

**Incidental Catches of Salmonids by U.S. Groundfish
Fisheries in the Bering Sea/Aleutian Islands and
the Gulf Of Alaska, 1990-2010**

by

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**INCIDENTAL CATCHES OF SALMONIDS
BY U.S. GROUND FISH FISHERIES
IN THE BERING SEA/ALEUTIAN ISLANDS
AND THE GULF OF ALASKA, 1990-2010**

ABSTRACT

In the U.S. groundfish fisheries in the Bering Sea/Aleutian Islands, annual estimated numbers of Chinook salmon have ranged from 8,223 to 129,534 and the annual average weight has ranged from 2.82 kg to 5.21 kg. Annual estimated numbers of non-Chinook salmon have ranged from 16,416 to 709,391. Chum salmon typically accounts for over 95% of the non-Chinook salmon catch. The annual average chum salmon weight has ranged from 2.07 kg to 3.43 kg. In the U.S. groundfish fisheries in the Gulf of Alaska, annual estimated numbers of Chinook salmon have ranged from 7,898 to 40,356 and the annual average weight has ranged from 2.02 kg to 4.60 kg. Annual estimated numbers of non-Chinook salmon have ranged from 2,156 to 64,792. Chum salmon typically accounts for over 95% of the non-Chinook salmon catch. The annual average chum salmon weight has ranged from 2.16 kg to 4.87 kg.

Incidental catches of Pacific salmonids in foreign and joint venture groundfish fisheries off Alaska are presented for 1977-1990. The last joint venture operations took place in 1990 in the Bering Sea/Aleutian Islands, with an incidental catch of 152 salmon.

Through August 14, 2010, the incidental catches were 9,444 Chinook salmon and 225 non-Chinook salmon in the Bering Sea/Aleutian Islands and 13,695 Chinook salmon and 1,284 non-Chinook salmon in the Gulf of Alaska.

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 a 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 recorded 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. In April 2009, the North Pacific Fisheries Management Council voted in favor of a motion to implement new salmon bycatch reduction measures in the Bering Sea. These reduction measures (Amendment 91) will be in effect for 2011. Links to the final rule and to Amendment 91 are available on the internet at: <http://alaskafisheries.noaa.gov/sustainablefisheries/bycatch/>.

RESULTS

Table 1 provides a summary of the groundfish and salmonid catches reported by NMFS, 1990-2010. Through 2009, the U.S. groundfish catch in the Bering Sea/Aleutian Islands (BSAI) has ranged from 1,335,434 mt in 2009 to 2,154,903 mt in 1991 and has an incidental catch of Chinook salmon ranging from 8,223 in 2000 to 129,534 in 2007 with an average catch of 46,625. The incidental catch of non-Chinook salmon has ranged from 16,416 in 1990 to 709,391 in 2005 with an average catch of 137,618.

Through 2009, the U.S. groundfish catch in the Gulf of Alaska (GOA) has ranged from 164,459 mt in 2007 to 269,797 mt in 1992 and has an incidental catch of Chinook salmon ranging from 7,898 in 2009 to 40,356 in 2007 with an average catch of 20,306. The incidental catch of non-Chinook salmon has ranged from 2,156 in 2008 to 64,792 in 1995 with an average catch of 13,590.

The last year of joint venture operations occurred in the BSAI, with a groundfish catch of 133,438 mt and an incidental catch of 147 Chinook salmon, 2 chum salmon, and 3 Coho salmon.

The annual average weights of Chinook salmon in the BSAI range from 2.82 kg in 2007 to 5.21 kg in 1995 (Table 2). The annual average weights of Chinook salmon in the GOA range from 2.02 kg in 2010 (preliminary data) to 4.60 kg in 1991.

The annual average weights of chum salmon in the BSAI range from 2.07 kg in 1993 to 3.43 kg in 1995 (Table 3). The annual average weights of chum salmon in the GOA range from 2.16 kg in 1993 to 4.87 kg in 1999.

Table 4 provides the estimated incidental catches of Pacific salmonids in the foreign and joint venture groundfish fisheries off Alaska for 1977-1989.

Table 1. Total groundfish catch and estimated bycatch of Chinook and other Pacific salmon in U.S. groundfish fisheries, 1990-2010.

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	-----	-----	47,132	-----	61,731
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	53,571	-----	-----	197,142	-----	250,713
2004	BSAI	1,979,143	60,442	-----	-----	450,588	-----	511,030
2005	BSAI	1,981,374	74,281	-----	-----	709,391	-----	783,672
2006	BSAI	1,976,553	87,084	-----	-----	325,185	-----	412,269
2007	BSAI	1,856,733	129,534	-----	-----	97,353	-----	226,887
2008	BSAI	1,540,610	23,195	-----	-----	16,898	-----	40,093
2009	BSAI	1,335,434	13,984	-----	-----	47,555	-----	61,539
2010	BSAI**	1,070,765	9,444	-----	-----	225	-----	9,669
Avg	1990-2009	1,818,478	46,625	-----	-----	137,618	-----	184,243

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	177,315	15,396	-----	9,530	-----	-----	24,926
2004	GOA	172,438	17,745	-----	5,809	-----	-----	23,554
2005	GOA	185,915	31,270	-----	6,608	-----	-----	37,878
2006	GOA	196,847	19,003	-----	4,226	-----	-----	23,229
2007	GOA	164,459	40,356	-----	3,421	-----	-----	43,777
2008	GOA	184,751	15,939	-----	2,156	-----	-----	18,095
2009	GOA	166,357	7,898	-----	2,355	-----	-----	10,253
2010	GOA**	141,747	13,695	-----	1,284	-----	-----	14,979
Avg 1990-2009		210,056	20,306	-----	13,590	-----	-----	33,896

Table 1. (Continued)

Year	Region	Groundfish Catch (mt)	Chinook -----	Chum -----	Coho -----	Sockeye -----	Pink -----	Total
		-----estimated numbers of fish-----						
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

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

** Through 8/14/2010

Note: For 1998 - 2010, 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, 1990-2010.

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	3.51	3.68	4.11	3.63
2009	BSAI	3.69	3.96	3.99	3.84
2010**	BSAI	4.20	4.03	2.99	4.09

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	2.95	2.74	2.47	2.79
2009	GOA	3.59	3.01	4.33	3.36
2010**	GOA	2.01	2.06	1.78	2.02

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

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

** Data presented for 2010 are based on preliminary data.

Table 3. Average body weight of chum salmon incidentally caught in U.S. groundfish fisheries, 1990-2010.

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	3.02	2.88	2.62	2.94
2009	BSAI	2.61	2.35	2.25	2.43
2010**	BSAI	2.80	2.64	1.53	2.67

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	3.65	2.78	1.26	2.67
2009	GOA	3.36	3.54	4.19	3.42
2010**	GOA	2.89	4.29	2.47	3.59

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

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

** Data presented for 2010 are based on preliminary data

Table 4. Estimated incidental catches of Pacific salmonids in the foreign and joint venture groundfish fisheries combined, 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	--

* Reported in INPFC Doc. 3588, October 1990

** Reported in INPFC Doc. 3417, September 1989