

MANAGEMENT PLAN FOR THE LYNN CANAL (DISTRICT 15)

DRIFT GILLNET FISHERY, 2000



By

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INTRODUCTION

This document describes the management plan for the 2000 Lynn Canal drift gillnet fishery. The purpose of this plan is to provide commercial fishers and others with a general idea of how the fishery may be managed, what tools are available to the manager, and the conditions which trigger major management actions. This plan will also serve as a reference that consolidates important historical harvest and escapement data and current fisheries information.

The Lynn Canal drift gillnet fishery targets sockeye, summer chum, coho, and fall chum salmon. Chinook and pink salmon also are taken as incidental catch. The sockeye run in Lynn Canal is among the largest in Southeast Alaska. The coho run to the Chilkat River is among the largest in northern Southeast Alaska. Currently, Chilkat River sockeye and Lynn Canal coho stocks are healthy. Total returns of Chilkoot Lake sockeye salmon have been below average since 1993. Fall chum stocks have not recovered to historical highs of the mid-1980s since a dramatic decline beginning in 1989, although escapements in 1999 were much improved over recent years.

Currently, problems exist in the management of Lynn Canal, especially in our understanding of reduced sockeye salmon production from Chilkoot Lake and Chilkat/Klehini River chum salmon. Potential stock assessment projects intended to fill some of these information gaps are briefly discussed.

Details presented for managing the 2000 season may be updated as factors change during the season or new information becomes available.

Fishery Area

The Lynn Canal drift gillnet fishery occurs in the waters of District 15 (Figure 1). The district is divided into three regulatory sections: 15-A (upper Lynn Canal), 15-B (Berners Bay), and 15-C (lower Lynn Canal).

Contributing Stocks

Target stocks for the gillnet fishery are:

- 1) Sockeye salmon from June through early September. The primary stocks originate in Chilkat and Chilkoot lakes (Figure 2). Sockeye salmon originating from the Berners Bay rivers, Chilkat River mainstem, and other relatively minor, local stocks are also harvested in the fishery. Both Chilkat and Chilkoot lakes have two separate stock groups, an early and a late component. Those stock groups are managed separately for escapement goals. The return timing for the Chilkat and Chilkoot lake sockeye salmon stocks in the Lynn Canal drift gillnet fishery is shown in Figure 3.
- 2) Summer chum, predominately from hatchery enhancement programs, and pink salmon from late June through July. The return timing for summer chum and pink salmon stocks to the Lynn Canal drift gillnet fishery is shown in Figure 4.
- 3) Fall chum and coho salmon from September through mid-October. The primary fall chum salmon stocks originate in the Klehini and Chilkat rivers. The primary coho salmon stocks originate in the Chilkat River and Berners Bay rivers. The return timing for fall chum and coho salmon stocks to the Lynn Canal drift gillnet fishery is shown in Figure 4.

Chinook salmon are harvested incidentally in the Lynn Canal drift gillnet fishery. A management concern for this species is to minimize chinook salmon harvests to stay within the board of fisheries allocation of all-gear quota (7,600 chinook for all Southeast gillnet districts [5 AAC 33.367 (a) (2)]). The return timing for chinook stocks to the Lynn Canal drift gillnet fishery is shown in Figure 4.

Historical catches for sockeye, coho, pink, chum, and chinook salmon in the Lynn Canal drift gillnet fishery are shown in Table 1 and Figure 5.

Regulatory Decision Process

The fishery opens by regulation on the third Sunday of June. The 2000 season will open on 12:01 p.m., June 18. Weekly fishing periods are set by emergency order and distributed to the public by department news releases that are typically distributed early in the afternoon on Thursdays.

General Goal

The overall management goal is to achieve desired spawning escapement levels while harvesting the available surplus for long-term maximum sustainable yield of all Lynn Canal salmon stocks. Stock specific escapement objectives have been established for the Chilkoot and Chilkat sockeye salmon stocks. Escapement to Chilkoot Lake is monitored at the enumeration weir located on the outlet of Chilkoot Lake. The sockeye salmon escapement to Chilkat River/Lake is monitored using fish wheels in the lower river. Total escapement is estimated using mark-recapture methodologies. As in 1999 the Chilkat Lake weir will be operated in 2000. Spawning objectives for other species have been developed as desired levels for index (peak) escapement counts.

MANAGEMENT GOALS

Specific management goals for the 2000 Lynn Canal drift gillnet fishery are as follows:

1. Obtain escapement counts for early run (through week 28; July 8) and late run Chilkoot Lake sockeye salmon of 16,500 and 34,000 fish, respectively.
2. Obtain an escapement of between 52,000 and 106,000 sockeye salmon to Chilkat Lake. The escapement objective for the early stock is approximately 17,500 fish through week 33 (August 12, Appendix 1) and 47,500 for the late stock.
3. Provide for sufficient chum, coho, and pink salmon spawning escapements to the Chilkat, Chilkoot, and Berners Rivers and other Lynn Canal systems, while harvesting those fish in excess of escapement needs.
4. Minimize, to the extent practical, the incidental harvest of chinook salmon.

2000 OUTLOOK

Chilkat Sockeye

The 1994 Chilkat Lake mark-recapture sockeye salmon escapement estimate totaled 153,500 sockeye salmon, including 43,900 early run fish, and 109,600 late run fish, well above the desired upper escapement goals for both stocks (Table 2, Table 3, Figure 6, McPherson 1990). The 1995 Chilkat Lake mark-recapture escapement estimate was 184,500 sockeye salmon, including 89,000 early run fish, and 95,500 late run fish, again exceeding the desired escapement goal range for both stocks. Historically, approximately 36% of the Chilkat Lake sockeye salmon escapement are age-2.3 (six-year old) fish, 24% are age-2.2 (five-year old) fish, 33% are age-1.3 (five-year old) fish, and the remainder are primarily age-1.2 (four-year old) fish (Appendix 2a). The Lynn Canal drift gillnet catches of Chilkat Lake sockeye salmon for return years, 1994 and 1995, were estimated to be 122,200 and 63,400 fish respectively, compared to the 1976 to 1998 historical average of 99,000 fish (Table 4).

The Northern Southeast Regional Aquaculture Association (NSRAA) conducted a smolt abundance estimation project at the outlet of Chilkat Lake from 1995 through 1999 (Table 5). Sockeye salmon smolt production from Chilkat Lake in 1997 and 1998, the dominant smolt years for the 2000 return, were estimated to be 1.51 million fish and 1.39 million fish, respectively. These smolt abundance estimates are 74% and 67%, respectively, of the historical 1989-90 and 1994-99 average. Approximately 10% of the age-1+ smolt and 29% of the age-2+ smolt from the 1997 emigration resulted from the Chilkat Lake enhancement program (based on thermal marks). An estimated 25% of the age 1+ smolt and 9% of the age 2+ smolt from the 1998 migration resulted from the Chilkat Lake enhancement program. Assuming a 10% marine survival rate and that 77% (Appendix 2b.) of those smolts return at three-years ocean age (combination of age-1.3 and 2.3 fish) there will be approximately 116,600 three-ocean (ages 1.3 and 2.3) Chilkat Lake sockeye salmon returning in 2000. Assuming a 10% marine survival rate and that 23% of those smolts return at two-years ocean age (ages 1.2 and 2.2), there will be approximately 31,900 two-ocean (ages 1.2 and 2.2) Chilkat Lake sockeye returning in 2000. The total expected return of four, five, and six-year-old sockeye to Chilkat Lake is approximately 148,500 fish which is 68% of the 1976 to 1999 historical average of 219,650 fish (Table 6, Figure 6).

Mark-recapture estimates of the Chilkat River mainstem sockeye salmon escapements in 1996 and 1997, the dominant parental brood years, were 53,400 and 14,700, respectively (Table 7). The Lower Chilkat River fish wheel project has been providing inseason stock assessment and post season escapement estimates of Chilkat River mainstem sockeye salmon since 1994 (Bachman, McGregor in prep). The 1996 estimate was the largest on record, although estimates are available only since 1994. Total escapement estimates are not available for Berners Bay sockeye systems. The 1996 commercial harvest was estimated at 29,000 fish. This catch was 2.2 times the historical 1976-99 average catch of 13,000 fish (Table 8). Based on the information above and that the 1999 age compositions of Chilkat mainstem showed a record high age-0.2 component (Appendix 1a), an above average return of Chilkat River mainstem sockeye salmon is expected in 2000.

Chilkoot Sockeye

The Chilkoot Lake sockeye escapement during the dominant parental brood year (1995) for the 2000 return was 7,200 fish (1,700 early run and 5,500 late run, Table 9), the lowest on record (Bachman and Kelley, 1999). Both the early and late run escapements were well below desired escapement goal ranges. Escapement of the late run, which historically has been the dominant segment of the Chilkoot Lake sockeye return, was below the lower bound of the escapement goal range (Table 2). The Lynn Canal drift

gillnet catch for the dominant brood year, 1995, was estimated to be 8,000 fish, 7% of the 1976 to 1999 historical average of 115,400 fish (Table 10).

Zooplankton abundance in Chilkoot Lake in 1996, when the majority of the fry expected to return as adults in 2000 were rearing in the lake, was very low but was improved from levels measured in 1995 (Table 11, Figure 7, Barto unpublished data). The 1996 hydroacoustic estimate of fall fry abundance in Chilkoot Lake was improved from 1995 but was the second lowest on record (421,000, range 285,000 to 3,066,100 for years 1987-1991 and 1995-1998, Barto unpublished data, Barto 1995, Table 11, Figure 7).

The annual total adult return of Chilkoot Lake sockeye salmon has been well below average since 1993, a trend that is expected to continue in 2000 (Table 12, Figure 6).

Chum Salmon

Summer Chum

The majority of the summer chum salmon harvest is comprised of enhanced fish from remote release sites at Boat Harbor and Amalga Harbor. Smaller numbers of wild chum salmon are produced from local area streams such as Sawmill Creek and the other Berners Bay rivers on the eastern side of Lynn Canal and the Endicott, Beardslee, and St. James rivers on the western side of Lynn Canal.

Douglas Island Pink and Chum Salmon Incorporated (DIPAC) is again expecting large numbers of hatchery chum salmon to return to the Amalga Harbor and Boat Harbor remote release sites. Preliminary projections for the Boat Harbor return are approximately 139,000 fish. No hatchery cost recovery fishery is planned for the Boat Harbor area so these fish will all be available for common property fishery harvest. The preliminary projection for the Amalga Harbor project is approximately 1,195,000 fish (Rick Focht, DIPAC, personal communication). DIPAC will conduct a hatchery cost recovery fishery in its Amalga Harbor Special Harvest Area in Section 11-A to harvest chum salmon returning to the Amalga Harbor remote release site.

Peak aerial escapement counts in Sawmill Creek in 1995, 1996, and 1997 were 1,750, 5,700, and 1,000 fish respectively. Those peak aerial escapements are within or above the desired peak aerial escapement goal for this system (Table 2). Cumulative peak counts of chum salmon in western Lynn Canal streams in 1995, 1996, and 1997 were 640, 17,300, and 10,700 fish respectively. Surveys performed in 1995 were done too early to draw any conclusions but combined peak counts in 1996 and 1997 exceeded escapement goals. Based on parental-year escapement counts, the wild summer chum return in 2000 should be good but much lower in magnitude in comparison to forecasted returns of hatchery chum salmon.

Fall Chum

Fall chum salmon returning to Lynn Canal are wild stocks returning primarily to the Klehini River, Chilkat River, and several Chilkat River tributaries. A smaller number of fall chum salmon are produced from the Herman Creek spawning channel and streamside incubation projects carried out by NSRAA. Parental-year escapements for the 2000 return of fall chum salmon were low. Peak aerial counts in the Klehini River in 1995 and 1996 were 200 and 3,600 fish respectively, well below the peak aerial escapement goals for this stock (Table 2). For the Chilkat River the peak aerial survey counts were 3,500 and 5,500 fish respectively in 1995 and 1996, also well below the peak aerial escapement goals for this stock (Table 2). It is known, however, that aerial escapement counts are not very reliable for this system because of the glacial nature of

the Chilkat River and the protracted spawning duration of these stocks. Other information that may be used as an indication of the strength of the fall chum salmon return is the fishery performance (Appendix 4) data from Lynn Canal. The fishery performance in the dominant parental brood years (1995 and 1996) was also poor. Based on this information the return of fall chum salmon stocks is, again, expected to be poor.

Coho Salmon

The coho salmon return in Lynn Canal is comprised of several stocks. The largest coho salmon system in the area is the Chilkat River, followed by the Berners and Chilkoot rivers.

A mark-recapture experiment conducted in 1990 estimated that the total coho salmon escapement to the Chilkat River was 80,500 (95% confidence interval 70,000 to 95,600 fish, Dangel et al. unpublished data). In 1998 Sport Fish Division conducted a mark-recapture experiment to estimate the escapement of Chilkat River coho salmon. The escapement estimate from that project was 37,132 fish (SE = 7,432, Ericksen, 1999). No other detailed harvest or escapement data is available for this stock.

A more detailed, longer-term (1982 to present) stock assessment program has been conducted on the Berners River (Clark et al 1994, Shaul and Crabtree 1998). Results from that program indicate that the average (1982 to 1995) total coho salmon return for that system is approximately 33,000 fish (range 14,000 to 73,800). Total harvest rates on the Berners River stock (1982 to 1995) have averaged 74.3%.

Weir counts for Chilkoot River coho salmon are also available but of limited value. In recent years the weir is operated primarily for sockeye salmon and in most years has removed prior to the peak of the coho salmon return (Appendix 3). For years in which the Chilkoot River weir was operated through at least the end of October (1987 to 1990) the peak total Chilkoot weir count for coho salmon was 3,800 (in 1989).

Parental-year escapement counts to the Chilkat, Berners, and Chilkoot rivers were generally below the ten-year average for all systems. The District 15 gillnet catch of 52,500 coho in 1996 (Table 1) was approximately 72% of the previous ten-year average. Based on this information the coho return is expected to be average to below average in 2000.

Chinook Salmon

Sport Fish Division has, since 1991, has been using mark-recapture methods to determine the spawning abundance of Chilkat River chinook salmon (Johnson et al 1993, Johnson 1994, Ericksen 1997, 1998, and 1999, Table 13). The resulting database will be used to refine escapement goals and future run forecasting models for this run. The interim escapement goal is 2,000 mature (\geq age 1.3) chinook salmon (Table 2). Sport Fish Division will review this goal in the fall of 2000. The preliminary preseason forecast for mature (\geq age 1.3) Chilkat chinook salmon is 4,800, which is slightly below the 1991-1999 average but above last year's estimated escapement of approximately 2,300 fish. There is no directed fishery for chinook salmon in Lynn Canal but management actions have been implemented to reduce the incidental take of Chilkat River chinook salmon. These management actions have been effective in conserving Chilkat River chinook salmon stocks as the interim escapement goal have been met or exceeded each year since 1991.

2000 MANAGEMENT APPROACH

Fishery Openings

In 2000, the department intends to manage the Lynn Canal drift gillnet fishery to obtain the lower ends of the escapement goal ranges for early and late stocks of Chilkoot Lake sockeye salmon. Depressed populations of Chilkoot Lake zooplankton that serve as the forage base for rearing juvenile sockeye salmon are thought to be limiting production from this system. The department believes targeting the low end of the escapement goal ranges is prudent to reduce the possibility of high fry production and resultant heavy predation on the lake's principal food source for sockeye salmon.

Section 15-A

Section 15-A will open for two days south of the latitude of Seduction Point beginning 12:01 p.m., Sunday June 18. If the Chilkoot River weir count through June 13 is less than 4,500 sockeye salmon the eastern side of Section 15-A will be closed. If the weir count is 4,500 sockeye salmon or greater the eastern portion of 15-A may be opened. Chilkat Inlet will remain closed for at least the first two weeks of the season to protect chinook salmon returning to the Chilkat River. Chinook salmon return timing data from the Sport Fish chinook salmon tagging program indicates that approximately 90% of the Chilkat River chinook salmon return has passed the inriver drift gillnet capture site at river mile seven by July 15 (Ericksen 1997). Assuming that the travel time from Chilkat Inlet to the sport fish division tagging site is roughly ten days, the bulk of the Chilkat River chinook salmon return should be in the Chilkat River by about July 4 (week 28 in 2000).

The Department has attempted to increase harvest rates on Chilkat Lake sockeye salmon by allowing extended fishing time and area in Chilkat Inlet and adjacent marine waters during years of high abundance. The success of this approach is limited because of terminal area closures designed to protect chinook salmon and Chilkat River mainstem sockeye early in the season and fall chum salmon late in the fishing season. Chilkat River mainstem fish have a return timing that overlaps the Chilkat Lake early sockeye salmon run (Figure 8, mainstem sockeye salmon are predominantly age 0, Chilkat Lake early run fish are predominantly age 1, and Chilkat Lake late run fish are predominantly age 2). There are no formal escapement goals for Chilkat River mainstem sockeye salmon. Data from the Chilkat River fish wheel mark-recapture program will be used to judge run strength inseason and escapement levels post season. The department is hopeful that this data may be used in the future to develop spawning escapement goals for this stock.

It is anticipated that the northern boundary line will remain at Seduction Point until the second or third week of the season. Depending on the strength of the early Chilkat Lake sockeye and the Chilkat River chinook run the northern boundary line may be moved to Glacier Point, or the northernmost tip of Kochu Island, the third week of the season. If the run strengths of Chilkat Lake sockeye and Chilkat River chinook warrants it, the northern boundary line in Chilkat Inlet may be moved north to Cannery Point during weeks 29 and 30. The area from Cannery Point to the Chilkat River mouth will be closed to protect Chilkat River mainstem sockeye salmon (Figure 8) during that time. If the Chilkat Lake sockeye salmon run is stronger than anticipated the northern boundary line may be moved to the mouth of the Chilkat River during weeks 31-34. Section 15-A (west of a line beginning at a point within two nautical miles of the western shoreline of Lynn Canal at the latitude to Point Sherman, to Sullivan Island Rock Light, to Eldred Rock Light, to the southernmost tip of Talsani Island, to the northernmost tip of Talsani Island, to Seduction Point) may be opened for extended periods of time during the summer season, but

due to this year's expected smaller run of Chilkat Lake sockeye it is likely that fishing time in this area will be less than during the last several years. Fishing time and area may be adjusted inseason and will be based on inseason fishery performance (Appendix 4) and on stock assessment data, primarily from the fish wheels in the lower Chilkat River.

If the Chilkoot Lake sockeye salmon return is poor as expected (run not forecasted to meet minimum escapement goals), the east side of Section 15-A will be closed for much of the season. Chilkoot Inlet is expected to be closed north of Seduction Point for most, if not all, of the summer season to protect Chilkoot Lake sockeye salmon.

Fall management will begin in week 35 (August 20). Fall chum salmon conservation will drive fishery management in Section 15-A from week 35 until the end of the season. In 1999, when the late run of Chilkat Lake sockeye salmon was very strong, the Department used a new management approach to the early fall fishery in Section 15-A in order to target fishing on Chilkat Lake sockeye salmon while limiting the harvest of milling Chilkat River fall chum salmon. During weeks 35 and 36 Chilkat Inlet was open from the latitude of Point Seduction to the mouth of the Chilkat River and the remainder of Section 15-A was closed. This management strategy is less likely to be used in 2000 because the return of Chilkat Lake sockeye is expected to be below average. If the strength of Chilkat sockeye and fall chum salmon runs are poor, a more conservative management approach may be expected. The department will assess sockeye and fall chum runs closely by monitoring fishery performance and inriver abundance at the Chilkat River fish wheels to adjust fishing time and area in Section 15-A during the fall.

Section 15-B

Section 15-B will not be open in 2000 unless the return of coho salmon to Berners Bay is very strong.

Section 15-C

Section 15-C will open for two days at 12:01 p.m., Sunday June 18. If the Chilkoot River weir count is less than 4,500 sockeye salmon through June 13 the eastern side of Section 15-C will be closed north of the latitude of Bridget Point. If the Chilkoot Lake sockeye salmon return is as poor as expected (based on weir counts) it is likely that there will be 6" minimum mesh size restrictions in Section 15-C (except for the Boat Harbor area). This gear restriction will be implemented to minimize the harvest of Chilkoot Lake sockeye salmon while targeting summer hatchery chum salmon. If the Chilkoot River weir counts continue to be very poor and effort levels are higher than in recent years, it is also possible that additional areas on the eastern side of Section 15-C may be closed. The decision to open the eastern side of this section and whether to implement a gear restriction will be driven by Chilkoot River weir counts, effort levels, and inseason stock assessment data based on site specific scale results.

The Boat Harbor area (those waters within two nautical miles of the western shoreline of Lynn Canal from the latitude of Lance Point at 58°43'56" N. latitude south to a point 2.4 miles north of Point Whidbey at 58°37'03" N. latitude) may be opened for extended periods beginning in week 28 (July 2). If enhanced chum salmon returns are as strong as projected the Boat Harbor area will be open continuously beginning the first week of July. It is probable that the western shoreline of Section 15-C will be closed north of Lance Point to protect wild summer chum salmon returning to the Endicott River during weeks 27 to 31 (June 25 to July 29).

Fall season management will begin in late August or early September in Section 15-C. A conservative management approach will again be implemented to ensure improved fall chum salmon escapement during the early weeks of the fall season. Management of Section 15-C during the fall season will be based on coho

and chum overall run strength and fishing effort levels. Fishing effort will be directed at harvesting returns of coho salmon in lower Lynn Canal while conserving fall chum salmon.

Other Comments

To avoid gear conflicts, the District 15 drift gillnet fishery will not be open concurrent with the Juneau Golden North Salmon Derby. Consequently, during Statistical Week 35, the District 15 gillnet fishery will not open until Monday, August 21.

INFORMATION NEEDS

The current major weakness in the management of the Lynn Canal drift gillnet fishery is poor production of Chilkoot Lake sockeye salmon. In order to conserve Chilkoot sockeye the department has in recent years had to close the eastern shoreline of Section 15-A during the entire summer fishing season and severely limit fishing along the eastern shoreline of Section 15-C as well. These actions have, as side-effects, limited harvest rates on plentiful returns of Chilkat Lake sockeye and enhanced chum salmon below levels that could otherwise have been realized. The department has had only limited funds to conduct assessment work at Chilkoot Lake but has collected lake productivity data that points to a limited food supply for juvenile sockeye salmon as a possible cause for poor returns of sockeye to this system. More intensive sampling of the lake and an in-depth analysis of available literature may reveal possible methods for enhancing the productivity of Chilkoot Lake. Production of sockeye from Coghill Lake, a glacial system in central Alaska with many physical similarities to Chilkoot Lake, appeared to respond favorably to a nutrient enrichment program in the early 1990s after several years of low productivity that were believed to be caused by a low zooplankton forage base (Edmundson et al 1997). The department and NSRAA are reviewing available information on Coghill Lake and similar programs within Alaska and Canada and hope, by the winter of 2000, to recommend whether a nutrient enrichment program could benefit Chilkoot Lake. Funding would need to be obtained to conduct such work. More detailed information on Chilkoot smolt size, age, and migration timing will be conducted at Chilkoot Lake again this coming season with funding help from NSRAA.

Returns of Chilkat and Klehini River chum salmon stocks have been depressed since the early 1990s. No stock assessment program is currently in place for this stock. A stratified mark-recapture project similar to the Chilkat sockeye salmon program involving the Chilkat River fish wheels would allow for an estimate on the abundance of this species. Additional funding to operate the fish wheels throughout the chum salmon migration period would be necessary.

Very little is known regarding the escapement and harvest of Chilkat River coho salmon. Sport fish division funded a Chilkat River stock assessment program in 1998 utilizing the Chilkat River fish wheels. Due to funding constraints, this project was discontinued in 1999 and will probably not continue again in 2000. Coho salmon were marked at the Chilkat River fish wheels and mark-recovery took place in upriver spawning locations. This program would provide escapement information for Chilkat River coho salmon stocks, which, over time, may be used to develop spawning escapement goals. In 1999 the sport fish division initiated a Chilkat drainage coho and chinook smolt coded wire-tagging program. The purpose of this project is to estimate the number of coho and chinook salmon smolt leaving the Chilkat River. Another goal of this project is to estimate the marine harvest of Chilkat River coho and chinook salmon in sampled fisheries during 2000 through the recovery of coded-wire tags that were applied in the spring of 1999. This program will commence again in 2000. The lower Chilkat fish wheels will be

utilized this fall to sample and scan for tagged coho salmon to estimate the proportion of one ocean age adult coho salmon returning to the Chilkat River this year.

Currently Chilkat sockeye salmon are captured, marked, and released at two fish wheels located in the lower Chilkat River. Recovery of those marked sockeye salmon takes place at upriver spawning locations in Chilkat Lake and the Chilkat River mainstem. Sockeye salmon are recovered in Chilkat Lake by capturing fish at the weir site located near the outlet of Chilkat Lake. This method is the best for examining the entire sockeye escapement into Chilkat Lake. The Chilkat Lake weir will be operated again this year to serve as a mark recovery and as a collection site for biological samples. The weir also provides information that is needed to refine the existing spawning escapement goals for Chilkat Lake. In addition, the weir provides run-reconstruction data for sockeye salmon as well as valuable data on the escapement of other salmonid species to Chilkat Lake. The objectives of the program are: 1. Provide precise postseason escapement estimates for Chilkat Lake sockeye salmon using stratified mark-recapture population estimates, and 2. Provide escapement data for other salmonid species to Chilkat Lake. The approximate cost of this program is \$46,000 annually. Like 1999, through cooperative agreement, NSRAA has agreed to run the recovery portion of this project utilizing the weir as a recovery platform.

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Table 1. Historical catches of chinook, sockeye, coho, pink, and chum salmon in the District 15 (Lynn Canal) drift gillnet fishery, 1960 to 1999.

Year	Chinook				Sockeye				Coho				Pink				Chum				Summer	Fall	
	15-A	15-B	15-C	15 Total	15-A	15-B	15-C	15 Total	15-A	15-B	15-C	15 Total	15-A	15-B	15-C	15 Total	15-A	15-B	15-C	15 Total			
60	1,453	0	0	1,453	59,603	1	0	59,604	9,998	966	0	10,964	1,760	0	0	1,760	58,254	308	0	58,562	1,180	57,382	
61	683	0	0	683	67,839	21	0	67,860	15,499	2,757	0	18,256	25,503	0	0	25,503	122,873	4,477	0	127,350	8,016	119,334	
62	806	0	0	806	103,696	0	0	103,696	24,436	0	0	24,436	2,041	0	0	2,041	115,036	0	0	115,036	3,733	111,303	
63	275	1	0	276	57,517	1	0	57,518	34,628	468	0	35,096	13,689	0	0	13,689	102,183	185	0	102,368	1,554	100,814	
64	771	0	0	771	68,200	0	0	68,200	33,347	0	0	33,347	6,602	0	0	6,602	103,047	0	0	103,047	1,192	101,855	
65	1,735	0	0	1,735	89,045	1	0	89,046	38,418	663	0	39,081	4,222	0	0	4,222	206,292	270	0	206,562	4,108	202,454	
66	865	3	0	868	108,060	26	0	108,086	39,598	1,196	0	40,794	6,004	4	0	6,008	233,759	1,413	0	235,172	3,657	231,515	
67	1,171	0	0	1,171	66,621	0	0	66,621	66,109	0	0	66,109	14,677	0	0	14,677	165,874	0	0	165,874	3,477	162,397	
68	1,488	0	1	1,489	79,937	0	67	80,004	39,606	0	3,656	43,262	7,776	0	27	7,803	159,776	0	9,839	169,615	3,519	166,096	
69	1,599	0	19	1,618	127,628	0	241	127,869	33,828	0	1,199	35,027	5,129	0	3,867	8,996	156,800	0	3,867	160,667	3,554	157,113	
70	1,733	0	38	1,771	78,734	0	381	79,115	38,916	0	9,727	48,643	19,271	0	568	19,839	230,833	0	40,582	271,415	4,555	266,860	
71	2,908	0	21	2,929	74,774	0	373	75,147	39,535	0	9,647	49,182	6,095	0	61	6,156	238,269	0	32,891	271,160	21,395	249,765	
72	923	0	63	986	79,287	0	1,723	81,010	50,834	0	7,137	57,971	13,346	0	1,174	14,520	322,259	0	27,422	349,681	19,050	330,631	
73	2,341	0	131	2,472	192,579	0	1,122	193,701	17,704	0	8,449	26,153	14,099	0	452	14,551	236,899	0	42,432	279,331	16,238	263,093	
74	1,607	0	64	1,671	142,187	0	9,827	152,014	44,745	0	20,064	64,809	4,079	0	924	5,003	372,671	0	71,295	443,966	5,749	438,217	
75	815	0	1	816	18,265	0	73	18,338	43,560	0	13,983	57,543	3,242	0	13	3,255	214,035	0	24,747	238,782	46,199	192,583	
76	2,044	0	24	2,068	122,735	0	3,887	126,622	49,167	0	22,817	71,984	3,866	0	563	4,429	329,974	0	45,052	375,026	5,173	369,853	
77	1,156	0	58	1,214	159,312	0	767	160,079	50,453	0	40,973	91,426	130,644	0	216	130,860	152,923	0	48,711	201,634	5,577	196,057	
78	457	0	79	536	105,491	0	2,989	108,480	26,084	0	27,081	53,165	3,260	0	551	3,811	82,443	0	35,985	118,428	7,845	110,583	
79	3,554	0	18	3,572	192,692	0	282	192,974	23,426	0	3,589	27,015	28,752	0	11	28,763	225,713	0	17,119	242,832	7,006	235,826	
80	434	0	6	440	53,096	0	891	53,987	26,120	0	2,778	28,898	79,441	0	2,902	82,343	157,515	0	11,338	168,853	19,888	148,965	
81	1,083	2	215	1,300	81,740	1,289	10,166	93,195	30,452	109	14,089	44,650	112,471	4,107	20,692	137,270	90,619	508	26,248	117,375	13,215	104,160	
82	5,878	1	66	5,945	268,290	160	5,432	273,882	47,719	78	24,573	72,370	67,415	126	1,509	69,050	271,659	37	34,889	306,585	5,337	301,248	
83	1,993	5	121	2,119	349,884	155	19,791	369,830	53,622	66	15,822	69,510	134,319	452	22,775	157,546	311,510	1,116	28,519	341,145	19,303	321,848	
84	5,822	13	264	6,099	320,277	3,759	10,546	334,582	43,637	58	24,520	68,215	68,611	2,128	7,261	78,000	552,232	10,177	79,829	642,238	59,567	582,671	
85	2,753	177	330	3,260	233,972	7,736	61,533	303,241	64,547	414	33,329	98,290	169,644	6,079	63,357	239,080	582,649	12,377	103,784	698,810	77,806	621,004	
86	2,141	41	590	2,772	248,264	1,100	40,541	289,905	48,046	4	34,071	82,121	31,927	34	6,154	38,115	305,610	1,357	74,415	381,382	18,987	362,395	
87	3,021	2	200	3,223	381,856	1,244	32,236	415,336	31,195	15	22,541	53,751	124,066	430	41,255	165,751	295,663	548	96,727	392,938	26,698	366,240	
88	1,136	27	94	1,257	327,330	17,469	7,000	351,799	50,984	410	30,142	81,536	193,991	10,343	4,070	208,404	284,127	28,664	64,792	377,583	60,206	317,377	
89	1,478	33	444	1,955	351,706	9,249	110,959	471,914	29,484	98	20,725	50,307	61,365	291	48,798	110,454	90,735	3,508	29,388	123,631	28,813	94,818	
90	364	16	290	670	248,878	3,612	104,928	357,418	36,260	48	26,764	63,072	48,645	1,247	51,207	101,099	122,157	2,908	85,477	210,542	84,282	126,260	
91	462	0	283	745	275,428	0	32,383	307,811	23,031	0	105,334	128,365	3,815	0	1,657	5,472	100,121	0	110,068	210,189	100,627	109,562	
92	225	0	385	610	230,229	0	55,806	286,035	30,021	0	78,732	108,753	243,297	0	108,265	351,562	114,157	0	131,090	245,247	132,505	112,742	
93	302	0	439	741	119,754	0	53,359	173,113	7,499	0	52,453	59,952	680	0	10,656	11,336	62,190	0	244,376	306,566	229,284	77,282	
94	253	4	723	980	111,061	80	60,588	171,729	55,925	13,805	71,034	140,764	57,648	2	89,627	147,277	155,172	4,482	525,795	685,449	529,380	156,069	
95	56	0	772	831	41,570	505	34,351	88,572	21,093	11,632	43,696	79,949	883	0	14,641	5,799	62,206	1,332	494,792	568,368	493,279	75,089	
96	106	0	491	642	65,031	0	41,354	149,961	16,525	0	29,885	52,658	1,290	0	958	2,358	55,321	0	337,709	415,547	340,021	75,526	
97	280	0	487	834	52,669	0	42,413	118,348	2,034	0	12,558	15,572	13,601	0	36,864	32,962	28,410	0	425,122	461,614	431,699	29,915	
98	375	0	304	679	114,467	0	20,470	134,937	7,003	0	19,115	26,118	22,260	0	10,091	32,351	29,933	0	130,736	160,669	136,515	24,154	
99	373	0	180	553	145,917	0	17,613	163,530	4,478	0	30,852	35,330	36,989	0	25,748	62,737	46,947	0	303,947	350,894	290,325	60,569	
Averages																							
1989-98	390	5	462	869	161,079	1,345	55,661	225,984	22,888	2,558	46,030	72,551	45,348	154	37,276	80,067	82,040	1,223	251,455	338,782	250,641	88,142	
1960-69	1,085	0	2	1,087	82,815	5	31	82,850	33,547	605	486	34,637	8,740	0	389	9,130	142,389	665	1,371	144,425	3,399	141,026	
1970-79	1,754	0	50	1,804	116,606	0	2,142	118,748	38,442	0	16,347	54,789	22,665	0	453	23,119	240,602	0	38,624	279,226	13,879	265,347	
1980-89	2,574	30	233	2,837	261,642	4,216	29,910	295,767	42,581	125	22,259	64,965	104,325	2,399	21,877	128,601	294,232	5,829	54,993	355,054	32,982	322,072	
1960-99	1,423	8	180	1,614	150,391	1,160	19,602	173,128	33,739	820	21,533	56,361	44,660	631	14,423	59,036	188,721	1,842	93,475	285,053	81,763	203,290	

Table 2. Escapement goals for Lynn Canal salmon stocks by species and location.

Species	Stock	Escapement Goal Type	Point Goal	Lower Escapement Goal	Upper Escapement Goal
Sockeye ^a	Chilkoot Lake Early	Weir Count	22,000	16,500	31,500
Sockeye ^a	Chilkoot Lake Late	Weir Count	40,000	34,000	60,000
Sockeye ^a	Chilkoot Lake Total	Weir Count	62,000	52,500	91,500
Sockeye ^a	Chilkat Lake Early	M-R Estimate	17,500	14,000	28,000
Sockeye ^a	Chilkat Lake Late	M-R Estimate	47,500	38,000	78,000
Sockeye ^a	Chilkat Lake Total	M-R Estimate	65,000	52,000	106,000
Sockeye	Chilkat River	Peak Foot Count	N/A	500	2,000
Sockeye	Berners Bay rivers	Peak Aerial Count	N/A	750	1,500
Coho	Berners River	Peak Foot Count	6,300	4,000	9,200
Coho	Tahini River	Peak Foot Count	N/A	400	900
Coho	Takhin River	Peak Aerial Count	N/A	800	1,200
Coho	Chilkat River	Undetermined	N/A	N/A	N/A
Fall Chum	Klehini River	Peak Aerial Count	N/A	20,000	N/A
Fall Chum	Chilkat River	Peak Aerial Count	N/A	70,000	100,000
Wild Summer Chum	Sawmill Creek	Peak Aerial Count	N/A	1,000	2,000
Wild Summer Chum	Western Lynn Canal Systems Combined	Peak Aerial Count	N/A	4,000	8,000
Pink	Sawmill Creek	Peak Aerial Count	N/A	5,000	10,000
Pink	Western Lynn Canal Systems Combined	Peak Aerial Count	N/A	50,000	90,000
Chinook ^b	Chilkat River Combined	M-R Estimate	2,000	N/A	N/A

^a From McPherson 1990.

^b Under review.

Table 3. Annual escapements of Chilkat Lake sockeye salmon by week, 1976 to 1999.

Mid-Week Date	Stat Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
31-May	23	0	0	0	0	0	0	0	0	0	0	0	0
7-Jun	24	1	0	22	6	0	0	0	0	0	0	0	0
14-Jun	25	0	214	476	44	72	3	0	0	302	0	0	0
21-Jun	26	433	305	1,302	698	887	0	31	368	1,441	7	4	88
28-Jun	27	944	572	8,622	6,930	1,152	5	532	1,248	5,436	98	2	1,777
5-Jul	28	2,437	773	2,751	2,081	3,560	141	605	11,144	623	1,317	602	2,197
12-Jul	29	1,140	207	11,816	8,576	4,355	549	461	15,284	3,280	1,141	139	5,601
19-Jul	30	2,055	542	1,310	4,068	4,575	1,071	2,515	8,935	6,011	334	20	2,542
26-Jul	31	2,816	711	1,814	1,413	2,100	1,002	1,743	10,750	929	812	24	1
2-Aug	32	310	1,184	40	2,056	2,100	266	3,496	6,865	141	2,029	1	123
9-Aug	33	2,740	725	1,078	5,895	2,100	729	509	4,254	2,971	157	3	1,776
16-Aug	34	9,810	968	1,634	7,288	5,666	1,450	4,073	5,589	1,417	1,555	138	1,875
23-Aug	35	4,283	1,269	1,246	11,212	6,910	767	5,151	1,433	14,899	4,434	736	6,193
30-Aug	36	6,799	18,711	5,670	3,639	10,351	4,967	1,575	5,475	18,015	3,271	1,006	1,618
6-Sep	37	17,483	8,664	6,106	19,464	29,613	18,652	6,091	10,526	18,512	3,372	5,364	27
13-Sep	38	9,655	144	7,747	12	10,739	1,113	20,378	21,097	21,106	12,639	6,943	259
20-Sep	39	5,584	5,821	9,469	2,353	7,015	6,134	25,516	9,455	17,510	17,688	3,796	18,033
27-Sep	40	0	234	6,334	1,413	3,374	32,516	7,467	9,398	2,252	5,258	3,762	6,165
4-Oct	41	3,001	0	91	2,125	778	10,222	78	7,305	424	2,009	831	0
11-Oct	42	238			1,316		4,502		5,081		1,603	576	318
Yearly Total		69,729	41,044	67,528	80,589	95,347	84,089	80,221	134,207	115,269	57,724	23,947	48,593
Weekly Mean		3,486	2,160	3,554	4,029	5,609	4,672	5,014	7,895	6,067	3,396	1,330	2,700
Early Stock		17,582	9,437	17,924	30,433	10,253	10,617	9,640	47,885	28,193	7,449	2,536	13,345
Late Stock		52,147	31,607	49,604	50,156	85,094	73,472	70,581	86,322	87,076	50,275	21,411	35,248

Mid-Week Date	Stat Week	1988	1989	1990	1991	1992	1993	1994 ^a	1995 ^a	1996 ^a	1997 ^a	1998 ^a	1999 ^a	Mean
31-May	23	0	62	0	1	0	0				0	0	0	3
7-Jun	24	0	689	202	44	10	0	57	0	476	592	258	98	
14-Jun	25	0	5,802	639	305	53	75	0	2,232	0	1,857	4,308	1,127	730
21-Jun	26	59	10,690	3,615	901	1,016	1,745	1,510	5,323	2,720	3,618	11,793	5,894	2,269
28-Jun	27	2,015	7,845	1,660	1,600	1,653	3,557	3,456	8,471	11,051	11,759	21,916	13,592	4,829
5-Jul	28	496	2,295	4,353	1,971	1,762	4,240	8,223	9,674	32,814	5,951	17,070	30,984	6,169
12-Jul	29	9	8,126	9,566	503	6,529	3,552	5,125	9,387	28,393	5,713	19,816	18,262	6,980
19-Jul	30	722	15,810	2,380	2,812	5,034	7,615	8,025	18,775	28,308	13,187	17,500	24,671	7,451
26-Jul	31	1,969	3,161	1,449	2,234	2,263	5,336	8,184	17,172	26,778	16,044	18,900	16,683	6,012
2-Aug	32	1,965	4,340	1,925	3,724	3,579	6,490	9,375	17,973	42,335	22,138	23,154	19,872	7,312
9-Aug	33	200	11	380	1,821	1,197	14,537	34,085	15,054	22,358	11,283	23,962	21,901	7,072
16-Aug	34	566	3,207	2,948	4,295	5,768	6,643	17,559	25,643	17,767	9,617	22,024	21,064	7,440
23-Aug	35	280	7,582	7,167	10,732	10,357	23,593	16,367	21,007	21,848	14,521	26,655	19,389	9,918
30-Aug	36	469	8,379	9,647	5,380	13,172	19,677	19,346	13,394	13,942	18,044	16,962	9,501	9,542
6-Sep	37	7,973	15,019	259	2,260	6,014	1,251	18,274	20,377	14,112	27,518	25,524	9,727	12,174
13-Sep	38	2,254	34,155	664	3,264	8,779	61,222	4,012		425	42,800	16,854	13,302	13,024
20-Sep	39	2,747	2,713	4,465	1,873	22,150	32,323				9,474	23,854	9,920	11,328
27-Sep	40	4,551	2,936	3,552	1,091	6,171	297				21,328	13,893	10,210	6,772
4-Oct	41	655	3,053	4,456	1,427	1,891	2,947				3,475	4,146	2,770	2,461
11-Oct	42	663	4,600	904	6,651	342	14,630				0	538	0	2,623
Yearly Total		27,593	140,475	60,231	52,889	97,740	209,730	153,540	184,541	262,852	238,803	309,462	249,125	120,220
Weekly Mean		1,533	7,024	3,170	2,644	5,144	10,487	10,236	13,182	17,523	11,940	15,473	12,456	6,697
Early Stock		7,512	54,090	25,792	15,916	23,096	47,147	43,897	89,065	172,401	80,744	135,050	131,342	42,973
Late Stock		20,081	86,385	34,439	36,973	74,644	162,583	109,643	95,476	90,451	158,059	174,412	117,783	77,247

^a Total escapement estimates from mark-recapture program, weekly escapement numbers are derived from fish wheel CPUE data.

Table 4. Annual harvests of Chilkat Lake sockeye salmon by week, 1976 to 1999.

Mid-Week Date	Stat Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
14-Jun	25	384		4,385	1,512	603	1,539	469		2,248	408	88	
21-Jun	26	4,605	5,041	1,343	3,243	166	1,960	2,139	1,084	4,907	1,725	357	1,880
28-Jun	27	4,624	9,089		25		1,821	3,529	1,868	5,696	1,633	1,302	3,530
5-Jul	28	4,146	1,577	1,048	4,936		1,494	2,919	5,603	4,790	5,139	625	1,516
12-Jul	29	897	2,205	1,832	5,512		2,504	2,626	4,457	9,051	4,318	1,858	6,810
19-Jul	30	1,740	1,044	3,218	13,220	2,110	5,100	1,103	7,382	8,136	3,137	2,209	5,038
26-Jul	31	1,459	1,130	20,294	18,107	1,301	2,121	11,392	8,243	8,366	9,150	2,242	6,072
2-Aug	32	9,420	3,318	18,939	28,212	3,450	5,668	27,126	17,604	12,062	9,676	10,774	15,278
9-Aug	33	11,682	4,625	22,490	15,870	8,237	1,017	30,199	18,777	18,396	11,336	30,803	9,454
16-Aug	34	11,496	5,217	11,334	16,101	6,844	1,980	14,475	11,718	6,390	26,250	45,502	8,166
23-Aug	35	7,997	6,123	3,138	6,339	6,889	18,720	16,202	20,923	6,528	35,316	14,617	6,456
30-Aug	36	497	1,482	1,233	1,471	681	3,130	10,675	19,799	4,898	16,834	44,362	2,494
6-Sep	37	257	318	256	685	207	1,000	1,913	5,148	3,997	7,808	7,719	1,825
13-Sep	38-42	124	220	48	761	193	406	2,269	1,282	2,766	2,773	5,903	1,550
Yearly Total		59,328	41,389	89,558	115,994	30,681	48,460	127,036	123,888	98,231	135,503	168,361	70,069
Weekly Mean		4,238	3,184	6,889	8,285	2,789	3,461	9,074	9,530	7,017	9,679	12,026	5,390
Early Stock Catch		9,514	13,064	8,023	29,065	1,984	12,885	26,257	32,908	43,208	23,540	15,333	24,571
Late Stock Catch		49,814	28,325	81,535	86,929	28,697	35,575	100,779	90,980	55,023	111,963	153,028	45,498

Mid-Week Date	Stat Week	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1976-99 Mean
14-Jun	25		7,596	1,719	1,211		2,283	0	2,283	987	3,146			1,815
21-Jun	26	2,379	8,490	2,406	1,826	2,436	1,141	4,752	1,698	3,234	2,950	2,841	4,398	2,792
28-Jun	27	3,482	10,439	6,306	1,557	4,627	2,563	6,768	2,002	929	3,398	7,888	6,643	4,078
5-Jul	28	4,920	11,161	4,405	1,931	3,548	5,547	7,677	4,884	1,597	2,387	14,463	15,656	4,868
12-Jul	29	7,598	12,833	3,688	2,389	5,687	5,865	11,756	1,971	2,512	2,756	16,274	17,622	5,784
19-Jul	30	3,405	9,805	10,257	2,116	5,647	2,926	6,452	2,082	2,869	2,588	14,006	14,618	5,425
26-Jul	31	8,507	12,833	9,923	4,060	5,562	3,981	9,597	2,611	8,008	7,596	13,211	11,890	7,819
2-Aug	32	6,497	30,913	25,025	6,478	11,688	7,123	11,775	4,543	16,233	9,590	18,128	16,818	13,597
9-Aug	33	13,369	18,492	35,214	6,049	24,426	11,967	12,141	5,764	17,426	6,066	12,852	11,762	14,934
16-Aug	34	6,771	18,034		10,037	9,648	26,518	11,760	18,943	19,743	11,031	9,738	14,708	14,018
23-Aug	35	6,728	13,465	29,780	8,691	26,558	14,515	18,913	7,195	9,872	11,544	4,875	15,698	13,212
30-Aug	36	6,637	3,833	14,282	6,056	9,517	10,273	12,759	4,375	6,742	4,627	2,687	9,653	8,292
6-Sep	37	3,518	1,231	3,761	5,466	2,220	4,650	7,863	2,996	3,977	2,378	2,197	5,969	3,223
13-Sep	38-42	2,662	321	290	1,939	323	1,365	0	2,048	2,251	0	1,485	4,261	1,468
Yearly Total		76,473	159,446	147,056	59,806	111,887	100,717	122,212	63,396	96,380	70,056	120,644	149,697	99,428
Weekly Mean		5,883	11,389	11,312	4,272	8,607	7,194	8,729	4,528	6,884	5,004	9,280	11,515	7,340
Early Stock Catch		25,500	60,963	2,972	11,030	21,945	20,325	37,404	14,920	12,129	17,225	55,472	58,938	24,132
Late Stock Catch		50,973	98,483	144,084	48,776	89,942	80,392	84,808	48,476	84,251	52,831	65,172	90,759	75,296

Table 5. Chilkat Lake sockeye smolt age, weight, and length compositions (wild and enhanced components), 1989-1990, 1994-1999.

Year	Total Outmigration	Fry Stocked	Total Wild	Total Enhanced	% Enhanced	Enhanced Survival %	Wild 1.0	Enhanced 1.0	Wild 2.0	Enhanced 2.0	Wild 3.0	Enhanced 3.0	<u>Age %</u>			<u>AVG Length</u>			<u>AVG Weight</u>		
													% 1.0	% 2.0	% 3.0	mm. 1.0	mm. 2.0	mm. 3.0	g. 1.0	g. 2.0	g. 3.0
89	2,000,000		2,000,000	0	0	0	1,520,000	0	480,000	0			76.0%	24.0%		100.20	121.00		8.90	14.60	
90	2,600,000		2,600,000	0	0	0	702,000	0	1,898,000	0			27.0%	73.0%		103.90	118.90		10.00	14.80	
94	2,367,891	4,400,000	2,367,891	0	0	0	1,207,624	0	1,160,267	0			51.0%	49.0%		102.30	119.50		9.90	14.80	
95	1,890,876	2,393,558	1,210,977	686,436	36.0%	23.1%	403,217	686,436	801,223	n/a	6,537	0	62.0%	37.0%	4.0%	92.50	115.40	147.35	7.10	13.20	27.15
96	2,869,690	2,691,311	2,269,741	599,419	21.0%	27.7%	939,393	269,365	1,325,183	330,054	5,165	0	42.0%	58.0%	2.0%	86.30	107.20	185.00	5.68	10.30	55.97
97	1,514,194	2,806,858	1,039,634	476,225	31.0%	5.0%	113,201	98,786	918,711	377,439	7,722	0	13.0%	86.0%	1.0%	95.20	101.20	154.50	7.03	8.80	34.44
98	1,386,118	0	1,115,700	270,418	19.5%	23.8%	666,224	220,892	340,569	33,683	108,907	15,843	64.0%	27.0%	9.0%	92.70	109.40	138.28	7.27	11.20	22.69
99	1,809,273	0	1,362,342	446,931	24.7%		620,377	n/a	716,718	446,931	25,247	0	34.0%	64.0%	2.0%	88.11	107.57	155.77	5.34	9.49	37.73
AVG	2,054,755	3,072,932	1,745,786	495,886	26.4%	19.9%	771,505	318,870	955,084	297,027	30,716	3,169	46.1%	52.3%	3.6%	95	113	156	8	12	36

Table 6. Annual total return of Chilkat Lake sockeye salmon by week, 1976 to 1999.

Mid-Week Date	Stat Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
31-May	23	0	0	0	0	0	0	0	0	0	0	0	0
7-Jun	24	1	0	22	6	0	0	0	0	0	0	0	0
14-Jun	25	384	214	4,861	1,556	675	1,542	469	0	2,550	408	88	0
21-Jun	26	5,038	5,346	2,645	3,941	1,053	1,960	2,170	1,452	6,348	1,732	361	1,968
28-Jun	27	5,568	9,661	8,622	6,955	1,152	1,826	4,061	3,116	11,132	1,731	1,304	5,307
5-Jul	28	6,583	2,350	3,799	7,017	3,560	1,635	3,524	16,747	5,413	6,456	1,227	3,713
12-Jul	29	2,037	2,412	13,648	14,088	4,355	3,053	3,087	19,741	12,331	5,459	1,997	12,411
19-Jul	30	3,795	1,586	4,528	17,288	6,685	6,171	3,618	16,317	14,147	3,471	2,229	7,580
26-Jul	31	4,275	1,841	22,108	19,520	3,401	3,123	13,135	18,993	9,295	9,962	2,266	6,073
2-Aug	32	9,730	4,502	18,979	30,268	5,550	5,934	30,622	24,469	12,203	11,705	10,775	15,401
9-Aug	33	14,422	5,350	23,568	21,765	10,337	1,746	30,708	23,031	21,367	11,493	30,806	11,230
16-Aug	34	21,306	6,185	12,968	23,389	12,510	3,430	18,548	17,307	7,807	27,805	45,640	10,041
23-Aug	35	12,280	7,392	4,384	17,551	13,799	19,487	21,353	22,356	21,427	39,750	15,353	12,649
30-Aug	36	7,296	20,193	6,903	5,110	11,032	8,097	12,250	25,274	22,913	20,105	45,368	4,112
6-Sep	37	17,740	8,982	6,362	20,149	29,820	19,652	8,004	15,674	22,509	11,180	13,083	1,852
13-Sep	38-42	18,602	6,419	23,689	7,980	22,099	54,893	55,708	53,618	44,058	41,970	21,811	26,325
Yearly Total		129,057	82,433	157,086	196,583	126,028	132,549	207,257	258,095	213,500	193,227	192,308	118,662
Weekly Mean		8,066	5,152	9,818	12,286	7,877	8,284	12,954	16,131	13,344	12,077	12,019	7,416
Early Stock Catch		37,411	27,912	79,212	100,639	26,431	25,244	60,686	100,835	73,419	40,924	20,247	52,453
Late Stock Catch		91,646	54,521	77,874	95,944	99,597	107,305	146,571	157,260	140,081	152,303	172,061	66,209

Mid-Week Date	Stat Week	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1976-1999 Average
31-May	23	0	62	0	1	0	0	0	0	0	0	0	0	3
7-Jun	24	0	689	202	44	10	0	0	57	0	476	592	258	98
14-Jun	25	0	13,398	2,358	1,516	53	2,358	0	4,516	987	5,003	4,308	1,127	2,015
21-Jun	26	2,438	19,180	6,021	2,727	3,452	2,886	6,261	7,021	5,954	6,569	14,634	10,292	5,060
28-Jun	27	5,497	18,284	7,966	3,157	6,280	6,120	10,224	10,474	11,981	15,157	29,804	20,235	8,567
5-Jul	28	5,416	13,456	8,758	3,902	5,310	9,787	15,900	14,557	34,411	8,338	31,533	46,640	10,835
12-Jul	29	7,607	20,959	13,254	2,892	12,216	9,417	16,880	11,359	30,905	8,469	36,090	35,884	12,523
19-Jul	30	4,127	25,615	12,637	4,928	10,681	10,541	14,476	20,856	31,177	15,775	31,506	39,289	12,876
26-Jul	31	10,476	15,994	11,372	6,294	7,825	9,317	17,780	19,782	34,786	23,640	32,112	28,573	13,831
2-Aug	32	8,462	35,253	26,950	10,202	15,267	13,613	21,151	22,516	58,568	31,728	41,282	36,690	20,909
9-Aug	33	13,569	18,503	35,594	7,870	25,623	26,504	46,225	20,818	39,784	17,349	36,814	33,663	22,006
16-Aug	34	7,337	21,241	2,948	14,332	15,416	33,161	29,319	44,587	37,510	20,648	31,761	35,772	20,874
23-Aug	35	7,008	21,047	36,947	19,423	36,915	38,108	35,280	28,202	31,720	26,064	31,529	35,087	23,130
30-Aug	36	7,106	12,212	23,929	11,436	22,689	29,950	32,105	17,769	20,683	22,670	19,649	19,154	17,834
6-Sep	37	11,491	16,250	4,020	7,726	8,234	5,901	26,137	23,374	18,089	29,896	27,720	15,695	15,398
13-Sep	38-42	13,532	47,778	14,331	16,245	39,656	112,784	4,012	2,048	2,676	77,078	60,771	40,462	33,689
Yearly Total		104,066	299,921	207,287	112,695	209,627	310,447	275,752	247,937	359,232	308,859	430,106	398,822	219,647
Weekly Mean		6,504	18,745	12,955	7,043	13,102	19,403	17,235	15,496	22,452	19,304	26,882	24,926	13,728
Early Stock Catch		44,023	162,890	89,518	35,663	61,094	64,039	102,673	111,138	208,770	115,155	221,860	218,988	86,718
Late Stock Catch		60,043	137,031	117,769	77,032	148,533	246,408	173,079	136,798	150,462	193,705	208,246	179,834	132,930

Table 7. Weekly and yearly escapement of Chilkat River mainstem sockeye salmon, 1994-1999.

Mid-Week Date	Stat. Week	1994-99								
		1994	1995	1996	1997	1998	1999	Mean	Minimum	Maximum
3-Jun	23								0	0
10-Jun	24		27		69	35	0	33	27	69
17-Jun	25		1,410		270	610	24	578	270	1,410
24-Jun	26	137	2,867	585	162	2,020	254	1,004	137	2,867
1-Jul	27	1,061	3,700	4,428	1,189	1,503	932	2,136	1,061	4,428
8-Jul	28	3,427	3,529	12,508	1,059	1,530	3,289	4,224	1,059	12,508
15-Jul	29	1,434	3,116	10,239	1,433	1,751	1,593	3,261	1,433	10,239
22-Jul	30	2,242	4,283	11,416	3,277	1,763	2,964	4,324	1,763	11,416
29-Jul	31	2,720	3,140	6,615	2,845	2,258	1,521	3,183	2,258	6,615
5-Aug	32	3,170	1,588	5,207	2,222	662	1,675	2,421	662	5,207
12-Aug	33	8,431	1,229	1,036	613	635	997	2,157	613	8,431
19-Aug	34	1,882	449	661	371	129	623	686	129	1,882
26-Aug	35	886	740	398	430	254	150	476	254	886
2-Sep	36	691		217	140	0	224	254	0	691
9-Sep	37	105		59	377	48	0	118	48	377
16-Sep	38				180		77	128	180	180
23-Sep	39									
30-Sep	40-42									
Yearly Total		26,186	26,080	53,369	14,699	13,196	14,324	24,642	13,196	53,369
Weekly Mean		2,182	2,173	4,447	976	943	955	1,666		

Note: Estimates based on mark-recapture methods. Weekly estimates are calculated from stock proportions of sockeye salmon captured in the lower Chilkat River fish wheels.

Table 8. Annual harvests of Chilkat River mainstem and Berners Bay rivers, and other non-Chilkat or Chilkoot lakes, sockeye salmon by week, 1976 to 1999.

Mid-Week Date	Stat Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
14-Jun	25	60	0	548	504	381	143	44	0	355	134	16	0
21-Jun	26	694	2,653	1,759	1,328	56	101	210	49	514	1,688	599	734
28-Jun	27	963	1,330	207	0	725	145	145	255	491	5,173	1,233	6,958
5-Jul	28	1,194	332	386	494	158	150	155	294	383	6,691	4,365	983
12-Jul	29	375	848	316	501	73	181	175	105	309	273	738	872
19-Jul	30	735	116	577	1,414	0	116	172	268	561	522	897	263
26-Jul	31	204	0	486	1,942	76	154	549	1,204	706	746	597	330
2-Aug	32	227	0	0	0	75	67	128	740	536	448	903	350
9-Aug	33	151	0	269	165	8	0	329	663	244	377	948	111
16-Aug	34	132	98	74	492	3	14	0	256	73	68	825	121
23-Aug	35	76	0	29	195	3	0	0	78	130	48	206	22
30-Aug	36	8	0	6	35		0	0	42	48	0	87	0
6-Sep	37	0	0	1	14		0	0	1	0	10	0	7
13-Sep	38-42	23	0		32		0	1	0	0	0	0	0
Yearly Total		4,842	5,377	4,658	7,116	1,558	1,071	1,908	3,955	4,350	16,178	11,414	10,751
Weekly Mean		346	384	333	508	111	77	136	283	311	1,156	815	768

Mid-Week Date	Stat Week	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1976-99 Mean
14-Jun	25	0	3,214	1,823	2,213	0	0		1,282	1,828	1,466			182
21-Jun	26	968	3,381	1,783	6,782	4,926	2,321	1,178	1,165	3,309	1,441	0	0	865
28-Jun	27	6,611	2,440	6,998	4,097	8,241	4,258	2,418	976	1,245	2,070	0	0	1,469
5-Jul	28	4,889	1,742	2,221	2,470	5,650	3,296	2,135	1,696	1,743	1,046	1,309	1,818	1,299
12-Jul	29	5,100	2,030	1,054	3,451	4,275	3,012	2,619	744	2,311	1,133	820	535	397
19-Jul	30	1,057	1,725	4,601	1,012	3,327	2,757	1,323	799	2,660	1,447	1,050	937	470
26-Jul	31	1,316	2,922	4,669	1,729	2,488	1,738	2,400	457	5,535	1,495	4,122	2,444	583
2-Aug	32	442	1,956	4,251	1,138	2,356	879	2,236	385	5,695	769	1,509	1,124	290
9-Aug	33	348	366	3,088	224	1,422	433	2,291	250	2,916	168	1,520	1,093	272
16-Aug	34	101	494	0	151	280	246	1,623	396	1,051	278	921	949	180
23-Aug	35	100	233	297	635	280	33	723	100	333	210	293	417	66
30-Aug	36	122	98	216	0	184	12	263	90	145	95	102	108	21
6-Sep	37	23	19	40	38	0	0	32	61	87	24	31	59	3
13-Sep	38-42	33	5	3	24	0	0	11	29	34	0	6	85	6
Yearly Total		21,110	20,625	31,044	23,964	33,429	18,985	19,252	8,430	28,893	11,642	11,683	9,570	12,992
Weekly Mean		1,508	1,473	2,217	1,712	2,388	1,356	1,481	602	2,064	832	899	736	436

Table 9. Annual escapements of Chilkoot Lake sockeye salmon by week, 1976 to 1999.

Date	Stat. Week												1976-99 Average
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
31-May	23	124	14	844	3	0	0	0	0	333	8	25	11
7-Jun	24	623	9,572	1,957	8,738	0	25	252	467	3,349	6	101	176
14-Jun	25	241	35,751	1,368	2,730	391	1,108	12,220	2,764	11,100	104	163	198
21-Jun	26	3,579	11,150	274	469	1,157	2,177	9,440	8,860	7,444	4,681	224	16,583
28-Jun	27	735	3,361	6,677	407	1,824	559	2,623	4,062	4,406	783	857	6,879
5-Jul	28	397	6,970	1,311	309	2,241	606	1,981	3,304	9,993	463	3,650	3,365
12-Jul	29	1,752	1,844	2,526	95	5,894	7,346	5,095	4,090	6,738	810	2,328	7,000
19-Jul	30	4,091	1,854	7,650	2,871	9,239	15,951	17,574	21,548	11,917	3,601	5,467	8,134
26-Jul	31	28,061	9,016	3,465	22,765	8,294	9,006	20,806	12,747	9,610	19,778	11,438	8,998
2-Aug	32	13,587	9,561	5,157	31,000	20,860	9,963	13,358	4,507	8,020	9,832	21,563	9,944
9-Aug	33	11,827	6,059	2,316	16,091	21,333	15,631	8,287	3,614	5,522	12,501	12,276	5,899
16-Aug	34	5,205	1,019	1,469	5,140	12,968	10,659	4,938	2,720	11,185	7,013	11,839	16,978
23-Aug	35	346	372	155	3,880	10,669	5,028	2,655	3,016	3,435	4,432	6,348	6,018
30-Aug	36	49	403	56	933	1,077	4,519	1,518	4,366	4,474	2,817	5,416	3,918
6-Sep	37	118	103	106	427	479	794	1,404	2,604	2,891	1,546	5,071	738
13-Sep	38	410	2	83	8	45	0	822	1,070	0	480	762	217
20-Sep	39	142	0	12	70	36	0	0	502	0	145	409	112
27-Sep	40-42	10	0	28	10	5	0	0	102	0	26	87	17
Yearly Total		71,297	97,051	35,454	95,946	96,512	83,372	102,973	80,343	100,417	69,026	88,024	95,185
Weekly Mean		3,961	6,066	1,970	5,330	6,032	5,955	6,436	4,464	6,694	3,835	4,890	5,288
Early Stock Esc.		6,737	69,268	10,349	13,026	14,196	8,144	29,127	21,545	37,489	9,424	17,210	29,141
Late Stock Esc.		64,560	27,783	25,105	82,920	82,316	75,228	73,846	58,798	62,928	59,602	70,814	66,044

Date	Stat. Week												1976-99 Average	
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998		1999
31-May	23	0	571	328	1	31	65	309	185	0	873	0	1	162
7-Jun	24	95	4,266	2,060	471	4,744	249	2,687	295	129	2,317	117	59	1,856
14-Jun	25	1,082	21,300	2,778	5,599	8,775	2,592	1,117	243	459	6,677	327	143	5,178
21-Jun	26	1,506	2,466	12,190	3,083	2,310	5,431	4,752	342	1,418	3,433	664	521	4,506
28-Jun	27	22,846	1,009	1,893	2,097	8,450	2,306	4,170	317	1,956	1,407	857	1,980	3,499
5-Jul	28	5,872	913	1,980	2,528	975	5,883	4,241	298	4,393	3,143	676	884	2,847
12-Jul	29	4,389	2,122	0	5,436	1,222	3,488	1,141	325	2,482	2,440	791	668	3,015
19-Jul	30	2,554	2,942	4,989	21,990	2,902	5,021	2,123	1,517	12,040	4,805	1,534	1,734	7,492
26-Jul	31	5,416	3,614	1,853	17,870	9,488	5,864	5,158	1,731	9,163	3,919	1,687	2,706	9,989
2-Aug	32	5,824	4,313	1,995	7,317	7,173	6,807	1,342	417	6,743	3,524	1,924	1,864	8,901
9-Aug	33	5,683	2,157	4,255	8,229	10,572	4,298	2,140	545	3,867	2,606	1,352	1,041	7,263
16-Aug	34	10,851	2,793	13,553	4,115	2,530	4,857	3,220	237	2,655	4,246	1,217	1,108	6,148
23-Aug	35	6,650	3,067	13,734	5,077	3,531	2,222	2,736	270	2,919	2,880	678	3,058	3,918
30-Aug	36	4,544	1,840	9,147	3,988	2,549	899	1,656	472	1,081	1,540	261	2,262	2,501
6-Sep	37	2,646	876	2,128	1,879	1,200	1,427	624	15	969	444	216	990	1,248
13-Sep	38	759	232	365	416	346	418	0	0	465	0	34	265	301
20-Sep	39	381	216	5	294	273	0	0	0	0	0	0	0	113
27-Sep	40-42	176	203	71	248	0	0	0	0	0	0	0	0	43
Yearly Total		81,274	54,900	73,324	90,638	67,071	51,827	37,416	7,209	50,739	44,254	12,335	19,284	68,982
Weekly Mean		4,781	3,050	4,074	5,035	3,726	2,879	2,459	401	2,819	2,459	685	1,071	4,056
Early Stock Esc.		30,765	29,561	21,229	16,497	25,285	16,526	17,276	1,680	8,355	17,850	2,641	3,588	19,710
Late Stock Esc.		50,509	25,339	54,870	74,141	41,786	35,301	20,140	5,529	42,384	26,404	9,694	15,696	49,393

Table 10. Annual harvests of Chilkoot Lake sockeye salmon by week, 1976 to 1999.

Stat												
Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
25	242		2,428	2,072	921	2,286	2,217		2,173	526	251	
26	2,891	22,024	733	1,719	322	2,078	3,832	1,315	6,760	2,294	423	4,838
27	2,457	17,624		2,425		1,750	4,349	2,574	7,686	2,589	2,135	16,332
28	2,953	13,860	1,093	11,723		2,740	5,325	3,882	8,885	6,463	1,035	4,660
29	3,087	16,535	2,458	1,002		9,464	5,585	3,839	21,330	2,046	1,697	44,328
30	6,006	8,698	1,523	5,193	945	8,159	11,347	19,770	49,673	4,595	2,342	46,056
31	2,422	11,583	2,883	7,114	1,931	11,679	36,013	49,231	47,278	17,492	2,068	42,042
32	23,153	11,734	971	25,146	6,974	2,165	28,481	40,832	37,997	23,836	7,901	85,999
33	2,424	6,773	1,133	5,786	6,955	1,578	21,656	41,120	20,685	19,764	21,361	41,439
34	2,381	3,803	738	4,879	1,293	952	16,192	22,533	15,902	48,615	37,864	32,383
35	13,008	511	204	1,921	1,302	539	8,310	28,181	9,903	12,833	20,961	13,503
36	808	124	80	446	128	232	754	21,668	2,980	9,550	9,762	2,537
37	419	26	17	207	39	121	461	5,190	367	1,271	2,206	728
38-42	201	18	3	231	36	49	70	1,334	173	451	424	150
	62,452	113,313	14,264	69,864	20,846	43,792	144,592	241,469	231,792	152,325	110,430	334,995
	4,461	8,716	1,097	4,990	1,895	3,128	10,328	18,575	16,557	10,880	7,888	25,769
	8,543	53,508	4,254	17,939	1,243	8,854	15,723	7,771	25,504	11,872	3,844	25,830
	53,909	59,805	10,010	51,925	19,603	34,938	128,869	233,698	206,288	140,453	106,586	309,165

Stat													1976-99
Week	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Average
25		5,673	2,284	2,701				1,504	1,403	6,934			2,241
26	4,591	12,640	2,546	4,103	7,116	7,692	3,879	1,165	3,971	5,352	160	338	4,283
27	5,961	12,466	8,019	2,933	12,867	9,424	4,682	1,015	1,618	4,492	112	201	5,623
28	14,662	27,293	7,958	6,536	9,143	6,134	2,763	1,866	1,594	1,682	233	386	6,212
29	25,161	43,692	13,233	8,095	14,276	5,786	2,619	744	578	2,322	450	658	9,956
30	22,721	34,439	41,331	8,141	13,654	3,724	1,228	237	779	3,061	330	450	12,267
31	48,921	61,509	29,768	35,267	13,496	4,510	2,400	213	3,355	4,293	380	342	18,175
32	40,664	43,957	34,731	49,985	18,479	2,502	2,609	144	2,983	251	167	769	20,518
33	43,995	33,639	28,539	36,144	19,574	3,500	2,291	250	1,346	180	117	288	15,022
34	14,181	8,205		37,354	12,852	3,089	1,298	396	525	159	76	270	11,563
35	21,734	5,245	4,758	19,334	12,929	2,214	904	232	444	117	140	0	7,468
36	8,951	2,497	3,068	7,322	4,612	2,131	526	90	145	48	19	255	3,281
37	1,931	369	2,440	5,089	1,503	583	97	61	87	24	21	235	979
38-42	495	239	189	1,037	218	135	119	29	34	0		66	248
	253,968	291,863	178,864	224,041	140,719	51,424	25,414	7,946	18,861	28,913	2,206	4,258	115,359
	19,536	20,847	13,759	16,003	10,825	3,956	1,955	568	1,347	2,065	184	328	8,569
	25,214	58,072	20,807	16,273	29,126	23,250	11,323	5,550	8,586	18,459	505	925	16,791
	228,754	233,791	158,057	207,768	111,593	28,174	14,091	2,396	10,275	10,454	1,701	3,333	98,568

Table 11. Selected data for Chilkoot Lake smolt for years 1996-1999, annual autumn hydroacoustic, total adult return, and average annual zooplankton densities for years 1987-1999.

Chilkoot Lake Smolt

Year	Sample Size	Average Weight	Average Length	% Age 1.0	% Age 2.0
1996	25	2.7	66.6	91	9
1997	5	3.0	68.0	N/A	N/A
1998	30	2.2	65.4	84	16
1999	39	1.3	51.0	100	0
Average	24.7	2.3	62.7	91.6	83.3

Average autumn hydroacoustic counts and annual zooplankton density.

Year	Last survey Date	Sockeye Juveniles	Total Adult Return	Zooplankton Density (no./m ²)
1987	10/30	1,344,951	430,180	172,295
1988	10/2	3,066,118	335,242	131,446
1989	10/16	874,794	346,763	46,872
1990	10/25	607,892	252,188	53,987
1991	10/22	475,404	314,679	9,751
1992	N/A	N/A	207,790	N/A
1993	N/A	N/A	103,251	N/A
1994	N/A	N/A	62,830	N/A
1995	11/6	285,477	15,155	26,579
1996	10/24	420,569	69,600	44,081
1997	10/22	761,569	73,167	15,063
1998	10/6	1,302,000	14,552	46,678
1999	10/14	373,000	23,542	14,329
Average		951,177	172,995	56,108

Source: Barto, unpublished data

Table 12. Annual total return of Chilkoot Lake sockeye salmon by week, 1976 to 1999.

Mid-Week Date	Stat Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
31-May	23	124	14	844	3	0	0	0	0	333	8	25	11
7-Jun	24	623	9,572	1,957	8,738	0	25	252	467	3,349	6	101	176
14-Jun	25	483	35,751	3,796	4,802	1,312	3,394	14,437	2,764	13,273	630	414	198
21-Jun	26	6,470	33,174	1,007	2,188	1,479	4,255	13,272	10,175	14,204	6,975	647	21,421
28-Jun	27	3,192	20,985	6,677	2,832	1,824	2,309	6,972	6,636	12,092	3,372	2,992	23,211
5-Jul	28	3,350	20,830	2,404	12,032	2,241	3,346	7,306	7,186	18,878	6,926	4,685	8,025
12-Jul	29	4,839	18,379	4,984	1,097	5,894	16,810	10,680	7,929	28,068	2,856	4,025	51,328
19-Jul	30	10,097	10,552	9,173	8,064	10,184	24,110	28,921	41,318	61,590	8,196	7,809	54,190
26-Jul	31	30,483	20,599	6,348	29,879	10,225	20,685	56,819	61,978	56,888	37,270	13,506	51,040
2-Aug	32	36,740	21,295	6,128	56,146	27,834	12,128	41,839	45,339	46,017	33,668	29,464	95,943
9-Aug	33	14,251	12,832	3,449	21,877	28,288	17,209	29,943	44,734	26,207	32,265	33,637	47,338
16-Aug	34	7,586	4,822	2,207	10,019	14,261	11,611	21,130	25,253	27,087	55,628	49,703	49,361
23-Aug	35	13,354	883	359	5,801	11,971	5,567	10,965	31,197	13,338	17,265	27,309	19,521
30-Aug	36	857	527	136	1,379	1,205	4,751	2,272	26,034	7,454	12,367	15,178	6,455
6-Sep	37	537	129	123	634	518	915	1,865	7,794	3,258	2,817	7,277	1,466
13-Sep	38-42	763	20	126	319	122	49	892	3,008	173	1,102	1,682	496
Yearly Total		133,749	210,364	49,718	165,810	117,358	127,164	247,565	321,812	332,209	221,351	198,454	430,180

Mid-Week Date	Stat Week	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1976-99 Mean
31-May	23	0	571	328	1	31	65	309	185	0	873	0	1	155
7-Jun	24	95	4,266	2,060	471	4,744	249	2,687	295	129	2,317	117	59	1,781
14-Jun	25	1,082	26,973	5,062	8,300	8,775	2,592	1,117	1,747	1,862	13,611	327	143	6,369
21-Jun	26	6,097	15,106	14,736	7,186	9,426	13,123	8,630	1,507	5,389	8,785	824	859	8,622
28-Jun	27	28,807	13,475	9,912	5,030	21,317	11,730	8,852	1,332	3,574	5,899	969	2,181	8,590
5-Jul	28	20,534	28,206	9,938	9,064	10,118	12,017	7,004	2,164	5,987	4,825	909	1,270	8,719
12-Jul	29	29,550	45,814	13,233	13,531	15,498	9,274	3,760	1,069	3,060	4,762	1,241	1,326	12,459
19-Jul	30	25,275	37,381	46,320	30,131	16,556	8,745	3,351	1,754	12,819	7,866	1,864	2,184	19,519
26-Jul	31	54,337	65,123	31,621	53,137	22,984	10,374	7,558	1,944	12,518	8,212	2,067	3,048	27,860
2-Aug	32	46,488	48,270	36,726	57,302	25,652	9,309	3,951	561	9,726	3,775	2,091	2,633	29,126
9-Aug	33	49,678	35,796	32,794	44,373	30,146	7,798	4,431	795	5,213	2,786	1,469	1,329	22,027
16-Aug	34	25,032	10,998	13,553	41,469	15,382	7,946	4,518	633	3,180	4,405	1,293	1,378	17,019
23-Aug	35	28,384	8,312	18,492	24,411	16,460	4,436	3,640	502	3,363	2,997	818	3,058	11,350
30-Aug	36	13,495	4,337	12,215	11,310	7,161	3,030	2,182	562	1,226	1,588	280	2,517	5,772
6-Sep	37	4,577	1,245	4,568	6,968	2,703	2,010	721	76	1,056	468	237	1,225	2,216
13-Sep	38-42	1,811	890	630	1,995	837	553	119	29	499	0	34	331	687
Yearly Total		335,242	346,763	252,188	314,679	207,790	103,251	62,830	15,155	69,600	73,167	14,541	23,542	182,270

Table 13. Estimated annual age compositions and brood year returns of large (\geq age 1.3) chinook salmon immigrating into the Chilkat River, 1991-1999^a.

	AGE CLASS						Total	SE
	1.3		1.4		1.5			
Year	Abundance	SE	Abundance	SE	Abundance	SE		
1991	2,714	489	2,995	541	187	23	5,897	1,005
1992	1,689	309	3,595	662	-	-	5,284	949
1993	2,217	432	2,180	425	75	10	4,472	851
1994	2,405	382	4,276	681	115	15	6,795	1,057
1995	450	93	3,077	664	263	52	3,790	805
1996	4,077	632	788	120	54	6	4,920	751
1997	1,943	354	6,157	930	-	-	8,100	1,193
1998	1,016	169	2,440	381	219	48	3,675	565
1999	534	109	1,656	302	80	27	2,271	408
Percent	37.70%		60.10%		2.20%			
Average	1,894		3,018		110		5,023	

^a Ericksen 1999 data is preliminary.

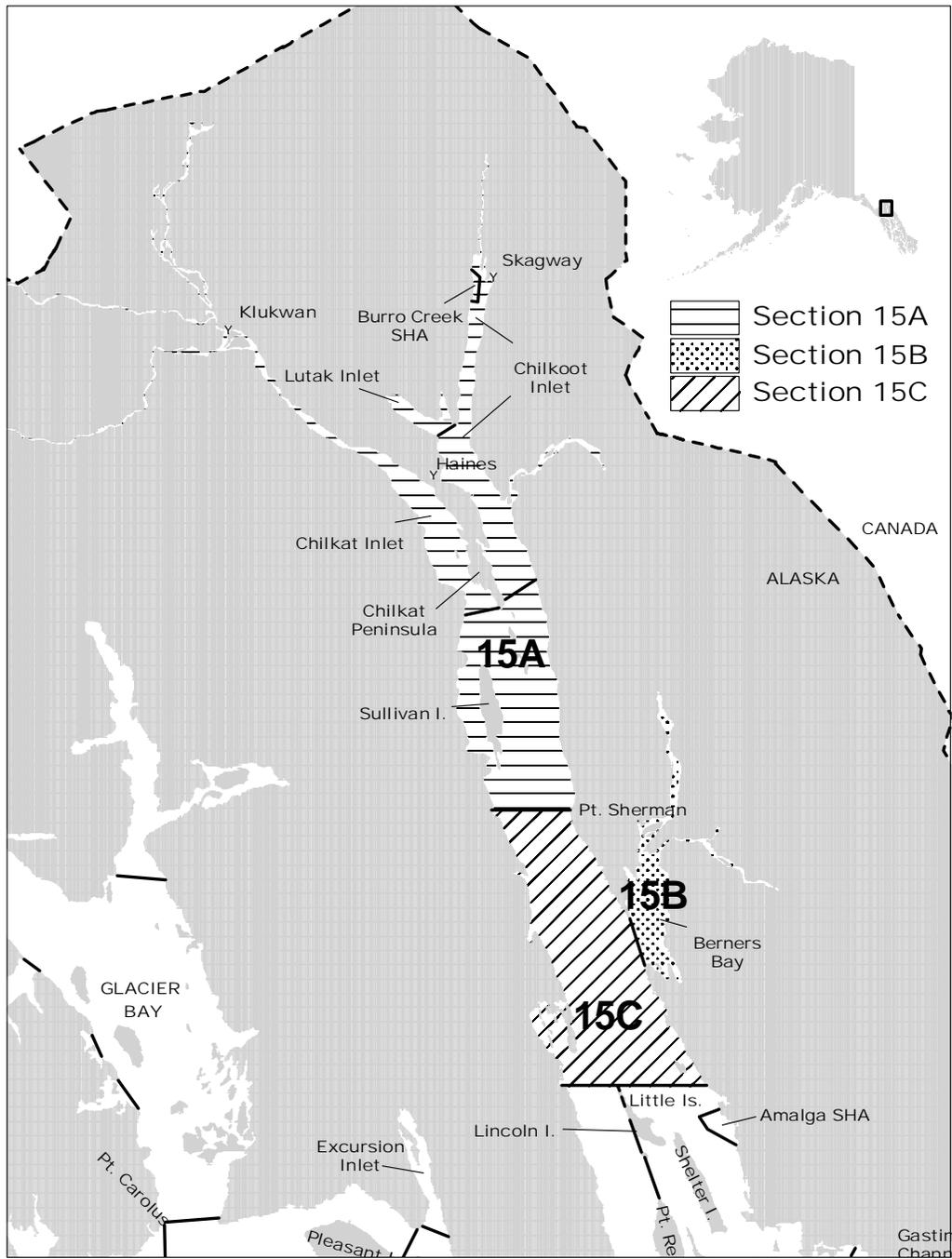


Figure 1. Lynn Canal district and section boundaries.

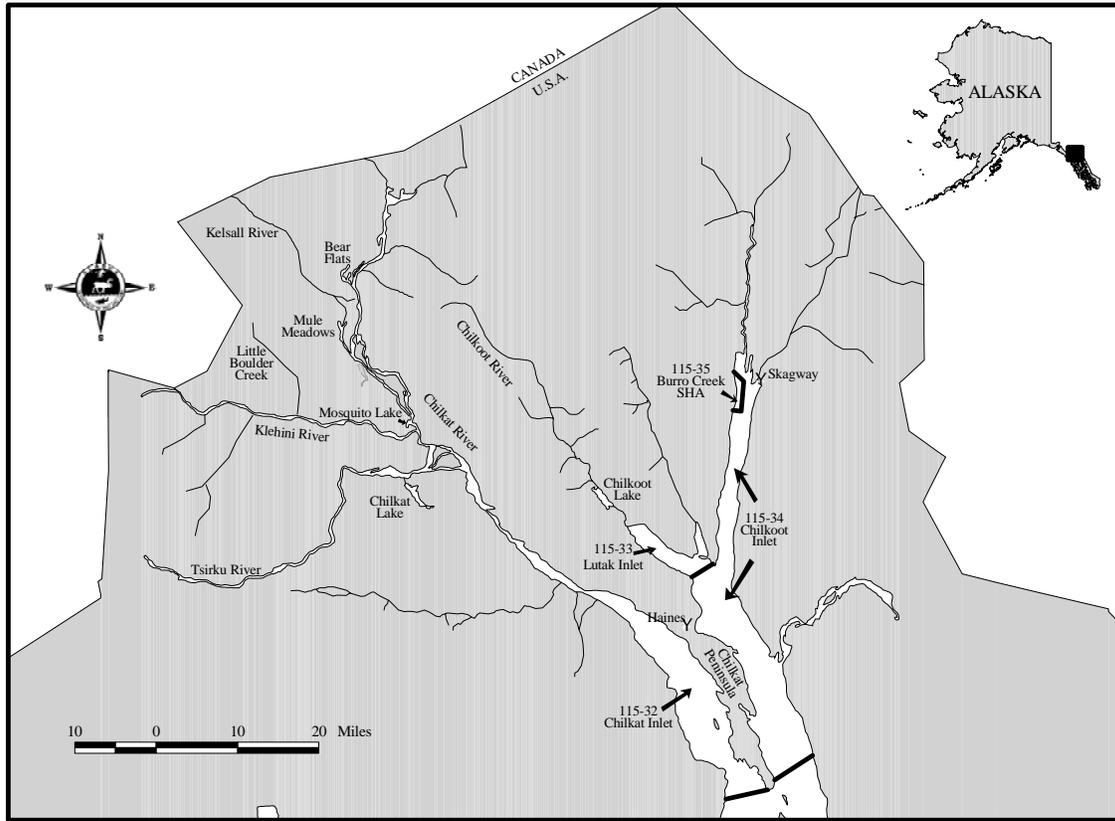


Figure 2. Upper Lynn Canal showing Chilkat and Chilkoot lakes.

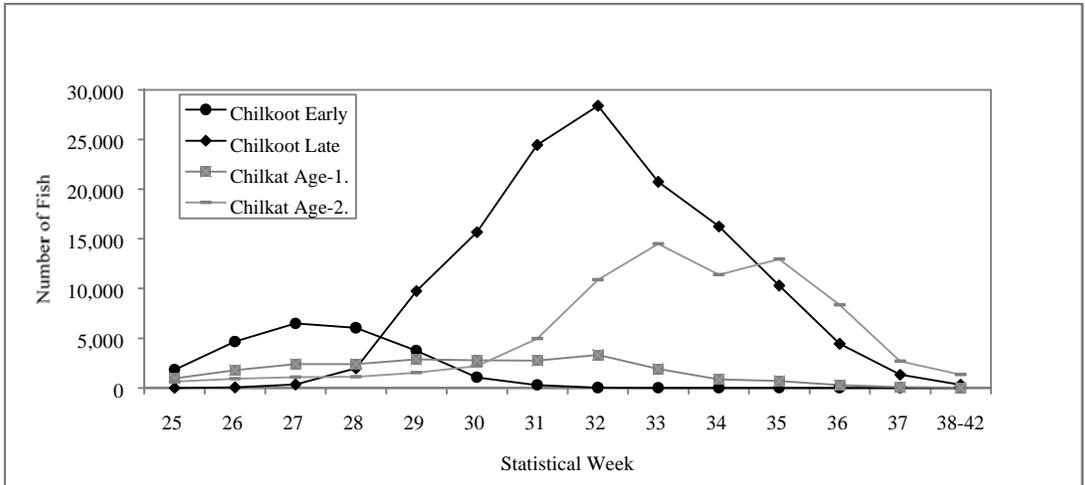


Figure 3. Lynn Canal sockeye salmon weekly abundance by stock. Data for period 1976 to 1992.

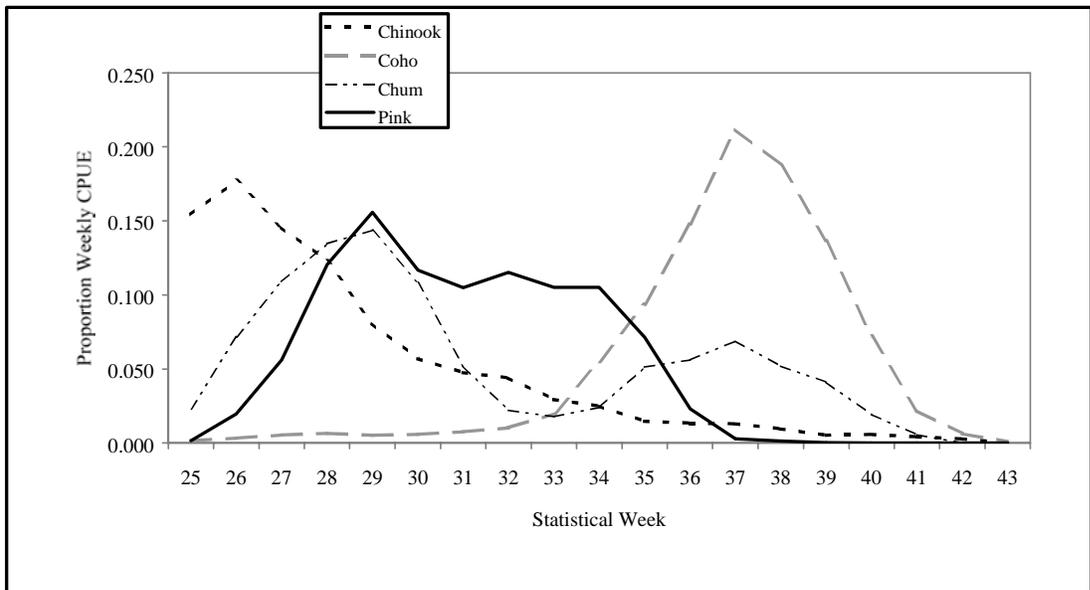


Figure 4. Run timing of chinook, coho, summer and fall chum, and pink salmon in the Lynn Canal drift gillnet fishery. Data for period 1976 to 1992.

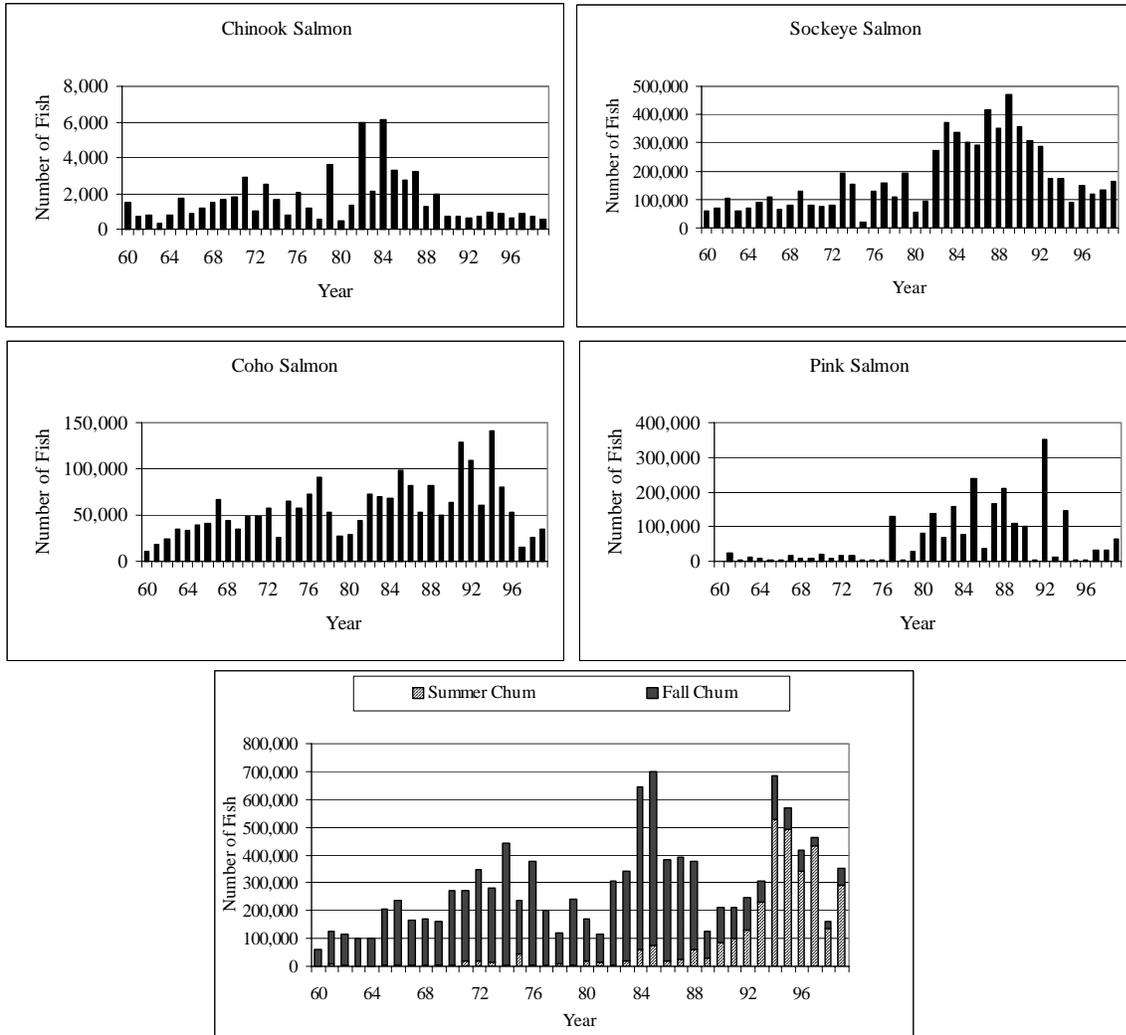


Figure 5. Historical catches of chinook, sockeye, coho, pink, and chum salmon in the District 15 (Lynn Canal) drift gillnet fishery, 1960 to 1999.

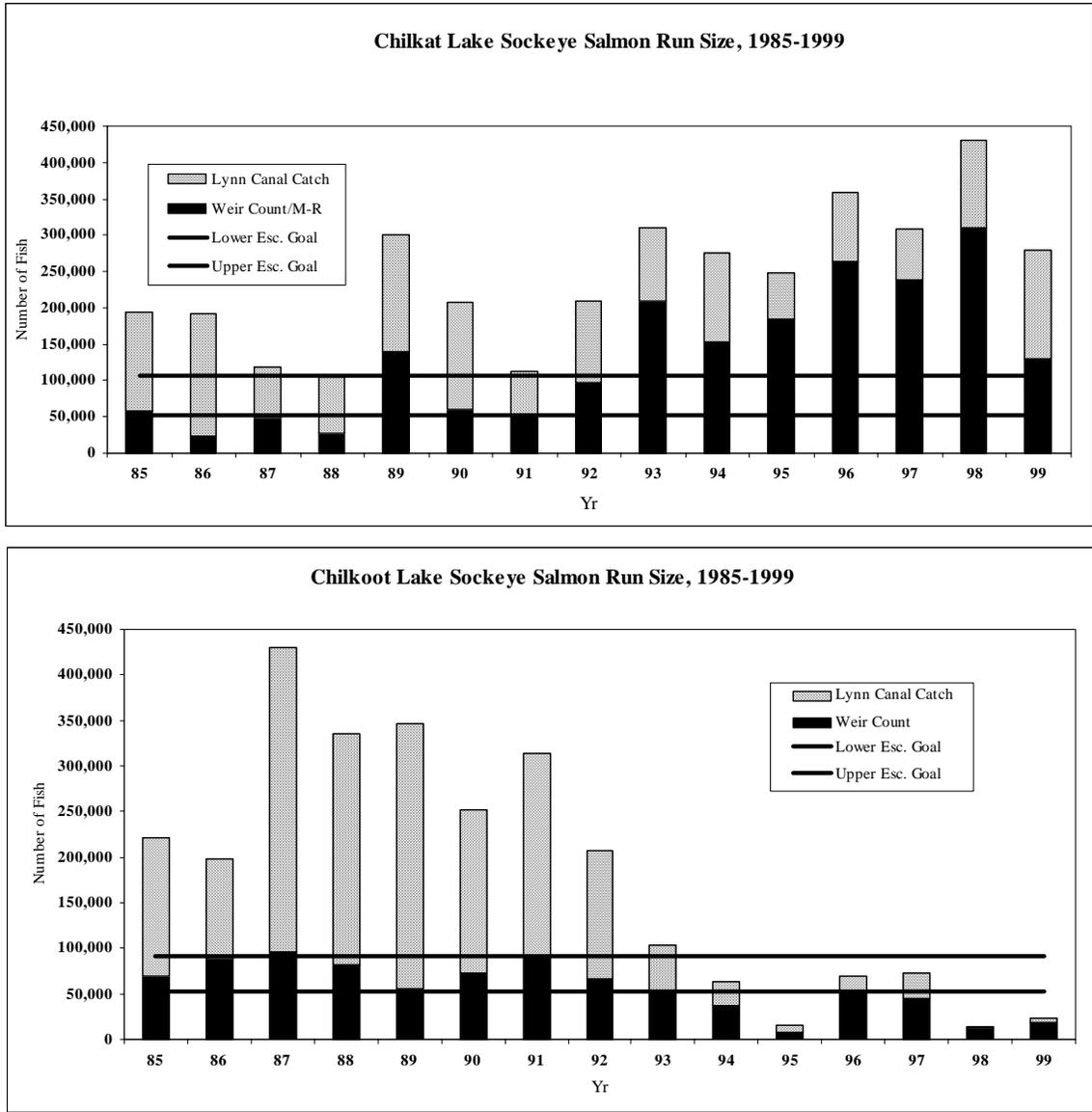


Figure 6. Historical escapement and harvest of Chilkoot and Chilkat Lake sockeye salmon, 1985 to 1999. Note: Escapements estimates in 1994-1998 in Chilkat Lake were based on mark-recapture estimates. Marine harvest for Chilkoot Lake in 1998 was estimated to be 2,200 fish.

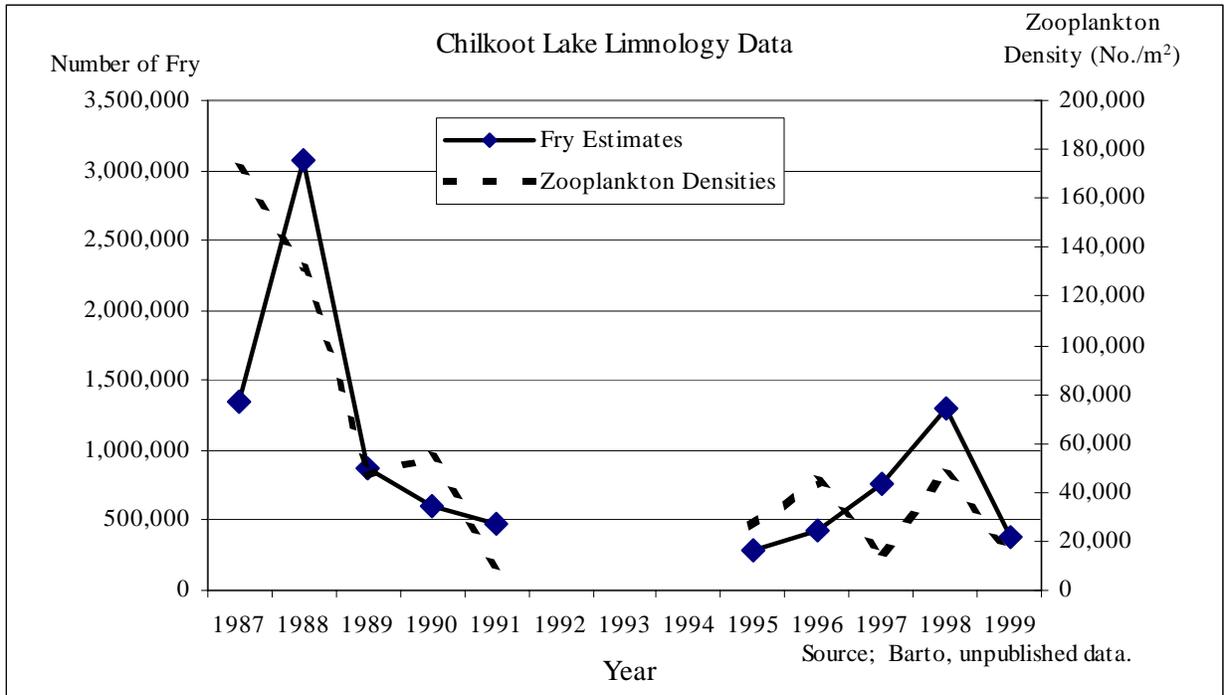


Figure 7. Yearly comparisons of Chilkoot Lake autumn hydroacoustic counts of juvenile sockeye salmon and average zooplankton densities, 1987-91, 1995-1999.

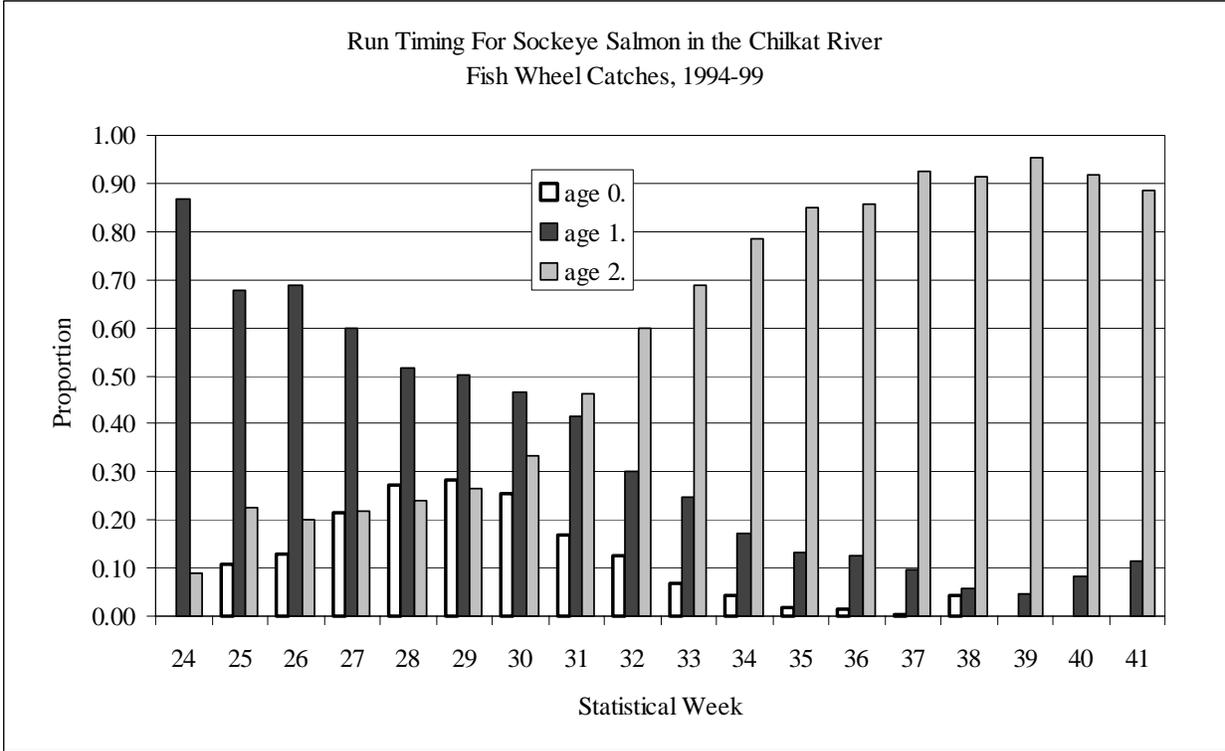


Figure 8. Average 1994-1999 run timing for Chilkat River sockeye salmon stocks (based on scale sample data from fish wheels).

APPENDICES

Appendix 1. Calendar dates for statistical weeks in 2000.

2000 Calendar Weeks

Week	Starting Date	Ending Date	Week	Starting Date	Ending Date
1	1-Jan	1-Jan	28	2-Jul	8-Jul
2	2-Jan	8-Jan	29	9-Jul	15-Jul
3	9-Jan	15-Jan	30	16-Jul	22-Jul
4	16-Jan	22-Jan	31	23-Jul	29-Jul
5	23-Jan	29-Jan	32	30-Jul	5-Aug
6	30-Jan	5-Feb	33	6-Aug	12-Aug
7	6-Feb	12-Feb	34	13-Aug	19-Aug
8	13-Feb	19-Feb	35	20-Aug	26-Aug
9	20-Feb	26-Feb	36	27-Aug	2-Sep
10	27-Feb	4-Mar	37	3-Sep	9-Sep
11	5-Mar	11-Mar	38	10-Sep	16-Sep
12	12-Mar	18-Mar	39	17-Sep	23-Sep
13	19-Mar	25-Mar	40	24-Sep	30-Sep
14	26-Mar	1-Apr	41	1-Oct	7-Oct
15	2-Apr	8-Apr	42	8-Oct	14-Oct
16	9-Apr	15-Apr	43	15-Oct	21-Oct
17	16-Apr	22-Apr	44	22-Oct	28-Oct
18	23-Apr	29-Apr	45	29-Oct	4-Nov
19	30-Apr	6-May	46	5-Nov	11-Nov
20	7-May	13-May	47	12-Nov	18-Nov
21	14-May	20-May	48	19-Nov	25-Nov
22	21-May	27-May	49	26-Nov	2-Dec
23	28-May	3-Jun	50	3-Dec	9-Dec
24	4-Jun	10-Jun	51	10-Dec	16-Dec
25	11-Jun	17-Jun	52	17-Dec	23-Dec
26	18-Jun	24-Jun	53	24-Dec	30-Dec
27	25-Jun	1-Jul	54	31-Dec	31-Dec

Appendix 2a. Historical age composition of sockeye salmon escapements to Chilkat and Chilkoot Lakes 1982 to 1999, and Chilkat River mainstem, 1984-1999.

Chilkat Lake		Year																		
AGE	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	AVG	SE
0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1	0.4	0.7	0.1	0.2	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.2	0.0
1.2	2.3	3.2	1.5	5.1	1.7	1.8	0.8	0.7	1.8	2.1	1.1	6.4	2.6	5.5	10.4	38.8	4.9	1.7	5.1	0.1
1.3	12.9	38.0	22.8	29.9	1.6	24.5	47.3	42.8	14.0	36.1	40.8	15.0	58.6	27.1	67.5	19.9	69.4	31.6	33.3	0.2
1.4	0	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.5	0.1	0.2	0.0	0.1	0.9	0.0	0.0	0.0	0.1	0.1	0.0
2.1	2.6	2.7	1.5	0.9	0.5	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.3	0.0	0.7	0.1
2.2	45.3	27.9	53.6	23.7	20.6	34.2	7.9	28.9	24.8	21.8	16.9	36.2	11.4	17.7	8.8	14.0	19.0	14.3	23.7	0.2
2.3	34.8	27.1	20.2	34.8	73.1	35.0	43.4	27.3	58.0	39.5	40.7	38.7	26.6	48.6	13.3	25.5	6.0	52.0	35.8	0.2
2.4	0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0
2.5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2	1.3	0.1	0.2	0.6	1.9	0.5	0.1	0.0	0.8	0.0	0.0	3.6	0.1	0.1	0.0	0.0	0.0	0.0	0.5	0.0
3.3	0.1	0.0	0.0	0.1	0.5	0.2	0.1	0.1	0.0	0.2	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0

Chilkoot Lake		Year																		
AGE	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	AVG	SE
0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.2	19.0	12.0	4.5	12.2	13.2	8.4	4.4	4.5	2.0	12.5	1.8	2.6	1.8	44.1	6.2	2.2	4.7	28.8	10.3	0.1
1.3	78.4	60.4	86.7	66.4	67.0	69.2	77.9	54.9	45.4	55.9	62.6	35.6	66.9	30.7	84.2	90.2	60.5	46.5	63.3	0.3
1.4	0.9	0.2	0.8	2.4	0.6	0.2	1.4	1.2	1.0	0.4	0.7	0.3	0.6	0.8	0.2	0.1	1.4	2.0	0.8	0.0
2.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.2	0.5	1.4	0.4	2.6	2.2	2.2	2.7	5.0	1.5	4.9	5.8	1.8	1.6	3.8	0.8	0.4	2.1	8.1	2.7	0.1
2.3	0.9	25.8	7.6	15.9	16.8	19.8	13.2	33.5	49.1	25.9	28.3	59.0	28.8	20.0	8.5	7.1	31.0	16.3	22.6	0.2
2.4	0.0	0.0	0.0	0.3	0.1	0.1	0.3	0.4	1.0	0.3	0.5	0.4	0.2	0.7	0.0	0.0	0.1	2.0	0.4	0.0
3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0

-Continued-

Appendix 1a. (page 2 of 2)

<u>Chilkat Mainstem</u>			<u>Year</u>															
<u>AGE</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>	<u>91</u>	<u>92</u>	<u>93</u>	<u>94</u>	<u>95</u>	<u>96</u>	<u>97</u>	<u>98</u>	<u>99</u>	<u>AVG</u>	<u>SE</u>
0.1	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.7	0.5	0.0	2.4	0.0	0.0	0.2	1.2	7.2	1.0	0.2
0.2	6.7	14.7	6.1	9.8	36.6	8.0	36.4	21.5	18.8	1.5	31.5	29.7	11.6	18.3	28.0	65.8	23.6	0.7
0.3	28.1	42.6	49.1	9.8	32.3	56.8	31.8	54.2	26.1	85.1	26.5	36.1	62.4	62.9	42.0	20.3	42.5	0.8
0.4	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0
1.1	0.7	0.0	0.0	0.0	1.1	0.0	0.0	1.0	2.3	0.0	2.4	0.0	0.2	0.0	1.9	2.1	1.0	0.2
1.2	1.5	0.0	14.9	3.9	23.7	2.3	4.5	9.1	3.0	0.0	20.4	12.4	5.6	3.2	7.5	4.2	8.5	0.4
1.3	63.0	39.7	26.3	74.5	5.4	31.8	27.3	13.5	48.9	13.4	16.0	21.5	20.2	15.3	19.6	0.0	23.0	0.7
1.4	0.0	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0
2.2	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.4	0.1	0.1
2.3	0.0	0.7	0.9	2.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
2.4	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix 2b. Historical age composition of Chilkat Lake and Chilkoot Lake sockeye salmon in the Lynn Canal drift gillnet fishery, 1984 to 1999.

Chilkat Lake

AGE	Year																AVG	SE
	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99		
0.2	0.1	0.1	0.2	0.6	0.2	0	0	0.3	0.1	0.1	0	0	0	0	0	0	0.1	0
0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.0	0
1.1	0	0	0	0	0	0.1	0	0	0	0	0.1	0	0	0	0	0	0.0	0
1.2	0.3	0.5	2	0.9	1.8	0.3	1.2	1.8	0.7	1.8	1.4	5.2	2.9	4.1	1.3	0.8	1.7	0.1
1.3	37.8	21.1	9.7	28.6	23.7	30.3	11.5	23.3	25.8	14.9	43.9	29.6	35.4	25.1	46.5	30.9	27.4	0.2
1.4	0	0.5	0	0	0.1	0	0.1	0.1	0.1	0.2	0	0.4	0.1	0.1	0.4	0	0.1	0
2.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
2.2	24.6	14.7	29.2	25.2	17.1	33	34.1	14.1	20.1	19.9	11.6	16.5	20.6	15.4	15.6	22.2	20.9	0.2
2.3	37	62.7	56.9	43.4	56.2	36.1	52.3	59.8	53	60.6	41.2	48	40.8	55.2	36.3	57.0	49.8	0.2
2.4	0	0.1	0.1	0.1	0.1	0	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	0
3.2	0.1	0.2	1.7	0.6	0.4	0	0.6	0	0.1	2.3	0.1	0	0.1	0	0.1	0	0.4	0
3.3	0.1	0	0.2	0.6	0.3	0.1	0	0.4	0.1	0.2	1.6	0.2	0.1	0.1	0.1	0	0.3	0

Chilkoot Lake

AGE	Year																AVG	SE
	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99		
0.2	0.1	0.2	0.5	0	0	0	0.1	0	0	0.2	1.7	2.2	1.3	1.8	0	0	0.5	0
0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
1.1	0	0.1	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0.0	0
1.2	2.3	4.3	7.5	5.3	6.7	3.4	4	6.2	1.9	2	1.2	31.4	9	3.6	5.2	16.5	6.9	0.1
1.3	90.2	78.5	76.8	68.6	78.3	53.2	47	65.7	63.5	48.3	72.2	41.2	80.7	85.6	75.3	50.5	67.2	0.2
1.4	0.3	2	0.6	0.1	0.5	0.3	0.4	0.3	0.6	0.3	0.6	1.4	0.1	0.2	0	1.0	0.5	0
2.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
2.2	0.1	0.8	1.2	0.7	3.3	4.2	2	1.3	2.8	1.1	0.6	2.7	2.1	0.5	3.9	8.7	2.3	0.1
2.3	6.8	13.9	13	25.1	11	38.1	45.9	26.4	30.9	47.7	23.5	20.9	6.8	8.4	15.6	23.3	22.3	0.2
2.4	0.2	0.1	0.3	0.1	0.2	0.1	0.6	0.1	0.1	0.2	0.1	0.1	0	0	0	0	0.1	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
3.3	0	0.1	0.1	0	0	0.7	0.1	0.1	0.1	0.1	0	0.1	0	0	0	0	0.1	0

Appendix 3. Inclusive dates of operation for Chilkoot and Chilkat weirs and Chilkat River fish wheels, 1967 to 1999.

Year	Chilkoot Lake Dates of Weir Operation	Chilkat Lake Dates of Weir Operation	Chilkat River Dates of Fish Wheel Operation
1967	None	6/13-9/02	
1968	None	6/8-9/12	
1969	None	6/4-9/16	
1970	None	5/29-9/17	
1971	None	5/31-10/28	
1972	None	6/3-10/12	
1973	None	6/11-10/15	
1974	None	5/30-9/28	
1975	None	6/4-11/06	
1976	5/30-11/2	6/3-10/21	
1977	5/28-9/11	6/3-9/27	8/21-10/21
1978	6/6-11/7	6/05-11/05	8/14-11/9
1979	6/9-11/5	6/9-11/11	
1980	6/15-10/5	6/15-10/08	
1981	6/10-10/12	6/11-10/22	
1982	6/3-9/16	6/24-10/06	10/5-26
1983	6/4-11/13	6/22-11/12	8/9-10/3
1984	6/3-9/14	6/9-10/07	
1985	6/5-10/21	6/23-10/22	
1986	6/6-10/29	6/16-11/14	
1987	6/4-11/2	6/19-11/20	
1988	6/9-11/12	6/18-11/14	
1989	6/4-10/30	6/5-10/28	
1990	6/3-10/30	6/6-11/13	8/14-10/25
1991	6/7-10/8	7/10-10/24	5/8-7/20
1992	6/2-9/26	6/8-10/15	
1993	6/3-9/30	6/13-10/14	
1994	6/4-9/24	5/20-10/5	6/18-9/11
1995	6/5-9/11	6/8-10/9	6/16-9/16
1996	6/6-9/11	Weir not used	6/22-9/16
1997	6/4-9/9	Weir not used	6/11-10/09
1998	6/4-9/13	6/9-10/13	6/9-10/13
1999	6/4-9/13	6/30-10/28	6/7-10/08

Appendix 4. Data collected from the inseason information system to determine fishery performance by species.

Sockeye Salmon

- a. In-season abundance forecasts: Forecasts will be obtained by comparing current year total return information (catch plus escapement), and expanding those results by historical run timing percentages for each stock.
- b. Escapement tracking: Daily escapements are tracked at the Chilkoot River weir. The weir provides timely data for in-season assessment as fish pass that weir within one week of fishery. Chilkat Lake/River sockeye escapements will be monitored using two fish wheels in the lower Chilkat River. Fish wheel catch alone is not a definitive index of abundance but current year data will be compared to historic data. The Chilkat weir will be operated to provide a site for mark-recovery, biological sampling and an estimate of escapement into Chilkat Lake.
- c. In-season catch figures: are from the ADF&G fish ticket system. In the first 24 hours of an opening interview data from the fleet is used to estimate catches. After that time a subsample of deliveries is expanded to total effort to estimate weekly catch.
- d. Stock contributions: In-season catch stock contributions are estimated each week from random scale samples. Estimates are made for three groups: Chilkoot Lake, Chilkat Lake, and a combination of Berners Bay and Chilkat mainstem. Postseason stock contributions are made to add to the historic database from which models are derived. Escapements are sampled for scales to determine age structure of spawners in order to combine with catch data for spawner-recruit and preseason databases.
- e. Fishery Monitoring: Site specific fishery performance data and scale sampling are used to monitor migration paths and identify areas of overlap between stocks. Information is also provided on fish buildups in specific areas.

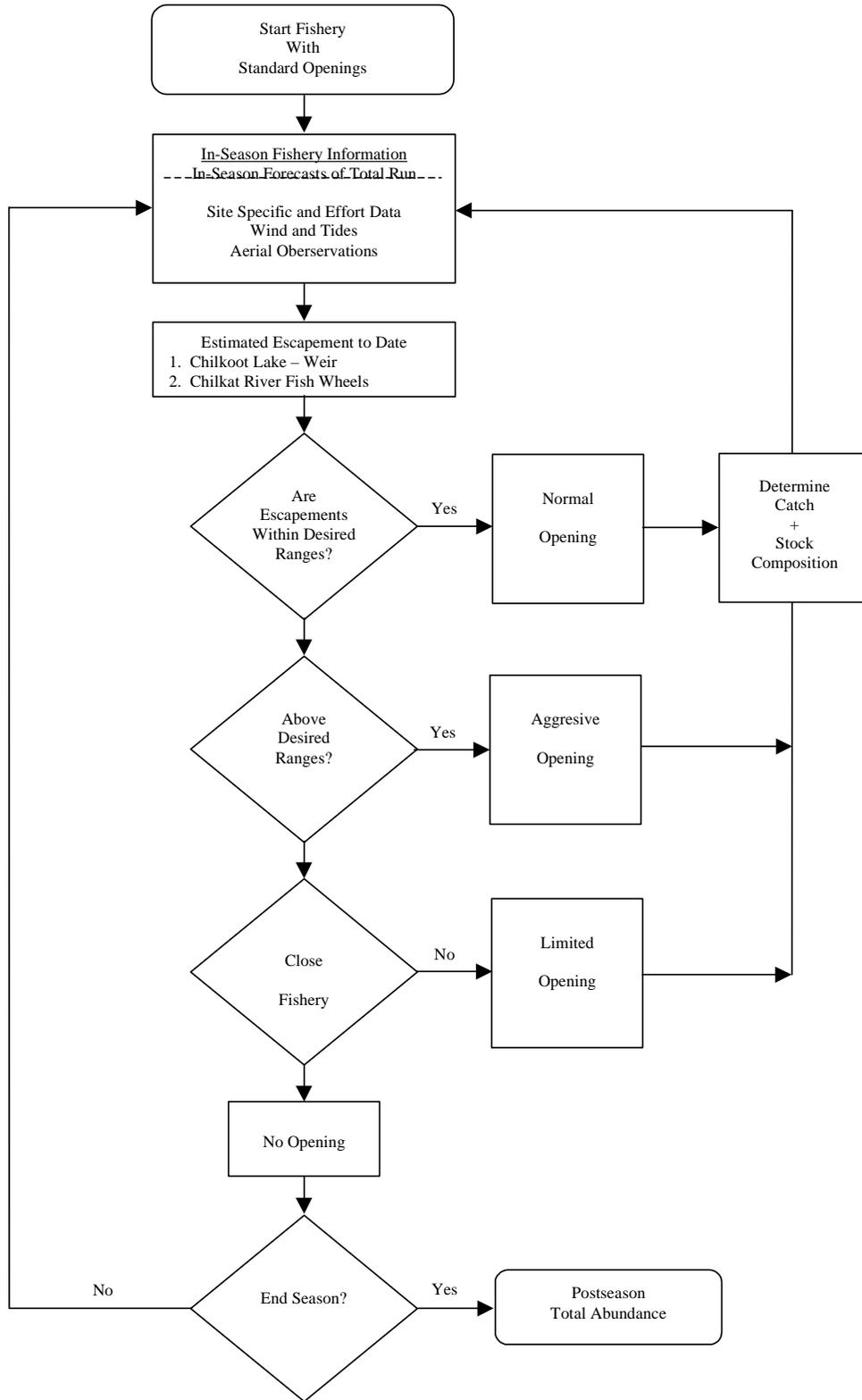
Fall and Summer Chum and Pink Salmon

- a. In-season catch figures: Inseason catch data are obtained from the ADF&G fish ticket system. In the first 24 hours of an opening interview data from the fleet are used to estimate total harvests. After that time, a subsample of deliveries is expanded to total effort to estimate catches.
- b. Aerial surveys and fish wheel catch: Escapement rates and distribution are monitored by aerial survey inseason when feasible and throughout the peak spawning period. Current fish wheel catches of salmon are compared to historical levels to estimate escapement rates.
- c. Fishery Monitoring: Collect catch data and other fishery performance information such as effort level, fishing conditions, influence of northerly winds on rate of entry into Chilkat River, and observations of fish buildups.
- d. Fish Wheel Index: Lower Chilkat River fish wheel catch rates will be compared to the historical database to be used as an indicator of abundance.

Coho Salmon

- a. In-season catch figures: from the ADF&G fish ticket system.
- b. Aerial and Foot Surveys: Peak spawner counts are not obtained until postseason. However, in some index systems, Berners River and Chilkoot Lake, early season surveys provide an indication of escapement rates when water levels and conditions allow.
- c. Fishery Monitoring: Availability of coho salmon is judged by comparing current CPUE and catch to the historical average and by the relative abundance of coho salmon in specific areas.
- d. Fish Wheel Index: Lower Chilkat River fish wheel catch rates will be compared to the historical database to be used as an indicator of abundance.
- e. Berners River Coded-wire Tag Monitoring and Inseason Projections: Coded-wire tag recoveries for Berners River coho salmon are monitored inseason by CFMD staff. Data collected from this program will be used to project the total return of Berners River coho salmon. This system is assumed to be an index for other Lynn Canal coho salmon stocks.

The following schematic diagram generally summarizes how the information collected from the inseason information system is used to determine fishery openings.



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