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Overview of the Sport Fisheries for King Salmon in Southeast Alaska through 2011

by

Bob Chadwick

and

Brian Frenette

December 2011

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$log_{2,}$ etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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by

Bob Chadwick
Division of Sport Fish, Sitka

and

Brian Frenette

Division of Sport Fish, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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Bob Chadwick[a]
Alaska Department of Fish and Game, Division of Sport Fish,
304 Lake St., Room 103, Sitka, AK 99835, USA

Brian Frenette
Alaska Department of Fish and Game, Division of Sport Fish,
802 3rd St., Douglas, AK 99824, P.O. Box 110024, Juneau, AK 99811, USA

About the Authors

Bob Chadwick is a fishery biologist with ADF&G Division of Sport Fish in Sitka, 304 Lake Street, Room 103, Sitka, AK 99835-7671

Brian Frenette is a regional supervisor with ADF&G Division of Sport Fish in Douglas, 802 3rd Street, P.O. Box 110024, Juneau, AK 99811-0024.

Author to whom all correspondence should be addressed: bob.chadwick@alaska.gov

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ABSTRACT

King salmon are probably the most highly preferred species of fish sought after by sport anglers and the commercial fishing industry in Southeast Alaska (SEAK). Fisheries management is complex and involves regulatory processes in both international and domestic venues. An all-gear harvest quota is established under the U.S./Canada Pacific Salmon Treaty (PST), which was recently renegotiated for 2009-2018. Since 1999, Alaska's allowable catch under the treaty has been based on coastwide king salmon abundance as measured by the preseason abundance index (AI). Once that is determined, the Alaska Board of Fisheries (board) allocates specific shares of the all-gear quota to the drift gillnet, set gillnet, seine, troll, and sport fisheries. The net fisheries are taken off the top, and the remainder is split between the troll and sport fisheries.

Marine and freshwater sport harvests of king salmon averaged 24,500 from 1977 to 1990, 56,400 from 1991 to 2000, and 72,500 from 2001 to 2010. Overall increases in harvest were primarily due to growth in outer coast fisheries in Sitka and Prince of Wales Island (PWI). From 2005 to 2010, the king salmon harvest by nonresidents averaged 38,600, or 55%, of the total, with the largest harvests by nonresidents in the Sitka and PWI areas. The largest harvests by Alaska residents occur in the Juneau, Sitka, and Ketchikan areas. The average sport harvest of treaty fish in 2006–2010 was 51,350; based on the preseason AI under the PST, sport harvest averaged 21.7% of the 20% sport allocation during that period. The preliminary estimated treaty harvest of king salmon in 2011 is 49,836. Alaska hatchery fish (as well as selected wild stock harvests) are subtracted from the total harvest to determine the number of king salmon that count toward Alaska's PST quota. Harvests in inside waters are composed of much higher percentages of Alaska hatchery king salmon than those in outside waters.

The sport fishery is managed each year under the *Southeast Alaska King Salmon Management Plan* (5AAC 47.055). The current plan is a result of modifications to the plan's management measures made by the board in 2006, 2008 and 2009. The board liberalized management measures to increase king salmon harvest at AI levels above 1.5 during the 2006 SEAK board meeting. Management measures that restricted the number of lines from charter vessels and increased the minimum king salmon size limit for part of the season for all anglers at AI levels below 1.1 were modified by emergency regulation in 2008. In May 2008, the Pacific Salmon Commission reached agreement to renew various fishery arrangements under the PST. One significant change was the reduction of 15% in allowable catch levels of the SEAK king salmon fisheries. In 2009, to address this reduction of allowable catch in the king salmon sport fishery, the board modified the plan with particular emphasis to periods of lower king salmon abundances.

The board received five proposals for consideration at the February 2012 meeting that, if adopted, would modify management of the king salmon sport fishery.

Key words: king salmon, Chinook salmon, Southeast Alaska, Pacific Salmon Treaty, abundance index, salmon management plan.

INTRODUCTION

King salmon are the species of fish most preferred by sport anglers fishing in Southeast Alaska (SEAK), and are highly valued by the commercial fishing industry as well. The SEAK region consists of Alaskan waters between Dixon Entrance to the south and Cape Suckling to the north (Figure 1).

The U.S./Canada Pacific Salmon Treaty (PST) limits the all-gear harvest of king salmon within SEAK (excluding a majority of the hatchery fish produced in Alaskan hatcheries). Due to this limit on harvest and the high value to both user groups, allocation of king salmon between sport and commercial fisheries has been contentious. Since 1992, the king salmon quota has been allocated on a percentage basis between the sport and commercial fisheries, and several management plans to direct the fishery have been in place.

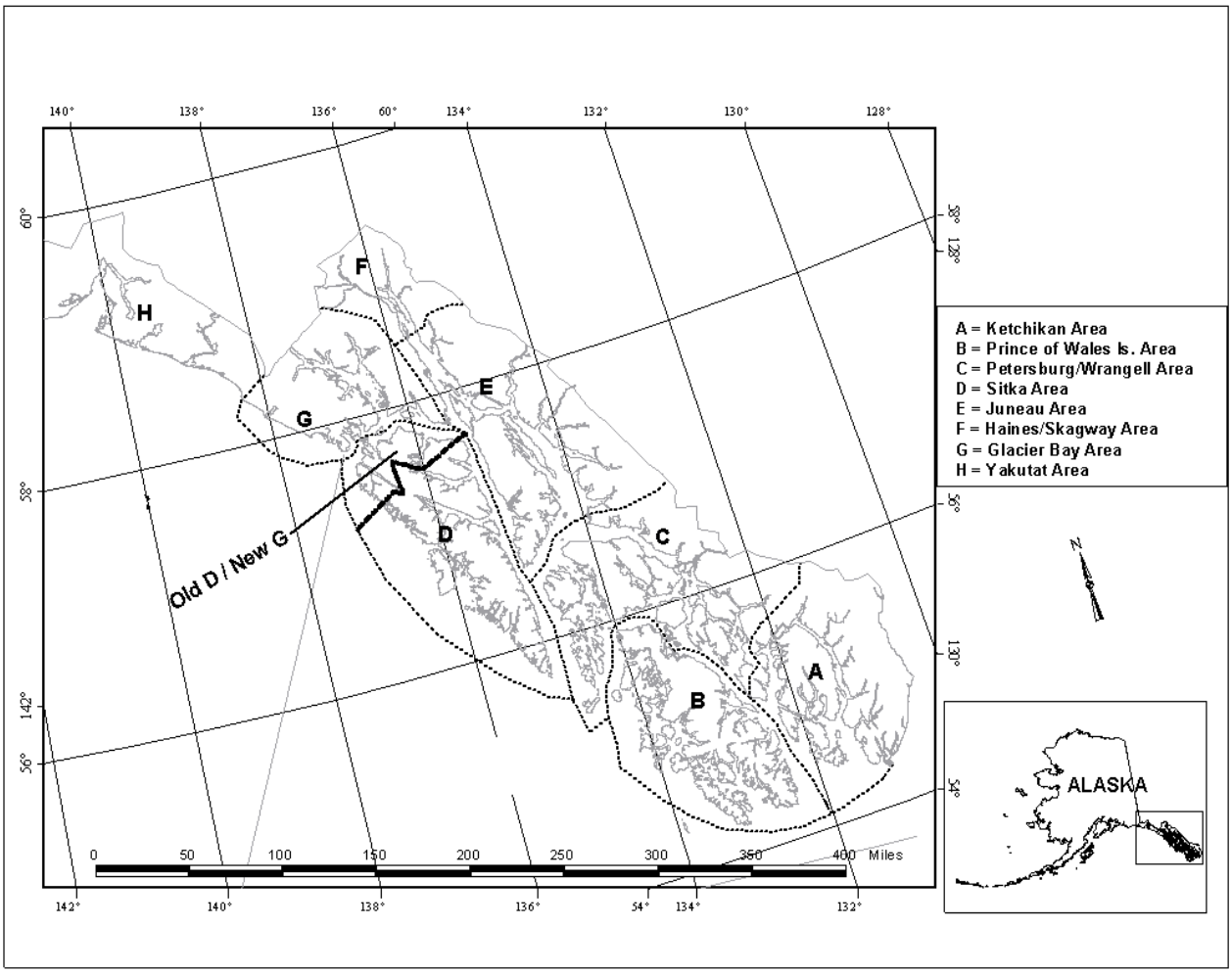

Figure 1.–Areas within the Southeast Alaska region for which sport effort and harvests are estimated through use of the Statewide Harvest Survey (SWHS) postal questionnaire. The boundary between the Sitka and Glacier Bay (D & G) areas was modified in 2000.

The objective of this report is to provide an overview of the sport fishery for king salmon in SEAK. A discussion of implementation of the sport fishery management plan since 1992 and an update of fishery status are also provided. Specifically, this report will detail for SEAK:

1. The history of sport fisheries regulations for king salmon and implementation of the various management plans since 1992;
2. King salmon harvest, effort, stock composition, and residency of angler; and
3. A discussion of the management issues to be decided by the board.

REGULATORY HISTORY AND MANAGEMENT PLAN

FRESHWATER FISHERIES

Sport fishing for king salmon in the fresh waters of SEAK east of the longitude of Cape Fairweather, including the Taku River drainage has been closed since 1963. However, there are

three exceptions: rivers and streams in the Yakutat area; streams containing only Alaska hatchery fish such as Blind Slough near Petersburg; and all freshwaters draining into the Sitka Sound Special Use Area. Freshwater anglers fishing in the Yakutat area may take one king salmon over 20 inches in length daily, along with 10 fish under 20 inches. The Situk River near Yakutat, supports the only freshwater sport fishery for wild king salmon in SEAK. The Situk River management plan (5 AAC 30.365) establishes sport and commercial fisheries regulations based on the projected inriver run to the Situk River weir. In Blind Slough near Petersburg, king salmon opportunity there target fish returning to the Crystal Lake Hatchery. A bag limit of two king salmon 28 inches or more in length, and two king salmon less than 28 inches in length applies to this system. In all freshwaters draining into the Sitka Sound Special Use Area, the king salmon daily bag limit is five fish greater than 28 inches in length and five fish less than 28 inches in length (5AAC 47.023(g)(10). Indigenous king salmon populations do not exist in the latter two freshwater systems and are fish that originate from hatchery releases. Since 1989, Alaska Department of Fish and Game (ADF&G) has also opened other freshwater systems by emergency order to provide for the harvest of these terminal area hatchery king salmon. Other streams that are opened to harvest surplus hatchery king salmon in freshwater include all freshwaters along the Juneau road systems, and Pullen Creek near Skagway.

MARINE FISHERIES

Regionwide regulations governing harvests of king salmon in marine recreational fisheries of SEAK have changed considerably over the years (Table 1). From 1958 to 1962, the minimum size limit was 26 inches (fork length) and the bag limit was three fish. During the period from 1963 to 1975, there was no minimum size limit for king salmon, and the bag limit remained three fish. In 1976, a minimum size limit of 26 inches (total length) was put into effect. The minimum size limit was increased to 28 inches (total length) in 1977. Bag and possession limits were reduced to two fish in 1983. The general regulations (two fish bag limit, 28 inch length limit) were in, except when modified by emergency order. Other changes to the regionwide king salmon regulations have occurred at specific times or areas to deal with specific issues. From 1980 to 1983, the minimum size limit was eliminated from April 1 to June 14 to provide for harvest of small mature males known as "jacks." The 28-inch size limit was in effect for the rest of the year. Portions of Behm Canal near Ketchikan, Greys Pass near Wrangell, and upper Taku Inlet near Juneau have been closed to recreational fishing to protect king salmon returning to spawn. Restrictive regulations, including partial area closures and seasonal bag limits, were imposed in the Haines area in 1987 in an attempt to rebuild the Chilkat River stock of king salmon. From 1983 through May 1989, it was legal for marine anglers to keep undersized king salmon (less than 28 inches in length) that had been adipose clipped. This regulation was enacted to increase recoveries of coded wire tags (CWTs). However, retention of these fish caused biased estimates of hatchery contributions and this regulation was repealed in 1989.

Terminal harvest areas play an important role in the SEAK king salmon fishery in that they provide additional opportunities to sport anglers fishing near major communities. Large amounts of effort are expended in these areas which, if directed elsewhere, would increase pressure on wild stocks. In addition, hatchery fish harvested in terminal areas do not count toward treaty harvest quotas and further help keep the sport fishery within the domestic allocation. In 1989, ADF&G was given authority to increase harvest opportunities for king salmon in terminal harvest areas. Since 1989, a number of terminal marine harvest areas have been opened with increased bag limits and/or reduced length limits. Those areas opened in 2011 are listed in Table 2.

Table 1.–Summary of regional king salmon regulations in the marine waters of Southeast Alaska since 1958.

Years	Bag limits	Possession limit	Minimum size limit	Other regionwide regulations	Areas with additional restrictions
1958-1962	3	3	≥26” fork		Ketchikan
1963-1975	3	3	None	• Freshwater- first closed	Ketchikan
1976	3	3	≥26” total		Juneau, Ketchikan
1977	3	3	≥28” total		Juneau, Ketchikan
1978-1979	3	3	≥28” total		Juneau, Ketchikan, Haines, Wrangell
1980-1982	3	3	≥28” total	• No size limit: 4/01-6/14	Juneau, Ketchikan, Haines, Wrangell
1983-1988	2	2	≥28” total	• No size limit – tagged fish	Juneau, Ketchikan, Wrangell
1989-1991	2	2	≥28” total	• Terminal area Mgmt.	Juneau, Ketchikan, Haines, Wrangell
1992-1996	2	2	≥28” total	• Management Plan	Juneau, Ketchikan, Haines, Wrangell
1997-2002	2	2	≥28” total	• No retention by charter vessel crews • 4 fish (≥28”) annual limit for nonresidents	Juneau, Ketchikan, Wrangell
2003-2005[a]	2	2	≥28” total	• No retention by charter vessel crews • 1 fish (≥28”) bag and possession limit for nonresidents	Juneau, Ketchikan, Wrangell
2006-2007	3	3	≥28” total	• No retention by charter vessel crews • 1 fish (≥28”) bag and possession limit for nonresidents • 3 fish (≥28”) annual limit for nonresidents • Use of two rods Oct-Mar	Skagway (2007)
2008	1	1	≥28” total and ≥48” total	• 1 fish (≥28”) bag and possession limit for nonresidents May1- July 15 and Oct. 1-Dec 31 • 1 fish (≥48”) bag and possession limit for nonresidents July 16-Sept. 30 • Nonresident harvest limits: 3 fish Jan 1-June 30 2 fish July 1-15 1 fish July 16-Dec 31	
2009	2	2	≥28” total	• 1 fish (≥28”) bag and possession limit for nonresidents • 3 fish annual limit for nonresidents	Skagway, Petersburg/ Wrangell
2010	2	2	≥28” total	• From Oct 1-March 31 residents may use two rods • 1 fish (≥28”) bag and possession limit for nonresidents • 3 fish annual limit for nonresidents	Ketchikan, Petersburg/ Wrangell
2011	3	3	≥28” total	• From Oct 1-March 31 all anglers may use two rods • 1 fish (≥28”) bag and possession limit for nonresidents except 2 fish (≥28”) bag and possession limit for nonresidents May 1-May 31 • 5 fish annual limit for nonresidents	Skagway, Petersburg/Wrangell,

[a] In 2005, the regional regulation was modified by emergency regulation for a portion of the year. The nonresident annual limit was increased to five and the resident bag limit was increased to three.

Table 2.–Names, locations, and dates of terminal marine harvest areas in Southeast Alaska that had liberalized regulations in 2011 to allow for increased harvests of Alaska hatchery king salmon.

SWHS[a] area	THA[b]	Location	Dates open
Ketchikan	Mountain Point	Tongass Narrows, Nichols Passage	6/01-7/31
		Revillagigedo Channel	
Petersburg/Wrangell	Neets Bay	Neets Bay, Revillagigedo I.	6/01-7/31
Juneau	Wrangell Narrows	W. Mitkof Island	6/01-7/31
	Juneau	Gastineau Channel, Auke Bay, Fritz Cove	6/01-8/31

[a] Statewide Harvest Survey = SWHS.
[b] Terminal Harvest area = THA.

In 1992, the *Southeast Alaska King Salmon Management Plan* (5AAC 47.055) was adopted by the board. This plan provided management options to be implemented during the season to meet the sport allocation (see management plan section). Further changes to general regulations were implemented in 1997 and included a four fish annual limit for nonresident anglers, a prohibition on charter captains and crew from retaining king salmon while clients were onboard, and a limit on the maximum number of lines fished to no more than the number of paying clients onboard a charter vessel. At the 1998 statewide meeting, the board passed a mandatory logbook requirement for charter vessels. In 2003 the board rescinded general regulations for specific king salmon bag, possession and annual limits and set general regulations that require the department to establish king salmon bag, possession, and annual limits, by emergency order as specified by the Southeast Alaska King Salmon Management Plan.

PACIFIC SALMON TREATY

In 1985, the United States and Canada signed the PST, which included provisions for management and conservation of king salmon stocks that inhabit the Pacific Coast, north of southern Oregon and into Southeast Alaska. Stocks for which the treaty applied included those that migrate north and are caught in the fisheries of both countries. Harvest ceilings (quotas) were established for the king salmon fishery in SEAK and other major fisheries in Canada as part of the initial sharing arrangements. Each of these fisheries is to be managed to ensure harvests will not exceed the negotiated annual quotas. As an incentive to minimize harvest of wild king salmon, the majority of king salmon produced from Alaska hatcheries do not count against Alaska's quota. When the treaty was initially implemented, only the commercial troll fishery was managed to ensure that annual quotas for treaty fish were not exceeded. But in 1987, the board allocated the harvest of treaty fish across the commercial users that harvest king salmon in SEAK, and by 1992 allocations were in place for the sport fishery as well.

In 1998, the Pacific Salmon Commission (PSC) negotiated a new agreement implementing abundance-based management in all king salmon fisheries in both the U.S. and Canada beginning in 1999. Since 1999, SEAK and other fisheries have been managed to achieve a king salmon harvest based on the coast wide abundance rather than on a fixed ceiling. The latest agreement that was implemented in 2009 includes provisions to revisit provisions of the "Chinook" chapter in five years (2014) to assess effectiveness. The allowable harvest level for the SEAK king salmon fisheries is based on the best available preseason abundance index (AI) as determined by the Chinook Technical Committee (CTC). However the allowable catch under

the latest agreement is now 15% lower for SEAK and is the result of concessions made during negotiations with Canada. The preseason index is calculated in early spring prior to the commencement of most fishing. Per the agreement, the index specifies the total allowable catch for SEAK fisheries at given AIs, and is based on exploitation levels that increase as abundance increases (Table 3).

Table 3.–Abundance indices and related all-gear quotas, sport allocations, and commercial allocations for king salmon in Southeast Alaska based on the 2009-2018 treaty agreement.

Abundance index	All-gear quota	Net allocation	80% troll allocation	20% sport allocation
0.5	72,250	6,202	52,838	13,210
0.8	105,400	8,589	77,449	19,362
0.9	116,450	9,384	85,652	21,413
1.0	127,500	10,180	93,856	23,464
1.1	151,725	11,924	111,841	27,960
1.2	175,950	13,668	129,825	32,456
1.3	214,237	16,425	158,250	39,562
1.4	229,409	17,517	169,514	42,378
1.5	244,582	18,610	180,777	45,194
1.6	279,983	21,159	207,060	51,765
1.7	296,420	22,342	219,262	54,815
1.8	312,856	23,526	231,464	57,866
1.9	329,293	24,709	243,667	60,917
2.0	345,729	25,892	255,869	63,967

[a] Net allocation = 1,000 for set gillnet, 2.9% of the all-gear quota for drift gillnet, and 4.5% of the all-gear quota for seine.

Catch accounting of the SEAK king salmon harvest is conducted by the Alaska members of the CTC and takes into account various provisions of the PST. All Alaska hatchery fish harvested are discounted from the total all-gear harvest. Fish harvested in "terminal exclusion" fisheries when directed fishing is allowed, are discounted to the base catch level before counting against the treaty harvest. In 2011, Alaska members of the CTC realized that there may have been an accounting error in the terminal exclusion fisheries and therefore, treaty harvest calculations had to be redone from the year implemented (2005) to present. The retrospective adjustment increased the all-gear treaty harvest by about 12% since 2005 (Table 4). See detail in the District 8 and 11 section.

Under the state's general harvest ceiling regulations for king salmon in SEAK (5AAC 29.060), each gear group, including the sport fishery is allocated a share of the all-gear quota allowed under the treaty. Since implementation of the newest agreement, postseason AIs have been slightly lower than the preseason AIs in 2009 and 2010 (Table 4). The postseason AI for 2011 will not be available until the spring of 2012. Alaska has harvested more than its all-gear quota by nearly 5,700 king salmon since implementation of the new agreement; however the overage is still well within the 7.5% management range. The slight overage however could be a function of coast wide abundance levels rebuilding after the pronounced downturn in ocean production that began in 2006 and continued through 2008. It is entirely possible that given the fisheries performance in 2011, the postseason index will be higher than the preseason this year.

Table 4.–Sport harvest of treaty king salmon and sport overage/underage calculations using allocations based on preseason abundance indices, 1999-2011.

Year	Preseason abundance index	Preseason allowable catch	Troll + sport allowable catch	Preseason troll allocation	Preseason sport allocation	All-gear observed catch	Troll catch	Sport harvest	Troll deviation	Sport deviation	Troll %	Sport %
1999	1.15	192,800	175,910	140,728	35,182	198,842	132,741	53,158	7,987	-17,976	75.5	30.2
2000	1.14	189,900	173,134	138,507	34,627	186,493	133,963	41,439	4,544	-6,812	77.4	23.9
2001	1.14	189,900	173,134	138,507	34,627	186,919	128,692	44,725	9,815	-10,098	74.3	25.8
2002	1.74	356,500	332,570	266,056	66,514	357,133	298,132	45,504	-32,076	21,010	89.6	13.7
2003	1.79	366,100	341,758	273,406	68,352	380,152	307,380	49,239	-33,974	19,113	89.9	14.4
2004	1.88	383,500	358,409	286,727	71,682	417,019	321,876	55,413	-35,149	16,269	89.8	15.5
2005	2.05	416,400	389,985	311,916	77,979	390,470	304,283	63,370	7,633	14,609	78.0	16.3
2006	1.69	346,800	320,830	256,664	64,166	362,402	263,950	69,838	-7,286	-5,672	82.3	21.8
2007	1.60	329,400	304,683	243,746	60,937	328,504	239,662	61,871	4,084	-934	78.7	20.3
2008	1.07	170,000	156,764	125,411	31,352	173,040	126,079	32,670	-668	-1,318	80.4	20.8
2009	1.33	218,800	202,047	161,638	40,407	230,401	158,814	48,088	2,824	-7,681	78.6	23.8
2010	1.35	221,800	204,829	163,863	40,966	231,591	177,808	44,284	-13,945	-3,318	86.8	21.6
2011[a]	1.69	294,800	272,574	218,059	54,515	289,980	220,403	49,878	-2,344	4,637	80.9	18.3
06-10 average		257,360	237,831	190,264	47,566	265,188	193,263	51,350	-2,998	-3,785	81.4	21.7
01-10 average		299,920	278,492	222,794	55,698	305,763	232,668	51,500	-9,874	4,198	82.9	21.1

[a] Preliminary estimate for catches and harvest.

SOUTHEAST ALASKA KING SALMON MANGEMENT PLAN

ALLOCATION

In March of 1992, the board allocated the SEAK king salmon treaty quota between the commercial and sport fisheries. A total of 20,000 king salmon were allocated to the commercial net fisheries, and the rest of the available king salmon were divided as follows: 83% to the commercial troll fishery and 17% to the sport fishery. Prior to this time, the estimated sport harvest of king salmon was subtracted from the allowable quota and the commercial troll fishery was managed to take the balance of the quota available. During a subsequent board meeting in early 1994, the allocation to the sport fishery was increased from 17% to 18% in 1994, to 19% in 1995, and to 20% in 1996. The sport allocation has remained at 20% since 1996.

The board also directed that the harvest of treaty fish and the "Alaska hatchery add-on" (those Alaska hatchery fish that do not count against the quota) were to be calculated separately for the sport and commercial fisheries. All wild and non-Alaskan hatchery king salmon harvested by the sport fishery are counted against the sport fish quota along with a small portion of the Alaska hatchery fish taken.

MANAGEMENT PLAN 1992-2002

The board initially adopted the plan in 1992. The plan outlined how ADF&G was to manage the marine sport fishery for its king salmon harvest allocation and provided regulatory authorities to implement the plan. The objectives of the 1992 plan were to: 1) allow uninterrupted sport fishing in marine waters for king salmon, while not exceeding the allocation and; 2) to minimize regulatory restrictions on unguided anglers, who harvest king salmon at a lower catch per unit of effort (CPUE) than do guided anglers fishing from charter vessels. The regulatory authorities to achieve these objectives included several bag limit, size limit, and gear restriction options to increase or reduce the sport harvest to meet the quota as well as options for increased catch reporting. Bag limits of two king salmon per day, two in possession, with a minimum size limit of 28 inches were to remain in effect in SEAK marine waters until it was projected (either preseason or inseason) that the total harvest would deviate by more than the management range from the allocation. The management range was set by regulation at 7.5%.

The plan was modified at board meetings in 1994, 1997, and 2000. The primary change in 1994 was to increase the sport allocation over a three-year period from 17% to 20%. In 1997, the board determined that stability was important to the sport fishery and that the plan should be modified to minimize inseason regulatory actions. Under the 1997 plan, as soon as the sport quota was determined, the department was to implement a one, two, or three fish bag limit for all anglers as needed to achieve the sport allocation. The projected harvest under the specific bag limit became the new harvest target for the sport fishery. Other significant changes in 1997 were: implementation of a four-fish annual limit for nonresidents; a prohibition on charter operators and crew from retaining king salmon when clients are onboard; and limiting the number of lines fished from charter vessels to the number of paying clients onboard but not to exceed the six line maximum. The primary changes to the plan in 2000 were to establish the sport fishery regulations prior to May 1 and have the regulations remain in effect for the entire season (except as needed for conservation), provide more specific regulatory actions to be taken at various levels of king salmon abundance, and implement more restrictive regulations on nonresidents and anglers fishing from

charter vessels. Under the 2000 plan, the commercial troll fishery continued to be managed to harvest the difference between the all-gear quota less the net allocation and projected sport harvest. Cumulative sport harvests above the sport fishery allocation came out of the troll quota and were to be paid back in future years by not implementing more liberal regulations in the sport fishery, and the cumulative number of unharvested fish (underage) was applied as an offset against excess harvests in prior or future years.

MANAGEMENT PLAN 2003-2005

In 2003 the plan was modified to include the following objectives: 1) manage the sport fishery to attain an average harvest of 20% of the annual harvest ceiling specified by the PSC after subtracting the commercial net harvest; 2) allow uninterrupted sport fishing in salt waters for king salmon, while not exceeding the sport fishery harvest ceiling; 3) minimize regulatory restrictions on resident anglers; and 4) provide stability to the sport fishery by eliminating inseason regulatory changes except those needed for conservation. The primary changes to the plan to achieve these objectives were to: require that the sport and troll fisheries be managed separately to achieve their own allocations (uncoupling of the fisheries); not use cumulative overages or underages in the sport fishery to liberalize or restrict regulations; reduce bag and/or annual limits for nonresidents at AIs above 1.2; remove additional restrictions to residents fishing on guided vessels; and implement a series of additional restrictions at lower AIs.

MANAGEMENT PLAN 2006-2008

In 2006 the king salmon AI and resulting sport allocation had been at near record levels since 2002. With relatively limited options for expanding the sport fishery at high abundance levels the sport fishery was consistently harvesting under its allocation.

The management measures within the plan were substantially modified by the board in 2006 to increase harvest during years when AIs were above 1.5. The resident bag limit was increased to three fish at AIs greater than 1.5. Nonresident bag limits were increased to two fish during May and June at AIs above 2.0 and in May when AIs are above 1.5 to 2.0. Annual limits were also increased to six fish at AIs above 2.0, to five or six fish at AIs above 1.75 to 2.0, and to four or five fish at AIs greater than 1.5 to 1.75. A management measure allowing the use of two rods per angler during March through October was also added to the plan.

In 2008 the department enacted all management measures in the plan for AIs below 1.1 and above 1.0. This was the first time these management measures had been used since they were substantially modified by the board in 2003. After implementation of these management measures by emergency order, questions arose within the department and from the public pertaining to the August exception for the Juneau sport fishing derby (the derby dates had changed) and how the four-line limit should be applied. The department sought clarification on the implementation of these management measures by polling the board.

In April of 2008 the board convened and modified provisions within the plan by emergency regulation. The board eliminated a management measure in the plan that provided exemptions to the prohibition of the retention of king salmon less than 48 inches in length by resident and nonresident anglers fishing in the Juneau derby area August 15 through August 25. The management measure restricting the maximum number of lines that may be fished from a charter vessel to four lines was also eliminated. Additionally a resident bag and possession limit of one fish, 28 inches or greater in length was added making an exception for residents fishing within

the Juneau derby area unnecessary. To balance the increased harvest by these more liberal management measures, the board increased the non-retention period by two weeks for king salmon less than 48 inches for nonresidents.

MANAGEMENT PLAN 2009-2011

A new agreement on fishery arrangements under the PST was reached between the U.S. and Canada in May 2008. One of the key elements to reaching that agreement was a 15% reduction in allowable catch of king salmon in SEAK. This reduction had significant implications for management of the sport fishery, especially at lower levels of abundance. To address this resulting reduction of allowable catch in the sport fishery the board modified harvest limits for nonresident anglers in years when the AI is 1.1 or lower. Additionally the board modified management measures when the AI is less than or equal to 1.5, to allow resident anglers the use two rods from October through the following March.

Under the various versions of the plan, the department has implemented numerous inseason regulatory actions. These actions are summarized in Table 5. Appendix A provides a detailed description of the allocation, regulatory actions, and fishery harvest results for each year that the plan has been in effect (1992–2008) with the most recent three years immediately below.

MANAGEMENT ACTIONS IN 2009

The 2009 preseason AI of 1.33 was announced in April. This level of abundance resulted in an all gear quota of 218,800, of which the 20% allocation less the net harvest totaled 40,409 king salmon. Given that the preseason king salmon AI was greater than 1.2 and less than or equal to 1.5, the newly revised management plan required a two fish bag limit for residents, a one fish bag limit for nonresidents, and a three fish annual limit for nonresident anglers. In addition, the use of two rods per angler was also allowed from October 2009 through March 2010 by residents as per the plan. These regulations were implemented by Emergency Order 1-KS-R-01-09 that became effective on April 1, 2009. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to maintain the sport harvest within the 20% average sport harvest target.

The estimate of treaty harvest for the sport fishery in 2009 was 48,088 fish. This was 7,681 fish above the 20% allocation based on the preseason AI (Table 4). Based on preseason estimates of abundance and harvest, the sport fishery took 23.8% of the all-gear quota less the net harvest.

MANAGEMENT ACTIONS IN 2010

The 2010 preseason king salmon AI of 1.35 was announced in late March. The resulting all-gear quota was 221,800 fish, of which the 20% allocation less the net harvest totaled 40,966 fish. According to the plan the sport fishery bag limits remained at two fish for residents, and a one fish with a three fish annual limit for nonresidents. Resident anglers were allowed the use of two rods per angler from October 2010 through March 2011 as directed by the plan. These regulations were implemented by Emergency Order 1-KS-R-02-10 that became effective on April 1, 2010. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to maintain the sport harvest within the 20% average sport harvest target.

Table 5.–Sport fishery regulatory actions taken under the Southeast Alaska King Salmon Management Plan to adjust king salmon harvests during 1992-2011 sport fisheries.

Year	One fish bag limit	Nonresident annual limit	Ban on take by charter crews	Two rods	Three-fish bag limit
1992	May 15-July 28		May 15–July 28		
1993[a]	June 17-Dec. 31		June 17–Dec. 31		
1994	April 15-June 30		April 15–June 30		July 30–Dec. 31
1995	Aug 17-Oct. 3[b]				
1996	June 15-Dec. 31		June 15–Dec. 31		
1997	July 7-Dec. 31	4[c]	Regionwide[d]		
1998	Sept. 9-Dec. 31	4	Regionwide		July 3–Sept. 8
1999	July 3-Dec. 31	4	Regionwide		
2000	May 3-Dec. 31[e]	May 3–June26, 2 June 27–Dec.31, 3	Regionwide		
2001	Jan. 1-Dec. 31 *Nonresidents* Jan. 1-Dec. 31 *Residents*	3 3	Regionwide		
2002	Jan. 1-April 26 *Nonresidents*		Regionwide		
2003	Jan. 1-Dec. 31 *Nonresidents*	3[c]	Regionwide		
2004	Jan. 1-Dec. 31	3	Regionwide		
2005	*Nonresidents* Jan. 1-Dec. 31 *Nonresidents*	May 3–Aug.30, 5[f] Jan. 1–May 2 and Aug.31–Dec.31, 3	Regionwide		*Residents* May 3–Aug.30[f]
2006	Jan. 1-Dec. 31.[g] *Nonresidents*	4	Regionwide	*Residents* Oct.–Mar.	*Residents* May 1–Dec.31
2007	Jan. 1-Dec. 31.[g]	4	Regionwide	*Residents* Oct.–Mar.	*Residents* May 1–Dec.31
2008[h]	Jan. 1-Dec. 31. *Nonresidents*	1-3[i]	Regionwide		
2009	Jan. 1-Dec. 31. *Nonresidents*	3	Regionwide		
2010	Jan. 1-Dec. 31. *Nonresidents*	3	Regionwide	*Residents* Oct.–Mar.	
2011	Jan. 1-Dec. 31.[g]	5	Regionwide	*Residents* Oct.–Mar.	*Residents* May 1–Dec.31

[a] Downrigger ban, June 17-Aug. 15.

[b] Action taken in response to a court order that closed commercial fisheries and capped additional sport harvest at 2,000 king salmon.

[c] An annual limit for nonresidents of four king salmon ≥28" was enacted in 1997. The annual limit for nonresidents was reduced to three king salmon ≥28 inches in 2003.

[d] Made a permanent year round regionwide regulation in early 1997 by action of the Board of Fisheries.

[e] Additional restrictions included: 1) four-line limit on charter boats; 2) closure to retention of king salmon on Wednesdays by charter anglers and nonresidents; 3) closure to retention of king salmon for nonresidents and charter anglers during August and September; and 4) closure to retention of king salmon on the outer coast from July 12 to July 31. These additional restrictions were rescinded on June 26.

[f] The bag limit increase for residents and nonresident annual limit increase in 2005 were enacted via emergency regulation.

[g] The bag limit for nonresidents was two fish in May greater than 28 inches in length.

[h] One fish 48 inches or greater in length July 16–September 30.

[i] The nonresident harvest limit (an annual limit that decreases during the year) was three fish 28 inches or greater in length January 1-June 30; two fish 28 inches or greater in length, July 1 to July 15; one fish 48 inches or greater in length, July 16 to September 30, and one fish 28 inches or greater in length October 1 to December 31. Any fish 28 inches or greater in length harvested by a nonresident anger earlier in the year applied toward their harvest limit.

The estimate of treaty harvest for the sport fishery in 2010 was 44,284 fish. This was 3,318 fish above the 20% allocation based on the preseason AI (Table 4). Based on preseason estimates of abundance and harvest, the sport fishery took 21.6% of the all-gear quota less the net harvest.

MANAGEMENT ACTIONS IN 2011

The 2011 preseason king salmon AI of 1.69 was announced in late March, resulting in an all gear quota of 294,800 fish, of which the 20% sport allocation less the net harvest totaled 54,515 fish. Given that the preseason king salmon AI was greater than 1.51 and less than or equal to 1.75, the management plan required a three fish bag limit for residents, two fish in May and a one fish bag limit for the remainder of the year, and a five fish nonresident annual limit. In addition, the use of two rods per angler was allowed from October 2011 through April 2012 as per the plan. These regulations were implemented by Emergency Order 1-KS-R-02-11 that became effective on April 1, 2011. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to maintain the sport harvest within the 20% average sport harvest target.

The preliminary harvest estimate (based on expanded creel census and logbook data) of treaty harvest is 49,878 treaty fish, which is 4,637 fish below the 20% allocation based on the preseason AI (Table 4). Based on preseason estimates of abundance and harvest, the sport fishery took 18.3% of the all-gear quota less the net harvest.

EFFORT

TOTAL NUMBER OF ANGLERS

The number of resident anglers who fished in SEAK has decreased 20 % since 1990, from a peak of about 39,000 (Figure 2). Since numbers of nonresident anglers were first estimated in 1984, there had been a steady increase from about 25,000 to almost 106,000 in 2007. Since the peak in 2007 the numbers of nonresident anglers has decreased 26% to 78,333 in 2010. The total number of anglers fishing in SEAK from 2006-2010 averaged about 122,900 annually. An estimated 107,000 anglers fished in SEAK in 2010.

CHARTER VESSEL REGISTRATIONS AND LOGBOOK PROGRAM

Since 1999, the number of registered saltwater charter vessels within SEAK has remained relatively stable (Table 6 and Figure 3). In 1998, a saltwater vessel logbook program was implemented, requiring all charter vessels operating in saltwater with a guide to obtain and complete a logbook. Summary data from the logbook program shows that on average 83% of licensed vessels reported taking clients on charter fishing trips (Table 7). From 1999 to 2008, the number of active permits remained relatively stable and averaged about 710, but the number of active permits decreased slightly to 669 in 2009 and 664 in 2010 (Figure 4).

Table 6.–Number of registered (or licensed) saltwater charter vessels in Southeast Alaska by Statewide Harvest Survey (SWHS) area, 1999 to 2010a.

SWHS area	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ketchikan	137	146	167	188	197	173	172	178	182	184	157	155
Prince of Wales Island	172	171	145	121	125	163	178	194	197	175	168	161
Petersburg/Wrangell	71	59	57	45	52	46	51	56	56	61	53	53
Sitka	222	207	232	214	209	218	239	241	242	232	202	194
Juneau	141	156	131	112	113	109	119	134	119	117	110	109
Skagway	9	9	12	14	8	8	9	9	8	7	8	4
Haines	11	10	6	3	5	9	6	5	3	4	3	3
Glacier Bay	63	75	70	70	74	82	85	83	93	108	93	85
Yakutat	15	16	17	18	19	17	18	19	20	17	13	13
Other[b]	6	4	2	3	5	6	2	7	2	2	2	2
Total	847[c]	853[c]	839[c]	788[c]	807[c]	831[c]	879[c]	926[c]	918[c]	904[c]	807[c]	778[c]

[a] Information for 1998 was incomplete – 915 of 1,504 records were missing a homeport and the majority of the records with a homeport listed were in Southeast Alaska.

[b] Operated or offloaded in multiple SWHS areas.

[c] Column is not additive. Some vessels registered in more than one SWHS area and were counted more than once.

Table 7.–Overall number of active saltwater charter vessels in Southeast Alaska by Statewide Harvest Survey (SWHS) area determined from logbook data collected in 1998-2010. Active vessels are those that turned in logbook forms reporting at least one trip with clients.

SWHS area	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ketchikan	94	106	115	136	151	162	150	155	142	156	141	130	129
Prince of Wales Island	115	147	145	125	103	106	140	223	237	243	183	162	146
Petersburg/Wrangell	42	50	45	50	35	41	38	120	133	117	53	54	52
Sitka[a]	162	173	172	196	190	180	190	248	255	259	222	194	180
Juneau	88	100	126	100	86	93	91	138	137	133	112	105	88
Skagway	8	9	9	11	13	8	7	12	11	11	6	8	5
Haines	7	9	6	5	3	5	7	6	4	4	4	3	4
Glacier Bay[a]	61	52	57	59	56	61	69	116	122	130	96	84	91
Yakutat	17	12	14	15	14	15	14	14	15	15	14	10	11
Other[b]	22	6	4	2	3	5	6	--	--	--	--	--	--
Total	616	664	693	699	654	676	712	737[c]	747[c]	767[c]	757[c]	670[c]	644[c]
Percent of licensed vessels active, 99-10[d]	--	78%	81%	83%	83%	84%	86%	84%	81%	84%	84%	83%	83%

[a] Beginning in 2000, the northern section of Chichagof Island (including Pelican, Elfin Cove, Hoonah, and the southern half of Icy Straight and Cross Sound) was re-assigned to SWHS Area G (Glacier Bay) and removed from SWHS Area D (Sitka). This was the primary reason for the dramatic increase in active vessels for the Glacier Bay area and the decrease in active vessels for the Sitka area between 1999 and 2000.

[b] Operated and offloaded fish and/or clients in more than one SWHS area during a given year.

[c] Column is not additive. Some vessels fished in more than one SWHS area and counted more than once, but were identified as "Other."

[d] Percent of active participants in 1998 could not be calculated because the number of registered vessels is unknown.

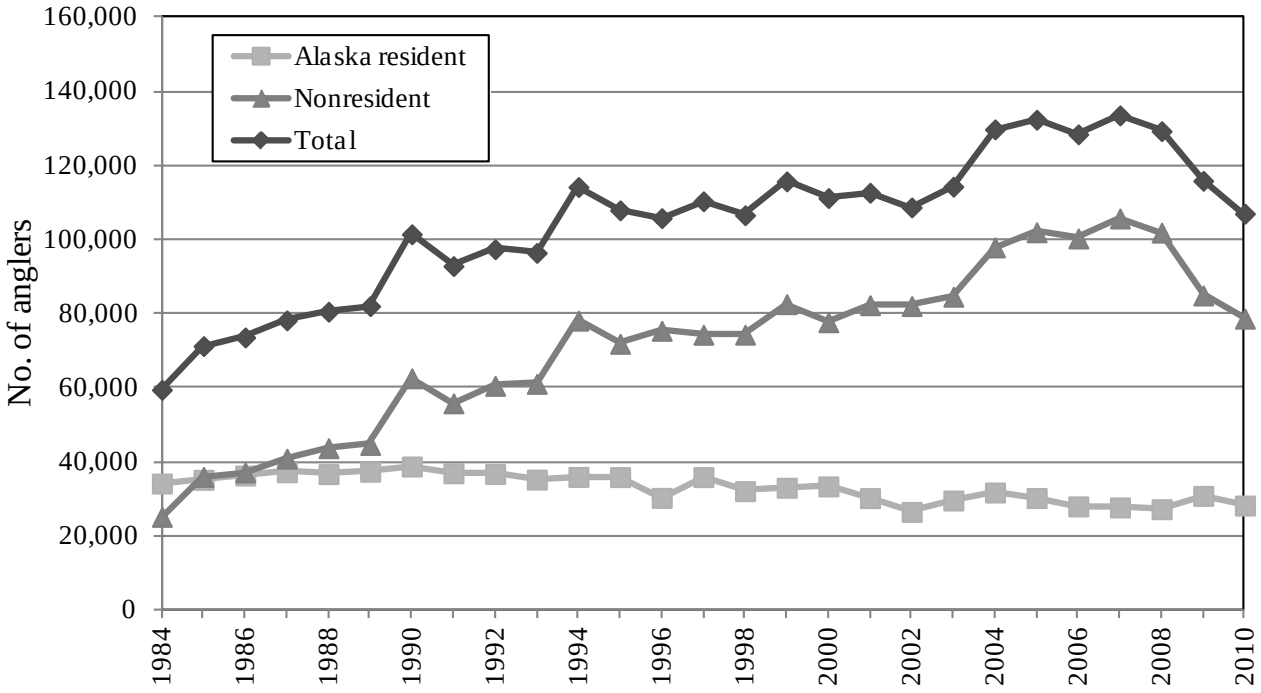

Figure 2.–Number of resident and nonresident anglers who fished in Southeast Alaska, 1984-2010.

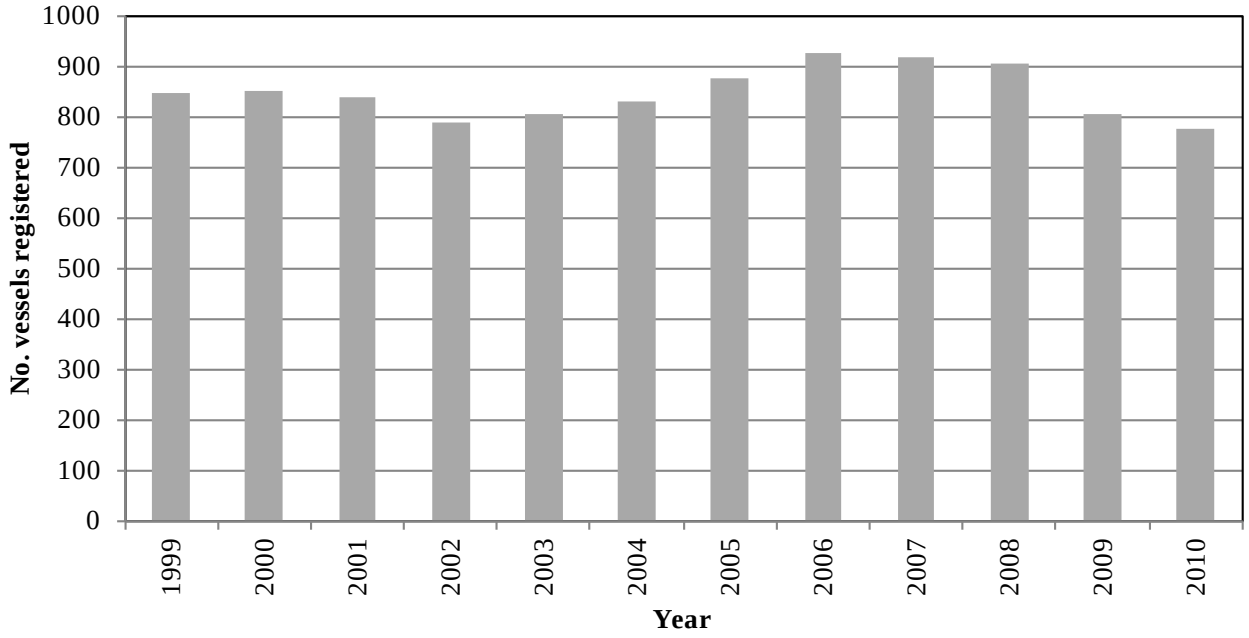

Figure 3.–Number of saltwater charter vessels registered in Southeast Alaska, 1999–2010.

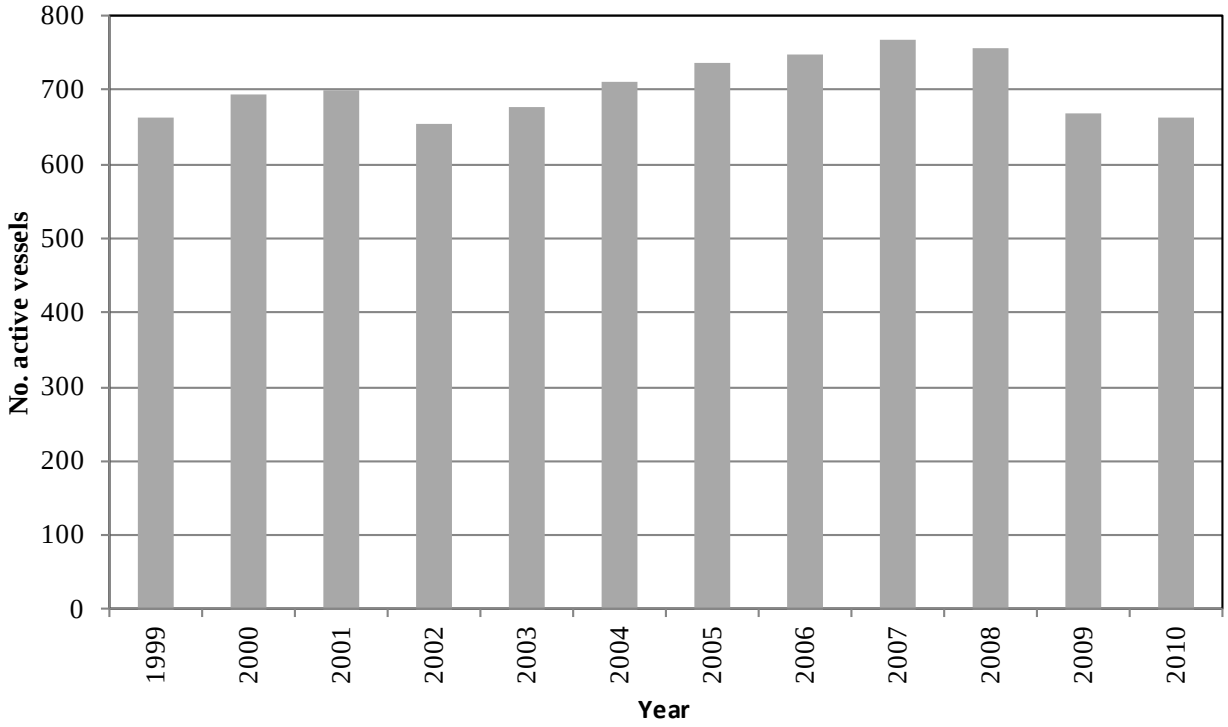

Figure 4.–Number of active marine charter vessels in Southeast Alaska as reported in logbook data, 1999–2010. Active vessels are those that turned in logbook forms with at least one trip with clients reported.

HARVEST

REGIONWIDE HARVEST

Marine and freshwater sport harvest of king salmon in SEAK from 1977 to 1988 was relatively stable; however, harvest began increasing rapidly in 1989 (Table 8). From 1977 to 1990, the average harvest was 24,500 fish, while the 1991–2000 average was 56,400 fish. From 2001 to 2007 the total sport harvest was at record levels, averaging 78,000 king salmon. The king salmon harvest in 2008 (49,300 fish) was the lowest in 16 years. The sport harvest of king salmon increased to 69,600 fish in 2009 and was 58,500 fish in 2010.

Distribution of king harvest by area in SEAK has changed substantially since the 1980s (Figure 5 and Table 8). Average harvest in the Ketchikan area remained stable from 1977 to 1990 and 1991 to 2000, while during the same time period, average harvest in the PWI, Sitka, Glacier Bay, and Yakutat areas increased five to 11 fold. During 1977–1990, 76% of the SEAK harvest was taken in Juneau (34%), Ketchikan (26%) and Petersburg-Wrangell (16%). The proportion of the harvest taken in these three ports had dropped to only 46% by 2000. The outer coast fisheries at Sitka and PWI increased from an average of 17% of the total Southeast harvest in 1977–1990 to 46% by 2000. The outer coast fisheries at Sitka and PWI continued to average 46% of the total SEAK harvest in 2001–2010. During the most recent five years (2006–2010), the portion of the harvest taken on the outer coast has remained relatively steady at 45%.

Table 8.–Estimated annual marine and freshwater sport harvest of king salmon in Southeast Alaska by area, 1977-2010. Estimates were obtained from the Statewide Harvest Survey.

Year	Ketchikan	Prince of Wales	Petersburg-Wrangell	Sitka	Juneau	Haines Skagway	Glacier Bay	Yakutat	Total
1977	4,672	811	2,671	1,738	6,377	471	356	353	17,449
1978	3,845	1,817	2,109	1,841	5,686	769	315	257	16,639
1979	4,165	863	2,173	2,054	5,935	644	282	445	16,561
1980	5,415	1,274	3,495	1,489	7,068	792	241	439	20,213
1981	5,683	1,294	2,906	1,955	7,722	1,372	184	184	21,300
1982	6,215	933	4,076	1,781	10,614	1,592	147	398	25,756
1983	7,968	1,543	3,332	2,108	5,431	1,426	157	356	22,321
1984	5,063	1,095	3,067	2,251	8,948	1,313	129	184	22,050
1985	6,170	534	4,060	1,430	10,376	2,041	186	61	24,858
1986	6,197	987	3,906	1,902	7,213	2,054	183	109	22,551
1987	5,826	649	3,534	2,537	9,857	1,419	258	244	24,324
1988	7,422	1,135	4,668	3,539	7,884	789	438	285	26,160
1989	7,642	2,599	4,702	5,569	9,375	758	344	82	31,071
1990	12,784	5,564	10,185	8,041	12,349	1,809	369	117	51,218
77–90 average	6,362	1,507	3,920	2,731	8,203	1,232	256	251	24,462
Percent	26%	6%	16%	11%	34%	5%	1%	1%	
1991	11,887	6,749	8,011	13,243	16,914	679	2,385	624	60,492
1992	8,010	4,381	5,746	11,139	11,886	181	1,071	478	42,892
1993	6,028	8,367	6,132	13,464	13,118	844	716	577	49,246
1994	5,448	7,006	4,217	12,263	11,407	636	576	812	42,365
1995	3,543	9,063	4,085	17,342	11,428	1,243	895	2,068	49,667
1996	5,437	6,833	5,039	19,743	14,684	777	1,384	3,611	57,508
1997	5,257	7,830	6,299	28,986	15,521	1,609	3,093	2,929	71,524
1998	3,242	10,232	3,692	24,547	8,778	691	1,314	2,517	55,013
1999	7,916	8,518	9,502	28,548	11,574	1,168	2,095	2,760	72,081
2000	9,570	6,755	8,926	18,888	12,126	1,342	3,217	2,349	63,173
91–00 average	6,634	7,573	6,165	18,816	12,744	917	1,675	1,873	56,396
Percent	12%	13%	11%	33%	23%	2%	3%	3%	
2001	10,348	7,455	9,962	24,205	15,215	1,252	2,711	1,143	72,291
2002	12,366	11,917	8,542	17,994	13,364	1,550	2,838	966	69,537
2003	11,788	7,793	7,465	21,727	13,679	2,117	3,325	1,476	69,370
2004	14,393	10,120	7,958	26,443	14,756	1,895	3,601	1,406	80,572
2005	16,483	13,615	8,988	26,698	14,948	1,359	3,343	1,141	86,575
2006	10,084	12,670	10,972	34,751	11,163	1,302	3,488	1,364	85,794
2007	11,370	11,633	10,797	30,879	10,372	1,300	5,363	1,134	82,848
2008	11,030	3,894	5,669	15,337	10,524	450	1,671	690	49,265
2009	22,633	5,793	5,328	18,336	12,169	735	3,277	1,294	69,565
2010	10,128	7,014	3,987	23,515	10,085	742	2,072	960	58,503
01–10 average	13,062	9,190	7,967	23,989	12,628	1,270	3,169	1,157	72,432
Percent	18%	13%	11%	33%	17%	2%	4%	2%	

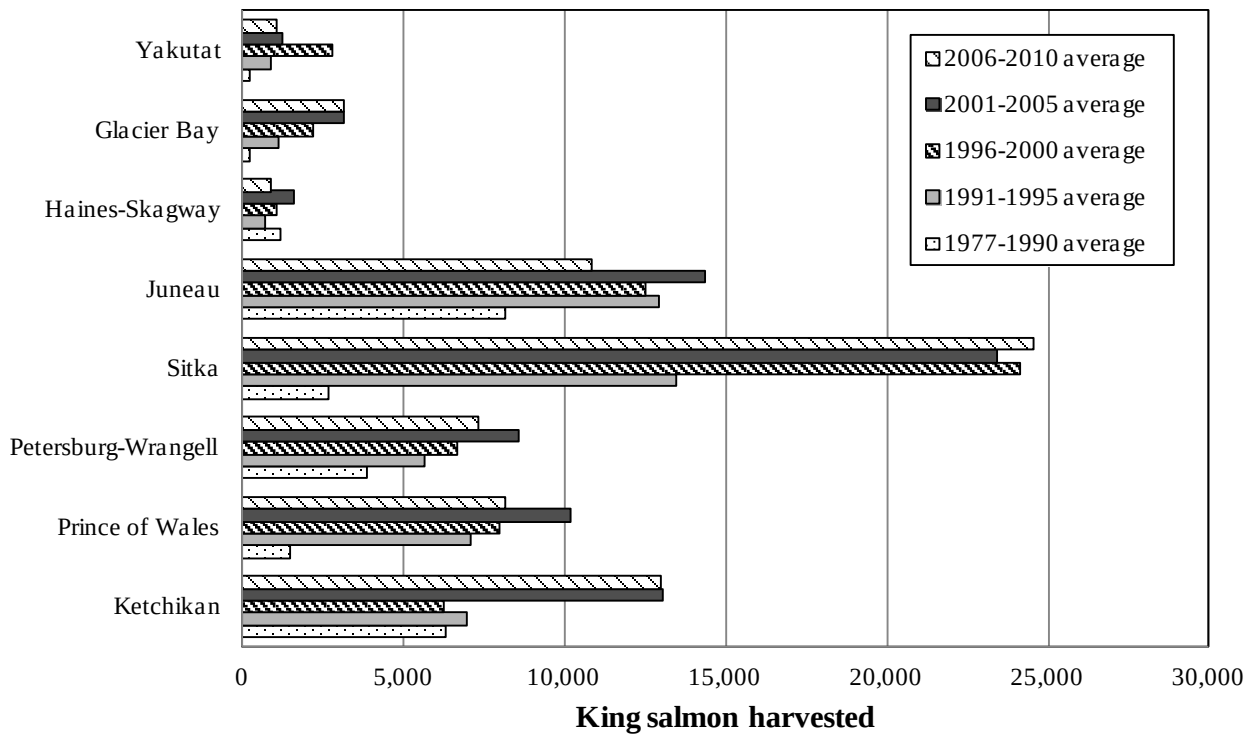

Figure 5.–Average estimated distribution of king salmon harvest in Southeast Alaska for 1977–1990, 1991–1995, 1996–2000, 2001–2005, and 2006–2010 as estimated by the Statewide Harvest Survey

DISTRICT 8 AND 11 HARVESTS

In February 2005, the U.S and Canada reached a bilateral terminal harvest sharing agreement for directed Taku and Stikine river king salmon fisheries to occur in years when an allowable catch of large king salmon (≥660 mm MEF) exists. An allowable catch exists when the preseason forecast or inseason projection of the terminal run exceeds the escapement target plus the combined Canada, U.S., and test fishery base level harvests (average harvests for the years 1985–2003). In March 2005, immediately after the harvest sharing agreement was established, the board approved emergency regulations containing management measures that would be implemented for directed sport and commercial king salmon fisheries in District 8 and 11 salt waters later that year. At the February 2006 SEAK finfish meeting, the board adopted management provisions for directed king salmon sport fisheries in District 8 specific to the Stikine River (5 AAC 47.057) and District 11 for the Taku River (5 AAC 47.021(e)). These liberalized sport fishing regulations include the use of two rods per angler for resident and nonresident anglers increased bag and possession limits for resident anglers; and increased bag, possession, and annual limits for nonresident anglers.

In 2009, 2010, and 2011, preseason terminal run forecasts for large Stikine River king salmon indicated U.S. allowable catches of 390, 0, and 190 large fish, respectively, over and above the sport base level harvest of 2,815 large fish. Sport fishing regulations were liberalized in 2009 and 2011 in District 8 consistent with 5 AAC 47.057, but not in 2010 since there was no allowable catch that year. Emergency order action in 2011, effective June 21, rescinded the

liberalized regulations three and a half weeks prior to the July 15 end date specified in regulation after inseason data indicated that the terminal run was below the threshold for an allowable catch. The sport harvest of large Stikine River king salmon in 2009, 2010, and 2011 was 761, 965, and 963, respectively; all significantly lower than the average for the base level period, but also well below the average harvest of 2,636 fish taken during the first three years of directed fishing (2005–2007).

Preseason forecasts for the large Taku River king salmon in 2009, 2010, and 2011 indicated U.S. allowable catches of 8,257, 1,782, and 1,533 fish, respectively, over and above the sport base level harvest of 2,566 large fish. Sport fishing regulations were liberalized in District 11 each year during the 2009–2011 period, consistent with 5 AAC 47.021(e). In 2011, the liberalized regulations were rescinded on June 21; 10 days prior to the June 30th end date specified in regulation, after inseason data indicated that the terminal run was not large enough to provide an allowable catch. The sport harvest of large fish in 2009, 2010, and 2011 was 1,287, 1,406, and 1,065, respectively; all significantly lower than the average for the base level period. Directed fisheries were not held in 2007 and 2008 as there was no allowable catch in those years. Sport harvests during the first two directed fisheries in 2005 (2,967 fish) and 2006 (2,396) were comparable to the average for the base level period.

HARVEST BY RESIDENT AND NONRESIDENTS

Marine and freshwater harvest of king salmon by both Alaska resident and nonresident anglers have been estimated since 1987 (Table 9 and Figure 6). The proportion of fish taken by nonresident anglers increased from 28% in 1987 to a peak of 68% in 1994. In response to increasing harvest, the board implemented annual limits for nonresidents in 1997. Annual limits, as well as lower bag and possession limits for nonresidents, have been effective in reducing the proportion of the total harvest taken by nonresidents. During the last five years (2006–2010), nonresidents have accounted for 55% of the total harvest of king salmon.

CHARTER HARVESTS

Mandatory logbooks for marine fishing from charter vessels were implemented for all of Alaska in 1998. The logbook estimates of king salmon harvests for SEAK have varied from 30,000 to over 57,000 during 1998–2010 (Table 10). An average of 51% of the charter harvest from 1998 to 2010 occurred in the Sitka area, with an additional 23% in the Prince of Wales area.

ALASKA HATCHERY COMPOSITION OF MIXED STOCK HARVESTS

Mixed stock sport harvests of king salmon have been extensively sampled for CWTs since 1983. Alaska hatchery contributions for the major mixed stock fisheries have been substantial, especially in Ketchikan, including east PWI harvests, and Juneau (Table 11). The average hatchery percentage in the sport harvest from 2001 to 2010 has been 55% in Ketchikan, 48% in Juneau, and 57% in the Haines/Skagway sport fisheries. The mixed stock hatchery contribution percentage in the Petersburg/Wrangell area declined during the same period because all harvest in the Wrangell Narrows terminal area has been subtracted off as a terminal fishery since 1997. In the outer coast fisheries, the average percentage of Alaska hatchery fish has been much lower (west PWI 6%, Sitka 10%).

Table 9.–Estimate marine and freshwater sport harvest of king salmon by Alaska resident and nonresident anglers in Southeast Alaska by area as estimated by the Statewide Harvest Survey, 1987–2010.

Year	Ketchikan	Prince of Wales	Petersburg-Wrangell	Sitka	Juneau	Haines-Skagway	Glacier Bay	Yakutat	Total
Alaska resident harvests									
1987	3,880	465	2,308	2,000	8,580	98	121	18	17,470
1988	2,974	582	2,296	2,406	7,083	218	399	124	16,082
1989	4,690	1,048	2,338	4,222	8,109	256	28	13	20,704
1990	4,466	1,346	4,431	4,681	9,062	142	80	8	24,216
1991	4,984	1,246	4,494	7,018	11,873	203	1,045	200	31,063
1992	3,646	1,195	3,419	5,480	9,245	102	211	189	23,487
1993	3,071	2,300	3,081	6,767	10,228	152	161	230	25,990
1994	1,398	917	1,456	2,035	7,052	228	134	155	13,375
1995	1,309	1,936	2,390	4,722	7,682	208	387	149	18,783
1996	2,303	608	2,036	5,388	9,348	236	352	373	20,644
1997	2,497	2,111	2,803	12,298	11,251	717	1,966	106	33,749
1998	1,117	1,992	1,937	6,992	6,595	100	643	215	19,591
1999	4,527	2,166	5,903	11,648	7,938	421	824	502	33,929
2000	5,555	2,219	5,771	6,908	9,412	403	1,837	111	32,216
2001	5,569	1,091	4,689	6,846	10,881	412	1,147	240	30,875
2002	7,313	2,644	4,966	6,185	8,565	630	995	263	31,561
2003	6,880	1,981	4,663	6,717	9,860	949	2,095	103	33,248
2004	7,519	2,035	3,416	9,641	11,560	983	1,538	299	36,991
2005	8,339	3,314	4,550	8,267	10,796	634	1,581	219	37,700
2006	4,036	3,123	5,307	8,770	8,696	565	1,266	240	32,003
2007	5,050	1,933	4,557	8,356	8,380	460	2,183	132	31,051
2008	5,300	1,316	3,468	3,292	8,808	159	453	250	23,046
2009	17,024	1,697	3,670	4,402	9,784	456	909	455	38,397
2010	6,487	1,550	2,780	7,540	8,859	441	779	190	28,626
92-02 average	3,482	1,744	3,496	6,843	8,927	328	787	230	25,837
03-10 average	7,579	2,119	4,051	7,123	9,593	581	1,351	236	34,199
Nonresident harvests									
1987	1,946	184	1,226	537	1,277	1,321	137	226	6,854
1988	4,448	553	2,372	1,133	801	571	39	161	10,078
1989	2,952	1,551	2,364	1,347	1,266	502	316	69	10,367
1990	8,318	4,218	5,754	3,360	3,287	1,667	289	109	27,002
1991	6,903	5,503	3,517	6,225	5,041	476	1,340	424	29,429
1992	4,364	3,186	2,327	5,659	2,641	79	860	289	19,405
1993	2,957	6,067	3,051	6,697	2,890	692	555	347	23,256
1994	4,050	6,089	2,761	10,228	4,355	408	442	657	28,990
1995	2,234	7,127	1,695	12,620	3,746	1,035	508	1,919	30,884
1996	3,134	6,225	3,003	14,355	5,336	541	1,032	3,239	36,865
1997	2,760	5,719	3,496	16,688	4,270	892	1,127	2,823	37,775
1998	2,125	8,240	1,755	17,555	2,183	591	671	2,302	35,422
1999	3,389	6,352	3,599	16,900	3,636	747	1,271	2,258	38,152
2000	4,015	4,536	3,155	11,980	2,714	939	1,380	2,238	30,957
2001	4,779	6,364	5,273	17,359	4,334	840	1,564	903	41,416
2002	5,053	9,273	3,576	11,809	4,799	920	1,843	703	37,976
2003	4,908	5,812	2,802	15,010	3,819	1,168	1,230	1,373	36,122
2004	6,874	8,085	4,542	16,802	3,196	912	2,063	1,107	43,581
2005	8,144	10,301	4,438	18,431	4,152	725	1,762	922	48,875
2006	6,048	9,547	5,665	25,981	2,467	737	2,222	1,124	53,791
2007	6,320	9,700	6,240	22,523	1,992	840	3,180	1,002	51,797
2008	5,730	2,578	2,201	12,045	1,716	291	1,218	440	26,219
2009	5,609	4,096	1,658	13,934	2,385	279	2,368	839	31,168
2010	3,641	5,464	1,207	15,975	1,226	301	1,293	770	29,877
92-02 average	3,533	6,289	3,063	12,895	3,719	699	1,023	1,607	32,828
03-10 average	5,909	6,948	3,594	17,588	2,619	657	1,917	947	46,832

Table 10.–Estimated charter harvest of king salmon (clients only) in Southeast Alaska from the charter logbook database, 1998–2010. SWHS = Statewide Harvest Survey.

SWHS area	1998	1999	2000	2001	2002	2003	2004	2005[a]	2006	2007	2008	2009	2010	98-10 average	% of total
Ketchikan	1,144	4,116	2,968	4,807	4,956	6,254	6,256	6,662	4,898	4,621	2,405	2,768	2,491	4,180	10%
Prince of Wales	10,895	7,633	5,440	7,811	11,293	8,750	14,680	14,568	15,016	12,159	3,098	4,142	5,570	9,312	23%
Petersburg/Wrangell	1,024	979	651	1,099	831	905	686	1,600	1,693	1,231	430	346	354	910	2%
Sitka[b]	18,072	17,462	14,834	19,360	20,954	21,286	27,181	24,658	29,757	27,187	13,077	15,566	16,385	20,445	51%
Juneau	2,060	3,035	2,601	2,841	2,828	2,504	2,871	2,597	1,640	1,877	807	1,033	602	2,100	5%
Haines/Skagway	1,050	1,203	1,461	1,335	998	1,713	1,280	1,056	618	476	153	236	193	906	2%
Glacier Bay[b]	525	505	1,672	2,304	2,708	1,912	3,822	2,431	2,865	3,396	891	1,875	1,593	2,038	5%
Yakutat	219	239	433	792	542	242	239	262	270	288	312	410	112	335	1%
Total	34,989	35,172	30,060	40,349	45,110	43,566	57,015	53,834	56,757	51,235	21,173	26,376	26,376	40,155	

[a] Unique angler identification information was not collected, so harvest is for all anglers. Crew members were not allowed to retain king salmon.

[b] The boundary between the Sitka and Glacier Bay SWHS areas was modified in 2000.

Table 11.–Estimated percentages of Alaska hatchery king salmon by area in selected marine sport fisheries. Some terminal harvests excluded.

Year	Ketchikan/ East Prince of Wales Is.	West Prince of Wales Is.	Petersburg/ Wrangell	Sitka	Juneau	Haines/ Skagway
1983	6		1		1	
1984	18		7		7	0
1985	33		7		10	0
1986	33		15		18	0
1987	21		20	2	23	1
1988	27		26	2	17	0
1989	36		19		12	3
1990	46				22	6
1991	55		39		26	0
1992	46	4	25	11	25	
1993	42	2	14	11	17	9
1994	41	3	21	12	33	2
1995	22	4	40	36	45	73
1996	39	6	37	17	28	13
1997	34	5	8	11	22	51
1998	49	1	14	4	37	36
1999	48	3	24	12	39	23
2000	51	4	30	9	58	69
2001	74	10	14	15	56	35
2002	63	2	23	10	60	67
2003	51	4	13	14	55	62
2004	51	1	26	7	60	57
2005	61	5	8	9	34	62
2006	40	4	18	4	31	51
2007	47	7	17	10	50	72
2008	55	14	14	12	46	39
2009	49	4	15	7	56	57
2010	57	6	11	8	36	65
83–90 average	28		14	2	14	1
91–00 average	43	4	25	14	33	31
01–10 average	55	6	16	10	48	57

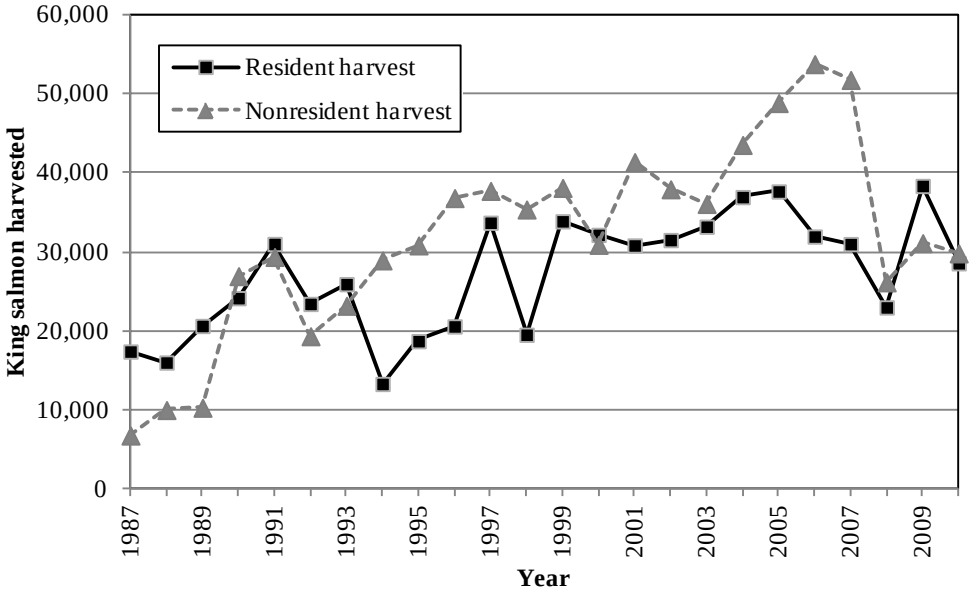

Figure 6.–Estimated harvest of king salmon by resident and nonresident anglers in Southeast Alaska, 1987–2010.

TIMING OF MARINE HARVEST

The midpoint of the marine waters harvest of treaty king salmon typically occurs in mid to late June (Figure 7). On average, 46% of the total regional harvest occurs in the 4-week period from approximately May 23 to June 19. This time period encompasses a 3-day weekend, when fishing effort is high due to the Memorial Day holiday and salmon derbies in Sitka, Ketchikan, and Petersburg, as well as the time period when harvest per unit of effort (HPUE) is at or near its annual peak. In 2011, the midpoint of the harvest occurred in early to mid June (Figure 7), and 28% of the harvest occurred in the four-week period from approximately May 9 to June 5.

HARVEST PER UNIT EFFORT IN MARINE FISHERIES

Over the past five years, HPUE for king salmon in Sitka has averaged far above HPUE in Juneau and Ketchikan (Figure 8). HPUE on the west coast of PWI is also higher than inside ports, but not as high as in Sitka. The higher HPUE in outer coast fisheries is partly due to better access to large numbers of non-Alaskan stocks migrating by the outer coast and the movement of the charter fleet since 1994 to very productive fishing grounds around the outer coast of Kruzof Island near Sitka. Also, guided anglers constitute a larger percentage of the fisheries in Sitka and west PWI. Guided anglers generally have HPUEs for king salmon that are about twice those of non-guided anglers.

Peak HPUE for king salmon generally occurs in June (Figure 8). HPUE generally declines through the month of July and by early August HPUE is generally very low in Juneau and Ketchikan. In Sitka and Craig, however, HPUE often remains high until about August 1, and then declines steadily to low levels by September 1.

During the spring, king salmon is the only species of salmon available to marine anglers in large numbers. In July, HPUE for pink and coho salmon increases rapidly and normally far exceeds HPUE for king salmon (see example for Juneau in Figure 9). As HPUE for other salmon species increases, most anglers begin to target pink and coho salmon for the balance of the fishing season.

KING SALMON MANAGEMENT ISSUES AND BOARD PROPOSALS

The board received five proposals for consideration at the February 2012 meeting that, if adopted, would modify management of the king salmon sport fishery in SEAK. Only one proposal seeks modification of the king salmon management plan, one proposal seeks to establish a freshwater king salmon fishery regionally and the remaining three are area specific proposals.

KING SALMON MANAGEMENT PLAN

Proposal 246 was submitted to clarify existing regulatory language pertaining to whether or not an angler may retain species other than king salmon when the use of two rods is allowed under the Southeast Alaska King Salmon Management Plan. Confusion exists over whether or not anglers may retain species other than king salmon when fishing with two rods. The plan states that at AIs from 1.50 to 1.1 two rods are allowed for resident anglers from October through March when fishing for king salmon; however, for AI greater than 1.51 it merely states that anglers may use two rods from October through March. The Southeast Alaska King Salmon Management Plan allows the use of two rods for all anglers from October through March at king salmon AIs of 1.51 or greater. Without this change there will continue to be no clear intent for the harvest of other species under the plan.

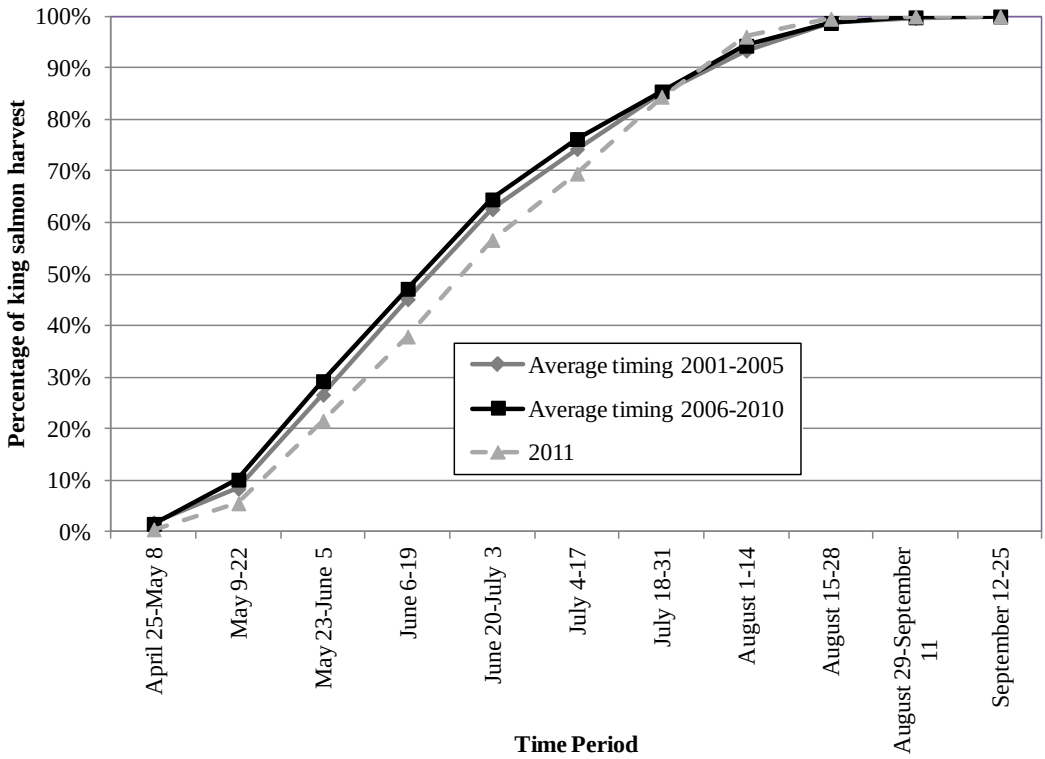

Figure 7.–Average timing of treaty king salmon harvest by two-week periods for the Southeast Alaska marine sport fishery for 2001–2005, 2006–2010, and 2011 as determined by creel surveys.

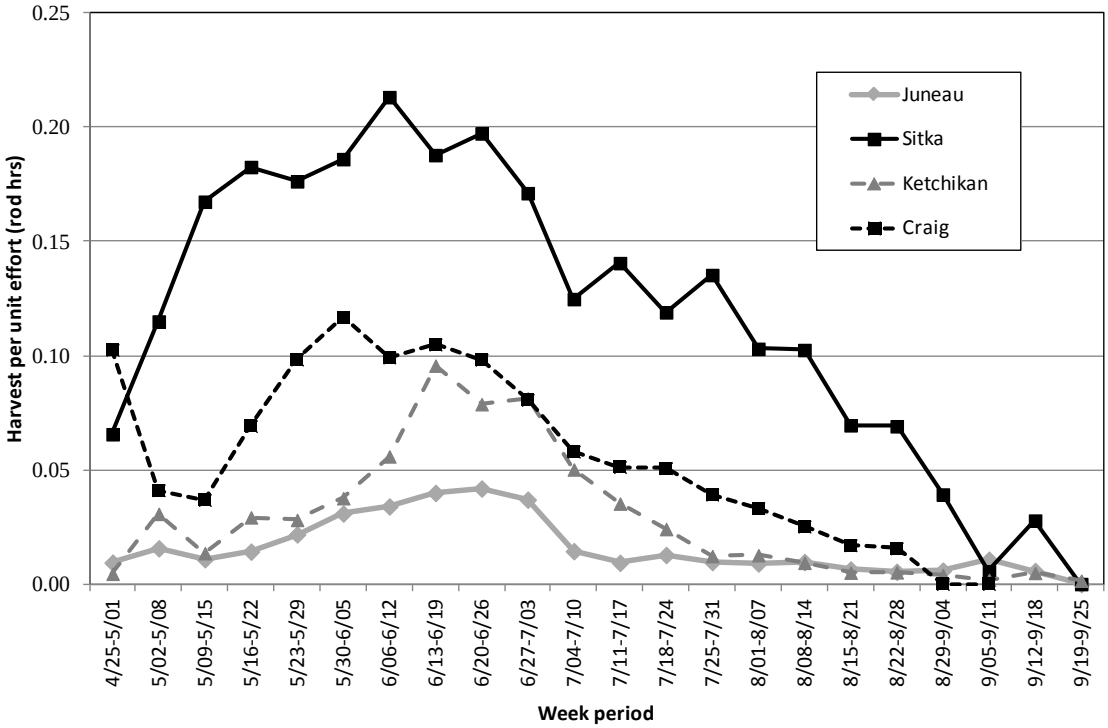

Figure 8.–Average weekly HPUE (harvest per rod-hour of salmon fishing effort) for king salmon in the Juneau, Ketchikan, Sitka, and west Prince of Wales Island marine sport fisheries as determined by creel surveys, 2007–2011.

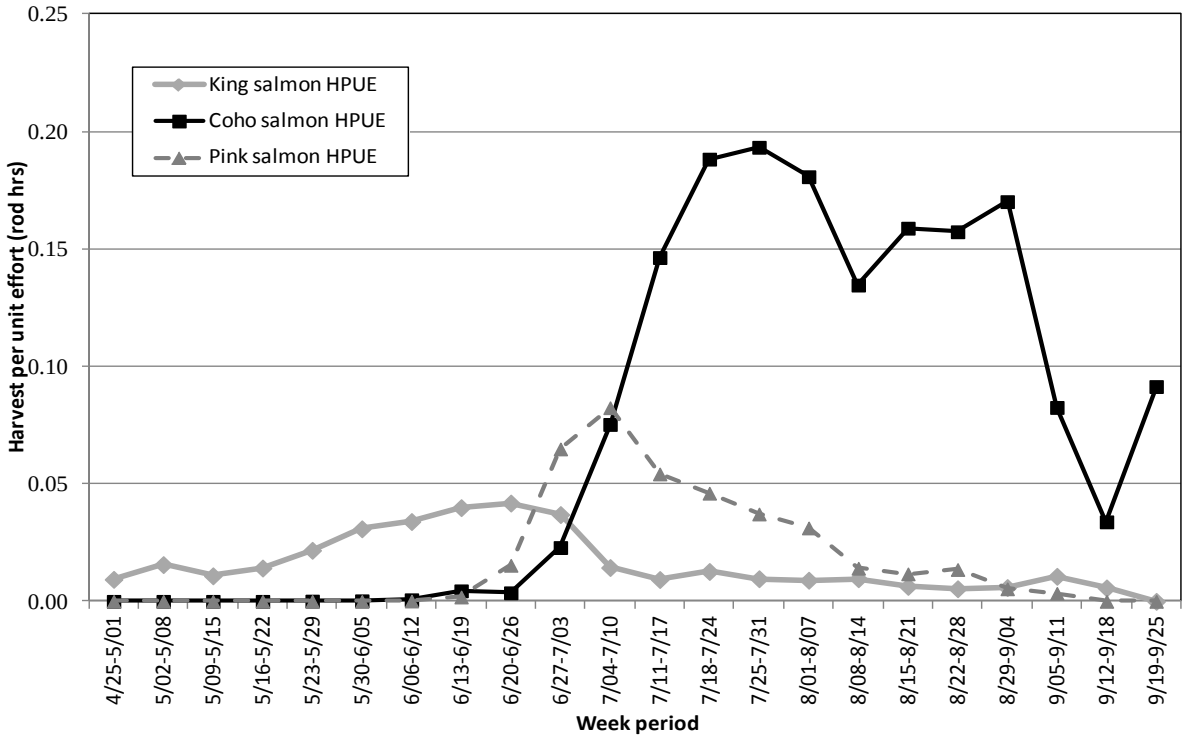

Figure 9.–Estimated weekly HPUE (harvest per rod-hour of salmon fishing effort) for king salmon in the Juneau, Ketchikan, Sitka, and west Prince of Wales Island marine sport fisheries as determined by creel surveys, 2007–2011.

FRESHWATER KING SALMON FISHERIES

Proposal 250 would open sport king salmon fisheries in the fresh waters of SEAK east of the longitude of Cape Fairweather and proposal 255 would specifically open a sport king salmon fishery in the Taku River.

Sport fishing for king salmon has been closed since 1963 in the fresh waters of SEAK east of the longitude of Cape Fairweather, including the Taku River drainage to rebuild and protect king salmon stocks. The only two exceptions in regulation to this closure are for hatchery reared king salmon in specific nonindigenous king salmon waters in the Petersburg and Sitka area. Since 1989, ADF&G has also opened other freshwater systems by emergency order to provide for the terminal harvest of hatchery king salmon.

Proposal 250 would create conservation concerns with the exceptions being the Taku, Stikine, and Chilkat rivers. The naturally occurring king salmon populations in the fresh waters of SEAK east of the longitude of Cape Fairweather occur in small clear water systems, or in larger glacial rivers having small clear water tributaries with populations that are too small to support directed sport fishing, with the exception of the Taku, Stikine, and Chilkat river. Although proposal 255 would not jeopardize the sustainability of the Taku River king salmon population it would be illegal under the PST, 2009 Annex, Chapter One, Paragraph 3(a)(3)(xiii) for the Stikine River and Paragraph 3(b)(3)(xii) for the Taku River in years with no harvestable surplus.

APPENDIX A

Appendix A1.–History of king salmon management in Southeast Alaska -1980–1999.

Prior to 1992, the sport fishery for king salmon was managed using general regionwide regulations to conserve wild stocks and provide an opportunity to harvest SEAK wild and hatchery stocks. During this time period, bag limits, established by emergency order, ranged from two to three fish and length limits ranged from a no length limit to 28 inches.

Monitoring the sport fisheries in SEAK was accomplished primarily by creel survey programs, which provided inseason and postseason harvest estimates and hatchery contribution estimates by fishery. Estimates of final harvests were obtained in approximately late June of the following year from the Statewide Harvest Survey (SWHS), which is a postal survey sent to a random sample of license holders. Creel surveys were conducted in Juneau through the entire time period, Ketchikan from 1985–1991, and in Petersburg and Wrangell from 1983–1989. In 1986, surveys were initiated in Sitka with support from US/Canada funds, but surveys in Sitka, Petersburg, and Wrangell were discontinued midseason in 1989 when these funds became unavailable. Salmon derbies were sampled for CWTs in 1990 in Sitka and in 1991 in Petersburg, Wrangell, and Sitka.

Sport harvest of king salmon was fairly stable from 1985 to 1988, averaging about 24,500 fish (including Alaska hatchery fish). In 1989, however, sport harvest began a rapid increase due primarily to increases in fishing effort and harvest in outer coastal areas in Sitka and PWI as well as increases in hatchery returns. Total harvest increased from 31,100 in 1989 to 60,500 in 1991. Unfortunately these increases occurred at a time when monitoring of sport fisheries had been virtually eliminated in Sitka and CWT sampling in the Petersburg and Wrangell fisheries was also reduced or eliminated (1990). Due to the rapid increase in harvest, coupled with a decline in fishery monitoring, the 1990 sport harvest estimate obtained from creel surveys, 38,200 fish, was 25% below the final estimate of 51,200 obtained from the SWHS. In 1990, the final treaty harvest estimate of 41,360 fish was about double the average harvest for the previous five years (22,283 treaty king salmon). This trend continued in 1991, when the sport treaty harvest increased to 45,144.

Due to the rapid rise in sport harvest, the Alaska Trollers Association submitted a request to the board in November 1991 to allocate a fixed percentage of the quota to the troll fleet and establish an allocation for the sport fishery. The board subsequently met in 1992 and provided an allocation (17% of the quota after subtracting the net allocation of 20,000 fish) to the sport fishery. At the same time, the board also adopted the Southeast Alaska King Salmon Management Plan, which directed ADF&G to manage the marine sport fishery for its allocation and provided regulatory authorities and guidelines to implement the plan. The regulatory authorities included options to change bag limits, size limits, and gear restrictions to increase or reduce the sport harvest to meet the allocation. The objectives of this plan were to: 1) allow uninterrupted sport fishing in marine waters for king salmon, while not exceeding the allocation and; 2) to minimize regulatory restrictions on unguided anglers, who harvest king salmon at a lower CPUE than do guided anglers fishing from charter vessels. Under the plan, limits of two king salmon per day, two in possession, with a minimum size limit of 28 inches were to remain in effect in SEAK/Yakutat marine waters until it was projected (either preseason or inseason) that the total harvest would deviate by more than the management range from the inseason management target. The management range was set by regulation at 7.5% (e.g., 3,100 fish for an allocation of 41,310 fish). The inseason management target was defined as the current year's allocation plus or minus cumulative deviations from past allocations.

In order to implement the new management plan, the creel survey program was expanded to more extensively monitor the sport fishery and improve inseason and postseason estimates of harvest. Surveys in Sitka, Wrangell, and Petersburg were reinstated and a creel survey was initiated in Craig (which was converted to a catch sampling program in 1993 to provide better stock composition estimates). CWTs were recovered during creel surveys and by voluntary programs at remote lodges scattered throughout the region to estimate the contribution of Alaska hatchery stocks. Time series analysis was also used to make preseason forecasts of sport harvests.

Data from the creel surveys were used to project the total sport harvest of treaty king salmon on an inseason basis. Harvest and hatchery contribution estimates were made every two weeks. The biweekly estimates were combined with the following data to project the total harvest of king salmon in SEAK sport fisheries:

1. harvest timing data for the king fisheries from past onsite surveys;
2. ratios of past SWHS harvest estimates within a given area to the creel survey estimates for the same area;
3. the ratio of the total SWHS harvest, including areas not sampled in onsite programs (Yakutat, Glacier Bay, and Haines/Skagway), to the areas sampled in onsite programs (Ketchikan, Prince of Wales, Petersburg/Wrangell, Sitka, and Juneau); and
4. comparisons of past hatchery contribution data for surveyed fisheries to current year data as collected.

The most important dates for the inseason harvest projections were June 15, July 1, and July 15. Because the bulk of the king salmon fishery occurs between the middle of May and the middle of July, early season projections were necessary to effectively limit the harvest. Harvest per unit effort (HPUE) for king salmon was also determined every week and compared with past averages.

Overview of Management Decisions - 1992

In 1992, the preseason harvest forecast exceeded the 7.5% management range. Therefore, on May 15, a one fish bag limit was implemented for all anglers and charter boat operators and crew were prohibited from retaining king salmon. These restrictions were subsequently repealed on July 28 when it was determined by inseason monitoring that the sport harvest would not reach the management target. The final treaty harvest, 35,346 fish, was below the sport allocation by 5,964 fish.

Overview of Management Decisions - 1993

In 1993, the preseason harvest projection indicated that a two fish bag limit was the appropriate regulation to stay within the allocation. However, an inseason harvest projection exceeded the management range and a one fish bag limit for all anglers, downrigger ban on all anglers, and prohibition on retention of king salmon by charter boat operators and crew were implemented on June 17. The downrigger ban was rescinded on August 16, 1993 to allow anglers to use downriggers to fish for coho salmon. The final treaty harvest, 42,677 exceeded the sport allocation by 3,067. The emergency order reducing the bag limit to one king salmon and banning take by charter operators and crew expired on December 31, 1993.

The following table summarizes the sport fishery quota and harvest that occurred under the original *Southeast Alaska King Salmon Management Plan*, 1992–1993. Over the two years of the plan, the sport fishery harvested 2,897 fish fewer than its allocation.

Year	Sport quota	Sport treaty harvest	Deviation from quota	Cumulative deviation from quota/target	Alaska hatchery add-on	Total sport harvest	Total sport harvest	Basis of quota (after subtracting net allocation)
1992	41,310	35,346	5,964	5,964	7,546	42,892	9,464	17% of 243,000
1993	39,610	42,677	-3,067	2,897	6,569	49,246	8,321	17% of 243,000 Minus 1,700

Appendix A3.–Management of the sport fishery under the revised Southeast Alaska King Salmon Management Plan - 1994–1996.

In early 1994, the board increased the allocation to the sport fishery from 17% to 18%, and then to 19% in 1995, and 20% in 1996. Other than the increase in allocation, the management plan remained essentially unchanged. During this period, PSC negotiations to arrive at the treaty quota were protracted and generally were not completed until late June. By late June, as much as 85% of the sport harvest had already been taken, making it very difficult to manage the sport fishery to achieve the objectives of the management plan.

Creel survey monitoring for 1994–1996 generally continued as during 1992–1993, however, the Petersburg and Wrangell surveys were converted to catch sampling programs to provide better stock composition estimates. Sampling in the Sitka area was also increased to provide better estimates of harvests and stock contributions.

Summary of Management Decisions - 1994

The preseason harvest forecast for 1994 with a two fish bag limit was 50,000 fish. Since the sport allocation had not yet been negotiated, the early season sport fishery had to be managed based on a guess of what the quota would be. Based on a combined sport underage of 2,897 fish from the previous seasons and an expected quota of 263,000, the 18% sport allocation would have been 47,000. Under this scenario, no inseason actions would have been necessary because the projected harvest of 50,000 was within the 7.5% management range of the expected allocation. However, preseason consultations for a Section 7 Permit under the Endangered Species Act (ESA) were ongoing with National Marine Fisheries Service. With the results of the consultations unknown, it was decided to manage conservatively. On April 15, a one fish bag limit and prohibition on retention of king salmon by charter boat operators and crew were implemented. The final quota was set in late June at 240,000 fish, which made the sport fish allocation 39,000. The more restrictive regulations were rescinded on July 1 when sport harvest was lower than expected. A three fish bag limit was implemented on July 30 but did little to increase harvest. The final sport harvest, 35,467, was below the sport allocation by 4,133 fish.

Summary of Management Decisions - 1995

The preseason forecast for 1995 with a two fish bag limit was 40,000 king salmon. ESA consultations were again ongoing and the allocation was unknown in early May when the sport fishery commenced. Therefore, early season management decisions were made based on an anticipated all-gear quota of 230,000 fish. Based on this quota and an allocation of 19%, the sport allocation of 40,000 matched closely with the preseason forecast and therefore no management actions were taken. Alaska continued managing for this quota until August 17 when the commercial king salmon fisheries were closed by court order (and a harvest cap of 2,000 additional king salmon was placed on the sport fishery). In response to the court order, the bag limit for the sport fishery was reduced to one fish from August 17 through October 3. The postseason sport treaty harvest was 35,496. But, because of the court order, actual allocations for the sport and commercial fisheries were never established. One interpretation is that the sport allocation would be determined by taking 19% of the actual combined sport and troll harvest, or about 29,500. Under this scenario, the sport harvest exceeded its quota by 5,996. Another interpretation is that each fishery's, allocation would equal their actual harvest. It is unclear to this day how to interpret results from this fishing season.

Summary of Management Decisions - 1996

For the 1996 season, king availability was forecast to be similar to 1995, and so it was expected that about 35,000 treaty king salmon would be taken with a two fish bag limit. At the beginning of the season, a number of scenarios were discussed with all-gear quotas ranging from 120,000 to 180,000. No quota was announced, however, and the season began with a two fish bag limit and early season catches were below normal. Although no quota was finalized, it was decided in early June that harvests should be limited by a one fish bag limit because indications were that the quota would be less than the harvest of 175,000 in 1995. Therefore on June 15, the bag limit was reduced to one fish and charter boat operators and crews were prohibited from retaining king salmon. The postseason harvest was 38,975 treaty king salmon. The final quota was established as a range between 140,000 and 155,000 fish. The 20 percent sport allocation ranged from 24,000 to 27,000 with a mid-point of 25,500. Assuming the mid-point allocation, the sport overage in 1996 was about 13,475 treaty fish.

The following table summarizes the sport fishery quota and harvest that occurred under the revised *Southeast King Salmon Management Plan*, 1994–1996. Because no quota was ever established for 1995, it is difficult to assess the cumulative harvest deviation for the sport fishery. However, assuming that the 1995 quota was equal to the harvest, the sport fishery exceeded its cumulative quota by 9,342 fish over the three years that this plan was in effect.

Year	Sport quota	Sport treaty harvest	Deviation from quota	Cumulative deviation from quota/target	Alaska hatchery add-on	Total sport harvest	Total sport harvest	Basis of quota (after subtracting net allocation)
1994	39,600	35,467	4,133	4,133	6,898	42,365	9,083	18% of 220,000
1995	[a]	35,496	[a]	[a]	14,171	49,667	16,524	[a]
1996	25,500	38,975	-13,475	-9,342	13,177	57,508	14,511	20% of 127,500

[a] There was no negotiated quota in 1995.

Appendix A4.–Management of the sport fishery under the second revision of the Southeast Alaska King Salmon Management Plan - 1997–1999.

In June of 1996, Alaska and the treaty representatives for the Southern U.S. signed a letter of agreement to manage king fisheries based primarily upon abundance. Under this approach, an initial quota is set based upon a preseason abundance forecast. After the first opening in the troll fishery, the quota could be modified in late July based on catch rates in the troll fishery, which were believed to be a more reliable indicator of abundance. Although fishery managers supported this approach, it meant that the final quota would not be known until after most sport harvest had occurred, and therefore adjustments would be ineffective in managing the sport fishery to achieve its share of the quota. Therefore, there was a need to modify the *Southeast Alaska King Salmon Management Plan* to make it more workable under this abundance-based approach.

In early 1997, concerns with the existing management plan were brought to the attention of the board, who subsequently revised the management plan and allocation scheme. Under the revised management plan a two fish bag limit was in place until the preseason AI was established. Once a preseason index and initial quota were obtained, ADF&G staff were to project what the annual sport harvest would be under one, two, and three fish bag limits and then implement the bag limit that came closest to obtaining the 20% allocation (based on the preseason AI). The harvest projected for the selected bag limit then became the sport fishery allocation, and additional management measures (as listed in the previous management plan) were to be implemented only if the sport harvest deviated more than 7.5% (approximately 3,000 fish) from this 'adjusted harvest target.' Inseason adjustments to the all-gear king quota based on commercial troll fishery performance were to have no affect on management of the sport fishery. The commercial troll fishery was to be managed to harvest the difference between the adjusted harvest target for the sport fishery and the all-gear quota less the net allocation. Only the portion of the deviation from the management target that is within the 7.5% management range was to be carried forward to future years.

The board also prohibited retention of king salmon by charter vessel operators and crew while chartering (year-round) and prohibited the number of lines fished from a vessel engaged in charter activities from exceeding the number of paying clients onboard. A four king salmon (28 inches or more) annual limit for nonresident anglers was also passed by the board, with a provision that it would be increased to five if the AI was 1.5 or greater. A management plan for Wrangell Narrows/Blind Slough fisheries for returns of king salmon to Crystal Lake hatchery was also implemented.

Creel survey monitoring generally continued as during 1994–1996. Estimates of stock contribution were improved by an increase in CWT sampling rates in 1998 when anglers were prohibited, by emergency order, from heading or filleting king (and coho) salmon on the fishing grounds at ports monitored with creel survey or catch sampling programs. Sampling rates for CWTs were also increased in some ports due to addition of samplers dedicated to this task.

Summary of Management Decisions - 1997

In 1997, the "preseason" AI was not announced until June 17. The "initial" 20% allocation from the quota of 277,000 was 51,300 treaty fish. At this time, enactment of a one fish bag limit was projected to limit the treaty harvest to 53,800 treaty fish, which became the management target. A one fish bag limit was implemented on July 7 and remained in effect through December 31.

Subsequently, the quota was increased to a range from 277,000 to 302,000. The postseason harvest estimate of 53,305 was 495 fish below the harvest target, but less than the lower bound of the 7.5% management range and therefore not carried over to the 1998 fishery.

Summary of Management Decisions - 1998

The 1998 fishery began with below average sport harvests in the inside fisheries and the "preseason" AI (resulting in a 263,000 fish quota) was not announced until June 25. At this time, it was projected that 41,200 treaty king salmon would be harvested by continuing with a two fish bag limit while a three fish bag limit would result in a harvest of 41,700 fish, both below the 20% allocation of 48,600. As directed under the management plan, the harvest target for the season became 41,700, and the bag limit was increased to three fish on July 3. Due to higher than expected harvest of king salmon during August in Craig and Sitka, the upper bound of the harvest target management range was exceeded. Therefore on September 9, the bag limit was reduced to one. The postseason estimate of 46,303 exceeded the harvest target by 4,603 fish. Therefore the 1,475 treaty fish above the 7.5% management range of 3,126 were subtracted from the initial 20% allocation in 1999 prior to setting bag limits and harvest targets.

Summary of Management Decisions - 1999

In 1999, the preseason AI was released June 28. In late June, the new treaty agreement was also signed, which resulted in a significant reduction of the king salmon quota for SEAK, especially at the lower AI. A preseason all-gear quota of 192,800 resulted in a 20% sport allocation of 35,182, which was reduced to 33,697 after subtraction of the 1,475 fish from the 1998 overage. When the AI was received in late June, the sport fishery was projected to take 42,800 treaty fish under a one fish bag limit. Therefore, a one fish bag limit was implemented on July 3, and 42,800 became the sport harvest target for 1999. Harvests in the sport fishery were again higher than expected.

The following table summarizes the sport fishery quota and harvest that occurred under the revised *Southeast Alaska King Salmon Management Plan*, 1997–1999. Over the three years of the plan, the sport fishery harvest exceeded the harvest target of treaty fish by a cumulative total of 14,466 fish. Because "preseason" AIs were not obtained prior to mid-June during 1997–1999, regulation changes made in early July when sport harvests were declining rapidly did not have an appreciable effect on harvests. Also, projections of final sport harvests made inseason were inaccurate and unreliable at predicting postseason harvest. Over the three years of the plan, the sport fishery harvest exceeded the harvest target of treaty fish by a cumulative total of 14,466 fish.

Year	Sport quota	Adjusted harvest target	Sport treaty harvest	Deviation from quota	Cumulative deviation from quota/target	Alaska hatchery add-on	Total sport harvest	Total sport harvest	Basis of quota (after subtracting net allocation)
1997	51,300	53,800	53,305	495	495	11,858	71,524	13,522	20% of 256,500
1998	48,600	41,700	46,303	-4,603	-4,108	7,094	55,013	8,361	20% of 243,000
1999	35,172	42,800	53,158	-10,358	14,466	17,578	72,081	19,657	20% of 161,000

Appendix A5.–Management actions – 2000–2008.

2000

In late April 2000, a preseason AI of 1.01 was announced. This index resulted in an all-gear quota of 152,850 fish, of which the 20% sport fish allocation totaled 27,535. Given that the preseason AI was less than 1.1, the newly revised management plan required that bag limits for all anglers and annual limits for nonresident anglers be reduced. Therefore, the king salmon bag and possession limit in marine waters of SEAK was decreased to one fish 28 inches or more in length on May 3, 2000. In addition, the annual limit for nonresident anglers was decreased from four to two. It was projected that these regulatory changes would decrease the sport harvest to 34,100 treaty king salmon.

Because the 20% allocation of 27,535 would still be exceeded, additional regulations were needed to reduce the harvest from 34,100. Therefore, on June 3, four additional harvest restrictions were imposed:

1. retention and possession of king salmon was prohibited if more than four lines were being fished from a chartered vessel from June 3 through June 30;
2. nonresident anglers and anglers fishing from a chartered vessel could not retain king salmon on any Wednesday from June 3 through July 31;
3. nonresident anglers and anglers fishing from a chartered vessel could not retain king salmon from August 1 through September 30; and
4. nonresident anglers and anglers fishing from a chartered vessel could not retain king salmon within two areas of the outside coast around Sitka and the west and south coasts of PWI from July 12 through July 31.

The first three restrictions applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. In aggregate, these four restrictions were projected to reduce the harvest down to the harvest target. Normally, these restrictions would have been placed into effect by May 1; however, implementation was delayed in 2000 because the revised management plan was not officially in effect until late May.

On June 5, the Alaska Sportfish Council filed for a temporary restraining order (TRO) to block implementation of the four restrictions on nonresident anglers and anglers fishing from a chartered vessel that went into effect on June 3. The request for a TRO was denied and then a "preliminary injunction" hearing was held in Juneau on June 14 based on the filing. The motion for a preliminary injunction was also denied.

In late June, review of results from the king model used to estimate coastwide abundance indicated that prior changes to the model were incorrect. Correction of the straying rates and a "recalibration" of the model resulted in a revised AI for SEAK of 1.14. Because, under the management plan, an AI of 1.1 to 1.2 results in a one fish bag limit and three fish nonresident annual limit, the four restrictions detailed above concerning the charter and nonresident fishery were rescinded on June 27. In addition, the nonresident annual limit for king salmon was increased from two to three. The one fish bag limit for all anglers and three fish annual limit for nonresident anglers remained in place for the rest of the year.

The late June revision of the preseason AI (1.14) resulted in a 34,627-fish allocation to the sport fishery. The postseason estimate of treaty harvest was 41,439 fish, which was 6,812 fish above the 20% allocation based on the preseason AI.

2001

The 2001 preseason AI of 1.14 was announced by May 1. This level of abundance resulted in an all gear quota of 189,900 and a sport allocation of 34,627. According to the plan, the sport regulations remained at one fish for all anglers with a three fish annual limit for nonresidents. Despite the reduced bag limit, harvests remained higher than expected, especially late in the season. The estimated harvest was 44,725, and based on the preseason AI, exceeded the sport allocation by 10,098 fish.

2002

The 2002 preseason AI, 1.74, was significantly higher than the prior two years. This level of abundance resulted in an all gear quota of 356,500 and a sport allocation of 66,514. According to the plan, when the preseason AI is greater than 1.5 the bag limit for resident anglers is two fish. However, because the sport fishery had a cumulative overage from prior years, nonresidents were limited to a one fish bag limit and a three fish annual limit. These regulations became effective by emergency order on April 27, 2002. The estimated sport harvest of treaty king was 45,504 fish, which was 21,010 below the 20% allocation based on the preseason AI.

The following table summarizes the sport fishery allocation and harvest that occurred since the implementation of the abundance-based treaty agreement (1999–2002). This time period encompasses two different versions of the *Southeast Alaska King Salmon Management Plan* (1999 and 2000–2002). During the first two years of the treaty agreement, king abundance was low, and the sport fishery exceeded its allocation by a combined total of 24,788 fish. During the next two years, king abundance increased and the cumulative sport overage was reduced to 13,876 fish.

2003

In April 2003, a preseason AI of 1.79 was announced. This index resulted in an all-gear quota of 366,100 fish, of which the 20% sport fish allocation totaled 68,352. Given that the preseason AI was greater than 1.2, the newly revised management plan required a two fish bag limit for residents and a one fish bag limit and three fish annual limit for nonresident anglers. These regulations were implemented by an emergency order that became effective on May 1, 2003. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to reduce the sport harvest to well below the 20% sport harvest target.

The estimate of treaty harvest for the sport fishery in 2003 was 49,239 fish. This was 19,113 below the 20% allocation based on the preseason AI.

2004

The 2004 preseason AI of 1.88 was announced on April 6. This level of abundance resulted in an all gear quota of 383,500 and a sport allocation of 71,682. According to the plan, the sport fishery bag limits remained at two fish for residents, and one fish with a three fish annual limit for nonresidents. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to reduce the sport harvest to well below the 20% sport harvest target.

The end-of-season estimate of treaty harvest was 55,413 fish, which was 16,269 fish below the 20% allocation based on the preseason AI.

2005

The 2005 preseason AI of 2.05 was announced in mid April. The resulting all-gear quota was 416,400 and the sport allocation was 77,979. Based on the performance of the sport fishery during the prior three years of high king abundance (in which the sport fishery under harvested its allocation by a total of 69,086 fish), the department decided to request permission from the board to issue an emergency regulation that would implement more liberal regulations than allowed under the *Southeast Alaska King Salmon Management Plan*. The board agreed to this approach for increasing harvest opportunity in the sport fishery, and on May 3, 2005 the resident bag limit was increased to three fish and the nonresident annual limit was increased from three to five fish. The nonresident bag and possession limits remained at one fish. These regulations were in place throughout SEAK from May 3, 2005 through August 30, 2005. Prior to and after that time the regulations were in effect, the regulations mandated by the *Southeast Alaska King Salmon Management Plan* applied (resident two fish bag limit, nonresident one fish bag limit, nonresident three fish annual limit).

The end-of-season estimate of treaty harvest was 63,370 fish, which was 14,609 fish below the 20% allocation based on the preseason AI.

2006

In April 2006, a preseason AI of 1.69 was announced. This index resulted in an all-gear quota of 346,800 fish, of which the 20% sport fish allocation less the net harvest totaled 64,166 fish. Given that the preseason AI was greater than 1.5, the newly revised management plan required a three fish bag limit for residents, a two fish in May and one fish bag limit for the remainder of the year for nonresidents, and a four fish annual limit for nonresident anglers. In addition, the use of two rods per angler was also allowed from October 2006 through March 2007 as directed by the plan. These regulations were implemented by Emergency Order 1-KS-R-02-06 that became effective on May 1, 2006. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to maintain the sport harvest within the 20% average sport harvest target.

The estimate of treaty harvest for the sport fishery in 2006 was 69,838 fish. This was 5,672 fish above the 20% allocation based on the preseason AI (Table 4).

2007

The 2007 preseason AI of 1.60 was announced in April. This level of abundance resulted in an all gear quota of 329,400 and a sport allocation of 60,937. Given that the preseason AI was again greater than 1.5, the management plan required a three fish bag limit for residents, a two fish in May and one fish bag limit for the remainder of the year for nonresidents, and a four fish annual limit for nonresident anglers. In addition, the use of two rods per angler was also allowed from October 2007 through March 2008 as per the plan. These regulations were implemented by Emergency Order 1-KS-R-02-07 that became effective on May 1, 2007. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to maintain the sport harvest within the 20% average sport harvest target.

The estimate of treaty harvest for the sport fishery in 2007 was 61,871 fish. This was 934 fish above the 20% allocation based on the preseason AI (Table 4). Based on preseason estimates of abundance and harvest, the sport fishery took 20.3% of the all-gear quota less the net harvest.

2008

The 2008 preseason AI of 1.07 was announced in early April, resulting in an all gear quota of 170,000 fish, of which the 20% sport allocation less the net harvest totaled 31,353 fish. This was a 48% reduction in the number of king salmon allocated to the sport fishery in 2007. The department issued Emergency Order 1-KS-R-03-08 on April 9 which enacted all management measures in the plan for AIs below 1.1 and above 1.0. These management measures in the plan were substantially modified by the board in 2003; this was the first time any of these management measures had been used. After implementation of the emergency order, questions arose within the department and from the public pertaining to the August exception for the Juneau sport fishing derby (the derby dates had changed) and how the four-line limit should be applied. The department sought clarification on the implementation of these management measures by polling the board, the results of which are detailed above in the section "Management Plan 2006-2008."

According to the modified plan, the sport fish bag limit was one fish for resident anglers. The nonresident bag limit was one fish during May 1-July 15 and October 1-December 31. From July 16-September 30, the nonresident bag limit was one fish 48 inches or greater in length.

The nonresident harvest limit (an annual limit that decreases during the year) was three fish 28 inches or greater in length January 1-June 30; two fish 28 inches or greater in length, July 1-July 15; one fish 48 inches or greater in length, July 16 - September 30 and one fish 28 inches or greater in length October 1-December 31. Any fish 28 inches or greater in length harvested by a nonresident anger earlier in the year applied toward their harvest limit.

These regulations were implemented by Emergency Order 1-KS-R-09-08 that became effective on May 2, 2008. These regulations applied to all marine waters in SEAK, including Yakutat, except for terminal harvest areas established by emergency order to harvest excess Alaska hatchery king salmon. These restrictions were expected to reduce the sport harvest within the 20% average sport harvest target.

The estimate of treaty harvest for the sport fishery in 2008 was 32,670 fish. This was 1,318 fish above the 20% allocation based on the preseason AI (Table 4). Based on preseason estimates of abundance and harvest, the sport fishery took 20.8% of the all-gear quota less the net harvest.