

STATE OF ALASKA

William A. Egan, Governor



Annual Progress Reports for

INVENTORY AND CATALOGING

*INVESTIGATIONS OF PUBLIC FISHING ACCESS
AND AQUATIC HABITAT REQUIREMENTS*

*DISSEMINATION OF INFORMATION
COLLECTED ON DOLLY VARDEN*

by

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RESEARCH PROJECT SEGMENT

State: Alaska Name: Sport Fish Investigations of
Alaska.

Project No: F-9-5 Study Title: Inventory and Cataloging.

Study No: G-I Job Title: Inventory and Cataloging of
the Sport Fish and Sport Fish
Waters in Southwest Alaska.

Job: G-I-B

Period Covered: July 1, 1972 thru June 30, 1973.

ABSTRACT

Physical and chemical water properties and/or volumetric surveys were conducted on five lakes prior to rehabilitation.

Abercrombie Lake, Lake Genevieve, and Margaret Lake were treated with liquid rotenone at 1.5 ppm.

Three lakes on Adak Island and 29 on Kodiak Island were sampled with gillnets to determine species, relative abundance, and size of native and stocked fish.

Lakes sampled for dissolved oxygen and pH in early March showed favorable conditions for fish survival. Ice depth varied from 22 to 30 inches.

The Buskin River Dolly Varden, Salvelinus malma, outmigration commenced about May 15 and ended approximately May 31. May creel census indicated a harvest rate of 1.9 fish per hour. A sample of 347 fish averaged 315 mm in length and ranged from 205-585 mm.

From June through October, anglers harvested approximately 50 sockeye salmon, Oncorhynchus nerka, 1,000 pink salmon, O. gorbuscha, and 700 coho salmon, O. kisutch, from the Buskin River.

Coho escapement counts and sport catch estimates were made on 16 Kodiak Island streams. Escapements were low for all streams surveyed except the Buskin River, Lake Rose Tead, Upper Station Lake, Saltery Lake, and Lake Miam.

A blanket creel census on the Karluk River indicated a harvest of approximately 179 chinook salmon, O. tshawytscha, and 86 steelhead trout, Salmo gairdneri.

Chinook salmon escapements in Karluk and Ayakulik Rivers were approximately 3,000 and 1,644 (weir count) fish, respectively.

An experimental chinook salmon egg take was conducted on the Chignik River.

OBJECTIVES

1. To determine the physical, chemical, and biological characteristics of existing and potential sport fishing streams and lakes in the Kodiak area.
2. To establish magnitude, distribution, timing, yearly fluctuations and angler harvest of sport fish populations of the Karluk River, Northeastern Kodiak Island, and areas of concern to fishery management.
3. To investigate, evaluate, and develop plans for the enhancement of anadromous and resident fish stocks.
4. To evaluate multiple-use development projects and their effects of the area's streams, lakes and coastal marine areas.
5. To assist as required in the investigation of public access status to the area's sport fishing waters and make specific recommendations for public fishing access sites.

TECHNIQUES USED

Standard techniques as described by Van Hulle (1971) were used in lake surveys, analysis of water samples, creel census and gillnet sampling.

Chinook salmon were captured at Karluk Lagoon, Ayakulik River (Red River), Chignik River, and Frazer Lake Steep Pass, by dip net and seines.

All fish were weighed to the nearest .01 kilogram and measured to the nearest millimeter from mid-eye to the fork to the tail. King salmon at Karluk Lagoon were tagged with consecutively numbered, orange Petersen disc tags.

FINDINGS

Lake Surveys

Lake surveys during 1972 were directed toward determining the size and accessibility of standing waters in the Lake Genevieve, Lake Margaret, Abercrombie, and Long Lake drainages. These data are recorded in the lake survey file and were utilized in conducting experimental rehabilitations.

A volumetric survey of Long Lake (T27S, R19W., Sec. 34) established a computed volume of 410 acre feet.

Devil's Lake (T28S, R.20W, Sec. 3), a 3.2 acre pond (Kodiak Coast Guard Station), was surveyed to determine its suitability for anadromous fish rearing. It is 12 feet deep, has a firm bottom, and an intermittent outlet stream to the Buskin River. The lake contains threespine stickleback, Gasterosteus aculeatus, and Dolly Varden, Salvelinus malma.

Analysis of dissolved oxygen and pH in Long, Snag, Mayflower, Big, and Pony lakes indicated dissolved oxygen saturation, and near neutral (6.5 - 7.0 ppm) pH. Ice cover on these lakes varied from 18 to 30 inches in early March.

These data reflect the mild conditions which prevailed on Kodiak Island during the 1972-73 winter period. Water conditions appeared favorable for fish survival in stocked lakes.

From June 7 - Sept. 15, 1972, 29 lakes on Kodiak Island were sampled with variable-mesh gillnets to determine population trends of rainbow trout, Salmo gairdneri, coho salmon, Oncorhynchus kisutch, Dolly Varden and arctic grayling, Thymallus arcticus (Table 1). Mayflower, Orbin, and Saturn lakes failed to produce net samples.

Abercrombie Lake was stocked from 1953 to 1962 with a total of 109,325 rainbow trout and from 1961 to 1971 with a total of 11,150 coho salmon.

During the past four years 135.0 hours of net sampling produced two Dolly Varden, and 16 coho salmon. The lake was treated on October 5, 1972 with liquid rotenone at a concentration of 1.5 ppm to remove stickleback, and will be restocked with rainbow trout and arctic grayling in 1973.

Survival and growth of both rainbow trout and grayling in Aurel, Cascade, and Cicely lakes appear good with natural reproduction of grayling and rainbow trout occurring in Cascade Lake and (although not noted in our sample) probably occurring in Aurel Lake. Both lakes have flowing inlets and outlets.

Lilly Pond was rehabilitated September 23, 1970, and stocked with 1,000 coho salmon (591/#) on June 16, 1971. On May 31, 1972 a total of 351 coho were captured by seine, fin-clipped (adipose), and returned to the lake. A random sample of 50 fish from this haul averaged 157 mm in length and 11.6 fish per pound, or 39.1 grams each. Twelve days later the pond was again seined and 628 land-locked coho were captured. Examination showed that 257 fish bore adipose clips. Employing the Petersen population estimate ($P = \frac{M(u+r)}{r}$), it was determined that survival to age 1+.0 was 858 coho salmon, or 85.8.

On August 31, 1972, 10 coho sampled from the Lilly Pond averaged 225 mm and 138.9 grams. A hook and line sample collected January 6, 1973 indicated a mean length of 260 mm at age 2.0.

TABLE 1 Population Characteristics of Kodiak Area Lakes as Defined by Variable Mesh Gillnets, 1972.

| Lake Name & Location | Date Sampled | Sampling Data | | Age Class | Length (mm) Range/Mean | Catch/ Net Hr. | History | | | |
|---|-----------------|---------------|--------|--------------|---------------------------|-------------------|---|-----------------|-------------|-------------|
| | | Species* | Number | | | | Date Stocked | Total Number | Per Lb. | Per Acre |
| Abercrombie T27S, R19W, Sec. 15 | 8/16/72 | DV | 1 | ** | 162 | 0.04 | <i>Natural Reproduction Rehabilitated 10-72</i> | | | |
| Aurel T28S, R21W Sec. 36 | 8/10/72 | GR | 4 | 4.0 | 312-370/332 | 0.20 | <i>These fish migrated via the inlet from Cicely Lake 1968.</i> | | | |
| | | GR | 4 | 2.0 | 240-290/265 | 0.20 | <i>These fish migrated via the inlet from Cicely Lake 1970.</i> | | | |
| | | RT | 1 | 3.0 | 385 | 0.03 | 7/1/69 | 2950 | 2480 | 197 |
| | | RT | 5 | 2.0 | 192-225/205 | 0.13 | 8/26/70 | 3000 | 398 | 200 |
| | | RT | 2 | 1.0 | 115-142/-- | 0.06 | 7/27/71 | 3000 | 306 | 200 |
| Cicely T28S, R21W Sec. 36 | 8/9/72 | GR | 5 | 2.0 | 241-245/245 | 5.0 | 6/3/70 | 10000 | -- | 1786 |
| | | RT | 1 | 3.0 | 345 -- | 1.0 | <i>A migrant from the 1969 Aurel Lake Plant.</i> | | | |
| Cascade T27S, R21W Sec. 12 | 9/15/72 | GR | 18 | 2.0 | 208-263/219 | 0.78 | <i>Natural Reproduction 1970</i> | | | |
| | | RT | 2 | 3.0 | 334-356/-- | 0.09 | " | " | <i>1969</i> | |
| | | RT | 8 | 2.0 | 206-295/236 | 0.35 | " | " | <i>1970</i> | |
| | | RT | 3 | 1.0 | 158-184/172 | 0.13 | 7/29/71 | 3000 | 543 | 182 |
| Barrys Lagoon T31S, R19W Sec. 28 | 6/7/72 | SS | 17 | 3.0 | 250-372/317 | 0.35 | 6/27/69 | 15950 | 640 | 125 |
| | | DV | 4 | ** | 199-320/249 | 0.08 | <i>Natural Reproduction</i> | | | |
| Beaver T28S, R20W Sec. 31 | 8/16/72 | RT | 9 | 1.0 | 167-197/180 | 1.50 | 6/10/71 | 600 | 302 | 300 |
| | | DV | 2 | ** | 170-197/-- | 0.33 | | | | |
| Dell T31S, R20W Sec. 35 | 6/8/72 | RT | 2 | 2.0 | 200-260/-- | 0.08 | 8/26/70 | 2000 | 398 | 202 |
| | | RT | 2 | 1.0 | 158-159/-- | 0.08 | 6/10/71 | 2000 | 302 | 202 |

TABLE 1 Population Characteristics of Kodiak Area Lakes as Defined by Variable Mesh Gillnets, 1972. (Cont.)

| Lake Name & Location | Date Sampled | Sampling Data | | | | Length (mm) Range/Mean | Catch/ Net Hr. | History | | | |
|--------------------------------------|-----------------|---------------|--------|--------------|-----------------|---------------------------|----------------------------------|-----------------|------------|-------------|--|
| | | Species* | Number | Age Class | Date Stocked | | | Total Number | Per Lb. | Per Acre | |
| Caroline T28S, R21W Sec. 36 | 6/10/72 | RT | 2 | 7.0 | 565-584/-- | 0.07 | 7/29/65 | 1400 | 460 | 212 | |
| | | RT | 1 | 1.0 | 144 -- | 0.04 | 7/27/71 | 1300 | 306 | 196 | |
| Dark T27S, R19W Sec. 28 | 8/15/72 | RT | 1 | 3.0 | 260 -- | 0.04 | <i>Natural Reproduction 1969</i> | | | | |
| | | RT | 2 | 2.0 | 178-181/-- | 0.08 | <i>Natural Reproduction 1970</i> | | | | |
| | | SS | 1 | 1.0 | 92 -- | 0.04 | <i>Natural Reproduction 1971</i> | | | | |
| | | DV | 9 | ** | 230 -- | 0.38 | <i>Natural Reproduction</i> | | | | |
| Devils T28S, R20W Sec. 3 | 8/3/72 | DV | 1 | ** | 200 -- | 0.04 | <i>Natural Reproduction</i> | | | | |
| Dolgoi T28S, R19W Sec. 12 | 6/29/72 | RT | 1 | 2.0 | 195 -- | 0.05 | <i>Natural Reproduction 1970</i> | | | | |
| | | DV | 16 | ** | 162-377/278 | 0.83 | <i>Natural Reproduction</i> | | | | |
| Dragonfly T28S, R20W | 6/23/72 | RT | 1 | 3.0 | 300 -- | 0.06 | 7/1/69 | 1600 | 2480 | 210 | |
| | | RT | 1 | 2.0 | 280 -- | 0.06 | 8/26/70 | 1600 | 398 | 210 | |
| | | RT | 3 | 1.0 | 145-162/155 | 0.17 | 6/10/71 | 1600 | 302 | 210 | |
| Genevieve T28S, R20W Sec. 10 | 8/15/72 | SS | 13 | 2.0 | 93-170/110 | 0.39 | <i>Natural Reproduction 1970</i> | | | | |
| | | DV | 5 | ** | 110-287/170 | 0.15 | <i>Lake Rehabilitated 10-72</i> | | | | |
| | | RS | 13 | ** | -- -- | 0.39 | <i>Adults</i> | | | | |
| Horseshoe T28S, R20W Sec. 35 | 6/2/72 | RT | 2 | 2.0 | 246 -- | 0.09 | 8/26/70 | 1400 | 398 | 291 | |
| Island Lake T27S, R19W Sec. 21 | 8/16/72 | RT | 2 | 4.0 | 380-390/ -- | 0.08 | <i>Natural Reproduction 1963</i> | | | | |
| | | RT | 3 | 2.0 | 180-204/190 | 0.12 | <i>Natural Reproduction 1970</i> | | | | |
| | | DV | 32 | ** | 118-445/250 | 1.31 | <i>Natural Reproduction</i> | | | | |
| | | SS | 2 | 2.1 | 470-605/ -- | 0.08 | <i>Natural Reproduction 1968</i> | | | | |

TABLE 1 Population Characteristics of Kodiak Area Lakes as Defined by Variable Mesh Gillnets, 1972. (Cont.)

| Lake Name & Location | Date Sampled | Sampling Data | | | Length (mm) Range/Mean | Catch/ Net Hr. | History | | | |
|---------------------------------------|-----------------|---------------|--------|--------------|---------------------------|-------------------|---|-----------------|------------|-------------|
| | | Species* | Number | Age Class | | | Date Stocked | Total Number | Per lb. | Per Acre |
| Jack Lake T28S, R21W Sec. 36 | 8/16/72 | RT | 3 | 3.0 | 312-373/337 | 0.13 | 7/1/69 | 900 | 2430 | 191 |
| | | RT | 2 | 2.0 | 202-268/-- | 0.08 | 8/26/70 | 900 | 398 | 191 |
| | | RT | 6 | 1.0 | 131-167/154 | 0.25 | 6/10/71 | 900 | 302 | 191 |
| Jupiter Lake T30S, R18W Sec. 18 | 7/13/72 | RT | 8 | 1.0 | 145-169/155 | 0.34 | 7/28/71 | 3600 | 543 | 206 |
| Lee Lake T28S, R21W Sec. 36 | 8/16/72 | RT | 1 | 1.0 | 133 -- | 0.04 | <i>Natural Reproduction 1971</i> | | | |
| Long Lake T27S, R19W Sec. 34 | 6/29/72 | SS | 1 | 6.0 | 241 -- | 0.80 | 6/27/66 | 3800 | 900 | 106 |
| | | DV | 3 | ** | 260-279/272 | 2.40 | <i>Natural Reproduction</i> | | | |
| Lupine Lake T21S, R20W Sec. 35 | 6/8/72 | RT | 7 | 2.0 | 161-230/198 | 0.29 | 8/26/70 | 1500 | 398 | 200 |
| Margaret T28S, R20W Sec. 11 | 8/15/72 | DV | 1 | ** | 111 -- | 0.05 | <i>Natural Reproduction Rehabilitated 10-72</i> | | | |
| Pony T29S, R19W Sec. 36 | 6/23/72 | SS | 8 | 2.0 | 114-131/120 | 0.37 | 7/7/70 | 2800 | 546 | 196 |
| Snag T28S, R20W Sec. 35 | 6/23/72 | RT | 2 | 3.0 | 215-235/225 | 0.07 | 7/1/69 | 1500 | 2480 | 300 |
| | | RT | 5 | 2.0 | 146-190/166 | 0.17 | 8/26/70 | 1500 | 398 | 300 |

TABLE 1 Population Characteristics of Kodiak Area Lakes as Defined by Variable Mesh Gillnets, 1972. (Cont.)

| Lake Name & Location | Date Sampled | Sampling Data | | | | Catch/ Net Hr. | Date Stocked | History | | |
|----------------------------------|-----------------|---------------|--------|--------------|---------------------------|-------------------|-----------------|-----------------|------------|-------------|
| | | Species* | Number | Age Class | Length (mm) Range/Mean | | | Total Number | Per lb. | Per Acre |
| Southern T28, R19W Sec. 14 | 6/30/72 | SS | 3 | 5.0 | 358-424/388 | 0.14 | 7/11/67 | 3498 | 530 | 200 |
| | | SS | 32 | 1.0 | 160-195/175 | 1.49 | 6/16/71 | 3300 | 222 | 159 |
| Tanignak T27S, R19W Sec. 3 | 6/24/72 | RT | 2 | 3.0 | 250-255/-- | 0.07 | 7/2/69 | 6400 | 2480 | 218 |

*

DV = Dolly Varden
 GR = Grayling
 RT = Rainbow Trout
 SS = Silver Salmon (coho)
 RS = Red Salmon (Sockeye)

**

Fish were not aged.

Table 2 presents test netting data for Lake Andrew, Shotgun Lake, and Palisades Lake located on Adak Naval Station, Adak, Alaska.

Lake Andrew encompasses over 2,000 surface acres. A total of 43.0 hours of gill-net sampling produced 18 Dolly Varden averaging 287 mm in length. One kokanee, O. nerka, and one rainbow trout were also captured. Dolly Varden and kokanee are indigenous to the lake. However, rainbow trout are apparently the progeny of 64,000 fry introduced during a 1954-1956 steelhead stocking program. Additional stocking of Andrew Lagoon should not be considered until comprehensive studies have been completed.

Coho salmon were stocked in Shotgun Lake (n=2,000) and Palisades Lake (n=1,500) on July 15, 1970. Survival and growth appeared good in Shotgun Lake and anglers reported harvesting many planted fish.

Gillnet sampling in Palisades Lake was inconclusive as the nets were disturbed. Stocking of coho salmon in selected land-locked lakes should be considered to produce a more diversified sport fishery on Adak Island.

Assessment and Inventory and Anadromous Fish Populations

Buskin River Dolly Varden, Coho, and Sockeye Salmon:

The Dolly Varden outmigration from Buskin Lake commenced about May 15; however, sport fishing opportunity was reduced by flooding conditions in the river from May 22 -30.

Interviews with 45 completed anglers from May 15 - 21 indicated an average harvest rate of 1.9 fish per angler hour. A sample of 347 Dolly Varden indicated that length varied from 205 to 585 mm and averaged 315 mm.

On May 30, anglers were catching and releasing Dolly Varden ranging from 200-250 mm. The presence of this size Dolly Varden in the sport fishery has in past years indicated the end of the outmigration period and it is thought that the majority of outmigrants in 1972 passed through the Buskin River during the high water periods.

Periodic checks of sport anglers throughout June indicated a sport catch of less than 50 sockeye salmon from the Buskin River.

A skiff and foot survey of the Buskin Lake Drainage on August 18 and August 25, 1972, indicated a total spawning escapement of 2,997 sockeye.

An aerial survey on October 18 and a foot survey on October 29, indicated a minimum of 675 coho salmon spawned in the Buskin River system during 1972. Periodic creel census during the August-to-November sport fishery provided an estimated catch of 700 adults. Harvest and size information are presented in Tables 3 and 4.

TABLE 2 Population Characteristics of Adak Island Lakes as Defined by Variable Mesh Gillnets, 1972.

| Lake Name & Location | Date Sampled | Sampling Data | | | | History | | | |
|----------------------------|-----------------|---------------|--------|--------------|---------------------------|-------------------|--|-----------------|------------|
| | | Species* | Number | Age Class | Length (mm) Range/Mean | Catch/ Net Hr. | Date Stocked | Total Number | Per Lb. |
| Lake Andrew | 9/9/72 | DV | 18 | ** | 171-381/287 | 0.42 | Natural Reproduction | | |
| | 9/10/72 | K | 1 | ** | 121 --- | 0.02 | " | " | |
| | | RT | 1 | ** | 178 --- | 0.02 | " | " | |
| Shotgun | 9/12/72 | DV | 8 | ** | 151-191/183 | 1.14 | " | " | |
| | | RT | 1 | 2.0 | 260 --- | 0.14 | Apparently stocked with 1970 SS | | |
| | | SS | 4 | 2.0 | 229-235/232 | 0.57 | 7/15/70 | 2,000 | 416 |
| Palisades | 9/11/72 | DV | 5 | ** | 210-267/233 | 0.63 | Natural Reproduction Had been stocked with 1500 SS 7/15/70 @ 416/# | | |

*DV= Dolly Varden, d=Kokanee, RT=Rainbow Trout, SS=Silver Salmon, ** Not Aged

Table 3 indicates that 76.4% (n=42) of all adults sampled were age class 2.1, averaged 680 mm in length and 4.17 kilos in weight. The mean length of all fish sampled was 678.6 mm.

Coho Salmon:

Coho salmon escapement estimates were made on Kodiak Island waters (Table 4).

Escapements appeared low except in the Buskin River system, Lake Rose Tead, Upper Station Lakes, Saltery Lake, and Lake Miam. These five systems have lakes capable of supporting juvenile fish during severe winters. The remaining 11 streams have limited winter rearing areas. The reduced escapements in the latter streams are probably the result of low water flows and unusually severe freezing conditions noted during the winter of 1970-1971 (Murray and Van Hulle 1971, 1972).

On November 9, approximately 150 coho salmon were observed spawning in a inlet to Kalsin Pond. These waters are adjacent to Kalsin Lagoon and the fish are thought to be Kalsin River stock as they cannot ascent the river during periods of low flow.

Steelhead:

Table 5 presents age and size composition of 33 steelhead trout sampled from the Karluk River, Portage area, during May and June of 1972. All fish were either spawning or in a spawned-out condition and had entered the river during late summer and fall, 1971.

The 1:7.3 male-female sex ratio of spring-caught fish (n=33) is significantly different than the 1:1.5 sex ratio of fall-caught steelhead (n=44) taken from the same area (Murray and Van Hulle, 1972).

Murray and Van Hulle noted older and larger steelhead in sport anglers creel during the 1971 fall fishery. Spring samples in 1972 contained female steelhead age classes 2.2 and older. This phenomena is probably related to spawning mortality, anglers releasing the smaller age class 2.1 steelhead in the fall and to male steelhead either segregating themselves in the spring or being more reluctant to strick a bait or lure.

Tables 6 and 7 present the age and size composition of 100 angler-caught steelhead trout from Karluk River in October, 1972.

Initial spawners comprised 63.0% of the sample.

Forty of forty-one angler-caught steelhead sampled in 1971 spent two years in freshwater. The 1972 sample was more diverse in length of freshwater residency with 37% (n=37) spending two years in freshwater and 63% spending three or more years in freshwater. Saltwater residency was 1 year - 36%, 2 years - 62%, 3 years - 2%.

TABLE 3 Age and Size Composition of Angler Caught Coho Salmon,
Buskin River, 1972.

| <u>Age Class</u> | <u>N</u> | <u>Percent</u> | <u>Length (mm)</u> | | <u>Weight (kg)</u> | |
|------------------|----------|----------------|--------------------|--------------|--------------------|--------------|
| | | | <u>Mean</u> | <u>Range</u> | <u>Mean</u> | <u>Range</u> |
| <u>Male</u> | | | | | | |
| 2.0 | 1 | 3.85 | | 285 | | |
| 1.1 | 1 | 3.85 | | 598 | | 2.63 |
| 2.1 | 21 | 80.77 | 675 | 585 - 760 | 4.22 | 2.50 - 5.9 |
| 3.1 | 3 | 11.53 | 687.0 | 658 - 736 | 4.45 | 3.86 - 5.5 |
| <u>Female</u> | | | | | | |
| 1.1 | 4 | 13.79 | 669.0 | 625 - 688 | 3.58 | 2.72 - 4.4 |
| 2.1 | 21 | 72.41 | 684.0 | 605 - 740 | 4.17 | 2.95 - 5.3 |
| 3.1 | 4 | 13.79 | 687.0 | 685 - 690 | 3.86 | 3.86 |
| <u>Combined</u> | | | | | | |
| 2.0 | 1 | 1.81 | | 285 | | |
| 1.1 | 5 | 9.09 | 655.0 | 598 - 688 | 3.58 | 2.63 - 4.54 |
| 2.1 | 42 | 76.36 | 680.0 | 585 - 760 | 4.17 | 2.50 - 5.90 |
| 3.1 | 7 | 12.73 | 687.0 | 658 - 736 | 4.13 | 3.86 - 5.58 |

TABLE 4 Coho Salmon Escapement Estimates in 16 stream systems on Kodiak Island, 1972.

| <u>System</u> | <u>Date</u> | <u>Method of Survey</u> | <u>Est. Spawning Escapement</u> | <u>Sport Catch Estimate</u> | <u>Total Run Estimate</u> |
|---------------|----------------|-------------------------|---------------------------------|-----------------------------|---------------------------|
| Buskin L. | 10-18 10-24 | *** | 675 | 700 | 1375 |
| Rose Tead L. | Various | *** | 28001 | 1400 | 4200 |
| Salonie Cr. | 10-18 | * | 37 | Neg. | 37+ |
| Miam Lake | Various | *** | 460 | Neg. | 460+ |
| Pillar Cr. | 10-17 11-3 | ** | 4 | 30 | 34 |
| Kalsin R. | 10-18 | * | 50 | Neg. | 50+ |
| Olds R. | 10-18 | * | 50 | 50 | 100 |
| Saltery L. | 10-18 | * | 240 | 1100 | 340 |
| Hurst Cr. | 10-18 | * | 40 | 10 | 50 |
| Upper Station | 10-17 | * | 3000+ | 0 | 3000+ |
| American R. | 10-18 | * | 140 | 50 | 190 |
| Monashka Cr. | 10-17 | * | No. Est. | | |
| Chiniak Cr. | 10-17 | * | No. Est. | | |
| Roslyn Cr. | 10-18 | * | No. Est. | | |
| Russian R. | 10-18 | * | 0 | | |
| Sargents Cr. | 10-18 | * | 35 | 0 | 35 |

I = 400 adults utilized for brood stock.

Aerial *

Foot **

Aerial and Foot ***

TABLE 5 Age and Size Composition of Angler Caught Steelhead Trout,
Karluk River Portage, May and June, 1972. *

| <u>Age</u> | <u>Year of Parent Escapement</u> | <u>No.</u> | <u>Per- cent</u> | <u>Length (mm)</u> | |
|-------------|--|------------|----------------------|--------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> |
| <u>Male</u> | | | | | |
| 2.2 | 1966 | 2 | 50% | | 646 |
| 3.2 | 1965 | 1 | 25% | | 747 |
| 3.1s | 1965 | 1 | 25% | | 680 |

| <u>Age</u> | <u>Year of Parent Escapement</u> | <u>No.</u> | <u>Per- cent</u> | <u>Length (mm)</u> | |
|---------------|--|------------|----------------------|--------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> |
| <u>Female</u> | | | | | |
| 2.2 | 1966 | 4 | 13.79 | 528 - 680 | 570 |
| 2.3 | 1965 | 15 | 51.72 | 650 - 700 | 680 |
| 3.1 | 1966 | 1 | 3.45 | | 585 |
| 3.2 | 1965 | 5 | 17.24 | 680 - 762 | 713 |
| 3.3 | 1964 | 1 | 3.45 | | 705 |
| 4.2 | 1964 | 1 | 3.45 | | 618 |
| 2.2s | 1964 | 2 | 6.90 | 703 - 820 | 762 |

* Parent year escapement 1971

TABLE 6 Age and Size Composition of Angler Caught Male Steelhead Trout, Karluk River - Portage, October, 1972.

| Age | Year of Parent Escapement | No. | Per-Cent | Length (mm) | | Weight (kilo) | |
|--------|---------------------------|-----|----------|-------------|-------|---------------|------|
| | | | | Range | Mean | Range | Mean |
| 2.1 | 1968 | 2 | 4.26 | 535-546 | 540 | 1.36-1.82 | 1.59 |
| 2.2 | 1967 | 5 | 10.64 | 686-775 | 720 | 3.27-4.32 | 3.67 |
| 3.1 | 1967 | 3 | 6.38 | 572-591 | 581 | 1.82-1.82 | 1.82 |
| 3.2 | 1966 | 8 | 17.02 | 650-815 | 727.7 | 2.72-5.45 | 4.05 |
| 3.3 | 1965 | 1 | 2.13 | | 882 | | 6.82 |
| 4.2 | 1965 | 1 | 2.13 | | 817 | | 5.91 |
| 2.1s | 1967 | 2 | 4.26 | 610-660 | 635 | 2.72-2.72 | 2.72 |
| 2.2s | 1966 | 3 | 6.38 | 749-838 | 791 | 4.65-5.22 | 4.93 |
| 3.1s | 1966 | 2 | 4.26 | 620-673 | 646 | 2.72-3.63 | 3.18 |
| 3.2s | 1965 | 1 | 2.13 | | 730 | | 5.00 |
| 2.1s1* | 1966 | 4 | 8.51 | 735-750 | 742 | 3.64-4.54 | 3.94 |
| 3.1s1* | 1965 | 8 | 17.02 | 735-780 | 751 | 4.09-5.45 | 4.74 |
| 3.1ss | 1965 | 5 | 10.64 | 735-826 | 764 | 4.54-5.45 | 4.94 |
| 3.2ss | 1964 | 2 | 4.26 | 735-815 | 775 | 4.32-5.45 | 4.87 |

* Scale pattern indicates that these fish spent a full growing season in salt water after spawning and are returning to spawn for the second time.

TABLE 7 Age and Size Composition of Angler Caught Female Steelhead Trout,
Karluk River - Portage, October, 1972.

| <u>Age</u> | <u>Year Of Parent Escapement</u> | <u>No.</u> | <u>Per- Cent</u> | <u>Range</u> | <u>Length (mm)</u> | | <u>Weight (kilo)</u> | |
|------------|--|------------|----------------------|--------------|--------------------|--------------|----------------------|-------------|
| | | | | | <u>Mean</u> | <u>Range</u> | <u>Mean</u> | <u>Mean</u> |
| 2.1 | 1968 | 1 | 1.89 | | 535 | | | 1.59 |
| 2.2 | 1967 | 17 | 32.08 | 654-711 | 684 | 2.95-3.86 | | 3.36 |
| 3.1 | 1967 | 5 | 9.43 | 540-612 | 568 | 1.59-1.82 | | 1.76 |
| 3.2 | 1966 | 18 | 33.96 | 585-735 | 664 | 2.72-4.54 | | 3.13 |
| 3.3 | 1965 | 1 | 1.89 | | 699 | | | |
| 2.2s | 1966 | 1 | 1.89 | | 795 | | | |
| 3.1s | 1966 | 2 | 3.77 | 667-685 | 676 | 2.95-3.41 | | 3.18 |
| 3.2s | 1965 | 2 | 3.77 | 725-760 | 742 | 3.86-4.54 | | 4.20 |
| 2.2s1* | 1965 | 1 | 1.89 | | 890 | | | |
| 3.1s1* | 1965 | 1 | 1.89 | | 725 | | | 7.73 |
| 3.2s1* | 1964 | 2 | 3.77 | 770-815 | 796 | | | 5.80 |
| 3.1ss | 1965 | 1 | 1.89 | | 655 | | | 3.18 |
| 3.2ss | 1964 | 1 | 1.89 | | 826 | | | 6.02 |

* Scale pattern indicates that these fish spent a full growing season in salt water after spawning and are returning to spawn for the second year.

The parent escapements in 1965, 1966, and 1967 produced 97.3% of the steelhead sampled in 1971 and 92.0% of the steelhead sampled in 1972 (Table 8).

In 1971, 30 anglers harvested 0.77 steelhead per hour, and in 1972, 26 anglers averaged 1.13 steelhead per hour. These data represent the total fishing effort at Karluk River - Portage during October of 1971 and 1972. All anglers were interviewed by BSF&W and/or Department of Fish and Game employees.

Based on catch per unit of effort, the high percentage of repeat spawners, the diversified age structure of sampled fish and the total harvest, the Karluk River steelhead population is not being overharvested. Complete harvest data for the fall, 1972 fishery are presented in Table 9.

Interviews with completed anglers indicate that 3.0% (n=5) of the coho, 24.7% (n=86) of the steelhead, 0.3% (n=1) of the Dolly Varden and 100% (n=4) of the rainbow trout under 508 mm (20 inches) were retained.

Based on creel census and personal observations of the 1972 subsistence and commercial fishery it is estimated that less than 100 steelhead were taken in the Karluk Lagoon subsistence fishery and 86 steelhead were taken in the sport fishery. The total harvest was under 200 fish and spawning escapement appeared excellent.

King Salmon:

Four trips were made to Karluk Lagoon to tag king salmon, O. tshawytscha, and to collect size, sex, and scale samples. A total of 65 salmon were captured by seine, 60 of which were marked with conspicuous orange Petersen disc tags. By identifying kings with "observable" tags, we had hoped to calculate the total population from observations of marked - to - unmarked spawning fish, sport-caught fish, and carcasses. The adipose fin was also removed to later identify fish that had lost their tags.

Examination of all sport caught kings (n=170) at Portage indicated a harvest of one marked fish. Two marked fish were observed during foot surveys August 9 - 11.

An average of 16 king salmon were captured each tagging trip indicating that king salmon migrated into Karluk Lagoon in small schools and remained there for only a short time before ascending the river. It would have been necessary to tag on a daily basis in order to have marked a significant percentage of the run. The tagging program has been discontinued and efforts are being directed to installing a counting weir on the lower Karluk River.

Table 10 presents age, size, and sex data for king salmon tagged at Karluk Lagoon and Table 11 presents similar data taken from subsistence caught fish. The smaller (younger) subsistence caught kings had been removed for drying prior to sampling.

TABLE 8 Percent Composition of Various Brood Years* Producing the 1971 and 1972 Karluk River Steelhead Runs.

| | Year of Parent Escapement | | | | | | Total |
|------------------------|---------------------------|------|------|------|------|------|--------|
| | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | |
| <u>1971 Immigrants</u> | | | | | | | |
| Number of Samples | 1 | 3 | 30 | 58 | 57 | 0 | 149 |
| Percent Composition | 0.7 | 2.0 | 20.0 | 38.9 | 38.3 | - | 100.0% |
| <u>1972 Immigrants</u> | | | | | | | |
| Number of Samples | 0 | 5 | 22 | 38 | 32 | 3 | 100 |
| Percent Composition | - | 5.0 | 22.0 | 38.0 | 32.0 | 3.0 | 100.0% |

* Brood year defined as calendar year that the parent escapement entered the river to spawn.

TABLE 9 Catch per Hour by Weekly Periods, Karluk River, September 30, to October 27, 1972.

| Date | No. Anglers | No. Hrs. Fished | Catch Per Hour ()* | | | |
|---------------------|-------------|-----------------|---------------------|--------------|------------|--------------|
| | | | Steelhead | Dolly Varden | Coho | All Fish |
| Sept. 30- Oct. 6 | 3 | 24.0 | 2.33 (56) | 0.29 (7) | 1.00 (24) | 3.625 (87) |
| Oct 7- Oct. 13 | 6 | 68.0 | 0.63 (43) | 0.15 (7) | 0.91 (62) | 1.65 (112) |
| Oct. 14- Oct. 20 | 3 | 31.5 | 4.70 (148) | 0.13 (4) | 0.76 (24) | 5.59 (176) |
| Oct. 21- Oct 27 | 9 | 98.0 | 0.74 (73) | 0.12 (12) | 0.47 (46) | 1.38 (135) |
| Oct. 28- Nov. 3 | 0 | - | - | - | - | - |
| Nov. 4- Nov. 10 | 5 | 86.0 | 0.33 (28) | 0.12 (1) | 0.1 (10) | 0.45 (39) |
| | 26 | 307.5 | 1.13 (348) | 0.10 (31) | 0.54 (166) | 1.79 (549)** |

* () = Number Fish Caught.

** = Includes 4 Rainbow Trout.

TABLE 10 Age and Size Composition of Chinook Salmon Tagged at Karluk Lagoon, June, 1972.

| <u>Age</u> | <u>Year Parent Escapement</u> | <u>No.</u> | <u>Per-Cent</u> | <u>Length (mm)</u> | | <u>Weight (kilo)</u> | |
|----------------|-------------------------------|------------|-----------------|--------------------|-------------|----------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> | <u>Range</u> | <u>Mean</u> |
| <u>Females</u> | | | | | | | |
| 2.3 | 1966 | 1 | 3.22 | | 819 | | 9.54 |
| 2.4 | 1965 | 27 | 87.09 | 730-927 | 815 | 4.54-14.09 | 10.26 |
| 3.3 | 1965 | 1 | 3.22 | | 806 | | 9.54 |
| Re-generate | | <u>2</u> | <u>6.45</u> | | | | |
| Total | | 31 | 99.98 | | | | |

| <u>Age</u> | <u>Year Parent Escapement</u> | <u>No.</u> | <u>Per-Cent</u> | <u>Length (mm)</u> | | <u>Weight (kilo)</u> | |
|--------------|-------------------------------|------------|-----------------|--------------------|-------------|----------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> | <u>Range</u> | <u>Mean</u> |
| <u>Males</u> | | | | | | | |
| 1.2 | 1968 | 2 | 6.06 | 578-591 | 584 | 3.64-3.86 | 3.75 |
| 1.4 | 1966 | 1 | 3.03 | | 851 | | 9.77 |
| 2.1 | 1968 | 5 | 15.15 | 311-362 | 333 | | |
| 2.3 | 1966 | 10 | 30.30 | 629-832 | 743 | 3.86-9.32 | 6.75 |
| 2.4 | 1965 | <u>15</u> | <u>45.45</u> | 737-927 | 858 | 7.27-14.50 | 10.88 |
| Total | | 33 | 99.99 | | | | |

TABLE 11 Age and Size Composition of Subsistence Caught Chinook Salmon,
Karluk Lagoon - June, 1972.

| <u>Age</u> | <u>Year Of Parent Escapement</u> | <u>No.</u> | <u>Per- Cent</u> | <u>Length (mm)</u> | | <u>Weight (kilo)</u> | |
|-----------------|--|------------|----------------------|--------------------|-------------|----------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> | <u>Range</u> | <u>Mean</u> |
| <u>Females</u> | | | | | | | |
| 2.4 | 1965 | 13 | 100 | 737-914 | 827 | 7.95-13.61 | 9.66 |
| <u>Males</u> | | | | | | | |
| 1.3 | 1967 | 2 | 11.76 | 762-787 | 774 | | |
| 1.4 | 1966 | 1 | 5.88 | | 787 | | 7.72 |
| 2.3 | 1966 | 4 | 23.52 | 635-711 | 660 | (n=1) | 6.13 |
| 2.4 | 1965 | 9 | 52.94 | 787-889 | 835 | 10.00-11.36 | 10.68 |
| Re- generate | | <u>1</u> | <u>5.88</u> | | | | |
| Total | | 17 | 99.98 | | | | |

The June 6 through August 4, 1972, creel census at Portage (all anglers were interviewed) indicated that 143 anglers caught 170 chinook salmon in 1,256 hours (1.18 fish per angler or 0.14 fish per hour, Table 8). Forty-seven (27.6%) of these fish were released. Data collected at Karluk Lagoon indicate that 87 king salmon were caught with 31 (35.7%) being released (Table 12 and 13).

A total of 144 king salmon were sampled during the sport fishery for sex, size, and age determination. These data are presented in Table 14.

Based on creel census data, commercial fish records and personal observations of the subsistence fishery, it is estimated that less than 300 Karluk River king salmon were harvested in 1972.

An aerial count August 8, 1972, indicated a minimum of 1,290 king salmon in pool areas of the Karluk River. Three days later, 1,110 king salmon were enumerated during a three-day float trip. An estimated 3,000+ king salmon spawned in the Karluk during the fall of 1972.

Ayakulik, Frazer and Chignik King Salmon:

Department personnel enumerated 1,644 king salmon through the Ayakulik (Red River) weir from June 4 to August 13, 1972. By July 8 the immigration had peaked, and less than 10 fish daily passed through the weir until the field camp was closed on August 13.

Table 15 presents sex, age, and size data for Ayakulik king salmon.

Sport fishing pressure on the Ayakulik was minimal (two reported fishing parties); however, Department personnel at the weir reported catching and releasing many king salmon during June and July. This stream has excellent potential for a king salmon sport fishery.

Frazer Lake was barren of anadromous fish until 1951, due to a 31-foot falls on the outlet, when sockeye salmon were introduced. In 1962, a fish ladder was installed at the falls to pass fish into the lake. King salmon (Karluk River stock) were planted in the lake as fingerlings in 1966 (42,000), 1967 (56,000) and 1968 (46,000). In 1969, 16,000 fingerlings were stocked below the falls. King salmon returns in 1968, 1969, 1971 and 1972, were comprised of 3, 2, 24, and 113 adults, respectively.

Table 16 presents sex, age, and size data for 56 Frazer Lake king salmon sampled in 1972.

Scale examinations showed that 34% of the fish sampled exhibited additional fresh water growth after the first annulus, however they were considered to have spent only one complete year in fresh water.

TABLE 12 Karluk River Creel Census, June 6 to August 4, 1972 at Portage.

| Date | Anglers | No. Hours Fished | King Salmon | | Steelhead | |
|--------------------|----------|---------------------|---------------|--------------------|---------------|--------------------|
| | | | No. Caught | No. Caught/Hour | No. Caught | No. Caught/Hour |
| June 6-12 | 5 | 37 | 3 | 0.08 | 11 | 0.30 |
| June 13-19 | 4 | 36 | 6 | 0.17 | 3 | 0.08 |
| June 20-26 | 35 | 392 | 41 | 0.10 | 25 | 0.06 |
| June 27- July 3 | 31 | 298 | 62 | 0.21 | 5 | 0.02 |
| July 4-10 | 57 | 321 | 34 | 0.11 | 4 | 0.01 |
| July 11-17 | 8 | 144 | 11 | 0.08 | - | 0.00 |
| July 18-24 | - | - | - | - | - | 0.00 |
| July 25-31 | <u>3</u> | <u>28</u> | <u>13</u> | <u>0.46</u> | <u>2</u> | <u>0.07</u> |
| Total | 143 | 1256 | 170 | 0.14 | 50 | 0.04 |

TABLE 13 Karluk River Creel Census June 6 to August 4, 1972.

| <u>Portage Area</u> | | | | |
|--|-----------------------|-------------------------|-----------------------|-----------------------|
| <u>Species</u> | <u>No. Caught</u> | <u>No. Retained</u> | <u>% Retained</u> | <u>% Released</u> |
| King Salmon | 170 | 123 | 72.4 | 27.6 |
| Steelhead | 50 | 15 | 30.0 | 70.0 |
| Dolly Varden | 10 | 2 | 20.0 | 80.0 |
| Pink and Sockeye Salmon | <u>6</u> | <u>2</u> | <u>33.3</u> | <u>66.7</u> |
| Sub-total | 236 | 142 | 60.2 | 39.8 |
| <u>Below Portage and Lagoon (May 16 to July 8)</u> | | | | |
| King Salmon | 87 | 56 | 64.4 | 35.7 |
| Steelhead | 51 | 2 | 3.9 | 96.1 |
| Dolly Varden | Not recorded * | | | |
| Pink and Sockeye Salmon | <u>1</u> | <u>1</u> | <u>100.0</u> | <u>0.0</u> |
| Sub-total | 139+ | 59+ | 42.4+ | 57.6- |
| GRAND TOTAL | 375 | 201 | 53.6 | 46.4 |

TABLE 14 Age and Size Composition of Angler Caught Chinook Salmon,
Karluk River, June and July, 1972.

| <u>Age</u> | <u>Year of Parent Escapement</u> | <u>No.</u> | <u>Per-Cent</u> | <u>Range</u> | <u>Length (mm)</u> | |
|----------------|----------------------------------|------------|-----------------|--------------|--------------------|-------------|
| | | | | | | <u>Mean</u> |
| <u>Females</u> | | | | | | |
| 1.4 | 1966 | 3 | 4.76 | 750-870 | | 817 |
| 2.3 | 1966 | 5 | 7.93 | 683-842 | | 754 |
| 2.4 | 1965 | 47 | 74.60 | 762-922 | | 837 |
| 3.3 | 1965 | 1 | 1.58 | - | | 775 |
| Regenerate | - | <u>7</u> | <u>11.11</u> | | | |
| Total | | 63 | 99.98 | | | |

| <u>Age</u> | <u>Year of Parent Escapement</u> | <u>No.</u> | <u>Per Cent</u> | <u>Range</u> | <u>Length (mm)</u> | |
|--------------|----------------------------------|------------|-----------------|--------------|--------------------|-------------|
| | | | | | | <u>Mean</u> |
| <u>Males</u> | | | | | | |
| 1.3 | 1967 | 1 | 1.23 | - | | 620 |
| 1.4 | 1966 | 5 | 6.17 | 831-910 | | 862 |
| 2.1 | 1968 | 4 | 4.93 | 334-389 | | 364 |
| 2.2 | 1967 | 6 | 7.40 | 505-582 | | 558 |
| 2.3 | 1966 | 12 | 14.81 | 581-813 | | 727 |
| 2.4 | 1965 | 43 | 53.08 | 705-990 | | 858 |
| 3.3 | 1965 | 2 | 2.46 | 749-787 | | 768 |
| Regenerate | - | <u>8</u> | <u>9.37</u> | | | |
| Total | | 81 | 99.95 | | | |

TABLE 15 Age and Size Composition of King Salmon Sampled at the Ayakulik River Weir - June, 1972.

| Age | Year Of Parent Escapement | No. | Per-Cent | Length (mm) | | Weight (kilo) | |
|----------------|---------------------------|----------|-------------|-------------|------|---------------|-------|
| | | | | Range | Mean | Range | Mean |
| <u>Females</u> | | | | | | | |
| 1.3 | 1967 | 2 | 4.17 | 730&749 | 740 | | 7.72 |
| 1.4 | 1966 | 27 | 56.25 | 806-908 | 852 | 10.00-15.45 | 11.94 |
| 1.5 | 1965 | 7 | 14.58 | 838-946 | 903 | 11.36-16.82 | 14.09 |
| 2.3 | 1966 | 2 | 4.17 | 718&851 | 784 | 8.18&11.81 | 9.99 |
| 2.4 | 1965 | 9 | 18.75 | 800-889 | 847 | 9.54-15.42 | 12.04 |
| Re-Generate | | <u>1</u> | <u>2.08</u> | | | | |
| | | 48 | 100 | | | | |

| Age | Year Of Parent Escapement | No. | Per-Cent | Length (mm) | | Weight (kilo) | |
|--------------|---------------------------|----------|-------------|-------------|------|---------------|-------|
| | | | | Range | Mean | Range | Mean |
| <u>Males</u> | | | | | | | |
| 1.3 | 1967 | 6 | 11.76 | 686-838 | 736 | 6.36-12.72 | 8.86 |
| 1.4 | 1966 | 28 | 54.90 | 730-991 | 877 | 8.18-18.63 | 12.75 |
| 1.5 | 1965 | 3 | 5.88 | 902-953 | 932 | 13.63-14.54 | 14.24 |
| 2.4 | 1965 | 11 | 21.57 | 800-941 | 899 | 11.81-18.18 | 13.96 |
| 2.5 | 1964 | <u>3</u> | <u>5.88</u> | 997-1067 | 1026 | 15.00&19.09 | 17.04 |
| | | 51 | 99.99 | | | | |

TABLE 16 Age and Size Composition of All Chinook Salmon Sampled at the Frazer Lake Fish Pass during June, July, and August, 1972.

| <u>Age</u> | <u>Year of Parent Escapement</u> | <u>No.</u> | <u>Per-Cent</u> | <u>Length (mm)</u> | | <u>Weight (kilo)</u> | |
|----------------|----------------------------------|------------|-----------------|--------------------|-------------|----------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> | <u>Range</u> | <u>Mean</u> |
| <u>Females</u> | | | | | | | |
| 1.3 | 1967 | 4 | 8.33 | 673-825 | 764 | 5.1-9.4 | 7.20 |
| 1.4 | 1966 | 31 | 64.58 | 775-950 | 872 | 8.0-13.6 | 10.22 |
| 2.4 | 1965 | 1 | 2.08 | | 930 | | 12.90 |
| Regenerate | | <u>12</u> | <u>25.00</u> | | | | |
| Total | | 48 | 99.99 | | | | |

| <u>Age</u> | <u>Year of Parent Escapement</u> | <u>No.</u> | <u>Per-Cent</u> | <u>Length (mm)</u> | | <u>Weight (kilo)</u> | |
|--------------|----------------------------------|------------|-----------------|--------------------|-------------|----------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> | <u>Range</u> | <u>Mean</u> |
| <u>Males</u> | | | | | | | |
| 1.3 | 1967 | 1 | 12.50 | | 432 | | 5.90 |
| 1.4 | 1966 | 6 | 75.00 | 777-910 | 822 | 6.3-11.8 | 8.59 |
| Regenerate | | <u>1</u> | <u>25.00</u> | | | | |
| Total | | 8 | 100.00 | | | | |

The 1972 return (n=113) was comprised of fish stocked in 1966 (1.78%), 1967 (66.07%), and 1968 (8.92%). Thirteen (23.21%) of the sample had regenerate scales.

Chignik King Salmon Egg-Take

Table 17 presents age, sex, and size data of 33 Chignik king salmon used for spawning stock in 1972. Most fish (78.8%) were age 1.4 and 2.4, with parent years 1965 and 1966 producing all of the spawning stock.

Evaluation of Multiple Use Development Projects

The revised Perenos Bay Timber sale on Afognak Island was reviewed. The sale, as laid out on maps, seems to adequately protect major lakes and streams. However, many smaller lakes (10 - 65 acres) are scheduled for partial-to-complete shoreline logging.

A major portion of the 1973-74 field season will be spent cataloging and inventorying these small lakes and streams and recommending sale modifications.

A 3.5-mile section of road from Pillar Creek to Monashka Creek was completed. All stream crossings, gravel removal operations, and sand borrow sites were reviewed prior to granting use permits and were monitored during construction activities.

The City of Kodiak's Monashka Creek impoundment design was reviewed, and stipulations to protect downstream fish populations were incorporated into the construction permit.

Public Access to Sport Fishing Waters

Letters were sent to the Habitat Section and the Bureau of Land Management requesting the metes and bounds of a homestead entry, encompassing the lower Pasagshak River, be altered slightly to allow angler access to the river. Letters of objection were filed with the BLM after the second public notice of intent to grant final patent.

Also included in the final patent is a portion of a former military road which extends a total of 12 miles beyond and provides access to Barry Lagoon, Bull, Lupine, and Twin lakes and numerous beach areas.

A reserve use application was applied for with the Division of Lands on Barbara Lake and special land use permits were applied for on the inlet and outlet of Lake Miam and on the outlet area of Saltery Lake.

The transfer of the Kodiak Naval Station to the Coast Guard necessitated changes in existing lease agreements and review of potential recreational areas formerly listed as "security." A formal agreement has not been prepared with the Coast Guard.

TABLE 17 Age and Size of Chignik Chinook Salmon used for Spawning Stock, August, 1972.

| <u>Age</u> | Year of Parent Escapement | <u>No.</u> | <u>Per-Cent</u> | <u>Length (mm)</u> | |
|----------------|---------------------------|------------|-----------------|--------------------|-------------|
| | | | | <u>Range</u> | <u>Mean</u> |
| <u>Females</u> | | | | | |
| 1.4 | 1966 | 7 | 25.00 | 841-1032 | 947 |
| 2.3 | 1966 | 2 | 7.14 | 942&978 | 960 |
| 2.4 | 1965 | 18 | 64.38 | 851-1042 | 939 |
| No Scales | - | <u>1</u> | <u>3.57</u> | - | - |
| Total | | 28 | 99.9 | | |
| <u>Males</u> | | | | | |
| 1.4 | 1966 | 2 | 40.0 | 883&978 | 936 |
| 2.4 | 1965 | 1 | 20.0 | - | 1029 |
| No scales | - | <u>2</u> | <u>40.0</u> | 822&1050 | 930 |
| Total | | 5 | 100.0 | | |

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