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Annual Performance Report for

INVENTORY AND RESEARCH OF THE SPORT FISH
AND SPORT FISH WATERS IN
SOUTHWESTERN ALASKA

by

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ABSTRACT

Karluk Lagoon weir escapement from May 21 to September 18, 1982, was comprised of 1,136 steelhead trout kelts, Salmo gairdneri Richardson, 7,490 chinook salmon, Oncorhynchus tshawytscha (Walbaum), 14,902 coho salmon, Oncorhynchus kisutch (Walbaum), 2,326,674 pink salmon, Oncorhynchus gorbuscha (Walbaum), 148,407 sockeye salmon, Oncorhynchus nerka (Walbaum); 104 chum salmon, Oncorhynchus keta (Walbaum), and 27 upmigrant adult steelhead trout. Age-growth data for Karluk River steelhead and chinook salmon and a summary of the weir counts are presented.

Population estimates derived by mark and recapture indicate Age 0 and Age II landlocked coho salmon stocked as fingerlings in Southern Lake had a survival rate of 36.1 and 18.6 percent, respectively. A summary of age-growth data is presented.

A total of 126,706 chinook salmon fingerlings (96,756 Chignik origin and 29,950 Lake Rose Tead origin) were stocked in Lake Rose Tead on June 15, 1982. Information from spawning ground surveys and a creel census indicated a minimum of 57 adult chinook salmon returned from the 1977 and 1979 plants. Chinook sampled for age-growth data (number = 57) were comprised of 86.0 percent Age 1.4 fish that returned from the 133,109 fingerlings stocked in 1977. Approximately 51,000 and 219,300 chinook salmon eggs were taken from Lake Rose Tead and Chignik River, respectively, for stocking in 1983. An estimated 124,000 eggs were naturally deposited in the lake outlet and major inlet. Summaries of chinook salmon age-growth and sex composition are presented.

A creel census conducted on Buskin River between September 4 and October 13, 1982 indicated 5,517 anglers fished 10,537 hours and harvested 2,646 coho salmon. A summary of the coho age-growth and sex composition is presented.

An egg take conducted on Buskin River coho salmon on November 16, 1982 resulted in the acquisition of 122,600 green eggs from 32 females.

Peak salmon escapement counts in 18 northeast Kodiak Island streams during 1982 indicated a minimum escapement of 330,022 pink salmon, 37,000 sockeye salmon, 20,715 chum salmon and 11,488 coho salmon.

KEY WORDS

Afognak, effort, enhancement, escapement, harvest, Kodiak, salmon, sport, steelhead.

BACKGROUND

The study area is comprised of the Kodiak-Afognak Island group and the Alaska Peninsula, south of a line from Cape Douglas to Port Heiden, including the Aleutian Islands. The Kodiak Island complex (Figure 1) is approximately 200 km long by 120 km wide. The Alaska Peninsula section is 1,600 km long extending 800 km into the Bering Sea. The area is mountainous with numerous bays, lakes and streams, and contains both anadromous and resident fish. Much of the area has not been surveyed and the total number of fish-producing waters is unknown. Kodiak Island has over 1,609 km of coastline, over 1,000 lakes 10 acres or larger in size and 229 known anadromous fish streams.

A fish stocking program for Kodiak area lakes was initiated in 1953 and has continued to the present. To develop more successful programs, numerous lakes have been chemically rehabilitated and planted with various fish species at differential stocking rates. Different sizes of fish have been tested and various habitat conditions have been studied to determine optimal growth and survival.

The physical and biological condition of lakes on northeast Kodiak Island has been examined in some detail and the results of these observations are shown in Annual Federal Aid in Fish Restoration Reports 1953-1982. Priority for research, stocking and general survey work has been directed toward these areas.

Past stream research has centered on waters containing steelhead trout, rainbow trout, coho and chinook salmon. Recent substantial increases in fishing effort suggest these studies should be intensified.

The Federal Aid in Fish Restoration Reports for the Kodiak area from 1953 to the present depict specific data concerning the size, age and growth rate of coho, chinook and sockeye salmon, Dolly Varden, rainbow trout and steelhead trout. Additional data concerning harvest rates and spawning escapement are also presented. These data form the foundation for most sport fish management decisions and recommendations pertaining to land use activities which may affect respective Kodiak area fisheries.

Table 1 presents a list of the fishes observed or studied in this report.



Figure 1 . Map of the Kodiak-Afognak Island Group.

Table 1. List of Common Names, Scientific Names and Abbreviations
Used in this Report.

Common Name	Scientific Name and Author	Abbreviation
Chinook salmon	<u>Oncorhynchus tshawytscha</u> (Walbaum)	KS
Chum salmon	<u>Oncorhynchus keta</u> (Walbaum)	CS
Coho salmon	<u>Oncorhynchus kisutch</u> (Walbaum)	SS
Dolly Varden	<u>Salvelinus malma</u> (Walbaum)	DV
Pink salmon	<u>Oncorhynchus gorbuscha</u> (Walbaum)	PS
Rainbow trout	<u>Salmo gairdneri</u> Richardson	RT
Sockeye salmon	<u>Oncorhynchus nerka</u> (Walbaum)	RS
Steelhead trout	<u>Salmo gairdneri</u> Richardson	SH
Threespine stickleback	<u>Gasterosteus aculeatus</u> Linnaeus	TS

RECOMMENDATIONS

1. A creel census should be conducted on the Pasagshak River in 1983 to determine angler effort and harvest of Dolly Varden and chinook salmon.
2. The fish-producing waters on Afognak and Shuyak Islands, that remain as public waters (following total implementation of the Alaska Native Claims Settlement Act), should be surveyed.
3. Survival, growth and quality of fishing produced by various fish species and strains that have been stocked in Kodiak and Afognak Island lakes should be evaluated.
4. A study should be implemented to determine the salmonid carrying capacity of Roslyn Creek, Olds River, American River, Salonie Creek, Buskin River and Lake Rose Tead.
5. A study should be developed to determine the Dolly Varden population sizes in Kodiak roadside streams and the optimum allowable sport harvest.
6. Portage Creek, Gretchen Creek, Laura Creek and Afognak River rainbow trout population parameters should be determined.
7. Hydrographic mapping of selected roadside lakes should be conducted to determine volume, mean depths and morphoedaphic index values.

OBJECTIVES

1. To determine the physical, chemical and biological characteristics of existing and potential sport fish streams and lakes in the Kodiak/Afognak Islands area.
2. To establish magnitude, distribution, timing, yearly fluctuations and angler harvest of sport fish populations on Kodiak Island, Afognak Island and areas of concern to sport fisheries management on the Alaska Peninsula.
3. To investigate, evaluate and develop plans for the enhancement of anadromous and resident fish stocks.

TECHNIQUES USED

Standard techniques described by Murray (1982) were used in age analysis, determination of fish size, escapement counts and harvest estimates.

The population size of landlocked coho salmon in Southern Lake was determined by the Peterson estimator (Ricker, 1970). Fish were captured for sampling and marking by fyke nets of the following size: length = 3.7 m; diameter = 1 m and two wings = 1.2 m x 7.6 m. Two square aluminum frames

and five aluminum hoops support the entrance and body of the fyke net. The wings, body and internal throats are constructed of 9.5 mm square mesh knotless nylon. Variable mesh monofilament gill nets (38.1 m x 1.8 m), composed of five different net panels (7.6 m long) with mesh ranging in size from 12.7 mm to 50.8 mm bar measure, were used when sufficient numbers of fish could not be captured with fyke nets.

Fish captured by fyke traps were anesthetized, sampled for age-growth data, marked with a caudal clip and then released in the center of the lake for dispersion.

A total of 96,756 Chignik origin chinook salmon (x wt = 0.7 g/fish) and 29,950 Lake Rose Tead origin chinook salmon (x wt = 0.6 g/fish) were stocked in Lake Rose Tead on June 15, 1982. Coded wire tags were put in 11,657 Lake Rose Tead fingerlings and 11,656 Chignik fingerlings.

FINDINGS

Development and Enhancement of Resident and Anadromous Fish Populations

Southern Lake Landlocked Coho Salmon:

Southern Lake has been annually stocked with coho salmon from 1971-1978, and semiannually since 1980 (n=3,500, wt=741/kg). The lake has never been chemically rehabilitated and it contains a large population of threespine stickleback. Fyke net trapping during October 9, 10, 12, 15 and 19, 1982 captured 322 landlocked coho salmon in 480.0 trap-hours. Age 0 (n=192) and Age II (n=130) fish were represented in the sample with mean lengths of 108.8 mm and 224.8 mm and weights of 14.8 g and 131.1 g, respectively. Population size was determined by the Peterson estimator (Table 2). The population estimates for two size classes of fish identified in the field were 1,264 Age 0 coho (150 mm) and 650 Age II coho (150 mm) with survival rates of 36.1% and 18.6%, respectively. The Age II population size is probably underestimated since Age II and older fish are difficult to capture and/or recapture.

The benefit of stocking coho in Southern Lake at 494 fish per surface hectare on alternate years is unclear at this time; e.g., Age I coho sampled from 1972-1979 had a mean length range of 162-179 mm (Murray and Van Hulle, 1973-1980), while 1981 Age I coho averaged 173.9 mm (Murray, 1982). Age I survival in 1979 and 1981 was 31.5% and 45.2%, respectively, or 13.7% higher for the alternate years. However, the 1981 survival (45.2%) calculated over a 2-year period (alternate year stocking) was only 22.6% or 8.9% less than that realized by stocking every year (Murray, 1982). Alternate year stocking may produce similar sized but fewer Age I coho. The 1982 Age II survival rate (18.6%) was 26.6% less than the 1981 Age I coho. This mortality is probably attributed to fish being removed by the sport fishery.

Lake Rose Tead Chinook Salmon:

Chinook salmon have been stocked annually in Lake Rose Tead (Table 3), the head waters of Pasagshak River, since 1976 (Murray and Van Hulle, 1977-

Table 2. Population Estimates of Southern Lake Landlocked Coho Salmon Utilizing the Peterson Estimator and Data From a Sequence of Five Samples, October 9-10, 12, 15, and 19, 1982.

Age 0 Landlocked Coho Salmon:

Peterson Estimator: $P = m(u+r)/r$

Population (P)	= 1,264	$P = 192 (67 + 12)/12$
Marked Fish (m)	= 192	$P = 1,264$
Unmarked Fish (u)	= 67	
Recaptured (r)	= 12	

Age II Landlocked Coho Salmon:

Peterson Estimator: $P = m(u+r)/r$

Peterson (P)	= 650	$P = 130 (56 + 14)/14$
Marked Fish (m)	= 130	$P = 650$
Unmarked Fish (u)	= 56	
Recaptured (r)	= 14	

Table 3. Lake Rose Tead Chinook Salmon Stocking History and 1978-1982 Observed Adult Returns.

Year Stocked	Number of Fish Stocked	Origin	Fingerling Size(#/kg)	Observed Adult Return by Year					Total	
				1978	1979	1980	1981	1982		
1976	22,500	Chignik	1,430	0	0	0	3	...	3	
1977	133,109	Chignik	1,130	...	3	5	36	49	93	
1978	14,261	Chignik	77	...	1	0	1	0	2	
1979	65,652	Chignik	980	...	...	0	1	8	9
1980	93,259	Chignik	685	...	...	...	0	0	0
1981	134,784	Chignik	808	...	...	...	...	0	0
1982	96,756*	Chignik	1,399	SubTotal	0	4	5	41	57	107
	29,950*	Rose Tead	1,555	Unageable	0	0	6	39	0	45
				Grand Total	0	4	11	80	57	152

* 11,657 Pasagshak K.S. and 11,656 Chignik K.S. fingerlings were coded wire tagged.

1981). The first returning adults were observed in 1979 (n=5) and 1980 (n=8), and the largest return (n=80) occurred in 1981 (Murray, 1982). Both streamside and spot creel censuses have been and will be conducted in future years to assess angler effort and the number of sport-caught chinook salmon.

During July and August, chinook salmon were not observed in the Lake Rose Tead system via foot and aerial surveys. Stream flows were extremely low at this time and it is presumed that most fish did not immigrate to fresh water until the freshets commenced in early September.

The 1982 creel census conducted on Pasagshak River between July 1 and August 1, indicated 866 anglers fished 2,148 hours and retained 10 pink salmon, 13 Dolly Varden, 36 sockeye salmon, and 0 chinook salmon. Sport anglers brought in 15 additional chinook salmon to the Department for sampling and 42 chinook salmon were picked up or seined in the lake for a total of 57 chinooks known to have returned in 1982. The 57 Pasagshak chinook salmon as presented in Table 4 were composed of 16 males, 32 females and nine fish of undetermined sex. Scale analysis indicated all fish smolted at Age 1.0 and the dominate 1.4 age class comprised 82.2% of the sample. Age 1.4 males and females had respective mean lengths of 1,076 mm and 1,007 mm. The low number of Age 1.2 fish (n=8) and the high number of Age 1.4 fish were expected; i.e., 65,652 fry and 133,109 fry were stocked in 1979 and 1977, respectively. The absence of Age 0.4 fish, which should have returned from 14,261 smolts stocked in 1978, is not understood. These fish may have matured early and returned as jacks, unobserved in 1979.

A total of 96,756 Chignik origin chinook salmon (x wt = 0.7 g/fish) and 29,950 Lake Rose Tead origin chinook salmon (x wt = 0.6 g/fish) were stocked in Lake Rose Tead on June 15, 1982. Coded wire tags were put on 11,657 Lake Rose Tead fingerlings and 11,656 Chignik fingerlings.

Approximately 219,300 chinook salmon eggs were taken from 28 Chignik River females and fertilized with four males on August 31, 1982. An additional 51,000 eggs were taken from nine Lake Rose Tead females and fertilized with five males September 16-21, 1982. These eggs are incubating in the Kitoi Bay Hatchery and will be stocked in Pasagshak as fingerlings in June 1983.

Age, sex and length data for Chignik and Lake Rose Tead brood stock chinook are presented in Tables 5 and 6, respectively.

In addition to the eggs obtained from Chignik and Lake Rose Tead, approximately 124,000 chinook eggs were naturally deposited in Lake Rose Tead; i.e., 25 females x 7,000 eggs/females = 175,000 eggs 51,000 green eggs = 124,000.

Lake Genevieve Coho Salmon:

Lake Genevieve is a 47.1-acre lake, located in the Buskin Lake drainage, that historically supported a small coho and sockeye salmon population, and numerous threespine stickleback and Dolly Varden (Van Hulle, 1972). The lake was chemically rehabilitated in 1972 and stocked with rainbow trout

Table 4. Age, Sex and Length of Pasagshak River Chinook Salmon from Sport Caught, Brood Stock, and Spent Fish, 1982.

Age Class	Males				Females				Unknown Sex				Total	
	n	%	Length(mm)		n	%	Length(mm)		n	%	Length(mm)		n	%
			x	+S.D.			x	+S.D.			x	+S.D.		
1.2	8	50.0	744	40.3	0	0	...	...	0				8	14.0
1.4	<u>8</u>	<u>50.0</u>			<u>32</u>	<u>100.0</u>	1,007	43.8	<u>9*</u>	<u>100.0</u>	991	91.0	<u>49</u>	<u>86.0</u>
Total	16	100.0			32	100.0			9	100.0			57	100.0

* Length data not available for five fish.

Table 5. Age, Sex and Length of Chignik River Chinook Salmon Utilized for Brood Stock, August 1982.

Age	Males				Females				n	%
	n	%	Length(mm)		n	%	Length(mm)			
			\bar{x}	+S.D.			\bar{x}	+S.D.		
1.2	1	25.0	679	...	0	0	...	...	1	3.1
1.3	1	25.0	910	...	0	0	...	...	1	3.1
1.4	2	50.0	976	7.1	27	96.4	1040	52.4	29	90.7
2.4	<u>0</u>	<u>0.0</u>	...	...	<u>1</u>	<u>3.6</u>	1055	...	<u>1</u>	<u>3.1</u>
Total	4	100.0			28	100.0			32	100.0

Table 6. Age, Sex and Length of Pasagshak River Chinook Salmon Utilized for Brood Stock, 1982.*

Age Class	Males				Females				Total	
	n	%	\bar{x}	+S.D.	n	%	\bar{x}	+S.D.	n	%
1.2	1	20.0	785	...	0	0	...	...	1	5.9
1.4	4	80.0	1003	25.0	12	100	1022.9	43.6	16	94.1
Total	5	100.0			12	100.0			17	100.0

* Total green eggs = 51,000. One female was green and seven were partially spent.

which supported a viable sport fishery from 1973 through 1976 (Van Hulle and Murray, 1974-1977). However, the lake has been out of fish production for the past 7 years as suitable rainbow trout have not been available for stocking. Subsequently, it was decided to stock Lake Genevieve with coho salmon fingerlings to produce an annual return of approximately 470 adult fish; e.g., utilizing F.R.E.D. Division standard assumptions, 23,550 fingerlings X 2% fingerling to adult survival = 471 adult coho salmon.

An egg take conducted on Buskin River coho salmon November 16, 1982, for the purpose of stocking Lake Genevieve, collected approximately 122,600 eggs from 32 females. The eggs are currently being incubated at the Kitoi Bay Hatchery, and 35,325 of the resultant fingerlings, all bearing a coded wire tag, will be stocked in Lake Genevieve during June 1983. Subsequent plants will consist of 23,550 fingerlings or 500 fish/surface acre. Any excess fingerlings will be restocked in Buskin River. Age, sex and length data of the brood stock are presented in Table 7. Ages 1.1 and 2.1 comprised 34.9% and 60.5% respectively of the ageable fish, while 4.6% of the fish had unreadable scales. Males and females of the dominant Age 2.1 class had mean lengths of 836 mm and 764 mm, respectively.

Sport Fish Harvest Estimates

Buskin River:

A streamside creel census conducted on Buskin River between September 4 and October 13, 1982 indicated 5,517 anglers fished 10,537 hours and harvested 2,646 coho salmon. Fish sampled (n=86) from angler creels, as presented in Table 8, were comprised of four age classes (Ages 1.0, 1.1, 2.1 and 3.1) with Age 1.1 and 2.1 comprising 45.8% and 49.4% of the sample, respectively. Age 1.1 and 2.1 males were approximately 767 mm and 765 mm in length, respectively, while females were 725 mm and 742 mm in length, respectively.

The 1982 coho salmon sport harvest (n=2,646) combined with the escapement (n=1,176) comprised the largest total coho run (n=3,822) since data have been collected on the system.

Afognak River:

A spot creel census was conducted from May 31 through August 7, 1982 on Afognak River by Commercial Fish Division weir personnel. The creel census data presented in Table 9 indicate a minimum of 58 anglers fished 510 hours and harvested 56 coho salmon, 2 steelhead, 33 rainbow trout, 23 Dolly Varden, 79 sockeye salmon and 1 pink salmon. Coho salmon (n=31) sampled from angler creels as presented in Table 10 were comprised of Ages 1.1, 2.1, and 3.1 representing 29.0%, 64.5% and 6.5% of the sample, respectively. Age 2.1 males and females had mean lengths of 666 mm and 606 mm, respectively. Rainbow trout sampled from angler creels as presented in Table 11 were composed of Age III, IV, V and VI fish with most of the harvest (42.9%) coming from small Age III fish (x ln = 210 mm). Brood stock fish (Age VI and greater) were noticeably absent from the sample.

The above data do not show total harvest or population parameters but will be useful in establishing the trend of Afognak River sport fisheries; i.e., the sport fish effort was considered non-existent 10 years ago.

Table 7. Age, Sex and Length of Buskin River Coho Salmon Used for Brook Stock, 1982.

Age Class	Males				Females				Total	%
	n	%	Length (mm)		n	%	Length (mm)			
			x	+S.D.			x	+S.D.		
1.1	5	45.4	817	16.0	10	31.3	755	38.0	15	34.9
2.1	6	54.6	836	35.1	20	62.5	764	30.6	26	60.5
Regenerate Scales	<u>0</u>	<u>0.0</u>	<u>2</u>	<u>6.2</u>	738	3.5	<u>2</u>	<u>4.6</u>
Total	11	100.0			32	100.0			43	100.0

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Table 8. Age, Sex and Size of Angler Caught Buskin River Coho Salmon, 1982.

Age* Class	Males						Females						Total	%
	n	%	Length (mm)		Weight(kg)		n	%	Length (mm)		Weight(kg)			
			x	+S.D.	x	+S.D.			x	+S.D.	x	+S.D.		
1.0	1	2.3	350	...	0.6	...	0	0.0	...	...	...	...	1	1.2
1.1	19	43.2	767	46.0	5.2	1.1	19	48.7	725	27.7	4.8	0.7	38	45.8
2.1	22	50.0	765	56.8	5.9	1.7	19	48.7	742	26.3	5.2	0.6	41	49.4
3.1	<u>2</u>	<u>4.5</u>	797	...	4.5	...	<u>1</u>	<u>2.6</u>	748	...	5.0	...	<u>3</u>	<u>3.6</u>
Total	44	100.0					39	100.0					83	100.0

* Three males and four females had regenerate scales

Table 9. Creel Census Estimates from Afognak River, May 31 through August 7, 1982.

Number of Anglers = 58; Angler Days = 107; Angler Hours = 510

	<u>Steelhead</u>	<u>Rainbow Trout</u>	<u>Dolly Varden</u>	<u>Coho Salmon</u>	<u>Sockeye Salmon</u>	<u>Pink Salmon</u>
Number Released	0	164	471	2	220	55
Number Retained	<u>2</u>	<u>33</u>	<u>23</u>	<u>56</u>	<u>79</u>	<u>1</u>
Total Catch	2	197	494	58	299	56

Table 10. Age, Sex and Length of Angler Caught Afognak River Coho Salmon, 1982.

Age	<u>Males</u>				<u>Females</u>				<u>Total</u>	
	n	%	<u>Length(mm)</u>		n	%	<u>Length(mm)</u>		n	%
			x	+S.D.			x	+S.D.		
1.1	7	38.9	616	55.4	2	15.4	560	14.1	9	29.0
2.1	11	61.1	661	75.9	9	69.2	606	52.9	20	64.5
3.1	<u>0</u>	<u>0.0</u>	...	...	<u>2</u>	<u>15.4</u>	685	7.1	<u>2</u>	<u>6.5</u>
Total	18	100.0			13	100.0			31	100.0

Table 11. Age, Sex and Length of Angler Caught Rainbow Trout from Afognak River, June, 1982.

Age	Males				Females				Unknown					
	n	%	Length(mm)		n	%	Length(mm)		n	%	Length(mm)		n	%
			x	+S.D.			x	+S.D.			x	+S.D.		
III	2	18.2	220	0.0	0	0.0	...	...	7	77.8	210	6.1	9	42.9
IV	3	27.3	241	4.0	0	0.0	...	...	1	11.1	260	...	4	19.0
V	5	45.5	273	10.9	1	100.0	270	...	1	11.1	272	...	7	33.3
VI	1	9.1	295	...	0	0.0	...	...	0	0.0	...	...	1	4.8
TOTAL	11	100.0			1	100.0			9	100.0			21	100.0

Considering the good access from Kodiak and anticipated angler increase (10% per year), Afognak River will be one of the heaviest utilized waters on Afognak Island.

Karluk River:

A streamside creel census was conducted at Karluk Lagoon from May 31 to August 8 and at Karluk Portage during the chinook fishery (June 1-July 24) and steelhead fishery (October 1-November 1). Volunteer data were also provided by personnel at Karluk Lodge and the French Guide Camp at Karluk Portage. These data as presented in Table 12 reflect the most comprehensive sport angler information collected on Karluk River to date. However, spring data from Karluk Lodge and fall data from Karluk Lagoon are missing.

An estimated 60 chinook salmon were harvested during June and early July by clients from Karluk Lodge; i.e., 60 anglers (maximum capacity for season) X one chinook per angler (lodge limit) = 60 chinook.

The sport fish harvest at Karluk Lagoon after August 8 was not estimated, however, past creel census data (Van Hulle and Murray, 1978) indicate coho salmon are primarily caught at this time. Steelhead are normally caught at Karluk Portage during October.

The angler effort (1,910 days or 11,431 hours) and harvest as presented in Table 12 were low in relation to the magnitude of available fish (Table 15). Fishing was excellent as anglers released more fish than they retained for all species, and the catch per unit of effort was high. The spring and fall target species, including retained and released fish, were chinook salmon (n=1,611), coho salmon (n=5,073) and steelhead (n=768).

Coho Salmon Derby:

The Lions Club Salmon Derby was conducted on August 28-29 and September 4-5, 1982 as recommended by the Department. A total of 37 coho were reported harvested from nine streams with most of the catch coming from Pasagshak (27.0%) and Buskin (32.4%) Rivers. A comparison of this derby with the 1979 and 1981 Derby (Table 13) shows the 1982 harvest was 78.1% and 48.6% less than 1979 and 1981, respectively. These reductions are probably due to the timing of the derbies. All fishing prior to September 11 is primarily in marine areas as streams draining into St. Paul Harbor are closed above the highway bridges August 1 through September 10. The 1982 derby entries were further reduced due to: (1) the Kodiak coho salmon run was unusually late; and (2) the value and quantity of derby prizes were substantially reduced. Holding the derby while most of the roadside streams were closed to salmon fishing appeared to: (1) spread the effort to additional streams; (2) reduce the total harvest and total angler effort; and (3) significantly reduce the catch on Buskin River.

Assessment and Inventory of Anadromous Fish Populations

Data reflected in Table 14 show escapement counts of the respective salmon species through weirs operated on Kodiak and Afognak Islands.

Table 12. Karluk River Creel Census Estimate, 1982.

Area	Date	Number Anglers	Total		Steelhead		Rainbow Trout		Dolly Varden		Coho		Chinook		Sockeye		Pink	
			Days	Hours	Rel.	Ret.	Rel.	Ret.	Rel.	Ret.	Rel.	Ret.	Rel.	Ret.	Rel.	Ret.	Rel.	Ret.
Karluk Lagoon	May 31 Aug. 8	191	898	4,205	171	28	24	1	285	28	0	0	632	330	311	85	88	0
Karluk* Lodge	Aug. 24 Sept. 24	47	339	2,542	6	0	0	0	0	0	4,630	265	...	...	...	...	...	...
Karluk Portage	June 1 July 24	73	226	1,094	10	9	3	4	13	1	0	0	68	63	8	3	...	...
Karluk Portage	Oct. 1 Nov. 1	67	105	510	493	51	0	0	0	0	157	21	0	0	0	0	...	...
French** Camp	June 24 July 13	<u>36</u>	<u>342</u>	<u>3,080</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>477</u>	<u>41</u>	<u>6</u>	<u>0</u>	<u>—</u>	<u>—</u>
	Total	414	1,910	11,431	680	88	27	5	298	29	4,787	286	1,177	434	325	88	88	0

Rel. = Released

Ret. = Retained

* = Volunteer data provided by Rob Sikes, guide, spring data not available

** = Volunteer data provided by French guide camp at Karluk Portage

Table 13. A Comparison of the Number and Percent of Coho Salmon Entered in the 1979, 1981 and 1982 Kodiak Salmon Derbies.

Area	Number of Fish Harvested					
	1979*		1981**		1982***	
	Total	Percent	Total	Percent	Total	Percent
Buskin River	68	40.3	5	6.9	12	32.5
Pasagshak River	32	18.9	54	75.0	10	27.0
Roslyn Creek	12	7.1	2	2.8	1	2.7
Womans Bay	22	13.0	3	4.2	2	5.4
Chiniak Creek	6	3.6	0	0.0	0	0.0
Olds River	8	4.7	0	0.0	0	0.0
Pillar Creek	0	0.0	0	0.0	2	5.4
Saltery River	21	12.4	1	1.4	1	2.7
Myrtle Creek	0	0.0	0	0.0	1	2.7
Kalsin	0	0.0	4	5.5	2	5.4
Kizhuyak Bay	0	0.0	0	0.0	1	2.7
American	0	0.0	1	1.4	0	0.0
Middle Bay	0	0.0	1	1.4	0	0.0
Selief Bay	0	0.0	1	1.4	0	0.0
Unknown	0	0.0	0	0.0	5	13.5
Total	169	100.0	72	100.0	37	100.0

* Held September 89 and 15-16 and Sponsored by U.S.C.G.

** Held August 29-30 and September 5-6 and Sponsored by the Lions Club.

*** Held August 28-29 and September 4-5 and Sponsored by the Lions Club.

Table 14. Fish Escapement Counts Through Weirs on Kodiak and Afognak Islands, 1982.

River	Sockeye Salmon	Chinook Salmon	Pink Salmon	Chum Salmon	Coho* Salmon	Steelhead* Kelts	Up
Afognak	123,055	3	3,841	4	428	106	0
Upper Station	470,732	2	9,177	0	4,839	0	0
Ayakulik**	169,562	3,230	721,462	71	5,011	54	4
Dog Salmon	437,474	47	0	56	0	0	0
Karluk*** Lagoon	148,407	7,490	2,326,674	104	14,902	1,136	27

* Total coho and steelhead escapements were not counted as all weirs were removed in August or early September.

** Weir out June 5-23 and July 25-August 1, escapements based on number of fish observed below the weir.

*** Weir out June 5-23 and September 5-20, escapements based on number of fish observed below the weir.

Fish escapement estimates through the Karluk Lagoon weir between May 21 and September 18, 1982 were comprised of 7,490 chinook salmon, 1,136 steelhead kelts, 14,902 coho salmon, 27 upmigrant steelhead trout, 2,326,674 pink salmon and 148,407 sockeye salmon. Table 15 presents weekly counts of chinook salmon, coho salmon and steelhead, while Table 16 and Table 17 display age, length and sex composition of chinook salmon and steelhead, respectively.

Ages 1.2, 1.3, 1.4 and 1.5 chinook salmon comprised 100% of the 136 fish sampled. The dominant 1.4 Age class contained 53 males and 37 females with respective mean lengths of 899 mm and 908 mm.

Steelhead kelts sampled from Karluk River (n=111) contained eight age classes (Table 17). The dominant 2.1S age class contained 25 males (x ln = 552.5 mm) and 23 males (x ln = 576.2 mm), while Age 2.2S contained eight males and 21 females with mean lengths of 705.0 mm and 666.4 mm, respectively. Most fish (n=90 or 95.7%) spent 2 years in fresh water, and 13 fish had (13.8%) returned to spawn a second time.

Peak salmon escapement estimates for northeast Kodiak Island, as presented in Table 18, indicated 330,022 pink salmon, 29,715 chum salmon, 37,000 sockeye salmon and 11,448 coho salmon spawned in 18 roadside streams. These peak counts were similar to previous years' escapements with the exception of coho salmon which reflected the highest escapement since counts were initiated in 1966.

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Table 15. Summary of Chinook, Coho and Steelhead Migrational Timing as Determined by Partial Enumeration Through Karluk Lagoon Weir, 1982.

Period	Chinook		SH Kelts		UP SH		Coho	
	No.	%	No.	%	No.	%	No.	%
May 21-22	13	.2	0	0.0	...	...	...	...
May 23-June 29	108	1.4	3	0.3	...	...	...	...
May 30-June 5*	577	7.7	30	2.6	...	...	...	...
June 6-12	1,465	19.5	40	3.5	...	...	...	...
June 13-19	1,930	25.8	75	6.6	...	...	...	...
June 20-26	1,811	24.2	41	3.6	...	...	...	...
June 27-July 3	740	9.9	51	4.5	...	...	...	...
July 4-10	469	6.3	261	23.0	...	...	...	...
July 11-17	178	2.4	452	39.8	...	...	...	...
July 18-24	114	1.5	144	12.7	...	...	...	...
July 25-31	46	0.6	12	1.1	...	...	...	...
August 1-7	31	0.4	22	1.9	...	...	...	...
August 8-14	7	0.1	5	0.4	7	25.9	4	0.0
August 15-21	0	0.0	...	0.0	8	29.7	16	0.1
August 22-28	1	...	...	...	4	14.8	20	0.1
August 29-Sept.4**	...	...	...	...	1	3.7	27	0.2
September 5-11**	...	...	...	...	0	0.0	211	1.4
September 12-18***	...	...	...	...	7	25.9	14,624	98.2
Total	7,490	100.0	1,136	100.0	27	99.9	14,902	100.0

- * Weir out June 5-June 10, counts based on estimated number fish below weir before washout.
- ** Weir out Sept. 1-Sept. 8, counts based on estimated number fish below weir before washout.
- *** Weir removed on September 18.
- **** 68 additional dead kelts were removed from the weir.

Table 16. Age, Sex and Length of Angler Caught Chinook Salmon from Karluk River, June and July, 1982.

Age	Males				Females				Total	
	n	%	Length(mm)		n	%	Length(mm)		n	%
			x	+S.D.			x	+S.D.		
1.2	11	16.7	606	106.5	0	0	...	...	11	8.1
1.3	17	25.7	761	75.6	13	18.6	760	70.1	30	22.0
1.4	37	56.1	899	60.6	53	75.7	908	52.2	90	66.2
1.5	<u>1</u>	<u>1.5</u>	1000	...	<u>4</u>	<u>5.7</u>	980	25.8	<u>5</u>	<u>3.7</u>
Total	66	100.0			70	100.0			136*	100.0

* 91 fish sampled at Karluk Lagoon weir and 45 fish sampled at Karluk Portage.

Table 17. Age, Sex, and Length of Kelt Steelhead Sampled from Karluk River, June and July, 1982.

Age*	Males				Females				Total	
	n	%	Length(mm)		n	%	Length(mm)		n	%
			x	+S.D.			x	+S.D.		
2.1S	25	59.5	552.5	31.7	23	44.2	576.2	65.4	48	51.1
2.2S	8	19.0	705.0	64.3	21	40.4	666.4	53.9	29	30.*
2.1SS	2	4.8	630.0	21.2	0	0.0	...	...	2	2.1
2.1S1S	2	4.8	747.5	24.7	4	7.7	752.5	36.6	6	6.4
2.2SS	4	9.5	775.8	107.9	0	0.0	...	...	4	4.2
2.2S1S	0	0.0	...	...	1	1.9	791.0	...	1	1.1
3.1S	1	2.4	620.0	...	2	3.9	569.5	27.6	3	3.2
3.2S	<u>0</u>	<u>0.0</u>	...	...	<u>1</u>	<u>1.9</u>	740.0	...	<u>1</u>	<u>1.1</u>
	42	100.0			52	100.0			94	100.0

* 17 fish had unreadable scales.

Table 18. Peak Salmon Escapement Estimates, N.E. Kodiak Island, 1982.

System	Chum Salmon		Coho Salmon		Pink Salmon		Sockeye Salmon	
	Date	Escpmt.**	Date	Escpmt.*	Date	Escpmt.**	Date	Escpmt.**
American	August 11	3,000	October 28	360	August 27	37,000	NA	...
Buskin	August 27	1,000	October 28	1,176	August 27	120,000	August 27	3,600
Chiniak	NC	...	October 25	155	August 25	4,500	NA	...
Hurst	August 31	1,500	November 2	644	August 27	5,000	NA	...
Kalsin	NC	...	October 25	233***	NC	...	NA	...
Monashka	September 17	200	October 26	31	September 1	2,000	NA	...
Myrtle	NC	...	NC	...	August 27	1,200	NA	...
Olds	August 27	2,500	October 27	1,375	August 27	62,500	NA	...
Panamaroff	NC	...	October 28	0	NC	...	NA	...
Pasagshak	NC	...	December 2	3,432	NC	...	August 27	5,400
Pillar	September 17	15	October 26	36	September 17	322	NA	...
Roslyn	NC	...	October 25	525	August 27	30,000	NA	...
Russian	August 11	2,000	October 28	87	August 11	8,000	NA	...
Salonie	August 27	1,000	October 26	388	August 27	12,000	NA	...
Saltery	August 31	8,000	November 3	2,176****	August 27	30,500	July 26	28,000
Sargent	August 27	1,500	November 4	130	August 27	10,000	NA	...
Twin	NC	...	October 7	240**	NC	...	NA	...
Sacramento	NC	...	October 7	500**	August 27	7,000	NA	...
Total		29,715		11,488		330,022		37,600

* Foot Survey

** Aerial Survey

*** Includes 100 SS observed in Kalsin Pond

**** Outlet only

NC = No Count

NA = No Applicable

Note: 42 chinook salmon were observed in Lake Rose Tead September 9-30.

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