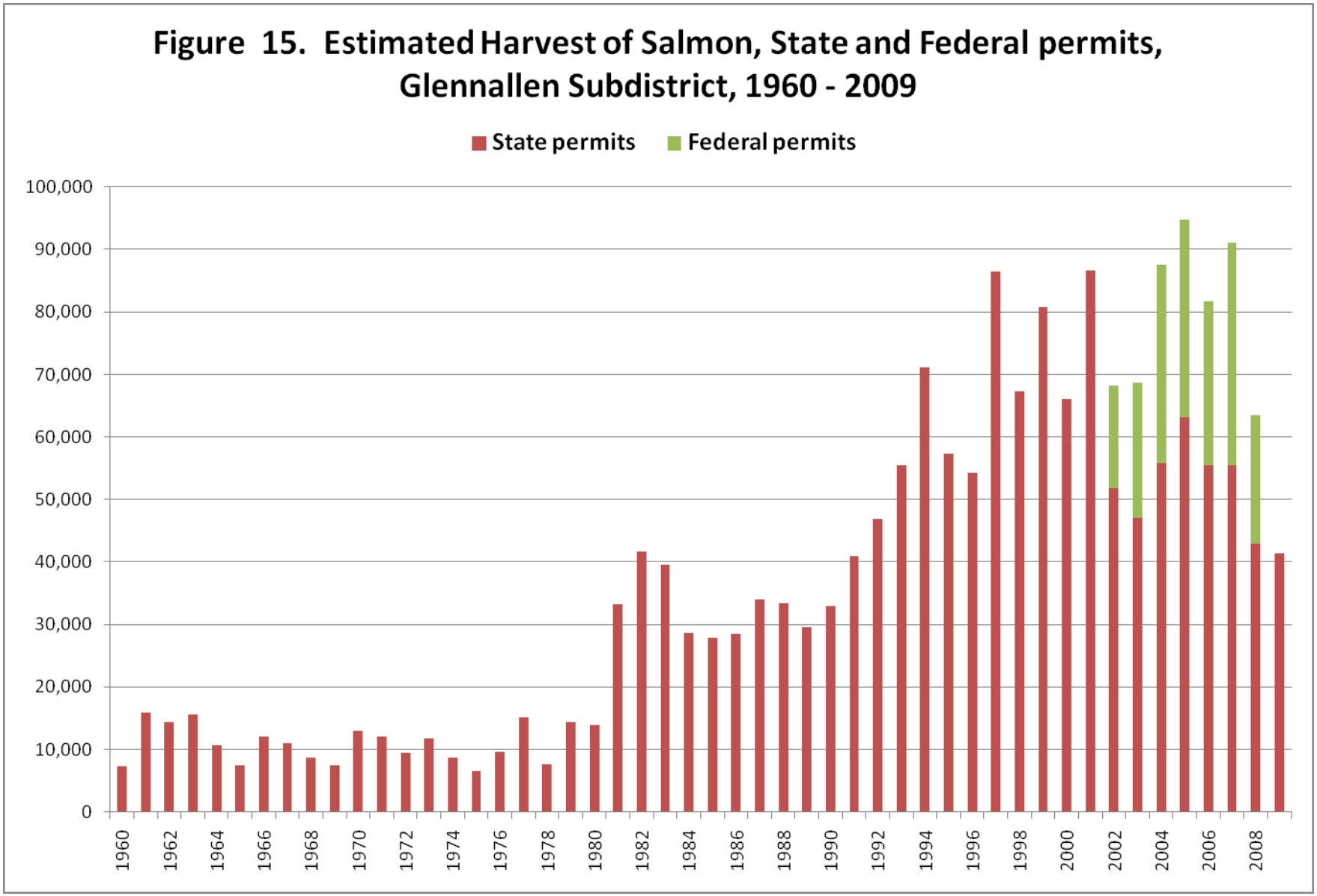


Figure 15.–Estimated harvest of salmon, state and federal permits, Glennallen subdistrict, 19602009.

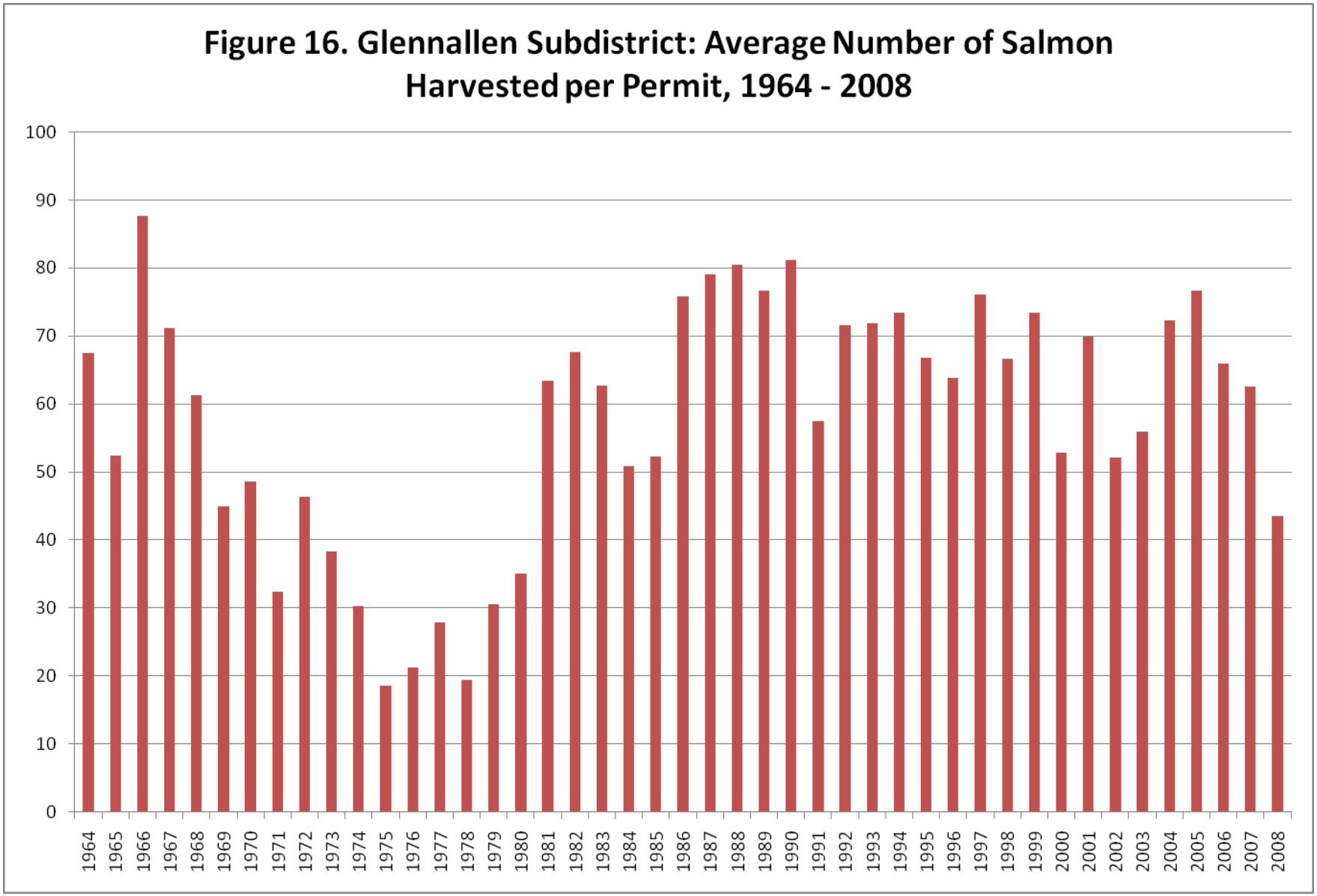


Figure 16.–Glennallen subdistrict: average number of salmon harvested per permit, 1964–2008.

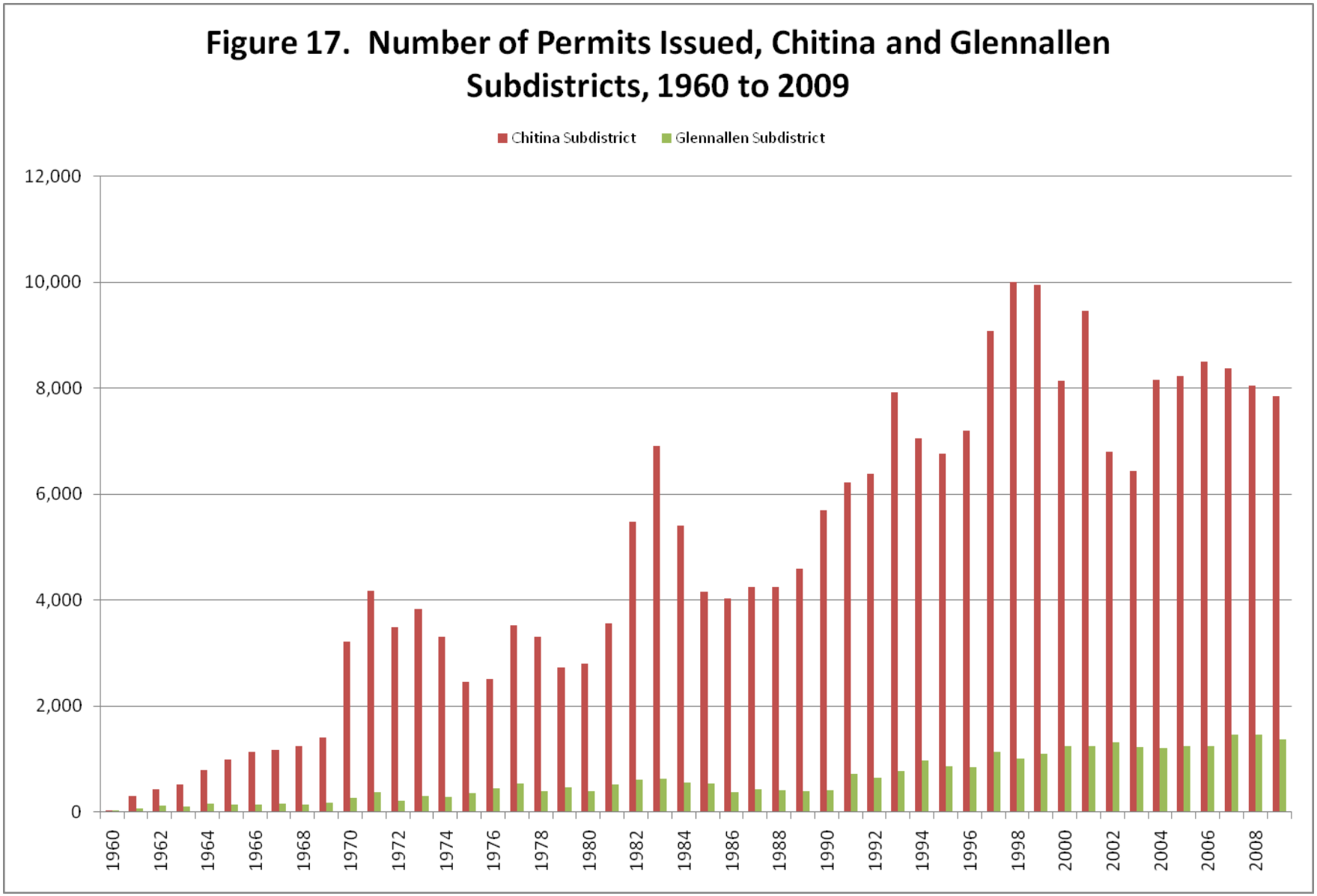


Figure 17.–Number of permits issued, Chitina and Glennallen subdistricts, 1960–2009.

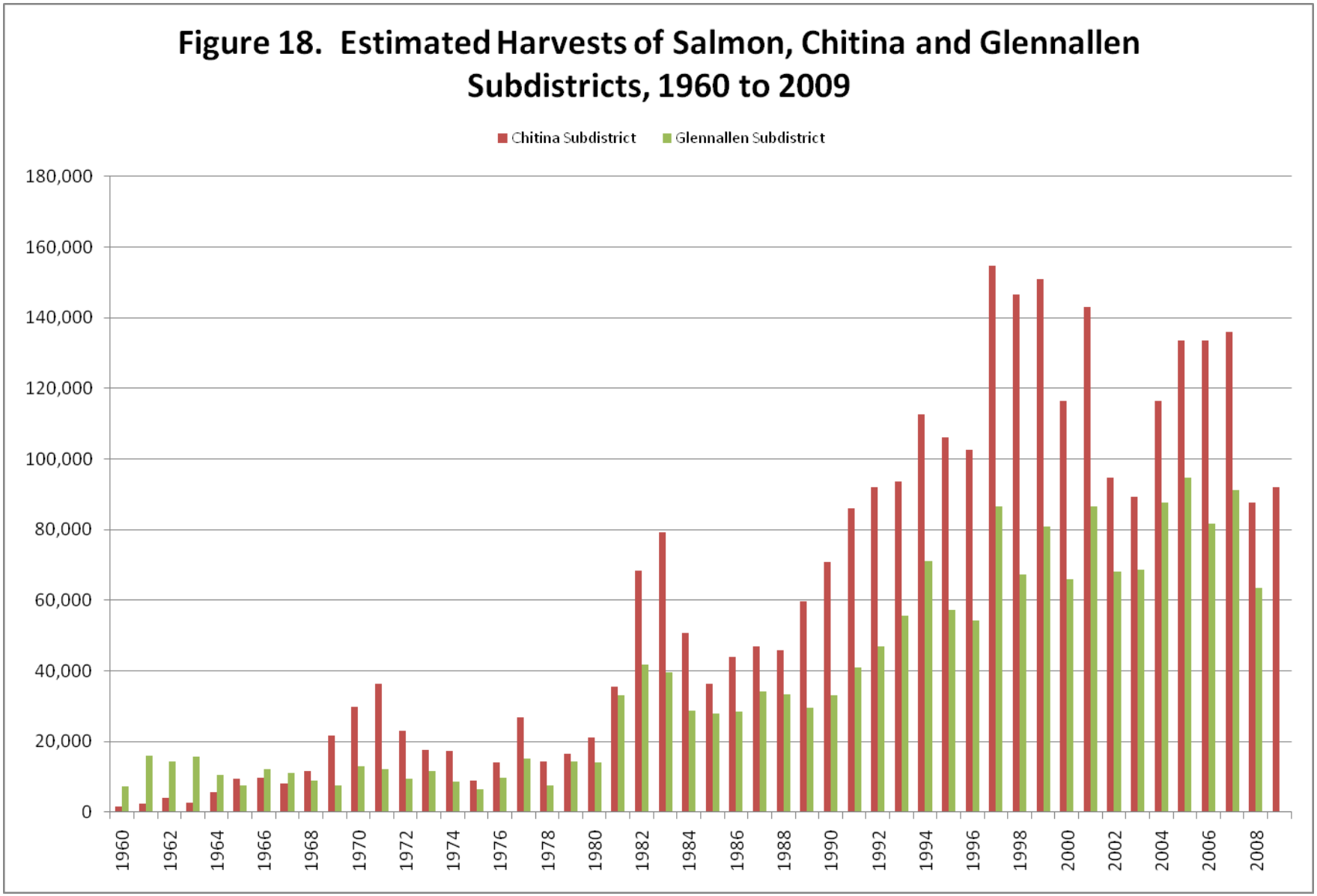


Figure 18.–Estimated harvests of salmon, Chitina and Glennallen subdistricts, 1960–2009.

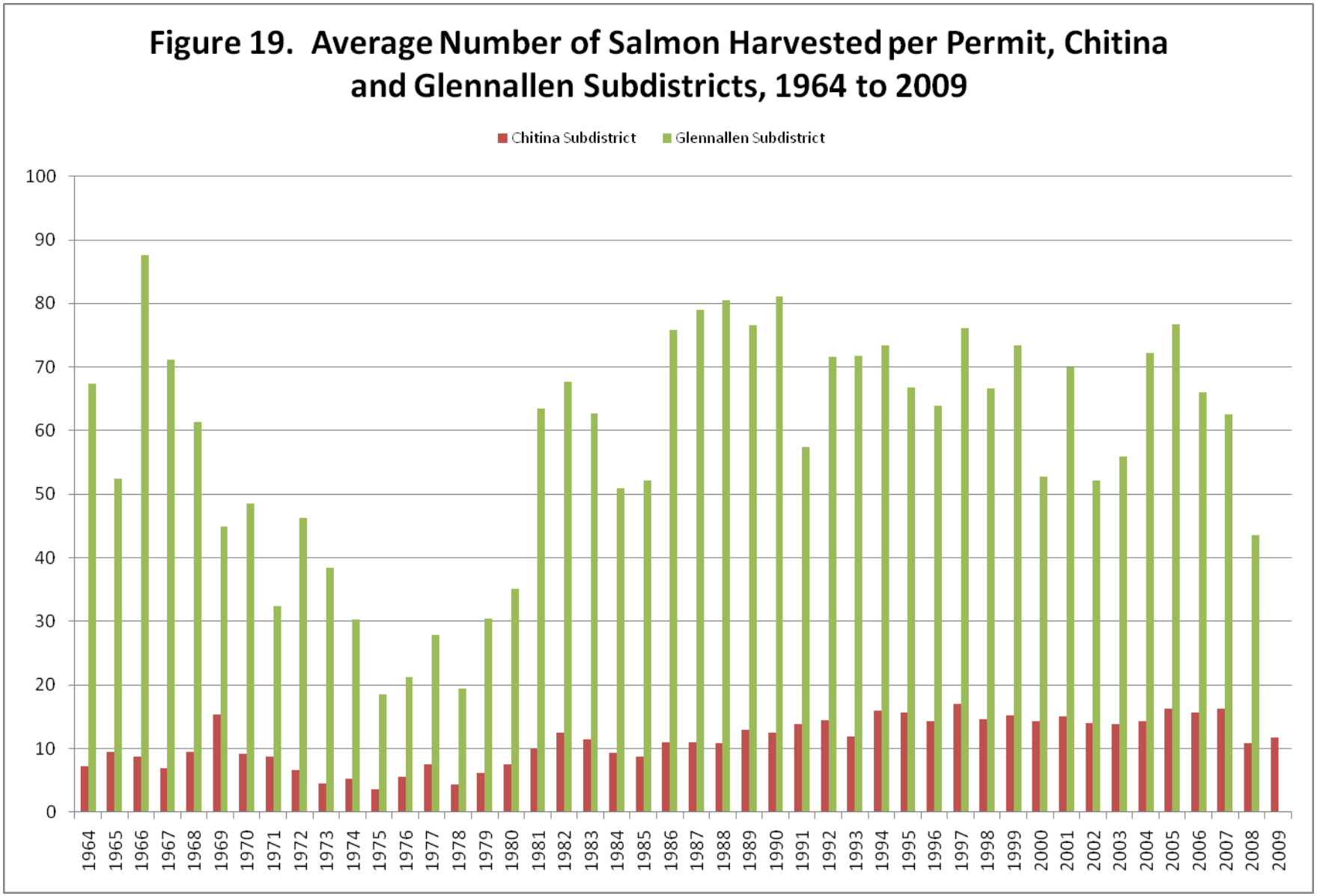


Figure 19.–Average number of salmon harvested per permit, Chitina and Glennallen subdistricts, 1964–2009.

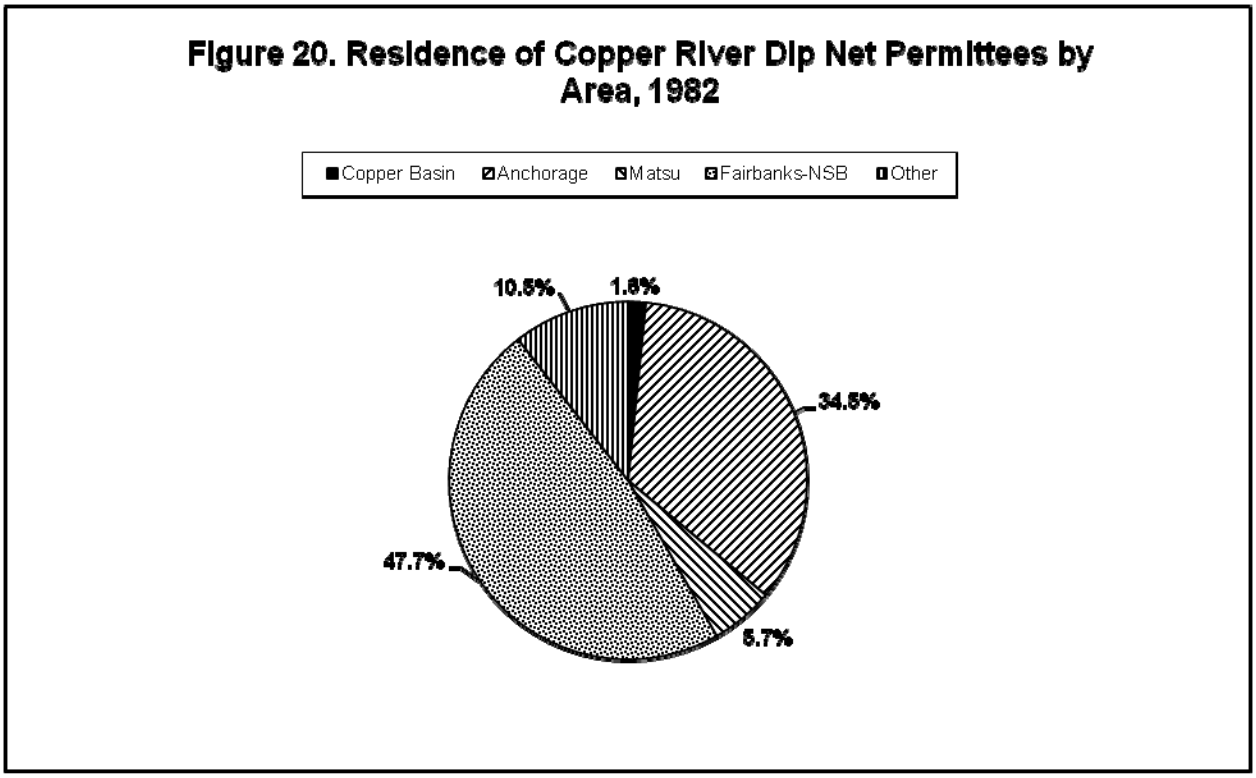


Figure 20.–Residence of Copper River dip net permittees by area, 1982.

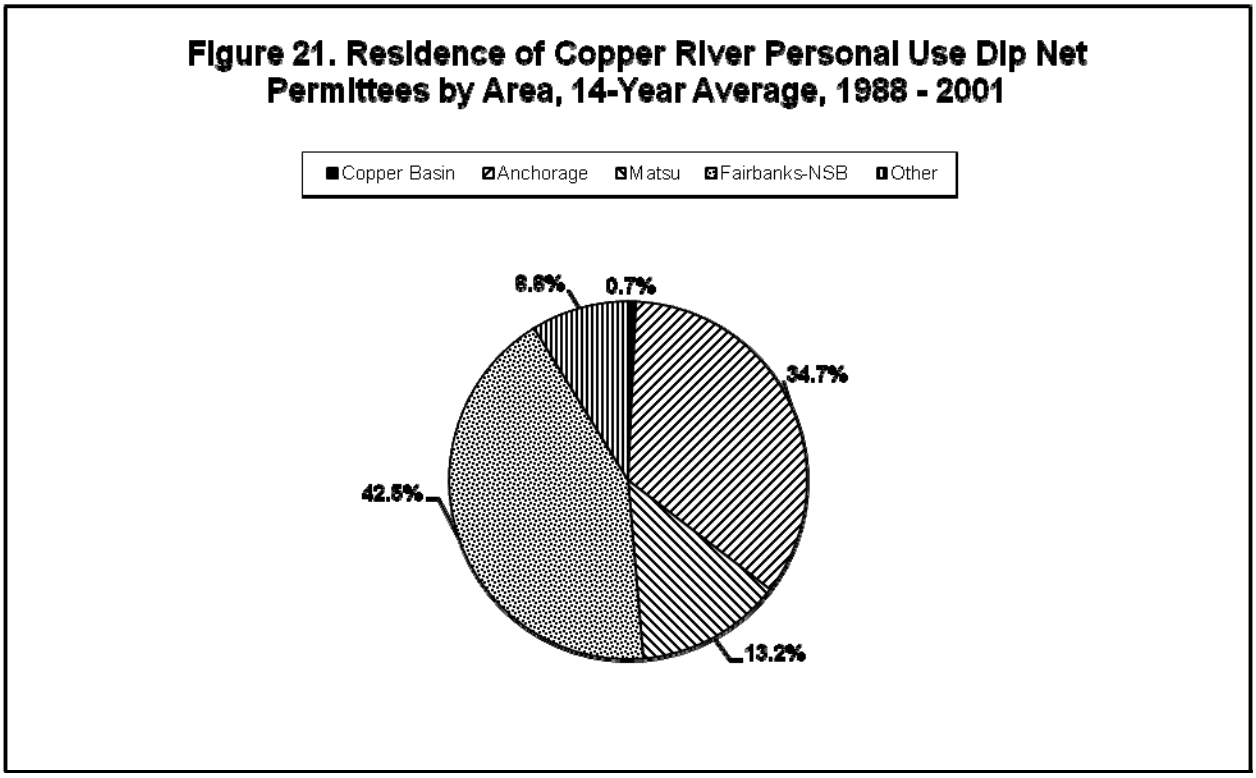


Figure 21.–Residence of Copper River personal use dip net permittees by area, 14-year average, 1988–2001.

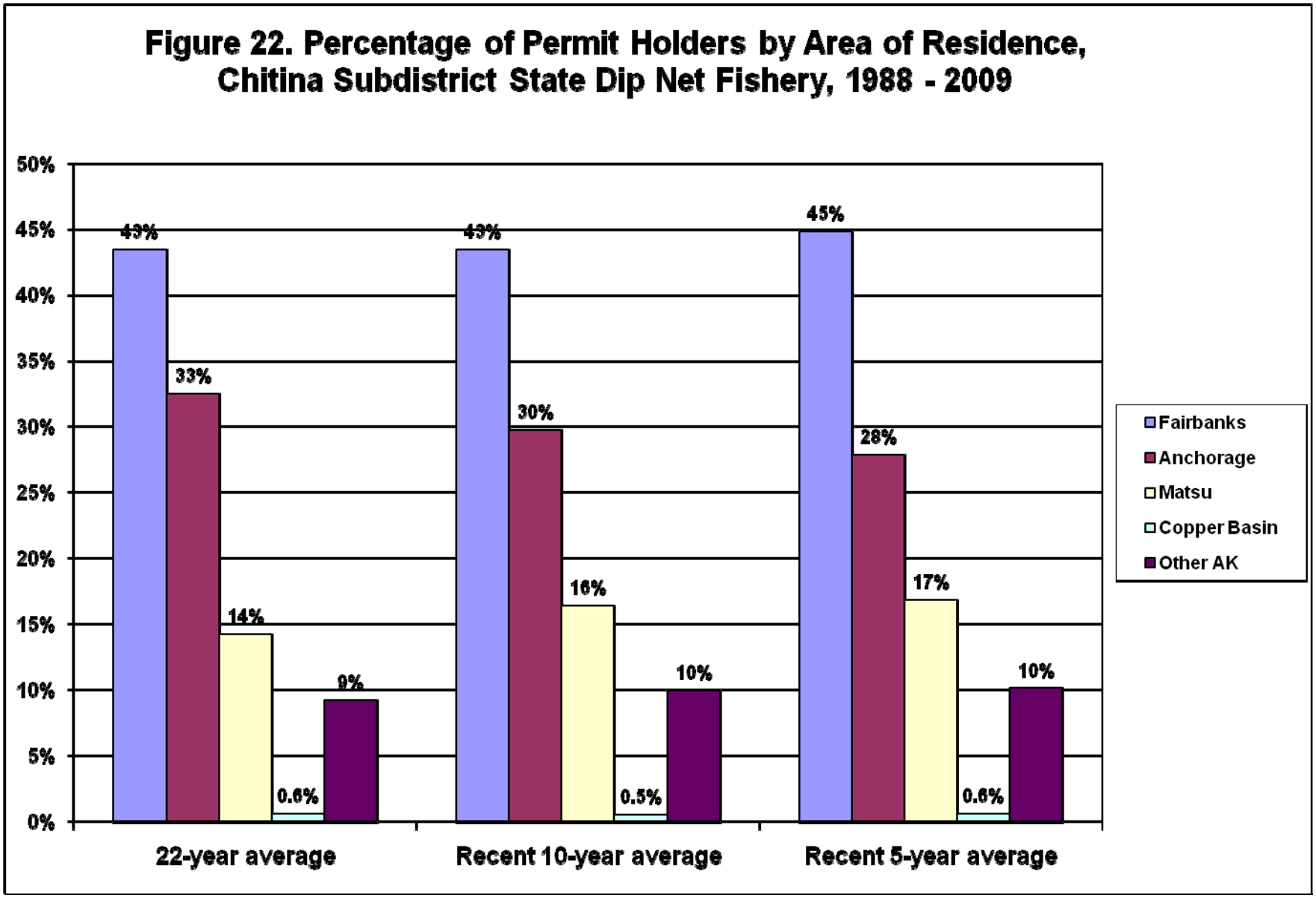


Figure 22.–Percentage of permit holders by area of residence, Chitina subdistrict state dip net fishery, 1988–2009.

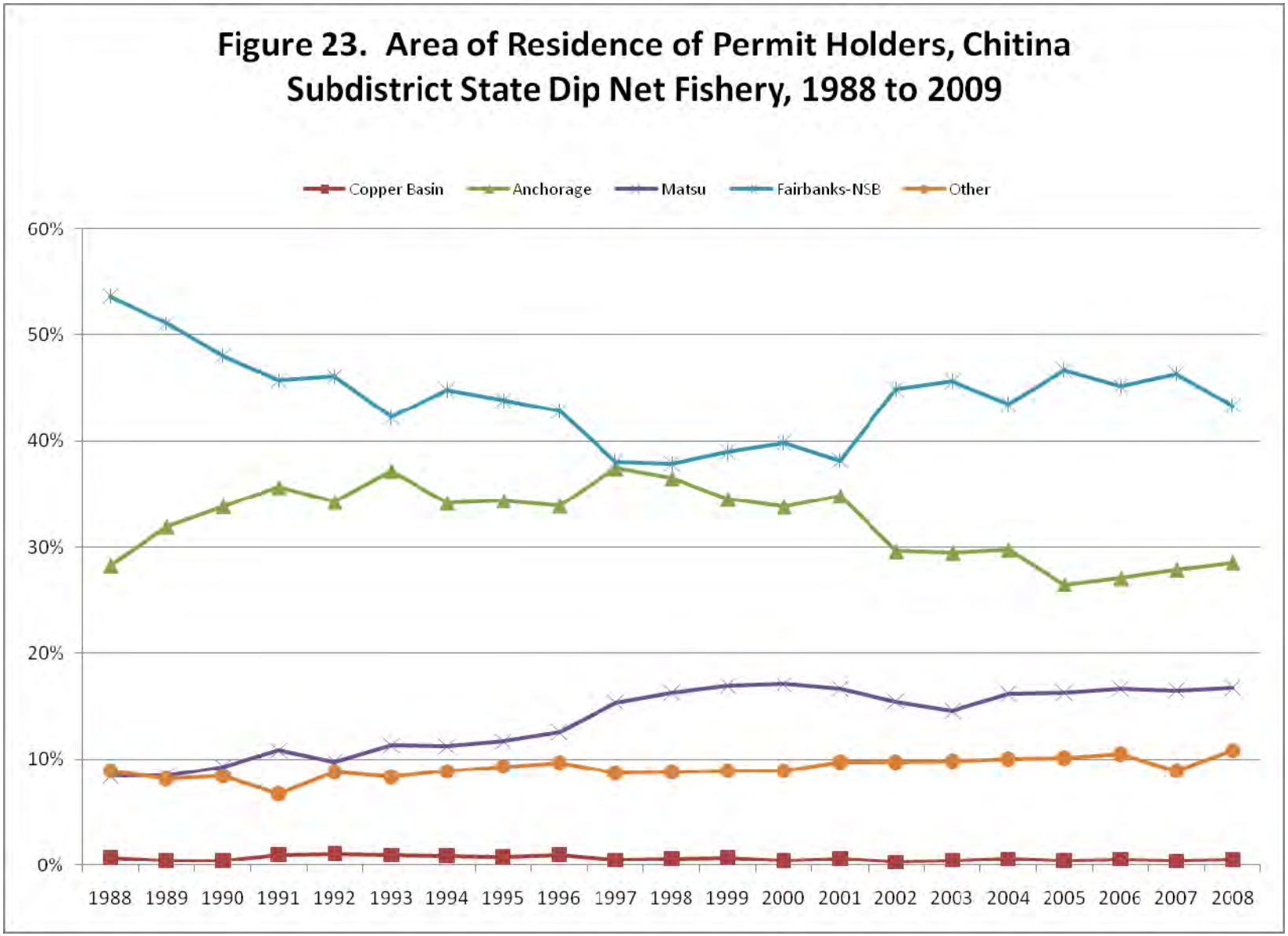


Figure 23.–Area of residence of permit holders, Chitina subdistrict state dip net fishery, 1988–2009.

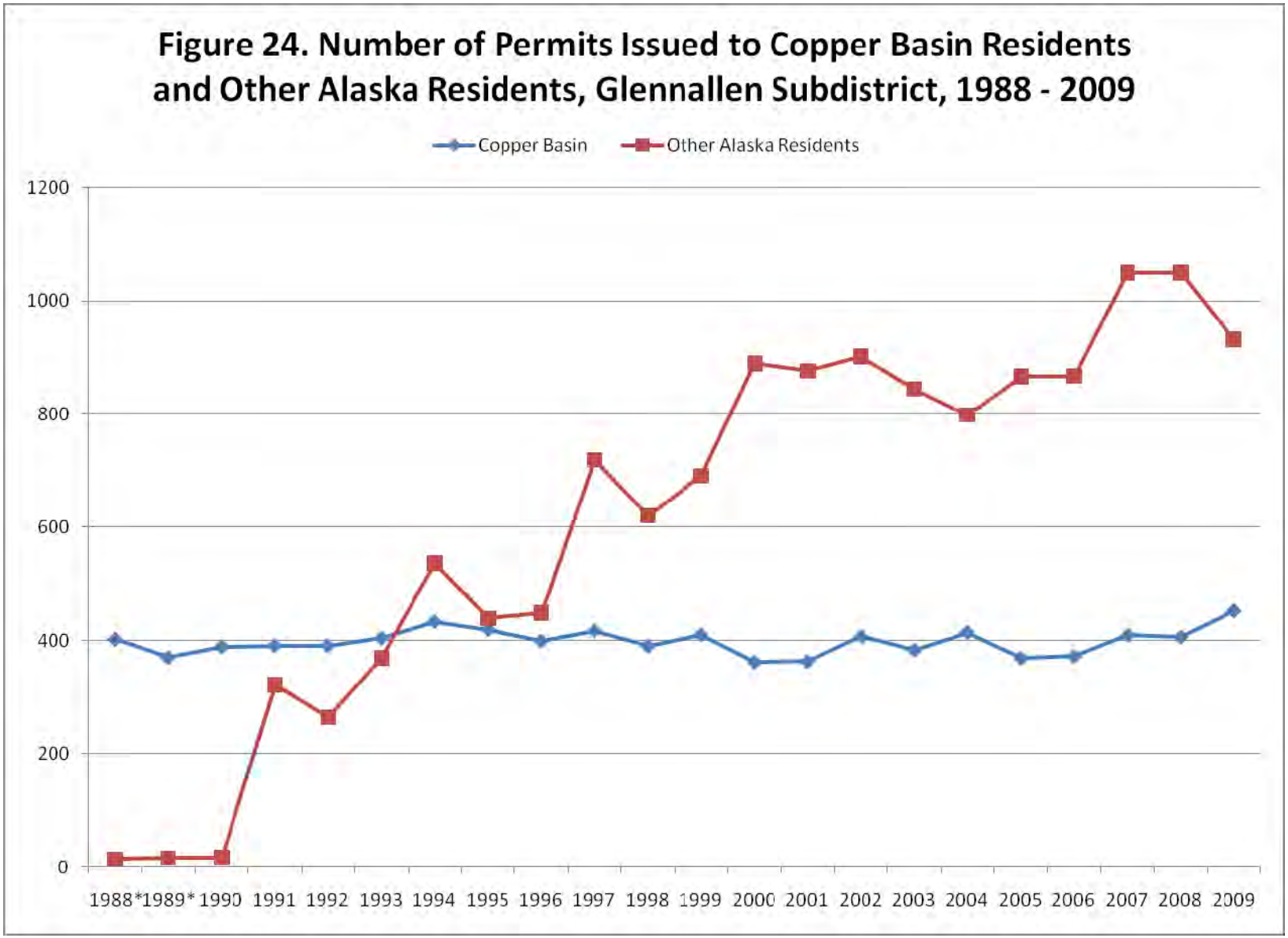


Figure 24.–Number of permits issued to Copper Basin residents and other Alaska residents, Glennallen subdistrict, 1988–2009.

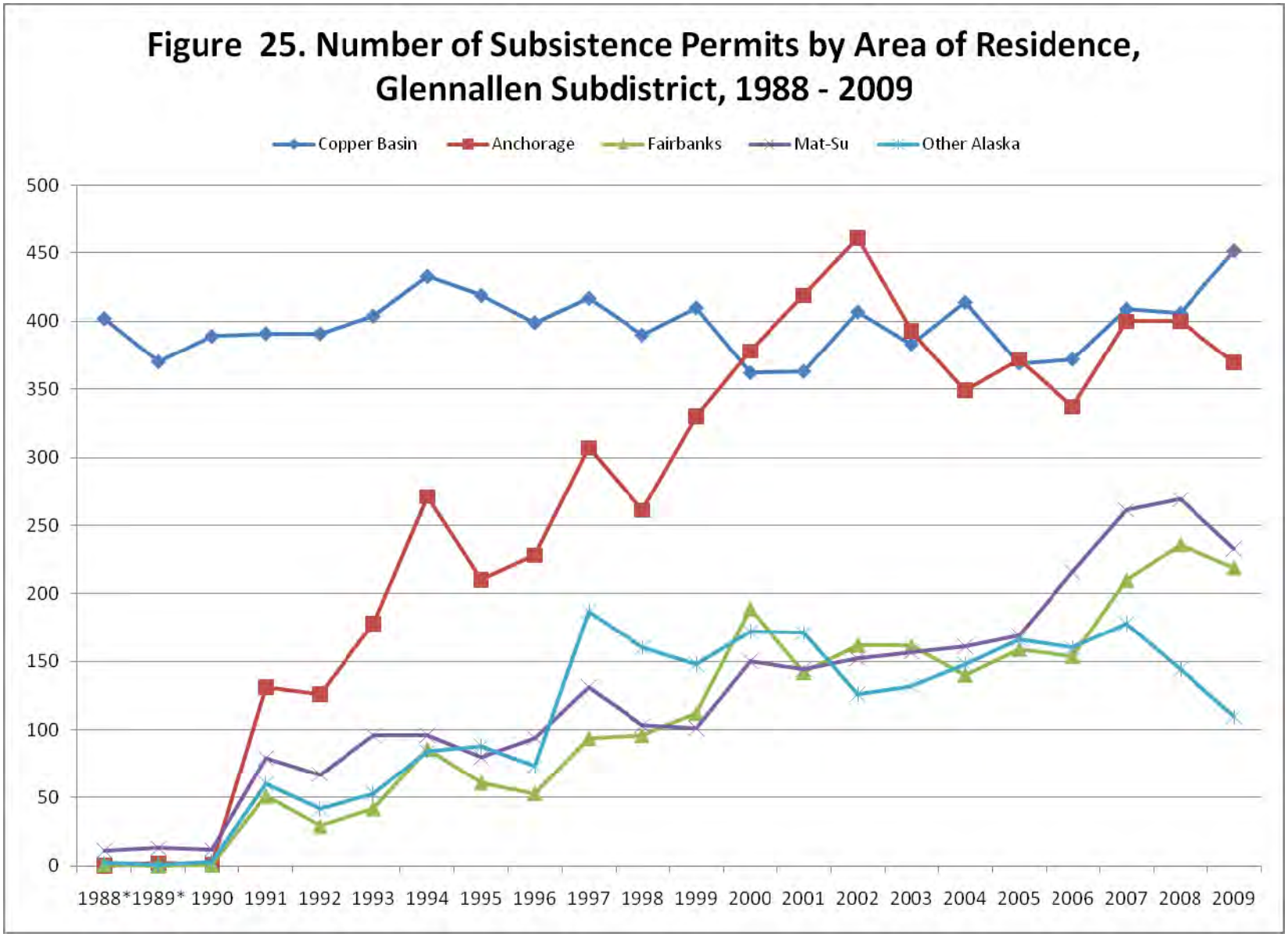


Figure 25.–Number of subsistence permits by area of residence, Glennallen subdistrict, 1988–2009.

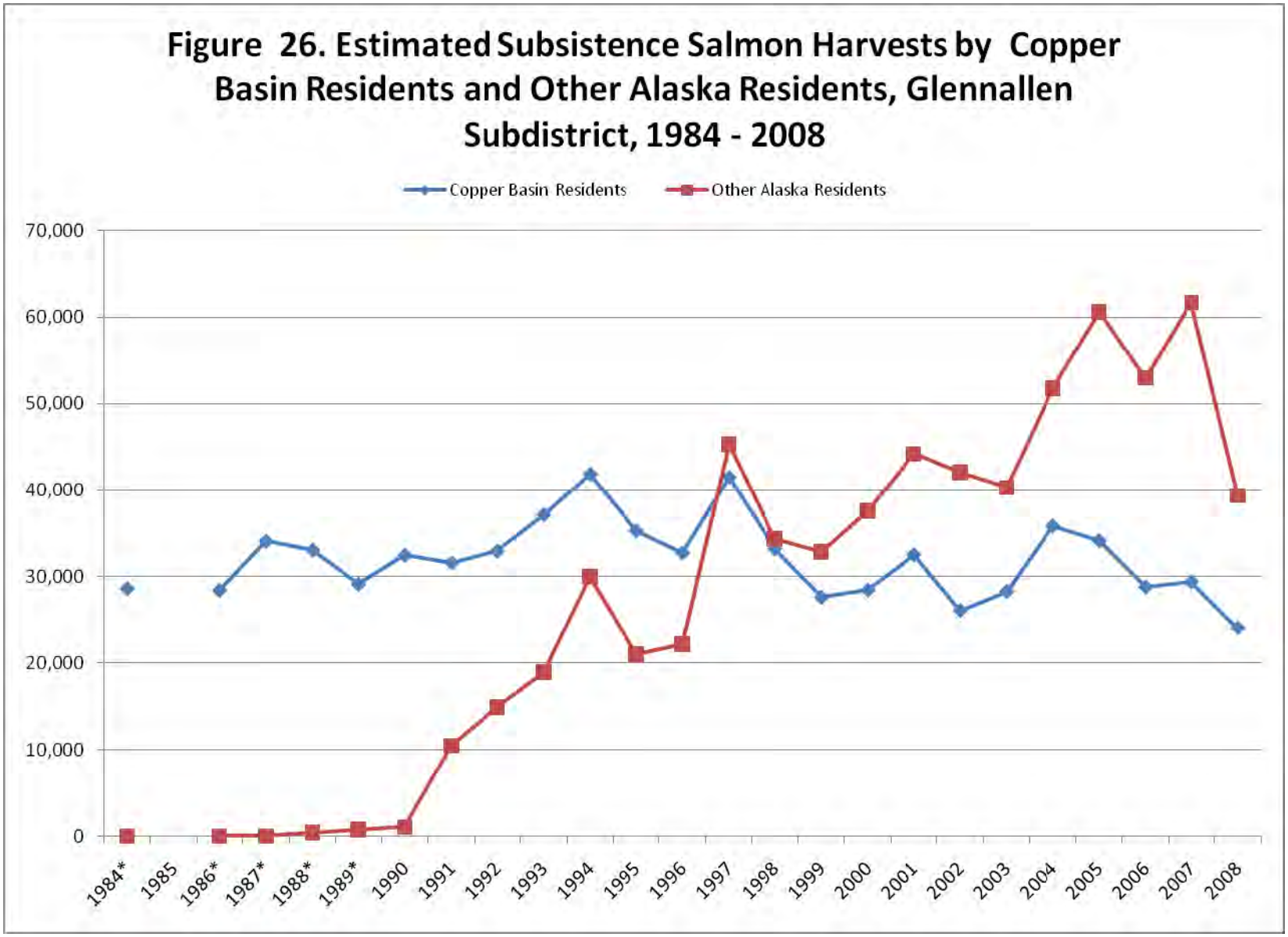


Figure 26.–Estimated subsistence salmon harvests by Copper Basin residents and other Alaska residents, Glennallen subdistrict, 1984–2008.

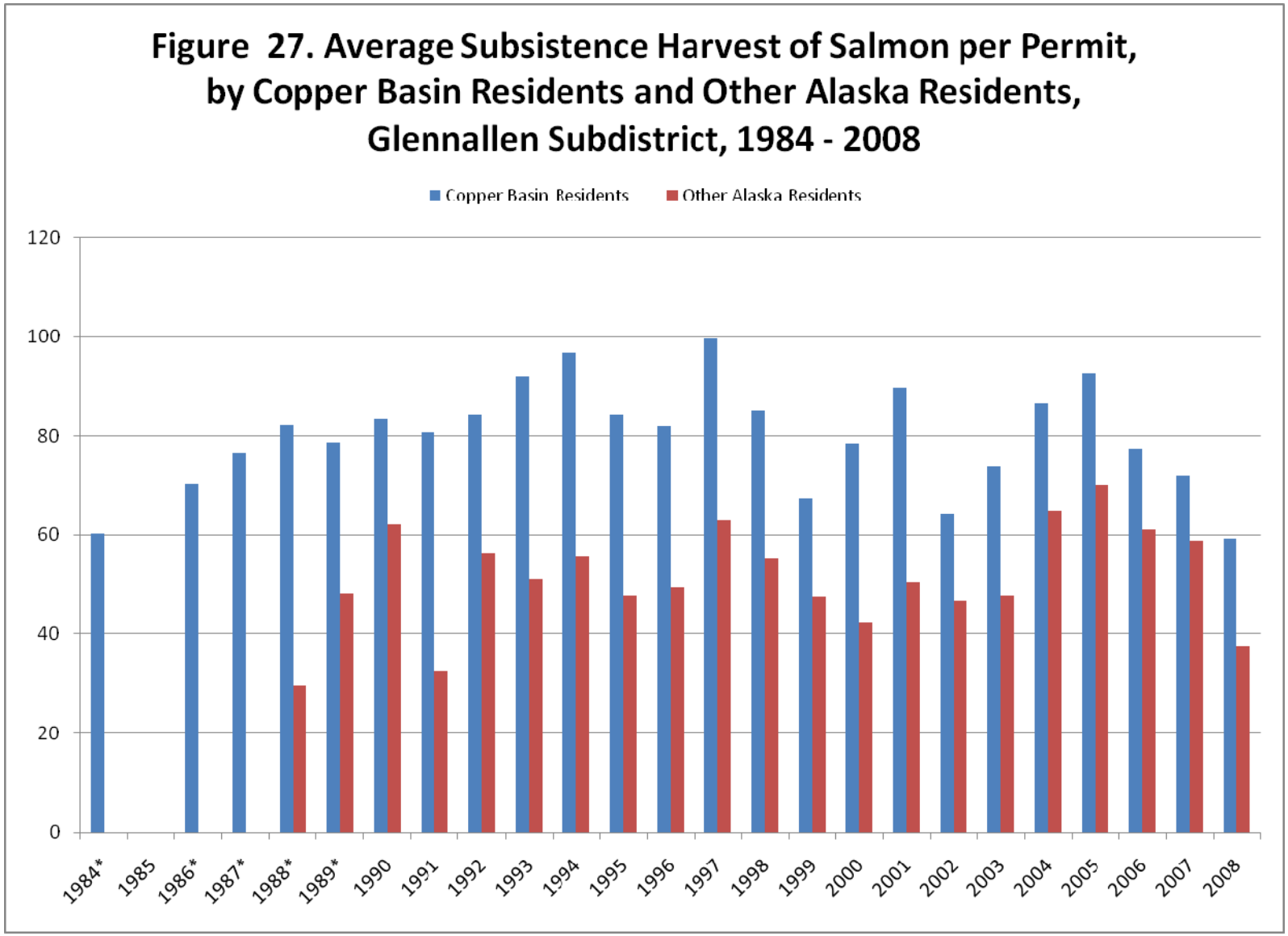


Figure 27.–Average subsistence harvest of salmon per permit, by Copper Basin residents and other Alaska residents, Glennallen subdistrict, 1984–2008.

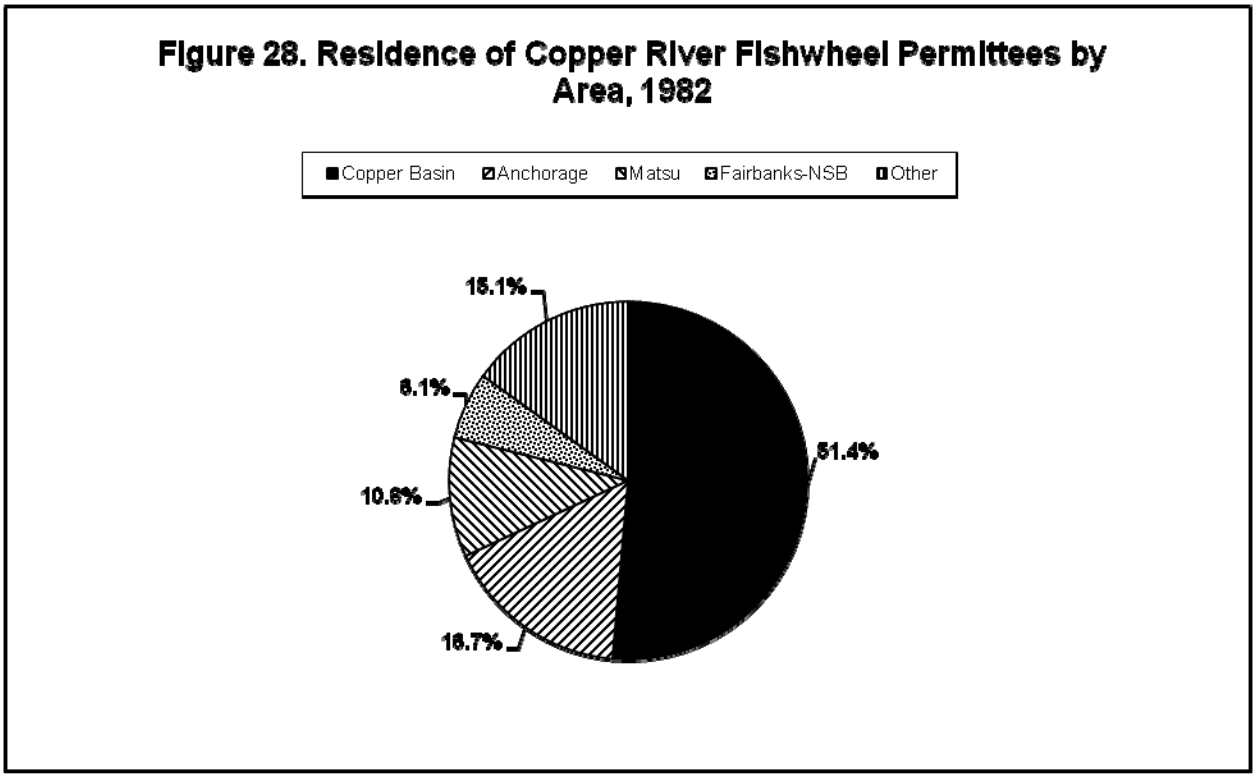


Figure 28.–Residence of Copper River fish wheel permittees by area, 1982.

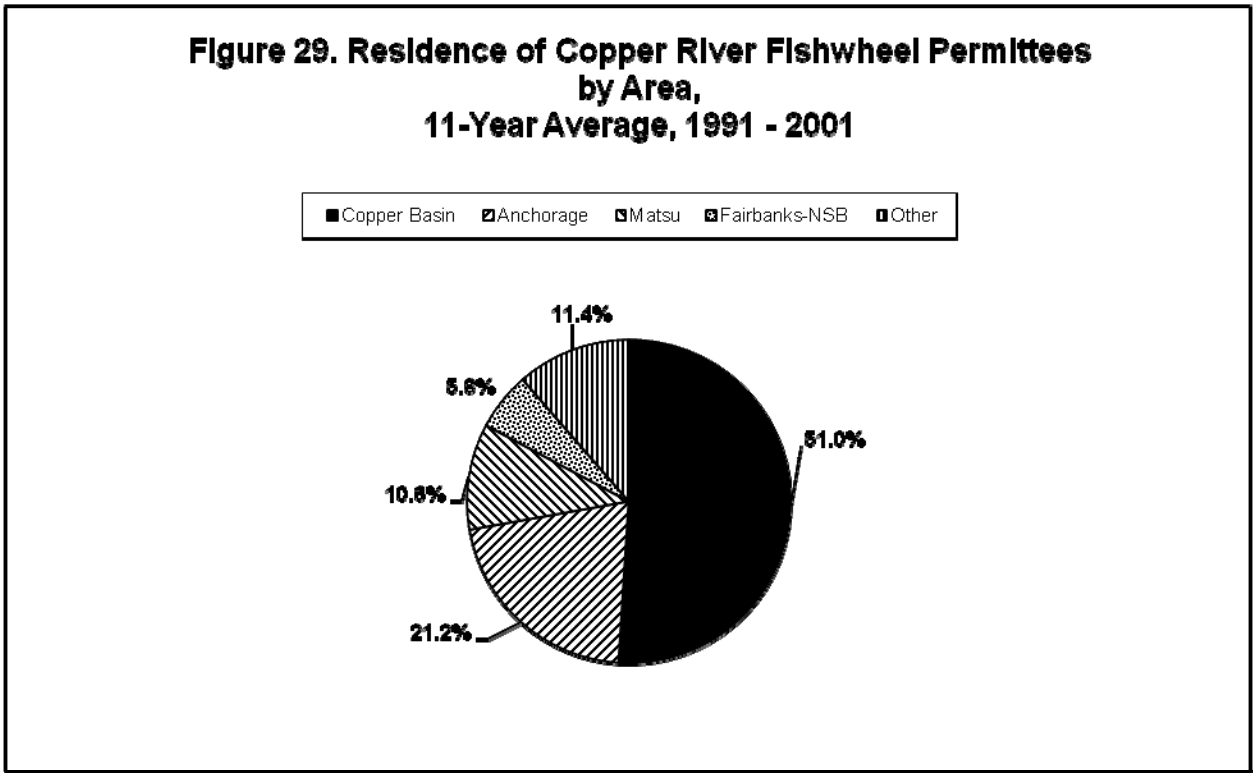


Figure 29.–Residence of Copper River fish wheel permittees, by area, 11-year average, 1991–2001.

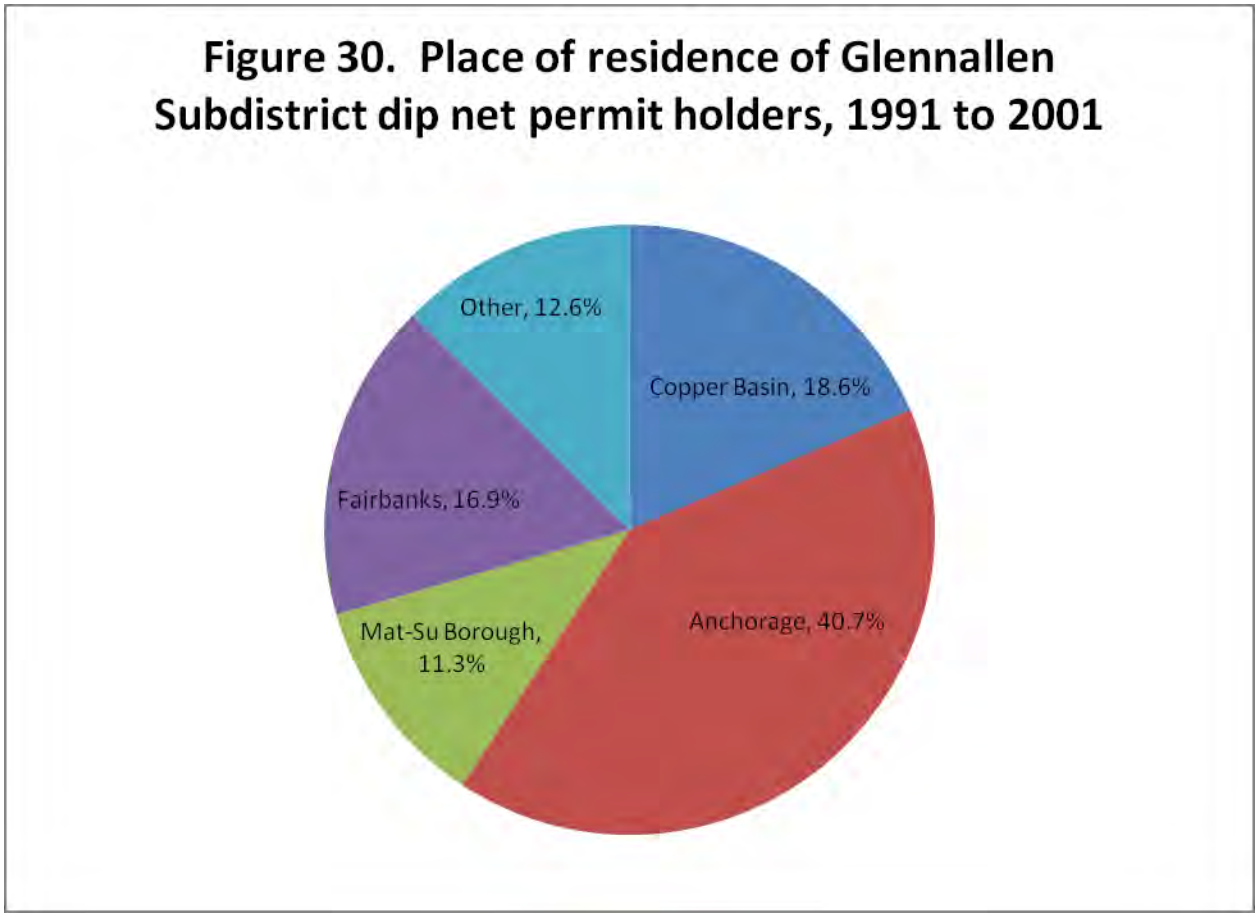


Figure 30.–Place of residence of Glennallen subdistrict dip net permit holders, 1991–2001.

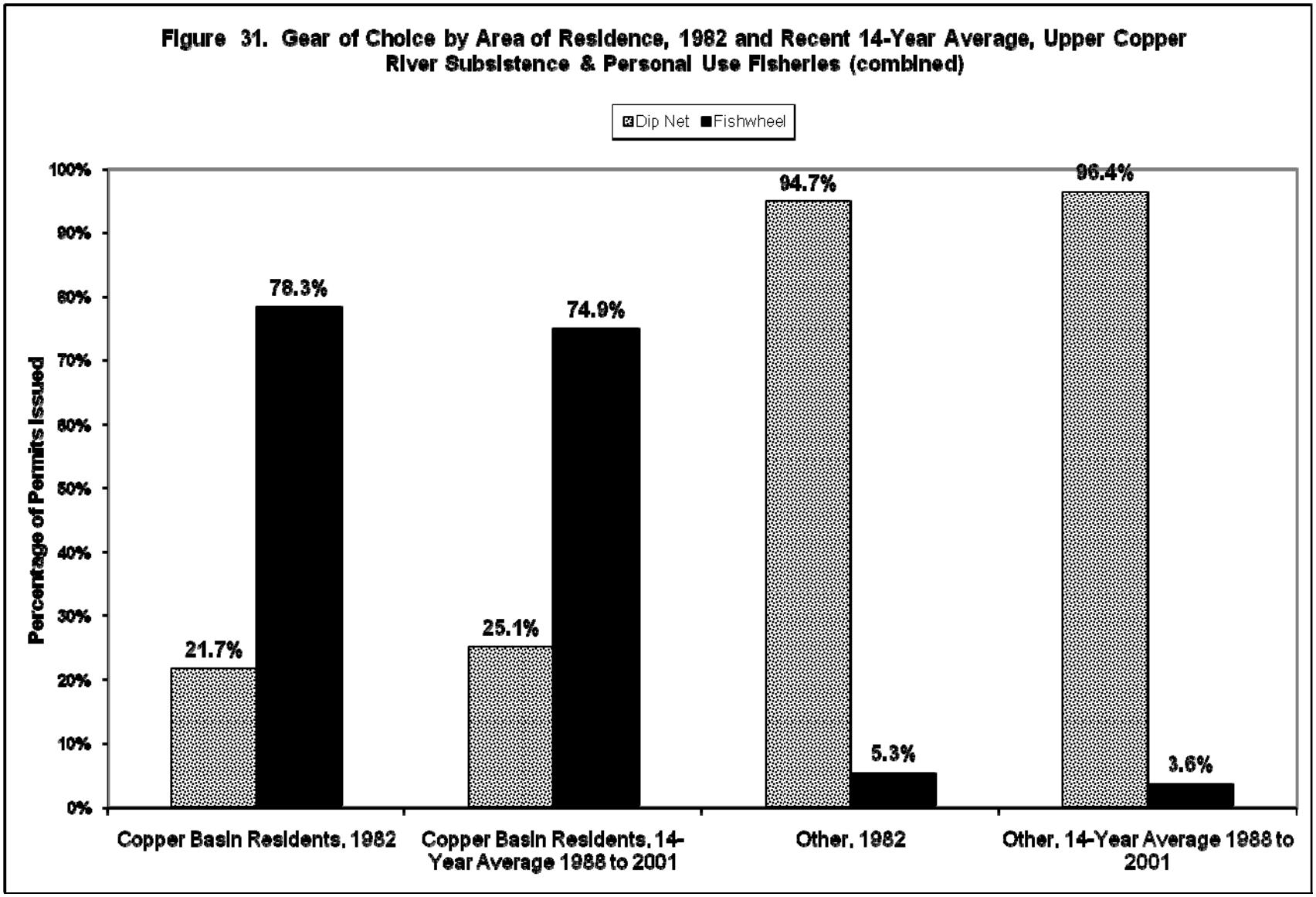


Figure 31.–Gear of choice by area of residence, 1982 and recent 14-year average, upper Copper River subsistence and personal use fisheries (combined).

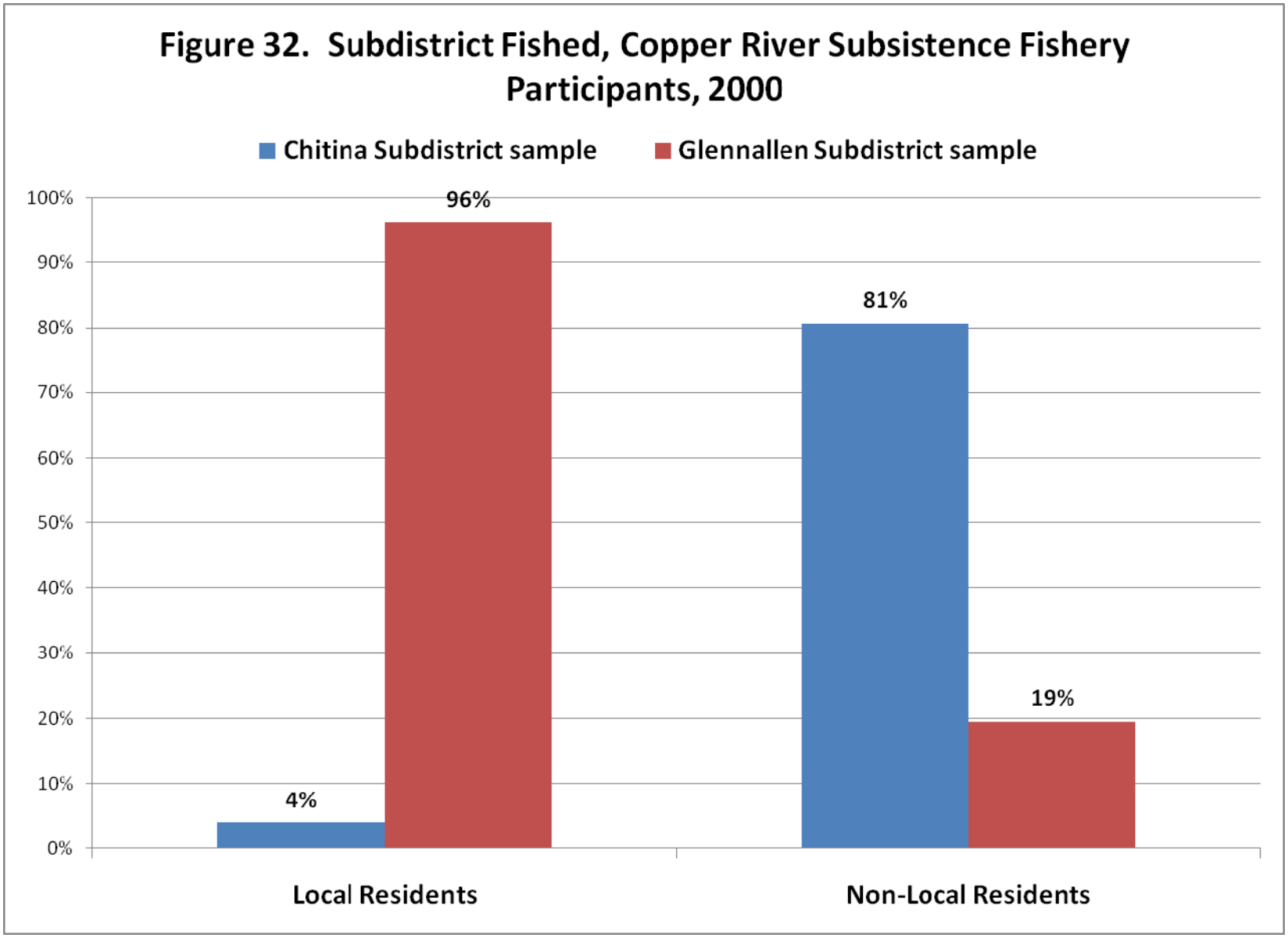


Figure 32.–Subdistrict fished, Copper River subsistence fishery participants, 2000.

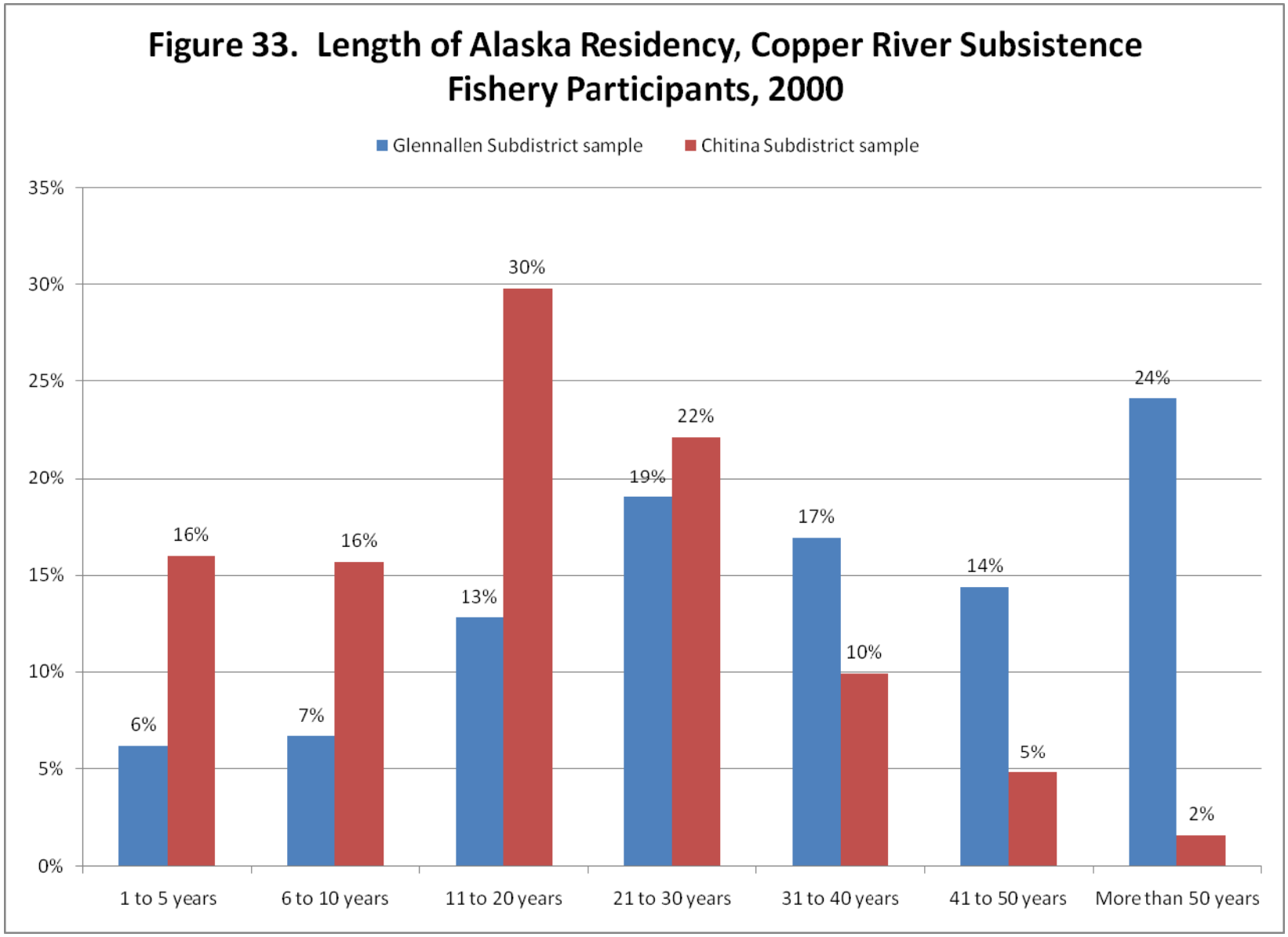


Figure 33.–Length of Alaska residency, Copper River subsistence fishery participants, 2000.

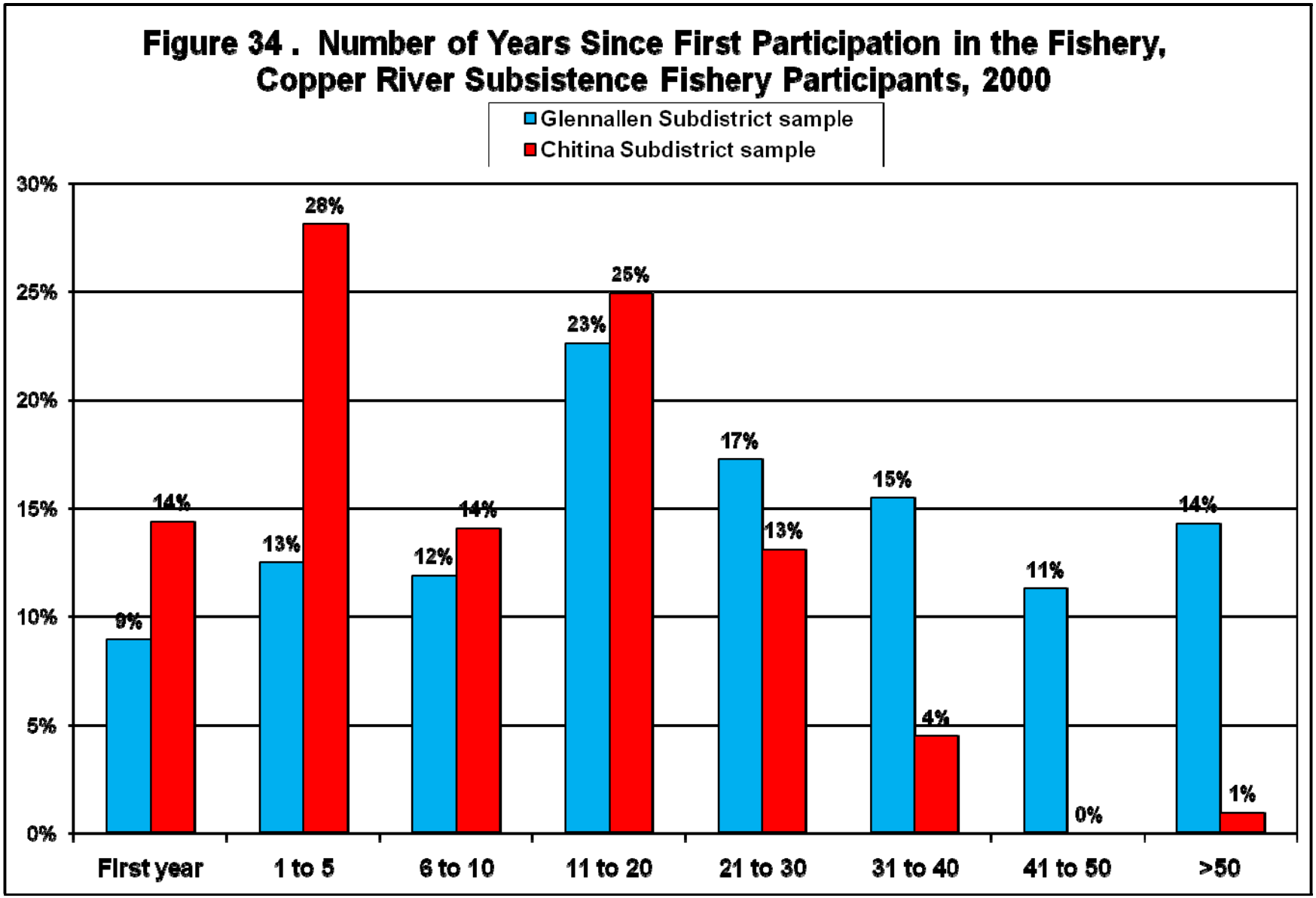


Figure 34.–Number of years since first participation in the fishery, Copper River subsistence fishery participants, 2000.

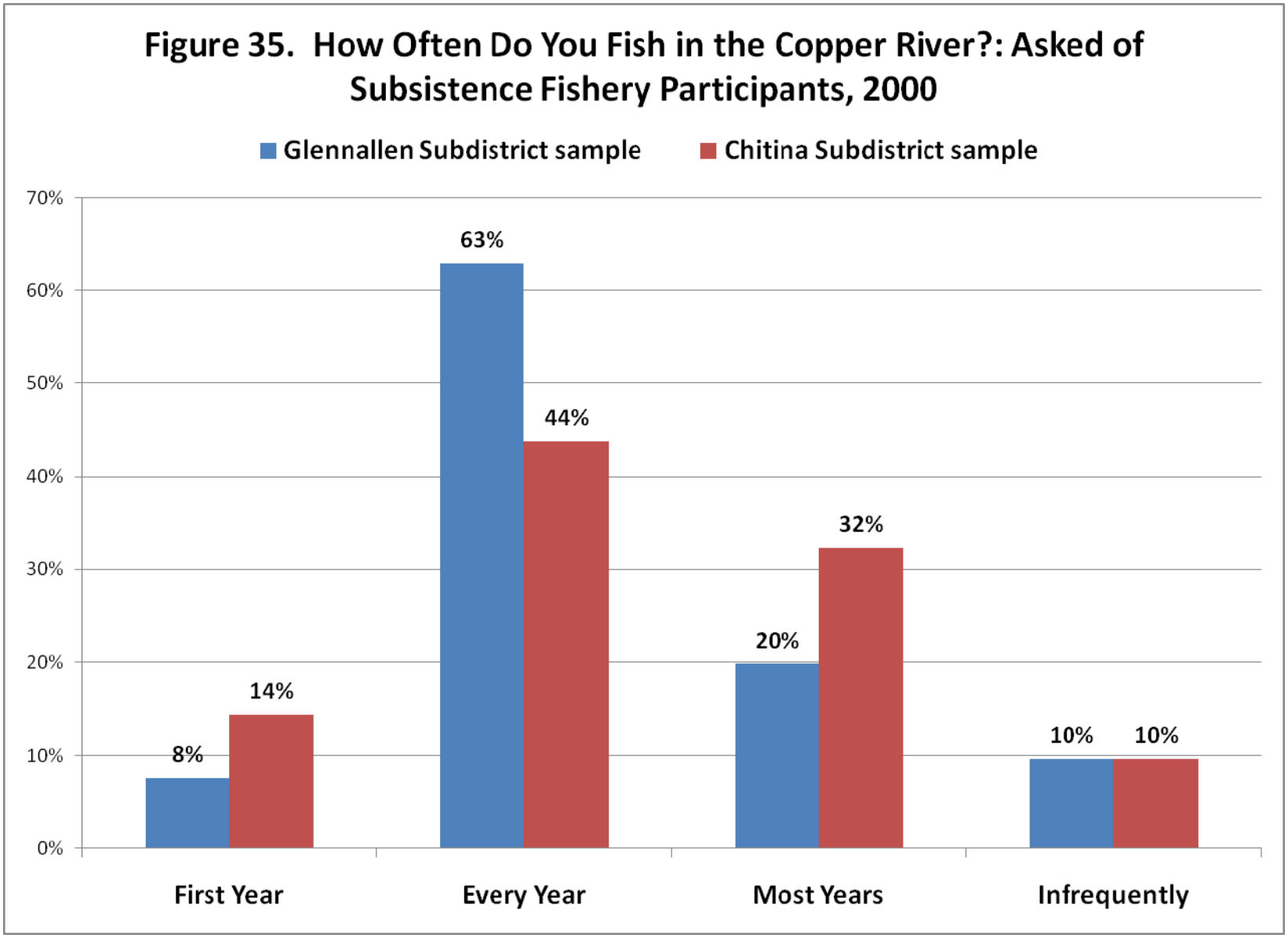


Figure 35.–"How often do you fish in the Copper River?"; asked of subsistence fishery participants, 2000.

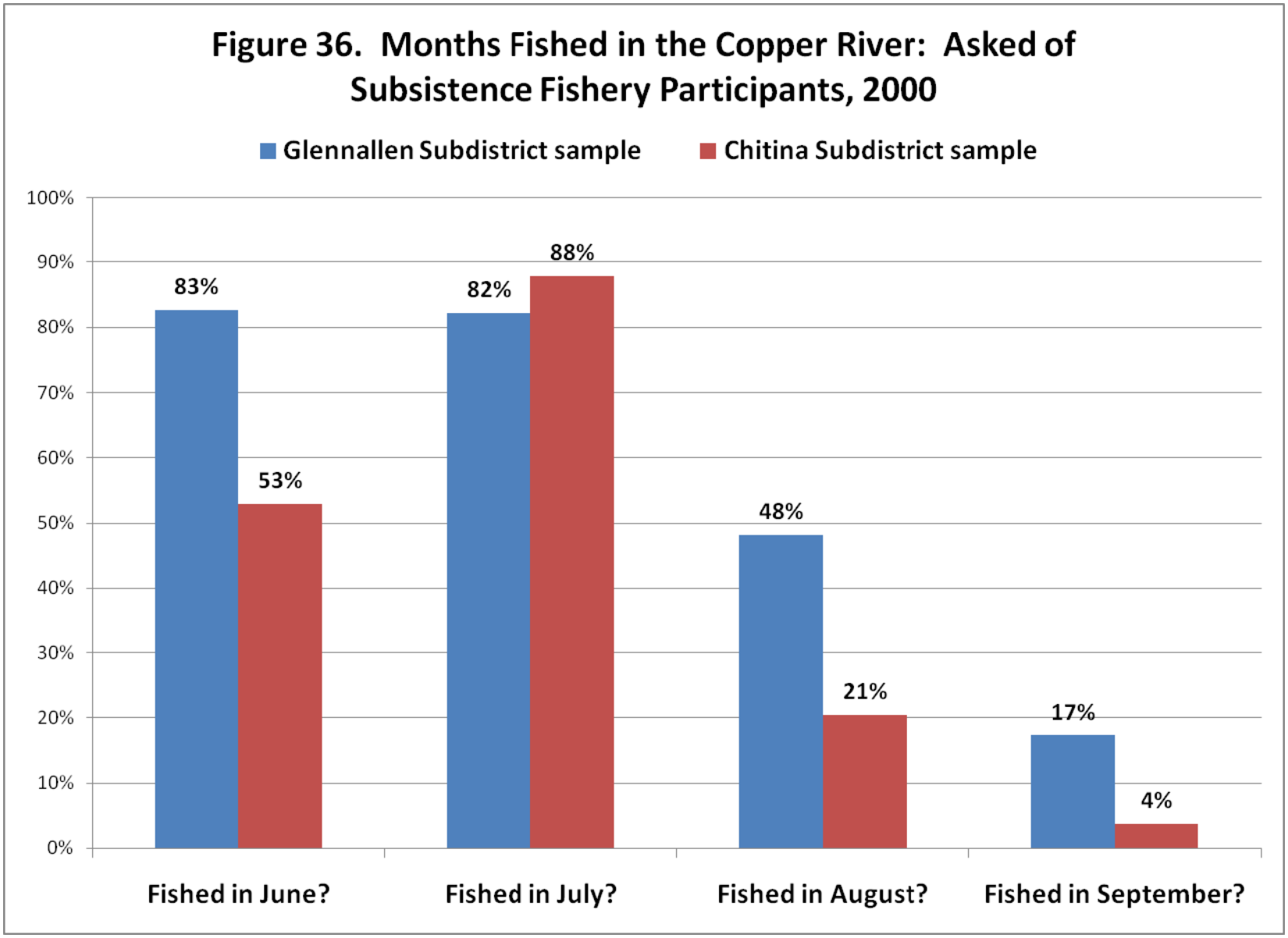


Figure 36.–Months fished in the Copper River, asked of subsistence fishery participants, 2000.

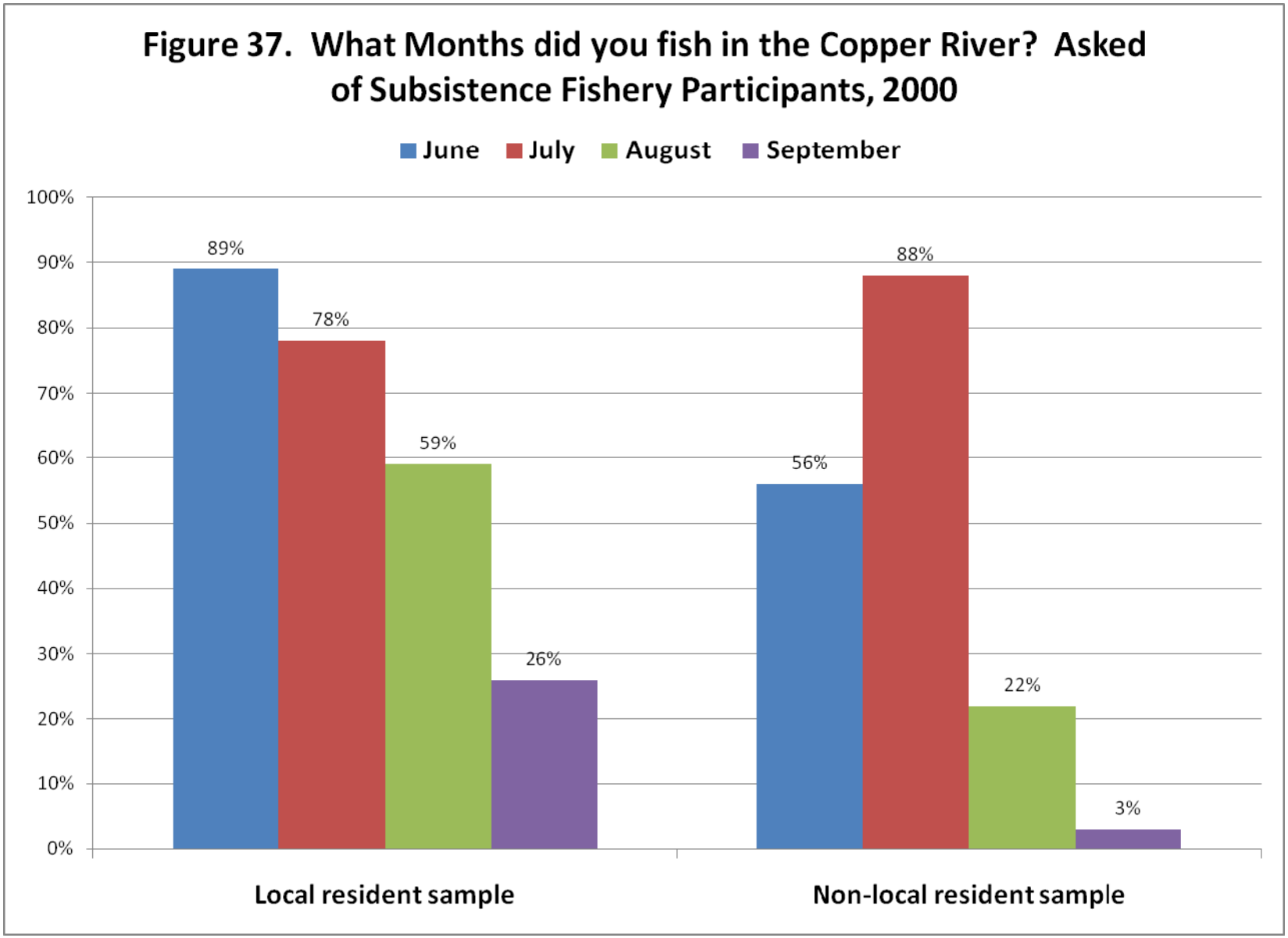


Figure 37.–"What months did you fish in the Copper River?"; asked of subsistence fishery participants, 2000.

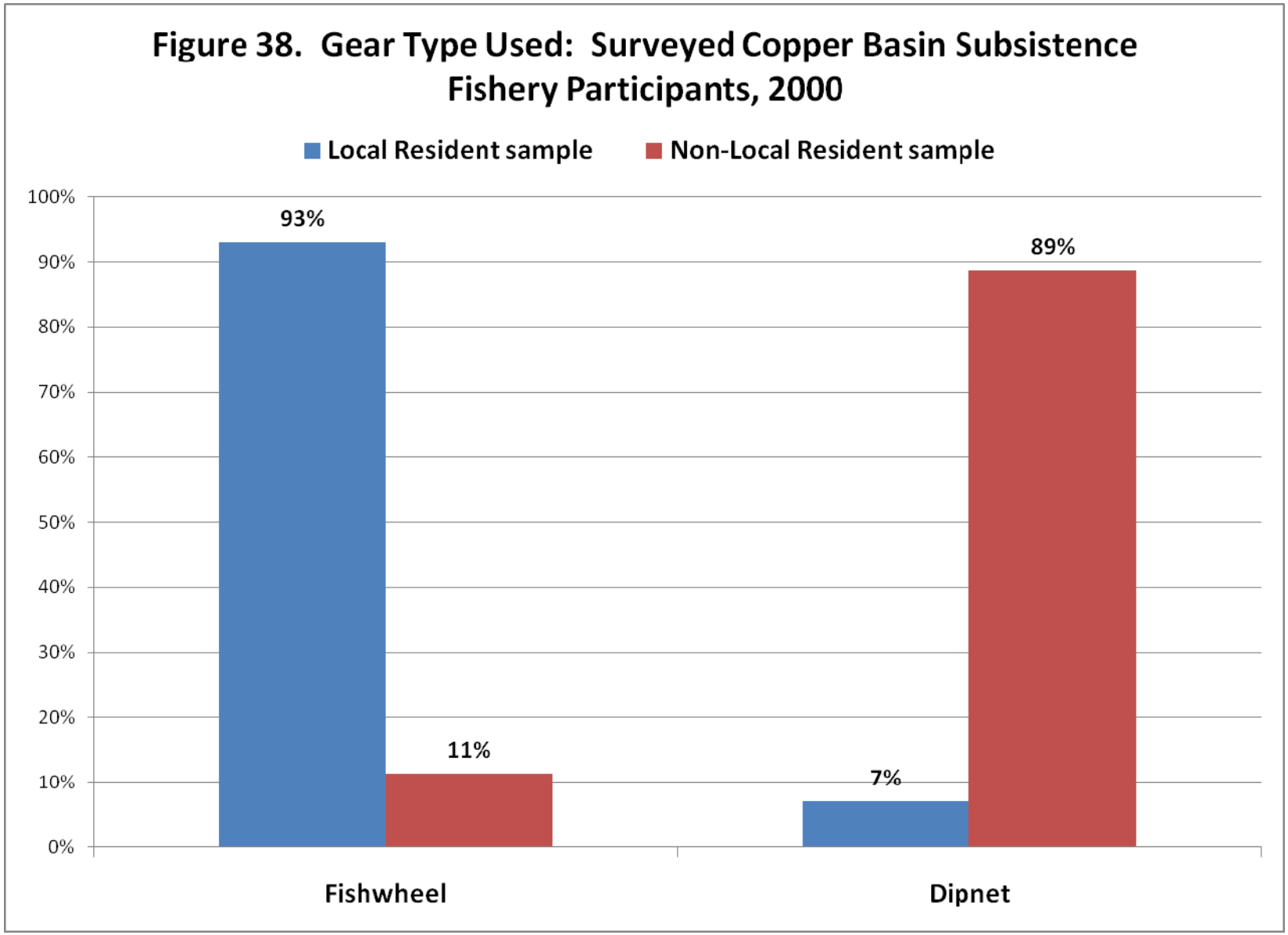


Figure 38.–Gear type used by surveyed Copper Basin subsistence fishery participants, 2000.

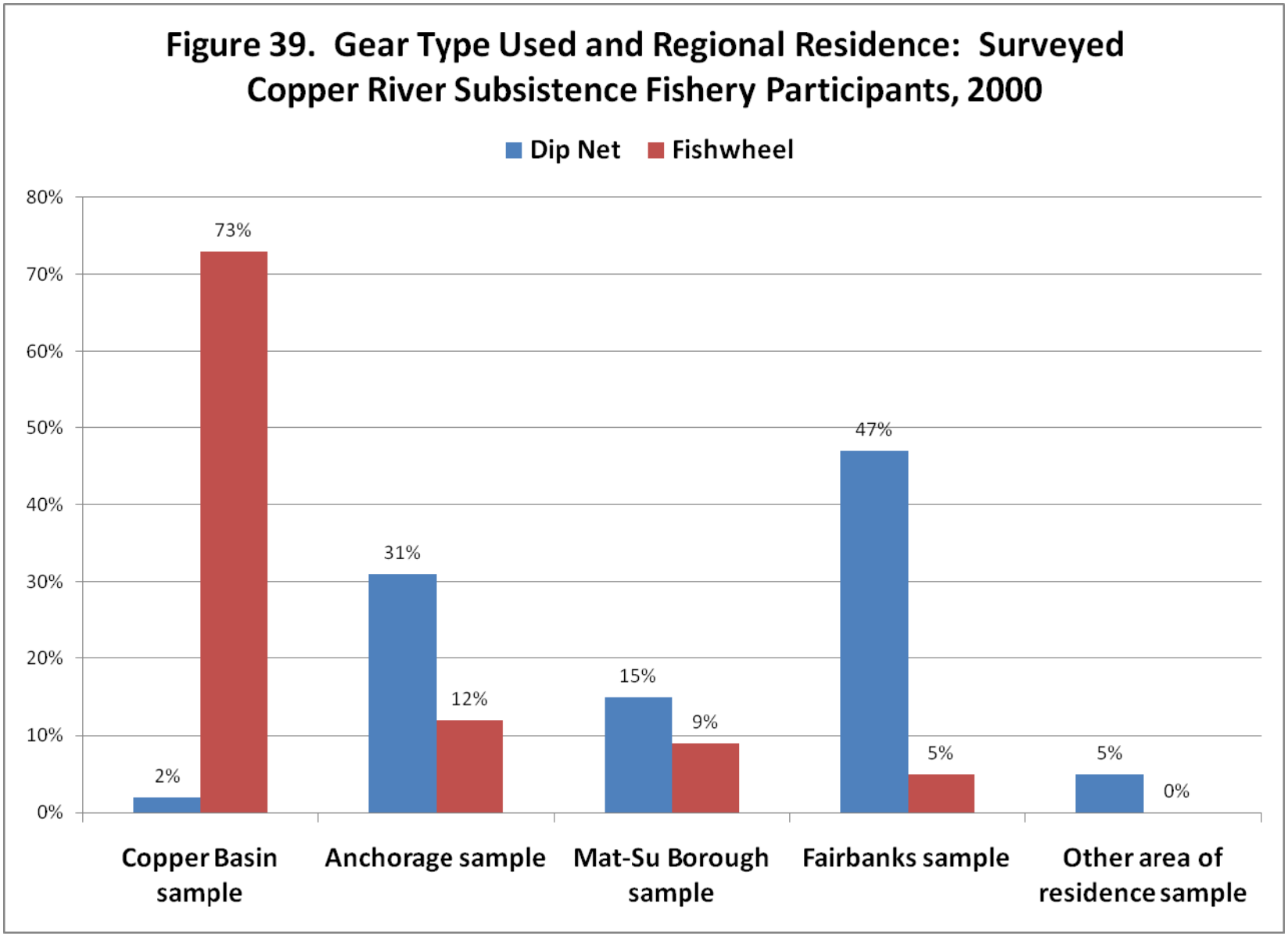


Figure 39.–Gear type used by, and regional residence of surveyed Copper River subsistence fishery participants, 2000.

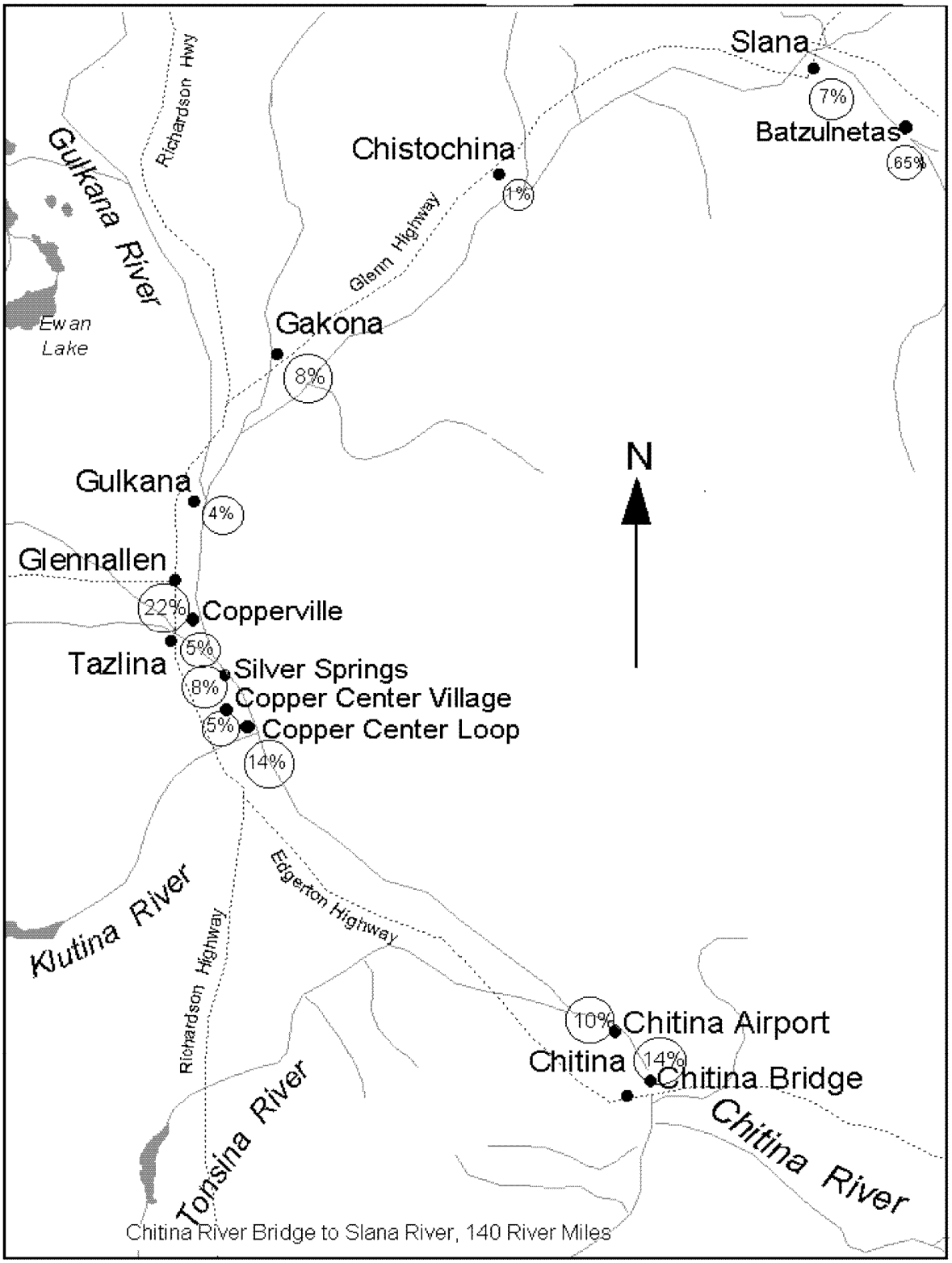


Figure 40.–Percentage of total permits of fish wheels, Glennallen Subdistrict, Copper River subsistence fishery, 1995.

Note N=665.

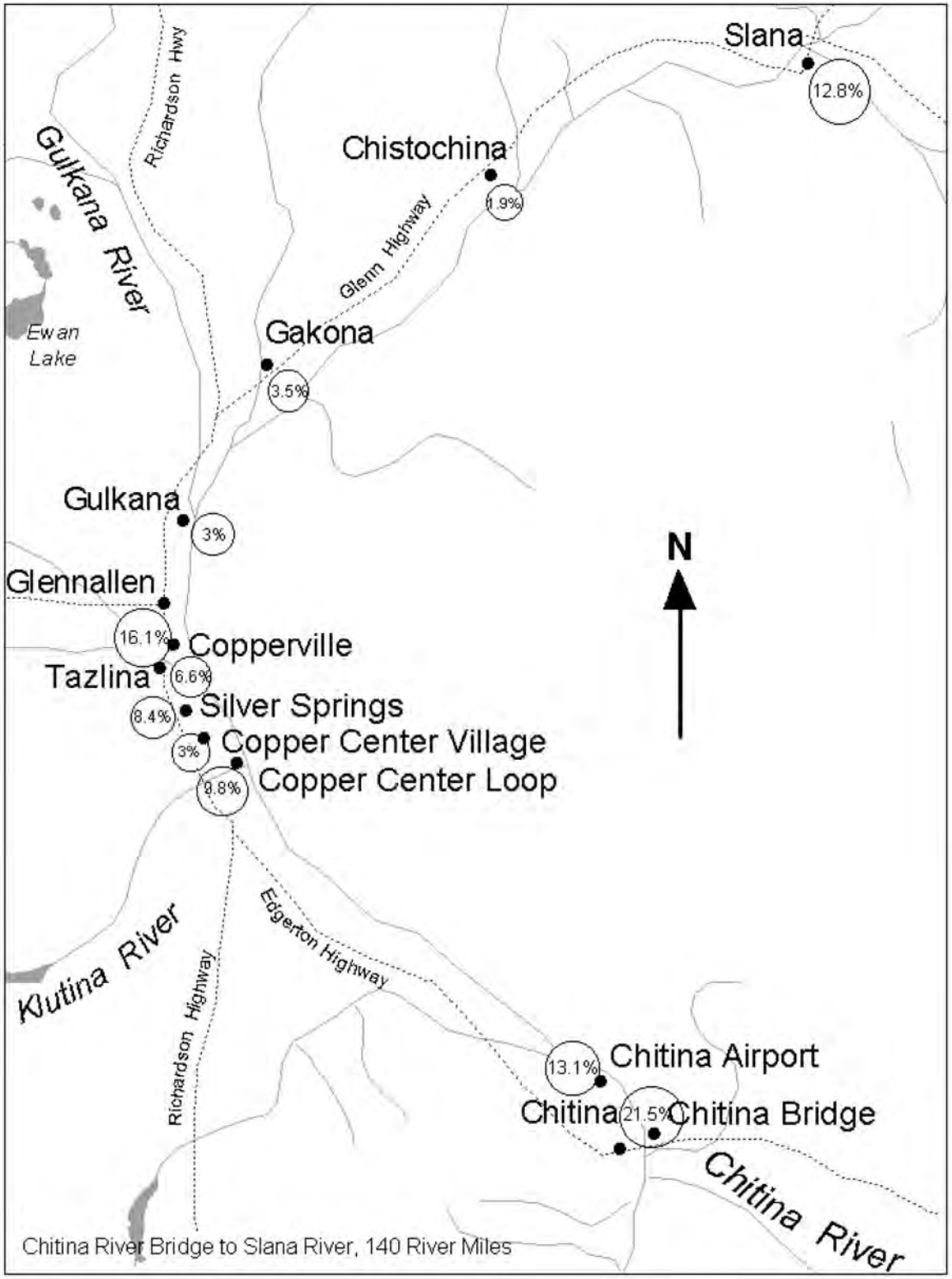


Figure 41.–Percentage of total permits and location of fish wheels, Glennallen Subdistrict, Copper River subsistence salmon fishery, 2001.

Note N=832.

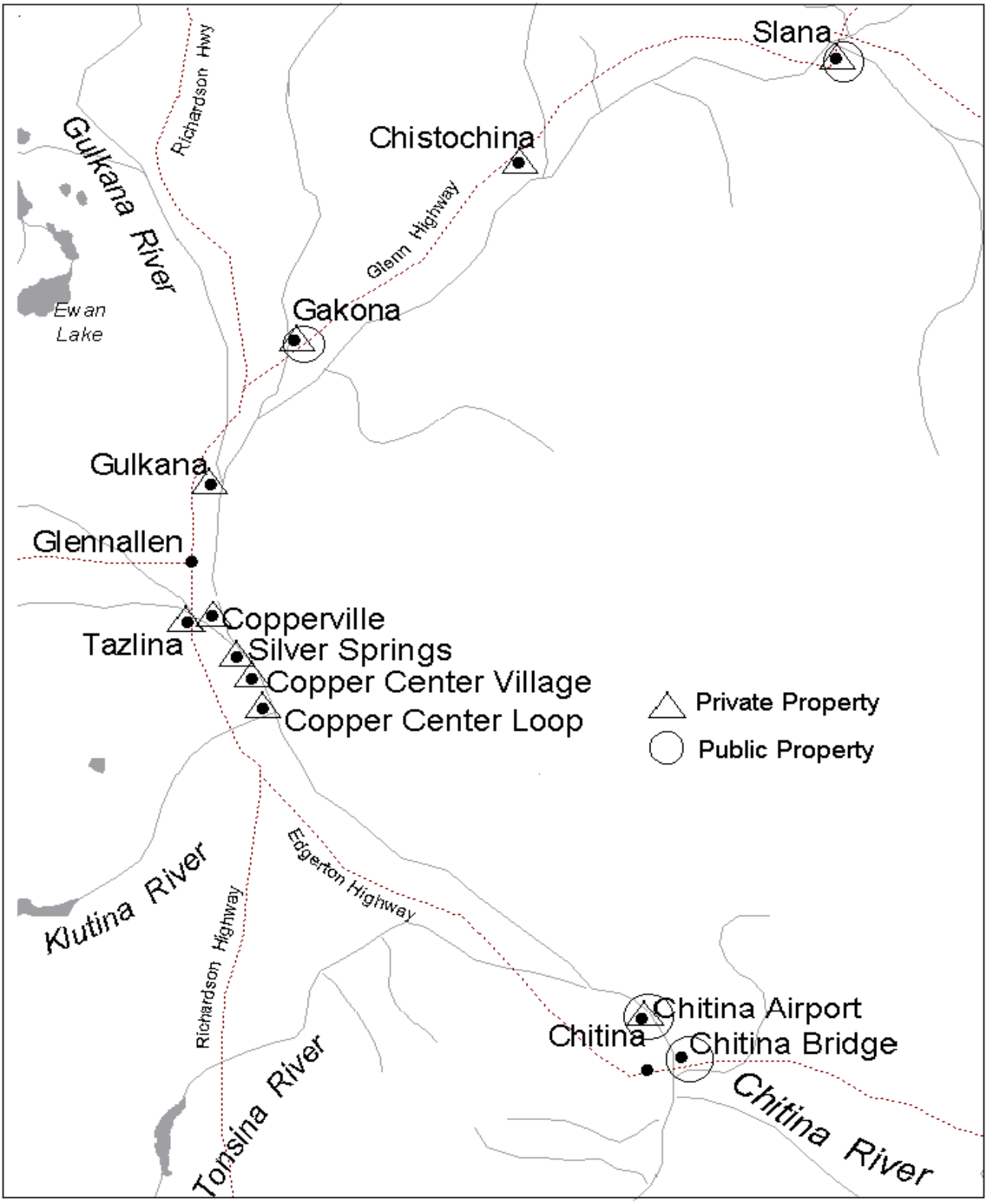


Figure 42.–Disposition of property at fish wheel sites, Glennallen Subdistrict, Copper River subsistence salmon fishery, 2001.

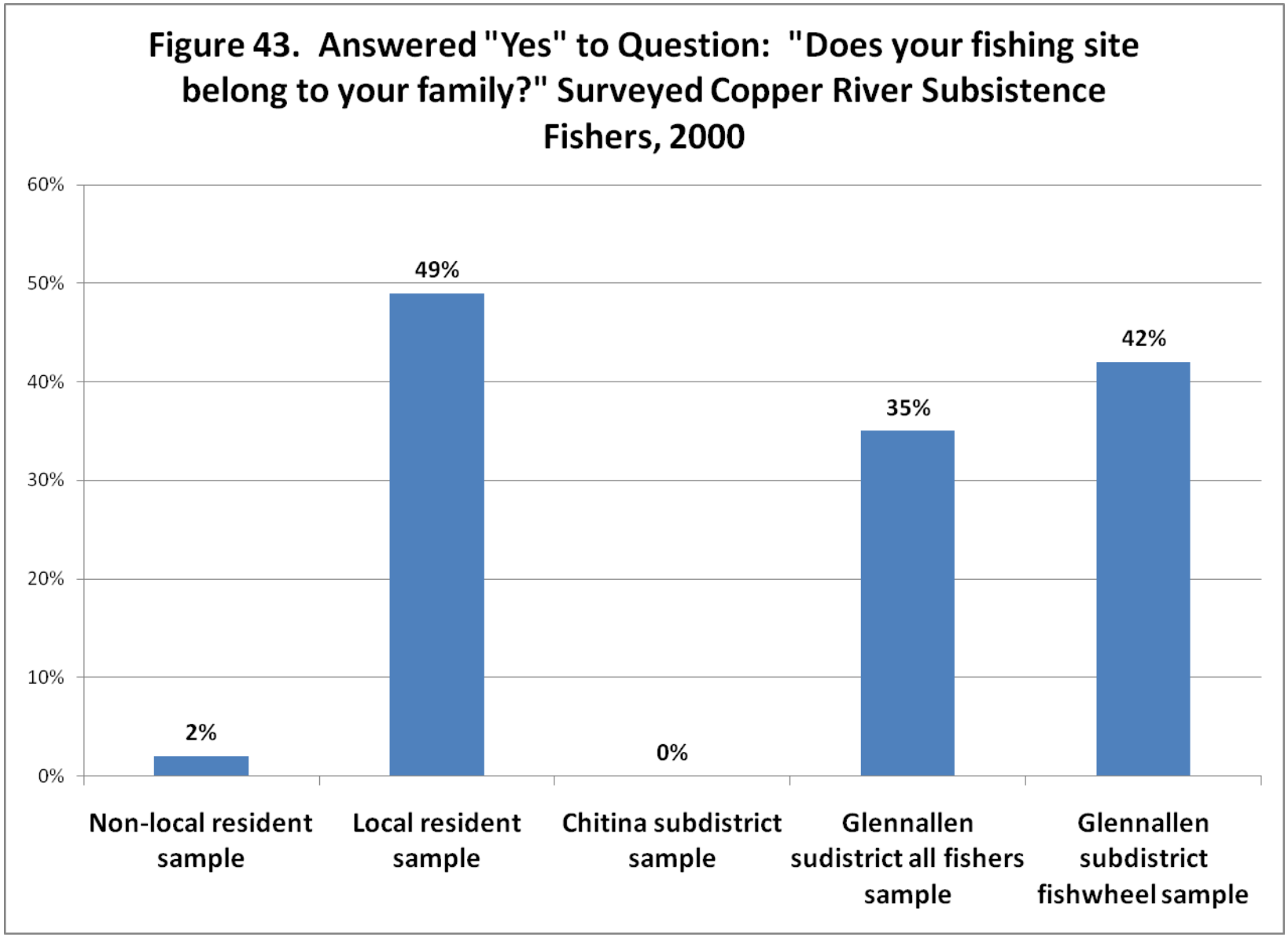


Figure 43.–Answered “yes” to question “Does your fishing site belong to your family?”; surveyed Copper River subsistence fishers, 2000.

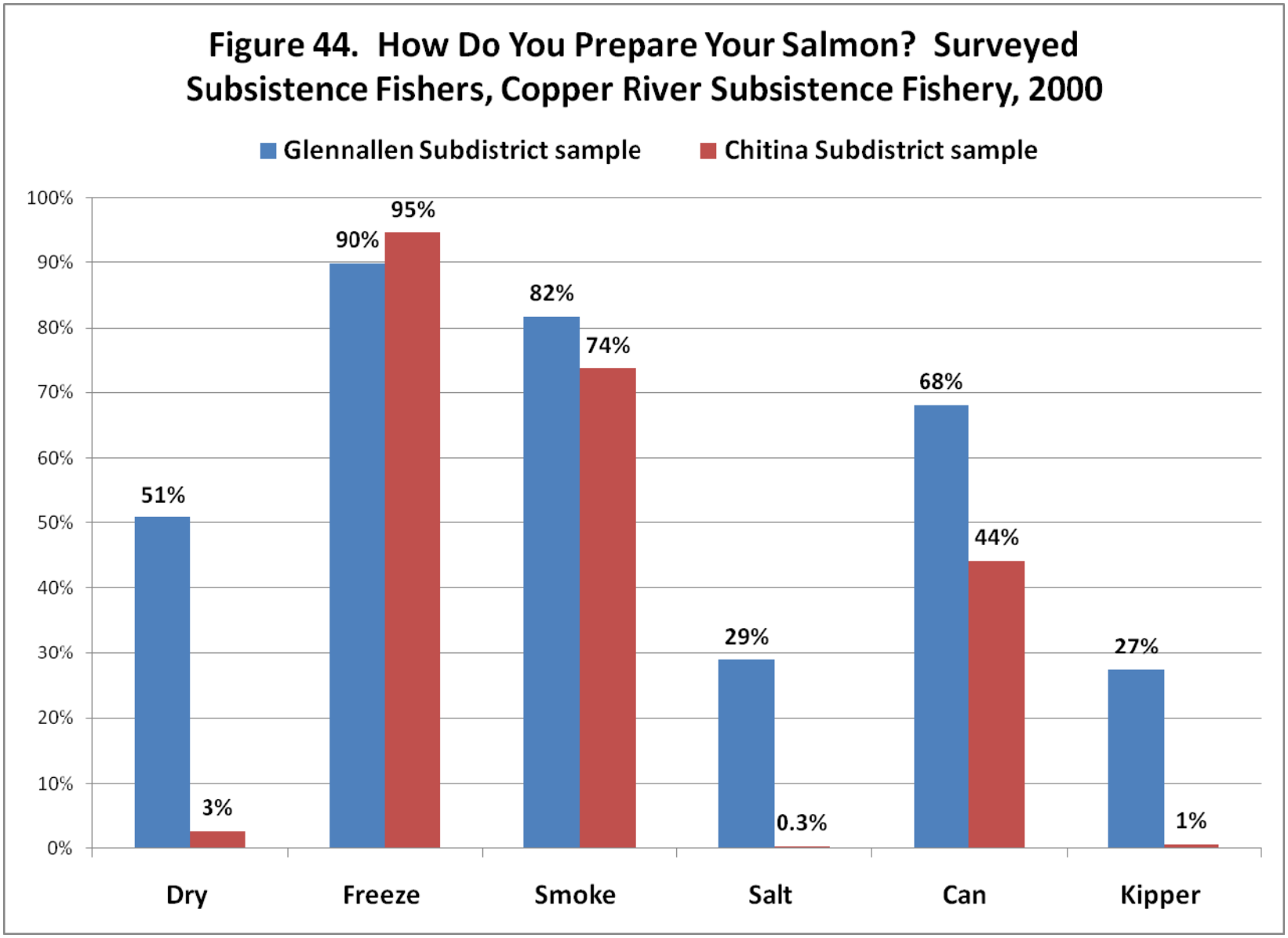


Figure 44.–"How do you prepare your salmon?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

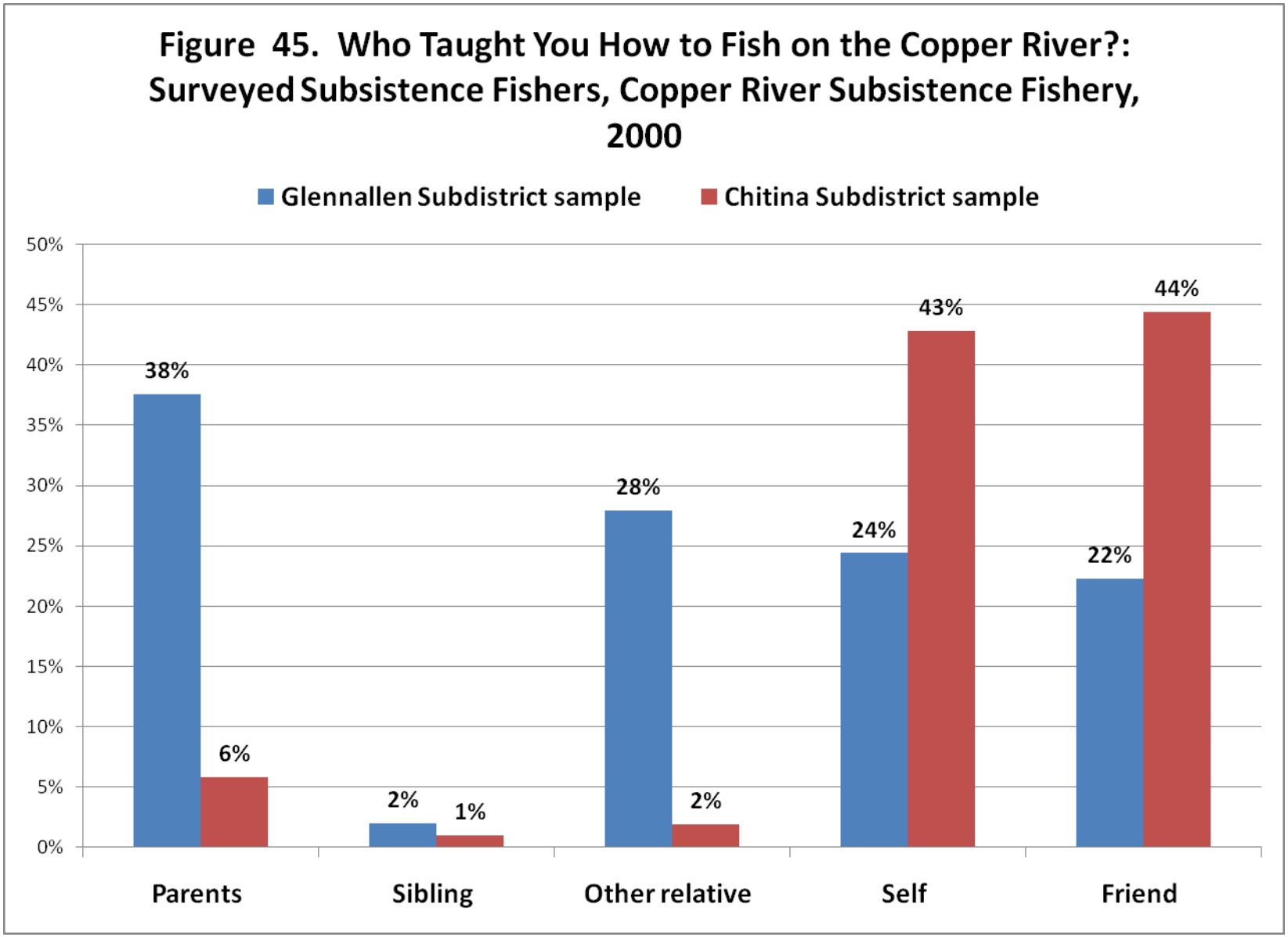


Figure 45.–"Who taught you how to fish on the Copper River?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

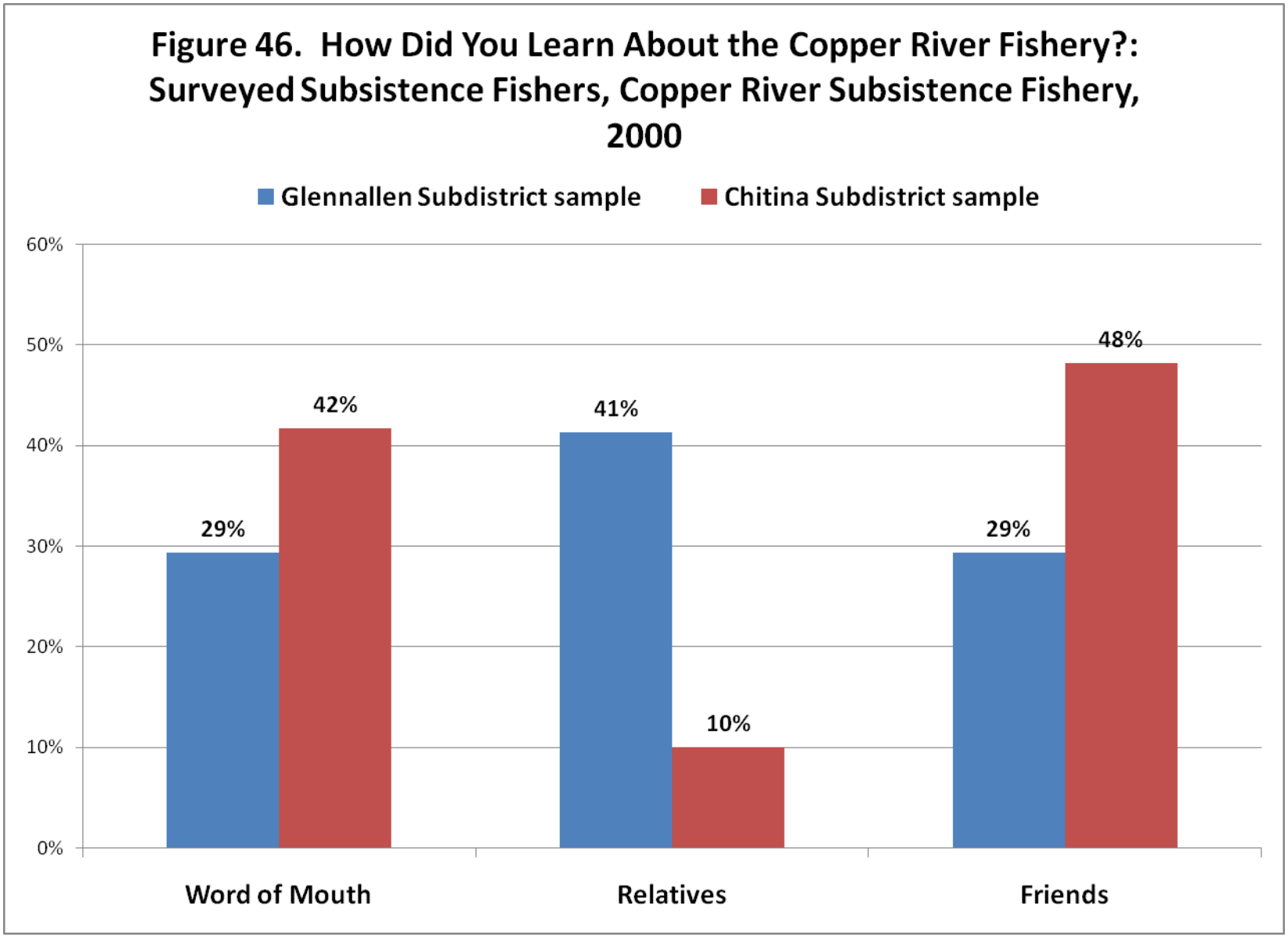


Figure 46.–"How did you learn about the Copper River fishery?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

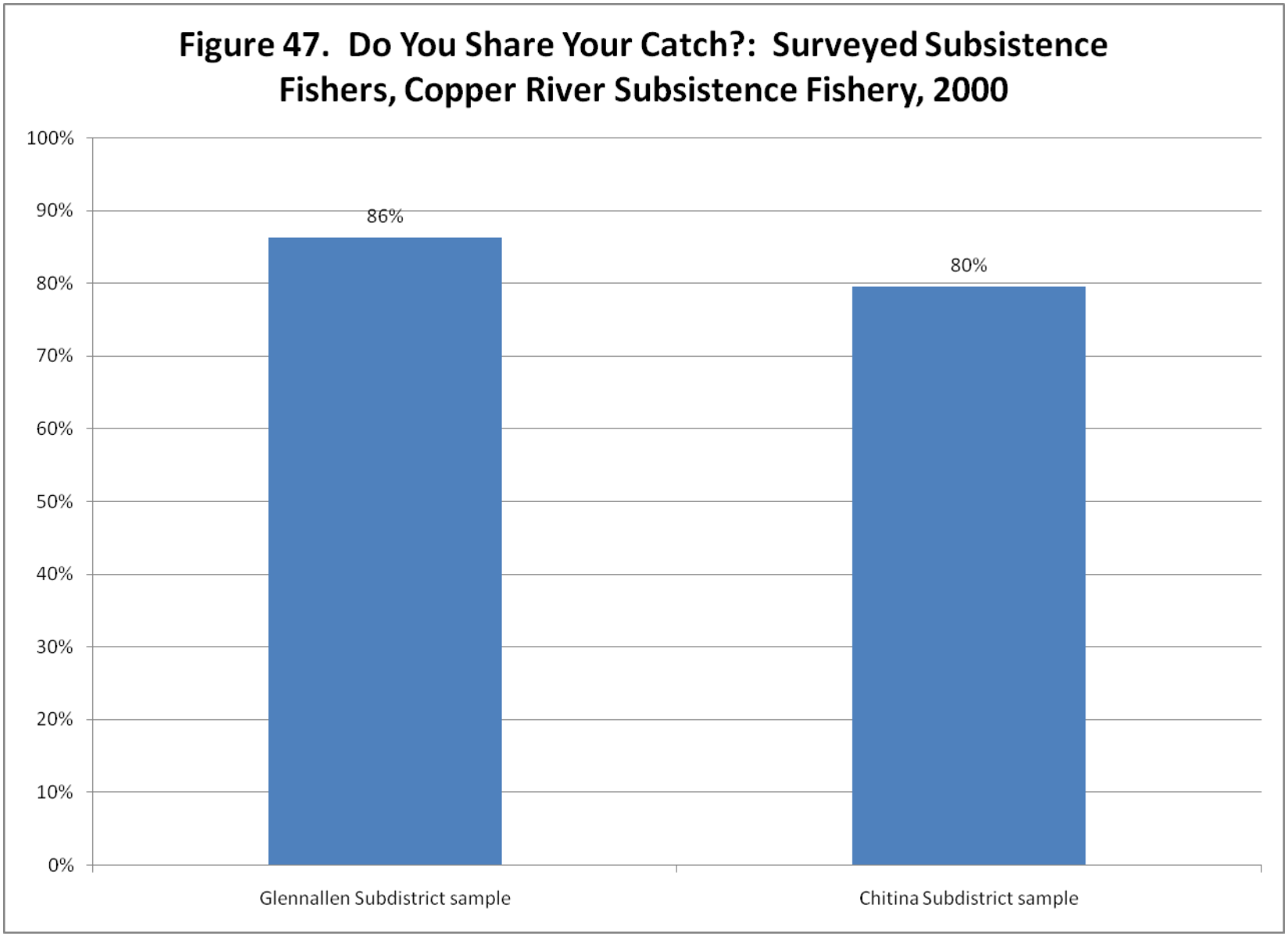


Figure 47.–"Do you share your catch?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

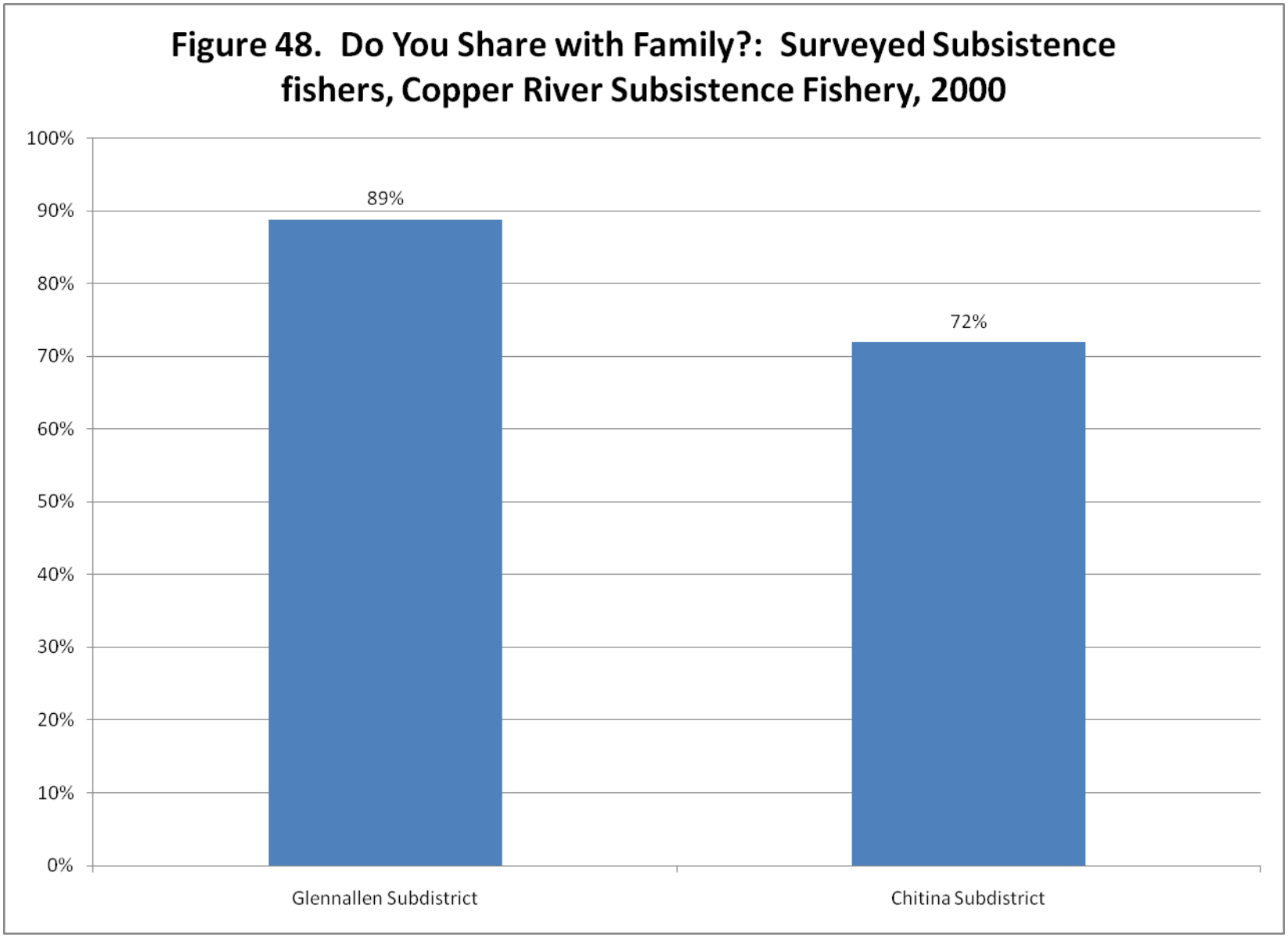


Figure 48.–"Do you share with family?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

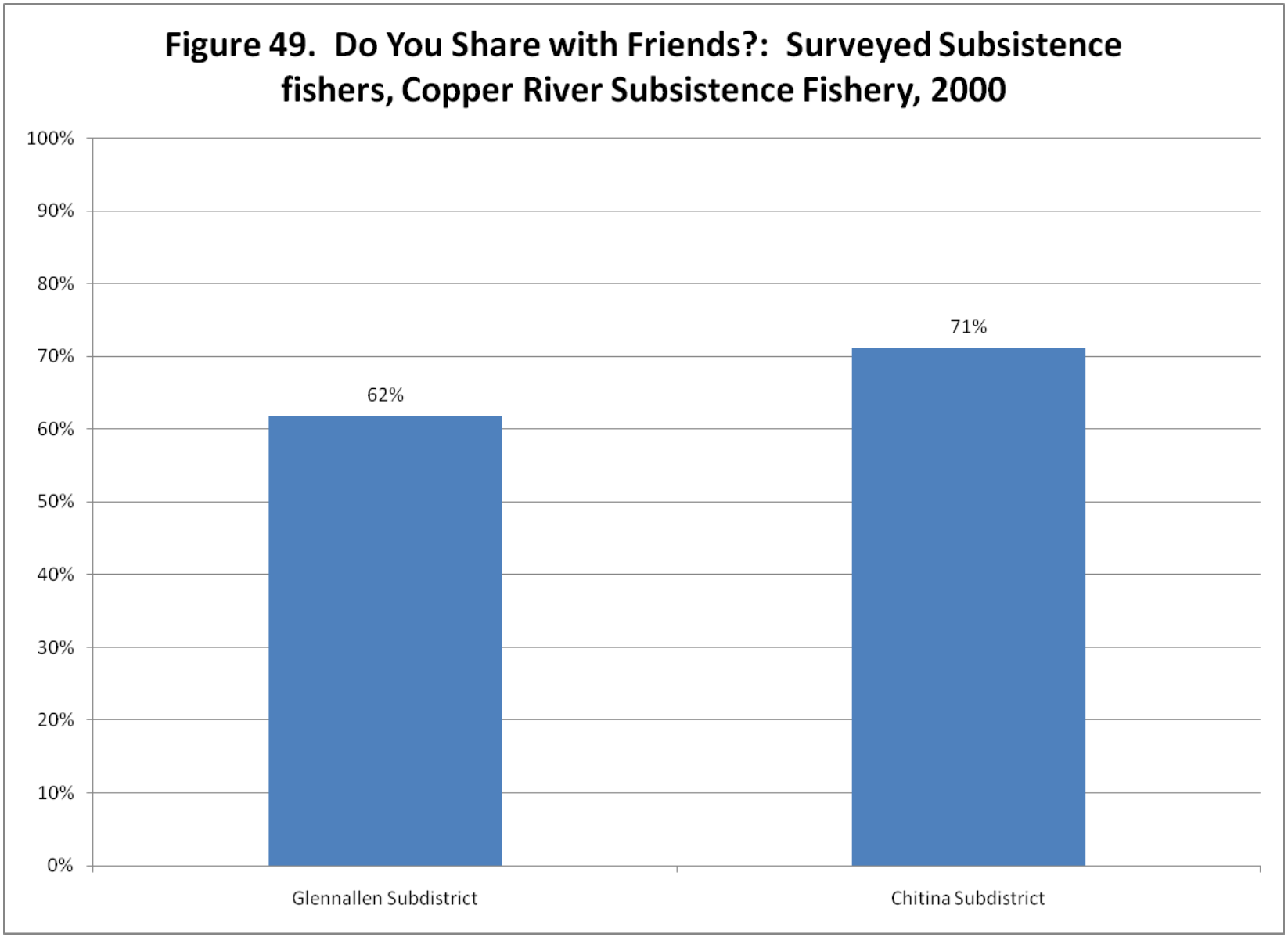


Figure 49.–"Do you share with friends?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

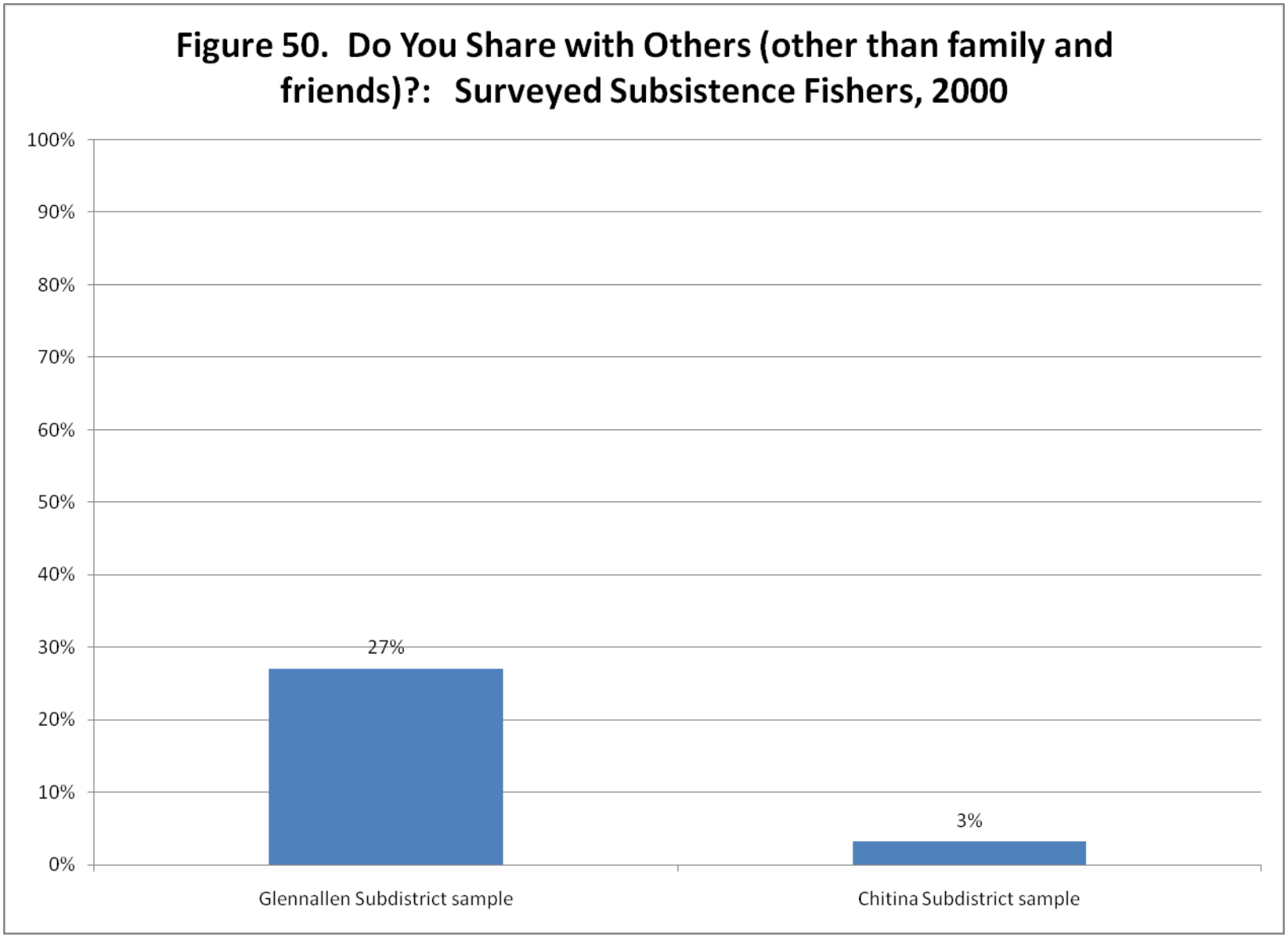


Figure 50.–"Do you share with others (other than family and friends)?"; surveyed subsistence fishers, 2000.

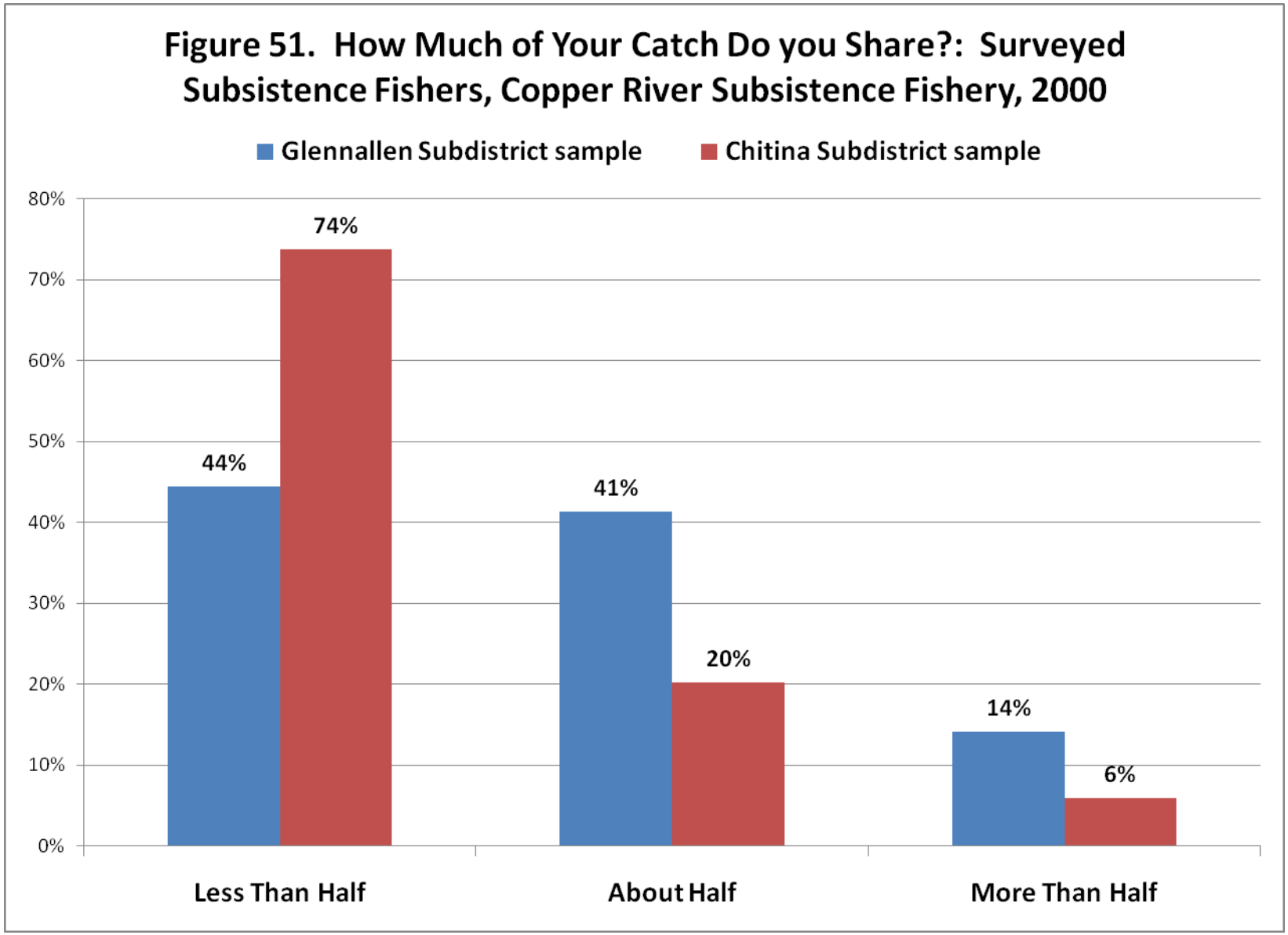


Figure 51.–:How much of your catch do you share?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

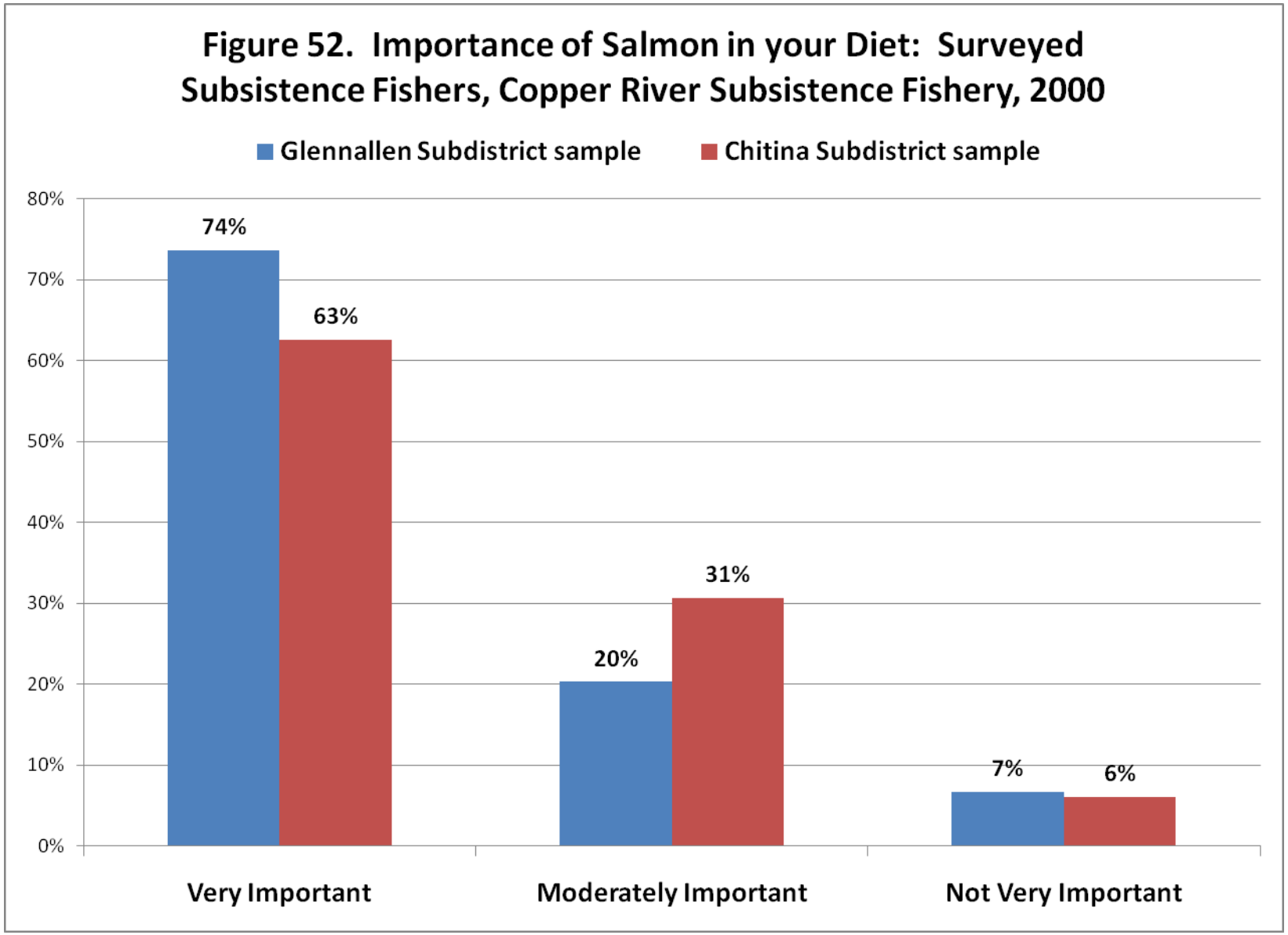


Figure 52.–Importance of salmon in the diet of surveyed subsistence fishers, Copper River subsistence fishery, 2000.

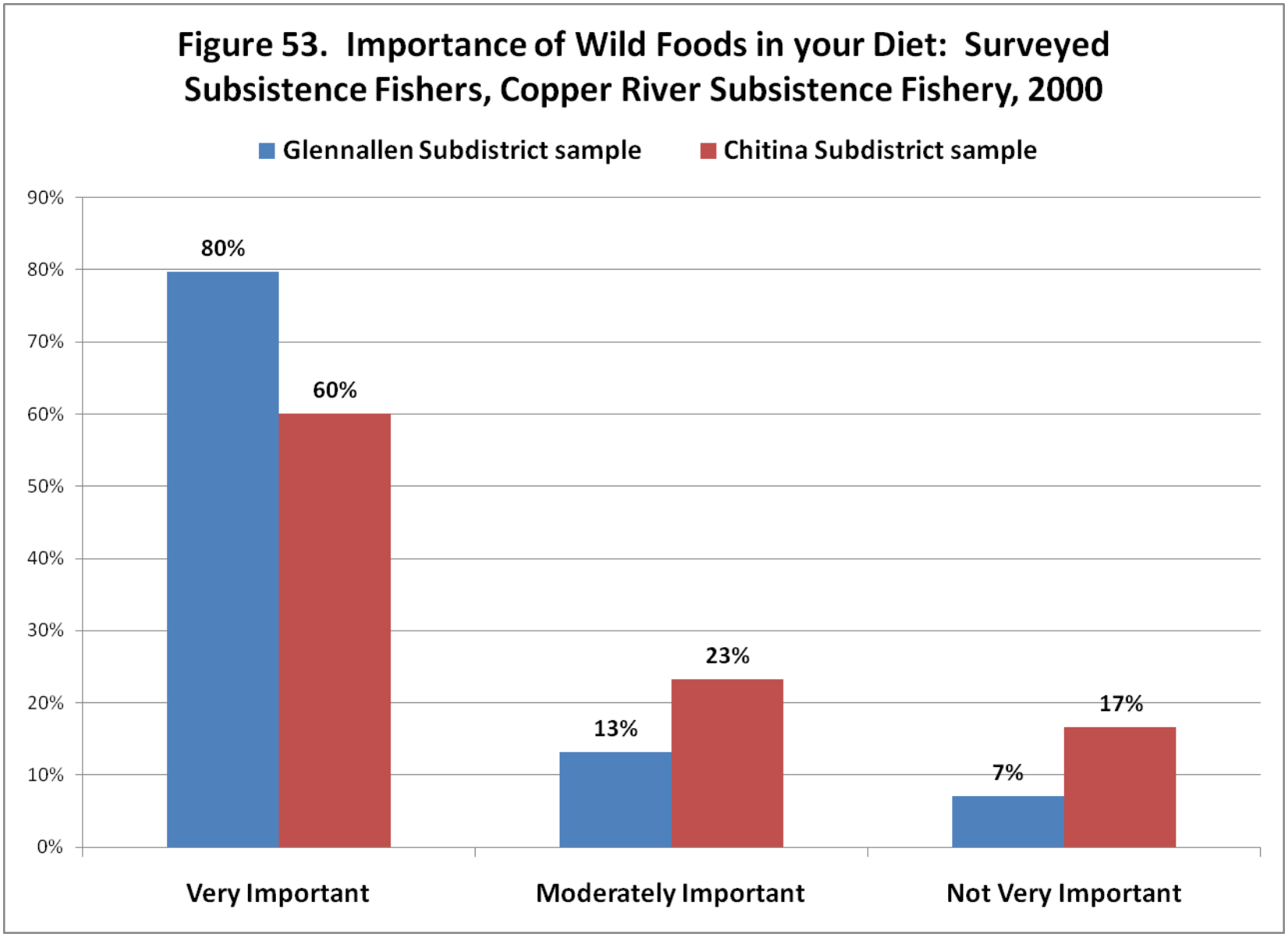


Figure 53.–Importance of wild foods in the diet, surveyed subsistence fishers, Copper River subsistence fishery, 2000.

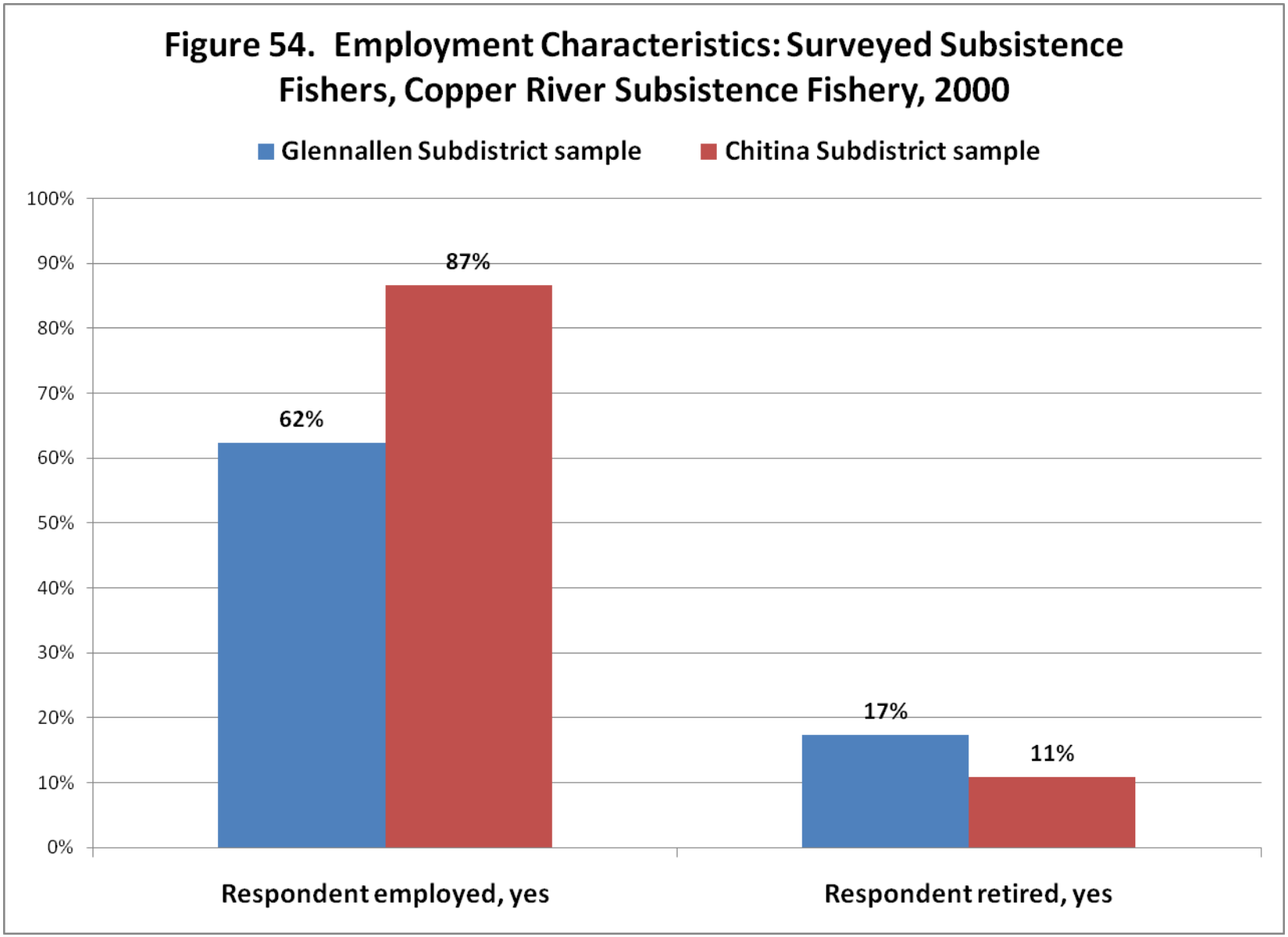


Figure 54.–Employment characteristics, surveyed subsistence fishers, Copper River subsistence fishery, 2000.

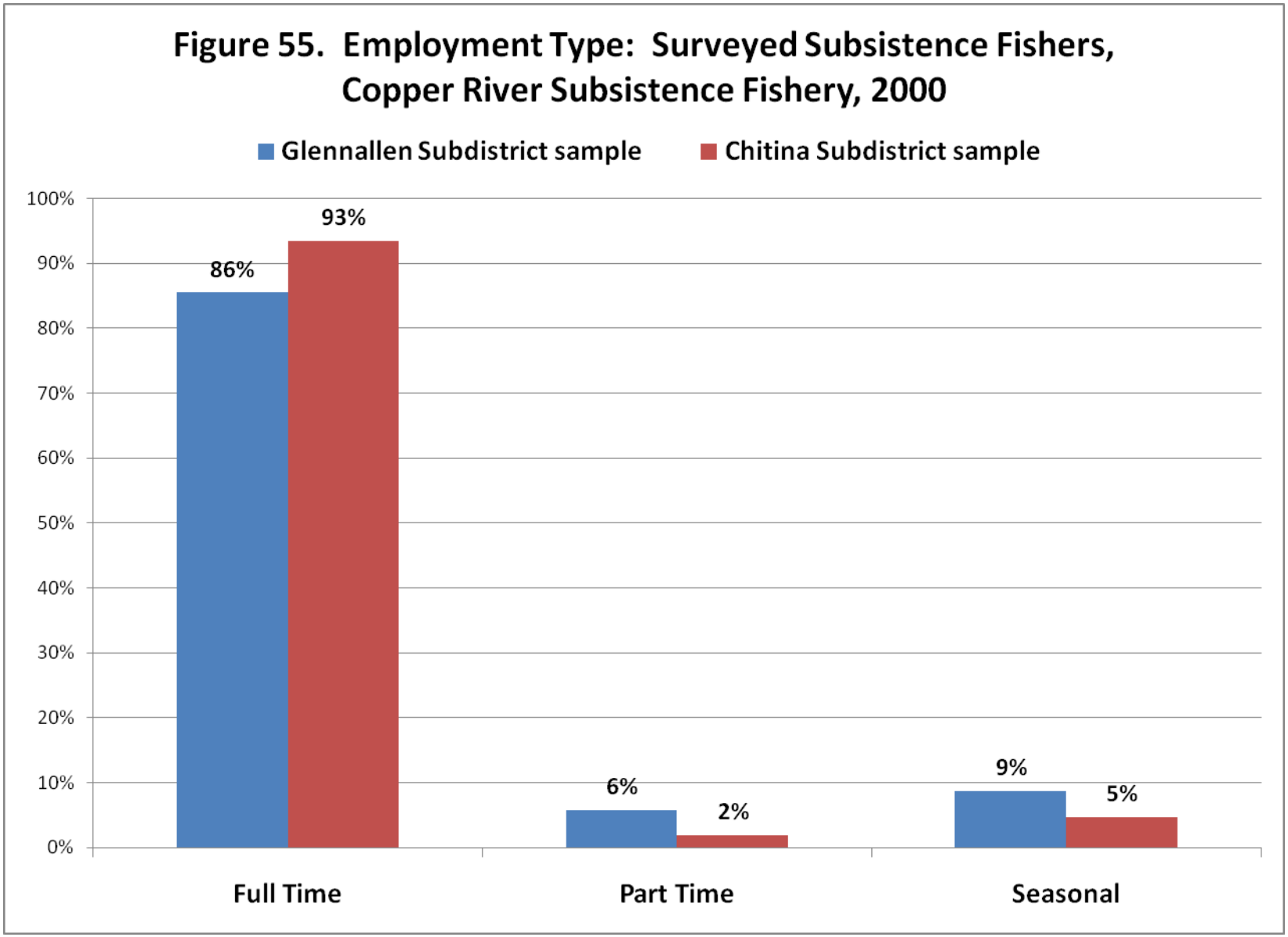


Figure 55.–Employment type, surveyed subsistence fishers, by subdistrict, Copper River subsistence fishery, 2000.

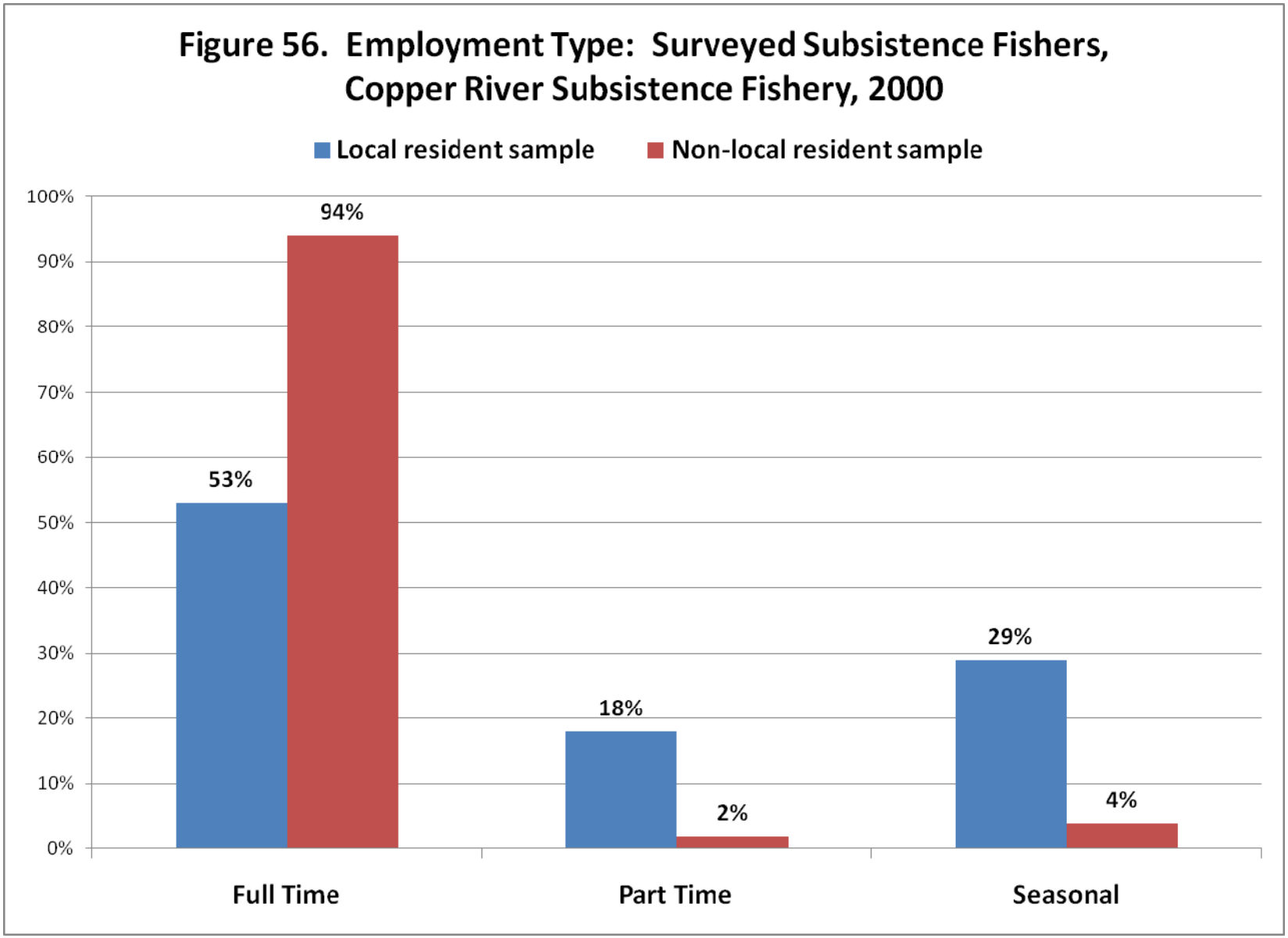


Figure 56.–Employment type, surveyed subsistence fishers, by residency, Copper River subsistence fishery, 2000.

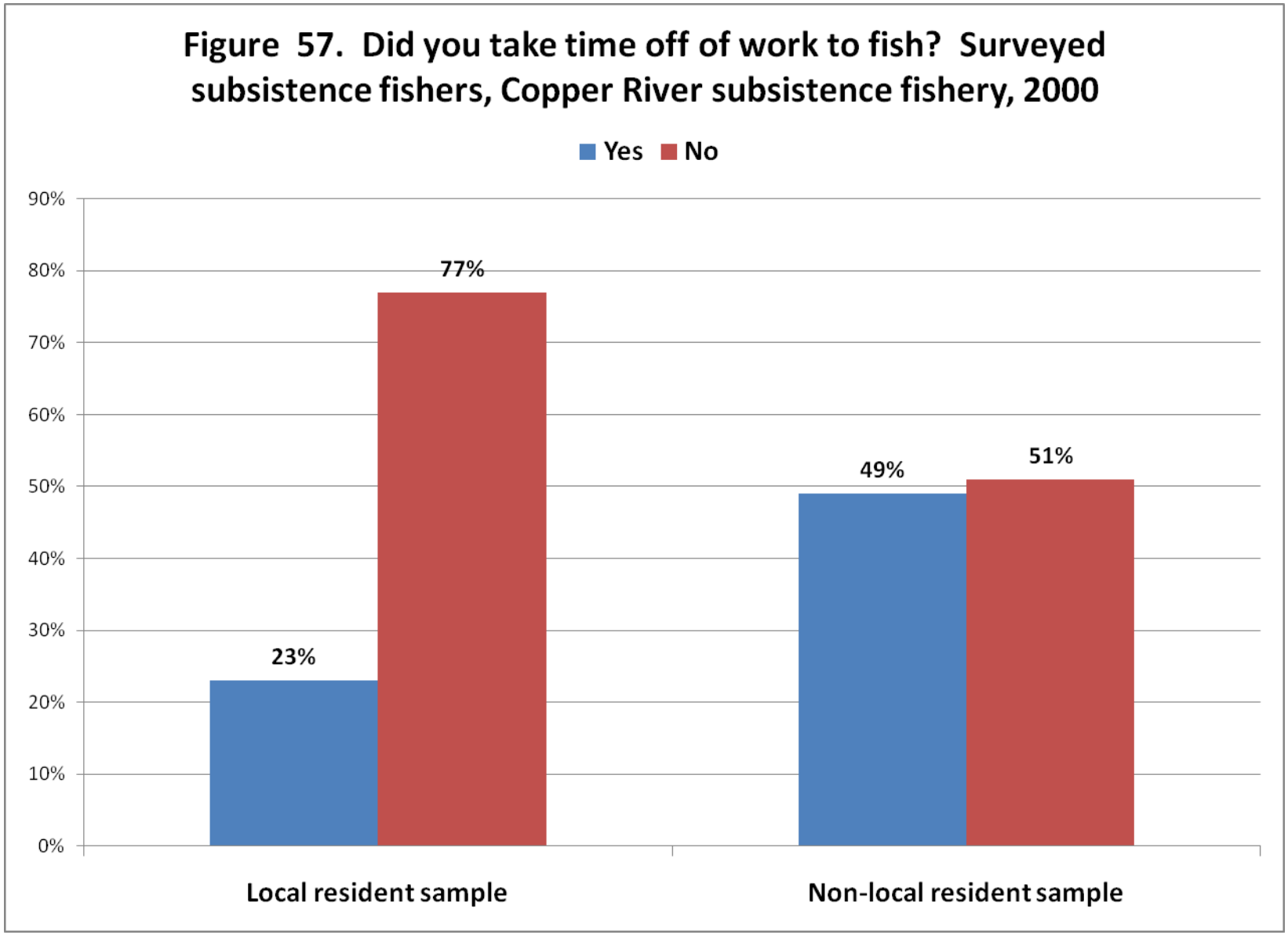


Figure 57.–"Did you take time off of work to fish?"; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

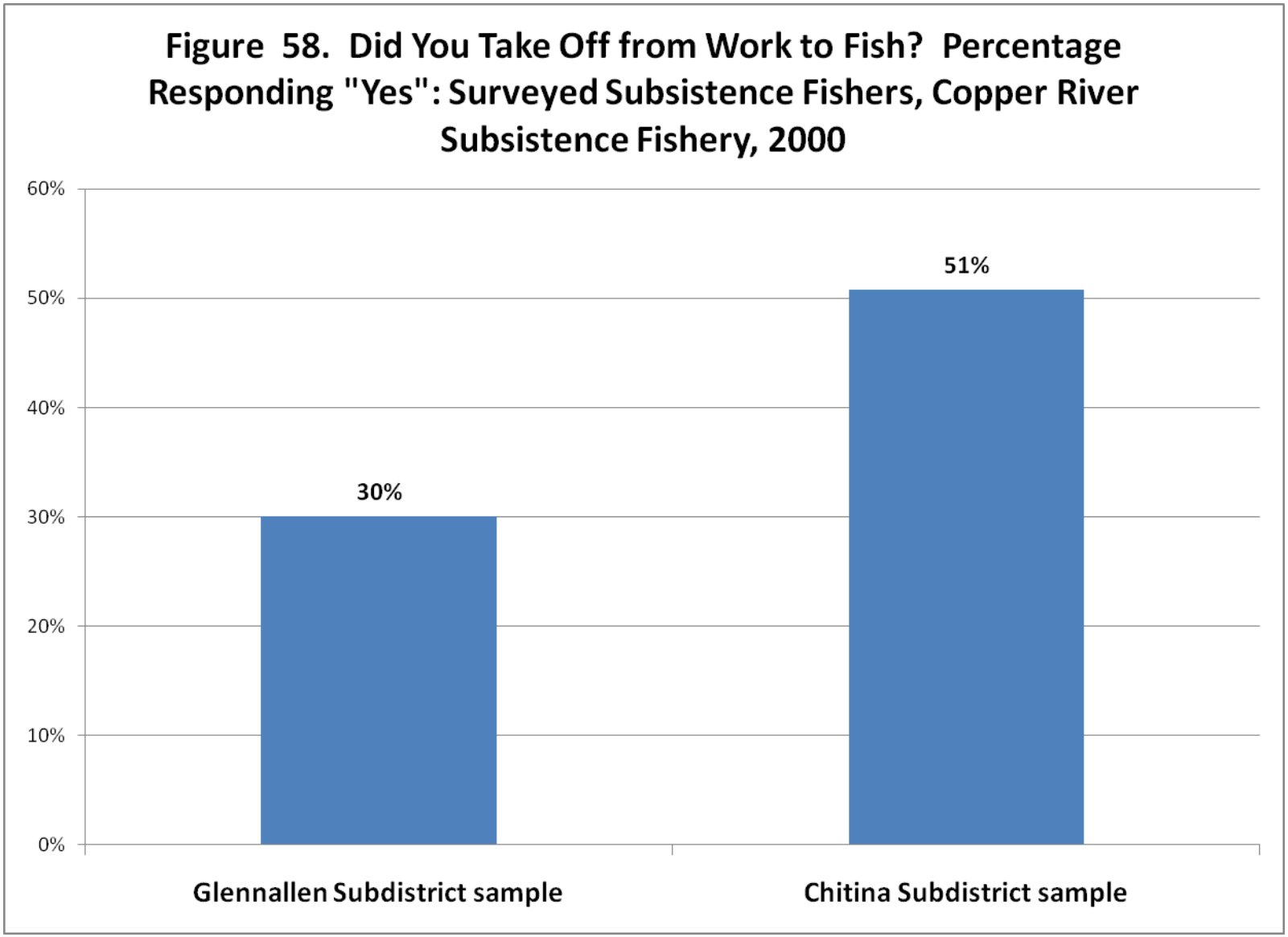


Figure 58.–Answered “yes” to question “Did you take off from work to fish?”; surveyed subsistence fishers, Copper River subsistence fishery, 2000.

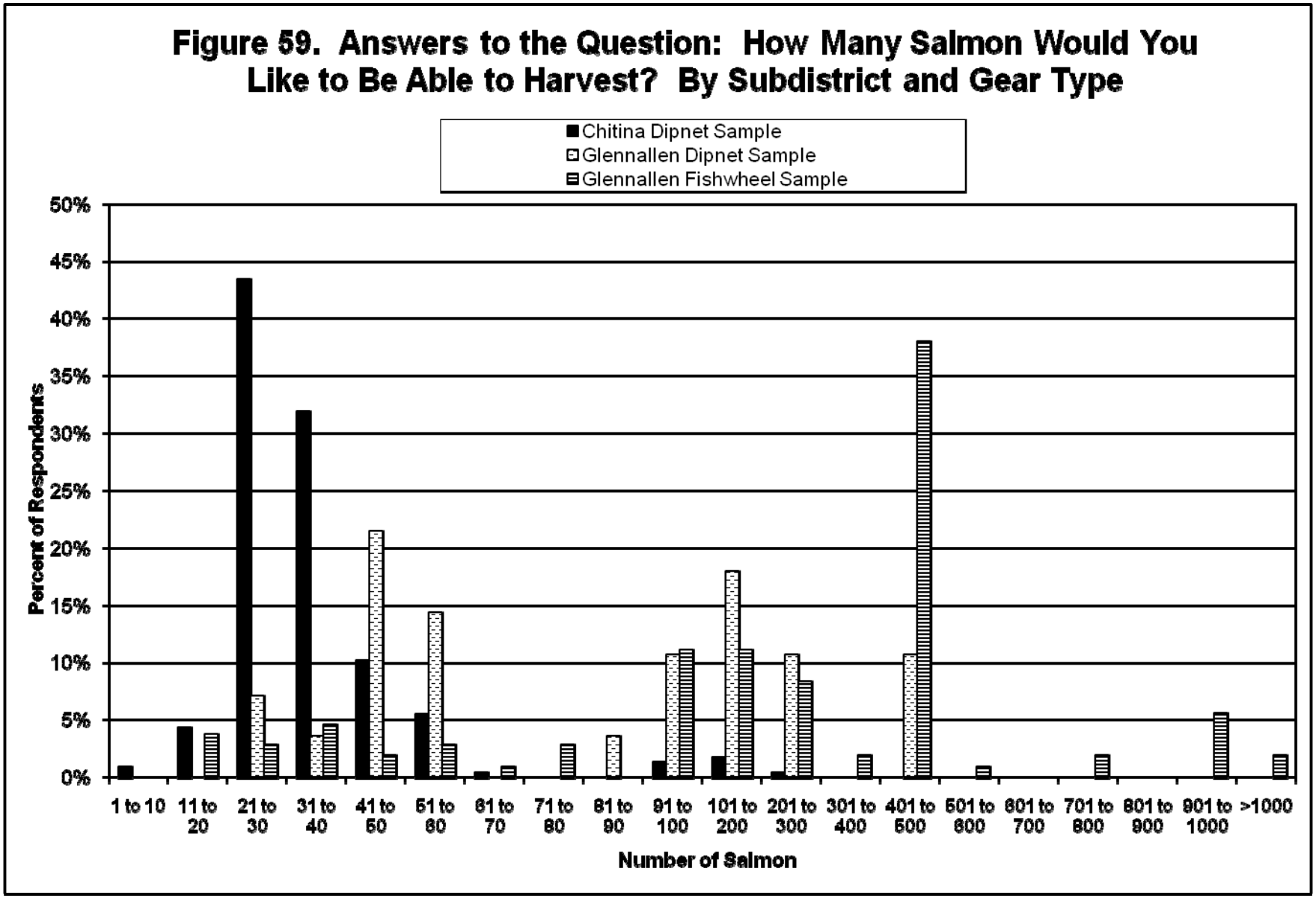


Figure 59.–Answers to the question "How many salmon would you like to be able to harvest?"; by subdistrict and gear type.

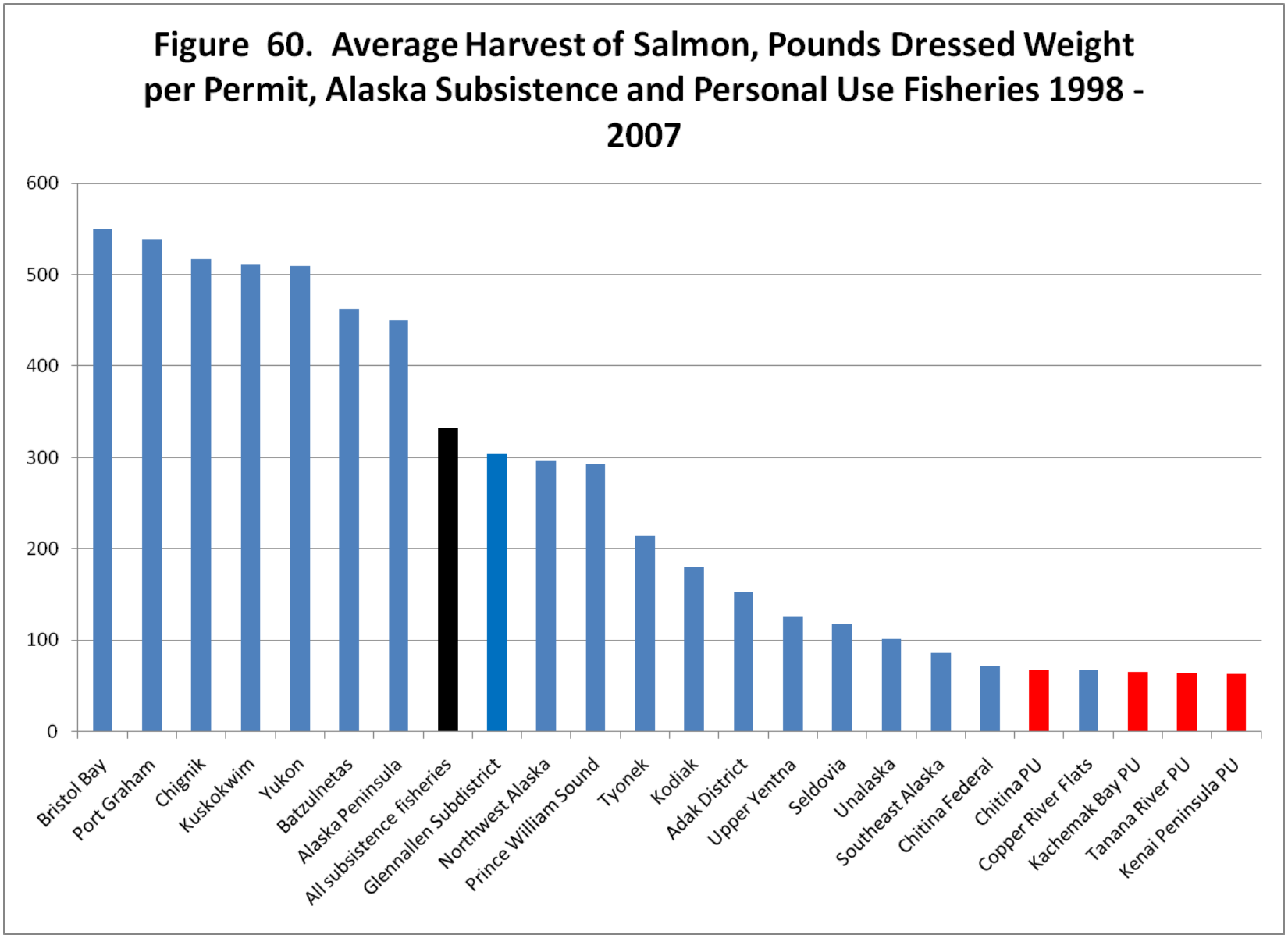


Figure 60.–Average harvest of salmon, pounds dressed weight per permit, Alaska subsistence and personal use fisheries, 1998–2007.

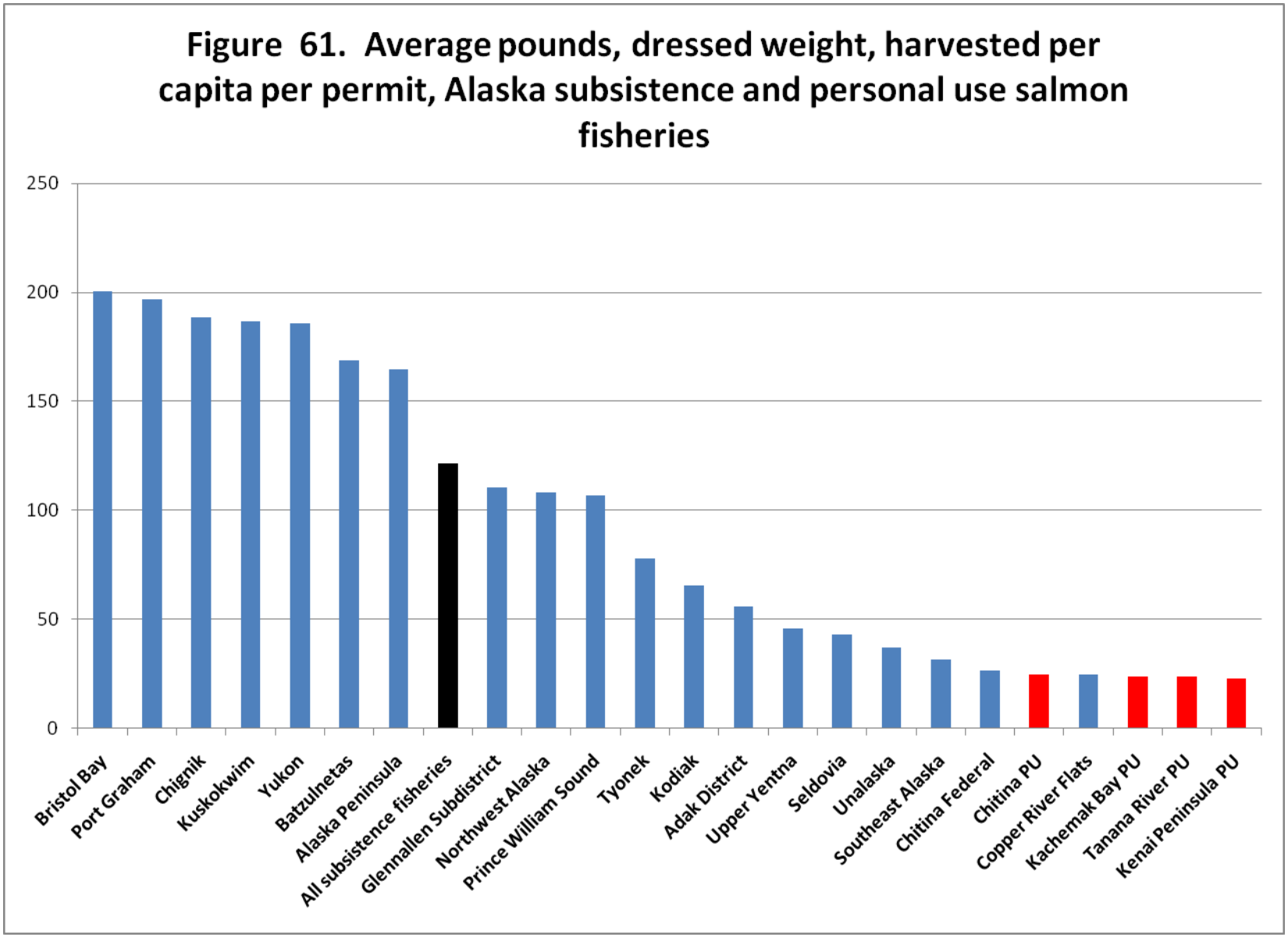


Figure 61.–Average pounds, dressed weight, harvested per capita per permit, Alaska subsistence and personal use salmon fisheries.

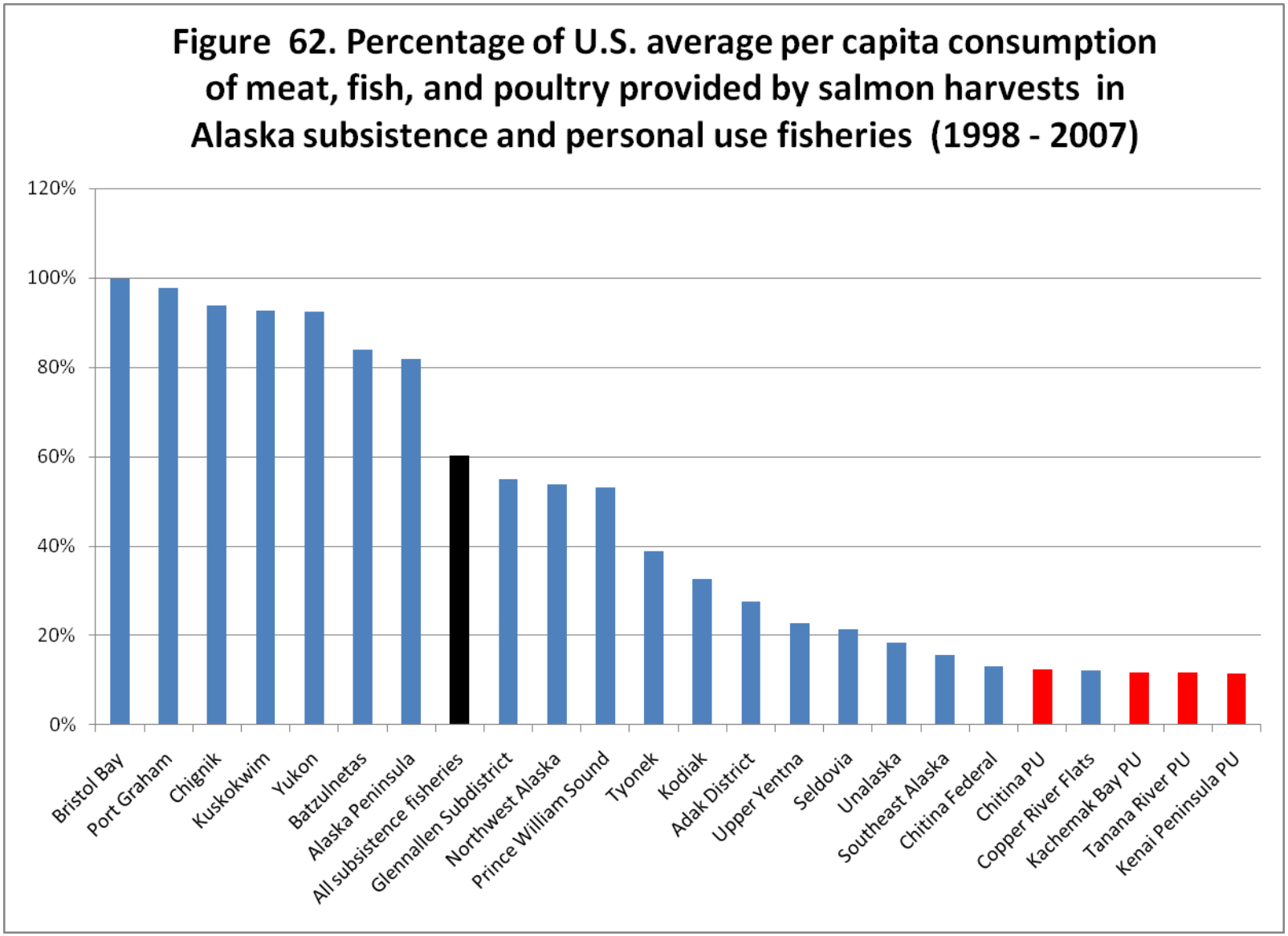


Figure 62.–Percentage of U.S. average per capita consumption of meat, fish, and poultry provided by salmon harvests in Alaska subsistence and personal use fisheries (19982007).

PLATES

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Plate 1.–Ahtna woman dipnetting salmon from dip net platform, perhaps at Lower Tonsina, approximately 1910.

Plate 2.–Chief Eskilida dipnetting salmon from platform.

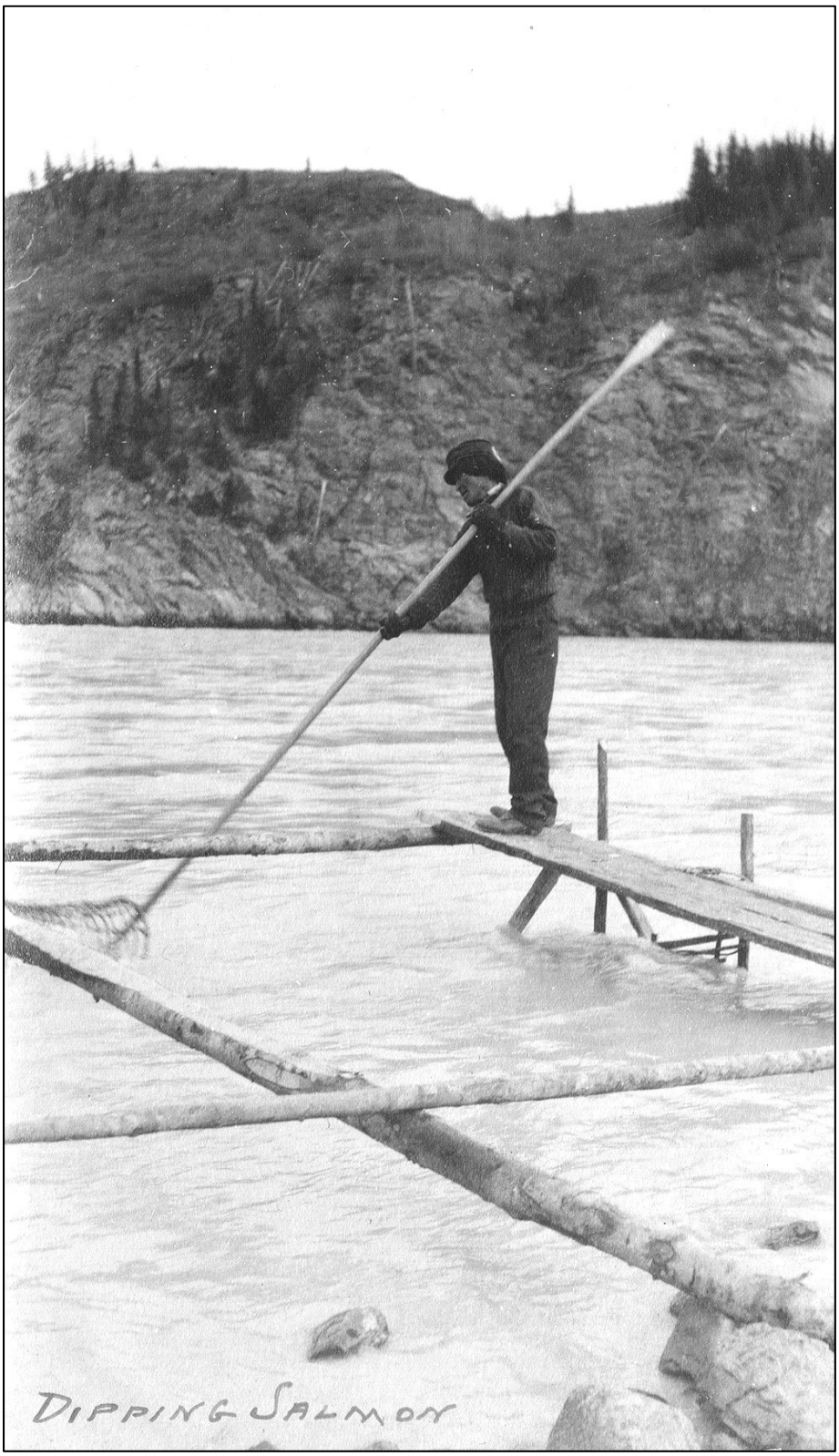

Plate 3.–Chief Eskilida with salmon in dip net.

Plate 4.–Ahtna fish wheel at Chitina, 1910s.

Plate 5.–Ahtna subsistence salmon harvest drying at Chitina, 1910s.

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APPENDICES

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APPENDIX A. PROCEDURES AND STATUTES IN EFFECT IN THE 1980S.

JOINT BOARD'S SUBSISTENCE POLICY

CHAPTER 99.
SUBSISTENCE USES.

5 AAC 99.010. JOINT BOARDS OF FISHERIES AND GAME SUBSISTENCE PROCEDURES. (a) In applying a subsistence priority, the Board of Fisheries and the Board of Game will provide for conservation and development of Alaska's fish and game resources according to the following procedures:

(1) each board will assess the biological status of fish or game resources and determine whether a surplus may be harvested during a regulatory year consistent with the conservation and development of the resources on the sustained yield principal and compatible with the public interest;

(2) each board will identify subsistence uses of fish and game resources, recognizing that subsistence uses are customary and traditional uses by rural Alaska residents for food, shelter, fuel, clothing, tools, transportation, making of handicrafts, customary trade, barter and sharing.

(b) Customary and traditional subsistence uses by rural Alaska residents will be identified by use of the following criteria:

(1) a long-term, consistent pattern of use, excluding interruption by circumstances beyond the user's control such as regulatory prohibitions;

(2) a use pattern recurring in specific seasons of each year;

(3) a use pattern consisting of methods and means of harvest which are characterized by efficiency and economy of effort and cost, and conditioned by local circumstances;

(4) the consistent harvest and use of fish or game which is near, or reasonably accessible from, the user's residence;

(5) the means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate;

(6) a use pattern which includes the handing down of knowledge of fishing or hunting skills, values and lore from generation to generation;

(7) a use pattern in which the hunting or fishing effort or the products of that effort are distributed or shared among others within a definable community of persons, including customary trade, barter, sharing and gift-giving; customary trade may include limited exchanges for cash, but does not include significant commercial enterprises; a community may include specific villages or towns, with a historical preponderance of subsistence users, and encompasses individuals, families, or groups who in fact meet the criteria described in this subsection; and

(8) a use pattern which includes reliance for subsistence purposes upon a wide diversity of the fish and game resources of an area, and in which that pattern of subsistence uses provides substantial economic, cultural, social, and nutritional elements of the subsistence user's life.

(c) After identifying subsistence uses based upon the criteria set out in (b) of this section, each board will determine the approximate amount of fish or game necessary to provide fully for reasonable opportunities to engage in these customary and traditional uses.

(d) Each board will adopt regulations that provide an opportunity for the subsistence taking of fish or game resources in amounts sufficient to provide for the customary and traditional uses identified in (b) of this section, and consistent with sound conservation and management practices. In no instance may the subsistence taking jeopardize or interfere with the maintenance of a specific fish stock or game population on a sustained yield basis.

(e) Each board will, in its discretion, adopt regulations that provide an opportunity for non-subsistence uses of the resource, to the extent that the non-subsistence uses do not jeopardize or interfere with the conservation and development of fish or game resources on a sustained yield basis, or with the opportunity for taking these resources for customary and traditional subsistence uses as provided in (d) of this section.

(f) When circumstances such as increased numbers of users, weather, predation, or loss of habitat may jeopardize the sustained yield of a fish stock or game population, each board will exercise all practical options for restricting non-subsistence harvest before subsistence uses are restricted. If all available restrictions for non-subsistence uses have been implemented and further restrictions are needed, each board will reduce the take for subsistence uses in a series of graduated steps, by giving maximum protection to subsistence users who

(1) live closest to the resource;

(2) have fewest available alternative resources; and

(3) have the greatest customary and direct dependence upon the resource.

(g) In no event, however, will a board allow uses which will jeopardize or interfere with the conservation and management of fish stocks on game populations on a sustained yield basis.

Authority: AS 16.05.251(b)
AS 16.05.255(b)

SELECTED ALASKA STATUTES
Title 16 — Fish & Game

LEGISLATIVE INTENT. The legislature finds that there is a need to develop a statewide policy on the utilization, development and conservation of fish and game resources, and to recognize that those resources are not inexhaustible and that preferences must be established among beneficial users of the resources. The legislature further determines that it is in the public interest to clearly establish subsistence use as a priority use of Alaska's fish and game resources and to recognize the needs, customs and traditions of Alaskan residents. The legislature further finds that beneficial use of those resources by all state residents should be carefully monitored and regulated, with as much input as possible from the affected users, so that the viability of fish and game resources is not threatened and so that resources are conserved in a manner consistent with the sustained-yield principle.

SEC. 16.05.251. REGULATIONS OF THE BOARD OF FISHERIES.

(b) The Board of Fisheries shall adopt regulations in accordance with the Administrative Procedure Act (AS 44.62) permitting the taking of fish for subsistence uses unless the board determines, in accordance with the Administrative Procedure Act, that adoption of such regulations will jeopardize or interfere with the maintenance of fish stocks on a sustained-yield basis. Whenever it is necessary to restrict the taking of fish to assure the maintenance of fish stocks on a substained-yield basis, or to assure the continuation of subsistence uses of such resources, subsistence use shall be the priority use. If further restriction is necessary, the board shall establish restrictions and limitations on and priorities for these consumptive uses on the basis of the following criteria:

(1) customary and direct dependence upon the resource as the mainstay of one's livelihood;

(2) local residency; and

(3) availability of alternative resources.

Section 16.05.940. Definitions.

(17) "subsistence fishing" means the taking, fishing for, or possession of fish, shellfish, or other fisheries resources for subsistence use with gill net, seine, fish wheel, long line, or other means defined by the Board of Fisheries;

(26) "subsistence uses" means the customary and traditional uses in Alaska of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter or sharing for personal or family consumption; for the purposes of this paragraph, "family" means all persons related by blood, marriage, or adoption, and any person living within the household on a permanent basis;

JOINT BOARD'S SUBSISTENCE POLICY

CHAPTER 99.
SUBSISTENCE USES.

5 AAC 99.010. JOINT BOARDS OF FISHERIES AND GAME SUBSISTENCE PROCEDURES. (a) In applying a subsistence priority, the Board of Fisheries and the Board of Game will provide for conservation and development of Alaska's fish and game resources according to the following procedures:

(1) each board will assess the biological status of fish or game resources and determine whether a surplus may be harvested during a regulatory year consistent with the conservation and development of the resources on the sustained yield principle and compatible with the public interest;

(2) each board will identify subsistence uses of fish and game resources, recognizing that subsistence uses are customary and traditional uses by rural Alaska residents for food, shelter, fuel, clothing, tools, transportation, making of handicrafts, customary trade, barter and sharing.

(b) Customary and traditional subsistence uses by rural Alaska residents will be identified by use of the following criteria:

(1) a long-term, consistent pattern of use, excluding interruption by circumstances beyond the user's control such as regulatory prohibitions;

(2) a use pattern recurring in specific seasons of each year;

(3) a use pattern consisting of methods and means of harvest which are characterized by efficiency and economy of effort and cost, and conditioned by local circumstances;

(4) the consistent harvest and use of fish or game which is near, or reasonably accessible from, the user's residence;

(5) the means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate;

(6) a use pattern which includes the handing down of knowledge of fishing or hunting skills, values and lore from generation to generation;

(7) a use pattern in which the hunting or fishing effort or the products of that effort are distributed or shared among others within a definable community of persons, including customary trade, barter, sharing and gift-giving; customary trade may include limited exchanges for cash, but does not include significant commercial enterprises; a community may include specific villages or towns, with a historical preponderance of subsistence users, and encompasses individuals, families, or groups who in fact meet the criteria described in this subsection; and

(8) a use pattern which includes reliance for subsistence purposes upon a wide diversity of the fish and game resources of an area, and in which that pattern of subsistence uses provides substantial economic, cultural, social, and nutritional elements of the subsistence user's life.

(c) After identifying subsistence uses based upon the criteria set out in (b) of this section, each board will determine the approximate amount of fish or game necessary to provide fully for reasonable opportunities to engage in these customary and traditional uses.

(d) Each board will adopt regulations that provide an opportunity for the subsistence taking of fish or game resources in amounts sufficient to provide for the customary and traditional uses identified in (b) of this section, and consistent with sound conservation and management practices. In no instance may the subsistence taking jeopardize or interfere with the maintenance of a specific fish stock or game population on a sustained yield basis.

(e) Each board will, in its discretion, adopt regulations that provide an opportunity for non-subsistence uses of the resource, to the extent that the non-subsistence uses do not jeopardize or interfere with the conservation and development of fish or game resources on a sustained yield basis, or with the opportunity for taking these resources for customary and traditional subsistence uses as provided in (d) of this section.

(f) When circumstances such as increased numbers of users, weather, predation, or loss of habitat may jeopardize the sustained yield of a fish stock or game population, each board will exercise all practical options for restricting non-subsistence harvest before subsistence uses are restricted. If all available restrictions for non-subsistence uses have been implemented and further restrictions are needed, each board will reduce the take for subsistence uses in a series of graduated steps, by giving maximum protection to subsistence users who

(1) live closest to the resource;

(2) have fewest available alternative resources; and

(3) have the greatest customary and direct dependence upon the resource.

(g) In no event, however, will a board allow uses which will jeopardize or interfere with the conservation and management of fish stocks or game populations on a sustained yield basis.

SELECTED ALASKA STATUTES
TITLE 16—FISH AND GAME

LEGISLATIVE INTENT. The legislature finds that there is a need to develop a statewide policy on the utilization, development and conservation of fish and game resources, and to recognize that those resources are not inexhaustible and that preferences must be established among beneficial users of the resources. The legislature further determines that it is in the public interest to clearly establish subsistence use as a priority use of Alaska's fish and game resources and to recognize the needs, customs and traditions of Alaskan residents. The legislature further finds that the beneficial use of those resources by all state residents should be carefully monitored and regulated, with as much input as possible from the affected users, so that the viability of fish and game resources is not threatened and so that resources are conserved in a manner consistent with the sustained-yield principle.

SEC. 16.05.258. SUBSISTENCE USE AND ALLOCATION OF FISH AND GAME. (a) The Board of Fisheries and the Board of Game shall identify the fish stocks and game populations, or portions of stocks and populations, that are customarily and traditionally used for subsistence in each rural area identified by the boards.

(b) The boards shall determine

(1) what portion, if any, of the stocks and populations identified under (a) of this section can be harvested consistent with sustained yield; and

(2) how much of the harvestable portion is needed to provide a reasonable opportunity to satisfy the subsistence uses of those stocks and populations.

(c) The boards shall adopt subsistence fishing and subsistence hunting regulations for each stock and population for which a harvestable portion is determined to exist under (b)(1) of this section. If the harvestable portion is not sufficient to accommodate all consumptive uses of the stock or population, but is sufficient to accommodate subsistence uses of the stock or population, then nonwasteful subsistence uses shall be accorded a preference over other consumptive uses, and the regulations shall provide a reasonable opportunity to satisfy the subsistence uses. If the harvestable portion is sufficient to accommodate the subsistence uses of the stock or population, then the boards may provide for other consumptive uses of the remainder of the harvestable portion. If it is necessary to restrict subsistence fishing or subsistence hunting in order to assure sustained yield or continue subsistence uses, then the preference shall be limited, and the boards shall distinguish among subsistence users, by applying the following criteria:

(1) customary and direct dependence on the fish stock or game population as the mainstay of livelihood;

(2) local residency; and

(3) availability of alternative resources.

(d) The boards may adopt regulations consistent with this section that authorize taking for nonsubsistence uses a stock or population identified under (a) of this section.

(e) Fish stocks and game populations, including bison, or portions of fish stocks and game populations, not identified under (a) of this section may be taken only under nonsubsistence regulations.

(f) Takings authorized under this section are subject to reasonable regulation of seasons, catch or bag limits, and methods and means. Takings and uses of resources authorized under this section are subject to AS 16.05.831 and AS 16.30.

Section 16.05.940. Definitions.

(22) **subsistence fishing** means the taking of, fishing for, or possession of fish, shellfish, or other fisheries resources by a resident domiciled in a rural area of the state for subsistence uses with gill net, seine, fish wheel, long line, or other means defined by the Board of Fisheries;

(23) **subsistence uses** means the noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption; in this paragraph, **family** means persons related by blood, marriage, or adoption, and a person living in the household on a permanent basis;

(28) **domicile** means the true and permanent home of a person from which the person has no present intention of moving and to which the person intends to return whenever the person is away; domicile may be proved by presenting evidence acceptable to the boards of fisheries and game;

(29) **fish stock** means a species, subspecies, geographic grouping or other category of fish manageable as a unit;

(32) **rural area** means a community or area of the state in which the noncommercial, customary, and traditional use of fish or game for personal or family consumption is a principal characteristic of the economy of the community or area.

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APPENDIX B. RESULTS OF A SURVEY CONDUCTED IN 2000 AMONG PARTICIPANTS IN THE COPPER RIVER SUBSISTENCE SALMON FISHERY (WITH AHTNA TABLES).

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PART B

Results of a Survey Conducted in 2000 among Participants in the Copper River Subsistence Salmon Fishery. Prepared by William E. Simeone and James A. Fall. Division of Subsistence, Alaska Department of Fish and Game. January 2003.

Please Note: This report was originally prepared for the Alaska Board of Fisheries meeting in Cordova, Alaska, February 2003. It was distributed as Part A of "Deliberations Materials for Committee A" by the Division of Subsistence, as RC 39. Later in the same meeting, the report was distributed again as RC 89.

The report was also provided to the Alaska Board of Fisheries, without changes as part of deliberation materials pertaining to Proposal 3 (RC **25**) at the December 2005 Board meeting in Valdez.

The report that follows has not been altered from that provided to the Board in 2003 and 2005.

Results of a Survey Conducted in 2000 Among Participants in the Copper River Subsistence Salmon Fishery

prepared by

William E. Simeone and James A. Fall

Division of Subsistence
Alaska Department of Fish and Game
333 Raspberry Road
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Prepared For

Alaska Board of Fisheries
Prince William Sound Management Area Finfish Regulatory Meeting
Cordova, Alaska

January 2003

Introduction

This report updates previous work done by the Division of Subsistence in 1982 and again in 1995-96. This earlier work was done to provide the Board of Fisheries with information on the status of the Copper River Subsistence fishery including whether the Chitina personal use dip net fishery met the customary and traditional use criteria for a subsistence fishery.

Background

When the state passed the first subsistence statute in 1978 the statute defined subsistence as "customary and traditional uses" and the Joint Board of Fisheries and Game developed a procedure for identifying which fish stocks and game populations supported those uses. Eight criteria were developed to determine customary and traditional use:

1. A Long Term, Consistent Pattern of Use
2. A Use Pattern Recurring in Specific Seasons
3. Efficient and Economical Methods and Means of Harvest
4. The Area in which the Use has been established
5. Means of handling, preparing, preserving and storing which have been traditionally used by past generations
6. Handing down of knowledge of fishing from generation to generation
7. Sharing of products of the harvest
8. Use of a wide variety of fish and game resources

In 1984 the Board of Fisheries, for the first time, applied these criteria to the fish wheel and dip net fisheries of the upper Copper River, and concluded that the uses of the Copper River salmon stocks as they occurred in the Glennallen Subdistrict supported customary and traditional use but that the dip net fishery at Chitina did not meet these same criteria. As a result the Board closed the Chitina Subdistrict to subsistence salmon fishing, but authorized a personal use fishery with dip nets and fish wheels to provide a continuing opportunity for Alaskans to harvest salmon for home use there.

In December 1989, the Supreme Court of Alaska, in the *McDowell* decision, found the provisions of the state statute limiting participation in subsistence hunting and fishing to

rural residents to be unconstitutional. The state then passed a new subsistence statute in 1992 but retained the requirement that subsistence uses be "customary and traditional." Meeting in January 1993, the Board of Fisheries affirmed its 1984 decision that uses of salmon in the Glennallen Subdistrict met the criteria for customary and traditional use, but those of the Chitina Subdistrict did not. The information presented to the board at that meeting was virtually the same as that used in 1984 (ADF&G 1993). In 1999 the Board of Fisheries was again presented with a proposal (No. 44) to reconsider its negative customary and traditional use finding for the salmon stocks of the Chitina Subdistrict. This time the Board, using the eight criteria, determined that the salmon stocks of the Chitina subdistrict did indeed have customary and traditional use. A key element in making this determination was whether continuity existed between the post-statehood urban-based dip net fishery and the use patterns established by Ahtna Athabaskans and other Copper River Basin residents in an earlier time. Through testimony offered by representatives of the Chitina Dipnetters Association, a Fairbanks based group, the Board decided there was this continuity.

However, in creating a Chitina Subdistrict subsistence fishery the Board did not substantially change the regulations but adhered, for the most part, to the regulations pertaining to the former Copper River personal use fishery, except that they reduced the seasonal limit of chinook salmon from four to one. In addition the Board set the amount necessary for the Chitina Subdistrict fishery for wild stock salmon at 85,000 to 130,000 salmon and said that permit holders no longer needed to obtain a sport fishing license. As in the past, fishing periods for the Chitina Subdistrict were to be determined based on the numbers of salmon passing the Miles Lake sonar (ADF&G 2000). Regulations regarding the Glennallen Subdistrict subsistence fishery were not changed at all so the Board, in effect, maintained the separation between the Chitina and Glennallen subdistricts that had been in place since the two subdistricts were created in 1977.

Almost immediately the Ahtna protested the Board's action. Darryl Jordan, CEO of Ahtna Incorporated wrote that the shareholders of the corporation were "vehemently opposed" to the action taken by the Board and they requested that the Board appoint a

review committee to reconsider their actions (Ahtna 2000). In response the Board created a review committee to conduct a public hearing and determine whether "expedited consideration is required." The Board took this action because the petitions received from the Copper River Native Association and Ahtna Incorporated did not contain "any new information relative to the Board's action" and as a result accepting the petitions then would be "premature" (BOF n.d.). On March 28, 2000 a three person committee from the Board held a public meeting in Anchorage that was attended by a number of Ahtna, other residents of the Copper River Basin, representatives from the Chitina Dipnetters Association (of Fairbanks), the Fairbanks Advisory Committee, and the Alaska Department of Fish and Game. The committee was looking for new information that might warrant immediate reconsideration but decided that it had not heard any and reconsideration was denied.

At this point the Division of Subsistence began to update information related to the eight criteria for the fisheries of the Glennallen and Chitina subdistricts. During the summer of 2000 the division, in collaboration with the Copper River Native Association, the CheeshNa' Tribal Council (Chistochina), and the Chitina Tribal Council, undertook to survey subsistence fishers in the both subdistricts. The Office of Subsistence Management of the US Fish Wildlife Service funded the research.

When presenting arguments to reclassify the dip net fishery as a subsistence fishery the Chitina Dipnetters Association argued that those people fishing at Chitina had developed a pattern of use that was customary and traditional. They argued that the modern dip net fishery was continuing a pattern of use begun by the indigenous Ahtna Athabaskans; that the fishery had been in existence for a relatively long period of time (since the late 1940s); that participants shared their harvest with families and friends; that elders in the fishery had passed their knowledge to succeeding generations; and finally, under state law all residents of Alaska were considered subsistence users. In other words, it was argued that there was little relevant difference between rural and urban participants and use patterns. The goal of the survey was to discover to what degree these generalizations

were true by comparing the Ahtna pattern of use with fishermen who lived outside the Copper River Basin.

Of all the participants in the Copper River salmon fishery the Ahtna have the longest history of use. They best represent the long-term pattern that defines customary and traditional use of salmon on the Copper River.[1] For this reason we decided to compare Ahtna with non-local or non-basin resident fishermen. Of the 510 people interviewed 109 or 21 percent, were Ahtna. In addition we interviewed 18 non-Native basin residents to see how their pattern of use compared with that of the Ahtna and the non-basin participants. We also tried to interview a large number of non-resident fishers. Of this category we interviewed a total of 383 people; 11 percent of these said they fished with a fish wheel while the remaining 89 percent used a dip net. Of the 510 people interviewed, 34 four percent came from the Fairbanks-Interior region, 41 percent from south central Alaska communities, and 25 percent from local communities (see Figure 1). Of all those interviewed 20 percent were from Anchorage and 26 percent from Fairbanks.

Respondents in all three categories were selected because of their active participation in the fishery. Non-basin fishermen were selected opportunistically and interviewed while on the fishing grounds. Interviews with all non-basin residents took place in the Chitina Subdistrict or at fishwheel sites located just above the Chitina McCarthy Bridge. Because of the nature of the fishery it was much easier to contact non-local respondents here than at scattered fishing sites further upriver. Ahtna respondents were chosen because of their known participation in the fishery and we attempted to interview as many Ahtna participants as possible, given the time constraints.

To administer the survey the division hired Sandy Scotton, a local basin resident, and staff members of various Ahtna organizations. The survey instrument consisted of thirty-five questions with most requiring forced answer responses. The questions were designed to elicit information about harvest patterns including: months fished, types

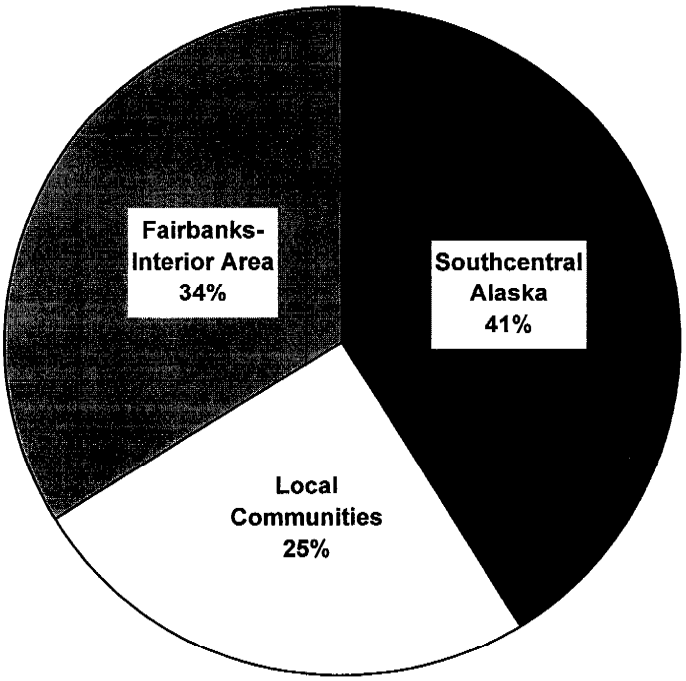
[1] In 2000, Ahtna represented about 13 percent of all local basin residents who registered fish wheels. There were, of course, many more Ahtna who were included on fish wheel permits.

Local Communities
Cantwell 2
Chistochina 25
Chitina 12
Copper Center 50
Gakona 10
Glennallen 1
Gulkana 16
Sheep Mountain 2
Kenny Lake 3
Tazlina 4
Copperville 1
Silver Springs 1

Souncentral Alaska
Anchorage 106
Big Lake 3
Chickaloon 1
Homer 2
Palmer 23
Sterling 1
Sutton 2
Valdez 10
Wasilla 36
Willow 1
Whale Pass 1
Eagle River 14
Chugiak 6
Girdwood 2
Eshamy Bay 1

Fairbanks-Interior
Salcha 1
Clear 1
Delta Junction 14
Eielson Air Force Base 2
Fairbanks 133
Nenana 1
North Pole 21

Figure 1. Residence of Survey Respondents, Copper River Subsistence Fishery, 2000
N= 510



of gear used, preparation of the catch, sharing, and transmission of knowledge. Also examined were employment characteristics, and opinions about the harvest and changes in the quality of salmon.

Study Results

The following figures summarize data describing a pattern of use for Ahtna, other basin residents, and non-basin residents. Figure 2 shows that 98 percent of Ahtna and 83 percent of other basin residents fished in the Glennallen Subdistrict, while 81 percent of non-local residents fished in the Chitina Subdistrict. Of all 127 local residents interviewed, 93 percent said they fished with a fish wheel while only 7 percent said they used a dip net. These results reflect the same pattern, noted in 1984 by Fall and Stratton (1984) correlating gear choice, fishing location, and area of residence.

Figures 3 and 4 refers to the "time depth" of the pattern of use laid out in Criterion 1: "a long-term consistent pattern of use and reliance on the fish stock or game population that has been established over a reasonable period of time, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns." Figure 3 shows the number of years since a person first participated in the fishery. Fifteen percent of the non-basin residents interviewed said that 2000 was the first year they participated in the fishery, while 26 percent said they had participated from one to five years. In comparison, only 1 percent of Ahtna and 6 percent of other basin residents were participating in the fishery for the first time.

Figure 4 provides data on the number of years people said they had used a fishing site. In responding to this question, 98 percent of non-local fishermen said they had been using their fish site for 20 years or less, compared to 69 percent of other basin residents and 57 percent of Ahtna respondents. At the same time 44 percent of Ahtna said they had been using their fish site for 20 years or more. There are two caveats to these results. One, fishermen who use a dip net do not usually have a specific fishing site or location, as do those who use a fish wheel and two, because the Copper River erodes its bank quickly,

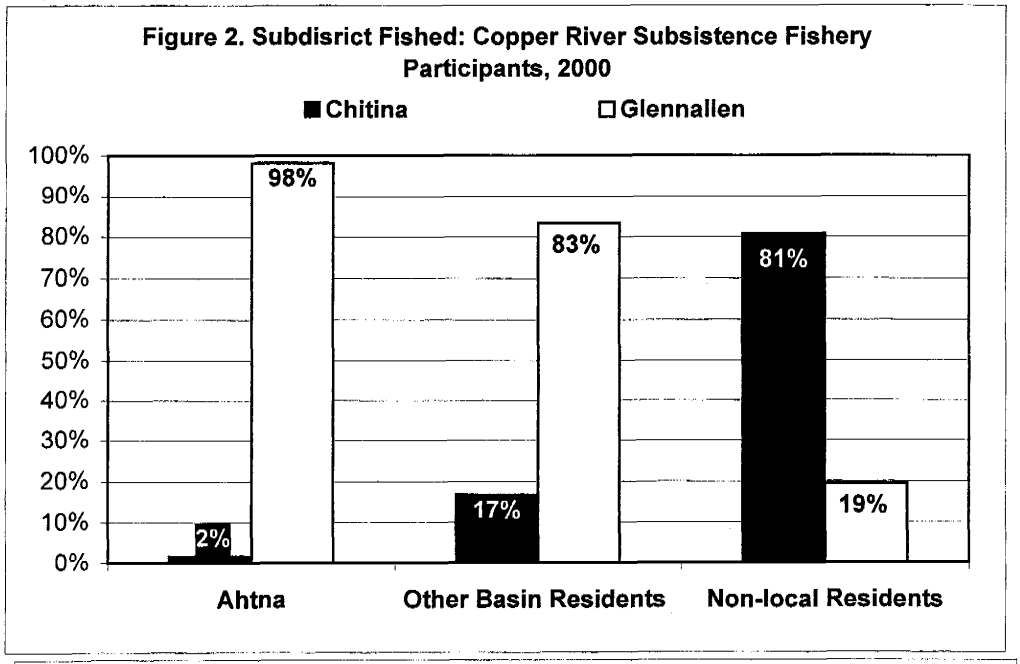


Figure 2. Subdisrict Fished: Copper River Subsistence Fishery Participants, 2000
Chitina
Glennallen
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
98%
2%
83%
17%
81%
19%
Ahtna
Other Basin Residents
Non-local Residents

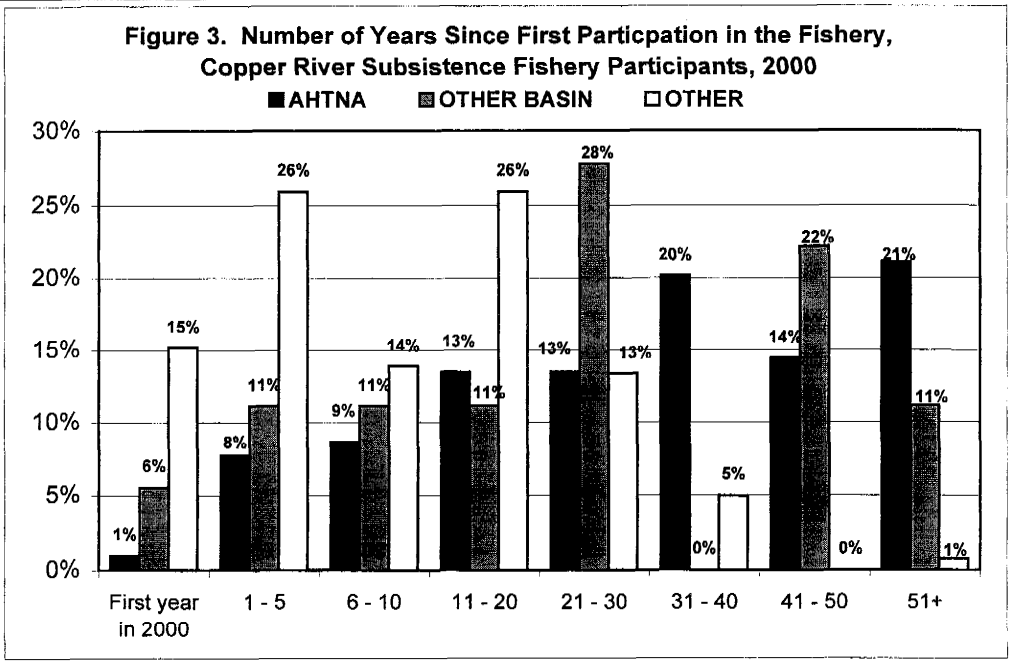


Figure 3. Number of Years Since First Particpation in the Fishery, Copper River Subsistence Fishery Participants, 2000
AHTNA
OTHER BASIN
OTHER
30%
25%
20%
15%
10%
5%
0%
1%
6%
15%
8%
11%
26%
9%
11%
14%
13%
11%
26%
13%
28%
13%
20%
0%
5%
14%
22%
0%
21%
11%
1%
First year in 2000
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51+

Figure 4. Number of Years Using Fishing Site: Copper River Subsistence Fishery Participants, 2000

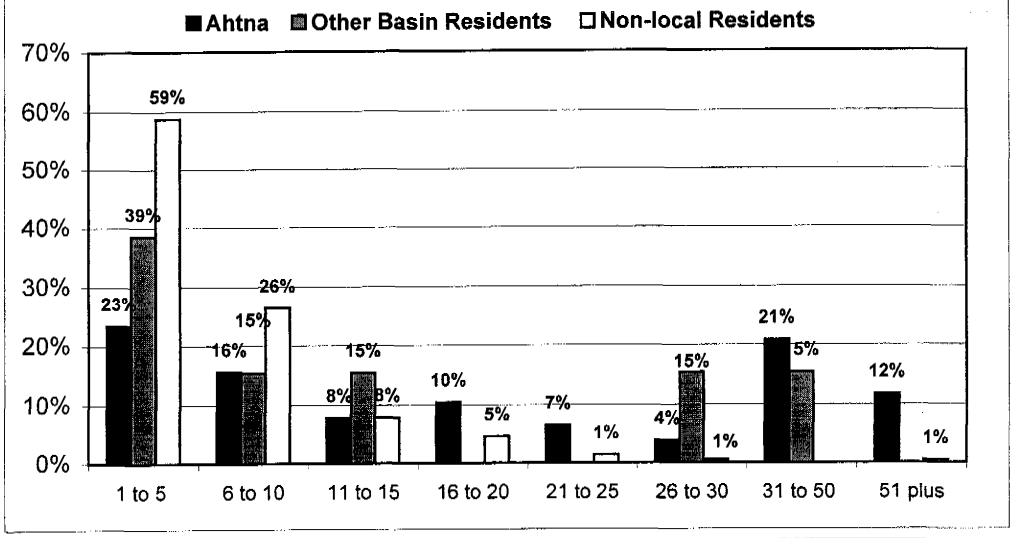
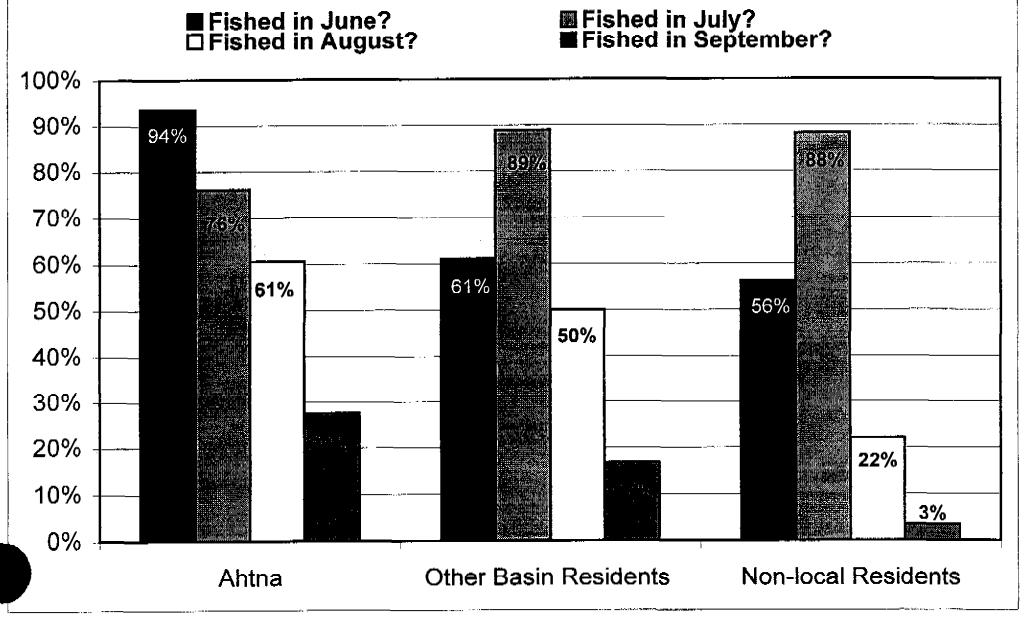


Figure 5. What Months did you Fish in the Copper River: Copper River Subsistence Fishery Participants, 2000



fish wheels often have to be moved, which partially explains why 23 percent of Ahtna said they had used their fish site from 1 to five years.

Figure 5 presents data referring to Criterion 2 showing contrasting patterns of seasonal participation. The traditional Ahtna pattern, documented by Simeone and Kari (2002), is to fish early in the season so as to take advantage of dry weather in June and to avoid the bees that swarm later in the summer. Over 90 percent of Ahtna said they fish in June, with participation rates dropping off as the season progresses. Most other basin residents (89 percent) interviewed said they fish in July, which is also the pattern for a majority of non-locals (88 percent). Note, that the fishing pattern for the dip net fishery is greatly affected by regulation because fishing time in the Chitina Subdistrict is restricted during the month of June by the Alaska Department of Fish and Game.[2] However, one long time dip netter said that he used to fish at Chitina in June but now he goes "later in the year." He said, "Usually I try and go around the 15th of July. It seems there's more fish, the weather is warmer…"

Figures 6, 7 and 8 refer to Criterion 3 (efficient and economical methods and means of harvest) and Criterion 4 (the area in which the use has been established). Figure 6 shows that a majority of Ahtna (95 percent) and other basin residents (83 percent) preferred to use fish wheels, while non-basin residents preferred dip nets (89 percent). These data represent a historical difference between local and non-local fishers that extends back to the beginning of the Chitina dip net fishery in the late 1940s.

With the introduction of the fish wheel at the beginning of the 20th century Natives and non-Natives living in the Copper River Basin largely gave up the use of the dip net and switched to the fish wheel, which was thought to be more efficient.[3] However, some dipnetters who have fished at Chitina since the 1950s or 1960s expressed the opinion that, for a number of reasons, fish wheels are not as efficient or practical as dip nets. One said he was always too busy to build a fish wheel: "Oh I was too busy. I could get

[2] Fishing in the Chitina Subdistrict is regulated based on the strength and timing of the sockeye salmon run.
[3] One Ahtna elder, who was raised in Chitina, remembers using dip nets made from chicken wire. These were different from the traditional dip nets made from spruce roots.

Figure 6. Gear Type Used: Surveyed Copper River Subsistence Fishery Participants, 2000

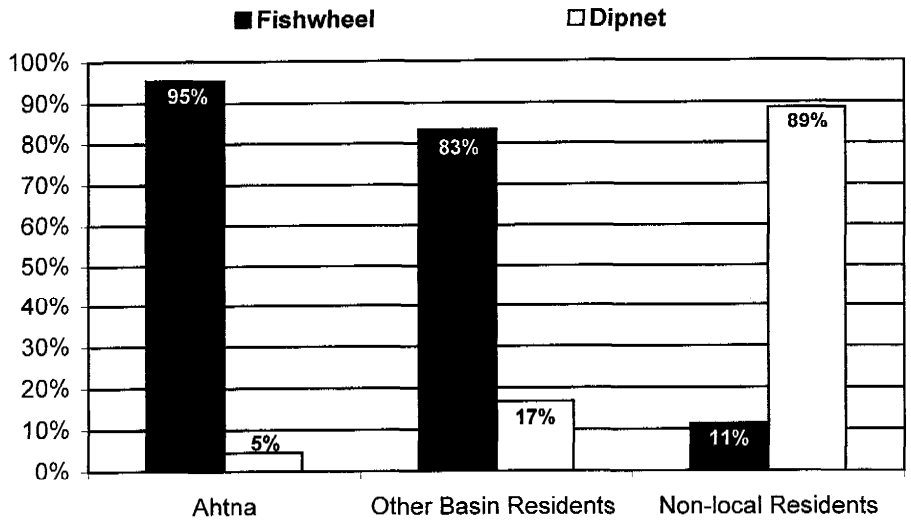
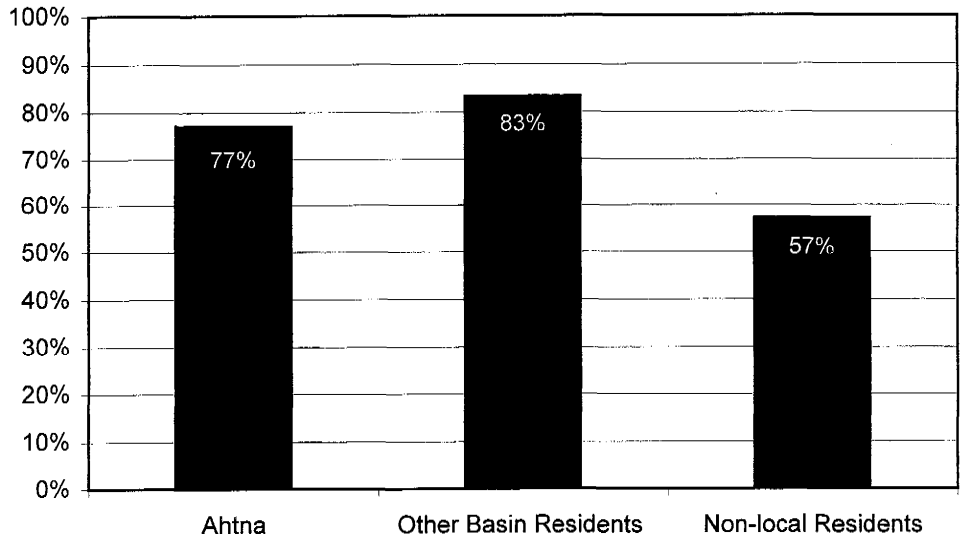


Figure 7. Do You Fish in the Same Site Every Year: Surveyed Copper River Subsistence Fishers, 2000



enough fish [using a dip net]. I was working six days a week with the airlines and building up the homestead." Another said that he was thinking of using a fish wheel but that he had "such good luck" dip netting from a boat that he had no need to use a fish wheel, except, he said "when you go down there once a year and you can use as many fish as we can, if you go fishing below the bridge like they had it this year, there really aren't enough fish for what we could like to have." A third said, "I just never had the need to, you know. To me, personally it's more a pain in the rear than it would be worth you know." A fourth pointed out that even though fish wheels are an "easy way" to catch fish he was not "raised up with a fish wheel and, to me it's more dangerous." He went on to say "I really prefer dip netting. People say that it is inefficient, but when the fish are running I've pulled up to four fish out in one dip, and the last two years we hit a spot where if dip netting is inefficient, I question that because we caught, last year we caught two hundred fish in less than six hours of dipping."

One factor limiting participation in the fish wheel fishery is access. There are few roads leading to the river and much of the land on the west bank is private property. Most fish wheels are concentrated in six or eight locations (Simeone and Fall 1996:69-71). As a result most fish wheel owners try and put their wheels in the same location every year and Figure 7 shows that over half of all respondents (Ahtna, Other Basin and Non-Basin residents) said they fished in the same site every year. Furthermore, use of fish wheels is governed by factors such as kinship relations and traditional rules of access. Most Ahtna generally do not share their fish wheels with large numbers of people while non-Natives do. For example, in 1996 there were at least 6 fish wheels owned by non-Native fishermen with more than 20 permits attached while only one Ahtna wheel had more than 10 affiliated permits.

Because good fish wheel sites are at a premium, they are often passed from generation to generation. Many Ahtna fish wheel sites have been occupied since the 1920s. Today there are fewer traditional fish camps than in the early 1980s and before (most people take their fish home to process rather than leave it at the fish wheel site where it might be stolen), but a few fishing sites still "belong" to some Ahtna families and are frequently

inherited. Over half of Ahtna (51 percent), and a large percentage of other basin residents interviewed (44 percent) said their family owns the fishing site (Figure 8). In sharp contrast only 2 percent of non-local residents said that their family owned the fish site.

Criterion 5 relates to a "means of handling, preparing, preserving, and storing which have been traditionally used by past generations." Traditionally Ahtna lightly smoked and dried their salmon. Later, in the 20th century, they learned to salt, can, and kipper fish and still later, when electricity became widely available, to freeze fish. Figure 9 shows that many Ahtna, as well as most other basin residents, use all of these methods to prepare and preserve their salmon. In contrast, most non-basin fishers freeze (95 percent), smoke (75 percent) or can (48 percent) their fish.

According to long time dip net fishermen, in the early years of the fishery many participants processed their fish right at the fishing site. A dip netter who fished at O'Brien Creek in the 1950s remembered canning fish right at the mouth of the creek and then hauling the cans out in a duffel bag. But today, as survey data indicate, freezing has become the most popular method for preserving salmon. One dip netter described how he used to can fish but now he uses a vacuum packer and freezes them.

> Two hundred fish is a lot of fish. We had, I think, twelve ice chests full of fish and we had some of those great big ice chests that hold lots and lots of fish. It's a major amount of work to go down there and take care of two hundred fish and then bring them home. Then you've got to take them, lately we've been, several years ago I bought one of them vacuum packing things and we go out here and filet fish, vacuum pack them and freeze them. Years before I had a canner. My wife likes them primarily, and she's the main fish eater. I like salmon but she loves it, she's the main fish eater. She likes them canned in jars, in mason jars and so we have done a lot of that. And I learned early to can them in mason jars and some people even take their jars and stuff down to O'Brien Creek and sit there and process there fish right there and do it that way.

Other long time dipnetters said they still can some fish and tend to use both the meat and heads. One Fairbanks resident who has been fishing at Chitina since the 1950s said he

Figure 8. Answered Yes to the Question: "Does Your Fishing Site Belong to Your Family?" Surveyed Copper River Subsistence Fishers, 2000

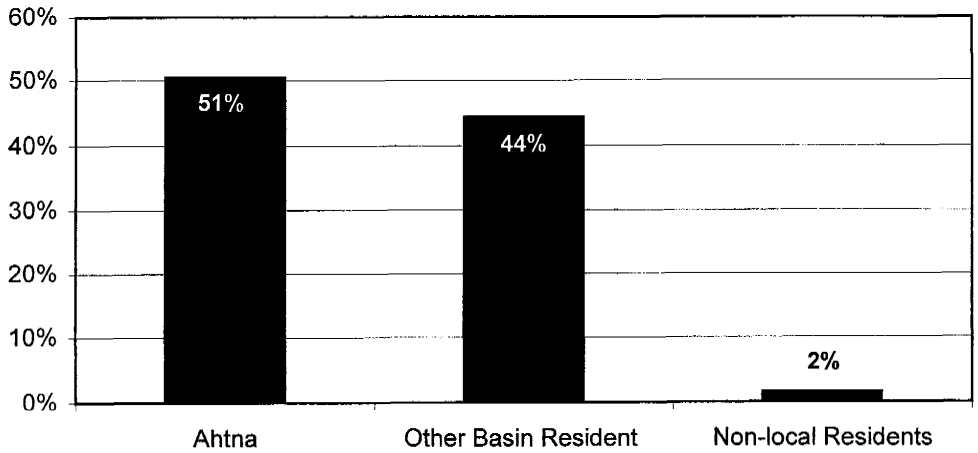
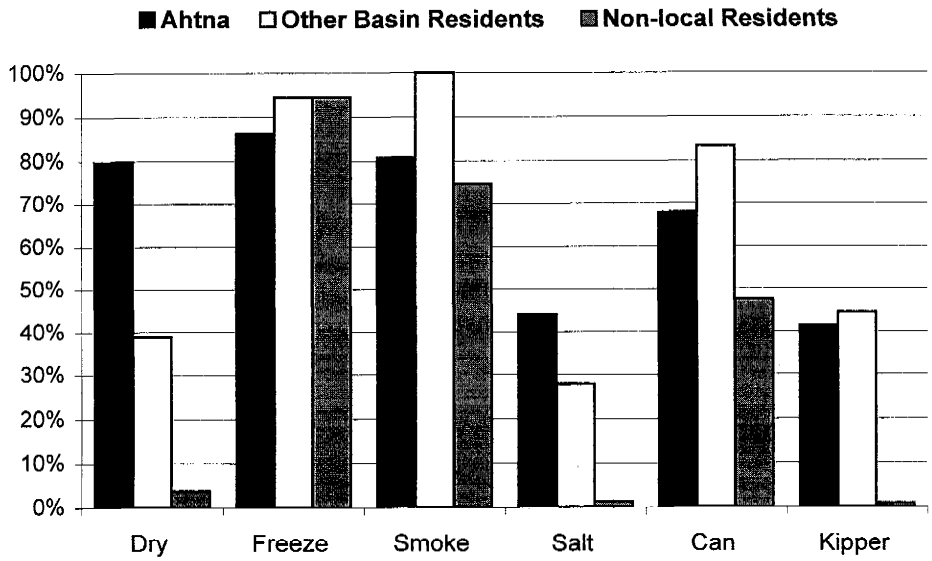


Figure 9. How do you Prepare your Salmon?: Surveyed Subsistence Fishers, Copper River Subsistence Fishery, 2000



still cans most of his salmon. "Like last summer I did most of the canning. I did 123 pints, I did 40 of those 303 cans, and I did 18 10-ounce jars. Those are the ones that oysters come in. What I do is usually when I trim the belly or something that doesn't fit in the can, I stick them in those because I'll just take one of them out and just sit there and eat it. I like those bellies and that front part that's got the fin on it, the cheeks. That's my favorite, you know, and gosh I see people down there cutting off those cheeks and throwing them away. They're throwing the best part of the fish away."

Figure 10 relates to the sixth C&T criteria: "A use pattern which includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation." Data gathered in the 2000 survey shows that most Ahtna interviewed learned how to fish in the Copper River from a parent (57 percent) or other relative (40 percent). Thirty-three percent of other basin residents interviewed said they learned how to fish from their parents. On the other hand, only 6 percent of non-local fishers interviewed learned from a parent while 43 percent said they were self-taught and 43 percent said they learned from a friend. Similarly, most Ahtna (67 percent) interviewed learned about the fishery from relatives while non-local fishermen learned about it through word of mouth (41 percent) or through friends (46 percent) (Figure 11).

The next set of figures compare and contrast some characteristics of sharing of participants in the Copper River subsistence salmon fisheries and relates to Criterion 7 "a pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving."

Despite the fact that there are differences in harvest limits between the dip net fishery in the Chitina Subdistrict and the fish wheel fishery in the Glennallen Subdistrict[4], a majority of respondents said they shared their catch (Figure 12), and about the same percentages said they shared with family members outside their households (Figure 13) or that they shared with friends (Figure 14). When asked if they shared with other non-

[4] For the Chitina Subdistrict the limit is 30 salmon for a family of two or more, of which no more than one may be a chinook salmon. For the Glennallen Subdistrict the limit is 500 salmon for a family of two or more.

Figure 10. Who Taught You How to Fish in the Copper River?: Surveyed Subsistence Fishers, Copper River Subsistence Fishery, 2000

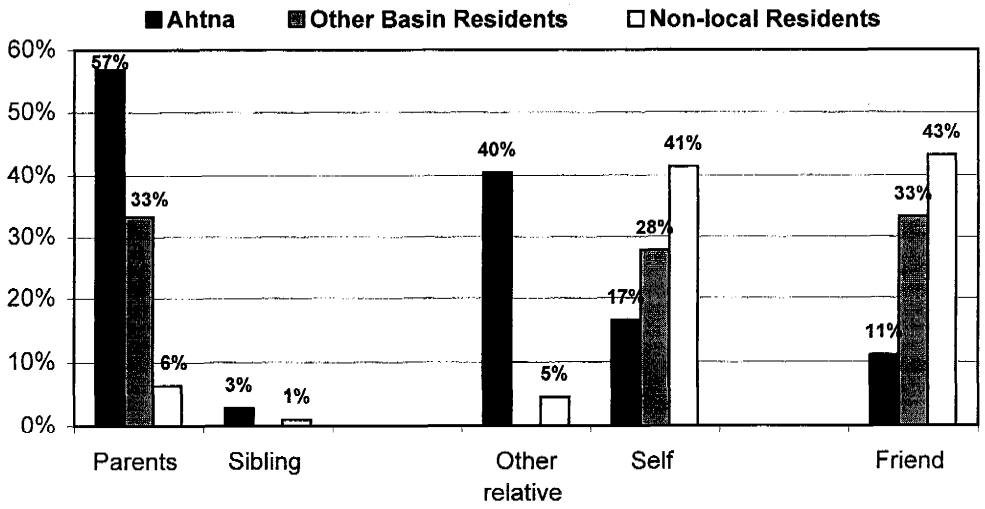


Figure 11. How Did You Learn about the Copper River Fishery:Copper River Subsistence Fishery Participants, 2000

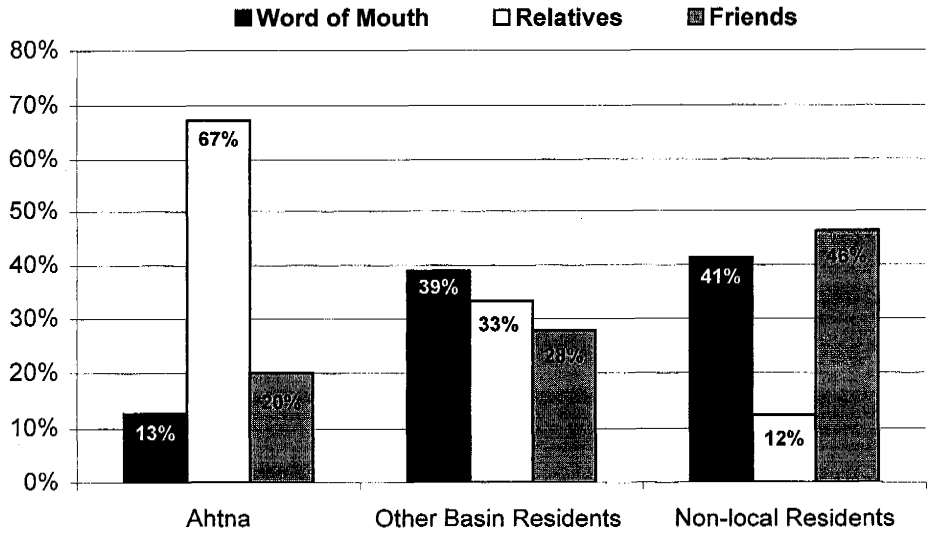


Figure12. Do you Share your Catch/: Surveyed Subsistence Fishers, Copper River Subsistence Fishery, 2000

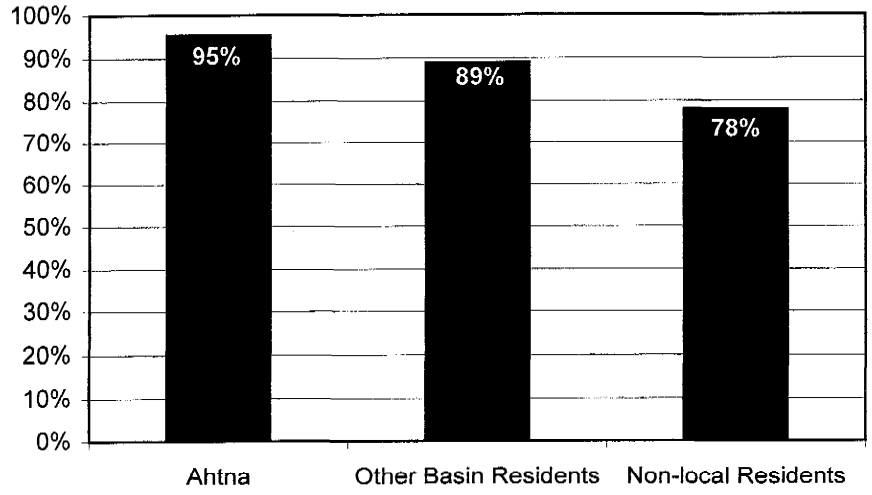


Figure 13. Do You Share With Family?: Copper River Subsistence Fishery Participants, 2000

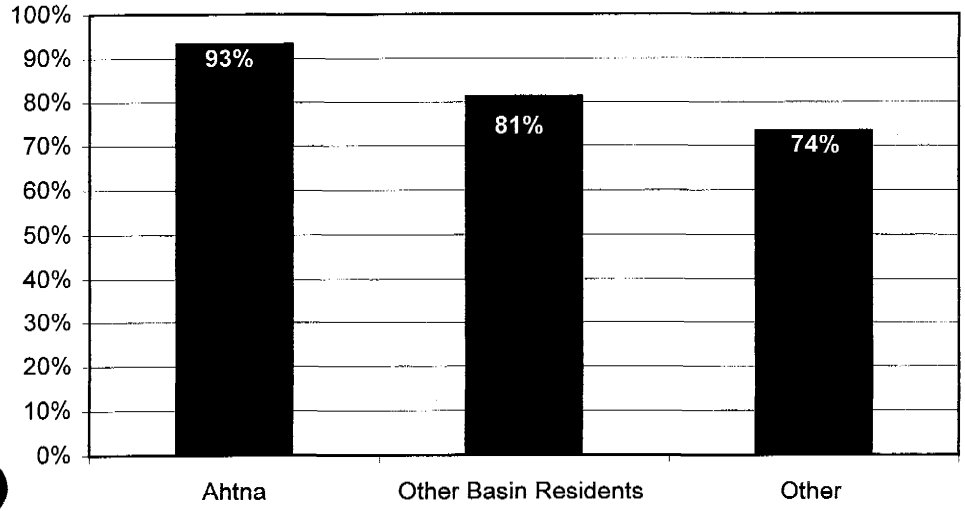


Figure 14. Do You Share With Friends?: Copper River Subsistence Fishery Participants, 2000

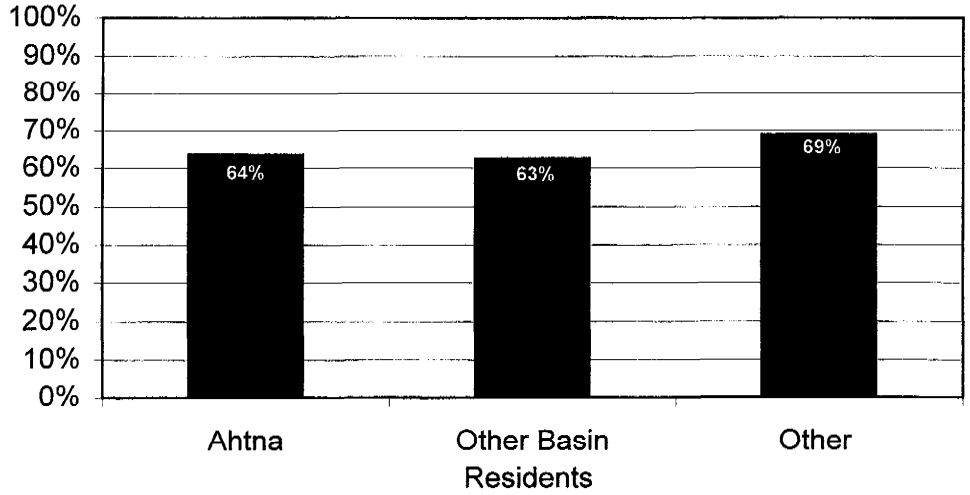
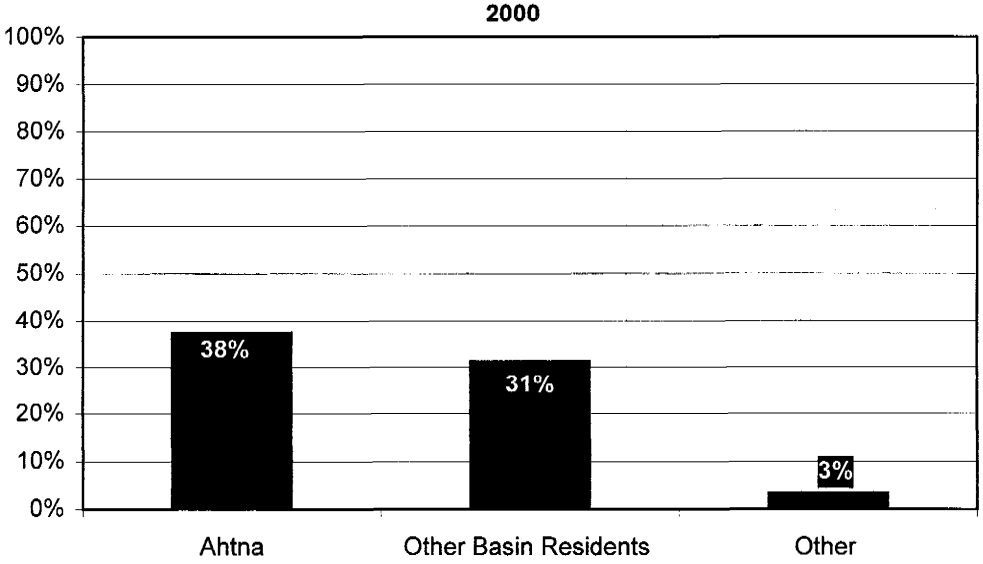


Figure 15. Do You Share With People Other Than Relatives or Close Friends: Copper River Subsistence Fishery Participants, 2000



relatives (for example, elders or people with whom they are not well acquainted), 38 percent of Ahtna and 31 percent of other basin residents said they did compared to only 3 percent of non-basin residents (Figure 15). When asked how much of their catch they shared Ahtna tended to share more of their catch than either other locals or non-local residents (Figure 16).

Several Fairbanks residents interviewed for the 2000 project and who participate regularly in the Chitina dip net fishery said that they commonly share salmon with family and friends. For example, one man said that he shared his fish "with lots and lots of people in Fairbanks." He went on to say that in 1999 some of the fish he shared "were used in some potlatches and they were used by some searchers: they had a native guy that drowned down here in the Chena River and they spent two weeks looking for him and Harry came over and told me and said he, 'I'm using your fish for to feed those guys that are searching.'" Another man said that he shared salmon with elderly people who cannot fish or hunt for themselves: "I can remember coming in here with about maybe close to two hundred fish. I mean, you could have all you wanted, you know, and none of them went to waste. We had a lot of old timers who couldn't do it anymore. We'd give everybody fish."

Figures 17 and 18 pertain to Criterion 8: "A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life." As might be expected, all fishermen, whether Ahtna, or local and non-local residents of the Copper Basin, said that salmon and wild foods were important in their diet (Figures 17 and 18). However, data collected by the Division of Subsistence in 1982/83 and 1987/88 compared with ADF&G harvest ticket and permit records for 1989 to 1991, indicate that Copper Basin households have higher per capita harvests of wild foods than households located in urban areas. Household surveys conducted in the Copper Basin in 1982/83 and in 1987/88 estimated a per capita harvest of wild foods at 111.1 and 140.2 pounds per person respectively (Simeone and Fall 1996:80-81; McMillan and Cuccarese 1988, Stratton and Georgette 1984, Scott et al.

Figure 16. How Much of your Catch do you Share:? Copper River Subsistence Fishery Participants, 2000

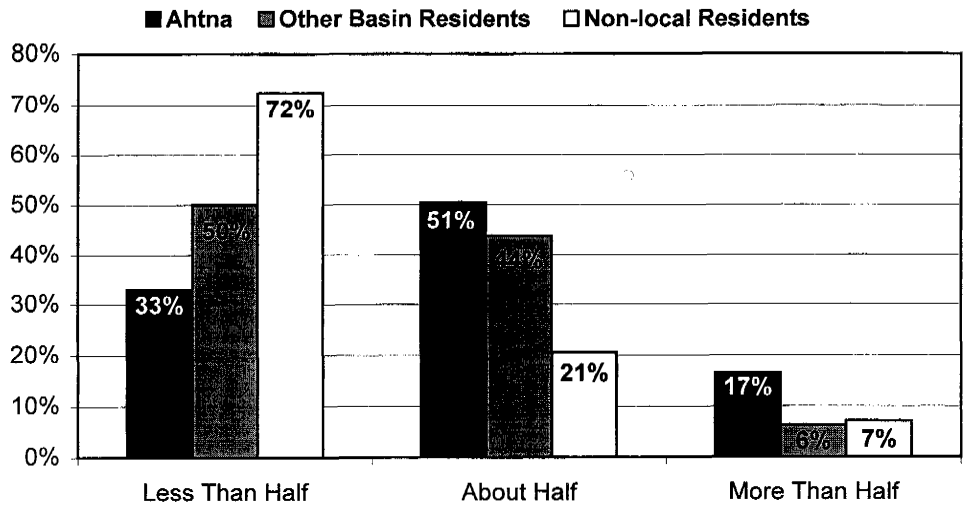


Figure 17. How Important is Salmon in Your Diet?: Copper River Subsistence Fishery Participants, 2000

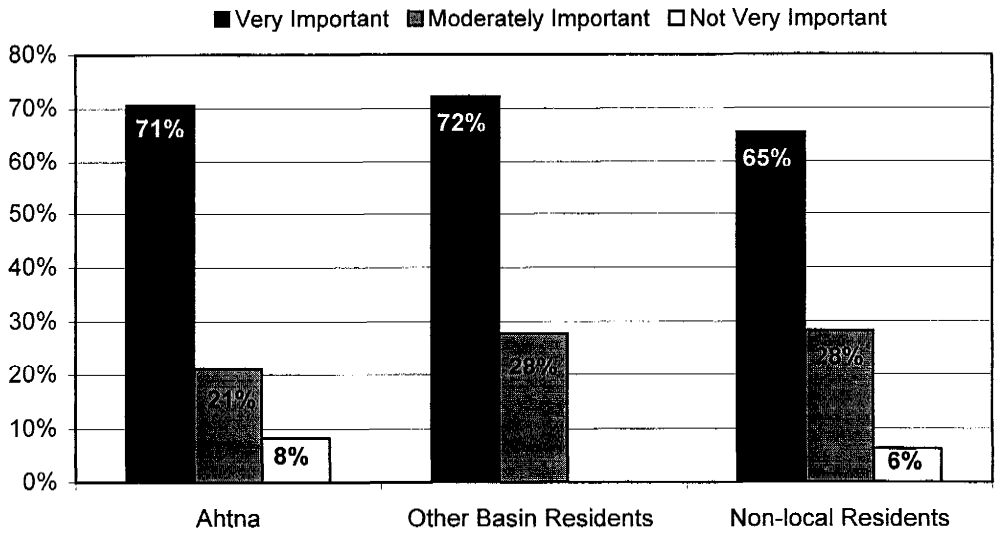


Figure 18. How Important are Wild Foods in Your Diet: Copper River Subsistence Fishery Participants, 2000

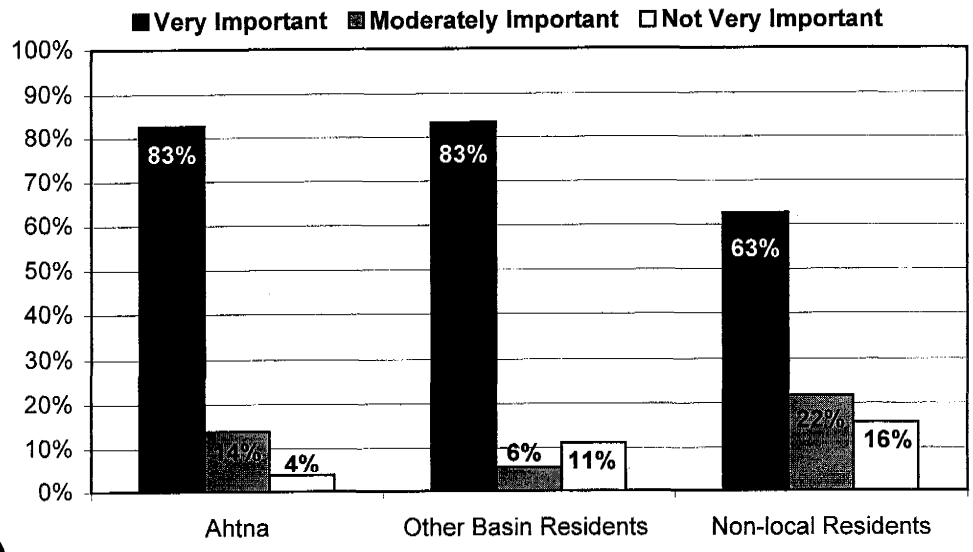
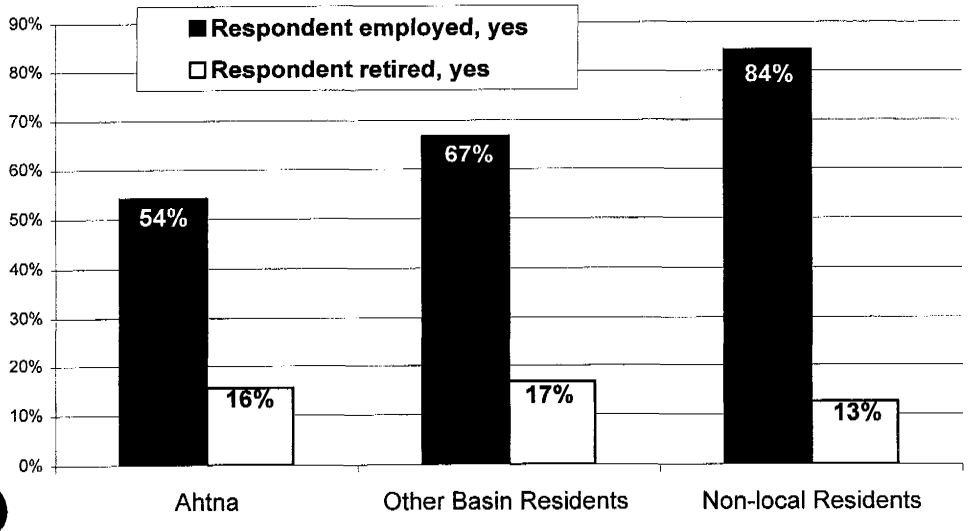


Figure 19. Enployment Characteristics: Copper River Subsistence Fishery Participants, 2000



2001). In both study years, about 41 percent of the total harvest was salmon. Based on ADF&G harvest ticket and permit records for the period 1989 to 1991, the estimated per capita harvest of wild foods among Fairbanks/Delta residents was 16 pounds per person, for Mat-Su it was 27 pounds per person, and for Anchorage it was 19 pounds per person (ADF&G 1992). Analysis of updated data for the late 1990s provided the following estimates: Anchorage, 18 pounds per person, Fairbanks North Star Borough, 21 pounds per person; and Matuanuska-Susitna Borough, 25 pounds per person (Wolfe and Fischer 2002:10).

Differences in the economies of the Copper River Basin and more urbanized areas of the state were reflected in responses to questions about employment.[5] Of the three groups interviewed, fewer Ahtna said they were employed (54 percent) than Other Basin Residents (67 percent) or Non-local Residents (84 percent) (Figure 19). Likewise fewer employed Ahtna were employed full time (40 percent) compared to Other Basin Residents (67 percent) and Non-local Residents (94 percent) (Figure 20). In terms of seasonal employment, Ahtna were similar to Other Basin Residents (30 and 33 percent respectively) but different than Non-Local Residents who reported only four percent seasonal employment (Figure 20). More Ahtna (24 percent) said they took time off from work to fish than Other Basin Residents (17 percent). Fifty percent of Non-local residents reported taking off from work (Figure 21). These figures suggest that subsistence fishing in the Glennallen Subdistrict is integrated into the round of economic activities in the Copper River Basin, in contrast to the predominant pattern in the Chitina Subdistrict where fishing is more likely to be a break from work activities (see Wolfe and Ellanna 1983:256).

[5] Within the Copper Basin there are differences in the employment characteristics of different segments of the population. According to data gathered during the 2000 U.S. Census, communities with predominantly Native populations report higher unemployment rates than those with smaller Native populations. Glennallen, which is 12 percent Native, reported an unemployment rate of 5 percent, whereas Mentasta, which is 71 percent Native, reported an unemployment rate of 28 percent and Tazlina, which is 30 percent Native, reported a 12 percent unemployment rate (Alaska Department of Community and Economic Development, Alaska Community Database).

Figure 20. Employment Type: Copper River Subsistence Fishery Participants, 2000

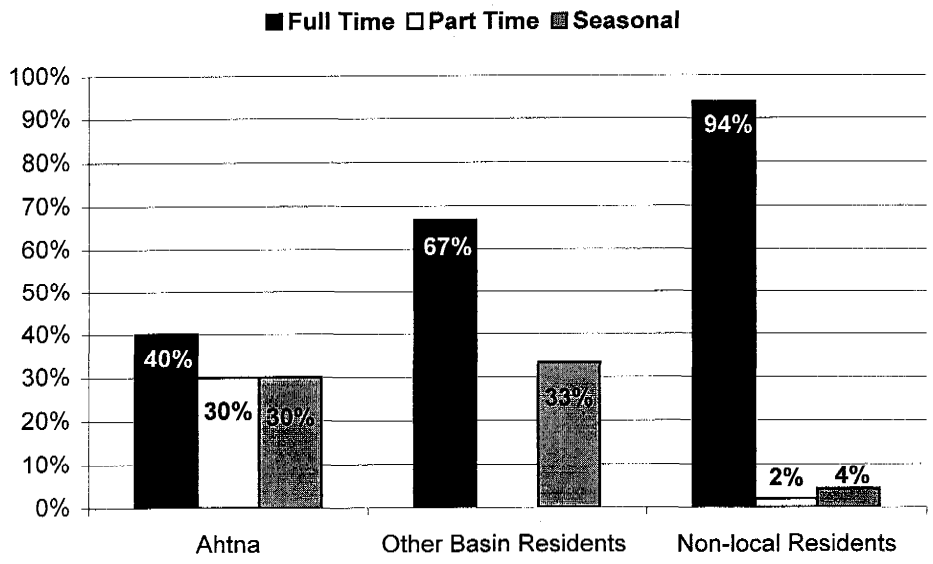
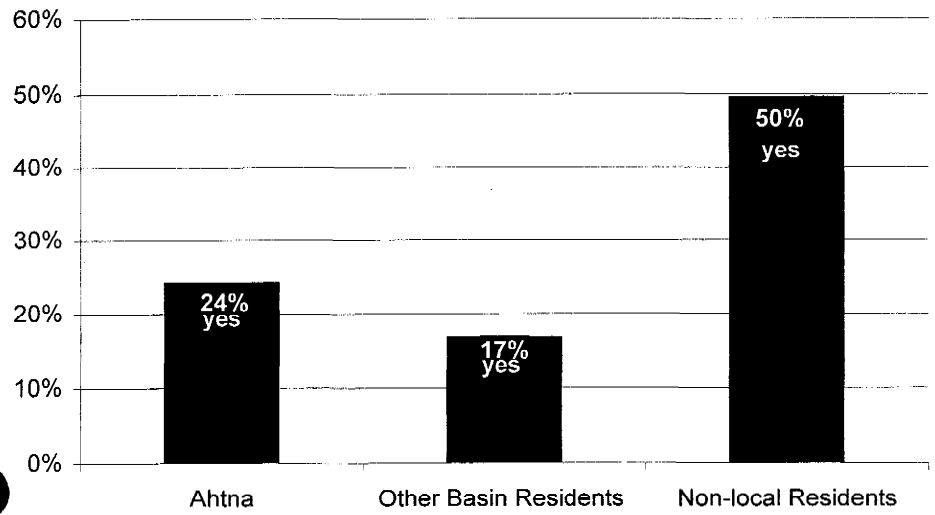


Figure 21. Took time off from work to fish: Copper River Subsistence Fishery Participants, 2000



Summary and Discussion

The goal of this study was to update information about customary and traditional use patterns regarding the subsistence salmon fisheries of the Chitina and Glennallen Subdistricts of the upper Copper River Subsistence salmon fishery. Ahtna have the longest history of use and best represent the long-term pattern that defines customary and traditional use of salmon on the Copper River. For this reason we chose to compare the Ahtna pattern of use with that of non-basin residents who take part in the fishery.

Data indicate that differences still exist in the fishing patterns of Ahtna, other basin residents, and non-basin residents. To be sure, some of these differences have diminished over time, while other differences are an artifact of regulation. For example, although Ahtna and other basin fishers have generally participated in the fishery longer than non-locals there are an increasing number of non-basin residents who have fished in the Copper River for 20 years or more. Today most Ahtna adhere to the traditional pattern of fishing early in the season (i.e. June and early July) when the weather is dry and there are not too many insects. However, most non-Natives (locals and non-locals) interviewed for this project said they prefer to fish in July. This difference is, in part, an artifact of regulation because fishing time in the Chitina Subdistrict is highly influenced by regulation.

On the other hand, most Ahtna, along with most other basin residents, prefer fishing in the Glennallen Subdistrict and using fish wheels, while most non-local residents prefer fishing in the Chitina Subdistrict with dip nets. This is the pattern reported by Stratton in 1982. Stratton (1982:22) also reported that in the early 1980s most non-local fishers canned their salmon while most locals dried their catch. Today this difference still exists, although most non-locals now freeze their fish. At the same time freezing has become the most widely used method of preserving fish among all groups.

In the Glennallen Subdistrict the pattern is for family owned fish camps and fish wheel sites that have been used year after year. Stratton (1982:31) reported ten clusters of fish

wheels and these same locations were still being used in 2000. In the Chitina Subdistrict there are still no family owned fish camps.

Customary and traditional use determinations have to be grounded in a socio-economic context (Criteria 6,7, & 8 for example). The knowledge about how to fish is, for instance, most commonly transferred across generations through the mechanism of kinship. Survey data indicate that Ahtna and other local fishers tended to learn how to fish from family members, while non-locals learned from friends and acquaintances and may not be cross generational. Despite differences in harvest limits between the dip net fishery in the Chitina Subdistrict and the fish wheel fishery in the Glennallen Subdistrict, a majority of both local and non-local fishers said they shared their harvest with family and friends. However, more Ahtna and other local residents said they shared with others outside of their family indicating a wider distribution network among people who live in the Copper Basin. In addition, Ahtna and other basin residents said they shared a larger portion of their harvest, which indicates that salmon has a greater role in the local economy.

Survey data indicate differences in employment characteristics between Ahtna, other basin residents and non-local residents. Fewer Ahtna were employed than in either other category, and fewer Ahtna were employed full time. This reflects the employment pattern in the Copper Basin (see footnote above). At the same time half of the non-locals interviewed said they took time from work to participate in the fishery, while only 24 percent of Ahtna and 17 percent of other basin residents said they did. This suggests that fishing is more integrated into the rural economy of the Copper Basin whereas fishing in the urban context is more of a break from work.

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APPENDIX C. SUMMARY OF HISTORICAL COPPER RIVER DATA PERTAINING TO THE CHITINA AREA.

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Appendix A:
Summary of Historical Copper River Data pertaining to the Chitina Area

These notes have been gathered from various sources, including archival material in the National Archives and annual reports submitted by area biologists who worked for ADF&G. Most of this material in its original form can be found in the ADF&G office in Glennallen. In general, the information shows the mounting concern over what appears to have been a rapid increase, beginning in the late 1960s, in the Copper River "subsistence" fishery by people who came from outside the local area. For many years, expansion of the fishery took place around Chitina as people from communities around Alaska came to catch salmon for personal use, either with dip net or fish wheel. From the beginning, the ADF&G biologists tried to define this new fishery. Until 1984, all fishing on the main stem of the Copper River was classified by regulation as "subsistence" (It was not until the early 1980s that a separate "personal use" regulatory category was created.) However, the biologists differentiated between "traditional subsistence," practiced by local residents, most of whom were Ahtna Athabaskans, and what they called the "personal use" or "recreational" fishery engaged in by people who traveled to Chitina from outside the region.

1921 Reference: Baker, Shirley A. 1921. Report to Commissioner, Bureau of Fisheries, Washington DC, 11/10/21. Reports of the Bureau of Fisheries Agents, 1917 to 1935. Records of the Division of Alaska Fisheries. US Fish and Wildlife Service. National Archives. Washington DC.

Reports 76 "fishwheel operators" at "Chitina;" harvest of 3,900 sockeyes and 234 chinook. Very unlikely this refers to 76 fishwheels, but rather 76 people sharing use of wheels.

1955 National Marine Fisheries Service, Report from Richard Wallace, Deputy Enforcement Agent. (Wallace 1955)

Joe Goodlataw and Mrs. Bell operated fishwheels at Chitina. Mr. Miller has a wheel at 5 Mile. By August of 1955 Mr. Goodlataw had harvested 200 sockeye and 75 king salmon, while Mrs. Bell had harvested 20 sockeye and 60 king salmon. By the same month, Mr. Miller had harvested 234 sockeye and 16 king salmon.

1958 Reference: RG 370 -- National Marine Fisheries Service Annual Reports 1925-1966. File: 1958 Annual Report Central District (NMFS 1958)

Locations of fish wheels: Mrs. Bell has a wheel at "Brine Creek" (likely O'Brien Creek), Paddy King at the mouth of Fox Creek, Pop Miller and George Miller at the Chitina Airfield. Dipnetting reported to be carried on by "tourists" and local residents of the Chitina area. This is the first reference we have found to nonlocal dipnetting. "Most of the netting was done along the cliffs near the mouth of Brine Creek about four miles below Chitina on the old railroad right of way." The dipnetters caught approximately 1,000 fish. The fishwheel harvests were: Mrs. Bell 908 sockeye and 23 king salmon; Paddy King 420 sockeye and 10 king salmon; Pop Miller 590 sockeye and 17 king

salmon; and George Miller 171 sockeyes and 2 king salmon. According to the report most of the fish taken by the fishwheel operators were cut and hung to dry. Some were salted and some salmon were canned.

1960/61 Reference: Annual Progress Report of the Join Sport and Commercial Fish Investigation of the Upper Copper River Drainage System, 1961 Segment. George L. Van Wyhe, author (Van Wyhe 1961)

The Department of Fish and Game now issuing subsistence permits. In the Copper River overall, 17 wheels operated in 1960, and 19 in 1961. Most of the fish wheels are located in the vicinity of Copper Center and Gulkana. Dip netting taking place at Chitina. [Both fish wheels and dip nets are considered subsistence gear at this time.] In 1960-61 free subsistence permits were issued to persons earning less than $4,000. Those people earning more than $4,000 were issued a subsistence permit if they possessed a valid commercial fishing license. During the 1961-62 season the $4,000 restriction was dropped and any Alaska resident was eligible for a subsistence permit. Dropping the $4,000 restriction increased the number of permits issued from 35 in 1960 to 321 in 1961. The total number of salmon harvested increased from 7,182 (1960) to 25,709 (1961). But the number of fish per permit dropped from 200 (1960) to 80 (1961). "This reduction is due to the large number of permits issued to persons not living in the immediate area." Those receiving permits must record species, number and time fish were taken.

1963 Reference: Unknown (Anonymous 1963)

Residence and number of dipnetters:

Delta Junction	48
Eagle River	12
Chitina	9
Valdez	2
Clear	11
Palmer	4
Kenai	1
Tok	3
Glennallen area	18
Anchorage	195
Fairbanks	796
Extra	27
Total:	1,126

1963 The Alaska Board of Fish and Game adopted a regulation that limited subsistence fishing in the Copper River Basin to the main stem of the Copper River below Slana.

1966 Reference: Letter from Governor William Egan to Amos Wallace, President of ANB Camp No. 2 (Egan 1966)

Alaska Governor Egan assured President Wallace that subsistence is a priority but that ADF&G needs to institute certain controls to ensure the perpetuation of the salmon stocks of the Copper River in the face of a substantial increase in the fishery. The governor writes that the number of subsistence fishermen has "increased in seven years from about 200 to 1,200. Of this figure only 126 are actually residents of the Copper River area." He goes on to say that, "Most of the other subsistence permit holders came from long distances from other areas of the State, primarily from the Fairbanks vicinity."

1967 Reference: Unknown (Anonymous 1967)

This year ADF&G issued 1,116 dipnet permits, 517 were returned. Seven fishwheels were operated in the Chitina area. Four wheels were located at "Five Mile" [upriver from what became the Chitina Subdistrict] and were operated by Nick Demientieff, Bill Williams, Robert Marshal, and Margaret and Marilyn Eskilida. Three wheels were located at or below the mouth of the Chitina River and were operated by Susie Brickle, Paddy King, and Fred John, who was from Mentasta.

1968 Reference: Unknown (Anonymous 1968)

Poor copy of a xeroxed map showing three wheels located below the mouth of the Chitina River and operated by Susie Brickle, Paddy King, and Byron McDonald (?; name is not clear). Maggie Eskilida and Bob Marshal operated wheels at Five Mile.

1969 Reference: Anonymous report to Wally Noerenberg, ADF&G, dated October 29, 1969. (Anonymous 1969a)

Provides data on the dipnet fishery. Total permits issued: Anchorage 276; Fairbanks 948; Glennallen 39.

Reference: Unknown (Anonymous 1969b)

Hand drawn map that shows four fishwheels located above the mouth of the Chitina River at Five Mile. No fishwheels are shown operating below the mouth of the Chitina River in what would become the Chitina Subdistrict.

Reference: Memorandum from Charles Larson to Ken Middleton (ADF&G, Division of Commercial Fisheries) dated November 14, 1969 (Larson 1969)

In this memo Larson tries to define the dipnet fishery using the terms "subsistence," "personal use" and "recreational" fisheries. According to Larson, the dipnet fishery is "50 percent or more recreational and the other half or less personal use oriented. A small effort is also made for subsistence purposes." He (Larson 1969:2) wrote that

> [The dip net fishery] is localized near Chitina since the method is relatively inefficient and the greatest concentration of fish and readily accessible [fishing areas are] in this area. This fishery is predominately "non-resident," that is to say, participants reside more than 50 miles from the Copper River, the majority coming from Anchorage and Fairbanks. For all practical purposes, this can be considered a personal use - recreational fishery. The distance traveled, equipment used and expense incurred by these fishermen precludes considering this a subsistence fishery except for a few isolated cases. . . The greatest abuses of this fishery are double tripping and over limits.

Larson (1969:2-3) also noted that

> There has been a steady increase in number of permits issued [in the dip net fishery] with each ensuring year and the increase can be expected to continue in the future. This is a popular recreational fishery, drawing participants from several hundred miles. Until now, access has been over a very poor unpaved road, dangerous in many places and at times unpassable to certain vehicles. Highway construction in the past two years has, to a certain extent, limited the number of

participants. This will all change in 1970 since road improvements were virtually completed to Chitina by fall of this year providing access over one of the best second class highways in the state. A proposed bridge - opening the McCarthy area is slated for construction in 1970 or 1971 and will undoubtedly be a drawing factor to this area.

Concerning the fish wheel fishery, Larson (1969:1-2) wrote that:

> Approximately 60-70% of the effort is for subsistence and the rest is personal use. . . This fishery extends for approximately 100 miles along the main Copper River from Chitina to its confluence with the Slana River. Major fish wheel concentrations occur at Chitina, Copper Center, Gulkana, and Chistochina. Most fish are taken by Athabascan natives residing in the above locations. Approximately 80 to 90 percent of the participants live within 10 miles of the Copper River. . . There is an undetermined amount of abuse in the form of renting gear and selling fish. This gear is popular with most residents of the area, native and non-native. Several families will generally get together to operate one wheel throughout the season.

Larson (1969:3-4) also described the rapidly growing sport fishery in the Copper Basin. Three areas were targeted by sport fishermen: Haley Creek, the outlet of Klutina Lake, and the Gulkana River. According to Larson

> Haley Creek seems to be a recent discovery and needs attention for several reasons.
>
> 1. It is located such that it can be considered either "in" Wood Canyon or below and its location in Area 2-A or 2-B should be specifically outlined
> 2. It is a "tricky" two hour hike from O'Brien Creek near Chitina so effort at present is limited, but it is becoming heavier each year and will undoubtedly increase with increased tourism to the area.
> 3. Red and king salmon school at Haley Creek (crystal clear) prior to assent through the canyon. During high water flow several thousand fish utilize this resting area for considerable time, as much as a week or more. These fish are particularly vulnerable and easy to catch and snag.

1971 Reference: Memo from Ken Middleton to Roy Rickey (ADF&G, Division of Commercial Fisheries) dated November 12, 1971 (Middleton 1971).

The subject was potential Copper River Subsistence and Sport Fishing proposals to the Board of Fisheries. Apparently ADF&G biologist Ralph Pirtle had developed a draft proposal that would limit the geographic expansion of the dipnet fishery "to nip off the beginning pressure at the mouths of tributary streams upriver from the Tonsina River" and to "eliminate any freshwater subsistence fishing downriver from the cable crossing at O'Brien Creek." At this time, fishwheels were still allowed below the mouth of the Chitina River to O'Brien Creek. The memo demonstrates the department's recognition at the time of the differences between the long-established fishwheel fishery and the newly developing dipnet fishery, and the frustrations encountered in trying to acknowledge these differences in regulations. Evidently, some consideration at the time was given to classifying the dipnet fishery as a sport fishery and applying lower sport fishing bag limits: "I believe the dip net fishery should be designated a sport fishery, which it is. . . Our basic objective is to stabilize a rapidly growing take of sockeye spawning population" (Middleton 1971:1). It was recognized that applying lower limits to the fishwheel fishery (called "the Indian fishery" in the memo) would be inapprorpatie due to the traditional levels of harvest and dependnecy on this harvest for food. There was also concern about a rapid growth in the fishwheel fishery if the dipnet fishery had lowered seasonal limits.

At this time, seasonal limits for both gear types remained tied to cash income: for incomes over $5,000, 20 salmon for an individual, 40 for a family; for incomes under $5,000, 200 salmon for an individual and 500 for a family.

1973 Reference: Memo from Ralph Pirtle to Ken Middleton, ADF&G, 1973 (Pirtle 1973).

Explains that permits for dipnetting carry a seasonal limit of 20 for individuals and 40 for families regardless of income. For fishwheels, "There is the income bracket to check. We allow 20 salmon for individuals and 40 salmon for families for those with income over $5,000, and 200 salmon for individuals and 500 salmon for families for under $5,000 income." The permittee also had to make a choice as to whether they wanted to use a dipnet or fishwheel.

1974 Reference: Unknown (Anonymous 1974)

Fishwheels were located below Salmon Point, which is on the Copper River adjacent to Chitina. One wheel was located at the mouth of O'Brien Creek. Ownership is not identified.

1975 Reference: Unknown (Anonymous 1975)

There are three wheels operating below the mouth of the Chitina River. Two at Salmon Point and a third below the point. These are wheels number 15, 16, and 17. Names of the people using these wheels do not appear in this record.

1976 Reference: Report by Ken Roberson of ADF&G, Division of Commercial Fisheries: A Review of the Fisheries of the Copper River (Roberson 1976).

In this report Roberson notes that the "Copper River subsistence fishery currently is allowed on a 100 mile stretch of the main river between Slana and Haley Creek (just below Wood Canyon near Chitina)." Roberson also notes that:

> Due to vastly improved road access, and increasing population, the Copper River subsistence fishery effort has increased greatly. . . Fishwheels remain the typical gear for traditional subsistence users; however, an influx of mobile wheels transported on trailers from the large urban areas has confused the association of fishwheels with traditional use. . . Dip nets are less effective than fishwheels and in recent years with weak runs their use has declined in favor of fishwheels or not fishing at all.

1977 Reference: Copper River -- Prince William Sound Inventory and Assessment. Authors: Roberson, Zorich, Fridgen and Bird (1977) of ADF&G. Technical Report for the period July 1, 1975 to June 30, 1976.

Subsistence listed as open from Wood Canyon to the Slana River. The report notes on page 19 that:

> The subsistence fishery has changed greatly in recent years, with greater mobility due to improved highways and more leisure time. Subsistence was for the most part a local use fishery in early years. Residents of Anchorage and Fairbanks have become the prime participants in Copper River subsistence fishery with a dramatic increase in catch beginning in 1969 after many years of a relatively stable use pattern.

Reference: A Review of the Subsistence Fishery of the Copper River by Ken Roberson, ADF&G, Division of Commercial Fisheries (Roberson 1977).

On page one of the report Roberson appears to define the subsistence fishery as having two components: "traditional subsistence and personal use." On page 4, he writes that the fishery historically included all tributaries and was more recently limited to the main river. In addition, "the area below Wood Canyon was not used for subsistence purposes." On page 5, he writes that, "During the past 15 years the nature of the participants, the gear used and the major location of the subsistence fishery have changed drastically. In addition, catches have increased significantly over historical levels as well as more recent use trends. Specifically, the traditional subsistence fisherman has become the minority." On page 12, Roberson lists the wheels operating below the mouth of the Chitina River: 5 at O'Brien Creek and 10 at Chitina. It is not clear where the latter were, but they were probably upstream of the bridge.

1977 ADF&G news release, "Regulation Changes Made for Copper River Salmon Subsistence Fishery." March 29, 1977 9ADF&G 1977).

The news release reports Board of Fisheries action to designate two "subsistence districts for the fishery," the "Glennallen district" and the "Chitina district." In the former, fishwheels and dipnets may be used 7 days a week. In the latter, dipnets may be fished 7 days a week, and fishwheels from 8 p.m. Tuesday to 8 a.m. Thursday and from 8 p.m. Friday to 8 p.m. Sunday. The news release also announced a comprehensive planning process for the fishery.

1979 Roberson and Williams (1979):

"The Copper River subsistence fishery has for many years been subject to debate on what it should be called. The debate was intensified in 1975 and again in 1978 when poor returns of salmon to the Copper River brought the question of priority use and allocation to a head along with the general debate surround the definition of subsistence on a broader scale. The Copper River fishwheel and dip net fisheries clearly are subject to major review and possible re-definition based on the possible altering of current definitions" (p. 4).

The following three items from extracted from the state's memorandum attached to a motion in opposition to a motion for partial summary judgment in John vs. State of Alaska, (1988?)

1984 Katie John and Doris Charles proposed to the Board of Fisheries that a subsistence salmon fishery be reestablished at Batzulnetas, located above Slana on the Copper River. The board rejected the proposal, reiterating concerns for the conservation of stocks and finding that existing subsistence fisheries at and below Slana provided adequate opportunities for local rural residents.

1985 Katie John and Doris Charles filed suit against the state in federal district court.

1988 The Board of Fisheries adopted regulations opening the Batzulnetas area to subsistence salmon fishing. The board concluded that the existing subsistence fishery at and below Slana provided a reasonable opportunity for subsistence users to meet their subsistence needs, but also found that Batzulnetas was an historical subsistence fishing site and could sustain a properly structured subsistence fishery.

APPENDIX D. CALCULATION METHODS AND TABLES.

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Appendix Table D-1.–10-year average salmon harvests, 1998–2007, subsistence and personal use fisheries.

		Annual average, estimated number of salmon harvested					
Fishery	Annual average, permits issued	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak District	8	1	277	3	0	15	296
Alaska Peninsula	172	299	10,520	4,039	1,426	1,160	17,444
Batzulnetas	1	0	111	0	0	0	111
Bristol Bay	1,146	15,004	98,352	7,018	4,940	1,755	127,069
Chignik	121	166	8,954	1,795	236	1,197	12,348
Chitina Subdistrict, federal	92	23	1,444	49	0	0	1,516
Copper River Flats	380	702	2,863	172	3	3	3,743
Glennallen Subdistrict	1,206	3,585	74,824	641	3	0	79,053
Kodiak	868	368	27,542	5,829	364	1,482	35,585
Kuskokwim	2,782	75,030	40,037	33,079	54,781	0	202,927
Northwest Alaska	1,770	5,144	6,486	17,063	49,835	48,515	127,043
Port Graham	57	283	3,409	1,088	430	1,436	6,646
Prince William Sound	19	14	436	345	142	156	1,093
Seldovia	19	105	102	6	20	35	268
Southeast Alaska	3,645	1,372	54,732	2,489	3,527	3,614	65,734
Tyonek	82	1,120	124	86	4	6	1,340
Unalaska	209	9	3,810	663	41	622	5,145
Upper Yentna	20	0	424	88	18	26	556
Yukon	2,882	51,391	0	21,405	148,920	4,048	225,764
Chitina personal use	8,467	3,517	122,885	2,209	0	0	128,611
Kachemak Bay personal use	140	72	55	1,461	12	254	1,854
Kenai Peninsula personal use	18,786	1,132	251,140	2,760	397	3,667	259,095
Tanana River personal use	71	178	0	151	333	0	662

Source ADF&G Division of Subsistence ASFDB.

Notes

For Prince William Sound, number of permits returned and reported harvests.

For Kodiak, permits = number of permits fished due to very low percentage of permits issued that are fished.

Southeast Alaska includes subsistence and personal use harvests.

Kenai Peninsula personal use includes Kasilof River, Kenai River, and Fish Creek dip net, and Kasilof River set net.

Chitina Subdistrict federal data begin in 2002.

Appendix Table D-2.–Average harvest per permit in pounds dressed weight by fishery, 10-year average.

		Average harvest in pounds dressed weight per permit					
	Average annual permits issued	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak District	8	1	144	2	0	5	152
Alaska Peninsula	172	16	255	118	44	18	451
Batzulnetas	1	0	463	0	0	0	463
Bristol Bay	1,146	127	370	30	19	4	549
Chignik	121	15	381	83	12	26	517
Chitina Subdistrict federal	92	3	65	3	0	0	72
Copper River Flats	380	29	35	3	0	0	67
Glennallen Subdistrict	1,206	42	259	3	0	0	303
Kodiak	868	3	133	37	2	5	180
Kuskokwim	2,782	277	70	65	99	0	511
Northwest Alaska	1,770	23	20	57	140	56	296
Port Graham	57	73	271	92	41	62	539
Prince William Sound	19	12	106	116	38	20	293
Seldovia	19	82	24	2	6	5	118
Southeast Alaska	3,645	4	71	3	6	3	86
Tyonek	82	202	7	5	0	0	214
Unalaska	209	0	76	16	1	8	101
Upper Yentna	20	0	96	21	5	3	125
Yukon	2,882	224	0	40	237	4	505
Chitina personal use	8,467	6	61	2	0	0	68
Kachemak Bay personal use	140	8	2	50	0	4	65
Kenai Peninsula personal use	18,786	1	61	1	0	0	63
Tanana River personal use	71	32	0	11	22	0	65
All state subsistence fisheries	15,387	111	96	34	82	9	332
All personal use fisheries	27,464	3	60	1	0	0	64

Note Dressed weights based on 2007 average round weights in area commercial fisheries, adjusted by factors reported in Crapo et al. 1993for “dressed, head off” by species.