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# **Norton Sound and Port Clarence Stock Status and Fishery Overview: A Report to the Alaska Board of Fisheries, January 2023**

by

**Kevin Clark**

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December 2022

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

***SPECIAL PUBLICATION NO. 22-21***

**NORTON SOUND AND PORT CLARENCE STOCK STATUS AND  
FISHERY OVERVIEW: A REPORT TO THE ALASKA BOARD OF  
FISHERIES, JANUARY 2023**

by

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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. In response to the guidelines established in the SSFP (5 AAC 39.222), the Alaska Board of Fisheries (board) classified Norton Sound Subdistrict 5 (Shaktoolik) and Norton Sound Subdistrict 6 (Unalakleet) Chinook salmon *Oncorhynchus tshawytscha* as a stock of yield concern at its January 2004 meeting. An action plan was developed by the department and acted upon by the board. The board continued the Subdistrict 5 and Subdistrict 6 Chinook salmon classification as a stock of yield concern in 2007 and adopted a Chinook salmon management plan (5 AAC 04.395) to increase escapements and restore the stock to historical levels of abundance. In 2010 and 2013, the board continued the stock of concern designation and modified the management plan to provide direction for targeting commercial chum (*O. keta*) and pink (*O. gorbuscha*) salmon fisheries in times of low Chinook salmon abundance. Gillnet mesh size restrictions and fishery closures were required to achieve the North River escapement goal in 2007, 2009, 2010, 2014, 2015, 2018, and 2019. Escapement goals were not achieved in 2008, 2012, 2013, 2016, 2017, or 2020–2022 despite similar conservation measures. The 2011 escapement could not be determined. From 2018–2022, Subdistricts 5 and 6 Chinook salmon stock yields have remained well below historical averages (1994–1999), despite the use of specific management measures. Therefore, Subdistricts 5 and 6 Chinook salmon continue to meet the definition for a stock of yield concern as defined in the SSFP and the department recommends continuing the stock of yield concern classification.

Keywords: Norton Sound, chum salmon, *Oncorhynchus keta*, Chinook salmon, *Oncorhynchus tshawytscha*, 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, effective 2000) 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 and BOF 2000). This report provides the department's assessment of the Norton Sound and Port Clarence Districts stock status and Subdistricts 5 (Shaktoolik) and 6 (Unalakleet) Chinook salmon that have been designated a stock of concern (Figure 1).

The board designated stock of concern status for Subdistricts 5 and 6 Chinook salmon in 2004 and a stock of yield concern classification has been continued during each regulatory cycle. An action plan developed by the department (Jones 2003) was acted upon by the board in January 2004. The department recommended continuing the stock of yield concern classification in 2007 following 3 consecutive years (2004–2006) of failing to meet escapement goals despite reductions in harvests and the continuing inability to meet expected yields over a 5-year period (Kent and Bergstrom 2006). The board agreed with this determination at its February 2007 meeting and adopted the *Subdistricts 5 and 6 of the Norton Sound District and the Unalakleet River King Salmon Management Plan* (5 AAC 04.395) to further conserve Chinook salmon and restore the stock to historical yield levels. The management plan incorporated a restrictive subsistence fishing schedule and 50% reductions in possession, and annual sport fish bag limits. The plan specified that subsistence fishing from June 15 to July 15 in Subdistricts 5 and 6 was limited to two 48-hour periods per week in the marine waters, and two 36-hour periods per week in Unalakleet River. Likewise, the Unalakleet River sport fish bag and possession limit for Chinook salmon, 20 inches or greater, was reduced to 1 fish per day, and the annual harvest limit was reduced from 4 to 2 fish. The management plan provides authority to the department to liberalize subsistence fishing time and the sport fishing annual limits if the midpoint of the Chinook salmon escapement goal range in the North River is projected to be exceeded. The intent of the management plan was to increase

Chinook salmon escapement by providing escapement windows between subsistence fishing periods and by reducing sport fish harvests. Continued poor Chinook salmon run performance has resulted in the department frequently reducing or suspending subsistence fishing periods in the past decade with the North River sustainable escapement goal (SEG) only being met in 2 of last 5 years (2018–2022) and 10 of the 23 years since goals were first established (Table 1).

In accordance with the SSFP, the department recommended, and the board approved continuing the designation of Norton Sound Subdistricts 5 and 6 Chinook salmon as a stock of yield concern at the October 2022 Alaska Board of Fisheries work session. This recommendation is based on escapement goals being reached in only 3 years since 2015 and low harvests during the most recent 5-year period (2018–2022; Table 1).

## **NORTON SOUND ASSESSMENT BACKGROUND**

Ground-based stock assessment for salmon in the Norton Sound District started with a tower project in Subdistrict 3 on the Kwiniuk River in 1965 and is the longest continuously running project in Norton Sound (Figure 2). Other ground-based salmon escapement projects have been run since the initial project on the Kwiniuk River and have involved other government, Non-Governmental Organizations, and tribal groups including the Bureau of Land Management, U.S. Fish and Wildlife Service/Office of Subsistence Management (USFWS/OSM), Kawerak Inc., Native Village of Unalakleet, Unalakleet Native Corporation, Native Village of White Mountain, Native Village of Elim, and Norton Sound Economic Development Corporation (NSEDC).

In Subdistrict 1, there are currently 4 operational ground-based escapement projects enumerating salmon. Ground-based salmon assessment in Subdistrict 1 started in 1993 with a counting tower on the Nome River and was replaced by a fixed-picket weir in 1996 and continues to operate as a fixed-picket weir. In 1995, a tower project was initiated on the Snake River and converted to a fixed-picket weir in 2003 and is still in operation. The Eldorado River had a counting tower project initiated in 1997 that converted to a fixed-picket weir in 2003. The Eldorado River acts as an index for chum salmon escapement for the Safety Sound area. The Solomon River has a fixed-picket weir that has been operational since 2013. Other projects have operated in Subdistrict 1 and are no longer active including a fixed-picket weir at Glacial Lake enumerating sockeye salmon (2001–2015), a fixed-picket weir on the Bonanza River (2018–2020), and a fixed-picket weir on the Sinuk River (2011).

In Subdistrict 2, the first ground-based enumeration project for salmon was started in the Niukluk River downstream from the village of Council in 1995. This project operated as a counting tower until it was shut down in 2012. The Niukluk River counting tower was restarted in 2022 and is expected to continue operations into the future. When operations at the Niukluk River counting tower ceased after 2011, a counting tower was initiated on the Fish River, of which the Niukluk River is a tributary. The Fish River tower operated from 2014 to 2020, but the location proved to be inadequate for counting tower operations due to the size of the river, numerous high water events, and staffing issues.

In Subdistrict 3, the Kwiniuk River counting tower is the only ground-based enumeration project and has been operated consistently as a counting tower since 1965.

In Subdistrict 4, concerns from local subsistence users and commercial fishers prompted NSEDC to initiate 2 projects in the Norton Bay area, the Inglutalik River and Ungalik River counting towers. The Inglutalik River counting tower was the first ground-based assessment project in



Norton Bay and was started in 2011. In 2019, a second tower was initiated to enumerate salmon escapement to the Ungalik River.

Only one ground-based assessment project operates in Subdistrict 5. The Shaktoolik River tower was first attempted from 1996 to 1998 when operations were terminated. The project was restarted by NSEDC in 2014 and has operated as a counting tower since that time. Previously, there were attempts to use sonar to estimate escapement of Chinook salmon to the Shaktoolik River with limited success.

In Subdistrict 6, two projects are operating in the Unalakleet River drainage, the North River tower and the Unalakleet River floating weir. The North River tower began operations in 1972. The tower ran from 1972 to 1974, 1984 to 1986, and currently has been operated annually operational since 1996. Radiotelemetry studies (Wuttig 1999; Joy and Reed 2014) showed that North River accounted for 37% (1997), 40% (1998), 34% (2009), and 53% (2010) of the Unalakleet River Chinook salmon drainagewide escapement. Due to the variability in escapements to the North River, an additional assessment project on the mainstem Unalakleet River was initiated in 2010 with funding from USFWS/OSM to estimate Chinook salmon escapement for the entire Unalakleet River drainage.

One additional assessment project, a counting tower, was operated in the Pikmiktalik River near the village of St. Michaels in the southern part of Norton Sound from 2003 to 2006 with limited success.

Within the Port Clarence District, the Pilgrim River is the only system with an assessment project. Escapements in the Pilgrim River have been monitored using ground-based estimates since 1995. Differing techniques for obtaining escapement estimates for the Pilgrim River have been used and include a fixed weir (1995–1996), counting tower (1997, 1999–2000, 2002), and a floating weir annually since 2003. Sockeye salmon migrating to Salmon Lake is an important subsistence stock for Nome area residents and concerns for sockeye salmon stocks prompted assessing sockeye salmon escapement to Salmon Lake.

In addition to ground-based salmon assessment projects, the department conducts aerial surveys to assess escapements. Aerial surveys can be problematic in Norton Sound due to inclement weather, and in years of high pink salmon abundance, pink salmon masking other salmon species making observations difficult and incomplete; and in more recent years, the department competing for available aircraft with mining and communications projects.

The department also conducted a Chinook salmon test fishery from 1985–2012 in the lower Unalakleet River to gauge run timing (Kent 2010). In 2012, a nearshore, variable mesh, gillnet marine test fishery was also conducted near the village of Unalakleet to describe run timing and age, sex, and size structure of the Subdistricts 5 and 6 Chinook salmon returns. Unalakleet River and Unalakleet Subdistrict marine test fishery projects were discontinued in 2012.

Subsistence salmon harvest is collected annually through the use of subsistence permits issued for Port Clarence District and Norton Sound Subdistricts 1 through 3. In Subdistricts 4 through 6, annual subsistence household surveys are conducted in the villages of Koyuk, Shaktoolik, and Unalakleet. Due to COVID-19 travel restrictions, the 2020 and 2021 household surveys were not conducted in Koyuk or Shaktoolik. Commercial harvest occurs in both subdistricts and total harvest is available from fish tickets. Sport fishing harvest and effort information has been collected from anglers by the department using the statewide sport fish harvest survey.

## **ESCAPEMENT**

### **Chinook Salmon**

Chinook salmon have been documented to occur in small numbers in several systems draining into Norton Sound and Port Clarence with the largest runs occurring in Norton Sound Subdistricts 5 and 6, which support subsistence and sport fisheries in some years, as well as commercial fisheries historically (Menard et al. 2017). Currently, 2 systems in the Norton Sound District have escapement goals for Chinook salmon, the Kwiniuk River and North River.

An escapement goal was first established for the Kwiniuk River in 1999 (Fair et al. 1999) with a range of 300 to 550 Chinook salmon based on counts from the Kwiniuk River tower project. In 2016, the escapement goal was modified to a point goal of greater than 250 Chinook salmon counted at the Kwiniuk River tower site. The escapement goal has been met in 1 of the last 5 years (2020) and has only been achieved 7 times since the goal was established in 1999. Escapements have ranged from a low of 15 fish in 2013, to a high of 778 fish in 2002 (Table 2).

In 1999, an SEG of 1,200–2,400 Chinook salmon was established for the North River, a tributary of the Unalakleet River (Fair et al. 1999). It was later revised to the current escapement goal of 1,200–2,600 salmon (ADF&G 2004). The North River SEG has only been met in 2 of last 5 years and 10 of the 23 years since the goal was first established. Escapements have ranged from 522 to 3,315 fish (Table 1, Figure 3). However, escapements were near (1,000 fish or more) the lower end of the escapement goal in 3 of the last 5 years and in 6 of the last 23 years. Additionally, since 2010, Unalakleet River Chinook salmon escapements have been monitored using a resistance-board weir (Kent et al. 2014). Chinook salmon escapement from the Unalakleet River weir project have ranged from 111 fish in 2022, to 6,641 fish in 2019 (Table 1).

Additional escapement data in Subdistricts 5 and 6 exists in the form of aerial surveys. Aerial surveys of Chinook salmon spawning areas in the Shaktoolik River and Unalakleet River drainages have periodically been flown to help evaluate tower and weir counts and make comparisons with historical data. Aerial surveys for these systems has been sporadic and data obtained from the surveys can be problematic due to timing, high water events obscuring viewing conditions, and trees obscuring the stream. For these reasons, very little of the aerial survey data can be used in analyses.

### **Chum Salmon**

Chum salmon are a major species in most systems that drain into Norton Sound and Port Clarence. Currently, escapement goals are established for 5 systems in Norton Sound: Nome River, Snake River, Eldorado River, Kwiniuk River, and Tubutulik River, with the Tubutulik River being the only system without a ground-based escapement project. Chum salmon are utilized by subsistence, commercial, and sport fisheries throughout the Norton Sound District.

In Subdistrict 1, escapement goals were established on the Nome, Snake, and Eldorado Rivers for chum salmon, and escapements are monitored utilizing fixed-picket weirs on all 3 systems. Initially, escapement goals were based on aerial surveys for Nome River and Eldorado River and were put in place prior to the 1982 season and prior to the 1991 season for the Snake River (Buklis 1993). Escapement goals in these 3 systems have morphed over the years from aerial survey goals to the current escapement goals based on weir counts. Currently, all 3 systems' escapement goals are SEGs: Nome River is 1,600 to 5,300 chum salmon, Snake River is 2,000 to 4,200 chum salmon, and Eldorado River is 4,400 to 14,200 chum salmon.

Nome River has met the chum salmon escapement goal in 4 of the last 5 years and met or exceeded the escapement goal in 9 of the last 10 years. Escapements have ranged from 2,428 in 2022 to 8,340 in 2017 (Table 3). Escapement counts for chum salmon were incomplete in 2021 due to prolonged high water, and no missed passage estimates were possible from available data. The Snake River has met or exceeded the chum salmon escapement goal in 4 of the last 5 years, and in 9 of the last 10 years. Escapements have ranged from 836 in 2020 to 5,206 in 2017 (Table 3). Eldorado River chum salmon escapements have met or exceeded the chum salmon escapement goal in every year since 2004, and in the past 10 years, escapements have ranged from 6,283 in 2021 to 73,882 in 2017 (Table 3).

In Subdistrict 2, there are currently no established escapement goals for chum salmon on any systems draining into Golovnin Bay. Historically, counting towers have operated on the Niukluk and Fish Rivers; however, operations on the Niukluk River were discontinued in 2012 and the Fish River proved to be unsuitable for counting tower operations. A counting tower project was restarted on the Niukluk River in 2022. Historically, there was an escapement goal of 23,000 chum salmon for the Niukluk River, which was discontinued when the project stopped in 2012. In 2022, an estimated 37,009 chum salmon passed the tower.

In Subdistrict 3, there are 2 systems with chum salmon escapement goals: the Kwiniuk and Tubutulik Rivers. Prior to the counting tower, escapements were estimated using aerial surveys. An aerial survey escapement goal of 25,000 chum salmon was utilized for the Kwiniuk River as early as 1979, and in 1984, an aerial escapement goal of 12,000 chum salmon was instituted (Buklis 1993). Chum salmon escapement goals are currently based on tower counts for the Kwiniuk River and on aerial survey estimates for the Tubutulik River.

Kwiniuk River escapement goal for chum salmon is currently an SEG of 9,100 to 32,600 fish and has been met or exceeded in 3 of the past 5 years and 6 out of the last 10 years. Escapement has ranged from 3,862 in 2021 to 40,055 in 2014 (Table 2). Aerial surveys to assess the Tubutulik River's SEG of 3,100 to 9,000 chum salmon has been sporadic in recent years. Primarily due to the availability of aircraft to conduct aerial surveys during peak chum salmon spawning, inclement weather, and large runs of pink salmon obscuring chum salmon inriver. It is assumed that spawning populations of chum salmon in the Tubutulik River and Kwiniuk River have similar run timing and run strength such that the Kwiniuk River escapement can act as a proxy when aerial surveys of the Tubutulik River are unable to be flown.

In Subdistricts 4, 5, and 6, there are currently no established escapement goals for chum salmon.

## **Pink Salmon**

Pink salmon in Norton Sound have an odd/even year abundance cycle where even years have a much higher abundance than odd years in most years. Currently, there are 3 systems in Norton Sound with established escapement goals: Nome River – greater than 3,200 (odd years) and greater than 13,000 (even years) pink salmon, Kwiniuk River – greater than 8,400 pink salmon, and North River – greater than 25,000 pink salmon. Escapement goals have been met in every year for the last 10 years with escapements in the millions of fish in some years.

## **Coho Salmon**

Coho salmon spawn in most systems that drain into Norton Sound, and there are currently 3 systems that have established escapement goals based on peak aerial survey counts: Kwiniuk River (650–1,300), Niukluk River/Ophir Creek (750–1,600), and North River (550–1,100) coho

salmon. Aerial surveys of these systems have been problematic in recent years due to aircraft availability, adverse fall weather, and high murky water making counts impossible in some years. In the last 10 years, there have been 5 total surveys conducted on these systems. Surveys were conducted in 2022 on the Kwiniuk River and the Niukluk River/Ophir Creek systems. Escapement estimates for the Kwiniuk River were above the escapement goal and the Niukluk River/Ophir Creek escapement estimate was below the goal; however, conditions were only suitable for counting salmon via an aerial survey in Ophir Creek in 2022 as the Niukluk River had high murky water that obscured most of the system at the time the aerial survey was conducted. It is likely that the escapement goal would have been met or exceeded if water conditions would have allowed a successful survey of the Niukluk River.

## **Sockeye Salmon**

Sockeye salmon occur in small numbers throughout Norton Sound and Port Clarence. There are currently 2 stocks with established escapement goals: Pilgrim River in the Port Clarence District and Glacial Lake in the Sinuk River drainage in Subdistrict 1 of the Norton Sound District. The escapement goal for the Pilgrim River is assessed using escapement estimates from a floating weir and by annual aerial surveys for Glacial Lake. The escapement goal for the Pilgrim River is an SEG of 6,800 to 36,000 sockeye salmon. Pilgrim River has met its goal in 3 out of the last 5 years and for 8 of the last 10 years with only 2021 and 2022 being below the escapement goal. Escapements have ranged from 1,518 in 2022 to 55,764 in 2017 for the last 10 years (Table 4). Abundance and carrying capacity of Salmon Lake, the origin of Pilgrim River and major spawning location for sockeye salmon in the Pilgrim River system, is complicated by the lake being artificially fertilized annually by NSEDC. The effects on future escapements, based on low escapements in 2021 and 2022, are uncertain.

Glacial Creek is the outlet of Glacial Lake and is a tributary of the Sinuk River. Glacial Lake has a peak aerial survey SEG of 800 to 1,600 sockeye salmon that was established in 1999. The escapement goal for Glacial Lake has been met every year in the last 10 years when aerial surveys were conducted on the system, with only 2021 not being surveyed due to aircraft availability, adverse weather conditions, and high murky lake conditions. In 2022, Glacial Lake met its escapement goal even as the Pilgrim River fell well short of its goal. Peak aerial survey counts for Glacial Lake have ranged from 875 in 2020 to 5,100 in 2019 over the last 10 years (Table 5).

## **HARVEST**

### **Chinook Salmon**

Chinook salmon harvests and abundance are a minor component for most systems draining into Norton Sound and Port Clarence, apart from Subdistricts 5 and 6 in southern Norton Sound. Declines in total run size of Unalakleet River Chinook salmon have resulted in commercial fishery closures for Chinook salmon and a reduction in total harvest in Subdistricts 5 and 6. Although historical total run data are limited, there is evidence of a 64% decline in total run from 1997 and 1998 compared to present (Table 1). Commercial harvest of Chinook salmon in Subdistricts 5 and 6 has been incidental to directed chum *Oncorhynchus keta*, pink *O. gorbuscha*, and coho *O. kisutch* salmon fisheries since 2001, except for a small directed commercial harvest of Chinook salmon in 2005. Combined commercial harvests for Subdistricts 5 and 6 averaged 6,745 Chinook salmon for the historical period 1994–1999 (Table 6). Commercial harvests over the recent 5-year period

(2018–2022) averaged 577 Chinook salmon, which represents a 92% decline from the historical commercial harvest average.

Although subsistence Chinook salmon harvests have decreased in Subdistricts 5 and 6, the decrease was not as dramatic as the commercial harvest. Subsistence fishing closures in Subdistricts 5 and 6 were implemented in 2003, 2004, and annually since the 2006 season, except for 2019–2021, because of difficulty achieving the North River tower SEG (Figure 3) and low Unalakleet River weir escapement counts of Chinook salmon. In 2019, subsistence reports and escapements to the Shaktoolik River tower, North River tower, and Unalakleet River weir indicated that Chinook salmon escapement was adequate to allow the department to ease subsistence fishing restrictions in Subdistricts 5 and 6. Those subdistricts were opened to subsistence fishing on June 30 as outlined in regulations. Subdistricts 5 and 6 subsistence harvests averaged 1,501 Chinook salmon from 2018–2022, a 66% decline from the 1994–1999 average subsistence harvest of 4,438 Chinook salmon, but has improved from the 2008–2017 average harvest of 1,190 Chinook salmon (Table 6). Large decreases in combined commercial and subsistence Chinook salmon harvest patterns have been apparent within each subdistrict since 2011. The average combined harvest (commercial and subsistence) of both Subdistricts 5 and 6 from 2018–2022 (2,511 Chinook salmon) decreased 78% from the historical 1994–1999 average combined harvest of 11,184 Chinook salmon, but improved from the recent historical average (2008–2017) of 1,370 Chinook salmon (Table 6, Figure 4). Subsistence harvests for 2022 are not available at this time; however, subsistence fishing restrictions and weaker runs in 2022 are assumed to have reduced subsistence harvest of Chinook salmon in Subdistricts 5 and 6.

## **Chum Salmon**

Directed chum salmon commercial fisheries and subsistence fisheries occur in all 6 subdistricts of the Norton Sound District and are a major contributor to the commercial and subsistence harvest for Norton Sound residents. Commercial harvest averaged 91,957 chum salmon during the last 5 years (2018–2022), which is slightly below the recent historical average (2008–2017) of 93,903 fish. Much of this decrease in average harvest is due to a record chum salmon harvest in Norton Sound from 2017 through 2019. Chum salmon harvests have declined since 2019 to harvest levels comparable to the late 1990s and early 2000s (Table 7).

In Subdistrict 1, the Nome Subdistrict, commercial salmon fishing was halted in 1997 in response to low salmon abundance and was declared a Tier II subsistence fishery in 1999. In 2006, the Tier II subsistence designation was removed and commercial fishing resumed after several years in 2013. Commercial harvest averaged 7,378 chum salmon from 2018 through 2022, and 5,825 chum salmon since the commercial fishery resumed in Subdistrict 1 (Table 8).

In Subdistricts 2 and 3, chum salmon harvests in the first decade of the 2000s were minimal. Subsistence chum salmon harvests averaged 1,767 fish in Subdistrict 2, and 1,216 fish in Subdistrict 3 from 2005 through 2009 (Tables 9 and 10). In 2007, there was a large surplus of chum salmon, but the buyer was only able to purchase fish in Subdistrict 3. Since 2008, commercial fisheries targeting chum salmon have occurred in both Subdistricts 2 and 3. In Subdistrict 2, a 5-year (2018–2022) average harvest of 14,884 chum salmon, and a historical average harvest of 9,149 chum salmon (2008–2017) occurred. In Subdistrict 3, a 5-year average of 11,515 chum salmon and a historical average harvest of 11,744 chum salmon (2008–2017) was recorded (Tables 9 and 10).

In Subdistrict 4, commercial harvests have averaged 4,089 chum salmon for the last 5 years (2018–2022) and 13,421 chum salmon historically (2008–2017; Table 11). The decline in commercial harvest was driven by a decrease in chum salmon in 2020 and 2021 in the Norton Bay Subdistrict and, more broadly, to a downward trend in chum salmon generally in Norton Sound similar to the rest of coastal western Alaska. Subsistence harvest is not available for the Norton Bay area for 2020 and 2021 as COVID-19 travel restrictions made collecting subsistence survey data impossible, and 2022 subsistence harvest data is not yet available.

Subdistricts 5 and 6 chum salmon commercial harvests were relatively consistent from 2010 to 2016 when the stock experienced 3 years (2017–2019) of record, to near record, harvests of chum salmon (Tables 12 and 13). Commercial harvests declined in both subdistricts for chum salmon in 2020 and 2021 causing the department to limit fishing time in both subdistricts.

### **Pink Salmon**

Pink salmon commercial harvest has been incidental to fisheries for chum and coho commercial fisheries in Norton Sound because a consistent market for pink salmon has not existed in the Norton Sound Area in most years. However, there was an experimental purse seine fishery that harvested 10% (28,789) of 289,912 commercial pink salmon harvest in 2021. Pink salmon harvests in Norton Sound are dependent on market availability and capacity more than abundance in any given year. Escapement objectives have been consistently met throughout Norton Sound from 2018–2022 (Table 14).

### **Coho Salmon**

Directed commercial and subsistence fisheries occur on coho salmon throughout the Norton Sound District and in some years make up the majority of the harvest for salmon (Table 7). Coho salmon abundance, based on subsistence and commercial harvest, has declined since the high harvest years of 2018 and 2019 and is similar to the early 2000s. Coho salmon commercial harvest has averaged 87,129 fish for the last 5 years (2018–2022) and 97,940 historically (2008–2017; Table 7).

### **Sockeye Salmon**

Sockeye salmon commercial harvests are incidental to fisheries targeting chum, pink, and coho salmon. Currently there are no directed commercial sockeye salmon fisheries in Norton Sound or Port Clarence. Subsistence fisheries occur in the lower sections of the Sinuk River and in the Pilgrim River with most subsistence harvest coming from Pilgrim River. Subsistence harvest of Pilgrim River sockeye salmon has averaged 6,122 fish (2008–2017) and 8,828 for the most recent five-year average (2018–2022; Table 15). The 5-year average is highly influenced by high harvest from the 2017 through 2019 seasons; however, 2021 and 2022 escapement projections prompted closures to subsistence net fishing in the Pilgrim River. Sockeye salmon escapement objectives have been met for Glacier Lake (Table 5).

## **OUTLOOK**

The 2023 Chinook salmon run in Norton Sound is expected to be below average, and like recent years, there may be subsistence closures in Subdistricts 5 (Shaktoolik) and 6 (Unalakleet). However, parent-year escapements of 2018 and 2019 were well above average and the Chinook salmon run may be better than expected.

The chum salmon run in 2023 is expected to be average based on above average parent-year escapements in 2018 and 2019 and returns since 2019 being below average. However, the average

weight of chum salmon caught in the commercial fishery in 2022 was a record low of 6.1 pounds, with ocean conditions possibly having a negative influence on the 2023 run.

The 2023 pink salmon run is expected to be average for an odd-numbered year. After 5 years of record pink salmon runs from 2016 through 2020, the runs of the last 2 years have been near the long-term average. Pink salmon runs in odd-numbered years are smaller than runs in even-numbered years, and for nearly 20 years, there has been sufficient run strength to allow for commercial fishing in all subdistricts.

The coho salmon run in 2023 is expected to be below average. The 2022 coho salmon run was below average even though the parent-year in 2018 was a record run. The last 3 years have had record low coho salmon average weights of 5.7 pounds in the commercial fishery. The previous record low average weight was 6.4 pounds in 2019. The 2019 coho salmon run was above average; however, the trend of below average runs is expected to continue in 2023 despite good parent-year runs.

The sockeye salmon run in Norton Sound is expected to be below average in 2023. The last time there were poor runs for several years began in 2009, and the current trend of poor runs that began in 2021 and is expected to continue in 2023.

## **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 biological escapement goals (BEGs) or SEGs based on analysis of production consistent with the escapement goal policy.

The department is not recommending revising escapement goals in any systems draining into Norton Sound or Port Clarence.

## **MANAGEMENT REVIEW**

Historically, markets for salmon in Norton Sound Subdistricts have been sporadic with buyers only available in some years in certain subdistricts. The combination of low salmon runs and no available market for salmon resulted in some subdistricts in Norton Sound not having commercial fisheries. There has been a market in all subdistricts for the last 10 years; however, market demand for pink salmon has been limited.

Subdistrict 1 was closed to commercial harvest of chum salmon in 1999 when the subdistrict was placed in a Tier II subsistence fishery by the board. Commercial fishing resumed in 2013 in Subdistrict 1 and has occurred annually since that time. Record harvests from 2017 through 2019 for chum and coho salmon occurred in Subdistrict 1 and harvest was limited by processing capacity in those years. Recently, declines in abundance have caused the department to limit commercial fishing time in Subdistrict 1 to allow for escapement and subsistence uses.

Commercial salmon fishing opened in Subdistrict 3 in 2007 when there was renewed commercial interest in the subdistrict, which expanded to Subdistrict 2 in 2008. In 2008 and 2009, the chum salmon runs were too weak in both subdistricts to allow for directed 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 5 strong chum salmon runs in 2014 and 2015, and 2017–2019; however, the buyer had limited tendering and processing capacity to harvest available chum salmon in those years. Since 2019, abundance of chum and coho salmon have declined from the

large runs during 2017–2019 and commercial fishing time has been reduced to ensure adequate escapement and subsistence harvests.

Commercial fishing in Subdistrict 4 has generally had less effort than other subdistricts in Norton Sound (Table 16). Chum and coho salmon are the primary species targeted by Subdistrict 4 commercial fishers. Since commercial interest in buying salmon returned in 2008, the subdistrict has had commercial fishing opportunities annually. The most recent 5-year average (2018–2022) is 4,089 chum salmon and 440 coho salmon harvested, which is well below the recent historical average (2008–2017) of 14,309 chum salmon and 4,730 coho salmon. Since commercial fishing markets have returned to Subdistrict 4 in 2008, harvests have ranged from a low of 61 chum salmon (primarily incidental harvest in directed pink salmon fisheries) in 2021 to a high of 36,021 in 2013 chum salmon, and from a low of 166 coho salmon in 2021 to a high of 9,526 coho salmon in 2014 (Table 11).

In most years, Chinook salmon commercial fishing in Subdistricts 5 and 6 consisted of biweekly 24-hour periods to prevent fishing on milling Chinook salmon stocks to allow for escapement and subsistence needs. However, diminishing returns in the 2000s necessitated a conservative management approach to meet escapement goals and subsistence uses. In 2007, the management plan was modified to allow commercial Chinook salmon fishing only if the midpoint of the North River tower Chinook salmon escapement goal range was projected to be reached. Chinook salmon directed commercial fishing has not occurred since 2005 due to conservative management to ensure meeting escapement goals and subsistence needs on the North River.

There has been a resurgence of market interest in Norton Sound chum and pink salmon since 2010. There is also increased interest in commercial salmon fishing for these species prior to July 1 to target these species earlier in their migration to increase harvests and improve quality of the harvest. Interest peaked in 2014 with salmon runs showing early to normal run timing compared to the late runs of salmon observed from 2007 to 2013. Chum and pink salmon stocks in Subdistricts 5 and 6 could sustain considerably higher commercial harvest rates in most years, but the fishery has been managed conservatively for the first 2 weeks of July to minimize incidental harvest of Chinook salmon. This has involved limiting gillnet mesh size to 6 inches or less, fishing periods from 24 to 36 hours in duration, and restricting the sale of Chinook salmon when there are subsistence restrictions in place. Since 2019, strong chum and coho salmon returns to Subdistricts 5 and 6 allowed the department to liberalize fishing time; however, weaker runs in 2020 and 2021 prompted the department to manage the commercial fishery in these 2 subdistricts conservatively and fishing time was reduced from previous levels.

Incidental harvests of Chinook salmon in recent chum and pink salmon commercial harvests have been small and are not expected to increase significantly if these fisheries are prosecuted earlier than July 1. Harvests of Chinook salmon in the Subdistricts 5 and 6 directed commercial chum salmon fishery have been low since 2007. Average chum salmon commercial harvest in Subdistricts 5 and 6 during the recent period (2018–2022) was 44,185 fish, whereas average annual Chinook salmon incidental harvest was approximately 540 fish (Table 17). During the directed pink salmon opening, the incidental harvest of Chinook salmon was lower than in chum salmon openings. In accordance with the management plan, the commercial sale of Chinook salmon was prohibited in Subdistricts 5 and 6 by emergency order from 2013 to 2017 and again in 2022. When commercial sales are prohibited, incidentally caught Chinook salmon may be retained for personal use and by regulation, all fish caught but not sold must be recorded on fish tickets.



Although there have been large pink salmon runs in even-numbered years with escapements in the millions of fish, there have been few pink salmon directed commercial fishing periods because of limited buyer interest and processing capacity in most years. Pink salmon harvests have primarily been as incidental harvest when targeting chum or coho salmon. Pink salmon fisheries generally occur at times when chum and coho salmon runs require the department to limit fishing time to protect those species. Fishing time, and the number of openings allowed for pink salmon is generally dictated by the markets processing capacity and tendering limitations. In 2021, two buyers expressed interest in harvesting pink salmon, and an experimental purse seine fishery was allowed by a commissioner's permit. Harvests for the experimental fishery were minimal and incidental harvest during this experimental fishery was insignificant.

Coho salmon fisheries have had the highest value of any commercial fisheries in the 2000s. There have been record commercial harvests of coho salmon in a number of years in the last decade (Table 7). However, this trend of record harvests has reversed itself and coho salmon fishing has been limited in Norton Sound after 2019.

Subsistence fishing schedules are in place for Subdistricts 1, 5, and 6 of the Norton Sound District. In Subdistrict 1, subsistence fishing is allowed in the fresh waters draining into Norton Sound and in marine waters west of Cape Nome from June 15 through August 31 with gillnets from 6:00 PM Wednesdays to 6:00 PM on Mondays. Marine waters east of Cape Nome are open to subsistence fishing continuously unless altered by emergency order. No additional restrictions to subsistence fishing in Subdistrict 1 have been enacted by emergency order in recent years. In Subdistricts 5 and 6, the subsistence fishing schedule in the marine waters goes into effect by emergency order on June 15 and consists of two 24-hour periods starting at 6:00 PM Mondays and 6:00 PM on Fridays when sufficient numbers of Chinook salmon are available to ensure escapement needs. Additionally, the department may, by emergency order, open the Unalakleet River to subsistence fishing for two 24-hour periods starting at 8:00 PM on Mondays and 8:00 PM on Fridays when sufficient numbers of Chinook salmon are available to meet the escapement goal. Beach seines are also allowed in Subdistricts 5 and 6 to target species other than Chinook salmon from July 1 through August 10; however, any Chinook salmon captured when beach seining must be returned to the water immediately, alive. Subsistence fishing for Chinook salmon has been limited in recent years in an effort to increase Chinook salmon escapement and restrictions have included limited openings early in the season when Chinook salmon are present and restricting mesh size to 6 inches or less in Subdistricts 5 and 6. Except for restrictions in Subdistricts 5 and 6 to conserve Chinook salmon and subsistence schedules in Subdistrict 1, there have been no subsistence fishing restrictions in Subdistricts 2–4 in recent years.

Subsistence fishing in the Port Clarence District has no restrictions except for a household limit of 3 Chinook salmon and 25 sockeye salmon per household for the Pilgrim River. In years when escapement in the Pilgrim River will support additional harvest of sockeye salmon, the department waives the sockeye salmon household limit on the Pilgrim River and may, by emergency order, allow subsistence fishing in Salmon Lake. Recent low runs of sockeye salmon in the Pilgrim River prompted the department to close the Pilgrim River to subsistence net fishing in mid-July in 2021 and early July in 2022.

## **RESEARCH**

Additional salmon research and assessment in this area continues to be conducted in cooperation and coordination with multiple local entities in the area, including Norton Sound Economic

Development Corporation, Bering Straits Native Corporation, Elim Native Corporation, and White Mountain 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.—Estimated escapement, total harvest, and total run compared to exploitation rate, Unalakleet River Chinook salmon, 1996–2022.

Year	Escapement		Drainagewide escapement <sup>b</sup>	Combined harvest <sup>c</sup>	Total estimated run size	Exploitation rate (percent) <sup>d</sup>
	North River <sup>a</sup>	Unalakleet mainstem				
1996	1,197	—	—	7,051	f	f
1997	2,940	—	11,204	14,100	25,304	55.7
1998	1,773	—	5,220	10,992	16,212	67.8
1999	1,022 <sup>e</sup>	—	—	9,279	f	f
2000	1,046	—	—	3,356	f	f
2001	895 <sup>e</sup>	—	—	3,176	f	f
2002	1,484	—	—	2,915	f	f
2003	1,223	—	—	2,692	f	f
2004	1,125	—	—	3,185	f	f
2005	1,015	—	—	2,510	f	f
2006	906	—	—	2,842	f	f
2007	1,948	—	—	1,826	f	f
2008	909	—	—	2,047	f	f
2009	2,357	—	6,932	2,207	9,139	24.1
2010	1,219	1,021	2,240	1,234	3,474	35.5
2011	841 <sup>g</sup>	1,030 <sup>g</sup>	1,871 <sup>g</sup>	1,149	f	f
2012	975	823	1,798	965 <sup>h</sup>	2,763	34.9
2013	580	667	1,247	599 <sup>h</sup>	1,846	32.4
2014	2,225 <sup>g</sup>	1,126 <sup>g</sup>	3,351 <sup>g</sup>	512 <sup>h</sup>	f	f
2015	1,950	2,789	4,739	1,523 <sup>h</sup>	6,262	24.3
2016	522 <sup>g</sup>	505 <sup>g</sup>	1,027 <sup>g</sup>	1,016	f	f
2017	1,045	2,934	3,979	836	4,815	17.4
2018	2,583	3,326	5,909	1,665 <sup>i</sup>	7,574	22.0
2019	3,315	6,641	9,956	3,129 <sup>i</sup>	13,085	23.9
2020	1,068	<sup>l</sup>	1,068	2,269 <sup>i</sup>	f	f
2021	1,013	518	1,531	1,485 <sup>i</sup>	1,531	0.0
2022	1,179	111	1290	<sup>l</sup>	f	f
1996–1999 <sup>j</sup> Average	1,970	—	8,212	10,356	20,758	61.8
2008–2017 <sup>j</sup> Average	1,291	1,647	3,489	1,344	4,717	28.1
2018–2022 <sup>j</sup> Average	1,832	2,649	4,672	2,137	7,892	31.7

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*Note:* En dash (–) = no data available.

- <sup>a</sup> North River SEG range is 1,200–2,600 Chinook salmon.
- <sup>b</sup> Drainagewide escapement estimates prior to 2010 are calculated by expanding tower counts by the proportion of Chinook salmon migrating into the North River, 1997 (34%), 1998 (40%; Wuttig 1999), and 2009 (34%; Joy and Reed 2014).
- <sup>c</sup> Harvest includes sport, commercial, and subsistence, assuming 100% of the marine subsistence and commercial Chinook salmon harvest was of Unalakleet River origin.
- <sup>d</sup> Because marine harvests in the Unalakleet Subdistrict represent mixed stocks, rates presented here may overestimate actual exploitation rate in years when marine harvest is a larger component of the overall harvest.
- <sup>e</sup> Project started late. Chinook salmon escapement underestimated.
- <sup>f</sup> Lack of or incomplete escapement data preclude calculation of total run and exploitation rates for those years.
- <sup>g</sup> Chinook salmon escapement underestimated in 2011, 2014, and 2016 due to poor counting conditions.
- <sup>h</sup> No sport harvests were reported from 2012 to 2015 due to preseason restrictions and closures. Combined harvest is subsistence and commercial only.
- <sup>i</sup> Sport fish catch data unavailable. Sport fish harvest in 2018 is probably small due to closures.
- <sup>j</sup> Excluding those years footnoted to be incomplete estimates.
- <sup>k</sup> Unalakleet weir was not operated in 2020.
- <sup>l</sup> Subsistence harvest not available for 2022.

Table 2.—Historical salmon migration at Kwiniuk River counting tower, 1995–2022.

Year	Operating period	Chum <sup>b</sup>	Pink	Chinook <sup>a</sup>	Coho
1965	Jun 18–Jul 19	32,861	8,668	19	0
1966	Jun 19–Jul 28	32,786	10,629	7	0
1967	Jun 18–Jul 28	26,661	3,587	13	0
1968	Jun 18–Jul 24	19,976	129,052	27	0
1969	Jun 26–Jul 26	19,687	56,683	12	0
1970	Jun 25–Jul 29	66,604	226,831	0	0
1971	Jun 29–Jul 29	38,679	16,634	0	0
1972	Jun 28–Jul 27	30,686	62,461	65	0
1973	Jun 25–Jul 25	28,029	37,070	57	0
1974	Jun 20–Jul 26	35,161	39,375	62	0
1975	Jul 04–Jul 26	14,049	55,293	44	0
1976	Jul 04–Jul 25	8,508	35,226	12	0
1977	Jun 26–Jul 25	21,798	47,934	0	0
1978	Jul 04–Jul 22	11,049	70,148	0	0
1979	Jun 28–Jul 25	12,355	167,492	107	0
1980	Jun 22–Jul 28	19,374	319,363	177	0
1981	Jun 19–Aug 02	34,565	566,534	136	0
1982	Jun 21–Jul 26	44,099	469,674	138	0
1983	Jun 19–Jul 27	56,907	251,965	267	0
1984	Jun 19–Jul 25	54,043	736,544	736	0
1985	Jun 26–Jul 28	9,013	18,237	955	0
1986	Jun 19–Jul 26	24,700	241,446	654	0
1987	Jun 25–Jul 23	16,133	5,566	317	0
1988	Jun 18–Jul 26	13,303	187,907	321	0
1989	Jun 27–Jul 27	14,529	27,488	248	0
1990	Jun 21–Jul 25	13,957	416,512	900	0
1991	Jun 18–Jul 27	19,801	53,499	708	0
1992	Jun 27–Jul 28	12,077	1,464,716	479	0
1993	Jun 27–Jul 27	15,824	43,063	600	0
1994	Jun 23–Aug 09	33,012	2,303,114	625	2,547
1995	Jun 21–Jul 26	42,500	17,511	498	114
1996	Jun 20–Jul 25	28,493	907,893	577	461
1997	Jun 18–Jul 27	20,119	9,535	974	0
1998	Jun 18–Jul 27	24,247	655,934	303	0
1999	Jun 25–Jul 28	8,763	607	116	0
2000	Jun 22–Jul 27	12,879	750,173	144	41
2001	Jun 27–Sep 15	16,598	8,423	261	9,532
2002	Jun 17–Sep 11	37,995	1,114,410	778	6,459
2003	Jun 15–Sep 15	12,123	22,329	744	5,490

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Year	Operating period	Chum <sup>b</sup>	Pink	Chinook <sup>a</sup>	Coho
2004	Jun 16–Sep 14	10,362	3,054,684	663	11,240
2005	Jun 17–Sep 13	12,083	341,048	342	12,950
2006	Jun 22–Sep 12	39,519	1,347,090	195	22,341
2007	Jun 21–Sep 10	27,756	54,255	258	9,429
2008	Jun 23–Sep 07	9,483	1,444,228	237	10,462
2009	Jun 24–Sep 13	8,739	42,963	444	8,705
2010	Jun 25–Sep 07	71,403	634,169	138	8,058
2011	Jun 20–Sep 11	32,239	30,913	57	3,290
2012	Jun 23–Aug 16	5,577	393,030	60	781
2013	Jun 24–Sep 16	5,625	13,212	15	3,729
2014	Jun 15–Sep 08	39,759	322,830	438	14,637
2015	Jun 15–Sep 03	37,812	67,295	318	6,252
2016	Jun 17–Sep 16	8,526	1,909,949	135	9,210
2017	Jun 15–Sep 12	32,553	506,445	57	13,593
2018	Jul 04–Sep 16	41,658	1,804,480	87	17,074
2019	Jul 02–Sep 06	21,363	808,156	122	5,649
2020	Jun 25–Sep 07	4,953	1,767,447	417	5,361
2021	Jul 01–Sep 07	3,862	56,685	227	1,347
2022	Jun 23–Sep 12	10,127	402,399	42	4,446
2018–2022 Average		16,393	967,833	179	6,775

<sup>a</sup> Chinook salmon counts from 1965–1984 were not expanded. Counts in 1985, and after, were expanded.

<sup>b</sup> Since 2001, BEG range is 10,000–20,000 fish and the Optimal Escapement Goal range is 11,500–23,000 fish. In 2019, the board set an SEG of 9,100–32,600 chum salmon.

Table 3.—Historical escapement of chum salmon at Nome River, Snake River, and Solomon River from 1993 to 2022.

Year	Escapement			
	Nome River	Snow Snake River	Eldorado River	Solomon River
1993	1,859	—	—	—
1994	2,984	—	—	—
1995	4,934	3,498	—	—
1996	3,339	2,772	—	—
1997	5,664	4,811	14,302	—
1998	1,930	7,952	13,808	—
1999	1,048	484	4,218	—
2000	4,056	1,394	11,617	—
2001	3,166	1,945	11,635	—
2002	1,720	2,776	10,215	—
2003	1,958	2,201	3,591	—
2004	4,095	2,165	3,277	—
2005	5,584	2,967	10,369	—
2006	5,204	4,160	42,105	—
2007	7,034	8,147	21,312	—
2008	2,607	1,294	6,746	—
2009	1,565	891	4,943	—
2010	5,906	6,974	42,612	—
2011	3,578	4,352	16,273	—
2012	2,028	978	13,348	—
2013	4,846	2,995	26,131	1,377
2014	5,789	3,983	27,054	1,504
2015	6,166	4,442	25,560	1,128
2016	7,093	3,677	18,938	2,016
2017	8,340	5,165	73,882	3,931
2018	5,240	3,133	42,361	2,917
2019	6,014	2,375	28,427	1,226
2020	2,822	842	11,333	830
2021	216	2,352	6,283	91
2022 <sup>a</sup>	2,428	4,696	7,430	161 <sup>b</sup>
2018–2022 Average	3,344	2,680	19,167	1,045
2008–2017 Average	4,792	3,475	25,549	1,991

Note: En dashes (—) indicate no data available.

<sup>a</sup> Numbers are preliminary and subject to change.

<sup>b</sup> Counts should be considered a minimum because incomplete data didn't allow for an expansion estimate to be calculated.

Table 4.—Historical migration of salmon and Dolly Varden at Pilgrim River counting tower, 1997–2002, and weir, 2003–2022.

Year	Operating period	Chinook	Chum	Pink	Coho	Sockeye	Dolly Varden
1997	Jul 12–Aug 21	356	15,652 <sup>a</sup>	5,557	452	15,652 <sup>a</sup>	—
1998	—	—	—	—	—	—	—
1999	Jul 13–Aug 06	6	2,617	35,577	104	4,650	—
2000	Jul 05–Aug 18	72	861	374	21	9,683	—
2001	—	—	—	—	—	—	—
2002	Jul 04–Aug 04	150	5,590	3,882	246	3,888	—
2003	Jun 21–Sep 14	1,016	15,200	14,100	677	42,729	550
2004	Jun 21–Sep 14	925	10,239	50,760	1,573 <sup>b</sup>	85,543	264
2005	Jun 24–Sep 05	216	9,685	13,218	304	55,951	112
2006	Jun 30–Sep 09	275	45,361	17,701	973	52,323	505
2007	Jun 29–Sep 10	501	35,334	3,616	605	43,432	339
2008	Jun 25–Sep 01	133	25,008	92,641	260	20,452	409
2009	Jun 26–Aug 31	52	5,427	483	18	953	130
2010	Jun 24–Sep 01	44	25,379	29,239	272	1,654	285
2011	Jun 28–Sep 01	44	41,740	3,364	269	8,824	229
2012	Jun 26–Aug 18	65	25,733	46,201	95	7,632	65
2013	Jun 27–Sep 08	37	47,557	1,060	890	12,428	27
2014	Jun 25–Aug 27	48	25,634	4,197	425	9,719	66
2015	Jul 02–Aug 25	99	41,121	2,807	296	36,150	76
2016	Jun 23–Aug 25	34	21,379	2,986	554	15,184	135
2017	Jun 21–Aug 22	101	50,189	80,124	665	55,764	450
2018	Jul 04–Aug 16	88	33,135	46,490	239	39,976	294
2019	Jul 11–Aug 18	164	18,480	387,799	240	30,451	206
2020	Jun 23–Aug 13	55	5,580	105,686	184	15,298	193
2021	Jul 06–Aug 18	13	2,608	749	60	4,607	6
2022	Jun 25–Aug 15	31	4,780	6,167	2	1,518	4

Note: En dashes (–) indicate tower did not operate. No data available.

<sup>a</sup> Chum and sockeye salmon escapements were combined due to species identification problems during 1997.

<sup>b</sup> Coho salmon were misidentified. Nearly 30% of scale samples in 2004 were sockeye salmon.

Table 5.–Aerial survey escapement counts for Glacial Lake sockeye salmon 1978–2022.

Year	Sockeye salmon count
1978	25
1979	–
1980	837
1981	60
1982	–
1983	470
1984	147
1985	385
1986	726
1987	2,427
1988	263
1989	470
1990	639
1991	2,141
1992	510
1993	419
1994	1,230
1995	733
1996	1,852
1997	345
1998	1,287
1999	525
2000	1,446
2001	3,380
2002	586
2003	865
2004	970
2005	3,730
2006	5,810
2007	1,505
2008	540
2009	169
2010	154
2011	–
2012	–
2013	2,362
2014	2,330
2015	1,819
2016	1,582
2017	4,250
2018	1,570
2019	5,175
2020	945
2021	–
2022	1,170

Note: En dashes (–) indicate no survey was conducted.

Table 6.–Subdistrict 5 and 6 commercial and subsistence Chinook salmon harvest 1994–2022.

Year	Shaktoolik (5)			Unalakleet (6)			Subdistricts 5 and 6		
	Commercial	Subsistence	Total	Commercial	Subsistence	Total	Commercial	Subsistence	Total
1994	885	1,175	2,060	4,400	3,035	7,435	5,285	4,210	9,495
1995	1,239	1,275	2,514	7,617	3,114	10,731	8,856	4,389	13,245
1996	1,340	1,114	2,454	3,644	3,023	6,667	4,984	4,137	9,121
1997	2,449	1,146	3,595	9,067	4,191	13,258	11,516	5,337	16,853
1998	910	982	1,892	6,413	4,066	10,479	7,323	5,048	12,371
1999	581	818	1,399	1,927	2,691	4,618	2,508	3,509	6,017
2000	160	440	600	582	2,429	3,011	742	2,869	3,611
2001	90	936	1,026	116	2,810	2,926	206	3,746	3,952
2002	1	1,230	1,231	4	2,367	2,371	5	3,597	3,602
2003	2	806	808	10	2,585	2,595	12	3,391	3,403
2004	0	943	943	0	2,829	2,829	0	3,772	3,772
2005	50	807	857	101	2,193	2,294	151	3,000	3,151
2006	0	382	382	12	2,537	2,549	12	2,919	2,931
2007	5	515	520	13	1,666	1,679	18	2,181	2,199
2008	6	422	428	65	1,402	1,467	71	1,824	1,895
2009	4	417	421	80	1,892	1,972	84	2,309	2,393
2010	4	327	331	124	1,257	1,381	128	1,584	1,712
2011	45	235	280	124	607	731	169	842	1,011
2012	25	214	239	157	808	965	182	1,022	1,204
2013	6	136	142	131	468	599	137	604	741
2014	16	158	174	70	442	512	86	600	686
2015	49	178	227	384	1,139	1,523	433	1,317	1,750
2016	23	290	313	101	837	938	124	1,127	1,251
2017	52	177	229	327	496	823	379	673	1,052
2018	19	208	227	648	1,017	1,665	667	1,225	1,892
2019	318	317	635	1,035	1,459	2,494	1,353	1,776	3,129
2020 <sup>a</sup>	238	<sup>a</sup>	238	491	1,778	2,269	729	1,778	2,507
2021 <sup>a</sup>	5	<sup>a</sup>	5	6	1,479	1,485	11	1,479	1,490
Historical avg. (1994–1999)	1,234	1,085	2,319	5,511	3,353	8,865	6,745	4,438	11,184
2017–2021 Average	126	234	267	501	1,246	1,747	628	1,386	2,014

<sup>a</sup> Subsistence surveys were not completed for Shaktoolik in 2020 and 2021 due to COVID-19 travel restrictions.

Table 7.—Commercial salmon catch by species, Norton Sound District, 1990–2022.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	8,895	434	56,712	0	65,123	131,164
1991	6,068	203	63,647	0	86,871	156,789
1992	4,541	296	105,453	6,284	83,394	199,968
1993	8,972	284	43,291	163,176	54,448	270,171
1994	5,285	80	102,152	982,389	18,290	1,108,196
1995	8,860	128	47,862	81,644	42,898	181,392
1996	4,999	1	70,458	487,441	10,833	573,732
1997	12,573	161	32,284	20	34,103	79,141
1998	7,429	7	29,623	588,013	16,324	641,396
1999	2,508	0	12,662	0	7,881	23,051
2000	752	14	42,701	166,548	6,120	216,135
2001	213	44	19,492	0	11,100	30,849
2002	5	1	1,759	0	600	2,365
2003	12	16	17,058	0	3,560	20,646
2004 <sup>a</sup>	0	40	42,016	0	6,296	48,352
2005	151	8	85,517	0	3,983	89,659
2006	20	3	130,808	0	9,995	140,826
2007	17	2	126,122	3,769	22,408	152,318
2008	66	46	120,293	75,792	25,124	221,321
2009 <sup>a</sup>	0	84	86,998	17,306	34,121	138,509
2010	118	96	62,068	31,539	117,803	211,624
2011	145	347	58,884	7,120	110,552	177,048
2012 <sup>a</sup>	0	100	36,963	205,403	62,765	305,231
2013 <sup>a</sup>	0	193	53,864	8,227	119,056	181,340
2014	84	319	112,568	181,633	107,674	402,278
2015	780	3,653	153,844	62,167	147,350	367,794
2016	183	2,635	102,722	208,739	51,167	365,446
2017	230	2,806	191,197	18,954	163,422	376,609
2018	270	3,311	260,505	39,123	237,823	541,032
2019	1,390	7,013	139,837	76,408	157,938	382,586
2020	906	1,808	14,651	6,950	26,366	50,681
2021	15	473	7,189	289,912	6,410	303,999
2022	0	1,223	13,464	84,261	31,249	130,197
2018–2022 Average	516	2,768	87,129	99,331	91,957	281,701
2008–2017 Average	161	1,028	97,940	81,688	93,903	274,720

*Note:* Some harvest numbers may differ from numbers in previous reports because all personal use harvest has been removed from this table starting in 2016.

<sup>a</sup> No Chinook salmon sales were allowed by ADF&G or the buyer would not purchase them.

Table 8.—Commercial and subsistence salmon catch by species, by year in Subdistrict 1, Norton Sound District, 1990–2022.

Year	Subdistrict 1 (Nome)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
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 <sup>a</sup>	0	0	0	0	0	0	11	85	161	58	337	652	11	85	161	58	337	652
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 <sup>b</sup>	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	1,150	8,376	2,521	12,229
2013 <sup>c</sup>	c	c	c	c	c	c	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	4	244	13	509	4,861	5,631	21	1,081	1,790	3,180	3,967	10,039	25	1,325	1,803	3,689	8,828	15,670

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Table 8.–Page 2 of 2.

Year	Subdistrict 1 (Nome)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
2016	0	10	118	1,456	662	2,246	26	601	2,274	10,069	3,260	16,230	26	611	2,392	11,525	3,922	18,476
2017	43	522	5,973	1,605	6,788	14,931	8	605	3,943	5,211	1,326	11,093	51	1,127	9,916	6,816	8,114	26,024
2018	18	426	9,080	3,930	10,205	23,659	11	336	4,940	10,786	1,196	17,269	29	762	14,020	14,716	11,401	40,928
2019	42	816	7,832	4,941	15,274	28,905	14	366	3,389	5,351	629	9,749	56	1,182	11,221	10,292	15,903	38,654
2020	37	861	6,663	1,007	7,101	15,669	66	462	2,869	11,184	1,002	15,583	103	1,323	9,532	12,191	8,103	31,252
2021	2	26	408	0	250	686	13	101	1,675	1,631	405	3,825	15	127	2,083	1,631	655	4,511
2022	1	128	613	56	4060	4,858	d	d	d	d	d	d	d	d	d	d	d	d
2018–2022 Average <sup>e</sup>	20	451	4,919	1,987	7,378	14,755	26	316	3,218	7,238	808	11,607	51	849	9,214	9,708	9,016	28,836
2014–2022 Average <sup>e</sup>	17	338	3,415	1,630	5,629	11,029	24	495	2,990	6,758	1,954	12,220	42	859	6,756	8,585	7,778	24,020

*Note:* Commercial harvest numbers may include some salmon reported on fish tickets that were retained for personal use and not commercially sold.

<sup>a</sup> Beginning in 1999, Tier II chum salmon fishing restrictions limited the number of permit holders that could fish for chum salmon.

<sup>b</sup> Beginning in 2006, Tier II chum salmon fishing restrictions were suspended.

<sup>c</sup> Less than 3 permit holders fished; therefore, information is confidential.

<sup>d</sup> Subsistence harvest not available for 2022.

<sup>e</sup> Confidential information is excluded from averages.



Table 9.—Commercial and subsistence salmon catch by species, by year in Subdistrict 2, Norton Sound District, 1990–2022.

Year	Subdistrict 2 (Golovin)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	52	21	9	9	15,993	16,066	a	a	a	a	a	a	a	a	a	a	a	a
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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>c</sup>	0	0	0	0	0	0	164	6	654	19,936	880	21,640	164	6	654	19,936	880	21,640
2005 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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

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Table 9.–Page 2 of 2.

Year	Subdistrict 2 (Golovin)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
2015 <sup>c</sup>	73	1,214	2,996	1,596	20,525	26,404	147	71	1,091	4,443	2,250	8,002	220	1,285	4,087	6,039	22,775	34,406
2016 <sup>c</sup>	17	157	880	15,346	5,331	21,731	35	29	844	6,747	1,006	8,661	52	186	1,724	22,093	6,337	30,392
2017 <sup>c</sup>	4	83	710	331	7,173	8,301	25	12	1,631	3,756	1,037	6,461	29	95	2,341	4,087	8,210	14,762
2018 <sup>c</sup>	31	75	2,995	4,171	25,070	32,342	50	83	1,369	6,944	773	9,219	81	158	4,364	11,115	25,843	41,561
2019 <sup>c</sup>	33	122	2,426	7,412	25,598	35,591	39	9	1,277	5,174	375	6,874	72	131	3,703	12,586	25,973	42,465
2020 <sup>c</sup>	64	227	1,964	1,987	11,536	15,778	77	65	862	5,270	139	6,413	141	292	2,826	7,257	11,675	22,191
2021 <sup>c</sup>	1	142	707	18,395	3,515	22,760	48	42	718	1,638	265	2,711	49	184	1,425	20,033	3,780	25,471
2022	0	183	965	1,473	8,701	11,322	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
2018–2022 Average	26	150	1,811	6,688	14,884	23,559	54	50	1,057	4,757	388	6,304	86	191	3,080	12,748	16,818	32,922
2008–2017 Average	13	152	2,383	6,214	9,149	17,911	89	50	1,447	6,281	1,562	9,430	102	202	3,830	12,495	10,711	27,341

*Note:* Commercial harvest numbers may include some salmon reported on fish tickets that were retained for personal use and not commercially sold.

<sup>a</sup> Norton Sound District subsistence salmon harvest surveys have been conducted sporadically since statehood, but no information is available.

<sup>b</sup> Subsistence harvests were estimated from Division of Subsistence surveys.

<sup>c</sup> Beginning in 2004, a permit was required for Golovin Subdistrict that replaced household surveys. The permit system helped to record harvest by residents living outside the subdistrict.

<sup>d</sup> Subsistence harvest not available for 2022.

Table 10.—Commercial and subsistence salmon catch by species, by year in Subdistrict 3, Norton Sound District, 1990–2022.

Year	Subdistrict 3 (Elim)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	202	0	0	501	3,723	4,426	a	a	a	a	a	a	a	a	a	a	a	a
1991 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	0	0	0	0	0	0	424	13	975	1,564	744	3,720	424	13	975	1,564	744	3,720
2000 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 <sup>c</sup>	0	0	0	0	0	0	412	0	704	7,858	683	9,657	412	0	704	7,858	683	9,657
2005 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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 <sup>c</sup>	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

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Table 10.–Page 2 of 2.

Year	Subdistrict 3 (Elim)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
2015 °	533	1,535	14,155	2,787	30,116	49,126	198	154	1,158	1,828	1,573	4,911	731	1,689	15,313	4,615	31,689	54,037
2016 °	69	728	14,197	39,028	6,736	60,758	163	60	1,164	6,717	830	8,934	232	788	15,361	45,745	7,566	69,692
2017 °	51	538	19,410	2,877	11,779	34,655	51	35	2,362	3,664	1,109	7,221	102	573	21,772	6,541	12,888	41,876
2018 °	138	482	20,002	9,474	38,419	68,515	59	35	1,657	4,360	588	6,699	197	517	21,659	13,834	39,007	75,214
2019 °	121	724	11,450	14,911	13,803	41,009	105	20	853	3,065	570	4,613	226	744	12,303	17,976	14,373	45,622
2020 °	145	238	2,013	331	857	3,584	125	17	365	3,462	124	4,093	270	255	2,378	3,793	981	7,677
2021 °	1	41	883	6,601	452	7,978	133	9	464	1,194	103	1,903	134	50	1,347	7,795	555	9,881
2022 °	0	136	1,312	2,602	4,043	8,093	d	d	d	d	d	d	d	d	d	d	d	d
2018–2022 Average	81	324	7,132	6,784	11,515	25,836	106	20	835	3,020	346	4,327	207	392	9,422	10,850	13,729	34,599
2008–2017 Average	78	301	10,508	15,297	11,774	37,958	184	33	1,691	4,650	1,779	8,336	262	334	12,199	19,947	13,552	46,294

*Note:* Commercial harvest numbers may include some salmon reported on fish tickets that were retained for personal use and not commercially sold.

<sup>a</sup> Norton Sound District subsistence salmon harvest surveys have been conducted sporadically since statehood, but no information is available.

<sup>b</sup> Subsistence harvests were estimated from Division of Subsistence surveys.

<sup>c</sup> Beginning in 2004, a permit was required for Elim Subdistrict that replaced household surveys. The permit system helped to record harvest by residents living outside the subdistrict.

<sup>d</sup> Subsistence harvest not available for 2022.

Table 11.—Commercial and subsistence salmon catch by species and year in Subdistrict 4, Norton Sound District, 1990–2022.

Year	Subdistrict 4 (Norton Bay)																	
	Commercial						Subsistence					Combined						
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	0	0	0	0	0	0	a	a	a	a	a	a	a	a	a	a	a	a
1991	0	0	0	0	0	0	a	a	a	a	a	a	a	a	a	a	a	a
1992	27	0	0	0	1,787	1,814	a	a	a	a	a	a	a	a	a	a	a	a
1993	267	0	0	290	1,378	1,935	a	a	a	a	a	a	a	a	a	a	a	a
1994 <sup>b</sup>	0	0	0	0	0	0	308	1	370	6,049	4,581	11,309	308	1	370	6,049	4,581	11,309
1995 <sup>b</sup>	0	0	0	0	0	0	475	46	985	3,514	5,828	10,848	475	46	985	3,514	5,828	10,848
1996 <sup>b</sup>	0	0	0	0	0	0	295	3	676	3,929	4,161	9,064	295	3	676	3,929	4,161	9,064
1997 <sup>b</sup>	194	0	0	0	531	725	656	54	322	1,795	4,040	6,867	850	54	322	1,795	4,571	7,592
1998 <sup>b</sup>	0	0	0	0	0	0	684	0	388	2,009	6,192	9,273	684	0	388	2,009	6,192	9,273
1999 <sup>b</sup>	0	0	0	0	0	0	327	0	167	1,943	4,153	6,590	327	0	167	1,943	4,153	6,590
2000 <sup>b</sup>	0	0	0	0	0	0	397	2	267	2,255	4,714	7,635	397	2	267	2,255	4,714	7,635
2001 <sup>b</sup>	0	0	0	0	0	0	460	14	276	5,203	4,445	10,398	460	14	276	5,203	4,445	10,398
2002 <sup>b</sup>	0	0	0	0	0	0	557	0	509	6,049	3,971	11,086	557	0	509	6,049	3,971	11,086
2003 <sup>b</sup>	0	0	0	0	0	0	373	46	510	4,184	3,397	8,510	373	46	510	4,184	3,397	8,510
2004	0	0	0	0	0	0	a	a	a	a	a	a	a	a	a	a	a	a
2005	0	0	0	0	0	0	a	a	a	a	a	a	a	a	a	a	a	a
2006	0	0	0	0	0	0	a	a	a	a	a	a	a	a	a	a	a	a
2007	0	0	0	0	0	0	a	a	a	a	a	a	a	a	a	a	a	a
2008	7	0	600	1,232	507	2,346	187	2	1,084	4,489	3,330	9,092	194	2	1,684	5,721	3,837	11,438
2009	0	0	1,714	558	1,850	4,122	259	2	891	2,508	3,183	6,843	259	2	2,605	3,066	5,033	10,965
2010	0	7	1,606	2,597	6,007	10,217	341	21	461	3,115	3,180	7,118	341	28	2,067	5,712	9,187	17,335
2011	5	9	4,836	652	7,558	13,060	239	1	549	1,132	3,529	5,450	6	558	5,968	4,181	13,008	13,066
2012	10	16	4,378	49,970	8,417	62,791	103	0	310	2,623	2,721	5,757	113	16	4,688	52,593	11,138	68,548
2013	8	4	5,485	487	36,021	42,005	123	2	826	1,341	3,853	6,145	131	6	6,311	1,828	39,874	48,150
2014	71	22	9,562	28,393	13,436	51,484	163	1	1,219	2,321	4,431	8,135	234	23	10,781	30,714	17,867	59,619

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Table 11.–Page 2 of 2.

Year	Subdistrict 4 (Norton Bay)																	
	Commercial						Subsistence					Combined						
	Chinook Sockeye	Coho	Pink	Chum	Total	Chinook Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total		
2015	245	335	9,468	8,297	23,568	41,913	269	56	1,005	1,692	3,646	6,668	514	391	10,473	9,989	27,214	48,581
2016	111	174	6,656	38,357	14,069	59,367	297	289	1,142	2,432	3,349	7,509	408	463	7,798	40,789	17,418	66,876
2017	61	265	2,990	3,666	31,653	38,635	318	229	1,487	2,845	6,553	11,432	379	494	4,477	6,511	38,206	50,067
2018 <sup>c</sup>	52	158	1,513	1,007	14,548	17,278	69	100	596	1,367	1,469	3,601	121	258	2,109	2,374	16,017	20,879
2019	8	106	199	1,320	1,982	3,615	16	135	1,544	4,466	2,306	8,467	24	241	1,743	5,786	4,288	12,082
2020	11	17	251	24	378	681	d	d	d	d	d	d	d	d	d	d	d	d
2021	0	8	166	14,190	61	14,425	d	d	d	d	d	d	d	d	d	d	d	d
2022	0	35	70	2,951	3,477	6,533	e	e	e	e	e	e	e	e	e	e	e	e
2018–2022 Average	14	65	440	3,898	4,089	8,506	43	118	1,070	2,917	1,888	6,034	73	250	1,926	4,080	10,153	16,481
2008–2017 Average	52	83	4,730	13,421	14,309	32,594	230	60	897	2,450	3,778	7,415	258	198	5,685	16,110	18,278	39,465

*Note:* Commercial harvest numbers may include some salmon reported on fish tickets that were retained for personal use and not commercially sold.

<sup>a</sup> Norton Sound District subsistence salmon harvest surveys have been conducted sporadically since statehood, but no information is available.

<sup>b</sup> Subsistence harvests were estimated from Division of Subsistence household surveys.

<sup>c</sup> A limited subsistence survey took place.

<sup>d</sup> Subsistence survey did not take place because of COVID-19 restrictions.

<sup>e</sup> Subsistence harvest is not available for 2022.

Table 12.—Commercial and subsistence salmon catch by species, by year in Subdistrict 5, Norton Sound District, 1990–2022.

Year	Subdistrict 5 (Shaktoolik)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	2,644	49	4,695	0	21,748	29,136	a	a	a	a	a	a	a	a	a	a	a	a
1991	1,324	55	11,614	0	31,619	44,612	a	a	a	a	a	a	a	a	a	a	a	a
1992	1,098	56	14,660	0	27,867	43,681	a	a	a	a	a	a	a	a	a	a	a	a
1993	2,756	20	11,130	106,743	20,864	141,513	a	a	a	a	a	a	a	a	a	a	a	a
1994 <sup>b</sup>	885	8	22,065	502,231	5,411	530,600	1,175	1	2,777	9,133	1,221	14,307	2,060	9	24,842	511,364	6,632	544,907
1995 <sup>b</sup>	1,239	5	10,856	37,377	14,775	64,252	1,303	72	2,682	7,176	2,534	15,885	2,542	77	13,538	44,553	17,309	80,137
1996 <sup>b</sup>	1,340	1	13,444	304,982	3,237	323,004	1,114	31	3,615	8,370	4,425	17,555	2,454	32	17,059	313,352	7,662	340,559
1997 <sup>b</sup>	2,449	0	4,694	0	5,747	12,890	1,146	62	2,761	5,779	1,612	11,360	3,595	62	7,455	5,779	7,359	24,250
1998 <sup>b</sup>	910	0	3,624	236,171	7,080	247,785	982	92	1,872	6,270	1,034	10,250	1,892	92	5,496	242,441	8,114	258,035
1999 <sup>b</sup>	581	0	2,398	0	2,181	5,160	818	183	1,556	5,092	467	8,116	1,399	183	3,954	5,092	2,648	13,276
2000 <sup>b</sup>	160	3	7,779	85,493	2,751	96,186	440	20	2,799	5,432	2,412	11,103	600	23	10,578	90,925	5,163	107,289
2001 <sup>b</sup>	90	0	2,664	0	1,813	4,567	936	143	2,090	10,172	1,553	14,894	1,026	143	4,754	10,172	3,366	19,461
2002 <sup>b</sup>	1	0	680	0	261	942	1,230	4	2,169	8,769	800	12,972	1,231	4	2,849	8,769	1,061	13,914
2003 <sup>b</sup>	2	0	4,031	0	485	4,518	881	50	2,941	12,332	587	16,791	883	50	6,972	12,332	1,072	21,309
2004	0	0	12,734	0	1,372	14,106	943	12	1,994	7,291	139	10,379	943	12	14,728	7,291	1,511	24,485
2005	50	0	21,818	0	791	22,659	807	0	1,913	12,075	202	14,997	857	0	23,731	12,075	993	37,656
2006	8	0	32,472	0	3,321	35,801	382	36	1,968	4,817	351	7,554	390	36	34,440	4,817	3,672	43,355
2007	5	0	31,810	0	6,076	37,891	515	28	1,443	2,708	465	5,159	520	28	33,253	2,708	6,541	43,050
2008	6	24	37,624	8,219	6,042	51,915	422	2	1,504	4,920	201	7,049	428	26	39,128	13,139	6,243	58,964
2009	4	36	13,063	5,146	10,941	29,190	417	57	2,141	6,101	374	9,090	421	93	15,204	11,247	11,315	38,280
2010	4	18	11,868	4,622	40,483	56,995	327	115	1,940	6,406	1,680	10,468	331	133	13,808	11,028	42,163	67,463
2011	45	69	15,368	29	25,388	40,899	235	100	1,241	2,681	490	4,747	280	169	16,609	2,710	25,878	45,646
2012	25	29	7,828	19,253	20,141	47,276	214	9	1,110	4,609	634	6,576	239	38	8,938	23,862	20,775	53,852
2013	6	45	6,890	14	23,268	30,223	136	108	2,146	3,346	983	6,719	142	153	9,036	3,360	24,251	36,942
2014	16	47	19,753	33,137	29,455	82,408	158	82	1,159	3,961	682	6,042	174	129	20,912	37,098	30,137	88,450

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Table 12.–Page 2 of 2.

Year	Subdistrict 5 (Shaktoolik)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
2015	49	53	25,637	15,156	27,503	68,398	178	223	2,201	5,263	510	8,375	227	276	27,838	20,419	28,013	76,773
2016	23	510	25,866	28,308	12,149	66,856	290	128	2,142	4,082	645	7,287	313	638	28,008	32,390	12,794	74,143
2017	52	470	50,299	1,470	41,664	93,955	177	169	2,979	5,427	576	9,328	229	639	53,278	6,897	42,240	103,283
2018	19	516	71,468	2,489	41,482	115,974	162	56	2,107	1,121	319	3,765	181	572	73,575	3,610	41,801	119,739
2019	318	1,995	35,381	19,015	42,827	99,536	317	129	2,167	3,295	605	6,513	635	2,124	37,548	22,310	43,432	106,049
2020	238	364	1,646	1,292	3,864	7,404	c	c	c	c	c	c	c	c	c	c	c	c
2021	5	150	2,593	80,735	1,237	84,720	c	c	c	c	c	c	c	c	c	c	c	c
2022	10	499	5,402	33,103	7,491	46,505	d	d	d	d	d	d	d	d	d	d	d	d
2018–2022																		
Average	118	705	23,298	27,327	19,380	70,828	240	93	2,137	2,208	462	5,139	408	1,348	55,562	12,960	42,617	112,894
2008–2017																		
Average	23	130	21,420	11,535	23,703	56,812	255	99	1,856	4,680	678	7,568	278	229	23,276	16,215	24,381	64,380

Note: Commercial harvest numbers may include some salmon reported on fish tickets that were retained for personal use and not commercially sold.

<sup>a</sup> Norton Sound District subsistence salmon harvest surveys have been conducted sporadically since statehood, but no information is available.

<sup>b</sup> Subsistence harvests were estimated from Division of Subsistence household surveys.

<sup>c</sup> Subsistence survey did not take place because of COVID-19 restrictions.

<sup>d</sup> Subsistence harvest not available for 2022.



Table 13.—Commercial and subsistence salmon catch by species, by year in Subdistrict 6, Norton Sound District, 1990–2022.

Year	Subdistrict 6 (Unalakleet)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	5,998	358	52,015	0	23,659	82,030	2,476	a	a	a	a	a	8,474	a	a	a	a	a
1991	4,534	147	52,033	0	39,609	96,323	a	a	a	a	a	a	a	a	a	a	a	a
1992	3,409	229	84,449	6,284	52,547	146,918	a	a	a	a	a	a	a	a	a	a	a	a
1993	5,944	251	26,290	42,061	28,156	102,702	a	a	a	a	a	a	a	a	a	a	a	a
1994 <sup>b</sup>	4,400	71	71,019	480,158	12,288	567,936	3,035	404	11,386	27,163	3,325	45,313	7,435	475	82,405	507,321	15,613	613,249
1995 <sup>b</sup>	7,617	78	31,280	37,009	24,843	100,827	3,114	591	9,833	16,625	5,458	35,621	10,731	669	41,113	53,634	30,301	136,448
1996 <sup>b</sup>	3,644	0	52,200	113,837	7,369	177,050	3,023	181	11,187	18,026	4,227	36,644	6,667	181	63,387	131,863	11,596	213,694
1997 <sup>b</sup>	9,067	159	26,079	0	17,139	52,444	4,191	196	6,746	10,600	1,603	23,336	13,258	355	32,825	10,600	18,742	75,780
1998 <sup>b</sup>	6,413	7	24,534	99,412	6,210	136,576	4,066	201	7,489	13,654	3,038	28,448	10,479	208	32,023	113,066	9,248	165,024
1999 <sup>b</sup>	1,927	0	10,264	0	5,700	17,891	2,691	537	8,140	10,060	3,692	25,120	4,618	537	18,404	10,060	9,392	43,011
2000 <sup>b</sup>	582	11	29,803	17,278	2,700	50,374	2,429	212	5,878	10,540	3,000	22,059	3,011	223	35,681	27,818	5,700	72,433
2001 <sup>b</sup>	116	1	15,102	0	1,512	16,731	2,810	359	6,270	11,269	2,918	23,626	2,926	360	21,372	11,269	4,430	40,357
2002 <sup>b</sup>	4	1	1,079	0	339	1,423	2,367	280	4,988	15,915	3,877	27,427	2,371	281	6,067	15,915	4,216	28,850
2003 <sup>b</sup>	10	21	13,029	0	3,075	16,135	2,585	297	6,192	21,779	1,785	32,638	2,595	318	19,221	21,779	4,860	48,773
2004	22	47	29,282	0	4,924	34,275	2,829	417	6,653	22,755	2,154	34,808	2,851	464	35,935	22,755	7,078	69,083
2005	101	12	63,705	0	3,192	67,010	2,193	656	7,886	25,447	2,660	38,842	2,294	668	71,591	25,447	5,852	105,852
2006	12	3	98,336	0	6,721	105,072	2,537	326	9,905	22,547	2,712	38,027	2,549	329	108,241	22,547	9,433	143,099
2007	13	2	88,418	2,121	11,788	102,342	1,666	292	5,859	11,674	2,057	21,547	1,678	294	94,277	13,795	13,845	123,889
2008	65	36	77,227	48,839	17,648	143,815	1,402	137	7,452	15,116	2,805	26,912	1,467	173	84,679	63,955	20,453	170,727
2009	80	89	60,230	11,625	20,647	92,671	1,892	200	6,923	11,707	2,708	23,430	1,972	289	67,153	23,332	23,355	116,101
2010	124	71	32,839	10,641	30,588	74,263	1,257	297	3,780	9,002	3,159	17,495	1,381	368	36,619	19,643	33,747	91,758
2011	124	279	29,518	6,292	34,003	70,216	607	189	2,486	5,608	3,316	12,206	731	468	32,004	11,900	37,319	82,422
2012	157	74	22,274	52,445	28,161	103,111	808	192	4,558	9,460	3,973	18,991	965	266	26,832	61,905	32,134	122,102
2013	131	171	29,390	6,056	54,873	90,621	468	221	6,117	7,724	3,129	17,659	599	392	35,507	13,780	58,002	108,280
2014	70	232	63,308	83,312	32,313	179,235	442	146	7,232	12,707	3,476	24,003	512	378	70,540	96,019	35,789	203,238

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Table 13.–Page 2 of 2.

Year	Subdistrict 6 (Unalakleet)																	
	Commercial						Subsistence						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
2015	384	738	101,659	34,543	40,924	178,248	1,139	294	6,723	8,940	2,821	19,917	1,523	1,032	108,382	43,483	43,745	198,165
2016	101	1,309	55,173	86,466	12,229	155,278	837	429	8,074	13,145	3,728	26,213	938	1,738	63,247	99,611	15,957	181,491
2017	327	1,097	111,872	10,372	64,416	188,084	496	304	8,680	11,069	3,625	24,174	823	1,401	120,552	21,441	68,041	212,258
2018	648	1,966	155,649	19,378	108,305	285,946	810	235	5,204	5,017	2,227	13,493	1,458	2,201	160,853	24,395	110,532	299,439
2019	1,035	3,440	82,626	29,417	58,990	175,508	1,459	571	5,584	8,055	1,795	17,464	2,494	4,011	88,210	37,472	60,785	192,972
2020	491	355	2,152	3,278	2,643	8,919	1,778	381	4,183	9,235	685	16,262	2,269	736	6,335	12,513	3,328	25,181
2021	6	106	2,432	169,991	895	173,430	1,479	245	3,179	4,881	890	10,674	1,485	351	5,611	174,872	1,785	184,104
2022	16	285	5,131	44,107	3,592	53,131	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>	<sup>c</sup>
2018–2022																		
Average	439	1,230	49,598	53,234	34,885	139,387	1,382	358	4,538	6,797	1,399	14,473	1,927	1,825	65,252	62,313	44,108	175,424
2008–2017																		
Average	156	410	58,349	35,059	33,580	127,554	935	241	6,203	10,448	3,274	21,100	1,091	651	64,552	45,507	36,854	148,654

Note: Commercial harvest numbers may include some salmon reported on fish tickets that were retained for personal use and not commercially sold.

<sup>a</sup> Norton Sound District subsistence salmon harvest surveys have been conducted sporadically since statehood, but no information is available.

<sup>b</sup> Subsistence harvests were estimated from Division of Subsistence household surveys.

<sup>c</sup> Subsistence harvest not available for 2022.

Table 14.—Pink salmon escapement for the Nome, Kwiniuk, and North Rivers, 1996–2022

Year	Nome River	Kwiniuk River	North River
1996	95,681	774,698	284,406
1997	8,035	8,292	92,200
1998	359,469	555,094	54,713
1999	2,033	350	29,648
2000	41,673	553,486	62,194
2001	3,138	8,286	20,144
2002	35,057	1,114,422	316,592
2003	11,402	22,329	262,292
2004	1,051,146	3,046,239	1,150,094
2005	285,759	340,899	1,606,842
2006	538,555	1,347,075	2,049,222
2007	24,395	54,255	577,682
2008	1,186,554	1,443,831	240,883
2009	16,490	42,960	189,906
2010	165,933	634,169	149,334
2011	11,402	30,909	123,852
2012	121,557	391,929	137,006
2013	10,257	13,212	46,728
2014	96,397	322,815	146,844
2015	76,374	67,290	463,068
2016	1,174,726	1,911,046	1,045,512
2017	717,770	506,340	1,530,582
2018	3,245,381	1,804,752	475,140
2019	656,033	659,769	2,070,267
2020	2,076,607	1,767,447	673,218
2021	4,615	56,625	372,843
2022	50,492	402,399	686,895

*Note:* Pink salmon escapements are not expanded to account for missed passage.

Table 15.—Subsistence surveys conducted in Port Clarence District, 1994–2021.

Year	Number of fishing families interviewed	Chinook	Sockeye	Coho	Pink	Chum	Total
1994 <sup>a</sup>	127	203	2,220	1,892	4,309	2,294	10,918
1995 <sup>a</sup>	122	76	4,481	1,739	3,293	6,011	15,600
1996 <sup>a</sup>	117	194	2,634	1,258	2,236	4,707	11,029
1997 <sup>a</sup>	126	158	3,177	829	755	2,099	7,018
1998 <sup>a</sup>	138	289	1,696	1,759	7,815	2,621	14,180
1999 <sup>a</sup>	155	89	2,392	1,030	786	1,936	6,233
2000 <sup>a</sup>	134	72	2,851	935	1,387	1,275	6,520
2001 <sup>a</sup>	160	84	3,692	1,299	1,183	1,910	8,168
2002 <sup>a</sup>	159	133	3,732	2,194	3,394	2,699	12,152
2003 <sup>a,b</sup>	204	177	4,495	1,434	4,113	2,430	12,649
2004 <sup>c</sup>	376 <sup>d</sup>	278	8,688	1,131	5,918	2,505	18,520
2005 <sup>c</sup>	335 <sup>d</sup>	152	8,492	726	6,615	2,479	18,464
2006 <sup>c</sup>	345 <sup>d</sup>	102	9,940	1,061	4,939	4,353	20,395
2007 <sup>c</sup>	363 <sup>d</sup>	85	9,484	705	1,468	4,454	16,196
2008 <sup>c</sup>	408 <sup>d</sup>	125	5,069	512	7,527	2,449	15,682
2009 <sup>c</sup>	326 <sup>d</sup>	40	1,643	804	1,882	3,060	7,429
2010 <sup>c</sup>	290 <sup>d</sup>	63	824	596	5,202	5,232	11,917
2011 <sup>c</sup>	270 <sup>d</sup>	57	1,611	393	2,610	4,338	9,008
2012 <sup>c</sup>	335 <sup>d</sup>	44	1,422	703	5,200	7,802	15,171
2013 <sup>c</sup>	431 <sup>d</sup>	38	5,243	651	1,788	6,588	14,308
2014 <sup>c</sup>	430 <sup>d</sup>	21	3,969	564	5,040	5,085	14,679
2015 <sup>c</sup>	549 <sup>d</sup>	64	13,872	550	2,982	4,231	21,699
2016 <sup>c</sup>	664 <sup>d</sup>	40	12,140	627	4,322	4,303	21,432
2017 <sup>c</sup>	665 <sup>d</sup>	39	15,424	697	5,365	6,886	28,411
2018 <sup>c</sup>	689 <sup>d</sup>	55	12,381	764	4,556	5,625	23,381
2019 <sup>c</sup>	575 <sup>d</sup>	60	12,309	733	5,654	2,906	21,662
2020 <sup>c</sup>	785 <sup>d</sup>	40	7,754	560	6,130	2,303	16,787
2021 <sup>c</sup>	558 <sup>d</sup>	31	2,869	363	2,805	1,719	7,787
2022 <sup>e</sup>							
5-year Average <sup>f</sup>	654	45	8,828	623	4,902	3,888	19,606
Historical average <sup>g</sup>	437	53	6,122	610	4,192	4,997	15,974

<sup>a</sup> Harvest estimate from ADF&G Division of Subsistence survey.

<sup>b</sup> Includes harvest reported from 59 Pilgrim River permits. 101 permits were issued and 79 were returned.

<sup>c</sup> Beginning in 2004, a permit was required for Port Clarence (including Pilgrim River and Salmon Lake) that replaced household surveys.

<sup>d</sup> The number is all permits issued for the Port Clarence District (including Pilgrim River and Salmon Lake permits).

<sup>e</sup> Subsistence harvest for 2022 is not available.

<sup>f</sup> 2018–2022.

<sup>g</sup> 2008–2017.

Table 16.—Number of commercial salmon permits fished, Norton Sound District, 1990–2022.

Year	Subdistrict						District total <sup>a</sup>
	1	2	3	4	5	6	
1990	0	15	23	0	28	73	128
1991	0	16	24	0	25	75	126
1992	2	1	21	9	25	71	110
1993	1	8	26	15	37	66	153
1994	1	5	21	0	39	71	119
1995	2	7	12	0	26	58	105
1996	1	4	12	0	20	54	86
1997	0	11	21	9	19	57	102
1998	0	16	23	0	28	52	82
1999	0	0	0	0	15	45	60
2000	0	12	13	0	26	49	79
2001	0	5	5	0	13	29	51
2002	0	0	0	0	7	5	12
2003	0	0	0	0	10	20	30
2004	0	0	0	0	11	25	36
2005	0	0	0	0	12	28	40
2006	0	0	0	0	22	40	61
2007	0	0	11	0	15	47	71
2008	0	4	12	4	23	58	91
2009	0	5	17	7	21	49	88
2010	0	10	19	5	35	59	115
2011	0	13	32	12	30	65	123
2012	0	14	24	18	21	55	123
2013	1	14	21	18	24	57	124
2014	3	18	29	20	24	63	128
2015	4	12	26	16	23	56	128
2016	5	10	25	18	28	68	141
2017	6	10	26	18	31	69	139
2018	7	18	34	12	36	80	149
2019	7	18	27	9	36	77	145
2020	10	17	25	7	27	55	122
2021	7	11	18	9	25	64	131
2022	9	11	15	8	22	49	114
2018–2022 Average	8	15	24	9	29	65	132
2008–2017 Average	2	11	23	14	26	60	120

<sup>a</sup> District total is the number of fishers that actually fished in Norton Sound; some fishers may have fished multiple subdistricts.

Table 17.—Combined Subdistricts 5 and 6 incidental Chinook salmon harvest data compared to commercial chum salmon harvests during directed chum salmon openings, 2007–2022.

Year	First commercial opening	Number of periods	Subdistricts 5 and 6 combined			Chum salmon harvest
			Incidental Chinook salmon harvest data <sup>a</sup>			
			Caught and sold	Caught but not sold	Total Chinook salmon harvest	
2007	18-Jul	5	12	2	14	11,734
2008	17-Jul	4	43	17	60	15,588
2009 <sup>b</sup>	10-Jul	8	0	61	61	22,724
2010	2-Jul	9	92	106	198	59,497
2011	2-Jul	9	114	33	147	53,094
2012 <sup>b</sup>	5-Jul	7	0	182	182	43,212
2013 <sup>c</sup>	1-Jul	9	0	130	130	68,720
2014 <sup>c</sup>	1-Jul	8	0	69	69	53,402
2015 <sup>c</sup>	1-Jul	9	0	205	205	62,400
2016 <sup>c</sup>	1-Jul	13	0	62	62	19,701
2017 <sup>c</sup>	1-Jul	12	51	229	280	94,310
2018	1-Jul	8	47	534	581	99,387
2019	1-Jul	19	1,224	129	1,353	101,817
2020	24-Jun	10	711	18	729	6,506
2021	16-Jul	14	11	0	11	2,133
2022	7-Jul	16	0	26	26	11,083
Total		160	2305	1803	4,108	714,225
2018–2022 Average		13	399	141	540	44,185

<sup>a</sup> Does not include Chinook salmon caught during the coho salmon fishery.

<sup>b</sup> Incidentally caught Chinook salmon were not purchased by the buyer.

<sup>c</sup> Commercial sale of Chinook salmon prohibited by regulation due to Chinook salmon conservation concerns.

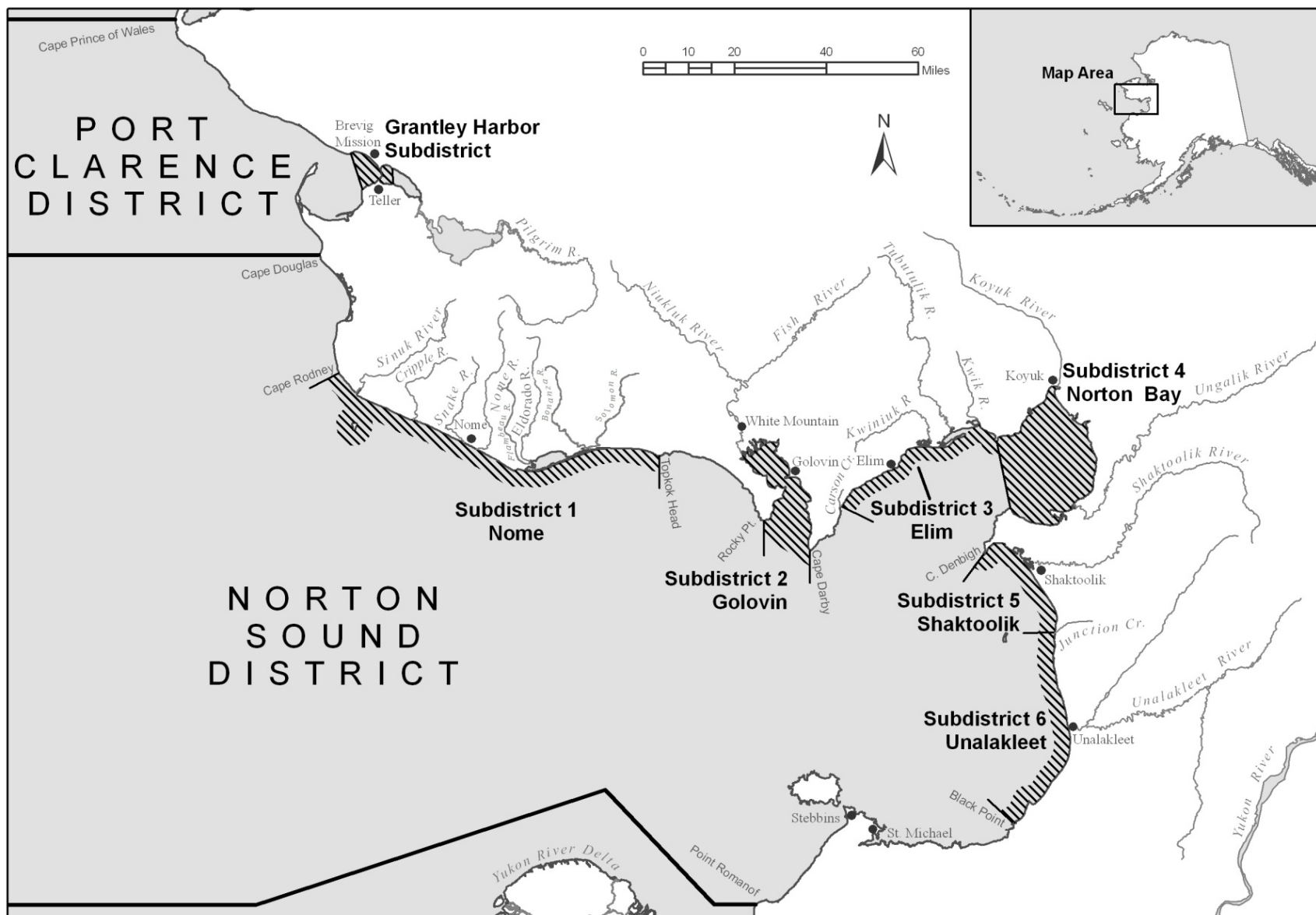


Figure 1.—Norton Sound commercial salmon fishing districts and subdistricts.

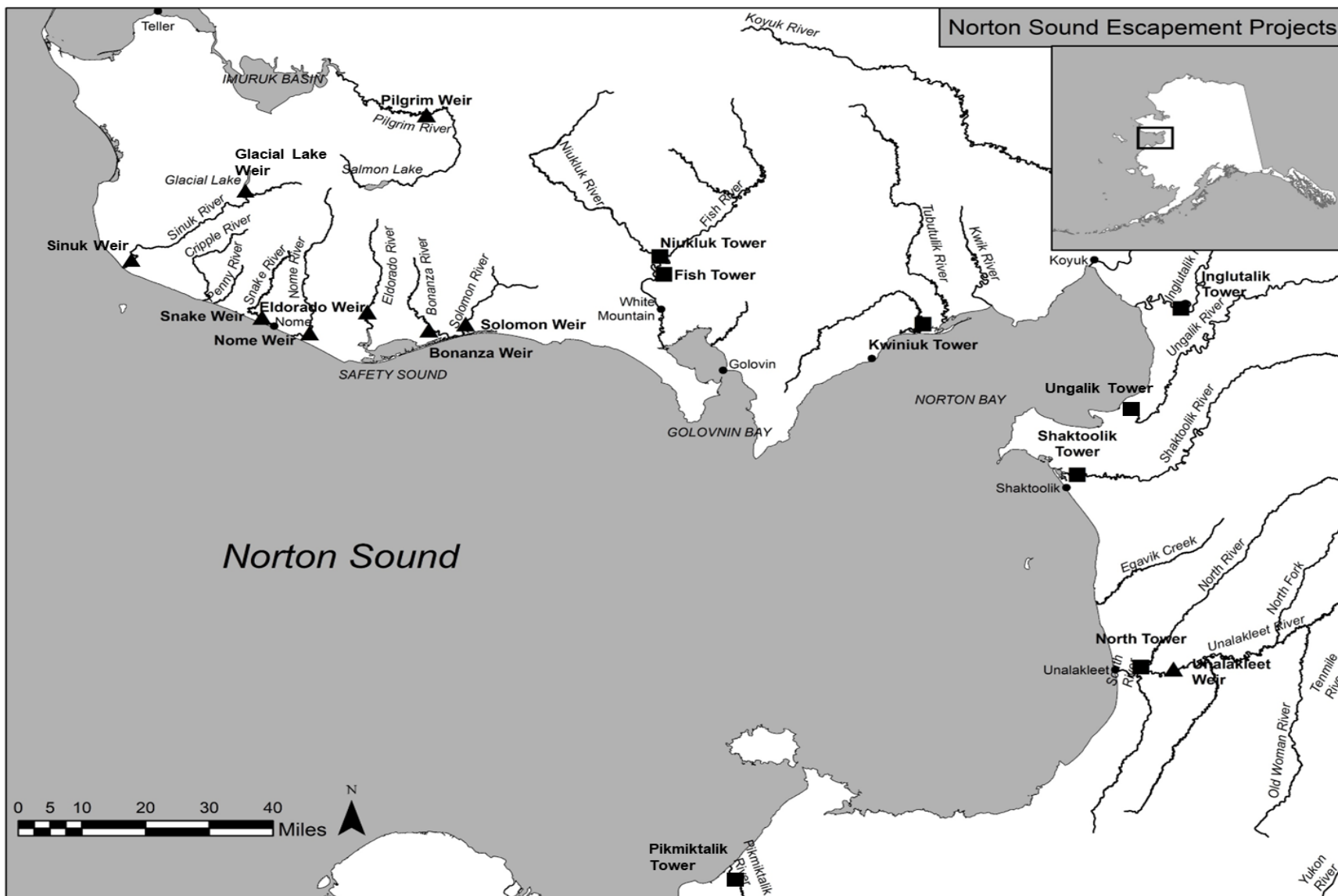


Figure 2.—Current and historical escapement projects in Norton Sound.



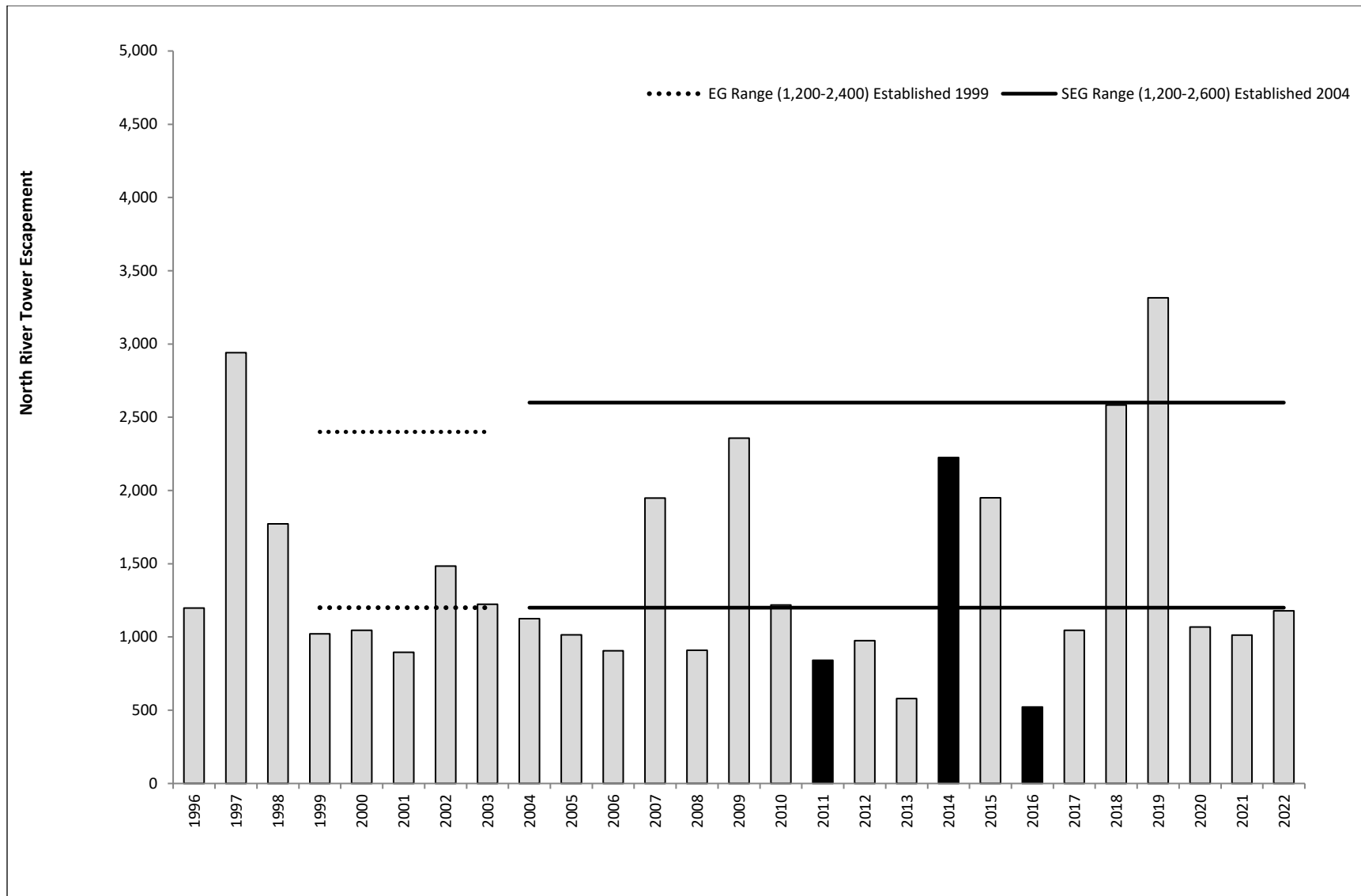


Figure 3.—Annual Chinook salmon escapement compared with established escapement goal ranges, 1996–2022, North River counting tower. The 2011, 2014, and 2016 North River tower counts are considered incomplete estimates of escapement because of poor counting conditions.

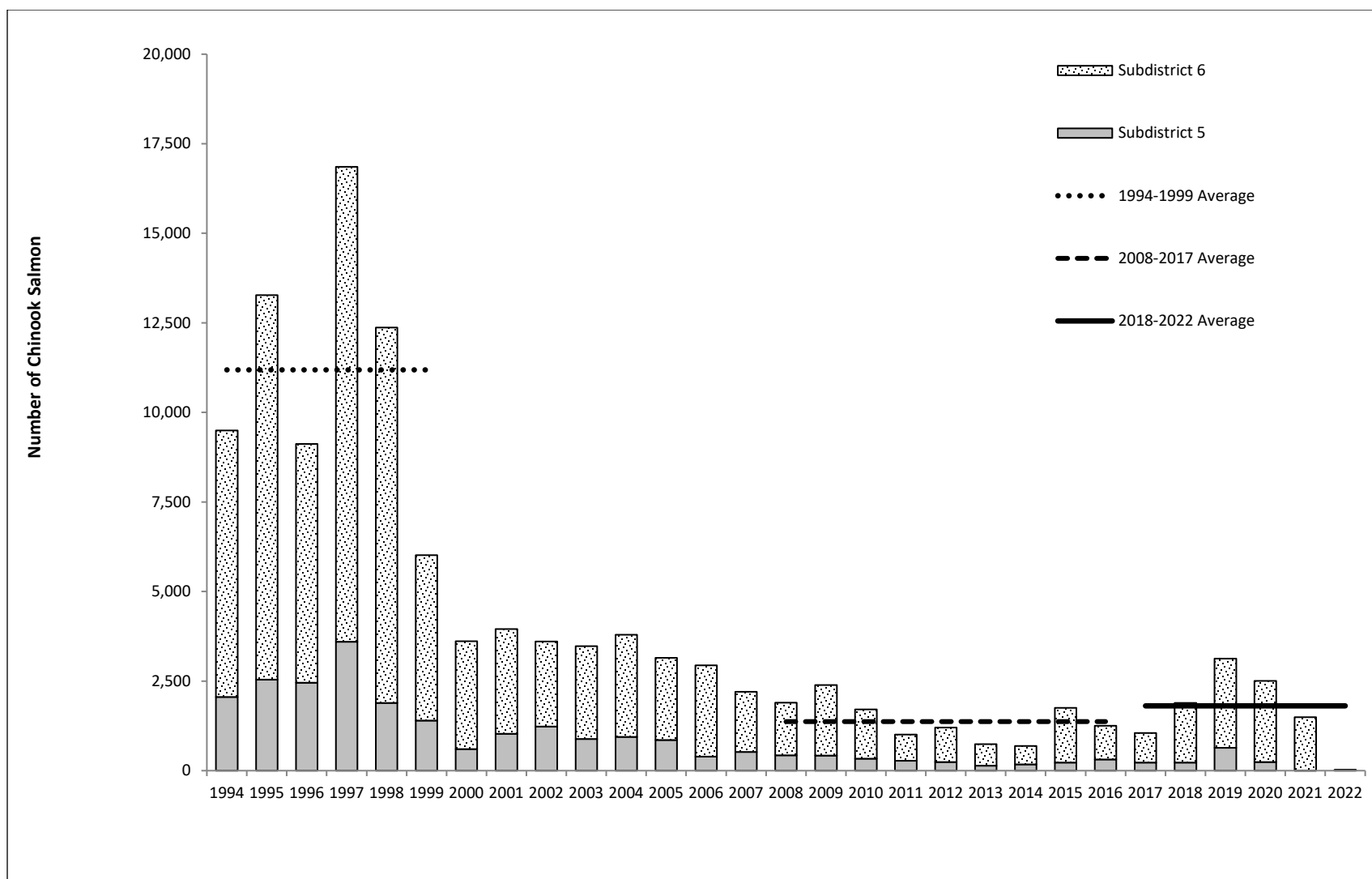


Figure 4.—Subdistricts 5 and 6 combined Chinook salmon harvest, compared to the recent 5-year (2018–2022), recent historical (2008–2017), and historical (1994–1999) averages. Subsistence harvest surveys were not conducted in Subdistrict 5 in 2020 and 2021. No subsistence harvest data is available for 2022.