

ALASKA LEGISLATURE COMMITTEE FILES 1985 - 1986 8672

4222.30 SERIES SUBSISTENCE: PUBLICATIONS (file 1)

121

SELECTED GENERAL PROVISIONS

(29) "processing" means completion of:

(A) cooking;

(B) canning;

(C) smoking;

(D) salting, which means uniformly mixing with a minimum salting level of at least 20% of the weight of the fish resources;

(E) drying, or

(F) freezing, which means to congeal and solidify the flesh of fish by abstraction of heat:

(30) "domicile" means the location of a person's primary residence; evidence of domicile may include, but is not limited to, the following:

(A) statements made to obtain a license to drive, hunt, fish, or engage in an activity regulated by a government entity;

(B) affidavit of the person, or of other persons who may know of that person's domicile;

(C) place of voter registration;

(D) location of residences owned, rented, or leased;

(E) location of storage of household goods;

(F) location of business owned or operated;

(G) residence of spouse and minor children or dependents;

(H) government to which taxes are paid; and

(I) whether the person has claimed residence in another location for the purpose of obtaining benefits provided by the government of that location.

Authority: AS 16.05.251
AS 16.05.940

(31) 'fishing site' means a structure or vessel used by a CFEC permit holder for providing shelter in support of the operation of stationary net gear;

(32) 'net gear site' means the in-water location of stationary net gear;

(33) 'seine vessel' means the largest vessel, as determined by keel length, used to operate a seine and the vessel from which the seine is set and retrieved to.

Authority: AS 16.05.251

SELECTED GENERAL PROVISIONS

5 AAC 39.997. ABBREVIATIONS AND SYMBOLS. (a) The abbreviations a.m. and p.m. indicate antemeridian and postmeridian respectively for either Standard Time or Daylight Saving Time in conformance with the official time in use for Alaska.

(b) The symbols °, ', " indicate degrees, minutes and seconds, respectively, of longitude or latitude, based on the North American datum of 1927.

(c) Lat. and long. indicate latitude and longitude, respectively.

(d) E. indicates east, N. indicates north, W. indicates west, and S. indicates south. All bearings and directions shall be construed to be true bearings and true directions.

(e) ADF&G is the abbreviation for Alaska Department of Fish and Game.

(f) CFEC is the abbreviation for the Commercial Fisheries Entry Commission.

Authority: AS 16.05.251(a)

ALASKA PUBLIC OPINION RESEARCH

SURVEY

ALASKAN FEDERATION OF NATIVES (AFN)

DECEMBER 1985

ALASKA PUBLIC OPINION RESEARCH SURVEY

DECEMBER 1985

Prepared for

ALASKAN FEDERATION OF NATIVES (AFN)

Prepared by

Marc E. Hellenthal, Director

HELLENTHAL & ASSOCIATES, INC.

2200 Vanderbilt Circle
Anchorage, Alaska 99508
(907) 276-1001 or
(907) 277-2315

* * * * *

The research and studies forming the basis for this report were conducted pursuant to a contract between Alaskan Federation of Natives and Hellenthal & Associates, Inc. The author and publisher are solely responsible for the accuracy of statements or interpretations contained therein.

HELLENTHAL & ASSOCIATES, INC.

INTRODUCTION AND METHODOLOGY

This report presents an analysis of a survey of Alaska statewide adults. The survey measured properties of Alaskan residents' demographics and attitudes toward subsistence. Research typically involves estimating the characteristics of a designated population. Because of the costs of conducting a census of all items in a population, and the adequacy of sample results, sample statistics were used to make statistical inferences concerning population parameters.

Five hundred and fifty five (555) Alaskan adults were interviewed between November 14th and 22nd, 1985. Interviewing was conducted by telephone on a random digit basis. All Alaskan adults who are accessible by telephone, had an equal chance of being interviewed.

The sample used for this survey was stratified by geographic areas. The following number of interviews were conducted by geographic region: Southeast (House Districts 1 through 4) = 25; Cordova, Valdez, Kenai Peninsula (House Districts 5,6, and 7) = 99; Anchorage (House Districts 8 through 15) = 204; Mat-Su and Greater Fairbanks (House Districts 16 and 17) = 100; Fairbanks (House Districts 18 through 21) = 100; and Rural (House Districts 22 through 27) = 26. The results presented in this report were weighted to reflect the actual population of each geographic region.

At a 95% confidence level, the empirical proportions presented in this report can be projected, within plus or minus 4.16%, to the entire Alaskan population of adults — aged 18 and over. This means one can be 95% sure that the frequencies reported in this survey are within 4.2% of the true Alaskan adult population proportions.

The following is a presentation of certain specialized tables concerning Alaskan adults' perception of subsistence.

QUESTIONNAIRE:
SUBSISTENCE, POLITICAL AND GENERAL
FREQUENCIES

ALASKA STATE'VIDE PUBLIC OPINION RESEARCH SURVEY

December 1985

HELLENTHAL & ASSOCIATES, INC.
2200 Vanderbilt Circle
Anchorage, Alaska 99508
(907) 276-1001 or
277-2315

Hello, I am _____ from HELLENTHAL & ASSOCIATES. We are conducting a State-wide public opinion research survey. Your telephone number was randomly selected. The questions I need to ask will take only 8 to 10 minutes. All of your responses will be completely confidential. (PAUSE AND PROCEED)

S1. Is this telephone number _____? (IF NO, TERMINATE WITH, "I'm sorry, I dialed the wrong number.")

S2. Is this a residence in which you live? (IF NO, TERMINATE INTERVIEW WITH, "I'm sorry, I need to talk with someone at a residence.")

S3. Are you 18 years old or older?

IF YES, THEN PROCEED TO QUESTION #1

IF NO, THEN ASK

Is there anyone home who is 18 years old or older?

IF YES, THEN ASK

May I speak with them? (PROCEED TO QUESTION #1 OR TERMINATE AND NOTE ON TELEPHONE CALL RECORD SHEET)

IF NO, THEN ASK

When will someone be home who is 18 or older? (TERMINATE AND NOTE ON TELEPHONE CALL RECORD SHEET)

1. What is the closest major intersection to your residence? (GET AS MUCH DETAIL AS POSSIBLE. LABEL EAST-WEST AND NORTH-SOUTH STREETS ON THE ANSWER SHEET AND PLACE AN 'X' IN THE PROPER QUADRANT.)

ASK IN ANCHORAGE AND FAIRBANKS ONLY

Do you live North or South of this intersection?
(ANCHORAGE: DOWNTOWN = NORTH; RABBIT CREEK = SOUTH)

Do you live East or West of this intersection?
(ANCHORAGE: MOUNTAINS = EAST; INLET = WEST)

AREA OF STATE	FREQUENCY	PERCENT
Southeast.....	81.....	14.6%
Valdez, Kenai, S. Anchorage.....	59.....	10.6%
Anchorage.....	224.....	40.4%
Mat-Su, Greater Fairbanks.....	50.....	9.0%
Fairbanks.....	76.....	13.7%
Rural.....	65.....	11.7%

HOUSE DISTRICT	FREQUENCY	PERCENT
One.....	21.....	3.9%
Two.....	14.....	2.5%
Three.....	11.....	2.0%
Four.....	35.....	6.2%
Five.....	33.....	6.0%
Six.....	11.....	2.0%
Seven.....	15.....	2.7%
Eight.....	43.....	7.7%
Nine.....	25.....	4.5%
Ten.....	30.....	5.3%
Eleven.....	25.....	4.6%
Twelve.....	25.....	4.6%
Thirteen.....	22.....	3.9%
Fourteen.....	25.....	4.6%
Fifteen.....	29.....	5.2%
Sixteen.....	43.....	7.8%
Seventeen.....	7.....	1.2%
Eighteen.....	17.....	3.1%
Nineteen.....	7.....	1.3%
Twenty.....	34.....	6.2%
Twenty-one.....	18.....	3.2%
Twenty-two.....	7.....	1.2%
Twenty-three.....	6.....	1.1%
Twenty-four.....	8.....	1.4%
Twenty-five.....	8.....	1.4%
Twenty-six.....	22.....	3.9%
Twenty-seven.....	15.....	2.7%

2. Are you presently registered to vote in the State of Alaska?

REGISTERED TO VOTE	FREQUENCY	PERCENT
Yes.....	447.....	80.5%
No.....	108.....	19.5%

3. Are you registered to vote as a (IF THEY ARE NOT REGISTERED TO VOTE, ASK "If you were to register to vote, would you register as a")

PARTY AFFILIATION	FREQUENCY	PERCENT
Democrat,.....	120.....	21.6%
Republican,.....	145.....	26.1%
Libertarian, or did you indicate.....	17.....	3.0%
No Party Affiliation (Non-Partisan)?.....	273.....	49.3%

4. In 1982, three years ago, did you vote in either the August 24th Primary or November 2nd General State Elections?

VOTE IN 1982 ELECTIONS	FREQUENCY	PERCENT
Yes.....	362.....	65.2%
No.....	193.....	34.8%

5. In 1984, last year, did you vote in either the August 28th Primary or November 6th General State Elections?

VOTE IN 1984 ELECTIONS	FREQUENCY	PERCENT
Yes.....	373.....	67.3%
No.....	182.....	32.7%

6. Do you consider yourself to be

RESPONDENT'S IDEOLOGY	FREQUENCY	PERCENT
1. Very Liberal.....	16.....	3.0%
2. Liberal,.....	112.....	20.2%
3. Moderate,.....	237.....	42.7%
4. Conservative, or.....	172.....	31.0%
5. Very Conservative.....	18.....	3.2%

(MEAN = 3.112)

7. Would you say that you generally are

INTEREST IN CAMPAIGNS	FREQUENCY	PERCENT
1. Very interested,.....	119.....	21.4%
2. Somewhat interested, or.....	319.....	57.6%
3. Not very interested in political campaigns?.....	117.....	21.4%

(MEAN = 1.997)

8. I am going to read to you a list of names of organizations. Please tell me whether your feelings toward each of them is VERY POSITIVE, POSITIVE, NEUTRAL, NEGATIVE, or VERY NEGATIVE — or if you don't know what they are. Are your feelings toward _____ (FILL IN ORGANIZATION) very positive, positive, neutral, negative, or very negative — or don't you know what it is?

ORGANIZATION	4 VERY POSITIVE	3 POSITIVE	2 NEUTRAL	1 NEGATIVE	0 VERY NEGATIVE WHO?	MEAN	
Alaskans for Sensible Fish and Game Management.....	7.3%	36.2%	17.2%	4.2%	0.9%	34.3%	2.682
Alaska State Department of Fish and Game.....	14.0%	51.5%	20.8%	9.2%	2.3%	2.2%	2.672
Oil Companies in Alaska.....	10.6%	50.0%	29.3%	7.2%	1.2%	1.7%	2.626
Alaska Sports Fisherman Association.....	8.2%	44.9%	21.3%	8.4%	0.7%	16.6%	2.616
Alaskans for Equal Hunting and Fishing Rights.....	9.4%	38.0%	19.2%	6.9%	1.9%	24.7%	2.612
Alaska Outdoors Council.....	6.9%	25.1%	15.2%	4.8%	0.9%	47.2%	2.611
Rural Alaska Community Action Program or RuralCap.....	3.0%	22.4%	19.3%	3.2%	0.3%	51.8%	2.512
Alaska Native Foundation (ANF).....	7.1%	32.8%	28.2%	10.1%	1.7%	20.1%	2.418
Alaskan Federation of Natives (AFN).....	6.1%	30.1%	32.1%	10.1%	1.4%	20.3%	2.370
Womens' Political Groups, such as NOW, in Alaska.....	5.5%	34.1%	30.2%	12.4%	3.1%	14.7%	2.311
United Tribes of Alaska (UTA).....	4.6%	20.5%	28.3%	9.5%	0.6%	36.6%	2.298
The Republican Party in Alaska.....	4.6%	28.0%	53.9%	10.0%	1.9%	1.6%	2.238
The Democratic Party in Alaska.....	1.9%	26.3%	52.1%	13.4%	3.4%	2.9%	2.101
Unions in Alaska.....	4.4%	23.3%	29.1%	27.5%	11.0%	4.6%	1.818
The Alaska Association of White Men.....	1.5%	7.4%	10.6%	10.6%	6.0%	63.9%	1.663

9. There is presently a bill before the Legislature that defines subsistence use as providing a priority for rural Alaskans, over urban Alaskans, in the taking of fish and game for personal consumption as food, clothing, fuel, or tools. Do you favor or oppose providing a priority for rural Alaskans in the taking of fish and game for subsistence use?

PRIORITY FOR RURAL ALASKANS	FREQUENCY	PERCENT
Favor.....	315.....	56.7%
Oppose.....	203.....	36.5%
DON'T KNOW.....	38.....	6.8%

10. Do you favor or oppose Alaskan Natives being allowed to regulate fish and game in their own areas?

NATIVES REGULATE IN OWN AREAS	FREQUENCY	PERCENT
Favor.....	222.....	40.4%
Oppose.....	269.....	48.4%
DON'T KNOW.....	64.....	11.6%

11. Do you favor or oppose Alaskan Native efforts for tribal self-government?

TRIBAL SELF-GOVERNMENT	FREQUENCY	PERCENT
Favor.....	266.....	48.0%
Oppose.....	195.....	35.1%
DON'T KNOW.....	94.....	16.9%

12. Do you favor or oppose Alaskan Native efforts for sovereignty?

NATIVE SOVEREIGNTY	FREQUENCY	PERCENT
Favor.....	160.....	28.8%
Oppose.....	282.....	50.9%
DON'T KNOW.....	113.....	20.3%

13a. Think now about the overall quality of hunting and fishing in Alaska during the last three years. Do you think the quality of hunting and fishing in Alaska has improved, stayed the same, or gotten worse over the past three years?

QUALITY OF HUNTING/FISHING	FREQUENCY	PERCENT
Improved.....	75.....	13.6%
Stayed the Same.....	236.....	42.5%
Gotten Worse.....	244.....	43.9%

13b. (IF "WORSE", ASK) Which of the following reasons do you think are most responsible for this change for the worse?

REASONS	FREQUENCY	PERCENT
There are more fishermen.....	186.....	33.5%
There are more hunters.....	179.....	32.2%
There are fewer animals.....	140.....	25.3%
There are more outside trophy hunters.....	137.....	24.6%
There are more restrictions on where one can hunt....	135.....	24.3%
There are more restrictions on where one can fish....	135.....	24.3%
There are fewer fish.....	100.....	18.0%

14a. Do you feel there is enough fish and game in Alaska for everyone to go hunting and fishing for whatever amount they want, or do you feel there should be regulations limiting the amount of fish and game any individual can take?

NON-REGULATION VS REGULATION	FREQUENCY	PERCENT
Whatever Amount They Want.....	28.....	5.0%
Regulations Limiting Amount.....	515.....	92.7%
DON'T KNOW.....	12.....	2.2%

14b. If a fish stock or game population is not large enough to allow everyone to fish or hunt, should rules limiting the amount of fish and game people can take be based on

REASONS	FREQUENCY	PERCENT
The customary and traditional uses of fish and game for personal consumption?.....	337.....	60.7%
Income or economic status of the household?.....	240.....	43.2%
Rural residency?.....	247.....	44.5%
How much people depend on fish and game?.....	402.....	72.5%
A person's race?.....	28.....	5.1%

15. Alaska's fish and game resources are used in three ways: subsistence use which is personal consumption by rural Alaskans for food, clothing, fuel, or tools; sports and recreational use; and commercial use. Please tell me which of these fish and games uses is most important for Alaska? How about 2nd most important? And least (3rd) important?

FISH AND GAME USES	1ST	2ND	3RD	DON'T KNOW	MEAN
Subsistence.....	47.7%....	29.5%....	20.8%....	2.0%....	1.725
Sports and Recreation.....	12.6%....	31.6%....	52.9%....	2.8%....	2.415
Commercial.....	37.9%....	36.0%....	23.4%....	2.7%....	1.851

16. How important would you say subsistence hunting and fishing by rural Alaskan residents for personal consumption is to the economies of rural communities? Would you say it is very important, somewhat important, neither important or unimportant, somewhat unimportant, or very unimportant?

IMPORTANCE OF SUBSISTENCE	FREQUENCY	PERCENT
Very Important.....	275.....	49.6%
Somewhat Important.....	166.....	29.9%
Neither Important or Unimportant.....	39.....	7.0%
Somewhat Unimportant.....	36.....	6.5%
Very Unimportant.....	16.....	2.9%
DON'T KNOW.....	23.....	4.1%

17. There has been some discussion in Alaska concerning subsistence fishing and hunting. Some people believe, if there is not enough fish or game for all Alaskan residents, a priority for the taking of fish and game should be given to rural Alaskans. Other people believe subsistence is not that important anymore and that all Alaskan residents should be treated the same. Do you think rural Alaskan residents should be given a priority or do you think all Alaskan residents should be treated the same?

RURAL VS ALL RESIDENTS	FREQUENCY	PERCENT
Rural Alaskan Residents.....	265.....	47.8%
All Alaskan Residents.....	275.....	49.5%
DON'T KNOW.....	15.....	2.7%

18. Some people say it is fair for rural subsistence uses of fish and game to be considered more important than commercial and recreational uses of fish and game? Do you think it is fair or not fair for rural subsistence uses to be considered more important than commercial and recreational uses?

RURAL VS OTHER USES	FREQUENCY	PERCENT
Fair.....	301.....	54.3%
<u>Not</u> Fair.....	225.....	40.6%
DON'T KNOW.....	28.....	5.1%

19. Now I am going to read you a short series of statements. Please tell me if you STRONGLY AGREE, MILDLY AGREE, MILDLY DISAGREE, OR STRONGLY DISAGREE with each of the following statements: (IF AGREE OR DISAGREE SAY, "Is that strongly agree/disagree or just mildly agree/disagree?")

STATEMENTS	1	2	4	5	3	MEAN
	STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE	DON'T KNOW	
In Alaska there are people who need to hunt and fish in order to live.....	55.0%	35.8%	6.0%	2.7%	0.4%	1.656
In Alaska the supply of fish and game is limited and <u>no</u> Alaskan should be allowed to catch all the fish or take all the game they want.....	55.8%	27.6%	9.0%	4.1%	3.5%	1.780
People in Rural Alaska are more dependent on fish and game than Urban Alaskans.....	39.8%	40.0%	12.3%	4.1%	3.7%	2.10
Both Alaska natives and Alaska non-natives need to hunt and fish in order to live.....	32.5%	38.1%	19.3%	8.4%	1.7%	2.329
<u>Not</u> providing a subsistence priority for rural Alaskans harms those who want to live off the land.....	18.3%	37.0%	28.9%	6.1%	9.7%	2.675
<u>Not</u> providing a subsistence priority for rural Alaskans harms rural people who live off the land to the benefit of urban sports fishermen.....	16.5%	35.6%	25.4%	6.5%	16.0%	2.697

STATEMENTS (CONTINUED)	1 STRONGLY AGREE	2 MILDLY AGREE	4 MILDLY DISAGREE	5 STRONGLY DISAGREE	3 DON'T KNOW	MEAN
Rural Alaskans <u>should</u> have a priority to fish and hunt over Urban Alaskans.....	24.9%	28.7%	24.8%	16.4%	5.2%	2.790
<u>Not</u> providing a subsistence priority for rural Alaskans only invites the federal government to come into Alaska to regulate fish and game on federal land in Alaska.....	16.0%	29.2%	26.2%	11.1%	17.5%	2.872
All Alaskans are equal and no Alaskan should have a hunting and fishing priority over any other Alaskan.....	22.4%	27.6%	30.6%	15.8%	3.7%	2.899
<u>Not</u> providing a subsistence priority for rural Alaskans is a direct attack on Alaska tradition and Native Alaska Culture.....	17.9%	27.0%	30.6%	14.6%	9.7%	2.972
Unimproved land owned by Native Corporations should <u>remain</u> exempt from local property taxes.....	12.6%	23.0%	31.8%	20.9%	11.8%	3.253
Alaska natives receive a greater share of State Revenues than they should.....	10.1%	13.6%	36.0%	16.2%	24.0%	3.347
Alaska natives take more fish and game than they really need.....	9.2%	20.3%	27.7%	23.7%	19.1%	3.364
Those groups and people presently fighting subsistence laws are partially, at least, racially motivated against Alaskan Natives.....	6.3%	22.0%	29.5%	22.9%	19.4%	3.407
Alaska natives, in this day and age, no longer need to fish and hunt in order to survive.....	6.1%	19.6%	39.1%	32.1%	3.2%	3.714
Improved land owned by Native Corporations <u>should be</u> exempt from local property taxes.....	5.6%	10.4%	33.9%	38.0%	12.1%	3.883

20. Now that you have heard some of the reasons for and against providing a subsistence priority for rural Alaskans. Let me ask you again, do you favor or oppose providing a priority for rural Alaskans in the taking of fish and game for subsistence use?

PRIORITY FOR RURAL ALASKANS #2	FREQUENCY	PERCENT
Favor.....	338	60.9%
Oppose.....	178	32.1%
DON'T KNOW.....	39	7.0%

21. Do you know any rural Alaska residents who live off the land by fishing and hunting?

KNOW ANYONE LIVES OFF LAND	FREQUENCY	PERCENT
Yes.....	290.....	52.2%
No.....	265.....	47.8%

22. Have you ever lived in rural, remote, primarily native areas of Alaska?

LIVED IN RURAL ALASKA	FREQUENCY	PERCENT
Yes.....	189.....	34.0%
No.....	366.....	66.0%

23. During the past 12 months, how many times did you, or someone else in your household, go hunting or trapping for game?

HUNTING LAST 12 MONTHS	FREQUENCY	PERCENT
1 to 3 Times.....	110.....	19.7%
4 to 10 Times.....	79.....	14.2%
11 or More Times.....	80.....	14.4%
NO HUNTER IN HOUSEHOLD/NONE.....	288.....	51.7%

24a. During a typical 12 month period or year, how many times do you, or someone else in your household, go hunting or trapping for game?

HUNTING TYPICAL 12 MONTHS	FREQUENCY	PERCENT
1 to 3 Times.....	123.....	22.2%
4 to 10 Times.....	92.....	16.6%
11 or More Times.....	102.....	18.4%
NO HUNTER IN HOUSEHOLD/NONE.....	237.....	42.8%

24b. Typically, do you, or someone else in your household hunt or trap

GAME	FREQUENCY	PERCENT
Duck or Geese?.....	126.....	22.7%
Moose, Caribou, bear, sheep, goat, Ptarmigan, rabbit, fox, etc.?.....	264.....	47.6%

24c. Typically, when you, or someone else in the household, goes hunting or trapping, do you hunt or trap

AREAS	FREQUENCY	PERCENT
In the Matanuska-Susitna Borough Anchorage or Chugach Mountain area?.....	117.....	21.1%
On the Kenai Peninsula?.....	100.....	18.0%
In the Fairbanks or Brooks Range area of Northern Alaska?..	94.....	16.9%
In Southeast Alaska?.....	84.....	15.1%
In Western Alaska or west of the Alaska Range?.....	66.....	11.9%
In Kodiak or the Aleutians Islands?.....	58.....	10.5%
In the Copper River, Wrangell, or Valdez area?.....	54.....	9.7%

25. During the past 12 months, how many times did you, or someone else in your household, go fishing?

FISHING LAST 12 MONTHS	FREQUENCY	PERCENT
1 to 5 Times.....	147.....	26.4%
6 to 10 Times.....	72.....	12.9%
11 to 20 Times.....	94.....	16.9%
21 or More Times.....	130.....	23.8%
NO FISHERMEN IN HOUSEHOLD/NONE.....	113.....	20.4%

26a. During a typical 12 month period or year, how many times do you, or someone else in your household, go fishing?

FISHING TYPICAL 12 MONTHS	FREQUENCY	PERCENT
1 to 5 Times.....	139.....	25.1%
6 to 10 Times.....	92.....	16.5%
11 to 20 Times.....	110.....	19.7%
21 or More Times.....	142.....	25.4%
NO FISHERMEN IN HOUSEHOLD/NONE.....	74.....	13.3%

26b. Typically, when you, or someone else in the household, goes fishing, do you fish

AREAS	FREQUENCY	PERCENT
On the Kenai Peninsula?.....	248.....	44.7%
In the Matanuska-Susitna Bourough, Anchorage or Chugach Mountain area?..	197.....	35.5%
In Southeast Alaska?.....	127.....	22.8%
In the Fairbanks or Brooks Range area of Northern Alaska?.....	97.....	17.4%
In the Copper River, Wrangell, or Valdez area?.....	73.....	13.2%
In Kodiak or the Aleutians Islands?.....	62.....	11.1%
In Western Alaska or west of the Alaska Range?.....	59.....	10.6%

27. In 1971, the U.S. Congress passed a law which set up village and regional corporations whose stock is owned only by Alaska natives. Under the current law, in 1991, village and regional corporation stock may be bought by non-natives. Alaska natives want to ammend the law so that the native shareholders of each corporation, by a majority vote, may decide whether the corporation's stock can be sold to non-natives after 1991. Do you favor or oppose amending the law to allow village and regional corporation shareholders to decide whether stock can be sold to non-natives after 1991?

AMENDING STOCK LAW	FREQUENCY	PERCENT
Favor.....	357.....	64.4%
Oppose.....	156.....	28.1%
DON'T KNOW.....	42.....	7.5%

28. What type of residence do you live in? Is it a... ..

HOUSING TYPE	FREQUENCY	PERCENT
Single family,.....	358.....	64.6%
Apartment, or a.....	86.....	15.4%
Duplex,.....	50.....	9.1%
Mobile home?.....	32.....	5.7%
Zero lot line,.....	11.....	2.0%
Condominium,.....	10.....	1.7%
Townhouse,.....	8.....	1.5%

29. Does someone in your household own your home, or do you rent it?

EQUITY STATUS	FREQUENCY	PERCENT
Own.....	373.....	67.2%
Rent.....	182.....	32.8%

30. In what year were you born? (COMPUTED TO AGE BY SUBTRACTING FROM 85)

AGE OF RESPONDENT	FREQUENCY	PERCENT
18 - 24.....	74.....	13.4%
25 - 29.....	91.....	16.4%
30 - 34.....	93.....	16.8%
35 - 39.....	91.....	16.5%
40 - 49.....	113.....	20.4%
50 plus.....	92.....	16.6%
(n = 555)		
(MEAN = 37.603)		
(MEDIAN = 35.034)		

31. How many total years and months have you lived in Alaska?

ALASKAN RESIDENCY	FREQUENCY	PERCENT
1982 - 1985.....	87.....	15.7%
1976 - 1981.....	129.....	23.3%
1967 - 1975.....	144.....	26.0%
Before 1967.....	194.....	34.9%
(n = 555)		
(MEAN = 16.400)		
(MEDIAN = 12.967)		

32. How many total years and months have you lived in the _____ area?
(FILL IN AREA CALLING AND WRITE NUMBER OF YEARS AND MONTHS ON ANSWER SHEET)

LOCAL RESIDENCY	FREQUENCY	PERCENT
1982 - 1985.....	160.....	28.9%
1976 - 1981.....	149.....	26.8%
1967 - 1975.....	124.....	22.3%
Before 1967.....	122.....	22.0%
(n = 555)		
(MEAN = 11.766)		
(MEDIAN = 7.330)		

33. Are you, or is any member of your household (living at home), a veteran?

VETERAN IN HOUSEHOLD	FREQUENCY	PERCENT
Yes.....	250.....	45.1%
No.....	305.....	54.9%

34. Are you, or is any member of your household (living at home), a member of a union?

UNION MEMBER IN HOUSEHOLD	FREQUENCY	PERCENT
Yes.....	182.....	32.8%
No.....	373.....	67.2%

35. Are you married, separated, divorced, widowed, never married and living with another adult, or never married and living alone?

MARITAL STATUS	FREQUENCY	PERCENT
Married.....	370.....	66.7%
Divorced.....	67.....	12.1%
Never Married and Living with Another Adult.....	63.....	11.3%
Never Married and Living Alone.....	35.....	6.4%
Widowed.....	11.....	2.0%
Separated.....	8.....	1.4%

(COMPUTED FROM MARITAL STATUS AND GENDER QUESTIONS)

MARITAL STATUS BY GENDER	FREQUENCY	PERCENT
Married Males.....	185.....	33.2%
Married Females.....	185.....	33.4%
Single Males.....	110.....	19.8%
Single Females.....	75.....	13.5%

(COMPUTED FROM AGE, CHILDREN, GENDER, AND MARITAL STATUS QUESTIONS)

FAMILY STATUS	FREQUENCY	PERCENT
Mature Family.....	127.....	22.9%
Young Family.....	101.....	18.2%
Mature Couple.....	97.....	17.4%
Young Single.....	76.....	13.8%
Adult Single.....	57.....	10.2%
Single Parent.....	52.....	9.3%
Young Couple.....	45.....	8.1%

36. Do you or does anyone in your household (living at home) work for the federal, state or local government? IF YES, ASK, "Which level of government? Is it the"

GOVERNMENT EMPLOYEE	FREQUENCY	PERCENT
NO GOVERNMENT EMPLOYEE.....	319.....	57.4%
State, or.....	135.....	24.3%
Federal,.....	56.....	10.2%
Municipal Government?.....	45.....	8.1%

The last few questions are being collected purely for statistical purposes.

37a. How many total people, including children and adults, live in your household?

HOUSEHOLD SIZE	FREQUENCY	PERCENT
One.....	68.....	12.2%
Two.....	164.....	29.5%
Three.....	118.....	21.2%
Four.....	122.....	22.0%
Five or More.....	84.....	15.1%
	(n = 555)	
	(MEAN = 3.079)	
	(MEDIAN = 2.392)	

37b. Of the people in your household, living at home, how many are adults — aged 18 and older?

NUMBER OF ADULTS	FREQUENCY	PERCENT
One.....	87.....	15.6%
Two.....	361.....	65.1%
Three.....	85.....	15.4%
Four or More.....	22.....	3.9%
	(n = 555)	
	(MEAN = 2.082)	
	(MEDIAN = 1.528)	

37c. How many are children or adolescents under 18 years old?

CHILDREN IN HOUSEHOLD	FREQUENCY	PERCENT
NONE.....	275.....	49.5%
One.....	111.....	20.0%
Two or More.....	169.....	30.4%
	(n = 555)	
	(MEAN - ALL HOUSEHOLDS = 0.997)	
	(MEDIAN - ALL HOUSEHOLDS = 0.025)	
	(MEAN - HOUSEHOLDS WITH CHILDREN = 1.976)	
	(MEDIAN - HOUSEHOLDS WITH CHILDREN = 1.266)	

38. How many total years of education have you completed? (FORMAL ATTENDANCE IN SCHOOL) (EIGHTH GRADE = 8; HIGH SCHOOL = 12; TRADE SCHOOL = 13; COLLEGE GRADUATE — BA OR BS = 16; MASTERS DEGREE = 18; LAWYER, DOCTOR, PH.D = 19)

YEARS OF EDUCATION	FREQUENCY	PERCENT
12 Grade or Less.....	194.....	34.9%
1 - 2 Years College.....	170.....	30.6%
3 - 4 Years College.....	124.....	22.3%
Post Graduate.....	68.....	12.2%
	(n = 555)	
	(MEAN = 13.941)	
	(MEDIAN = 13.055)	

39. Are you seasonally employed, annually employed, unemployed and looking for work, not looking for work, or retired?

EMPLOYMENT STATUS	FREQUENCY	PERCENT
Annually Employed.....	341.....	61.5%
Seasonally Employed.....	74.....	13.3%
Not Looking for Work.....	66.....	11.9%
Retired.....	39.....	7.0%
Unemployed and Looking for Work.....	35.....	6.4%

40a. How many individuals in your household are presently working fulltime 35 or more hours per week? How many part-time, 34 or less hours?

(COMBINES WAGE EARNERS COMPUTED FROM THE PRECEEDING TWO QUESTIONS)

TOTAL WAGE EARNERS	FREQUENCY	PERCENT
Under One.....	52.....	9.4%
One.....	185.....	33.4%
One and One-half.....	77.....	14.0%
Two.....	176.....	31.6%
Over Two.....	65.....	11.6%

(n = 555)

(MEAN = 1.545)

(MEDIAN = 1.259)

41a. Including only those living at home, what was your total household income for 1984 before taxes and other deductions were made? Please tell me the figure to the nearest thousand dollars.

41b. We don't need the exact dollar figure; could you tell me which of these broad categories it falls in...

- Less than 16,000 dollars,
- Between 16,000 and 25,000 dollars,
- Between 26,000 and 35,000 dollars,
- Between 36,000 and 45,000 dollars,
- Between 46,000 and 55,000 dollars,
- Between 56,000 and 65,000 dollars,
- Between 66,000 and 75,000 dollars, or
- More than 75,000 dollars?

(COMPUTED INCOME FROM THE PRECEEDING TWO QUESTIONS)

1985 HOUSEHOLD INCOME	FREQUENCY	PERCENT
\$ 0 - \$15,999.....	73.....	14.5%
\$16,000 - \$25,999.....	67.....	13.3%
\$26,000 - \$35,999.....	74.....	14.6%
\$36,000 - \$45,999.....	93.....	18.5%
\$46,000 - \$65,999.....	96.....	19.1%
\$66,999 or More.....	101.....	20.0%

(n = 504)

(MEAN = \$46,132)

(MEDIAN = \$39,889)

(COMPUTED FROM WAGE AND INCOME QUESTIONS)

INCOME PER WAGE EARNER	FREQUENCY	PERCENT
\$ 0 - \$15,999.....	133.....	26.4%
\$16,000 - \$25,999.....	116.....	23.0%
\$26,000 - \$35,999.....	104.....	20.7%
\$36,000 - \$49,999.....	80.....	15.9%
\$50,000 or More.....	71.....	14.0%

(n = 504)
(MEAN = \$30,595)
(MEDIAN = \$25,777)

42. Is your telephone number.....

TELEPHONE LISTING	FREQUENCY	PERCENT
Listed or.....	483.....	87.0%
Unlisted.....	72.....	13.0%

43. SEX.....

GENDER OF RESPONDENT	FREQUENCY	PERCENT
Male.....	295.....	53.1%
Female.....	260.....	46.9%

THIS COMPLETES THE SURVEY, THANKYOU VERY MUCH FOR HELPING US — GOODBYE

SUBSISTENCE PRIORITY FOR RURAL ALASKANS

BY

POLITICAL AND GENERAL DEMOGRAPHICS

SUBSISTENCE PRIORITY	FREQUENCY	PERCENT
FAVOR	338	60.9%
OPPOSE	178	32.1%
DON'T KNOW	39	7.0%

DEMOGRAPHICS	n	FAVOR	OPPOSE	DON'T KNOW	TOTAL % OF ADULTS
AREA OF STATE: (Row %)					p = 0.0190
Valdez-Kenai-S. Anc	59	59.3%	33.7%	7.0%	10.6%
Anchorage	224	60.2%	34.4%	5.4%	40.4%
Mat Su/Grtr Fbks	50	54.2%	39.9%	5.9%	9.0%
Fairbanks	76	47.9%	43.0%	9.1%	13.7%
Southeast-Rural Alaska	146	71.7%	19.7%	8.6%	26.3%
REGISTERED TO VOTE: (Row %)					p = 0.4858
Yes	447	59.9%	33.3%	6.8%	80.5%
No	108	64.8%	27.4%	7.8%	19.5%
PARTY AFFILITATION: (Row %)					p = 0.0007
Democrat	120	73.8%	19.4%	6.9%	21.6%
Republican	145	66.1%	31.4%	2.5%	26.1%
Libertarian	17	63.5%	29.9%	6.6%	3.0%
Independent	273	52.3%	38.3%	9.4%	49.3%
VOTED IN 1982, NOVEMBER: (Row %)					p = 0.2295
Yes	362	59.0%	34.6%	6.4%	65.2%
No	193	64.4%	27.6%	8.0%	34.8%
VOTED IN 1984, NOVEMBER: (Row %)					p = 0.1290
Yes	373	58.1%	34.8%	7.1%	67.3%
No	182	66.7%	26.6%	6.8%	32.7%
IDEOLOGY OF RESPONDENT: (Row %)					p = 0.0461
Liberal	128	70.5%	23.4%	6.1%	23.2%
Moderate	237	59.4%	32.0%	8.6%	42.7%
Conservative	190	56.3%	38.3%	5.5%	34.2%
INTEREST IN STATE CAMPAIGNS: (Row %)					p = 0.7837
Very Interested	119	56.4%	36.5%	7.0%	21.4%
Somewhat Interested	319	61.3%	31.5%	7.2%	57.6%
Not very Interested	117	64.3%	29.4%	6.3%	21.0%
ADULT MARKET SHARE		60.9%	32.1%	7.0%	100.0%

HISTORICAL CHANGES IN HUNTING AND FISHING
PATTERNS IN THE COPPER RIVER BASIN, ALASKA

by

James A. Fall

Division of Subsistence
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, Alaska 99518
907-267-2359

Paper presented at the symposium Modern Hunting and Fishing Adaptations
in Northern North America at the 84th Annual Meeting of the American
Anthropological Association, Washington, D.C., December 7, 1985.

NOV 27 1985

ALASKA DEPARTMENT OF FISH & GAME

ABSTRACT

This paper examines contemporary subsistence hunting and fishing in the Copper River basin, southcentral Alaska. This 24,000 square mile region had a population of 3,228 in 1983; about 20 percent were Ahtna Athapaskans. Data collected in 1981 through 1984 include harvest quantities, breadth of harvests, and participation rates for Ahtna and non-native households. Ethnohistorical information, and comparisons with other regions of Alaska, illustrate the effects on traditional subsistence patterns of demographic change, competition with recreational hunters and fishermen, commercialization of resources, and a road system connecting the basin with urban centers.

TABLE OF CONTENTS

List of Tables.....	iii
List of Figures.....	iv
Acknowledgements.....	v
I. Introduction.....	1
II. Research Methods and Data Sources.....	3
III. Natural Environment.....	7
IV. Traditional Ethnography and History.....	8
V. Current Demographic and Economic Conditions.....	13
VI. Patterns of Wild Resource Use in the Copper River in the 1980s....	17
VII. Caribou.....	23
VIII. Moose.....	34
IX. Sockeye Salmon.....	41
X. Discussion.....	57
References Cited.....	62

LIST OF TABLES

1.	DIVISION OF SUBSISTENCE, ALASKA DEPARTMENT OF FISH AND GAME, RESEARCH IN THE COPPER RIVER BASIN.....	5
2.	COPPER RIVER BASIN POPULATION AND SAMPLE SIZES, 1983.....	6
3.	ALASKA AND COPPER BASIN POPULATIONS, 1880-1983.....	11
4.	COPPER RIVER BASIN DEMOGRAPHIC AND EMPLOYMENT CHARACTERISTICS, 1982-83.....	15
5.	MEAN HOUSEHOLD HARVESTS AND PER CAPITA HARVESTS OF WILD RESOURCES, POUNDS DRESSED WEIGHT, COPPER RIVER REGION, 1982-1983.....	18
6.	COMPARISONS OF NATIVE AND NON NATIVE RESOURCE HARVESTS, BY COMMUNITY, COPPER RIVER BASIN, 1982-1983.....	21
7.	HARVESTS OF SALMON AND OTHER RESOURCES BY NATIVE AND NON-NATIVE HOUSEHOLDS, COPPER RIVER BASIN.....	22
8.	CARIBOU HARVESTS AND USE, COPPER RIVER BASIN 1982-1983.....	24
9.	NELCHINA CARIBOU HARVESTS, NUMBER OF HUNTERS, AND HERD SIZE, 1948-1984.....	26
10.	CARIBOU HUNTING REGULATIONS, GAME MANAGEMENT UNIT 13.....	28
11.	NUMBER OF HUNTERS AND HARVEST LEVELS, MENTASTA CARIBOU HERD (GMU 11), 1977-1984.....	33
12.	MOOSE HARVEST AND USE, COPPER RIVER BASIN, 1982-1983.....	35
13.	NUMBER OF MOOSE HUNTERS AND MOOSE HARVESTS, GAME MANAGEMENT UNITS 11 AND 13, 1966-1984.....	37
14.	MOOSE HUNTING REGULATIONS, GAME MANAGEMENT UNIT 13, 1959-1985.....	39
15.	SOCKEYE SALMON HARVEST AND USE, COPPER RIVER BASIN, 1982-1983.....	42
16.	SALMON HARVESTS, COPPER RIVER BASIN, 1921.....	45
17.	PARTICIPATION IN COPPER RIVER SUBSISTENCE FISHERY AND HARVESTS BY GEAR TYPE, 1948-1984.....	48
18.	COPPER RIVER SOCKEYE SALMON HARVEST, 1969-1984.....	50

List of Figures

1. The Copper Basin Area, Southcentral Alaska	2
2. Growth of Alaska Population and Population Along Roads, 1960-1983...	14
3. Per Capita Harvests of Fish And Wildlife Resources by Copper Basin Communities and Selected Alaska Communities and Regions	20
4. Nelchina Caribou Herd Harvests, 1948-1984.....	25
5. Number of Permit Applicants and Number of Available Permits Nelchina Caribou Herd, 1977-1984.....	29
6. Nelchina Caribou Herd Harvests, 1982-85.....	32
7. Number of Moose Hunters, Copper River Basin, Game Management Units 11 and 13, 1966-1984.....	36
8. Copper Basin Moose Harvests, Game Management Units 11 and 13, 1966-84.....	38
9. Mean Number of Sockeye Salmon Harvested per Household, Copper Basin Communities, June 1982-May 1983.....	43
10. Copper River Subsistence Salmon Fishery, Permits Issued, 1960-1984.....	47
11. Copper River Subsistence and Personal Use Sockeye Salmon Harvests, 1960-1984.....	49
12. Copper River Commercial and Subsistence Sockeye Salmon Harvests, 1975-1984.....	53
13. Harvest of Copper Basin Resources by Commercial and Non-commercial Users, 1984.....	60

ACKNOWLEDGEMENTS

This paper could not have been written without the fine research of Lee Stratton, Susan Georgette, and Dan Foster of the Division of Subsistence, Alaska Department of Fish and Game. Dan and Susan also prepared the figures. In addition we thank the Copper Basin Native Association, National Park Service, and the Glennallen and Anchorage staffs of the Alaska Department of Fish and Game. Especially, the division is grateful to the many residents of the Copper basin, the users of the Copper River subsistence fisheries, and the Nelchina caribou hunters, for their time and information.

I. Introduction

The viability of communities with hunting and fishing economies in northern North America is dependent upon healthy wildlife populations and upon government management programs that provide these communities with reasonable opportunities to harvest fish and game resources. This paper focuses on the effects of the growth of urban hunting and fishing pressures and commercialization on the traditional wild resource uses of communities of the Copper River basin region of southcentral Alaska (Fig. 1).

Recent research (e.g. Wolfe and Ellanna 1983; Wolfe et al. 1984) has demonstrated that in Alaska there are communities with "mixed, subsistence-based socioeconomic systems." These systems have successfully integrated cash and cash-related pursuits so as to support subsistence hunting and fishing. Typical of these communities are large subsistence harvests of fish and game, high levels of participation in hunting and fishing activities, a stable seasonal round of resource harvests, kin-based subsistence production, wide non-commercial networks of distribution and exchange, seasonal wage employment, commercial fishing, and investment of cash into subsistence production.

An Alaska statute adopted in 1978 and federal legislation passed in 1980 contain provisions regarding fish and game management in Alaska which are intended to protect traditional subsistence activities from competing commercial and recreational uses of wild resources. These statutes require the state to adopt regulations allowing subsistence hunting and fishing. In times of resource shortage, subsistence uses have a priority over other uses of fish and game. The state law also created the Division of Subsistence within the Alaska Department of Fish and Game.

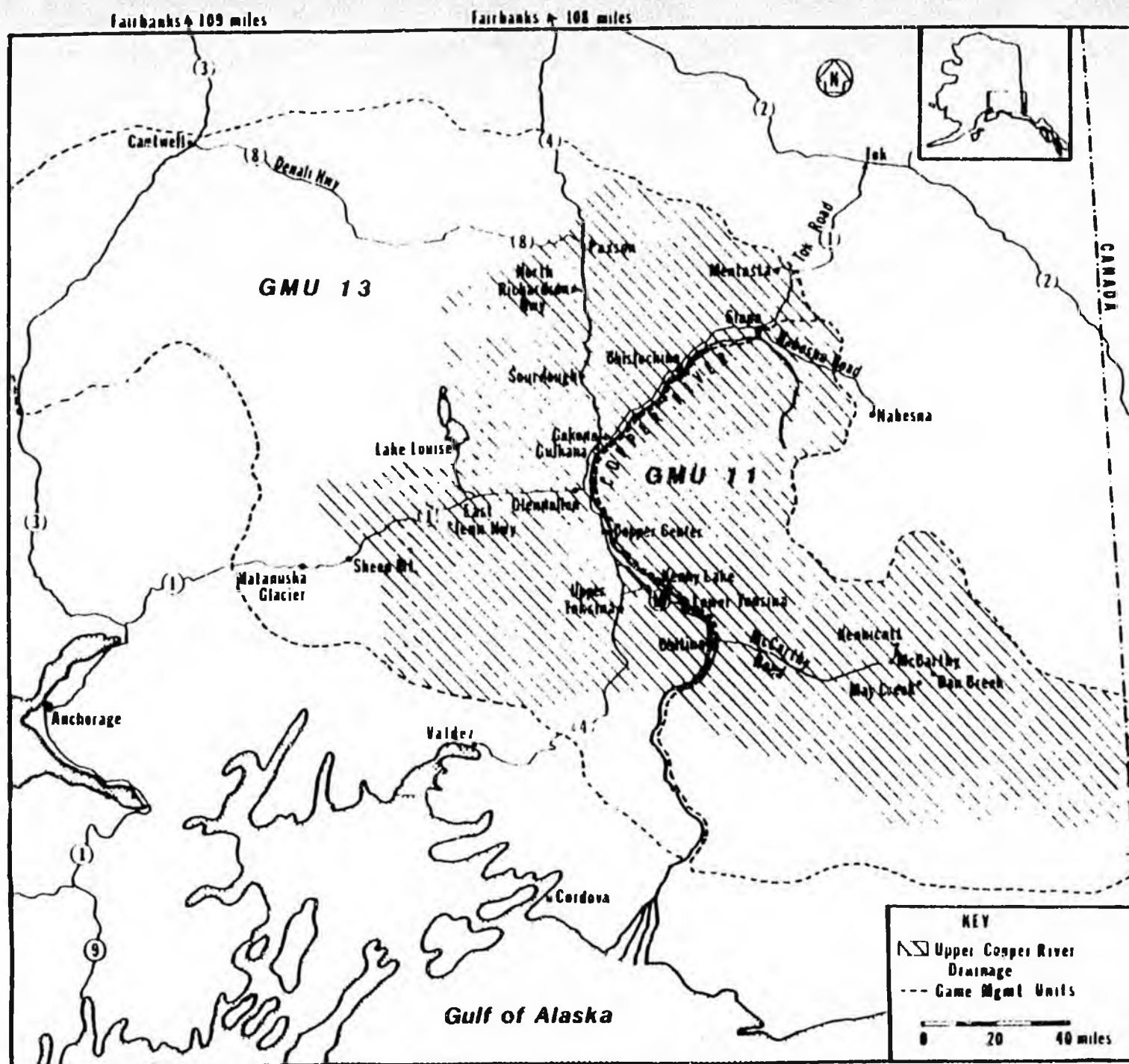


Fig. 1. The Copper Basin Area, Southeastern Alaska.

The division is a social science research agency charged with collecting data on all aspects of subsistence hunting and fishing by Alaska residents. These data are used by the regulatory Board of Fisheries and Board of Game to assess hunting and fishing management plans.

The purpose of research conducted by the Division of Subsistence in the Copper basin region from 1981 through 1984 was to describe the role of hunting, fishing, and gathering wild resources in the Copper basin communities of the early 1980s, to compare these patterns with those of communities in other parts of Alaska, and to identify the factors which have shaped Copper basin hunting and fishing patterns today. To a much greater extent than more isolated communities of western and northern Alaska, the Copper basin and its resources have been subject to pressures from Alaska's growing population and commercial harvesting for most of the 20th century. This pressure has been facilitated by the basin's accessibility by road. Therefore, the Copper Basin is a good case example of the effects on traditional subsistence patterns of regional population growth, competition with recreational hunters and fishermen, commercialization of resources, and a road system connecting rural areas with urban centers.

II. Research Methods and Data Sources

As defined in this paper, the Copper River basin area includes Alaska Game Management Units (GMU) 11 and 13. This includes the entire Copper River drainage above its delta plus most of the upper Susitna River and upper Matanuska River drainages. This area generally coincides with the traditional territory of the Ahtna Athapaskan Indians. Sources on the

traditional ethnography and history of the Copper River basin include Allen (1887), Strong (1976), de Laguna and McClellan (1981), Hanable (1982), and Reckord (1983a). Published sources on contemporary resource use and socioeconomic patterns include Reckord (1979) and Reckord (1983b).

Table 1 summarizes the research efforts of the Division of Subsistence in the Copper River basin area from 1979 through 1985. The division has utilized a variety of data gathering methods, including mailed questionnaires, key respondent interviews, surveys of randomly selected households, participant observation, and resource use area mapping. Early projects were designed to collect information about particular resources which were the focus of regulatory issues, such as caribou and salmon. In order to provide a broader perspective, in 1983 the division conducted structured interviews with 431 households in 24 communities and sample areas in and adjacent to the Copper River basin. Two of these communities, Chickaloon and North Wrangell Mountains, are outside the basin as defined in this paper, resulting in a sample size of 408.

Random samples were selected in the larger communities of Copper Center, East Glenn Highway, Glennallen, Kenny Lake, Matanuska Glacier, North Richardson Highway, Sheep Mountain, Upper Tonsina, and Tok Road. For the other areas, a goal of 100 percent was sought. Table 2 summarizes the sample characteristics. In addition, another 62 of the remaining 10% Alaska Native households in the larger communities were interviewed, but were not, except where noted, included in the data analysis. Interview questions concerned household harvest and use quantities of wild resources for a 12 month study period from June 1982 to May 1983. Demographic and employment data were also collected. Harvest quantities were converted from numbers of animals or fish to pounds

TABLE 1. DIVISION OF SUBSISTENCE, ALASKA DEPARTMENT OF FISH AND GAME,
RESEARCH IN THE COPPER RIVER BASIN

<u>Year</u>	<u>Subject</u>	<u>Data gathering methods and sample size</u>	<u>Reference</u>
1979	Copper River fishwheel & dipnet subsistence fisheries	Mailed questionnaires to 3,025 permit holders; 704 (23.3%) returned	Stickney & Cunningham 1979
1981	Nelchina Caribou herd use	Mailed questionnaires to 1,791 permit holders; 650 (36.6%) returned. Key respondent inter- views with 53 former caribou hunters	Stratton 1982a
1982	Copper River fishwheel and dipnet subsistence fisheries	Key respondent interviews with 81 (13.2%) fishwheel permittees, and 93 (1.5%) dipnet permittees	Stratton 1982b; Fall & Stratton 1984
1982-83	Uses of Nelchina & Mentasta caribou herds	Mailed questionnaires to 2,100 permit holders; 1,044 (49.7%) useable questionnaires returned	Stratton 1983
1984	Wild fish, game, & plant use of Copper basin communities	Structured interviews with sample of 431 (40.8%) households ¹	Stratton & Georgette 1984; Fall & Stratton 1984
1985	Resource use areas of Copper basin communities	Mapping sessions with 278 households (27.7%)	Stratton & Georgette 1985; ADFG 1985a

¹ Included 23 households (out of 36) in Chickaloon and North Wrangell Mountains,
which are outside the Copper basin as defined in this paper.

TABLE 2. COPPER RIVER BASIN POPULATION AND SAMPLE SIZES, 1983

<u>Community/Area</u>	<u>Estimated population</u>	<u># of households</u>	<u>Interview sample</u>	<u>Data analysis sample</u>	<u>Mean household size</u>
Cantwell	136	47	43 (91.5%)	43	2.9
Chistochina	65	27	21 (77.8%)	22 ^a	2.7
Chitina	43	24	23 (95.8%)	23	1.8
Copper Center	439	129	27 (20.9%)	27	3.4
East Glenn Highway	182	65	15 (23.1%)	15	2.8
Gakona	79	24	21 (87.5%)	23 ^a	3.2
Glennallen	861	269	51 (19.0%)	51	3.2
Gulkana	115	41	35 (85.4%)	36 ^a	3.0
Kenny Lake	357 ^b	68 ^b	12 ^b (17.6%)	12	3.2
Lake Louise	39	15	13 (86.7%)	13	2.6
Lower Tonsina	35	9	8 (88.9%)	8	3.9
Matanuska Glacier	179	64	30 (46.9%)	30	2.8
McCarthy Road	52	18	13 (72.2%)	13	2.9
Mentasta	67	19	16 (84.2%)	19 ^a	3.6
Nabesna Road	37	10	8 (80.0%)	8	4.4
North Richardson Hwy.	32	16	4 ^c (25.0%)	-	-
Paxson-Sourdough	27	9	7 (77.8%)	10 ^a	2.5
Sheep Mountain	59	19	9 (47.4%)	9	3.1
Slana	43	17	14 (82.4%)	16 ^a	2.7
South Wrangell Mts	32	16	15 (93.8%)	15	2.1
Upper Tonsina Area	228	76	15 (19.7%)	15	3.0
Tok Road	121	39	8 ^c (20.5%)	-	-
TOTAL	<u>3,228</u>	<u>1,021</u>	<u>408 (40%)</u>	<u>408</u>	

a Includes households from road samples.

b Population includes two cooperatives which are excluded from number of households. One cooperative that was interviewed was excluded from data analysis.

c Included in neighboring communities for data analysis.

Source: Stratton and Georgette 1984: 11, 13, 27.

dressed weight using standard conversion factors (Stratton and Georgette 1984:7-15).

Another source of information about wild resource harvests in the Copper basin are the reports and files of the Alaska Department of Fish and Game, Division of Commercial Fisheries, which manages the subsistence fishery, and the Division of Game. These often contain the best available data on harvest sizes and fishing and hunting effort. Early data, however, should be viewed as rough estimates because reporting of harvests, especially those occurring illegally, was often unreliable. More recent data, especially permit data, are probably more accurate.

III. Natural Environment

The Copper River flows 287 miles south from its source in the Wrangell Mountains and drains an area of 24,000 square miles before cutting through the coastal Chugach Mountains to empty into the Gulf of Alaska near the town of Cordova. The river is laden with glacial silt. Its major tributaries include the Chitina, Tonsina, Klutina, Tazlina, Gulkana, Gakona, Sanford, Chistochina, and Slana rivers.

The basin is surrounded on all sides by massive mountains; the Alaska Range rises on the north, the Chugach Mountains bound the basin on the west and south, the Talkeetna Mountains define the western boundary, and the Wrangell Mountains form a barrier to the east. Tundra, along with rock and ice, covers the mountains above 4,000 feet. Below the tundra grow dwarf birch and willow, which give way at lower elevations to forests of white and black spruce, balsam poplar, aspen, and birch. The continental climate of the basin is characterized by great extremes of temperature,

with cold, dry winters and warm summers (Selkregg 1974).

The Copper basin's wildlife is diverse. Two major caribou herds, the Nelchina and the Mentasta, roam the northern and western basin. Dall sheep and mountain goats are found in the mountains. Moose, brown and black bear, and a typical assemblage of boreal forest small game and furbearers are also present. The latter include spruce grouse, ptarmigan, hare, porcupine, beaver, marten, mink, land otter, wolverine, lynx, red fox, and wolf. Beginning in June, sockeye (red) and chinook (king) salmon ascend the Copper River to spawn, followed in August and September by small runs of coho (silver) salmon and steelhead trout. Freshwater fish present in basin river and lakes include rainbow and lake trout, grayling, whitefish, and burbot (Selkregg 1974).

IV. Traditional Ethnography and History

The aboriginal inhabitants of the Copper River basin, the Athapaskan-speaking Ahtna Indians, have probably occupied this drainage area for at least the last 1000 years (Workman 1976). In the 19th century, the Ahtna were organized into eight regional bands, each with its distinctive dialect, fishing sites, and hunting grounds. Each Ahtna belonged to one of about 11 matrilineal, exogamous clans, which were grouped into moieties. The most significant social unit in resource production was the local band. The members of each band were linked through kinship and marriage, and occupied the same winter village near productive salmon fishing sites (de Laguna and McClellan 1981).

In the foraging economic system of the Ahtna, each local band followed a seasonal round which included fishing for salmon each summer with funnel

traps and spears in clear water streams, and with weirs, willow dip nets, and dipnetting platforms in the Copper River itself. Fishwheels were introduced to the Copper River subsistence fishery around 1910 and rapidly replaced the aboriginal fishing technology. The salmon were preserved, mostly by drying, and stored in caches at each winter village. Certainly, sockeye and chinook salmon were the most important food for most Ahtna, for the risk of starvation was great if adequate supplies of this seasonally abundant resource were not prepared each summer (de Laguna and McClellan 1981).

In fall, hunting for large and small game took place from mountain hunting camps. Caribou and moose were taken in snares, often placed in long brush fences. Caribou and moose were also speared and taken with bows and arrows. After fall hunting, people remained at their villages throughout a portion of the winter, supplementing their stored foods with ice fishing. Often, supplies ran low in late winter and spring. Then, families left the village to hunt for game. June brought the return of salmon and seasonal abundance (de Laguna and McClellan 1981).

In 1793, the Russians discovered the mouth of the Copper River, but their repeated attempts to explore the Copper River valley were largely failures. However, the Ahtna became involved in the Euroamerican fur trade during the Russian era of Alaska history (1741-1867). European-introduced diseases caused severe reductions of the basin's Indian population in the 19th and early 20th centuries (de Laguna and McClellan 1981:643; Ketz 1983:6-45).

Following the 1867 purchase of Alaska by the United States, in 1885 Lt. Henry Allen of the U.S. Army led the first successful non-native expedition through the Copper River basin to the Tanana River valley

(Allen 1887). The population of the basin in 1880 was 250 (Table 3).

The next several decades were a period of rapid change. In 1889, a commercial salmon fishery targeting Copper River stocks began on the Copper River delta (Strong 1976:187). In 1898 and 1899, thousands of prospectors bound for the Klondike goldfields passed through the Copper River valley. Hundreds overwintered at the present site of Copper Center. Beginning in 1899, a trail was constructed from Valdez on Prince William Sound into the basin. By 1905, this forerunner of the Richardson Highway was open to travel to Fairbanks by horse-drawn wagons. By 1927, the highway was open to automobile traffic. Many of today's basin communities grew around road houses along this route. Former native villages were abandoned as the Ahtna were drawn to the roadhouses for imported trade goods and temporary wage employment as a cash economy developed. The presence of schools and missions also attracted people to these centers. Development of the Kennecott copper mines near McCarthy on the Chitina River drainage in the early 1900s resulted in the construction of the Copper River and Northwestern Railway between the mine and Cordova, and the growth of the community of Chitina. Both the mines and the railway were abandoned by 1938 (de Laguna and McClellan 1981:643; Hanable 1982:65).

Market hunting for the roadhouses and mines began in the early 20th century. By 1910, game laws were enforced in the Chitina area. By 1927, hunting throughout the basin was regulated by federal authorities, although enforcement was rare because of the large area involved (Reckord 1983b:46,50-51).

By the 1920s, a mixed, subsistence-based economy had evolved in the Ahtna villages in the basin. Hunting and subsistence fishing remained major sources of food along with imported items purchased in local stores. Fur trapping was the major source of cash in the 1920s, but declined with

TABLE 3. ALASKA AND COPPER RIVER BASIN POPULATION, 1880-1983

<u>Year</u>	<u>Alaska</u>	<u>Copper River Basin¹</u>
1880	33,426	250
1890	32,052	n.a.
1900	63,592	n.a.
1910	64,356	553
1920	55,036	511
1930	59,278	729
1940	72,524	759
1950	128,643	875
1960	226,167	1,469 ²
1970	302,583	1,914 ²
1980	401,851	3,213 ²
1983	510,554	3,511 ²
1983	-	3,228 ³

¹ Copper River basin includes the following census data: 1880, "Atnah Villages"; 1910-1920, Copper Center District; 1930-1950, Chitina District, plus Cantwell; 1960, District 8 minus Valdez, Whittier, and Tatitlek, plus Cantwell; 1970, Valdez-Chitina, Whittier district, minus Valdez, Tatitlek, and Whittier, plus Cantwell; 1980-1983, Valdez-Cordova District, minus Valdez, Cordova, Whittier, and Tatitlek, plus Cantwell.

² May contain small number of people living outside of the Copper River basin and outside city limits of Valdez and Cordova.

³ Division of Subsistence research in the summer of 1983 identified 1,021 households with an approximate population of 3,228 within the Copper River basin as defined in this paper.

Source: Rollins 1978, Alaska Department of Labor 1984; U.S. Department of Commerce 1984, Stratton & Georgette 1984:27.

the drop in world fur prices after 1929 (Reckord 1979:43-46).

American involvement in World War II resulted in the construction of the Glenn Highway between Anchorage and the basin. Also the Richardson Highway was linked with the new Alaska Highway, which ran through Canada to the rest of the continental United States. Again, this "boom" period in the Copper basin was followed by a period of reduced economic activity.

Settlement and demographic patterns changed in the 1950s. Government officials pressured the Ahtna to send their children to school. This forced Indian families to relocate to communities along the road system (Reckord 1983b:54-55). Also, many Ahtna left the region to find jobs in urban centers, especially Anchorage (Reckord 1979:49).

Statehood in 1959 brought growth to the service and government sectors of the local economy. The population of the basin gradually rose as newcomers arrived and by 1970 had reached 1,914. Some were attracted by new wage employment opportunities, others by the basin's natural resources and way of life (Reckord 1979:7, 1983b:181).

With the passage of the Alaska Native Claims Settlement Act in 1971 came the formation of the Ahtna, Inc., the regional corporation. Ahtna Inc., along with the Copper Basin Native Association, a service-oriented organization, became the largest employers of Alaska Natives in the basin (Reckord 1979:14).

Between 1973 and 1977, the construction of the trans-Alaska oil pipeline again brought renewed opportunities for wage employment; more newcomers arrived in the basin. Many Ahtna who had left the villages for Anchorage or Fairbanks in search of employment also returned home during this period (Reckord 1979:9). This growth spurt, too, was temporary, although many who moved or returned to the basin during the pipeline's construction

chose to remain and seek other means of livelihood. Thus, the basin's population jumped 68 percent to 3,213 in 1980. In part, wage employment opportunities have arisen in local businesses serving the tourists, hunters, and fishermen who visit from other parts of Alaska, as well as from other states and foreign countries. The several highways now crossing the region provide these groups access to the basin (Stratton and Georgette 1984). The establishment of the Wrangell-St. Elias National Park in the area in 1980 has also brought recent attention to the area and has attracted additional visitors.

As illustrated in Figure 2, the population of Alaska rose from 226,167 in 1960 to 510,554 in 1983. About 72.8 percent (372,000 people) had road access to the Copper River basin. This population growth has placed increasing demand on the natural resources of the Copper basin. Not only has the expansion of urban centers appropriated wildlife habitat to development, but the remaining hunting and fishing areas close to these centers have received increasingly heavy use. Thus urban residents have traveled increasingly greater distances to harvest wild resources. Improvements in the road system to and within the Copper Basin over the last 20 years have facilitated access to the region from Alaska's population centers (Stratton and Georgette 1984:24-25).

V. Current Demographic and Economic Conditions

According to Division of Subsistence research (Stratton and Georgette 1984; Table 4), in 1983 the population of 22 communities and areas in the Copper River basin was 3,228 in 1,021 households. About 24 percent of these were Alaskan Native households. In only five communities (Chistochina,

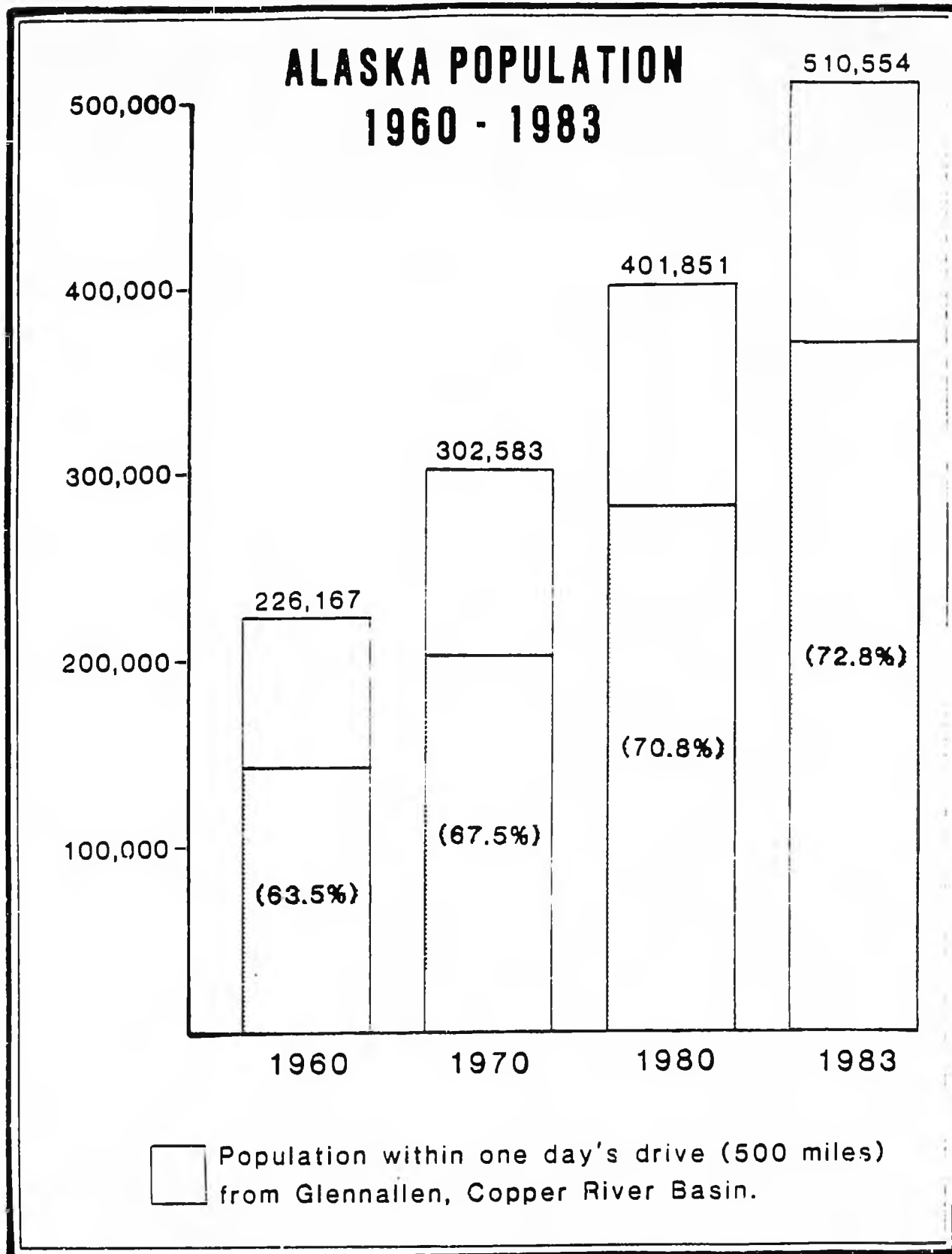


Fig. 2. Growth of Alaska Population and Population Along Roads, 1960-1983.

TABLE 4. COPPER RIVER BASIN DEMOGRAPHIC & EMPLOYMENT CHARACTERISTICS, 1982-83

<u>Community/ Sample</u>	<u>House- holds Surveyed</u>	<u>% of House- holds with Ak Native</u>	<u>Mean Length of Residency, Copper River Basin, H.H. Head</u>	<u>Mean # of Months Household Head Employed</u>
Cantwell	43	16	19.2	6.6
Chistochina	22	55	28.2	5.1
Chitina	23	24	21.2	6.6
Copper Center	27	48	32.8	7.9
E. Glenn Highway	15	7	18.6	6.0
Gakona	23	4	16.5	8.3
Glennallen	51	10	14.4	10.9
Gulkana	36	49	31.4	8.0
Kenny Lake	12	17	12.0	7.1
Lake Louise	12	8	11.8	9.5
Lower Tonsina	8	75	31.7	2.9
Matanuska Glacier	30	0	10.0	7.0
McCarthy Road	13	8	13.7	4.7
Mentasta	19	90	41.3	4.2
Nabesna Road	8	38	32.8	4.1
Paxson-Sourdough	10	0	13.3	10.1
Sheep Mountain	9	11	10.4	10.4
Slana	16	6	17.5	8.8
South Wrangell Mts.	15	0	10.1	3.9
Upper Tonsina Area	15	20	13.3	7.6

Source: Stratton & Georgette 1984:30-31, 34

Copper Center, Gulkana, Lower Tonsina, and Mentasta) did Native households comprise about half or more of the population. Three samples (Matanuska Glacier, Paxson-Sourdough, and South Wrangell Mountains) contained no Alaska Natives.

The 1983 Alaska state census, using slightly different boundaries than the division's study, counted 3,422 residents in the basin. According to the results of the 1980 U.S. census (U.S. Department of Commerce 1984:33), 549 (18.9 percent) of the 2,956 residents of the area served by Ahtna, Inc., the regional native corporation, were Alaska Natives. There were 486 Indians, 57 Eskimos, and 6 Aleuts.

Almost all of the basin's population lives along roads. Service centers have developed at Glennallen and Copper Center, which are also the population centers of the basin. Other community centers occur at major highway intersections, at former roadhouse sites, and at Native villages. However, many of the basin's households reside along the highways outside any recognizable community center.

In 1983, wage employment in the basin was largely limited to jobs in government, construction, travel/service, and native corporations. Many of these jobs were seasonal or part time. As shown in Table 4, in 16 communities, the mean length of employment for household heads was less than nine months. Generally, households in or near service centers such as Glennallen (mean 10.9 months) were more likely to hold year round jobs than were households in smaller, more remote communities such as Chistochina (5.1 months) or McCarthy Road (4.7 months).

Table 4 also reports the mean length of residency for household heads in each of the 20 samples. Generally, communities with the highest percentages of Native households had the highest means. These data

demonstrate that many basin households have a long history of residence in their communities, in particular those communities with traditional locations along the river system. It is also evident that immigration from other parts of the state or from outside the state has been significant in the last several decades. Research in 1983 found that 21.8 percent of the sampled household heads had been born in the Copper River basin, while 7.2 percent had been born elsewhere in Alaska and 71 percent were from other states or foreign countries (Stratton and Georgette 1984:29).

VI. Patterns of Wild Resource Use in the Copper River Basin in the 1980s

Research conducted with a sample of 408 households in 20 Copper Basin communities in 1983 found a diversity of wild resource uses among basin residents. Most households reported fish, game, or plant harvests, but annual harvests ranged from a few pounds to thousands of pounds of wild foods. Mean household harvests for each community (Table 5) ranged from a low of 225 pounds in Sheep Mountain to a high of 1,233 pounds per household in the Nabesna Road sample. Twelve communities (60 percent) ranged between 290 and 406 pounds per household.

Also, Table 5 shows that during the 1982-1983 study period, fish provided the majority of the wild resource harvests for 11 of the 20 basin communities. In all but five communities, fish provided over 40 percent of the wild food. For communities adjacent to the Copper River, the bulk of the fish taken was sockeye salmon (see below). Game harvests were usually highest in communities in the northern portion of the basin, such as Mentasta (63 percent of harvest), Slana (46 percent), Nabesna Road (47 percent), and Cantwell (73 percent). In part, this more common

TABLE 5. MEAN HOUSEHOLD HARVESTS AND PER CAPITA HARVESTS OF WILD RESOURCES, POUNDS DRESSED WEIGHT, COPPER RIVER REGION, 1982-1983

	<u>Mean Household harvest</u>	<u>Rank</u>	<u>Per Capita Harvest</u>	<u>Rank</u>	<u>% Fish</u>	<u>% Game</u>	<u>% Plants</u>
Cantwell	378	12	130	10	24	73	3
Chistochina	311	15	115	12	45	44	12
Chitina	342	13	190	5	65	29	7
Copper Center	383	11	113	14	83	13	5
E. Glenn Highway	404	9	144	8	56	37	7
Gakona	614	3	192	4	69	28	3
Glennallen	227	19	71	20	54	42	4
Gulkana	320	14	114	13	62	34	5
Kenny Lake	248	18	78	18	44	49	7
Lake Louise	448	5	172	6	51	34	15
Lower Tonsina	468	4	120	11	69	24	7
Matanuska Glacier	290	17	104	16	33	57	10
McCarthy Road	406	7	140	9	43	51	6
Mentasta	393	10	109	15	23	63	14
Nabesna Road	1,233	1	280	1	52	47	1
Paxson-Sourdough	441	6	164	7	28	61	5
Sheep Mountina	225	20	73	19	61	36	4
Slana	679	2	252	2	49	46	5
South Wrangell Mts.	406	7	203	3	28	67	5
Upper Tonsina Area	305	16	102	17	58	35	6

Source: Stratton & Georgette 1984:37

harvest of game was due to the greater accessibility of big game, particularly caribou, to these communities.

As shown in Table 5 and Figure 3, per capita harvests in the Copper basin study communities ranged from a low of 71 pounds in Glennallen, the regional center, to 280 pounds in Nabesna Road, a sample primarily composed of big game guides, outfitters, and trappers. Fourteen communities (70 percent) had per capita harvests between 100 and 200 pounds. Figure 3 also illustrates that these reported harvests are greater than those of more urbanized areas such as Anchorage (10 lbs per capita), Fairbanks (22 lbs), Juneau (34 lbs), and the Kenai Peninsula (63 lbs). However, Copper basin subsistence harvests were considerably lower than those of many small, mostly non-road connected, predominately Native communities in western, interior, and northern Alaska, such as six Kodiak villages (473 lbs per capita), eight southwest Alaska villages (654 lbs), nine western Alaska villages (725 lbs), and six Yukon-Kuskokwim (957 lbs). This suggests that subsistence harvests by Copper basin communities have declined since the 1920s and 1930s.

This decline in per capita harvests is not simply the result of the arrival of a non-native population in the basin. Table 6 presents harvest data for Native and non-native households in each community. In several communities, such as Cantwell, Chistochina, Chitina, Glennallen, Kenny Lake, and Nabesna Road, Native per capita harvests substantially exceeded non-native harvests. In a few communities, such as Gulkana and Upper Tonsina, non-native harvests were greater. In Copper Center, the per capita harvests were almost identical. For the other communities, the Native and non-native samples were too small to allow comparisons.

For the entire sample (including non-randomly selected households),

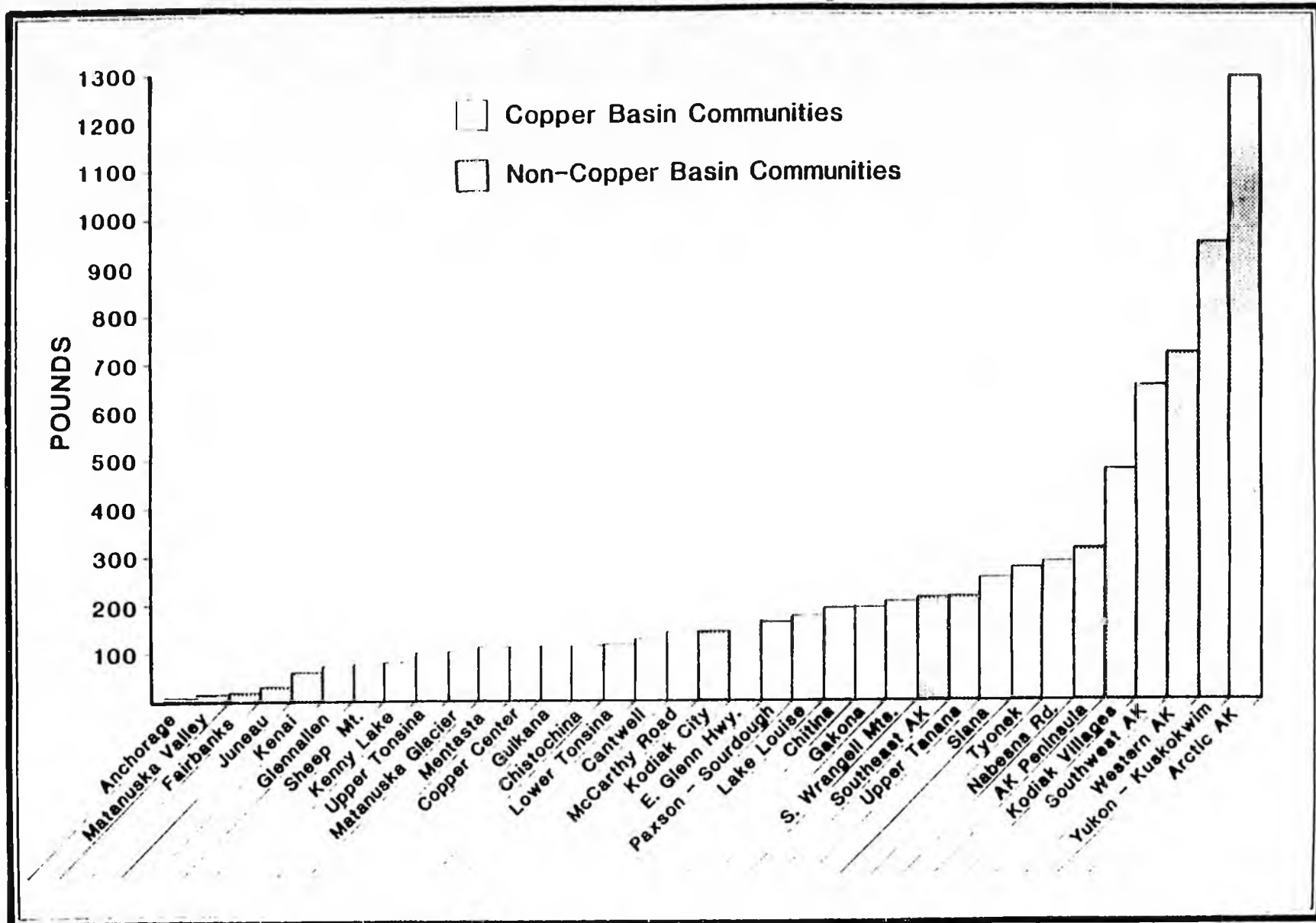


Fig. 3. Per Capita Harvests of Fish and Wildlife Resources by Copper Basin Communities and Selected Alaska Communities and Regions.

TABLE 6. COMPARISON OF NATIVE & NON-NATIVE RESOURCE HARVESTS, BY COMMUNITY, COPPER RIVER BASIN, 1982-83

<u>Community</u>	<u>N A T I V E</u>				<u>N O N- N A T I V E</u>			
	<u>House Holds</u>	<u>Mean H.H. Size</u>	<u>Mean H.H. Harvest</u>	<u>Per Capita Harvest</u>	<u>House-Holds</u>	<u>Mean H.H. Size</u>	<u>Mean H.H. Harvest</u>	<u>Per Capita Harvest</u>
Cantwell	7	2.9	472.3	162.9	36	2.9	359.9	124.1
Chistochina	12	2.3	561.9	244.3	10	3.2	386.0	120.6
Ciitina	5	3.8	821.8	216.3	16	1.2	193.1	160.9
Copper Center	40	2.6	278.4	107.1	14	3.7	403.9	109.2
Gakona	1	13.0	1597.0	122.8	22	2.7	684.1	253.4
E. Glenn Highway	1	4.0	1336.0	334.0	14	2.7	328.1	121.5
Glennallen	27	3.2	557.3	174.2	46	3.2	171.8	53.7
Gulkana	17	2.8	256.1	91.4	18	3.0	377.3	125.8
Kenny Lake	16	3.4	341.1	100.3	10	3.4	136.4	40.1
Lake Louise	1	2.0	622.0	311.0	12	2.7	433.3	160.5
Lower Tonsina	6	4.2	462.2	110.0	20	3.0	486.0	162.0
Matanuska Glacier	0	0	0	0	30	2.8	290.0	104.0
McCarthy Road	1	4.0	616.0	154.0	12	2.8	1365.4	130.5
Mentasta	17	2.7	321.0	118.9	2	3.0	1003.5	334.5
Nabesna Road	3	4.5	2230.3	495.6	5	3.4	633.8	186.4
Paxson	0	0	0	0	7	2.5	441.0	164.0
Sheep Mountain	1	4.0	768	192.0	8	3.0	156.8	52.3
Slana	1	1.0	1366.0	1366.0	13	2.8	633.5	226.3
South Wrangell Mtns.	0	0	0	0	15	2.0	406.0	203.0
Upper Tonsina Area	3	4.7	287.0	61.1	12	2.6	309.0	118.8
TOTAL	<u>159</u>		<u>454.3</u>	<u>148.6</u>	<u>304</u>		<u>355.5</u>	<u>126.1</u>

Source: Alaska Department of Fish and Game 1983

the mean harvest by Native households was 454.3 pounds dressed weight, and the per capita harvest was 148.6 pounds. This harvest was larger than the non-native mean household harvest of 355.5 pounds and the per capita harvest of 126.1 pounds. As illustrated in Table 7, Native households in communities near the Copper River harvested more salmon than did sampled non-native households, and salmon comprised a larger percentage of the mean household harvest as well. Nevertheless, these harvests were generally lower than those of more remote areas of the state.

TABLE 7. HARVESTS OF SALMON AND OTHER RESOURCES BY NATIVE AND NON-NATIVE HOUSEHOLDS, COPPER RIVER BASIN

	<u>n</u> ¹	<u>Mean # salmon</u>	<u>Mean lbs, salmon</u>	<u>Mean lbs, all resources</u>
Native	89	47.5	199.5 (41% of harvest)	490.2
Non-native	274	19.7	82.7 (24% of harvest)	345.1
Missing	4			

¹Excludes Cantwell, Chickaloon, and North Wrangell Mountains.

SOURCE: Alaska Department of Fish and Game 1983

Patterns of resource use within the Copper River basin area, and factors which have shaped that use over time, can be best understood by discussing three resources that contribute large portions of the harvests in most basin communities. These are caribou, moose, and sockeye salmon. These resources have been subject to increasing harvest pressures from outside the basin, and consequently have been of regulatory concern.

VII. Caribou

As noted above, caribou was a major resource of the Ahtna bands of the 19th century. As shown in Table 8, caribou continue to be an important component of most Copper basin communities' wildlife harvests. During the 12 month study period in 1982-83, caribou was used by over 25 percent of the households in 17 communities, and comprised at least 10 percent of the resources used in 13 communities. However, harvests in all communities were less than one caribou per household, which is probably a substantial reduction of the historic use. In part, this reduction is the consequence of hunting pressure from outside the region, reduced caribou populations, and consequent restrictive regulations.

In the early 1980s, two major caribou herds occupied portions of the Copper River basin. The Nelchina herd, with a population of 25,000 animals in 1983, was the largest. During the summer and early fall, this herd occupies much of the Nelchina River basin and the eastern slopes of the Talkeetna Mountains. In winter, it ranges from the Lake Louise Flats eastward into the western slopes of the Wrangell Mountains, primarily, but not entirely within Game Management Unit (GMU) 13. This herd is very accessible by road to Alaska's population centers around Fairbanks and Anchorage. The Mentasta herd was smaller, numbering between 2,000 and 3,000 animals in 1983. It ranges from the Mentasta Mountains to the western slopes of the Wrangell Mountains, primarily within GMU 11 (Alaska Department of Fish and Game 1984:1-2; Skoog 1968:292-301).

As illustrated in Figure 4 and Table 9, reported harvests of Nelchina caribou rose rapidly from an average of 419 animals for the period 1948-1952, to an average of 6,191 for the period 1959 to 1972. This harvest increase

TABLE 8. CARIBOU HARVEST AND USE, COPPER RIVER BASIN, 1982-1983

	H A R V E S T			U S E		
	<u>%</u> <u>har-</u> <u>vesting</u>	<u>Mean</u> <u>household</u> <u>harvest, lbs.</u>	<u>%</u> <u>of</u> <u>total</u>	<u>%</u> <u>using</u>	<u>Mean</u> <u>household</u> <u>use, lbs.</u>	<u>%</u> <u>of</u> <u>total</u>
Cantwell	30	97	26	33	98	22
Chistochina	18	47	15	27	71	15
Chitina	9	11	3	26	15	4
Copper Center	22	42	11	44	54	11
E. Glenn Highway	33	61	15	53	80	12
Gakona	30	57	9	61	77	11
Glennallen	14	28	12	51	36	15
Gulkana	14	22	7	33	65	16
Kenny Lake	8	22	9	17	21	8
Lake Louise	31	50	11	77	73	14
Lower Tonsina	38	64	14	50	62	13
Matanuska Glacier	10	17	6	33	26	7
McCarthy Road	0	0	0	8	4	1
Mentasta	16	21	5	58	60	10
Nabesna Road	63	54	12	75	161	12
Paxson-Sourdough	20	39	9	30	40	9
Sheep Mountain	11	14	6	22	17	3
Slana	25	49	7	56	87	13
South Wrangell Mts.	7	9	2	27	18	4
Upper Tonsina Area	13	36	12	53	44	11

Source: Stratton & Georgette 1984

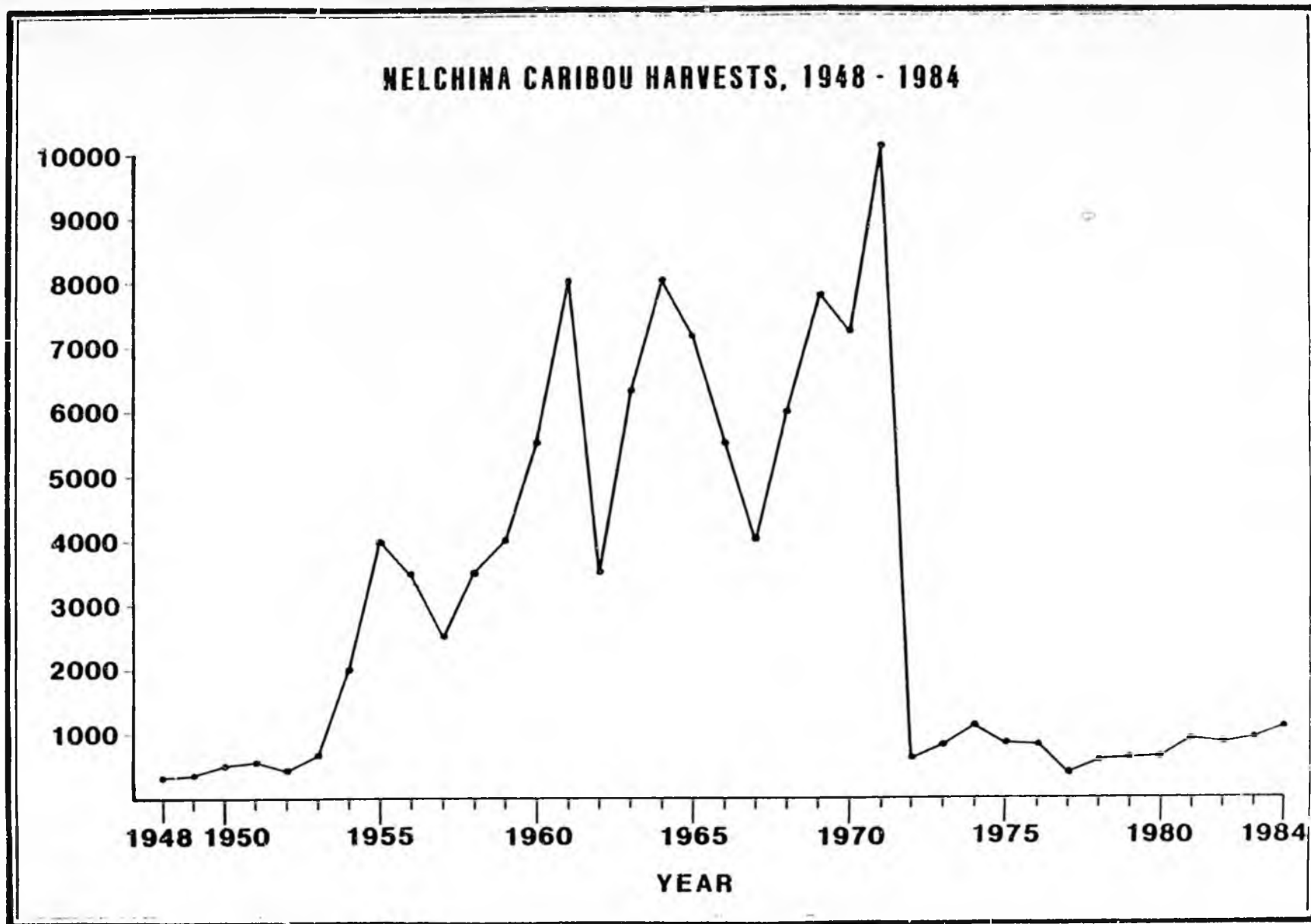


Fig. 4. Nelchina Caribou Herd Harvests, 1948-1984.

TABLE 9. NELCHINA CARIBOU HARVESTS, 1948-1984

<u>Year</u>	<u>Number of hunters or permit applicants</u>	<u>Total harvest</u>	<u>Harvest by holders of subsistence permits</u>	<u>Herd size</u>
1948-49		300		4,500-5,000
1949-50		350		
1950-51		500		5,000-5,500
1951-52		525		
1952-53		450		7,600
1953-54		700		13,200
1954-55		2,000		40,000
1955-56		4,000		36,000
1956-57		3,500		
1957-58		2,500		
1958-59		3,500		
1959-60	1,118	4 000		
1960-61	5,209	5,500		
1961-62	3,694	8,000		
1962-63	5,702	3,500		71,000
1963-64	6,699	6,300		
1964-65	5,052	8,000		
1965-66	3,088	7,100		
1966-67	2,799	5,500		
1967-68	2,977	4 000		61,000
1968-69	2 065	6,000		
1969-70	6,487 ¹	7,800		
1970-71	3,167 ²	7,247		
1971-72	6,967	10,131		
1972-73	1,586	555		7,842
1973-74	1,982	810		7,693
1974-75	2,550	1,193		
1975-76	1,991	806		
1976-77	1,807	822		8,081
1977-78 ⁴	750 ⁵ (1,383) ⁶	360		13,936
1978-79	1,000 (2,775)	539		18,891
1979-80	1,300 (5,600)	630		18,580
1980-81	1,300 (6,841)	621		18,713
1981-82	1,655 (6,874)	880	37	20,694
1982-83	1,750 (9,327)	861	209	21,152
1983-84	1,750 (9,720)	969	207	24,825
1984-85	1,900 (12,516)	1,063	286	24,095

- 1 188 of these hunters (3%) were Copper Basin residents
- 2 101 of these hunters (2.8%) were Copper Basin residents
- 3 First year harvest tickets required
- 4 First year of drawing hunt
- 5 Number of available permits
- 6 Number of permit applicants

Source: Alaska Department of Fish and Game 1981, 1985b

coincided with rapid growth of the herd and liberalized hunting regulations (Table 10). For example, in 1971 regulations allowed the taking of four caribou by each hunter and the season stretched from August 10 to March 31. Significantly, this increase in harvest also coincided with the population growth of Anchorage, Fairbanks, and the Matanuska-Susitna Valley. These non-basin residents were responsible for the majority of the harvest and hunting effort during the peak harvest years. For example, in 1969, only three percent (188) of the 6,487 hunters were Copper basin residents.

After a record harvest of 10,131 in 1971, the herd size plummeted to 7,842 in 1972. The causes of this decline were complex, but can be attributed to range deterioration due to caribou overpopulation, high winter calf mortality in 1971-72, and large harvests, especially those occurring when the herd was near roads in October through December (Johnson 1971). Restrictive regulations were adopted, including an August 10 to September 20 season and a one caribou limit, which reduced the harvest in 1972 to 555 animals by 1,586 hunters. In 1976, however, 1,807 hunters took 822 caribou, exceeding the harvest goal in just five days. The season was closed by emergency order. Therefore, in 1977 the Board of Game placed Nelchina caribou hunting on a drawing permit basis, with permits awarded by chance. Any person was allowed to apply; a \$5.00 fee was required. Since the inception of the permit system, harvest has been tightly controlled. The herd has grown in size. Consequently, the number of available permits has increased, but the number of applicants has far exceeded the supply (Fig. 5). In 1984, a record 12,516 people applied for the 1,900 available permits. The vast majority of the applicants, and therefore the permit winners, live in urban Alaska. For example, in 1982, 57 percent of the permit holders were from Anchorage, 18 percent lived in the Palmer-Wasilla

TABLE 10. CARIBOU HUNTING REGULATIONS, GAME MANAGEMENT UNIT 13

<u>Year</u>	<u>Season</u>	<u>Bag limits</u>	<u>Conditions</u>
1946-48	Aug 20-Sept 30, Dec 1-15	2	Non Alaskans: 1 caribou limit
1948-54	Aug 10-Sept 30, Dec 1-15	1	1952-54 branch antlered males only
1954-55	Aug 10-Sept 30, Nov 20-30	1	
1955-56	same	2	
1956-57	Aug 10-Dec 31	2	
1957-63	same	3	
1963-64	Aug 10-Mar 31	3	
1964-65	same	4	
1965-70	same	3	
1970-71	Aug 10-Sept 30, Nov 1-Mar 31	3	
1971-72	Aug 10-Mar 31	4	
1972-74	Aug 10-Sept 20	1	
1975	Sept 5- Sept 20	1	
1976	Sept 5-Sept 10	1	
1977	Sept 1-20	1	750 permits
1978	same	1	1,000 permits
1979-80	Aug 20-Sept 20	1	1,300 permits
1981	Aug 20-Sept 20, Jan 1-Feb 28 (subsistence only)	1	1,450 general permits, up to 150 subsistence permits
1982-83	Aug 20-Sept 20, Jan 1-Mar 31 (subsistence only)	1	1,300 general 450 subsistence
1984-85	same	1	1,400 general 500 subsistence

Source: McIlroy 1972, Alaska Department of Fish and Game 1981

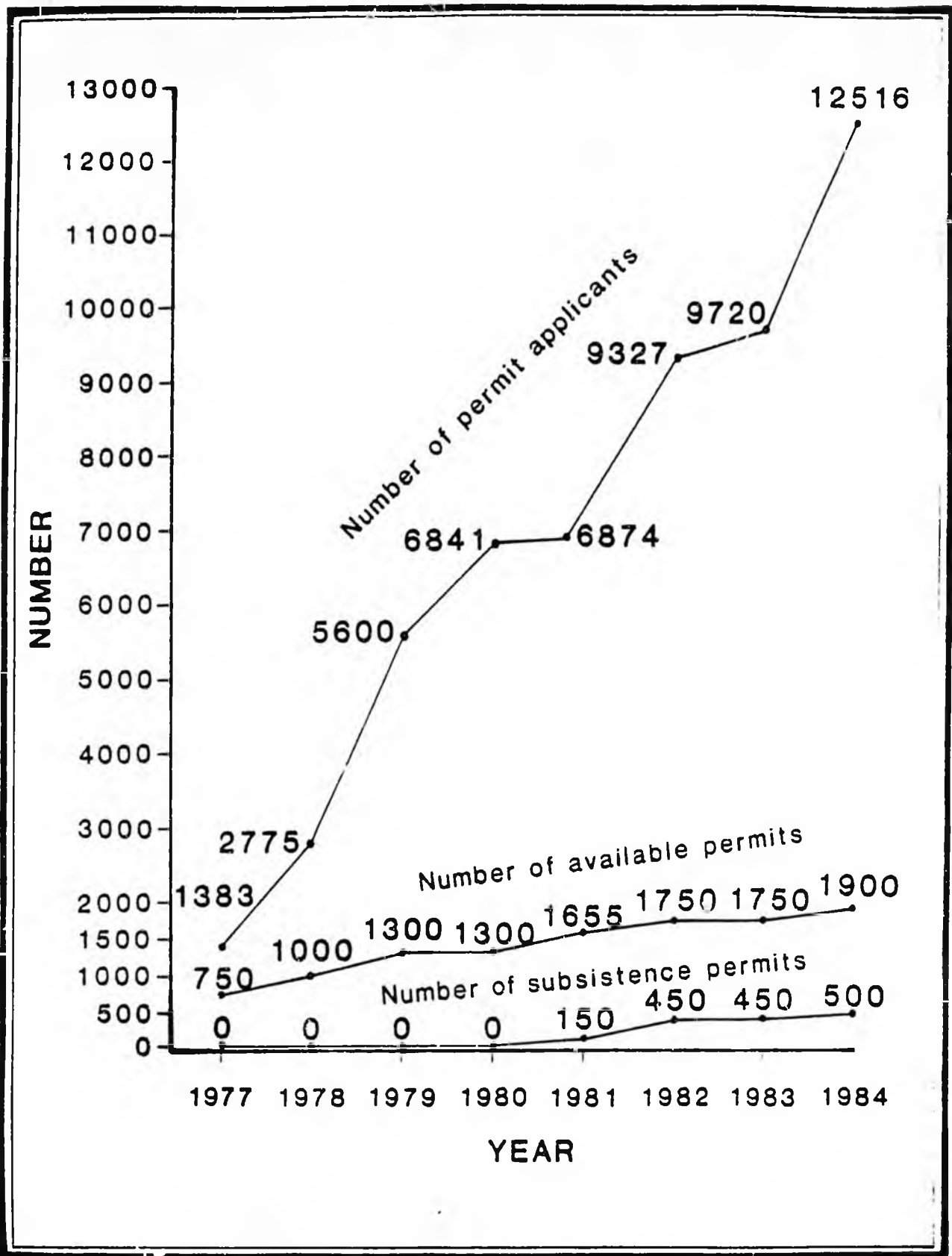


Fig. 5. Number of Permit Applicants and Number of Available Permits, Nelchina Caribou Herd, 1977-1984.

area, 11 percent were from Fairbanks, and six percent lived on military bases (Stratton 1983:8).

For the first four years of the permit system, there were no special provisions for Copper basin residents in the drawing. As they were far outnumbered by applicants from other areas, many long term Copper basin caribou users ceased applying for permits, for they had only a small chance of winning one. Some turned to other resources, while an unknown number hunted illegally without permits. The relative inaccessibility of the caribou and the lack of snow cover in the August-September season also created difficulties for local caribou hunters. Then, in 1980, a Gulkana hunter was charged with taking caribou out of season. The defendant argued that regulations did not adequately provide for his subsistence uses of caribou as required by the 1978 state subsistence statute. This defense was successful and the defendant was acquitted.

In response, the Board of Game adopted a permit system designed to provide for subsistence uses of Nelchina caribou. Research conducted by the Division of Subsistence in 1981 and 1982 demonstrated that Copper basin caribou hunters, or former hunters, displayed a different set of socioeconomic characteristics than caribou hunters from outside the basin who hunted Nelchina caribou in the early 1980s. In contrast to non-basin residents, these local hunters had long histories of use of the species, had lower monetary incomes, and used other Copper basin fish and game resources extensively. Their historical use of Nelchina caribou had been disrupted because of the random draw permit system, shortened seasons, and the caribou population decline (Stratton 1982a).

Consequently, the Board of Game in 1981 made 150 subsistence permits available to basin residents meeting certain criteria, including monetary

income of \$12,000 or less. Permits were still awarded by chance. Subsistence permit holders could hunt in the general August 20 to September 10 season, or during a special winter season (January through February in 1982; January through March in 1983-1985). The income limit was omitted in 1982 and the number of available permits raised to 450. In 1981 through 1983, the supply of permits exceeded demand, but in 1984, 718 Copper basin residents applied for 500 permits. In 1985, the Board adopted a registration permit system and harvest guideline for the subsistence caribou hunt, but a decision by the Alaska Supreme Court in February 1985 resulted in a single drawing system again, whereby all Alaskans were classified as subsistence users and were individually ranked according to three criteria: traditional use, availability of alternative resources, and local residency. Preliminary results show that of the 1,800 permits available under this system, 677 (38 percent) went to basin residents.

Since the institution of the subsistence hunt in 1981, non-basin hunters have continued to harvest the bulk of the caribou (Fig. 6). They also still comprise most of the hunters, and continue to compete with local residents for the limited caribou resources. Nevertheless, recent regulatory changes have improved the opportunity to hunt caribou for Copper basin residents, resulting in an increased share of the resource over the last few years.

Like the Nelchina Caribou herd, the Mentasta caribou hunt in Game Management Unit 11 has also drawn increasing numbers of permit applicants since 1977, but for a constant number of available permits (350) (Table 11). The number of permit applicants rose from 227 in 1977 to 731 in 1984. Again, most of this increase is from non-basin residents. Also similar to the Nelchina pattern, non-basin hunters take the majority of the Mentasta harvest. In 1984, for example, non-basin residents took 91

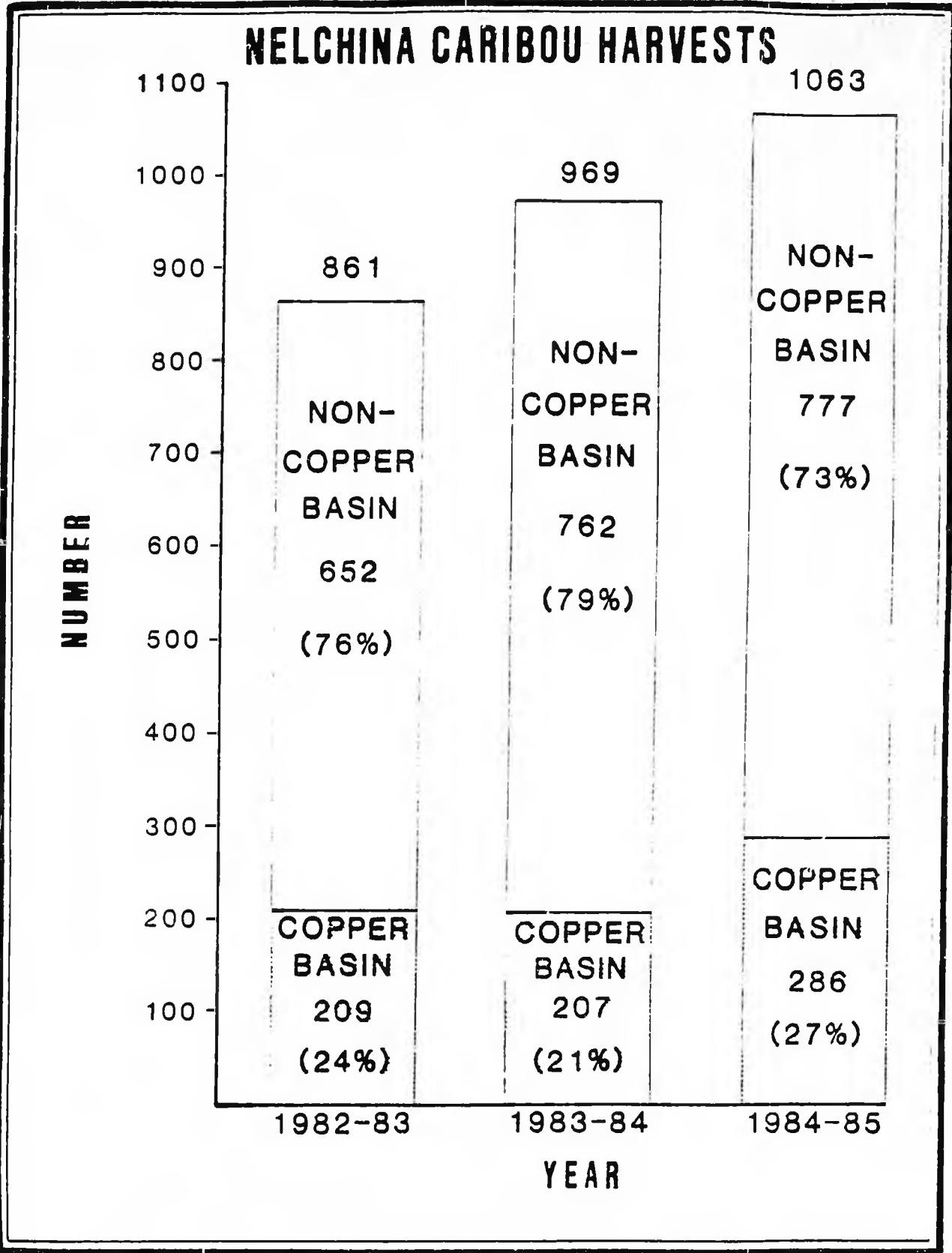


Fig. 6. Nelchina Caribou Herd Harvests, 1982-1985.

TABLE 11. NUMBER OF HUNTERS AND HARVEST LEVELS, MENTASTA CARIBOU HERD (GMU 11), 1977-1984

	<u>Applicants</u>	<u>Available permits</u>	<u>Harvest</u>	<u>Residency of Winners</u>	
				<u>Copper Basin</u>	<u>Non-Copper Basin</u>
1977	277	150	52	--	--
1978	363	350	149	--	--
1979	408	350	99	--	--
1980	421	350	144	--	--
1981	619	350	135	148 (43%)	202 (57%)
1982	732	350	141	128 (37%)	220 (63%)
1983	757	350	90	99 (28%)	251 (72%)
1984	731	350	118	59 (17%)	291 (83%)

Source: Alaska Department of Fish and Game 1985b

caribou, 77 percent of the total take. Unlike the Nelchina hunt, until 1985 regulations did not provide Copper basin hunters with an advantage over non-local residents in the drawing system.

VIII. Moose

As shown in Table 12, moose comprised a substantial portion of the harvest and use quantities of most Copper River basin communities in 1982-83, usually second only to salmon. Harvests of Copper basin moose display some similarities with those of Nelchina caribou. For example, most hunters of moose in GMUs 11 and 13 arrive in the Copper River basin along roads from Alaska's population centers of Anchorage, the Matanuska-Susitna Borough, or the Fairbanks area. As shown in Figure 7 and Table 13, in 1984 only 671 (18 percent) of the GMU 11 and 13 moose hunters were Copper basin residents. Hunter numbers peaked in 1971 at 5,427. Seven percent (390) of these were basin residents. Hunter numbers dropped sharply over the next few years. This was probably the result of shortened moose hunting seasons (Table 14) and the reduction in caribou seasons and limits after 1971, which discouraged non-local residents from using the area to hunt. However, since 1977, the reported number of hunters has increased from 2,445 to 3,650, a gain of 49 percent. During that same period, the number of Copper basin moose hunters jumped from 278 to , for a 141 percent gain. This increase was in part the result of a regulatory change that established a subsistence permit hunt in 1983 (see below).

As with caribou, the moose harvest within the Copper River basin is mostly taken by non-local hunters (Fig. 8). The harvest peaked in 1971, with non-Copper basin hunters taking 1,807 (93 percent) of 1,939 moose in

TABLE 12. MOOSE HARVEST AND USE COPPER RIVER BASIN 1982-1983

	H A R V E S T			U S E		
	<u>% har-vesting</u>	<u>Mean house-hold har-vest, lbs.</u>	<u>% of total</u>	<u>% using</u>	<u>Mean household use, lbs</u>	<u>% of total</u>
Cantwell	28	150	40	61	210	48
Chistochina	14	68	22	64	121	25
Chitina	4	65	19	65	104	29
Copper Center	0	0	0	48	73	15
E. Glenn Highway	13	50	12	67	168	25
Gakona	13	65	11	44	93	14
Glennallen	12	59	26	39	54	22
Gulkana	14	69	22	28	115	29
Kenny Lake	8	83	33	25	65	24
Lake Louise	15	77	17	54	113	21
Lower Tonsina	0	0	0	13	2	*
Matanuska Glacier	20	133	46	63	188	47
McCarthy Road	15	77	19	46	51	12
Mentasta	32	158	40	90	187	32
Nabesna Road	38	313	25	75	383	28
Paxson-Sourdough	40	200	45	70	232	50
Sheep Mountain	11	56	25	67	195	37
Slana	44	219	32	56	231	35
South Wrangell Mts.	40	178	44	80	190	41
Upper Tonsina Area	7	53	17	40	120	30

Source: Stratton & Georgette 1984

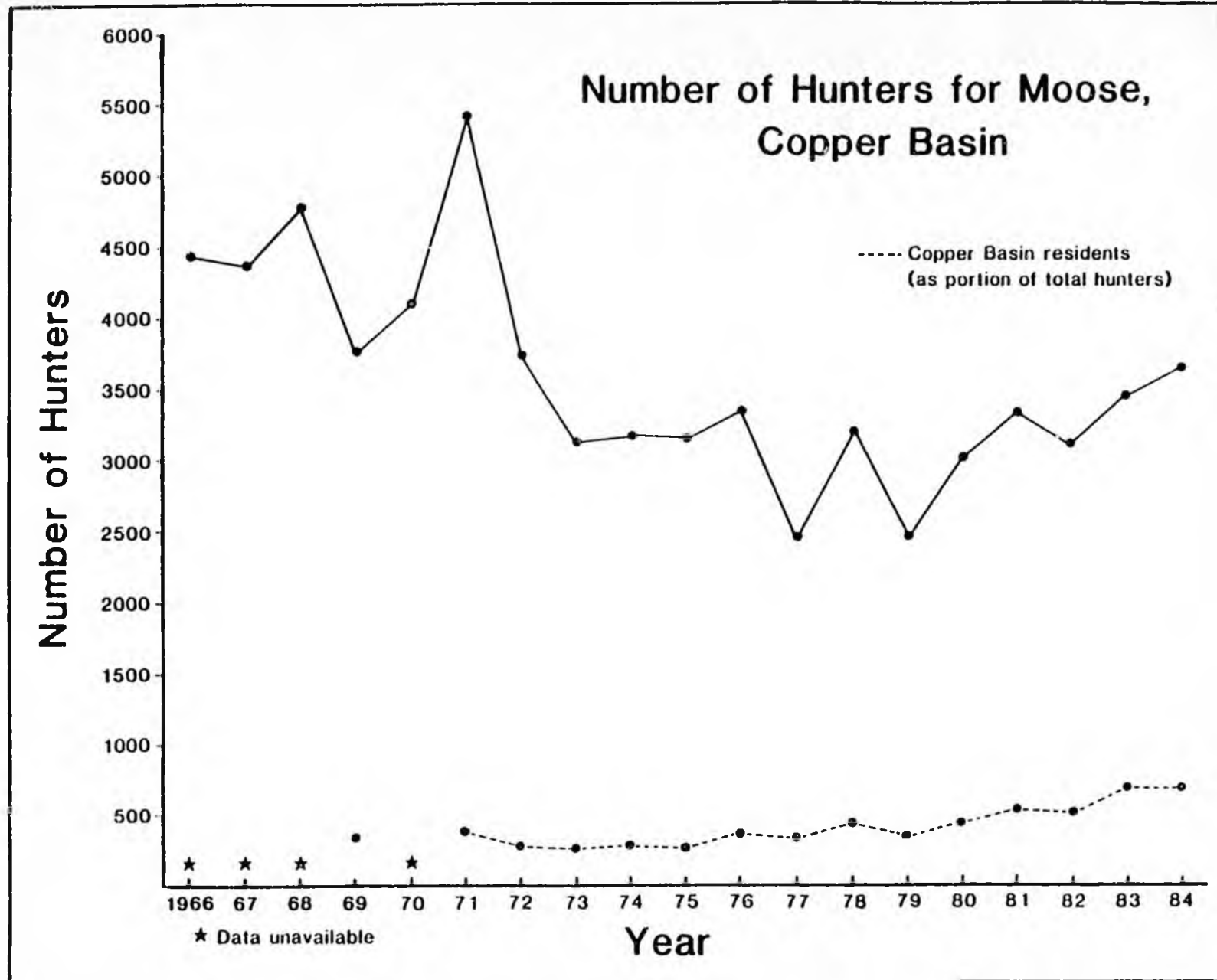


Fig. 7. Number of Moose Hunters, Copper River Basin, Game Management Units 11 and 13, 1966-1984.

TABLE 13. NUMBER OF MOOSE HUNTERS AND MOOSE HARVESTS,
GAME MANAGEMENT UNITS 11 and 13, 1966-1984

<u>Year</u>	<u>Total Hunters</u>	<u>Hunters from Copper Basin</u>	<u>Total Harvest</u>	<u>Harvest by Copper Basin Residents</u>
1966	4,426	n.a.	n.a.	n.a.
1967	4,374	n.a.	1,746	n.a.
1968	4,776	n.a.	1,804	n.a.
1969	3,759	315	1,386	103
1970	4,097	n.a.	1,571	n.a.
1971	5,427	390	1,939	132
1972	3,724	287	858	66
1973	3,107	254	805	85
1974	3,167	274	917	70
1975	3,142	249	755	55
1976	3,318	344	780	75
1977	2,445	278	733 ¹	72 ¹
1978	3,191	423	903	109
1979	2,449 ¹	335	869	109
1980	3,010	434	599	95
1981	3,315	520	869	133
1982	3,097	503	665	84
1983	3,438	671	952	166 ²
1984	3,650	671	880	149 ²

¹ Artificially low: no reminder letters sent.

² Includes special subsistence hunt: 32 in 1983 and 20 in 1984

Source: Alaska Department of Fish and Game n.d.

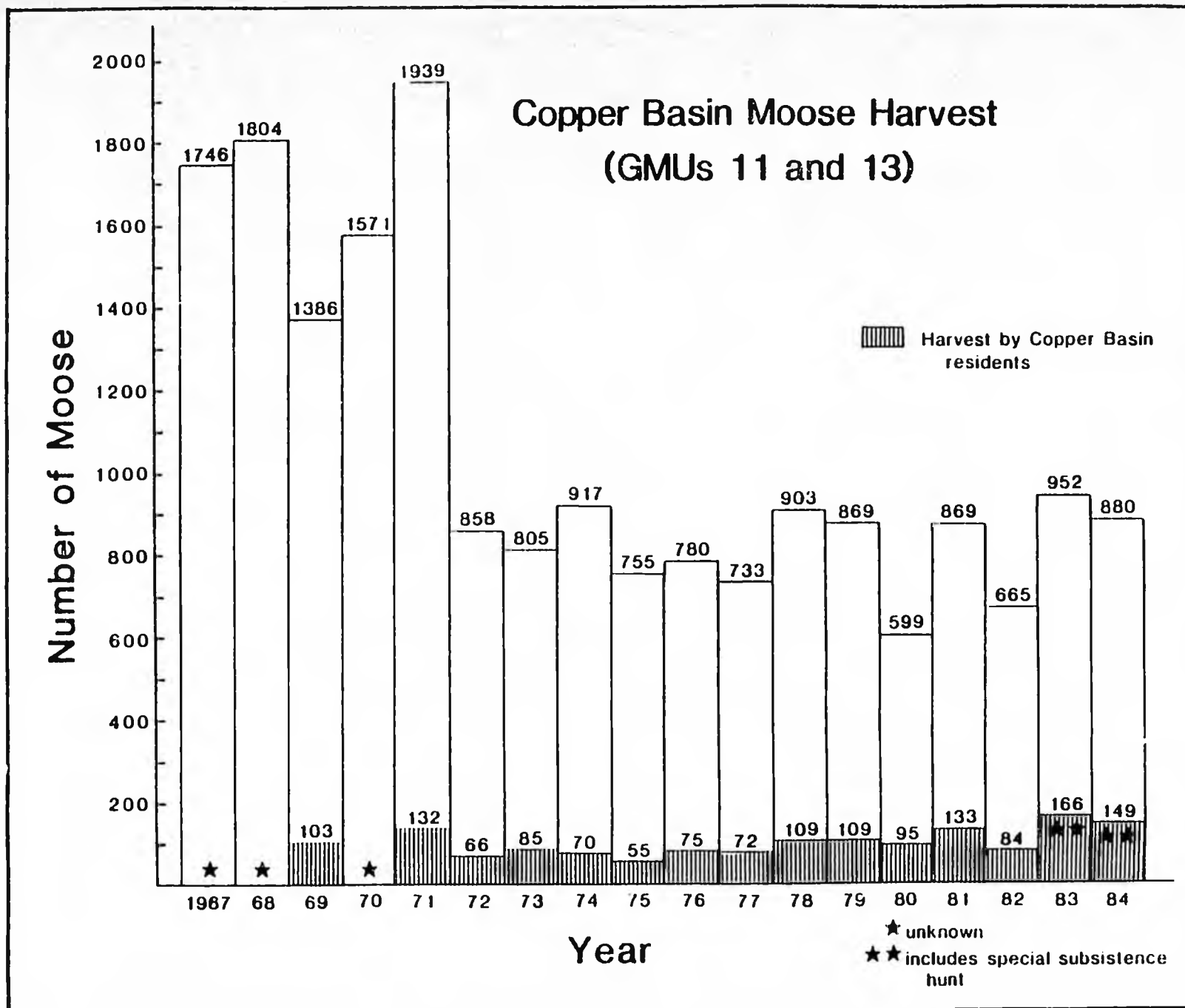


Fig. 8. Copper Basin Moose Harvests, Game Management Units 11 and 13, 1966-1984.

TABLE 14. MOOSE HUNTING REGULATIONS, GAME MANAGEMENT UNIT 13

<u>Year</u>	<u>Season</u>	<u>Bag Limit</u>	<u>Comment</u>
1959	Aug 20-Sept 30, Nov 20-30	1 bull	
1960-66	Aug 20-Sept 30, Nov 1-30	1 bull	Antlerless moose seasons in 1962 (Nov 1-7), 1963-4 (Sept 24-30), 1966 (Sept 29-30)
1967-71	Aug 20-Sept 30, Nov 1-20	1 bull	Antlerless moose seasons in 1967 Sept 29-30, 1968 (Sept 28-30), 1970 (Aug 20-Sept 30, Dec 5-13: 700 permits), 1971 (Aug 20-Sept 30, Nov 1-30: 700 permits)
1972	Aug 20-Sept 10, Nov 1-7	1 bull	
1973	Aug 20-Sept 10	1 bull	No open season in GMU 13C
1974-79	Aug 20-Sept 10	1 bull	
1980-82	Sept 1-20	1 bull having antler spread of at least 36" or at least 3 brow tines on at least one antler	
1983-84	Sept 1-20	1 bull with antler spread of at least 36"; however qualified subsistence users may take one bull without antlerless restriction by subsistence drawing permit only. 100 permits will be issued.	
1985	Sept 1-20	same, except 200 subsistence permits available	

Source: Alaska Department of Fish and Game n.d.

GMUs 11 and 13. Since 1972, total moose harvests have averaged 814 animals, with an average of 98 (12 percent) taken by basin residents and 716 (88 percent) by non-local residents.

As a consequence of increasing hunting pressures by Alaska's growing urban population, moose hunting regulations in GMU 11 and 13 have become increasingly restrictive. The taking of antlerless moose has been prohibited since 1972. In 1973, the November season was dropped, leaving an open period of 20 days in August and September (Table 14). Beginning in 1980, hunters could only take bull moose with antler spreads of at least 36 inches in a season running from September 1 to September 20.

Not until 1983 did regulations provide Copper basin residents with a preference in moose hunting opportunities. In that year, 100 subsistence permits for taking any bull moose in portions of Unit 13 were awarded by random draw. Only residents of GMU 13 were eligible. There were 230 applicants for these permits in 1983, and 372 in 1984. Unsuccessful applicants could, of course, still hunt for 36 inch bulls in the general hunt. As a consequence of this subsistence hunt, the number of basin moose hunters increased, since the opportunity for a successful hunt had improved. The portion of the moose harvest taken by basin residents in 1983 and 1984 rose to 17 percent of the total harvests. This was five percentage points higher than the previous 13 year average. However, the heavy hunting pressure from urban areas remains, keeping moose populations low and perhaps driving moose to less accessible areas. Also, most local residents must still hunt under the more restrictive general regulations.

IX. Sockeye Salmon

As shown in Table 15, sockeye salmon comprise a large portion of the harvests of most Copper River basin communities. With the exception of communities relatively distant from the river (Cantwell, Lake Louise, Matanuska Glacier, Mentasta, Paxson, Sheep Mountain, and South Wrangell Mountains), mean household harvests contained at least 25 percent sockeye salmon. Likewise, as illustrated in Figure 9, mean household harvests of sockeyes declined with distance from the river.

Copper basin subsistence fishermen and commercial fishermen at the river's mouth have had a history of conflict over salmon. When a commercial salmon fishery began the Gulf of Alaska near the mouth of the Copper River in 1889, Copper River residents expressed concern about the effects of this fishery on upriver subsistence catches (Strong 1976:187).

Before 1915, the average commercial catch was approximately 250,000 sockeye and had little effect on the runs. But in 1915, intensive commercial salmon fishing began in the Copper River itself. A cannery was built 40 miles from the river's mouth near Abercrombie Canyon. Employees of the cannery took salmon with dipnets and gillnets (Roberson 1976). A rapid increase in the number of canneries and gear occurred. The commercial harvest jumped to 653,402 in 1915, and rose to 1,253,129 in 1919 (Gilbert 1921). Consequently, escapements upriver were extremely low and Ahtna fishermen had extreme difficulties in catching adequate supplies of salmon with their fishwheels. According to reports from the Copper basin, the local population faced starvation because of the depleted runs (Miller 1916, Bourke 1917). In addition, the health of the runs themselves was in grave danger (Gilbert 1921).

TABLE 15. SOCKEYE SALMON HARVEST AND USE, COPPER RIVER BASIN, 1982-1983

	H A R V E S T			U S E		
	<u>% Har-vesting</u>	<u>Mean house-hold har-vest, lbs.</u>	<u>% of total</u>	<u>% Using</u>	<u>Mean household use, lbs</u>	<u>% of total</u>
Cantwell	7	3	1	7	3	*
Chistochina	23	100	32	77	188	39
Chitina	48	146	43	87	125	34
Copper Center	63	177	46	78	192	39
E. Glenn Highway	47	99	25	87	166	25
Gakona	74	225	37	96	239	35
Glennallen	45	69	30	71	74	30
Gulkana	61	103	32	69	102	25
Kenny Lake	83	74	30	92	82	30
Lake Louise	31	9	2	54	12	2
Lower Tonsina	88	245	52	100	256	53
Matanuska Glacier	33	26	9	63	47	12
McCarthy Road	31	116	29	85	166	38
Mentasta	16	60	15	84	140	24
Nabesna Road	50	341	28	100	365	27
Paxson-Sourdough	20	14	3	60	31	7
Sheep Mountain	33	17	8	44	24	5
Slana	75	265	39	88	202	30
South Wrangell Mts.	40	67	17	93	78	17
Upper Tonsina Area	53	126	41	67	124	31

* less than 1%

Source: Stratton & Georgette 1984

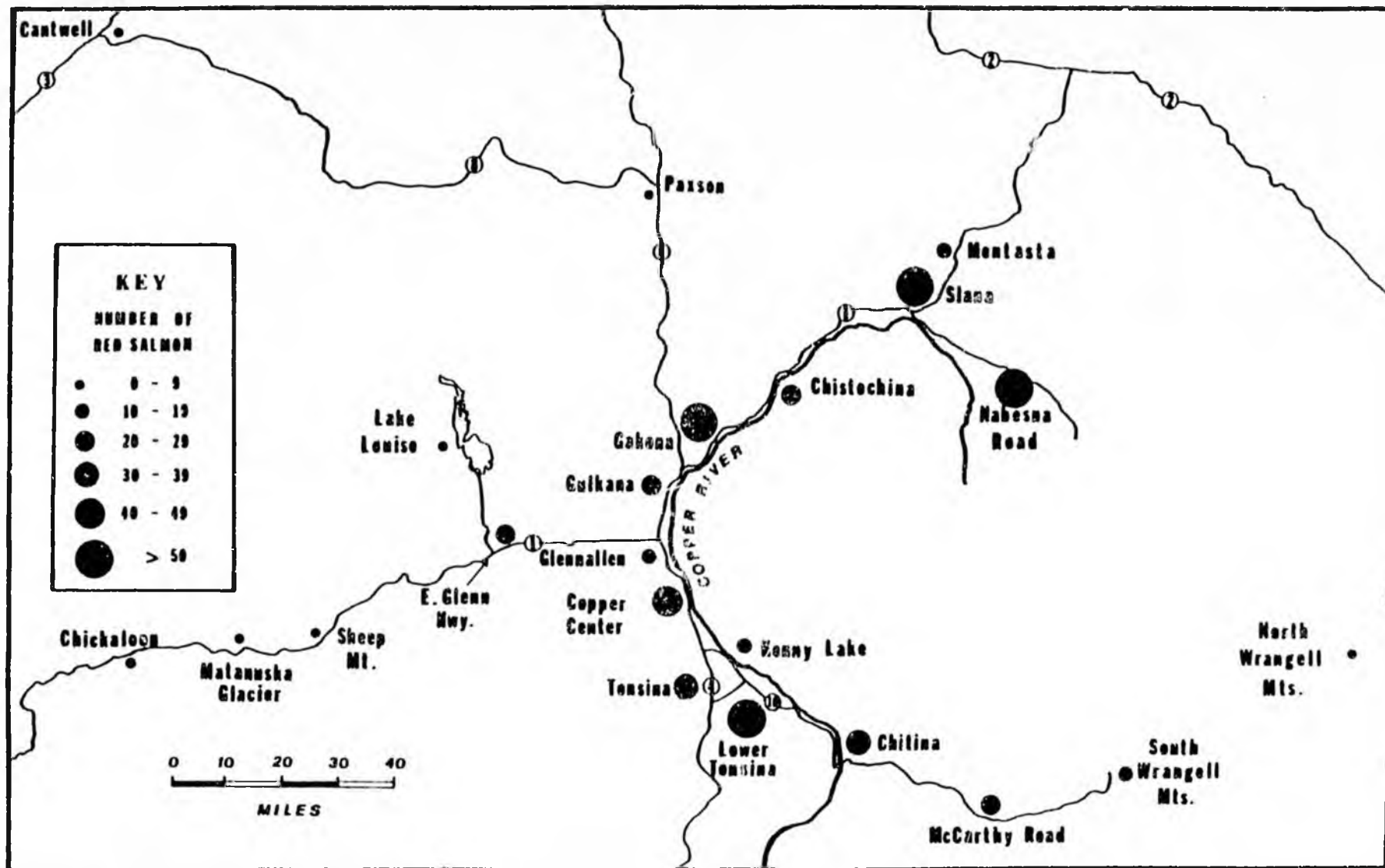


Fig. 9. Mean Number of Sockeye Salmon Harvested per Household, Copper Basin Communities, June 1982-May 1983.

Despite the reports of extremely low subsistence catches, the U.S. Department of Commerce was reluctant to restrict the commercial fishery within the Copper River because, "the fisheries companies have rights that are to be respected and there is the broad question of policy as to whether a fishery enterprise which produces food for the world at large must be made to suffer in order that 300 Indians can secure a supply of fish easily" (Redfield 1917a). Nevertheless, the imminent destruction of the runs was well documented (Gilbert 1921) and regulations partially closing the Copper River to commercial fishing were adopted for the 1918 season (Redfield 1917b). Stocks were still depressed in 1921, however (Gilbert 1921), and in that year the entire river was closed to commercial fishing. The fishery in the Gulf of Alaska remained open (Roberson 1976:8).

A harvest survey conducted by the Bureau of Fisheries of the U.S. Department of Commerce in 1921 (Table 16) recorded a subsistence harvest of 23,793 sockeye salmon by about 170 fishwheel operators, for a per capita catch for the basin of 196 pounds. These catches were reported to be lower than those prior to the growth of the commercial fishery in 1915, but had improved over the year before (Baker 1921). This was probably the consequence of the low commercial catch at the mouth that year, the result of the unfavorable weather during the commercial season (Gilbert 1921).

According to records of the U.S. Bureau of Commercial Fisheries (the management agency for Alaskan fisheries before statehood), in the late 1940s and 1950s approximately 5,000 sockeye salmon were taken annually by residents of the Copper River basin. The bureau estimated that about "100 individuals and families, mostly of Indian origin," operated 25 fishwheels and 25 dipnets to take salmon for subsistence use (Pirtle 1971).

TABLE 16. SALMON HARVESTS, COPPER BASIN 1921

<u>Place</u>	<u># of fishwheel operators</u>	<u>Sockeyes</u>	<u>Kings</u>	<u>Silvers</u>
Chitina	76	3,900	234	0
Mouth of Tonsina River	1	360	80	40
Copper Center	31	3,932	1,408	0
Mouth of Tazlina River	1	75	17	0
Mouth of Gulkana River	3	461	182	0
Paxson Lake	2	565	225	0
Mentasta, Batzulnetas, Suslata, Tanada	50-60	14,500 ¹	-	-
TOTAL	<u>164-174</u>	<u>23,793</u>	<u>2,146</u>	<u>40</u>
Pounds, dressed weight		99,930.6 lbs	38,842.6 lbs	244 lbs
Per capita harvest ²		195.6 lbs	76.0 lbs	.3 lbs

¹ 14,000 - 15,000, mostly reds

² Based on population of 511 reported by 1920 U.S. Census.

Source: Baker 1921

Since the state assumed management of the Copper River fishery in 1960, regulations have allowed the taking of salmon for subsistence purposes with dipnets in a five mile section of the Copper River below Chitina (the Chitina Subdistrict), and with fishwheels from Chitina upriver to Slana, a distance of about 120 river miles. Through 1983, any Alaska resident could obtain a subsistence permit for either gear type.

Since statehood, subsistence fishing regulations for the Copper River have generally become more restrictive. For the first time, all tributary streams and the main river above Slana were closed to subsistence fishing. These remained open to sport fishing with hook and line gear. Until 1977, harvests in the dipnet fishery were limited to 20 salmon for a one person household and 40 salmon for households with two or more members. Since then, the limits have been 15 salmon and 30 salmon. Until 1981, limits for the fishwheel fishery were the same as the dipnet fishery. However, households with incomes under \$6,000 could qualify for an allocation of up to 500 salmon. Beginning in 1981, fishwheel limits were 30 for one person, 60 for a household of two, and 10 for each additional household member. The income limit for a higher allocation was raised to \$12,000.

As shown in Figure 10 and Table 17, participation in the Copper River subsistence fisheries, as measured by the number of permits issued, rose steadily from 1960 to 1969, and very rapidly in the early 1970s. Catches increased as well (Fig. 11). Almost all of the increase in the 1960s was caused by residents of the growing urban centers of Anchorage and Fairbanks driving to the basin and fishing with dipnets at Chitina. Harvests by basin residents did not increase during this period (Table 18, Fig. 11).

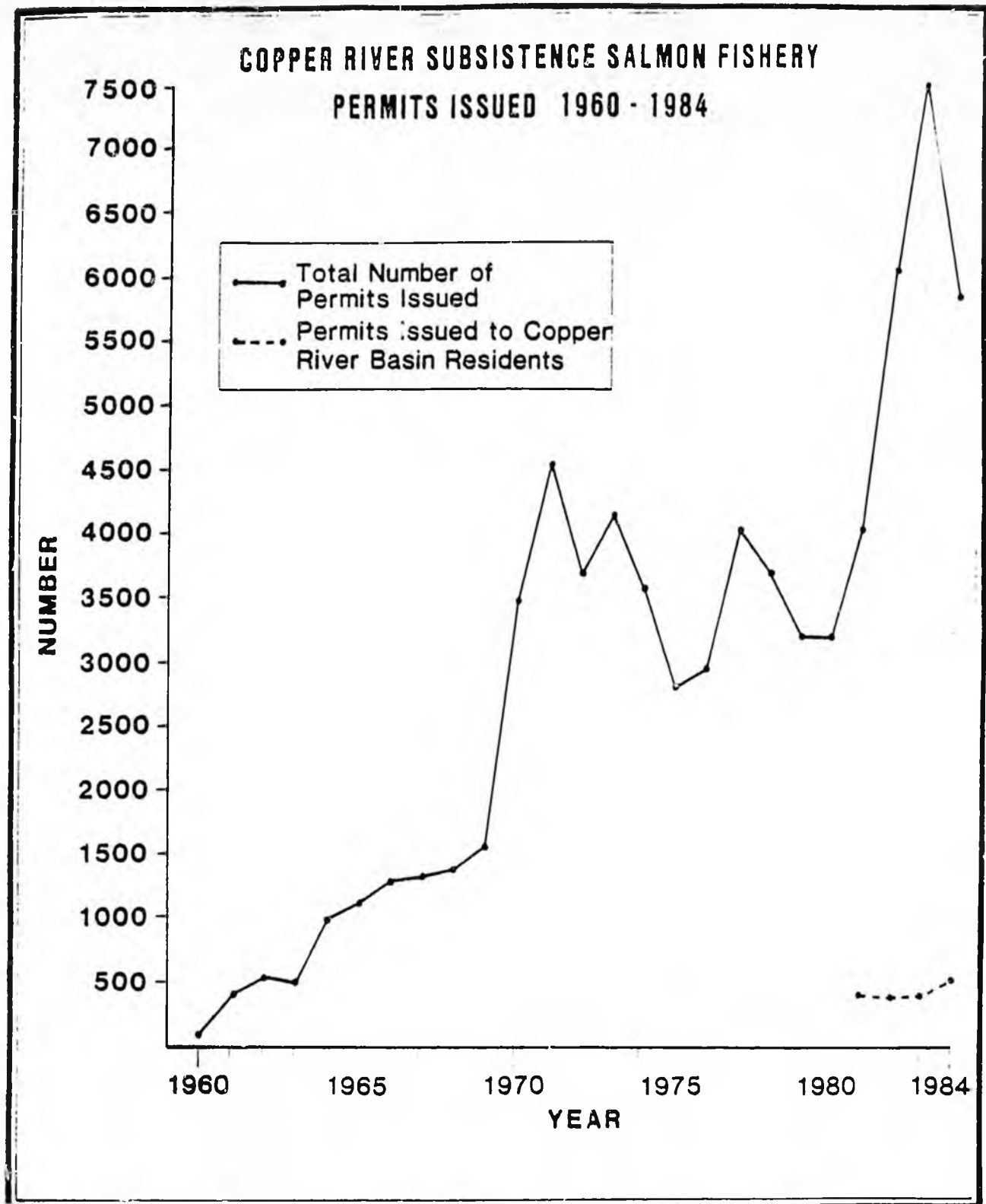


Fig. 10. Copper River Subsistence Salmon Fishery, Permits Issued, 1960-1984.

TABLE 17. PARTICIPATION IN COPPER RIVER SUBSISTENCE FISHERY, AND HARVESTS BY GEAR TYPE 1948-1984

YEAR	REPORTED CATCH		PERMITS ISSUED			CATCH BY SPECIES			ESTIMATED TOTAL CATCH
	DIP NET	FISHWHEEL	DIP NET	FISHWHEEL	TOTAL	SOCKEYE	CHINOOK	COHO	
1948	5,100								
1949	5,500								
1952	2,136		Species Combined, and Gear			1,601	535		
1954	3,145		Combined			3,057	88		
1955	2,086					1,767	319		
1957	7,753					7,241	281	108	
1958	13,263					12,909	354		
1960	1,179	5,660	32	26	58	6,739	136	25	8,803
1961	1,777	12,419	307	59	366	15,472	388	550	18,206
1962	3,203	11,101	435	117	552	14,543	848	381	18,486
1963	2,124	12,395	514	110	624	14,055	464	558	18,287
1964	4,133	7,749	794	158	952	11,915	725	103	16,340
1965	7,215	5,813	982	115	1,097	12,760	644	52	16,818
1966	7,452	9,188	1,132	110	1,242	16,718	555		21,896
1967	6,146	8,360	1,166	125	1,291	14,457	419		19,007
1968	8,040	6,071	1,235	112	1,347	14,819	644	233	20,283
1969	18,054	6,220	1,415	113	1,528	27,604	719	224	29,266
1970	22,700	9,886	3,220	267	3,487	36,500	427	554	42,757
1971	28,115	9,370	4,168	374 ^a	4,542	37,517	1,363	363	48,449
1972	18,996	7,854	3,485	205	3,690	26,850	1,501	248 ^b	32,468
1973	16,407	10,943	3,840	305	4,145	27,350	1,856	51 ^c	29,428
1974	15,143	7,657	3,305	288	3,593	22,800	1,141	163 ^d	26,001
1975	7,694	5,626	2,452	350	2,802	13,320	1,705		15,357
1976	12,130	8,321	2,512	451	2,963	20,451	2,017	17	23,623
1977	22,612	12,751	3,526	540	4,066	35,363	2,171	454	41,815
1978	12,569	6,638	3,313	392	3,705	19,207	2,050	633	22,029
1979	11,887	10,251	2,730	470	3,200	22,138	2,372	705	30,963
1980	14,661	9,716	2,804	399	3,203	21,437	2,256	636	35,081
1981	28,872	26,924	3,555	523	4,078	53,008	1,913	849	68,746
1982	62,614	38,120	5,475	615	6,090	96,799	2,532	1,246	110,006
1983	72,257	35,971	6,911	630	7,541	100,995	5,421	1,690	118,728
1984 ^e	47,306	20,597	5,415	475	5,890	65,078	2,007	789	73,033 ^f

^a Last use of Dip Net/Fishwheel Combination permits.

^b First issue of permits at Chitina

^c Last year permits were denied fishermen who failed to return their previous year permits.

^d Issue of permits at Chitina and Glennallen only.

^e Combined subsistence and personal use.

^f Preliminary totals, based on returns as of 1/28/85.

Source: Randall, et al, 1985:39

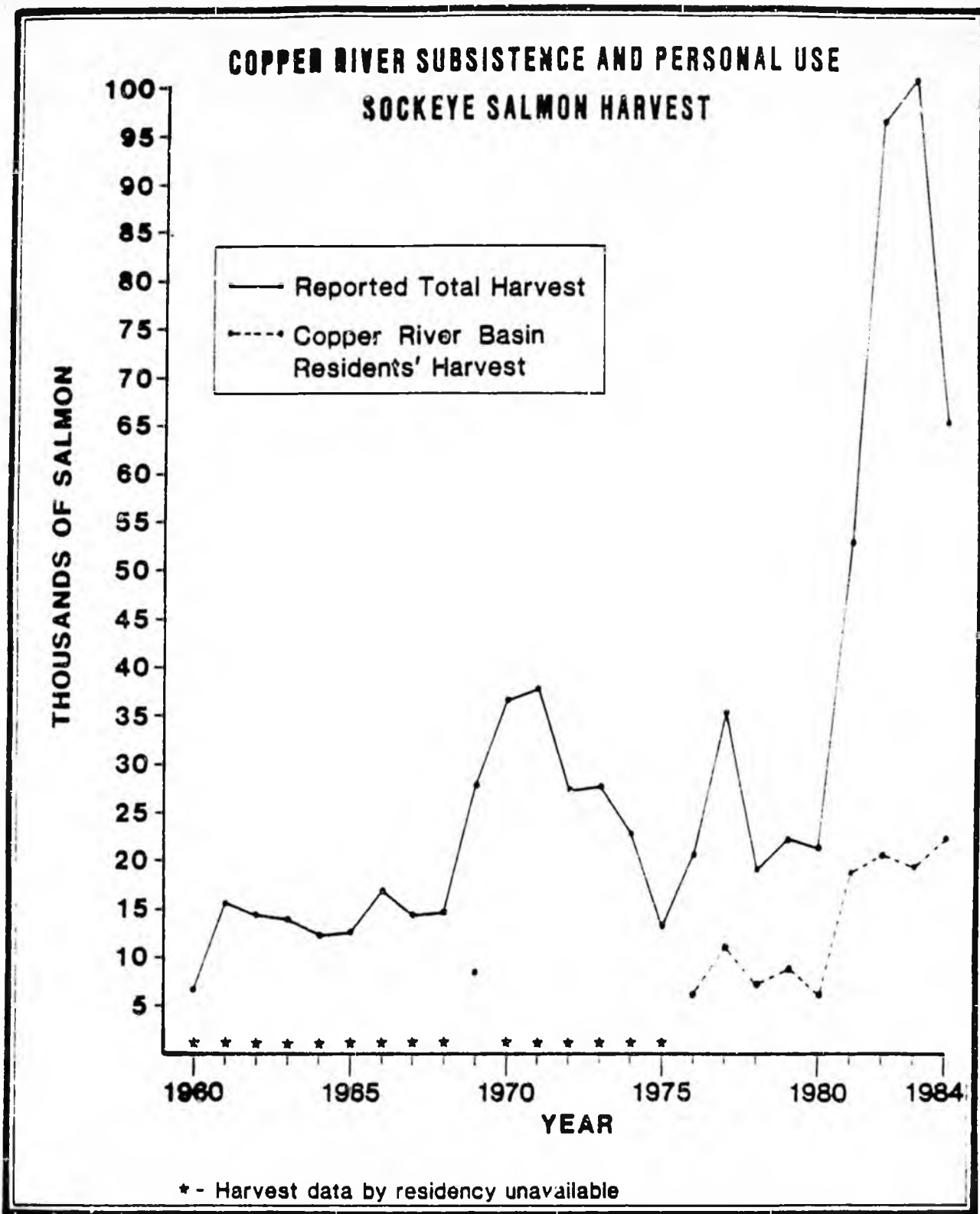


Fig. 11. Copper River Subsistence and Personal Use Sockeye Salmon Harvests, 1960-1984.

TABLE 18. COPPER RIVER SOCKEYE SALMON HARVESTS, 1969-1984

<u>Year</u>	<u>Commercial Catch</u>	<u>S U B S I S T E N C E C A T C H¹</u>		<u>Total Reported Harvest</u>
		<u>Copper Basin Res.</u>	<u>Non-Copper Basin Res.</u>	
1969	696,836	8,813	18,791	724,440
1970	1,115,695		36,500	1,152,195
1971	616,801		37,517	654,318
1972	727,144		26,850	753,994
1973	332,816		27,350	360,166
1974	607,766		22,820	630,566
1975	335,687		13,320	349,007
1976	865,195	6,035	14,416	885,646
1977	619,140	10,902	24,461	654,503
1978	249,872	6,980	12,227	269,079
1979	80,528	8,778	13,360	102,666
1980	18,908	6,217	15,220	40,345
1981	477,662	18,662	35,404	530,670
1982	1,177,632	18,933	70,091	1,266,656
1983	633,010	20,359	87,869	741,238
1984	899,776	20,999	44,079	964,854

¹ Residence data unavailable for some years.

Source: Roberson, 1969, 1976, 1977, 1979, 1980; Roberson & Williams 1979;
Fall and Stratton 1984:28; Randall et. al 1985:39

In 1970, the Department of Fish and Game expressed concern over the growth of the Copper River subsistence fishery. Management personnel recommended that its growth be halted to protect the salmon runs:

The recent rapid expansion of the subsistence fishery has more than doubled the effort and catch to become a serious threat to the red salmon spawning escapement. In view of this fact, any curtailment in effort or catch should be borne by the subsistence fishery (Pirtle 1971).

The management report recommended that a quota of 36,000 sockeyes be established for the subsistence fishery, and that each permittee be limited to a catch of 10 salmon. In 1970, the commercial fishery took 1,115,695 sockeyes, 97 percent of the total harvest. Probably, about one third of the subsistence harvest of 36,500 was taken by Copper basin residents. This quota was not adopted.

In the early 1970s, the dipnet fishery leveled off. However, the number of fishwheels and fishwheel permittees began to increase. This was the result of the development of portable fishwheels, which urban residents brought to the Copper River on trailers. None of the 33 fishwheels used in the Copper River in 1972 were portable. But in 1977, 25 portable wheels (out of a total of 72), were operated in the river (Roberson 1977:5). Non-basin residents placed their wheels in concentrated areas that could be reached by public roads, especially at Chitina (Stratton 1982b). Thus, the fishwheel fishery, always dominated by basin residents, began to change.

Participation in the Copper River subsistence fishery was relatively stable during the 1970s, probably because of reduced runs of sockeye salmon. In some years, such as 1978, 1979, and 1980, because of low escapements, the subsistence fisheries were restricted to shortened and closed fishing periods (Roberson 1978, 1979, 1980). Under the Copper River Subsistence

Salmon Management Plan of 1980, Copper basin residents were given a preference over non-basin residents in times of low projected escapements (Fall and Stratton 1984:3).

In the 1980s, the vast majority of the Copper River sockeye salmon harvest was still taken by the commercial drift net fleet near the river mouth (Fig. 12). For example, from 1981 to 1984, out of an average harvest of 876,119 sockeyes, 91 percent were taken by the commercial fishery, and nine percent by upriver subsistence fisheries.

However, rapid growth in the subsistence fisheries resumed between 1980 and 1983, from 3,203 permits in 1980 to 7,540 permits in 1983. Most of this growth can be attributed to participation by non-basin residents who drove to the basin to fish with dipnets. With strengthened runs, the reported sockeye catches for the fishery jumped from 21,437 in 1980 to 100,995 in 1983 (Fig. 11). Basin residents' catches jumped from 6,217 in 1980 to 18,662 in 1981. This probably reflects the population increase in the basin during the 1970s and the strengthened runs. After this jump, the number of permits issued to basin residents remained stable: 409 in 1981, 400 in 1982, and 397 in 1983. Subsistence catches by basin residents also remained relatively constant, with 18,662 in 1981, 18,933 in 1982, and 20,359 in 1983.

In 1984, the Board of Fisheries again changed the management plan to bring it into compliance with state subsistence statutes. This change was precipitated by the concern of the commercial fishermen about the still rapidly growing harvests by the Chitina dipnet fishery. As a result of these regulatory changes, subsistence permits for either fishwheels or dipnets were available only to residents of the Copper basin and certain Upper Tanana River basin communities. These permit holders could

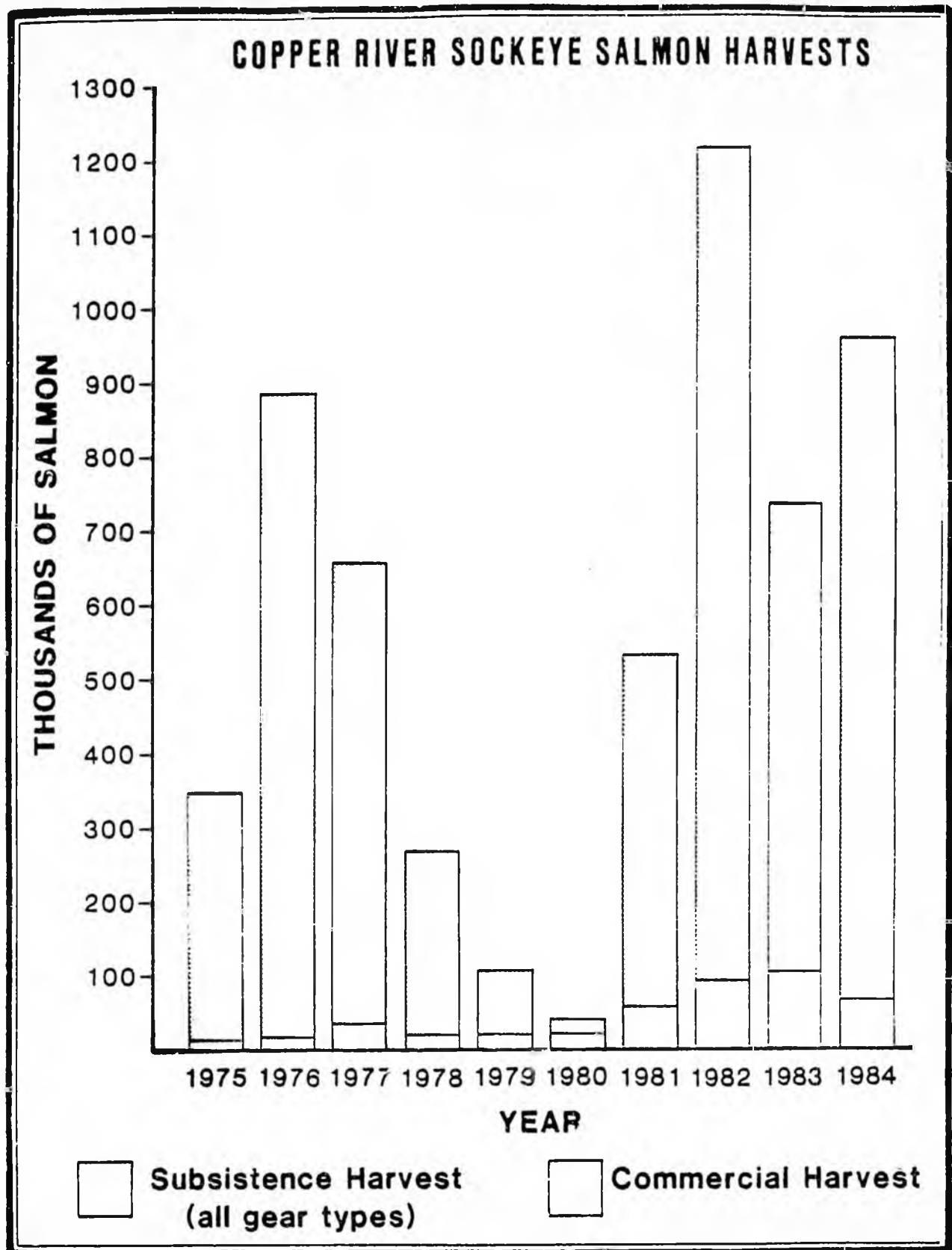


Fig. 12. Copper River Commercial and Subsistence Sockeye Salmon Harvests, 1975-1984.

fish from Chitina north to Slana. They could obtain permits for up to 500 salmon regardless of income. All other Alaskans were eligible for a "personal use" fishery using fishwheels (in a very limited area) or dipnets in the Chitina Subdistrict with the limits similar to those of the previous dipnet fishery. Partly as a consequence of this change, participation by non-basin residents dropped in 1984. However, a decision by the Alaska Supreme Court in February 1985 declared all Alaskans eligible to participate in subsistence fisheries. Thus in 1985 the Board returned to the 1983 regulatory system, except that fishwheel operators could obtain permits for 500 salmon upon request, regardless of income or residency.

Despite major changes in the Copper River subsistence salmon fishery since 1960, local Copper basin residents generally display a pattern of subsistence salmon fishing very different from non-local residents. For example, dip nets are the overwhelming choice of fishing gear of non-basin permit holders. In 1983, 96 percent of the 7,144 Copper River subsistence permits issued to non-basin residents were dipnet permits. Only 102 (four percent) of the non-basin participants held fishwheel permits. Overall, about 99 percent of all dipnetters and 48 percent of all fishwheel users resided outside the Copper River basin in 1983 (Fall and Stratton 1984:40). Fairbanks (35.7 percent), Anchorage (35.2 percent), and military bases (14 percent) were the most common origin of Copper River dipnet fishermen (Fall and Stratton 1984:42). Research in 1982 found that about 60 percent of a sample of dipnet fishermen had participated in the fishery for two years or less (Stratton 1982b:55).

Dipnets were chosen by non-basin residents because of their ease of operation in comparison with fishwheels. Also, these new participants

lacked knowledge of fishwheel construction and operation. Many had no access to suitable fishwheel sites, most of which were reached across private property or were occupied by basin fishermen. Long distance transport of wheels also discouraged their use by this group. Many non-basin residents who used fishwheels operated equipment belonging to basin residents (Fall and Stratton 1984:43).

In contrast, in the early 1980s, Copper River basin residents harvested salmon primarily with fishwheels. For example, in 1981, about 83 percent of the 409 basin households which held subsistence permits used fishwheels. In 1982, 79 percent, and in 1983, 83 percent, operated fishwheels.

Division of Subsistence research found that a large portion of all households in Copper River basin communities participate in the fishwheel fishery. For example, almost 60 percent of a random sample of Copper Center households harvested salmon with fishwheels during a 12 month study period in 1982-83. Only 7 percent of this sample took salmon with rod and reel, and none used dipnets. Most communities bordering the Copper River from Chitina to Slana displayed similar patterns (Fall and Stratton 1984:26).

In part, the efficiency of fishwheels for harvesting salmon over dipnets and rod and reel explains the preference local residents exhibit for this gear type. Building a fishwheel requires knowledge about construction techniques, and a relatively high initial investment of time and money for constructing the wheel and installing it at a fishing site. However, once operating, a fishwheel is capable of harvesting salmon rapidly in a fairly short amount of time, under favorable water and salmon run conditions. Local residents, many of whom have lived in the area for years, know the

best fishing sites and access routes; through networks of relatives and friends, they may also gain permission to place a wheel on privately-owned land or share the use of a fishwheel. The few basin residents who utilize dipnets do so because they lack the time to invest in building and maintaining a fishwheel; opt to harvest a few salmon quickly using inexpensive gear; or have temporarily lost their access to the fishwheels they have used in the past (Stratton 1982b:54-55).

Fishwheel owners normally place their wheels in the same general area each year. Many fishwheels are operated from private property. Other wheels are placed at sites that are recognized by long term basin residents as "belonging" to certain families. This right to use a particular site appears to be inherited through lines of kinship (Reckord 1983b:102). In 1982, about 104 fishwheels were operated in 13 distinct areas along the Copper River. These areas were used because of ease of access, proximity to communities, and a history of past use (Stratton 1982b:13).

In 1982, many Ahtna tended to operate their fishwheels from camps with permanent facilities for processing the salmon. Fishers using the "Old Village" cluster of ten wheels near Copper Center provide an example of this technique. Other basin residents transported their catch to their permanent residences, where processing and storage occurred. Among basin residents, fishing groups tended to be composed of kin (Stratton 1982b:20).

In 1982, most basin fishwheel operators used a combination of methods to preserve their salmon catch, including canning (63 percent), freezing (59 percent), smoking (52 percent), drying (45 percent), kippering (13 percent), and salting (11 percent). Ahtna residents of the basin were much more likely to dry their salmon than other fishwheel operators. Drying requires a great deal of time, special storage conditions, and

knowledge of how to prepare the product (Stratton 1982b:68).

Research conducted in 1982 by the division found that many basin fishwheel operators had a long history of involvement in the fishery. For example, over 50 percent of interviewed fishwheel operators from basin communities had used fishwheels for over 20 years. Only five percent were using fishwheel for the first time. Local people were likely to have begun participating in the fishery as children with their parents, aunts, and uncles (Stratton 1982b:67).

Another characteristic of the basin residents who used fishwheels was their high level of use of other fish and game resources. In 1982, almost all of these activities took place within the Copper River basin (Stratton 1982b:62).

It is evident, therefore, why sockeye salmon continue to be the most commonly harvested and used wild resource in most Copper River basin communities. Although competition with commercial fisheries and non-local fishermen has been high, salmon have been a fairly reliable resource, and are seasonally abundant. Given adequate gear, knowledge of fishing techniques, access, and favorable river conditions, they can be taken in large numbers. Good fishing sites are reasonably accessible to basin residents. Because of their knowledge of fishwheel use and their access to traditional sites, basin residents still hold an advantage over non-basin residents in the operation of this gear type.

X. Discussion

Recent research in four communities of southwest Alaska (Quinhagak, Goodnews Bay, Togiak, and New Stuyahok) has identified several socio-

economic conditions which have supported the successful integration of [redacted] into the subsistence-based economies of these villages (Wolfe et al. 1984:555-560). These conditions include: 1) healthy fish and game resources; 2) low population densities relative to the wild resource base; 3) limited external competition for land and other resources; 4) local labor and technology used for extracting wild resources; 5) no legal barriers to overly restrict local harvests; 6) limited government expropriation of local income; and 7) limited in-migration of persons with non-traditional beliefs, values, and food preferences related to wild resources. Typical of such communities are stable seasonal rounds of resource harvests, high levels of participation in resource use activities, and high subsistence harvests of fish and wildlife.

This paper has shown that resource harvests in contemporary Copper basin communities are higher than those of Alaska's urban centers, but are much lower than the subsistence production of communities of southwest and western Alaska. In the Copper basin today, the population is diverse, and there is a range of resource uses with communities and between communities. While fishing and hunting remain important, it is clear that resource harvest quantities have declined since the early 20th century.

The reasons for this decline are complex. For example, changes in settlement patterns have occurred. Communities are now located almost exclusively along roads because of the availability of services. People rarely occupy seasonal hunting and trapping camps. Also, emigration to cities in the 1950s through the early 1970s drained the basin's population of many young adults who thereby no longer played a role in subsistence harvesting. More recently, new settlers have changed the composition of the basin's population. Especially in the regional centers of Glennallen

and Copper Center, many of these newcomers arrive without a value system that emphasizes the use of wild foods. In addition, other economic alternatives have developed, such as employment with Native corporations, local service businesses, or state and federal agencies. However these opportunities remain limited compared to urban centers.

Also, this paper has demonstrated the major impact of urban population growth and the development of transportation systems on Copper basin communities' fish and game harvests. As summarized in Figure 13, in 1984 most resources produced within the Copper basin were harvested by commercial fishermen and non-local residents, including 73.5 percent of the caribou, 85.5 percent of the moose, and 97.9 percent of the sockeye salmon. Copper basin residents took 22 percent of the non-commercial harvest (pounds dressed weight) of sockeye salmon, caribou, and moose in 1984. This has resulted in competition for local resources, reduced availability of fish and game, and restrictive regulations. Thus, several of the conditions critical to the functioning of mixed, subsistence-based economies -- limited external competition for resources and no legal barriers that overly restrict local harvests -- do not obtain in the Copper basin today.

In addition, it is clear that this competition and restriction are not recent developments. In the 1910s, overfishing by commercial fisheries severely reduced Copper basin subsistence harvests, and limited them again in the 1970s. Monetary income was used as a device to limit household allocations of subsistence salmon for almost 25 years. Increases in catches by non-local dipnet and fishwheel fishermen led to proposed restrictions on local harvests while the commercial fishery harvested most of the salmon. Presently, the commercial fishery takes the vast majority of the sockeye salmon produced by the Copper River system, thereby reducing