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## **Summary of 2020 Alaska Pacific Salmon Escapement and Commercial Harvest**

by

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## **Abstract**

Alaska has used escapement goal-based management of its Pacific salmon stocks since 1959 and in 2000 codified escapement goal management into regulation. Annually, the Alaska Department of Fish and Game produces a report on statewide salmon escapements and escapement goals as well as a season summary and forecast report for commercial salmon fisheries. This report provides a summary of commercial salmon harvests and achievement of salmon escapement goals in 2020 based upon these reports.

## **Introduction**

The Alaska Department of Fish and Game (ADF&G) manages salmon fisheries to achieve spawning escapement goals or targets that provide sustained yields and ensure long-term viability of salmon stocks. Escapement is defined as the number of salmon that “escape” fisheries (i.e., are not harvested) and return to fresh water to spawn. When Alaska gained statehood in 1959, escapement goal-based management was adopted and enshrined in the Alaska State Constitution and State Statute. Alaska adopted its first written escapement goal policy in 1992, and in 2000 escapement goal management was codified into regulation as the Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222) and the Policy for Statewide Salmon Escapement Goals (5AAC 39.223). The sustainable salmon fisheries policy is a comprehensive policy for the regulation and management of sustainable fisheries management in Alaska and provides a framework of roles and responsibilities of the Alaska Board of Fisheries (the regulatory body) and ADF&G (the management and research agency). The escapement goal policy outlines the concepts, criteria, and procedures for establishing and modifying salmon escapement goals in Alaska and establishes a process that facilitates public review of allocative issues associated with salmon escapement goals. An overview of the methods that ADF&G uses to assess salmon escapement can be found in Volk and Munro (2015). Brief descriptions of the methods used to develop escapement goals can be found in the annual statewide escapement and escapement goal report (e.g., Munro 2019), which includes references to more detailed descriptions and application within Alaska.

ADF&G produces an annual report on statewide salmon escapements and escapement goals as well as an annual season summary and forecast report for commercial salmon fisheries. ADF&G also collects data on sport and subsistence harvest of salmon each year that are provided to NPAFC for inclusion in the annual statistics (<https://npafc.org/statistics/>), although these harvest estimates are lagged by one year because of the time it takes to compile the data. The report presented here provides a summary of commercial salmon harvests and achievement of salmon escapement goals in 2020 based upon these reports, which contain more details and interpretation.

## Commercial Harvest

The commercial harvest of salmon in Alaska for 2020 totaled 118.3 million fish, about 11% fewer fish than the preseason forecast of 132.7 million fish (Brenner et al. 2021). This combined harvest was composed of 272,000 Chinook salmon *Oncorhynchus tshawytscha*, 46.4 million sockeye salmon *O. nerka*, 2.4 million coho salmon *O. kisutch*, 60.7 million pink salmon *O. gorbuscha*, and 8.6 million chum salmon *O. keta* (Table 1). Chinook salmon were primarily harvested in Southeast Alaska (80%), as were coho salmon (48%), whereas the majority of sockeye salmon were harvested in Bristol Bay (85%). Pink salmon were harvested primarily in Prince William Sound (38%) and Kodiak management areas (36%) and the areas of major commercial chum salmon harvest were Southeast Alaska (55%), Prince William Sound (23%), and the South Alaska Peninsula (11%). Figures 2 through 6 show recent trends (2001–2020) in commercial salmon harvest by species and more detail can be found in Brenner et al. (2021).

## Achievement of Escapement Goals

In 2020 there were 265 salmon escapement goals in Alaska and 220 of the systems with escapement goals were successfully assessed for escapement (Table 2, Munro *in prep.*). This was in part because COVID-19 restrictions prevented assessment of some systems. Overall, 65% of the escapement goals were achieved or exceeded—down from 78% in 2019 and 5-year average of 76%. Achievement of escapement goals in 2020 was down for Chinook, chum and sockeye salmon, compared to 2019. A summary by species is as follows:

*Chinook salmon*—In 2020, 47% of the escapement goals were met for Chinook salmon (Figure 2) compared to a recent high of 72% in 2019 and a 5-year average of 61%.

*Sockeye salmon*—Within Alaska, 76% of the sockeye salmon escapement goals were achieved in 2020 (Figure 3), the lowest since 2006 and about 10% lower than the 5-year average of 86%.

*Coho salmon*—Achievement of escapement goals for coho salmon in 2020 was similar to 2018 and 2019 at 73% (Figure 4), but lower than the 5-year average of 80%.

*Pink salmon*—The percentage of pink salmon escapement goals met in 2020 was 86% (Figure 5), an increase from 2019 and the 5-year average of about 80%.

*Chum salmon*—For chum salmon, 45% of the escapement goals were met in 2020 (Figure 6), which is the lowest since the current escapement goal policy was adopted in 2001 and a departure from the 5-year average of 81%.

More detail by management area and species for 2020 can be found in Table 2 and historical information in Munro (*in prep.*).

### **Summary by Species**

*Chinook salmon*—In 2020, Chinook salmon runs continue to be poor throughout the state and conservation measures for commercial, sport and subsistence fisheries continue to be implemented to try to provide enough spawning fish to achieve escapement goals.

*Sockeye salmon*—Sockeye salmon runs were variable in Alaska in 2020. Bristol Bay sockeye salmon runs continue to be large with 2020 being the fourth largest run on record and the sixth year in a row exceeding 50 million fish. Copper River and Chignik on the other hand had some of the weakest sockeye salmon runs on record. Commercial fishery restrictions and closures provided minimal harvest opportunities. Several areas noted late run timing for sockeye, including Bristol Bay and Kenai River in Upper Cook Inlet. In addition, the average weight of Copper River sockeye was similar to the record low reported in 2018 and the Bristol Bay sockeye salmon run was dominated by fish that had spent only one year in fresh water and the proportion of fish having spent two years in freshwater was lower than expected.

*Coho salmon*—Coho salmon runs are generally difficult to assess in Alaska because of their late timing, but in 2020 the statewide commercial harvest was about 42% below the preseason forecast, although the percentage of escapement goals met was similar to the previous two years.

*Pink salmon*—Pink salmon, which are a major component of the commercial salmon fishery have experienced some poor returns recently (e.g., 2016). In 2020, however, the commercial harvest was slightly above the preseason forecast and escapement goals were achieved throughout much of the state. Areas, such as Norton Sound, continue to see strong pink salmon returns. But pink salmon returns in some Southeast Alaska areas were poor and commercial fisheries were restricted in an attempt to meet escapement goals.

*Chum salmon*—Chum salmon runs were generally poorer than expected statewide resulting in some fisheries being restricted or closed to try to meet escapement goals. Statewide, chum salmon harvest in the commercial was 56% below the preseason forecast.

### **Acknowledgements**

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## References

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**Table 1.** 2020 Alaska commercial salmon harvests, by fishing area (see Figure 1) and species, in thousands of fish (from Brenner et al. 2021).

Fishing area	Species					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Southeast Region Total <sup>a,b</sup>	215	458	1,163	8,083	4,696	14,615
Prince William Sound <sup>a</sup>	7	942	289	23,004	2,017	26,258
Lower Cook Inlet <sup>c,d</sup>	1	181	4	2,516	14	2,716
Upper Cook Inlet <sup>d</sup>	3	696	139	345	29	1,212
Bristol Bay	10	39,580	114	72	293	40,069
Central Region Total	20	41,399	547	25,937	2,353	70,255
Kodiak Area	8	1,524	441	21,551	368	23,892
Chignik						
South Peninsula and Aleutians	21	1,069	183	5,050	913	7,237
North Peninsula	1	1,780	48	30	56	1,916
Westward Region Total	31	4,373	672	26,632	1,138	33,045
Arctic-Yukon-Kuskokwim Region Total <sup>d</sup>	6	145	55	13	200	418
Total Alaska	272	46,375	2,437	60,665	8,587	118,333

Note: Missing data indicates no harvest, and zeros indicate harvest activity but <500 fish.

Note: Columns may not total exactly due to rounding.

<sup>a</sup> Chinook salmon adults and jacks are totaled.

<sup>b</sup> Catch accounting period for the 2020 Chinook salmon troll season goes from October 1, 2019, to September 30, 2020.

<sup>c</sup> Does not include broodstock.

<sup>d</sup> Total includes commercially harvested fish retained for homepack (i.e., personal use).

**Table 2.** 2020 Alaska Department of Fish and Game achievement of escapement goal objectives, by fishing areas (see Figure 1), and species (data from Munro *in prep.*).

Region	Area	Species	Number of Systems			Percent
			Under range	Within range	Over range	Within or over goal range
Region 1	Southeast Alaska	Chinook	5	4	2	55%
		sockeye	6	3	2	45%
		coho	4	5	2	64%
		pink	1	2		67%
		chum	4	3		43%
			<b>20</b>	<b>17</b>	<b>6</b>	<b>53%</b>
Region 2	Upper Cook Inlet	Chinook	8	5		38%
		sockeye	1	4	3	88%
		coho		2	1	100%
		chum		1		100%
	Lower Cook Inlet	Chinook	2	1		33%
		sockeye	2	3	3	75%
		pink	3	5	9	82%
		chum	7	1	4	42%
	Bristol Bay	Chinook	1			0%
		sockeye		4	5	100%
		coho				NA
		pink				NA
	Prince William Sound	chum	1			0%
		sockeye		1		100%
		pink		6	2	100%
chum		2	3		60%	
Copper/Bering River	Chinook	1			0%	
	sockeye		3		100%	
	coho		2		100%	
			<b>28</b>	<b>41</b>	<b>27</b>	<b>71%</b>
Region 3	Yukon River	Chinook	4			0%
		coho	1			0%
		chum (fall)	2	1		33%
		chum (summer)		1		100%
	Kuskokwim	Chinook	2	8		80%
		sockeye	1	1	2	75%
		coho				NA
		chum		1		100%
	Norton Sound	Chinook	1	1		50%
		sockeye		2		100%
		coho				NA
		pink		3		100%
	Kotzebue	chum	2	2		50%
chum					NA	
			<b>13</b>	<b>20</b>	<b>2</b>	<b>63%</b>

**Table 2. (Continued)**

Area	Species	Number of Systems			Percent Within or over goal range
		Under range	Within range	Over range	
Region 4 Kodiak	Chinook	1	1		50%
	sockeye		11		100%
	coho	1	2		67%
	pink			2	100%
	chum	1			0%
Chignik	Chinook	1			0%
	sockeye	2			0%
	pink	1			0%
	chum	1			0%
South Alaska Peninsula	sockeye	3			0%
	pink		1		100%
	chum	1	2		67%
North Alaska Peninsula	Chinook		1		100%
	sockeye	1	5	3	89%
	coho		2		100%
	chum	2			0%
Aleutian Islands	sockeye	1			0%
		<b>16</b>	<b>25</b>	<b>5</b>	<b>65%</b>
<b>Statewide Totals</b>		<b>77</b>	<b>103</b>	<b>40</b>	<b>65%</b>

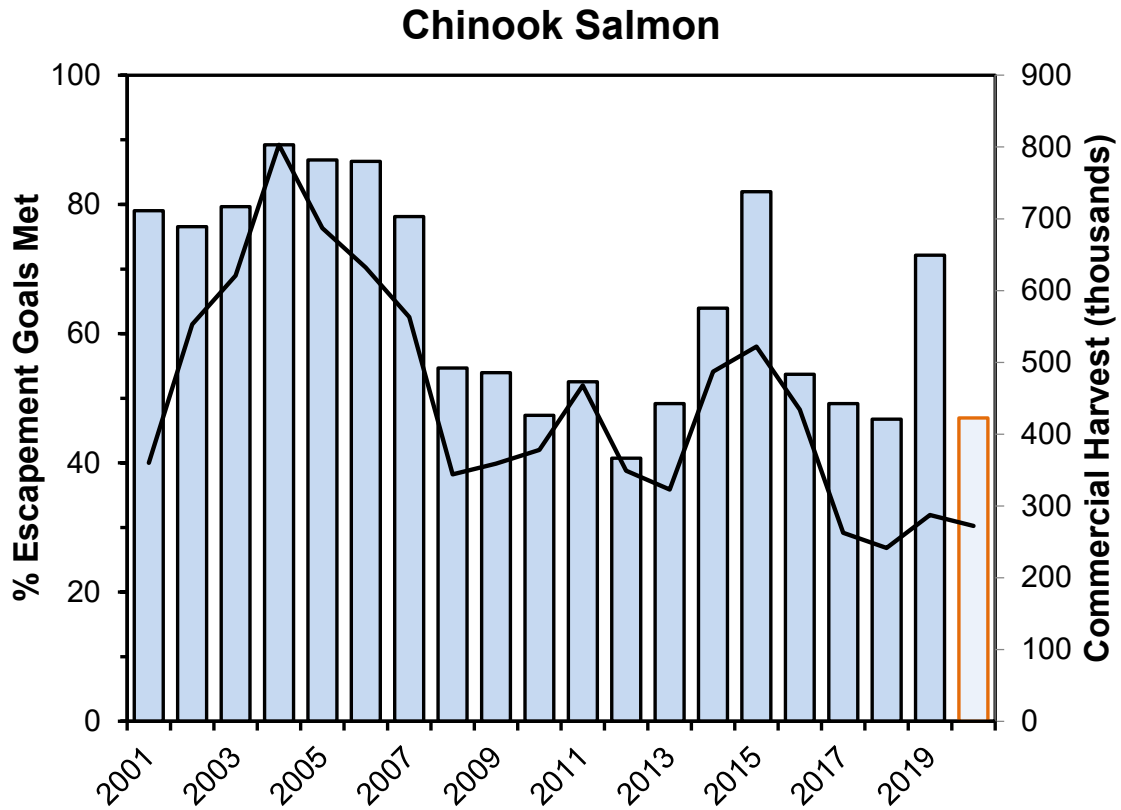
*Note:* Escapement goals that are only a lower-bound threshold (known as lower-bound sustainable escapement goals in Alaska) were classified as "within goal" if escapement was above the goal.

*Note:* Region 1 = Southeast Alaska, Region 2 = Central Region; Region 3 = Arctic-Yukon-Kuskokwim Region; Region 4 = Westward Region.

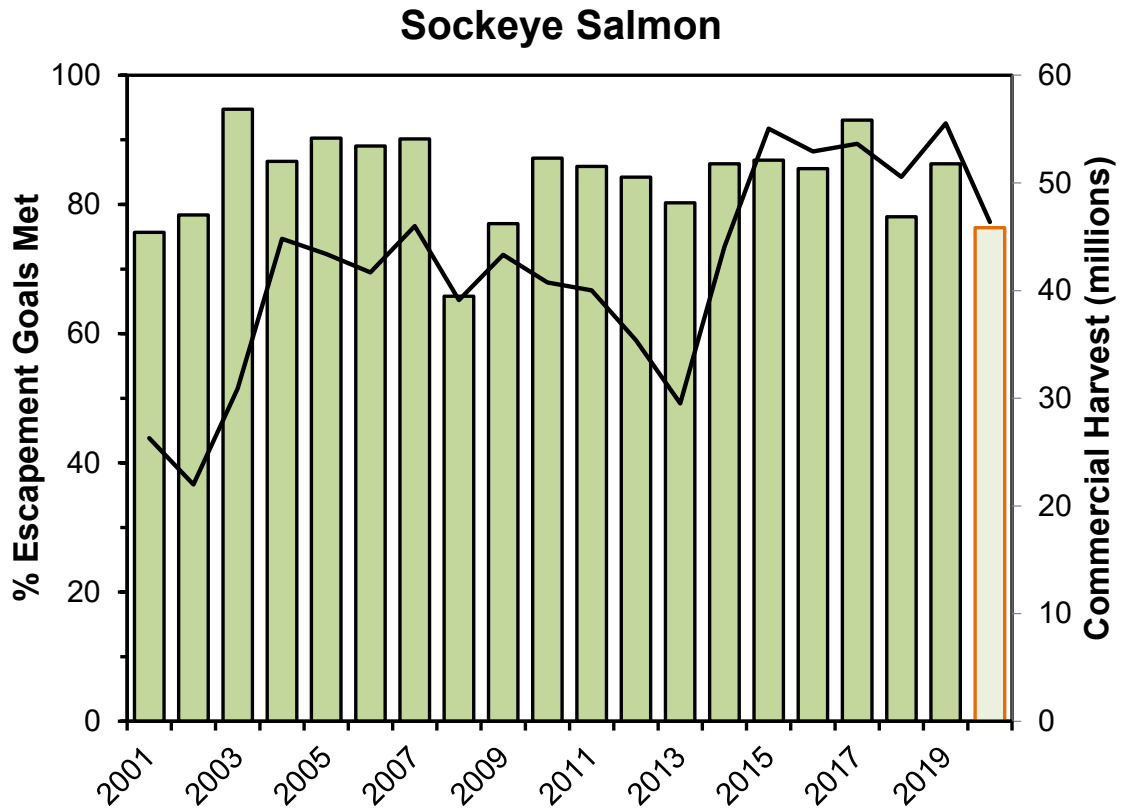




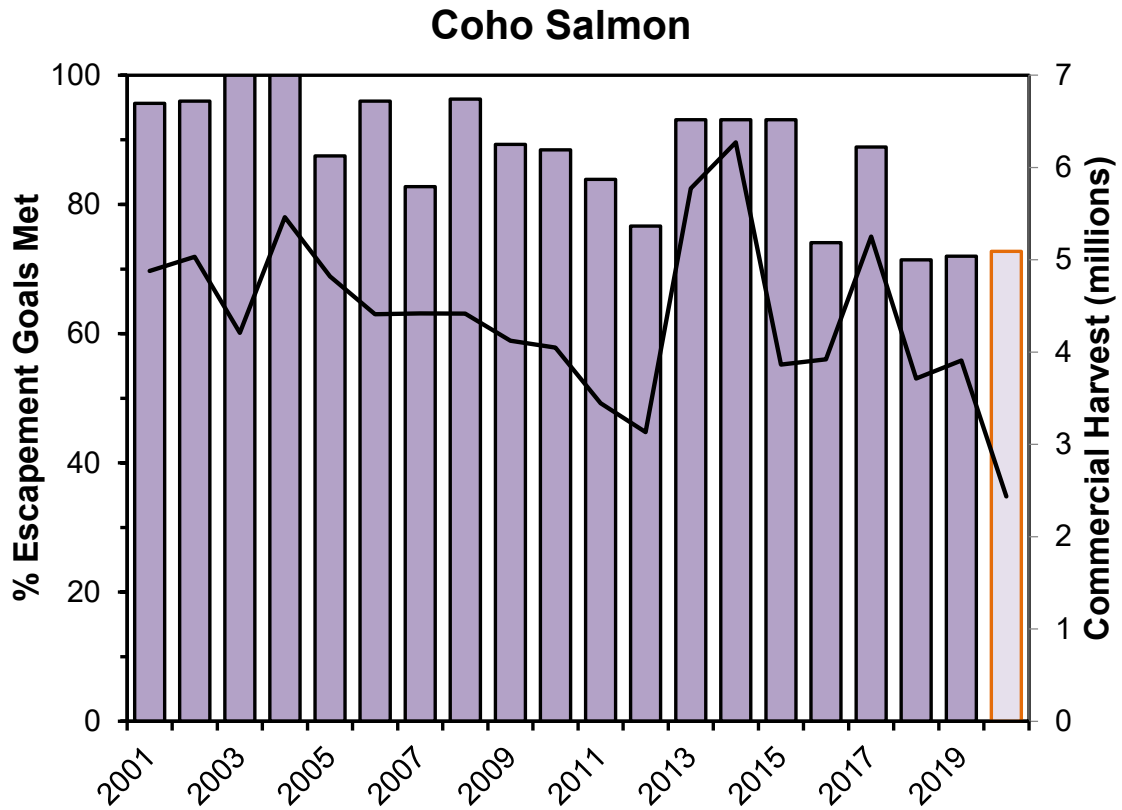
**Figure 1.** Map of Alaska fishery management regions and management areas for the Alaska Department of Fish and Game, Division of Commercial Fisheries.



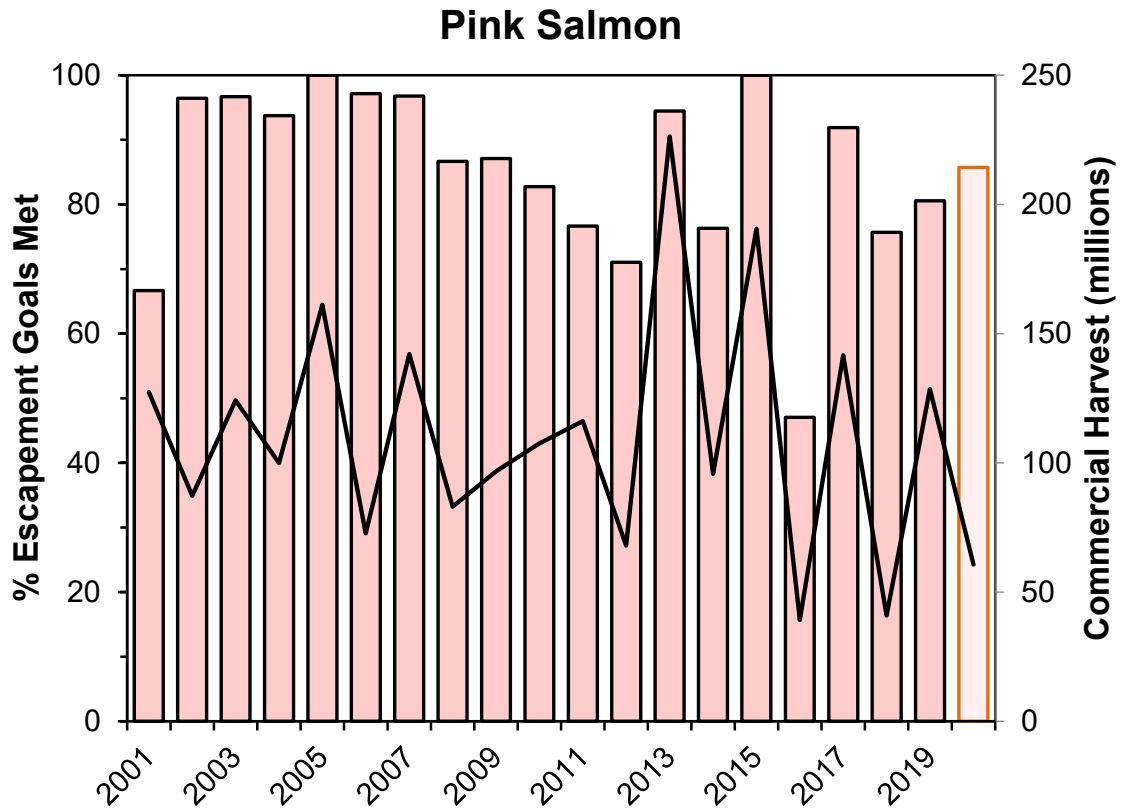
**Figure 2.** Percent of Chinook salmon escapement goals met or exceeded in Alaska from 2001 to 2020 (primary axis; bars) and Alaska commercial harvest in thousands of fish from 2001 to 2020 (secondary axis; black line).



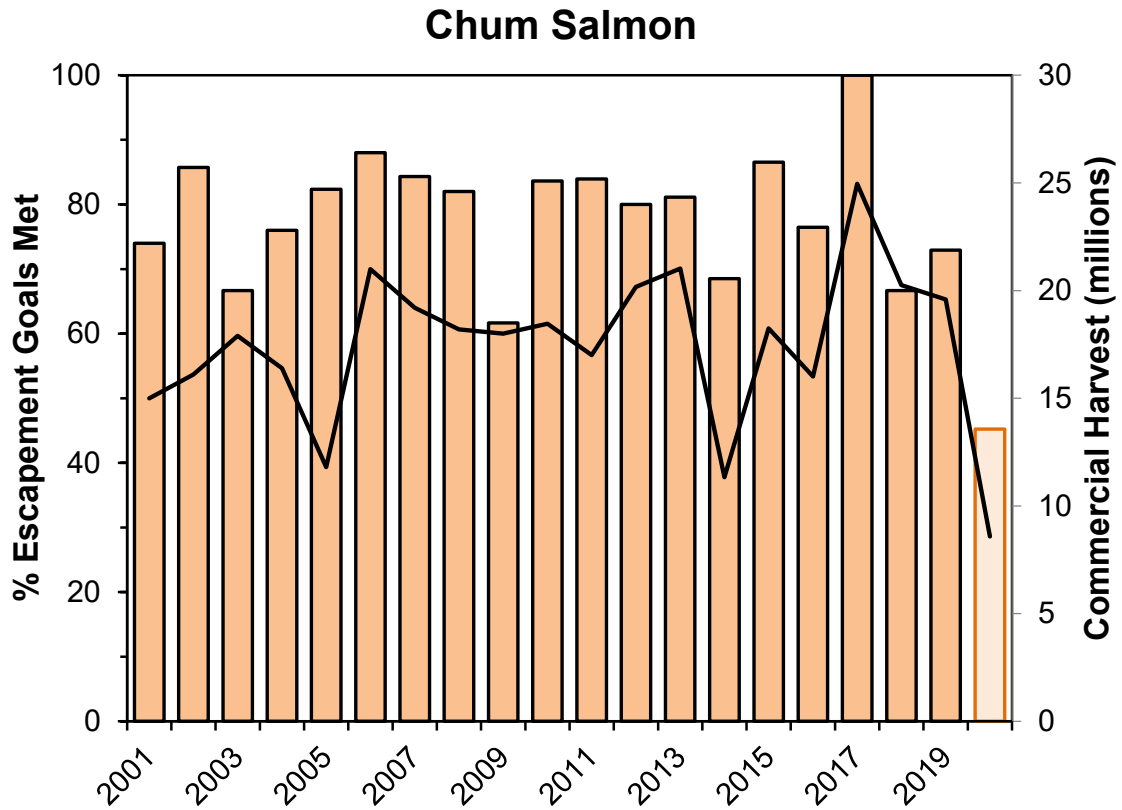
**Figure 3.** Percent of sockeye salmon escapement goals met or exceeded in Alaska from 2001 to 2020 (primary axis; bars) and Alaska commercial harvest in millions of fish 2001 to 2020 (secondary axis; black line).



**Figure 4.** Percent of coho salmon escapement goals met or exceeded in Alaska from 2001 to 2020 (primary axis; bars) and Alaska commercial harvest in millions of fish 2001 to 2020 (secondary axis; black line).



**Figure 5.** Percent of pink salmon escapement goals met or exceeded in Alaska from 2001 to 2020 (primary axis; bars) and Alaska commercial harvest in millions of fish 2001 to 2020 (secondary axis; black line).



**Figure 6.** Percent of chum salmon escapement goals met or exceeded in Alaska from 2001 to 2020 (primary axis; bars) and Alaska commercial harvest in millions of fish 2001 to 2020 (secondary axis; black line).