

NPAFC

Doc. 1104

Rev. \_\_\_\_\_

Rev. Date: \_\_\_\_\_

**Incidental Catches of Salmonids by U.S. Groundfish  
Fisheries in the Bering Sea/Aleutian Islands and  
the Gulf Of Alaska, 1990-2008**

by

Jerald D. Berger

Fisheries Monitoring and Analysis Division  
Alaska Fisheries Science Center  
National Marine Fisheries Service  
NOAA, U.S. Dep. Commerce,  
7600 Sand Point Way NE, Seattle, WA 98115-0070

Submitted to the

**NORTH PACIFIC ANADROMOUS FISH COMMISSION**

by

United States Party

September 2008

**THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:**

Berger, J.D. 2008. Incidental catches of salmonids by U.S. groundfish fisheries in the Bering Sea/Aleutian Islands and the Gulf of Alaska, 1990-2008. NPAFC Doc. 1104. 10 pp. Fisheries Monitoring and Analysis Div., Alaska Fish. Sci. Cent., NMFS, NOAA, U.S. Dep. Commerce, 7600 Sand Point Way NE, Seattle, WA 98115-0070. (Available at <http://www.npafc.org>).

**INCIDENTAL CATCHES OF SALMONIDS  
BY U.S. GROUND FISH FISHERIES  
IN THE BERING SEA/ALEUTIAN ISLANDS  
AND THE GULF OF ALASKA, 1990-2008**

**ABSTRACT**

Incidental catches of Pacific salmonids in U.S. groundfish fisheries off Alaska are presented for 1977 through August 24, 2008. Estimated numbers of salmonids caught incidentally in these fisheries in the Bering Sea/Aleutian Islands were 30,501 in 1990; 79,142 in 1991; 83,405 in 1992; 289,284 in 1993; 138,369 in 1994; 45,311 in 1995; 141,265 in 1996; 117,524 in 1997; 121,128 in 1998; 61,833 in 1999; 67,550 in 2000; 101,278 in 2001; 122,167 in 2002; 248,744 in 2003; 520,416 in 2004; 786,914 in 2005; 414,255 in 2006 and 226,749 in 2007. In the Gulf of Alaska, incidental catches were 21,085 in 1990; 53,848 in 1991; 28,010 in 1992; 80,853 in 1993; 50,839 in 1994; 79,439 in 1995; 19,937 in 1996; 18,539 in 1997; 30,528 in 1998; 38,129 in 1999; 37,700 in 2000; 21,167 in 2001; 16,139 in 2002; 26,408 in 2003; 23,965 in 2004; 38,692 in 2005; 23,657 in 2006 and 43,462 in 2007. Through August 24, 2008, the incidental catches were 27,799 salmon in the Bering Sea/Aleutian Islands and 15,379 salmon in the Gulf of Alaska. The last joint venture operations took place in 1990 in the Bering Sea/Aleutian Islands, with an incidental catch of 152 salmon.

**INTRODUCTION**

Groundfish fisheries are conducted primarily by the use of trawl gear that occasionally encounters and catches Pacific salmonids. Other gear used to harvest groundfish - longline and pots - generally do not catch many salmonids. U.S. fishing regulations consider salmonids to be prohibited species for the groundfish fisheries, and when taken, they must immediately be returned to the sea. The incidental catches of salmonids are monitored by the U.S. National Marine Fisheries Service (NMFS). Estimates are produced by the NMFS Alaska Regional Office by applying the bycatch rates calculated from observer data to the total groundfish catches. Total groundfish catch estimates are derived from multiple sources including landing reports, observer reports, and production reports.

The observer program coverage for the groundfish trawl fisheries off Alaska is 100% for the large-sized vessel fleet (greater than 125 ft. length overall) and 30% for the medium-sized vessel fleet (60-125 ft. length overall). The small-sized vessel fleet (less than 60 ft. length overall) is not monitored by direct observer coverage. Instead, some of their catches are sampled when they deliver to motherships or shore-based processing plants. Motherships are staffed 100% of the time by observers and shore-based plants are staffed 30% or 100%, depending upon the volume of fish processed.

Salmon collected in observer samples are by species, but the catch reports produced by NMFS only provide estimated numbers of Chinook salmon (*Onchorhynchus tshawytscha*) and non-Chinook salmon. The sample data indicates that chum salmon (*Onchorhynchus keta*) account for over 95% of the non-Chinook salmon catch every year except 1990 (91.0%) and 1991 (92.8%).

At present, there are no specific limits set for salmonid bycatch in the Gulf of Alaska. In the Bering Sea, a catch of 42,000 non-Chinook salmon between August 15 and October 14 triggers a time-area closure. This was established in 1994 to minimize the incidental catches of chum salmon. Additionally, incidental catch rates of individual vessels and the fleet average are monitored closely and made known to the fleet, so individual vessels can take voluntary actions to minimize their bycatch. Considerable work is currently being done by the North Pacific Fisheries Management Council to develop new salmon bycatch reduction measures. The details of this work can be found at the Council website ([http://www.fakr.noaa.gov/npfmc/current\\_issues/bycatch/bycatch.htm](http://www.fakr.noaa.gov/npfmc/current_issues/bycatch/bycatch.htm)).

## **RESULTS**

Table 1 provides a summary of the groundfish and salmonid catches reported by NMFS. Tables 2 and 3 list the annual average weights of Chinook and chum salmon in the Bering Sea/Aleutian Islands and Gulf of Alaska Regions, 1990-2008. Table 4 provides the estimated incidental catches of Pacific salmonids for 1977-1989.

Table 1. Total groundfish catch and estimated bycatch of chinook and other Pacific salmon in U.S. groundfish fisheries, 1990-2008\*.

Year	Region	Groundfish Catch (mt)	Chinook -----	Chum -----	Coho -----	Sockeye -----	Pink -----	Total
		-----estimated numbers of fish-----						
Domestic								
1990	BSAI	1,706,379	14,085	16,202	153	30	31	30,501
1991	BSAI**	2,154,903	48,880	28,270	656	1,310	26	79,142
1992	BSAI	2,057,849	41,955	40,090	1,266	14	80	83,405
1993	BSAI**	1,854,216	46,014	242,916	324	22	8	289,284
1994	BSAI	1,958,788	43,821	94,107	228	20	193	138,369
1995	BSAI	1,928,073	23,436	20,983	871	0	21	45,311
1996	BSAI	1,847,631	63,205	77,819	234	5	2	141,265
1997	BSAI	1,824,188	50,530	66,816	109	3	66	117,524
1998	BSAI	1,615,685	55,431	-----	-----	65,697	-----	121,128
1999	BSAI	1,424,752	14,599	-----	-----	47,234	-----	61,833
2000	BSAI	1,607,549	8,223	-----	-----	59,327	-----	67,550
2001	BSAI	1,813,924	40,547	-----	-----	60,731	-----	101,278
2002	BSAI	1,934,957	39,684	-----	-----	82,483	-----	122,167
2003	BSAI	1,970,817	54,763	-----	-----	193,981	-----	248,744
2004	BSAI	1,978,721	63,130	-----	-----	457,286	-----	520,416
2005	BSAI	1,981,072	74,975	-----	-----	711,939	-----	786,914
2006	BSAI	1,975,216	87,798	-----	-----	326,457	-----	414,255
2007	BSAI	1,853,877	129,530	-----	-----	97,219	-----	226,749
2008	BSAI	1,221,795	18,768	-----	-----	9,031	-----	27,799

Table 1. (Continued)

Year	Region	Groundfish Catch (mt)	Chinook	Chum	Coho	Sockeye	Pink	Total
			-----estimated numbers of fish-----					
Domestic								
1990	GOA	244,397	16,913	2,541	1,482	85	64	21,085
1991	GOA	269,616	38,894	13,711	1,133	46	64	53,848
1992	GOA	269,797	16,794	11,140	55	21	0	28,010
1993	GOA	255,434	24,465	55,268	306	15	799	80,853
1994	GOA	239,503	13,613	36,782	42	96	306	50,839
1995	GOA	216,585	14,647	64,067	668	41	16	79,439
1996	GOA	202,054	15,761	3,969	194	2	11	19,937
1997	GOA	230,448	15,119	3,349	41	7	23	18,539
1998	GOA	245,516	16,984	-----	-----13,544-----	-----	-----	30,528
1999	GOA	227,614	30,600	-----	-----7,529-----	-----	-----	38,129
2000	GOA	204,398	26,705	-----	-----10,995-----	-----	-----	37,700
2001	GOA	182,011	15,104	-----	-----6,063-----	-----	-----	21,167
2002	GOA	165,664	12,920	-----	-----3,219-----	-----	-----	16,139
2003	GOA	176,433	15,860	-----	-----10,548-----	-----	-----	26,408
2004	GOA	168,475	18,087	-----	-----5,878-----	-----	-----	23,965
2005	GOA	185,138	31,598	-----	-----7,094-----	-----	-----	38,692
2006	GOA	195,593	19,158	-----	-----4,499-----	-----	-----	23,657
2007	GOA	163,433	39,757	-----	-----3,705-----	-----	-----	43,462
2008	GOA	117,193	13,344	-----	-----2,035-----	-----	-----	15,379

Table 1. (Continued)

Year	Region	Groundfish Catch (mt)	Chinook -----estimated numbers of fish-----	Chum	Coho	Sockeye	Pink	Total
				Joint Venture				
1990	BSAI	133,438	147	2	3	0	0	152
1990	GOA	0	0	0	0	0	0	0

BSAI = Bering Sea/Aleutian Islands; GOA = Gulf of Alaska

na - Not available

\* Through 8/24/2008

\*\* 1 steelhead was reported in 1991 and 5 steelhead were reported in 1993.

Note: For 1998 - 2008, the estimates of non-chinook salmon are not separated by species and are thus listed as a single value.

Groundfish catch and salmonid numbers in the BSAI include catches made by vessels fishing under Community Development Quotas.

Table 2. Average body weight of chinook salmon incidentally caught in U.S. groundfish fisheries, 1990-2008\*.

Year	Region	Male Avg. Wt. (kg)	Female Avg. Wt. (kg)	Unsexed Avg. Wt. (kg)	Combined Avg. Wt. (kg)
1990	BSAI	3.73	3.71	3.56	3.70
1991	BSAI	2.82	3.04	3.04	3.10
1992	BSAI	3.03	3.65	4.23	3.54
1993	BSAI	3.78	4.11	4.74	4.01
1994	BSAI	4.37	4.29	4.11	4.30
1995	BSAI	4.95	5.43	5.19	5.21
1996	BSAI	3.67	3.89	3.39	3.75
1997	BSAI	4.02	4.17	4.41	4.14
1998	BSAI	2.91	3.30	2.40	3.02
1999	BSAI	3.53	3.73	3.91	3.64
2000	BSAI	3.67	3.87	4.12	3.78
2001	BSAI	2.94	3.32	1.50	3.04
2002	BSAI	3.79	4.15	3.07	3.89
2003**	BSAI	--	--	--	3.44
2004**	BSAI	--	--	--	3.50
2005**	BSAI	--	--	--	3.29
2006**	BSAI	--	--	--	3.01
2007	BSAI	2.81	2.95	2.39	2.82
2008	BSAI	3.55	3.56	3.34	3.55

Table 2. (Continued)

Year	Region	Male Avg. Wt. (kg)	Female Avg. Wt. (kg)	Unsexed Avg. Wt. (kg)	Combined Avg. Wt. (kg)
1990	GOA	3.94	4.29	3.91	4.10
1991	GOA	3.05	5.10	4.08	4.60
1992	GOA	4.46	4.11	3.58	4.14
1993	GOA	2.83	2.76	3.40	2.90
1994	GOA	3.72	3.69	2.85	3.63
1995	GOA	4.48	3.31	3.00	3.67
1996	GOA	2.71	2.97	2.80	2.83
1997	GOA	4.28	4.08	5.08	4.49
1998	GOA	3.00	3.07	3.47	3.08
1999	GOA	2.69	3.16	2.49	2.82
2000	GOA	3.34	3.21	3.45	3.32
2001	GOA	3.36	3.08	2.95	3.20
2002	GOA	2.76	2.59	3.38	2.73
2003**	GOA	--	--	--	2.84
2004**	GOA	--	--	--	2.47
2005**	GOA	--	--	--	2.46
2006**	GOA	--	--	--	3.41
2007	GOA	2.85	3.35	2.75	3.00
2008	GOA	2.97	2.64	2.34	2.74

BSAI = Bering Sea/Aleutian Islands; GOA = Gulf of Alaska

\* Data presented for 2008 are based on preliminary data.

\*\* For years 2003 - 2006, only the combined average weight is shown because observers were combining sexes prior to weighing the salmon.

Table 3. Average body weight of chum salmon incidentally caught in U.S. groundfish fisheries, 1990-2008\*.

Year	Region	Male Avg. Wt. (kg)	Female Avg. Wt. (kg)	Unsexed Avg. Wt. (kg)	Combined Avg. Wt. (kg)
1990	BSAI	2.27	2.26	2.45	2.32
1991	BSAI	2.76	2.40	2.91	2.66
1992	BSAI	2.54	2.48	2.61	2.56
1993	BSAI	2.16	1.96	2.07	2.07
1994	BSAI	2.72	2.65	2.62	2.66
1995	BSAI	3.45	3.17	3.83	3.43
1996	BSAI	2.47	2.23	2.10	2.31
1997	BSAI	2.35	2.24	1.98	2.25
1998	BSAI	2.88	2.50	3.02	2.86
1999	BSAI	2.97	2.82	3.10	2.96
2000	BSAI	2.97	2.79	2.64	2.77
2001	BSAI	2.70	2.47	2.56	2.61
2002	BSAI	2.97	2.71	3.04	2.91
2003**	BSAI	--	--	--	2.52
2004**	BSAI	--	--	--	2.41
2005**	BSAI	--	--	--	2.15
2006**	BSAI	--	--	--	2.77
2007	BSAI	2.40	2.19	2.12	2.26
2008	BSAI	3.31	2.95	2.60	3.13

Table 3. (Continued)

Year	Region	Male Avg. Wt. (kg)	Female Avg. Wt. (kg)	Unsexed Avg. Wt. (kg)	Combined Avg. Wt. (kg)
1990	GOA	3.22	3.16	2.94	3.12
1991	GOA	3.27	2.90	3.11	3.11
1992	GOA	3.09	3.02	2.44	2.88
1993	GOA	2.40	2.27	1.93	2.16
1994	GOA	3.40	3.20	2.92	3.10
1995	GOA	3.14	3.12	2.97	3.02
1996	GOA	3.10	2.42	2.50	2.61
1997	GOA	5.28	4.09	3.94	4.37
1998	GOA	3.84	3.77	3.75	3.80
1999	GOA	4.33	5.45	3.84	4.87
2000	GOA	4.16	4.26	4.17	4.20
2001	GOA	2.82	2.90	3.16	2.91
2002	GOA	3.61	3.53	3.39	3.51
2003**	GOA	--	--	--	3.18
2004**	GOA	--	--	--	3.68
2005**	GOA	--	--	--	4.61
2006**	GOA	--	--	--	3.77
2007	GOA	3.26	2.99	3.01	3.10
2008	GOA	3.68	2.65	1.17	2.43

BSAI = Bering Sea/Aleutian Islands; GOA = Gulf of Alaska

\* Data presented for 2008 are based on preliminary data.

\*\* For years 2003 - 2006, only the combined average weight is shown because observers were combining sexes prior to weighing the salmon.

Table 4. Estimated incidental catches of Pacific salmonids previously reported to the International North Pacific Fisheries Commission, 1977-1989.

Year	Bering Sea/ Aleutian*	Gulf of Alaska**
1977	47,840	5,222
1978	44,548	45,603
1979	107,706	21,460
1980	122,002	36,069
1981	43,191	30,860
1982	23,623	6,967
1983	42,666	13,874
1984	84,138	75,846
1985	20,423	14,102
1986	20,983	20,820
1987	14,234	1,221
1988	9,380	147
1989	14,153	0

\* Reported in INPFC Doc. 3588, October 1990

\*\* Reported in INPFC Doc. 3417, September 1989