

COHO SALMON ESCAPEMENT COUNTS  
IN THE EGEK DISTRICT,  
BRISTOL BAY, ALASKA, 1995

By

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## ABSTRACT

Adult coho salmon, *Oncorhynchus nerka*, entering the escapement were counted from counting towers at Egegik River, a tributary to Bristol Bay, Alaska, from July 23 through August 30, 1995. A total of 7,470 adult cohos were enumerated. A total of 501 adult cohos, captured through beach seining operations, were sampled for age and length. The majority were age 2.1. Aerial surveys of the Egegik District drainages yielded a count of 5,258 adult cohos in spawning areas.

KEY WORDS: Coho salmon *Oncorhynchus nerka*, salmon counting towers, escapement, Egegik River, Bristol Bay, aerial surveys

## INTRODUCTION

The Egegik River system (Figure 1) contains two major watersheds: (1) the Egegik River, draining Becharof Lake and nearby coastal lowlands, and (2) the King Salmon River, comprised of runoff from the Kejulik Mountains and uplands in the southern portions of Katmai National Park. Both rivers flow into Egegik Bay near Egegik village. A commercial fishery for salmon is conducted at the mouths of these rivers in Egegik Bay and in nearby waters of the Egegik District (Figure 2).

Becharof Lake, Alaska's second largest body of fresh water, has a surface area of 458 square miles, Bue (1963), and lies within the Becharof National Wildlife Refuge. Waters of the lake are clear and support one of Alaska's largest sockeye salmon (*Oncorhynchus nerka*) runs. Additionally, runs of chinook (*O. tshawytscha*), chum (*O. gorbuscha*), pink (*O. keta*), and coho salmon, along with resident freshwater species inhabit the drainage. Becharof Lake and its tributaries provide the primary spawning habitat for sockeye and coho salmon within the Egegik District. The Egegik River between the outlet of Becharof Lake and the upper range of tidal influence (Egegik Lagoon) provides spawning substrate for all five salmon species but is used most heavily by spawning sockeye and pink salmon. The King Salmon River is glacially turbid during summer and fall but supports runs of all five salmon species listed above. Its tributaries provide the primary spawning habitat for chinook and chum salmon in the Egegik District.

Egegik District salmon escapements have been intermittently assessed by various means since about 1920. Foot surveys, weir counts, aerial surveys, float counts, and counting from counting towers have all been employed at times to provide subjective and/or enumerated estimates of escapement abundance for target species, McCurdy (1973). Counting towers have been used annually in the enumeration of sockeye salmon escapements in Egegik River from 1957-1995. In most cases escapement estimation has targeted sockeye salmon as they have provided the largest economic return to the commercial fishery in the Egegik District. Species attracting the least amount of escapement assessment attention to date have been pink and coho salmon.

Coho salmon have been harvested commercially in the Egegik District (Figure 2) for most of the past century. Their first documented appearance in the commercial salmon case pack was in 1913. They enter the district later than any other salmon species, peaking in the commercial harvest on or about August 14. In contrast, the sockeye harvest peaks in the district on approximately July 2 and most sockeye buyers have left the area by the end of July. Commercial emphasis on coho salmon harvesting has been light and sporadic until fairly recent time. It wasn't worth the salmon

buyers' investment in time and labor to keep canneries open from late July until late August to obtain a few thousand cohos after sockeye runs tailed-off...so when the annual sockeye harvest neared an end each season they ceased buying operations, leaving little market opportunity for the later arriving cohos. This pattern changed in the late 1970's due to entry into the Bristol Bay fisheries of salmon buyers employing floating Freezer/Processor ships, and the growth of small shore-side buyers employing Fly-out operations. In addition to affecting sockeye harvest operations these buyers provided additional market opportunity for those commercial fishermen desiring to stay later into late summer to fish for coho salmon. The harvest grew as a result of these market options and over the 15-year period from 1980-1994 the Egegik District coho harvest averaged approximately 43,150 fish (Appendix Table 1).

Given the increased annual commercial harvests, as well as a small but increasing recreational harvest, it has recently become apparent that emphasis on obtaining relevant coho escapement data from the Egegik District is necessary to protect viability of the run. This need has been further reinforced by the need to better understand the significance of coho salmon in the overall ecological regime within Becharof National Wildlife Refuge. Due to the scarcity of escapement data to date, no formal coho escapement goals have been established for the Egegik District.

In response to the need for coho escapement information from the Egegik District efforts were initiated by the U.S. Fish and Wildlife Service to collect daily coho escapement counts and gather coho age composition data from Egegik River beginning in 1994. Using counting towers and equipment made available by the Alaska Department of Fish and Game the USFWS personnel conducted daily salmon counting activities at Egegik River from July 22 until September 11, 1994, obtaining a count of 10,140 cohos (Appendix Tables 2 and 3). Following the 1994 season the USFWS and the Alaska Department of Fish and Game agreed to continue the coho counting program in 1995-1996 with USFWS supplying funding for counting personnel and ADF&G supplying the personnel, equipment, facilities, and data analysis. This progress report will detail coho counting activities accomplished during 1995.

## METHODS

Coho salmon were counted from two construction scaffolds (counting towers) situated on opposite banks of the Egegik River approximately 4 km downstream from the outlet of Becharof Lake (Figure 3). The right bank tower (as one faces downstream) was 7.6 meters in height (25 ft) and the left bank tower 6.1 meters in height (20 ft). Three Fish and Wildlife Technicians conducted the counts. Two of these individuals had ample experience in sockeye salmon counting from counting towers and the third had experience

in sampling coho from local rivers in a program designed to obtain Age-Weight-Length data during 1990. Polaroid sunglasses were used by the technicians to minimize glare off the water surface. Painted metal panels were placed on the river bottom perpendicular to the shore, yet near the shore, to provide a background contrast enabling optimal fish spotting. Artificial lights were employed during hours of darkness to enable counting at night. Coho passage estimates were derived by expanding 10-minute counts of individual fish made from each bank each hour of the calendar day (twenty-four 10-minute counts from the left bank and twenty-four 10-minute counts from the right bank). The 10-minute counts were multiplied by a factor of six to account for the non-counted portion of each hour, yielding an hourly passage estimate by the towers. At the end of each day the 24 hourly counts obtained were summed to provide a daily passage estimate. This is the same procedure used since the mid 1950's to estimate sockeye passage at counting towers in the major tributary rivers of Bristol Bay. The data was recorded daily on standard counting forms and transmitted by radio or cellular telephone to project biologists at King Salmon.

Coho salmon were captured for Length-Age sampling with beach seines. Prior to August 6, a 107 meter X 2 fathom beach seine was employed, and an additional 30 meters X 3 fathoms section was added to it thereafter. Several capture locations in the general vicinity of the Egegik River "Rapids" and farther downriver in Egegik Lagoon were tested in attempts to find the most productive site for efficient coho sampling. Captured fish were measured to the closest mm (mid-eye to fork of tail) and a scale sample (3 scales from the area 3-4 rows above the lateral line on a diagonal between the insertion of the dorsal fin and the origin of the anal fin) was obtained. Length data was entered on standard Age-Weight-Length forms and submitted to King Salmon. Scales were mounted on gum cards for eventual impression into clear acetate cards, from which they were aged by research biologists with the Commercial Fisheries Management and Development Division in Anchorage, AK. Age designations are expressed in the European fashion, Koo (1962) where numerals preceding the decimal denote freshwater annuli, and numerals following the decimal refer to the marine annuli.

The 1995 counting program at Egegik River was terminated August 30 when funding for the technicians was exhausted. Subsequently, two days of aerial surveys were conducted, September 27 and 29, to document terminal streams used by spawning cohos and provide numeric estimates of spawning distribution through-out the drainage. This was the second consecutive year this type of survey activity has been conducted. Funding for these surveys was also provided by the U.S. Fish and Wildlife Service. The surveys were flown in a Cessna 180 at low speeds and low altitude over the lakes, rivers, and streams. Fish were counted by the author. Polaroid sunglasses, and hand tally counters were used to assist in minimizing glare and to keep track of counts.

## RESULTS and DISCUSSION

### DAILY COHO COUNTS

Alaska Department of Fish and Game funded salmon enumeration at Egegik River counting towers, targeting sockeye escapement estimation, was initiated June 19 and conducted through July 22, 1995. Beginning July 23, program funding switched to the USFWS and counting continued through August 30 with emphasis directed at coho escapement enumeration. Daily counts of all species observed during the entire 1995 counting season are presented in Table 1. The first cohos were noted at the counting towers on July 30; the largest daily count (912 fish) was obtained August 27; and cohos were still migrating upstream past the counting towers when the project ended August 30. A total of 7,470 coho salmon were counted during the counting program. Daily coho counts, cumulative count totals, and passage percentages by day are presented in Table 2. Fifty percent of the coho counts in 1995 were reached by August 14, as opposed to August 26 in 1994 (See Appendix Tables 2 and 3 for 1994 coho count information). Daily counts fluctuated a good deal but seemed to be increasing just prior to curtailment of the counting program in 1995, so it's unfortunate the program couldn't have been extended later into the escapement. Reports from local residents and anglers visiting the Egegik River "Rapids" area suggest that cohos continued to enter the river through early October.

### SPECIES IDENTIFICATION

Accurate identification and enumeration of migrating adult coho salmon from amidst mixed schools of sockeye/chum/coho salmon was a concern during the counting program. Chum salmon were actually quite scarce, but the large sockeye escapement into Egegik River in 1995, approximately 1,282,000 fish, exhibited a long tail as it slowly wound down and there were opportunities to confuse bright sockeye with bright cohos through the end of July and into early August. By August 15 cohos had begun to exhibit some "maroonish" coloration which was helpful in segregating them during the counts. Cohos larger average size and their migratory behavior were also somewhat different than that of the late-run sockeye providing some help in differentiating the two species. Given these factors it is useful to look at other data collected during the season that might suggest whether coho counts from the towers appear to be out-of-phase with temporal characteristics of the coho run.

The commercial harvest by day of all salmon species from the Egegik District during the period July 23-August 25, 1995 is presented in Table 3. From these catch data it's apparent that sockeye salmon were at least as available to commercial harvesters in Egegik Bay (Figure 2) as were cohos through the first week of August, and thereafter cohos predominated in the commercial catches. Based on

these indications one would not expect cohos to begin out-numbering sockeye in counts at the counting towers until sometime during the second week of August. During 1995 it appears that cohos began to outnumber sockeye in the tower counts fairly consistently around August 13, although the percentages did not strongly favor cohos until August 25 (Table 4). These results differ somewhat from those obtained during 1994 (Appendix Table 4). In 1994 sockeye outnumbered cohos in the commercial catches only through August 3, and cohos were predominate in the tower counts beginning August 7.

The timing of commercial coho catches from the Egegik District for the 15 years from 1980-1994 is presented in Appendix Table 1. From this data it appears that 25% of the commercial coho harvest is generally achieved by approximately August 10 on the average, while the 50% and 75% harvest levels are reached around August 16, and August 23 respectively. If escapement rate follows commercial harvest availability reasonably closely these data would suggest one should expect coho escapements to begin showing strength at upriver counting locations around the end of the second week of August, somewhat consistent with the results obtained in 1995.

#### COHO CAPTURE AND SAMPLING

A total of 501 cohos were captured and sampled for length and age data during the 1995 escapement sampling program. Sampling distribution by day is presented in Table 5. Prior to August 6 beach seining yielded very few cohos for sampling, but their representation increased thereafter, and by approximately August 20 they predominated in the samples collected. The sampling crew reported that small schools of cohos were passing the towers prior to August 6 but that these fish were extremely spooky and very hard to seine, while the sockeye passing were much more easily caught. The increased length and depth added to the seine on August 6 probably contributed to subsequent improved coho capture effectiveness, although the greater abundance of cohos available later in the season may have been even more responsible for the better capture success.

#### COHO AGE-LENGTH DISTRIBUTION

A total of 387 (77%) of the 501 cohos sampled from beach seines in the 1995 escapement yielded scales suitable for aging. The length and age distribution of these fish was as follows:

|               |     |             |        |
|---------------|-----|-------------|--------|
| Age Group 1.1 | 29% | Mean length | 513 mm |
| Age Group 2.1 | 65% | Mean length | 557 mm |
| Age Group 3.1 | 5%  | Mean length | 565 mm |

Age Group 2.1 was predominate in the Egegik District escapement during 1995. This agrees with previous age composition information.

Stratton (1991) reported the age composition of a very small sample (n = 13) of Egegik River coho escapement samples collected in 1990 was 84% Age Group 2.1, while a similar sample (n = 40 fish) collected from Gertrude Creek (a King Salmon River tributary) was comprised of 95% Age Group 2.1 fish. Stratton and Crawford (1992) reported that the 1991 coho escapement into the King Salmon River was comprised of 82% Age group 2.1. Preliminary data (all capture methods combined) collected by the USFWS personnel counting salmon at Egegik River in 1994 suggest 85% of the Egegik River coho escapement was Age Group 2.1. No age data was collected from the Egegik District commercial coho catch during 1995. Previous years' age composition data from the Egegik District commercial harvest exist for 1983, 70% Age Group 2.1, Yuen and Nelson (1987); for 1989, 69% Age Group 2.1, Stratton (1990); and for 1990, 87% Age Group 2.1, Stratton (1991).

#### AERIAL SURVEY COUNTS

On September 27 and 29 a combined total of 5,258 coho salmon were counted during aerial surveys of the King Salmon and Egegik Rivers and in numerous tributaries of Becharof Lake. The distribution of fish counted by stream is presented in Table 6 (See Figures 4 and 5 for stream location keys). Of this total, approximately 4,740 fish were counted upstream of the Egegik River counting towers. The streams with the largest apparent coho concentrations were Egegik River "rapids", Salmon Creek, and Kejulik River, all with more than 500 fish each. Most of the cohos counted in the Egegik River "rapids" were schooled near the mouth of Myers Creek (see Figure 2) and may have been waiting to enter the creek. These coho counts should be considered as only an index, since the counting towers were not operated at all in September, and since an undetermined number of cohos could have been present in the turbid waters of the mainstem King Salmon River and some of its tributaries.

Aerial survey counts of cohos obtained in 1994 are presented in Appendix Table 6. Egegik River "rapids", Burl's Creek, Ruth River, Salmon Creek, Becharof Creek, and Kejulik River were the major concentration areas in 1994. Conditions for the aerial surveys were not as good in 1995 as those encountered in 1994. Becharof Lake surface was nearly calm in 1994 but was white-capping moderately in 1995...so any comparison of counts between the two years should take that into account.

#### 1995 COMMERCIAL COHO HARVEST

Preliminary figures from the 1995 commercial coho harvest indicate it totaled approximately 21,800 fish, well below the 1980-1994 average of 43,150. Due to lower than normal commercial daily catch rates and the rather modest escapement rate past the Egegik River counting towers, the Egegik District commercial coho fishery was closed effective August 25, and it remained closed through the end of the commercial salmon season September 30.

## RECOMMENDATIONS

The author recommends that in 1996 counts be suspended between the dates that ADF&G ceases its daily sockeye escapement count (generally around July 22-24) and August 5. This recommendation is based on the low daily coho counts obtained over the interval July 22-August 5 over the past two years (1% of total counts in 1994, and 29% of counts in 1995), and the historic commercial coho harvest timing data (16% of the annual harvest obtained through August 5). Further, it's responsive to the need to operate the counting program within a fixed budget for technicians' salaries. A total of 39 days of counting was funded under the contract with USFWS in 1995. If this same amount of daily coverage is affordable in 1996 counting could resume on August 6 and extend until approximately September 13. This time period and any additional time that could be added beyond September 13 would provide more coverage of the main body of the coho escapement migration into Egegik River. Additionally, it would lessen uncertainty regarding species identification, and provide the opportunity for stronger correlations between late September aerial surveys of Becharof Lake tributaries and the actual tower counts, since they would be more closely related in time.

Based on the results of coho capture and sampling in 1994, 1995, and historically, it would also be advisable to place less emphasis on this very labor intensive and expensive activity in 1996. The resultant curtailment in technicians' overtime could possibly add a little extra counting time to the project.

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Table 1. Egegik River salmon escapement counts, Egegik Tower, 1995.

| Date         | Daily Counts     |           |            |           |              |
|--------------|------------------|-----------|------------|-----------|--------------|
|              | Sockeye          | Chinook   | Chum       | Pink      | Coho         |
| June 19      | 456              | 0         | 0          | 0         | 0            |
| 20           | 4,686            | 0         | 0          | 0         | 0            |
| 21           | 15,516           | 0         | 0          | 0         | 0            |
| 22           | 2,052            | 0         | 0          | 0         | 0            |
| 23           | 78               | 0         | 0          | 0         | 0            |
| 24           | 3,600            | 0         | 0          | 0         | 0            |
| 25           | 28,476           | 0         | 0          | 0         | 0            |
| 26           | 81,684           | 0         | 0          | 0         | 0            |
| 27           | 88,326           | 0         | 0          | 0         | 0            |
| 28           | 188,766          | 0         | 0          | 0         | 0            |
| 29           | 115,818          | 0         | 0          | 0         | 0            |
| 30           | 122,076          | 6         | 0          | 0         | 0            |
| July 01      | 79,986           | 0         | 0          | 0         | 0            |
| 2            | 6,894            | 0         | 0          | 0         | 0            |
| 3            | 18,528           | 0         | 0          | 0         | 0            |
| 4            | 78,906           | 0         | 0          | 0         | 0            |
| 5            | 56,136           | 0         | 0          | 0         | 0            |
| 6            | 41,226           | 0         | 0          | 0         | 0            |
| 7            | 2,976            | 0         | 0          | 0         | 0            |
| 8            | 65,376           | 0         | 0          | 0         | 0            |
| 9            | 61,818           | 0         | 0          | 0         | 0            |
| July 10      | 5,220            | 0         | 0          | 0         | 0            |
| 11           | 23,634           | 0         | 0          | 0         | 0            |
| 12           | 21,480           | 0         | 0          | 0         | 0            |
| 13           | 14,844           | 0         | 0          | 0         | 0            |
| 14           | 11,166           | 0         | 0          | 0         | 0            |
| 15           | 4,362            | 0         | 0          | 0         | 0            |
| 16           | 8,904            | 0         | 0          | 0         | 0            |
| 17           | 10,872           | 0         | 0          | 0         | 0            |
| 18           | 5,850            | 6         | 0          | 0         | 0            |
| 19           | 7,374            | 0         | 0          | 0         | 0            |
| July 20      | 6,498            | 0         | 0          | 0         | 0            |
| 21           | 4,290            | 0         | 6          | 0         | 0            |
| 22           | 32,268           | 0         | 0          | 0         | 0            |
| 23           | 24,972           | 0         | 0          | 0         | 0            |
| 24           | 14,784           | 0         | 0          | 0         | 0            |
| 25           | 5,964            | 0         | 0          | 0         | 0            |
| 26           | 1,104            | 0         | 0          | 0         | 0            |
| 27           | 1,308            | 0         | 0          | 0         | 0            |
| 28           | 546              | 0         | 0          | 0         | 0            |
| 29           | 1,032            | 0         | 0          | 0         | 0            |
| July 30      | 1,218            | 0         | 6          | 0         | 696          |
| 31           | 3,720            | 0         | 0          | 0         | 138          |
| Aug. 01      | 1,140            | 0         | 0          | 0         | 138          |
| 2            | 660              | 0         | 0          | 0         | 324          |
| 3            | 672              | 0         | 0          | 0         | 432          |
| 4            | 342              | 0         | 0          | 0         | 180          |
| 5            | 300              | 0         | 0          | 0         | 240          |
| 6            | 126              | 0         | 0          | 0         | 312          |
| 7            | 726              | 0         | 6          | 12        | 474          |
| 8            | 234              | 0         | 0          | 6         | 84           |
| 9            | 300              | 0         | 0          | 0         | 150          |
| Aug. 10      | 96               | 12        | 18         | 0         | 54           |
| 11           | 408              | 0         | 0          | 0         | 150          |
| 12           | 354              | 0         | 18         | 0         | 60           |
| 13           | 162              | 0         | 0          | 0         | 210          |
| 14           | 414              | 0         | 0          | 0         | 402          |
| 15           | 138              | 0         | 0          | 0         | 198          |
| 16           | 18               | 0         | 18         | 0         | 18           |
| 17           | 42               | 0         | 6          | 0         | 42           |
| 18           | 198              | 18        | 42         | 0         | 144          |
| 19           | 36               | 6         | 0          | 0         | 42           |
| Aug. 20      | 66               | 6         | (6)        | 0         | 78           |
| 21           | 66               | 0         | 6          | 0         | 84           |
| 22           | 54               | 0         | 0          | 0         | 132          |
| 23           | 54               | 6         | 6          | 0         | 48           |
| 24           | 36               | 0         | 0          | 0         | 30           |
| 25           | 42               | 0         | 12         | 0         | 96           |
| 26           | 78               | 0         | 6          | 0         | 168          |
| 27           | 54               | 0         | 0          | 0         | 912          |
| 28           | 18               | 0         | 0          | 6         | 372          |
| 29           | 18               | 0         | 0          | 0         | 648          |
| 30 a/        | 36               | 0         | 0          | 0         | 414          |
| <b>Total</b> | <b>1,281,678</b> | <b>60</b> | <b>144</b> | <b>24</b> | <b>7,470</b> |

a/ Partial interpolation of daily count to account for last 6 hours of the day missed.

Table 2. Coho salmon escapement counts, Egegik River, 1995.

| Date    | Daily Counts | Cumulative Total | Daily % of Total | Cumulative Percent | Comments                           |
|---------|--------------|------------------|------------------|--------------------|------------------------------------|
| July 23 | 0            | 0                | 0.00             | 0.00               | USFWS funding began.               |
| 24      | 0            | 0                | 0.00             | 0.00               |                                    |
| 25      | 0            | 0                | 0.00             | 0.00               |                                    |
| 26      | 0            | 0                | 0.00             | 0.00               |                                    |
| 27      | 0            | 0                | 0.00             | 0.00               |                                    |
| 28      | 0            | 0                | 0.00             | 0.00               |                                    |
| 29      | 0            | 0                | 0.00             | 0.00               |                                    |
| 30      | 696          | 696              | 9.32             | 9.32               |                                    |
| 31      | 138          | 834              | 1.85             | 11.16              |                                    |
| Aug. 01 | 138          | 972              | 1.85             | 13.01              |                                    |
| 2       | 324          | 1,296            | 4.34             | 17.35              |                                    |
| 3       | 432          | 1,728            | 5.78             | 23.13              |                                    |
| 4       | 180          | 1,908            | 2.41             | 25.54              |                                    |
| 5       | 240          | 2,148            | 3.21             | 28.76              |                                    |
| 6       | 312          | 2,460            | 4.18             | 32.93              |                                    |
| 7       | 474          | 2,934            | 6.35             | 39.28              |                                    |
| 8       | 84           | 3,018            | 1.12             | 40.40              |                                    |
| 9       | 150          | 3,168            | 2.01             | 42.41              |                                    |
| Aug. 10 | 54           | 3,222            | 0.72             | 43.13              |                                    |
| 11      | 150          | 3,372            | 2.01             | 45.14              |                                    |
| 12      | 60           | 3,432            | 0.80             | 45.94              |                                    |
| 13      | 210          | 3,642            | 2.81             | 48.76              |                                    |
| 14      | 402          | 4,044            | 5.38             | 54.14              |                                    |
| 15      | 198          | 4,242            | 2.65             | 56.79              |                                    |
| 16      | 18           | 4,260            | 0.24             | 57.03              |                                    |
| 17      | 42           | 4,302            | 0.56             | 57.59              |                                    |
| 18      | 144          | 4,446            | 1.93             | 59.52              |                                    |
| 19      | 42           | 4,488            | 0.56             | 60.08              |                                    |
| Aug. 20 | 78           | 4,566            | 1.04             | 61.12              |                                    |
| 21      | 84           | 4,650            | 1.12             | 62.25              |                                    |
| 22      | 132          | 4,782            | 1.77             | 64.02              |                                    |
| 23      | 48           | 4,830            | 0.64             | 64.66              |                                    |
| 24      | 30           | 4,860            | 0.40             | 65.06              |                                    |
| 25      | 96           | 4,956            | 1.29             | 66.35              |                                    |
| 26      | 168          | 5,124            | 2.25             | 68.59              |                                    |
| 27      | 912          | 6,036            | 12.21            | 80.80              |                                    |
| 28      | 372          | 6,408            | 4.98             | 85.78              |                                    |
| 29      | 648          | 7,056            | 8.67             | 94.46              |                                    |
| Aug. 30 | 414          | 7,470            | 5.54             | 100.00             | Interpolated from 1601-2400 hours. |
| Totals  | 7,470        |                  | 100.00           | 100.00             |                                    |

Table 3. Commercial salmon catch by date and species, in numbers of fish, Egegik District, Bristol Bay, for the interval from July 23-August 25, 1995.

| Date         | Hrs.       | Effort <sup>1</sup> |            | Sockeye       | Chinook   | Chum         | Pink     | Coho          | Total          |
|--------------|------------|---------------------|------------|---------------|-----------|--------------|----------|---------------|----------------|
|              |            | Drift               | Set        |               |           |              |          |               |                |
| July 23      | 0.00       |                     |            |               |           |              |          |               |                |
| 24           | 15.00      | 130                 | 68         | 26,345        | 0         | 700          | 0        | 3             | 27,048         |
| 25           | 24.00      | 67                  | 87         | 17,604        | 1         | 986          | 0        | 36            | 18,627         |
| 26           | 24.00      | 24                  | 78         | 15,486        | 2         | 353          | 0        | 7             | 15,848         |
| 27           | 24.00      | 29                  | 79         | 10,701        | 2         | 514          | 0        | 51            | 11,268         |
| 28           | 9.00       | 6                   | 27         | 3,767         | 0         | 116          | 0        | 21            | 3,904          |
| 29           | 0.00       |                     |            |               |           |              |          |               |                |
| 30           | 0.00       |                     |            |               |           |              |          |               |                |
| 31           | 15.00      | 15                  | 21         | 3,637         | 2         | 146          | 0        | 564           | 4,349          |
| Aug. 01      | 24.00      | 21                  | 31         | 3,908         | 0         | 116          | 0        | 769           | 4,793          |
| 2            | 24.00      | 17                  | 29         | 2,812         | 1         | 115          | 0        | 947           | 3,875          |
| 3            | 24.00      | 7                   | 16         | 841           | 0         | 9            | 0        | 425           | 1,275          |
| 4            | 9.00       | 0                   | 4          | 118           | 1         | 0            | 0        | 75            | 194            |
| 5            | 0.00       |                     |            |               |           |              |          |               |                |
| 6            | 0.00       |                     |            |               |           |              |          |               |                |
| 7            | 15.00      | 12                  | 23         | 912           | 0         | 63           | 0        | 1,855         | 2,830          |
| 8            | 24.00      | 10                  | 28         | 578           | 2         | 47           | 0        | 1,518         | 2,145          |
| 9            | 24.00      | 3                   | 20         | 520           | 0         | 16           | 0        | 1,432         | 1,968          |
| Aug. 10      | 24.00      | 6                   | 19         | 479           | 0         | 20           | 0        | 1,408         | 1,907          |
| 11           | 9.00       | 0                   | 1          | 27            | 0         | 0            | 0        | 26            | 53             |
| 12           | 0.00       |                     |            |               |           |              |          |               |                |
| 13           | 0.00       |                     |            |               |           |              |          |               |                |
| 14           | 15.00      | 5                   | 17         | 243           | 0         | 44           | 0        | 1,465         | 1,752          |
| 15           | 24.00      | 6                   | 22         | 283           | 0         | 24           | 0        | 1,705         | 2,012          |
| 16           | 24.00      | 3                   | 17         | 236           | 1         | 17           | 0        | 1,995         | 2,249          |
| 17           | 24.00      | 7                   | 12         | 69            | 3         | 7            | 0        | 1,640         | 1,719          |
| 18           | 9.00       | 0                   | 0          | 0             | 0         | 0            | 0        | 0             | 0              |
| 19           | 0.00       |                     |            |               |           |              |          |               |                |
| Aug. 20      | 0.00       |                     |            |               |           |              |          |               |                |
| 21           | 15.00      | 3                   | 15         | 43            | 0         | 0            | 0        | 2,270         | 2,313          |
| 22           | 24.00      | 3                   | 16         | 55            | 0         | 0            | 0        | 1,465         | 1,520          |
| 23           | 24.00      | 3                   | 16         | 54            | 0         | 0            | 0        | 1,135         | 1,189          |
| 24           | 24.00      | 0                   | 10         | 32            | 0         | 1            | 0        | 679           | 712            |
| 25           | 9.00       | 0                   | 5          | 7             | 0         | 0            | 0        | 281           | 288            |
| <b>Total</b> | <b>480</b> | <b>377</b>          | <b>661</b> | <b>88,757</b> | <b>15</b> | <b>3,294</b> | <b>0</b> | <b>21,772</b> | <b>113,838</b> |

<sup>1</sup> Estimated number of deliveries based on daily oral company reports. Preliminary.

Table 4. Comparison of coho salmon percentages in the Egegik District commercial harvest versus coho percentages in the Egegik River tower counts, July 23-August 30, 1995.

| Date    | Commercial Harvest (in number of fish) 1/ |       |        |        | Escapement Counts (in number of fish) |      |       |        |
|---------|---|-------|--------|--------|---------------------------------------|------|-------|--------|
|         | Sockeye                                   | Chum  | Coho   | Coho % | Sockeye                               | Chum | Coho  | Coho % |
| July 23 | 0   | 0     | 0      |        | 24,972                                | 0    | 0     | 0.00   |
| 24      | 26,345                                    | 700   | 3      | 0.01   | 14,784                                | 0    | 0     | 0.00   |
| 25      | 17,604                                    | 986   | 36     | 0.19   | 5,964                                 | 0    | 0     | 0.00   |
| 26      | 15,486                                    | 353   | 7      | 0.04   | 1,104                                 | 0    | 0     | 0.00   |
| 27      | 10,701                                    | 514   | 51     | 0.45   | 1,308                                 | 0    | 0     | 0.00   |
| 28      | 3,767                                     | 116   | 21     | 0.54   | 546                                   | 0    | 0     | 0.00   |
| 29      | 0   | 0     | 0      |        | 1,032                                 | 0    | 0     | 0.00   |
| 30      | 0   | 0     | 0      |        | 1,218                                 | 6    | 696   | 36.25  |
| 31      | 3,637                                     | 146   | 564    | 12.97  | 3,720                                 | 0    | 138   | 3.58   |
| Aug. 01 | 3,908                                     | 116   | 769    | 16.04  | 1,140                                 | 0    | 138   | 10.80  |
| 2       | 2,812                                     | 115   | 947    | 24.45  | 660                                   | 0    | 324   | 32.93  |
| 3       | 841                                       | 9     | 425    | 33.33  | 672                                   | 0    | 432   | 39.13  |
| 4       | 118                                       | 0     | 75     | 38.86  | 342                                   | 0    | 180   | 34.48  |
| 5       | 0   | 0     | 0      |        | 300                                   | 0    | 240   | 44.44  |
| 6       | 0   | 0     | 0      |        | 126                                   | 0    | 312   | 71.23  |
| 7       | 912                                       | 63    | 1,855  | 65.55  | 726                                   | 6    | 474   | 39.30  |
| 8       | 578                                       | 47    | 1,518  | 70.84  | 234                                   | 0    | 84    | 26.42  |
| 9       | 520                                       | 16    | 1,432  | 72.76  | 300                                   | 0    | 150   | 33.33  |
| Aug. 10 | 479                                       | 20    | 1,408  | 73.83  | 96                                    | 18   | 54    | 32.14  |
| 11      | 27  | 0     | 26     | 49.06  | 408                                   | 0    | 150   | 26.88  |
| 12      | 0   | 0     | 0      |        | 354                                   | 18   | 60    | 13.89  |
| 13      | 0   | 0     | 0      |        | 162                                   | 0    | 210   | 56.45  |
| 14      | 243                                       | 44    | 1,465  | 83.62  | 414                                   | 0    | 402   | 49.26  |
| 15      | 283                                       | 24    | 1,705  | 84.74  | 138                                   | 0    | 198   | 58.93  |
| 16      | 236                                       | 17    | 1,995  | 88.75  | 18                                    | 18   | 18    | 33.33  |
| 17      | 69  | 7     | 1,640  | 95.57  | 42                                    | 6    | 42    | 46.67  |
| 18      | 0   | 0     | 0      |        | 198                                   | 42   | 144   | 37.50  |
| 19      | 0   | 0     | 0      |        | 36                                    | 0    | 42    | 53.85  |
| Aug. 20 | 0   | 0     | 0      |        | 66                                    | (6)  | 78    | 56.52  |
| 21      | 43  | 0     | 2,270  | 98.14  | 66                                    | 6    | 84    | 53.85  |
| 22      | 55  | 0     | 1,465  | 96.38  | 54                                    | 0    | 132   | 70.97  |
| 23      | 54  | 0     | 1,135  | 95.46  | 54                                    | 6    | 48    | 44.44  |
| 24      | 32  | 1     | 679    | 95.37  | 36                                    | 0    | 30    | 45.45  |
| 25      | 7   | 0     | 281    | 97.57  | 42                                    | 12   | 96    | 64.00  |
| 26      | a/  |       |        |        | 78                                    | 6    | 168   | 66.67  |
| 27      | a/  |       |        |        | 54                                    | 0    | 912   | 94.41  |
| 28      | a/  |       |        |        | 18                                    | 0    | 372   | 95.38  |
| 29      | a/  |       |        |        | 18                                    | 0    | 648   | 97.30  |
| Aug. 30 | a/  |       |        |        | 36                                    | 0    | 414   | 92.00  |
| Totals  | 88,757                                    | 3,294 | 21,772 |        | 61,536                                | 138  | 7,470 |        |

1/ Catch data is still preliminary pending final fish ticket runs.

a/ Commercial season was closed from Aug.26-September 30.

Table 5. Salmon capture results, beach seining , Egegik River, July 23-August 30, 1995.

| Date         | Number of Sets | Sample Location                                    | Number of salmon caught |            |           |           | % Coho | Number sampled |            | Miscellaneous Observations                                   |
|--------------|----------------|--|-------------------------|------------|-----------|-----------|--------|----------------|------------|--|
|              |                |  | Sockeye                 | Coho       | Chum      | Pink      |        | Sockeye        | Coho       |  |
| July 23      | 2              | Egegik River, just above Right bank tower          | 95                      | 0          | 0         | 0         | 0.00   | 80             | 0          |  |
| 24           | 2              | Egegik River, just above Right bank tower          | 70                      | 0          | 0         | 0         | 0.00   | 40             | 0          |  |
| 25           | 1              | Egegik River, just above Right bank tower          | 60                      | 0          | 0         | 0         | 0.00   | 40             | 0          |  |
| 26           | 0              |  |                         |            |           |           |        |                |            |  |
| 27           | 0              |  |                         |            |           |           |        |                |            |  |
| 28           | 0              |  |                         |            |           |           |        |                |            |  |
| 29           | 0              |  |                         |            |           |           |        |                |            |  |
| 30           | 6              | Egegik River, just above Right bank tower          | 2                       | 0          | 0         | 0         | 0.00   | 2              | 0          | Missed several groups of coho. Caught 2 round whitefish.     |
| 31           | 1              | Egegik River, just above Right bank tower          | 0                       | 0          | 0         | 0         |        |                |            | Snagged gear on bottom panels and then in prop.              |
| Aug. 01      | 0              |  |                         |            |           |           |        |                |            |  |
| 2            | 1              | Egegik River, just above Right bank tower          | 0                       | 0          | 0         | 0         |        |                |            | Missed 20 cohos.   |
| 3            | 1              | Left Bank Egegik River, just above Myers Creek     | 129                     | 2          | 1         | 1         | 1.50   | 40             | 2          | Also caught 2 round whitefish.                               |
| 4            | 0              |  |                         |            |           |           |        |                |            |  |
| 5            | 0              |  |                         |            |           |           |        |                |            |  |
| 6            | 5              | Egegik Lagoon, East side of Spit, near corner      | 11                      | 32         | 10        | 2         | 58.18  | 11             | 32         | Caught 1 round whitefish.                                    |
| 7            | 1              | Egegik River, just above Right bank tower          | 50                      | 2          | 2         | 0         | 3.70   | 40             | 2          |  |
|              | 1              | Egegik Lagoon, East side of Spit, near corner      | 0                       | 0          | 0         | 0         |        |                |            |  |
| 8            | 1              | Egegik Lagoon, East side of Spit, near corner      | 0                       | 0          | 0         | 0         |        |                |            |  |
| 9            | 1              | Egegik River, Right bank opp. mouth of Myers Creek | 88                      | 5          | 1         | 0         | 5.32   | 40             | 5          | Sample site = sockeye smolt fyke net site. One R. whitefish. |
| Aug. 10      | 1              | Egegik River, Left bank, just above Myers Creek.   | 105                     | 37         | 3         | 4         | 24.83  | 40             | 37         | Caught 2 round whitefish.                                    |
| 11           | 0              |  |                         |            |           |           |        |                |            | Too windy for sampling.                                      |
| 12           | 1              | Egegik River, Right bank opp. mouth of Myers Creek | 1                       | 0          | 7         | 4         | 0.00   | 1              | 0          | Caught 1 Dolly Varden & 5 round whitefish.                   |
|              | 2              | Egegik River, Left bank, just above Myers Creek    | 62                      | 22         | 3         | 1         | 25.00  | 40             | 22         |  |
| 13           | 3              | Egegik River, Left bank, just above Myers Creek    | 30                      | 10         | 3         | 0         | 23.26  | 30             | 10         | Caught 3 round whitefish.                                    |
| 14           | 2              | Egegik River, Left bank, just above Myers Creek    | 41                      | 6          | 1         | 1         | 12.24  | 40             | 6          | Caught 4 round whitefish.                                    |
| 15           | 1              | Egegik Lagoon, East side of Spit, near Barge       | 0                       | 1          | 2         | 1         | 25.00  | 0              | 1          |  |
|              | 1              | Egegik River, Left bank, just above Myers Creek    | 60                      | 18         | 5         | 3         | 20.93  | 40             | 18         | Bright cohos.  |
| 16           | 1              | Egegik River, Left bank, just above Myers Creek    | 21                      | 9          | 0         | 0         | 30.00  | 17             | 9          | Caught 1 round whitefish.                                    |
|              | 1              | Egegik River, Left bank, near west end of Airstrip | 23                      | 2          | 7         | 0         | 6.25   | 22             | 2          | Caught 1 Dolly Varden & 11 round whitefish.                  |
| 17           | 1              | Egegik River, Left bank, just above Myers Creek    | 0                       | 0          | 0         | 0         |        |                |            | Caught 6 round whitefish.                                    |
| 18           | 1              | Egegik River, Left bank, just above Myers Creek    | 43                      | 15         | 1         | 0         | 25.42  | 40             | 15         | Caught 8 round whitefish.                                    |
| 19           | 1              | Egegik River, Left bank, just above Myers Creek    | 14                      | 7          | 1         | 0         | 31.82  | 14             | 7          | Caught 2 round whitefish.                                    |
|              | 1              | Egegik Lagoon, East side of Spit, midway           | 0                       | 1          | 0         | 0         | 100.00 | 0              | 1          |  |
| Aug. 20      | 1              | Egegik River, Left bank, just above Myers Creek    | 2                       | 4          | 1         | 0         | 57.14  | 0              | 4          | Caught 5 round whitefish. Stopped sampling sockeye.          |
| 21           | 1              | Egegik River, Left bank, just above Myers Creek    | 2                       | 0          | 0         | 0         | 0.00   | 0              | 0          | Caught 5 round whitefish.                                    |
| 22           | 1              | Egegik River, Left bank, just above Myers Creek    | 19                      | 57         | 20        | 4         | 57.00  | 0              | 56         | Caught 5 round whitefish, and had one coho recapture.        |
| 23           | 1              | Egegik River, Left bank, just above Myers Creek    | 1                       | 1          | 0         | 0         | 50.00  | 0              | 1          | Caught 3 round whitefish.                                    |
| 24           | 1              | Egegik River, Left bank, just above Myers Creek    | 0                       | 0          | 0         | 0         |        | 0              | 0          | Caught 4 round whitefish.                                    |
| 25           | 1              | Egegik Lagoon, East side of Spit, near corner      | 0                       | 400        | 1         | 0         | 99.75  | 0              | 171        | Caught 25 round whitefish & 1 Dolly Varden.                  |
| 26           | 1              | Egegik River, Left bank, just above Myers Creek    | 1                       | 0          | 1         | 0         | 0.00   | 0              | 0          | Caught 10 round whitefish.                                   |
| 27           | 1              | Egegik River, Left bank, just above Myers Creek    | 0                       | 0          | 0         | 0         |        | 0              | 0          | Caught 7 round whitefish.                                    |
| 28           | 1              | Egegik Lagoon, East side of Spit, near Barge       | 0                       | 115        | 0         | 4         | 96.64  | 0              | 100        | Caught 4 round whitefish.                                    |
| 29           | 0              |  |                         |            |           |           |        |                |            |  |
| 30           | 0              |  |                         |            |           |           |        |                |            |  |
| <b>Total</b> | <b>49</b>      |  | <b>930</b>              | <b>746</b> | <b>70</b> | <b>25</b> |        | <b>577</b>     | <b>501</b> | <b>116 round whitefish &amp; 3 Dolly Varden</b>              |

Table 6. Aerial survey counts of coho salmon escapement, Egegik District, 1995.

| Location                          | Survey Date  | Number of Coho Salmon Counted |   |
|-----------------------------------|--------------|-------------------------------|---|
| <b>Egegik River Drainage 1/</b>   |              |                               |   |
| Egegik Lagoon                     | September 27 | 50                            |   |
| Egegik River Rapids               | September 27 | 1,700                         | Most schooled off mouth of Myers Creek.   |
| Myers Creek                       | September 27 | 4                             |   |
| Stream 148.2                      | September 27 | 0                             |   |
| Stream 146.4                      | September 27 | 50                            | All schooled off mouth.                   |
| Stream 141.5 (Rusty Creek)        | September 27 | 62                            | 50 of these schooled off mouth.           |
| Stream 136.8                      | September 27 | 0                             |   |
| Stream 131.9                      | September 27 | 0                             |   |
| Stream 127.5                      | September 27 | 0                             |   |
| Stream 117.5                      | September 27 | 0                             |   |
| Stream 115.8 (Feathery Creek)     | September 27 | 280                           | 150 of these schooled off mouth.          |
| Stream 112.8                      | September 27 | 0                             |   |
| Stream 108.7                      | September 27 | 40                            | All schooled off mouth.                   |
| Stream 107.6 (Burf's Creek)       | September 27 | 130                           | 120 of these schooled off mouth.          |
| Stream 102.1                      | September 27 | 0                             |   |
| Stream 101.8                      | September 27 | 0                             |   |
| Stream 99.2 (Frank's Creek)       | September 27 | 30                            | All of these schooled off mouth.          |
| Stream 96.2 (Ruth River)          | September 27 | 0                             |   |
| Ruth Lake                         | September 27 | 120                           | All schooled off mouths of 4 tributaries. |
| Stream 95.0                       | September 27 | 15                            | All schooled off mouth.                   |
| Stream 93.5 (Otter Creek)         | September 27 | 50                            | 10 of these schooled off mouth.           |
| Stream 91.9                       | September 27 | 0                             |   |
| Stream 90.3 (Salmon Creek)        | September 27 | 900                           | 800 of these schooled off mouth.          |
| Stream 89.8                       | September 27 | 0                             |   |
| Stream 87.0 (Bear Creek)          | September 27 | 190                           | 160 of these schooled off mouth.          |
| Stream 86.1                       | September 27 | 100                           | All schooled off mouth.                   |
| Stream 84.7                       | September 27 | 35                            | All schooled off mouth.                   |
| Stream 83.9                       | September 27 | 40                            | All schooled off mouth.                   |
| Stream 81.2 (Cleo Creek)          | September 27 | 19                            | 5 of these schooled off mouth.            |
| Stream 73.5 (Becharof Creek)      | September 27 | 310                           | All instream.                             |
| Stream 71.3                       | September 27 | 0                             |   |
| Stream 48.1 (Kejulik River)       | September 27 | 640                           | Includes Margaret & Albert Creeks.        |
| Stream 46.3 (Marie Creek)         | September 27 | 0                             |   |
| Stream 42.2                       | September 27 | 0                             |   |
| Stream 35.5                       | September 27 | 25                            | All instream.                             |
| Stream 35.1 through 1.7           | September 27 | 0                             |   |
| Shosky Creek                      | September 29 | 18                            | All instream.                             |
| Swampy Creek                      |              |                               | Did not survey.                           |
| Sub-total                         |              | 4,808                         |   |
| <b>King Salmon River Drainage</b> |              |                               |   |
| Whale Mountain Creek              | September 29 | 122                           |   |
| Mossy Creek                       | September 29 | 15                            |   |
| Mink Creek                        | September 29 | 33                            |   |
| Gertrude Creek                    | September 29 | 170                           |   |
| Kaye's Creek                      | September 29 | 4                             | Most of stream quite milky.               |
| Takayoto Creek                    | September 29 |                               | Too turbid to count.                      |
| Angle Creek                       | September 29 |                               | Too turbid to count.                      |
| Contact Creek                     | September 29 | 106                           |   |
| Mainstem King Salmon River        | September 29 |                               | Too turbid to count.                      |
| Sub-total                         |              | 450                           |   |
| District Grand Total              |              | 5,258                         |   |

1/ Streams tributary to Becharof Lake are designated by the number of miles between their mouth and the outlet of Becharof Lake (Egegik River) as one travels around the lake in a clockwise fashion from the Becharof lake outlet. This is the same system of designation used for years by previous investigators.

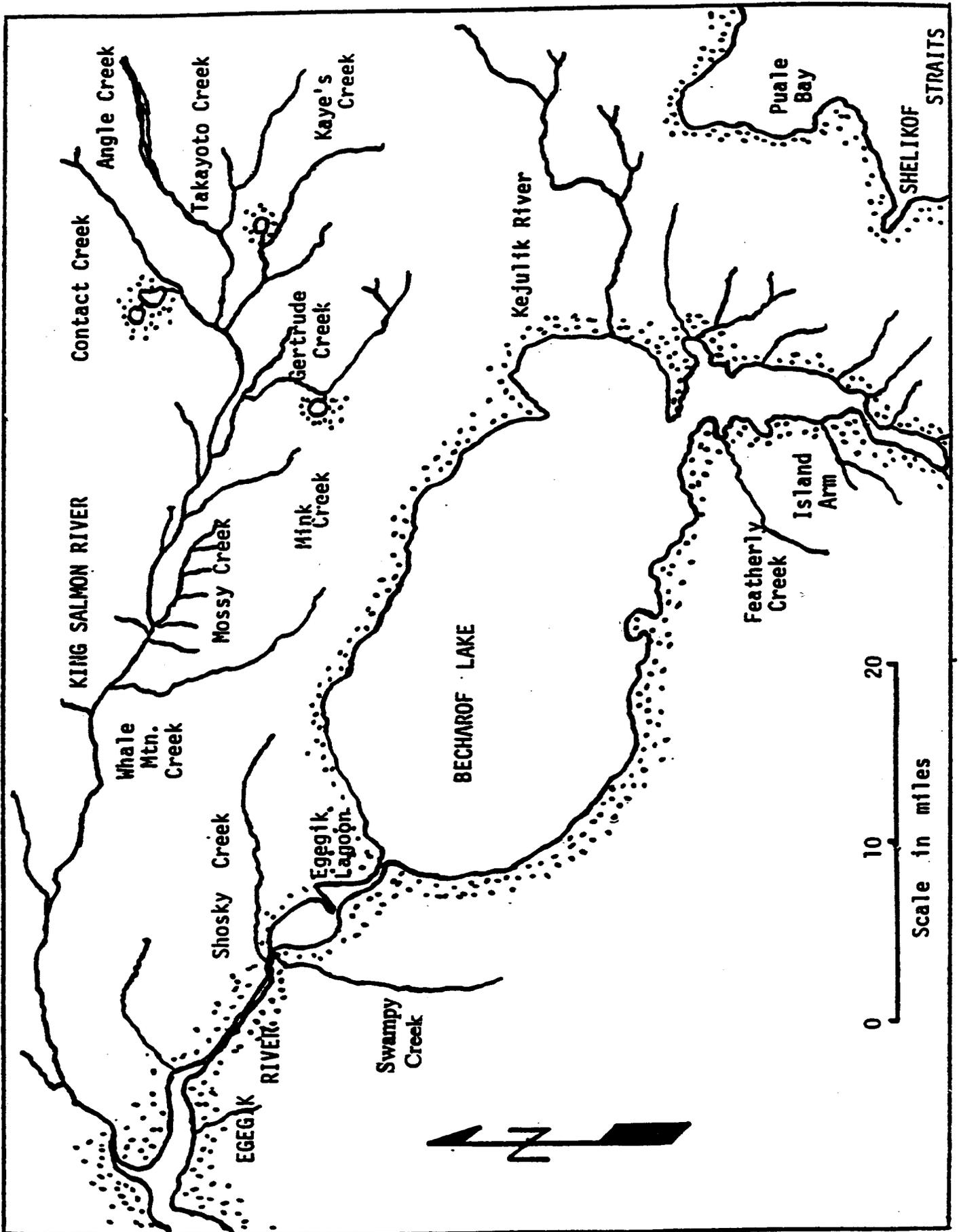


Figure 1. Egegik River drainage, Bristol Bay, Alaska.

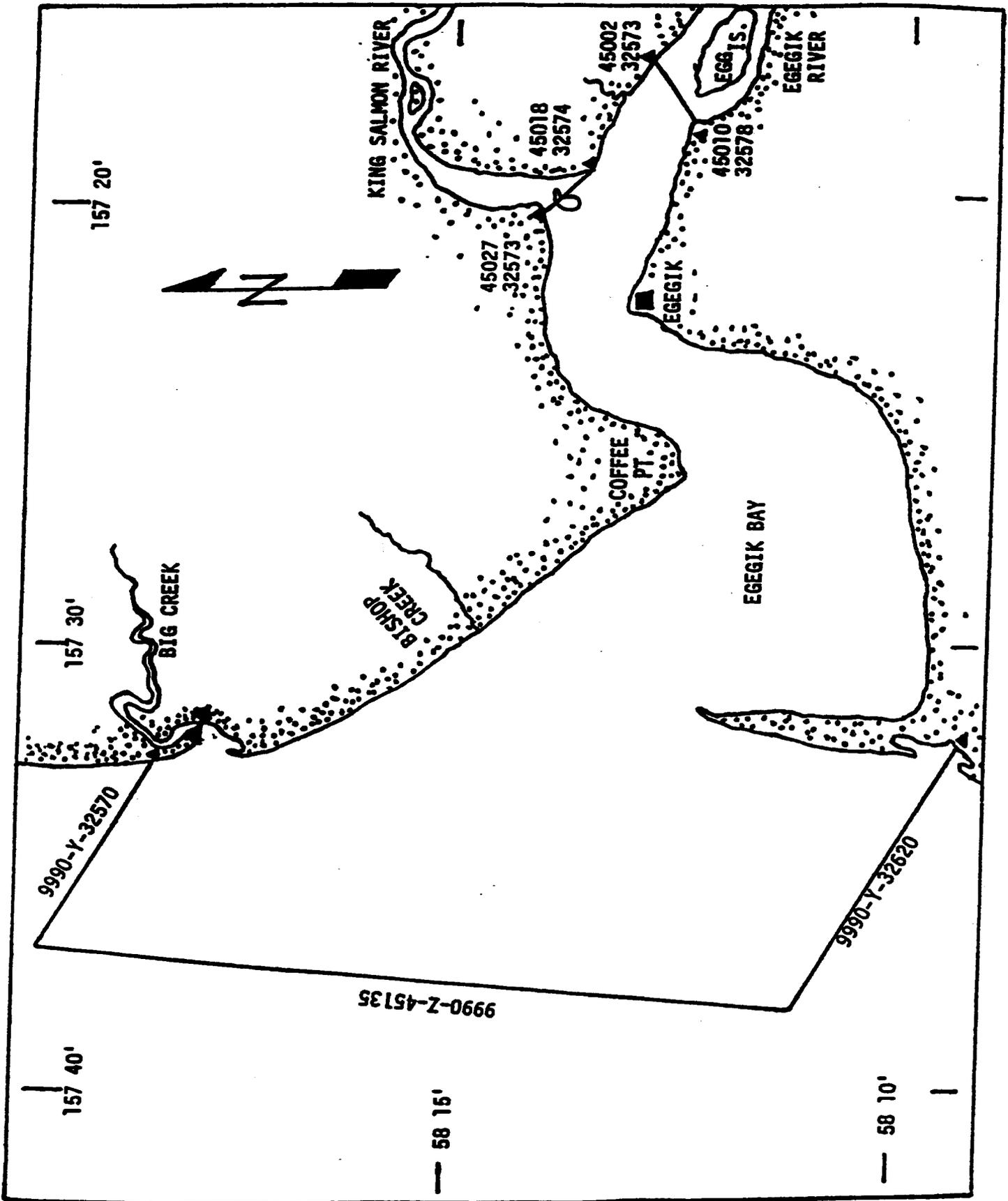


Figure 2. The Egegik District, 1995.

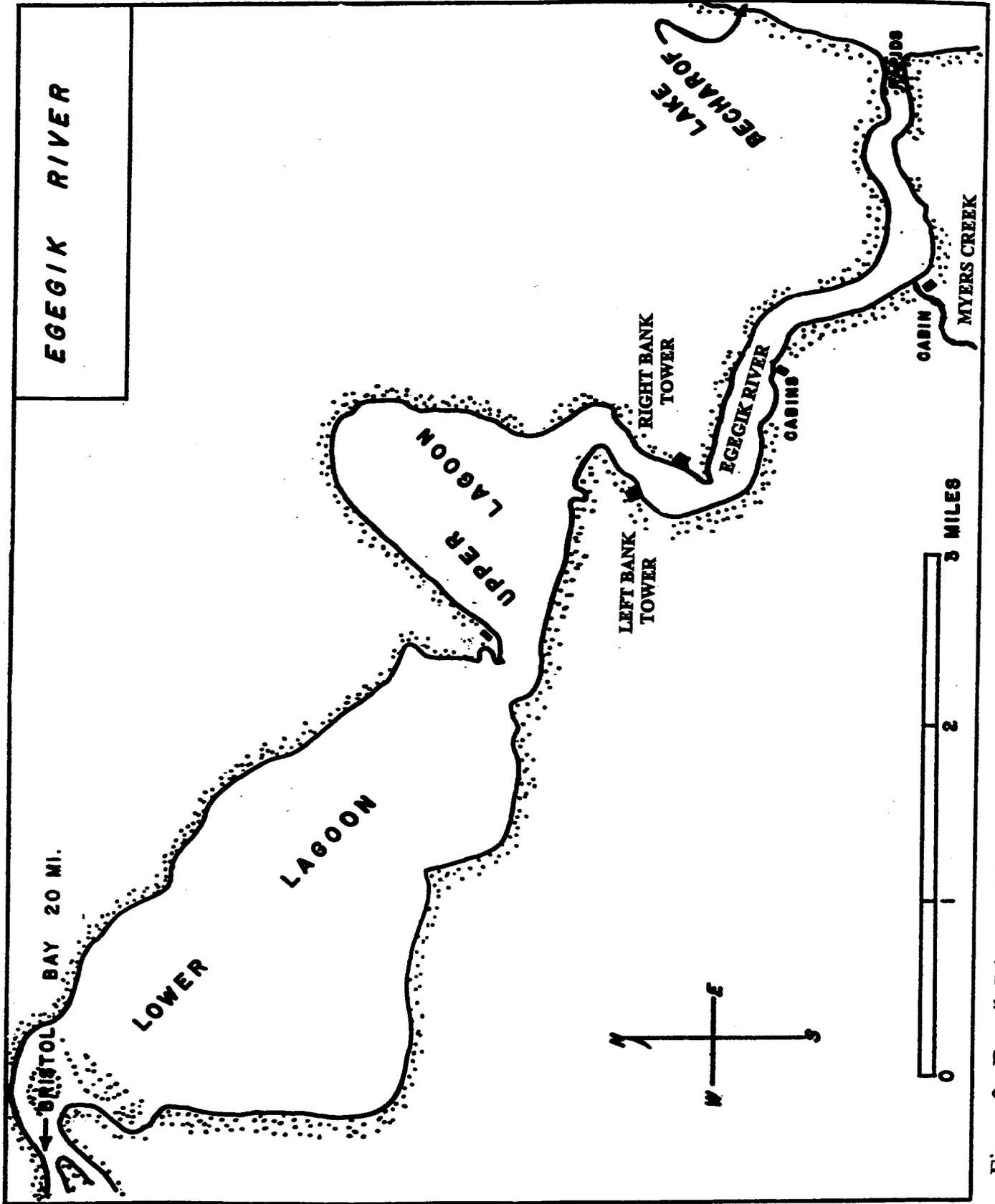


Figure 3. Egegik River and Lagoon showing location of counting towers, 1995.



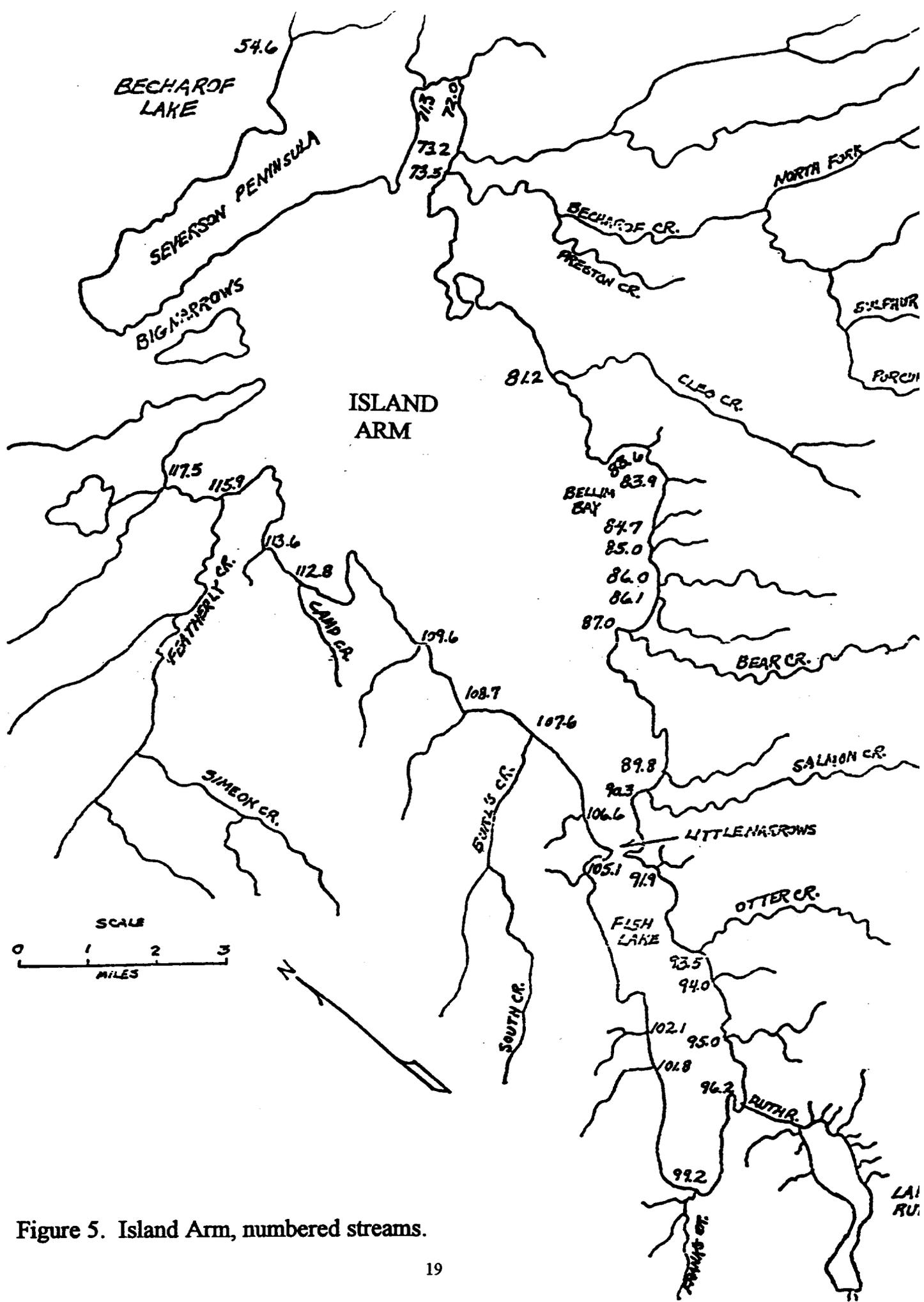


Figure 5. Island Arm, numbered streams.

Appendix Table 1. Coho salmon commercial harvest timing characteristics, Egegik District, 1980-1994.

| Year            | Day Julian of the First Arrival of Cohos in Harvest | Day Julian that Cohos First Out-numbered Sockeye in Daily Harvest | Day Julian 25% of Coho Harvest Achieved | Day Julian 50% of Coho Harvest Achieved | Day Julian 75% of Coho Harvest Achieved | Total Coho Commercial Harvest (No. of Fish) |
|-----------------|---|---|---|---|---|---|
| 1980            | 207   | 213   | 225                                     | 228                                     | 240                                     | 22,537                                      |
| 1981            | 199   | 212   | 219                                     | 224                                     | 229                                     | 32,759                                      |
| 1982            | 193   | 208   | 221                                     | 228                                     | 235                                     | 74,989                                      |
| 1983            | 194   | 213   | 227                                     | 232                                     | 238                                     | 25,954                                      |
| 1984            | 198   | 207   | 219                                     | 227                                     | 234                                     | 66,589                                      |
| 1985            | 181   | 212   | 218                                     | 226                                     | 234                                     | 32,666                                      |
| 1986            | 186   | 214   | 217                                     | 223                                     | 231                                     | 33,607                                      |
| 1987            | 201   | 215   | 224                                     | 229                                     | 233                                     | 30,789                                      |
| 1988            | 175   | 214   | 222                                     | 230                                     | 237                                     | 48,981                                      |
| 1989            | 190   | 212   | 219                                     | 226                                     | 235                                     | 49,175                                      |
| 1990            | 202   | 218   | 225                                     | 232                                     | 239                                     | 43,897                                      |
| 1991            | 195   | 217   | 220                                     | 227                                     | 233                                     | 47,486                                      |
| 1992            | 199   | 216   | 223                                     | 225                                     | 231                                     | 47,780                                      |
| 1993            | 200   | 217   | 223                                     | 231                                     | 237                                     | 41,603                                      |
| 1994            | 174   | 216   | 223                                     | 229                                     | 237                                     | 48,436                                      |
| 1980-94 Average | 193   | 214   | 222                                     | 228                                     | 235                                     | 43,150                                      |
|                 | July 12   | Aug. 02   | Aug. 10                                 | Aug. 16                                 | Aug. 23                                 |   |

Appendix Table 2. Egegik River salmon escapement counts, Egegik Tower, 1994.

| Date        | Daily Counts |         |      |        |        |
|-------------|--------------|---------|------|--------|--------|
|             | Sockeye      | Chinook | Chum | Pink   | Coho   |
| June 20     | 0            | 0       | 0    | 0      | 0      |
| 21          | 0            | 0       | 0    | 0      | 0      |
| 22          | 816          | 0       | 0    | 0      | 0      |
| 23          | 264          | 0       | 0    | 0      | 0      |
| 24          | 4,938        | 0       | 0    | 0      | 0      |
| 25          | 32,052       | 0       | 0    | 0      | 0      |
| 26          | 71,178       | 0       | 0    | 0      | 0      |
| 27          | 17,364       | 0       | 0    | 0      | 0      |
| 28          | 10,890       | 0       | 0    | 0      | 0      |
| 29          | 5,712        | 0       | 0    | 0      | 0      |
| 30          | 35,088       | 0       | 0    | 0      | 0      |
| July 01     | 31,410       | 0       | 0    | 0      | 0      |
| 2           | 4,578        | 0       | 0    | 0      | 0      |
| 3           | 29,520       | 0       | 0    | 0      | 0      |
| 4           | 221,826      | 0       | 0    | 0      | 0      |
| 5           | 184,764      | 0       | 0    | 0      | 0      |
| 6           | 178,818      | 0       | 0    | 0      | 0      |
| 7           | 180,138      | 6       | 0    | 18     | 0      |
| 8           | 151,176      | 0       | 0    | 0      | 0      |
| 9           | 176,892      | 6       | 0    | 0      | 0      |
| July 10     | 79,404       | 0       | 0    | 0      | 0      |
| 11          | 106,392      | 0       | 0    | 0      | 0      |
| 12          | 100,008      | 6       | 0    | 0      | 0      |
| 13          | 42,348       | 0       | 0    | 0      | 12     |
| 14          | 43,422       | 0       | 0    | 0      | 12     |
| 15          | 50,148       | 6       | 0    | 12     | 12     |
| 16          | 23,088       | 0       | 0    | 6      | 0      |
| 17          | 21,774       | 0       | 0    | 0      | 6      |
| 18          | 45,642       | 0       | 0    | 0      | 0      |
| 19          | 21,366       | 0       | 0    | 0      | 6      |
| July 20     | 11,622       | 0       | 0    | 0      | 0      |
| 21          | 15,294       | 0       | 0    | 0      | 0      |
| 22 a/       | 3,666        | 6       | 0    | 0      | 0      |
| 23          | 6,066        | 0       | 0    | 12     | 0      |
| 24 b/       | 6,900        | 0       | 0    | 0      | 0      |
| 25 b/       | 6,900        | 0       | 0    | 6      | 0      |
| 26          | 6,486        | 0       | 0    | (18    | 0      |
| 27          | 11,376       | 0       | 0    | 18     | 0      |
| 28          | 4,224        | 0       | 0    | 12     | 0      |
| 29          | 5,862        | 0       | 0    | 0      | 0      |
| July 30     | 5,778        | 0       | 0    | 24     | 0      |
| 31          | 4,752        | 0       | 0    | 0      | 0      |
| Aug. 01 b/  | 3,306        | 0       | 0    | 12     | 0      |
| 2           | 2,244        | 0       | 0    | 12     | 0      |
| 3           | 624          | 0       | 0    | 6      | 6      |
| 4           | 114          | 0       | 0    | 30     | 30     |
| 5           | 258          | 0       | 0    | 96     | 42     |
| 6 b/        | 216          | 0       | 6    | 318    | 180    |
| 7           | 204          | 0       | 18   | 612    | 318    |
| Aug. 8      | 276          | 0       | 0    | 540    | 336    |
| 9           | 90           | 0       | 0    | 156    | 132    |
| 10          | 72           | 0       | 0    | 102    | 78     |
| 11 b/       | 60           | 0       | 0    | 282    | 78     |
| 12          | 66           | 0       | 6    | 564    | 48     |
| 13          | 12           | 0       | 0    | 312    | 42     |
| 14          | 18           | 0       | 0    | 312    | 24     |
| 15          | 0            | 0       | 12   | 354    | 54     |
| 16          | 108          | 0       | 0    | 978    | 258    |
| 17          | 42           | 0       | 0    | 2,670  | 378    |
| 18 b/       | 42           | 0       | 0    | 1,584  | 258    |
| 19          | 0            | 0       | 0    | 2,202  | 150    |
| Aug. 20     | 12           | 0       | 0    | 474    | 252    |
| 21          | 24           | 0       | 0    | 900    | 744    |
| 22          | 0            | 0       | 0    | 786    | 516    |
| 23          | 0            | 0       | 0    | 348    | 384    |
| 24          | 0            | 0       | 0    | 552    | 234    |
| 25 b/       | 0            | 0       | 0    | 426    | 312    |
| 26 c/       | 0            | 0       | 0    | 468    | 546    |
| 27          | 0            | 0       | 0    | 324    | 84     |
| 28          | 0            | 24      | 0    | 594    | 252    |
| 29          | 0            | 0       | 0    | 1,476  | 678    |
| 30          | 0            | 0       | 0    | 1,314  | 636    |
| Aug. 31     | 0            | 6       | 0    | 210    | 240    |
| Sept. 01 b/ | 0            | 0       | 0    | 546    | 438    |
| 2           | 0            | 0       | 0    | 144    | 306    |
| 3           | 0            | 0       | 0    | 534    | 576    |
| 4           | 0            | 0       | 0    | 276    | 414    |
| 5           | 0            | 0       | 0    | 240    | 462    |
| 6           | 0            | 0       | 0    | 192    | 234    |
| 7           | 0            | 6       | 0    | 96     | 72     |
| 8 b/        | 0            | 0       | 0    | 78     | 102    |
| 9           | 0            | 0       | 0    | 18     | 102    |
| Sept. 10    | 0            | 0       | 0    | 6      | 0      |
| 11          | 0            | 0       | 0    | 48     | 96     |
| Total       | 1,967,730    | 66      | 42   | 21,282 | 10,140 |

a/ USFWS took over counts from ADF&amp;G.

b/ Interpolated counts...Ave of counts from previous 2 counting days + subsequent 2 counting days.

c/ Partial interpolation of daily counts to account for several hours missed.

Appendix Table 3. Coho salmon escapement counts, Egegik River, 1994.

| Date     | Daily Counts | Cumulative Total | Daily % of Total | Cumulative Percent | Comments  |
|----------|--------------|------------------|------------------|--------------------|---|
| July 12  | 0            | 0                | 0.00             | 0.00               |   |
| 13       | 12           | 12               | 0.12             | 0.12               |   |
| 14       | 12           | 24               | 0.12             | 0.24               |   |
| 15       | 12           | 36               | 0.12             | 0.36               |   |
| 16       | 0            | 36               | 0.00             | 0.36               |   |
| 17       | 6            | 42               | 0.06             | 0.41               |   |
| 18       | 0            | 42               | 0.00             | 0.41               |   |
| 19       | 6            | 48               | 0.06             | 0.47               |   |
| July 20  | 0            | 48               | 0.00             | 0.47               |   |
| 21       | 0            | 48               | 0.00             | 0.47               |   |
| 22       | 0            | 48               | 0.00             | 0.47               | USFWS crew took over counts.                    |
| 23       | 0            | 48               | 0.00             | 0.47               |   |
| 24       | 0            | 48               | 0.00             | 0.47               | Interpolated count for the day. 1/              |
| 25       | 0            | 48               | 0.00             | 0.47               | Interpolated count for the day. 1/              |
| 26       | 0            | 48               | 0.00             | 0.47               |   |
| 27       | 0            | 48               | 0.00             | 0.47               |   |
| 28       | 0            | 48               | 0.00             | 0.47               |   |
| 29       | 0            | 48               | 0.00             | 0.47               |   |
| 30       | 0            | 48               | 0.00             | 0.47               |   |
| 31       | 0            | 48               | 0.00             | 0.47               |   |
| Aug. 01  | 0            | 48               | 0.00             | 0.47               | Interpolated count for the day. 1/              |
| 2        | 0            | 48               | 0.00             | 0.47               |   |
| 3        | 6            | 54               | 0.06             | 0.53               |   |
| 4        | 30           | 84               | 0.30             | 0.83               |   |
| 5        | 42           | 126              | 0.41             | 1.24               |   |
| 6        | 180          | 306              | 1.78             | 3.02               | Interpolated count for the day. 1/              |
| 7        | 318          | 624              | 3.14             | 6.15               |   |
| 8        | 336          | 960              | 3.31             | 9.47               |   |
| 9        | 132          | 1,092            | 1.30             | 10.77              |   |
| Aug. 10  | 78           | 1,170            | 0.77             | 11.54              |   |
| 11       | 78           | 1,248            | 0.77             | 12.31              | Interpolated count for the day. 1/              |
| 12       | 48           | 1,296            | 0.47             | 12.78              |   |
| 13       | 42           | 1,338            | 0.41             | 13.20              |   |
| 14       | 24           | 1,362            | 0.24             | 13.43              |   |
| 15       | 54           | 1,416            | 0.53             | 13.96              |   |
| 16       | 258          | 1,674            | 2.54             | 16.51              |   |
| 17       | 378          | 2,052            | 3.73             | 20.24              |   |
| 18       | 258          | 2,310            | 2.54             | 22.78              | Interpolated count for the day. 1/              |
| 19       | 150          | 2,460            | 1.48             | 24.26              |   |
| Aug. 20  | 252          | 2,712            | 2.49             | 26.75              |   |
| 21       | 744          | 3,456            | 7.34             | 34.08              |   |
| 22       | 516          | 3,972            | 5.09             | 39.17              |   |
| 23       | 384          | 4,356            | 3.79             | 42.96              |   |
| 24       | 234          | 4,590            | 2.31             | 45.27              |   |
| 25       | 312          | 4,902            | 3.08             | 48.34              | Interpolated count for the day. 1/              |
| 26       | 546          | 5,448            | 5.38             | 53.73              | Partial interpolation for several hours missed. |
| 27       | 84           | 5,532            | 0.83             | 54.56              |   |
| 28       | 252          | 5,784            | 2.49             | 57.04              |   |
| 29       | 678          | 6,462            | 6.69             | 63.73              |   |
| 30       | 636          | 7,098            | 6.27             | 70.00              |   |
| Aug. 31  | 240          | 7,338            | 2.37             | 72.37              |   |
| Sept. 01 | 438          | 7,776            | 4.32             | 76.69              | Interpolated count for the day. 1/              |
| 2        | 306          | 8,082            | 3.02             | 79.70              |   |
| 3        | 576          | 8,658            | 5.68             | 85.38              |   |
| 4        | 414          | 9,072            | 4.08             | 89.47              |   |
| 5        | 462          | 9,534            | 4.56             | 94.02              |   |
| 6        | 234          | 9,768            | 2.31             | 96.33              |   |
| 7        | 72           | 9,840            | 0.71             | 97.04              |   |
| 8        | 102          | 9,942            | 1.01             | 98.05              | Interpolated count for the day. 1/              |
| 9        | 102          | 10,044           | 1.01             | 99.05              |   |
| 10       | 0            | 10,044           | 0.00             | 99.05              |   |
| 11       | 96           | 10,140           | 0.95             | 100.00             |   |
| Totals   | 10,140       |                  | 100.00           | 100.00             |   |

1/ Counts interpolated using the average of counts from the preceding 2 days counted and the subsequent 2 days counted.

Appendix Table 4. Comparison of coho salmon percentages in the Egegik District commercial harvest versus coho percentages in the Egegik River tower counts, July 22 - Sept. 16, 1994.

| Date          | Commercial Harvest (in number of fish) 1/ |              |               |        | Escapement Counts (in number of fish) |           |               |        |
|---------------|---|--------------|---------------|--------|---------------------------------------|-----------|---------------|--------|
|               | Sockeye                                   | Chum         | Coho          | Coho % | Sockeye                               | Chum      | Coho          | Coho % |
| July 22       | 81,009                                    | 2,946        | 0             | 0.00   | 3,666                                 | 0         | 0             | 0.00   |
| 23            | 55,767                                    | 1,709        | 11            | 0.02   | 6,066                                 | 0         | 0             | 0.00   |
| 24            | 25,674                                    | 370          | 3             | 0.01   | 6,900 a/                              | 0         | 0             | 0.00   |
| 25            | 37,252                                    | 755          | 189           | 0.49   | 6,900 a/                              | 0         | 0             | 0.00   |
| 26            | 23,927                                    | 571          | 139           | 0.56   | 6,486                                 | 0         | 0             | 0.00   |
| 27            | 15,444                                    | 345          | 440           | 2.71   | 11,376                                | 0         | 0             | 0.00   |
| 28            | 14,878                                    | 499          | 561           | 3.52   | 4,224                                 | 0         | 0             | 0.00   |
| 29            | 3,933                                     | 48           | 142           | 3.44   | 5,862                                 | 0         | 0             | 0.00   |
| 30            | 0   | 0            | 0             |        | 5,778                                 | 0         | 0             | 0.00   |
| 31            | 0   | 0            | 0             |        | 4,752                                 | 0         | 0             | 0.00   |
| Aug. 01       | 3,914                                     | 188          | 1,211         | 22.79  | 3,306 a/                              | 0         | 0             | 0.00   |
| 2             | 2,051                                     | 197          | 1,331         | 37.19  | 2,244                                 | 0         | 0             | 0.00   |
| 3             | 1,411                                     | 198          | 1,373         | 46.04  | 624                                   | 0         | 6             | 0.95   |
| 4             | 1,115                                     | 110          | 1,321         | 51.89  | 114                                   | 0         | 30            | 20.83  |
| 5             | 345                                       | 81           | 495           | 53.75  | 258                                   | 0         | 42            | 14.00  |
| 6             | 0   | 0            | 0             |        | 216 a/                                | 6         | 180           | 44.78  |
| 7             | 0   | 0            | 0             |        | 204                                   | 18        | 318           | 58.89  |
| 8             | 339                                       | 145          | 1,554         | 76.25  | 276                                   | 0         | 336           | 54.90  |
| 9             | 261                                       | 92           | 1,446         | 80.38  | 90                                    | 0         | 132           | 59.46  |
| Aug. 10       | 216                                       | 129          | 1,732         | 83.39  | 72                                    | 0         | 78            | 52.00  |
| 11            | 334                                       | 278          | 2,869         | 82.42  | 60 a/                                 | 0         | 78            | 56.52  |
| 12            | 42  | 64           | 585           | 84.66  | 66                                    | 6         | 48            | 40.00  |
| 13            | 0   | 0            | 0             |        | 12                                    | 0         | 42            | 77.78  |
| 14            | 0   | 0            | 0             |        | 18                                    | 0         | 24            | 57.14  |
| 15            | 115                                       | 145          | 2,858         | 91.66  | 0                                     | 12        | 54            | 81.82  |
| 16            | 103                                       | 138          | 3,216         | 93.03  | 108                                   | 0         | 258           | 70.49  |
| 17            | 62  | 84           | 3,461         | 95.95  | 42                                    | 0         | 378           | 90.00  |
| 18            | 28  | 78           | 3,171         | 96.77  | 42 a/                                 | 0         | 258           | 86.00  |
| 19            | 3   | 2            | 635           | 99.22  | 0                                     | 0         | 150           | 100.00 |
| Aug. 20       | 0   | 0            | 0             |        | 12                                    | 0         | 252           | 95.45  |
| 21            | 0   | 0            | 0             |        | 24                                    | 0         | 744           | 96.88  |
| 22            | 9   | 7            | 1,565         | 98.99  | 0                                     | 0         | 516           | 100.00 |
| 23            | 30  | 8            | 2,868         | 98.69  | 0                                     | 0         | 384           | 100.00 |
| 24            | 13  | 7            | 2,687         | 99.26  | 0                                     | 0         | 234           | 100.00 |
| 25            | 3   | 0            | 1,718         | 99.83  | 0 a/                                  | 0         | 312           | 100.00 |
| 26            | 1   | 0            | 266           | 99.63  | 0                                     | 0         | 546           | 100.00 |
| 27            | 0   | 0            | 0             |        | 0                                     | 0         | 84            | 100.00 |
| 28            | 0   | 0            | 0             |        | 0                                     | 0         | 252           | 100.00 |
| 29            | 0   | 0            | 2,417         | 100.00 | 0                                     | 0         | 678           | 100.00 |
| 30            | 0   | 0            | 2,360         | 100.00 | 0                                     | 0         | 636           | 100.00 |
| Aug. 31       | 0   | 0            | 1,840         | 100.00 | 0                                     | 0         | 240           | 100.00 |
| Sept. 01      | 0   | 0            | 1,201         | 100.00 | 0 a/                                  | 0         | 438           | 100.00 |
| 2             | 0   | 0            | 570           | 100.00 | 0                                     | 0         | 306           | 100.00 |
| 3             | 0   | 0            | 0             |        | 0                                     | 0         | 576           | 100.00 |
| 4             | 0   | 0            | 0             |        | 0                                     | 0         | 414           | 100.00 |
| 5             | 0   | 0            | 1,134         | 100.00 | 0                                     | 0         | 462           | 100.00 |
| 6             | 0   | 0            | 667           | 100.00 | 0                                     | 0         | 234           | 100.00 |
| 7             | 0   | 0            | 20            | 100.00 | 0                                     | 0         | 72            | 100.00 |
| 8             | 0   | 0            | 85            | 100.00 | 0 a/                                  | 0         | 102           | 100.00 |
| 9             | 0   | 0            | 22            | 100.00 | 0                                     | 0         | 102           | 100.00 |
| Sept. 10      | 0   | 0            | 0             |        | 0                                     | 0         | 0             |        |
| 11            | 0   | 0            | 0             |        | 0                                     | 0         | 96            | 100.00 |
| 12            | 0   | 0            | 64            | 100.00 |                                       |           |               |        |
| 13            | 0   | 0            | 70            | 100.00 |                                       |           |               |        |
| 14            | 0   | 0            | 45            | 100.00 |                                       |           |               |        |
| 15            | 0   | 0            | 47            | 100.00 |                                       |           |               |        |
| 16            | 0   | 0            | 42            | 100.00 |                                       |           |               |        |
| <b>Totals</b> | <b>187,270</b>                            | <b>6,248</b> | <b>48,431</b> |        | <b>66,132</b>                         | <b>42</b> | <b>10,092</b> |        |

1/ Catch data is final...off fish ticket runs.

a/ Interpolated totals.

Note: 48 cohos were counted at Egegik Tower prior to July 22, bringing season total count to 10,140 fish.

Appendix Table 5. Coho salmon observations, Egegik River weirs, 1932-1956.

| Year | Dates of Weir Operation | Date of First Arrival of Cohos at Weir | Date that Cohos First Out-numbered Sockeye | Coho Count | Comments        |
|------|-------------------------|--|--|------------|-----------------|
| 1932 | June 26 - Aug . 09      |  |  |            | No Cohos noted. |
| 1952 | July 01 - Aug. 10       |  |  |            | No Cohos noted. |
| 1953 | June 25 - Aug. 12       | Aug. 08                                | Aug. 12                                    | 84         |                 |
| 1954 | June 27 - Aug. 16       | Aug. 10                                | Aug. 15                                    | 113        |                 |
| 1955 | June 22 - Aug. 22       | Aug. 04                                | Aug. 22                                    | 722        |                 |
| 1956 | July 08 - Aug. 19       | Aug. 10                                | Aug. 17                                    | 676        |                 |

Appendix Table 6. Aerial survey counts of coho salmon escapement, Egegik District, 1994.

| Location                          | Survey Date  | Number of Coho Salmon Counted |   |
|-----------------------------------|--------------|-------------------------------|---|
| <b>Egegik River Drainage 1/</b>   |              |                               |   |
| Egegik Lagoon                     | September 26 | 30                            |   |
| Egegik River Rapids               | September 26 | 660                           | Most schooled off mouth of Myers Creek.   |
| Myers Creek                       | September 26 | 10                            |   |
| Stream 148.2                      | September 26 | 30                            | All schooled off mouth.   |
| Stream 146.4                      | September 26 | 75                            | All schooled off mouth.   |
| Stream 141.5 (Rusty Creek)        | September 26 | 55                            | 40 of these schooled off mouth.   |
| Stream 136.8                      | September 26 | 0                             |   |
| Stream 131.9                      | September 26 | 0                             |   |
| Stream 127.5                      | September 26 | 15                            | All schooled off mouth.   |
| Stream 117.5                      | September 26 | 75                            | All schooled off mouth.   |
| Stream 115.8 (Featherly Creek)    | September 26 | 200                           | All schooled off mouth.   |
| Stream 112.8                      | September 26 | 4                             | All schooled off mouth.   |
| Stream 108.7                      | September 26 | 30                            | All schooled off mouth.   |
| Stream 107.6 (Burf's Creek)       | September 26 | 604                           | 600 of these schooled off mouth.  |
| Stream 102.1                      | September 26 | 75                            | All schooled off mouth.   |
| Stream 101.8                      | September 26 | 50                            | All schooled off mouth.   |
| Stream 99.2 (Frank's Creek)       | September 26 | 95                            | 50 of these schooled off mouth.   |
| Stream 96.2 (Ruth River)          | September 26 | 600                           | All schooled in lower 100 yards of river.   |
| Ruth Lake                         | September 26 | 190                           | All schooled off mouths of 4 tributaries.   |
| Stream 95.0                       | September 26 | 50                            | All schooled off mouth.   |
| Stream 93.5 (Otter Creek)         | September 26 | 230                           | All schooled off mouth.   |
| Stream 91.9                       | September 26 | 25                            | All schooled off mouth.   |
| Stream 90.3 (Salmon Creek)        | September 26 | 730                           | 700 of these schooled off mouth.  |
| Stream 89.8                       | September 26 | 300                           | All schooled off mouth.   |
| Stream 87.0 (Bear Creek)          | September 26 | 170                           | All schooled off mouth.   |
| Stream 86.1                       | September 26 | 80                            | All schooled off mouth.   |
| Stream 84.7                       | September 26 | 75                            | All schooled off mouth.   |
| Stream 83.9                       | September 26 | 135                           | All schooled off mouth.   |
| Stream 81.2 (Cleo Creek)          | September 26 | 130                           | All schooled off mouth.   |
| Stream 73.5 (Becharof Creek)      | September 26 | 485                           | All but 5 instream. A few on redds.   |
| Stream 71.3                       | September 26 | 160                           | 130 of these schooled off mouth.  |
| Stream 48.1 (Kejulik River)       | September 26 | 750                           | Includes Margaret & Albert Creeks.  |
| Stream 46.3 (Marie Creek)         | September 26 | 110                           | All schooled in lower couple of miles.  |
| Stream 42.2                       | September 26 | 5                             | All schooled off mouth.   |
| Stream 35.5                       | September 26 | 0                             |   |
| Stream 35.1 through 2.9           | September 26 | 0                             |   |
| Shosky Creek                      | September 27 | 180                           | All instream...several schools.   |
| Swampy Creek                      | September 27 | 21                            | All upstream of Armstrong's Dunes.  |
| Sub-total                         |              | 6,434                         |   |
| <b>King Salmon River Drainage</b> |              |                               |   |
| Whale Mountain Creek              | September 27 | 355                           | All instream. Less than half on redds.  |
| Mossy Creek                       | September 27 | 160                           | All instream (most schooled).   |
| Mink Creek                        | September 27 | 26                            | Migrating upstream.   |
| Gertrude Creek                    | September 27 | 200                           | Only a few on redds.  |
| Kaye's Creek                      | September 27 | 30                            | In upper stream reaches.  |
| Takayoto Creek                    | September 27 | 110                           | In upper stream reaches.  |
| Angle Creek                       | September 27 |                               | Too turbid to survey.   |
| Contact Creek                     | September 27 | 80                            | Several schools instream.   |
| Mainstem King Salmon River        | September 27 | 17                            | Too turbid to count but these noted in a slough opposite the mouth of Whale Mtn Cr. |
| Sub-total                         |              | 978                           |   |
| District Grand Total              |              | 7,412                         |   |

1/ Streams tributary to Becharof Lake are designated by the number of miles between their mouth and the outlet of Becharof Lake (Egegik River) as one travels around the lake in a clockwise fashion from the Becharof lake outlet. This is the same system of designation used for years by previous investigators.

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