

Fishery Data Series No. 92-52

**Compilation of Age, Weight, and Length Statistics for
Arctic Grayling Samples Collected in Southwest
Alaska, 1964 through 1989**

by

Lewis G. Coggins

November 1992

Alaska Department of Fish and Game

Division of Sport Fish



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SOUTHWEST ALASKA, 1964 THROUGH 1989¹

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Division of Sport Fish
Anchorage, Alaska

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ABSTRACT

Mean length, mean weight, percentage by age class, sample size, and standard error term statistics are presented by gear type for samples of Arctic grayling *Thymallus arcticus* collected over a 26-year period (1964 through 1989) from waters of Southwest Alaska. Of the 10,298 records summarized in tabular form, age estimates, based on scale samples, are available for approximately 7,043 records. This document is the most complete and uniform summary of available size and age information yet to be published for wild Arctic grayling stocks found in Southwest Alaska.

KEY WORDS: Arctic grayling, *Thymallus arcticus*, Bristol Bay, age, length, weight.

INTRODUCTION

The southwestern sport fish management area is approximately 54,700 square miles, or roughly equivalent in size to the state of Washington. This management area includes all waters and drainages flowing into Bristol Bay from Cape Menshikof north to Kuskokwim Bay, and the Kuskokwim River and its tributaries from Aniak River downstream to Kuskokwim Bay (Figure 1). As one might expect in an area of this size, distinct differences in geology, climate, vegetation, and landscapes result in a variety of river, stream, and lake ecosystems. These physical differences result in different environmental conditions that affect fishery resources and ultimately stock composition. For these reasons, the southwest management area is divided into four sections; the eastern, central, western, and northwestern (Figure 1).

Arctic grayling *Thymallus arcticus* are one of the many game fishes sought by the area's multimillion dollar per year sport fishing industry. Grayling are found in abundance in all the major drainages of southwestern Alaska with no hatchery established or enhanced stocks. The Ugashik drainage is of particular interest as it has accounted for over 70% of the trophy grayling recorded by the Alaska Department of Fish and Game (Holmes 1988).

Over the years, a relatively large collection of age and size data for southwestern Alaskan Arctic grayling has been amassed. Of the data that have been reported, the most significant contributions have come from Paddock (1965, 1968, 1969), Paddock and Whitehead (1970), Siedelman (1971), Siedelman and Cunningham (1972a, 1972b, 1973), Siedelman, Cunningham, and Russell (1973), Russell (1974, 1975), Gwartney and Russell (1978), Gwartney (1979, 1980, 1983), Brookover (1990), and Meyer (1990). To date, there has been no coordinated effort to bring together, in a standard format, the age and size data that have been, and still are, being collected by a number of federal agencies as well as the state of Alaska. As greater demands are placed on the Arctic grayling resources of the area, managers will need tools with which to evaluate current management strategies and assess stock status. Historical size and age information will provide a benchmark from which comparisons can be made with present-day conditions.

The objective of this report is to provide a compilation of all existing age and size information collected from Arctic grayling stocks in southwestern Alaska. My intent is to provide data in a convenient format for further detailed analysis.

Specifically I:

1. compiled all available age and size data collected from grayling stocks in southwestern Alaska; and
2. summarized in tabular format mean length, mean weight, and associated standard error statistics, by age class, for samples ≥ 25 fish by location, year of collection, and gear type.

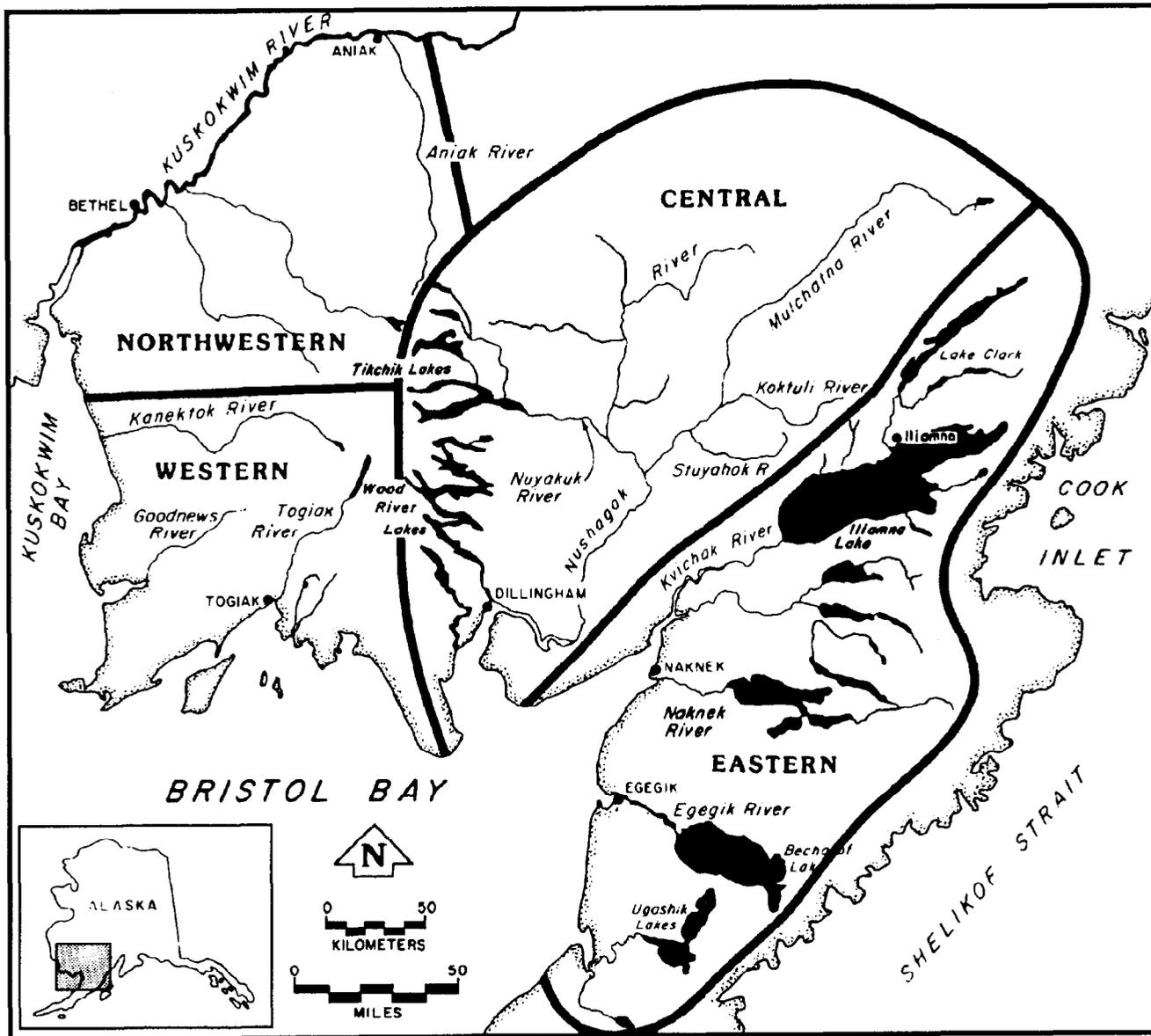


Figure 1. Southwestern Alaska sport fish management area, showing the eastern, central, western, and northwestern sections.

METHODS

Tasks necessary to compile and summarize these data were grouped into five distinct phases: data accumulation and organization, age determination, data entry, data editing, and sample summarization. The methods associated with each phase are explained below.

Data Accumulation and Organization

This project involved an exhaustive search for available size and age data. The major source of these data was the archive files of the Alaska Department of Fish and Game, Division of Sport Fish. Data from samples of individual fish were preferred to that of already summarized groupings. In total, over 10,000 individual records were accumulated. A major cataloging and organizational effort was then launched. Data sets were first organized by drainage, then individual records within drainages were sorted by sampling location and year of collection. For the purpose of this project, a data set was defined as a collection of samples taken from the same general location within the same calendar year. Splitting data sets by sampling period or by sample size was not done in favor of larger, more general groupings consistent with a simple summary report.

Age Determination

Age was estimated from scale samples for each fish from which scales were available. Where ages had previously been recorded and scale samples were still available, ages were verified to ensure consistency in interpretation. Scale samples were enlarged to 20X by use of a model 1200 Micro Design microfiche reader fitted with a 17 mm lens. Age was estimated by counting the number of annuli as defined by regions of broken and compacted circuli (Laakso and Cope 1956, and Beamish and McFarlane 1987).

Data Entry

Once organized and cataloged, a microcomputer was used to put each data set in the standard biological data format (standard age, weight, length form; version 1.1) as used by Division of Sport Fish (ADF&G 1990). A detailed description of the standard mark-sense data file format can be found in Appendix A. Explanation of the coded information by field was published by Mills and Fidler (1981) for data collected prior to 1985, and from 1985 to present (ADF&G 1990). Sampling locations were coded using site codes described by ADF&G (1990) which are listed in Appendix B. Capture methods or gear type were similarly coded as described in ADF&G (1990); Appendix C is a listing of the gear codes in this data set.

Length information was entered in millimeters and weight recorded in grams. In the cases where length and weight had previously been recorded in inches and pounds, they were converted to metric units.

Data Editing

Frequency reports, which tally data by field, were used to find coding errors, unreadable fields, and key punch errors (Heineman 1989a). Obvious errors were corrected and values which appeared out of limits were individually verified.

Sample Summarization

Estimates of mean length and weight by age group and percentage by age groups were calculated using a crosstabulation program called BBX2, developed by Alaska Department of Fish and Game staff specifically for this project (Heineman 1989b). The BBX2 program initially sorts the data set by gear type and generates summary statistics in tabular format for each gear type. BBX2 follows the procedures outlined by Sokal and Rohlf (1981, Boxes 4.2 and 7.1, pages 56 and 139) to obtain unweighted estimates of mean length and weight and the associated standard error estimates.

The arithmetic mean for length and weight in each age group was calculated as:

$$\bar{X} = \sum_{i=1}^{n_i} x_i / n_i \quad (1)$$

where:

x_i = the length (or weight) of a fish in age group i , and

n_i = the number of fish in age group i .

The variance of the mean was calculated as:

$$V(\bar{X}) = \sum_{i=1}^{n_i} x_i^2 - [(\sum_{i=1}^{n_i} x_i)^2 / n_i] / [n_i (n_i - 1)] \quad (2)$$

with the standard error expressed as simply:

$$SE = [V(\bar{X})]^{1/2} . \quad (3)$$

BBX2 also calculates percentage of fish in each age group. The estimated percentage was calculated as:

$$\hat{P}_i = (n_i / N) * 100 \quad (4)$$

where:

N = the total number of fish sampled.

The variance of the percentage was calculated as:

$$V(\hat{P}_i) = [(\hat{P}_i * (1 - \hat{P}_i)) / (N - 1)] * [100^2] \quad (5)$$

and the standard error as:

$$SE = [V(\hat{P}_i)]^{1/2} . \quad (6)$$

RESULTS

Sample data for a 26-year period (1964 through 1989), more than 10,000 records of Arctic grayling age and size samples, were summarized. Table 1 is a listing of the 187 data sets included in this summary. Detailed information including sampling location, dates of collection, number of records, and the number of aged records for each sample can be found in Appendices D, E, F, and G. The greatest number of samples are from the eastern section of the management area where the 117 files contain some 8,639 records of which 5,639 age estimates are available. Tables 2 through 15 are summaries of the age and size information available for the central section. Tables summarizing the data from the data sets containing 25 or more records are shown in Tables 16 through 74. Samples from the central section are contained in 51 files and account for 1,135 samples of which age estimates were available for 965 records. Samples from the northwestern section are summarized in Tables 75 through 80 and account for 335 aged records from a total of 416 records. The fewest samples were available for Arctic grayling stocks found in the western section (108 records, of which 104 were aged from the 8 data sets available). The only data set from the western section containing 25 or more records is summarized in Table 81.

Figure 2 represents the average length at age by management section of all the grayling samples with age estimates contained in this summary. With the exception of the western section curve, Figure 2 supports the thesis that Arctic grayling are larger at age in the eastern sections of the management area as compared to samples collected from waters of the western and northwestern sections. This general relationship between length at age and east-west distribution is supported by three of the four curves in Figure 2 and has been shown to occur in other resident fishes (Minard and Dunaway 1991). Presumably the size at age phenomenon has its roots in the different environmental conditions facing these different stocks. Although further sampling within the western section may show that western section grayling are as long or longer at age than eastern section grayling, it should be noted that the data set used to generate the western curve is much smaller than the data sets used to generate the other curves. For this reason, it is quite possible that the western section data are not representative of western section grayling stocks.

DISCUSSION

The length, weight, and age summaries contained in this document should in no way be considered a detailed analysis of the available data. Rather, they should be viewed as summaries which combine available information for a given location and year. This document and the attendant computerized database is the starting point for further investigation. For those wishing to make a more detailed analysis of any given data set or combination of data sets, electronic copies of the entire Arctic grayling database are available.

Deficiencies in the quantity of data for all but the most popular fisheries become apparent as a result of this work. The quantity of size and age information for Arctic grayling stocks in the eastern section is by far the greatest and, with the exception of a few gaps, collection appears to have been spread evenly over the years. In the central, western, and northwestern

Table 1. Listing of available age and size information for Arctic grayling sampled in southwest Alaskan waters for the period 1964 to 1989.

Section	Drainage	System	Number Files	Number Records	Aged Records
Central	Nushagak	Allen River	1	6	6
Central	Nushagak	Chilikadrotna River	1	25	25
Central	Nushagak	Fish Trap Lake	1	1	1
Central	Nushagak	Igushik River	1	5	5
Central	Nushagak	King Salmon River	3	147	128
Central	Nushagak	Mulchatna River	4	63	62
Central	Nushagak	Nushagak River	3	30	26
Central	Nushagak	Nuyakuk River	4	87	78
Central	Nushagak	Nuyakuk-Chauekuktuli River	1	6	5
Central	Nushagak	Snipe Lake	1	61	61
Central	Nushagak	Stuyahok River	2	15	7
Central	Nushagak	Tikchik Narrows	1	75	72
Central	Nushagak	Tikchik River	1	166	164
Central	Nushagak	Twin Lakes	1	8	8
Central	Wood	Agulowak River	6	110	98
Central	Wood	Agulukpak River	4	136	76
Central	Wood	Grant River	1	2	2
Central	Wood	K-1 Creek	1	1	1
Central	Wood	Kema Creek	2	29	28
Central	Wood	Little Togiak River	2	3	3
Central	Wood	Lynx Creek	1	5	5
Central	Wood	Lynx Lake	1	46	2
Central	Wood	Peace River	1	4	4
Central	Wood	Stoval Creek	1	7	5
Central	Wood	Tsun Creek	2	18	18
Central	Wood	Wind River	2	75	71
Central	Wood	Wood River	2	4	4
Central	Sub Total		51	1,135	965
Eastern	Egegik	Egegik River	1	6	6
Eastern	Egegik	Featherly Creek	1	3	3
Eastern	Egegik	Gertrude Creek	3	130	124
Eastern	Kvichak	Alagnak River	3	44	40
Eastern	Kvichak	Caribou Lakes	1	7	3
Eastern	Kvichak	Chulitna River	2	111	107
Eastern	Kvichak	Copper River	1	2	2
Eastern	Kvichak	Gibraltar River	1	3	3
Eastern	Kvichak	Kaskanak Creek	1	1	1
Eastern	Kvichak	Kijik River	2	26	13
Eastern	Kvichak	Kvichak River	4	120	116

-continued-

Table 1. (Page 2 of 3).

Section	Drainage	System	Number Files	Number Records	Aged Records
Eastern	Kvichak	Lake Clark	2	44	43
Eastern	Kvichak	Little Kijik River	1	63	61
Eastern	Kvichak	Lower Talarik Creek	10	1,061	498
Eastern	Kvichak	Middle Talarik Creek	1	6	6
Eastern	Kvichak	Moraine Creek	2	4	4
Eastern	Kvichak	Newhalen River	1	31	31
Eastern	Kvichak	Nonvianuk River	1	30	28
Eastern	Kvichak	Ole Creek	2	4	4
Eastern	Kvichak	Pecks Creek	4	51	46
Eastern	Kvichak	Roadhouse Creek	1	9	9
Eastern	Kvichak	Tanallan River	1	3	3
Eastern	Kvichak	Tazimina Lake	1	72	62
Eastern	Kvichak	Tazimina River	5	820	790
Eastern	Kvichak	Tommy Creek	1	2	2
Eastern	Kvichak	Turquoise Lake	1	10	10
Eastern	Naknek	Bay of Islands	1	5	5
Eastern	Naknek	Big Creek	5	119	111
Eastern	Naknek	King Salmon Creek	3	72	69
Eastern	Naknek	Naknek River	10	356	96
Eastern	Ugashik	Crooked Creek	2	171	157
Eastern	Ugashik	Deer Creek	1	46	42
Eastern	Ugashik	Deer Lake	1	3	3
Eastern	Ugashik	E Creek	3	53	43
Eastern	Ugashik	Grassy Creek	1	16	16
Eastern	Ugashik	Lower Ugashik Lake	1	1	1
Eastern	Ugashik	Ugashik Area Mixed	3	590	360
Eastern	Ugashik	Ugashik Narrows	13	1,671	1,301
Eastern	Ugashik	Ugashik Outlet	17	2,788	1,356
Eastern	Ugashik	Upper Ugashik Lake	2	85	64
Eastern	Sub Total		117	8,639	5,639
Northwestern	Aniak	Aniak Lake	1	25	25
Northwestern	Aniak	Aniak River	2	116	84
Northwestern	Aniak	Kasigluk River	1	33	33
Northwestern	Aniak	Kisaralik River	2	132	96
Northwestern	Eek	Eek River	1	20	19
Northwestern	Kuskokwim	Kwethluk River	2	46	35
Northwestern	Kuskokwim	Tuluksak River	1	32	32
Northwestern	Kuskokwim	Whitefish Creek	1	12	11
Northwestern	Sub Total		11	416	335

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Table 1. (Page 3 of 3).

Section	Drainage	System	Number Files	Number Records	Aged Records
Western	Arolik	Arolik Lake	1	2	1
Western	Arolik	Arolik River	1	39	39
Western	Goodnews	Goodnews River	1	3	3
Western	Kanektok	Kanektok River	1	34	33
Western	Togiak	Nayorurun River	1	1	1
Western	Togiak	Togiak River	3	29	27
Western	Sub Total		8	108	104
All Sections			187	10,298	7,043

Table 2. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Chilikadrotna River (T0087BG8), 1978. Sampling period 9/18 to 9/22, hook and line.

	Age Group								TOTAL
	3	4	5	6	7	8	9	10	
ALL SAMPLES									
n (Known Age)	2	2	4	4	8	3	1	1	25
Percent	8.0	8.0	16.0	16.0	32.0	12.0	4.0	4.0	100.0
Standard Error	5.54	5.54	7.48	7.48	9.52	6.63	4.00	4.00	
Mean Length	282	291	353	351	357	374	413	380	349
Standard Error	13.00	2.50	9.08	12.61	2.79	18.52			6.94
Sample Size	2	2	4	4	8	3	1	1	25
Mean Weight	199	241	530	454	511	568	823	653	495
Standard Error		14.50	41.26	28.00	16.16	74.96			30.82
Sample Size	1	2	3	3	8	3	1	1	22

Table 3. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the King Salmon River (T1298BG0), 1980. Sampling period 6/17 to 6/22, hook and line.

	Age Group									
	UNKNOWN	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES										
n (Known Age)		2	9	19	11	34	23	13	2	113
Percent		1.8	8.0	16.8	9.7	30.1	20.4	11.5	1.8	100.0
Standard Error		1.25	2.56	3.53	2.80	4.33	3.80	3.01	1.25	
Mean Length	386	310	316	347	367	373	386	396	383	370
Standard Error	6.92	12.00	13.04	4.63	4.29	2.95	4.42	4.99	12.00	2.71
Sample Size	15	2	9	19	11	34	23	13	2	128

Table 4. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Mulchatna River (T0077BG9), 1979. Sampling period 9/10 to 9/15, hook and line.

	Age Group							TOTAL
	3	4	5	6	7	8	9	
ALL SAMPLES								
n (Known Age)	1	6	3	13	12	8	2	45
Percent	2.2	13.3	6.7	28.9	26.7	17.8	4.4	100.0
Standard Error	2.22	5.12	3.76	6.83	6.67	5.76	3.11	
Mean Length	243	293	298	326	343	341	375	327
Standard Error		4.47	9.84	5.25	5.28	5.26	30.50	4.39
Sample Size	1	6	3	13	12	8	2	45
Mean Weight		284	341					313
Standard Error								28.50
Sample Size	0	1	1	0	0	0	0	2

Table 5. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Nuyakuk River (T0056BG7), 1967. Sampling period 6/23 to 10/04, hook and line.

	Age Group											TOTAL
	1	2	3	4	5	6	7	8	9	10	11	
ALL SAMPLES												
n (Known Age)	3	1	2	12	6	9	8	7	3	3	1	55
Percent	5.5	1.8	3.6	21.8	10.9	16.4	14.5	12.7	5.5	5.5	1.8	100.0
Standard Error	3.09	1.82	2.55	5.62	4.24	5.03	4.80	4.54	3.09	3.09	1.82	
Mean Length	134	197	232	283	320	356	372	391	379	405	432	329
Standard Error	3.71		16.00	5.23	10.54	5.98	7.19	13.11	2.00	39.55		9.87
Sample Size	3	1	2	12	6	9	8	7	3	3	1	55
Mean Weight											965	965
Standard Error												
Sample Size	0	0	0	0	0	0	0	0	0	1	0	1

Table 6. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Snipe Lake (T1637BG8), 1967. Sampling period 7/19 to 7/20, gill net.

	Age Group						TOTAL
	2	3	4	5	6	7	
ALL SAMPLES							
n (Known Age)	15	7	21	13	3	1	60
Percent	25.0	11.7	35.0	21.7	5.0	1.7	100.0
Standard Error	5.64	4.18	6.21	5.36	2.84	1.67	
Mean Length	179	230	268	294	330	350	252
Standard Error	3.74	2.82	3.92	5.01	10.59		6.60
Sample Size	15	7	21	13	3	1	60
Mean Weight	74	158	218	275	341	398	196
Standard Error	4.61	10.42	8.16	13.01	56.67		12.02
Sample Size	15	7	21	13	3	1	60

Table 7. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Tikchik Narrows (T1626BG7), 1967. Sampling period 8/14 to 10/04, hook and line.

	Age Group											
	UNKNOWN	2	3	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES												
n (Known Age)		3	11	22	11	8	8	5	2	1	1	72
Percent		4.2	15.3	30.6	15.3	11.1	11.1	6.9	2.8	1.4	1.4	100.0
Standard Error		2.37	4.27	5.47	4.27	3.73	3.73	3.02	1.95	1.39	1.39	
Mean Length	379	212	275	306	327	344	404	409	419	457	483	333
Standard Error	13.78	18.32	6.18	5.48	7.83	11.81	8.02	17.73	38.00			7.04
Sample Size	3	3	11	22	11	8	8	5	2	1	1	75

Table 8. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Tikchik River (T1708BG0), 1980. Sampling period 7/13 to 7/17, hook and line.

	Age Group										
	UNKNOWN	3	4	5	6	7	8	9	10	12	TOTAL
ALL SAMPLES											
n (Known Age)		6	18	46	35	19	15	12	3	1	155
Percent		3.9	11.6	29.7	22.6	12.3	9.7	7.7	1.9	0.6	100.0
Standard Error		1.55	2.58	3.68	3.37	2.64	2.38	2.15	1.11	0.65	
Mean Length	318	269	302	361	386	405	432	438	458	485	376
Standard Error	17.00	4.57	7.91	3.77	3.95	5.40	4.77	6.77	3.48		4.13
Sample Size	2	6	18	46	35	19	15	12	3	1	157

Table 9. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Agulowak River (T1118BG8), 1988. Sampling period 6/29 to 8/24, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	11	TOTAL
ALL SAMPLES										
n (Known Age)		4	3	6	6	6	2	3	1	31
Percent		12.9	9.7	19.4	19.4	19.4	6.5	9.7	3.2	100.0
Standard Error		6.12	5.40	7.21	7.21	7.21	4.49	5.40	3.23	
Mean Length	305	261	319	371	398	381	401	407	438	365
Standard Error		13.90	15.50	9.35	37.03	8.80	2.00	18.78		11.28
Sample Size	1	4	3	6	6	6	2	3	1	32
Mean Weight	375	263	392	625	642	667	688	798	900	590
Standard Error		22.50	46.40	44.27	47.15	49.90	62.50	57.76		33.98
Sample Size	1	4	3	6	6	6	2	3	1	32

Table 10. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Agulowak River (T1110BB1), 1989. Sampling period 6/17 to 9/20, hook and line.

	Age Group								
	UNKNOWN	3	4	5	6	7	8	9	TOTAL
ALL SAMPLES									
n (Known Age)		7	13	3	9	15	4	1	52
Percent		13.5	25.0	5.8	17.3	28.8	7.7	1.9	100.0
Standard Error		4.78	6.06	3.26	5.30	6.34	3.73	1.92	
Mean Length	392	311	316	305	374	386	399	356	354
Standard Error	4.41	8.53	9.09	16.33	5.49	5.84	20.30		5.85
Sample Size	3	7	13	3	9	15	4	1	55
Mean Weight	670	396	342	370	563	649	1025		516
Standard Error	30.00	26.03	31.88	70.00	18.56	31.10			33.09
Sample Size	2	5	8	2	3	10	1	0	31

Table 11. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Agulukpak River (T1280BA9), 1986. Sampling period 7/04 to 8/16, hook and line.

	Age Group		TOTAL
	UNKNOWN	4	
ALL SAMPLES			
n (Known Age)		3	3
Percent		100.0	100.0
Standard Error		0.00	
Mean Length	366	345	365
Standard Error	4.87	24.66	4.78
Sample Size	50	3	53
Mean Weight	573	483	568
Standard Error	22.62	88.19	21.91
Sample Size	50	3	53

Table 12. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Agulukpak River (T1288BG8), 1988. Sampling period 7/01 to 8/23, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		3	12	9	10	5	4	1	1	45
Percent		6.7	26.7	20.0	22.2	11.1	8.9	2.2	2.2	100.0
Standard Error		3.76	6.67	6.03	6.27	4.74	4.29	2.22	2.22	
Mean Length	320	253	315	348	368	389	408	320	415	347
Standard Error		11.02	10.42	13.34	10.17	15.94	11.58			7.52
Sample Size	1	3	12	9	10	5	4	1	1	46
Mean Weight	380	197	404	465	561	665	788	483	824	506
Standard Error	70.00	3.38	34.82	49.69	47.87	53.39	46.96			27.82
Sample Size	2	3	12	9	10	5	4	1	1	47

Table 13. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Lynx Lake (T1688BG0), 1980. Sampling period 7/01 to 7/02, hook and line.

	Age Group			TOTAL
	UNKNOWN	5	6	
ALL SAMPLES				
n (Known Age)		1	1	2
Percent		50.0	50.0	100.0
Standard Error		50.00	50.00	
Mean Length	257	261	330	259
Standard Error	8.49			8.27
Sample Size	44	1	1	46
Mean Weight		227	398	313
Standard Error				85.50
Sample Size	0	1	1	2

Table 14. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Wind River (T1346BG9), 1969. Sampling period 7/03 to 8/23, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		1	3	12	11	6	1	1	1	36
Percent		2.8	8.3	33.3	30.6	16.7	2.8	2.8	2.8	100.0
Standard Error		2.78	4.67	7.97	7.79	6.30	2.78	2.78	2.78	
Mean Length	344	276	310	368	378	386	409	403	424	369
Standard Error	29.00		26.69	7.70	11.99	6.75				6.51
Sample Size	2	1	3	12	11	6	1	1	1	38

Table 15. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Wind River (T1347BG0), 1970. Sampling period 8/06 to 10/02, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		3	3	5	13	7	2	1	1	35
Percent		8.6	8.6	14.3	37.1	20.0	5.7	2.9	2.9	100.0
Standard Error		4.80	4.80	6.00	8.29	6.86	3.98	2.86	2.86	
Mean Length	349	302	334	353	377	409	406	406	450	373
Standard Error	17.50	2.08	14.97	9.59	7.35	7.70	8.50			6.62
Sample Size	2	3	3	5	12	7	2	1	1	36

Table 16. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Gertrude Creek (R2330BA9), 1989. Sampling period 6/18 to 6/20, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	11	TOTAL
ALL SAMPLES										
n (Known Age)		4	10	32	28	14	14	9	1	112
Percent		3.6	8.9	28.6	25.0	12.5	12.5	8.0	0.9	100.0
Standard Error		1.76	2.71	4.29	4.11	3.14	3.14	2.58	0.89	
Mean Length	381	253	305	329	356	378	402	412	427	354
Standard Error	11.50	4.80	9.04	3.71	4.52	5.50	5.97	11.48		4.13
Sample Size	2	4	10	32	28	14	14	9	1	114
Mean Weight	612	181	295	403	536	629	708	767	975	520
Standard Error	12.50	18.75	8.98	15.89	20.75	25.66	35.51	67.70		17.96
Sample Size	2	4	10	31	28	14	13	9	1	112

Table 17. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Alagnak River, (S008BA1), 1989. Sampling period 8/01 to 8/21, hook and line.

	Age Group							TOTAL
	UNKNOWN	3	4	5	6	7	8	
ALL SAMPLES								
n (Known Age)		1	5	10	9	5	2	32
Percent		3.1	15.6	31.3	28.1	15.6	6.3	100.0
Standard Error		3.13	6.52	8.32	8.08	6.52	4.35	
Mean Length	385	285	344	364	371	395	400	369
Standard Error	62.92		11.51	8.17	4.92	9.28	40.00	6.84
Sample Size	3	1	5	10	9	5	2	35
Mean Weight				570	645	740		639
Standard Error				70.00		20.00		46.52
Sample Size	0	0	0	3	1	2	0	6

Table 18. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Chulitna River (S1737BG9), 1979. Sampling period 6/24 to 8/04, hook and line.

	Age Group											TOTAL	
	UNKNOWN	1	2	3	4	5	6	7	8	9	10		11
ALL SAMPLES													
n (Known Age)		3	5	4	3	6	16	13	19	9	6	3	87
Percent		3.4	5.7	4.6	3.4	6.9	18.4	14.9	21.8	10.3	6.9	3.4	100.0
Standard Error		1.97	2.51	2.26	1.97	2.73	4.18	3.84	4.46	3.28	2.73	1.97	
Mean Length	302	139	205	240	302	322	349	373	377	395	402	409	343
Standard Error	58.89	7.54	2.91	9.37	20.85	4.20	4.61	5.49	5.03	6.76	8.25	5.24	7.33
Sample Size	4	3	5	4	3	6	16	13	19	9	6	3	91

Table 19. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Kvichak River (S0036BG9), 1969. Sampling period 6/14 to 7/22, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		10	16	30	25	13	5	4	2	105
Percent		9.5	15.2	28.6	23.8	12.4	4.8	3.8	1.9	100.0
Standard Error		2.88	3.52	4.43	4.18	3.23	2.09	1.88	1.34	
Mean Length	386	257	311	342	364	363	383	407	417	344
Standard Error	16.75	5.71	10.31	5.93	5.84	7.96	14.20	11.64	17.50	4.60
Sample Size	4	10	16	30	25	13	5	4	2	109

Table 20. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Lake Clark (S0097BG9), 1979. Sampling period 6/28, gill net.

	Age Group									TOTAL
	1	2	3	5	6	7	8	9	10	
ALL SAMPLES										
n (Known Age)	5	3	3	2	6	3	2	3	2	29
Percent	17.2	10.3	10.3	6.9	20.7	10.3	6.9	10.3	6.9	100.0
Standard Error	7.14	5.76	5.76	4.79	7.66	5.76	4.79	5.76	4.79	
Mean Length	124	194	224	336	344	348	392	383	406	290
Standard Error	1.40	12.44	9.68	14.50	10.29	14.64	10.50	6.96	19.00	18.95
Sample Size	5	3	3	2	6	3	2	3	2	29
Mean Weight	142	117	104	426	464	464	624	625	738	379
Standard Error	0.00	46.70	19.00	85.00	39.79	80.60	56.50	28.33	57.00	42.63
Sample Size	5	3	3	2	6	3	2	3	2	29

Table 21. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Little Kijik River (S1787BG9), 1979. Sampling period 6/06 to 6/08, hook and line.

	Age Group						TOTAL
	UNKNOWN	4	5	6	7	8	
ALL SAMPLES							
n (Known Age)		10	19	21	7	4	61
Percent		16.4	31.1	34.4	11.5	6.6	100.0
Standard Error		4.78	5.98	6.13	4.11	3.20	
Mean Length	432	313	341	354	399	377	352
Standard Error	32.00	6.04	6.46	4.63	7.06	24.39	4.70
Sample Size	2	10	19	21	7	4	63

Table 22. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0047BG1), 1971. Sampling period 5/26 to 6/11, weir trap.

	Age Group							TOTAL
	UNKNOWN	2	3	4	5	6	7	
ALL SAMPLES								
n (Known Age)		16	17	45	37	17	1	133
Percent		12.0	12.8	33.8	27.8	12.8	0.8	100.0
Standard Error		2.83	2.91	4.12	3.90	2.91	0.75	
Mean Length	288	218	283	285	320	306	380	289
Standard Error	10.64	15.35	5.81	5.90	6.52	12.01		4.19
Sample Size	33	16	17	45	37	17	1	166
Mean Weight	195		250	280				230
Standard Error	55.00							30.82
Sample Size	2	0	1	1	0	0	0	4

Table 23. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0047BG2), 1972. Sampling period 6/03 to 6/11, electroshocking.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	323	323
Standard Error	8.36	8.36
Sample Size	27	27

Table 24. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0047BG2), 1972. Sampling period 5/02 to 6/16, weir trap.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	282	282
Standard Error	5.88	5.88
Sample Size	103	103

Table 25. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0047BG3), 1973. Sampling period 5/02 to 10/11, weir trap.

	Age Group										
	UNKNOWN	1	2	3	4	5	6	7	8	9	TOTAL
ALL SAMPLES											
n (Known Age)		1	2	2	19	61	63	43	5	3	199
Percent		0.5	1.0	1.0	9.5	30.7	31.7	21.6	2.5	1.5	100.0
Standard Error		0.50	0.71	0.71	2.09	3.28	3.31	2.92	1.11	0.87	
Mean Length	328	95	153	261	315	315	336	357	373	400	330
Standard Error	8.16		7.00	35.50	3.05	4.00	2.96	3.47	13.62	13.11	2.74
Sample Size	38	1	2	2	19	61	63	43	5	3	237
Mean Weight	324			100	290	385	391	556	485		395
Standard Error	23.15				22.80	26.84	25.18	59.19	75.00		19.61
Sample Size	5	0	0	1	6	12	13	8	2	0	47

Table 26. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0047BG4), 1974. Sampling period 4/30 to 5/28, weir trap.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	307	307
Standard Error	5.08	5.08
Sample Size	172	172
Mean Weight	316	316
Standard Error	12.11	12.11
Sample Size	172	172

Table 27. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0047BG5), 1975. Sampling period 6/09 to 9/21, weir trap.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	263	263
Standard Error	16.14	16.14
Sample Size	26	26
Mean Weight	313	313
Standard Error	37.33	37.33
Sample Size	20	20

Table 28. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0040BA7), 1987. Sampling period 5/16 to 10/02, seine.

	Age Group								
	UNKNOWN	1	2	3	4	5	6	8	TOTAL
ALL SAMPLES									
n (Known Age)		2	7	17	2	2	3	1	34
Percent		5.9	20.6	50.0	5.9	5.9	8.8	2.9	100.0
Standard Error		4.10	7.04	8.70	4.10	4.10	4.94	2.94	
Mean Length	233	192	238	217	248	329	325	343	241
Standard Error		1.00	17.28	4.56	15.00	12.00	9.82		8.30
Sample Size	1	2	7	17	2	2	3	1	35

Table 29. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Lower Talarik Creek (S0040BA7), 1987. Sampling period 5/03 to 9/18, hook and line.

	Age Group										
	UNKNOWN	3	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES											
n (Known Age)		15	33	19	9	10	7	2	1	2	98
Percent		15.3	33.7	19.4	9.2	10.2	7.1	2.0	1.0	2.0	100.0
Standard Error		3.66	4.80	4.01	2.93	3.07	2.61	1.44	1.02	1.44	
Mean Length	342	262	290	307	340	346	368	376	397	391	311
Standard Error	2.50	5.62	3.34	5.93	6.18	6.40	4.82	3.00		14.50	4.05
Sample Size	2	15	33	19	9	10	7	2	1	2	100

Table 30. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Newhalen River (S0077BG4), 1974. Sampling period 6/17 to 9/14, hook and line.

	Age Group					TOTAL
	1	2	3	4	5	
ALL SAMPLES						
n (Known Age)	1	15	6	4	5	31
Percent	3.2	48.4	19.4	12.9	16.1	100.0
Standard Error	3.23	9.12	7.21	6.12	6.72	
Mean Length	140	183	227	270	308	222
Standard Error		4.57	8.50	22.56	20.11	10.23
Sample Size	1	15	6	4	5	31

Table 31. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Nonvianuk River (S1287BG4), 1974. Sampling period 6/01 to 6/06, hook and line.

	Age Group						TOTAL
	UNKNOWN	4	5	6	7	8	
ALL SAMPLES							
n (Known Age)		4	11	6	6	1	28
Percent		14.3	39.3	21.4	21.4	3.6	100.0
Standard Error		6.73	9.40	7.90	7.90	3.57	
Mean Length	406	329	355	374	386	376	366
Standard Error	12.00	21.65	4.39	8.27	5.88		5.26
Sample Size	2	4	11	6	6	1	30

Table 32. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Pecks Creek (S1756BG9), 1969. Sampling period 6/14 to 7/21, hook and line.

	Age Group								
	UNKNOWN	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES									
n (Known Age)		2	16	7	8	4	1	1	39
Percent		5.1	41.0	17.9	20.5	10.3	2.6	2.6	100.0
Standard Error		3.58	7.98	6.23	6.55	4.92	2.56	2.56	
Mean Length	380	313	337	360	391	373	412	410	361
Standard Error	16.35	22.50	8.10	12.76	9.61	9.82			5.82
Sample Size	5	2	16	7	8	4	1	1	44

Table 33. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Tazimina Lake (S1557BG8), 1978. Sampling period 9/08 to 9/13, gill net.

	Age Group						TOTAL
	UNKNOWN	1	2	3	4	5	
ALL SAMPLES							
n (Known Age)		19	7	12	15	6	59
Percent		32.2	11.9	20.3	25.4	10.2	100.0
Standard Error		6.14	4.25	5.29	5.72	3.97	
Mean Length	244	129	195	227	260	294	212
Standard Error	27.32	1.69	3.18	2.09	3.26	4.83	7.89
Sample Size	10	19	7	12	15	6	69
Mean Weight	85	27	71	112	183	237	107
Standard Error	13.27	1.01	5.29	2.42	12.73	11.99	9.21
Sample Size	8	19	7	12	15	6	67

Table 34. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Tazimina River (S1337BG4), 1974. Sampling period 7/31 to 9/17, hook and line.

	Age Group							TOTAL
	2	3	4	5	6	7	10	
ALL SAMPLES								
n (Known Age)	1	5	13	19	15	9	1	63
Percent	1.6	7.9	20.6	30.2	23.8	14.3	1.6	100.0
Standard Error	1.59	3.43	5.14	5.83	5.41	4.44	1.59	
Mean Length	215	238	296	324	337	360	418	320
Standard Error		9.21	9.05	6.61	11.46	10.86		6.11
Sample Size	1	5	13	19	15	9	1	63

Table 35. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Tazimina River (S1337BG9), 1979. Sampling period 7/16 to 8/20, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		3	6	16	7	10	4	1	1	48
Percent		6.3	12.5	33.3	14.6	20.8	8.3	2.1	2.1	100.0
Standard Error		3.53	4.82	6.88	5.15	5.92	4.03	2.08	2.08	
Mean Length	221	234	320	344	353	383	399	380	409	347
Standard Error		12.55	18.61	7.97	9.57	4.61	6.01			7.16
Sample Size	1	3	6	16	7	10	4	1	1	49

Table 36. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Tazimina River (S1330BM8), 1987. Sampling period 7/28 to 9/30, hook and line.

	Age Group									
	UNKNOWN	2	3	4	5	6	7	8	9	TOTAL
ALL SAMPLES										
n (Known Age)		2	29	33	18	24	18	8	1	133
Percent		1.5	21.8	24.8	13.5	18.0	13.5	6.0	0.8	100.0
Standard Error		1.06	3.59	3.76	2.98	3.35	2.98	2.07	0.75	
Mean Length	386	207	280	339	385	412	430	436	445	364
Standard Error	30.12	7.50	7.65	5.80	6.95	5.36	7.01	7.98		5.73
Sample Size	7	2	29	33	18	24	18	8	1	140
Mean Weight	453	100	269	385	554	671	670	752	760	499
Standard Error	344.79		29.58	37.86	68.63	74.24	95.68	126.32		33.00
Sample Size	3	1	15	16	11	12	11	4	1	74

Table 37. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Tazimina River (S1330BU8), 1988. Sampling period 5/19 to 10/05, hook and line.

	Age Group											TOTAL
	UNKNOWN	1	2	3	4	5	6	7	8	9	11	
ALL SAMPLES												
n (Known Age)		1	24	93	167	134	61	23	15	3	1	522
Percent		0.2	4.6	17.8	32.0	25.7	11.7	4.4	2.9	0.6	0.2	100.0
Standard Error		0.19	0.92	1.68	2.04	1.91	1.41	0.90	0.73	0.33	0.19	
Mean Length	381	160	222	283	326	371	396	405	429	449	437	342
Standard Error	13.77		5.36	3.71	2.98	3.01	3.72	4.39	6.21	16.71		2.61
Sample Size	16	1	24	93	167	133	61	23	15	3	1	537
Mean Weight	611		201	264	431	627	729	740	1060			491
Standard Error	109.94		47.30	12.31	12.99	13.50	29.55	22.73	94.07			13.35
Sample Size	8	0	9	59	94	65	36	4	4	0	0	279

Table 38. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Big Creek (R1966BG4), 1964. Sampling period 8/15 to 8/18, hook and line.

	Age Group									
	UNKNOWN	2	3	4	5	6	7	8	9	TOTAL
ALL SAMPLES										
n (Known Age)		2	1	6	5	10	18	17	4	63
Percent		3.2	1.6	9.5	7.9	15.9	28.6	27.0	6.3	100.0
Standard Error		2.23	1.59	3.73	3.43	4.64	5.74	5.64	3.10	
Mean Length	378	222	248	282	339	366	374	389	417	362
Standard Error	14.88	0.00		8.86	12.52	8.42	6.71	3.79	8.73	5.91
Sample Size	4	2	1	6	5	10	18	17	4	67

Table 39. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Big Creek (R1966BG7), 1967. Sampling period 8/10 to 8/14, hook and line.

	Age Group						TOTAL
	3	4	5	6	7	8	
ALL SAMPLES							
n (Known Age)	1	3	6	9	3	3	25
Percent	4.0	12.0	24.0	36.0	12.0	12.0	100.0
Standard Error	4.00	6.63	8.72	9.80	6.63	6.63	
Mean Length	260	303	337	354	382	398	349
Standard Error		7.86	11.56	9.37	13.58	18.58	8.15
Sample Size	1	3	6	9	3	3	25

Table 40. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from King Salmon Creek (R1436BG4), 1964. Sampling period 8/11 to 8/13, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		3	4	9	10	12	11	4	1	54
Percent		5.6	7.4	16.7	18.5	22.2	20.4	7.4	1.9	100.0
Standard Error		3.15	3.60	5.12	5.34	5.71	5.53	3.60	1.85	
Mean Length	337	309	299	387	390	400	433	418	470	392
Standard Error		5.86	6.52	8.68	13.19	7.44	10.62	22.54		6.73
Sample Size	1	3	4	9	10	12	11	4	1	55
Mean Weight				908			908			908
Standard Error										0.00
Sample Size	0	0	0	1	0	0	1	0	0	2

Table 41. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Naknek River (R0076BG8), 1968. Sampling period 3/13 to 8/06, hook and line.

	Age Group						TOTAL
	UNKNOWN	2	3	4	5	7	
ALL SAMPLES							
n (Known Age)		2	3	2	6	5	18
Percent		11.1	16.7	11.1	33.3	27.8	100.0
Standard Error		7.62	9.04	7.62	11.43	10.86	
Mean Length	371	292	341	293	388	414	368
Standard Error	22.79	57.00	27.45	49.50	14.31	8.83	11.79
Sample Size	7	2	3	2	6	5	25
Mean Weight			454		795	802	731
Standard Error						84.95	83.48
Sample Size	0	0	1	0	1	3	5

Table 42. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Naknek River (R0078BG2), 1982. Sampling period 8/06 to 9/07, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
n (Known Age)	223	223
Percent	100.0	100.0
Standard Error	0.00	
Mean Length	434	434
Standard Error	4.30	4.30
Sample Size	60	60

Table 43. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Naknek River (R0070BB9), 1989. Sampling period 6/08 to 9/22, hook and line.

	Age Group								
	UNKNOWN	2	3	4	5	6	7	8	TOTAL
ALL SAMPLES									
n (Known Age)		6	8	3	9	7	6	4	43
Percent		14.0	18.6	7.0	20.9	16.3	14.0	9.3	100.0
Standard Error		5.35	6.00	3.93	6.28	5.70	5.35	4.48	
Mean Length	385	253	285	327	356	381	383	377	337
Standard Error		6.65	11.75	19.62	10.66	2.79	7.22	6.57	8.13
Sample Size	1	6	8	3	9	7	6	4	44
Mean Weight	610	217	341	417	541	639	635	606	483
Standard Error		27.13	38.36	101.38	55.49	20.31	69.64	21.35	29.01
Sample Size	1	6	8	3	8	7	5	4	42

Table 44. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Crooked Creek (R2070BA8), 1988. Sampling period 5/23 to 5/26, gill net.

	Age Group						TOTAL
	UNKNOWN	4	5	6	7	8	
ALL SAMPLES							
n (Known Age)		1	4	13	16	10	44
Percent		2.3	9.1	29.5	36.4	22.7	100.0
Standard Error		2.27	4.38	6.96	7.34	6.39	
Mean Length	434	344	425	422	442	460	436
Standard Error	14.53		14.12	6.79	6.06	6.93	4.38
Sample Size	3	1	4	13	16	10	47
Mean Weight		480	900	857	987	1105	956
Standard Error			89.07	38.57	35.20	58.61	28.51
Sample Size	0	1	4	13	16	10	44

Table 45. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Crooked Creek (R2070BA9), 1989. Sampling period 7/12 to 7/13, electroshocking.

	Age Group								
	UNKNOWN	2	6	7	8	9	10	11	TOTAL
ALL SAMPLES									
n (Known Age)		1	4	9	17	2	1	1	35
Percent		2.9	11.4	25.7	48.6	5.7	2.9	2.9	100.0
Standard Error		2.86	5.46	7.50	8.57	3.98	2.86	2.86	
Mean Length	120	204	431	459	474	453	475	487	448
Standard Error			19.80	6.89	5.26	11.50			12.87
Sample Size	1	1	3	9	17	2	1	1	35
Mean Weight		115	1085	1271	1342	1255	1360	1540	1260
Standard Error			109.28	63.76	39.32	105.00			45.97
Sample Size	0	1	4	9	17	2	1	1	35

Table 46. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Crooked Creek (R2070BA9), 1989. Sampling period 6/16 to 6/27, hook and line.

	Age Group										
	UNKNOWN	3	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES											
n (Known Age)		1	1	5	4	12	18	11	6	2	60
Percent		1.7	1.7	8.3	6.7	20.0	30.0	18.3	10.0	3.3	100.0
Standard Error		1.67	1.67	3.60	3.25	5.21	5.97	5.04	3.91	2.34	
Mean Length	452	320	366	342	412	435	454	457	467	468	439
Standard Error	11.03			10.56	22.56	7.06	5.36	7.15	3.61	7.00	5.17
Sample Size	10	1	1	5	4	12	17	11	6	2	69
Mean Weight	1157	460	650	530	920	1034	1211	1225	1272	1170	1095
Standard Error	71.31			49.70	132.48	45.43	37.16	50.37	34.97	30.00	31.40
Sample Size	10	1	1	5	4	12	18	11	6	2	70

Table 47. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Deer Creek (R2060BA9), 1989. Sampling period 7/14, electroshocking.

	Age Group											
	UNKNOWN	2	3	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES												
n (Known Age)	1	6	5	2	1	6	6	5	2	1		35
Percent	2.9	17.1	14.3	5.7	2.9	17.1	17.1	14.3	5.7	2.9		100.0
Standard Error	2.86	6.46	6.00	3.98	2.86	6.46	6.46	6.00	3.98	2.86		
Mean Length	293	217	272	340	355	370	448	467	459	454	483	385
Standard Error	105.44		14.12	17.20	20.00		6.14	2.63	5.41	1.50		16.97
Sample Size	4	1	6	4	2	1	6	6	5	2	1	38
Mean Weight	1400	150	288	506	650	740	1167	1342	1314	1295	1600	947
Standard Error	180.00		42.73	54.92	150.00		57.43	50.82	19.65	35.00		76.64
Sample Size	2	1	6	5	2	1	6	6	5	2	1	37

Table 48. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Area Mixed (R0116BG7), 1967. Sampling period 5/28 to 10/17, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	444	444
Standard Error	4.08	4.08
Sample Size	147	147
Mean Weight	1179	1179
Standard Error	67.43	67.43
Sample Size	41	41

Table 49. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Area Mixed (R0116BG8), 1968. Sampling period 5/18 to 10/27, hook and line.

	Age Group													TOTAL
	UNKNOWN	1	2	3	4	5	6	7	8	9	10	11	12	
ALL SAMPLES														
n (Known Age)		4	5	12	53	77	72	55	46	28	5	1	1	359
Percent		1.1	1.4	3.3	14.8	21.4	20.1	15.3	12.8	7.8	1.4	0.3	0.3	100.0
Standard Error		0.55	0.62	0.95	1.87	2.17	2.12	1.90	1.77	1.42	0.62	0.28	0.28	
Mean Length	428	171	240	290	353	383	417	437	472	486	494	508	508	409
Standard Error	12.37	19.83	10.85	9.66	4.10	3.68	3.80	4.15	3.24	4.49	8.72			3.36
Sample Size	28	4	5	12	50	76	72	52	43	28	5	1	1	377
Mean Weight	1450				1590		230		1150	1589				1276
Standard Error									174.51	78.52				157.42
Sample Size	1	0	0	0	1	0	1	0	3	3	0	0	0	9

Table 50. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2026BC9), 1969. Sampling period 6/09 to 7/22, hook and line.

	Age Group									
	UNKNOWN	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES										
n (Known Age)		1	9	17	6	8	6	1	1	49
Percent		2.0	18.4	34.7	12.2	16.3	12.2	2.0	2.0	100.0
Standard Error		2.04	5.59	6.87	4.73	5.33	4.73	2.04	2.04	
Mean Length	482	400	381	408	445	457	461	430	470	430
Standard Error	14.24		14.28	4.71	13.51	9.59	14.63			5.96
Sample Size	6	1	9	17	6	8	6	1	1	55

Table 51. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2027BG0), 1970. Sampling period 6/27 to 8/12, hook and line.

	Age Group							TOTAL	
	UNKNOWN	3	4	5	6	7	8		9
ALL SAMPLES									
n (Known Age)		21	15	10	15	16	6	1	84
Percent		25.0	17.9	11.9	17.9	19.0	7.1	1.2	100.0
Standard Error		4.75	4.20	3.55	4.20	4.31	2.83	1.19	
Mean Length	380	291	339	390	411	428	430	483	373
Standard Error	21.89	5.40	9.98	7.12	5.49	6.31	6.52		6.59
Sample Size	15	20	15	10	15	16	6	1	98

Table 52. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2027BG1), 1971. Sampling period 8/03 to 8/08, hook and line.

	Age Group							TOTAL
	UNKNOWN	4	5	6	7	8	9	
ALL SAMPLES								
n (Known Age)		3	11	19	14	4	1	52
Percent		5.8	21.2	36.5	26.9	7.7	1.9	100.0
Standard Error		3.26	5.72	6.74	6.21	3.73	1.92	
Mean Length	389	379	392	421	441	455	435	419
Standard Error	25.90	15.43	9.32	5.84	4.78	16.78		4.67
Sample Size	4	3	11	19	14	4	1	56
Mean Weight	749	721	751	892	1067	1082	966	903
Standard Error	137.95	117.42	58.14	31.50	39.74	94.47		27.76
Sample Size	4	3	11	19	14	4	1	56

Table 53. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2027BG2), 1972. Sampling period 8/04 to 8/05, hook and line.

	Age Group							TOTAL
	UNKNOWN	3	4	5	6	7	8	
ALL SAMPLES								
n (Known Age)		1	8	31	17	8	4	69
Percent		1.4	11.6	44.9	24.6	11.6	5.8	100.0
Standard Error		1.45	3.88	6.03	5.23	3.88	2.83	
Mean Length	404	323	359	380	410	438	456	396
Standard Error	11.32		9.50	4.78	4.82	5.45	6.75	4.10
Sample Size	9	1	8	31	17	8	4	78
Mean Weight	782	386	554	705	813	1091	1170	781
Standard Error	56.82		35.59	36.43	34.98	61.75	112.48	26.99
Sample Size	9	1	8	31	17	8	4	78

Table 54. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2020BA7), 1987. Sampling period 8/25, seine.

	Age Group								TOTAL
	UNKNOWN	1	2	3	4	5	6	7	
ALL SAMPLES									
n (Known Age)		1	11	5	2	6	3	1	29
Percent		3.4	37.9	17.2	6.9	20.7	10.3	3.4	100.0
Standard Error		3.45	9.17	7.14	4.79	7.66	5.76	3.45	
Mean Length	443	226	221	288	361	422	428	455	322
Standard Error	16.00		2.68	13.52	17.00	10.06	4.26		17.36
Sample Size	2	1	11	5	2	6	3	1	31
Mean Weight	1275	140	147	314	540	990	1012	1200	542
Standard Error			14.09	42.85	80.00	42.11	36.09		78.02
Sample Size	1	1	10	5	2	6	3	1	29

Table 55. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2020BA8), 1988. Sampling period 6/06 to 7/14, gill net.

	Age Group									
	UNKNOWN	2	3	4	5	6	7	8	9	TOTAL
ALL SAMPLES										
n (Known Age)		1	1	1	8	12	4	6	2	35
Percent		2.9	2.9	2.9	22.9	34.3	11.4	17.1	5.7	100.0
Standard Error		2.86	2.86	2.86	7.20	8.14	5.46	6.46	3.98	
Mean Length	364	168	314	296	406	433	444	474	461	414
Standard Error	33.07				7.28	4.44	10.11	7.73	14.00	10.21
Sample Size	5	1	1	1	8	12	4	6	2	40
Mean Weight	789	60	635	325	831	951	1026	1311	1082	933
Standard Error	184.26				43.06	27.95	102.13	60.39	57.50	46.34
Sample Size	4	1	1	1	8	12	4	6	2	39

Table 56. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2020BA8), 1988. Sampling period 7/15 to 9/14, seine.

	Age Group											TOTAL
	UNKNOWN	2	3	4	5	6	7	8	9	10	11	
ALL SAMPLES												
n (Known Age)		24	25	41	31	56	49	37	22	7	1	293
Percent		8.2	8.5	14.0	10.6	19.1	16.7	12.6	7.5	2.4	0.3	100.0
Standard Error		1.60	1.63	2.03	1.80	2.30	2.18	1.94	1.54	0.89	0.34	
Mean Length	405	223	303	354	408	433	444	460	477	486	488	402
Standard Error	5.99	4.07	4.19	4.08	4.28	2.92	3.50	3.58	4.77	8.92		3.70
Sample Size	96	24	25	40	30	56	47	37	21	7	1	384
Mean Weight	890	129	306	606	848	1026	1126	1268	1336			813
Standard Error	44.74	5.82	30.81	27.09	40.86	34.21	28.61	64.53	87.24			28.79
Sample Size	52	20	8	24	17	31	16	5	8	0	0	181

Table 57. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2020BA8), 1988. Sampling period 6/16 to 9/13, hook and line.

	Age Group											TOTAL
	UNKNOWN	2	3	4	5	6	7	8	9	10	11	
ALL SAMPLES												
n (Known Age)		6	21	34	37	63	69	48	22	4	2	306
Percent		2.0	6.9	11.1	12.1	20.6	22.5	15.7	7.2	1.3	0.7	100.0
Standard Error		0.79	1.45	1.80	1.87	2.32	2.39	2.08	1.48	0.65	0.46	
Mean Length	423	223	298	363	406	432	451	458	472	471	479	420
Standard Error	8.11	6.21	5.61	4.60	4.51	2.54	2.43	3.19	4.11	13.91	7.00	3.16
Sample Size	25	6	21	34	37	62	68	48	22	4	2	329
Mean Weight	997	121	320	600	852	1021	1148	1225	1344	1307	1332	984
Standard Error	60.12	15.13	20.45	23.24	36.31	22.72	20.46	23.00	32.23	85.77	67.50	19.41
Sample Size	21	6	20	29	34	54	65	48	21	4	2	304

Table 58. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2020BA9), 1989. Sampling period 6/09 to 9/19, seine.

	Age Group											TOTAL
	UNKNOWN	1	2	3	4	5	6	7	8	9	10	
ALL SAMPLES												
n (Known Age)		11	8	8	17	24	27	48	28	11	7	189
Percent		5.8	4.2	4.2	9.0	12.7	14.3	25.4	14.8	5.8	3.7	100.0
Standard Error		1.71	1.47	1.47	2.09	2.43	2.55	3.17	2.59	1.71	1.38	
Mean Length	385	119	226	269	344	380	421	434	457	469	458	388
Standard Error	10.32	8.20	6.74	9.11	5.24	5.29	4.95	3.90	4.08	4.90	4.89	5.72
Sample Size	112	11	8	8	17	24	27	48	28	11	7	301
Mean Weight	962	115	151	232	556	680	950	1056	1191	1253	1263	926
Standard Error	31.43		14.33	27.50	27.31	28.11	34.46	21.00	28.40	37.37	52.36	20.03
Sample Size	98	1	7	8	17	23	26	48	28	11	7	274

Table 59. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Ugashik Narrows (R2020BA9), 1989. Sampling period 6/10 to 9/19, hook and line.

	Age Group											
	UNKNOWN	1	3	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES												
n (Known Age)		3	3	8	7	28	52	39	15	3	1	159
Percent		1.9	1.9	5.0	4.4	17.6	32.7	24.5	9.4	1.9	0.6	100.0
Standard Error		1.08	1.08	1.74	1.63	3.03	3.73	3.42	2.33	1.08	0.63	
Mean Length	435	170	305	334	385	423	437	452	454	484	447	428
Standard Error	4.59	5.84	4.37	7.46	9.21	3.41	2.93	3.61	5.38	3.53		3.30
Sample Size	59	3	3	8	7	28	52	39	15	3	1	218
Mean Weight	1075		315	475	635	958	1073	1150	1209	1440	1060	1038
Standard Error	49.92		45.00	43.30	67.14	39.83	34.93	39.24	54.35	20.00		25.99
Sample Size	31	0	2	4	4	12	30	15	9	2	1	110

Table 60. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2036BG9), 1969. Sampling period 6/10 to 9/19, hook and line.

	Age Group											
	UNKNOWN	2	3	4	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES												
n (Known Age)		3	21	74	215	196	132	79	29	20	2	771
Percent		0.4	2.7	9.6	27.9	25.4	17.1	10.2	3.8	2.6	0.3	100.0
Standard Error		0.22	0.59	1.06	1.62	1.57	1.36	1.09	0.69	0.57	0.18	
Mean Length	424	205	328	354	383	412	436	458	477	484	474	410
Standard Error	4.19	1.67	5.55	3.63	1.87	2.06	2.26	3.00	3.40	5.68	6.00	1.62
Sample Size	71	3	21	74	213	196	129	78	29	20	2	836
Mean Weight					771	864	733					793
Standard Error						361.00	220.00					136.97
Sample Size	0	0	0	0	1	2	2	0	0	0	0	5

Table 61. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2037BG0), 1970. Sampling period 6/02 to 8/11, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	11	TOTAL
ALL SAMPLES										
n (Known Age)		11	30	29	53	42	14	1	1	181
Percent		6.1	16.6	16.0	29.3	23.2	7.7	0.6	0.6	100.0
Standard Error		1.78	2.77	2.73	3.39	3.15	1.99	0.55	0.55	
Mean Length	439	328	369	382	413	431	445	481	495	408
Standard Error	8.36	9.52	3.89	4.13	3.12	3.55	7.38			2.94
Sample Size	31	11	30	29	53	40	13	1	1	209
Mean Weight						1362				1362
Standard Error										
Sample Size	0	0	0	0	0	1	0	0	0	1

Table 62. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2037BG1), 1971. Sampling period 6/29 to 10/08, hook and line.

	Age Group									
	UNKNOWN	3	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES										
n (Known Age)		3	17	25	29	18	11	8	1	112
Percent		2.7	15.2	22.3	25.9	16.1	9.8	7.1	0.9	100.0
Standard Error		1.53	3.41	3.95	4.16	3.49	2.82	2.44	0.89	
Mean Length	435	321	349	402	429	441	456	475	454	419
Standard Error	8.78	7.13	5.38	5.40	4.87	4.59	5.90	7.15		3.91
Sample Size	22	3	17	25	29	18	11	8	1	134
Mean Weight	1122	451	581	897	1055	1078	1333	1276	1442	1006
Standard Error	65.14	43.91	29.75	34.78	32.47	38.86	67.26	53.36		25.45
Sample Size	20	3	16	25	29	18	11	8	1	131

Table 63. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2037BG2), 1972. Sampling period 6/28 to 9/20, hook and line.

	Age Group								
	UNKNOWN	4	5	6	7	8	9	10	TOTAL
ALL SAMPLES									
n (Known Age)		6	29	27	25	21	6	4	118
Percent		5.1	24.6	22.9	21.2	17.8	5.1	3.4	100.0
Standard Error		2.03	3.98	3.88	3.78	3.54	2.03	1.67	
Mean Length	453	369	395	424	440	470	455	496	434
Standard Error	7.06	10.32	4.07	4.05	5.55	4.17	22.40	10.36	3.34
Sample Size	24	6	29	27	25	21	6	4	142
Mean Weight	974	737	833	961	1145	1355	1443	1612	1067
Standard Error	71.75	64.53	26.21	30.68	47.49	43.95	88.68	71.57	25.90
Sample Size	9	6	29	27	25	21	6	4	127

Table 64. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2037BG8), 1978. Sampling period 8/03, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	421	421
Standard Error	2.65	2.65
Sample Size	197	197

Table 65. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2037BG9), 1979. Sampling period 8/03, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	418	418
Standard Error	2.91	2.91
Sample Size	225	225
Mean Weight	957	957
Standard Error	26.73	26.73
Sample Size	109	109

Table 66. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2038BG0), 1980. Sampling period 8/13 to 10/05, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	416	416
Standard Error	4.54	4.54
Sample Size	107	107

Table 67. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2038BG1), 1981. Sampling period 7/01 to 7/25, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	443	443
Standard Error	6.79	6.79
Sample Size	31	31

Table 68. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2038BG2), 1982. Sampling period 8/06 to 9/07, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	434	434
Standard Error	4.30	4.30
Sample Size	60	60

Table 69. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2038BG3), 1983. Sampling period 9/04, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	442	442
Standard Error	4.48	4.48
Sample Size	52	52

Table 70. Mean lengths (mm) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2038BG4), 1984. Sampling period 9/02 to 9/06, hook and line.

	Age Group	
	UNKNOWN	TOTAL
ALL SAMPLES		
Mean Length	441	441
Standard Error	3.25	3.25
Sample Size	123	123

Table 71. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2030BA8), 1988. Sampling period 8/14 to 9/27, hook and line.

	Age Group							TOTAL
	UNKNOWN	5	6	7	8	9	10	
ALL SAMPLES								
n (Known Age)		12	13	11	7	2	1	46
Percent		26.1	28.3	23.9	15.2	4.3	2.2	100.0
Standard Error		6.55	6.71	6.36	5.35	3.04	2.17	
Mean Length	448	412	429	460	453	449	470	440
Standard Error	9.55	5.86	7.97	6.80	4.80	13.00		4.00
Sample Size	14	12	13	11	7	2	1	60
Mean Weight	1235	1003	1133	1348	1317	1335	1600	1207
Standard Error	75.66	47.65	64.57	53.12	37.65	145.00		31.20
Sample Size	13	12	12	11	7	2	1	58

Table 72. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2030BA9), 1989. Sampling period 7/22 to 9/17, seine.

	Age Group								
	UNKNOWN	5	6	7	8	9	10	11	TOTAL
ALL SAMPLES									
n (Known Age)		1	10	20	12	7	4	1	55
Percent		1.8	18.2	36.4	21.8	12.7	7.3	1.8	100.0
Standard Error		1.82	5.25	6.55	5.62	4.54	3.53	1.82	
Mean Length	434	374	413	421	440	464	455	445	432
Standard Error	7.49		8.71	4.67	5.69	4.78	2.99		3.45
Sample Size	26	1	10	20	12	7	4	1	81
Mean Weight	1173	710	977	1062	1207	1314	1375	1260	1144
Standard Error	65.42		54.98	35.83	48.40	53.98	63.05		28.12
Sample Size	26	1	10	20	12	7	4	1	81

Table 73. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Ugashik Outlet (R2030BA9), 1989. Sampling period 7/22 to 9/13, hook and line.

	Age Group										
	UNKNOWN	1	4	5	6	7	8	9	10	12	TOTAL
ALL SAMPLES											
n (Known Age)		1	4	1	12	16	9	3	1	1	48
Percent		2.1	8.3	2.1	25.0	33.3	18.8	6.3	2.1	2.1	100.0
Standard Error		2.08	4.03	2.08	6.32	6.88	5.69	3.53	2.08	2.08	
Mean Length	440	153	372	396	419	434	445	467	478	495	427
Standard Error	5.68		14.11		9.43	5.34	9.15	2.33			6.42
Sample Size	10	1	4	1	12	16	9	3	1	1	58
Mean Weight	1247		732	880	1016	1211	1276	1490	1750	1870	1155
Standard Error	57.76		66.76		59.96	66.15	119.86				45.10
Sample Size	7	0	4	1	11	11	5	1	1	1	42

Table 74. Mean lengths (mm) of Arctic grayling, by age group from samples collected from Upper Ugashik Lake (R2000BA9), 1989. Sampling period 6/21 to 7/06, seine.

	Age Group				TOTAL
	UNKNOWN	1	2	3	
ALL SAMPLES					
n (Known Age)		43	12	1	56
Percent		76.8	21.4	1.8	100.0
Standard Error		5.69	5.53	1.79	
Mean Length	114	113	180	259	126
Standard Error	2.54	1.92	3.36		3.58
Sample Size	20	43	12	1	76

Table 75. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Aniak River (V0057BA5), 1975. Sampling period 5/27 to 5/29, gill net.

	Age Group					TOTAL
	UNKNOWN	4	5	6	7	
ALL SAMPLES						
n (Known Age)		2	6	5	4	17
Percent		11.8	35.3	29.4	23.5	100.0
Standard Error		8.05	11.95	11.39	10.60	
Mean Length	294	250	248	317	339	292
Standard Error	11.01	18.50	4.54	11.12	5.72	7.61
Sample Size	20	2	6	5	4	37
Mean Weight	344	122	143	392	673	342
Standard Error	55.85	3.50	9.47	93.21	115.38	41.62
Sample Size	20	2	6	5	4	37

Table 76. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Aniak River (V0057BA5), 1975. Sampling period 5/24 to 5/30, all other methods.

	Age Group					TOTAL
	UNKNOWN	5	6	7	8	
ALL SAMPLES						
n (Known Age)		8	8	4	2	22
Percent		36.4	36.4	18.2	9.1	100.0
Standard Error		10.50	10.50	8.42	6.27	
Mean Length	297	251	295	333	356	295
Standard Error	10.24	10.35	16.34	7.87	21.00	7.26
Sample Size	25	8	8	4	2	47
Mean Weight	297	173	281	380	505	284
Standard Error	32.65	21.99	35.33	29.85		21.27
Sample Size	23	8	7	4	1	43

Table 77. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Kisaralik River (V1267BA5), 1975. Sampling period 5/06 to 7/05, gill net.

	Age Group								
	UNKNOWN	3	4	5	6	7	8	10	TOTAL
ALL SAMPLES									
n (Known Age)		1	5	6	12	9	5	1	39
Percent		2.6	12.8	15.4	30.8	23.1	12.8	2.6	100.0
Standard Error		2.56	5.42	5.85	7.49	6.83	5.42	2.56	
Mean Length	300	220	226	250	304	324	369	395	300
Standard Error	9.68		8.55	2.84	5.86	7.67	10.64		6.23
Sample Size	32	1	5	6	12	9	5	1	71
Mean Weight	315	106	115	192	297	339	501	700	306
Standard Error	29.14		13.35	19.63	21.58	33.79	55.93		18.62
Sample Size	32	1	5	6	12	9	5	1	71

Table 78. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Kisaralik River (V1267BG6), 1976. Sampling period 7/10 to 7/29, hook and line.

	Age Group						TOTAL
	UNKNOWN	4	6	7	8	9	
ALL SAMPLES							
n (Known Age)		1	2	10	9	10	32
Percent		3.1	6.3	31.3	28.1	31.3	100.0
Standard Error		3.13	4.35	8.32	8.08	8.32	
Mean Length	295	265	292	314	332	395	340
Standard Error			2.50	3.64	5.08	7.82	7.43
Sample Size	1	1	2	10	9	10	33
Mean Weight	350	250		338	418	690	481
Standard Error				12.99	31.68	71.22	40.32
Sample Size	1	1	0	9	7	10	28

Table 79. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Tuluksak River (V1767BG6), 1976. Sampling period 7/31 to 8/02, hook and line.

	Age Group							TOTAL
	4	5	6	7	8	9	10	
ALL SAMPLES								
n (Known Age)	2	1	3	7	10	1	1	25
Percent	8.0	4.0	12.0	28.0	40.0	4.0	4.0	100.0
Standard Error	5.54	4.00	6.63	9.17	10.00	4.00	4.00	
Mean Length	267	270	313	331	367	385	405	341
Standard Error	2.50		14.53	6.59	5.33			7.89
Sample Size	2	1	3	7	10	1	1	25
Mean Weight	313	325	450	479	539	825	950	513
Standard Error	12.50		52.04	32.93	28.31			30.69
Sample Size	2	1	3	7	10	1	1	25

Table 80. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from Arolik Lake and River (V1497BG6), 1976. Sampling period 7/13 to 7/17, hook and line.

	Age Group					TOTAL
	5	6	7	8	9	
ALL SAMPLES						
n (Known Age)	1	2	8	14	2	27
Percent	3.7	7.4	29.6	51.9	7.4	100.0
Standard Error	3.70	5.14	8.96	9.80	5.14	
Mean Length	330	415	422	461	480	443
Standard Error		35.00	7.13	4.21	5.00	6.91
Sample Size	1	2	8	14	2	27
Mean Weight		1165	848	1050	1182	1011
Standard Error			79.08	52.47	82.50	46.57
Sample Size	0	1	5	8	2	16

Table 81. Mean lengths (mm) and weights (g) of Arctic grayling, by age group from samples collected from the Kanektok River (V0037BG5), 1975. Sampling period 7/23 to 7/25, hook and line.

	Age Group							TOTAL
	UNKNOWN	4	5	6	7	8	9	
ALL SAMPLES								
n (Known Age)		1	13	10	7	1	1	33
Percent		3.0	39.4	30.3	21.2	3.0	3.0	100.0
Standard Error		3.03	8.64	8.12	7.23	3.03	3.03	
Mean Length	393	257	327	401	426	459	463	377
Standard Error			6.39	10.61	9.86			9.68
Sample Size	1	1	13	10	7	1	1	34
Mean Weight	750	200	419	705	843	950	800	621
Standard Error			37.36	46.82	55.02			40.28
Sample Size	1	1	13	10	7	1	1	34

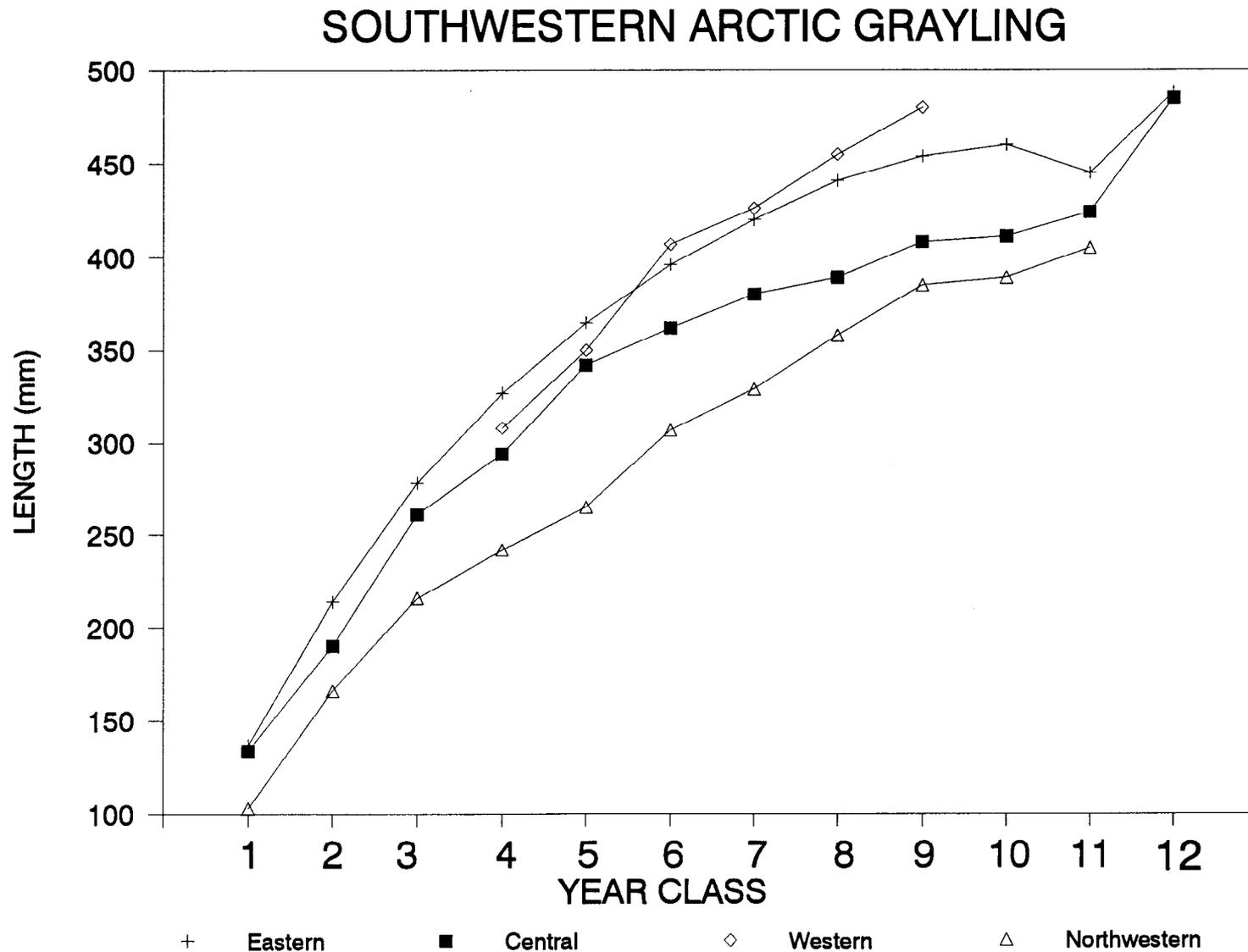


Figure 2. Mean length at age for Arctic grayling in the eastern, central, western, and northwestern sections of the southwestern sport fish management area.

sections of the management area, however, sample sizes are clearly deficient. For all but the most recent years, little information is available. Future sampling efforts should emphasize stocks in these sections.

Age, when estimated from scale samples, is generally considered to be conservative when compared to age estimates made from other boney structures such as otoliths, fin rays, vertebrae, or operculum (Merritt and Fleming 1991). Although age estimates from scales are not absolute, neither are those from other structures collected from wild stocks in the absence of known-age fish for verification. For reasons of cost and the biological concerns for having to sacrifice the fish to collect boney structures other than scales, the Department has settled on scale ages as the standard aging technique for Arctic grayling.

Collecting and processing age and size data is expensive. In order to derive the greatest benefit from the information, resource agencies need to standardize sampling techniques, recording methods, and age estimation procedures. In addition, agencies need to better coordinate sampling efforts and share results. The coordination, standardization, and distribution would be facilitated if one agency served as the accumulation and dispersal point for age and size data collected by all the resource agencies working in southwestern Alaska. With the completion of this project, and as the primary authority for Arctic grayling management in Southwest Alaska, the Alaska Department of Fish and Game is the appropriate agency to assemble and distribute this information. Ideally, with the cooperation of other resource agencies, an updated summary of age and size data can be produced on regular intervals and updated data sets made available upon request.

ACKNOWLEDGEMENTS

The data contained in this summary represent the combined efforts of many fishery professionals and volunteers too numerous to list. Worthy of mention, however, are the efforts of Mr. Scott Meyer, Mr. Richard Russell, and Mr. Lou Gwartney, who together collected the vast majority of this data. Mr. Scott Meyer is additionally recognized as contributing the bulk of the time and effort which was required to age, process, and organize these data into a useable standard format. I would like to thank Ms. Beverly LeMaster and Mr. Matt Miller for data entry, Ms. Gail Heineman for technical support, and Mr. Mac Minard for advice and patience.

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APPENDIX A

Appendix A. File format for Division of Sport Fish standard age, weight, and length form version 1.1.

Name of Field	Width	Start Column	End Column	Comma Column
survey area	3	1	3	4
site	3	5	7	8
unused	3	9	11	12
sublocation line 1	3	13	15	16
sublocation line 2	3	17	19	20
date	6	21	26	27
week of year (computed)	2	28	29	30
weekend/weekday (computed)	1	31	31	32
project number	6	33	38	39
page number	3	40	42	43
species	3	44	46	47
type of length measurement	2	48	49	50
type of weight measurement	2	51	52	53
type of fishery	2	54	55	56
gear code	2	57	58	59
mesh size inches	1	60	60	61
mesh size eighths	1	62	62	63
variable 1 row 1	3	64	66	67
variable 1 row 2	3	68	70	71
variable 2 row 1	3	72	74	75
variable 2 row 2	3	76	78	79
variable 3 row 1	3	80	82	83
variable 3 row 2	3	84	86	87
variable 4 row 1	3	88	90	91
variable 4 row 2	3	92	94	95
age structure type	2	96	97	98
type of tag	2	99	100	101
litho-code	8	102	109	110
line number	2	111	112	113
sex	1	114	114	115
maturity index	2	116	117	118
length	4	119	122	123
weight	4	124	127	128
age	2	129	130	131
age error	1	132	132	133
fate	1	134	134	135
recapture	1	136	136	137
finclip adipose	2	138	139	140
finclip caudal	2	141	142	143
finclip dorsal	2	144	145	146

-continued-

Appendix A. (Page 2 of 2).

Name of Field	Width	Start Column	End Column	Comma Column
finclip anal	2	147	148	149
finclip left ventral	2	150	151	152
finclip right ventral	2	153	154	155
finclip left pectoral	2	156	157	158
finclip right pectoral	2	159	160	161
tag color white	2	162	163	164
tag color black	2	165	166	167
tag color red	2	168	169	170
tag color yellow	2	171	172	173
tag color blue	2	174	175	176
tag color clear	2	177	178	179
tag number	6	180	185	

APPENDIX B

Appendix B. Division of Sport Fish location names and site codes
for waters in southwestern Alaska.

Survey Area		Site	Name
Letter	Number		
R	18	207	CROOKED CREEK
R	18	206	DEER CREEK
R	18	226	E CREEK
R	18	012	EGEGIK RIVER
R	18	239	FEATHERLY CREEK
R	18	233	GERTRUDE CREEK
R	18	235	GRASSY CREEK (into Ugashik River)
R	18	143	KING SALMON CREEK (Naknek River)
R	18	201	LOWER UGASHIK LAKE
R	18	008	NAKNEK LAKE (BAY OF ISLANDS)
R	18	007	NAKNEK RIVER & TRIBUTARIES
R	18	200	UPPER UGASHIK LAKE
R	18	201	LOWER UGASHIK LAKE
R	18	202	UGASHIK LAKE NARROWS
R	18	203	UGASHIK RIVER
R	18	011	UGASHIK SYSTEM
S	19	008	ALAGNAK (BRANCH) RIVER
S	19	176	CARIBOU LAKES
S	19	173	CHULITNA RIVER
S	19	005	COPPER RIVER
S	19	170	GIBRALTER RIVER
S	19	145	KASKANAK CREEK
S	19	149	KIJIK RIVER
S	19	003	KVICHAK RIVER
S	19	009	LAKE CLARK AREA
S	19	178	LITTLE KIJIK RIVER
S	19	004	LOWER TALARIK CREEK
S	19	164	MIDDLE TALARIK CREEK
S	19	134	MORAIN CREEK
S	19	007	NEWHALEN RIVER
S	19	128	NONVIANUK RIVER
S	19	174	OLE CREEK
S	19	175	PECKS CREEK
S	19	163	ROADHOUSE CREEK
S	19	156	TANALIAN RIVER
S	19	155	TAZIMINA LAKES
S	19	133	TAZIMINA RIVER
S	19	166	TOMMY CREEK
S	19	151	TURQUOISE LAKE (Dirk's Lake)

-continued-

Appendix B. (Page 2 of 2).

Survey Area		Site	Name
Letter	Number		
T	20	111	AGULOWAK RIVER
T	20	128	AGULUKPAK RIVER
T	20	135	GRANT RIVER
T	20	166	K-1 CREEK
T	20	167	KEMA CREEK
T	20	136	LITTLE TOGIAK CREEK (into Lake Nerka)
T	20	138	LYNX CREEK
T	20	168	LYNX LAKE
T	20	133	PEACE RIVER
T	20	169	STOVALL CREEK
T	20	137	TUN CREEK (also Rainbow Basin)
T	20	134	WIND RIVER
T	20	004	WOOD RIVER LAKES SYSTEM
T	20	165	ALLEN RIVER
T	20	008	CHILIKADROTNA RIVER
T	20	130	FISH TRAP LAKE
T	20	114	IGUSHIK RIVER
T	20	129	KING SALMON RIVER
T	20	007	MULCHATNA RIVER
T	20	003	NUSHAGAK RIVER SYSTEM
T	20	005	NUYAKUK RIVER
T	20	175	NUYAKUK LAKE (outlet of Nuyakuk- Chauekuktuli River)
T	20	163	SNIPE LAKE
T	20	120	STUYAHOK RIVER
T	20	162	TIKCHIK NARROWS
T	20	170	TIKCHIK RIVER
T	20	122	TWIN LAKES
T	20	142	NAYORURUN RIVER
T	20	006	TOGIAK RIVER SYSTEM
V	22	050	ANIAK LAKE
V	22	005	ANIAK RIVER
V	22	084	KASIGLUK RIVER
V	22	043	KISARALIK RIVER
V	22	019	KWETHLUK RIVER
V	22	115	EK RIVER
V	22	176	TULUKSAK RIVER
V	22	015	WHITEFISH CREEK (out of Whitefish Lake)
V	22	149	AROLIK LAKE
V	22	004	GOODNEWS RIVER
V	22	003	KANEKTOK RIVER

APPENDIX C

Appendix C. Division of Sport Fish gear codes.

GEAR CODE	MEANING
01	Gill Net
02	Electroshocking
03	Seine
04	Weir Trap
05	Minnow Trap
06	Fyke Net
07	Other Traps
08	Dip Net
09	Hook and Line
10	Trot Line
11	Fish Wheel
12	Spear
13	Shovel
14	Chemical Treatment
15	Explosives
16	Beach or Stream Dead
17	Weir Screen Dead
18	Subsistence Gill Net
19	Subsistence Seine
20	Longline
25	Hoop Net
30	Tow Net
99	All Other Methods

APPENDIX D

Appendix D. Summary of available Arctic grayling data from the central section of the Southwest Alaska sport fish management area.

CENTRAL SECTION:												
NUSHAGAK RIVER DRAINAGE												
System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Erve-ropes			start	end	
Allen River	67	T1656BG7	09	2	2	0	6	6	6	670829	671012	
system subtotal				2	2	0	6	6	6			
Chilikadrotna River	78	T0087BG8	09	0	0	0	25	25	25	780918	780922	
system subtotal				0	0	0	25	25	25			
Fishtrap Lake	79	T1307BG9	01	0	0	0	1	1	1	790824	790824	
system subtotal				0	0	0	1	1	1			
Igushik River	68	T1146BG8	09	1	1	0	5	5	5	680621	680624	
system subtotal				1	1	0	5	5	5			
King Salmon River	65	T1296BG5	09	0	1	0	0	10	13	650809	650809	
	80	T1298BG0	09	15	15	0	128	113	128	800617	800622	
	86	T1298BG6	09	1	1	0	0	5	6	8607	8607	
system subtotal				16	17	0	128	128	147			
Mulchatna River	78	T0077BG8	09	0	0	0	6	5	6	780812	780812	
	79	T0077BG9	09	0	0	0	45	45	45	790910	790915	
	86	T0078BG6	09	4	4	0	0	10	10	860701	860903	
	89	T0070BA1	09	1	1	0	2	2	2	890720	890720	
system subtotal				5	5	0	53	62	63			
Nushagak River	65	T0036BG5	09	1	1	0	1	0	1	650703	650703	
	69	T0036BG9	09	2	2	0	5	5	5	690629	690630	
	86	T0038BG6	09	3	3	0	0	21	24	86	86	NO DATES
system subtotal				6	6	0	6	26	30			

-continued-

Appendix D. (Page 2 of 4).

CENTRAL SECTION:

NUSHAGAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Nuyakuk River	64	T0056BG4	03	1	1	0	1	1	1	640705	640705	
	64	T0056BG4	09	3	3	0	3	3	3	640701	640705	
	65	T0056BG5	03	2	2	0	22	15	22	650706	650706	
	65	T0056BG5	09	0	0	0	0	1	3	650709	650709	
	67	T0056BG7	09	12	12	0	55	55	55	670623	671004	
	69	T0056BG9	09	3	3	0	3	3	3	690627	690730	
system subtotal				21	21	0	84	78	87			
Nuyakuk- Chaekuktuili River	67	T1756BG7	09	1	1	0	5	5	6	670822	670829	
system subtotal				1	1	0	5	5	6			
Snipe Lake	78	T1637BG8	01	0	0	0	60	60	60	780719	780720	
	78	T1637BG8	02	0	0	0	1	1	1	780719	780719	
system subtotal				0	0	0	61	61	61			
Stuyahok River	63	T1206BG3	09	1	1	0	6	4	6	630806	630806	
	68	T1206BG8	09	1	1	0	0	3	9	680616	680616	
system subtotal				2	2	0	6	7	15			
Tikchik Narrows	67	T1626BG7	09	17	17	0	75	72	75	670814	671004	
system subtotal				17	17	0	75	72	75			
Tikchik River	80	T1708BG0	02	0	1	0	9	9	9	800713	800713	
	80	T1708BG0	09	1	2	0	157	155	157	800713	800717	
system subtotal				1	3	0	166	164	166			
Twin Lakes	78	T1227BG8	01	3	3	0	8	8	8	780802	780802	
system subtotal				3	3	0	8	8	8			
Total NUSHAGAK RIVER drainage samples:				75	78	0	629	648	695			

-continued-

Appendix D. (Page 3 of 4).

CENTRAL SECTION:

WOOD RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Agulowak River	64	T1116BG4	09	0	0	0	0	0	2	640802	640802	
	69	T1116BG9	09	3	3	0	10	9	10	690717	690819	
	70	T1117BG0	09	1	1	0	2	1	2	700925	701006	
	86	T1118BG6	09	3	3	0	7	4	9	860717	860803	
	88	T1118BG8	09	12	12	0	32	31	32	880629	880824	
	89	T1110BB1	09	13	13	0	55	53	55	890617	890920	
system subtotal				32	32	0	106	98	110			
Agulukpak River	69	T1286BG9	09	4	4	0	20	17	20	690721	690826	
	70	T1287BG0	09	1	1	0	11	14	16	700929	701005	
	86	T1280BA9	09	0	0	0	0	0	53	860704	860816	
	88	T1288BG8	09	7	7	0	47	45	47	880701	880823	
system subtotal				12	12	0	78	76	136			
Grant River	70	T1357BG0	09	1	1	0	2	2	2	701003	701003	
system subtotal				1	1	0	2	2	2			
K-1 Creek	64	T1666BG4	09	1	1	0	1	1	1	640822	640822	
system subtotal				1	1	0	1	1	1			
Kema Creek	69	T1676BG9	09	3	3	0	21	20	21	690826	690826	
	70	T1677BG0	09	1	1	0	8	8	8	700928	700928	
system subtotal				4	4	0	29	28	29			
Little Togiak River	69	T1366BG9	09	2	2	0	2	2	2	690629	690820	
	70	T1367BG0	09	1	1	0	1	1	1	701005	701005	
system subtotal				3	3	0	3	3	3			

-continued-

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Appendix D. (Page 4 of 4).

CENTRAL SECTION:

WOOD RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Lynx Creek	70	T1387BG0	09	1	1	0	5	5	5	701006	701006	
system subtotal				1	1	0	5	5	5			
Lynx Lake	80	T1688BG0	09	1	1	0	2	2	46	800701	800702	
system subtotal				1	1	0	2	2	46			
Peace River	69	T1336BG9	09	1	1	0	4	4	4	690706	690824	
system subtotal				1	1	0	4	4	4			
Stovall Creek	69	T1696BG9	09	1	1	0	7	5	7	690820	690821	
system subtotal				1	1	0	7	5	7			
Tsun Creek	69	T1376BG9	09	4	4	0	17	17	17	690706	690824	
	70	T1377BG0	09	1	1	0	1	1	1	700929	700929	
system subtotal				5	5	0	18	18	18			
Wind River	69	T1346BG9	09	5	5	0	38	36	38	690703	690823	
	70	T1347BG0	09	6	6	0	37	35	37	700806	701002	
system subtotal				11	11	0	75	71	75			
Wood River	64	T0046BG4	01	1	1	0	3	3	3	640807	640804	
	68	T0046BG8	09	1	1	0	1	1	1	680626	680626	
system subtotal				2	2	0	4	4	4			
Total WOOD RIVER drainage samples:				75	75	0	334	317	440			
CENTRAL SECTION TOTALS				150	153	0	963	965	1135			

APPENDIX E

Appendix E. Summary of available Arctic grayling data from the eastern section of the Southwest Alaska sport fish management area.

EASTERN SECTION:

EGEGIK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Egegik River	88	R0128BG8	09	4	4	0	6	6	6	880611	880615	
system subtotal				4	4	0	6	6	6			
Featherly Creek	80	R2398BG0	09	1	1	0	3	3	3	800728	800728	
system subtotal				1	1	0	3	3	3			
Gertrude Creek	70	R2337BG0	09	1	1	0	7	7	7	701016	701016	
	77	R2337BG7	09	1	1	0	9	5	9	770605	770605	
	89	R2330BA9	09	13	13	0	114	112	114	890618	890620	
system subtotal				15	15	0	130	124	130			
Total EGEKIK RIVER drainage samples:				20	20	0	139	133	139			

-continued-

Appendix E. (Page 2 of 10).

EASTERN SECTION:

KVICHAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace- tates	Enve- lopes	Slides			start	end	
Alagnak River	64	S0086BG4	09	1	1	0	1	1	1	640713	640713	
	70	S0087BG0	09	2	2	0	8	8	8	700714	700714	
	89	S0080BA1	09	7	7	0	35	31	35	890801	890821	
system subtotal				10	10	0	44	40	44			
Caribou Lakes	79	S1767BG9	09	2	2	0	7	3	7	790728	790729	
system subtotal				2	2	0	7	3	7			
Chulitna River	72	S1737BG2	09	1	1	0	5	5	5	720727	720727	
	79	S1737BG9	03	0	0	0	15	15	15	790630	790605	
	79	S1737BG9	09	0	0	0	91	87	91	790624	790804	
system subtotal				1	1	0	111	107	111			
Copper River	72	S0057BG2	09	2	2	0	2	2	2	720905	720915	
system subtotal				2	2	0	2	2	2			
Gibraltar River	73	S1707BG3	09	1	1	0	3	3	3	730727	730727	
system subtotal				1	1	0	3	3	3			
Kaskanak Creek	69	S1456BG9	09	1	1	0	1	1	1	690722	690722	
system subtotal				1	1	0	1	1	1			
Kijik River	74	S1497BG4	09	1	1	0	12	0	12	740616	740705	
	78	S1497BG8	09	3	3	0	14	13	14	780605	780626	
system subtotal				4	4	0	26	13	26			

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EASTERN SECTION:

KVICHAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Kvichak River	64	S0036BG4	09	3	3	0	9	9	9	640702	640725	
	68	S0036BG8	09	1	1	0	1	1	1	680821	680821	
	69	S0036BG9	09	28	28	0	109	105	109	690614	690722	
	70	S0037BG0	09	1	1	0	1	1	1	700615	700615	
system subtotal				33	33	0	120	116	120			
Lake Clark	78	S0097BG8	01	4	4	0	15	14	15	780607	780927	
	79	S0097BG9	01	3	3	0	29	29	29	790628	790628	
system subtotal				7	7	0	44	43	44			
Little Kijik River	79	S1787BG9	09	6	6	0	63	61	63	790606	790608	
system subtotal				6	6	0	63	61	63			
Lower Talarik Creek	64	S0046BG4	01	1	1	0	3	3	3	640902	640902	
	64	S0046BG4	09	3	3	0	9	8	9	640901	641008	
	68	S0046BG8	09	1	1	0	9	9	9	680826	680924	
	69	S0046BG9	09	0	0	0	0	0	3	690604	690604	
	70	S0047BG0	09	5	5	0	13	13	13	700312	700716	
	71	S0047BG1	04	5	5	0	166	133	166	710526	710611	
	71	S0047BG1	09	0	0	0	0	2	2	710803	710803	
	72	S0047BG2	02	1	1	0	0	0	27	720603	720611	
	72	S0047BG2	04	2	2	0	0	0	103	720502	720616	
	73	S0047BG3	04	7	7	0	237	196	237	730502	731011	
	74	S0047BG4	04	0	0	0	0	0	291	740430	740528	
	74	S0047BG4	10	0	0	0	0	0	18	740503	740503	
	74	S0047BG4	17	0	0	0	0	0	2	740503	740503	
	75	S0047BG5	04	0	0	0	0	0	26	750609	750921	
75	S0047BG5	09	0	0	0	0	0	15	750612	750627		

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EASTERN SECTION:

KVICHAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Erve- lopes			start	end	
Lower Talarik Creek (continued)	87	S0040BA7	03	5	5	0	35	34	35	870516	871002	
	87	S0040BA7	08	1	1	0	2	2	2	870525	870525	
	87	S0040BA7	09	17	17	0	100	98	100	870503	870918	
system subtotal				48	48	0	574	498	1061			
Middle Talarik Creek	71	S1647BG1	02	1	1	0	6	6	6	711003	711003	
system subtotal				1	1	0	6	6	6			
Moraine Creek	70	S1347BG0	09	1	1	0	1	1	1	700725	700725	
	89	S1340BA1	09	1	1	0	3	3	3	890713	890714	
system subtotal				2	2	0	4	4	4			
Newhalen River	74	S0077BG4	09	13	13	0	31	31	31	740617	740914	
system subtotal				13	13	0	31	31	31			
Nonvianuk River	74	S1287BG4	09	1	1	0	30	28	30	740601	740606	
	system subtotal			1	1	0	30	28	30			
Ole Creek	64	S1746BG4	01	1	1	0	3	3	3	641012	641012	
	69	S1746BG9	09	1	1	0	1	1	1	690705	690705	
system subtotal				2	2	0	4	4	4			
Pecks Creek	64	S1756BG4	01	1	1	0	2	2	2	641012	641012	
	64	S1756BG4	09	1	1	0	1	1	1	640828	640828	
	68	S1756BG8	09	1	1	0	1	1	1	680816	680816	
	69	S1756BG9	09	10	10	0	44	39	44	690614	690721	
	80	S1758BG0	09	1	1	0	3	3	3	800731	800731	
system subtotal				14	14	0	51	46	51			
Roadhouse Creek	74	S1637BG4	09	2	2	0	9	9	9	740708	740822	
system subtotal				2	2	0	9	9	9			

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Appendix E. (Page 5 of 10).

EASTERN SECTION:

KVICHAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Erve-ropes			start	end	
Tanallan River	79	S1567BG9	02	1	1	0	3	3	3	790803	790803	
system subtotal				1	1	0	3	3	3			
Tazimina Lake (Upper & Lower)	78	S1557BG8	01	0	0	0	69	59	69	780908	780913	
	78	S1557BG8	02	0	0	0	1	1	1	780908	780908	
	78	S1557BG8	02	0	0	0	2	2	2	780908	780908	
system subtotal				0	0	0	72	62	72			
Tazimina River	74	S1337BG4	09	6	6	0	63	63	63	740731	740917	
	79	S1337BG9	09	6	6	0	49	48	49	790716	790820	
	87	S1330BM8	09	14	14	0	0	133	140	870728	870930	
	88	S1330BU8	03	3	3	0	0	17	18	880913	880916	
	88	S1330BU8	09	99	99	0	76	517	538	880519	881005	
	89	S1330BA1	09	3	3	0	12	12	12	890821	890823	
system subtotal				131	131	0	200	790	820			
Tommy Creek	78	S1667BG8	09	1	1	0	2	2	2	780609	780609	
system subtotal				1	1	0	2	2	2			
Turquoise Lake	78	S1517BG8	01	4	4	0	10	10	10	780807	780809	
system subtotal				4	4	0	10	10	10			
Total KVICHAK RIVER drainage samples:				287	287	0	1417	1882	2524			

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Appendix E. (Page 6 of 10).

EASTERN SECTION:

NAKNEK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Bay of Islands	64	R0086BG4	09	1	1	0	5	5	5	640820	640820	
system subtotal				1	1	0	5	5	5			
Big Creek	64	R1966BG4	09	9	9	0	67	63	67	640815	640818	
	67	R1966BG7	09	5	5	0	25	25	25	670810	670814	
	68	R1966BG8	09	5	5	0	20	20	20	680725	680812	
	69	R1966BG9	09	1	1	0	3	3	3	090619	690619	
	88	R1968BG8	09	0	0	0	0	0	4	880817	880819	
system subtotal				20	20	0	115	111	119			
King Salmon Creek	64	R1436BG4	09	6	6	0	55	54	55	640811	640813	
	67	R1436BG7	09	4	4	0	7	7	7	670724	670727	
	68	R1436BG8	09	3	3	0	10	8	10	680617	680722	
system subtotal				13	13	0	72	69	72			

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EASTERN SECTION:

NAKNEK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Erve-ropes			start	end	
Naknek River	64	R0076BG4	09	1	1	0	2	2	2	640915	640915	
	67	R0076BG7	09	2	2	0	2	2	2	670616	670904	
	68	R0076BG8	09	9	9	0	19	18	25	680313	680806	
	69	R0076BG9	09	2	2	0	4	4	11	690428	691026	
	70	R0077BG0	09	8	8	0	9	9	9	700608	700719	
	71	R0077BG1	09	1	1	0	2	2	2	710622	710623	
	82	R0078BG2	09	0	0	0	0	0	223	820806	820907	VARIABLE 2 COLUMN-TOTAL LENGTH LENGTH COLUMN-FORK LENGTHS
	87	R0070BD9	09	9	9	0	3	9	14	870613	871018	
	88	R0070BC9	09	7	7	0	0	7	24	880830	881009	
	89	R0070BB9	09	21	21	0	44	43	44	890608	890922	
system subtotal				60	60	0	85	96	356			
Total NAKNEK RIVER drainage samples:				94	94	0	277	281	552			

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Appendix E. (Page 8 of 10).

EASTERN SECTION:

UGASHIK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Crooked Creek	88	R2070BA8	01	7	7	0	47	44	47	880523	880526	
	88	R2070BA8	09	5	5	0	18	18	18	880521	880807	
	89	R2070BA9	02	4	4	0	36	35	36	890712	890713	
	89	R2070BA9	09	9	9	0	70	60	70	890616	890627	
system subtotal				25	25	0	171	157	171			
Deer Creek	89	R2060BA9	02	1	1	0	39	35	39	890714	890714	
	89	R2060BA9	09	4	4	0	7	7	7	890626	890626	
system subtotal				5	5	0	46	42	46			
Deer Lake	88	R2060BA8	01	1	1	0	0	3	3	880527	880527	
system subtotal				1	1	0	0	3	3			
E Creek	70	R2267BG0	09	0	0	0	0	0	1	700630	700630	
	88	R2260BA8	02	3	3	0	17	15	17	880803	880831	
	88	R2260BA8	09	2	2	0	8	7	8	880603	880806	
	89	R2260BA9	02	1	1	0	4	4	4	890711	890711	
	89	R2260BA9	09	3	3	0	23	17	23	890704	890710	
system subtotal				9	9	0	52	43	53			
Grassy Creek	88	R2350BA8	02	1	1	0	6	6	6	880830	880830	
	88	R2350BA8	09	1	1	0	9	10	10	880801	880801	
system subtotal				2	2	0	15	16	16			
Lower Ugashik Lake	88	R2010BA8	01	1	1	0	1	1	1	880605	880605	
system subtotal				1	1	0	1	1	1			
Ugashik Area Mixed	65	R0116BG5	09	0	0	0	0	0	22	650530	650827	
	67	R0116BG7	09	8	8	0	0	1	149	670528	671017	
	68	R0116BG8	09	18	17	0	0	359	419	680518	681027	
system subtotal				26	25	0	0	360	590			

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EASTERN SECTION:

UGASHIK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Ugashik Narrows	69	R2026BG9	09	3	3	0	0	49	58	690609	690722	
	70	R2027BG0	09	3	3	0	0	84	109	700627	700812	
	71	R2027BG1	09	2	2	0	0	52	57	710803	710808	
	72	R2027BG2	09	2	2	0	78	69	78	720804	720805	
	73	R2027BG3	09	0	0	0	0	0	2	730717	730717	
	74	R2027BG4	09	0	0	0	0	0	1	7408	7408	
	76	R2027BG6	09	0	0	0	0	0	1	760801	760801	
	77	R2027BG7	09	0	0	0	0	0	1	7709	7709	
	82	R2028BG2	09	0	0	0	0	0	11	820808	820808	
	87	R2020BA7	03	4	4	0	31	29	31	870825	870825	
	87	R2020BA7	09	9	9	0	10	16	19	870620	870825	
	88	R2020BA8	01	6	6	0	40	38	40	880606	880714	
	88	R2020BA8	03	43	43	0	387	293	388	880715	880914	
	88	R2020BA8	09	41	41	0	332	318	332	880616	880913	
	88	R2020BB8	09	5	3	0	2	4	18	880703	880923	
	89	R2020BA9	03	36	36	0	279	189	301	890609	890919	
89	R2020BA9	09	35	35	0	222	159	223	890610	890919		
89	R2020BA9	16	1	1	0	1	1	1	890814	890814		
system subtotal				190	188	0	1382	1301	1671			
Ugashik Outlet	64	R2036BG4	09	0	0	0	0	0	14	640524	640702	
	69	R2036BG9	09	39	39	0	0	771	990	690610	690919	
	70	R2037BG0	09	8	7	0	0	181	242	700602	700811	
	71	R2037BG1	09	5	5	0	79	112	158	710629	711008	
	72	R2037BG2	09	4	4	0	127	118	144	760628	720920	
	73	R2037BG3	09	0	0	0	0	0	17	730714	730923	

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EASTERN SECTION:

UGASHIK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Acetates	Slides	Envelopes			start	end	
Ugashik Outlet (continued)	74	R2037BG4	09	0	0	0	0	0	14	740821	740907	
	78	R2037BG8	09	0	0	0	0	0	203	780803	780803	
	79	R2037BG9	09	0	0	0	0	0	225	790803	790803	
	80	R2038BG0	09	0	0	0	0	0	108	800813	801005	
	81	R2038BG1	09	0	0	0	0	0	32	810701	810725	
	82	R2038BG2	09	0	0	0	0	0	206	820806	820907	
	83	R2038BG3	09	0	0	0	0	0	52	830904	830904	
	84	R2038BG4	09	0	0	0	0	0	143	840902	840906	
	87	R2030BA7	09	2	2	0	10	11	14	870823	870912	
	88	R2030BA8	01	1	1	0	3	3	3	880713	880713	
	88	R2030BA8	03	4	4	0	23	18	23	880814	880914	
	88	R2030BA8	09	15	13	0	44	39	60	880814	880927	
	89	R2030BA9	03	11	11	0	81	55	81	890722	890917	
89	R2030BA9	09	9	9	0	59	48	59	890722	890913		
system subtotal				98	95	0	426	1356	2788			
Upper Ugashik Lake	87	R2008BG7	01	1	1	0	3	2	3	870515	870515	
	89	R2000BA9	01	2	2	0	6	6	6	890621	890705	
	89	R2000BA9	03	10	10	0	37	56	76	890621	890706	
system subtotal				13	13	0	46	64	85			
Total UGASHIK RIVER drainage samples:				370	364	0	2139	3343	5424			
EASTERN SECTION TOTALS				771	765	0	3971	5639	8639			

APPENDIX F

Appendix F. Summary of available Arctic grayling data from the northwestern section of the Southwest Alaska sport fish management area.

NORTHWESTERN SECTION:

ANIAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve- lopes			start	end	
Aniak Lake	76	V0507BG6	09	0	0	0	0	2	2	760708	760708	
	76	V0507BG6	99	0	0	0	0	23	23	760709	760709	
system subtotal				0	0	0	0	25	25			
Aniak River	75	V0057BA5	01	0	0	0	0	14	37	750527	750529	
	75	V0057BA5	99	0	0	0	0	39	47	750524	750530	
	76	V0057BG6	01	0	0	0	0	17	18	760513	760809	
	76	V0057BG6	99	0	0	0	0	14	14	760512	760808	
system subtotal				0	0	0	0	84	116			
Kasigluk River	75	V0847BG5	01	0	0	0	0	8	8	750611	750611	
	75	V0847BG5	09	0	0	0	0	4	4	750611	750611	
	75	V0847BG5	99	0	0	0	0	21	21	750611	750612	
system subtotal				0	0	0	0	33	33			
Kisaralik River	75	V1267BA5	01	0	0	0	0	39	71	750506	750705	
	75	V1267BA5	99	0	0	0	0	1	1	750506	750506	
	76	V1267BG6	01	0	0	0	0	14	17	760520	760730	
	76	V1267BG6	09	0	0	0	0	31	32	760710	760729	
	76	V1267BG6	99	0	0	0	0	11	11	760727	760729	
system subtotal				0	0	0	0	96	132			
Total ANIAK RIVER drainage samples:				0	0	0	0	238	306			

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NORTHWESTERN:

EEK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Enve-ropes			start	end	
Eek River	76	V1157BG6	01	0	0	0	0	13	14	760719	760720	
	76	V1157BG6	09	0	0	0	0	3	3	760719	760720	
	76	V1157BG6	99	0	0	0	0	3	3	760720	760720	
system subtotal				0	0	0	0	19	20			
Total EEK RIVER drainage samples:				0	0	0	0	19	20			

KUSKOKWIM RIVER DRAINAGE

Kwethluk River	75	V0197BA5	01	0	0	0	0	5	12	750618	750725	
	75	V0197BA5	09	0	0	0	0	0	1	750618	750618	
	75	V0197BA5	99	0	0	0	0	1	4	750618	750618	
	76	V0197BG6	01	0	0	0	0	6	6	760726	760726	
	76	V0197BG6	09	0	0	0	0	16	16	760725	760725	
	76	V0197BG6	99	0	0	0	0	7	7	760724	760725	
system subtotal				0	0	0	0	35	46			
Tuluksak River	76	V1767BG6	01	0	0	0	0	2	2	760803	760803	
	76	V1767BG6	09	0	0	0	0	25	25	760731	760802	
	76	V1767BG6	99	0	0	0	0	5	5	760801	760801	
system subtotal				0	0	0	0	32	32			
Whitefish Creek	69	V0156BG9	09	2	2	0	12	11	12	690816	690816	
system subtotal				2	2	0	12	11	12			
Total KUSKOKWIM RIVER drainage samples:				2	2	0	12	78	90			
NORTHWESTERN SECTION TOTALS				2	2	0	12	335	416			

APPENDIX G

Appendix G. Summary of available Arctic grayling data from the western section of the Southwest Alaska sport fish management area.

WESTERN SECTION:

AROLIK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples				Number of Aged Records	Final Number Records	Sampling Period		Comments
				Gum Cards	Ace-tates	Slides	Erve-ropes			start	end	
Arolik Lake	75	V1497BA5	09	0	0	0	0	0	1	750713	750713	
	75	V1497BA5	99	0	0	0	0	1	1	750715	750715	
system subtotal				0	0	0	0	1	2			
Arolik Lake & River	76	V1497BG6	01	0	0	0	0	1	1	760715	760715	
	76	V1497BG6	09	0	0	0	0	27	27	760713	760717	
	76	V1497BG6	99	0	0	0	0	11	11	760714	760718	
system subtotal				0	0	0	0	39	39			
Total AROLIK RIVER drainage samples:				0	0	0	0	40	41			

GOODNEWS RIVER DRAINAGE

Goodnews River	75	V0047BG5	09	0	0	0	0	3	3	750718	750718	
system subtotal				0	0	0	0	3	3			
Total GOODNEWS RIVER drainage samples:				0	0	0	0	3	3			

KANEKTOK RIVER DRAINAGE

Kanektok River	75	V0037BG5	09	0	0	0	0	33	34	750723	750725	
system subtotal				0	0	0	0	33	34			
Total KANEKTOK RIVER drainage samples:				0	0	0	0	33	34			

-continued-

Appendix G. (Page 2 of 2).

WESTERN SECTION:

TOGIAK RIVER DRAINAGE

System	Year	Filename	Gear	No. of Samples			Number of Aged Records	Final Number Records	Sampling Period		Comments	
				Gum Cards	Ace-tates	Enve- Slides lopes			start	end		
Nayorurun River	86	T1428BG6	09	1	1	0	0	1	1	860725	860725	A.K.A. Kashaik Creek
system subtotal				1	1	0	0	1	1			
Togiak River	64	T0066BG4	09	1	1	0	4	4	4	640727	640807	
	69	T0066BG9	09	6	6	0	20	19	20	690726	690816	
	73	T0067BG3	09	2	2	0	5	4	5	730803	730804	
system subtotal				9	9	0	29	27	29			
Total TOGIAK RIVER drainage samples:				10	10	0	29	28	30			
WESTERN SECTION TOTALS				10	10	0	29	104	108			

