

THE ALITAK BAY DISTRICT COMMERCIAL SALMON FISHERY, 1998

REPORT TO THE ALASKA BOARD OF FISHERIES

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## INTRODUCTION

The Alitak Bay District is one of seven commercial salmon fishing districts in the Kodiak Management Area (KMA). This district contains 32 known salmon streams. Six species of Pacific salmon migrate through this district, and spawn within streams in the district, including sockeye, pink, chum, coho, chinook, and steelhead. This district is currently managed under the guidelines of an Alaska Board of Fisheries (BOF) approved regulatory management plan, the Alitak Bay District Salmon Management Plan (5AAC 18.361). There are five proposed regulatory changes that concern the Alitak Bay District that will come before the BOF in January, 1999 (Proposals # 114 through 118). This report is intended to provide background information to the BOF concerning the Alitak area salmon resources and fisheries management.

### *Location*

The Alitak Bay District is located at the southern end of Kodiak Island, extending from Cape Trinity, on the Aliulik Peninsula, to the latitude of Low Cape, on the southwest side of Kodiak Island (Figure 1). Within these bounds are included Humpy Cove, Portage and Sulua Bays, Deadman Bay, Alitak Bay, Moser Bay, Olga Bay, and the outside beach from Cape Alitak to Low Cape, which includes Sukhoi Lagoon.

### *Alitak Bay District Management Units*

The Alitak Bay District is currently subdivided into eight sections (Figure 2). Gillnet only and seine only areas have been in effect in the Alitak Bay District since the days of Federal management. This was modified slightly in 1970 when seines were allowed in the entire Alitak Bay District after September 4. Three sections, the Humpy-Deadman, Cape Alitak, and Moser-Olga Bay Sections, are considered the traditional harvest areas. The Humpy-Deadman and Cape Alitak Sections are designated seine gear only. The Moser-Olga Bay Section is designated set gillnet only prior to September 5. The remaining five sections, the Dog Salmon Flats, Inner Akalura, Outer Akalura, Outer Upper Station, and Inner Upper Station Sections, are also designated set gillnet only prior to September 5, but are normally closed to fishing and open only if salmon well in excess of escapement requirements move past the traditional fishing areas

### *History*

Commercial fishing for salmon has a long history in this area, beginning with the Russians in the early 1800's. The first canneries were built in 1889, one in Moser Bay and one in inner Olga Bay. A cannery built in Alitak Bay near the village of Akhiok in 1918 is still in operation today. Sockeye salmon was the species that drew commercial interest to Alitak Bay, with the Olga Lakes (Upper Station system) and Akalura Lake being the major producers. After 1924 pink salmon began to make up a considerable portion of the catch. Gear used was primarily fish traps, plus a few large beach seines and gillnets. Since the 1930's commercial salmon fishing in Olga Bay and in portions

of Moser Bay of the Alitak Bay District has been limited to set gillnets only. Purse seines were first allowed into this district in 1933 when, by regulation, they were allowed to operate outside of Moser Bay from Cape Trinity to Cape Alitak. Fish traps, previously allowed at specific sites in Alitak Bay, were prohibited in 1959 when Alaska received statehood. Both seine and gillnet gear are still allowed to fish this district, though separated into set gillnet only and seine only areas (Figure 2).

As competition for salmon resources increased in the early 1900's, stocks declined. Harvest control was virtually nonexistent prior to 1924, leading to the congressional enactment of the White Act. This Act mandated that escapement should equal 50% of the total run, as determined by harvest reports and escapement counts, with sockeye salmon the principal (if not only) species considered. In Alitak Bay these escapement counts came from fish counting weirs at Upper Station (on Olga Lake) and at Akalura Creek. Closed water sanctuaries were established, and fixed weekly fishing periods and season lengths were adjusted pre-season to perceived run strengths. With little enforcement this was largely ineffective, plus large escapements did not lead to increased productivity. Sockeye runs continued to decline or remained depressed. With Alaska statehood came the concept of fixed, or constant escapement goals, increased research of optimum spawning capacity, stocking of previously barren lake systems, adjustments in escapement goals, increased monitoring and enforcement, emergency order openings and closures based on actual run strength, modifications in gear size and operation, and changes in harvest strategies and management plans, all in the attempt to achieve optimum escapement and maximize the sustainable harvest.

## SALMON RESOURCES

The Alitak Bay District currently has two major sockeye salmon producing systems and several major pink, chum, and coho producing systems. Escapement into district streams is estimated by aerial survey for most systems, with foot surveys on some minor systems, and fish counting weirs installed on major sockeye salmon producing systems. The first weirs, at Upper Station and Akalura, were installed in 1923.

Escapement goals for individual salmon systems have developed over time. As mentioned previously, under Federal management (prior to 1959) escapement objective for major sockeye systems varied each year, with managers attempting to get 50% of annual runs into the streams as escapement. With State management, ADF&G has attempted to achieve fixed goals, based on perceptions of the individual systems production potential. With increased knowledge of each system's response to various escapement levels and their production potentials, escapement goals have been modified (Table 1).

Prior to the late 1980's escapement goals for pink, chum, and coho salmon were set by wide geographical areas, and only for areas where significant production occurred. Escapement goal ranges (with lower and upper bounds) were first listed for major or representative pink, chum, and coho salmon systems in 1988 (Table 2). These goals were meant to be a working range for management, such that accomplishment of escapements within these ranges should insure stable salmon production and allow for continued commercial harvest. Pink salmon returns throughout the

KMA may exhibit an odd numbered year or even numbered year dominance, and pink salmon escapement goals are based on odd-year or even-year production.

### *Sockeye Salmon*

Sockeye salmon are found in at least five streams in the Alitak Bay District (ADF&G 1993), with two relatively large producers (the Upper Station and Frazer Lake systems), and three smaller producing systems (Akalura, Silver Salmon, and Horse Marine systems). All five systems empty into Olga Bay (Figure 1). Historically, the Alitak Bay District systems produced large numbers of sockeye salmon, and commercial catches were second only to those from the Karluk system. The Upper Station and Akalura systems were the major producers. Production from Alitak sockeye systems declined drastically and remained at low levels through the late 1960's (Figure 3). Through the mid 1970's the only major contributor to the Alitak Bay District sockeye salmon catch was Upper Station (Manthey et al 1977). Despite years of poor returns, with sockeye salmon escapements far below current objectives, the Alitak sockeye stocks remained viable and, with protection, have rebuilt (Figure 4).

Sockeye salmon were introduced into the previously barren Frazer Lake from 1951 through 1971. A fishpass, constructed in 1962, allows sockeye to climb above barrier falls near the mouth of the lake. Counts of upstream migrant salmon have been made at the Frazer fishpass since 1962. This introduction is considered very successful, and since the early 1970's has been self-sustaining. In an attempt to rebuild early sockeye runs to Karluk and minor sockeye systems, and to allow the new Frazer Lake run to build, most of the Kodiak Management Area was closed to fishing during June and early July from 1971 through 1977.

Initial attempts at stabilizing production included setting escapement goals for sockeye systems (Table 1). In the early 1970's goals of 175,000 for Frazer sockeye and 180,000 Upper Station sockeye were used. Research on the Frazer Lake escapement goal, conducted from the mid 1960's to late 1970's, indicated a potential optimum of 350,000 to 400,000 spawning sockeye salmon, based on estimates of rearing capacity and the available spawning habitat of Frazer Lake and its tributaries, and assumptions of the optimum spawner density (Blackett 1979). Since the Frazer run was newly established and it was uncertain whether all spawning habitat would be utilized, a lower goal of 175,000 to 250,000 was used. The extensive June and early July closures of commercial fisheries from 1971 through 1977 greatly improved the sockeye salmon escapements into the newly developed Frazer run. As an added benefit of the closures, the early portion of the Upper Station sockeye run began to build. To take advantage of the newly improved production levels very limited commercial fisheries (two 24-hour openings) were allowed in June beginning in 1978. These fisheries were limited to the gillnet only area (the equivalent of the Moser-Olga Bay Section) and occurred on June 14 and June 22.

1978 was also the first year that sockeye salmon escapement goals were listed in preseason management plans (Manthey et al 1978). In developing the Upper Station sockeye salmon escapement goal it was noted that extensive research into the optimum escapement level for this and other systems was lacking. As a result of this "lack of extensive research", many of the initial escapement goals were based on assessment and interpretation of historic production

levels. For Upper Station, the sockeye salmon escapement goal ranged from 100,000 to 180,000 fish. This goal was apportioned out by month, as follows: July-30,000, August-130,000, and September-20,000 fish. The August portion of the goal was further broken down into weekly goals. Note that no portion of the year-end escapement requirement was expected to occur in June. The Frazer goal remained at 175,000 to 250,000 sockeye salmon.

After a large sockeye escapement at Frazer in 1980 (405,000) there were indications that the previous assessment of spawning potential was correct. In 1981 the Frazer goal was raised to 350,000 to 400,000 sockeye salmon. In order to meet the new escapement goal for Frazer, the department continued with a very restrictive management strategy that resulted in some relatively large sockeye harvests in Olga Bay and escapements into Frazer Lake that met and at times exceeded the new goal. These new levels of sockeye available for harvesting attracted the attention of both gillnetters and seiners.

In 1983, a weir was established on the lower portion of the Frazer system, on the Dog Salmon River near saltwater. This allowed an immediate count of sockeye escapement into the river (the fishpass is five miles and four days migration time above the commercial fishery), and allows assessment of salmon buildups on the flats near the river mouth. Also in 1983, the sockeye salmon escapement goal for Upper Station was increased to a range of 150,000 to 250,000 fish. It appears that the main justification for this increase was based on an improved return from only one year (1974) of high escapement. It also appears that the very restricted commercial fishing in June allowed the early segment of the Upper Station sockeye run to build. As this early portion of the run developed, there was interest in harvesting fish that were excess to the escapement needs (there was no Upper Station escapement goal for June). The first June escapement goal was assigned in 1983 when the early portion of the goal was changed from 30,000 sockeye in July to 50,000 sockeye salmon in June and July (Manthey et al 1983). This would indicate that an escapement of 20,000 sockeye would be the June portion of the new goal. In addition the August portion of the goal was increased from 130,000 fish to 175,000 sockeye. The new August goal was again broken down by weekly goals. The September portion of the goal was also increased from 20,000 to 25,000. These escapement goals remained in effect through 1987.

Although the increase in sockeye salmon escapements, combined with favorable environmental conditions, resulted in an increase of sockeye available for harvesting, there were signs that problems were developing with the Frazer sockeye run. In 1985, additional ADF&G research staff were added to the Kodiak salmon program to construct brood tables for Kodiak's major sockeye systems and initiate a formal forecasting program. With the development of formal forecasts for each major sockeye system, the expected timing of the harvests could be projected. This led to breaking Kodiak's long fishing season into early and late segments, with July 15 as the break point. For sockeye systems that have a bimodal time of entry for the early and late-run escapements, July 15 was utilized as a break between the early and late-run escapement goals. Instead of using interim escapement goals by month or week, interim goals were changed to reflect an average escapement time of entry (percent by day). In 1986 ADF&G initiated a test fishery, to be used to estimate the abundance of Frazer bound sockeye salmon entering Olga Bay during closures, and maximize the harvest in traditional fishing areas. This test fishery has been located in Chip Cove, near the narrows leading into Olga Bay, since 1988.

The Frazer Lake sockeye stock did not respond as expected to the higher escapements, with much lower than expected returns coming from the large escapements. The first poor run was in 1984, and the effects of previous over escapements were suspected. Poor sockeye runs to Frazer occurred again in 1986 and 1987. Severe fishery restrictions during June were again employed to assure sufficient escapement reached the Frazer system. The Frazer sockeye escapement goal was lowered to 200,000 to 275,000 sockeye in 1987.

In 1988 the sockeye salmon escapement goals for Upper Station and Frazer Lake were again changed. For Frazer, upon review of escapements and subsequent returns by ADF&G management and research staffs, the goal was reduced to 140,000 to 200,000 sockeye, with an escapement of 140,000 sockeye being the targeted escapement goal (as counted through the Dog Salmon weir). The Frazer stock is essentially an early run (prior to July 15).

For Upper Station, the target escapement goal was raised to 275,000 sockeye, and a minimum goal of 200,000 sockeye salmon established. An early-run component was identified as those fish counted past the weir through July 15, and a late-run component (historically the more productive) was identified as sockeye entering the lakes after July 15. The sockeye salmon escapement goal for the early Upper Station run was changed to a range of 50,000 to 75,000 fish through July 15. This was a large increase from the previous early-run goals (50,000 in June and July, with 20,000 in June). This early-run goal seemed to reflect that there may be a sustainable early run, even though historically only the July-August-September run was recognized. This early goal would also be used as an "action point" to trigger directed fisheries in the normally closed waters of upper Olga Bay. This meant that directed fisheries in the closed waters would not occur unless it appeared that the upper range of the goal would be exceeded. The sockeye salmon escapement goal for the late run to Upper Station was changed to a range of 150,000 to 200,000 fish from July 15 through mid September. This goal recognized that this was still the most productive portion of Upper Station's annual sockeye salmon run.

Sockeye returns to the Alitak Bay District have been at all time highs over the last ten years. However, Upper Station returns in recent years, from brood year escapement levels that have consistently met these higher escapement levels, have not been as productive as expected.

Individual sockeye salmon escapement goals have been formulated for Upper Station (early and late run) and Frazer, and for the minor producing systems of Akalura, Horse Marine, and Silver Salmon. These systems account for 99.9% of the total sockeye salmon escapement in the Alitak Bay District (there are two additional very small sockeye systems known in this district, one in Kempf Bay and one on the Aliulik Peninsula). Weirs are operated annually at Upper Station, Dog Salmon (for Frazer), and, with the exception of 1998, Akalura. Sockeye salmon escapements to Horse Marine and Silver Salmon (and to Akalura in 1998) are usually were estimated by aerial survey. For all systems, the Alitak Bay District escapement goal range is 386,000 to 550,000 sockeye salmon. The sockeye salmon escapement goal for the Alitak Bay District has been met or exceeded each year since 1988, and sockeye escapements have been within the desired range in 6 of the last 10 years (Figure 5). The highest recorded sockeye escapement was 933,852 individuals (1985), and the recent ten-year (1989-1998) average escapement is 549,749 sockeye salmon (Table 3).

The recent ten-year<sup>1</sup> (1988-1998) average harvest is 1,1189,690 sockeye salmon, with the record harvest of 2,062,718 sockeye salmon occurring in 1991 (Table 4).

### *Chinook Salmon*

Chinook salmon fry were planted in the Frazer Lake/Dog Salmon River system from 1966 through 1969 (Blackett 1979). The introduction was successful and chinook salmon still return to the Frazer system. However, the size of the population remains small, with the escapement goal currently established at 110 to 330 chinook salmon. This system accounts for 99.9% of the total chinook salmon escapement in the Alitak Bay District (there are occasionally individual chinook salmon counted in other systems in this district, but are considered strays). The highest recorded escapement was 685 chinook salmon (1996), and the recent ten-year (1989-1998) average escapement has been 382 chinook salmon (Table 3). The escapement goal has been met or exceeded each year since 1988 (Figure 6).

Small numbers of chinook (less than 100) have long been harvested in the Alitak Bay District, even in years prior to the Frazer introductions. The recent ten year<sup>2</sup> (1988-1998) average harvest is 1,028 chinook salmon, with the record harvest of 1,946 chinook salmon occurring in 1994 (Table 5).

### *Coho Salmon*

Coho salmon are known to spawn in at least 15 streams within the district (ADF&G 1993). Sukhoi, Silver Salmon, Akalura, Upper Station, Dog Salmon, Horse Marine, Deadman, Sulua, and Humpy Creeks all have viable, but relatively minor, populations. For coho salmon, there are three representative streams for which escapement goals have been established; Upper Station, Dog Salmon, and Akalura. These three streams account for an average of over 70% (range 48-100%) of Alitak coho salmon escapement counts. Because coho salmon may continue to migrate into streams late into the fall (as late as November), and budgets and weather preclude late season escapement surveys, the escapement goals expressed are considered interim goals. These numbers represent the number of coho salmon that should be counted in these systems by September 15.

The Alitak Bay District escapement goal range is 8,500 to 14,500 coho salmon. Indexed coho escapements in the entire district seldom exceed 30,000 fish. Due to limited escapement monitoring late in the season, coho salmon escapement estimates generally represent minimum numbers. The highest recorded coho escapement was 52,941 individuals (1998), and the recent ten-year (1989-1998) average escapement is 25,846 coho salmon (Table 3). The coho salmon escapement goal has been met or exceeded each year since 1984 (Figure 7).

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<sup>1</sup> 1989 is not included in harvest averages because of unusual harvest patterns as a result of the Exxon Valdez oil spill.

<sup>2</sup> 1989 is not included in harvest averages because of unusual harvest patterns as a result of the Exxon Valdez oil spill.

The recent ten-year<sup>3</sup> (1988-1998) average harvest is 26,917 coho salmon, with the record harvest of 43,914 coho salmon occurring in 1985 (Table 6).

### *Chum Salmon*

Chum salmon escapements have been documented in 14 streams within the Alitak Bay District (ADF&G 1993). Sukhoi supports a large population (escapements in excess of 100,000 have been documented), and the chum salmon runs to Dog Salmon, Deadman, Portage, and Northeast Sulua systems can be significant (greater than 20,000). Yearly indexed chum escapements in the district vary widely, though difficulties identifying chum salmon in streams during large pink salmon returns may be a significant influence. For chum salmon, there are six representative streams for which escapement goals have been identified; the Big Sukhoi, Dog Salmon, and Deadman Rivers and Narrows, Sulua, and Portage Creeks. These six streams account for an average of over 90% (range 67-100%) of Alitak chum salmon escapements.

For all systems, the Alitak Bay District escapement goal range is 26,000 to 78,000 chum salmon. The escapement goal has been met or exceeded in 17 of the last 20 years (Figure 8). The recent ten-year (1989-1998) average escapement is 59,808 chum salmon, and the highest recorded chum escapement (1991) was 139,520 chum (Table 3).

The recent ten-year<sup>4</sup> (1988-1998) average harvest is 72,281 chum salmon, with the record harvest of 191,437 coho salmon occurring in 1971 (Table 7).

### *Pink Salmon*

Pink salmon are generally the most numerous salmon species and certainly the most wide spread, occurring in all known salmon streams (ADF&G 1993). The largest producing systems in the Alitak Bay District are the Humpy, Deadman, and Dog Salmon Rivers. As with most pink salmon populations survival and subsequent return of pink salmon to this district is highly variable. Over the last twenty years these systems have exhibited an odd-year dominance, with larger pink salmon returns occurring in odd numbered years. It should also be noted that the timing of the pink salmon return to the Dog Salmon River varies considerably between odd and even years. On odd numbered years the highest pink escapement counts occur during the last week of July, while on even numbered years peak escapement occurs the last week of August. For pink salmon, there are four representative streams for which escapement goals have been expressed; the Dog Salmon, Deadman, and Humpy Rivers, and Narrows Creek. These four streams, located in different portions of the Alitak Bay District, during odd years account for an average of over 78% of Alitak pink salmon escapements, while during even years they account for over 86% of Alitak pink salmon escapements (range for all years 68-95%).

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<sup>3</sup> 1989 is not included in harvest averages because of unusual harvest patterns as a result of the Exxon Valdez oil spill.

<sup>4</sup> 1989 is not included in harvest averages because of unusual harvest patterns as a result of the Exxon Valdez oil spill.

For all systems, the Alitak Bay District escapement goal range is 162,000 to 486,000 pink salmon in even numbered years, and 212,000 to 636,000 pink salmon in odd numbered years. The escapement goals have been met or exceeded in 19 of the last 20 years (Figures 9 and 10). In the past ten years (1989-1998) the average odd-year escapement is 1,686,015 pink salmon, while the even-year pink escapement is 532,351 (Table 3). The highest recorded pink escapement was 3,796,345 individuals (1995).

During the recent past ten years<sup>3</sup> (1988-1998) the odd-year average harvest is 3,465,042 pink salmon, while the even-year average pink harvest is 661,461 (Table 8). The record harvest of 7,065,924 pink salmon occurred in 1995.

## MANAGEMENT

In the Alitak Bay District, ADF&G attempts to assure that stock specific escapement requirements are met while allowing harvest of surplus fish throughout the run in traditional harvest areas (the Humpy-Deadman, Cape Alitak, and Moser-Olga Bay Sections). The overlap in run timing of various stocks, combined with variations in run size, add to management difficulty. The complexity of managing for several salmon producing systems with various run timings, and the involved fisheries on these stocks, necessitated a detailed overall management plan. To direct management, major systems and target species were identified.

Each year preseason sockeye salmon forecasts are prepared by ADF&G research staff, based on recent year sibling relationships and smolt to adult survival data. Forecasts for other species are formulated based on recent past escapements and assumed production capabilities. To judge inseason run strength various data is used, including salmon counts from weirs, escapement and buildup estimates from aerial surveys, ADF&G test fishery estimates of fish passage into Olga Bay, commercial catch and effort levels, and estimates of the commercial catch stock composition.

### *Management Plans*

Just as escapement goals have been set and modified over time, so has the management of the Alitak Bay District commercial salmon fishery evolved. Various harvest strategies have been applied to the salmon resources, with sockeye salmon as the primary species (Table 1).

As noted earlier, from 1970 through 1977 there was a complete closure of the district during June, to allow Frazer sockeye stocks to build. In 1975 management moved from weekly fishing periods set preseason to commercial openings set inseason by emergency order. In the late 1970's a Moser/Olga Bay Management Plan was formulated by ADF&G area biologists. In 1978, the preseason plan allowed for a minimum of two, single day, fisheries in the district during June (typically near June 14 and June 22). However, only the set gillnet sections were opened.

In the early 1980's, in order to meet Frazer sockeye escapement goals, the department continued with this restrictive management strategy, which resulted in some relatively large sockeye

harvests inside Olga Bay, as well as escapements into Frazer Lake that met and at times exceeded the current goals. These new, increased levels of sockeye available for harvesting in the Alitak Bay District attracted the attention of both gillnetters and seiners (Figure 4). In 1982, catch reporting Statistical Areas were changed so that gillnet harvests could be distinguished between Olga and Moser Bays. In 1982 gillnetters harvested 86% of the sockeye caught in the Alitak Bay District (Table 4).

In 1983, with the Frazer sockeye salmon stock developing well, the Board of Fisheries directed the department to open the Cape Alitak Section (seine gear) concurrently with openings of the Moser-Olga Bay Section (set gillnet only). The Alitak harvest strategy also allowed for the possibility of limited gillnet openings of the normally closed area in upper Olga Bay and near the mouth of the Dog Salmon River (Dog Salmon Flats) in the event of escapements in excess of established goals. Late in the 1983 season, "mop up" fisheries were prosecuted in the normally closed upper Olga Bay area (the equivalent of the Inner and Outer Upper Station and Outer Akalura Sections) and on Dog Salmon Flats, for coho and late Upper Station sockeye salmon (Table 9). In 1983, the first year that the seiners were allowed equal fishing time, the gillnetters harvested 59% of the sockeye harvested in the Alitak Bay District.

Beginning in 1984 a more aggressive harvest strategy was implemented by ADF&G. A June 9 one-day "commercial test fishery" was initiated. This allows an early commercial fishing period for the purpose of assessing the strength of the early sockeye run. This also distributes the Frazer harvest to fishers outside Olga Bay, to Moser Bay gillnet and Alitak Bay seine fishers. The June 9 harvest has been used to trigger another commercial opening as early as June 12. The harvest during this June 9 fishery is still used as an indicator of the actual strength of early-run sockeye stocks.

The Frazer Lake sockeye salmon run was poor in 1984, and the effects of previous over escapements were suspected. Severe fishery restrictions during June were employed to assure sufficient escapement reached the Frazer system. Upper Station experienced a good sockeye run, and an upper Olga Bay mop up fishery was necessary (Table 9). In 1985 the Frazer sockeye run was strong, and the first Frazer sockeye salmon mop up fishery was allowed, in the normally closed water section at the stream mouth on Dog Salmon Flats. Poor sockeye runs to Frazer occurred again in 1986 and 1987, which resulted in a minimal amount of fishing time in the traditional harvest locations in the Moser-Olga Bay, Humpy-Deadman, and Cape Alitak Sections.

Upper Station continued to have good returns, exceeding the current escapement goals, and upper Olga Bay mop up fisheries were necessary during June and July of 1986 and 1987 (for the Upper Station early run), and in August of 1986 (for the Upper Station late run). These mop up fisheries were not popular with the majority of KMA commercial fishers. Seine fishers could not access these fisheries because upper Olga Bay area are gillnet only prior to September 5. Many gillnet fishers disliked these upper bay mop up fisheries because a great deal of effort and expense is required to move from their normal sites. Initially, three days advance notice was given to allow gillnet permit holders from Westside Kodiak areas more opportunity to participate.

In 1987, the department proposed to the Board of Fisheries several regulation changes for the Alitak Bay District. The current section boundaries were described, with specific "normal closed water" upper Olga Bay sections defined (the Inner and Outer Akalura, Inner and Outer Upper Station, and Dog Salmon Flats Sections). The existing harvest strategy for the Alitak Bay District was formalized into a regulatory management plan, detailing which species affect fishing time for each section throughout the season. This plan was adopted by the Board of Fisheries in 1987, and in 1988 the Alitak Bay District Salmon Management Plan (5AAC 18.361) went into regulation (Table 10). It is the stated intent that salmon be harvested in the traditional fisheries located in the Humpy-Deadman, Cape Alitak and Moser-Olga Bay Sections.

This plan provides a basic management strategy, with minor differences for even versus odd numbered years. The fishery is to be managed from June 9 through July 15 based on sockeye salmon escapement to the Frazer system; from July 16 through August 9 in even years for sockeye salmon escapement to Upper Station, and in odd years for pink salmon escapements to the Dog Salmon River; from August 10 to August 25 in even years for sockeye salmon escapement to Upper Station, and in odd years on both Upper Station sockeye and Dog Salmon pink escapements; and after August 25 management is based on sockeye and coho salmon escapements to the district streams (ADF&G 1996). The department uses aerial survey and weir escapement counts, qualitative analysis of inseason run timing, catch per unit effort of test and commercial fisheries, and species composition of the catches, to open and close the fishery by emergency order within the guidelines of the management plan.

This plan fully recognized that through July 15 sockeye returning to Frazer Lake would largely determine fishing time in the traditional harvest locations, with the Frazer sockeye run much more productive than the early Upper Station sockeye run. There were no directives in the regulatory management plan to provide opportunities (such as closures) to get early Upper Station sockeye past the traditional harvest locations if there was a harvestable surplus of Frazer sockeye. It was assumed that a sufficient number of early Upper Station sockeye (necessary to sustain the run) would escape to spawn in the course of managing the traditional fishing areas to meet Frazer sockeye escapement goals. With the improvement in the Frazer sockeye salmon production the June 9 commercial test fishery has triggered additional fishing time beginning June 12 in 1990, 1991, 1993, 1995, and 1996.

With the current good production, the reduced Frazer goal has been fairly easy to achieve. In years of very large runs the sockeye escapement into the Frazer system may continue to exceed daily interim escapement goals despite nearly continuous fishing in the traditional harvest areas (the Cape Alitak, Humpy-Deadman, and Moser-Olga Bay Sections), requiring short mop up fisheries in a portion of the Dog Salmon Flats Section. Dog Salmon Flats openings under these circumstances generally result in the harvest of lower quality fish. Since the adoption of lower Frazer sockeye salmon escapement goals (1988), openings on Dog Salmon Flats targeting Frazer sockeye salmon have occurred in 1988, 1990, 1991, 1994, and 1997.

Similarly, in years of strong late Upper Station sockeye runs and strong coho runs to Olga Bay systems, or in years when low Frazer pink salmon returns may necessitate closures in the traditional harvest areas, openings in normally closed waters of upper Olga Bay were required. Since the adoption of higher Upper Station sockeye salmon escapement goals (1988), Upper Olga Bay

openings, in the Outer and/or Inner Upper Station Sections targeting late Upper Station sockeye and coho salmon, have occurred in 1988, 1991, 1990, 1994, and 1997. An upper Olga Bay opening was allowed in 1988 for early-run Upper Station sockeye salmon. A short mop up fishery for Akalura sockeye occurred in 1992.

Specific statistical area numbers for the upper bay sections were not in place prior to 1995, so a breakdown of catches from the normally closed upper bay sections is not possible.

### ***Gear Restrictions***

An evolution of regulations has also occurred in regards to restrictions on fishing gear allowed in the Alitak Bay District (Table 11). The increased sockeye production in this district has attracted a lot of interest from other set net permit holders to establish a fishing site in the Moser-Olga Bay Section or expand their existing fishing site. This resulted in years of controversy on where and how it is legally permissible to fish a gillnet in the Alitak Bay District.

#### **Seine**

In 1985, a regulation was passed which prevents using a seine as a stationary trap (Table 11). In 1990 the maximum depth limit for purse seines was set at 325 meshes, with mesh size of seines not exceeding seven inches. Purse seines must be between 100 and 200 fathoms in length, and must be between 100 and 325 meshes deep with at least 50 fathoms of the seine at 150 meshes in depth. Beach seines must be between 100 and 225 fathoms in length and must be at least 100 meshes in depth. A lead of no more than 100 fathoms may be used with a purse seine, but the aggregate length of purse seine and lead may not exceed 250 fathoms.

#### **Set Gillnet**

For the set gillnet fishery more changes in regulations have taken place, and some regulations specific to gear operating in the Alitak Bay District have been adopted (Table 11). Prior to 1983 the aggregate length of set gillnets used by an individual could not exceed 150 fathoms, and no more than two set gillnets could be operated by the individual holding the gear license. Set gillnets were required to be operated in a straight line, with no more than 25 fathoms of each net used as a single hook. Seine webbing could be used on the inshore end of the set net as a lead, but only between high and low water marks. The inshore end of the set gillnet was required to be attached to the shore above the mean low water mark. Further, it was stated in regulation that no part of a set gillnet could be placed or operated within 900 feet of any part of another set gillnet. In 1983, a 25 fathom hook in any configuration was allowed.

In 1985 many modifications to gillnet operations were passed into regulation. "Joint venture" set net operations were first allowed. This essentially allows two permit holders to combine their gear, whereby three gillnets, of no more than 150 fathoms in length each, could be operated. Also in 1985 it was specified that set net attachment points must be 900 feet apart and cannot be attached inside closed waters. Further, it was added that the shoreward end of the set gillnet must be attached to the beach above the lowest tide of the day. It was specified that seine webbing on the shoreward end of

a set gillnet may not extend more than 50 fathoms seaward of the beach at lowest tide of the day, except in the Moser-Olga Bay Section where seine webbing may be used only from the high tide mark seaward, and no portion of the seine web may be in water deeper than five feet during the lowest tide of the day.

In 1988 the Board of Fisheries again passed a number of set gillnet regulations. In order to increase the efficiency of terminal gillnet fisheries in the normally closed sections of Olga Bay, minimum distance requirement between units of gear were eliminated. In addition, no set gillnet gear, including running lines, leads, anchors, or buoys, could be in place in the water prior to the opening time.

It was also determined that the shoreward end of a set gillnet must be attached to a point of land that was exposed at the lowest tide of the day or to a rock that was within five feet of the surface at the lowest tide of the day. A rock was defined as any naturally located or created geological formation that shows no evidence of having been located or created through man-made means.

Further, it was passed that in the Moser-Olga Bay Section south of a line from Bun Point to a point on the opposite shore at 56°57'59" N. lat., 154°07'35" W. long. that seine webbing may be used only from high tide seaward, plus no portion of the seine webbing used can be in water deeper than five feet at lowest tide of the day, or the seine web lead length could not exceed 20 fathoms.

In 1990 the BOF passed into regulation the stipulation that in the Alitak Bay District the distance from an attachment point to the shore end of the net is limited to the legal lead distance for that gear location. Also in 1990 a maximum depth limit was placed on set gillnets of 125 meshes.

In 1994, in response to claims that there had been a proliferation of new set gillnet gear into the Moser Bay portion of the Moser–Olga Bay Section, and because of difficulties in enforcing a regulation on set gillnet attachment points based on determination of which rocks were within five feet of the surface at the lowest tide of the day, the BOF passed new regulations on attachment points for set gillnets in the Moser–Olga Bay Section of the Alitak Bay District, to take effect for the 1995 season (ADF&G 1996). Beginning January 1, 1995, the shoreward end attachment point could be no more than 2.1 feet below the surface of the water at mean low water at Alitak Bay. If the shoreward attachment is under water at any time, it must be certified and marked with a permanent survey monument by registered land surveyors. Also, the gillnet attachment can be no more than two feet from the survey monument, and never deeper than the 2.1 foot limit.

## 1998 SEASON SUMMARY

The first commercial salmon fishing period in 1998 for the Alitak Bay District began on June 9. Commercial salmon fisheries occurred in Alitak Bay District management units throughout the season, based on the strength of local sockeye, pink and coho salmon runs. The last Alitak Bay District delivery occurred on October 5. In total, 1,487 chinook, 1,003,245 sockeye, 1,704,581 pink, 40,554 chum, and 32,185 coho salmon were harvested; this includes 655 sockeye and 8 chum salmon harvested in the ADF&G test fishery (Table 12).

Seventy one purse seine permit holders fished in the Alitak Bay District fisheries, and harvested 1,394 chinook (93.7% of the total chinook harvest), 435,018 sockeye (43.4%), 1,266,107 pink (74.2%), 24,492 chum (60.4%), and 17,004 coho (52.8%) salmon (Tables 4-8, and 13). Seventy seven gillnet permit holders fished in the Alitak Bay District, and harvested 93 chinook (6.3%), 567,572 sockeye (56.6%), 438,474 pink (25.8%), 16,054 chum (39.6%), and 15,181 coho (47.2%) salmon. Further, the gillnet harvest can be apportioned between the Moser Bay (statistical area 257-41) and Olga Bay (statistical area 257-40) gillnet fishers (Table 14). Sixty one gillnet permit holders fished in Moser Bay, and harvested 72 chinook, 448,625 sockeye (44.7% of the total sockeye harvest), 300,965 pink, 11,610 chum, and 12,581 coho salmon. Thirty gillnet permit holders fished in Olga Bay, and harvested 21 chinook, 118,947 sockeye (11.9% of the total sockeye harvest), 137,509 pink, 4,444 chum, and 2,600 coho salmon.

### **Early Run**

The Alitak Bay District Salmon Management Plan (5AAC 18.361) dictates that from June 9 through July 15 commercial salmon fishing must be managed in the Cape Alitak, Moser-Olga Bay, and Humpy-Deadman Sections based on the sockeye salmon run to the Frazer system. In 1998, the forecast for the Frazer system was for a run of 539,000 sockeye salmon (range 400,000 to 1,132,000), with a harvestable surplus of approximately 399,000 sockeye salmon. The forecast for the early run to the Upper Station system was 98,000 sockeye salmon (range 42,000 to 206,000), with a harvestable surplus of approximately 48,000 sockeye salmon. Early Upper Station sockeye salmon are taken incidentally during fisheries primarily targeting Frazer system sockeye salmon or in directed fisheries in upper Olga Bay.

The first fishing period for these sections was the 33-hour commercial test fishery beginning on June 9. The June 9 fishery was good, resulting in a harvest of 42,179 sockeye salmon, indicating a large run to Frazer and/or Upper Station. However, the ADF&G Chip Cove test fishery had record low catches, indicating poor movement of sockeye salmon into Olga Bay. Weather patterns were extremely unusual in the spring of 1998. Heavy rainfall in May and June led to record high water in KMA streams. It was speculated that the large volume of freshwater entering Olga Bay and flushing out through Olga Narrows may have altered salmon movement patterns. Because of flooding the Dog Salmon weir was not completely installed until June 22. The ADF&G technician at Dog Salmon had over ten years experience at this station, so good estimates were made of salmon buildups on Dog Salmon Flats and of fish migrating upriver.

Chip Cove test fishery catches remained low. Through June 12 the estimated buildup and escapement of Frazer sockeye salmon at the mouth of the Dog Salmon River was above the expected escapement for that date (Figure 11). But without a clear assessment of the strength of the Frazer sockeye run the second commercial fishery opening was delayed, beginning June 14 for only 33 hours. Commercial catches were very good, including approximately 64,000 sockeye salmon. A surge of fish passed into Olga Bay, as indicated by Chip Cove test fish catches (though cumulative test fish catches remained at record low totals). Estimated escapement continued to exceed interim escapement goals for Frazer sockeye, while the early Upper Station sockeye salmon escapement continued at near the lower goal (Figures 11 and 12). The commercial salmon fishery was opened again on June 17, for 2½ days and, as estimated escapement into the Dog Salmon River continued to exceed interim escapement goals, the fishery was extended twice through June 23.

Though the interim escapement goals for Dog Salmon were being met, the escapement counts were primarily from estimates. Salmon had not begun to pass up through the Frazer fishpass (normal migration time from the weir at the outlet of the Dog Salmon River to the fishpass near Frazer Lake is approximately 4 days). Again it was suspected that high water flow was slowing migration timing. Estimated daily escapement rates through the Dog Salmon weir had slowed. There was some uncertainty and, to ensure that Frazer sockeye escapement would continue to meet the desired goals, a fishery closure was necessary. The Alitak Bay District was allowed to close June 23, to allow a shot of escapement to bypass the commercial fishery.

With the closure, Olga Narrows test fish catches immediately jumped and, within two days, fish were building on Dog Salmon Flats, in the lower creek mouths, and were moving past the weirs. The Alitak Bay District reopened to commercial fishing on June 27. Escapements increased and the estimated total to date remained above the established goals. However, very few sockeye had moved up to or through the fishpass, almost fourteen days after it was estimated that large numbers of sockeye had moved up the river. The commercial fishery closed as scheduled on June 29.

At the beginning of July, sockeye finally began to move through the Frazer fishpass, and large numbers (tens of thousands) were holding below the fishpass. The Alitak Bay District was allowed to reopen to commercial fishing on July 2. Fishing was extended twice, through July 10. At that time, again it was felt that a closure was necessary to allow a pulse of escapement to bypass the fishing grounds and reach the river. The estimated escapement into the river was near the upper escapement goal, and was in fact above the targeted season's goal of 140,000 sockeye by July 15. However, almost 1/3 of that escapement had been estimated as entering the river during mid June when the fish weir was flooded out. Also, though sockeye had begun to ascend the fishpass near Frazer Lake, the numbers were still below what was normal for this time of year and this estimated escapement level. Large numbers of sockeye were still holding below the fishpass, and there was concern that there had been or could be high mortality associated with the extended migratory timing. It was felt that this was the last opportunity to allow additional salmon escapement to move into the upper bay before management concerns switched on July 15 (as dictated by the Alitak Bay Salmon Management Plan).

A 3½ day fishing period began on July 13. Frazer sockeye salmon escapement through the fishpass remained at high numbers and the estimated escapement into the Dog Salmon River was strong, surpassing the desired early-run goal. The Alitak Bay District closed to commercial salmon fishing on July 16. By that date the escapement into the Frazer system included 181,764 sockeye salmon (Figure 11). The escapement into the Upper Station system was approximately 30,730 sockeye salmon (Figure 12).

The Alitak Bay District salmon harvest through July 16 included 1,176 chinook, 533,715 sockeye, 495 coho, 28,911 pink, and 9,023 chum salmon. The sockeye salmon harvest for the outer, seine only, sections (Cape Alitak and Humpy-Deadman) was 256,149 (48.0%), and for the inner, gillnet only, areas (Moser-Olga Bay) was 277,566 (52.0%) sockeye salmon. Post season analyses of commercial catch samples from the Alitak Bay District fisheries indicate that the June 9 through July 15 (early-run) harvest was comprised of approximately 79% Frazer bound sockeye salmon, 18% Upper Station bound sockeye salmon, with 3% of the sockeye harvest unassigned.

## Late Run

The Alitak Bay District Salmon Management Plan (5AAC 18.361) dictates that during even numbered years (as in 1998) from July 16 through August 9 commercial salmon fishing must be managed in the Cape Alitak and Moser-Olga Bay Sections based on the sockeye salmon run to the Upper Station system, and that the Humpy-Deadman Section be managed based on the strength of salmon runs to systems within that section through season's end. The forecasted late-run Upper Station sockeye salmon run was good, estimated at 417,000 (range 48,000 to 848,000) with a harvestable surplus of approximately 267,000. The forecasted pink salmon return for the Alitak Bay District was very good for an even year, at approximately 2.2 million, with a projected harvestable surplus of approximately 1,876,000 pink salmon.

Escapement of sockeye through the Upper Station weir was slow from July 15 to 20, due to the extended fishing that had occurred in the Cape Alitak and Moser-Olga Bay Sections through July 16 (Figure 13). Commercial catches from the last period had indicated that good numbers of sockeye and pink salmon were moving into the district, and it was felt that the recent closure would have allowed a pulse of escapement to move toward Upper Station and districtwide pink salmon streams. The Alitak Bay District opened to fishing for 3½ days beginning July 20. It was expected that during this fishing period both harvest data and early escapement and buildup information would give an indication of run strength to the pink salmon systems in the district and the sockeye run to Upper Station. Catches in the Alitak Bay District were strong for this period, with pink catches indicating that the return may be stronger than forecasted. A 24 hour extension was allowed, with the fishery closing on July 24 to permit a pulse of escapement to pass the fishery.

The Alitak Bay District opened for another 3½ day period on July 27. Though sockeye escapements through Upper Station weir were still below the interim escapement goal there were indications that substantial numbers of sockeye had passed the normal fishing areas and were present in the large closed waters area of upper Olga Bay (migration timing from the fishing areas to Upper Station is normally about 3 to 5 days). Catches were very strong, but escapements into Upper Station were still lagging. The Cape Alitak and Moser-Olga Bay Sections were again allowed to close on July 30, to permit a pulse of escapement to pass the fishery. The Humpy-Deadman Section was extended an additional three days, to allow harvest of pink salmon in excess of escapement requirements.

On August 3 the Cape Alitak and Moser-Olga Bay Sections were allowed to open for a 2½ day fishing period, and the Humpy-Deadman Section was extended an additional three days. Commercial catches were good and sockeye escapement began to increase at Upper Station. Initial escapements of pink salmon in the Humpy-Deadman Section were very good. Near the end of this fishing period, despite the fact that catches indicated large numbers of salmon were moving through the district daily, escapements at Upper Station appeared to be approximately a week behind schedule. Commercial fishing in the Cape Alitak and Moser-Olga Bay Sections closed as scheduled, and the Humpy-Deadman Section fishery continued to be extended. The pink salmon return was strong and by August 4 most seiners were placed on daily catch limits by their processing companies because pink salmon harvests were exceeding daily processing capacity.

The Alitak Bay District Management Plan states that from August 10 to 25 the Cape Alitak and Moser-Olga Bay Sections are to be managed based on the late sockeye salmon run to Upper Station

and the pink salmon return to the Frazer system. Pink salmon escapement through the Dog Salmon weir through August 8 was the highest escapement to date for an even year, and large numbers of pink salmon were staged on Dog Salmon Flats. A commercial fishery opened in the Cape Alitak and Moser-Olga Bay Sections beginning August 10, with another extension of the fishery in the Humpy-Deadman Section. By August 11 the season total pink salmon escapement goal for Dog Salmon River was assured, but sockeye escapements through the Upper Station weir were still below the desired level. It was felt that large numbers of sockeye were present in the large close water area of upper Olga Bay, but without assurance that escapement goals would be met it was decided to allow the Cape Alitak and Moser-Olga Bay Sections to close on August 13. Commercial fisheries in the Humpy-Deadman Section continued to be extended, as escapements in local streams were excellent for this date and catches remained strong.

The Cape Alitak and Moser-Olga Bay Sections opened to fishing again on August 20 for 2½ days. Sockeye escapement to Upper Station was still behind schedule. There had just been a week closure and, based on catches from the last opening and past run timing, the run should have been building in strength, with escapement expected to increase. Counts through the Upper Station weir were good, with sockeye built up near the mouth of the stream. Catches during this opening were very good. However, late-run Upper Station sockeye escapement remained below the desired goal, so once again the Cape Alitak and Moser-Olga Bay Sections closed and commercial fisheries in the Humpy-Deadman Section continued to be extended.

The Alitak Bay District Management Plan states that from August 25 to season's end the Cape Alitak and Moser-Olga Bay Sections are to be managed based on the late sockeye salmon and coho salmon returning to the entire district. Late-run Upper Station sockeye escapements had finally begun to meet interim goals, and were soon expected to surpass the lower goal for the season (150,000). Coho escapements, through the Upper Station and Dog Salmon weirs, were above their respective interim escapement goals. The Cape Alitak and Moser-Olga Bay Sections were allowed to open August 25, and commercial fisheries in the Humpy-Deadman Section continued to be extended.

Interim escapement goals for late-run sockeye, pink, and coho salmon were being met or exceeded in both the Upper Station and Dog Salmon (Frazer) systems. Escapements of pink, coho, and chum salmon continued to meet established goals, and so commercial fishing in the entire Alitak Bay District was extended three times, through the end of the commercial salmon fishing season (October 31).

The Alitak Bay District salmon harvest from July 17 through season end included 311 chinook, 468,875 sockeye, 31,690 coho, 1,675,670 pink, and 31,523 chum salmon. The salmon harvest for the outer, seine only, sections (Cape Alitak and Humpy-Deadman) included 178,869 (38.1%) sockeye and 1,243,118 (74.2%) pink salmon, and for the inner, gillnet only, areas (Moser-Olga Bay) included 290,006 (61.9%) sockeye and 432,552 (25.8%) pink salmon.

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Table 1. Chronology of events affecting the management of commercial salmon fisheries in the Alitak Bay District, Kodiak Management Area, 1960 – 1998.

Year	Management Action or Change
1960	The Alaska Department of Fish and Game assumes management control of salmon fisheries. Weekly fishing periods set pre-season, with Emergency Order closures announced when needed.
1962	Fishpass installed on barrier falls near Frazer Lake.
1970	Continued poor returns of Alitak sockeye stocks leads to complete closure of the Alitak Bay District during June.
1971	Last year of sockeye plants into the Frazer system. Adult returns are sufficient to insure population buildup. Optimum Frazer escapement estimated to be near 120,000 sockeye.
1975	Frazer sockeye escapement goal set at 350,000 - 400,000. Upper Station sockeye escapement goal set at 180,000.
	Fishing periods set in-season by Emergency Order. Limited Entry comes to Kodiak salmon fisheries.
1978	Upper Station sockeye escapement goal listed at 100,000 - 180,000, with interim goals for July (30,000), August (130,000), and September (20,000).
	Minimum of two single day fisheries in June allowed (June 14 and 22). However, only gillnet areas opened (Moser-Olga Bay).
1980	Frazer sockeye salmon escapement goal first met.
1982	Moser-Olga Bay Section split into two statistical areas, so gillnet catch from Moser Bay vs. Olga Bay can be determined.
1983	Equal fishing time mandated for gillnet area (Moser-Olga Bay) and seine areas (Cape Alitak and Humpy-Deadman) during June. Harvest strategy recognizes possible upper Olga Bay closed water gillnet only openings in the event of sockeye escapements higher than established interim goals.
	Upper Station sockeye escapement goal raised to 150,000 - 250,000, with interim goals for June and July (50,000), August (175,000), and September (25,000).
	Weir installed near saltwater on Dog Salmon River (which drains Frazer Lake), in order to assess salmon buildups on Dog Salmon Flats and provide more timely counts of Frazer sockeye escapement.
1984	More aggressive harvest strategy by ADF&G. First June 9 "commercial test fishery" for the Alitak Bay District.
	First poor sockeye return to Frazer; the effects of previous over escapements suspected.
	First gillnet mop up fishery in upper Olga Bay for late-run Upper Station sockeye.
1985	First gillnet mop up fishery on Dog Salmon Flats for Frazer sockeye.
	ADF&G salmon research staff begins development of formal sockeye forecasts. Sockeye runs broken down into early (pre-July 15) and late (post-July 15) runs.
1986	ADF&G early-run sockeye test fishery begins in Moser Bay, near the narrows leading to Olga Bay.
	Second year of weak sockeye return to Frazer system. Record late sockeye run to Upper Station. Gillnet mop up fisheries in upper Olga Bay for early and late-run Upper Station sockeye.

-Continued-

Table 1. (page 2 of 2)

Year	Management Action or Change
1987	<p>Frazer sockeye escapement goal lowered to 200,000 - 275,000. Escapement goals for other Alitak Bay District salmon species first listed.</p> <p>Gillnet mop up fishery in upper Olga Bay for early and late-run Upper Station sockeye.</p>
1988	<p>Alitak Bay District Salmon Management Plan placed in Regulations (SAAC 18.361)</p> <p>Frazer sockeye escapement goal lowered to 140,000 - 200,000. Upper Station sockeye escapement goal raised to 200,000 - 275,000 with early run (pre-July 15) at 50,000 - 75,000, and late run (post-July 15) at 150,000 - 200,000.</p>
1990	<p>New record sockeye harvest in the Alitak Bay District. Gillnet mop up fishery on Dog Salmon Flats for Frazer sockeye, and in upper Olga Bay for late-run Upper Station sockeye.</p>
1991	<p>New record sockeye harvest in the Alitak Bay District. Gillnet mop up fishery on Dog Salmon Flats for Frazer sockeye.</p>
1992	<p>Gillnet mop up fishery at Inner Akalura Section for late-run Akalura sockeye.</p>
1994	<p>Gillnet mop up fishery on Dog Salmon Flats for Frazer sockeye, and in upper Olga Bay for late-run Upper Station sockeye.</p>
1997	<p>Gillnet mop up fishery on Dog Salmon Flats for Frazer sockeye, and in upper Olga Bay for late-run Upper Station sockeye.</p>

Table 2. Salmon escapement goals and representative index streams in the Alitak Bay District of the Kodiak Management Area, 1998.

Stream Number	Stream Name	Run Timing	Current Escapement Goal																																																																
			Lower	Upper																																																															
<b>Alitak Sockeye Systems</b>																																																																			
(257-304)	Upper Station <sup>a</sup>	Early-Run	Early June to Mid July	50,000	75,000																																																														
		Late-Run	Mid July to Mid September	<del>150,000</del> 200,000	<del>200,000</del> 275,000																																																														
(257-403)	Frazer <sup>a</sup>		Early June to Mid July	140,000	200,000																																																														
(257-302)	Akalura <sup>a</sup>		Mid July to Mid September	40,000	60,000																																																														
(257-402)	Horse Marine		Mid July to Mid August	5,000	10,000																																																														
(257-303)	Silver Salmon		Mid July to Mid August	1,000	5,000																																																														
<b>Total Alitak Sockeye Salmon Escapement Goal</b>				<b>386,000</b>	<b>550,000</b>																																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Even-Year Escapement Goal</th> <th colspan="2">Odd-Year Escapement Goal</th> </tr> <tr> <th colspan="2"></th> <th>Lower</th> <th>Upper</th> <th>Lower</th> <th>Upper</th> </tr> </thead> <tbody> <tr> <td colspan="5"><b>Alitak Pink Salmon Systems</b></td> </tr> <tr> <td>(257-701)</td> <td>Humpy</td> <td></td> <td>Mid July to Late August</td> <td>70,000</td> <td>210,000</td> <td>90,000</td> <td>270,000</td> </tr> <tr> <td rowspan="2">(257-403)</td> <td rowspan="2">Dog Salmon<sup>a</sup></td> <td>Even-Year</td> <td>Late July to Early September</td> <td>50,000</td> <td>150,000</td> <td></td> <td></td> </tr> <tr> <td>Odd-Year</td> <td>Early July to Mid August</td> <td></td> <td></td> <td>60,000</td> <td>180,000</td> </tr> <tr> <td>(257-502)</td> <td>Deadman</td> <td></td> <td>Late July to Early September</td> <td>40,000</td> <td>120,000</td> <td>60,000</td> <td>180,000</td> </tr> <tr> <td>(257-401)</td> <td>Narrows</td> <td></td> <td>Late July to Late August</td> <td>2,000</td> <td>6,000</td> <td>2,000</td> <td>6,000</td> </tr> <tr> <td colspan="3"><b>Total Alitak Pink Salmon Escapement Goal</b></td> <td></td> <td><b>162,000</b></td> <td><b>486,000</b></td> <td><b>212,000</b></td> <td><b>636,000</b></td> </tr> </tbody> </table>							Even-Year Escapement Goal		Odd-Year Escapement Goal				Lower	Upper	Lower	Upper	<b>Alitak Pink Salmon Systems</b>					(257-701)	Humpy		Mid July to Late August	70,000	210,000	90,000	270,000	(257-403)	Dog Salmon <sup>a</sup>	Even-Year	Late July to Early September	50,000	150,000			Odd-Year	Early July to Mid August			60,000	180,000	(257-502)	Deadman		Late July to Early September	40,000	120,000	60,000	180,000	(257-401)	Narrows		Late July to Late August	2,000	6,000	2,000	6,000	<b>Total Alitak Pink Salmon Escapement Goal</b>				<b>162,000</b>	<b>486,000</b>	<b>212,000</b>	<b>636,000</b>
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		Current Escapement Goal																																																																	
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<b>Total Alitak Chum Salmon Escapement Goal</b>				<b>26,000</b>	<b>78,000</b>																																																														
<b>Alitak Coho Salmon Systems</b>																																																																			
(257-304)	Upper Station <sup>a</sup>		Mid August to October	3,500	5,500																																																														
(257-403)	Dog Salmon <sup>a</sup>		Mid August to October	3,500	5,500																																																														
(257-302)	Akalura		Mid August to October	1,500	3,500																																																														
<b>Total Alitak Coho Salmon Escapement Goal</b>				<b>8,500</b>	<b>14,500</b>																																																														

<sup>a</sup> Goals reflect escapement as measured by weirs; all others as measured by aerial survey.

Table 3. Historical salmon escapements and goals, by species, for the Alitak Bay District of the Kodiak Management Area, 1970-1998.

Escapement Goals					
	Sockeye	Pink	Chum	Coho	Chinook
		Even : Odd			
Lower	386,000	162,000 : 212,000	26,000	8,500	110
Upper	550,000	486,000 : 636,000	78,000	14,500	330

Escapement of Salmon					
Year	Sockeye	Pink	Chum	Coho	Chinook
1970	80,695	256,898	13,200	2,902	2
1971	163,793	333,800	6,602	4,031	24
1972	188,569	145,000	21,783	7,512	117
1973	150,157	128,566	10,821	6,308	35
1974	403,048	235,788	6,700	9,042	12
1975	163,124	235,744	27,220	13,513	6
1976	223,463	634,115	33,755	11,779	21
1977	218,355	411,508	46,520	9,762	205
1978	274,210	657,337	35,683	6,547	143
1979	332,325	569,185	9,815	11,605	53
1980	528,154	517,905	99,575	3,050	69
1981	579,494	625,206	68,110	8,733	22
1982	920,706	466,829	122,900	10,439	47
1983	467,305	440,358	117,917	14,754	169
1984	396,100	313,518	110,522	7,855	138
1985	933,852	798,638	53,168	10,798	341
1986	621,758	380,321	26,634	11,463	222
1987	295,667	512,694	123,248	18,563	104
1988	612,395	211,868	47,033	15,734	305
1989 <sup>a</sup>	771,359	2,710,821	53,199	20,588	160
1990	563,388	89,013	16,441	26,066	275
1991	636,591	468,244	139,520	32,235	283
1992	491,445	183,124	49,372	21,838	265
1993	458,485	949,662	23,742	21,205	337
1994	518,814	545,907	69,096	18,257	391
1995	470,931	3,796,345	66,438	20,188	470
1996	524,085	490,459	44,387	21,946	685
1997	572,170	505,001	68,857	23,192	662
1998	490,220	1,353,251	67,029	52,941	294
AVERAGES:					
1970-98	450,023	654,038	54,458	15,271	202
1989-98	549,749	1,109,183	59,808	25,846	382
	Odd	1,686,015			
	Even	532,351			

<sup>a</sup> Commercial fisheries severely restricted due to the M/V Exxon Valdez oil spill.

Table 4. Commercial sockeye salmon harvest by gear for the Alitak Bay District, of the Kodiak Management Area, 1970 to 1998.

Year	SEINE <sup>a</sup>			GILLNET <sup>a</sup>			Total Harvest
	# Permits	Harvest	Percent	# Permits	Harvest	Percent	
1970	79	19,528	24	49	62,016	76	81,544
1971	119	55,514	45	47	68,966	55	124,480
1972	69	6,681	30	46	15,446	70	22,127
1973	45	3,889	38	38	6,449	62	10,338
1974	73	33,323	49	45	34,420	51	67,743
1975	46	4,746	29	45	11,752	71	16,498
1976	121	28,304	29	56	68,711	71	97,015
1977	75	24,474	31	55	54,338	69	78,812
1978	172	88,921	41	61	129,380	59	218,301
1979	149	158,400	50	63	158,860	50	317,260
1980	96	36,252	18	64	161,514	82	197,766
1981	94	91,525	26	64	254,548	74	346,073
1982	109	67,168	14	66	409,694	86	476,862
1983	158	190,776	41	68	269,311	59	460,087
1984	75	126,515	33	70	256,214	67	382,729
1985	125	262,924	37	75	440,311	63	703,235
1986	146	522,383	42	79	724,983	58	1,247,366
1987	153	193,206	37	73	322,204	63	515,410
1988	123	470,529	42	81	653,318	58	1,123,847
1990	158	690,818	48	91	744,643	52	1,435,461
1991	187	864,944	42	86	1,197,774	58	2,062,718
1992	141	248,699	47	79	276,459	53	525,158
1993	116	474,096	47	76	524,655	53	998,751
1994	111	430,462	46	74	500,866	54	931,328
1995	149	890,194	53	75	782,998	47	1,673,192
1996	138	676,011	46	80	782,204	54	1,458,215
1997	92	282,047	41	78	403,588	59	685,635
1998	71	435,018	43	77	567,572	57	1,002,590
AVERAGES <sup>b</sup> :							
1970-98		263,477	43		352,971	57	616,448
1978-87	128	173,807	36	68	312,702	64	486,509
1988-98	129	546,282	46	80	643,408	54	1,189,690

<sup>a</sup> Harvest in numbers of fish. Data from ADF&G Annual Management Reports and fish ticket summaries.

<sup>b</sup> 1989 not included in averages; commercial fisheries were severely restricted due to the M/V Exxon Valdez oil spill.

Table 5. Commercial chinook salmon harvest by gear for the Alitak Bay District, of the Kodiak Management Area, 1970 to 1998.

Year	SEINE <sup>a</sup>			GILLNET <sup>a</sup>			Total Harvest
	# Permits	Harvest	Percent	# Permits	Harvest	Percent	
1970	79	4	50	49	4	50	8
1971	119	23	70	47	10	30	33
1972	69	9	60	46	6	40	15
1973	45	2	50	38	2	50	4
1974	73	16	84	45	3	16	19
1975	46	0	0	45	0	0	0
1976	121	13	72	56	5	28	18
1977	75	12	60	55	8	40	20
1978	172	294	42	61	400	58	694
1979	149	82	76	63	26	24	108
1980	96	27	82	64	6	18	33
1981	94	39	87	64	6	13	45
1982	109	30	70	66	13	30	43
1983	158	140	88	68	19	12	159
1984	75	258	89	70	32	11	290
1985	125	158	79	75	41	21	199
1986	146	111	83	79	23	17	134
1987	153	93	89	73	12	11	105
1988	123	558	89	81	66	11	624
1990	158	667	83	91	140	17	807
1991	187	740	90	86	81	10	821
1992	141	964	91	79	92	9	1,056
1993	116	1,646	90	76	182	10	1,828
1994	111	1,794	92	74	152	8	1,946
1995	149	718	85	75	130	15	848
1996	138	467	82	80	102	18	569
1997	92	202	69	78	89	31	291
1998	71	1,394	94	77	93	6	1,487
AVERAGES <sup>b</sup> :							
1970-98		374	86		62	14	436
1978-87	128	123	68	68	58	32	181
1988-98	129	915	89	80	113	11	1,028

<sup>a</sup> Harvest in numbers of fish. Data from ADF&G Annual Management Reports and fish ticket summaries.

<sup>b</sup> 1989 not included in averages; commercial fisheries were severely restricted due to the M/V Exxon Valdez oil spill.

Table 6. Commercial coho salmon harvest by gear for the Alitak Bay District, of the Kodiak Management Area, 1970 to 1998.

Year	SEINE <sup>a</sup>			GILLNET <sup>a</sup>			Total Harvest
	# Permits	Harvest	Percent	# Permits	Harvest	Percent	
1970	79	1,227	27	49	3,313	73	4,540
1971	119	777	34	47	1,484	66	2,261
1972	69	647	50	46	642	50	1,289
1973	45	38	30	38	87	70	125
1974	73	661	51	45	623	49	1,284
1975	46	1,586	97	45	41	3	1,627
1976	121	1,676	47	56	1,859	53	3,535
1977	75	572	43	55	771	57	1,343
1978	172	1,327	48	61	1,461	52	2,788
1979	149	6,840	46	63	8,167	54	15,007
1980	96	8,665	66	64	4,455	34	13,120
1981	94	7,611	45	64	9,400	55	17,011
1982	109	17,504	60	66	11,874	40	29,378
1983	158	15,825	55	68	13,122	45	28,947
1984	75	12,409	49	70	12,890	51	25,299
1985	125	22,707	52	75	21,207	48	43,914
1986	146	17,041	56	79	13,507	44	30,548
1987	153	8,481	47	73	9,478	53	17,959
1988	123	18,670	62	81	11,331	38	30,001
1990	158	6,300	35	91	11,876	65	18,176
1991	187	11,783	48	86	12,818	52	24,601
1992	141	11,107	45	79	13,441	55	24,548
1993	116	11,641	60	76	7,630	40	19,271
1994	111	18,186	56	74	14,126	44	32,312
1995	149	10,055	53	75	8,945	47	19,000
1996	138	18,967	53	80	16,562	47	35,529
1997	92	19,860	59	78	13,689	41	33,549
1998	71	17,004	53	77	15,181	47	32,185
AVERAGES <sup>b</sup> :							
1970-98		9,613	53		8,571	47	18,184
1978-87	128	11,841	53	68	10,556	47	22,397
1988-98	129	14,357	53	80	12,560	47	26,917

<sup>a</sup> Harvest in numbers of fish. Data from ADF&G Annual Management Reports and fish ticket summaries.

<sup>b</sup> 1989 not included in averages; commercial fisheries were severely restricted due to the M/V Exxon Valdez oil spill.

Table 7. Commercial chum salmon harvest by gear for the Alitak Bay District, of the Kodiak Management Area, 1970 to 1998.

Year	SEINE <sup>a</sup>			GILLNET <sup>a</sup>			Total Harvest
	# Permits	Harvest	Percent	# Permits	Harvest	Percent	
1970	79	79,433	85	49	13,887	15	93,320
1971	119	178,454	93	47	12,983	7	191,437
1972	69	89,117	94	46	6,018	6	95,135
1973	45	19,880	81	38	4,528	19	24,408
1974	73	21,870	91	45	2,069	9	23,939
1975	46	1,731	61	45	1,122	39	2,853
1976	121	58,926	86	56	9,206	14	68,132
1977	75	62,652	88	55	8,317	12	70,969
1978	172	60,625	84	61	11,541	16	72,166
1979	149	15,245	68	63	7,217	32	22,462
1980	96	59,808	88	64	7,833	12	67,641
1981	94	38,722	63	64	22,791	37	61,513
1982	109	79,398	78	66	22,145	22	101,543
1983	158	85,491	79	68	22,295	21	107,786
1984	75	64,145	76	70	20,779	24	84,924
1985	125	57,077	67	75	27,683	33	84,760
1986	146	63,185	84	79	12,458	16	75,643
1987	153	37,865	63	73	21,858	37	59,723
1988	123	60,693	65	81	32,698	35	93,391
1990	158	32,083	64	91	18,221	36	50,304
1991	187	63,483	76	86	19,520	24	83,003
1992	141	19,642	57	79	14,938	43	34,580
1993	116	39,415	73	76	14,221	27	53,636
1994	111	91,468	82	74	20,723	18	112,191
1995	149	87,163	83	75	18,037	17	105,200
1996	138	45,536	71	80	18,714	29	64,250
1997	92	56,437	66	78	29,273	34	85,710
1998	71	24,492	60	77	16,054	40	40,546
AVERAGES <sup>b</sup> :							
1970-98		56,930	78		15,612	22	72,542
1978-87	128	56,156	76	68	17,660	24	73,816
1988-98	129	52,041	72	80	20,240	28	72,281

<sup>a</sup> Harvest in numbers of fish. Data from ADF&G Annual Management Reports and fish ticket summaries.

<sup>b</sup> 1989 not included in averages; commercial fisheries were severely restricted due to the M/V Exxon Valdez oil spill.

Table 8. Commercial pink salmon harvest by gear for the Alitak Bay District, of the Kodiak Management Area, 1970 to 1998.

Year	SEINE <sup>a</sup>			GILLNET <sup>a</sup>			Total Harvest
	# Permits	Harvest	Percent	# Permits	Harvest	Percent	
1970	79	691,013	73	49	258,858	27	949,871
1971	119	955,531	90	47	110,649	10	1,066,180
1972	69	156,773	83	46	31,704	17	188,477
1973	45	32,486	65	38	17,446	35	49,932
1974	73	321,568	91	45	33,586	9	355,154
1975	46	210,456	89	45	25,255	11	235,711
1976	121	1,361,475	75	56	465,007	25	1,826,482
1977	75	738,853	77	55	222,820	23	961,673
1978	172	3,691,218	88	61	500,538	12	4,191,756
1979	149	1,550,402	93	63	114,008	7	1,664,410
1980	96	1,812,336	88	64	239,937	12	2,052,273
1981	94	1,807,562	87	64	266,067	13	2,073,629
1982	109	380,224	73	66	139,656	27	519,880
1983	158	1,338,208	94	68	90,318	6	1,428,526
1984	75	323,767	75	70	110,039	25	433,806
1985	125	907,028	86	75	150,912	14	1,057,940
1986	146	603,812	83	79	124,393	17	728,205
1987	153	831,927	91	73	84,948	9	916,875
1988	123	251,888	65	81	133,847	35	385,735
1990	158	125,678	87	91	19,249	13	144,927
1991	187	2,261,769	95	86	111,747	5	2,373,516
1992	141	42,942	72	79	16,326	28	59,268
1993	116	3,259,000	94	76	206,473	6	3,465,473
1994	111	1,024,739	91	74	96,093	9	1,120,832
1995	149	6,638,137	94	75	427,787	6	7,065,924
1996	138	339,155	61	80	214,269	39	553,424
1997	92	816,687	85	78	138,566	15	955,253
1998	71	1,266,107	74	77	438,474	26	1,704,581
AVERAGES <sup>b</sup> :							
1970-98	114	1,205,026	88		171,035	12	1,376,061
Odd Years	116	1,642,157	92		151,307	8	1,793,465
Even Years	109	876,216	81		200,195	19	1,076,410
1978-87	128	1,324,648	88	68	182,082	12	1,506,730
Odd Years	136	1,287,025	90	69	141,251	10	1,428,276
Even Years	120	1,362,271	86	68	222,913	14	1,585,184
1988-98	129	1,602,610	90	80	180,283	10	1,782,893
Odd Years	136	3,243,898	94	79	221,143	6	3,465,042
Even Years	124	508,418	77	80	153,043	23	661,461

<sup>a</sup> Harvest in numbers of fish. Data from ADF&G Annual Management Reports and fish ticket summaries.

<sup>b</sup> 1989 not included in averages; commercial fisheries were severely restricted due to the M/V Exxon Valdez oil spill.

Table 9. Chronology of commercial fishery openings in the normally closed waters sections of Olga Bay, in the Alitak Bay District of the Kodiak Management Area, 1983 to 1998.

Year <sup>a</sup>	Dates	Location	Targeted Salmon Stocks
1983	9/6-10/31	Inner and Outer Upper Station, and Outer Akalura	Late Upper Station Sockeye and Upper Olga Bay Coho
	9/26-10/31	Dog Salmon Flats	Dog Salmon and Horse Marine Coho
1984	9/1-6	Inner and Outer Upper Station, and Outer Akalura	Late Upper Station Sockeye and Upper Olga Bay Coho
	9/5-6, 9/10-12, 9/17-19, 9/24-10/31	Dog Salmon Flats	Dog Salmon and Horse Marine Coho
1985	7/3-6	Dog Salmon Flats	Frazer Sockeye
	8/22-25	Inner and Outer Upper Station	Late Upper Station Sockeye
	9/12-10/31	Outer Upper Station and Outer Akalura	Upper Olga Bay Coho
1986	6/22-30	Inner Upper Station	Early Upper Station Sockeye
	6/22-7/10, 7/12-17	Outer Upper Station	Early Upper Station Sockeye
	8/17-27	Inner and Outer Upper Station	Late Upper Station Sockeye
	9/5-10/31	Dog Salmon Flats	Dog Salmon and Horse Marine Coho
1987	6/17-19, 6/24-7/7	Outer Upper Station	Early Upper Station Sockeye
	6/25-28	Inner Upper Station	Early Upper Station Sockeye
1988	6/26-28	Outer Upper Station	Early Upper Station Sockeye
	7/11-12	Dog Salmon Flats	Frazer Sockeye
	8/14-20	Inner Upper Station	Late Upper Station Sockeye
	8/11-20, 8/23-25, 8/30-9/16, 9/19-10/31	Outer Upper Station	Late Upper Station Sockeye and Coho
	9/6-16, 9/19-10/31	Outer Akalura	Late Sockeye and Coho
1990	6/27-7/11, 7/28+30	Dog Salmon Flats	Frazer Sockeye
	8/16-18	Outer Upper Station	Late Upper Station Sockeye
1991	6/30-7/17	Dog Salmon Flats	Frazer Sockeye
	9/11-10/31	Outer Upper Station and Outer Akalura	Upper Bay Sockeye and Coho
1992	8/20	Inner Akalura	Akalura Sockeye
1994	7/20	Dog Salmon Flats	Frazer Sockeye
	8/24-27	Inner and Outer Upper Station	Late Upper Station Sockeye
1997	6/21-22	Dog Salmon Flats	Frazer Sockeye
	8/29	Inner and Outer Upper Station	Late Upper Station Sockeye
	9/7-10/31	Outer Upper Station	Late Upper Station Sockeye and Coho

<sup>a</sup> Prior to 1988 there were no defined Sections in upper Olga Bay, but the equivalent areas are listed.

Table 10. Primary management species and fishery chronology of the Alitak Bay District Salmon Management Plan for the Kodiak Management Area.

Alitak Bay District Salmon Management Plan						
HUMPY-DEADMAN SECTION (SEINE)	CLOSED	FRAZER SOCKEYE (AGGRESSIVE MANAGEMENT STRATEGY)	FRAZER SOCKEYE (CONSERVATIVE MANAGEMENT STRATEGY)	ALITAK BAY PINK, CHUM, AND COHO		
CAPE ALITAK SECTION (SEINE)	CLOSED	FRAZER SOCKEYE (AGGRESSIVE MANAGEMENT STRATEGY)	FRAZER SOCKEYE (CONSERVATIVE MANAGEMENT STRATEGY)	ODD-YEAR CYCLE FRAZER PINK SALMON	ODD-YEAR CYCLE UPPER STATION SOCKEYE	ALL ALITAK DISTRICT COHO SYSTEMS
				EVEN-YEAR CYCLE UPPER STATION SOCKEYE (LATE RUN)	EVEN-YEAR CYCLE UPPER STATION SOCKEYE & FRAZER PINK SALMON	
MOSER-OLGA BAY SECTION (GILLNET) (TRADITIONAL)	CLOSED	FRAZER SOCKEYE (AGGRESSIVE MANAGEMENT STRATEGY)	FRAZER SOCKEYE (CONSERVATIVE MANAGEMENT STRATEGY)	ODD-YEAR CYCLE FRAZER PINK SALMON	ODD-YEAR CYCLE UPPER STATION SOCKEYE	ALL OLGA BAY COHO SYSTEMS
				EVEN-YEAR CYCLE UPPER STATION SOCKEYE (LATE RUN)	EVEN-YEAR CYCLE UPPER STATION SOCKEYE & FRAZER PINK SALMON	
BELOW ARE NORMALLY CLOSED WATER SECTIONS, EXCEPT FOR MOP UP FISHERIES BASED ON:						
OUTER UPPER & INNER UPPER STATION (GILLNET) (NON-TRADITIONAL)	CLOSED	UPPER STATION SOCKEYE (EARLY RUN)		UPPER STATION (LATE RUN)		UPPER STATION SOCKEYE & COHO UPPER STATION COHO
OUTER AKALURA & INNER AKALURA SECTIONS (GILLNET) (NON-TRADITIONAL)	CLOSED	AKALURA SOCKEYE (EARLY RUN)		AKALURA SOCKEYE (LATE RUN)		AKALURA SOCKEYE & COHO AKALURA COHO
DOG SALMON FLATS SECTION (GILLNET) (NON-TRADITIONAL)	CLOSED	FRAZER SOCKEYE		FRAZER PINK SALMON		FRAZER AND HORSE MARINE COHO
	6/9	6/14	6/24	7/16	8/10	8/21 8/26

Table 11. Changes in gear regulation affecting the commercial salmon fisheries in the Alitak Bay District of the Kodiak Management Area, 1983 to 1998.

YEAR	GEAR REGULATIONS
Prior to 1983	<p>The aggregate length of set gillnets used by an individual may not exceed 150 fathoms. No more than two set gillnets may be operated by the individual holding the gear license. Set gillnet shall be operated in substantially a straight line. No more than 25 fathoms of each net may be used as a single hook. Seine webbing may be used as a lead on the shore end between high and low water marks. The inshore end of a set gillnet must be attached to the shore above the mean low water mark.</p>
	<p>No part of a set gillnet may be placed or operated within 900 feet of any part of another set gillnet.</p>
1983	<p>25 fathom of setnet may be used as a single hook, in any configuration.</p>
1985	<p>Joint venture set gillnet sites.</p> <p>Shoreward end of a set gillnet must be attached to the beach above the lowest tide of the day. Set gillnet attachment points must be 900 feet apart and cannot be attached inside closed waters</p> <p>Seine webbing used as a lead may extend on the shoreward end of a set gillnet and may not extend more than 50 fathoms seaward of beach at low tide of day except for Moser-Olga Bay Section where seine webbing used from high tide mark seaward and no portion of the seine web may be in water deeper than five feet during the lowest tide of the day.</p> <p>Seines may not be used as a stationary trap.</p>
1988	<p>For Moser Bay set gillnets outside Bun Point, minimum lead length of 20 fathoms or seine webbing from high tide seaward no deeper than five feet at lowest tide of the day.</p> <p>No minimum distance between set gillnet gear in Olga Bay closed water openings. No running lines or buoys in water prior to openings in normally closed waters,</p> <p>Shoreward end of set gillnet attached to point of land or rock within five feet of the lowest tide of the day (also defined rock - naturally located).</p>
1990	<p>In the Alitak District distance from attachment point to set gillnet limited to legal lead distance for that gear location.</p> <p>Purse seine maximum depth limit 325 meshes with mesh not over 7".</p> <p>Set gillnets maximum depth limit 125 meshes.</p>
1995	<p>Shoreward attachment point for Alitak set gillnet no more than 2.1' below water surface at mean low water (Alitak Bay tide). If attachment point under water at any time it must be marked by permanent survey monument and certified as no more than 2.1' below water surface by registered surveyor. Set gillnet may be attached no more than 2' from monument and never deeper.</p>

Table 12. Salmon harvest, by gear type and by species, for the Alitak Bay District of the Kodiak Management Area, 1998.

	Permits	Landings	CHINOOK		SOCKEYBE		COHO		PINK		CHUM		TOTAL	
			Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
<b>EARLY RUN</b>														
PURSE SEINE	57	388	1,094	19,491	256,149	1,170,928	417	3,521	22,989	86,070	5,910	53,392	286,559	1,333,402
Average Weight -				17.8		4.6		8.4		3.7		9.0		
SET GILLNET	75	1,309	82	1,440	277,566	1,346,267	78	620	5,922	22,484	3,113	25,116	286,761	1,395,927
Average Weight -				17.6		4.9		7.9		3.8		8.1		
EARLY RUN SUBTOTAL		1,697	1,176	20,931	533,715	2,517,195	495	4,141	28,911	108,554	9,023	78,508	573,320	2,729,329
				17.8		4.7		8.4		3.8		8.7		
<b>LATE RUN</b>														
PURSE SEINE	53	685	300	6,848	178,869	884,514	16,587	161,172	1,243,118	4,742,117	18,582	174,053	1,457,456	5,968,704
Average Weight -				22.8		4.9		9.7		3.8		9.4		
SET GILLNET	72	1,740	11	182	290,006	1,530,597	15,103	151,152	432,552	1,713,801	12,941	108,144	750,613	3,503,876
Average Weight -				16.5		5.3		10.0		4.0		8.4		
LATE RUN SUBTOTAL		2,425	311	7,030	468,875	2,415,111	31,690	312,324	1,675,670	6,455,918	31,523	282,197	2,208,069	9,472,580
				22.6		5.2		9.9		3.9		9.0		
<b>SEASON TOTAL</b>														
PURSE SEINE	71	1,073	1,394	26,339	435,018	2,055,442	17,004	164,693	1,266,107	4,828,187	24,492	227,445	1,744,015	7,302,106
Average Weight -				18.9		4.7		9.7		3.8		9.3		
SET GILLNET	77	3,049	93	1,622	567,572	2,876,864	15,181	151,772	438,474	1,736,285	16,054	133,260	1,037,374	4,899,803
Average Weight -				17.4		5.1		10.0		4.0		8.3		
ALL GEAR TOTAL		4,122	1,487	27,961	1,002,590	4,932,306	32,185	316,465	1,704,581	6,564,472	40,546	360,705	2,781,389	12,201,909
				18.8		4.9		9.8		3.9		8.9		
<b>ADF&amp;G TEST FISHERY</b>														
TOTAL	1	9	0	0	655	3,365	0	0	0	0	8	67	663	3,432
Average Weight -				0.0		5.1		0.0		0.0		8.4		

Table 13. Commercial salmon harvest, by species, with percent harvest by gear type, in the Alitak Bay District of the Kodiak Management Area, 1954 - 1998.

YEAR	Chinook			Sockeye			Coho			Pink			Chum			TOTAL		
	Number	GN%	PS%	Number	GN%	PS%	Number	GN%	PS%	Number	GN%	PS%	Number	GN%	PS%	Number	GN%	PS%
1954	3	33%	67%	44,448	94%	6%	1,118	93%	7%	490,038	47%	53%	55,788	19%	81%	591,395	48%	52%
1955	38	74%	26%	56,058	89%	11%	410	68%	32%	1,656,363	15%	85%	100,031	17%	83%	1,812,900	18%	82%
1956	10	10%	90%	62,673	77%	23%	904	25%	75%	335,669	30%	70%	55,967	11%	89%	455,223	34%	66%
1957	7	14%	86%	15,365	88%	12%	378	31%	69%	410,620	12%	88%	49,661	27%	73%	476,031	16%	84%
1958	11	0%	100%	30,542	79%	21%	488	33%	67%	770,851	29%	71%	81,255	8%	92%	883,147	29%	71%
1959	11	18%	82%	24,888	59%	41%	378	30%	70%	544,592	23%	77%	70,589	8%	92%	640,458	23%	77%
1960	29	17%	83%	68,472	77%	23%	2,129	77%	23%	1,561,476	25%	75%	102,432	13%	87%	1,734,538	26%	74%
1961	23	4%	96%	145,781	67%	33%	1,470	49%	51%	1,589,027	14%	86%	60,600	18%	82%	1,796,901	19%	81%
1962	5	20%	80%	124,496	75%	25%	1,792	79%	21%	1,886,769	23%	77%	54,115	26%	74%	2,067,177	26%	74%
1963	30	7%	93%	54,992	60%	40%	1,202	31%	69%	1,522,856	14%	86%	42,836	10%	90%	1,621,916	15%	85%
1964	29	10%	90%	50,167	72%	28%	2,324	76%	24%	1,408,731	46%	54%	34,460	13%	87%	1,495,711	46%	54%
1965	16	6%	94%	68,876	68%	32%	688	16%	84%	1,129,185	11%	89%	20,604	17%	83%	1,219,369	14%	86%
1966	2	50%	50%	70,526	91%	9%	585	78%	22%	429,204	40%	60%	33,153	18%	82%	533,470	46%	54%
1967	6	0%	100%	14,227	82%	18%	50	0%	100%	84,918	66%	34%	17,377	55%	45%	116,578	66%	34%
1968	16	44%	56%	40,662	86%	14%	3,701	79%	21%	1,046,221	21%	79%	29,450	35%	65%	1,120,050	24%	76%
1969	27	37%	63%	98,722	54%	46%	7,240	7%	93%	3,768,917	8%	92%	45,134	15%	85%	3,920,040	10%	90%
1970	8	50%	50%	81,528	76%	24%	4,540	73%	27%	949,488	27%	73%	93,306	15%	85%	1,128,870	30%	70%
1971	33	30%	70%	124,480	55%	45%	2,261	66%	34%	1,066,180	10%	90%	191,437	7%	93%	1,384,391	14%	86%
1972	15	40%	60%	22,127	70%	30%	1,270	51%	49%	187,154	17%	83%	93,236	6%	94%	303,802	18%	82%
1973	4	50%	50%	10,338	62%	38%	125	70%	30%	49,932	35%	65%	24,408	19%	81%	84,807	34%	66%
1974	19	16%	84%	66,605	52%	48%	1,284	49%	51%	363,389	9%	91%	22,220	9%	91%	453,517	16%	84%
1975	0	0%	0%	16,515	72%	28%	1,627	3%	97%	235,720	11%	89%	2,855	40%	60%	256,717	15%	85%
1976	18	28%	72%	96,668	71%	29%	3,518	53%	47%	1,804,003	26%	74%	66,183	14%	86%	1,970,390	28%	72%
1977	20	40%	60%	78,805	69%	31%	1,343	57%	43%	961,673	23%	77%	70,978	12%	88%	1,112,819	26%	74%
1978	694	58%	42%	218,165	59%	41%	2,788	52%	48%	4,191,756	12%	88%	72,166	16%	84%	4,485,569	14%	86%
1979	108	24%	76%	317,906	50%	50%	15,007	54%	46%	1,664,249	7%	93%	22,454	32%	68%	2,019,724	14%	86%
1980	34	21%	79%	208,200	83%	17%	12,972	34%	66%	2,033,236	12%	88%	67,471	12%	88%	2,321,913	18%	82%
1981	45	13%	87%	346,073	74%	26%	17,011	55%	45%	2,073,629	13%	87%	61,513	37%	63%	2,498,271	22%	78%
1982	43	30%	70%	476,862	86%	14%	29,378	40%	60%	519,880	27%	73%	101,543	22%	78%	1,127,706	52%	48%
1983	159	12%	88%	460,087	59%	41%	28,953	45%	55%	1,318,526	7%	93%	107,786	21%	79%	1,915,511	21%	79%
1984	290	11%	89%	382,729	67%	33%	25,299	51%	49%	433,806	25%	75%	84,924	24%	76%	927,048	43%	57%
1985	199	21%	79%	703,186	63%	37%	43,914	48%	52%	1,057,912	14%	86%	84,760	33%	67%	1,889,971	34%	66%
1986	134	17%	83%	1,247,976	58%	42%	30,548	44%	56%	728,205	17%	83%	75,643	16%	84%	2,082,506	42%	58%
1987	105	11%	89%	515,410	63%	37%	17,959	53%	47%	916,875	9%	91%	59,723	37%	63%	1,510,072	29%	71%
1988	624	11%	89%	1,123,474	58%	42%	30,001	38%	62%	385,735	35%	65%	93,391	35%	65%	1,633,225	51%	49%
1990	807	17%	83%	1,435,461	52%	48%	18,176	65%	35%	144,927	13%	87%	50,304	36%	64%	1,649,675	48%	52%
1991	821	10%	90%	2,062,718	58%	42%	24,601	52%	48%	2,373,516	5%	95%	83,003	24%	76%	4,544,659	30%	70%
1992	1056	9%	91%	525,158	53%	47%	24,548	55%	45%	59,268	28%	72%	34,580	43%	57%	644,610	50%	50%
1993	1828	10%	90%	998,751	53%	47%	19,271	40%	60%	3,465,473	6%	94%	53,636	27%	73%	4,538,959	17%	83%
1994	1946	8%	92%	931,328	54%	46%	32,312	44%	56%	1,120,832	9%	91%	112,191	18%	82%	2,198,609	29%	71%
1995	848	15%	85%	1,674,169	47%	53%	19,000	47%	53%	7,065,939	6%	94%	105,224	17%	83%	8,865,180	14%	86%
1996	569	18%	82%	1,458,215	54%	46%	35,529	47%	53%	553,424	39%	61%	65,250	29%	71%	2,112,987	49%	51%
1997	291	31%	69%	685,635	59%	41%	33,549	41%	59%	955,253	15%	85%	85,710	34%	66%	1,760,438	33%	67%
1998	1487	6%	94%	1,002,590	57%	43%	32,185	47%	53%	1,704,581	26%	74%	40,546	40%	60%	2,781,389	37%	63%

Table 14. Sockeye harvest by gear and area in the Alitak Bay District of the Kodiak Management Area, 1982-1998.

Year	Gillnet									Seine			All Gear District Harvest
	Moser Bay			Olga Bay			Total District			Total District			
	Permits	Harvest	%	Permits	Harvest	%	Permits	Harvest	%	Permits	Harvest	%	
1982	56	246,998	52	44	162,696	34	66	409,694	86	109	67,168	14	476,862
1983	61	183,417	40	36	85,894	19	68	269,311	59	158	190,776	41	460,087
1984	62	176,297	46	40	79,917	21	70	256,214	67	75	126,515	33	382,729
1985	70	301,634	43	45	138,677	20	75	440,311	63	125	262,924	37	703,235
1986	67	338,492	27	65	386,491	31	79	724,983	58	146	522,383	42	1,247,366
1987	60	188,343	37	61	133,861	26	73	322,204	63	153	193,206	37	515,410
1988	65	401,887	36	59	251,431	22	81	653,318	58	123	470,529	42	1,123,847
1989 <sup>a</sup>	45	133,983	10	80	1,150,084	90	87	1,284,067	100	1	100	0	1,284,167
1990	73	507,372	35	63	237,271	17	91	744,643	52	158	690,818	48	1,435,461
1991	65	626,061	30	67	571,713	28	86	1,197,774	58	187	864,944	42	2,062,718
1992	65	197,733	38	44	78,726	15	79	276,459	53	141	248,699	47	525,158
1993 <sup>b</sup>	64	384,487	38	35	140,168	14	76	524,655	53	116	474,096	47	998,751
1994	61	364,925	39	43	135,941	15	74	500,866	54	111	430,462	46	931,328
1995 <sup>b</sup>	61	622,810	37	30	160,188	10	75	782,998	47	149	890,194	53	1,673,192
1996 <sup>b</sup>	71	677,399	46	23	104,805	7	80	782,204	54	138	676,011	46	1,458,215
1997	70	318,855	47	47	84,733	12	78	403,588	59	92	282,047	41	685,635
1998 <sup>b</sup>	61	448,625	45	30	118,947	12	77	567,572	57	71	435,018	43	1,002,590
AVERAGES <sup>a</sup>													
1982-98 <sup>a</sup>	65	374,083	38	46	179,466	18	77	553,550	56	128	426,612	44	980,162
1983-87	64	237,637	36	49	164,968	25	73	402,605	61	131	259,161	39	661,765
1988-93 <sup>a</sup>	66	423,508	34	54	255,862	21	83	679,370	55	145	549,817	45	1,229,187
1994-98	65	486,523	42	35	120,923	11	77	607,446	53	112	542,746	47	1,150,192

<sup>a</sup> Harvest patterns were unusual due to the effect of the Exxon Valdez oil spill. The harvest in 1989 was not used to calculate averages.

<sup>b</sup> There were NO commercial mop up fisheries in the normally closed water areas of Olga Bay during this year.

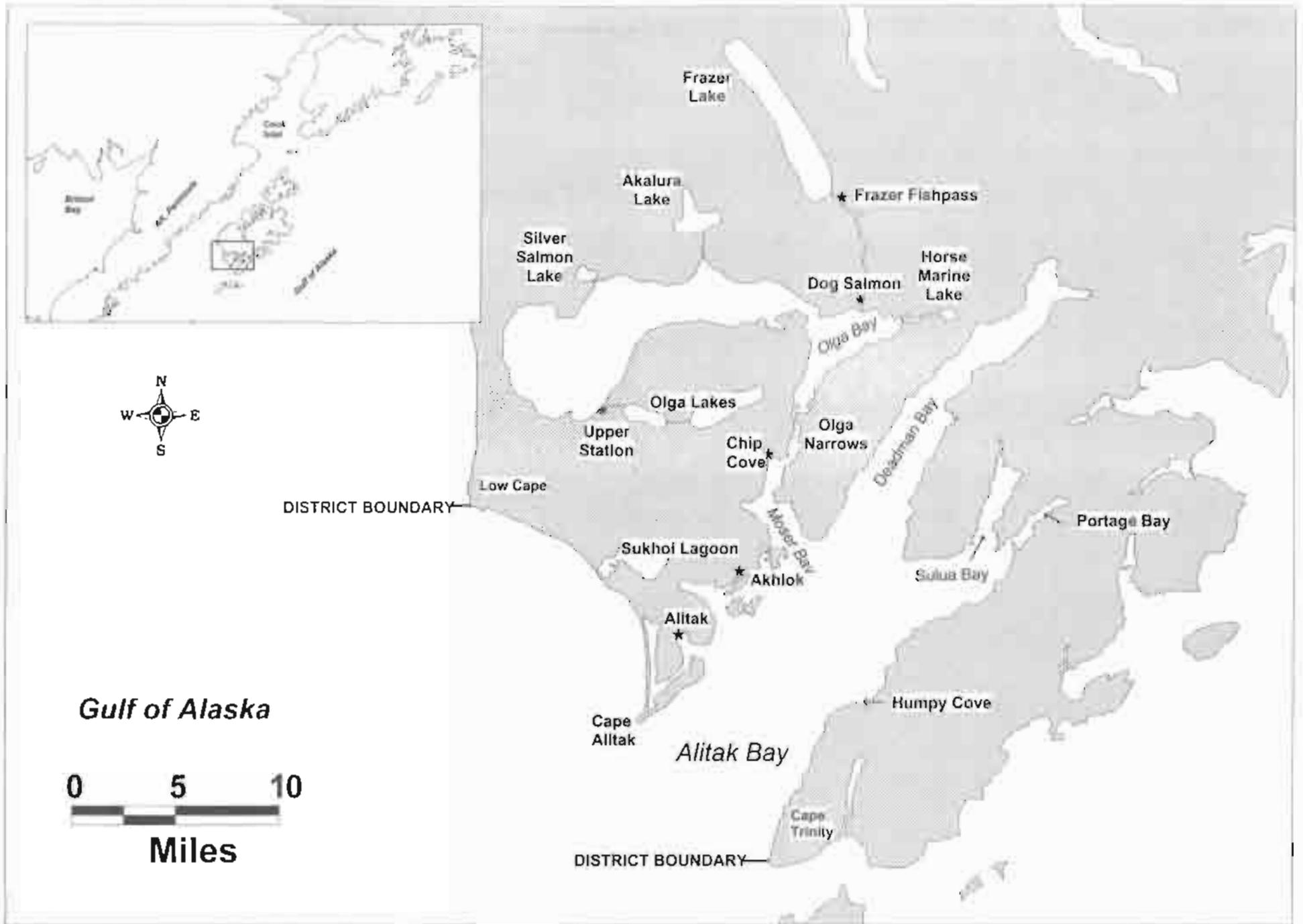


Figure 1. Map of the Alitak Bay commercial salmon fishing district and sockeye salmon producing systems.



Figure 2. Map of the Alitak Bay District showing seine vs gillnet fishing areas.

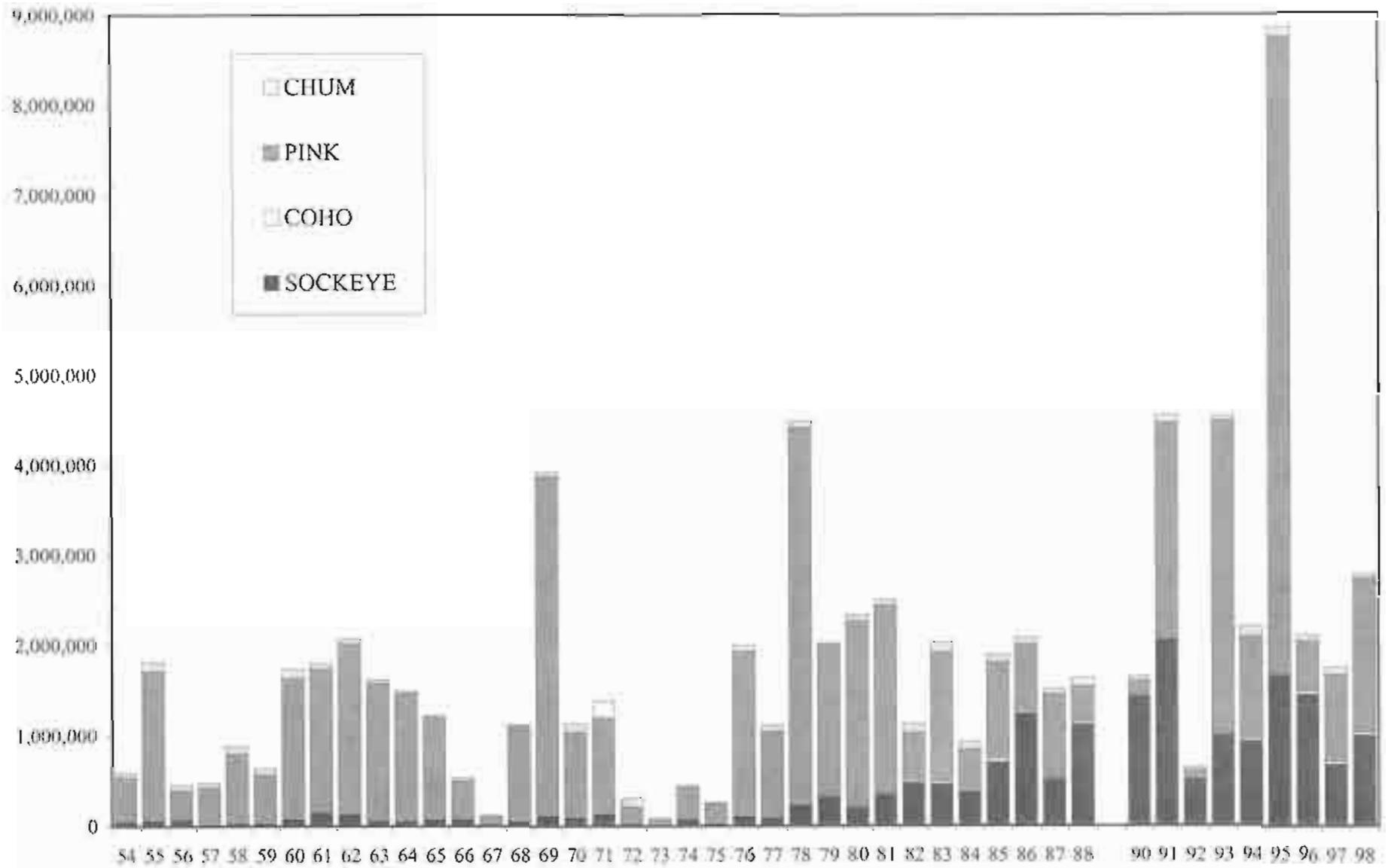


Figure 3. Annual commercial salmon harvest, by species, all gear combined, for the Alitak Bay District of the Kodiak Management Area, 1954 to 1998.

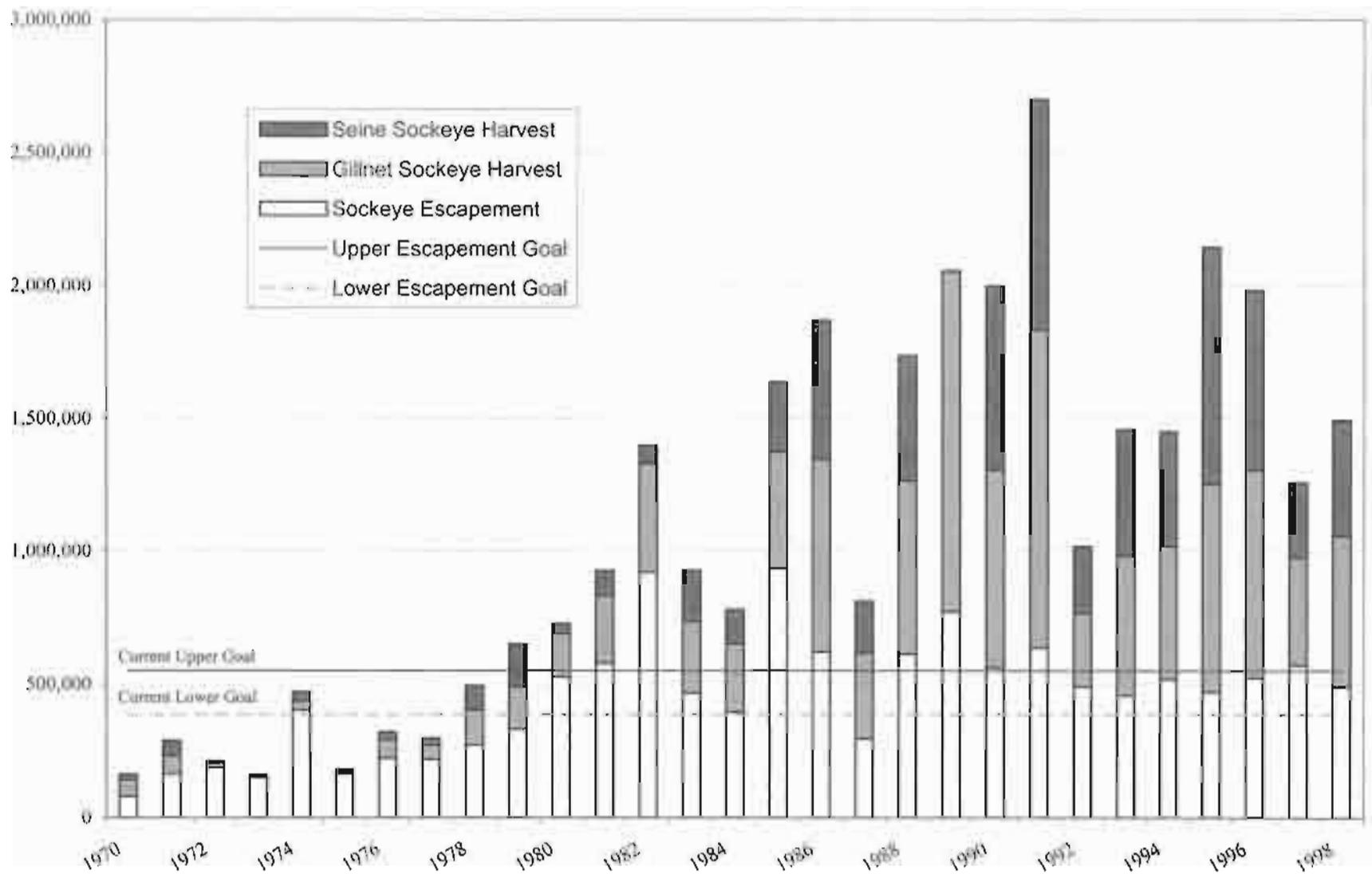


Figure 4. Sockeye salmon commercial catch and escapement from the Alitak Bay District of the Kodiak Management Area, 1970 to 1998.

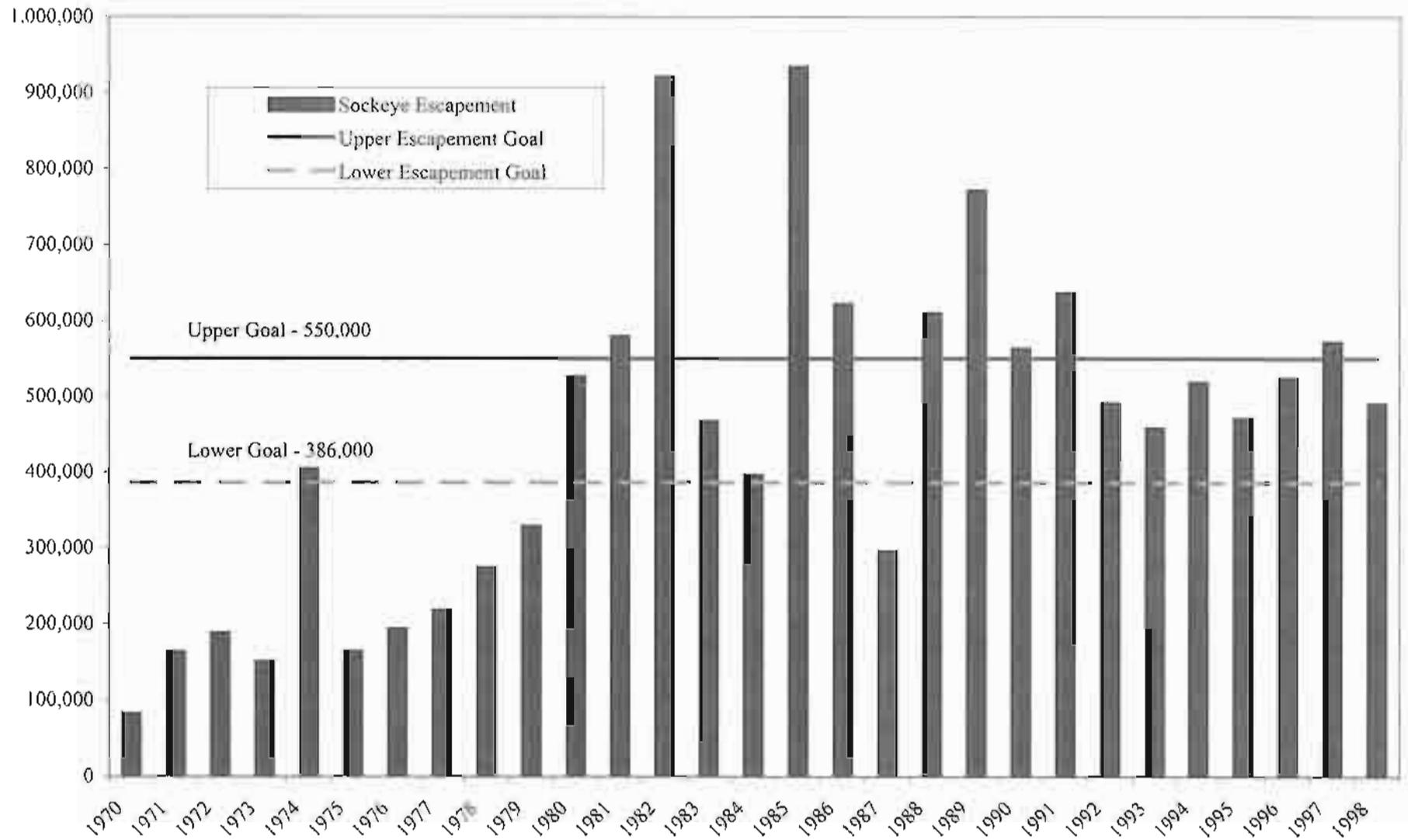


Figure 5. Sockeye salmon escapement and current escapement goals for the Alitak Bay District, 1970 to 1998.

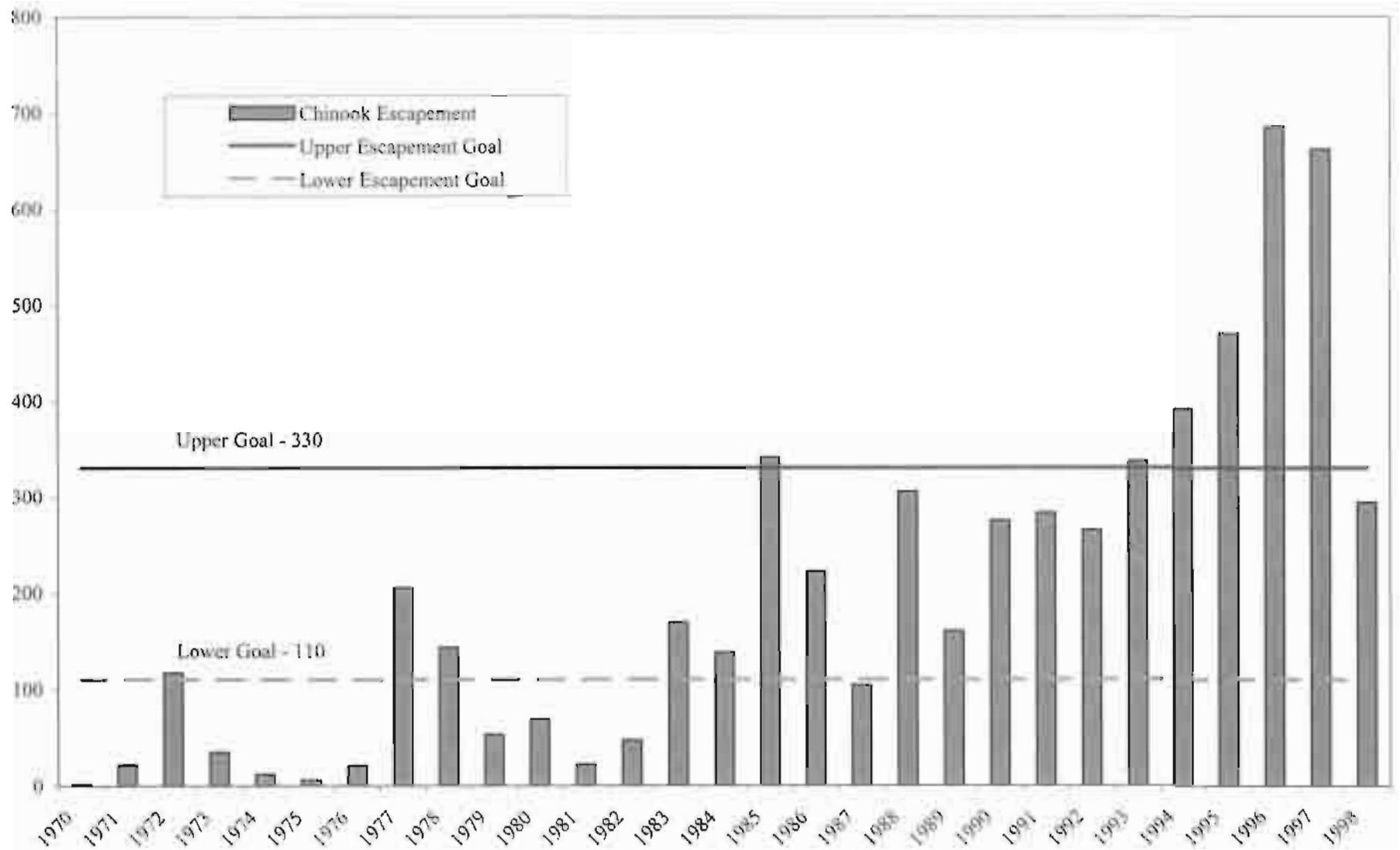


Figure 6. Chinook salmon escapement and current escapement goals for the Alitak Bay District, 1970 to 1998.

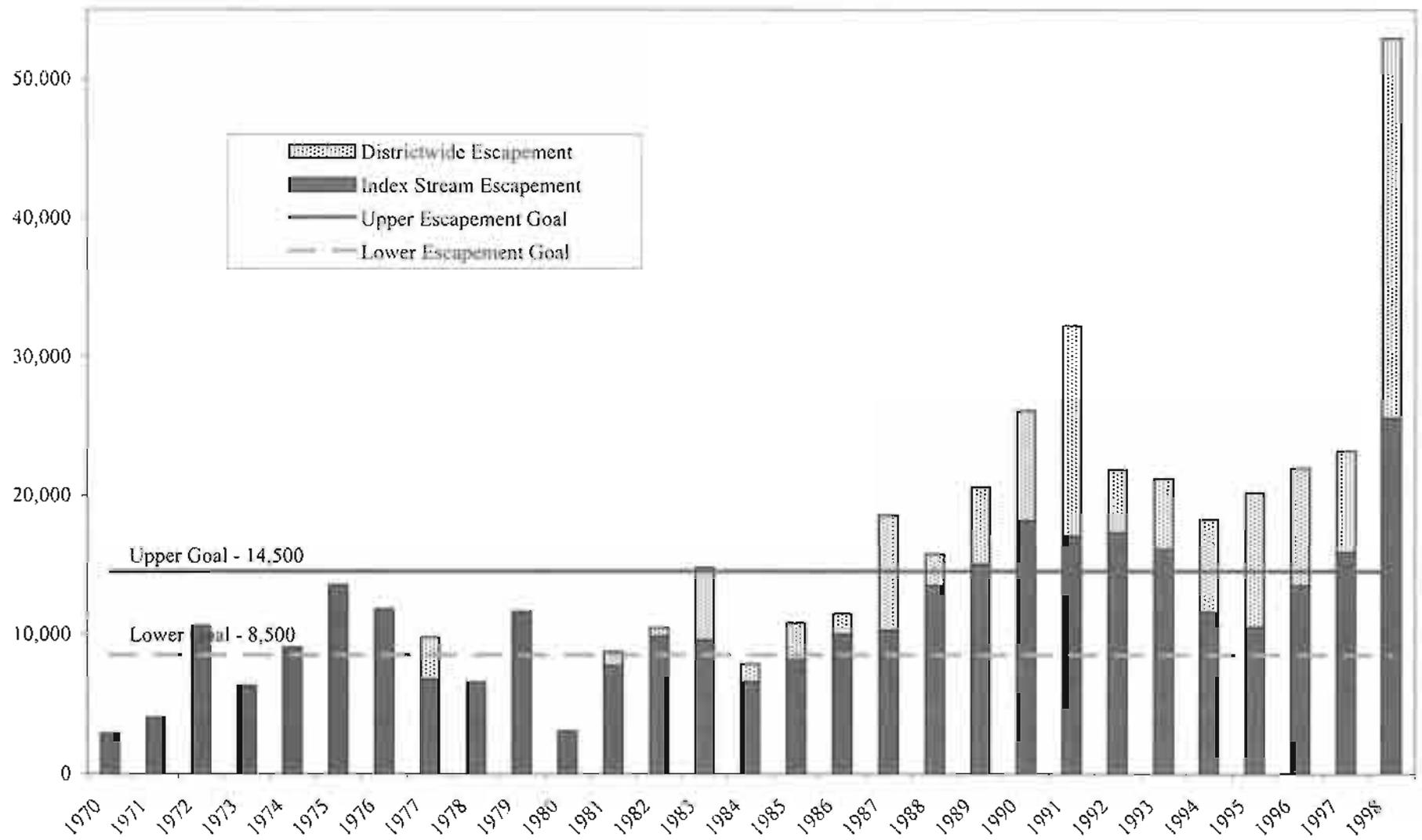


Figure 7. Coho salmon escapement, districtwide and in Index streams, and current indexed escapement goals for the AJitak Bay District, 1970 to 1998.

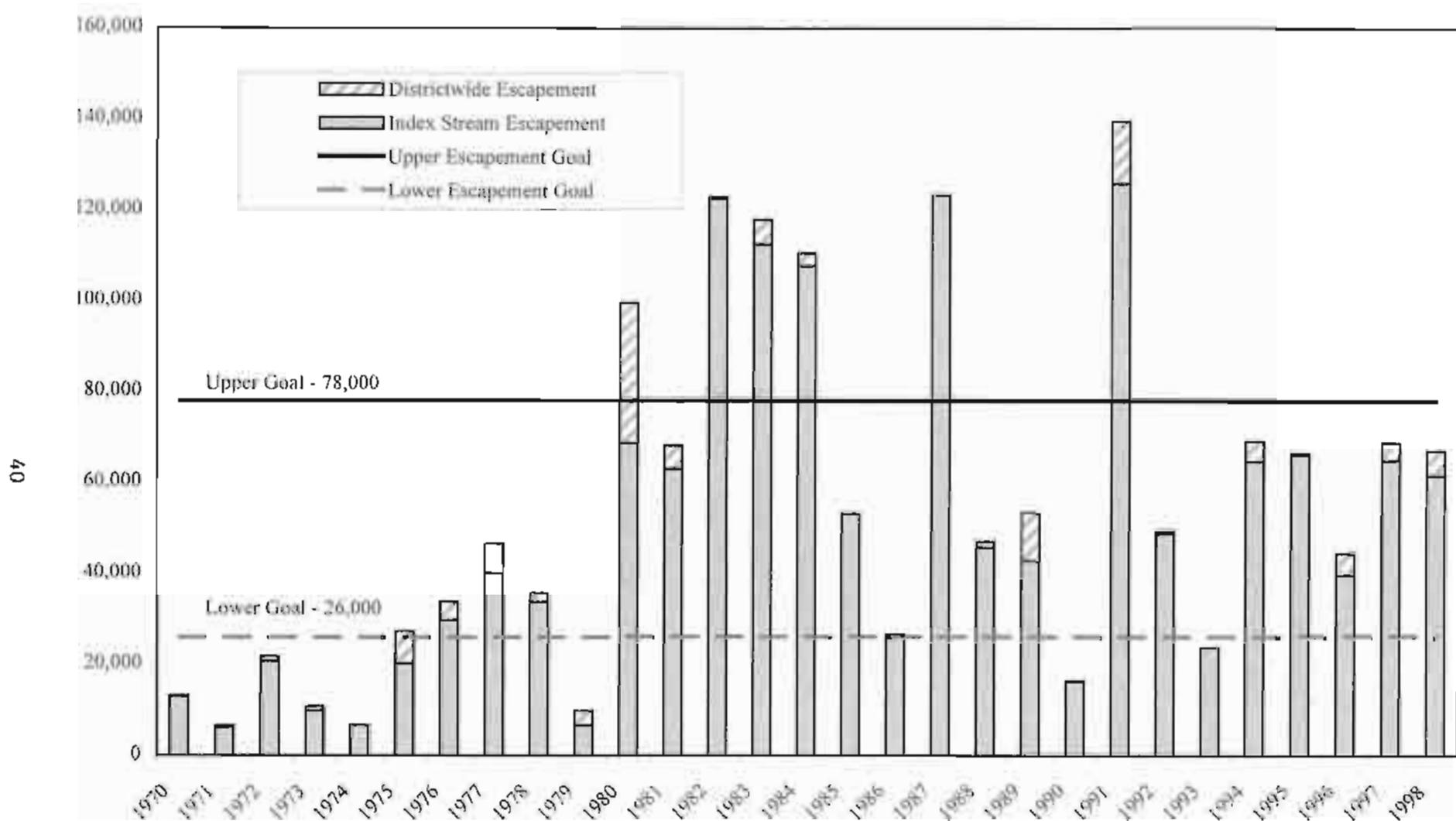


Figure 8. Chum salmon escapement, districtwide and in Index streams, and current indexed escapement goals for the Alitak Bay District, 1970 to 1998.

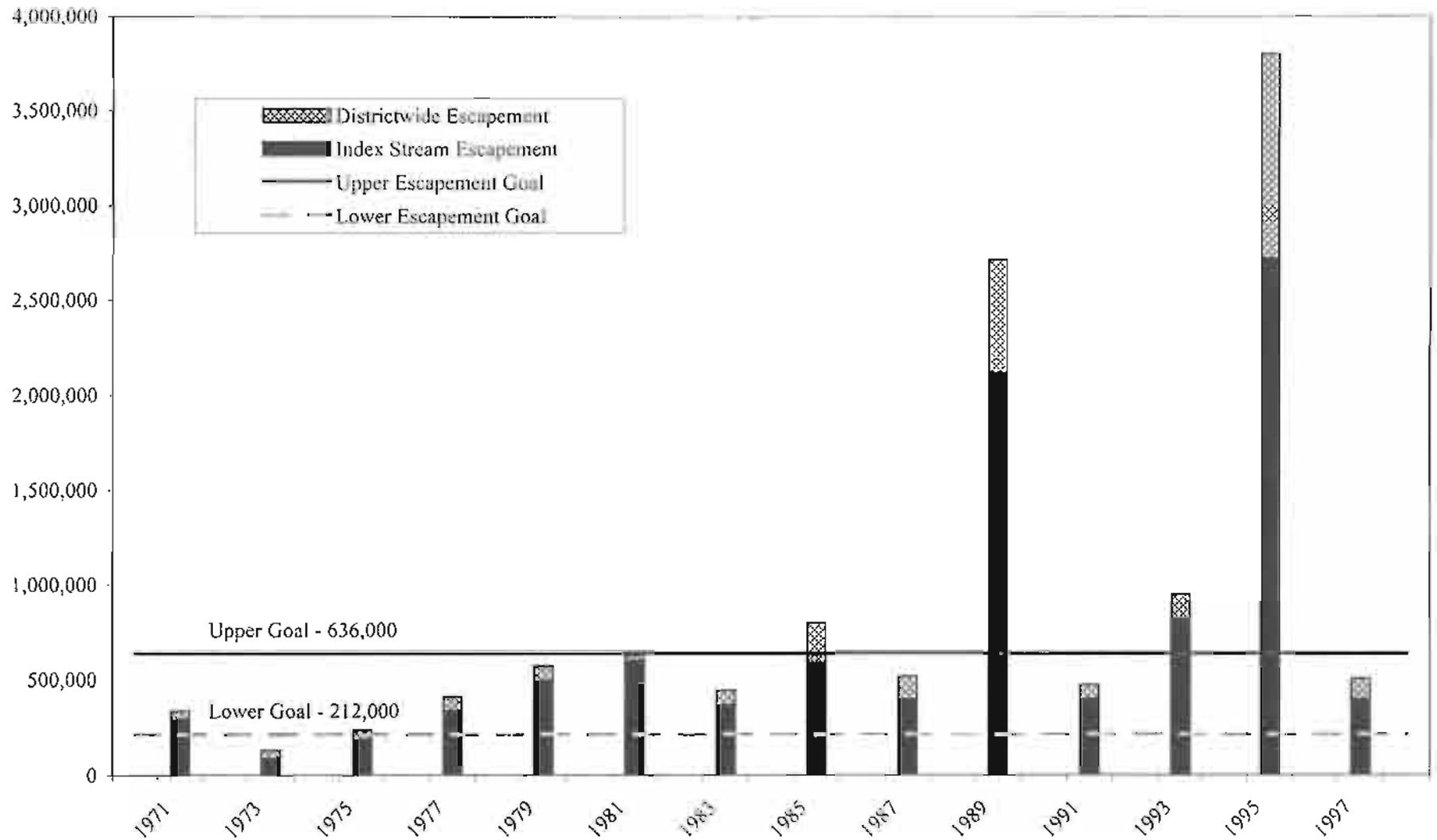


Figure 9. Odd-year pink salmon escapement, districtwide and in Index streams, and current indexed escapement goals for the Alitak Bay District, 1970 to 1998.

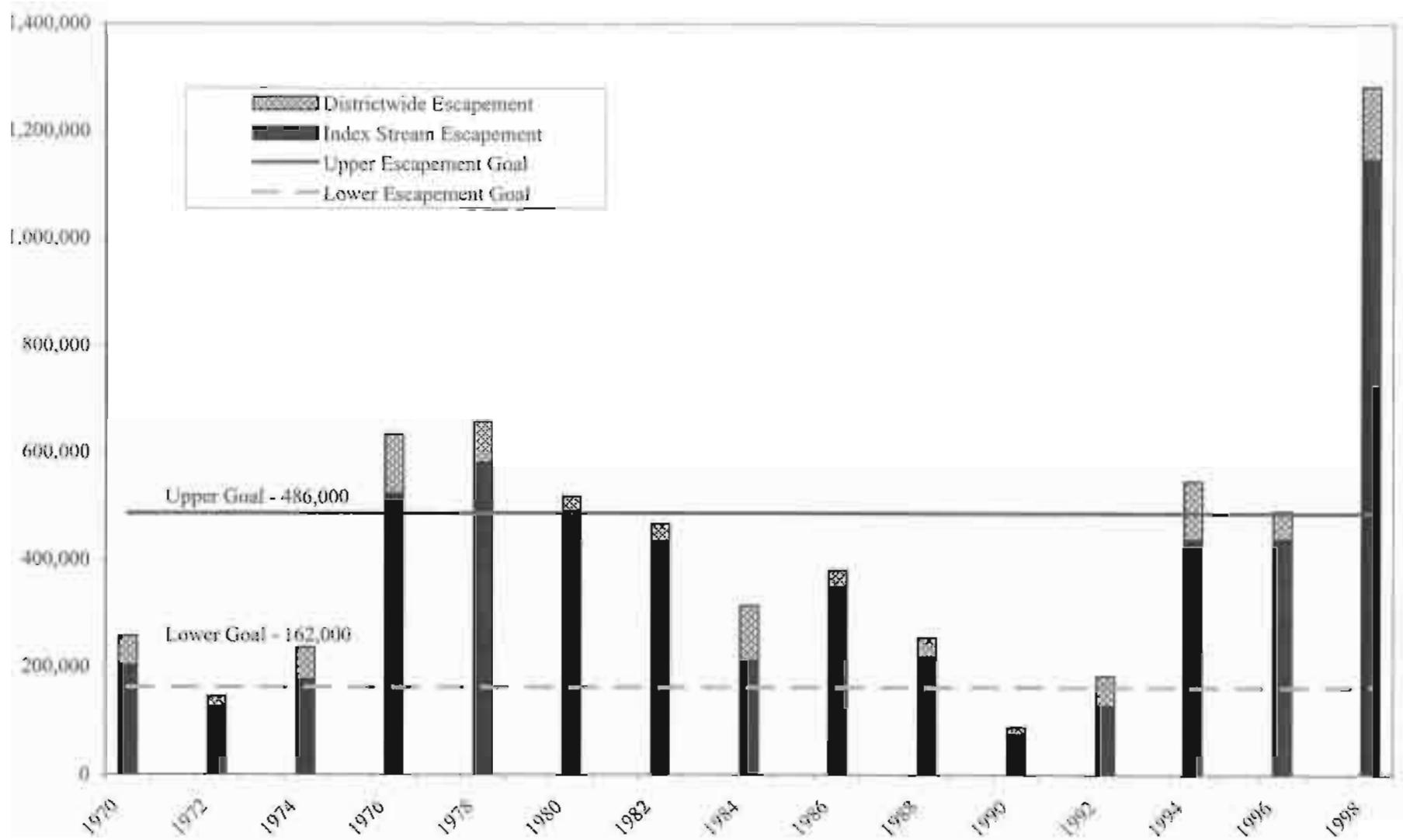


Figure 10. Even-year pink salmon escapement, districtwide and in Index streams, and current indexed escapement goals for the Alitak Bay District, 1970 to 1998.

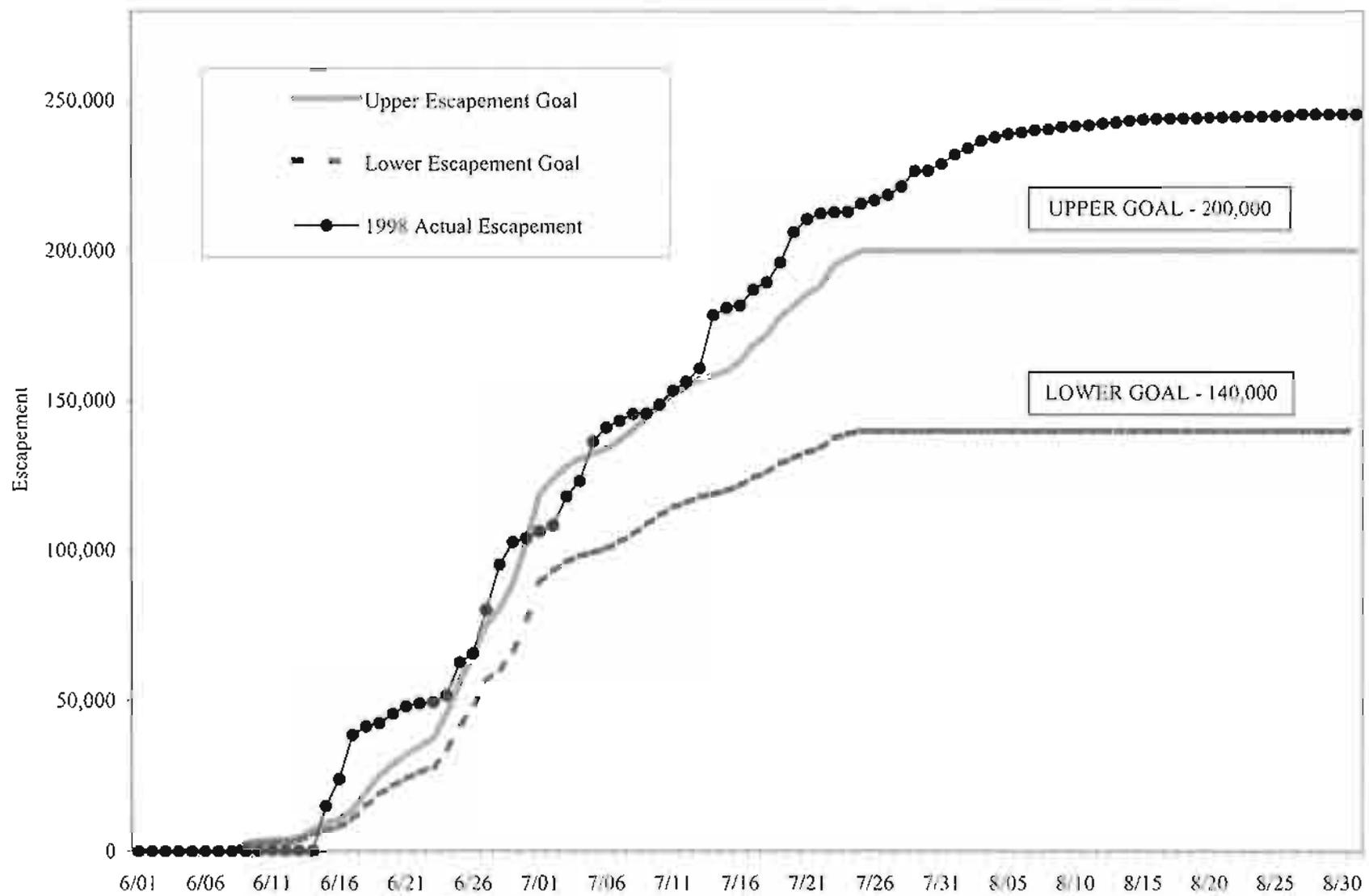


Figure 11. Frazer Lake sockeye salmon daily escapement and escapement goals, 1998.

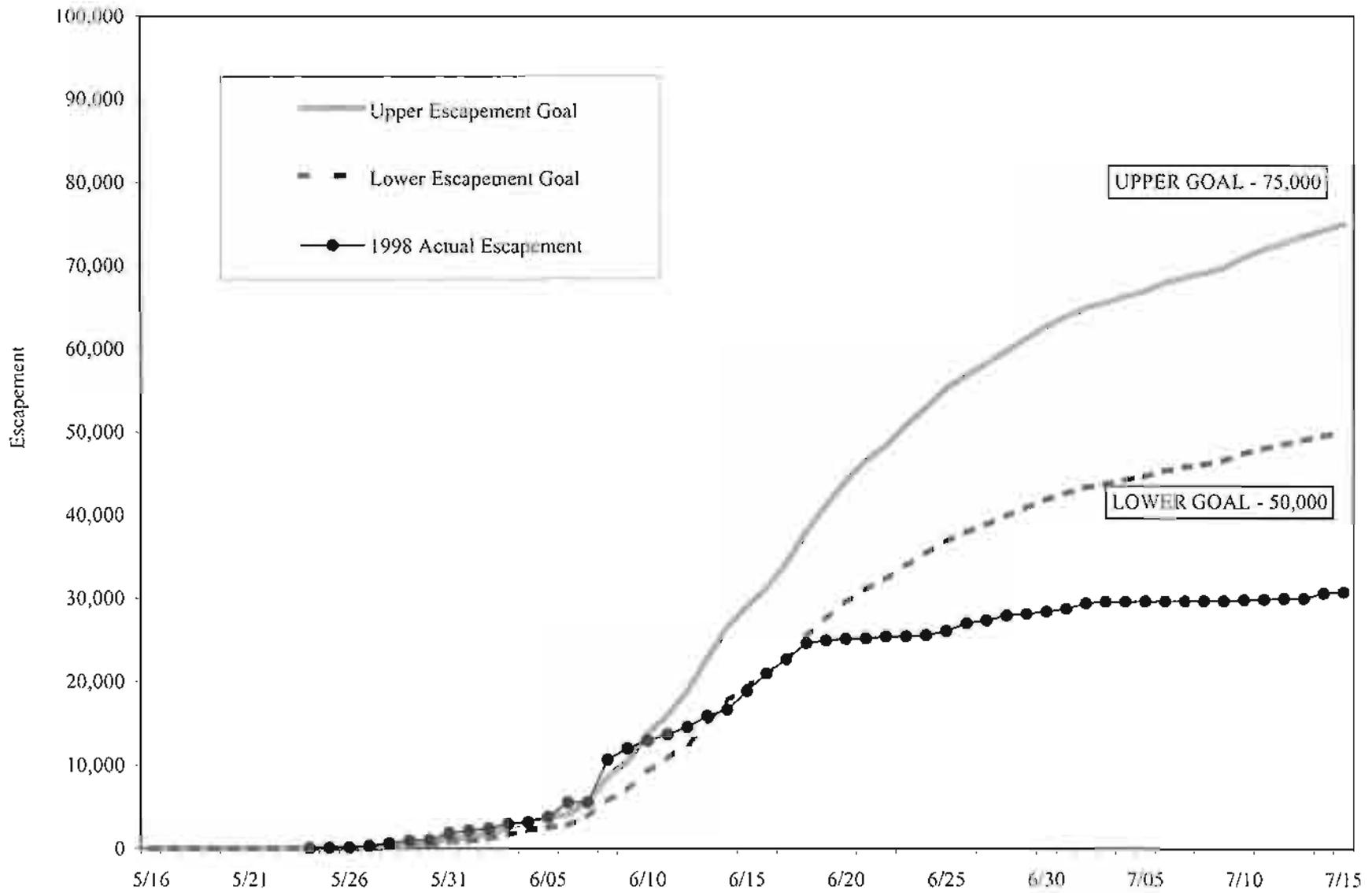


Figure 12. Upper Station early-run sockeye salmon daily escapement and escapement goals, 1998.

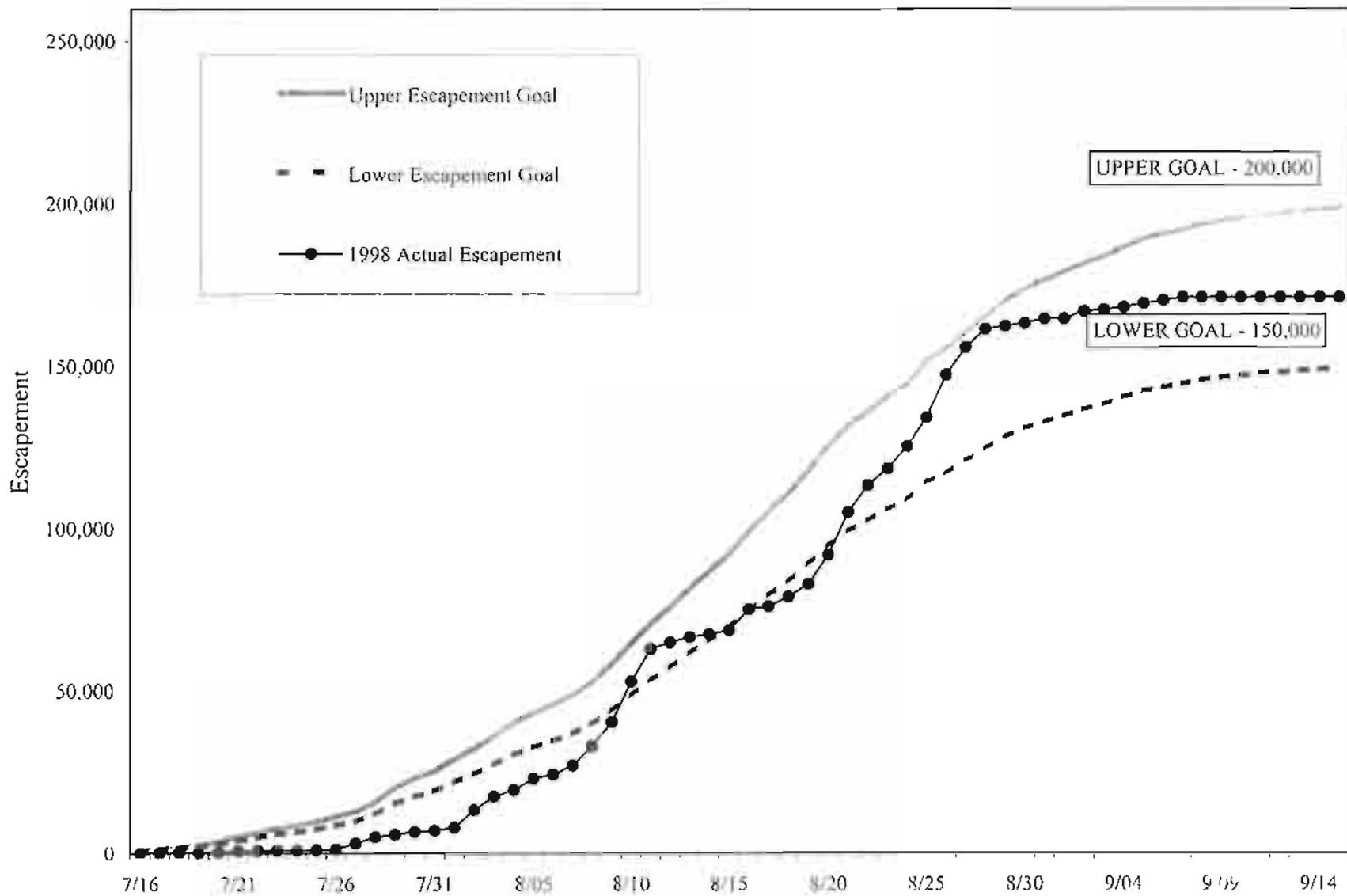


Figure 13. Upper Station late-run sockeye salmon daily escapement and escapement goals, 1998.

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