




THE STATE  
of **ALASKA**  
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## Department of Fish and Game

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### MEMORANDUM

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DATE: November 30, 2020

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SUBJECT: 2020 Chignik Salmon  
Season Summary

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The following is a brief overview of the 2020 Chignik Management Area (CMA; Figure 1) commercial salmon season.

The Chignik River watershed supports two genetically distinct sockeye salmon runs which traditionally provide the majority of directed harvest opportunities within the CMA. In 2020, sockeye salmon returns to the Chignik watershed were extremely poor and no commercial harvest opportunity was provided. The overall escapement was approximately 330,978 sockeye salmon (Table 1).

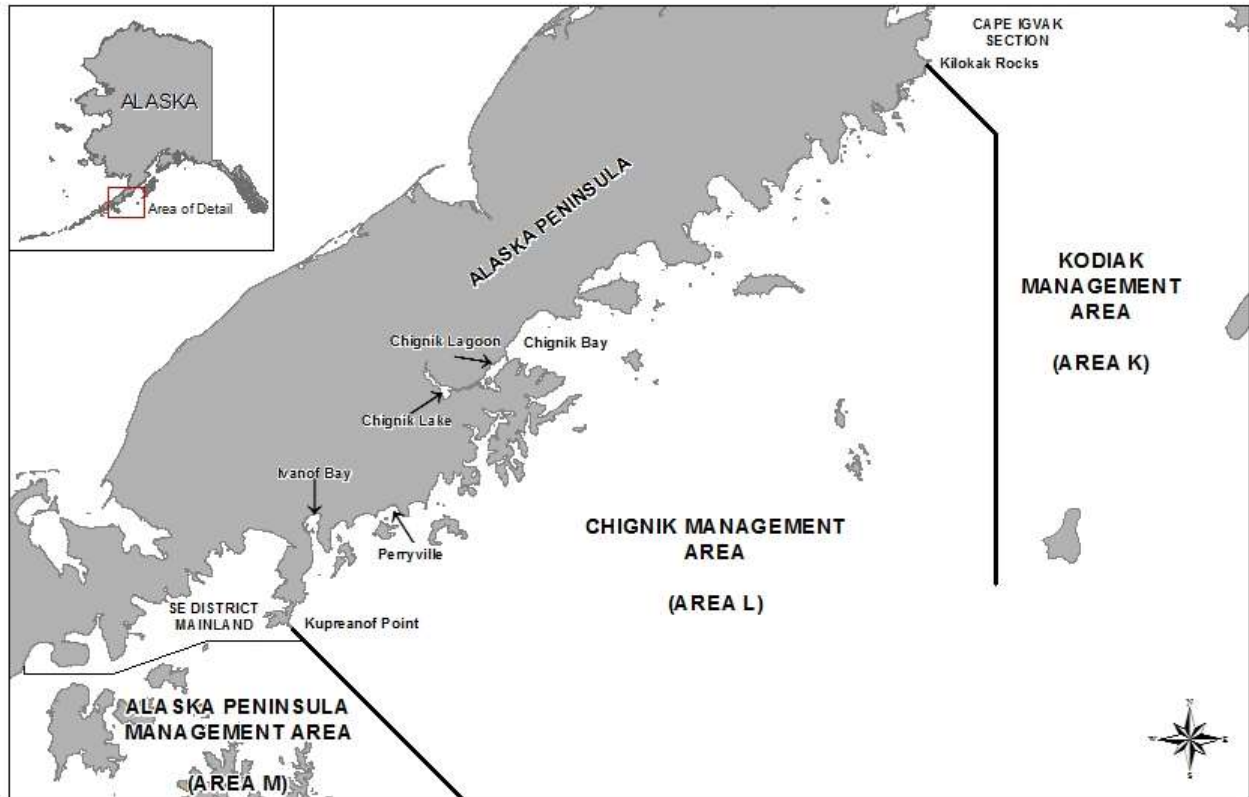


Figure 1.– Map of the Alaska Peninsula illustrating the relative locations of the Chignik, Kodiak, and Alaska Peninsula Management areas.

## ESCAPEMENT

Escapement through the Chignik River weir was monitored using underwater digital video equipment from May 30 through August 26. Two underwater camera gates in the weir were open to provide uninterrupted passage. Fish passing through the weir were counted, by species, for the first 10 minutes of each hour. The counts were expanded to obtain hourly escapement estimates, and then summed to provide an estimate of daily fish passage. A digital video archive was kept of each 10-minute counting period.

Aerial surveys were flown throughout the season to monitor pink and chum salmon escapement into other CMA streams. Peak survey counts, by index stream and species, were summed and compared to escapement goals established by Schaberg et al. (2019). Pink and chum salmon escapements were measured against established areawide sustainable escapement goals (SEG).

## Chinook Salmon

The Chignik River is the only major Chinook salmon-producing stream within the CMA, and one of the largest Chinook salmon streams on the South Alaska Peninsula. The biological escapement goal (BEG) for Chinook salmon into the Chignik River watershed is 1,300–2,700 fish (Schaberg

et al. 2019). The 2020 Chignik River Chinook salmon escapement, above the weir, of 1,278 fish (Table 1) did not meet the escapement goal and was below all recent escapement averages. State subsistence and sport fishery harvest of Chinook salmon will not be known until permits and questionnaires are returned and tabulated in the spring of 2021.

### **Sockeye Salmon**

Sockeye salmon escapement to the Chignik River is managed based on separate escapement objectives for both Black Lake (early run) and Chignik Lake (late run) sockeye salmon. Black Lake sockeye salmon have a BEG of 350,00–450,000 fish. During June of 2020, escapement fell below minimum management objectives and continued to lag for the remainder of the early run. Black Lake escapement was not met in 2020, with an estimated escapement of 137,213 fish (Table 1). The early-run sockeye salmon escapement was well below all recent escapement averages.

In 2020, genetic samples were taken at the weir to apportion early- and late-run fish during the peak of the overlap period (late June through late July). Samples were collected every 4 to 5 days from approximately June 29 to August 1. The samples were sent to the ADF&G genetics lab after each sample was collected for analysis. Samples were analyzed inseason, but stock specific apportionment was not adjusted until the final sample from August 1 was collected and analyzed. Once all the samples were analyzed, a new logistic curve was applied to the 2020 daily and cumulative escapement from June 1 through July 31. The transition between runs was estimated by fitting the stock apportion data to a common logistic equation adapted from Quinn and Deriso (1999).

The Chignik River has an inriver run goal (IRRG) of 20,000 additional sockeye salmon (10,000 in August and 10,000 in September) to provide for additional freshwater subsistence fishing opportunity. The IRRG is incorporated into the late-run SEG of 220,000 to 400,000 sockeye salmon. In 2020, the late-run SEG was not met with an estimated total escapement of 193,765 fish (Table 1). Of these fish, a total of 172,489 late-run sockeye salmon passed through the weir, and 21,276 late-run sockeye salmon were estimated to have escaped post-weir (August 27 through September 30). Sockeye salmon escapement during the month of August was estimated to be 70,610 fish, meeting the minimum escapement requirement of 50,000 sockeye salmon in August and the August IRRG component of an additional 10,000 fish. An estimated 17,142 fish escaped during the month of September and were included in the total late-run escapement estimate. The total late-run estimated escapement was well below all recent averages (Table 1).

### **Coho Salmon**

Coho salmon begin to enter CMA drainages in mid-August and continue through November. In 2020, coho salmon escapement was 6,964 fish which is well below all recent averages (Table 1). It should be noted that the weir was removed on August 26 when the coho salmon run typically begins to build.

## Pink Salmon

Pink salmon escapement through the Chignik River weir in 2020 was estimated at 10,614 fish, which is well above all recent even-year averages (Table 1). Pink salmon escapements into other local CMA streams were estimated via aerial surveys. The even-year pink salmon SEG of 170,000–280,000 fish is based on pink salmon escapement for 4 of the 5 districts and 8 total index streams within those districts (Schaberg et al. 2019). In 2020, pink salmon peak estimated escapement for the 8 representative index streams was 118,675 fish, below the even-year SEG of 170,000 pink salmon (Table 2). However, 2020 was the strongest even-year return for pink salmon in the past decade to the CMA.

## Chum Salmon

The 2020 Chignik River chum salmon escapement was 118 fish, which is comparable to the 5-year average, but below the most recent 10-year average (Table 1). Chum salmon escapements to other CMA streams were estimated via aerial surveys. The chum salmon SEG of 45,000–110,000 fish is based on escapement of 6 total index streams within 4 of the 5 districts (Schaberg et al. 2019). The 2020 estimated total peak chum escapement for the 6 index streams was 39,675 fish, which is below the established SEG (Table 2).

Table 1.– Estimated Chinook, sockeye, coho, pink, and chum salmon, and Dolly Varden escapement to the Chignik River, 2010 to 2020.

Year	Escapement						
	Chinook <sup>a</sup>	Sockeye		Coho	Pink <sup>c</sup>	Chum	Dolly Varden
		Early-run	Late-run <sup>b</sup>				
2010	3,679	432,535	310,634	5,152	3,670	95	17,578
2011	2,728	488,930	264,887	5,293	16,298	145	19,225
2012	1,449	353,441	358,948	2,663	2,849	73	18,032
2013	1,253	386,782	369,319	16,783	7,231	72	17,230
2014	2,895	360,381	291,228	15,572	3,171	58	44,899
2015	2,054	534,088	589,810	60,209	4,269	54	16,346
2016	1,843	418,290	337,698	14,187	486	114	24,625
2017	1,137	453,257	339,303	33,270	123,531	615	7,664
2018	825	263,979	275,718	64,214	3,222	54	4,550
2019	1,517	345,918	336,077	282	18,073	67	6,242
2020	1,278	137,213	193,765	6,964	10,614	118	4,919
Averages							
2010–19	1,938	403,760	347,362	21,763	2,680	135	17,639
2015–19	1,475	403,106	375,721	34,432	1,854	181	11,885

<sup>a</sup> No escapement adjustments were made for Chinook salmon that spawn below the weir, or those removed by the sport and subsistence fisheries above the weir.

<sup>b</sup> Late-run sockeye salmon totals include a weir estimate and post-weir escapement estimate using a time series analysis.

<sup>c</sup> Pink salmon averages include even years only.

Table 2.– Estimated indexed, peak pink and chum salmon escapement in the Chignik Management Area, 2010 to 2020.

Year	Indexed peak escapement	
	Pink	Chum
2010	98,400	102,625
2011	272,000	119,000
2012	111,000	93,800
2013	231,800	109,900
2014	87,240	46,720
2015	404,000	123,400
2016	68,100	69,900
2017	586,000	96,900
2018	41,900	33,400
2019	415,300	98,000
2020	118,675	39,675
Averages <sup>a</sup>		
2010–19	81,328	89,365
2015–19	55,000	84,320

Note: Peak escapements are calculated using aerial surveys from the 6 pink salmon and 8 chum salmon index streams established in Schaberg et al. 2015.

<sup>a</sup> Pink salmon averages include even years only.

## COMMERCIAL FISHERY

In June, commercial salmon fishing is based on the strength of Chignik River early-run sockeye salmon. The first commercial fishing period, established by emergency order, is typically based on escapement monitored at the weir, and future fishing periods are determined by daily escapement as well as harvest information. In June and July, the CMA is managed largely to achieve adequate escapement of the Chignik River early- and late-run sockeye salmon, as well as local pink and chum salmon stocks. Beginning in early July, opportunity to target early pink and chum salmon may occur in select bays of the Central, Western, Eastern, and Perryville districts. In August, and for the remainder of the season, management of the CMA is based on achieving the Chignik River late-run sockeye salmon goals or on ADF&G's evaluation of local stocks of pink, chum, and coho salmon. If the Chignik River late sockeye salmon run is not meeting interim escapement objectives and a harvestable surplus of pink, chum, or coho salmon is available, ADF&G may restrict fishing to certain areas in the CMA to allow fishing, while minimizing the harvest of sockeye salmon.

In 2020, ADF&G applied an average stock apportion curve developed from genetic data collected at the weir during the 2010–2019 seasons. This approach allows ADF&G to assign daily escapement to the two genetically distinct stocks of sockeye salmon present in Chignik. Post-transition, the 2020 curve is applied to the current year escapement and escapement allocations to the early and late runs are adjusted accordingly. Early-run sockeye salmon escapement fell behind interim escapement objectives early in June and failed to develop throughout June and early July.

As a result of poor early run escapement, there were no fishing periods scheduled in June and early July.

Typically, in mid-July, late-run sockeye salmon begin to enter the Chignik watershed. Commercial fishing is frequently curtailed during this time in order for ADF&G to evaluate the strength of the late run. Similar to the early run, late-run sockeye salmon escapement lagged behind interim escapement objectives and the late run also failed to materialize. Due to the lack of late-run sockeye salmon, no commercial fishing periods were scheduled during July and throughout August. The overall Chignik sockeye salmon run was well below the 2020 forecast of approximately 1.3 million fish (Renick 2020). Overall, the 2020 sockeye salmon run was the worst run in Chignik history.

Starting on July 6, opportunity to target local CMA pink and chum salmon stocks may be allowed in select inner bays if early indications warrant commercial opportunity. Aerial surveys to monitor pink and chum salmon escapement began on June 29. Aerial surveys were flown every 3 to 4 days beginning in late June, through early September. Pink and chum salmon escapement was poor throughout much of the season, and escapement levels to local CMA streams did not meet established escapement goals (Table 2). As a result, no commercial openings were allowed to target local pink and chum salmon stocks in the inner bays of the CMA.

## HARVEST

During the 2020 season, there were no commercial salmon openings in the CMA and as a result, zero harvest occurred (Table 3).

Table 3.– Total commercial salmon harvests, including home pack and department test fishery, from the Chignik Management Area by species and year, 2010 through 2020.

Year	Permits <sup>a</sup>	Landings	Chignik Management Area Harvest					Total
			Chinook	Sockeye	Coho	Pink	Chum	
2010	66	2,532	10,380	1,379,785	159,198	489,781	581,329	2,620,473
2011	65	2,617	6,586	2,497,004	76,792	905,166	269,503	3,755,051
2012	70	2,915	3,687	1,800,121	33,316	137,706	171,112	2,145,942
2013	77	3,153	2,962	2,405,151	32,312	871,871	154,964	3,467,260
2014	71	1,525	8,846	620,339	132,459	352,115	55,152	1,168,911
2015	72	2,276	9,204	1,552,495	82,054	1,978,211	101,017	3,722,981
2016	70	2,554	20,719	1,394,091	94,397	140,913	118,435	1,768,555
2017	68	2,408	3,946	897,489	226,829	7,077,924	609,236	8,815,424
2018	6	6	0	128	1	6	924	1,059
2019	51	1,503	4,312	638,784	248,282	2,452,838	157,517	3,501,733
2020	0	0	0	0	0	0	0	0
Averages <sup>b</sup>								
2010–19	62	2,149	7,064	1,318,539	108,564	224,104	221,919	3,096,739
2015–19	53	1,749	7,636	896,597	130,313	70,460	197,426	3,561,950

<sup>a</sup> Includes the department's test fishery permit.

<sup>b</sup> Pink salmon averages include even years only.

## Economic Value

There was no harvest opportunity in the CMA during 2020 due to poor sockeye and pink salmon runs. The exvessel value for 2020 was \$0 per active permit holder (Table 4).

Table 4.– Total value, by species, and average value per active permit, in dollars, in the Chignik Management Area, 2010 to 2020.

Year	Chinook		Sockeye		Coho		Pink		Chum		Total value (\$)	Permits <sup>c</sup>	Value per permit (\$)
	Total <sup>a</sup>	Average <sup>b</sup>	Total <sup>a</sup>	Average <sup>b</sup>	Total <sup>a</sup>	Average <sup>b</sup>	Total <sup>a</sup>	Average <sup>b</sup>	Total <sup>a</sup>	Average <sup>b</sup>			
2010	160,076	2,463	9,549,462	146,915	566,191	8,711	565,941	8,707	1,774,763	27,304	12,616,433	65	194,099
2011	57,524	899	21,469,153	335,456	278,391	4,350	1,040,264	16,254	919,586	14,369	23,764,918	64	371,327
2012	47,612	690	12,803,505	185,558	97,430	1,412	146,011	2,116	634,705	9,199	13,729,263	69	198,975
2013	37,620	495	21,960,018	288,948	86,953	1,144	868,071	11,422	385,172	5,068	23,337,834	76	307,077
2014	66,875	955	6,040,512	86,293	434,394	6,206	286,942	4,099	185,016	2,643	7,013,739	70	100,196
2015	74,403	1,048	6,600,110	92,959	101,967	1,436	940,236	13,243	164,225	2,313	7,880,941	71	110,999
2016	176,800	2,562	8,044,321	116,584	158,010	2,290	95,776	1,388	161,028	2,334	8,635,935	69	125,158
2017	51,611	770	7,182,853	107,207	546,586	8,158	6,579,390	98,200	1,439,418	21,484	15,799,858	67	235,819
2018	0	0	860	143	1	0	3	1	1,235	206	2,099	6	350
2019	31,628	620	5,062,351	99,262	506,047	9,922	2,047,651	40,150	363,019	7,118	8,010,696	51	157,072
2020	0	0	0	0	0	0	0	0	0	0	0	0	0
Averages													
2010–19	70,415	1,050	9,871,315	145,933	277,597	4,363	1,257,029	19,558	602,817	9,204	12,079,172	61	180,107
2015–19	66,888	1,000	5,378,099	83,231	262,522	4,361	1,932,611	30,596	425,785	6,691	8,065,906	53	125,880

<sup>a</sup> Total value of commercial catch in dollars, by species. Value does not include home pack or department test fishery.

<sup>b</sup> Average value of commercial catch per permit in dollars, by species. Average value does not include home pack or department test fishery.

<sup>c</sup> Includes the number of commercial permits that received income from the harvest. These figures do not include department test fishery harvests.

## Test Fishery and Cost Recovery

The Department did not conduct test or cost recovery fisheries in the CMA during the 2020 season.

## SUBSISTENCE

State subsistence fishing was open for sockeye salmon the entire season in the CMA; however, the Federal Subsistence Board restricted fishing for sockeye salmon to federally qualified users only from June 18 through July 31 in all Federal public waters of the Chignik River drainage. Subsistence fishing in Federal public waters for sockeye salmon reopened to all subsistence users on August 1.

Due to poor Chinook salmon escapement through the Chignik weir, both state and federal subsistence fishing for Chinook salmon was restricted on July 18 to protect Chignik River Chinook salmon. ADF&G closed the entire Chignik Bay District to the harvest of Chinook salmon to all users through December 31, 2020. Subsistence fishing for Chinook salmon on all Federal public waters was closed through August 9.

State subsistence harvest totals for 2020 will not be known until the spring of 2021, once all permits have been returned.

### **LITERATURE CITED**

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