

Special Publication No. 15-18

**Norton Sound Subdistricts 1-3 Chum Salmon Stock
Status and Action Plan, 2016; A Report to the Alaska
Board of Fisheries**

by

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and

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December 2015

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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| Weights and measures (metric) | | General | | Mathematics, statistics | | |
|---|-----------------------|---|--|--|---|----------|
| centimeter | cm | Alaska Administrative Code | AAC | all standard mathematical signs, symbols and abbreviations | | |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | alternate hypothesis | H _A | |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | base of natural logarithm | <i>e</i> | |
| hectare | ha | | | catch per unit effort | CPUE | |
| kilogram | kg | | | coefficient of variation | CV | |
| kilometer | km | at | @ | common test statistics | (F, t, χ^2 , etc.) | |
| liter | L | | | confidence interval | CI | |
| meter | m | | | correlation coefficient (multiple) | R | |
| milliliter | mL | compass directions: | | correlation coefficient (simple) | r | |
| millimeter | mm | east | E | covariance | cov | |
| Weights and measures (English) | | north | N | degree (angular) | ° | |
| | | south | S | degrees of freedom | df | |
| | cubic feet per second | ft ³ /s | west | expected value | <i>E</i> | |
| | foot | ft | copyright | © | greater than | > |
| | gallon | gal | corporate suffixes: | | greater than or equal to | ≥ |
| | inch | in | Company | Co. | harvest per unit effort | HPUE |
| | mile | mi | Corporation | Corp. | less than | < |
| | nautical mile | nmi | Incorporated | Inc. | less than or equal to | ≤ |
| | ounce | oz | Limited | Ltd. | logarithm (natural) | ln |
| | pound | lb | District of Columbia | D.C. | logarithm (base 10) | log |
| quart | qt | et alii (and others) | et al. | logarithm (specify base) | log ₂ etc. | |
| yard | yd | et cetera (and so forth) | etc. | minute (angular) | ' | |
| Time and temperature | | exempli gratia | | not significant | NS | |
| | | (for example) | e.g. | null hypothesis | H ₀ | |
| | day | d | Federal Information Code | FIC | percent | % |
| | degrees Celsius | °C | id est (that is) | i.e. | probability | P |
| | degrees Fahrenheit | °F | latitude or longitude | lat or long | probability of a type I error (rejection of the null hypothesis when true) | α |
| | degrees kelvin | K | monetary symbols (U.S.) | \$, ¢ | probability of a type II error (acceptance of the null hypothesis when false) | β |
| | hour | h | months (tables and figures): first three letters | Jan.,...,Dec | second (angular) | " |
| | minute | min | registered trademark | ® | standard deviation | SD |
| | second | s | trademark | ™ | standard error | SE |
| | Physics and chemistry | | United States (adjective) | U.S. | variance | |
| | | United States of America (noun) | USA | population | Var | |
| | | U.S.C. | United States Code | sample | var | |
| | | U.S. state | use two-letter abbreviations (e.g., AK, WA) | | | |
| all atomic symbols | | | | | | |
| alternating current | | AC | | | | |
| ampere | | A | | | | |
| calorie | | cal | | | | |
| direct current | | DC | | | | |
| hertz | | Hz | | | | |
| horsepower | hp | | | | | |
| hydrogen ion activity (negative log of) | pH | | | | | |
| parts per million | ppm | | | | | |
| parts per thousand | ppt, ‰ | | | | | |
| volts | V | | | | | |
| watts | W | | | | | |

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STOCK STATUS AND ACTION PLAN, 2016;
A REPORT TO THE ALASKA BOARD OF FISHERIES**

by

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Division of Sport Fish, Research and Technical Services
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The Special Publication series was established by the Division of Sport Fish in 1991 for the publication of techniques and procedures manuals, informational pamphlets, special subject reports to decision-making bodies, symposia and workshop proceedings, application software documentation, in-house lectures, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Special Publications are intended for fishery and other technical professionals. Special Publications are available through the Alaska State Library, Alaska Resources Library and Information Services (ARLIS) and on the Internet: <http://www.adfg.alaska.gov/sf/publications/>. This publication has undergone editorial and peer review.

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ABSTRACT

The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the Alaska Department of Fish and Game (department) to assess salmon stocks during Alaska Board of Fisheries (board) regulatory cycles, to identify stocks of concern and to reassess the stock of concern status for stocks previously designated. The SSFP defines “management concern” as “a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for salmon stocks within the bound of a Sustainable Escapement Goal (SEG), Biological Escapement Goal (BEG), Optimal Escapement Goal (OEG), or other specified objectives for the fishery.” A “yield concern” is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock’s escapement needs; a yield concern is less severe than a management concern.” In 2000, the board classified Norton Sound Subdistrict 1 chum salmon *Oncorhynchus keta* as a stock of management concern and subdistricts 2 and 3 chum salmon as a stock of yield concern. Action plans were developed for these stocks by the department and acted upon by the board in January 2001. Subdistricts 2 and 3 chum salmon have maintained yield concern classification throughout subsequent board cycles. Improvements in Subdistrict 1 chum salmon stocks from 2002–2006 led the board to reclassify this stock as a yield concern in 2007. During the past 5 years, Subdistrict 1 stock status has continued to improve, and available yield is near historical levels. Subdistricts 2 and 3 chum salmon runs have been more volatile and average yield has continued to be below historical levels. The department recommends continuing Norton Sound subdistricts 2 and 3 chum salmon as a yield concern and discontinuing Subdistrict 1 chum salmon as a stock of concern.

Key words: Norton Sound, chum salmon, *Oncorhynchus keta*, stock of concern, commercial, fishing, department, sustainable salmon fisheries policy, Alaska Board of Fisheries, Alaska

INTRODUCTION

The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222, 2001) directs the Alaska Department of Fish and Game (department) to provide the Alaska Board of Fisheries (board) with reports on the status of salmon stocks and identify any salmon stocks that present a concern related to yield, management, or conservation during regular board meetings (ADF&G 2000). This report provides the department’s reassessment of the Norton Sound Subdistrict 1 (Nome), Subdistrict 2 (Golovin) and Subdistrict 3 (Elim) chum salmon *Oncorhynchus keta* stocks of concern, which are classified as a yield concern.

In response to guidelines established in the SSFP, the board classified the Norton Sound Subdistrict 1 chum salmon stock as a management concern, and subdistricts 2 and 3 chum salmon stocks as a yield concern at the September 2000 work session. A stock of management concern is defined as “a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds of a Sustainable Escapement Goal (SEG), Biological Escapement Goal (BEG), Optimal Escapement Goal (OEG), or other specified management objectives for the fishery” (5 AAC 39.222(f)(21)). The SSFP further goes on to define chronic inability as “the continuing or anticipated inability to meet escapement objectives over a 4 to 5 year period.” A stock of yield concern is defined as “a concern arising from a chronic inability, despite use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock’s escapement needs; a yield concern is less severe than a management concern” (5 AAC 39.222(f)(42)).

The Subdistrict 1 stock of concern determination was a result of the persistent low chum salmon productivity since the mid-1980s. In Subdistrict 1, commercial and sport fishing for chum salmon was closed and subsistence salmon management was among the most restrictive in Alaska, with a Tier II chum salmon fishery in effect from 1999–2005. A Tier II fishery indicates that reasonable opportunities for subsistence uses cannot be provided to all Alaska residents who wish to participate in the fishery (AS 16.05.258(b)(4) and (f)). A Tier II fishery restricts

subsistence fishing to those households that submit an application to fish and receive a subsistence permit based on a scoring system that ranks individual households against one another based upon determining a household's historical dependence on chum salmon and the household's ability to obtain food if subsistence use is restricted or eliminated (AS.16.05.258(b)(4)(B)). An action plan was subsequently developed by the department (Bue 2000a) and acted upon by the board in January 2001. The classification as a management concern was recommended by the department during the next board cycle (Menard and Bergstrom 2003a) and was continued at the January 2004 board meeting.

In 2007, based on definitions provided in SSFP (5 AAC 39.222(f)(21) and (42)), only the most recent 5-year yield and escapement information (2002–2006) and the historical level of yield or harvestable surpluses were considered. During the preceding 5 years (2002–2006) a majority of chum salmon escapement goals had been achieved in Subdistrict 1 (Menard and Bergstrom 2006a). Accordingly, the department recommended a change in status of Subdistrict 1 chum salmon stock from a management concern to a yield concern at the October 2006 board work session. The board accepted the department's recommendation and Subdistrict 1 chum salmon stock was reclassified from a management concern to a yield concern at the 2007 board meeting. The classification as a yield concern was continued at the next board cycle meetings in January 2010 (Menard and Bergstrom 2009a) and January 2013 (Menard and Bergstrom 2012).

In subdistricts 2 and 3, the determination as a yield concern for chum salmon was based on low harvest levels for the previous 5-year period (1995–1999). An action plan was subsequently developed by the department (Bue 2000b) and acted upon by the board in January 2001. The classification as a yield concern was continued at the 2004, 2007, 2010, and 2013 board meetings based on department recommendations (Menard and Bergstrom, 2003b, 2006b, 2009b, 2012).

At the October 2015 board work session, the department recommended discontinuation of Subdistrict 1 chum salmon stock as a yield concern but the continuation of Norton Sound subdistricts 2 and 3 chum salmon stock as a yield concern. The department recommendation to discontinue Subdistrict 1 as a stock of yield concern was based on the subdistrict-wide BEG range being greatly exceeded every year during the recent 5-year period (2011–2015) and escapement goal ranges for individual rivers being exceeded in 4 of 5 years indicating there was not a chronic inability to meet escapement goals. Furthermore, the available yield the past 5 years has increased to near historical levels to provide for subsistence uses and other uses. The recommendation for continued classification of subdistricts 2 and 3 chum salmon as a stock of yield concern was based on continued lower yields for the recent 5-year period (2011–2015) compared to historical yields in the 1980s. Although the yields in 2010, 2011, and 2015 in subdistricts 2 and 3 were the best seen since the 1980s, the other 2 years had very low yields and escapement goals were not reached.

The board has made a positive “customary and traditional use for subsistence” (“C&T”) finding for salmon and all finfish other than salmon in the Norton Sound-Port Clarence Area, and specifically for chum salmon in Subdistrict 1. The board found that 3,430–5,716 chum salmon in Subdistrict 1, and 96,000–160,000 salmon for the Norton Sound-Port Clarence Area, are amounts reasonably necessary for subsistence uses (ANS; 5 AAC 01.186).

SUBDISTRICT 1 STOCK ASSESSMENT BACKGROUND

The Norton Sound District is composed of 6 commercial fishing subdistricts (Figure 1). Most subdistricts have several rivers where subsistence fishing occurs (Menard et al. 2015). In Subdistrict 1, the larger chum salmon runs are typically east of Nome, particularly in the Eldorado and Flambeau rivers (Figure 2).

ESCAPEMENT

In 2001, the department established a subdistrict-wide chum salmon BEG for Subdistrict 1 of 23,000 to 35,000 chum salmon (Clark 2001a). In January 2001, the board established OEG ranges for chum salmon on 3 rivers in Subdistrict 1: Nome, Snake, and Eldorado rivers, in order to index the subdistrict-wide BEG. Chum salmon have been counted via towers or weirs on these rivers since 1994, 1995, and 1997, respectively (Table 1). All board-established OEGs and department-established SEGs were set in conjunction with the overall Subdistrict 1 BEG and have been used to assess the overall escapement to Subdistrict 1. The Subdistrict 1 BEG was achieved or exceeded from 2004 through 2008, fell short of the goal in 2009, and easily exceeded the goal from 2010 through 2015 (Figure 3). During the recent 5-year period (2011-2015), the OEGs have been exceeded for 4 of 5 years at Snake (Figure 4) and Nome (Figure 5) rivers and all 5 years at Eldorado River (Figure 6). Comparing escapements during 2011–2015 to the escapement goals established in 2001 shows there has not been a chronic inability to meet escapement goals (Table 1 and Figures 3–6).

YIELD

Subsistence chum salmon harvests in Subdistrict 1 gradually increased after statehood until the 1990s, when harvests decreased because of low runs and increasing subsistence restrictions (Table 2). However, even with fishing closures, escapements did not increase in the late 1990s and early 2000s in response to less fishing pressure (Figures 3–6). Participation in Subdistrict 1 subsistence chum salmon fishing was limited beginning in 1999 when Tier II management restrictions were initiated. In 2004 and 2005 all Tier II applicants received a permit, but harvests still remained below 1,000 chum salmon (Table 2 and Figure 7). Since 2006, Tier II restrictions have been suspended, allowing all Alaska residents to participate in the subsistence fishery for chum salmon. However, subsistence harvests of chum salmon continue to be low in the 2000s and may be the result of changing harvest patterns resulting from Tier II management. Record pink salmon *O. gorbuscha* and coho salmon *O. kisutch* runs in the mid-2000s in Subdistrict 1 allowed subsistence permit holders to easily target those species. Subsistence users have been targeting pink salmon since 2004, particularly during the larger runs in even-numbered years when harvests have ranged from 3 to 25 times higher than the following odd-numbered year pink salmon runs (Table 2). Additionally, beginning in 2003, there was record Pilgrim River sockeye salmon runs in Port Clarence District for several years. A record 374 subsistence permits were issued for Pilgrim River in 2015, easily exceeding the previous record in 2013 by over 100 permits, and the sockeye salmon harvest alone exceeded the entire subsistence salmon harvest taken in Subdistrict 1 (Table 2 and Figure 8).

During the most recent 5-year period (2011–2015), the average total chum salmon harvest and available yield, as discerned by large escapements (Figures 3–6), has been similar to the historical yield (combined subsistence and commercial harvests) of the 1980s and early 1990s (Table 2 and Figure 7). Although the average harvest is below historical harvests in the 1980s,

harvests have increased the past 5 years and much of the available surplus has gone to escapement. In 2013 the board repealed the regulation preventing commercial chum salmon fishing, but commercial fishing effort has been minimal, and although there has been much more subsistence fishing opportunity in recent years, there also has been a shift in subsistence fishing effort toward pink and coho salmon and to the Pilgrim River sockeye salmon (Figure 8). In 2013, the board adopted a proposal to reopen the sport fishery for chum salmon to a bag and possession limit of 3 fish per day in all Nome Subdistrict waters except for the Penny and Cripple rivers. These rivers remain closed due to their very small size and subsequent small runs of chum salmon. Since 2013, the sport fish harvest has averaged 112 chum salmon per year in Subdistrict 1, mostly from Nome River.

SUBDISTRICT 1 STOCK OF CONCERN RECOMMENDATION

Based on the definitions provided in the SSFP of 5 AAC 39.222(f)(21) and (42), the stock of concern designation for Norton Sound Subdistrict 1 chum salmon was discontinued during the board work session in October 2015, because of improved production of this stock over the past 5 years. Given that chum salmon escapement goal ranges for Nome and Snake rivers have been achieved or exceeded 4 of the past 5 years and the Eldorado River OEG and Subdistrict 1 BEG were exceeded the past 5 years, there is not a chronic inability to meet escapement goals. As assessed by individual tributary projects, and due to the overall Subdistrict 1 chum salmon escapement goals being greatly exceeded, the available yield the past 5 years has increased to near historical levels and provided for subsistence uses and other uses. Thus, the Norton Sound Subdistrict 1 chum salmon stock does not fit the SSFP definition of either a management or yield concern because it has consistently maintained “expected yields, or harvestable surpluses, above escapement needs” (5 AAC 39.222(f)(42)). The department recommends the Norton Sound Subdistrict 1 chum salmon stock no longer be considered a stock of concern. The stock of concern status was discussed with stakeholders as part of the escapement goal review process and there was a consensus among meeting participants that Subdistrict 1 chum salmon was no longer a stock of concern.

OUTLOOK

The Subdistrict 1 chum salmon run is expected to be above average in 2016 based on parent year escapements and age composition of escapement samples from 2015. The 2016 run is expected to provide for all subsistence uses for the seventh consecutive year and no Tier II restrictions will be in place. Age-0.3 chum salmon make up the majority of the run to Subdistrict 1 in most years, and the high number of age-0.3 present in 2015 run is a likely indication that age-0.4 chum salmon returns will be above average in 2016. Likewise, based on the number of age-0.2 chum salmon, the age-0.3 returns are expected to be average to above average in 2016. The 2016 chum salmon run is expected to be sufficient to provide for escapement, as well as subsistence, sport, and commercial uses.

ALASKA BOARD OF FISHERIES ACTION

In response to the guidelines established in the SSFP, the board removed stock of concern classification of Norton Sound Subdistrict 1 chum salmon stock as a yield concern during the October 2015 work session.

REVIEW OF SUBDISTRICT 1 CHUM SALMON MANAGEMENT ACTION PLAN, 2001–2015

CURRENT STOCK STATUS

In response to the guidelines established in the SSFP, the board discontinued the Norton Sound Subdistrict 1 chum salmon stock as a yield concern at the October 2015 work session. This designation is based on achieving or exceeding a majority of chum salmon escapement goals during the last 5 years and the available yield increasing to near historical levels.

CUSTOMARY AND TRADITIONAL USE FINDING AND THE AMOUNT NECESSARY FOR SUBSISTENCE

As mentioned, the board has made a positive C&T finding for chum salmon in Subdistrict 1 and determined the chum salmon ANS is 3,430–5,716 fish.

EXISTING MANAGEMENT PLAN

5 AAC 01.190. Subdistrict 1 of the Norton Sound District chum salmon management plan.

Norton Sound Subdistrict 1 Chum Salmon Action Plan Goal

The goal of the action plan was to reduce fishing mortality when necessary in order to meet spawning escapement goals, to provide for subsistence harvests within the ANS range, and to provide opportunity for other uses when a surplus above escapement needs and subsistence uses is available (Menard and Bergstrom 2012). This objective has been met for Norton Sound Subdistrict 1 chum salmon with escapement goals being met, or exceeded, from 2011–2015. Although harvests the past 5 years remain below historical range, the surplus available for harvest since 2011 was near the historical range. Low salmon harvests were primarily the result of subsistence fishermen targeting other species and low effort in the commercial fishery the last 3 years.

Regulation Changes Adopted in January 2001

In January 2001, after review of the management action plan options addressing this stock of concern, the board adopted the following plan:

5 AAC 01.190. Subdistrict 1 of the Norton Sound District Chum Salmon Management Plan. The purpose of this management plan is to provide the department with conservative management guidelines for the sustained yield of chum salmon stocks in Subdistrict 1 of the Norton Sound District. The department shall manage Subdistrict 1 to achieve optimal escapement goals for chum salmon spawning streams and to restore chum salmon abundance so that a Tier II subsistence fishery will not be necessary. The department shall manage chum salmon as follows:

- (1) commercial fishing for chum salmon is closed and will be reopened only after,
 - (A) the harvestable surplus of chum salmon has met Tier I subsistence needs for 4 consecutive years; and
 - (B) the department has proposed to the Board of Fisheries and the board has adopted an abundance-based management plan supported by inseason enumerator counts of abundance;

(2) in the subsistence fishery,

(A) subsistence chum salmon fishing will be opened and closed by emergency order on a stream-by-stream basis, to be determined by the department, when chum salmon stocks are abundant enough to provide for optimal escapement goals and a harvestable surplus;

(B) a subsistence fishing permit under 5 AAC 01.180 is required and will be issued to a household; the permit will identify the body of water to be fished, the annual limit for each salmon species, and the allowable gear;

(C) in Subdistrict 1, pink salmon may be taken only with gillnets that have a mesh size of 4.5 inches or less.

The board repealed escapement goal ranges in 5 AAC 04.358 *Chum salmon optimal escapement goal ranges for river systems in Subdistrict 1 of the Norton Sound District* currently in regulation and adopted the following optimal escapement goal ranges for chum salmon:

(1) Snake River – 1,600 to 2,500 chum salmon

(2) Nome River – 2,900 to 4,300 chum salmon

(3) Eldorado River – 6,000 to 9,200 chum salmon

The Cripple and Penny rivers were closed to subsistence chum salmon fishing.

The board adopted subsistence hook and line attached to a rod or pole as a lawful gear for all species in northern Norton Sound and southern Kotzebue Sound. Sport fishing limits and methods and means restrictions were adopted except when a subsistence fishing permit is required, and then the catch limits specified in the subsistence fishing permit applied, except when fishing through the ice.

Regulation Changes Adopted in January 2004

In January 2004, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2003a), the board adopted the following regulations: (1) subsistence salmon fishermen using hook and line attached to a rod or pole were required to obtain subsistence salmon permits, and (2) 5 AAC 01.190(2)(C), which required subsistence fishermen to take pink salmon only by gillnets that had a mesh size of 4.5 inches or less, was repealed.

Regulation Changes Adopted in January 2007

In January 2007, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2006a), the board adopted the following regulations: (1) expanded the subsistence fishing area with a hook and line to all areas where sport fishing was allowed, (2) reopened the first 100 yards of the Penny River upstream from the mouth and the first 200 yards of the Cripple River upstream from the mouth to subsistence salmon fishing, except for chum salmon, (3) eliminated subsistence permit catch limits listed in regulation and allowed the department to continue setting catch limits based on expected returns, (4) reduced the subsistence area where nets could be fished in the Nome River, and (5) allowed for an annual cash sale of up to \$200 for customary trade of subsistence-caught finfish in Norton Sound with transactions limited to within the Norton Sound-Port Clarence Area.

Regulation Changes Adopted in January 2013

In January 2013, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2012), the board adopted the following regulations: (1) allowed for commercial fishing for chum or pink salmon when escapement goals are projected to be reached and that a directed pink or chum salmon commercial fishery will not have a significant impact on escapement goals or subsistence uses of chum salmon, (2) allowed for an increase in amount of commercial gillnet gear allowed in the Norton Sound pink salmon fishery by emergency order, (3) allowed subsistence gillnet fishing 7 days a week in marine waters east of Cape Nome, (4) allowed subsistence fishing with beach seines any time subsistence gillnet fishing is open from June 15 through July 25, (5) extended the upstream subsistence fishing boundary for net fishing on the Sinuk River, (6) repealed the requirement that chum salmon escapement goals in Subdistrict 1 be achieved before allowing commercial coho salmon fishing in subdistricts 2 and 3, (7) reopened sport fishing for chum salmon, and (8) increased the annual cash sale for customary trade of subsistence-caught finfish from \$200 to up to \$500. In addition to allowing for commercial fishing for chum and pink salmon the board eliminated the moratorium on commercial fishing west of Cape Nome.

Management Review

Historical management actions in Subdistrict 1 are listed in Table 3. Conservative management strategies employed by the department from 2001 through 2003 were based on the management action plan adopted by the board in January 2001. Subdistrict 1 was closed to all salmon fishing in mid-June and reopened in marine waters to Tier II chum salmon permit holders the third week of June. In 2003, the Subdistrict 1 escapement goal was not reached and Tier II chum salmon fishing was suspended. In the years 2000–2002, there was regular Tier II fishing periods in marine waters and some rivers had Tier II fishing periods. In 2004 and 2005, there were regular Tier II subsistence fishing periods in marine waters and some freshwater areas also had Tier II fishing periods. Because escapements were met in rivers, Tier I fishing was allowed and chum salmon harvest limits were waived.

The number of successful Tier II permit applicants was 30 in 2001, and 40 in 2002 and 2003. After 2003, the department reviewed the 5 years of fishing history since Tier II went into effect in 1999. Analyses showed that some successful applicants were not picking up permits and some permit holders were not fishing. Also, average harvests were 33 chum salmon per permit even though the limit was 100. Because of limited fishing effort and limited catches, the number of permits issued was increased to 50 in 2004 and 2005 with the possibility of issuing an additional 10 conditional permits. All applicants were successful in 2004 (57) and 2005 (59) with 52 Tier II permits issued in 2004 and 49 issued in 2005. The number of permits issued was fewer than the number of applicants because some applicants never picked up their permit.

A trend in subsistence harvests was observed in 2004 and 2005 that approximately one-half of Tier II permit holders were harvesting chum salmon. Other permit holders were using the Tier II permits as an opportunity to fish for other salmon species, particularly pink salmon, during Tier II openings. In 2006, the department suspended Tier II restrictions after considering that the projection for a strong chum salmon run would easily exceed the ANS and that trends of limited effort targeting chum salmon observed in recent years would continue. For the first time since 1990, Subdistrict 1 did not close to salmon fishing in mid-June, but went to the subsistence fishing schedule in regulation. At the start of the season almost all salmon limits in marine

waters and rivers were doubled from previous years and were later waived for pink (July 6), chum (July 10), sockeye (July 14), and coho (August 19 in marine waters and September 1 in rivers) salmon. Although there was much more opportunity for subsistence salmon fishing in 2006, and the chum salmon run was the best in nearly 2 decades, chum catches were still 20% below those in 2002 (Table 2 and Figure 3). The lower chum salmon harvests may have been the result of subsistence fishermen harvesting other species (Figure 8). In 2006, subsistence harvests of coho salmon were record breaking and pink salmon subsistence harvests were second highest in the preceding 20 years. Beginning in 2004, the 5 highest subsistence salmon harvests in 25 years were from the even-numbered years 2004–2012. Likewise, since 2004 the 7 highest subsistence salmon harvests in 20 years, if the Pilgrim River catch is included with Subdistrict 1 catch, were from 2004–2012 (Table 2 and Figure 8).

In 2007, the department again suspended Tier II restrictions because the ANS was projected to be reached. A strong run resulted in subsistence limits being waived for chum salmon in the marine waters and most of the rivers in Subdistrict 1. The odd-numbered year run of pink salmon was average and allowed for fishermen to target chum salmon more easily without worrying about pink salmon plugging their nets as had been the case in 2004 and 2006. The harvest of 2,938 chum salmon was the highest since 1995, but still below the lower end of the ANS of 3,430. Although the 2008 chum salmon run was within the SEG range, the harvest was one-fourth of the previous year and may have been the result of subsistence fishermen targeting a record pink salmon run. The poor chum salmon run of 2009 in Subdistrict 1 was similar to poor chum salmon runs observed elsewhere in northern Norton Sound.

From 2010 through 2012, Subdistrict 1 chum salmon runs produced harvestable surpluses well above the ANS, and there were no fishing closures. The department waived subsistence chum salmon catch limits in many locations in Subdistrict 1 and usually allowed beach seining for the majority of the season during the regular gillnet schedule. Still, the harvest of chum salmon remained below the lower end of the ANS.

From 2013 through 2015, Subdistrict 1 chum salmon runs were some of the highest on record. There were no fishing closures, and beginning in 2014 the department eliminated subsistence chum salmon catch limits in marine waters, and in 2015 eliminated subsistence chum salmon catch limits in the majority of the rivers east of Cape Nome and in the Sinuk River west of Cape Nome. Yet, even with record chum salmon runs, the subsistence harvest was only a little above the lower end of the ANS range in 2014 and 2015.

Based on the most recent 5-year period, chum salmon harvests are anticipated to increase in the near term but are likely to remain variable. Habitat concerns persist in Subdistrict 1 from past and present mining activities (Menard and Bergstrom 2012) and from Port of Nome expansion at the mouth of Snake River. The department does have a wide variety of tools in regulation to manage and sustain the Norton Sound Subdistrict 1 chum salmon stock in the future.

2016 ALASKA BOARD OF FISHERIES REGULATORY PROPOSALS AFFECTING NORTON SOUNDSUBDISTRICT 1 CHUM SALMON

Subsistence

Proposal number:

- 129 – Require the release of a specified salmon species when beach seining.
- 130 – Allow the restriction of gillnet mesh size during times of conservation for chum and king salmon.
- 131 – Increase gillnet fishing periods and beach seine usage.
- 132 – Allow cast nets and dip nets to harvest finfish including salmon.

SUBDISTRICT 2 AND 3 STOCK ASSESSMENT BACKGROUND

In Subdistrict 2, most freshwater subsistence fishing occurs in Niukluk and Fish rivers, and in Subdistrict 3, in Kwiniuk and Tubutulik rivers (Figure 2). Therefore, the Niukluk, Fish, Kwiniuk, and Tubutulik rivers are index rivers to determine salmon run strength for those two subdistricts. Both subdistricts 2 and 3 have had renewed buyer interest in the chum salmon fishery beginning in 2008 and 2007, respectively; historical management actions are listed in Table 4.

ESCAPEMENT

In Subdistrict 2, the department established a threshold SEG of 30,000 chum salmon for Niukluk River tower in 2004. From 2004 through 2009, this SEG was achieved only in 2007 (Table 5). In 2010, the department recommended a lower-bound SEG of 23,000 chum salmon for Niukluk River tower (Bernard et al. 2009), and this goal was established and reached in 2010 and 2011 (Figure 9). In 2012 the chum salmon escapement may have fallen short by less than 10% of the goal, but the total chum salmon escapement could not be determined because flooding events prevented total enumeration of the chum salmon run. Beginning in 2013 the Niukluk River tower was discontinued. In 2014 a new counting tower project was initiated farther downstream on the Fish River, and it continues to be in development. High water prevented an accurate assessment of chum salmon passage in 2014, but in 2015 chum salmon escapement was well above average. Based on previous radio telemetry work indicating that one-third of the Fish River chum salmon run spawns in the Niukluk River (Todd 2004; Todd et al. 2005), the 2015 Fish River tower counts suggest that the Niukluk River tower goal would have been easily exceeded.

In 2001, the department established Subdistrict 3 chum salmon BEGs for Kwiniuk River and Tubutulik River of 10,000 to 20,000 and 8,000 to 16,000 chum salmon, respectively (Clark 2001b). In January 2001, the board established OEG ranges for chum salmon in Kwiniuk River and Tubutulik River by adding an additional 15% to the BEG range to account for subsistence harvests that may occur above the tower site on Kwiniuk River and inriver on Tubutulik River. Based on escapement counts from Kwiniuk River counting tower project, the OEG of 11,500 to 23,000 chum salmon has been achieved or exceeded in 2 of the 5 recent years (Table 6 and Figure 11). The OEG for the Tubutulik chum salmon stock is 9,200 to 18,400 chum salmon as assessed via aerial survey. It is difficult to determine if the OEG was achieved in most years

because aerial surveys were often incomplete due to poor weather conditions or lack of aircraft. Another difficulty in surveying Tubutulik River beginning in 2004 was the huge numbers of pink salmon that have been arriving at the same time as chum salmon in even-numbered years. In 2010, the chum salmon run was estimated to be the best in 25 years and a record escapement was counted at Kwiniuk River tower. The 2006 brood year had phenomenal production resulting in strong runs in both 2010 and 2011, but the 2012 and 2013 runs were considerably weaker, followed by strong runs again in 2014 and 2015. Overall, chum salmon runs in Subdistrict 3 have been lower in the 1990s and 2000s than in the 1980s based on Kwiniuk River escapements and reported harvests (Figures 11 and 12).

YIELD

In subdistricts 2 and 3, chum salmon harvests in the 2000s had been minimal until 2010. Subsistence chum salmon harvests averaged 1,857 and 2,093 fish in subdistricts 2 and 3, respectively, from 2011 through 2015. The total subsistence salmon harvest has usually been 50% or greater in even-numbered years compared to odd-numbered years as fishermen take advantage of the greater runs of pink salmon in even-numbered years (Tables 7 and 8). In most years in the middle of the last decade, chum salmon runs were insufficient to allow for commercial harvests in subdistricts 2 and 3. However, in 2007 there was a large surplus of chum salmon, but the sole buyer was only able to purchase fish in Subdistrict 3. In 2008 and 2009 there was not a surplus of chum salmon in either subdistrict, but in 2010 and 2011 chum salmon runs and harvests were the highest in over 20 years. In 2012 and 2013, commercial chum salmon fishing was limited because of a weaker than expected run, but in 2014 and 2015 strong runs again occurred and the department allowed commercial fishing whenever there was a market available. During the last 5 years (2011–2015), the available yield has been less than historical yield in the 1980s (Tables 7 and 8; Figures 10 and 12).

SUBDISTRICT 2 AND 3 STOCK OF CONCERN RECOMMENDATION

Given the continued low yield of chum salmon despite use of specific management measures, the Norton Sound subdistricts 2 and 3 chum salmon stock continues to meet the criteria for a stock of yield concern. Therefore, based on the definitions provided in the *Policy for the Management of Sustainable Salmon Fisheries* of 5 AAC 39.222(f)(42), the board continued the yield concern classification for the Norton Sound subdistricts 2 and 3 chum salmon stock at the October 2015 work session.

OUTLOOK

The 2016 chum salmon run in Norton Sound subdistricts 2 and 3 is expected to be above average based on the age-0.2 and age-0.3 chum salmon samples from the commercial catch and Kwiniuk River escapement in 2015 and from the parent year escapement numbers. In most years age-0.3 chum salmon make up the majority of the run to subdistricts 2 and 3, and the survival rate from brood year 2012 was estimated to be above average based on the number of age-0.2 fish observed in escapement samples. Based on the age-0.3 fish return in 2015, age-0.4 is expected to be average to above average.

ALASKA BOARD OF FISHERIES ACTION

In response to guidelines established in the SSFP, the board continued classification of the Norton Sound subdistricts 2 and 3 chum salmon as a stock of yield concern during its October 2015 work session.

ESCAPEMENT GOAL EVALUATION

The department has undertaken a review of escapement goals for several Norton Sound salmon stocks where sufficient long-term escapement, catch, and age composition data exist that enable the development of BEGs or SEGs based on analysis of production consistent with the escapement goal policy.

In Subdistrict 2, the department established an escapement goal threshold of 30,000 chum salmon for Niukluk River tower in 2004 (ADF&G 2004). In Subdistrict 3, BEGs were established for the Tubutulik and Kwiniuk rivers in 2001 (Clark 2001b). Aerial surveys are used to determine if the Tubutulik River goal is reached. A counting tower project is used to estimate chum salmon escapement in Kwiniuk River. In January 2001, the board established OEG ranges for Tubutulik and Kwiniuk rivers by increasing the department-recommended BEGs by 15%. Escapement goals were reviewed in the 2007 board cycle utilizing additional data since the escapement goals were established. This evaluation resulted in no recommended changes (Brannian et al. 2006). Escapement goals were examined for the 2010 board cycle, and the review team recommended changing the Niukluk River chum salmon goal to a lower-bound SEG of >23,000 (Volk et al. 2009) based on a risk analysis (Bernard et al. 2009) that indicated escapements exceeding this threshold would result in only a 6.6% estimated risk of a management concern (4 consecutive years of escapements below the threshold), and only a 6.4% estimated risk of experiencing a 75% drop in mean escapement. The Niukluk River counting tower is no longer operational. Therefore, the escapement goal will be discontinued. A new counting tower project has been initiated downstream on the Fish River, and it is the goal of the review team that an escapement goal be established on this system when sufficient ground-based data have been collected.

Current goals for Subdistricts 3 chum salmon stocks are as follows:

| Stream | Current Goal | | Proposed Goal |
|-------------------------------|---------------|-----|---------------|
| Kwiniuk River Counting Tower | 10,000–20,000 | BEG | No Change |
| Kwiniuk River Counting Tower | 11,500–23,000 | OEG | No Change |
| Tubutulik River Aerial Survey | 8,000–16,000 | BEG | No Change |
| Tubutulik River Aerial Survey | 9,200–18,400 | OEG | No Change |
| Niukluk River Counting Tower | >23,000 | SEG | Discontinue |

MANAGEMENT ACTION PLAN OPTIONS FOR ADDRESSING STOCKS OF CONCERN AS OUTLINED IN THE SUSTAINABLE FISHERIES POLICY

NORTON SOUND SUBDISTRICTS 2 AND 3 CHUM SALMON MANAGEMENT PLAN REVIEW/DEVELOPMENT

Current Stock Status

In response to guidelines established in the SSFP (5 AAC 39.222), the department recommended continuation of Norton Sound subdistricts 2 and 3 chum salmon as a stock of yield concern at the October 2015 board work session. The board continued the classification of subdistricts 2 and 3 chum salmon as a stock of yield concern at its October 2015 work session. This determination was based on the inability, despite the use of specific management measures, to maintain expected yields or harvestable surpluses above a stock's escapement needs during the last 5 years (2011–2015).

Customary and Traditional Use Finding and Amount Necessary for Subsistence

As previously mentioned, the board has made a positive C&T finding for salmon in the Norton Sound-Port Clarence Area and determined the ANS to be 96,000–160,000 salmon for the Norton Sound-Port Clarence Area.

HABITAT FACTORS ADVERSELY AFFECTING CHUM SALMON STOCKS

Subdistrict 2

The Norton Sound/Bering Strait Regional Comprehensive Salmon Plan 1996–2010 (Norton Sound/Bering Strait Regional Planning Team 1996) briefly mentions that the population of Council, on Niukluk River, was 10,000 people during the 1895 Gold Rush. Damage to fish habitat would have occurred over 110 years ago and is not thought by area staff to be the limiting factor now in chum salmon production. Available spawning habitat appears to be more than adequate for the numbers of fish returning. The extent to which mining reduced the available spawning and rearing habitat is not known. There is occasional small-scale mining activity on Ophir Creek, which is not currently known for chum salmon production. Oral history indicated Ophir Creek used to be predominately a chum salmon producer. Historically, dredging left numerous dredge ponds. Beaver activity has intensified morphological changes in the creek. The system now primarily produces coho salmon. The increasing presence of beavers appears to be a common agent of habitat change. There are probably other habitat changes with very small impacts that could indicate a trend in changing environment. Casadepaga River has both small-scale mining and significant chum salmon production.

Subdistrict 3

In the late 1990s, there was a perched culvert on Iron Creek on the Moses Point to Elim Road that was a barrier to fish passage (pink, chum, and coho salmon) at all but high tidal stages. Local residents manually transported spawning stocks around the culvert in some years. The culvert was initially installed by the Bureau of Indian Affairs (BIA) and a retrofit has now provided easier fish passage. Beaver dams are becoming more prevalent on Iron Creek and this stream has been transformed from a chum salmon producer to a coho salmon producer. Many

hook and line subsistence fishermen report harvesting coho salmon from Iron Creek. Kroeker (2006) reported the effect of beaver activity on Kwiniuk River and Iron Creek.

EXISTING MANAGEMENT PLAN

5 AAC 04.390. Subdistricts 2 and 3 of the Norton Sound District Salmon Management Plan.

ACTION PLAN DEVELOPMENT

NORTON SOUND SUBDISTRICTS 2 AND 3 CHUM SALMON ACTION PLAN GOAL

The goal of the plan is to reduce fishing mortality in order to meet spawning escapement goals, to provide for subsistence harvest levels within the ANS range, and to reestablish historical range of harvest levels by other users.

REVIEW OF MANAGEMENT ACTION PLAN

Regulation Changes Adopted in January 2001

In January 2001, after review of the management action plan options addressing this stock of concern, the board adopted the following plan:

5 AAC 04.390. Subdistricts 2 and 3 of the Norton Sound District Salmon Management Plan.

- (a) The purpose of this management plan is to provide the department with management guidelines for sustained yield of salmon stocks in Subdistricts 2 and 3 in the Norton Sound District. The department shall manage, to the extent practicable, the commercial, sport, subsistence, and personal use fisheries in Subdistricts 2 and 3 to achieve escapement goals.
- (b) The department shall manage salmon fisheries in the Subdistricts 2 and 3 as follows:
 - (1) in the commercial chum salmon fishery,
 - (A) the department shall manage the fisheries to achieve the following optimal escapement goals ranges:
 - i. Kwiniuk River: 11,500–23,000 chum salmon; and
 - ii. Tubutulik River: 9,200–18,400 chum salmon;
 - (B) the chum salmon harvest may not exceed 15,000 fish before the departments mid-July run assessment in Subdistrict 2;
 - (C) the fishery may occur only if the department projects that chum salmon escapement goals will be achieved and the harvestable surplus will more than meet subsistence needs;
 - (2) in the commercial pink salmon fishery, the fishery may occur only if subsistence needs are expected to be met and chum salmon escapement goals achieved;
 - (3) in the commercial coho salmon fishery, the fishery may occur only when the chum salmon escapement goals for the Norton Sound District index rivers specified in 5 AAC 04.358 are achieved or when the department determines that further restrictions would have no impact on achieving chum salmon escapement goals;

- (4) the commissioner may not place restrictions on subsistence fishing for chum salmon by emergency order, unless all directed chum salmon commercial fishing has been closed and sport fishing has been appropriately restricted in the subdistrict as provided in 5 AAC 01.180–5 AAC 01.184.

The board adopted subsistence hook and line attached to a rod or pole as a lawful gear for all species in northern Norton Sound and southern Kotzebue Sound. Sport fishing bag limits and methods and means restrictions were adopted, except when a subsistence fishing permit is required; then, the catch limits specified in the subsistence fishing permit will apply, except when fishing through the ice.

Regulation Changes Adopted in January 2004

In January 2004, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2003b), the board adopted a regulation requiring subsistence salmon permits in all waters of subdistricts 2 and 3. No harvest limits were established for subdistricts 2 and 3.

Regulation Changes Adopted in January 2007

In January 2007, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2006b), the board (1) eliminated the commercial fishing period schedule of two 48-hour fishing periods per week in Subdistrict 2 and allowed the department to set periods by emergency order, and (2) eliminated the commercial fishing period schedule in Subdistrict 3 of two 24-hour fishing periods per week and allowed the department to set periods by emergency order.

Regulation Changes Adopted in January 2010

In January 2010, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2009b), the board allowed for a directed pink salmon commercial fishery after July 6 in Subdistrict 3 and after July 14 in Subdistrict 2 if there was a harvestable pink salmon surplus even though chum salmon escapement goals had not been reached.

Regulation Changes Adopted in January 2013

In January 2013, after review of the management action plan options addressing this stock of concern (Menard and Bergstrom 2012), the board repealed the regulatory requirement that chum salmon goals in Subdistrict 1 be achieved before allowing for commercial coho salmon fishing in subdistricts 2 and 3.

Management Review

Historical management actions in subdistricts 2 and 3 are listed in Table 4. From 2002 through 2006 there was no commercial fishing in either subdistrict, mainly because of no market interest; however, in the case of chum salmon there were some years of poor runs.

Beginning in 2007, one buyer was interested in purchasing salmon from Subdistrict 3 and expanded to Subdistrict 2 in 2008. Commercial fishing was allowed in 2007 for chum salmon in Subdistrict 3. In 2008 and 2009, the chum salmon runs were too weak in both subdistricts to allow for commercial fishing, but in 2010 and 2011 chum salmon fishing was the best in over 20 years. Two weak chum salmon runs occurred in 2012 and 2013, followed by two strong chum

runs in 2014 and 2015. In 2014 and 2015, fishing time was liberalized to allow harvest of surplus chum salmon; however, the buyer had limited tendering and processing capacity. Pink salmon commercial fishing has occurred during the even-numbered years since 2008, and commercial fishing for coho salmon has occurred yearly since 2008 in both subdistricts. There have been record harvests of coho salmon in a number of years since 2008.

Subsistence salmon harvests in the 2000s, in subdistricts 2 and 3, have usually been higher in even-numbered years compared to odd-numbered years due to fishermen taking advantage of the larger runs of pink salmon in the even-numbered years. There have been no subsistence chum salmon fishing restrictions since 2003.

2016 ALASKA BOARD OF FISHERIES REGULATORY PROPOSAL AFFECTING NORTON SOUND SUBDISTRICTS 2 AND 3 CHUM SALMON

Subsistence

Proposal:

- 129 – Require the release of a specified salmon species when beach seining.
- 130 – Allow the restriction of gillnet mesh size during times of conservation for chum and king salmon.
- 132 – Allow cast nets and dip nets to harvest finfish including salmon.

RESEARCH

The Regional Planning Team (RPT) met in the spring of 2012 after several years of inactivity. The RPT board members are made up of 3 department personnel and 3 members appointed by the Northern Bering Sea Regional Aquaculture Association (NoBSRAA). The RPT recently updated the *Norton Sound/Bering Strait Regional Comprehensive Salmon Plan, 1996–2010*, and a finalized report is expected to be published in late 2015. Norton Sound Economic Development Corporation (NSEDCC) has conducted small-scale chum salmon egg takes and planted eyed eggs back into Snake and Solomon rivers during 4 of the last 5 years.

In 2015, a 2-year chum salmon tagging radio telemetry project in Subdistrict 1 was funded by the Alaska Sustainable Salmon Fund (AKSSF) to determine origin of chum salmon captured and tagged in nearshore marine waters. In 2015 there were tagged chum salmon recoveries from Shaktoolik to Kotzebue (Jenefer Bell, Fishery Biologist, Alaska Department of Fish and Game, Division of Commercial Fisheries, Nome; personal communication).

Additional salmon research and assessment in this area continues to be conducted in cooperation and coordination with multiple local entities in the area, including NSEDCC, Bering Straits Native Corporation, White Mountain Native Corporation, Solomon Native Corporation, and Sitnasuak Native Corporation. The efforts of these organizations contribute to strengthening knowledge of these stocks and improving the management capabilities of the department.

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TABLES AND FIGURES

Table 1.—Subdistrict 1 chum salmon estimated escapement.

| Year | Solomon River ^a | Bonanza River ^a | Flambeau River ^a | Sinuk River ^a | Eldorado River ^b | Snake River ^c | Nome River ^d | Subdistrict River ^e |
|-----------------|-------------------------------|-------------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|----------------------------|-----------------------------------|
| 1993 | 2,525 | 3,007 | 6,103 | 6,052 | 9,048 | 2,115 | 5,925 | 34,775 |
| 1994 | 1,066 | 5,178 | 12,889 | 4,905 | 13,202 | 3,519 | 2,893 | 43,652 |
| 1995 | 2,106 | 11,182 | 16,474 | 9,464 | 18,955 | 4,395 | 5,093 | 67,669 |
| 1996 | 2,141 | 7,049 | 13,613 | 6,658 | 32,970 | 2,772 | 3,339 | 68,542 |
| 1997 | 2,111 | 4,140 | 9,455 | 9,212 | 14,302 | 6,184 | 5,147 | 50,551 |
| 1998 | 925 | 4,552 | 9,129 | 6,720 | 13,808 | 11,067 | 1,930 | 48,131 |
| 1999 | 637 | 2,304 | 637 | 6,370 | 4,218 | 484 | 1,048 | 15,698 |
| 2000 | 1,294 | 4,876 | 3,947 | 7,198 | 11,617 | 1,911 | 4,056 | 34,899 |
| 2001 | 1,949 | 4,745 | 10,465 | 10,718 | 11,635 | 2,182 | 2,859 | 44,553 |
| 2002 | 2,150 | 3,199 | 6,804 | 6,333 | 10,243 | 2,776 | 1,720 | 33,225 |
| 2003 | 806 | 1,664 | 3,380 | 3,482 | 3,591 | 2,201 | 1,957 | 17,081 |
| 2004 | 1,436 | 2,166 | 7,667 | 3,197 | 3,273 | 2,145 | 3,903 | 23,787 |
| 2005 | 1,914 | 5,534 | 7,692 | 4,710 | 10,426 | 2,948 | 5,584 | 38,808 |
| 2006 | 2,062 | 708 | 27,828 | 4,834 | 41,985 | 4,128 | 5,677 | 87,222 |
| 2007 | 3,469 | 8,491 | 12,006 | 16,481 | 21,312 | 8,147 | 7,034 | 76,940 |
| 2008 | 959 | 3,636 | 11,618 | 5,367 | 6,746 | 1,244 | 2,607 | 32,177 |
| 2009 | 918 | 6,744 | 4,075 | 2,232 | 4,943 | 891 | 1,565 | 21,368 |
| 2010 | 2,678 | 3,513 | 25,009 | 11,107 | 42,612 | 6,973 | 5,906 | 97,798 |
| 2011 | 4,529 | 7,357 | 15,056 | 15,028 | 16,227 | 4,343 | 3,582 | 66,122 |
| 2012 | 1,377 | 6,002 | 17,517 | 10,537 | 13,393 | 1,235 | 2,015 | 52,076 |
| 2013 | 1,377 | 13,437 | 27,928 | 31,691 | 26,121 | 2,755 | 4,811 | 108,120 |
| 2014 | 1,502 | 18,508 | 21,462 | 19,136 | 27,054 | 3,983 | 5,589 | 97,234 |
| 2015 | 1,128 | 13,212 | 12,011 | 29,643 | 25,560 | 4,260 | 6,216 | 92,030 |
| 2011–2015 Avg. | 1,983 | 11,703 | 18,795 | 21,207 | 21,671 | 3,315 | 4,443 | 83,116 |
| Escapement Goal | | | | | 6,000-9,200 | 1,600-2,500 | 2,900-4,300 | 23,000-35,000 |

^a The Bonanza, Flambeau, Sinuk and Solomon Rivers escapement estimate is obtained by expanding aerial survey counts by calculation from Clark 2001a. From 2013–2015 the Solomon River escapement estimate is by weir.

^b The Eldorado River escapement estimate is the same method as in Clark 2001a for 1993–1996. From 1997–2002 escapement estimates are from counting tower and from 2003–2015 by weir. The 2010 escapement estimate was by aerial expansion because the weir was often not fish tight because of high water. Escapement goal range was established in 2001.

^c The Snake River escapement estimate is the same method as in Clark 2001a for 1993–1994. From 1995–2002 escapement estimates are from counting tower and from 2003–2015 by weir. Escapement goal range was established in 2001.

^d The Nome River escapement estimate is the same method as in Clark 2001a for 1993. From 1994–1995 escapement estimates are from counting tower and from 1996–2015 by weir. Escapement goal range was established in 2001.

^e Subdistrict 1 BEG was established in 2001.

Table 2.—Commercial and subsistence salmon catch by species, by year in Subdistrict 1.

| Year | SUBDISTRICT 1 (NOME) | | | | | | | | | | | | | | | | | |
|-------------------|----------------------|---------|-------|--------|--------|--------|-------------|---------|-------|--------|--------|--------|----------|---------|-------|--------|--------|--------|
| | Commercial | | | | | | Subsistence | | | | | | Combined | | | | | |
| | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total |
| 1964 | 5 | 0 | 0 | 1 | 1,194 | 1,200 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 1,194 | 1,200 |
| 1965 | 1 | 0 | 0 | 193 | 1,941 | 2,135 | 0 | 0 | 0 | 780 | 1,825 | 2,605 | 1 | 0 | 0 | 973 | 3,766 | 4,740 |
| 1966 | 1 | 0 | 32 | 1 | 581 | 615 | 12 | 0 | 0 | 1,794 | 1,762 | 3,568 | 13 | 0 | 32 | 1,795 | 2,343 | 4,183 |
| 1967 | 0 | 0 | 0 | 72 | 406 | 478 | 11 | 0 | 0 | 349 | 627 | 987 | 11 | 0 | 0 | 421 | 1,033 | 1,465 |
| 1968 ^a | 0 | 0 | 0 | 50 | 102 | 152 | 7 | 0 | 0 | 6,507 | 621 | 7,135 | 7 | 0 | 0 | 6,557 | 723 | 7,287 |
| 1969 | 0 | 0 | 63 | 330 | 601 | 994 | 2 | 0 | 0 | 3,649 | 508 | 4,159 | 2 | 0 | 63 | 3,979 | 1,109 | 5,153 |
| 1970 | 0 | 0 | 6 | 55 | 960 | 1,021 | 0 | 0 | 35 | 5,001 | 458 | 5,494 | 0 | 0 | 41 | 5,056 | 1,418 | 6,515 |
| 1971 | 11 | 0 | 0 | 14 | 2,315 | 2,340 | 0 | 0 | 122 | 5,457 | 2,900 | 8,479 | 11 | 0 | 122 | 5,471 | 5,215 | 10,819 |
| 1972 | 15 | 0 | 0 | 12 | 2,643 | 2,670 | 19 | 0 | 52 | 4,684 | 315 | 5,070 | 34 | 0 | 52 | 4,696 | 2,958 | 7,740 |
| 1973 | 0 | 0 | 0 | 321 | 1,132 | 1,453 | 14 | 0 | 120 | 5,108 | 1,863 | 7,105 | 14 | 0 | 120 | 5,429 | 2,995 | 8,558 |
| 1974 | 19 | 0 | 123 | 7,722 | 10,431 | 18,295 | 8 | 0 | 5 | 3,818 | 183 | 4,014 | 27 | 0 | 128 | 11,540 | 10,614 | 22,309 |
| 1975 ^b | 2 | 0 | 319 | 2,163 | 8,364 | 10,848 | 2 | 0 | 97 | 6,267 | 2,858 | 9,224 | 4 | 0 | 416 | 8,430 | 11,222 | 20,072 |
| 1976 | 2 | 10 | 26 | 1,331 | 7,620 | 8,989 | 13 | 0 | 189 | 5,492 | 1,705 | 7,399 | 15 | 10 | 215 | 6,823 | 9,325 | 16,388 |
| 1977 | 8 | 0 | 58 | 65 | 15,998 | 16,129 | 35 | 0 | 498 | 2,773 | 12,192 | 15,498 | 43 | 0 | 556 | 2,838 | 28,190 | 31,627 |
| 1978 | 19 | 0 | 0 | 22,869 | 8,782 | 31,670 | 35 | 0 | 225 | 13,063 | 4,295 | 17,618 | 54 | 0 | 225 | 35,932 | 13,077 | 49,288 |
| 1979 | 9 | 0 | 29 | 5,860 | 5,391 | 11,289 | 11 | 0 | 1,120 | 6,353 | 3,273 | 10,757 | 20 | 0 | 1,149 | 12,213 | 8,664 | 22,046 |
| 1980 | 8 | 0 | 0 | 10,007 | 13,922 | 23,937 | 129 | 0 | 2,157 | 22,246 | 5,983 | 30,515 | 137 | 0 | 2,157 | 32,253 | 19,905 | 54,452 |
| 1981 | 4 | 0 | 508 | 3,202 | 18,666 | 22,380 | 35 | 14 | 1,726 | 5,584 | 8,579 | 15,938 | 39 | 14 | 2,234 | 8,786 | 27,245 | 38,318 |
| 1982 | 20 | 0 | 1,183 | 18,512 | 13,447 | 33,162 | 21 | 6 | 1,829 | 19,202 | 4,831 | 25,889 | 41 | 6 | 3,012 | 37,714 | 18,278 | 59,051 |
| 1983 | 23 | 0 | 261 | 308 | 11,691 | 12,283 | 74 | 53 | 1,911 | 8,086 | 7,091 | 17,215 | 97 | 53 | 2,172 | 8,394 | 18,782 | 29,498 |
| 1984 | 7 | 0 | 820 | 0 | 3,744 | 4,571 | 83 | 16 | 1,795 | 17,182 | 4,883 | 23,959 | 90 | 16 | 2,615 | 17,182 | 8,627 | 28,530 |
| 1985 | 21 | 0 | 356 | 0 | 6,219 | 6,596 | 56 | 114 | 1,054 | 2,117 | 5,667 | 9,008 | 77 | 114 | 1,410 | 2,117 | 11,886 | 15,604 |
| 1986 | 6 | 0 | 50 | 0 | 8,160 | 8,216 | 150 | 107 | 688 | 8,720 | 8,085 | 17,750 | 156 | 107 | 738 | 8,720 | 16,245 | 25,966 |
| 1987 | 3 | 0 | 577 | 0 | 5,646 | 6,226 | 200 | 107 | 1,100 | 1,251 | 8,394 | 11,052 | 203 | 107 | 1,677 | 1,251 | 14,040 | 17,278 |
| 1988 | 2 | 0 | 54 | 182 | 1,628 | 1,866 | 63 | 133 | 1,076 | 2,159 | 5,952 | 9,383 | 65 | 133 | 1,130 | 2,341 | 7,580 | 11,249 |
| 1989 | 2 | 0 | 0 | 123 | 492 | 617 | 24 | 131 | 469 | 924 | 3,399 | 4,947 | 26 | 131 | 469 | 1,047 | 3,891 | 5,564 |
| 1990 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 234 | 510 | 2,233 | 4,246 | 7,281 | 58 | 234 | 510 | 2,233 | 4,246 | 7,281 |
| 1991 | 0 | 0 | 0 | 0 | 0 | 0 | 83 | 166 | 1,279 | 194 | 3,715 | 5,437 | 83 | 166 | 1,279 | 194 | 3,715 | 5,437 |
| 1992 | 1 | 2 | 693 | 185 | 881 | 1,762 | 152 | 163 | 1,481 | 7,351 | 1,684 | 10,831 | 153 | 165 | 2,174 | 7,536 | 2,565 | 12,593 |
| 1993 | 0 | 2 | 611 | 0 | 132 | 745 | 52 | 80 | 2,070 | 873 | 1,766 | 4,841 | 52 | 82 | 2,681 | 873 | 1,898 | 5,586 |
| 1994 | 0 | 1 | 287 | 0 | 66 | 354 | 23 | 69 | 983 | 6,556 | 1,673 | 9,304 | 23 | 70 | 1,270 | 6,556 | 1,739 | 9,658 |
| 1995 | 0 | 1 | 369 | 0 | 122 | 492 | 26 | 148 | 1,365 | 336 | 3,794 | 5,669 | 26 | 149 | 1,734 | 336 | 3,916 | 6,161 |
| 1996 | 0 | 0 | 9 | 13 | 3 | 25 | 9 | 185 | 828 | 3,510 | 2,287 | 6,819 | 9 | 185 | 837 | 3,523 | 2,290 | 6,844 |
| 1997 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 325 | 175 | 2,696 | 3,256 | 10 | 50 | 325 | 175 | 2,696 | 3,256 |
| 1998 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 14 | 1,057 | 4,797 | 964 | 6,847 | 15 | 14 | 1,057 | 4,797 | 964 | 6,847 |
| 1999 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 85 | 161 | 58 | 337 | 652 | 11 | 85 | 161 | 58 | 337 | 652 |

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Table 2.–Page 2 of 2.

| SUBDISTRICT 1 (NOME) | | | | | | | | | | | | | | | | | | | |
|----------------------|------------|---------|------|-------|-------|-------|-------------|---------|-------|--------|-------|--------|----------|---------|-------|--------|-------|--------|--|
| | Commercial | | | | | | Subsistence | | | | | | Combined | | | | | | |
| Year | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total | |
| 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 26 | 747 | 2,657 | 535 | 3,972 | 7 | 26 | 747 | 2,657 | 535 | 3,972 | |
| 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 92 | 425 | 113 | 858 | 1,490 | 2 | 92 | 425 | 113 | 858 | 1,490 | |
| 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 79 | 666 | 3,161 | 1,114 | 5,024 | 4 | 79 | 666 | 3,161 | 1,114 | 5,024 | |
| 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 76 | 351 | 507 | 565 | 1,562 | 63 | 76 | 351 | 507 | 565 | 1,562 | |
| 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 106 | 1,574 | 15,047 | 685 | 17,512 | 100 | 106 | 1,574 | 15,047 | 685 | 17,512 | |
| 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 177 | 1,287 | 5,075 | 803 | 7,404 | 62 | 177 | 1,287 | 5,075 | 803 | 7,404 | |
| 2006 ^d | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 159 | 3,865 | 9,329 | 890 | 14,267 | 24 | 159 | 3,865 | 9,329 | 890 | 14,267 | |
| 2007 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 297 | 1,103 | 850 | 2,938 | 5,206 | 18 | 297 | 1,103 | 850 | 2,938 | 5,206 | |
| 2008 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 127 | 3,423 | 12,592 | 739 | 16,920 | 39 | 127 | 3,423 | 12,592 | 739 | 16,920 | |
| 2009 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 64 | 1,132 | 487 | 387 | 2,102 | 32 | 64 | 1,132 | 487 | 387 | 2,102 | |
| 2010 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 77 | 1,983 | 6,281 | 3,124 | 11,504 | 39 | 77 | 1,983 | 6,281 | 3,124 | 11,504 | |
| 2011 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 47 | 1,229 | 1,389 | 1,428 | 4,112 | 19 | 47 | 1,229 | 1,389 | 1,428 | 4,112 | |
| 2012 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 171 | 1,150 | 8,376 | 2,521 | 12,229 | 11 | 171 | 1,149 | 8,376 | 2,521 | 12,229 | |
| 2013 ^e | | | | | | | 48 | 211 | 1,804 | 845 | 3,065 | 5,973 | 48 | 211 | 1,804 | 845 | 3,065 | 5,973 | |
| 2014 | 3 | 7 | 39 | 1,169 | 1,456 | 2,674 | 31 | 405 | 3,042 | 6,648 | 3,844 | 13,970 | 34 | 412 | 3,081 | 7,817 | 5,300 | 16,644 | |
| 2015 ^f | 3 | 93 | 13 | 553 | 4,861 | 5,523 | 21 | 1,078 | 1,768 | 3,163 | 3,966 | 9,996 | 24 | 1,171 | 1,781 | 3,716 | 8,827 | 15,519 | |
| 2011–2015 | Not | | | | | | | | | | | | | | | | | | |
| Average | Calculated | | | | | | 26 | 382 | 1,799 | 4,084 | 2,965 | 9,256 | 27 | 402 | 1,809 | 4,429 | 4,228 | 10,895 | |

^a Beginning in 1968 a subsistence permit was required for Sinuk, Snake, Nome, and Solomon rivers. Previous subsistence harvests were estimated by a limited survey of fishermen.

^b Beginning in 1975 a subsistence permit was required for the entire subdistrict.

^c Beginning in 1999 Tier II chum salmon fishing restrictions limited the number of permit holders that could fish for chum salmon.

^d Beginning in 2006 Tier II chum salmon fishing restrictions were suspended.

^e Confidential; only one permit holder fished.

^f Preliminary.

Table 3.—Subdistrict 1 (Nome) historical management actions.

| | |
|-------------|---|
| 1962 | Norton Sound District divided into subdistricts to focus management near terminal harvest areas. |
| 1968 | Subsistence registration permits required for fishing in the Sinuk, Snake, Nome, and Solomon rivers with bag limits and standard fishing times for entire subdistrict. |
| Late 1970s– | The Alaska Board of Fisheries set commercial guideline harvest range between 5,000 and 15,000 chum salmon. |
| | Commercial fishing period length reduced by half. |
| | Subsistence permits required for all Subdistrict 1 waters beginning in 1975. |
| 1981 | Subsistence fishing periods were two 48-hour fishing periods a week. |
| 1984 | Salmon management shifted focus from commercial to subsistence. |
| | Commercial harvest area reduced by half to protect subsistence harvest areas. |
| | Commercial fishing time greatly reduced to allow for subsistence needs and adequate escapements. |
| | Sport fish chum and coho salmon bag limits reduced. |
| | Subsistence season bag limits reduced to 20 chum and 20 coho salmon. |
| 1987 | Commercial fishery nearly eliminated by current regulations and management due to low chum and pink salmon runs. |
| | Sport fish chum and coho salmon bag limits further reduced. |
| | Subsistence beach seines disallowed as a legal gear type in specific waters. |
| 1988 | Sport fishing for chum salmon closed in the Nome River. |
| | Subsistence gillnets reduced to 50 feet maximum length in Nome River. |
| 1990 | Subsistence fishing closure on Nome River to allow for chum salmon escapement. |
| 1991 | Commercial, sport, and subsistence closures of nearly the entire subdistrict due to low chum and pink salmon escapements. Restrictions were lifted once they became no longer effective and other species could be targeted. |
| 1992 | Similar to 1991, except that subsistence restrictions were lifted incrementally as numerous pink salmon returned while protecting chum salmon stocks. Beach seines were allowed as a legal gear for pink salmon only. |
| | Subsistence gillnet gear was restricted to 50 feet maximum length for all fresh waters of Subdistrict 1 by regulation. |
| 1993 | Same to 1991. |
| 1994 | Commercial fishing closed until August 1 when coho salmon could be targeted. Sport harvest of chum salmon closed for entire season. Subsistence restrictions similar to 1992. |
| 1995 | Management similar to 1994 except: sport fishing for chum salmon was closed by regulation; beach seine gear was allowed in areas with adequate chum salmon escapements; and subsistence fishing time increased for marine waters an additional day to 5 days a week to allow for more flexibility to deal with more harsh fishing conditions. |

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Table 3.–Page 2 of 5.

| | |
|------|--|
| 1996 | Management similar to 1995, except that beach seine fishing targeted pink salmon and did not allow chum salmon to be retained. |
| 1997 | Management similar to 1995 except that no beach seine fishing was allowed. |
| 1998 | Initially, subsistence salmon fishing closure for all waters except marine west of Cape Nome Jetty. Incremental relaxing of individual areas to subsistence fishing with gear restrictions to avoid chum salmon. No commercial coho salmon season. |
| 1999 | Board implements Tier II subsistence chum salmon fishing regulations, which awards limited fishing opportunity to individuals with the longest history and greatest dependence on the Nome Subdistrict chum salmon resource based on the inability of the Nome chum salmon stock to fully support all subsistence users' needs. Board reduces subsistence fishing time in marine waters from 5 days to 3 days a week during chum salmon season. Open Tier II only subsistence chum salmon fishing, issuing 20 permits and restricting effort to marine waters east of Cape Nome. Close all subsistence chum fishing due to very weak runs. No commercial coho salmon season; close sport and subsistence fishing for coho salmon. |
| 2000 | Open Tier II only subsistence chum salmon fishing, issuing 10 permits and restricting effort to marine waters east of Cape Nome. Open Tier I beach seining for pink salmon and later small mesh gillnets to take advantage of strong pink salmon run while protecting chum salmon. General subsistence fishing reopened to coho salmon in all usual waters of subdistrict. |
| 2001 | Board establishes optimum escapement goals for Nome Subdistrict rivers. Open Tier II only subsistence chum salmon fishing in late June, issuing 20 permits and restricting effort to marine waters east of Cape Nome. Tier II fishing opened in Eldorado, Flambeau and Bonanza Rivers in mid-July. An additional 10 Tier II permits are issued in mid-July. Open Tier I subsistence chum salmon in Eldorado–Flambeau rivers after July 18. General subsistence fishing reopened in August to coho salmon fishing. Subsistence coho salmon fishing time reduced after August 20. Sport coho salmon fishing closed. Hook and line attached to a rod or pole adopted as legal subsistence gear. |
| 2002 | Open Tier II only subsistence chum salmon fishing in late June, issuing 30 permits and restricting effort to marine waters east of Cape Nome. An additional 10 Tier II permits are issued in late June. Open Tier II fishing in Eldorado and Flambeau Rivers after July 4. Open Tier I fishing for pink salmon in marine waters 2nd week of July. Open Tier I fishing open in fresh waters east of Cape Nome in mid-July and then all rivers except Nome. |

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Table 3.–Page 3 of 5.

| | |
|------|--|
| | <p>General subsistence fishing reopened in August to coho salmon fishing.</p> <p>Subsistence and sport coho salmon fishing closed for 2 weeks beginning mid-August and then a restricted fresh water schedule in September.</p> |
| 2003 | <p>Open Tier II only subsistence chum salmon fishing in late June, issuing 30 permits and restricting effort to marine waters east of Cape Nome. An additional 10 Tier II permits are issued in early July.</p> <p>Close all subsistence fishing in mid-July because of weak chum salmon runs.</p> <p>General subsistence fishing reopened in August to coho salmon fishing.</p> <p>Subsistence and sport fishing for coho salmon closed in mid-August.</p> |
| 2004 | <p>All applicants for Tier II subsistence chum salmon fishing permits were successful.</p> <p>57 applicants (including those applying during 10-day appeal process).</p> <p>52 applicants eventually picked up permits and 49 permit holders fished.</p> <p>Tier II opened in marine waters east of Cape Nome on June 15.</p> <p>Eldorado, Flambeau, and Sinuk freshwater subsistence zones opened in late June.</p> <p>Hook and line Tier I subsistence fishing opened to target record pink salmon run.</p> <p>Marine waters west of Cape Nome opened to Tier II gillnets from July 1 to July 3.</p> <p>Tier II fishing was allowed in all chum salmon subsistence areas the second half of July, except for the Eldorado and Solomon rivers.</p> <p>Tier I chum salmon fishing was allowed in rivers that had made the escapement goal.</p> |
| 2005 | <p>All applicants for Tier II subsistence chum salmon fishing permits were successful.</p> <p>59 applicants (including those applying during the 10-day appeal process)</p> <p>49 applicants eventually picked up permits and 44 permit holders fished.</p> <p>Tier II opened in marine waters east of Cape Nome on June 15.</p> <p>Eldorado, Flambeau, and Sinuk freshwater subsistence zones opened on June 29 to set gillnet fishing for Tier II permit holders.</p> <p>Hook and line Tier I subsistence fishing opened on June 30.</p> <p>In mid-July Tier II restrictions were rescinded.</p> <p>In late July, Tier I subsistence chum salmon limits were waived.</p> <p>Anvil Creek closed to protect spawning coho salmon.</p> |
| 2006 | <p>No Tier II restrictions because chum salmon surplus projected to surpass ANS.</p> <p>Beginning mid-June the Nome Subdistrict is on the regular subsistence schedule for the first time since 1990.</p> <p>Opened beach seining during gillnet fishing schedule on July 6 and pink salmon limits waived. Chum salmon limits were waived on July 10.</p> <p>Coho salmon limits were waived on August 19 in the marine waters.</p> |

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Table 3.–Page 4 of 5.

| | |
|------|--|
| | Coho salmon limits were waived on September 1 in fresh waters. |
| 2007 | <p>No Tier II restrictions as chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect.</p> <p>In mid-July subsistence catch limits for chum and sockeye salmon waived in the Nome Subdistrict, except for the Solomon, Cripple, and Penny rivers. Subsistence marine gillnet schedule extended 2 additional days a week.</p> <p>End of July beach seining is allowed for salmon during subsistence net fishing periods.</p> |
| 2008 | <p>No Tier II restrictions because chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect.</p> <p>Beginning the second week of July beach seining is allowed throughout the month during subsistence net fishing periods and pink salmon limits are waived. Sport fishing pink salmon limits are doubled from 10 to 20 fish.</p> <p>Subsistence coho salmon limits are doubled in September.</p> |
| 2009 | <p>No Tier II restrictions because chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect.</p> <p>In mid-July subsistence salmon gillnet fishing and chum salmon subsistence fishing closed in Subdistrict 1 when projections show chum salmon escapement will fall short of lower end of escapement goal range of 23,000 to 35,000 chum salmon.</p> <p>In mid-July, Pilgrim River, in neighboring Port Clarence District, is closed to all salmon net fishing because of low sockeye salmon run until September.</p> <p>First week of August subsistence salmon gillnet fishing schedule allowed in marine waters to target coho salmon.</p> <p>Second week of August the subsistence gillnet fishing schedule allowed in the fresh waters.</p> <p>Fourth week of August subsistence salmon gillnet fishing and sport fishing for coho salmon closed. A few days later subsistence coho salmon fishing with hook and line closed.</p> |
| 2010 | <p>No Tier II restrictions as chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect. Beginning July 1 beach seining is allowed in Eldorado, Flambeau, and Sinuk rivers until coho salmon season in late July.</p> <p>Beginning second week of July subsistence pink salmon catch limits are waived. Subsistence chum salmon limits are waived in rivers east of Cape Nome, excluding Solomon River, and in Sinuk River and later throughout the subdistrict.</p> <p>In mid-July, Pilgrim River, in neighboring Port Clarence District, is closed to all salmon net fishing through the first week of August because of low sockeye salmon run.</p> |
| 2011 | <p>No Tier II restrictions because chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect and beach seining is allowed until coho salmon season in late July. During the second week of July ocean net fishing time is doubled because of poor weather for 2 weeks.</p> <p>Beginning second week of July subsistence chum salmon catch limits are waived, east of Cape Nome, except of Solomon River.</p> |

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Table 3.–Page 5 of 5.

| | |
|------|---|
| | <p>In mid-July, Pilgrim River, in neighboring Port Clarence District, is closed to all salmon net fishing through the first week of August because of low sockeye salmon run. Sockeye salmon escapement goal is reached.</p> <p>Last 5 days of August and first 2 weeks of September subsistence coho salmon fishing is closed.</p> |
| 2012 | <p>No Tier II restrictions because chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect and beach seining is allowed until coho salmon season in late July.</p> <p>Beginning second week of July subsistence chum salmon catch limits are waived, east of Cape Nome, except of Solomon River.</p> <p>In mid-July, pink salmon limit is waived.</p> <p>Third week of July, Pilgrim River, in neighboring Port Clarence District, is closed to all salmon net fishing through the first week of August because of low sockeye salmon run. Sockeye salmon escapement goal is reached.</p> <p>In mid-August almost all counting projects in Norton Sound are knocked out for the season by record rainfall.</p> |
| 2013 | <p>No Tier II restrictions because chum salmon surplus projected to surpass ANS.</p> <p>The regular subsistence gillnet schedule is in effect. Beach seining is allowed by regulation until late July and marine waters in east of Cape Nome open 7 days a week.</p> <p>First time in 4 years no closure to Pilgrim River subsistence salmon fishing.</p> <p>Re-open sport fishing for chum salmon by regulation for the first time in over 20 years.</p> <p>Re-open commercial fishing for chum salmon for the first time in over 20 years.</p> <p>Additional subsistence fishing time for chum salmon allowed west of Cape Nome.</p> |
| 2014 | <p>No Tier II restrictions as chum salmon surplus projected to surpass ANS.</p> <p>No chum salmon catch limits in marine waters for subsistence fishing throughout the season.</p> <p>End of first week of July subsistence chum and pink salmon limits are waived east of Cape Nome, except of Solomon River and additional subsistence fishing time for chum salmon allowed west of Cape Nome.</p> <p>End of second week of July subsistence chum and pink salmon limits are waived, except for Solomon, Cripple, and Penny rivers.</p> <p>End of second week of July, Pilgrim River, in neighboring Port Clarence District, is closed to all salmon net fishing through August 1 because of low sockeye salmon run. Sockeye salmon escapement goal is reached.</p> |
| 2015 | <p>No Tier II restrictions as chum salmon surplus projected to surpass ANS.</p> <p>No chum salmon catch limits in marine waters, and Bonanza, Eldorado, Flambeau, and Sinuk rivers and Safety Sound throughout the season.</p> <p>Mid-July the marine waters west of Cape Nome fishing time is extended to 5 days per week.</p> <p>Mid-July all chum salmon limits waived in Nome and Snake rivers.</p> <p>Mid-July, sockeye salmon limit in Pilgrim River, in neighboring Port Clarence District, is waived. Record number of subsistence salmon permits issued for Pilgrim River and record sockeye salmon catch.</p> |

Table 4.–Subdistricts 2 and 3 (Golovin and Elim) historical management actions.

| | |
|------|--|
| 1961 | Districtwide fishing schedule standard two 48-hour periods per week. Commercial fishing allowed in marine waters only. 100 fathoms maximum length allowable gillnet gear. |
| 1962 | Formation of 6 Management Subdistricts. |
| 1969 | Beach seines allowed in Subdistrict 2 as commercial gear for pink salmon by emergency order. |
| 1977 | Kwiniuk River escapement goal of 20,000 chum salmon established due to low returns in 1975 and 1976. |
| 1979 | Kwiniuk River escapement goal of 25,000 chum salmon established due to low returns in 1975 and 1976 and intended to rebuild the stock. |
| 1980 | Management authority to restrict gillnet mesh size to 4.5 inch maximum allowed the ability to open pink salmon directed fishing periods. Subdistrict 3 fishing period duration reduced to half the standard length. |
| 1985 | Commercial seasons to be opened by emergency order between June 8 and June 20 and close by regulation on August 31. Subdistrict 3 returned to the standard two 48-hour fishing periods per week schedule. Half of Subdistrict 3 closed to commercial fishing due to low chum salmon returns. |
| 1986 | Four commercial fishing periods closed in Subdistrict 3 due to low chum salmon returns. |
| 1987 | Five commercial fishing periods closed in Subdistrict 3 due to low chum salmon returns. |
| 1988 | Management authority to restrict gillnet mesh size to 6-inch maximum allowed the ability to direct the fishery toward a target species. Management restricted Subdistrict 3 to pink salmon gear only and closed fishing periods to protect the weak chum salmon return. |
| 1989 | Management reduced period length in Subdistrict 2 and closed Subdistrict 3 during most of the chum salmon run to protect the weak return. |
| 1990 | Subdistrict 3 commercial fishery was restricted half the season to pink salmon gear during weak chum salmon run. |
| 1991 | Subdistrict 3 commercial fishery was open only one period during weak chum salmon run. |
| 1992 | Management plan for Subdistrict 2 established a maximum harvest level of 10,000 chum salmon to preserve the stock and allowed directed fisheries on other species only if survey data indicated adequate chum salmon escapements would probably be achieved. The Kwiniuk River escapement goal was reduced to 19,500 chum salmon. Only one directed chum salmon commercial period during the anticipated weak chum salmon run. |
| 1993 | Management restricted Subdistrict 2 to special pink salmon periods, with limited gear and harvest areas to avoid high incidental catches of chum salmon. The Subdistrict 3 did not open for king or pink salmon due to the chance of potentially harvesting a portion of the depressed chum salmon stocks. |

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Table 4.–Page 2 of 3.

| | |
|------|--|
| | Subsistence fishing restrictions were imposed that protected chum salmon on the spawning grounds. |
| 1994 | Subdistrict 2 continued to operate under the 10,000 chum salmon cap management plan, but no harvest occurred due to lack of market. Subdistrict 3 had no directed commercial chum salmon fishery, with plan to only allow a pink salmon fishery if adequate chum salmon were available; however, no market interest. |
| 1995 | No change in management plans in either subdistrict with some chum salmon caught during directed pink salmon and coho salmon fisheries. |
| 1996 | No change in management plans in either subdistrict with some chum salmon caught during directed pink salmon and coho salmon fisheries. |
| 1997 | No change in management plans in either subdistrict with some chum salmon caught during directed king salmon periods, except for the Subdistrict 2 chum salmon guideline was liberalized to 15,000 fish prior to July 15. |
| 1998 | One commercial king salmon period allowed in consideration of incidental catches when chum salmon periods were common. Pink salmon-directed commercial harvest opened continuously with the buyer scheduling fishing to maximize transport and production. Good coho salmon run attracted limited market. |
| 1999 | No commercial periods for any salmon species due to poor returns. Sport and subsistence coho salmon closures in Subdistrict 2. |
| 2000 | Directed pink and coho salmon fisheries land small numbers of chum salmon through use of gear and time restrictions. |
| 2001 | New chum salmon optimal escapement goals established for Kwiniuk River (11,500–23,000) and Tubutulik River (9,200–18,400); board establishes subdistricts 2 and 3 salmon management plan. |
| 2002 | Lack of buyer results in no commercial fishing. Sport and subsistence restrictions for coho salmon in Subdistrict 2. However, run determined to be very late and escapement was good. |
| 2003 | No commercial fishing in either subdistrict because of poor runs. Sport and subsistence restrictions for chum salmon and coho salmon in Subdistrict 2. |
| 2004 | Subsistence and sport restrictions on coho salmon. New goal for chum salmon established for Niukluk River tower (SEG >30,000 chums). |
| 2005 | Sport restrictions for coho salmon in Subdistrict 2. |
| 2006 | No restrictions. |
| 2007 | For the first time in 6 years, a buyer returns to Subdistrict 3 and commercial chum salmon and coho salmon fishing periods allowed. |
| 2008 | For the first time in 7 years, a buyer returns to Subdistrict 2 and commercial coho salmon fishing periods occur. After one commercial chum salmon period, Subdistrict 3 is closed because inseason projection indicated the chum salmon escapement goal will not be met. Pink salmon and coho salmon commercial periods occur in Subdistrict 3. |

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Table 4.–Page 3 of 3.

| | |
|------|---|
| 2009 | <p>Both subdistricts 2 and 3 remain closed to commercial chum salmon fishing because projections show chum salmon escapement goals will not be reached.</p> <p>Kwiniuk River counting tower recorded one of the worst chum salmon escapements on record.</p> <p>Commercial coho salmon harvest in Subdistrict 3 surpasses the previous record by over 50%.</p> <p>Commercial coho salmon harvest was the fourth best on record in the Golovin Subdistrict.</p> |
| 2010 | <p>Both subdistricts 2 and 3 have record commercial coho salmon harvests and the best commercial chum salmon harvests in over 20 years.</p> <p>Kwiniuk River counting tower has a record chum salmon escapement.</p> |
| 2011 | <p>Both subdistricts 2 and 3 have the best commercial chum salmon harvests in over 20 years.</p> |
| 2012 | <p>Both subdistricts 2 and 3 have the best commercial pink salmon harvests since 1998.</p> <p>Only one commercial chum salmon fishing period in Subdistrict 2 and none in Subdistrict 3.</p> <p>Kwiniuk River has the lowest chum salmon escapement on record.</p> <p>Stormy August weather greatly curtails coho salmon fishing and floods out escapement counting projects in mid-August for the remainder of the year.</p> |
| 2013 | <p>Only 2 commercial chum salmon fishing periods in subdisriacts 1 and 2.</p> <p>Kwiniuk River has the lowest king salmon and second lowest chum escapement on record.</p> <p>Commercial coho salmon harvests are second highest all-time in Subdistrict 2 and fourth highest all time in Subdistrict 3.</p> |
| 2014 | <p>Both subdistricts 2 and 3 have sport and subsistence hook and line closures for king salmon.</p> <p>Kwiniuk River king salmon escapement is reached for the first time since 2009.</p> <p>Commercial chum salmon harvests are third highest in over 25 years in Subdistrict 3 and fifth highest in over 25 years in Subdistrict 2.</p> <p>Commercial coho salmon harvests are a record in Subdistrict 3 and fourth highest of all time in Subdistrict 2.</p> |
| 2015 | <p>Commercial chum salmon harvests are the highest in over 25 years in Subdistrict 3 and third highest in over 25 years in Subdistrict 2.</p> <p>Commercial coho salmon harvests are second highest of all time in Subdistrict 3 and fifth highest of all time in Subdistrict 2.</p> |

Table 5.—Historical salmon escapements at Niukluk River counting tower.

| Year | Operating Period | Chum | Pink | King | Coho |
|------|------------------|--------|-----------|------|--------|
| 1995 | June 29–Sept 12 | 86,332 | 17,088 | 123 | 4,713 |
| 1996 | June 23–Sept 12 | 80,178 | 1,154,922 | 243 | 12,781 |
| 1997 | June 28–Sept 09 | 57,305 | 10,468 | 259 | 3,994 |
| 1998 | July 04–Aug 09 | 45,588 | 1,624,438 | 260 | 840 |
| 1999 | June 04–Sept 04 | 35,239 | 20,351 | 40 | 4,260 |
| 2000 | July 04–Aug 27 | 29,573 | 961,603 | 48 | 11,382 |
| 2001 | July 10–Sept 08 | 30,662 | 41,625 | 30 | 3,468 |
| 2002 | June 25–Sept 10 | 35,307 | 645,141 | 621 | 7,391 |
| 2003 | June 25–Sept 10 | 20,018 | 75,855 | 179 | 1,282 |
| 2004 | June 25–Sept 08 | 10,770 | 975,895 | 141 | 2,064 |
| 2005 | June 28–Sept 09 | 25,598 | 270,424 | 41 | 2,727 |
| 2006 | June 26–Sept 08 | 29,199 | 1,371,919 | 39 | 11,169 |
| 2007 | July 01–Sept 04 | 50,994 | 43,617 | 30 | 3,498 |
| 2008 | July 01–Sept 06 | 12,078 | 669,234 | 33 | 13,779 |
| 2009 | July 03–Sept 02 | 15,879 | 24,204 | 204 | 6,861 |
| 2010 | July 01–Sept 01 | 48,561 | 434,205 | 15 | 9,042 |
| 2011 | June 28–Sept 06 | 23,607 | 15,425 | 18 | 2,405 |
| 2012 | July 04–Aug 16 | 19,576 | 249,412 | 21 | 1,729 |

Table 6.—Historical salmon escapements at Kwiniuk River counting tower.

| Year | Operating Period | Chum | Pink | King ^a | Coho |
|----------------|------------------|--------|-----------|-------------------|--------|
| 1965 | June 18–Jul 19 | 32,861 | 8,668 | 19 | 0 |
| 1966 | June 19–Jul 28 | 32,786 | 10,629 | 7 | 0 |
| 1967 | June 18–Jul 28 | 26,661 | 3,587 | 13 | 0 |
| 1968 | June 18–Jul 24 | 19,976 | 129,052 | 27 | 0 |
| 1969 | June 26–Jul 26 | 19,687 | 56,683 | 12 | 0 |
| 1970 | June 25–Jul 29 | 66,604 | 226,831 | 0 | 0 |
| 1971 | June 29–Jul 29 | 38,679 | 16,634 | 0 | 0 |
| 1972 | June 28–Jul 27 | 30,686 | 62,461 | 65 | 0 |
| 1973 | June 25–Jul 25 | 28,029 | 37,070 | 57 | 0 |
| 1974 | June 20–Jul 26 | 35,161 | 39,375 | 62 | 0 |
| 1975 | July 04–Jul 26 | 14,049 | 55,293 | 44 | 0 |
| 1976 | July 04–Jul 25 | 8,508 | 35,226 | 12 | 0 |
| 1977 | June 26–Jul 25 | 21,798 | 47,934 | 0 | 0 |
| 1978 | July 04–Jul 22 | 11,049 | 70,148 | 0 | 0 |
| 1979 | June 28–Jul 25 | 12,355 | 167,492 | 107 | 0 |
| 1980 | June 22–Jul 28 | 19,374 | 319,363 | 177 | 0 |
| 1981 | June 19–Aug 02 | 34,565 | 566,534 | 136 | 0 |
| 1982 | June 21–Jul 26 | 44,099 | 469,674 | 138 | 0 |
| 1983 | June 19–Jul 27 | 56,907 | 251,965 | 267 | 0 |
| 1984 | June 19–Jul 25 | 54,043 | 736,544 | 736 | 0 |
| 1985 | June 26–Jul 28 | 9,013 | 18,237 | 955 | 0 |
| 1986 | June 19–Jul 26 | 24,700 | 241,446 | 654 | 0 |
| 1987 | June 25–Jul 23 | 16,133 | 5,566 | 317 | 0 |
| 1988 | June 18–Jul 26 | 13,303 | 187,907 | 321 | 0 |
| 1989 | June 27–Jul 27 | 14,529 | 27,488 | 248 | 0 |
| 1990 | June 21–Jul 25 | 13,957 | 416,512 | 900 | 0 |
| 1991 | June 18–Jul 27 | 19,801 | 53,499 | 708 | 0 |
| 1992 | June 27–Jul 28 | 12,077 | 1,464,716 | 479 | 0 |
| 1993 | June 27–Jul 27 | 15,824 | 43,063 | 600 | 0 |
| 1994 | June 23–Aug 09 | 33,012 | 2,303,114 | 625 | 2,547 |
| 1995 | June 21–Jul 26 | 42,500 | 17,511 | 498 | 114 |
| 1996 | June 20–Jul 25 | 28,493 | 907,893 | 577 | 461 |
| 1997 | June 18–Jul 27 | 20,119 | 9,535 | 974 | 0 |
| 1998 | June 18–Jul 27 | 24,247 | 655,934 | 303 | 0 |
| 1999 | June 25–Jul 28 | 8,763 | 607 | 116 | 0 |
| 2000 | June 22–Jul 27 | 12,879 | 750,173 | 144 | 41 |
| 2001 | June 27–Sept 15 | 16,598 | 8,423 | 261 | 9,532 |
| 2002 | June 17–Sept 11 | 37,995 | 1,114,410 | 778 | 6,459 |
| 2003 | June 15–Sept 15 | 12,123 | 22,329 | 744 | 5,490 |
| 2004 | June 16–Sept 14 | 10,362 | 3,054,684 | 663 | 11,240 |
| 2005 | June 17–Sept 13 | 12,083 | 341,048 | 342 | 12,950 |
| 2006 | June 22–Sept 12 | 39,519 | 1,347,090 | 195 | 22,341 |
| 2007 | June 21–Sept 10 | 27,756 | 54,255 | 258 | 9,429 |
| 2008 | June 23–Sept 07 | 9,483 | 1,444,213 | 237 | 10,461 |
| 2009 | June 24–Sept 13 | 8,739 | 42,962 | 444 | 8,677 |
| 2010 | June 25–Sept 07 | 71,388 | 634,220 | 135 | 8,049 |
| 2011 | June 20–Sept 11 | 31,604 | 30,023 | 57 | 3,288 |
| 2012 | June 23–Aug 16 | 5,577 | 393,302 | 54 | 777 |
| 2013 | June 24–Sept 16 | 5,631 | 13,212 | 15 | 3,940 |
| 2014 | June 15–Sept 08 | 39,789 | 326,558 | 429 | 14,713 |
| 2015 | June 15–Sept 03 | 37,831 | 102,942 | 318 | 7,151 |
| 2011–2015 Avg. | | 24,086 | 173,207 | 175 | 5,974 |

^a King salmon counts from 1965–1984 were not expanded. Counts in 1985 and after were expanded.

Table 7.—Commercial and subsistence salmon catch by species, by year in Subdistrict 2.

| SUBDISTRICT 2 (GOLOVIN) | | | | | | | | | | | | | | | | | | |
|-------------------------|------------|---------|-------|--------|--------|---------|-------------|---------|-------|--------|-------|--------|----------|---------|-------|--------|--------|---------|
| Year | Commercial | | | | | | Subsistence | | | | | | Combined | | | | | |
| | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total |
| 1962 | 45 | 11 | 264 | 10,276 | 68,720 | 79,316 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1963 | 40 | 40 | 0 | 19,677 | 49,850 | 69,607 | 0 | 0 | 118 | 5,702 | 9,319 | 15,139 | 40 | 40 | 118 | 25,379 | 59,169 | 84,746 |
| 1964 | 27 | 40 | 3 | 7,236 | 58,301 | 65,607 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1965 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 49 | 1,523 | 3,847 | 5,421 | 2 | 0 | 49 | 1,523 | 3,847 | 5,421 |
| 1966 | 17 | 14 | 584 | 4,665 | 29,791 | 35,071 | 4 | 0 | 176 | 1,573 | 3,520 | 5,273 | 21 | 14 | 760 | 6,238 | 33,311 | 40,344 |
| 1967 | 10 | 0 | 747 | 5,790 | 31,193 | 37,740 | 3 | 0 | 185 | 2,774 | 4,803 | 7,765 | 13 | 0 | 932 | 8,564 | 35,996 | 45,505 |
| 1968 | 12 | 0 | 205 | 18,428 | 10,011 | 28,656 | 4 | 0 | 181 | 4,955 | 1,744 | 6,884 | 16 | 0 | 386 | 23,383 | 11,755 | 35,540 |
| 1969 | 28 | 0 | 1,224 | 23,208 | 20,949 | 45,409 | 2 | 0 | 190 | 2,760 | 2,514 | 5,466 | 30 | 0 | 1,414 | 25,968 | 23,463 | 50,875 |
| 1970 | 13 | 0 | 3 | 18,721 | 20,566 | 39,303 | 4 | 0 | 353 | 2,046 | 2,614 | 5,017 | 17 | 0 | 356 | 20,767 | 23,180 | 44,320 |
| 1971 | 37 | 0 | 197 | 2,735 | 33,824 | 36,793 | 7 | 0 | 191 | 1,544 | 1,936 | 3,678 | 44 | 0 | 388 | 4,279 | 35,760 | 40,471 |
| 1972 | 36 | 0 | 20 | 6,562 | 27,097 | 33,715 | 4 | 0 | 62 | 1,735 | 2,028 | 3,829 | 40 | 0 | 82 | 8,297 | 29,125 | 37,544 |
| 1973 | 70 | 0 | 183 | 14,145 | 41,689 | 56,087 | 1 | 0 | 48 | 9 | 74 | 132 | 71 | 0 | 231 | 14,154 | 41,763 | 56,219 |
| 1974 | 30 | 0 | 3 | 28,340 | 30,173 | 58,546 | 3 | 0 | 0 | 967 | 205 | 1,175 | 33 | 0 | 3 | 29,307 | 30,378 | 59,721 |
| 1975 | 17 | 0 | 206 | 10,770 | 41,761 | 52,754 | 0 | 0 | 1 | 2,011 | 2,025 | 4,037 | 17 | 0 | 207 | 12,781 | 43,786 | 56,791 |
| 1976 | 12 | 0 | 1,311 | 24,051 | 30,219 | 55,593 | 0 | 0 | 0 | 1,995 | 1,128 | 3,123 | 12 | 0 | 1,311 | 26,046 | 31,347 | 58,716 |
| 1977 | 26 | 0 | 426 | 7,928 | 53,912 | 62,292 | 3 | 0 | 80 | 703 | 2,915 | 3,701 | 29 | 0 | 506 | 8,631 | 56,827 | 65,993 |
| 1978 | 22 | 0 | 94 | 72,033 | 41,462 | 113,611 | 1 | 0 | 0 | 2,470 | 1,061 | 3,532 | 23 | 0 | 94 | 74,503 | 42,523 | 117,143 |
| 1979 | 75 | 49 | 1,606 | 45,948 | 30,201 | 77,879 | 0 | 0 | 845 | 2,546 | 2,840 | 6,231 | 75 | 49 | 2,451 | 48,494 | 33,041 | 84,110 |
| 1980 | 36 | 36 | 328 | 10,774 | 52,609 | 63,783 | 12 | 0 | 692 | 10,727 | 4,057 | 15,488 | 48 | 36 | 1,020 | 21,501 | 56,666 | 79,271 |
| 1981 | 23 | 5 | 13 | 49,755 | 58,323 | 108,119 | 8 | 0 | 1,520 | 5,158 | 5,543 | 12,229 | 31 | 5 | 1,533 | 54,913 | 63,866 | 120,348 |
| 1982 | 78 | 5 | 4,281 | 39,510 | 51,970 | 95,844 | 7 | 0 | 1,289 | 4,752 | 1,868 | 7,916 | 85 | 5 | 5,570 | 44,262 | 53,838 | 103,760 |
| 1983 | 52 | 10 | 295 | 17,414 | 48,283 | 66,054 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1984 | 31 | 0 | 2,462 | 88,588 | 54,153 | 145,234 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1985 | 193 | 113 | 1,196 | 3,019 | 55,781 | 60,302 | 12 | 2 | 430 | 1,904 | 9,577 | 11,925 | 205 | 115 | 1,626 | 4,923 | 65,358 | 72,227 |
| 1986 | 81 | 8 | 958 | 25,425 | 69,725 | 96,197 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1987 | 166 | 51 | 2,203 | 1,579 | 44,334 | 48,333 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1988 | 108 | 921 | 2,149 | 31,559 | 33,348 | 68,085 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1989 | 0 | 0 | 0 | 0 | 0 | 0 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1990 | 52 | 21 | 0 | 0 | 15,993 | 16,066 | a | a | a | a | a | a | a | a | a | a | a | a |

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Table 7.–Page 2 of 2.

| SUBDISRICT 2 (GOLOVIN) | | | | | | | | | | | | | | | | | | |
|------------------------|------|---------|-------|---------|--------|---------|-------------|-----|-------|--------|--------|--------|----------|---------|-------|---------|--------|---------|
| Commercial | | | | | | | Subsistence | | | | | | Combined | | | | | |
| Year | King | Sockeye | Coho | Pink | Chum | Total | Sockeye | | | | | | King | Sockeye | Coho | Pink | Chum | Total |
| | King | e | Coho | Pink | Chum | Total | King | e | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total |
| 1991 | 49 | 1 | 0 | 0 | 14,839 | 14,889 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1992 | 6 | 9 | 2,085 | 0 | 1,002 | 3,102 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1993 | 1 | 4 | 2 | 8,480 | 2,803 | 11,290 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1994 ^b | 0 | 0 | 3,424 | 0 | 111 | 3,535 | 253 | 168 | 733 | 8,410 | 1,337 | 10,901 | 253 | 168 | 4,157 | 8,410 | 1,448 | 14,436 |
| 1995 ^b | 0 | 0 | 1,616 | 4,296 | 1,987 | 7,899 | 165 | 34 | 1,649 | 7,818 | 10,373 | 20,039 | 165 | 34 | 3,265 | 12,114 | 12,360 | 27,938 |
| 1996 ^b | 0 | 0 | 638 | 0 | 0 | 638 | 86 | 134 | 3,014 | 17,399 | 2,867 | 23,500 | 86 | 134 | 3,652 | 17,399 | 2,867 | 24,138 |
| 1997 ^b | 19 | 2 | 102 | 20 | 8,003 | 8,146 | 138 | 427 | 555 | 4,570 | 4,891 | 10,581 | 157 | 429 | 657 | 4,590 | 12,894 | 18,727 |
| 1998 ^b | 1 | 0 | 3 | 106,761 | 723 | 107,488 | 184 | 37 | 1,292 | 13,340 | 1,893 | 16,746 | 185 | 37 | 1,295 | 120,101 | 2,616 | 124,234 |
| 1999 ^b | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 48 | 1,234 | 469 | 3,656 | 5,467 | 60 | 48 | 1,234 | 469 | 3,656 | 5,467 |
| 2000 ^b | 0 | 0 | 1,645 | 17,408 | 164 | 19,217 | 169 | 18 | 2,335 | 10,906 | 1,155 | 14,583 | 169 | 18 | 3,980 | 28,314 | 1,319 | 33,800 |
| 2001 ^b | 0 | 43 | 30 | 0 | 7,094 | 7,167 | 89 | 72 | 880 | 1,665 | 3,291 | 5,997 | 89 | 115 | 910 | 1,665 | 10,385 | 13,164 |
| 2002 ^b | 0 | 0 | 0 | 0 | 0 | 0 | 69 | 66 | 1,640 | 14,430 | 1,882 | 18,087 | 69 | 66 | 1,640 | 14,430 | 1,882 | 18,087 |
| 2003 ^b | 0 | 0 | 0 | 0 | 0 | 0 | 166 | 28 | 309 | 5,012 | 1,477 | 6,992 | 166 | 28 | 309 | 5,012 | 1,477 | 6,992 |
| 2004 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 164 | 6 | 654 | 19,936 | 880 | 21,640 | 164 | 6 | 654 | 19,936 | 880 | 21,640 |
| 2005 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 96 | 15 | 686 | 11,467 | 1,852 | 14,116 | 96 | 15 | 686 | 11,467 | 1,852 | 14,116 |
| 2006 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 136 | 38 | 1,760 | 14,670 | 722 | 17,326 | 136 | 38 | 1,760 | 14,670 | 722 | 17,326 |
| 2007 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 188 | 321 | 1,179 | 3,980 | 4,217 | 9,885 | 188 | 321 | 1,179 | 3,980 | 4,217 | 9,885 |
| 2008 ^c | 0 | 0 | 256 | 2,699 | 623 | 3,578 | 146 | 95 | 2,337 | 10,155 | 350 | 13,083 | 146 | 95 | 2,593 | 12,854 | 973 | 16,661 |
| 2009 ^c | 0 | 0 | 2,452 | 0 | 87 | 2,539 | 237 | 33 | 1,377 | 3,787 | 1,694 | 7,128 | 237 | 33 | 3,829 | 3,787 | 1,781 | 9,667 |
| 2010 ^c | 3 | 2 | 5,586 | 2,039 | 17,212 | 24,842 | 59 | 32 | 2,020 | 9,620 | 1,133 | 12,864 | 62 | 34 | 7,606 | 11,659 | 18,345 | 37,706 |
| 2011 ^c | 7 | 0 | 859 | 3 | 20,075 | 20,944 | 99 | 74 | 1,345 | 5,652 | 2,122 | 9,292 | 106 | 74 | 2,204 | 5,655 | 22,197 | 30,236 |
| 2012 ^c | 2 | 14 | 573 | 31,055 | 3,791 | 35,435 | 57 | 52 | 1,143 | 7,635 | 1,056 | 9,943 | 59 | 66 | 1,716 | 38,690 | 4,847 | 45,378 |
| 2013 ^c | 0 | 0 | 5,362 | 1,180 | 3,113 | 9,655 | 47 | 15 | 964 | 3,655 | 3,256 | 7,937 | 47 | 15 | 6,326 | 4,835 | 6,369 | 17,592 |
| 2014 ^c | 28 | 47 | 4,156 | 7,888 | 13,560 | 25,679 | 36 | 91 | 1,720 | 7,363 | 1,719 | 10,929 | 64 | 138 | 5,876 | 15,251 | 15,279 | 36,608 |
| 2015 ^{cd} | 62 | 1,007 | 3,627 | 1,270 | 17,772 | 23,738 | 125 | 71 | 933 | 4,211 | 2,126 | 6,850 | 112 | 1,107 | 5,327 | 4,270 | 19,772 | 30,588 |
| 2011–2015 | | | | | | | | | | | | | | | | | | |
| Average | 20 | 214 | 2,915 | 8,279 | 11,662 | 23,090 | 73 | 61 | 1,221 | 5,703 | 2,056 | 8,990 | 78 | 280 | 4,290 | 13,740 | 13,693 | 32,080 |

^a Subsistence surveys were not conducted.^b Subsistence harvests were estimated from department household surveys. Previous surveys often were partial surveys and did not capture later season harvests like coho salmon.^c Beginning in 2004 a permit was required for the subdistrict that replaced household surveys. The permit system helped to record harvest by residents living outside the subdistrict.^d Preliminary.

Table 8.—Commercial and subsistence salmon catch by species, by year in Subdistrict 3.

| Year | SUBDISTRICT 3 (ELIM) | | | | | | | | | | | | | | | | | |
|------|----------------------|---------|-------|--------|--------|--------|-------------|---------|-------|-------|-------|--------|----------|---------|-------|--------|--------|--------|
| | Commercial | | | | | | Subsistence | | | | | | Combined | | | | | |
| | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total |
| 1962 | 27 | 0 | 0 | 11,100 | 50,683 | 61,810 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1963 | 15 | 0 | 0 | 2,549 | 46,274 | 48,838 | 5 | 0 | 0 | 5,808 | 8,316 | 14,129 | 20 | 0 | 0 | 8,357 | 54,590 | 62,967 |
| 1964 | 32 | 3 | 0 | 3,372 | 28,568 | 31,975 | 0 | 0 | 0 | 63 | 348 | 411 | 0 | 0 | 0 | 3,435 | 28,916 | 32,386 |
| 1965 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 72 | 1,325 | 9,857 | 11,270 | 16 | 0 | 72 | 1,325 | 9,857 | 11,270 |
| 1966 | 17 | 0 | 0 | 2,745 | 24,741 | 27,503 | 14 | 0 | 250 | 2,511 | 5,409 | 8,184 | 31 | 0 | 0 | 5,256 | 30,150 | 35,687 |
| 1967 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 116 | 1,322 | 9,913 | 11,390 | 39 | 0 | 116 | 1,322 | 9,913 | 11,390 |
| 1968 | 12 | 0 | 1 | 9,012 | 17,908 | 26,933 | 2 | 0 | 80 | 6,135 | 2,527 | 8,744 | 14 | 0 | 81 | 15,147 | 20,435 | 35,677 |
| 1969 | 29 | 0 | 0 | 11,807 | 26,594 | 38,430 | 9 | 0 | 109 | 1,790 | 1,303 | 3,211 | 38 | 0 | 0 | 13,597 | 27,897 | 41,641 |
| 1970 | 39 | 0 | 0 | 13,052 | 29,726 | 42,817 | 16 | 0 | 160 | 4,661 | 6,960 | 11,797 | 55 | 0 | 0 | 17,713 | 36,686 | 54,614 |
| 1971 | 95 | 0 | 4 | 922 | 43,831 | 44,852 | 16 | 0 | 271 | 1,046 | 2,227 | 3,560 | 111 | 0 | 275 | 1,968 | 46,058 | 48,412 |
| 1972 | 190 | 0 | 11 | 5,866 | 30,919 | 36,986 | 44 | 0 | 108 | 1,579 | 2,070 | 3,801 | 234 | 0 | 119 | 7,445 | 32,989 | 40,787 |
| 1973 | 134 | 0 | 0 | 10,603 | 31,389 | 42,126 | 2 | 0 | 0 | | 298 | 300 | 136 | 0 | 0 | 10,603 | 31,687 | 42,426 |
| 1974 | 198 | 0 | 9 | 12,821 | 55,276 | 68,304 | 3 | 0 | 0 | 2,382 | 1,723 | 4,108 | 201 | 0 | 0 | 15,203 | 56,999 | 72,412 |
| 1975 | 16 | 0 | 0 | 4,407 | 46,699 | 51,122 | 2 | 0 | 6 | 1,280 | 508 | 1,796 | 18 | 0 | 0 | 5,687 | 47,207 | 52,918 |
| 1976 | 24 | 0 | 232 | 5,072 | 10,890 | 16,218 | 22 | 0 | 0 | 5,016 | 1,548 | 6,586 | 46 | 0 | 0 | 10,088 | 12,438 | 22,804 |
| 1977 | 96 | 0 | 6 | 9,443 | 47,455 | 57,000 | 22 | 0 | 225 | 1,145 | 1,170 | 2,562 | 118 | 0 | 231 | 10,588 | 48,625 | 59,562 |
| 1978 | 444 | 0 | 244 | 39,694 | 44,595 | 84,977 | 38 | 0 | 407 | 1,995 | 1,229 | 3,669 | 482 | 0 | 651 | 41,689 | 45,824 | 88,646 |
| 1979 | 1,035 | 0 | 177 | 40,811 | 37,123 | 79,146 | 16 | 0 | 890 | 6,078 | 1,195 | 8,179 | 1,051 | 0 | 1,067 | 46,889 | 38,318 | 87,325 |
| 1980 | 502 | 0 | 0 | 1,435 | 14,755 | 16,692 | 131 | 0 | 229 | 4,232 | 1,393 | 5,985 | 633 | 0 | 0 | 5,667 | 16,148 | 22,677 |
| 1981 | 198 | 0 | 5 | 26,417 | 29,325 | 55,945 | 32 | 0 | 2,345 | 6,530 | 2,819 | 11,726 | 230 | 0 | 2,350 | 32,947 | 32,144 | 67,671 |
| 1982 | 253 | 0 | 318 | 9,849 | 40,030 | 50,450 | 1 | 0 | 1,835 | 3,785 | 3,537 | 9,158 | 254 | 0 | 2,153 | 13,634 | 43,567 | 59,608 |
| 1983 | 254 | 0 | 0 | 17,027 | 65,776 | 83,057 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1984 | 0 | 0 | 5,959 | 28,035 | 9,477 | 43,471 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1985 | 816 | 32 | 1,803 | 559 | 24,466 | 27,676 | 67 | 0 | 1,389 | 1,212 | 947 | 3,615 | 883 | 0 | 3,192 | 1,771 | 25,413 | 31,291 |
| 1986 | 600 | 41 | 5,874 | 15,795 | 20,668 | 42,978 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1987 | 907 | 15 | 64 | 568 | 17,278 | 18,832 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1988 | 663 | 93 | 3,974 | 13,703 | 18,585 | 37,018 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1989 | 62 | 0 | 0 | 0 | 167 | 229 | a | a | a | a | a | a | a | a | a | a | a | a |
| 1990 | 202 | 0 | 0 | 501 | 3,723 | 4,426 | a | a | a | a | a | a | a | a | a | a | a | a |

-continued-

Table 8.–Page 2 of 2.

| SUBDISTRICT 3 (ELIM) | | | | | | | | | | | | | | | | | | |
|----------------------|------------|---------|--------|---------|--------|---------|-------------|---------|-------|--------|-------|--------|----------|---------|--------|---------|--------|---------|
| Year | Commercial | | | | | | Subsistence | | | | | | Combined | | | | | |
| | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total | King | Sockeye | Coho | Pink | Chum | Total |
| 1991 ^b | 161 | 0 | 0 | 0 | 804 | 965 | 312 | 0 | 2,153 | 3,555 | 2,660 | 8,680 | 473 | 0 | 2,153 | 3,555 | 3,464 | 9,645 |
| 1992 ^b | 0 | 0 | 3,531 | 0 | 6 | 3,537 | 100 | 0 | 1,281 | 6,152 | 1,260 | 8,793 | 100 | 0 | 4,812 | 6,152 | 1,266 | 12,330 |
| 1993 ^b | 3 | 0 | 4,065 | 0 | 167 | 4,235 | 368 | 0 | 1,217 | 1,726 | 1,635 | 4,946 | 371 | 0 | 5,282 | 1,726 | 1,802 | 9,181 |
| 1994 ^b | 0 | 0 | 5,345 | 0 | 414 | 5,759 | 322 | 104 | 1,180 | 9,345 | 3,476 | 14,427 | 322 | 104 | 6,525 | 9,345 | 3,890 | 20,186 |
| 1995 ^b | 4 | 44 | 3,742 | 2,962 | 1,171 | 7,923 | 284 | 17 | 1,353 | 2,046 | 3,774 | 7,474 | 288 | 61 | 5,095 | 5,008 | 4,945 | 15,397 |
| 1996 ^b | 0 | 0 | 1,915 | 68,609 | 0 | 70,524 | 417 | 52 | 1,720 | 9,442 | 2,319 | 13,950 | 417 | 52 | 3,635 | 78,051 | 2,319 | 84,474 |
| 1997 ^b | 844 | 0 | 1,409 | 0 | 2,683 | 4,936 | 619 | 50 | 1,213 | 1,314 | 2,064 | 5,260 | 1,463 | 50 | 2,622 | 1,314 | 4,747 | 10,196 |
| 1998 ^b | 105 | 0 | 1,462 | 145,669 | 2,311 | 149,547 | 414 | 49 | 1,831 | 6,891 | 1,376 | 10,561 | 519 | 49 | 3,293 | 152,560 | 3,687 | 160,108 |
| 1999 ^b | 0 | 0 | 0 | 0 | 0 | 0 | 424 | 13 | 975 | 1,564 | 744 | 3,720 | 424 | 13 | 975 | 1,564 | 744 | 3,720 |
| 2000 ^b | 10 | 0 | 5,182 | 46,369 | 535 | 52,096 | 248 | 46 | 1,429 | 5,983 | 1,173 | 8,879 | 258 | 46 | 6,611 | 52,352 | 1,708 | 60,975 |
| 2001 ^b | 7 | 0 | 1,696 | 0 | 681 | 2,384 | 427 | 70 | 1,352 | 1,390 | 898 | 4,137 | 434 | 70 | 3,048 | 1,390 | 1,579 | 6,521 |
| 2002 ^b | 0 | 0 | 0 | 0 | 0 | 0 | 565 | 14 | 1,801 | 8,345 | 1,451 | 12,176 | 565 | 14 | 1,801 | 8,345 | 1,451 | 12,176 |
| 2003 ^b | 0 | 0 | 0 | 0 | 0 | 0 | 660 | 39 | 1,143 | 2,524 | 1,687 | 6,053 | 660 | 39 | 1,143 | 2,524 | 1,687 | 6,053 |
| 2004 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 412 | 0 | 704 | 7,858 | 683 | 9,657 | 412 | 0 | 704 | 7,858 | 683 | 9,657 |
| 2005 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 225 | 9 | 1,011 | 3,721 | 598 | 5,564 | 225 | 9 | 1,011 | 3,721 | 598 | 5,564 |
| 2006 ^c | 0 | 0 | 0 | 0 | 0 | 0 | 179 | 13 | 1,769 | 5,216 | 1,267 | 8,444 | 179 | 13 | 1,769 | 5,216 | 1,267 | 8,444 |
| 2007 ^c | 1 | 0 | 5,908 | 1,648 | 4,567 | 12,124 | 260 | 0 | 2,295 | 1,742 | 2,334 | 6,631 | 261 | 0 | 8,203 | 3,390 | 6,901 | 18,755 |
| 2008 ^c | 5 | 0 | 4,602 | 14,536 | 304 | 19,447 | 269 | 0 | 1,804 | 7,655 | 1,284 | 11,012 | 274 | 0 | 6,406 | 22,191 | 1,588 | 30,459 |
| 2009 ^c | 0 | 1 | 9,582 | 35 | 597 | 10,215 | 545 | 13 | 2,434 | 1,522 | 600 | 5,114 | 545 | 14 | 12,016 | 1,557 | 1,197 | 15,329 |
| 2010 ^c | 9 | 5 | 10,180 | 11,658 | 23,453 | 45,305 | 97 | 7 | 1,679 | 7,830 | 3,925 | 13,538 | 106 | 12 | 11,859 | 19,488 | 27,378 | 58,843 |
| 2011 ^c | 4 | 12 | 8,336 | 165 | 23,531 | 32,048 | 160 | 3 | 1,688 | 704 | 3,671 | 6,226 | 164 | 15 | 10,024 | 869 | 27,202 | 38,274 |
| 2012 ^c | 3 | 1 | 2,003 | 52,775 | 2,262 | 57,044 | 42 | 0 | 1,302 | 10,848 | 1,494 | 13,686 | 45 | 1 | 3,305 | 63,623 | 3,756 | 70,730 |
| 2013 ^c | 6 | 27 | 6,675 | 601 | 1,434 | 8,743 | 39 | 15 | 1,515 | 1,134 | 1,218 | 3,921 | 45 | 42 | 8,190 | 1,735 | 2,652 | 12,664 |
| 2014 ^c | 101 | 164 | 15,938 | 28,507 | 17,525 | 62,235 | 276 | 38 | 1,808 | 4,595 | 2,081 | 8,798 | 377 | 202 | 17,746 | 33,102 | 19,606 | 71,033 |
| 2015 ^{cd} | 557 | 2,318 | 14,130 | 4,586 | 39,709 | 61,300 | 123 | 149 | 901 | 1,648 | 1,457 | 4,328 | 680 | 2,467 | 15,031 | 6,234 | 41,166 | 65,628 |
| 2011–2015 | | | | | | | | | | | | | | | | | | |
| Average | 134 | 504 | 9,416 | 17,327 | 16,892 | 44,274 | 128 | 41 | 1,443 | 3,786 | 1,984 | 7,392 | 262 | 545 | 10,859 | 21,113 | 18,876 | 51,666 |

^a Subsistence surveys were not conducted.^b Subsistence harvests were estimated from department household surveys. Previous surveys often were partial surveys and did not capture later season harvests like coho salmon.^c Beginning in 2004 a permit was required for the subdistrict that replaced household surveys. The permit system helped to record harvest by residents living outside the subdistrict.^d Preliminary.

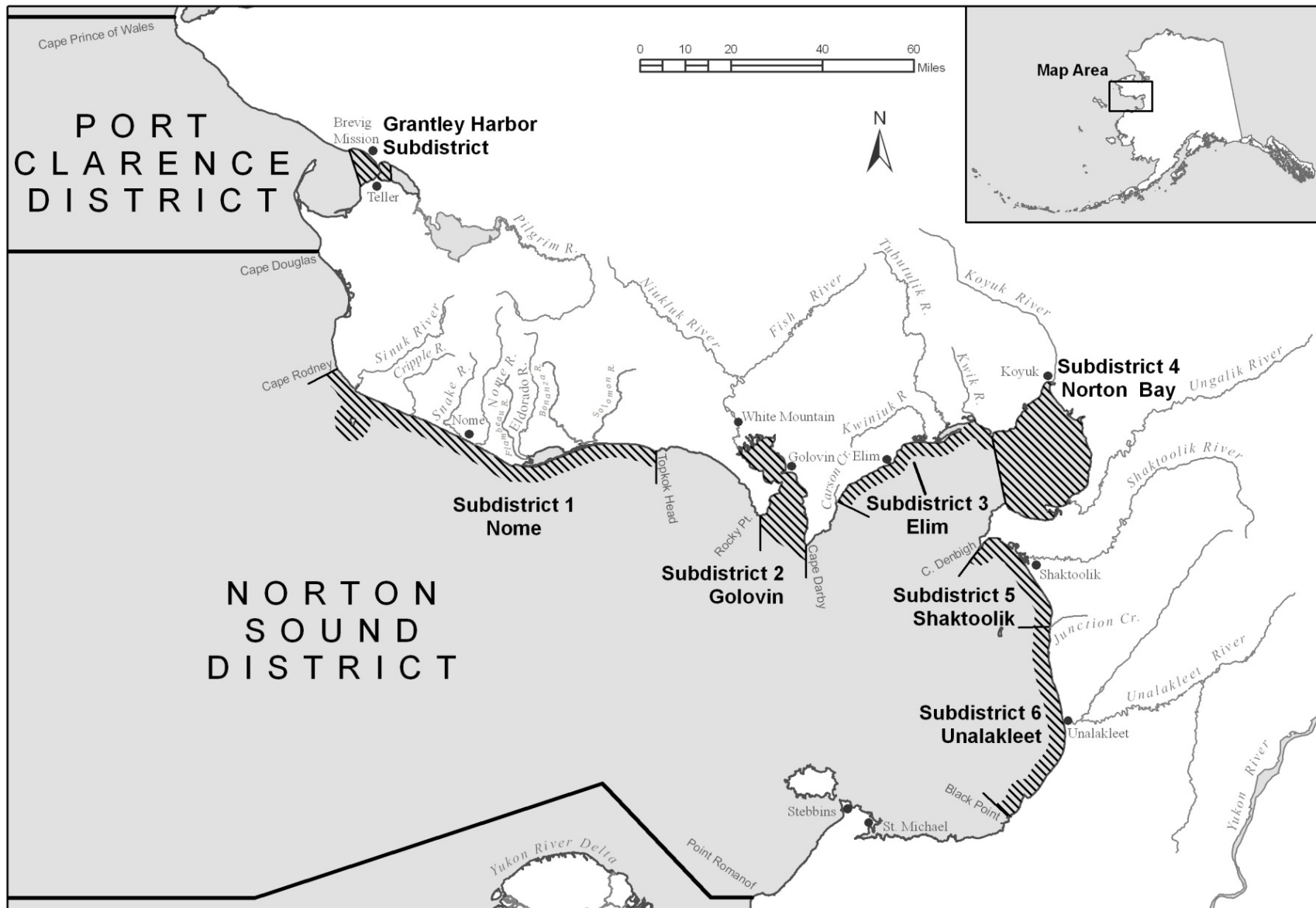


Figure 1.—Norton Sound commercial salmon fishing districts and subdistricts.

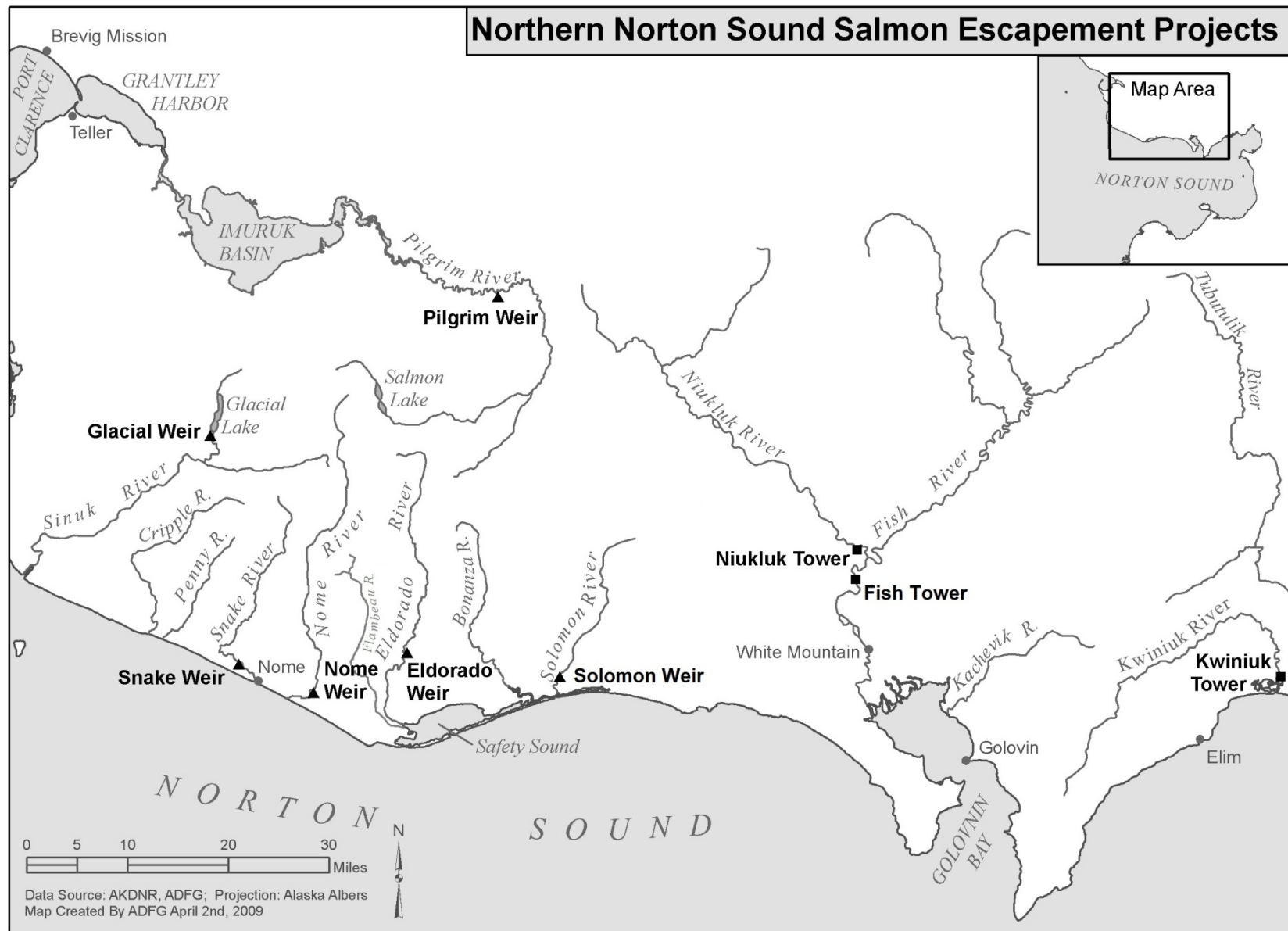


Figure 2.—Northern Norton Sound area rivers.

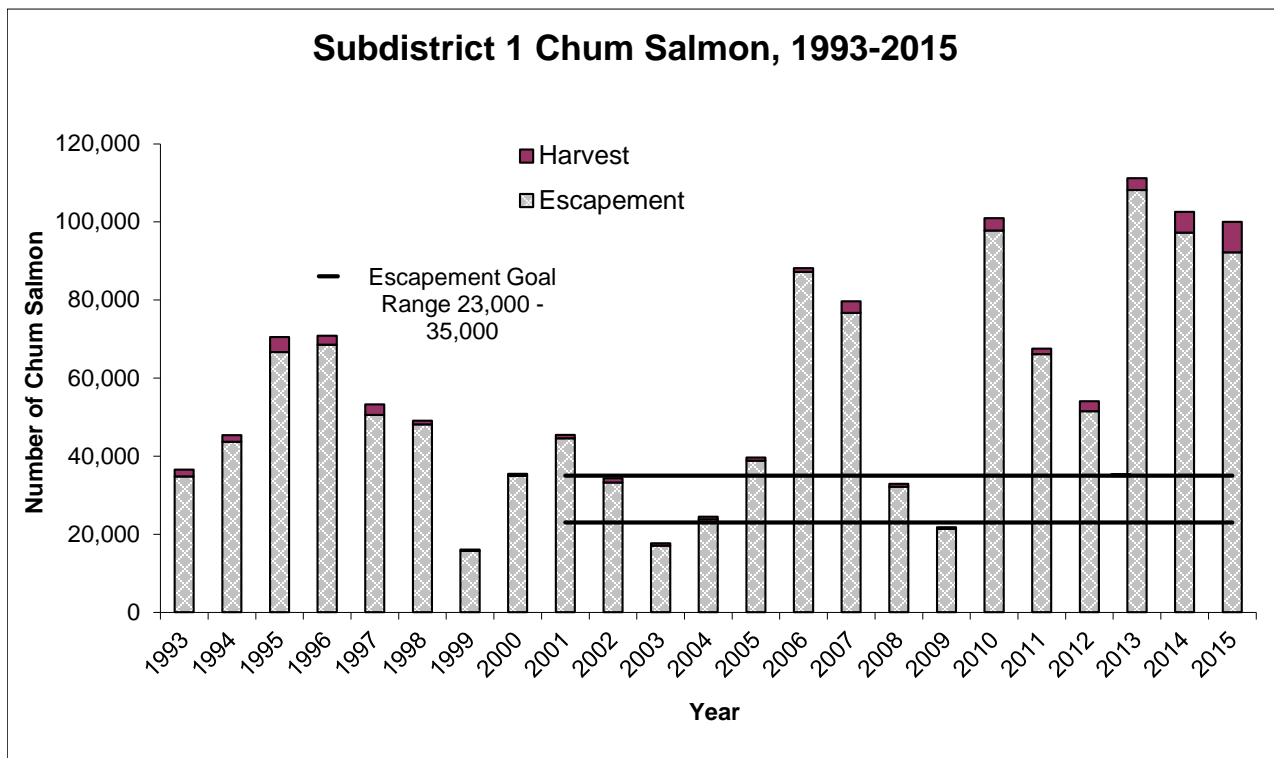


Figure 3.—Subdistrict 1 total chum salmon run by harvest and escapement with escapement compared to the subdistrict-wide BEG, 1993–2015.

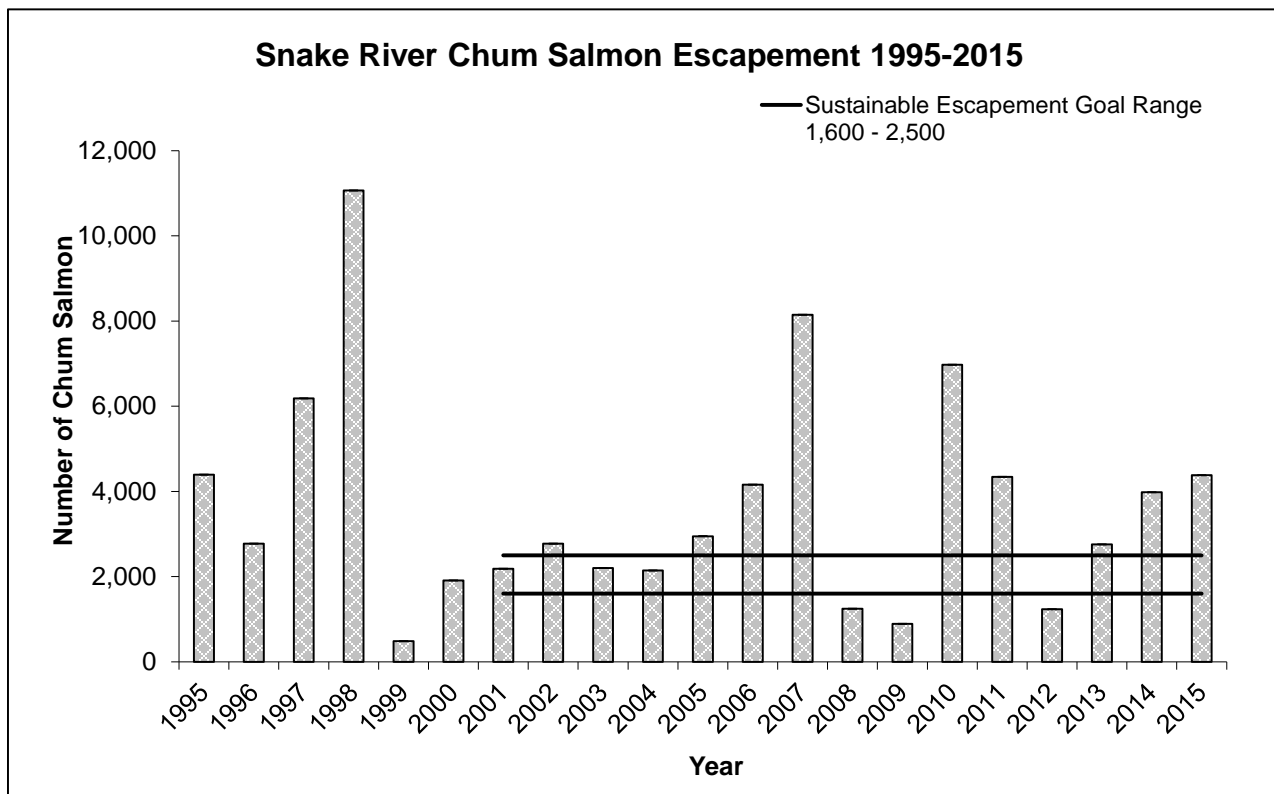


Figure 4.—Snake River chum salmon escapement, 1995–2015.

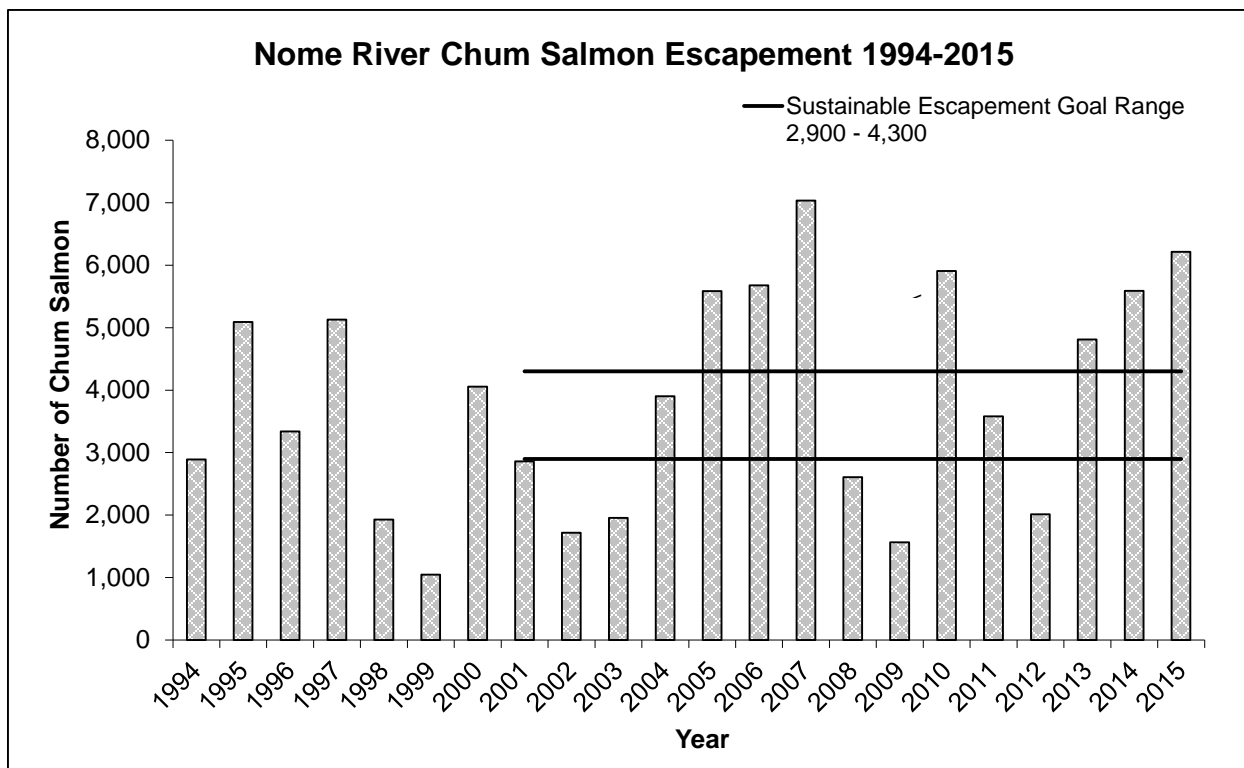


Figure 5.—Nome River chum salmon escapement, 1994–2015.

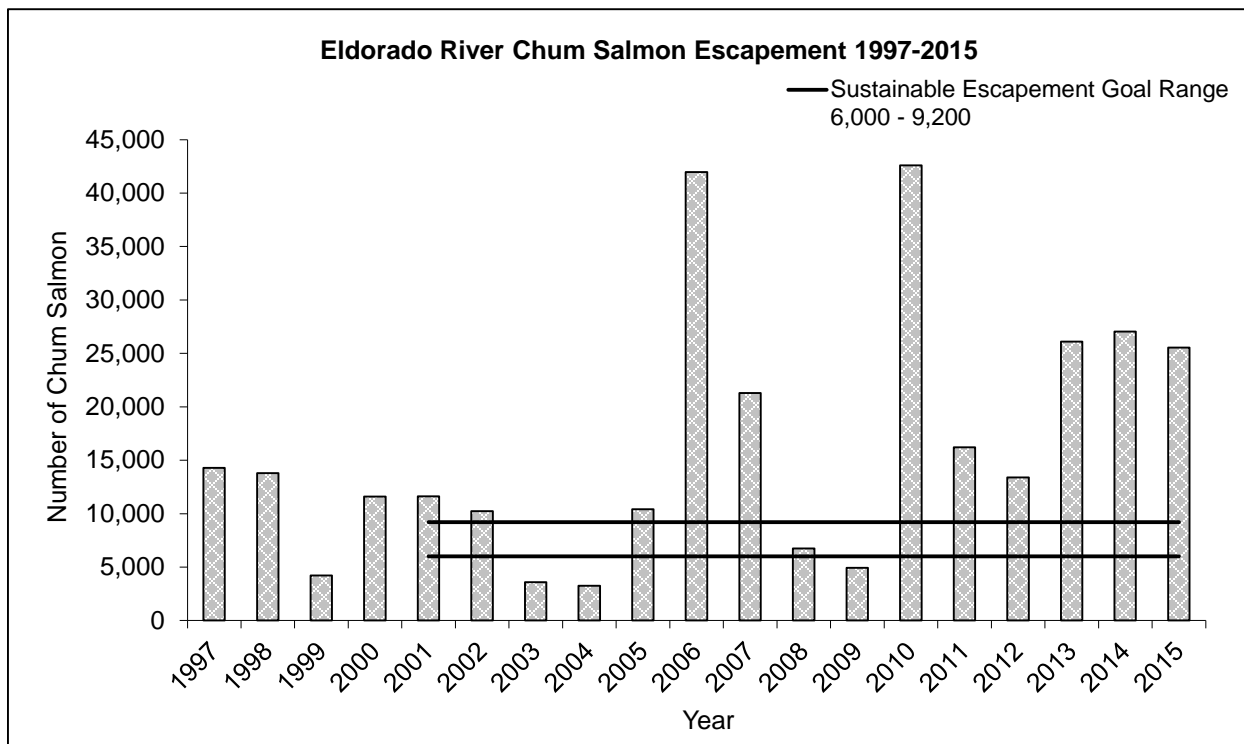


Figure 6.—Eldorado River chum salmon escapement, 1997–2015.

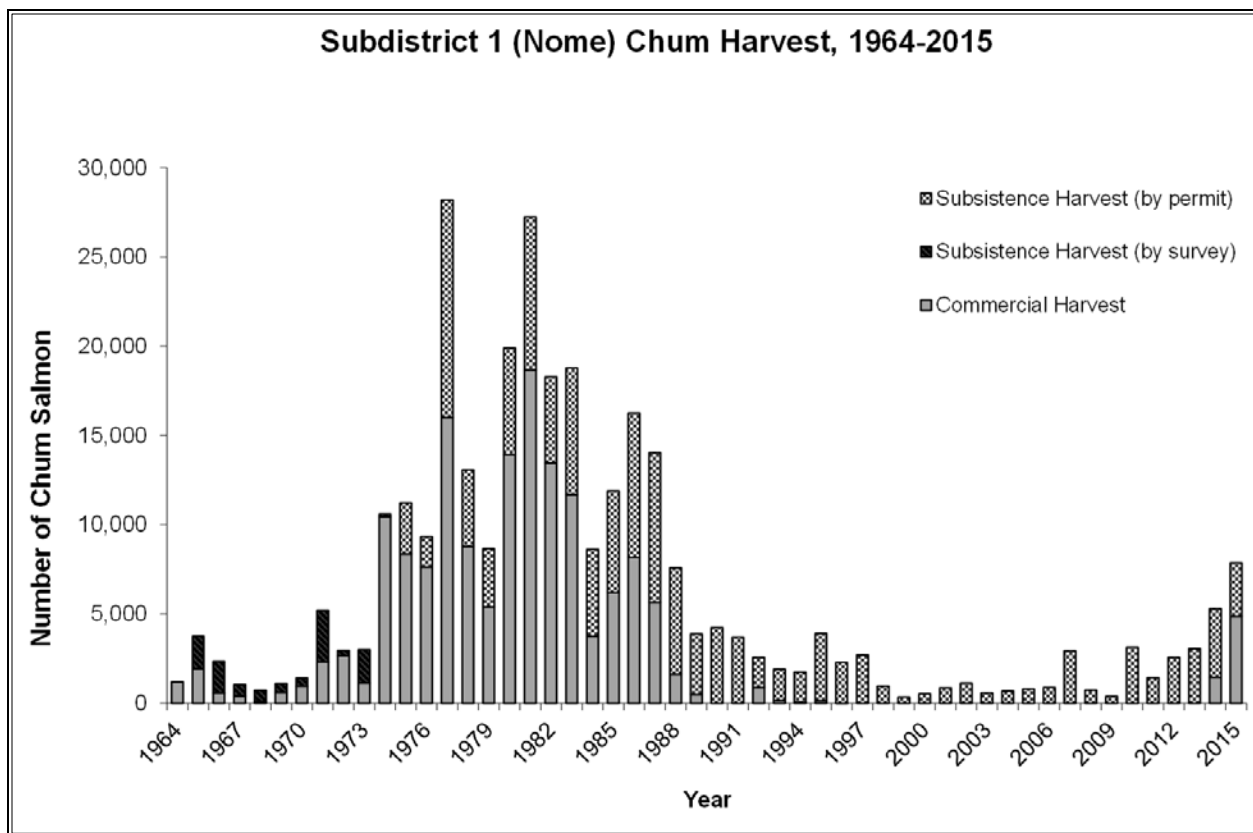


Figure 7.—Subdistrict 1 chum salmon harvest, 1961–2015.

Note: Subsistence harvest data not available for all years and incomplete for other years prior to 1975.

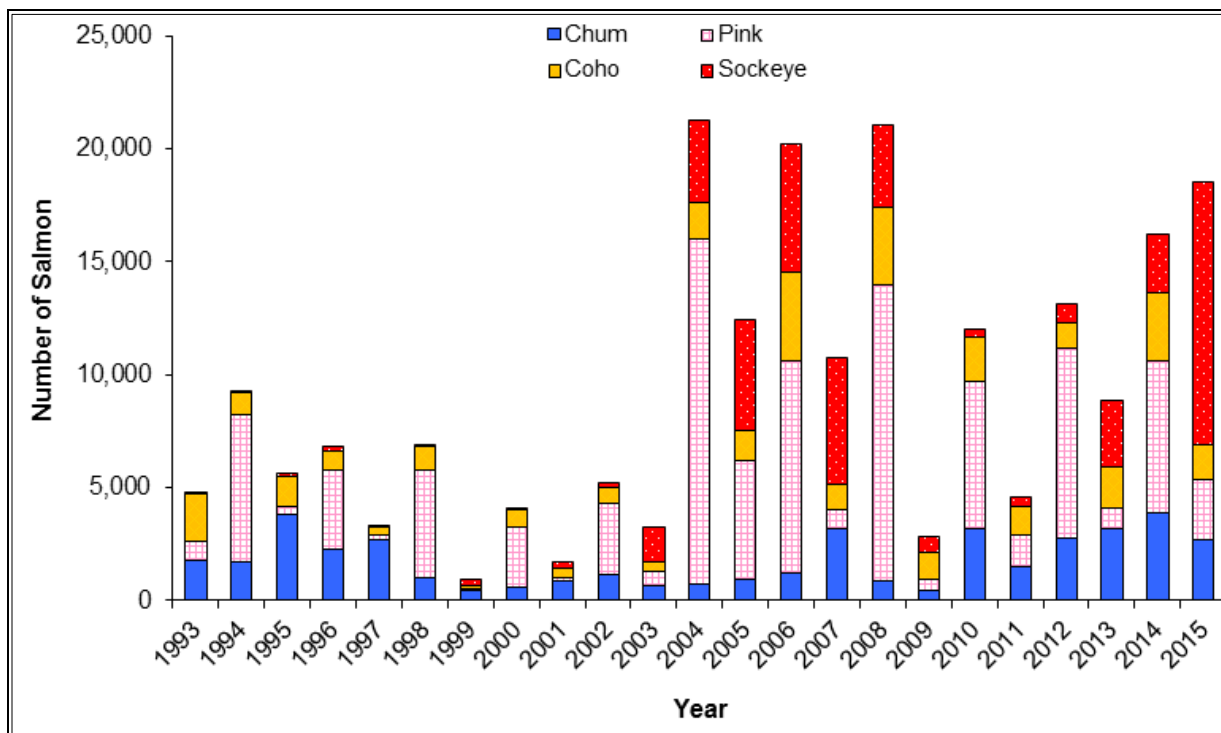


Figure 8.—Subdistrict 1 and Pilgrim River combined subsistence salmon harvest, 1993–2015.

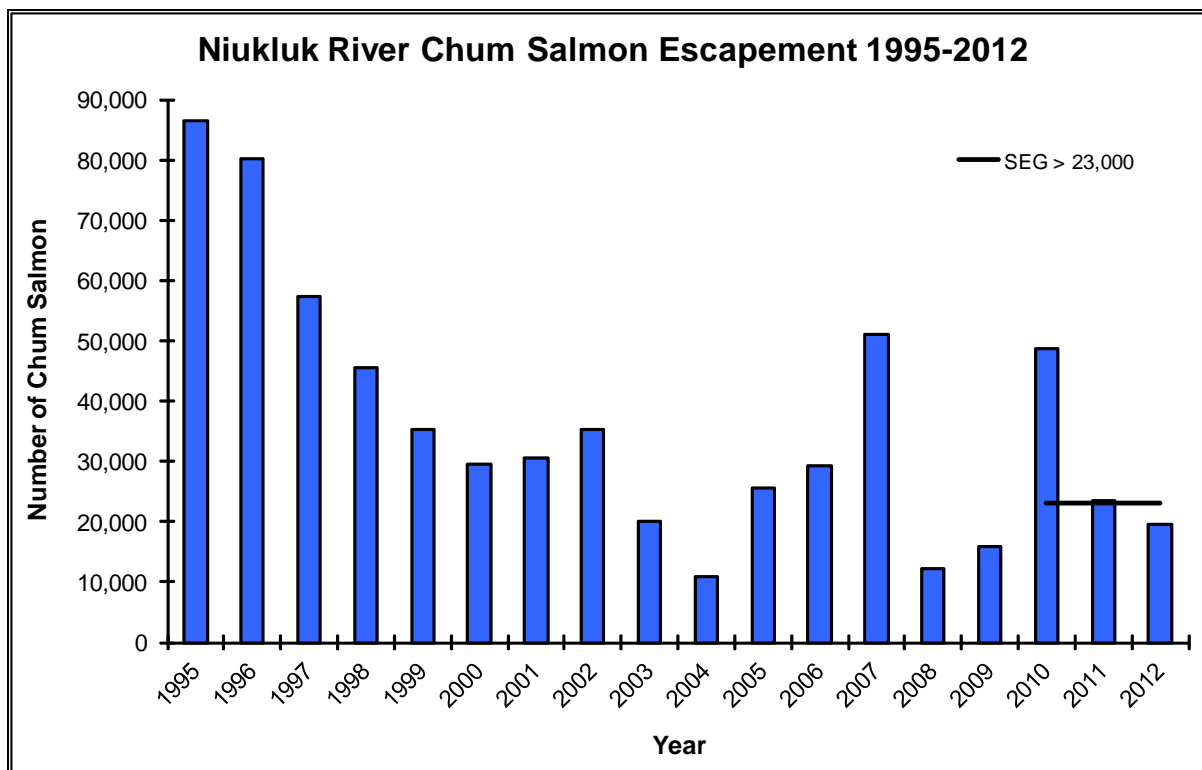


Figure 9.—Niukluk River chum salmon escapement, 1995–2012.

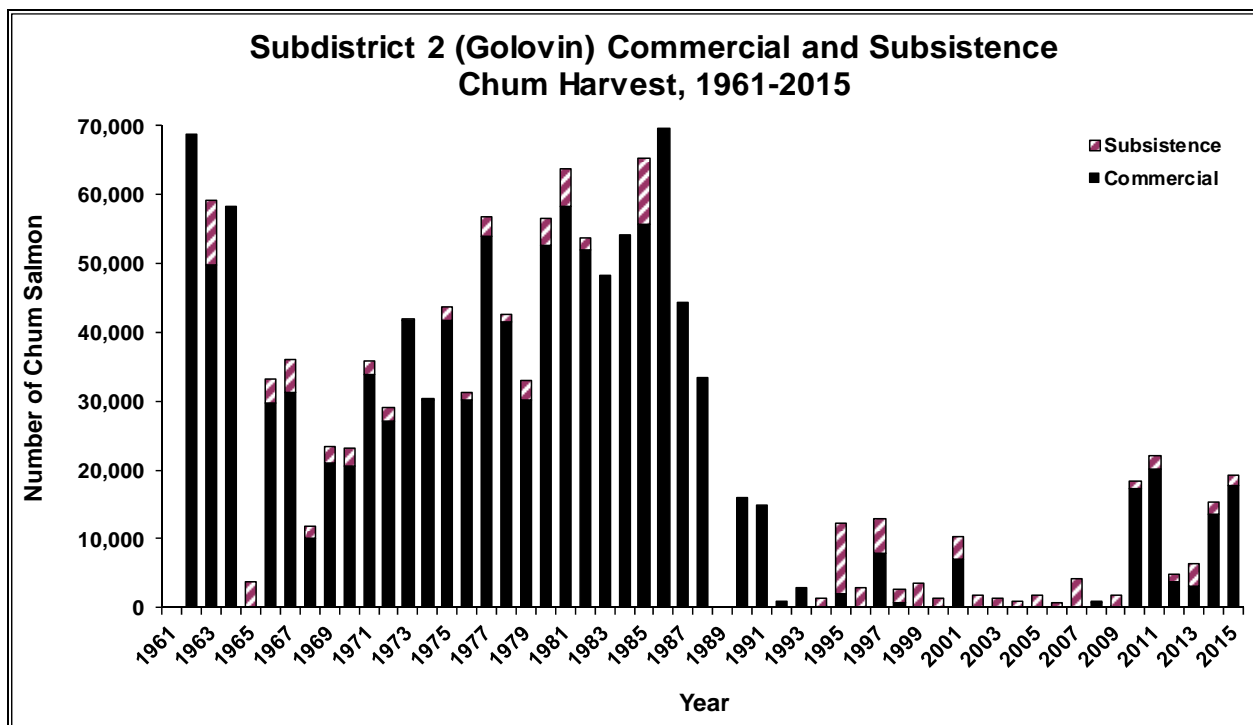


Figure 10.—Subdistrict 2 (Golovin) commercial and subsistence chum salmon harvest, 1961–2015.

Note: Subsistence data not available for all years.

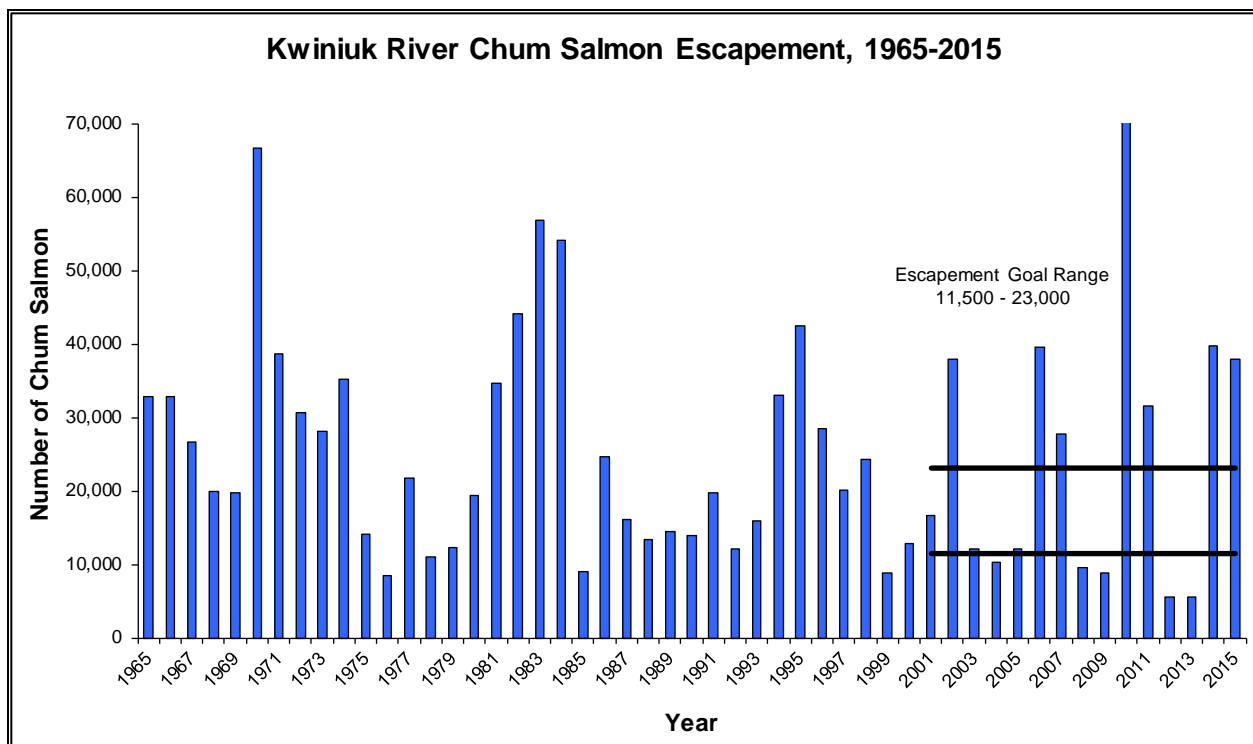


Figure 11.—Kwiniuk River chum salmon escapement, 1965–2015.

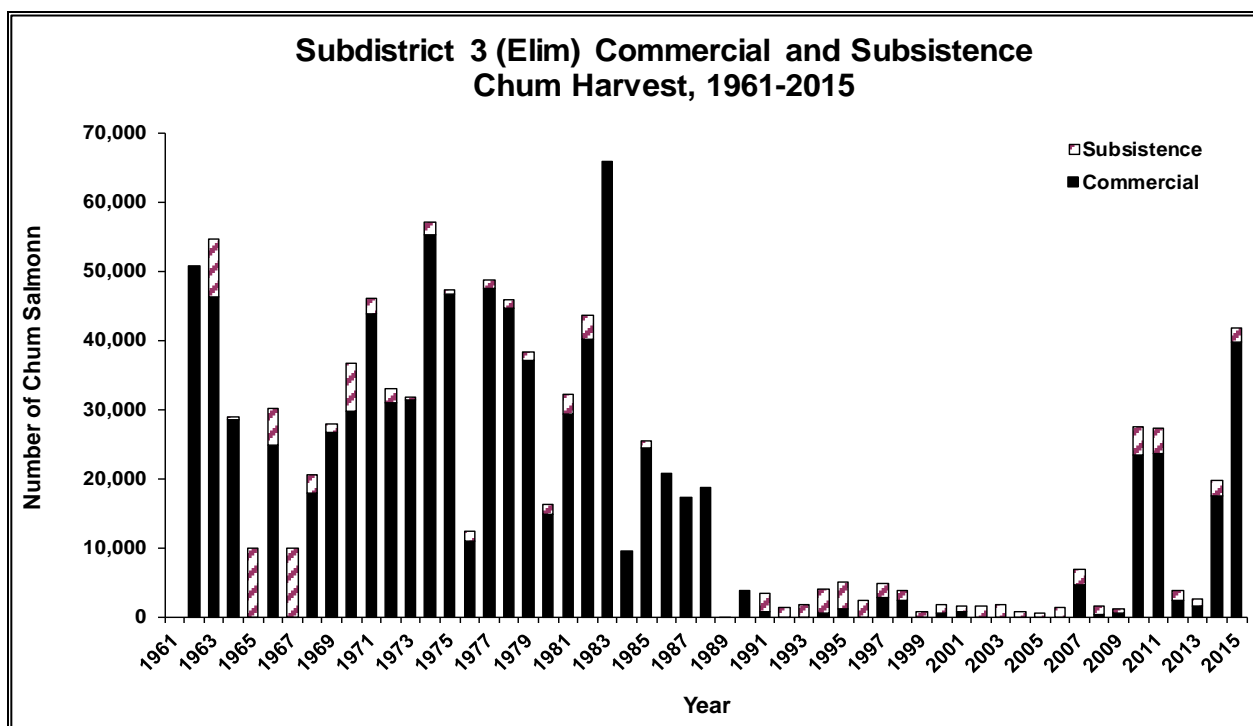


Figure 12.—Subdistrict 3 (Elim) commercial and subsistence chum salmon harvest, 1961–2015.

Note: Subsistence data not available for all years.