Division of Commercial Fisheries
Sam Rabung, Director

Headquarters Office
PO Box 115526
Juneau, AK 99811-5526

Alaska Department of Fish and Game
Doug Vincent-Lang, Commissioner

PO Box 115526
Juneau, AK 99811-5526
www.adfg.alaska.gov

Advisory Announcement

CONTACT:
Reid Johnson, Chignik Area Management Biologist
Michelle Stratton, Assistant Area Management Biologist
(907) 512-6731

***Released:* 9:00 a.m. November 19, 2021**

2021 CHIGNIK COMMERCIAL SALMON SEASON SUMMARY

The following is a brief overview of the 2021 Chignik Management Area (CMA; Figure 1) commercial salmon season. The numbers provided in this season summary are preliminary.

The Chignik River watershed supports two genetically distinct sockeye salmon runs which traditionally provide a majority of directed harvest opportunities within the CMA. In 2021, sockeye salmon returns to the Chignik watershed were below historical averages, and commercial harvest opportunity targeting sockeye salmon was not provided until early August, well past historical sockeye salmon opening dates in June. The overall escapement was 640,942 sockeye salmon, composed of 244,384 early-run sockeye salmon, and 396,558 late-run sockeye salmon (Table 1).

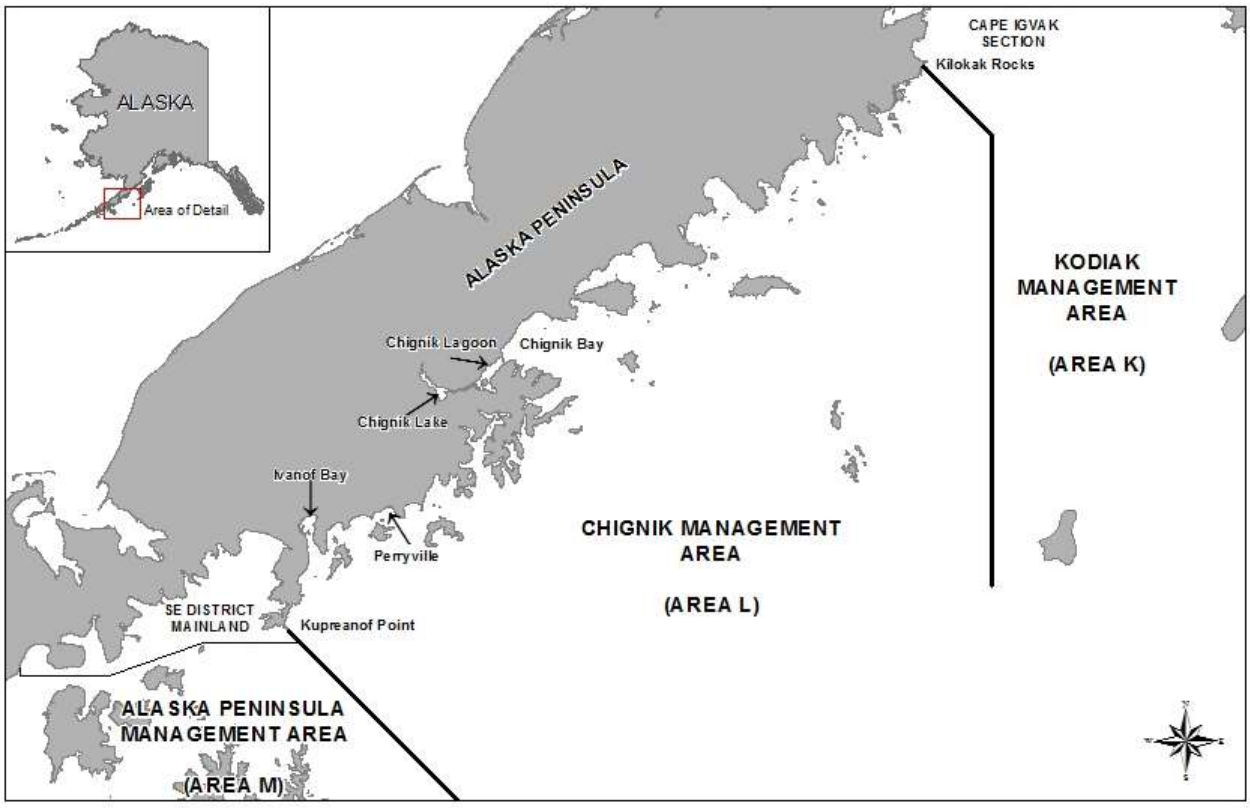

Figure 1.– Map of the Alaska Peninsula illustrating the relative locations of the Chignik, Kodiak, and Alaska Peninsula Management areas.

2021 Escapement Summary

Escapement through the Chignik River weir was monitored using underwater digital video equipment from June 1 through August 16. 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 estimate 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 CMA streams. Peak survey counts, by index stream and species, were summed and compared to areawide sustainable escapement goals (SEG) established by Schaberg et al. (2019).

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 range (BEG) for Chinook salmon into the Chignik River watershed is 1,300–2,700 fish (Schaberg et al. 2019). The 2021 Chignik River Chinook salmon escapement of 1,172 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 2022.

Sockeye salmon

Sockeye salmon escapement to the Chignik River is managed based on separate escapement objectives for both early-run and late-run sockeye salmon. During 2021, the commercial salmon fishery targeting sockeye salmon in the CMA was managed based upon in-season escapement information gathered at the Chignik River weir. In addition to daily escapement observations, a total of 240 adult sockeye salmon were sampled each week for age, sex, and length (ASL) information. Apportionment between early- and late-run sockeye salmon was achieved using a historic run timing curve built using historical genetic information. ASL information was also used in season to help inform management decisions.

Genetic samples were taken at the weir to facilitate postseason apportionment of early- and late-run sockeye salmon escapement. Samples were collected every 4 to 5 days from late June through the start of August. Genetic samples were analyzed by the Alaska Department of Fish and Game (department) genetics lab in Anchorage. Postseason, after all harvest data and fish tickets were accounted for, early- and late-run escapement was adjusted, a post-weir escapement was estimated, and a run-reconstruction was completed. The transition between runs was estimated by fitting the stock apportionment data to a common logistic equation adapted from Quinn and Deriso (1999). The postseason analysis allows a more complete picture of the overlapping runs regarding run timing and apportionment than is possible in season. Unless otherwise noted, all numbers reported in this document are generated through postseason analysis.

Early-run sockeye salmon have a BEG range of 350,00–450,000 fish. Early-run escapement trended below minimum management objectives throughout the season. Early-run escapement was not met in 2021, with an estimated escapement of 244,384 fish (Table 1). The early-run sockeye salmon escapement was well below all recent escapement averages, although higher than the record low escapement in 2020 of roughly 137,000 fish.

The late-run SEG range of 200,000 – 400,000 sockeye salmon was met, with 396,558 sockeye salmon escaping into the Chignik River system (Table 1). Interim escapement objectives for the late run were met throughout the season, although escapements trended along the lower end of interim escapement objectives until early August.

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 additional freshwater subsistence fishing opportunities. This IRRG is in addition to the lower end of the Chignik River late-run SEG of 200,000 sockeye salmon. In 2021, the August IRRG was

met with a total of 142,380 fish escaping into the river system, and the September IRRG was met with a total of 20,583 fish escaping into the river system. A total of 55,173 sockeye salmon were estimated to have escaped into the river system after August 16, the date the weir was removed (Finkle *unpublished memorandum*)[1].

Coho salmon

Coho salmon begin to enter CMA drainages in mid-August and continue through November. In 2021, coho salmon were not observed passing the weir (Table 1). It should be noted that the weir was removed on August 16, which is about when the coho salmon traditionally starts.

Pink salmon

The odd-year pink salmon SEG range of 260,000–450,000 fish is based on pink salmon escapement for four of the five districts and eight total index streams within those districts (Schaberg et al. 2019). In 2021, pink salmon peak estimated escapement for the eight representative index streams was 495,000 fish, above both the odd 10-year average and the upper bound of the SEG range (Table 2).

Chum salmon

Indexed chum salmon escapements to CMA streams were estimated via aerial surveys. The chum salmon SEG range of 45,000–110,000 fish is based on escapement of six total index streams within four of the five districts (Schaberg et al. 2019). The 2021 estimated total peak chum escapement for the six index streams was 122,000 fish, which was above the established SEG range and the 10-year average (Table 2).

Table 1.– Estimated Chinook, sockeye, coho, pink, and chum salmon, and Dolly Varden escapement to the Chignik River, 2010 to 2021.

	Escapement						
	Chinook[a]	Sockeye		Coho	Pink[c]	Chum	Dolly Varden
Year		Early-run	Late-run[b]				
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
2021	1,172	244,384	396,558	0	6,057	25	4,363
Averages							
2011–20	1,698	374,228	335,675	21,944	33,880	138	16,373
2016–20	1,320	323,731	296,512	23,783	70,802	195	9,600

[a] 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.
[b] Late-run sockeye salmon totals include a weir estimate and post-weir escapement estimate using a time series analysis.
[c] Pink salmon averages include odd years only.

[1] Finkle, H. unpublished memorandum. 2021 Chignik post-weir estimate thru September 30. Alaska Department of Fish and Game, Kodiak memorandum addressed to Kevin Schaberg, dated October 25, 2021.

Table 2.– Estimated indexed, peak pink and chum salmon escapement in the Chignik Management Area, 2010 to 2021.

	Indexed peak escapement	
Year	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
2021	495,000	122,000
Averages[a]		
2011–20	385,235	83,070
2016–20	509,187	67,575

Note: Peak escapements are calculated using aerial surveys from the eight pink salmon and six chum salmon index streams established in Schaberg et al. 2019.
[a] Pink salmon averages include odd years only.

2021 Commercial Fishery Summary

In early June, commercial salmon fishing is based on the strength of Chignik River early-run sockeye salmon. Fishing periods are determined by daily escapements as well as harvest information. From mid-June thru July, the CMA is managed 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 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 goal or on the department's evaluation of local stocks of pink, chum, and coho salmon. If the Chignik River sockeye salmon late run is not meeting interim escapement objectives and a harvestable surplus of pink, chum, or coho salmon is available, the department may restrict fishing to certain areas in the CMA to allow fishing, while minimizing the harvest of sockeye salmon.

Sockeye salmon

In 2021, the department managed the commercial salmon fishery based upon daily escapement levels, ASL data, and an applied average stock apportionment curve developed from genetic data collected at the weir during the 2010–2020 seasons to apportion stocks of sockeye salmon to early or late runs.

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 the poor early-run escapement, there were no fishing periods scheduled in June. Fishing periods in July occurred only in terminal areas for the harvest of pink and chum salmon stocks.

Typically, in mid-July, late-run sockeye salmon begin to enter the Chignik watershed. Commercial fishing is frequently curtailed during this time for the department to evaluate the strength of the late run. The late run of sockeye salmon met all interim escapement goals throughout the 2021 season, although escapement trended along

the lower end of interim escapement objectives during July, and there was no harvestable surplus. During the first week of August, escapement levels started to trend in the upper 50 percentile of interim escapement goals.

Commercial salmon fishing in areas with sockeye salmon started August 2 in the Eastern, Western, and Perryville Districts, as well as the Kujulik Bay Section of the Central District for an initial 48-hour period. On August 5 all districts opened to commercial salmon fishing for 60 hours. The commercial salmon fishing period was extended multiple times throughout August based on the strength of sockeye salmon escapement at the Chignik River weir. Ultimately, commercial salmon fishing opportunity was extended through midnight of August 31, although harvest effort ceased on August 26 when processors ceased fish purchasing operations.

Pink and chum salmon

Starting 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 three to four days, beginning in late June through early September. Starting July 12 commercial salmon fishing was allowed in terminal inner bay harvest areas targeting pink and chum salmon. Weekly 48-hour fishing periods were allowed until August 2. On August 2, the Eastern, Western, and Perryville Districts, as well as the Kujulik Bay Section of the Central District, were opened to commercial salmon fishing for 48 hours. This decision was based upon both increasing numbers of sockeye salmon observed escaping into the Chignik River and increasing numbers of pink and chum salmon observed during aerial surveys. Starting on August 5, all districts in the CMA were open to commercial salmon fishing, including terminal areas, based upon the late-run sockeye salmon exceeding the midpoint of interim escapement objectives.

2021 Commercial Harvest Summary

Chinook salmon

A total of 1,420 Chinook salmon were harvested during the 2021 season, well below recent averages (Table 3). The majority of the harvest occurred in the Western District and the Central District (Table 4). Chinook salmon harvest was incidental to fisheries targeting other species. Chinook salmon escapements into the Chignik River system were poor throughout the season, resulting in restrictions on commercial salmon harvest opportunities. From August 5 (when the Chignik Bay District opened to commercial salmon fishing) through the end of the commercial salmon fishing season, Chinook salmon 28 inches or greater could not be retained in the commercial salmon fishery.

Sockeye salmon

A total of 118,785 sockeye salmon were harvested during 2021, well below recent averages (Table 3). The majority of the harvest occurred in the Chignik Bay and Western Districts (Table 4).

The Southeastern District Mainland (SEDM) was not opened during the June 1 – July 25 allocation period. The Cape Igvak fishery was not opened during the June 1 – July 5 allocation period. Both the SEDM and Cape Igvak fisheries depend upon sockeye salmon harvest in the CMA reaching certain thresholds, which did not occur during 2021. Generally, no commercial salmon fishing will occur in either Cape Igvak or SEDM unless the department believes at least 600,000 sockeye salmon will be harvested within the CMA.

Coho salmon

Coho salmon harvest in the CMA totaled 84,452 fish, comparable to recent historical averages (Table 3). The majority of the coho salmon harvest occurred in the Western District (Table 4).

Pink salmon

A total of 1,321,454 million pink salmon were harvested in the CMA during 2021, which is approximately half the recent historical odd-year pink salmon harvest of 2,657,202 million fish since 2011 (Table 3). Most of the pink salmon harvest occurred in the Western District (Table 4).

Chum salmon

A total of 43,187 chum salmon were harvested in the CMA during 2021, which is well below recent historical averages (Table 3). Most of the chum salmon harvest occurred in the Western District (Table 4).

Table 3.– Total commercial salmon harvests, including home pack and department test fishery, from the Chignik Management Area by species and year, 2010 through 2021.

	Permits[a]		Chignik Management Area Harvest					
Year		Landings	Chinook	Sockeye	Coho	Pink	Chum	Total
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
2021	31	439	1,420	118,785	84,452	1,321,454	43,187	1,569,298
Averages[b]								
2011–20	55	1,896	6,026	1,180,560	92,644	2,657,202	163,786	2,834,692
2016–20	39	1,294	5,795	586,098	113,902	4,765,381	177,222	2,817,354

[a] Includes the department's test fishery permit.
[b] Pink salmon averages include odd years only.

Table 4.– Chignik Management Area commercial salmon harvest, excluding home pack, and department test fishery, by district, 2021.

	Chinook		Sockeye		Coho		Pink		Chum	
District	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Chignik Bay	38	336	63,718	330,951	4,226	25,420	89,975	289,771	3,820	21,920
Central	623	4,878	3,460	17,384	4,248	26,500	71,841	198,063	8,844	64,076
Eastern	44	361	171	977	166	1,006	8,447	18,698	5,186	40,327
Western	679	4,225	49,708	257,349	73,245	462,656	1,079,397	3,433,316	23,176	141,848
Perryville	36	207	1,728	9,393	2,567	15,850	71,794	226,068	2,161	11,066
Total	1,420	10,007	118,785	616,054	84,452	531,432	1,321,454	4,165,916	43,187	279,237

Exvessel value

The total 2021 exvessel value in the CMA was approximately $2.5 million, or about $80,000 per active participant in the fishery (Table 5). The majority of the exvessel value ($1.3 million) was made up of pink salmon, followed by sockeye salmon ($868,000, Table 5).

Table 5.– Total value, by species, and average value per active permit, in dollars, in the Chignik Management Area, 2010 to 2021.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total	Permits Fished	Value per permit
2010	$160,076	$9,549,462	$566,191	$565,941	$1,774,763	$12,616,433	65	$194,099
2011	$57,524	$21,469,153	$278,391	$1,040,264	$919,586	$23,764,918	64	$371,327
2012	$47,612	$12,803,505	$97,430	$146,011	$634,705	$13,729,263	69	$198,975
2013	$37,620	$21,960,018	$86,953	$868,071	$385,172	$23,337,834	76	$307,077
2014	$66,875	$6,040,512	$434,394	$286,942	$185,016	$7,013,739	70	$100,196
2015	$74,403	$6,600,110	$101,967	$940,236	$164,225	$7,880,941	71	$110,999
2016	$176,800	$8,044,321	$158,010	$95,776	$161,028	$8,635,935	69	$125,158
2017	$51,611	$7,182,853	$546,586	$6,579,390	$1,439,418	$15,799,858	67	$235,819
2018	$0	$860	$1	$3	$1,235	$2,099	6	$350
2019	$31,628	$5,062,351	$506,047	$2,047,651	$363,019	$8,010,696	51	$157,072
2020	$0	$0	$0	$0	$0	$0	0	$0
2021	$2,807	$867,612	$143,434	$1,332,609	$120,000	$2,466,462	31	$79,563
Averages								
2011-2020	$54,407	$8,916,368	$220,978	$1,200,434	$425,340	$10,817,528	54	$160,697
2016-2020	$52,008	$4,058,077	$242,129	$1,744,564	$392,940	$6,489,718	39	$103,680

Note: Values do not include home pack or department test fishery.

Test Fishery and Cost Recovery

The department did not conduct test or cost recovery fisheries in the CMA during the 2021 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 July 8 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 14. The department closed the entire Chignik Bay District to the harvest of Chinook salmon greater than 28 inches in length to all users through August 31, 2021. Subsistence fishing for Chinook salmon on all Federal public waters was closed through August 31.

State subsistence harvest totals for 2021 will not be known until the spring of 2022, once all permits have been returned.

Literature Cited

Quinn, T. J., II, and R. B. Deriso. 1999. Quantitative fish dynamics. Oxford University Press, New York.

Schaberg, K. L., M. B. Foster, A. St. Savior. 2019. Review of salmon escapement goals in the Chignik Management Area, 2018. Alaska Department of Fish and Game, Fishery Manuscript Series No. 19-02, Anchorage.