

**An update on catch trends for Pacific salmon in British Columbia Canada
and the ongoing catch estimation review**

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ABSTRACT

During 2007, Canadian Pacific salmon fisheries were again managed with a strong emphasis on conservation, with the result that many of the catches were relatively modest. This document reports preliminary estimates for retained commercial catch (numbers and total weight), recreational catch (numbers only) and aboriginal catch (numbers only) for the five major salmon species caught in British Columbia (B.C.) tidal waters from 1952 (commercial), 1953 (recreational), or 1951 (aboriginal) to 2007. Catches include non-Canadian fish caught in B.C. and exclude Canadian fish caught outside B.C. Some changes from previous documents resulted from ongoing efforts to standardize estimation approaches. Commercial estimates are sale slip based, and have been labeled as “preliminary” since 1996 because of problems with the sale slip program including non-compliance and misreporting. We summarise our catch estimation review in which we use all available information (sale slips, log books, interview and observer information), to re-estimate commercial catch for salmon for 1996-2004. The primary findings are that i) revised estimates tend to be higher than earlier estimates, and ii) differences between the two sets of estimates are generally modest in the early period but increase through the time series. Although revised estimates, and the approaches used to generate these have been presented to the Canada’s peer review system (PSARC), at the time of writing, this review has not been completed. We are therefore not able to recommend changes to the Canadian time series of commercial catch data.

INTRODUCTION

The six species of salmon native to British Columbia (B.C.) contribute to commercial, recreational, and aboriginal fisheries. Commercial net fisheries tend to focus on sockeye (*Oncorhynchus nerka*), chum (*O. keta*), and pink (*O. gorbuscha*) salmon, while recreational harvesters catch mostly Chinook (*O. tshawytscha*), coho (*O. kisutch*), and steelhead (*O. mykiss*). All species of salmon are valued by aboriginal fisheries, which usually occur in terminal areas within freshwater. Steelhead constitute a relatively minor component of the catch, and are not discussed further in this document.

In general, retained catch estimates for commercial fisheries are reasonably reliable and time series analyses can be undertaken on these. Unfortunately, methods to gather recreational and aboriginal catch data have been more variable and time series analysis of these data should not be undertaken without a good understanding of the limitations of the data.

Commercial catch estimates are often used as indices of abundance for salmon. For sockeye, chum, and pink salmon, since fishery exploitation rates are often high, catch data may be useful indices of abundance when exploitation rates have been consistent over time. However, numerous factors control abundances and catches. We do not advocate the use of catch data alone to assess stock status.

This document reports estimates of retained commercial catch (numbers and total weight), recreational catch (numbers only) and aboriginal catch (numbers only) for the five major salmon species caught in B.C. tidal waters from 1952 (commercial), 1953 (recreational), or 1951 (aboriginal) to 2007. Catches include non-Canadian fish caught in B.C. and exclude Canadian fish caught outside B.C.

METHODS

The Regional Data Services Unit within Pacific region of Fisheries and Oceans Canada is responsible for compiling, producing, maintaining, and disseminating official catch statistics for the Pacific region, according to regional standards and procedures. Some changes from earlier documents resulted from ongoing efforts to standardize estimation approaches. A brief description of the approaches used for the 3 major fishery types follows.

Commercial Catch Estimates

Official commercial catch estimates presented here include weights and numbers (pieces) of fish caught and retained by commercial salmon vessels (salmon gill net, salmon seine net and salmon troll).

Although various fisher-produced data (e.g. sale slips, logbooks, at-sea interviews) and fisher-independent data (e.g. on-board observers and dockside monitors) have been used to estimate commercial salmon catches, most of the commercial catch estimates reported here are based on sale slip data. Sale slips record gear type, area of catch, date of landing, and landed weight and value by species. Sale slips document transactions between commercial fishers and fish buying companies. Since the value of the landing and resulting payments are based primarily on the landed weight, weight estimates are considered reasonably accurate.

In some cases, pieces are recorded on sale slips. Since this information is generally not used to determine the payment to the fisher, there is little incentive by the fisher or fish buying company to count pieces landed. Rather, piece estimates recorded on sale slips are usually estimated by applying an arbitrary estimated average weight to the landed weight, particularly for high volume net landings (i.e., net landings of sockeye, pink and/or chum salmon). Therefore, if appropriate average weight per piece estimates are available, they are used to convert accurate estimates of landed weight to estimates of pieces landed. The average weight estimates are obtained by weighing counted samples of landed catch during offloading. Sampling for average weights is conducted to allow relatively accurate and precise, species-, area-, time- and gear-specific estimates of average weights to be generated. Such estimates have been widely available for Chinook and coho salmon since the early 1980's, and for sockeye, chum and pink salmon since 1994.

Recreational Catch Estimates

Recreational catch reported here represents retained catch only, and is reported in pieces. Creel surveys are the primary source of recreational catch data, resulting in estimates by Statistical Area and month (or sometimes only by year). As well, many sport fishing lodges have a logbook program in place, which provides an estimate of the catch from those lodges. Lodge based catch from lodges not reporting via logbooks is sometimes incorporated in creel survey based estimates.

Recreational catch estimation programs generally cover the areas and times with relatively large catches, but typically not areas and times where fishing is open with relatively low effort and/or catch rates. Further, the numbers provided here are the unexpanded estimates from those catch estimation programs; they do not include estimates for the catch from areas and times not covered by catch estimation programs. Consequently, recreational catches reported here are underestimates.

Aboriginal Catch Estimates

Aboriginal catch reported here represents retained catch, and is reported in pieces. Aboriginal catch statistics can usually be resolved to Statistical Area and year, but areas may be grouped in some cases. A variety of approaches have been used to generate estimates.

While aboriginal catch estimation programs cover many of the largest aboriginal fisheries, coverage is incomplete both temporally and especially spatially. As with recreational catch, aboriginal catch estimates presented here do not include catch from areas and times not covered by catch estimation programs, and therefore underestimate total catches.

RESULTS

During 2007, fisheries in B.C. were again managed with a strong emphasis on conservation, with the result that catches were relatively modest.

Commercial Fisheries

Retained commercial catch, by numbers and weight, are reported in Tables 1 and 2, respectively, for 1952-2007. Tables 3 and 4 provide a breakdown of 2007 salmon catch by major Statistical Area, by numbers and weight, respectively. Weights are given as round (i.e., whole fish) equivalents.

Recreational Fisheries

Recreational catches for 1953-2007 are given in Table 5, with a breakout by major Statistical Area for 2007 in Table 6. Since the locations and time periods surveyed vary from year to year, annual summaries are not valid trend indicators. Chinook and coho traditionally are the main targets of recreational anglers, but harvest of these species has declined during the past decade in response to conservation concerns, and recreational catch of other species, notably pink and chum salmon, has been an increasing proportion of the catch.

Aboriginal Fisheries

Aboriginal catch for 1951-2007 is given in Table 7. The data for 2000-2007 are incomplete, with many areas not represented. The data for 1998 and 1999 are complete, but subject to further revision. In general, reporting inconsistencies with aboriginal catch data make it difficult to use the annual summaries as trend indicators.

FINALIZING CANADIAN CATCH ESTIMATES

Last year's report (Irvine et al. 2007) described Canada's ongoing review of catch estimates for Pacific salmon. Official estimates based primarily on sale slips have not been finalized since 1995. Consequently, estimates provided to NPAFC have been labeled as "preliminary" because of numerous problems with the sale slip program including non-compliance and misreporting. A detailed review of the 2000 South Coast salmon season found that sale slips routinely underestimated catch, sometimes by large amounts (Bijsterveld et al. 2002).

As mentioned earlier, sale slips are not the only means to estimate catch. Data from log books, interviews, and observers are routinely used to estimate catches. As a result, different estimates of catch sometimes exist for the same gear/species/time strata.

We initiated this project in response to the acknowledged weaknesses of the current catch reporting system, and the assumption that current sale slip based estimates were inadequate. Our

primary objective was: using all available information (sale slips, log books, interview and observer information), to re-estimate commercial catch for salmon for 1996-2004.

Catches were estimated for each week, Management Area, species, gear and license type for which there was fishing. Thus, for example, fishing in the same week and Management Area under commercial salmon seine, commercial salmon troll, salmon test fishing, and First Nations Economic Opportunity type licenses would lead to four separate estimates for each species. In total, 42,069 catch estimates were made for each species (although many were zero).

The extensive time period and geographical scope of this exercise, along with the many different types of data and approaches used to generate catch estimates including variability in the quality of the various data sets make it impossible to document detailed estimation methodologies here. In general, we relied on the local knowledge and expertise of area reviewers to determine the best approach in each situation. Science staff were available for consultation and emphasized that when reliable effort estimates exceeded the effort for which catch was reported, catch estimates should be expanded accordingly. This requirement distinguished revised estimates from most provided earlier to NPAFC based on sale slips; sale slip based estimates were not expanded for vessels known (or estimated) to have fished for which no sale slips were received.

While there are many area and species-specific findings, the primary observations are that i) revised estimates tend to be higher than earlier estimates (43 out of 45 times in Fig. 2), and ii) differences between the two sets of estimates are generally modest in the early period but increase through the time series (positive slope for right hand graphs in Fig. 2). The average changes in annual province wide totals range from 2.4% for pink salmon to 19.6% for coho salmon (though this large value mainly results from large changes in 3 years with very small catches).

We are confident that revised estimates are more accurate than those provided earlier NPAFC because the latter were often incomplete. There are no estimates of the precision of revised estimates (but similarly, there are also none for earlier estimates). However, the precision of catch estimates should depend on the fraction of the participating vessels for which catch data was obtained (“sample fraction”). Since the revised estimates were at least partly based on the sale slip data, and in many cases were based on other types of data as well, the sample fraction for the revised estimates was as large as or larger than that for the earlier estimates. Thus, we conclude that in most cases, the precision of the revised estimates should be as high or higher than earlier estimates.

Although revised estimates, and the approaches used to generate these have been presented to the Canada’s peer review system (PSARC), at the time of writing this review has not been completed. We are therefore not able to recommend changes to the Canadian time series of commercial catch data.

REFERENCES CITED

- Bijsterveld, L., S. Di Novo, A. Fedorenko, and L. Hop Wo. 2002. Comparison of catch reporting systems for commercial salmon fisheries in British Columbia. *Can. Manusc. Rep. Fish. Aquat. Sci.* 2626: 44 p.
- Irvine, J. R., R. Houtman, L. Biagini, and M. Poon. 2007. An update on catch trends for Pacific salmon in British Columbia Canada with comments on the ongoing catch estimation review. NPAFC Doc. No. 1049. 17 p. (Available at <http://www.npafc.org>).

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Table 1. Preliminary retained commercial salmon catch (numbers) in British Columbia tidal waters, by species and year, 1952-2007.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1952	904,000	4,838,000	2,719,000	11,217,000	2,479,000	22,157,000
1953	1,017,000	5,914,000	2,871,000	11,103,000	4,672,000	25,577,000
1954	876,000	6,702,000	2,442,000	5,439,000	5,838,000	21,297,000
1955	876,000	2,835,000	2,976,000	11,240,000	1,569,000	19,496,000
1956	982,000	3,257,000	3,041,000	7,352,000	2,458,000	17,090,000
1957	948,000	3,036,000	3,137,000	11,310,000	2,412,000	20,843,000
1958	1,074,000	12,045,000	2,989,000	6,908,000	3,192,000	26,208,000
1959	956,000	3,260,000	2,897,000	6,776,000	2,015,000	15,904,000
1960	753,000	2,858,000	2,030,000	4,098,000	1,837,000	11,576,000
1961	700,000	4,564,000	3,299,000	8,305,000	1,218,000	18,086,000
1962	720,000	3,499,000	3,623,000	23,429,000	1,496,000	32,767,000
1963	800,000	2,086,000	3,418,000	12,200,000	1,463,000	19,967,000
1964	961,000	3,619,000	4,147,000	9,628,000	2,253,000	20,608,000
1965	981,000	3,019,000	4,437,000	5,108,000	633,000	14,178,000
1966	1,163,000	4,020,000	5,402,000	17,261,000	1,311,000	29,157,000
1967	1,099,000	6,748,000	3,151,000	9,712,000	1,130,000	21,840,000
1968	1,054,000	6,346,000	5,147,000	20,247,000	3,095,000	35,889,000
1969	1,076,000	4,267,000	2,341,000	2,564,000	1,310,000	11,558,000
1970	1,143,000	4,067,000	3,347,000	13,580,000	3,679,000	25,816,000
1971	1,518,000	6,304,000	4,608,000	8,445,000	1,263,000	22,138,000
1972	1,508,000	3,561,000	3,208,000	13,995,000	6,031,000	28,303,000
1973	1,372,000	7,583,000	3,338,000	6,493,000	6,225,000	25,011,000
1974	1,422,000	7,222,000	3,511,000	7,372,000	2,202,000	21,729,000
1975	1,380,000	2,270,000	2,225,000	4,620,000	1,147,000	11,642,000
1976	1,499,000	4,813,000	3,485,000	10,344,000	1,901,000	22,042,000
1977	1,470,000	6,346,000	3,265,000	10,307,000	1,088,000	22,476,000
1978	1,352,000	7,222,000	3,350,000	10,748,000	2,979,000	25,651,000
1979	1,328,000	5,669,000	3,630,000	11,807,000	851,000	23,285,000
1980	1,269,000	3,186,000	3,415,000	8,364,000	3,414,000	19,648,000
1981	1,133,000	8,413,000	2,815,000	18,072,000	1,116,000	31,549,000
1982	1,234,000	10,057,000	3,171,000	2,675,000	2,966,000	20,103,000
1983	950,000	5,500,000	4,125,000	23,944,000	999,000	35,518,000
1984	1,010,000	5,065,000	3,599,000	7,491,000	1,843,000	19,008,000
1985	869,000	12,217,000	2,946,000	20,224,000	5,470,000	41,726,000
1986	813,000	10,548,000	4,904,000	17,977,000	5,580,000	39,822,000
1987	766,000	5,373,000	3,348,000	13,349,000	2,267,000	25,103,000
1988	723,000	4,449,000	2,739,000	23,122,000	6,167,000	37,200,000
1989	648,000	13,747,000	3,425,000	17,050,000	1,809,000	36,679,000
1990	664,000	14,152,000	3,865,000	17,223,000	3,175,000	39,079,000
1991	639,000	10,336,000	3,506,000	23,977,000	2,349,000	40,807,000
1992	679,000	8,170,000	2,956,000	10,263,000	4,006,000	26,074,000
1993	619,000	18,060,000	1,889,000	10,127,000	4,221,000	34,916,000
1994	428,000	11,504,000	2,548,000	2,207,000	4,322,000	21,009,000
1995	193,000	4,412,000	1,871,000	11,727,000	2,475,000	20,678,000
1996	55,706	5,977,896	1,414,499	5,905,262	1,375,818	14,729,182
1997	212,372	10,685,534	229,622	6,494,479	1,891,775	19,513,783
1998	152,747	1,805,564	6,303	2,408,601	4,474,831	8,848,045
1999	108,399	705,804	8,047	6,078,086	950,467	7,850,803
2000	73,321	3,469,195	8,958	4,427,109	556,324	8,539,580
2001	97,661	2,574,827	16,245	6,126,875	1,159,141	9,974,695
2002	237,992	3,631,199	120,199	5,310,679	2,455,478	11,755,547
2003	302,352	2,386,054	220,923	10,321,129	2,835,659	16,066,117
2004	347,636	1,714,415	314,062	2,337,968	3,075,338	7,789,418
2005	299,166	433,028	334,721	7,054,869	2,330,465	10,452,249
2006	263,960	4,197,566	144,785	755,411	2,040,627	7,402,348
2007	182,063	645,632	275,825	6,207,396	1,009,900	8,320,816

Table 2. Preliminary retained commercial salmon catch (round weight, tonnes) in British Columbia tidal waters, by species and year, 1952-2007.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1952	7,104	15,208	10,829	25,281	15,738	74,160
1953	7,717	17,456	11,377	30,476	26,883	93,909
1954	6,643	23,228	10,224	12,722	36,750	89,567
1955	6,197	8,224	11,652	31,270	8,980	66,323
1956	6,774	10,619	12,416	14,311	13,549	57,669
1957	6,262	7,770	11,272	28,297	13,456	67,057
1958	7,033	36,608	12,225	16,752	18,823	91,441
1959	6,686	8,921	9,687	17,315	11,416	54,025
1960	5,107	7,646	7,045	8,394	10,035	38,227
1961	4,486	13,150	12,235	24,731	7,217	61,819
1962	4,471	9,931	13,157	46,231	8,918	82,708
1963	5,002	5,865	12,599	29,925	7,620	61,011
1964	6,565	11,337	15,662	18,163	11,821	63,548
1965	6,266	8,010	18,128	11,343	3,288	47,035
1966	7,568	12,697	19,102	36,292	7,588	83,247
1967	7,368	18,347	10,557	25,311	6,006	67,589
1968	7,348	20,695	16,350	28,256	18,132	90,781
1969	6,916	11,923	8,517	6,816	6,617	40,789
1970	6,732	12,405	12,640	26,173	18,259	76,209
1971	9,033	18,870	14,886	19,183	5,901	67,873
1972	8,870	10,324	10,958	19,453	32,595	82,200
1973	7,928	23,386	11,703	14,457	35,566	93,040
1974	8,072	23,623	10,767	12,203	13,586	68,251
1975	7,773	6,184	8,085	11,127	5,870	39,039
1976	8,255	13,438	9,653	18,576	11,897	61,819
1977	8,058	18,928	10,493	26,818	6,565	70,862
1978	8,504	24,316	9,989	16,688	17,259	76,756
1979	7,456	15,745	11,211	26,887	5,092	66,391
1980	7,288	8,534	10,012	15,304	18,750	59,888
1981	6,451	22,763	8,175	41,661	6,664	85,714
1982	7,723	32,780	10,073	4,330	16,429	71,335
1983	5,865	15,523	11,387	43,068	5,325	81,168
1984	6,826	13,965	11,002	13,138	9,804	54,735
1985	5,964	34,292	9,783	41,072	25,751	116,862
1986	5,463	33,573	14,448	32,134	27,443	113,061
1987	5,717	16,321	9,140	29,329	11,968	72,475
1988	6,434	12,927	7,681	35,079	32,982	95,103
1989	5,680	37,312	9,494	33,758	10,148	96,392
1990	5,667	40,327	11,478	28,572	18,706	104,750
1991	5,496	27,375	10,932	38,216	11,146	93,165
1992	5,786	22,655	7,955	16,239	19,560	72,195
1993	5,222	46,101	4,679	17,473	18,808	92,283
1994	3,864	33,362	8,325	3,684	22,129	71,364
1995	1,624	11,244	5,230	21,524	13,190	52,812
1996	456	15,654	3,878	8,620	6,560	35,168
1997	1,662	25,358	751	12,242	8,686	48,700
1998	1,401	5,170	25	3,921	19,913	30,430
1999	768	1,813	27	9,537	4,997	17,141
2000	521	8,871	34	7,221	2,848	19,495
2001	667	7,187	53	10,972	5,850	24,729
2002	1,696	10,164	472	8,610	12,305	33,246
2003	2,204	6,396	812	15,456	13,736	38,605
2004	2,463	4,372	1,187	3,578	14,302	25,902
2005	2,083	1,056	1,168	12,638	11,323	28,268
2006	1,904	10,105	557	1,431	9,890	23,887
2007	1,324	1,760	812	11,197	4,861	19,953

Table 3. Preliminary 2007 retained commercial salmon catch (numbers) in British Columbia tidal waters, by species and Statistical Area.

AREA	CHINOOK	CHUM	COHO	PINK	SOCKEYE	STEELHEAD	Grand Total
1	65,037	437	115,110	42,273	1,541		224,398
2 EAST			16,626				16,626
2 WEST	5,315	1	3,840	2,129	43		11,327
3	4,235	28,952	52,772	3,189,948	251,545		3,527,451
4	6,664	932	38,776	640,508	349,256	340	1,036,476
5			3,905	376,298	2,131		382,334
6	240	15,504	31,799	1,697,598	8,701		1,753,843
7		5,448	1,753	4,865	6		12,072
8	5,033	268,877	48	229,631	357		503,945
12	11	78,115		6,168	6,856		91,149
13		400,797		14,328	5,177		420,303
14	1	14,595	2				14,598
17		38					38
18		3,510					3,510
21		120,809	2				120,811
23	49,175	6,384	2,905	16	399		58,880
24	5,496	3,992	77				9,565
25	8,546	13,264	310	20			22,139
26	17,363	227	8	445			18,043
27	9,495	863	24	87			10,470
29AB	235	38,856		1,962	934		41,987
29C		834					834
29D	2,219	7,465		1,120	1,635		12,439
TAKU	2,998		7,869		17,051		27,918
Grand Total	182,063	1,009,900	275,825	6,207,396	645,632	340	8,321,156

Table 4. Preliminary 2007 retained commercial salmon catch (round weight, tonnes) in British Columbia tidal waters, by species and Statistical Area.¹

AREA	CHINOOK	CHUM	COHO	PINK	SOCKEYE	STEELHEAD	Grand Total
1	564	2	343	85	5		999
2 EAST			35				35
2 WEST	49	0	10	4	0		62
3	37	121	154	5,698	691		6,702
4	60	5	110	1,260	948	1	2,383
5			13	823	6		841
6	1	86	103	2,847	21		3,059
7		28	4	9	0		40
8	50	1,475	0	421	1		1,946
12	0	347		13	19		378
13		1,810		29	14		1,854
14	0	73	0				73
17		0					0
18		19					19
21		551	0				551
23	260	28	8	0	1		298
24	28	21	0				49
25	68	61	1	0			130
26	96	1	0	1			98
27	66	4	0	0			71
29AB	2	184		4	3		193
29C		4					4
29D	20	41		2	5		68
TAKU	23		29		47		98
Grand Total	1,324	4,861	812	11,197	1,760	1	19,954

¹Catches <0.5 tonnes appear as 0.

Table 5. Preliminary retained recreational salmon catch (numbers) in British Columbia tidal waters, by species and year, 1953-2007.

Year	Chinook	sockeye	Coho	Pink	Chum	Total
1953	74,400	0	130,200	0	0	204,600
1954	75,900	0	134,400	0	0	210,300
1955	89,200	0	184,600	0	0	273,800
1956	106,500	0	197,500	0	0	304,000
1957	101,300	0	252,300	10,200	0	363,700
1958	106,000	400	261,800	3,100	0	371,300
1959	93,600	0	243,000	36,800	0	373,500
1960	68,900	0	238,100	800	0	307,800
1961	46,300	100	157,200	26,500	0	230,000
1962	55,400	100	184,100	3,500	0	243,000
1963	61,000	100	197,500	111,000	0	369,500
1964	49,300	0	181,000	2,300	0	232,600
1965	52,800	100	188,600	9,600	0	251,000
1966	61,400	0	253,000	5,000	0	319,400
1967	61,300	0	169,200	29,100	900	260,500
1968	63,700	0	218,500	5,600	0	287,900
1969	66,800	1,400	143,900	36,400	0	248,400
1970	97,500	500	236,900	10,700	0	345,600
1971	85,600	200	371,100	46,000	0	503,000
1972	294,600	1,900	345,200	12,100	0	653,800
1973	281,500	4,500	384,400	51,700	0	722,200
1974	282,200	3,400	788,100	16,400	0	1,090,100
1975	439,700	2,300	469,800	28,500	0	940,300
1976	515,500	1,200	440,400	16,600	0	973,800
1977	255,000	900	255,200	33,900	1,800	546,800
1978	276,000	300	378,700	6,500	4,900	666,400
1979	188,900	2,400	407,300	89,600	1,300	689,600
1980	204,100	0	393,500	0	0	597,600
1981	197,200	0	317,100	0	0	514,300
1982	124,400	0	411,700	2,800	0	538,900
1983	198,400	0	404,000	54,900	0	657,300
1984	457,800	0	449,600	10,200	0	917,600
1985	292,800	3,000	760,200	111,800	3,100	1,170,800
1986	220,300	1,600	614,600	35,900	2,900	875,300
1987	196,500	33,200	735,700	128,000	5,500	1,098,900
1988	195,400	18,600	1,121,200	58,700	7,200	1,401,200
1989	255,000	15,000	591,700	148,900	9,400	1,020,000
1990	245,600	45,700	740,100	50,100	4,200	1,085,800
1991	206,600	107,500	232,500	297,600	5,800	850,000
1992	219,500	121,700	717,800	65,400	7,300	1,131,700
1993	226,300	131,200	879,300	181,100	4,300	1,422,100
1994	187,400	45,400	366,200	23,200	2,700	624,900
1995	152,500	18,400	197,100	198,300	6,800	573,100
1996	120,300	72,500	249,800	21,900	6,500	471,000
1997	206,400	91,700	253,000	119,400	6,300	676,800
1998	128,300	62,500	1,800	18,100	7,000	217,700
1999	156,500	95,800	19,600	129,000	1,500	402,400
2000	115,700	32,200	31,400	70,800	4,900	255,000
2001	144,900	42,200	133,200	95,800	7,000	423,100
2002	217,700	61,000	141,300	20,700	18,300	459,000
2003	209,400	130,500	173,800	158,900	10,700	683,300
2004	191,400	134,700	125,300	23,300	27,600	502,300
2005	247,700	81,000	148,100	120,600	8,400	605,800
2006	237,900	78,600	113,900	22,000	11,000	463,400
2007	161,686	420	85,639	103,649	6,425	357,819

Table 6. Preliminary 2007 retained recreational salmon catch (numbers) in British Columbia tidal waters, by species and Statistical Area.

AREA	ALL SPECIES	SOCKEYE	PINK	CHUM	COHO	CHINOOK	STEELHEAD
TOTAL	357,819	420	103,649	6,425	85,639	161,686	-
Queen Charlotte Islands							
1	62,590	120	1,050	420	30,000	31,000	-
2 East	1,000	-	-	-	500	500	-
2 West	35,090	10	430	50	12,100	22,500	-
North Coast							
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	10,555	1	177	15	4,394	5,968	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-
West Coast							
Vancouver Island							
21	869	-	52	-	123	694	-
22	-	-	-	-	-	-	-
23	38,815	-	252	87	8,507	29,969	-
24	2,878	-	1	8	2,159	710	-
25	20,164	9	138	8	5,405	14,604	-
26	4,561	-	-	1	2,062	2,498	-
27	6,670	2	197	6	4,864	1,601	-
South Coast							
11	2,741	-	45	50	542	2,104	-
12	35,612	76	22,123	308	6,074	7,031	-
13	28,215	3	14,308	5,272	1,390	7,242	-
14	4,577	-	528	-	238	3,811	-
15	980	-	98	-	-	882	-
16	442	-	-	-	11	431	-
17	868	-	17	-	17	834	-
18	1,077	-	771	4	22	280	-
19	4,796	7	1,805	-	89	2,895	-
20	93,933	192	61,494	171	6,862	25,214	-
28	888	-	69	17	241	561	-
29AB	498	-	94	8	39	357	-

Source - Fisheries and Oceans Canada, Pacific Region, Regional Data Unit

Table 7. Preliminary retained aboriginal subsistence catch of salmon (numbers) in British Columbia tidal waters, by species and year, 1951-2007.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1951	14,300	143,000	22,100	10,500	75,500	265,400
1952	19,100	152,800	22,200	9,400	66,600	270,200
1953	21,500	170,300	25,800	12,700	47,700	278,100
1954	22,100	147,500	29,000	7,000	38,800	244,500
1955	20,500	105,100	30,900	19,800	43,100	219,400
1956	17,400	129,900	29,500	17,900	38,800	233,600
1957	18,000	182,800	30,700	39,500	50,100	321,100
1958	19,900	183,300	29,600	21,700	42,000	296,500
1959	22,100	132,100	28,400	28,800	50,000	261,400
1960	17,100	146,000	20,100	8,200	51,700	243,100
1961	16,600	208,700	27,500	41,800	40,300	334,900
1962	16,500	200,000	32,400	15,700	43,600	308,300
1963	15,900	285,800	26,200	55,400	35,400	418,600
1964	17,200	220,000	35,100	9,900	42,200	324,200
1965	16,400	199,800	46,700	43,400	38,900	345,200
1966	14,400	231,800	44,000	17,600	37,500	345,300
1967	14,700	191,100	19,600	35,700	34,800	295,900
1968	16,700	208,500	40,500	14,000	59,500	339,200
1969	18,900	245,400	23,500	31,900	35,900	355,600
1970	26,200	245,900	35,800	31,200	43,900	383,000
1971	21,700	280,600	36,500	47,000	38,600	424,300
1972	23,500	231,000	33,800	14,500	49,400	352,300
1973	22,000	285,900	27,200	66,300	49,000	450,300
1974	27,900	356,200	42,500	10,200	75,800	512,600
1975	29,900	407,100	36,500	59,000	44,200	576,800
1976	28,600	377,500	47,300	24,000	60,600	538,000
1977	36,300	434,200	36,200	51,200	54,300	612,100
1978	29,600	418,600	50,300	19,100	51,100	568,700
1979	28,000	509,300	77,100	84,100	44,200	742,700
1980	40,400	411,500	104,000	13,400	56,400	625,700
1981	39,900	644,800	98,300	88,100	68,000	939,000
1982	76,800	787,400	119,600	43,900	82,200	1,109,900
1983	65,300	650,700	76,200	207,600	68,700	1,068,400
1984	57,000	647,400	121,400	61,400	99,100	986,400
1985	54,900	760,100	85,600	158,400	102,400	1,161,400
1986	79,400	795,500	92,900	45,300	127,100	1,140,200
1987	78,400	748,200	65,900	151,200	103,400	1,147,100
1988	69,400	676,600	68,300	20,500	108,600	943,300
1989	76,900	829,500	62,300	119,700	84,000	1,172,400
1990	69,500	1,150,400	60,600	51,800	147,700	1,480,000
1991	93,700	1,027,700	61,700	177,100	92,100	1,452,200
1992	76,700	861,500	82,300	70,500	197,200	1,288,200
1993	111,100	1,522,300	95,900	37,800	655,900	2,422,800
1994	72,300	1,580,200	121,400	17,500	609,400	2,400,700
1995	38,300	851,500	117,200	186,700	143,000	1,336,700
1996	43,400	970,300	75,600	17,700	519,700	1,626,700
1997	36,200	316,800	49,900	34,900	296,100	733,900
1998	29,800	325,500	4,500	44,800	22,600	427,200
1999	70,000	512,400	28,000	151,600	63,400	825,400
2000	50,900	1,593,500	92,400	33,100	91,500	1,861,400
2001	56,000	972,000	19,200	212,800	140,000	1,400,000
2002	42,200	1,083,600	18,100	18,100	82,900	1,244,900
2003	54,500	902,500	12,400	334,500	101,000	1,404,900

Table 7. Preliminary retained aboriginal subsistence catch of salmon (numbers) in British Columbia tidal waters, by species and year, 1951-2007, continued.


Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2004	93,500	758,700	31,700	23,000	21,800	928,700
2005	28,400	623,700	1,300	270,500	132,900	1,056,800
2006	70,500	676,900	4,300	500	135,200	887,400
2007	6974	142,442	5,252	11,296	6,179	345,083

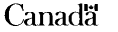
Figure 1 a. Major Fisheries and Oceans Canada Statistical Reporting Areas for Pacific salmon catch in southern British Columbia.

READ CAREFULLY

1. Reporting of all catches to the Dept. of Fisheries and Oceans is the Responsibility of the fisherman and a condition of licence renewal.
2. Accurate catch reports must include the map number or numbers showing the area in which your fish were caught.
3. The statistical areas shown on this map are to be used as a guide only. For more exact information refer to the Pacific Fishery Management Area Regulations.

● Dept. of Fisheries and Oceans Office
 — Statistical areas
 — Surfline
 Note: All areas revised February 1985

 Fisheries and Oceans
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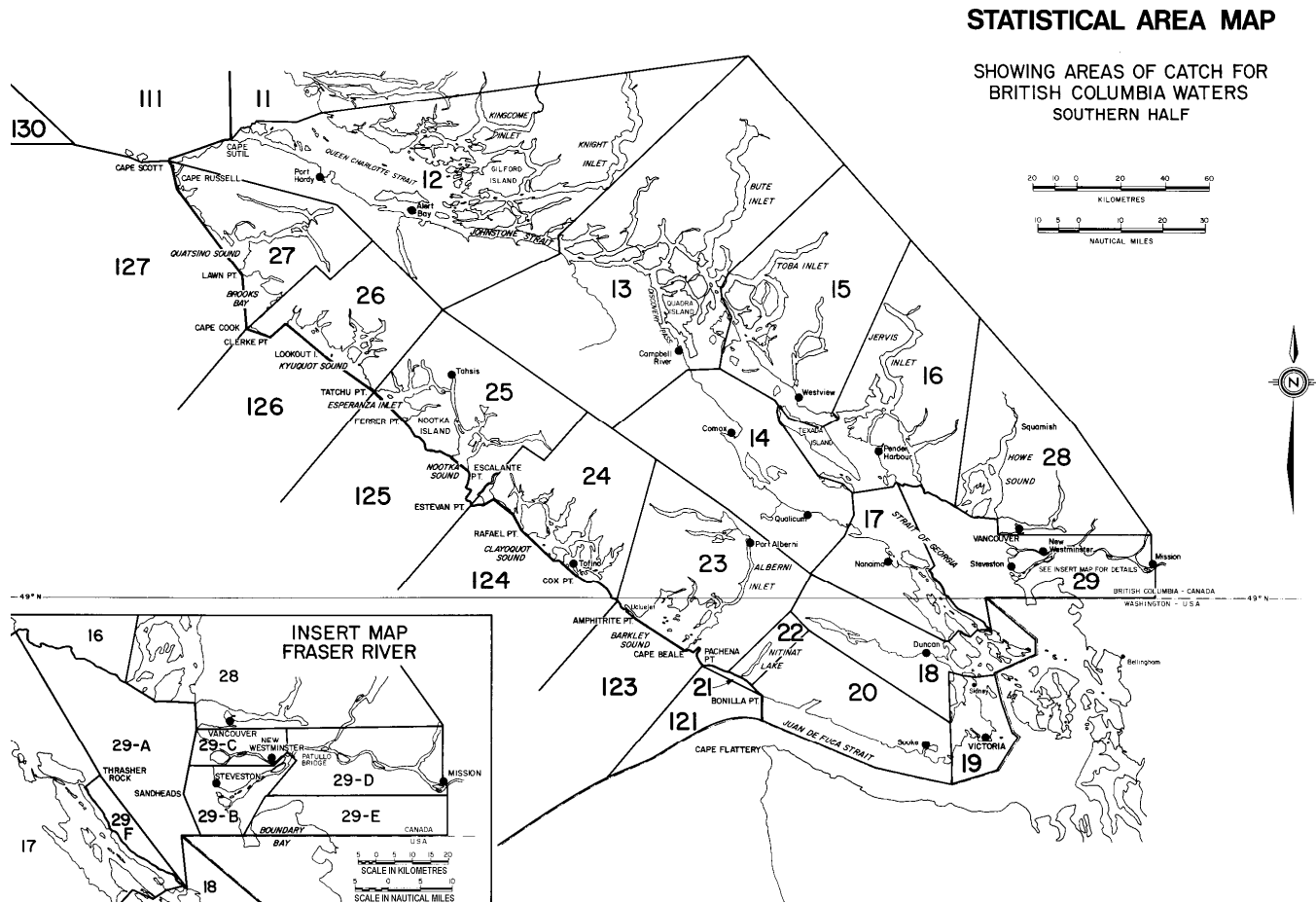
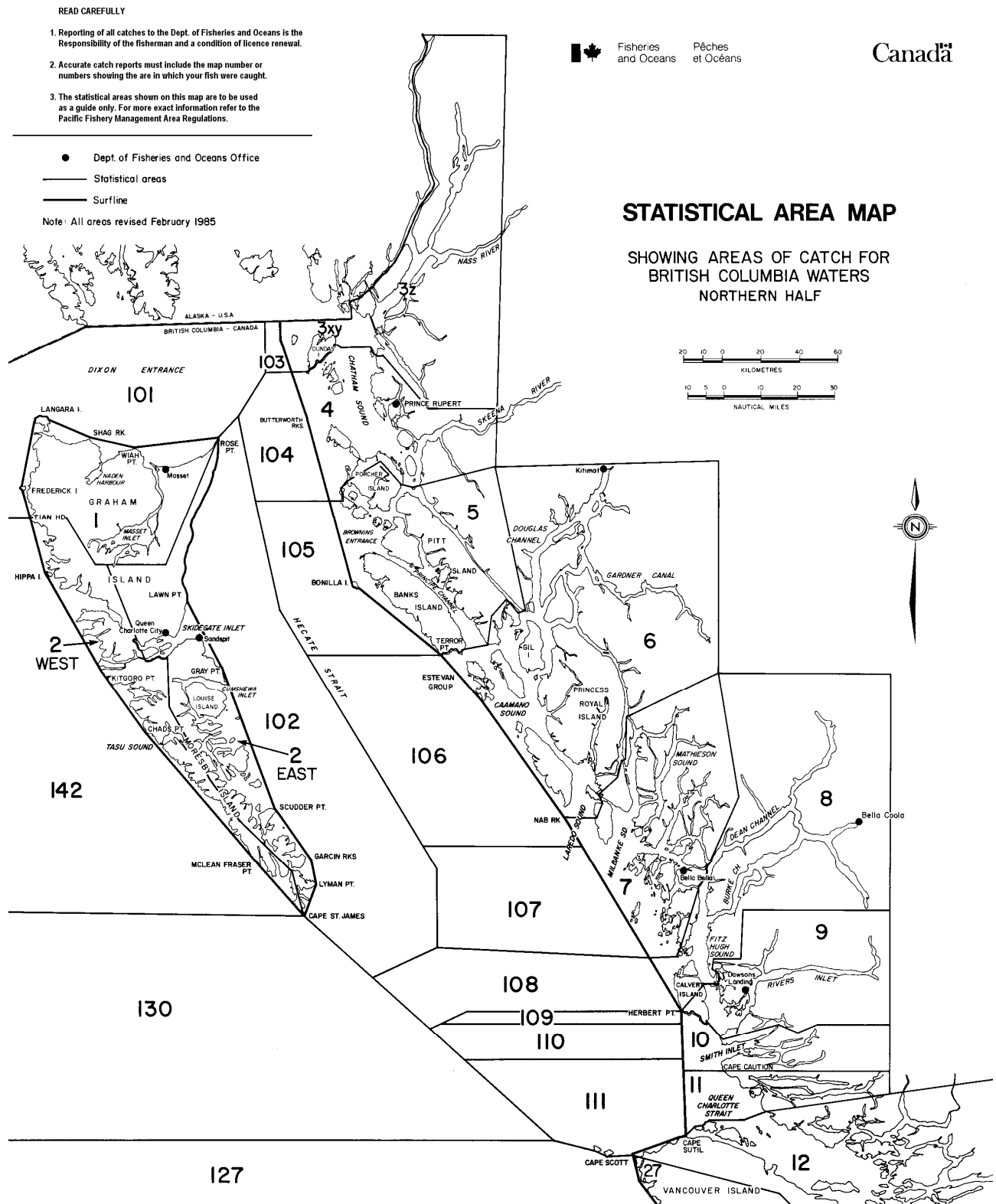


Figure 1 b. Major Fisheries and Oceans Canada Statistical Reporting Areas for Pacific salmon catch in northern British Columbia.



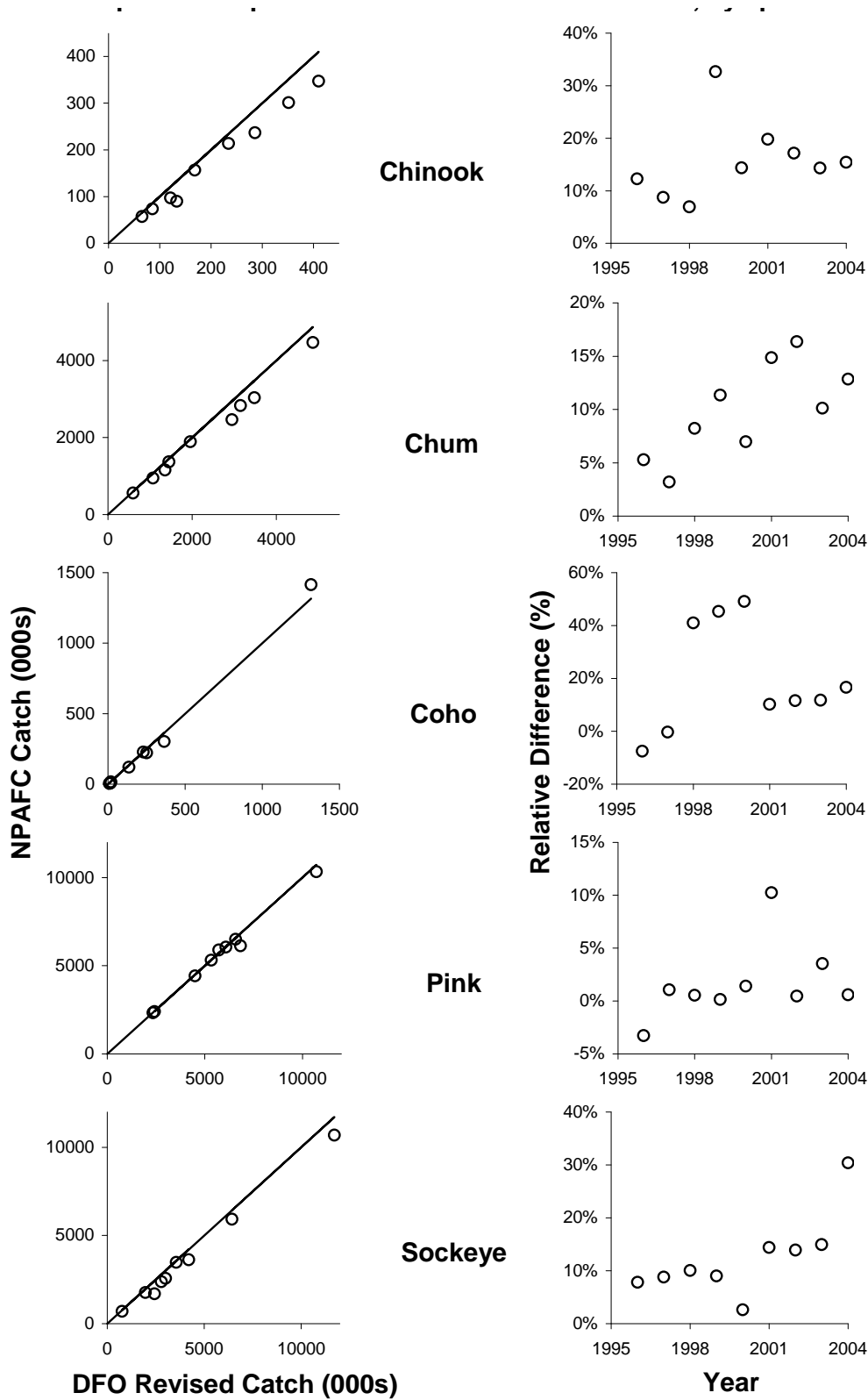


Figure 2. Comparison of NPAFC and revised province-wide, annual, kept catch estimates for five Pacific salmon species. Graphs on the left show NPAFC catch estimates vs. revised catch estimates with a 1:1 line for reference; graphs on the right show the Relative Difference vs. year. Catches are in thousands of pieces, and "Relative Difference" = $[\text{Revised estimate} - \text{NPAFC estimate}] / \text{Revised estimate} \times 100$. In the graphs on the left, points below the 1:1 line represent cases in which the revised estimate is greater than the NPAFC estimate, and correspond to positive relative differences on the right hand graphs.