Fishery Data Series No. 96-28

Harvest Estimates for Selected Marine Sport Fisheries in Southeast Alaska During 1995

by

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September 1996

Alaska Department of Fish and Game

Division of Sport Fish

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used in Division of Sport Fish Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications without definition. All others must be defined in the text at first mention, as well as in the titles or footnotes of tables and in figures or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
metric ton	mt
milliliter	ml
millimeter	mm

Weights and measures (English)

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

Spell out acre and ton.

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
hour (spell out for 24-hour clock)	h
minute	min
second	s

Spell out year, month, and week.

Physics and chemistry

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

General

All commonly accepted abbreviations.	e.g., Mr., Mrs., a.m., p.m., etc.
All commonly accepted professional titles.	e.g., Dr., Ph.D., R.N., etc.
and	&
at	@
Compass directions:	
east	E
north	N
south	S
west	W
Copyright	©
Corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
et alii (and other people)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.,
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
number (before a number)	# (e.g., #10)
pounds (after a number)	# (e.g., 10#)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S. state and District of Columbia abbreviations	use two-letter abbreviations (e.g., AK, DC)

Mathematics, statistics, fisheries

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	C.I.
correlation coefficient	R (multiple)
correlation coefficient	r (simple)
covariance	cov
degree (angular or temperature)	°
degrees of freedom	df
divided by	÷ or / (in equations)
equals	=
expected value	E
fork length	FL
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.
mideye-to-fork	MEF
minute (angular)	'
multiplied by	x
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
standard length	SL
total length	TL
variance	Var

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ABSTRACT

Creel surveys of the Juneau, Ketchikan, Sitka, and Petersburg marine sport fisheries for chinook salmon *Oncorhynchus tshawytscha* were conducted during 1995. Estimates from these surveys were necessary to provide data for inseason management of the chinook salmon sport fishery in Southeast Alaska to meet an allocation determined by the Alaska Board of Fisheries. Dockside interviews of boat-parties completing trips were used to estimate angler effort for and total catch and harvest of chinook salmon. Harvest and total catches of other Pacific salmon and trout *Oncorhynchus* species, Pacific halibut *Hippoglossus stenolepis*, lingcod *Ophiodon elongatus,* rockfish *Sebastes* species, and Dolly Varden *Salvelinus malma* were also estimated. In addition, harvests of crab and shrimp were estimated in Ketchikan and Petersburg; while harvest of crab was estimated in Juneau. The contributions of hatchery chinook salmon and coho salmon *Oncorhynchus kisutch* to these sport fisheries were estimated from coded wire tag recovery information. Coded wire tag sampling programs conducted at Wrangell and Craig also provided hatchery contribution estimates. Scale samples and lengths were taken from chinook salmon for age composition and length-at-age estimates in all fisheries. Lengths of Pacific halibut were taken to estimate total round weight of the harvest from existing length-weight relationships.

The estimated harvest of chinook salmon was 26,977 (SE = 524), and the estimated catch was 63,493 (SE = 5,227) in the boat sport fisheries monitored. Harvests of chinook salmon were lower than the long-term average in the Ketchikan fishery, but about average in the Juneau fishery. Hatcheries in Alaska, British Columbia, Washington, and Oregon produced about 50% of the monitored chinook salmon harvest, and 37% of the total harvest was of Alaska hatchery origin. In Juneau hatcheries produced about 46% of the chinook salmon harvest, and Southeast Alaska hatcheries contributed 45% of the total harvest. In Ketchikan 25% of the harvest was of hatchery origin, and the percentage of Alaska hatchery chinook salmon harvested was estimated to be 21% of the harvest. The estimated Alaska hatchery contribution of chinook salmon was 36% in Sitka and 63% in Petersburg, and coded wire tag sampling in Craig and Wrangell revealed that chinook salmon from Alaska hatcheries contributed about 4% and 15%, respectively, of the harvest in those locations.

An estimated 46,352 (SE = 3,058) coho salmon, 34,638 (SE = 3,701) pink salmon *Oncorhynchus gorbuscha*, 43,788 (SE = 1,901) Pacific halibut, and 18,684 (SE = 1,358) rockfish were also harvested in the sampled marine boat fisheries. Hatcheries produced 7% and 38%, respectively, of the coho harvest in Juneau and Ketchikan. The Pacific halibut harvest of 9,252 (SE = 762) in Juneau was below the long-term average, and the Ketchikan harvest of 19,675 (SE = 1,669) was the highest recorded. Shellfish effort was above average in the Juneau and Ketchikan fisheries, and Dungeness crab harvest was above average in Juneau and the highest recorded in Ketchikan.

Key words: Creel survey, angler effort and harvest, harvest per unit effort, age composition, length-at-age estimation, round weight, boat sport fishery, hatchery, enhancement, coded wire tag, chinook salmon, *Oncorhynchus tshawytscha*, coho salmon, *Oncorhynchus kisutch*, salmon, *Oncorhynchus*, Pacific halibut, *Hippoglossus stenolepis*, Dolly Varden, *Salvelinus malma*, lingcod, *Ophiodon elongatus,* rockfish, *Sebastes*, Dungeness crab, *Cancer magister*, Tanner crab, *Chionoecetes* species, king crab, *Paralithodes* species, shrimp, *Pandalus* species, Juneau, Ketchikan, Sitka, Petersburg, Wrangell, Craig, Southeast Alaska.

INTRODUCTION

The waters of Southeast Alaska support important commercial, sport, personal use, and subsistence fisheries for a variety of salmonid, bottomfish, and shellfish species. The largest sport fishery in Southeast Alaska is the Juneau marine boat fishery, but other important marine boat sport fisheries occur around Ketchikan, Sitka, Petersburg, Wrangell, Craig, and Haines (Figure 1).

Data on sport harvests of important fish species in Southeast Alaska have been collected by both postal surveys and various onsite creel surveys. The Statewide Harvest Survey (SWHS) is a postal survey which has provided annual estimates of sport effort and harvest by area since 1977 (Howe et al. 1995). This statewide survey has been an economical means of comprehensively monitoring often remote sport fisheries, and SWHS estimates are used for official regional and statewide sport harvests. The SWHS estimates, however, cannot be used directly for inseason management because estimates for a given year are not available until the following summer.

Estimates from onsite creel surveys, however, can be used for inseason management and can also be used to gather a variety of other biological and fishery performance data. Creel surveys, however, are relatively expensive and usually less comprehensive than the SWHS. For instance, it is virtually impossible to survey all access points into the sport fishery for chinook salmon *Oncorhynchus tshawytscha* in Southeast Alaska, which remains open year round in nearly all marine waters. In fisheries where comparisons of harvest estimates from the SWHS and onsite creel surveys are possible, the two surveys have shown very similar results (Mills and Howe 1992).

Expansion of the onsite creel survey program in Southeast Alaska was necessary beginning in 1992 to monitor sport harvests of chinook salmon on an inseason basis. The Alaska Board of Fisheries allocated the Pacific Salmon Treaty catch quota for chinook salmon in Southeast Alaska between the sport and commercial fisheries in March of 1992. They also passed a chinook salmon management plan for the marine boat sport fishery in the Southeast Alaska/Yakutat area which required inseason monitoring of the sport fishery to ensure the quota was not exceeded.

In order to monitor the entire Southeast Alaska chinook salmon fishery with adequate precision to ensure compliance with the sport fishery allocation, it was determined that creel surveys or catch sample programs were needed in the Ketchikan, Craig, Petersburg, Wrangell, Sitka, and Juneau boat fisheries during the major portion of the fishery for chinook salmon. In 1994, 95% of the total sport harvest of chinook salmon of Southeast Alaska occurred in the SWHS areas represented by these fisheries (Howe et al. 1995). Sport harvests in other SWHS areas (Haines/Skagway, Glacier Bay, and Yakutat) were determined to be too small or too dispersed to be effectively monitored with onsite programs.

In addition to total harvest estimates for the sport fishery, estimates of the number of Alaska hatchery chinook salmon taken were also necessary since most of this harvest does not count toward the sport fishery allocation. Sampling of sport harvested chinook salmon for coded wire tags by creel samplers was necessary to provide this information as a portion of all hatchery releases of chinook salmon in Southeast Alaska are coded wire tagged. Several terminal sport fisheries for Alaska hatchery fish in the Petersburg and Juneau areas were not monitored with creel surveys as these harvests do not count toward the sport allocation, and post-season estimates from the SWHS will be adequate to document harvests within these fisheries.

Inseason estimates of the harvest of chinook salmon for the entire Southeast/Yakutat area were obtained by combining information from past SWHS and onsite creel surveys. This report, however, will only present information from the onsite creel surveys conducted in 1995 as the current estimates of total harvests will be revised when final SWHS estimates are completed.

Creel survey information from the marine boat sport fisheries is used for a variety of other management and reporting purposes. Coho salmon *Oncorhynchus kisutch* harvests by the boat sport

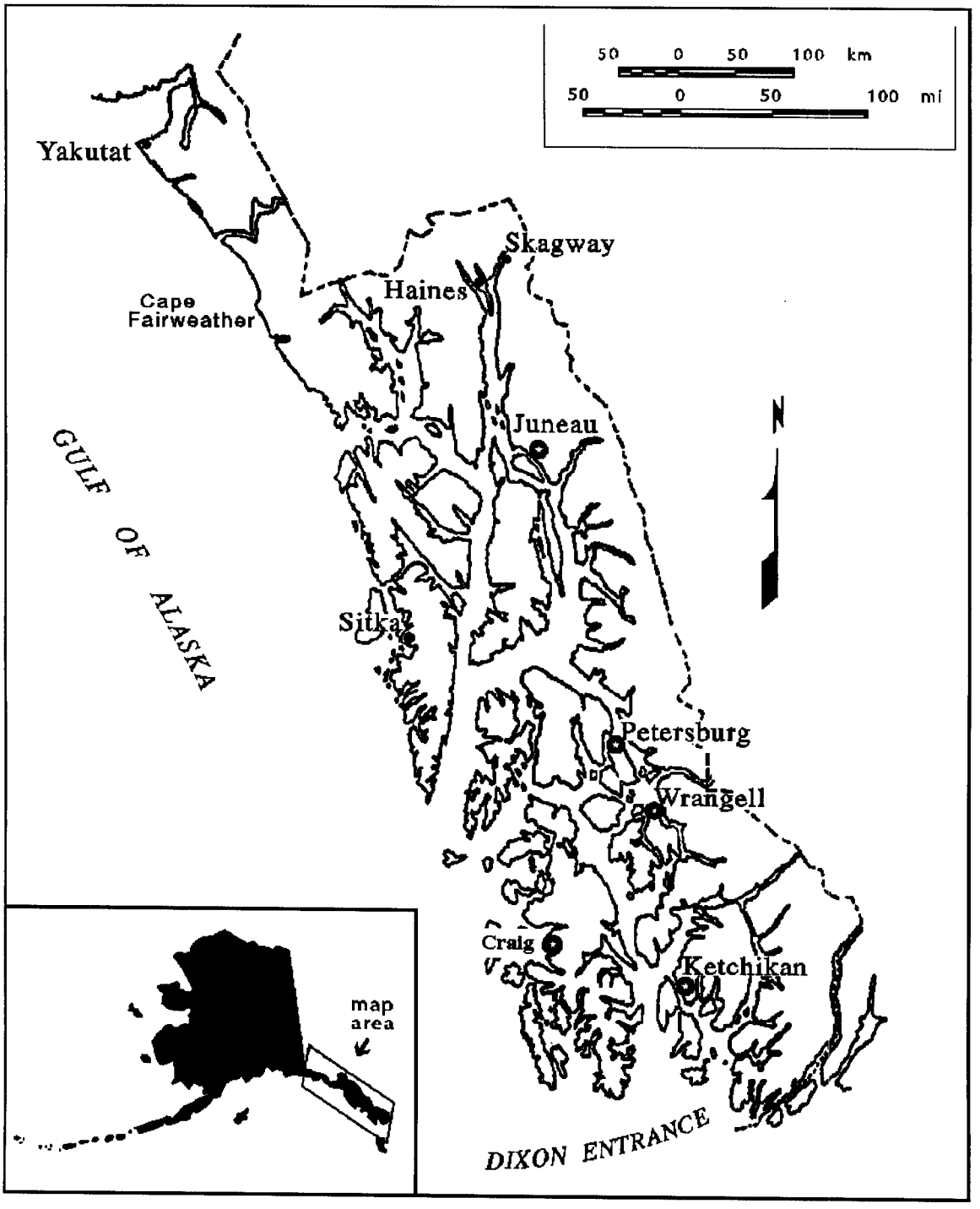

Figure 1.–Location of Juneau, Sitka, Petersburg, Wrangell, Ketchikan, and Craig, Southeast Alaska.

fisheries are also of special interest as coho salmon management has become another high priority within the region. Harvest per unit effort (HPUE) data for coho salmon in marine boat recreational fisheries, along with HPUE data from commercial troll and net fisheries, are used to monitor the relative abundance and migratory patterns of coho salmon. Analyses of coded wire tag data from coho salmon harvested in these sport fisheries are used for determinations of stock composition.

Creel survey effort and harvest information on the Pacific halibut *Hippoglossus stenolepis* fishery is provided to the International Pacific Halibut Commission (IPHC) and the North Pacific Fisheries Management Council during their consideration of proposed changes to sport fishing regulations and in resolving allocation issues. Estimated weight of the sport catch of Pacific halibut in Alaska is reported to the IPHC on an annual basis.

The personal use or sport harvest of shellfish is a very important activity for both residents of Southeast Alaska and visitors to the region. Shellfish harvest information is needed so that the Department, in conjunction with the Board of Fisheries, will have the necessary tools to take a more active role in managing these fisheries. Data from onsite creel surveys have been gathered on the harvest of shellfish in Southeast Alaska since 1988.

This report presents the findings of creel surveys of marine boat sport fisheries conducted in 1995 by the Division of Sport Fish of the Alaska Department of Fish and Game (ADF&G) in the Ketchikan, Juneau, Sitka, and Petersburg areas. Results from creel in the Haines area and other sport fisheries in Southeast Alaska are presented in other ADF&G Fishery Data Series reports (e.g., Ericksen 1994, Beers 1994).

REGULATIONS

Sport fishing regulations for chinook salmon in marine waters during 1995 were identical to those described in Suchanek and Bingham (1992) with the following exceptions. Terminal areas where two chinook salmon >28" and two chinook salmon ≤28" could be taken were opened by emergency order as follows:

1) An emergency order (E.O. #1-3-95) opened a special harvest area at Earl West Cove near Wrangell. This emergency order was in effect from 1 June through 15 June 1995 when E.O. #1-5-95 was issued. E.O. #1-5-95) expanded the boundaries of the Earl West Cove special harvest area and was in effect from 15 June through 1 September 1995.

2) An emergency order (E.O. #1-4-95) opened the Wrangell Narrows near Petersburg to two chinook >28" and two chinook ≤28". This E.O. was in effect from 1 June through 1 August 1995.

3) Another emergency order (E.O. #1-10-95) opened the Auke Bay, Fritz Cove, and Gastineau Channel terminal harvest areas near Juneau to two chinook >28" and two chinook ≤28" and was in effect from 10 June through 1 September 1995.

Also, an emergency order (E.O. #1-21-95) reduced the Southeast Alaska bag and possession limit for chinook salmon in all marine waters to one chinook salmon >28" (this was in response to a temporary restraining order issued by Judge Barbara Rothstein of the U.S. District Court in Seattle). This E.O. was in effect from 17 August through 3 October 1995 when E.O. #1-25-95 was issued. E.O. #1-25-95 returned the Southeast Alaska bag and possession limit for chinook salmon in all marine waters to two chinook salmon >28". This E.O. was in effect from 4 October through 31 December 1995.

General bag limits for salmon species other than chinook salmon remained at six fish per day, 12 in possession for fish 16 inches (41 cm) or more in length. The Pacific halibut bag limit also remained at two fish per day, four in possession. The bag and possession limit for lingcod *Ophiodon elongatus* was two per day, four in possession during the open season from 1 May through 30 November. Anglers were limited to five pelagic rockfish *Sebastes spp.* per day, 10 in possession, and five non-pelagic rockfish, 10 in possession, only two fish per day (four in possession) of which could be yelloweye rockfish *Sebastes ruberrimus*. Areas adjacent to Ketchikan and Sitka were further restricted to a non-pelagic rockfish bag and possession limit of three fish per day, only one of which could be a yelloweye rockfish. The sport, personal use, and subsistence regulations for the harvest of crab in Southeast Alaska have been summarized by Suchanek and Bingham (1989 and 1990). A daily bag and possession limit of 3 king crab *Paralithodes spp.* was in effect for the Juneau area in 1995.

OBJECTIVES

The primary goals of the 1995 Southeast Alaska marine boat sport fishery surveys were to obtain: (1) inseason estimates of the regionwide harvest of chinook salmon; (2) estimates of the regionwide harvest of chinook salmon of Alaskan hatchery origin and; (3) estimates of the harvest of coho salmon of Alaska hatchery origin in the Ketchikan, Sitka, and Juneau fisheries. The following objectives were identified, to help measure program performance and achieve project goals:

1) Estimate total sport harvest of chinook salmon in the following marine boat sport fisheries during the noted time periods in 1995:

   - Ketchikan — 24 April to 24 September
   - Petersburg — 8 May to 16 July
   - Sitka — 24 April to 24 September
   - Juneau — 24 April to 24 September

   such that each individual estimate for the surveyed period was within ±20% of the true value 90% of the time;

2) estimate the contribution of Alaska hatchery chinook salmon by coded wire tag lot to each of the fisheries noted above; such that the contribution estimate in relative terms[1] for each individual fishery was within ±25 percentage points of the true value 90% of the time;

3) estimate the relative contribution of Alaska hatchery chinook salmon by coded wire tag lot to the following marine boat sport fisheries during the noted time periods:

   - Wrangell — 1 May to 16 July
   - Craig — 1 May to 10 September

   such that the total relative contribution estimate was within ±25 percentage points of the true value 90% of the time;

4) estimate the contribution of Alaska hatchery coho salmon by coded wire tag lot to fisheries in Ketchikan, Sitka, and Juneau; such that the contribution estimate in relative terms for each individual fishery was within ±25 percentage points of the true value 90% of the time; and

5) estimate the relative contribution of Alaska hatchery coho salmon by coded wire tag lot to the fishery in Craig such that the total relative contribution estimate is within ±25 percentage points of the true value 90% of the time.

[1] Contribution in relative terms is equal to the contribution estimate divided by total harvest.

TASKS

In addition to meeting the primary objectives for monitoring the chinook and coho salmon fisheries (discussed above), there were also a number of additional tasks which addressed secondary data needs. To fulfill these data needs, additional tasks in 1995 included:

1) estimating the biweekly harvest per unit effort (HPUE) for coho salmon in the Juneau and Ketchikan marine boat sport fisheries during 24 April to 24 September;

2) estimating total sport angler effort, harvest and catch of coho salmon, pink salmon *O. gorbuscha*, chum salmon *O. keta*, sockeye salmon *O. nerka*, Pacific halibut, lingcod, rockfish, and Dolly Varden *Salvelinus malma* by the Juneau and Ketchikan marine boat sport fisheries during 24 April to 24 September;

3) estimating the shellfish effort and harvest of Dungeness crab *Cancer magister*, Tanner crab *Chionoecetes spp.*, and king crab in the Juneau and Ketchikan marine boat sport fisheries during 24 April to 24 September; and shrimp landed by the Ketchikan marine boat fishery;

4) estimating the age composition and mean length-at-age of chinook salmon harvested in the Juneau and Ketchikan marine boat sport fisheries during 24 April to 24 September; and

5) estimating the average weights of Pacific halibut harvested in the Juneau, Sitka, and Ketchikan marine boat sport fisheries from 24 April to 24 September.

METHODS

Procedures for obtaining estimates associated with each of the study objectives were similar for each of the surveyed locations. The following sections detail the procedures that were common to multiple surveys. Site-specific differences in procedures are outlined in later sections of this report.

ONSITE CREEL SURVEY ANGLER EFFORT, CATCH, AND HARVEST ESTIMATES:

Direct expansion creel surveys were conducted of the Ketchikan, Petersburg, Sitka, and Juneau marine boat sport fisheries. The harvest of chinook salmon landed by sport anglers was estimated from information collected via stratified random multistage sample surveys. Strata were defined according to unique combinations of biweekly periods, type of day (e.g., weekday versus weekend-holiday), time of day (early versus late) and, in some instances, type of access location (e.g., heavy use versus low use harbors).

Three general sampling designs were used within each stratum. For Ketchikan and Juneau surveys, a three-stage sample survey was conducted. Within any stratum for these two surveys, days to sample represented the first sampling stage, and were selected at random without replacement (WOR). The various access locations at which marine boat sport anglers land their harvested fish represented the second sampling stage. As such within any selected day within each stratum at least two harbors were selected at random WOR for surveying. During each sampled day, a creel technician attempted to interview all exiting boat-parties[2] at each of the selected access locations during the sampled days within each stratum. If all boat-parties could not be interviewed, any missed boat-parties were counted. Boat-parties represented the third sampling stage in these three-stage surveys.

A four-stage sample survey was conducted at Sitka. For this survey, access locations to sample represented the first sampling stage, with days within each stratum at each sampled location representing the second stage sampling units. Periods within the sampling day represented the third sampling stage. At some sites and for some strata only one sampling period existed, for these strata at any sampled day-location combination the entire period was sampled. Minimally, two periods were sampled for each day-location combination for strata with more than one period per sampling day. Finally, boat-parties to interview represented the fourth sampling stage units in this survey.

A three-stage sample survey was conducted at Petersburg. Each of three access locations were treated as a level of stratification. The days to sample within each stratum represented the first stage sampling units. Periods within the sampling day represented the second stage units, and boat-parties to interview represented the third stage unit in this survey.

The sampling designs for the surveys conducted in Juneau and Ketchikan were essentially equivalent to the surveys conducted in previous years at these locations (see Hubartt et al. 1994). The surveys at Sitka and Petersburg represented a slight restructuring compared to surveys conducted at each of these locations in 1994. In Sitka, access locations were not used as a level of stratification and the "type of day" stratum and the definition of sampling day were modified. In Petersburg the survey was stratified by access location. The reasons for restructuring these surveys were primarily directed at obtaining unbiased estimates of angler effort, catch, and harvest in the most efficient manner possible.

Data collected from each interviewed boat-party included number of rods fished, hours fished, trip type (guided or unguided), number of days fished in trip, location fished, target (e.g., salmon, Pacific halibut, or rockfish), and number of fish kept and/or released by species. Crab effort (boat-days fished and number of pots or rings fished) and harvest was recorded in all areas sampled except Sitka. In Ketchikan and Petersburg, numbers of shrimp harvested were also recorded in multiples of 10. All data recording procedures were outlined in detail in site-specific Creel Technician Manuals,

[2] A boat-party is defined as all sport anglers in one boat exiting a fishery at an access location.

and computer data files and analysis programs are listed in Appendix C1.

Estimates of harvested chinook salmon at each of the four surveyed Southeast Alaskan marine boat sport fisheries were calculated according to standard direct expansion equations for stratified multistage sampling designs. Mean harvest of boat-parties interviewed during a sample were expanded by the number of boat-parties counted exiting the fishery during each sample to obtain the estimates for each sample. Means across sample periods were similarly expanded by the number of periods within a sampling day to obtain the estimates at a sampled access location for the four-stage surveys. Means across days within a sampled location were then expanded by the number of possible days to obtain the location estimate of catch, effort, or harvest for the four-stage surveys. Finally, across location means were expanded by the number of access locations in a stratum to obtain the stratum estimates. Across stratum estimates of harvest were obtained by summation across strata. Estimates were obtained similarly for the three-stage designs, with the appropriate reordering of calculations. Specific calculating procedures for the point estimates and their variances are described in detail in Appendices A1 and A2.

Estimates of harvest of other species by the surveyed boat anglers were estimated similarly. Additionally, estimates of the total catch (caught and released as well as caught and kept) of all species of interest were estimated in a similar manner.

Biweekly Estimates of Coho Salmon Harvest Per Unit Effort

Data collected during creel surveys of the Ketchikan and Juneau marine boat sport fisheries were used to calculate mean biweekly coho salmon harvest per unit effort (HPUE) of boat anglers in harvest per angler-hour. Harvest instead of total catch was used, because relatively few coho salmon were released, and those salmon released may not have been correctly identified to species. The estimates obtained by these procedures were indicative of the abundance of coho salmon (L. D. Shaul, ADF&G, Douglas, personal communication). Mean HPUE from these fisheries was considered to be an index of abundance under the traditional linear model:

$$\text{hpue}_k = qN + \varepsilon_k \qquad (1)$$

where hpue_k is the harvest per unit of effort during the kth angler-trip, N is abundance of the fish, q is the catchability coefficient, and ε is a random error with mean equal to zero and variance equal to σ^2. In this case, each angler-trip was considered a separate, replicated sample in a test fishery. All boat-parties interviewed within each week surveyed at each location were treated as equally weighted test samples (i.e., ignoring strata and sampling stages). Harvest per unit effort (HPUE) in terms of coho salmon harvested per angler-hour of effort was estimated for each biweek using the procedures outlined in Appendix A3.

Hatchery Contribution Estimates

Creel technicians attempted to inspect each harvested chinook and coho salmon for a missing adipose fin indicating the probable presence of an internal coded wire tag (CWT). Catches of chinook salmon and coho salmon checked for clipped adipose fins were recorded as "sampled," while catches not checked were recorded as "not sampled." The number of chinook and coho salmon inspected for a clipped adipose fin was recorded, and heads from salmon with clipped adipose fins were collected and identified with a uniquely numbered cinch strap. These heads were forwarded to the Commercial Fisheries Management and Development (CFMADD) Division coded wire tag laboratory for eventual dissection, tag removal, and decoding.

Information from the sampling program as well as the coastwide coded wire tag database was used to estimate the contributions of both Alaskan and non-Alaskan hatchery chinook salmon according to procedures described by Bernard and Clark (*In press*). Since not all hatchery releases from Oregon, Washington, and Idaho are coded wire tagged, the estimates of non-Alaskan contributions should be considered as minimal estimates.

The contribution of chinook and coho salmon with a particular tag code to the marine fisheries surveyed was estimated using procedures outlined in Appendix A4, which essentially followed the approach proposed by Bernard and Clark (*In press*).

ADDITIONAL CODED WIRE TAG SAMPLING

Technicians sampled catches of chinook and coho salmon for the presence of a clipped adipose fin from boat parties returning to Wrangell harbors from 1 May through 16 July, and to Craig harbors from 9 May through 18 September. Some additional sampling for adipose clipped fish was also conducted in Ketchikan from 17 July to 24 September and in Juneau from 24 August through 10 September. The specific equations for estimating the relative contributions of hatchery stocks are detailed in Appendix A4.

AGE, LENGTH, AND WEIGHT ESTIMATES

Estimates of Chinook Salmon Age Composition and Mean Length-at-age

As time permitted, chinook salmon harvested by anglers surveyed in the sampled marine boat sport fisheries were sampled for scales for age determination. Three scales were taken from the preferred area of each chinook salmon sampled (Welander 1940, INPFC 1958). Scales were then mounted on gum cards, and impressions were made in cellulose acetate (Clutter and Whitesel 1956). Ages were determined by reading the scales using procedures designed by Van Allen and McPherson (ADF&G Commercial Fisheries, Douglas, Alaska, personal communication). Lengths in millimeters (tip of snout to fork of tail) of these chinook salmon were also recorded.

For estimation of age composition of the harvest and for estimation of mean length-at-age, all data collected from harvested chinook salmon within each of these fisheries were treated as one sample (i.e., ignoring internal stratification and sampling stages). Age composition estimates were calculated from the sample data using procedures outlined in Cochran 1977. Estimates of mean length by age group of chinook salmon sampled from the harvest were calculated following the procedures outlined by Sokal and Rohlf 1981. Each survey's entire sample was used in an unweighted fashion to obtain the length-at-age statistics.

Pacific Halibut Harvest by Weight

As time permitted, Pacific halibut landed by boat anglers interviewed in the sampled fisheries were sampled for length. Total lengths in millimeters from Pacific halibut sampled were also recorded.

Procedures as outlined by Quinn et al. (1983), were used to convert the harvest and the mean length estimates to an estimate of the round weight of Pacific halibut harvested.

ASSUMPTIONS

The assumptions necessary for the estimates of angler effort, catch, harvest, and HPUE to be unbiased for these surveys were that:

1) anglers accurately reported their hours of fishing effort and the number by species of fish released; and
2) no significant number of boat-parties returned between evening civil twilight and the beginning of early-day surveys, or at access locations other than those surveyed.

In addition to the above assumptions, the following condition must be met for unbiased estimates of contributions of CWT stocks to the harvest:

3) the relative contribution of different stocks of salmon associated with a CWT release lot to the harvest did not vary appreciably within a biweekly period.

Similarly, the following assumption must be true for unbiased length-at-age and age composition estimates:

4) length-at-age and age composition did not vary substantially within the sampling season.

RESULTS

Because of their size and impacts on the Southeast Alaska marine boat sport fishery, detailed finfish effort and chinook salmon harvest results are

presented here primarily for the Juneau, Sitka, and Ketchikan areas, while other fisheries are presented in less detail. Detailed tables presenting total estimates of finfish effort, harvest, and catch for all species monitored at each area surveyed; as well as shellfish effort and harvest; can be found in Appendices B1 through B4. Appendices B5 through B8 present biweekly and total estimates and variances for effort, harvest, and catch for all species monitored for each boat fishery surveyed. Summary data from catch sampling programs are presented in Appendices B9 (Wrangell) and B10 (Craig).

ANGLER EFFORT

An estimated 816,357 (SE = 22,970) angler-hours of effort were expended in the four marine boat sport fisheries during the time periods sampled (Table 1). Sixty-three percent of the total effort in angler-hours was targeted on salmon in Ketchikan, 81% in Juneau, 72% in Sitka, and 62% in Petersburg. Bottomfish (primarily Pacific halibut) were the other major target of anglers. Major salmon derbies in Ketchikan, Juneau, and Sitka increased the amount of effort targeted on salmon, as 12%, 13%, and 18% of the total salmon fishing effort, respectively, occurred during these short time periods.

CHINOOK SALMON FISHERIES

An estimated 26,977 chinook salmon (SE = 524) were harvested in all the sampled marine boat sport fisheries (Table 2). Relative precision of the estimated chinook harvests were within our goal of ± 20% of the true value 90% of the time at all locations. About 59% (16,048) of the monitored harvest of chinook salmon were taken in the Sitka fishery, while the Juneau fishery accounted for an additional 24% of the harvest. Most of the chinook salmon harvested were at least 28 inches in length, but an estimated 113 small (< 28 inches) chinook salmon were also harvested.

Harvest of chinook salmon in the Ketchikan King Salmon Derby comprised 12% of the total chinook salmon harvested in the Ketchikan marine fishery. Six percent of the harvest of chinook salmon in the Juneau marine boat sport fishery was taken during the Juneau Golden North Salmon Derby, while 13% of the total salmon fishing effort was expended during this event (Table 1). A total of 537 chinook salmon were entered in the Ketchikan and Juneau derbies from a harvest of 814 fish during the derby time periods (Table 2). A total of 1,040 chinook salmon were entered in the Sitka Salmon Derby from a total harvest of 2,085 chinook salmon during the derby time period, making it the largest derby in Southeast Alaska in terms of fish entered. A total of 253 chinook salmon were entered in the Petersburg Salmon Derby, about 27% of the harvest in the surveyed fishery.

About 16% of the estimated harvest of chinook salmon in the Ketchikan boat fishery were sampled for coded wire tags (Appendix B11). In the Juneau boat fishery, 16% of the estimated harvest of chinook salmon were sampled, 15% in Sitka, and 36% in Petersburg.

An estimated 37% of the chinook salmon harvested in the marine boat fisheries were of Alaska hatchery origin (Table 3). Contribution estimates of Alaska hatchery chinook salmon were within ±25 percentage points of absolute precision 90% of the time at all locations except Petersburg (Table 3). Absolute precision of the Alaska hatchery contribution estimates at all sites ranged from 12% to 26%. Additional hatchery fish originated in Oregon, Washington, and British Columbia, and, in aggregate, 50% of the chinook salmon harvested in boat fisheries originated in hatcheries.

Thirty-six percent of the harvest of chinook salmon in Sitka came from Alaska hatcheries, and the overall hatchery contribution was 56% of the harvest. The majority of Alaska hatchery chinook salmon harvested in Sitka were produced at the Little Port Walter hatchery. This year in Ketchikan only 21% of the harvest of chinook salmon were from Alaska hatcheries, and the overall hatchery contribution to the Ketchikan fishery totaled 25%. Most of the Alaskan hatchery chinook salmon taken in Ketchikan originated in Neets Bay, Whitman Lake, and Carroll Inlet (release site only) hatcheries operated by the

Table 1.–Summary of estimated total and derby angler effort by target for the Southeast Alaska marine boat sport fisheries during 1995.

	TOTAL EFFORT BY TARGET AND TIME PERIOD				
	Ketchikan 4/24–9/24	Juncau 4/24–9/24	Sitka 4/24–9/24	Petersburg 5/08–7/16	Total
Boat-hours	105,622	129,911	69,028	9,679	314,240
SE	5,943	5,501	2,540	661	8,512
Salmon-hours	175,765	265,923	135,866	15,194	592,748
SE	12,709	12,390	5,647	1,369	18,676
Bottomfish-hours [a]	101,381	60,158	51,710	9,210	222,459
SE	7,037	3,734	3,592	945	8,790
Angler-hours [b]	277,146	326,807	188,000	24,404	816,357
SE	15,817	14,543	7,884	1,952	22,970
% salmon-hours [c]	63%	81%	72%	62%	73%

	DERBY EFFORT BY TARGET AND TIME PERIODS				
	Ketchikan 5/27–29, 6/3–4, and 6/10–11	Juneau 8/18–20	Sitka 5/27–29 and 6/3–4	Petersburg 5/26–29	Total
Boat-hours	10,461	13,436	9,470	2,267	35,634
SE	1,683	2,227	708	67	2,881
Salmon-hours	21,871	34,075	24,024	5,453	85,423
SE	3,536	6,125	1,767	246	7,294
Bottomfish-hours	2,950	1,814	541	32	5,337
SE	529	442	171	23	711
Angler-hours	24,821	35,889	26,641	5,485	92,836
SE	3,802	6,492	1,873	247	7,757
% of total salmon fishery [d]	12%	13%	18%	36%	14%

[a] Includes hours fished for Pacific halibut, rockfish, and other bottomfish.

[b] Includes all targeted and non-targeted effort.

[c] (salmon-hours/total angler-hours) * 100.

[d] (derby salmon-hours/total salmon-hours) * 100.

Southern Southeast Regional Aquaculture Association. About 45% of the chinook salmon harvest in the Juneau boat fishery were of Alaska hatchery origin. Nearly half of the Alaska hatchery fish taken in Juneau came from the Hidden Falls hatchery operated by the Northern Southeast Regional Aquaculture Association, whereas Snettisham and Gastineau hatcheries produced much of the remaining harvest. Sixty-three percent (63%) of the chinook salmon harvest in Petersburg came from Alaska hatcheries; the majority was from the Crystal Lake hatchery operated by ADF&G. Detailed hatchery contribution estimates by tag code are presented in appendices for the Ketchikan fishery (Appendix B12), Juneau fishery (Appendix B13), Sitka fishery (Appendix B14), and the Petersburg fishery (Appendix B15). In addition to the recoveries of hatchery origin fish, wild coded wire tagged chinook salmon were recovered from the Ketchikan, Sitka, and Craig fisheries (Appendices B17 and B18). Total contributions of these tagged wild stocks could not be estimated as tagging fractions are unknown.

Table 2.–Summary of estimated harvests of chinook salmon in Southeast Alaska marine boat sport fisheries surveyed during 1995.

CHINOOK SALMON HARVESTS

Sport fishery	Time period	Harvest of chinook ≥ 28"	Harvest of chinook < 28"	Combined	SE	Relative precision
Ketchikan	4/24–9/24	3,476	23	3,499	356	17%
Juneau	4/24–9/24	6,301	70	6,371	372	10%
Sitka	4/24–9/24	16,048	0	16,048	997	10%
Petersburg	5/08–7/16	1,039	20	1,059	96	15%
Total		26,864	113	26,977	524	3%

DERBY CHINOOK SALMON HARVESTS

		Chinook ≥ 28"		Chinook < 28"		Total harvested		
Major salmon derbies	Time period	Entered	Total[a]	Entered	Total[a]	Number	SE	%[b]
Ketchikan King Salmon Derby	5/27–29 6/3–4 6/10–11	200	415	0	0	415	48	12%
Juneau Golden North Salmon Derby	8/18–20	334	390	3	9	399	17	6%
Sitka Salmon Derby	5/27–29 6/3–4	1,040	2,085	0	0	2,085	140	13%
Petersburg Salmon Derby	5/26–29	253	287	0	0	287	2	27%

[a] Includes entered and take-home harvests.

[b] (Total derby harvest/total area harvest) * 100.

Of 238 chinook salmon which were examined for clipped adipose fins at the Wrangell marine boat sport fishery (Appendix B11), about 16% came from hatcheries (Appendix B16). Crystal Lake and Neets Bay hatcheries were the largest contributors to the Wrangell harvest. At the Craig marine boat sport fishery 1,693 chinook salmon were examined for clipped adipose fins (Appendix B11). Overall, 34% of the sample came from hatcheries, and while only 4% were from Alaska hatcheries, the Medvejie hatchery was the largest contributor (Appendix B17).

Of the total 1,691 chinook salmon successfully aged from the sampled fisheries (Table 4 and Appendix B19), about 33% lacked a freshwater annulus (age-0.), which usually indicates non-Alaskan origin (Van Alen 1988). Saltwater ages varied considerably; an estimated 100% of the chinook salmon harvested during the Juneau Golden North Salmon Derby were age-.3 or less whereas only 33% of the chinook salmon sampled in the Craig fishery were age-.3 or less. The sampled harvest across all surveyed fisheries consisted of 38% males and 62% females. Mean length-at-age of sampled chinook salmon varied among the fisheries surveyed (Appendix B20).

COHO SALMON FISHERIES

Harvests of coho salmon in the sampled fisheries totaled an estimated 46,352 fish (SE = 3,058) (Table 5). Only small portions of the coho salmon fisheries in Petersburg and Wrangell were monitored as surveys were discontinued by July 17, and this year no harvest was recorded during the period monitored. The only monitored derby

Table 3.–Contributions of hatchery chinook salmon to sampled marine boat sport fisheries of Southeast Alaska, 1995.

Region or hatchery	Marine boat sport fishery: Juneau (4/24-9/24)	Ketchikan (4/24-9/24)	Petersburg (5/08-7/16)	Sitka (4/24-9/24)	Total
Oregon	12	0	0	53	65
Washington	0	0	0	942	942
British Columbia	48	165	22	2,355	2,590
Non-Alaskan total	60	165	22	3,350	3,597
SE	41	104	11	801	809
Alaska					
Bell Island Net Pens	0	24	0	0	24
Burnett Inlet	0	0	2	11	13
Carroll Inlet	0	235	0	258	493
Crystal Lake	82	0	411	52	545
Crystal Lake/Earl West Cove	81	0	66	0	147
Deer Mountain	0	105	0	2	107
Gastineau	433	0	0	0	433
Hidden Falls	1,467	0	101	47	1,615
Jerry Myers	9	0	0	0	9
Little Port Walter	104	0	43	33	180
Medvejie	0	0	0	4,907	4,907
Neets Bay	10	117	27	4	158
Port Armstrong	0	0	12	25	37
Sheldon Jackson	0	0	0	338	338
Snettisham	675	0	0	11	686
Tamgas Creek	0	199	5	0	204
Whitman Lake	12	43	0	14	69
Alaskan total	2,873	723	667	5,702	9,965
SE	758	226	167	867	1,186
Absolute precision[a] ($\alpha = 0.10$)	1,247	372	275	1,426	1,951
% absolute precision[b]	20	11	26	9	7
Total all areas	2,933	888	689	9,052	13,562
SE	759	248	168	1,181	1,435
Absolute precision ($\alpha = 0.10$)	1,249	408	276	1,943	2,361
% absolute precision	20	12	26	12	9
Chinook salmon harvest	6,371	3,499	1,059	16,048	26,977
SE	372	356	96	997	524
% Alaska hatchery	45	21	63	36	37
% total hatchery	46	25	65	56	50

[a] SE * 1.645.

[b] (Absolute precision / total harvest) * 100.

in which coho salmon were heavily targeted was the Juneau Golden North Salmon Derby, and an estimated 2,914 coho salmon (SE = 234) were taken during this event (Appendix B2). Harvests of hatchery coho salmon were estimated from a sample of 17% of the coho salmon harvest (Appendix B21). Estimates of coho salmon hatchery contributions by tag code and time period are presented in Appendix B22 for the Ketchikan fishery, Appendix B23 for the Juneau fishery, and Appendix B24 for the Sitka fishery. An estimated 10,607 (SE = 1,928) hatchery coho salmon were taken in all the sampled fisheries combined (Table 6). Wild stocks of coho salmon dominated the harvest in all areas, but hatchery contributions ranged from 7% in Juneau to 19% in Sitka and

Table 4.–Summary of the age composition of chinook salmon sampled in selected marine sport fisheries in Southeast Alaska during 1995.

	FRESHWATER AGE COMPOSITION				
	----------Age 0.----------		--------Age 1. or more--------		
Sport fishery	Sample size	Percent	Sample size	Percent	Total sampled
Ketchikan	50	28	128	72	178
Juneau non-derby	3	1	289	99	292
Juneau Derby[a]	7	7	91	93	98
Sitka	122	35	225	65	347
Petersburg	16	12	113	88	129
Wrangell	15	11	121	89	136
Craig	349	68	162	32	511
Total	562	33	1,129	67	1,691

	SALTWATER AGE COMPOSITION				
	---------Age .3 or less---------		--------Age .4 or more--------		
Sport fishery	Sample size	Percent	Sample size	Percent	Total sampled
Ketchikan	100	56	78	44	178
Juneau non-derby	180	62	112	38	292
Juneau Derby[a]	98	100	0	0	98
Sitka	163	47	184	53	347
Petersburg	80	62	49	38	129
Wrangell	66	49	70	51	136
Craig	171	33	340	67	511
Total	858	51	833	49	1,691

[a] Juneau Golden North Salmon Derby.

Table 5.–Summary of estimated catch and harvest of coho salmon in the Southeast Alaska marine boat sport fisheries surveyed during 1995.

		HARVEST							
		Wild		Hatchery		Total		Catch	
Sport fishery	Time period	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Ketchikan	4/24-9/24	11,835	1,700	7,327	1,787	19,165	2,467	25,619	3,201
Juneau	4/24-9/24	14,161	1,211	1,010	272	15,172	1,241	15,555	1,255
Sitka	4/24-9/24	9,747	1,130	2,270	671	12,015	1,314	12,803	1,371
TOTAL		35,744	2,374	10,607	1,928	46,352	3,058	53,977	3,701

Table 6.–Contributions of hatchery coho salmon to sampled marine boat sport fisheries of Southeast Alaska, 1995.

Region or hatchery	Marine boat sport fishery			Total
	Juneau (4/24–9/24)	Ketchikan (4/24–9/24)	Sitka (4/24–9/24)	
British Columbia	0	18	9	27
Non-Alaskan total	0	18	9	27
SE	0	18	9	27
Alaska				
Bell Island Net Pens	0	10	0	10
Burro Creek	1	0	0	1
Deer Mountain	0	372	0	372
Gastineau	989	0	0	989
Medvejie	0	0	1,513	1,513
Medvejie CIF	20	0	28	48
Nakat Inlet	0	107	0	107
Neets Bay	0	5,946	535	6,481
Sheldon Jackson	0	0	185	185
Whitman Lake	0	874	0	874
Alaskan total	1,010	7,309	2,261	10,580
SE	272	1,787	671	1,928
Absolute precision[a] ($\alpha = 0.10$)	447	2,940	1,104	3,172
% absolute precision[b]	3	15	9	7
Total all areas	1,010	7,327	2,270	10,607
SE	272	1,787	671	1,928
Absolute precision ($\alpha = 0.10$)	447	2,940	1,104	3,172
% absolute precision	3	15	9	7
Coho salmon harvest	15,172	19,165	12,015	46,352
SE	1,241	2,467	1,314	3,058
% Alaska hatchery	7	38	19	23
% total hatchery	7	38	19	23

[a] SE * 1.645.

[b] (Absolute precision / total harvest) * 100.

38% in Ketchikan. A few hatchery coho salmon taken in Sitka and Ketchikan originated in British Columbia hatcheries. The Neets Bay hatchery contributed the most coho salmon to the Ketchikan fishery, the Gastineau hatchery owned by Douglas Island Pink and Chum, Inc. contributed the most coho salmon to the Juneau fishery, and the Medvejie hatchery was the major contributor in Sitka. Additionally, some recoveries of coho salmon from wild stocks were obtained in the Ketchikan, Juneau, Sitka, and Craig fisheries (Appendices B25, B26). Because tagging fractions are currently unknown, total contributions of these wild-tagged stocks were not estimated. Appendix B25 lists the tag codes recovered and the estimates of relative contribution to the Craig marine boat sport fishery from the 2,668 coho salmon which were examined for clipped adipose fins. About 5% of the coho salmon harvested in Craig were from hatcheries, and Alaska hatcheries contributed 2% of the sample. The HPUE for coho salmon for the Ketchikan, Juneau, and Sitka fisheries reached highs of 0.188 (SE = 0.020), 0.139 (SE = 0.016), and 0.358 (SE = 0.033) coho salmon, respectively, per angler-hour of effort (Table 7). The peak in HPUE for coho salmon occurred in late August in Juneau and Sitka, and late September in Ketchikan. Sitka anglers experienced higher

Table 7.–Harvest per unit effort (HPUE) for coho salmon (harvest per angler-hours of effort) by biweekly period in the Ketchikan, Juneau, and Sitka marine boat sport fisheries during 1995.

HARVEST OF COHO SALMON PER ANGLER-HOUR OF EFFORT[a]						
	Ketchikan		Juneau		Sitka	
Seasonal period	HPUE	SE	HPUE	SE	HPUE	SE
6/05–6/18	0.002	0.001	0.002	0.001	0.005	0.001
6/19–7/02	0.020	0.003	0.010	0.002	0.020	0.004
7/03–7/16	0.037	0.006	0.043	0.005	0.040	0.009
7/17–7/30	0.021	0.005	0.070	0.007	0.022	0.005
7/31–8/13	0.034	0.007	0.068	0.008	0.079	0.019
8/14–8/27	0.068	0.018	0.139	0.016	0.358	0.033
8/28–9/10	0.187	0.015	0.124	0.015	0.158	0.032
9/11–9/24	0.188	0.020	0.049	0.011	0.140	0.062
All periods	0.061	0.004	0.046	0.002	0.075	0.006

[a] Does not include derby effort or harvest.

HPUEs for coho salmon than did Juneau and Ketchikan anglers for the peak of the season.

BOTTOMFISH FISHERIES

Most of the bottomfish effort in Southeast Alaska is targeted on Pacific halibut, and an estimated 43,788 (SE = 1,901) were harvested in the sampled marine boat sport fisheries (Table 8). Substantial portions of the bottomfish fisheries were monitored only in Juneau, Ketchikan, and Sitka. Estimated average round weight of the Pacific halibut in the sampled fisheries ranged from 18.9 pounds in Ketchikan to 35.8 pounds in Sitka (Table 9). About 1,055,500 pounds of Pacific halibut were taken in the sampled fisheries, with about 45% of this harvest landed in Sitka.

Although rockfish are not a primary target of most Southeast Alaska marine boat sport anglers, an estimated 54,017 (SE = 2,689) rockfish were caught in the marine boat sport fisheries surveyed (Table 8). Only 18,690 (SE = 1,358) of the rockfish caught were retained (35%). Ketchikan anglers retained an estimated 44% (10,132) of the 23,147 rockfish caught. Sitka anglers retained an estimated 26% (7,676) of the 29,932 rockfish caught. Retention in Juneau and Petersburg, where few were caught, was 97% and 66%, respectively.

Major species composition of the rockfish harvest was estimated for the Ketchikan, Sitka, and Petersburg fisheries (Table 10). Quillback rockfish *S. maliger* were most frequently taken in Ketchikan (50%), whereas yelloweye rockfish composed 28% of the Ketchikan rockfish harvest. Yelloweye rockfish and black rockfish *S. melanops* each composed 37% of the Sitka rockfish harvest. Other species in the sport harvest included copper *S. caurinus*, dusky *S. ciliatus*, and silvergrey *S. brevispinis* rockfish along with a variety of other unidentified species. Lingcod was another bottomfish species frequently harvested in Sitka (3,653) and Ketchikan (1,230) fisheries (Table 8).

OTHER SALMONID FISHERIES

Although not usually primary targets, other salmonids such as pink, chum, and sockeye salmon, and Dolly Varden were harvested in the sampled fisheries (Table 11). Pink salmon were taken in large numbers in Ketchikan; the estimated harvest totaled 29,406 (SE = 9,485). Only 2,850 (SE = 310) pink salmon were harvested in Juneau, and the retention rate was only 58% in comparison to the 81% observed in Ketchikan. Harvests of both chum and sockeye salmon were much less, totaling 5,833 chum salmon and 872 sockeye

Table 8.-Summary of estimated catch and harvest of Pacific halibut, rockfish, and lingcod in the Southeast Alaska marine boat sport fisheries sampled during 1995.

Sport fishery	Time period	Total catch	SE	Harvest	SE
		Pacific halibut			
Ketchikan	4/24–9/24	26,764	2,148	19,675	1,669
Juneau	4/24–9/24	12,486	1,158	9,252	762
Sitka	4/24–9/24	19,114	1,666	13,151	1,182
Petersburg	5/08–7/16	2,935	457	1,710	228
Total halibut		61,299	2,749	43,788	1,901
		Rockfish			
Ketchikan	4/24–9/24	23,147	1,986	10,134	1,185
Juneau	4/24–9/24	833	183	812	181
Sitka	4/24–9/24	29,932	1,803	7,676	637
Petersburg	5/08–7/16	105	37	62	25
Total rockfish		54,017	2,689	18,684	1,358
		Lingcod			
Ketchikan	4/24–9/24	1,623	251	1,230	171
Juneau	4/24–9/24	68	55	68	55
Sitka	4/24–9/24	4,778	445	3,653	352
Petersburg	5/08–7/16	0	0	0	0
Total lingcod		6,469	514	4,951	395

Table 9.–Average length, round weight, and total round weight of Pacific halibut harvested in sampled Southeast Alaska marine boat sport fisheries during 1995.

Sport fishery	Survey period	Sample size	Total length Mean (cm)	Total length SE (cm)	Average round weight (lb)	Estimated number harvested	Estimated total round weight (thousand lb.)
Ketchikan	4/24–9/24	549	84.2	0.7	18.9	19,675	371.9
Juneau	4/24–9/24	299	83.3	1.4	23.0	9,252	212.8
Sitka	4/24–9/24	253	99.6	1.7	35.8	13,151	470.8
Petersburg/ Wrangell	5/08–7/16	304	93.9	1.6	30.2		
Craig	5/01–9/10	677	87.8	0.8	22.6		
All areas combined		2,082	89.0	0.5	24.4	42,078	1,055.5

Table 10.–Rockfish composition in sampled marine boat sport fisheries during 1995.

Rockfish species[a]	Ketchikan		Sitka		Petersburg	
	Harvest[b]	%	Harvest[b]	%	Harvest[b]	%
Quillback	5,106	50.4	836	10.9	18	29.0
Dusky	64	0.6	171	2.2	0	0
Copper	401	3.9	159	2.1	0	0
Black	280	2.8	2,827	36.8	0	0
Yelloweye	2,841	28.0	2,824	36.8	38	61.3
Silvergrey	402	4.0	335	4.4	0	0
Other non-pelagic	902	8.9	152	2.0	6	9.7
Other pelagic	138	1.4	373	4.8	0	0
Total	10,134		7,676		62	

[a] An estimated 812 rockfish were harvested in the Juneau marine boat sport fishery, and individual species were not identified.

[b] The unidentified rockfish harvest was allocated to species by expanding the appropriate percentage of harvest in the identified harvest to the total harvest.

Table 11.–Summary of estimated total catch and harvest of pink salmon, chum salmon, sockeye salmon, and Dolly Varden in the Southeast Alaska marine boat sport fisheries sampled during 1995.

Sport fishery	Time period	Pink salmon		Chum salmon		Sockeye salmon		Dolly Varden	
		Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
Ketchikan	4/24–9/24	36,200	29,406	3,076	2,792	369	369	12	7
Juneau	4/24–9/24	4,891	2,850	2,338	2,109	58	58	1,621	850
Sitka	4/24–9/24	4,818	2,382	1,276	932	414	414	70	34
Petersburg	5/08–7/16	0	0	0	0	31	31	0	0
Total		45,909	34,638	6,690	5,833	872	872	1,703	891

Table 12.–Estimated effort for, and harvest of Dungeness crab, king crab, Tanner crab and shrimp in sampled Southeast Alaska marine boat sport fisheries during 1995.

Sport fishery	Time period	Effort		Harvest			
		Boat-days	SE	Dungeness crab	Tanner crab	King crab	Shrimp
Ketchikan	4/24-9/24	2,590	297	14,258	0	0	164,390
Juneau	4/24-9/24	5,161	278	10,460	2,161	4,598	—[a]
Petersburg	5/08-7/16	213	56	682	96	0	7,900
Total		7,964	411	25,400	2,257	4,598	172,290

[a] Shrimp harvest not estimated in Juneau.

salmon for the sampled fisheries combined. About 95% of the 891 Dolly Varden harvested were taken by Juneau anglers.

SHELLFISH FISHERIES

Shellfish effort and harvests of Dungeness, Tanner, and king crab were estimated for Ketchikan, Juneau, and Petersburg (Table 12). Shellfish effort in boat-days for the Juneau fishery (5,161 boat-days) was about twice that estimated for the Ketchikan fishery (2,590 boat-days). Since some effort was expended by divers, effort in boat-days is more comparable from fishery to fishery than effort in number of pots or rings fished.

Substantial numbers of Dungeness, Tanner and king crab were harvested in the Juneau fishery, but no king crab or Tanner crab were taken in the Ketchikan area. Shrimp harvest was only recorded in Ketchikan and Petersburg, and most of the monitored shrimp harvest (164,390 shrimp, SE = 13,058) occurred in Ketchikan, but a small shrimp harvest was also taken in Petersburg.

DISCUSSION

Onsite creel surveys provide data necessary for inseason management and they also can provide detailed fishery performance and biological information difficult to obtain with postal surveys. For inseason management, the usefulness of onsite surveys lies in their consistency of method and coverage, so that inseason estimates can be compared with statewide harvest survey (SWHS) and onsite creel estimates from previous years.

Effort, harvest and total catch estimates from the four creel surveys reported here should not be considered to be representative of the total Southeast Alaska marine boat sport fisheries. This number is best estimated by the SWHS (Howe et al. 1995). This is especially true for species other than chinook salmon in the fishery near Petersburg, where the survey occurred from 8 May through 16 July. Pacific halibut, coho salmon, and pink salmon are harvested in substantially larger numbers during the period from 17 July through the end of September than during the period from 8 May through 16 July.

Estimates for chinook salmon in the Juneau and Ketchikan fisheries are incomplete because there were no surveys: (1) of harvests occurring during 1 January–23 April and during 25 September–31 December, (2) of private moorages on the road system or remote moorages, docks, or lodges inaccessible from the road system, (3) during the night period from the end of civil twilight to the beginning of surveys at about 0800 hours, and (4) of those boat parties which were missed by creel samplers and therefore not counted or interviewed. Mills and Howe (1992) reported that SWHS estimates were generally about 10% higher than creel survey estimates for comparable surveys from the same geographic areas in Southeast Alaska.

Onsite creel surveys of the Juneau and other selected Southeast Alaska marine boat sport fisheries have been conducted every year since 1960 (Schmidt et al. 1973; Schmidt and Robards 1974, 1975; Mattson 1975; Robards 1976, 1977, 1978; Marriott et al. 1979; Schwan 1980, 1981, 1982; Neimark and Schwan 1983; Neimark 1984, 1985; Mecum and Suchanek 1986, 1987; Bingham et al. 1988; Suchanek and Bingham 1989, 1990, 1991, 1992; and Hubartt et al. 1993, 1994, 1995). These reports also present some sporadic surveys of the Ketchikan fishery, although it has been monitored for the entire spring and summer season since 1984, except for a one-year hiatus in 1985. The Sitka fishery was not surveyed in 1990, 1991, or prior to 1986, but was surveyed in spring of 1986 and 1989, and for most of the season (April or May through August or September) in 1987, 1988, 1992, 1993, and 1994. The Petersburg and Wrangell fisheries were not surveyed in 1990 or 1991, but were consistently surveyed in spring from 1983–1989 and during 1992, 1993, and 1994.

The Juneau and Ketchikan marine boat fisheries have been consistently surveyed from approximately mid-April or early May through late September. Among year comparisons of angler effort and harvest for a given fishery are

Table 13.–Estimated angler effort in the Juneau, Ketchikan and Sitka marine boat sport fisheries as determined by onsite creel surveys for comparable sample periods.

Sport fishery	Year	Survey dates	Salmon-hours Estimate	Salmon-hours Percent	Bottomfish-hours Estimate	Bottomfish-hours Percent	Total angler-hours
Juneau	1983	4/17-10/01	236,344	74	84,259	26	320,603
	1984	4/29-9/29	246,732	77	72,090	23	318,822
	1985	4/15-9/29	269,077	79	72,381	21	341,458
	1986	4/14-10/05	240,921	76	77,165	24	318,086
	1987	3/16-9/27	307,124	76	94,658	24	401,840
	1988	4/11-9/25	254,196	72	96,188	27	351,247
	1989	4/24-9/24	287,676	77	85,354	23	373,504
	1990	4/23-9/23	300,167	78	83,106	22	383,976
	1991	4/15-9/29	324,788	82	69,475	18	394,275
	1992	4/27-9/27	301,588	78	84,718	22	388,498
	1993	4/26-9/26	270,838	77	78,820	23	349,965
	1994	4/25-9/25	320,385	83	63,398	16	384,528
	Average		279,986	78	80,134	22	360,567
	1995	4/24-9/24	265,923	81	60,158	18	326,807
	% of average		95		75		91
Ketchikan	1984	4/29-9/29	161,100	72	62,625	28	223,725
	1985	----------no comparable survey----------					
	1986	4/28-9/28	133,518	72	51,208	28	184,726
	1987	4/20-9/27	157,306	65	84,954	35	242,274
	1988	4/11-9/25	153,086	68	71,611	32	225,779
	1989	4/24-9/24	195,974	71	79,958	29	276,516
	1990	5/07-9/23	199,063	80	49,347	20	248,618
	1991	4/29-9/29	275,856	80	67,842	20	343,698
	1992	4/27-9/27	192,269	73	69,366	27	261,635
	1993	4/26-9/26	198,960	72	78,002	28	276,969
	1994	4/25-9/25	230,372	80	56,092	20	286,464
	Average		189,750	74	67,101	26	257,040
	1995	4/24-9/24	175,765	63	101,381	37	277,146
	% of average		93		151		108
Sitka	1987	4/20-9/13	33,130	56	24,266	41	58,814
	1988	4/11-9/25	35,763	65	18,493	34	54,766
	1989	4/24-7/02[a]	34,946	84	6,177	15	41,362
	1990	no survey					
	1991	no survey					
	1992	5/11-8/30	74,183	64	40,756	35	115,031
	1993	4/26-9/26	107,184	71	44,480	29	151,829
	1994	4/25-9/25	123,971	74	43,363	26	168,146
	Average		74,846	68	34,272	31	109,717
	1995	4/24-9/24	135,866	72	51,710	28	188,000
	% of average		182		151		171

[a] Not used to calculate average.

Table 14.–Estimated harvest of chinook salmon in the Juneau, Ketchikan, and Sitka marine boat sport fisheries as determined by onsite creel surveys for comparable sample periods.

Year	Juneau marine[a]	Juneau Golden North Derby	Ketchikan marine	Sitka marine
1983	4,316	872	---	
1984	6,474	855	1,820	
1985	8,133	1,222	---	
1986	5,050	1,073	5,006	
1987	8,893	1,005	4,723	2,466
1988	5,683	677	5,245	3,177
1989[b]	7,074	609	5,752	3,501
1990	7,335	493	9,869	
1991	12,234	522	12,730	
1992	7,114	603	5,670	9,588
1993	8,337	243	5,277	13,779
1994	5,819	678	3,374	13,139
Average	7,205	738	5,947	8,430
1995	6,371	343	3,299	16,048
% of average	88	46	47	190

[a] Includes Juneau Golden North Salmon Derby harvest.

[b] Not used to calculate Sitka average.

confounded by some variation from year to year in the time periods surveyed. Effort and harvest either at the beginning or end of the survey season are small, however, in comparison to effort in the middle of the season. Among-year comparisons are generally valid, but variations in survey periods should be noted. Variances for harvest estimates have been generated only since 1987, so statistical comparisons with prior years are not possible. It should be noted in the following discussion that it might not be possible in some instances to show a statistically significant difference between years.

ANGLER EFFORT

Total effort in the Juneau fishery during 1995 (326,807 angler-hours) was 15% lower than during 1994 (384,528 angler-hours) and 9% lower than the 1983–1994 average of 360,567 angler-hours. In Ketchikan, total 1995 effort (277,146 angler-hours) was down 3% from estimated 1994 effort (286,464 angler-hours), and 8% above the 1984–1994 average of 257,040 angler-hours (Table 13). Average effort through 1994 (as determined from available data) for the Ketchikan fishery was about 71% of the Juneau average. For 1995, total effort in Ketchikan was 85% of that in Juneau. Total 1995 effort in the Sitka fishery (188,000 angler-hours) was 112% higher than the 168,146 angler-hours in 1994 and 171% above the average for 1987, 1988, 1992, 1993, and 1994—making it the fastest-growing fishery surveyed.

In Juneau the estimated level of salmon effort was 5% below average, and salmon effort in Ketchikan was 7% below average. Bottomfish effort in Juneau was 25% below average, while bottomfish effort in Ketchikan was 51% above the 1984–1994 average; 81% of the 1995 effort in Juneau targeted salmon—slightly above the long-term average; 63% of Ketchikan effort targeted salmon, about 11% below the 1984–1994 average. In Sitka 72% of the effort was targeted on salmon.

CHINOOK SALMON FISHERIES

Total harvest of chinook salmon for the Juneau marine boat fisheries was up from 1994, while the 1995 Ketchikan harvest was slightly below 1994 (Table 14). The Juneau harvest of 6,371 chinook salmon was about average, but the Ketchikan

Table 15.–Estimated contributions of hatchery-produced chinook salmon to Juneau, Ketchikan and Sitka marine boat sport fisheries as determined by onsite creel surveys, 1983–1995.

	Juneau marine				Ketchikan marine				Sitka marine			
Year	Total	% of harvest	Alaska	% of harvest	Total	% of harvest	Alaska	% of harvest	Total	% of harvest	Alaska	% of harvest
1983	46	1	25	1	350	10	233	6				
1984	577	9	444	7	432	24	333	18				
1985	1,037	13	831	10	862	34	838	33				
1986	1,032	20	918	18	2,226	44	1,638	33				
1987	2,060	23	2,015	23	1,409	30	999	21	150	6	53	2
1988	1,210	21	979	17	1,747	33	1,405	27	1,026	32	66	2
1989	1,018	14	865	12	2,992	52	2,082	36	1,186 [a]	34	215	6
1990	2,011	27	1,584	22	6,023	61	4,511	46	no survey			
1991[b]	4,279	37	2,957	26	8,373	66	7,035	55	no survey			
1992	2,958	42	1,762	25	3,628	64	2,604	46	4,074	42	1,092	11
1993	1,511	18	1,446	17	3,425	65	2,234	42	7,351	53	1,468	11
1994	2,127	37	1,895	33	2,393	71	1,378	41	6,210	47	1,642	12
Average	1,656	26	1,310	21	2,822	47	2,108	35	3,762	45	864	10
1995	2,933	46	2,873	45	888	25	723	22	9,052	56	5,702	36

[a] Not used to calculate average.

[b] Juneau percentages for 1991 were calculated without including 803 chinook salmon taken in strata which were not sampled for coded wire tags.

harvest was 45% below the 1984-1994 average, and the lowest since 1984. Harvest of chinook salmon in the Juneau Golden North Salmon Derby was 54% below average. Harvest of chinook salmon for the Sitka fishery (16,048) was the highest recorded and was 190% above the five year average (1987, 1988, 1992, 1993, and 1994), and 122% of the 1994 harvest.

Relative hatchery contribution to the Juneau fishery was the highest ever recorded, while contribution to the Ketchikan fishery was the lowest since 1984 (Table 15). An estimated 46% of the 1995 chinook salmon harvest in Juneau originated in hatcheries compared to the 1983-1994 average of 26%. In Ketchikan, an estimated 25% of the 1995 harvest originated in hatcheries in comparison to the average of 47%. Harvests of Alaska hatchery chinook salmon are of most value as most of these fish do not count toward U.S./Canada Pacific Salmon Treaty catch totals. An estimated 45% of the 1995 chinook salmon harvest in Juneau originated in Alaskan hatcheries, which was also the highest percentage recorded. In Ketchikan, an estimated 21% of the 1995 harvest originated in Alaskan hatcheries in comparison to the average of 35%. In Sitka 56% of the 1995 harvest originated in hatcheries with 36% coming from Alaska hatcheries.

COHO SALMON FISHERIES

The 1995 harvest of 19,165 coho salmon in the Ketchikan area was 15% below the 1984-1994 average of 22,533 (Table 16). The Juneau area harvest of coho salmon (15,172 fish) was 27% below the 1983-1994 average of 20,704. The Juneau Golden North Salmon derby harvest of 2,914 coho salmon was 7% above the 1983-1994 average of 2,714. The Sitka area harvest was 112% of the five year average (1987, 1988, 1992, 1993, and 1994), but only 52% of the record harvest of 23,080 coho salmon in 1994.

Harvest of coho salmon in the Juneau, Ketchikan and Sitka areas continues to be supplemented by hatchery contributions (Table 17). The estimated harvest of 1,010 (7% of total) hatchery coho salmon in Juneau was well below the 1994 harvest, but nearly average. The Ketchikan fishery has been much more dependent upon hatchery coho salmon than the Juneau fishery. About 32% of the 1984 to

Table 16.–Estimated harvest of coho salmon in the Juneau, Ketchikan, and Sitka marine boat sport fisheries as determined by onsite creel surveys for comparable sample periods.

Year	Juneau marine[a]	Juneau Golden North Derby	Ketchikan marine	Sitka marine
1983	12,662	2,964	---	
1984	10,100	1,594	14,231	
1985	17,138	2,919	---	
1986	9,763	367	20,814	
1987	17,610	3,056	10,464	1,185
1988	12,017	1,453	5,525	616
1989[b]	23,819	3,173	10,781	104
1990	26,343	1,914	33,661	no survey
1991	22,379	2,567	43,789	no survey
1992	18,482	2,166	22,688	4,336
1993	15,921	2,031	18,703	14,166
1994	62,218	8,358	44,673	23,080
Average	20,704	2,714	22,533	8,677
1995	15,172	2,914	19,165	12,015
% of average	73	107	85	112

[a] Includes Juneau Golden North Salmon Derby harvest.

[b] Not used to calculate Sitka average.

Table 17.–Estimated contributions of hatchery-produced coho salmon to Juneau, Ketchikan, and Sitka marine boat sport fisheries as determined by onsite creel surveys, 1983–1995.

	Juneau marine		Ketchikan marine		Sitka marine	
Year	Total	% of harvest	Total	% of harvest	Total	% of harvest
1983	227	2				
1984	52	1	5,181	36		
1985	1,353	8				
1986	37	< 1	3,200	15		
1987	94	1	4,663	45	57	5
1988	262	2	292	5	218	35
1989[a]	930	4	1,147	11	0	0
1990	482	2	9,515	28	no survey	
1991[b]	2,526	12	18,627	43	no survey	
1992	905	5	9,588	42	1,264	29
1993	1,577	10	4,325	23	1,650	12
1994	8,260	13	14,491	32	4,773	21
Average	1,392	8	7,103	32	1,592	18
1995	1,010	7	7,327	38	2,270	19

[a] Not used to calculate Sitka average.

[b] Juneau percentages for 1991 were calculated without including 1,111 coho salmon taken in strata which were not sampled for coded wire tags.

Table 18.–Estimated harvest and catch of Pacific halibut in the Juneau, Ketchikan, and Sitka marine boat sport fisheries, 1983–1995.

	Juneau marine				Ketchikan marine				Sitka marine			
Year	Kept	Released	Total catch	Percent retained	Kept	Released	Total catch	Percent retained	Kept	Released	Total catch	Percent retained
1983	16,414	4,674	21,088	78	---	---	---	---				
1984	14,609	9,100	23,709	62	8,913	748	9,661	92				
1985	11,931	3,955	15,886	75	---	---	---	---				
1986	13,132	6,868	20,000	66	8,208	1,577	9,785	84				
1987	13,513	10,357	23,870	57	10,493	3,390	13,883	76	8,314	7,214	15,528	54
1988	12,672	5,027	17,699	72	7,317	1,338	8,655	85	6,923	5,962	12,885	54
1989	12,484	2,406	14,890	84	10,797	1,256	12,053	90	2,694 [a]	1,411 [a]	4,105 [a]	66
1990	11,774	4,018	15,792	75	7,419	1,281	8,700	85		no survey		
1991	8,611	2,363	10,974	78	9,650	1,125	10,775	90		no survey		
1992	9,265	2,554	11,819	78	10,257	2,582	12,839	80	12,549	3,927	16,476	76
1993	6,928	2,652	9,580	72	12,783	4,443	17,226	74	12,720	4,289	17,009	75
1994	8,843	4,047	12,890	69	10,960	2,849	13,809	79	13,185	5,233	18,418	72
Average	11,681	4,835	16,516	71	9,680	2,059	11,739	82	10,738	5,325	16,063	67
1995	9,252	3,234	12,486	74	19,675	7,089	26,764	74	13,151	5,963	19,114	69
% of average	79	69	76		203	344	228		122	112	119	

[a] Not used to calculate average.

1994 Ketchikan harvest originated in hatcheries (Table 17). In 1995, both the estimated harvest of 7,327 hatchery coho salmon and the hatchery contribution of 38% in Ketchikan were above average. The contribution of hatchery-produced coho salmon to the Sitka fishery was about 19% of the total harvest, down two percentage points from 1994.

BOTTOMFISH FISHERIES

The 1995 harvest of Pacific halibut in the Juneau fishery (9,252) was 79% of the 1983-1994 average of 11,681 (Table 18). The Ketchikan harvest (19,675) was the highest recorded, and was more than double the 1984–1994 average of 9,680. Total estimated catch of Pacific halibut in the Juneau fishery (12,486) was 76% of the 1983-1994 average (16,516). The 1995 catch of Pacific halibut in Ketchikan (26,764) was 128% above the 1984-1994 average (11,739). The retention rate for Pacific halibut was slightly above the average of 71% in Juneau at 74%, and the same retention rate in Ketchikan (74%) was below the 1984-94 average of 82%. The Sitka harvest of halibut in 1995 (13,151) was nearly equal the 1994 harvest of 13,185, but a larger catch produced a lower retention rate (69% in 1995 vs. 72% in 1994).

Rockfish harvest in the 1995 Ketchikan fishery (10,134) was 7% below the 1984-94 average of 10,944 (Table 19). Retention of rockfish at 44% was below the 1986-1994 average of 46%. Targeted HPUE and CPUE for rockfish were both well below average.

SHELLFISH FISHERIES

Harvests of shellfish in the Juneau and Ketchikan areas have been consistently estimated with creel surveys since 1988 (Table 20). In 1995 estimated shellfish effort of 5,161 boat-days in the Juneau area was above average, as were the harvests of 4,598 king crab, 2,161 Tanner crab, and 10,460 Dungeness crab. In Ketchikan, shellfish effort of 2,590 boat-days was the highest recorded, and 108% above the 1988-1994 average of 1,245 boat-days. Dungeness crab harvest in Ketchikan of 14,258 was the highest recorded, and was 105% above the 1988-1994 average of 6,984. Shrimp harvest in the Ketchikan area during 1995 (164,390) was the highest recorded.

CONCLUSIONS AND RECOMMENDATIONS

The primary goals of this project were to obtain estimates of the harvest and Alaska hatchery contributions of chinook salmon in selected sport fisheries of Southeast Alaska with specified levels of precision for management of the fisheries. Due to the relatively low harvest in Petersburg compared to the other fisheries, it is recommended that a catch sampling program be implemented in lieu of a creel survey in 1996.

Several changes have occurred in Southeast Alaska marine boat sport fisheries over the past decade. Wild stocks of fish have historically supported most of the sport fisheries, but increasing enhancement efforts have led to increases in harvests of hatchery chinook and coho salmon. For example, from 1990 through 1994 over 60% of the chinook salmon taken in the Ketchikan area originated in hatcheries. These enhancement efforts are costly and catch monitoring through the use of onsite creel survey programs is one of the few means to evaluate the success of hatchery programs in producing fish for sport anglers. During 1995, the percent contribution of Alaskan hatchery chinook salmon to monitored marine boat sport fisheries averaged 37% and the total hatchery contribution averaged 50%. The number of hatchery coho salmon contributed to the Ketchikan, Juneau, and Sitka sport fisheries was 38%, 7%, and 19% of the harvest, respectively. It is recommended that onsite creel surveys and catch sampling programs of marine sport boat fisheries be continued to evaluate the effectiveness of stocking programs.

In March of 1992, the Alaska Board of Fisheries allocated the Southeast Alaska chinook salmon quota, established under the U.S./Canada Pacific Salmon Treaty, between the commercial and sport fisheries. The board also adopted a management plan for the chinook salmon sport fishery which requires inseason management by the Department

Table 19.–Comparative effort and catch statistics for the Ketchikan rockfish sport fishery.

		Angler effort		Total rockfish harvest and catch				Harvest per unit effort		Catch per unit effort	
Year	Survey dates	Total angler-hours	Bottomfish-hours	Harvest	Released	Total catch	% harvest	Targeted [a]	Non-targeted [b]	Targeted [c]	Non-targeted [d]
1984	4/29–9/29	223,725	62,625	9,805	---	---	---	0.16	0.04	---	---
1985 [e]	4/15–6/30	---	---	---	---	---	---	---	---	---	---
1986	4/28–9/28	184,726	51,208	6,017	7,527	13,544	44	0.12	0.03	0.54	0.19
1987	4/20–9/27	242,274	84,954	18,591	27,539	46,130	40	0.22	0.08	0.26	0.07
1988	4/11–9/25	225,779	71,611	17,477	15,516	32,993	53	0.24	0.08	0.46	0.15
1989	4/24–9/24	276,516	79,958	11,224	6,742	17,966	62	0.14	0.04	0.22	0.06
1990	5/07–9/23	248,618	49,347	9,561	9,132	18,693	51	0.19	0.04	0.38	0.08
1991	4/29–9/29	343,698	67,842	12,442	10,714	23,156	54	0.18	0.04	0.34	0.07
1992	4/27–9/27	261,635	69,366	8,149	15,272	23,424	35	0.12	0.03	0.34	0.09
1993	4/26–9/26	276,969	78,002	10,573	15,192	25,765	41	0.14	0.04	0.33	0.09
1994	4/25–9/25	286,464	56,092	5,604	8,283	13,887	40	0.10	0.02	0.25	0.05
Average		257,040	67,101	10,944	12,880	23,951	46	0.16	0.04	0.35	0.09
1995	4/24–9/24	277,146	101,381	10,132	13,015	23,147	44	0.10	0.04	0.23	0.08
% of average		108	151	93	101	97		63	100	66	89

[a] Rockfish harvest per bottomfish-hour of effort.

[b] Rockfish harvest per angler-hour of effort.

[c] Rockfish total catch per bottomfish-hour of effort.

[d] Rockfish total catch per angler-hour of effort.

[e] Data in 1985 are not comparable because the creel survey lasted only through 30 June, instead of late September.

Table 20.–Comparison of estimated shellfish effort and harvest for the Juneau and Ketchikan marine boat fisheries, 1988–1995.

JUNEAU FISHERY

Year	Effort (boat-days)	Dungeness crab harvest	Tanner crab harvest	King crab harvest	Shrimp harvest
1988	2,287	6,459	3,042	552	
1989	2,652	8,356	3,369	1,849	
1990	2,622	6,289	1,883	1,960	
1991	3,812	13,433	1,294	2,467	
1992	5,411	12,675	1,034	5,673	
1993	6,013	11,980	1,557	8,963	
1994	5,486	6,786	2,328	5,925	
Average	4,040	9,425	2,072	3,913	
1995	5,161	10,460	2,161	4,598	

KETCHIKAN FISHERY

Year	Effort (boat-days)	Dungeness crab harvest	Tanner crab harvest	King crab harvest	Shrimp harvest
1988	1,398	9,043	0	0	27,643
1989	508	2,688	100	0	12,730
1990	614	3,367	0	0	17,130
1991	1,394	7,631	0	0	69,450
1992	1,387	10,227	0	0	130,720
1993	1,973	8,897	0	0	37,060
1994	1,439	7,032	0	0	34,580
Average	1,245	6,984	14	0	47,045
1995	2,590	14,258	0	0	164,390

of Fish and Game to ensure the sport fishery does not exceed its allocation. In 1995, sampling of all major boat sport fisheries including those in Ketchikan, Juneau, Sitka, and Petersburg was necessary to estimate the total Southeast Alaska sport harvest of chinook salmon so that the sport fishery could be effectively managed. These sampling efforts along with coded wire tag sampling programs in Craig and Wrangell were also necessary to better document harvests of Alaska hatchery fish for catch reporting required by the Pacific Salmon Treaty. It is recommended that this expanded program be continued.

Data from marine boat surveys are also used for a variety of other purposes including preparation of position statements on proposed regulation changes and public information documents. It is recommended that the collection of current data on sport fisheries for coho salmon and Pacific halibut be continued to improve management planning for these species. It is also recommended that the estimation of the shellfish harvest as a component of the marine harvest studies be continued to provide information for evaluating the performance of this fishery and for addressing potential regulation changes during Alaska Board of Fisheries meetings.

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APPENDIX A: DATA ANALYSIS PROCEDURES

Appendix A1.–Data analysis procedures for angler effort, catch, and harvest estimates for the Petersburg and Sitka marine boat sport fisheries during 1995.

Standard procedures were used to calculate estimates of angler effort, and catch and harvest by species for the surveys at Petersburg and Sitka. The standard equations for a stratified four-stage random sample survey with locations, days, periods, and boat-parties were used for the Sitka survey to obtain point estimates as well as variance estimates. These same procedures were used for the Petersburg survey. Since the Petersburg survey is actually a three-stage survey with days, periods and boat-parties as sampling units, the first-stage units (locations) for this survey were all defined as having one location to sample.

First, the mean harvest of each species was obtained over all boat-parties interviewed during each sampled period for a sampled day at an access location:

$$\bar{n}_{hjio} = \frac{\sum_{k=1}^{m_{hjio}} n_{hjiok}}{m_{hjio}} \tag{A1.1}$$

where: n_{hjiok} is the number of fish harvested by interviewed boat-party k during period o during sampled day i at access location j within stratum h; and m_{hjio} equals the number of interviewed boat-parties during each sample.

Then the mean estimate was expanded over all counted boat-parties to obtain the harvest estimate for each sample:

$$\hat{N}_{hjio} = M_{hjio}\bar{n}_{hjio} \tag{A1.2}$$

where: M_{hjio} equals the number of boat-parties counted within each sample.

Then, the mean harvest by species was obtained over all periods sampled for the sampled day at each access location:

$$\bar{\hat{N}}_{hji} = \frac{\sum_{o=1}^{p_{hji}} \hat{N}_{hjio}}{p_{hji}} \tag{A1.3}$$

where: p_{hji} is the number of periods sampled within each sampled day.

Then this mean was expanded over all periods at each location to obtain the harvest estimate for the day at each access location:

$$\hat{N}_{hji} = P_{hji}\bar{\hat{N}}_{hji} \tag{A1.4}$$

where: P_{hji} equals the number of periods within the sampling day.

Next the mean harvest over all days sampled at each access location was obtained:

$$\bar{\hat{N}}_{hj} = \frac{\sum_{i=1}^{d_{hj}} \hat{N}_{hji}}{d_{hj}} \tag{A1.5}$$

where: d_{hj} equals the days sampled for access location j.

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The estimated harvest for the sampled access location within each stratum was obtained by expanding by the number of days:

$$\hat{N}_{hj} = D_{hj}\bar{\hat{N}}_{hj} \tag{A1.6}$$

where: D_{hj} equals the total number of possible days available for sampling.

Then the stratum mean harvest over all sampled access locations was obtained:

$$\bar{\hat{N}}_{h} = \frac{\sum_{j=1}^{q_h}\hat{N}_{hj}}{q_h} \tag{A1.7}$$

where: q_h equals the number of access locations sampled within each stratum.

Finally, the estimated harvest for each stratum was obtained by expanding for access locations:

$$\hat{N}_{h} = Q_h\bar{\hat{N}}_{h} \tag{A1.8}$$

where: Q_h equaled the total number of access locations in each stratum.

Estimates of catch of each species were calculated similarly by substituting the appropriate catch statistics for each species into equations (A1.1) through (A1.8), above. Similarly, the angler effort estimate was calculated by substitution.

The variance of the stratum estimates of harvest was obtained using the standard four-stage equation (adapted from Cochran 1977):

$$\begin{aligned}\hat{V}\left[\hat{N}_h\right] = &\left\{(1-f_{1h})Q_h^2\frac{S_{1h}^2}{q_h}\right\} + \left\{f_{1h}\frac{Q_h^2}{q_h q_h'}\sum_{j=1}^{q_h}(1-f_{2hj})D_{hj}^2\frac{S_{2hj}^2}{d_{hj}}\right\} + \\ &\left\{f_{1h}\frac{Q_h^2}{q_h^2}\sum_{j=1}^{q_h}f_{2hj}\frac{D_{hj}^2}{d_{hj}d_{hj}'}\sum_{i=1}^{d_{hj}}(1-f_{3hji})P_{hji}^2\frac{S_{3hji}^2}{p_{hji}}\right\} + \\ &\left\{f_{1h}\frac{Q_h^2}{q_h^2}\sum_{j=1}^{q_h}f_{2hj}\frac{D_{hj}^2}{d_{hj}^2}\sum_{i=1}^{d_{hj}}f_{3hji}\frac{P_{hji}^2}{p_{hji}p_{hji}'}\sum_{o=1}^{p_{hji}}(1-f_{4hjio})M_{hjio}^2\frac{s_{4hjio}^2}{m_{hjio}}\right\}\end{aligned} \tag{A1.9}$$

where: f_{1h}, f_{2hj}, f_{3hji}, and f_{4hjio} are the sampling fractions for access locations, days, sampling periods, and boat-parties, respectively (i.e., $f_{1h} = q_h/Q_h$; $f_{2hj} = d_{hj}/D_{hj}$; $f_{3hji} = p_{hji}/P_{hji}$; $f_{4hjio} = m_{hjio}/M_{hjio}$); S_{1h}^2 equals the among access location variance component for the angler harvest estimate, which was calculated as

$$S_{1h}^2 = \frac{\sum_{j=1}^{q_h}\left(\hat{N}_{hj} - \bar{\hat{N}}_h\right)^2}{q_h - 1} \tag{A1.10}$$

S_{2hj}^2 equals the among day (within access location) variance component for the harvest estimate, obtained as

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$$S_{2hj}^2 = \frac{\sum_{i=1}^{d_{hj}} \left(\hat{N}_{hji} - \bar{\hat{N}}_{hj}\right)^2}{d_{hj} - 1} \tag{A1.11}$$

q'_h is the number of access locations sampled in which S_{2hj}^2 can be estimated (i.e., in which at least two days sampled); S_{3hji}^2 equals the among sampling period variance component for the harvest estimate, obtained as

$$S_{3hji}^2 = \frac{\sum_{o=1}^{p_{hji}} \left(\hat{N}_{hjio} - \bar{\hat{N}}_{hji}\right)^2}{p_{hji} - 1} \tag{A1.12}$$

d'_{hj} is the number of days sampled in which S_{3hji}^2 can be estimated (i.e., in which at least two periods are sampled or less than two periods are available for sampling by definition); s_{4hjio}^2 equals the among boat-party variance component for the harvest estimate, obtained as

$$s_{4hjio}^2 = \frac{\sum_{k=1}^{m_{hjio}} \left(n_{hjiok} - \bar{n}_{hjio}\right)^2}{m_{hjio} - 1} \tag{A1.13}$$

p'_{hji} is the number of periods in which s_{4hjio}^2 can be estimated (i.e., either (1) at least two boat-parties interviewed or (2) the number of boat-parties interviewed equals the number of exiting boat-parties: $m_{hjio} = M_{hjio}$).

Variances of the stratum estimates of catch by species and angler effort were obtained similarly, by substituting the appropriate catch and effort statistics into equations (A1.9) to (A1.13), above.

In applying these procedures for some of the strata (for example during the derby at Sitka) only one period is defined within a sampling day. The sampling day in these surveys is completely covered during any sample. Accordingly, $p_{hji} = P_{hji} = 1$, and $f_{3hji} = 1$, and as such the third-stage variance term in equation (A1.9) equals zero.

Similarly, in applying these procedures to some strata only one location is defined. Accordingly, $q_h = Q_h = 1$, and $f_{1h} = 1$, and as such the first-stage variance term equals zero. Note, that only one access location is defined within all sampling strata for the Petersburg survey, and as such the first stage variance component reduces to zero for this survey.

Also note that during many of the derby strata each derby day is defined as a separate stratum, so that $d_{hj} = D_{hj} = 1$, and $f_{2hj} = 1$, and as such the second-stage variance term equals zero. Finally, during many samples all exiting boat-parties were interviewed so that $m_{hjio} = M_{hjio}$ and $f_{4hjio} = 1$, and as such the fourth-stage variance term equals zero.

Estimates of angler effort, catch and harvest by species and their variances across all strata, or select combinations of strata were obtained by summing individual stratum estimates (assuming independence). Standard errors of the strata and total estimates were obtained simply by taking the square root of the appropriate variance estimate.

Appendix A2.–Data analysis procedures for angler effort, catch, and harvest estimates for the Ketchikan and Juneau marine boat sport fisheries during 1995.

Estimates of angler effort, and catch and harvest by species for the surveys conducted at Juneau and Ketchikan were obtained by the procedures appropriate to a stratified three-stage random sample survey with days, locations, and boat-parties as sampling units. First, the mean harvest of each species was calculated over all boat-parties interviewed at each sampled access location within each sampled day:

$$\bar{n}_{hij} = \frac{\sum_{k=1}^{m_{hij}} n_{hijk}}{m_{hij}} \tag{A2.1}$$

where n_{hijk} is the number of fish harvested by interviewed boat-party k at access location j during sampled day i within stratum h; and m_{hij} equals the number of interviewed boat-parties during each sample.

Then the mean estimate was expanded over all counted boat-parties to obtain the harvest estimate for each sampled location within a day:

$$\hat{N}_{hij} = M_{hij}\bar{n}_{hij} \tag{A2.2}$$

where M_{hij} equals the number of boat-parties counted within each sample.

Then, the mean harvest by species was obtained over all periods sampled at each access location within each sampled day:

$$\bar{\hat{N}}_{hi} = \frac{\sum_{j=1}^{q_{hi}} \hat{N}_{hij}}{q_{hi}} \tag{A2.3}$$

where: q_{hi} equals the number of access locations sampled during sampled day i.

The estimated harvest for the sampled day within each stratum was then obtained by expanding by the number of access locations:

$$\hat{N}_{hi} = Q_{hi}\bar{\hat{N}}_{hi} \tag{A2.4}$$

where: Q_{hi} equals the total number of possible access locations available for sampling.

Then the stratum mean daily harvest was calculated :

$$\bar{\hat{N}}_{h} = \frac{\sum_{i=1}^{d_h} \hat{N}_{hi}}{d_h} \tag{A2.5}$$

where d_h equals the number of days sampled within each stratum.

Finally, the estimated harvest for each stratum was obtained by expanding for days:

$$\hat{N}_{h} = D_h\bar{\hat{N}}_{h} \tag{A2.6}$$

where D_h equals the total number of days in each stratum.

Estimates of catch of each species were obtained similarly by substituting the appropriate catch statistics for each species into equations (A2.1) through (A2.6), above. Similarly, the angler effort estimate was calculated by substitution.

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The variance of the stratum estimates of harvest were obtained using the three-stage equation (adapted from Cochran 1977):

$$\hat{V}\left[\hat{N}_h\right] = \left\{(1-f_{1h})D_h^2 \frac{S_{1h}^2}{d_h}\right\} + \left\{f_{1h}\frac{D_h^2}{d_h d_h'}\sum_{i=1}^{d_h'}(1-f_{2hi})Q_{hi}^2\frac{S_{2hi}^2}{q_{hi}}\right\} + \left\{f_{1h}\frac{D_h^2}{d_h^2}\sum_{i=1}^{d_h} f_{2hi}\frac{Q_{hi}^2}{q_{hi}q_{hi}'}\sum_{j=1}^{q_{hi}'}(1-f_{3hij})M_{hij}^2\frac{s_{3hij}^2}{m_{hij}}\right\} \quad \text{(A2.7)}$$

where f_{1h}, f_{2hi}, and f_{3hij} are the sampling fractions for days, access locations, and boat-parties, respectively (i.e., $f_{1h} = d_h/D_h$; $f_{2hi} = q_{hi}/Q_{hi}$; $f_{3hij} = m_{hij}/M_{hij}$); S_{1h}^2 equals the among day variance component for the angler harvest estimate, which was obtained as

$$S_{1h}^2 = \frac{\sum_{i=1}^{d_h}\left(\hat{N}_{hi} - \bar{\hat{N}}_h\right)^2}{d_h - 1} \quad \text{(A2.8)}$$

S_{2hi}^2 equals the among access location (within day) variance component for the harvest estimate, obtained as

$$S_{2hi}^2 = \frac{\sum_{j=1}^{q_{hi}}\left(\hat{N}_{hij} - \bar{\hat{N}}_{hi}\right)^2}{q_{hi} - 1} \quad \text{(A2.9)}$$

d_h' is the number of days in which S_{2hi}^2 can be estimated (i.e., days with at least two locations sampled); s_{3hij}^2 equaled the among boat-party variance component for the harvest estimate, obtained as

$$s_{3hij}^2 = \frac{\sum_{k=1}^{m_{hij}}\left(n_{hijk} - \bar{n}_{hij}\right)^2}{m_{hij} - 1} \quad \text{(A2.10)}$$

and q_{hi}' is the number of locations in which s_{3hij}^2 can be estimated (i.e., locations with either (1) at least two boat-parties interviewed or (2) the number of boat-parties interviewed equals the number of exiting boat-parties: $m_{hij} = M_{hij}$).

Variances of the stratum estimates of catch by species and angler effort were obtained similarly, by substituting the appropriate catch and effort statistics into equations (A2.1) through (A2.10), above.

Estimates of angler effort, catch and harvest by species and their variances across all strata, or select combinations of strata were calculated by summing the individual stratum estimates (assuming independence). Standard errors of the strata and total estimates were obtained simply by taking the square root of the appropriate variance estimate.

Appendix A3.–Data analysis procedures for coho salmon harvest per unit effort estimates for the Ketchikan and Juneau marine boat sport fishery surveys during 1995.

Harvest per unit effort (HPUE) in terms of coho salmon harvested per angler-hour of effort was estimated for the Juneau and Ketchikan surveys by the following procedures for each biweek. The estimates of HPUE were obtained from unweighted means as follows, by first obtaining the mean HPUE for all anglers in each interviewed boat-party:

$$\overline{HPUE}_{hijk} = \frac{n_{hijk}}{e_{hijk} v_{hijk}} \tag{A3.1}$$

where n_{hijk} equaled the entire harvest of the interviewed boat-party k, from the sample at access location j, during day i within stratum h; e_{hijk} was the effort (in boat-hours) of each interviewed boat-party; and v_{hijk} was the number of anglers in the interviewed boat-party.

The mean HPUE for the biweek was obtained over all boat-parties interviewed within each biweek:

$$\hat{HPUE} = \frac{\sum_{h=1}^{s} \sum_{i=1}^{d_h} \sum_{j=1}^{q_{hi}} \sum_{k=1}^{m_{hij}} \overline{HPUE}_{hijk}}{m} \tag{A3.2}$$

where m_{hij} equaled the number of boat-parties interviewed; q_{hi} equaled the number of access locations sampled during each day; d_h equaled the number of days sampled within each stratum; s equaled the number of strata within each biweekly period; and m equaled all the boat-parties interviewed within a biweekly period, obtained as:

$$m = \sum_{h=1}^{s} \sum_{i=1}^{d_h} \sum_{j=1}^{q_{hi}} m_{hij} \,. \tag{A3.3}$$

The variances of the biweekly estimates of HPUE were obtained by the following equation:

$$\hat{V}\left[\hat{HPUE}\right] = \frac{\sum_{h=1}^{s} \sum_{i=1}^{d_h} \sum_{j=1}^{q_{hi}} \sum_{k=1}^{m_{hij}} \left(\overline{HPUE}_{hijk} - \hat{HPUE}\right)^2}{m\,(m-1)} \,. \tag{A3.4}$$

Standard errors were obtained by taking the square root of the variance estimates.

Appendix A4.–Data analysis procedures for hatchery contributions for the surveys of the marine boat sport fishery during 1995.

Hatchery contributions were estimated for the surveys using procedures outlined by Bernard and Clark (*In press*). Estimates were obtained on a biweekly basis, treating all strata within each biweek equally. As such, the relative contributions of the Alaskan hatchery releases of interest were assumed to be consistent from one sampling stratum (except for derby strata) to the next within any biweekly period. Considering that anglers in general fished the same stocks of fish, regardless of the access location used within each survey, then this assumption should be valid. The estimating procedures used (Bernard and Clark *In press)* are those appropriate for estimating contributions and variances when total harvest is estimated.

The notation used in the following equations essentially follows that used by Bernard and Clark (*In press*), with subscripts adapted to avoid confusion with other subscripts used in this report. The first step involved estimating the contribution to each biweekly period in the fishery of each particular tag code:

$$\hat{r}_{tc} = \hat{N}_t \hat{p}_{tc} \theta_c^{-1} \tag{A4.1}$$

where $\hat{r}_{tc}$ equals the estimated number of salmon from a hatchery release identified by the unique tag code c, harvested in biweek t; $\hat{N}_t$ is the estimated total harvest of salmon (one particular species only) for biweek t; θ_c is the proportion of a particular hatchery release which contained a coded wire tag of the unique tag code c; $\hat{p}_{tc}$ which was calculated as

$$\hat{p}_{tc} = \frac{m_{tc}}{\lambda_t n_t} \tag{A4.2}$$

n_t is number of salmon (one particular species only) inspected for missing adipose fins from the sampled harvest in biweek t; m_{tc} equals the number of coded wire tags dissected out of the salmon heads and decoded as the unique tag code c, originally sampled from biweek t; λ_t is defined as

$$\lambda_t = \frac{a_t' t_t'}{a_t t_t} \tag{A4.3}$$

a_t is the number of salmon with a missing adipose fin from the n_t sampled harvest in biweek t; a_t' equals the number of salmon heads previously marked with a head strap which arrived at the tag lab, from fish originally sampled from biweek t; t_t is the number of coded wire tags which were detected in the salmon heads at the tag lab, from those salmon sampled in biweek t; t_t' equals the number of coded wire tags which were removed from the salmon heads and decoded, from those salmon sampled in biweek t.

Estimates of across biweek contributions by tag code, as well as by combined tag codes (e.g., all Alaskan hatchery tag codes) were obtained by summing the estimates across biweeks and tag codes, as appropriate:

$$\hat{R} = \sum_t \sum_c \hat{r}_{tc} \tag{A4.4}$$

Estimates of the variance for contributions in a biweekly period were estimated following the approach outlined by Bernard and Clark (*In press*):

$$\hat{V}[\hat{r}_{tc}] = \hat{r}_{tc}^2 \left\{ \frac{\hat{V}[\hat{p}_{tc}]}{\hat{p}_{tc}^2} + \frac{\hat{V}[\hat{N}_t]}{\hat{N}_t^2} - \frac{\hat{V}[\hat{p}_{tc}]\hat{V}[\hat{N}_t]}{\hat{p}_{tc}^2 \hat{N}_t^2} \right\} \tag{A4.5}$$

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where $\hat{V}[\hat{N}_t]$ equals the estimated variance of overall harvest estimate for biweek *t*, obtained from the harvest sampling program; and $V[\hat{p}_{tc}]$ is the variance of $\hat{p}_{tc}$ which is estimated approximately following the approach used by Bernard and Clark (*In press*; their equations [8] and [10]) (the approximate nature of equation (A4.6) is due to estimating the sampling fraction, $\hat{\phi}_t = n_t/\hat{N}_t$ as well as the values for E_t and C_t);

$$\hat{V}[\hat{p}_{tc}] \approx \left\{\left[\frac{1}{D_t}\frac{n_t}{(n_t-1)}\right]\left[\left(\frac{1}{\lambda_t n_t}\right)\hat{p}_{tc} - \left(1 - D_t\frac{(n_t-1)}{n_t}\right)\hat{p}_{tc}^2\right]\right\} \left\{\left[\frac{1-m_{tc}(1-\hat{C}_t)}{\hat{E}_t - m_{tc}(\hat{E}_t - \hat{C}_t)}\right] - \left[\lambda_t\hat{\phi}_t\theta_c\frac{\hat{C}_t}{\hat{E}_t - m_{tc}(\hat{E}_t - \hat{C}_t)}\right]\right\} \quad \text{(A4.6)}$$

where:

$$D_t = \frac{a_t(a_t'-1)t_t(t_t'-1)}{a_t'(a_t-1)t_t'(t_t-1)} \quad \text{(A4.7)}$$

$$\hat{C}_t = \frac{\hat{N}_t(n_t-1)a_t(a_t'-1)t_t(t_t'-1)}{n_t(\hat{N}_t-1)a_t'(a_t-1)t_t'(t_t-1)} \quad \text{(A4.8)}$$

$$\hat{E}_t = \frac{\hat{N}_t}{\hat{N}_t - 1} \quad \text{(A4.9)}$$

Estimates of the variance of across biweek contributions by tag code, as well as by combined tag codes were obtained by the following approximate equation (adapted from equation [3] in Bernard and Clark *In press*):

$$\hat{V}[\hat{R}] = \sum_t\sum_c \hat{V}[\hat{r}_{tc}] + 2\sum_t\sum_c\sum_{u>c} \hat{Cov}[\hat{r}_{tc}, \hat{r}_{tu}] \quad \text{(A4.10)}$$

where $\hat{Cov}[\hat{r}_{tc}, \hat{r}_{tu}]$ is the covariance between the estimated contribution of two different tag codes within one biweekly period, which is calculated as:

$$\hat{Cov}[\hat{r}_{tc}, \hat{r}_{tu}] = \hat{r}_{tc}\hat{r}_{tu}\left\{\frac{\hat{V}[\hat{N}_t]}{\hat{N}_t^2} + \frac{\hat{Cov}[\hat{p}_{tc}, \hat{p}_{tu}]}{\hat{p}_{tc}\hat{p}_{tu}} - \frac{\hat{V}[\hat{N}_t]\hat{Cov}[\hat{p}_{tc}, \hat{p}_{tu}]}{\hat{N}_t^2\hat{p}_{tc}\hat{p}_{tu}}\right\} \quad \text{(A4.11)}$$

where $\hat{Cov}[\hat{p}_{tc}, \hat{p}_{tu}]$ is the covariance between $\hat{p}_{tc}$ and $\hat{p}_{uc}$ which is estimated approximately following the approach used by Bernard and Clark (*In press*; their equations [9] and [11]) (the approximate nature of equation (A4.12) is again due to estimating E_t and C_t);

-continued-

$$\hat{Cov}[\hat{p}_{tc},\hat{p}_{tu}] \approx -\left\{\left[\frac{1}{D_t}\frac{n_t}{(n_t-1)}\right]\left[1-D_t\frac{(n_t-1)}{n_t}\right][\hat{p}_{tc}\hat{p}_{tu}]\right\}\left\{\frac{1-\hat{C}_t}{\hat{E}_t-\hat{C}_t}\right\} \quad \text{(A4.12)}$$

Standard errors (SE's) were obtained as the square root of the appropriate variance.

The estimates of relative contribution by coded wire tag code for Alaskan hatchery fish (denoted below by the term $\hat{u}_c$) for the Craig and Wrangell surveys were estimated by utilizing the approach outlined by in Bernard and Clark (*In press*). Specifically equation (A4.1) was adapted by dividing through by the unknown total harvest estimate (N)

$$\hat{u}_c = \left(\frac{m_c}{\lambda n}\right)\theta_c^{-1} = \hat{p}_c\theta_c^{-1} \quad \text{(A4.13)}$$

where all terms are as defined above, without the biweek subscript since estimates are calculated for the entire season as a whole.

The variance of $\hat{u}_c$ was calculated by:

$$\hat{V}[\hat{u}_c] = V[\hat{p}_c]\theta_c^{-2} \quad \text{(A4.14)}$$

The variance of $\hat{p}_c$ was calculated approximately (adapting equation (A4.6), above) as:

$$\hat{V}[\hat{p}_c] \approx \left(\frac{1}{D}\frac{n}{(n-1)}\right)\left[\left(\frac{1}{\lambda n}\right)\hat{p}_c - \left(1-D\frac{(n-1)}{n}\right)\hat{p}_c^2\right] \quad \text{(A4.15)}$$

where all terms are as defined above without the biweek subscript. Note that $\hat{V}[\hat{u}_c] > V[\hat{u}_c]$ by a factor of $(1-\lambda\phi\theta_c)$ where $\phi = n/N$. If the product $\lambda\phi\theta_c$ is negligible, $\hat{V}[\hat{u}_c] = V[\hat{u}_c]$. If the product $\lambda\phi\theta_c$ is not negligible, $\hat{V}[\hat{u}_c](1-\lambda\phi\theta_c) = V[\hat{u}_c]$. Substitution of $\hat{\phi}$ for ϕ would produce $\hat{V}[\hat{u}_c](1-\lambda\hat{\phi}\theta_c) = V[\hat{u}_c]$.

Unbiased estimates of $\hat{u}_c$ were obtained only if the total harvest of chinook salmon is sampled proportionally throughout each of the harvest sampling surveys or the contributions do not vary within the season at each survey location.

APPENDIX B: CREEL SURVEY STATISTICS

Appendix B1.–Estimated effort, harvest, and total catches for the Ketchikan marine boat sport fishery, 24 April–24 September 1995.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort			
Boat-hours	105,622	5,943	9%
Salmon-hours	175,765	12,709	12%
Bottomfish-hours	101,381	7,037	11%
Angler-hours	277,146	15,817	9%
Boat-days	29,867	1,629	9%
Finfish Harvests[b]			
Total Chinook Salmon ≥ 28"	3,476	356	18%
Derby Take-home	215	48	526%
Derby Entered	200	0	0%
Derby Take-home & Entered	415	48	37%
Total Chinook Salmon < 28"	23	10	72%
Coho Salmon	19,165	2,467	21%
Chum Salmon	2,792	467	28%
Sockeye Salmon	369	188	84%
Pink Salmon	29,406	9,485	53%
Pacific Halibut	19,675	1,669	14%
Lingcod	1,230	171	23%
Dolly Varden	7	6	141%
Total Rockfish	10,134	1,185	19%
Quillback Rockfish	4,366	903	34%
Dusky Rockfish	55	21	63%
Copper Rockfish	343	79	38%
Black Rockfish	239	78	54%
Yelloweye Rockfish	2,429	296	20%
Silvergrey Rockfish	344	73	35%
Other Pelagic Rockfish	118	50	70%
Other Non-pelagic Rockfish	771	212	45%
Unidentified Rockfish	1,469	244	27%
Finfish Total Catch[b]			
Chinook Salmon ≥ 28"	3,532	358	18%
Chinook Salmon < 28"	17,909	4,845	45%
Coho Salmon	25,619	3,201	21%
Chum Salmon	3,076	506	27%
Sockeye Salmon	369	188	84%
Pink Salmon	36,200	3,201	15%
Pacific Halibut	26,764	2,148	13%
Lingcod	1,623	251	25%
Dolly Varden	12	8	110%
Total Rockfish	23,147	1,986	14%
Shellfish Effort and Harvest[c]			
Boat-days Fished	2,590	297	19%
Pots or Rings	6,449	770	20%
Dungeness Crab Kept	14,258	2,035	23%
Shrimp Kept	164,390	13,058	13%

[a] Relative precision ($\alpha = 0.10$) = (SE * 1.645 / estimate) * 100.

[b] No steelhead trout, cutthroat trout, Tanner crab, or king crab were caught or harvested.

Appendix B2.–Estimated effort, harvest, and total catches for the Juneau marine boat sport fishery, 24 April–24 September 1995.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort			
Boat-hours	129,911	5,501	7%
Salmon-hours	265,923	12,390	8%
Bottomfish-hours	60,158	3,734	10%
Angler-hours	326,807	14,543	7%
Boat-days	31,806	1,258	7%
Finfish Harvests[b]			
Total Chinook Salmon ≥ 28"	6,301	371	10%
Derby Take-home	56	17	20%
Derby Entered	334	0	0%
Derby Take-home & Entered	390	17	5%
Total Chinook Salmon < 28"	70	23	54%
Derby Take-home	6	0	0%
Derby Entered	3	0	0%
Derby Take-home & Entered	9	0	0%
Coho Salmon	15,172	1,241	13%
Derby Take-home	701	234	55%
Derby Entered	2,213	0	0%
Derby Take-home & Entered	2,914	234	13%
Chum Salmon	2,109	222	17%
Derby Take-home	49	23	77%
Derby Entered	327	0	0%
Derby Take-home & Entered	376	23	10%
Sockeye Salmon	58	18	51%
Derby Take-home	4	3	123%
Derby Entered	5	0	0%
Derby Take-home & Entered	9	3	55%
Pink Salmon	2,850	310	18%
Derby Take-home	137	41	49%
Pacific Halibut	9,252	762	14%
Dolly Varden	850	112	22%
Cutthroat Trout	6	6	165%
Lingcod	68	55	133%
Total Rockfish	812	181	37%
Finfish Total Catch[b]			
Chinook Salmon ≥ 28"	6,417	375	10%
Chinook Salmon < 28"	15,182	1,154	13%
Coho Salmon	15,555	1,255	13%
Chum Salmon	2,338	237	17%
Sockeye Salmon	58	18	51%
Pink Salmon	4,891	518	17%
Pacific Halibut	12,486	1,158	15%
Dolly Varden	1,621	233	24%
Cutthroat Trout	6	6	165%
Steelhead Trout	0	0	0%
Lingcod	68	55	133%
Total Rockfish	833	183	36%
Shellfish Effort and Harvest[b]			
Boat-days Fished	5,161	278	9%
Pots or Rings	9,856	535	9%
King Crab Kept	4,598	477	17%
Dungeness Crab Kept	10,460	880	14%
Tanner Crab Kept	2,161	426	32%

[a] Relative precision ($\alpha = 0.10$) = (SE * 1.645 / estimate) * 100.

[b] No steelhead trout were caught or harvested.

Appendix B3.–Estimated effort, harvest, and total catches for the Sitka marine boat sport fishery, 24 April–24 September 1995.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort			
Boat-hours	69,028	2,540	6%
Salmon-hours	135,866	5,647	7%
Bottomfish-hours	51,710	3,592	11%
Angler-hours	188,000	7,884	7%
Boat-days	18,429	672	6%
Finfish Harvests[b]			
Total Chinook Salmon ≥ 28"	16,048	997	10%
Derby Take-home	1,045	140	22%
Derby Entered	1,040	0	0%
Derby Take-home & Entered	2,085	140	11%
Total Chinook Salmon < 28"	0	0	0%
Coho Salmon	12,015	1,314	18%
Chum Salmon	932	142	25%
Sockeye Salmon	414	254	101%
Pink Salmon	2,382	389	27%
Pacific Halibut	13,151	1,182	15%
Dolly Varden	34	21	102%
Lingcod	3,653	352	16%
Total Rockfish	7,676	637	14%
Quillback Rockfish	617	117	31%
Dusky Rockfish	126	36	47%
Copper Rockfish	117	36	51%
Black Rockfish	2,085	331	26%
Yelloweye Rockfish	2,083	248	20%
Silvergrey Rockfish	247	67	45%
Other Non-pelagic Rockfish	112	50	73%
Other Pelagic Rockfish	275	73	44%
Unidentified Rockfish	2,014	373	30%
Finfish Total Catch[b]			
Chinook Salmon ≥ 28"	17,302	1,080	10%
Chinook Salmon < 28"	1,818	269	24%
Coho Salmon	12,803	1,371	18%
Sockeye Salmon	414	254	101%
Chum Salmon	1,276	204	26%
Pink Salmon	4,818	758	26%
Pacific Halibut	19,114	1,666	14%
Dolly Varden	70	25	59%
Lingcod	4,778	445	15%
Total Rockfish	29,932	1,803	10%

[a] Relative precision ($\alpha = 0.10$) = (SE * 1.645 / estimate) * 100.

[b] No steelhead trout or cutthroat trout were caught or harvested; and shellfish effort, catch and harvest were not recorded.

Appendix B4.–Estimated effort, harvest, and total catches for the Petersburg marine boat sport fishery, 8 May–16 July 1995.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort			
Boat-hours	9,679	661	11%
Salmon-hours	15,194	1,369	15%
Bottomfish-hours	9,210	945	17%
Angler-hours	24,404	1,952	13%
Boat-days	2,350	172	12%
Finfish Harvests[b]			
Total Chinook Salmon ≥ 28"	1,039	95	15%
Derby Take-home	34	2	10%
Derby Entered	253	0	0%
Derby Entered & Take-home	287	2	1%
Total Chinook Salmon < 28"	20	12	99%
Sockeye Salmon	31	26	138%
Pacific Halibut	1,710	228	22%
Total Rockfish	62	25	60%
Quillback Rockfish	18	11	101%
Yelloweye Rockfish	38	21	91%
Other non-pelagic Rockfish	6	5	137%
Finfish Total Catch[b]			
Chinook Salmon ≥ 28"	1,055	95	15%
Chinook Salmon < 28"	278	50	30%
Sockeye Salmon	31	26	138%
Pacific Halibut	2,935	457	26%
Total Rockfish	105	37	58%
Quillback Rockfish	18	11	101%
Yelloweye Rockfish	38	21	91%
Other non-pelagic Rockfish	6	5	137%
Shellfish Effort and Harvest[b]			
Boat-days Fished	213	59	46%
Pots or Rings	319	90	46%
Dungeness Crab Kept	682	265	64%
Tanner Crab Kept	96	60	103%
Shrimp Kept	7,900	3,100	65%

[a] Relative precision ($\alpha = 0.10$) = (SE * 1.645 / estimate) * 100.

[b] No coho salmon, pink salmon, chum salmon, lingcod, Dolly Varden, steelhead trout, cutthroat trout, copper rockfish, black rockfish, silvergrey rockfish, dusky rockfish, other pelagic rockfish, or king crab were caught or harvested.

Appendix B5.–Estimated effort, harvest and catch for the Ketchikan marine boat sport fishery by seasonal period, 24 April–24 September 1995.

Seasonal period	Boat-hours		Salmon-hours		Bottomfish-hours		Angler-hours	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	3,691	645,638	2,538	300,560	5,066	2,434,302	7,604	3,235,475
08May-21May	4,629	781,844	3,247	830,765	6,788	1,440,631	10,035	3,054,277
22May-04Jun	3,826	306,038	7,212	1,622,632	2,461	227,697	9,672	2,346,019
Derby[a]--------	10,461	2,834,099	21,871	12,506,686	2,950	279,881	24,821	14,452,606
05Jun-18Jun	9,404	1,612,823	14,937	5,053,197	9,024	1,769,428	23,961	10,486,842
19Jun-02Jul	13,893	1,715,802	22,886	7,714,363	13,184	2,854,717	36,070	10,942,984
03Jul-16Jul	9,209	1,039,630	14,938	7,739,041	10,467	1,904,415	25,405	10,060,714
17Jul-30Jul	9,930	2,872,999	16,792	31,472,468	13,661	8,391,728	30,454	39,166,142
31Jul-13Aug	9,173	4,071,781	14,505	15,326,069	12,653	15,951,439	27,158	32,568,241
14Aug-27Aug	8,525	1,888,725	12,728	7,668,100	10,656	7,208,567	23,384	23,086,425
28Aug-10Sep	15,775	16,539,085	30,481	66,182,045	10,118	6,100,723	40,599	94,350,985
11Sep-24Sep	7,106	1,005,622	13,630	5,104,731	4,353	959,152	17,983	6,415,547
Total	105,622	35,314,086	175,765	161,520,657	101,381	49,522,680	277,146	250,166,257

Seasonal period	Boat-days		Chinook salmon ≥ 28" total catch		Chinook salmon ≥ 28" harvested		Chinook salmon < 28" total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	1,152	49,565	108	3,297	108	3,297	42	1,680
08May-21May	1,363	61,365	81	1,833	81	1,833	199	20,466
22May-04Jun	1,074	20,014	193	2,601	193	2,601	332	62,991
Derby[a]--------	2,211	109,223	415	2,282	415	2,282	401	10,003
05Jun-18Jun	2,475	102,011	836	24,941	836	24,941	323	8,158
19Jun-02Jul	3,955	159,995	1,010	60,927	1,003	61,011	1,674	193,131
03Jul-16Jul	2,734	84,890	402	14,036	395	14,045	746	91,514
17Jul-30Jul	3,283	234,810	255	11,703	213	10,317	495	13,232
31Jul-13Aug	2,837	403,806	180	5,556	180	5,556	632	77,912
14Aug-27Aug	2,779	233,921	37	726	37	726	441	26,527
28Aug-10Sep	4,031	1,104,697	8	62	8	62	9,710	20,959,421
11Sep-24Sep	1,973	87,816	7	37	7	37	2,914	2,004,540
Total	29,867	2,652,113	3,532	128,001	3,476	126,708	17,909	23,469,575

Seasonal period	Chinook salmon < 28" harvested		Coho salmon total catch		Coho salmon harvested		Pink salmon total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	0	0	0	0
08May-21May	0	0	0	0	0	0	0	0
22May-04Jun	0	0	0	0	0	0	0	0
Derby[a]--------	0	0	54	222	41	102	4	12
05Jun-18Jun	11	47	104	1,382	104	1,382	6	27
19Jun-02Jul	0	0	1,184	85,418	1,041	72,274	3,416	960,955
03Jul-16Jul	5	17	1,649	327,841	1,439	215,708	6,819	3,874,667
17Jul-30Jul	0	0	1,041	82,957	874	65,807	12,834	89,211,289
31Jul-13Aug	0	0	1,676	322,556	1,388	221,420	7,794	6,978,141
14Aug-27Aug	0	0	3,505	2,170,988	2,848	1,374,711	3,255	919,475
28Aug-10Sep	0	0	10,562	6,223,242	7,446	3,552,463	1,697	278,056
11Sep-24Sep	7	45	5,844	1,030,317	3,984	581,648	375	33,514
Total	23	109	25,619	10,244,923	19,165	6,085,515	36,200	102,256,136

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Seasonal period	Pink salmon harvested		Chum salmon total catch		Chum salmon harvested		Sockeye salmon catch and harvest	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	0	0	0	0
08May-21May	0	0	0	0	0	0	0	0
22May-04Jun	0	0	0	0	0	0	0	0
Derby[a]--------	0	0	12	25	12	25	0	0
05Jun-18Jun	0	0	11	48	6	27	4	12
19Jun-02Jul	2,098	670,975	762	74,075	690	53,724	11	51
03Jul-16Jul	4,969	2,528,413	700	55,903	621	42,966	184	12,262
17Jul-30Jul	11,507	79,351,040	401	23,222	360	23,348	157	22,792
31Jul-13Aug	7,026	6,516,330	484	80,220	484	80,220	0	0
14Aug-27Aug	2,489	771,511	166	5,329	166	5,329	13	148
28Aug-10Sep	1,031	98,295	321	10,087	271	7,740	0	0
11Sep-24Sep	286	31,297	219	6,699	182	4,882	0	0
Total	29,406	89,967,861	3,076	255,608	2,792	218,261	369	35,265

Seasonal period	Pacific halibut total catch		Pacific halibut harvested		Lingcod total catch		Lingcod harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	473	53,693	372	38,147	12	132	12	132
08May-21May	1,151	40,762	842	24,266	21	383	7	43
22May-04Jun	1,273	124,354	647	25,105	63	1,055	63	1,055
Derby[a]--------	768	32,796	537	28,127	53	224	53	224
05Jun-18Jun	3,287	480,005	2,375	268,621	235	7,102	210	7,036
19Jun-02Jul	3,904	395,351	2,634	143,347	245	5,815	169	3,154
03Jul-16Jul	3,124	513,224	2,275	300,063	108	1,666	108	1,666
17Jul-30Jul	2,957	583,440	2,033	279,650	232	9,940	169	6,722
31Jul-13Aug	4,174	1,528,225	3,305	1,009,987	182	3,020	182	3,020
14Aug-27Aug	2,140	428,565	1,897	361,133	75	1,429	75	1,429
28Aug-10Sep	2,518	378,784	2,099	286,085	148	5,259	98	3,307
11Sep-24Sep	995	53,287	659	19,747	249	26,986	84	1,609
Total	26,764	4,612,486	19,675	2,784,278	1,623	63,011	1,230	29,397

Seasonal period	Dolly Varden total catch		Dolly Varden harvested		Rockfish total catch		Rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	502	14,007	158	4,045
08May-21May	0	0	0	0	1,331	74,323	659	33,218
22May-04Jun	0	0	0	0	670	52,521	285	11,294
Derby[a]--------	5	17	0	0	988	45,668	327	6,606
05Jun-18Jun	0	0	0	0	2,644	410,936	924	28,168
19Jun-02Jul	0	0	0	0	2,450	151,149	988	28,588
03Jul-16Jul	7	42	7	42	2,121	83,579	954	16,266
17Jul-30Jul	0	0	0	0	3,738	848,814	1,585	319,688
31Jul-13Aug	0	0	0	0	3,237	1,340,559	2,138	831,454
14Aug-27Aug	0	0	0	0	2,687	646,209	964	56,300
28Aug-10Sep	0	0	0	0	1,633	134,750	851	58,865
11Sep-24Sep	0	0	0	0	1,146	142,923	301	10,647
Total	12	59	7	42	23,147	3,945,438	10,134	1,405,139

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Seasonal period	Quillback rockfish harvested		Dusky rockfish harvested		Copper rockfish harvested		Black rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	61	1,360	8	49	20	181	0	0
08May-21May	195	6,857	0	0	33	688	26	591
22May-04Jun	67	2,057	0	0	0	0	36	1,080
Derby[a]--------	98	1,393	0	0	16	130	0	0
05Jun-18Jun	192	2,226	16	115	17	121	105	2,862
19Jun-02Jul	348	11,189	20	196	49	771	72	1,506
03Jul-16Jul	355	9,803	11	100	7	42	0	0
17Jul-30Jul	792	225,846	0	0	38	748	0	0
31Jul-13Aug	1,365	495,677	0	0	96	1,848	0	0
14Aug-27Aug	435	42,929	0	0	28	756	0	0
28Aug-10Sep	353	14,114	0	0	0	0	0	0
11Sep-24Sep	105	2,619	0	0	39	1,005	0	0
Total	4,366	816,070	55	460	343	6,290	239	6,039

Seasonal period	Other pelagic rockfish harvested		Yelloweye rockfish harvested		Silvergrey rockfish harvested		Other non-pelagic rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	44	619	0	0	13	164
08May-21May	13	164	95	812	0	0	4	12
22May-04Jun	0	0	42	563	42	891	6	30
Derby[a]--------	44	1,213	45	178	12	61	37	844
05Jun-18Jun	8	48	263	6,659	21	229	54	916
19Jun-02Jul	29	527	236	3,769	30	273	63	887
03Jul-16Jul	0	0	333	3,999	7	42	27	212
17Jul-30Jul	24	528	374	9,324	50	336	255	33,296
31Jul-13Aug	0	0	317	17,834	120	2,856	204	6,852
14Aug-27Aug	0	0	235	10,800	25	280	52	1,020
28Aug-10Sep	0	0	316	31,013	37	322	42	690
11Sep-24Sep	0	0	129	1,766	0	0	14	85
Total	118	2,480	2,429	87,336	344	5,290	771	45,008

Seasonal period	Unidentified rockfish harvested		Shellfish boat-days		Shellfish pots or rings		Crab boat-days	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	12	132	210	3,457	982	110,289	78	2,562
08May-21May	293	17,772	131	1,980	213	3,852	124	1,907
22May-04Jun	92	3,198	49	641	79	1,386	24	191
Derby[a]--------	75	751	68	480	176	5,040	52	216
05Jun-18Jun	248	8,858	199	8,942	559	32,879	167	8,211
19Jun-02Jul	141	6,368	341	25,006	397	6,544	270	10,494
03Jul-16Jul	214	3,750	316	5,820	601	23,290	261	4,331
17Jul-30Jul	52	1,291	413	12,906	1,054	65,070	341	10,338
31Jul-13Aug	36	1,188	244	5,052	580	29,372	220	4,716
14Aug-27Aug	189	9,955	220	7,812	404	16,740	196	6,012
28Aug-10Sep	103	6,303	221	11,339	476	45,842	129	7,450
11Sep-24Sep	14	78	178	4,827	928	252,661	126	2,485
Total	1,469	59,644	2,590	88,262	6,449	592,965	1,988	58,913

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Seasonal period	Crab pots or rings		Dungeness crab catch		Dungeness crab harvested		Shrimp total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	213	27,077	3,654	11,270,388	399	100,113	67,080	87,670,420
08May-21May	200	3,861	1,606	826,179	368	40,068	130	1,480
22May-04Jun	54	1,050	702	218,949	269	32,270	8,660	6,897,520
Derby[a]--------	124	1,560	1,000	188,724	404	27,828	4,920	1,815,480
05Jun-18Jun	319	11,231	4,857	5,788,826	855	92,590	28,800	40,512,000
19Jun-02Jul	370	5,767	5,691	2,714,666	1,769	333,657	1,560	158,290
03Jul-16Jul	439	15,568	6,218	4,739,373	1,789	382,648	20,000	19,230,850
17Jul-30Jul	934	57,198	10,906	8,903,763	3,407	1,188,138	10,800	6,639,360
31Jul-13Aug	532	29,036	11,948	15,389,228	2,660	1,291,268	1,200	132,000
14Aug-27Aug	332	11,196	2,508	1,599,996	816	154,920	5,880	2,218,920
28Aug-10Sep	260	30,196	2,097	2,431,206	815	417,535	8,900	2,433,510
11Sep-24Sep	281	8,190	5,492	3,285,741	707	81,541	6,530	2,830,800
Total	4,058	201,930	56,679	57,357,039	14,258	4,142,576	164,460	170,540,630

Seasonal period	Shrimp harvested	
	Estimate	Variance
24Apr-07May	67,080	87,670,420
08May-21May	130	1,480
22May-04Jun	8,660	6,897,520
Derby[a]--------	4,920	1,815,480
05Jun-18Jun	28,800	40,512,000
19Jun-02Jul	1,560	158,290
03Jul-16Jul	19,930	19,214,100
17Jul-30Jul	10,800	6,639,360
31Jul-13Aug	1,200	132,000
14Aug-27Aug	5,880	2,218,920
28Aug-10Sep	8,900	2,433,510
11Sep-24Sep	6,530	2,830,800
Total	164,390	170,523,880

[a] Derby held on 27–29 May, 3–4 June, and 10–11 June.

Appendix B6.–Estimated effort, harvest and catch for the Juneau marine boat sport fishery by seasonal period, 24 April–24 September 1995.

Seasonal period	Boat-hours		Salmon-hours		Bottomfish-hours		Angler-hours	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	8,112	2,501,561	17,113	13,219,595	362	17,015	17,475	13,316,578
08May-21May	12,045	2,837,743	27,207	16,055,193	227	7,217	27,475	16,350,389
22May-04Jun	12,302	1,876,633	28,562	10,814,313	1,465	216,830	30,145	12,424,055
05Jun-18Jun	15,559	2,318,438	35,935	14,390,670	3,404	497,175	39,378	15,860,606
19Jun-02Jul	12,843	2,240,079	24,665	9,041,452	8,199	2,466,466	32,999	16,671,004
03Jul-16Jul	13,031	3,038,486	18,920	7,902,100	15,617	4,453,477	34,672	22,036,566
17Jul-30Jul	10,618	864,364	18,507	5,268,406	9,515	1,127,322	28,122	8,250,220
31Jul-13Aug	9,990	1,013,081	18,752	5,060,394	8,741	1,904,307	27,548	9,872,908
Derby[a]	13,436	4,961,669	34,075	37,516,124	1,814	195,468	35,889	42,144,901
14Aug-27Aug	8,850	4,405,146	16,417	18,424,256	5,316	1,678,143	21,734	30,038,886
28Aug-10Sep	10,377	3,977,977	21,416	15,091,302	4,200	1,318,739	25,718	23,535,798
11Sep-24Sep	2,748	223,444	4,354	730,974	1,298	57,911	5,652	998,268
Total	129,911	30,258,621	265,923	153,514,779	60,158	13,940,070	326,807	211,500,179

Seasonal period	Boat-days		Chinook salmon ≥ 28" total catch		Chinook salmon ≥ 28" harvested		Chinook salmon < 28" total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	2,065	143,966	312	4,866	298	5,265	105	3,790
08May-21May	2,705	129,394	640	10,772	636	10,732	903	48,178
22May-04Jun	2,899	86,227	1,033	19,950	1,033	19,950	1,769	150,720
05Jun-18Jun	3,767	118,955	2,005	68,659	2,005	68,659	2,668	122,023
19Jun-02Jul	3,422	165,974	575	7,089	575	7,089	1,245	55,329
03Jul-16Jul	3,702	230,785	537	14,838	503	13,163	2,091	227,069
17Jul-30Jul	2,993	67,253	325	4,052	325	4,052	1,693	151,593
31Jul-13Aug	2,710	68,899	347	4,068	318	3,138	1,384	62,026
Derby[a]	1,879	85,698	412	849	390	302	2,588	491,618
14Aug-27Aug	2,213	235,962	79	1,708	79	1,708	242	4,185
28Aug-10Sep	2,631	231,122	135	3,969	122	3,817	411	11,556
11Sep-24Sep	820	19,143	17	124	17	124	83	3,688
Total	31,806	1,583,378	6,417	140,944	6,301	137,999	15,182	1,331,775

Seasonal period	Chinook salmon < 28" harvested		Coho salmon total catch		Coho salmon harvested		Pink salmon total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	0	0	0	0
08May-21May	10	83	0	0	0	0	0	0
22May-04Jun	0	0	14	88	0	0	0	0
05Jun-18Jun	6	35	171	3,548	171	3,548	28	221
19Jun-02Jul	30	348	341	6,196	313	5,662	191	7,788
03Jul-16Jul	11	49	1,531	81,567	1,477	76,001	851	89,595
17Jul-30Jul	4	10	2,070	153,230	2,058	153,136	1,575	43,705
31Jul-13Aug	0	0	1,905	66,755	1,736	63,329	1,263	74,550
Derby[a]	9	0	2,944	55,187	2,914	54,893	267	4,231
14Aug-27Aug	0	0	2,887	643,430	2,856	631,035	474	37,120
28Aug-10Sep	0	0	3,439	561,837	3,394	548,611	231	10,650
11Sep-24Sep	0	0	253	3,476	253	3,476	11	50
Total	70	525	15,555	1,575,314	15,172	1,539,691	4,891	267,910

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Seasonal period	Pink salmon harvested		Chum salmon total catch		Chum salmon harvested		Sockeye salmon catch and harvest	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	0	0	0	0
08May-21May	0	0	0	0	0	0	0	0
22May-04Jun	0	0	12	61	12	61	0	0
05Jun-18Jun	20	125	185	3,678	179	3,648	14	54
19Jun-02Jul	90	1,986	467	11,903	428	9,960	0	0
03Jul-16Jul	471	13,753	668	32,034	613	28,031	25	198
17Jul-30Jul	965	18,366	333	4,564	285	4,081	4	11
31Jul-13Aug	858	52,173	107	659	71	395	6	43
Derby[a]	137	1,681	398	492	376	517	9	11
14Aug-27Aug	227	6,482	117	2,586	100	2,487	0	0
28Aug-10Sep	71	1,547	51	406	45	307	0	0
11Sep-24Sep	11	50	0	0	0	0	0	0
Total	2,850	96,163	2,338	56,383	2,109	49,487	58	317

Seasonal period	Pacific halibut total catch		Pacific halibut harvested		Rockfish total catch		Rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	0	0	0	0
08May-21May	14	46	14	46	29	496	29	496
22May-04Jun	192	5,474	124	2,087	15	97	15	97
05Jun-18Jun	745	39,007	591	28,459	117	1,807	117	1,807
19Jun-02Jul	1,972	280,481	1,491	138,262	17	128	17	128
03Jul-16Jul	2,893	286,429	2,185	142,553	144	1,907	127	1,542
17Jul-30Jul	2,105	119,323	1,560	56,412	146	2,147	146	2,147
31Jul-13Aug	1,895	251,600	1,220	56,815	81	1,359	81	1,359
Derby[a]	578	49,342	361	9,802	85	2,907	81	2,584
14Aug-27Aug	1,129	220,708	858	91,806	45	853	45	853
28Aug-10Sep	853	88,592	738	54,255	154	21,868	154	21,868
11Sep-24Sep	110	506	110	506	0	0	0	0
Total	12,486	1,341,508	9,252	581,003	833	33,569	812	32,881

Seasonal period	Lingcod catch and harvest		Dolly Varden total catch		Dolly Varden harvested		Cutthroat trout catch and harvest	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	16	112	8	56	0	0
08May-21May	0	0	184	3,321	96	934	0	0
22May-04Jun	0	0	280	4,272	155	1,356	0	0
05Jun-18Jun	60	3,000	457	13,087	204	4,385	0	0
19Jun-02Jul	0	0	557	32,483	285	5,029	6	35
03Jul-16Jul	0	0	89	669	83	621	0	0
17Jul-30Jul	0	0	31	225	15	102	0	0
31Jul-13Aug	0	0	0	0	0	0	0	0
Derby[a]	0	0	7	10	4	10	0	0
14Aug-27Aug	8	50	0	0	0	0	0	0
28Aug-10Sep	0	0	0	0	0	0	0	0
11Sep-24Sep	0	0	0	0	0	0	0	0
Total	68	3,050	1,621	54,179	850	12,493	6	35

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Seasonal period	Shellfish boat-days		Shellfish pots or rings		King crab boat-days		King crab pots or rings	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	157	1,720	391	16,377	0	0	0	0
08May-21May	204	3,120	440	12,958	0	0	0	0
22May-04Jun	265	2,027	484	7,459	0	0	0	0
05Jun-18Jun	347	2,117	596	8,298	0	0	0	0
19Jun-02Jul	544	6,998	1,168	30,867	110	2,370	242	11,867
03Jul-16Jul	1,212	24,642	2,276	79,580	710	10,661	1,377	46,528
17Jul-30Jul	821	8,739	1,595	36,602	458	2,856	886	11,923
31Jul-13Aug	607	7,202	1,036	14,341	426	3,900	750	10,914
Derby[a]	117	704	216	2,151	62	215	106	753
14Aug-27Aug	348	5,192	741	32,424	189	2,613	401	14,321
28Aug-10Sep	334	11,295	539	31,897	173	3,785	289	12,291
11Sep-24Sep	205	3,504	372	13,801	103	941	237	8,247
Total	5,161	77,260	9,854	286,755	2,231	27,341	4,288	116,844

Seasonal period	Dungeness crab harvested		King crab harvested		Tanner crab harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	916	183,923	0	0	0	0
08May-21May	600	26,638	0	0	87	3,405
22May-04Jun	899	50,046	0	0	26	326
05Jun-18Jun	1,172	104,719	0	0	0	0
19Jun-02Jul	1,568	41,948	263	17,226	166	7,489
03Jul-16Jul	1,829	103,960	1,506	74,669	894	128,477
17Jul-30Jul	1,321	85,901	994	27,867	291	9,127
31Jul-13Aug	637	36,543	756	39,499	184	3,357
Derby[a]	165	4,107	114	3,481	187	24,454
14Aug-27Aug	597	63,683	408	22,286	68	1,323
28Aug-10Sep	648	71,823	436	39,385	109	2,722
11Sep-24Sep	108	1,252	121	3,245	149	866
Total	10,460	774,543	4,598	227,658	2,161	181,546

[a] Derby held August 18–20.

Appendix B7.–Estimated effort, harvest and catch for the Sitka marine boat sport fishery by seasonal period, 24 April–24 September 1995.

Seasonal period	Boat-hours		Salmon-hours		Bottomfish-hours		Angler-hours	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	1,755	160,355	2,063	235,115	1,427	289,114	3,711	720,111
08May-21May	5,043	356,078	9,878	1,711,078	975	77,857	10,891	2,143,401
Derby[a]	9,470	500,797	24,024	3,123,683	541	29,361	24,641	3,509,726
22May-04Jun	3,658	306,311	9,511	3,655,790	769	76,219	10,280	4,425,803
05Jun-18Jun	11,661	400,735	27,032	7,365,639	4,345	481,610	31,443	6,470,136
19Jun-02Jul	9,738	883,082	20,123	4,712,783	7,535	1,486,875	27,640	9,535,450
03Jul-16Jul	6,685	1,029,148	11,118	3,530,860	8,571	2,523,561	19,706	9,412,950
17Jul-30Jul	6,342	1,268,552	11,240	3,251,593	8,074	3,828,174	19,314	11,948,049
31Jul-13Aug	4,573	839,270	5,213	1,869,863	7,245	2,827,905	12,458	8,051,344
14Aug-27Aug	6,969	496,848	11,898	1,579,497	8,205	987,890	20,104	4,299,174
28Aug-10Sep	2,056	127,575	3,069	804,187	2,663	149,926	5,756	1,395,386
11Sep-24Sep	1,078	81,985	697	45,172	1,360	146,779	2,056	239,200
Total	69,028	6,450,736	135,866	31,885,260	51,710	12,905,271	188,000	62,150,730

Seasonal period	Boat-days		Chinook salmon ≥ 28" total catch		Chinook salmon ≥ 28" harvested		Chinook salmon < 28" total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	580	16,129	57	645	57	645	0	0
08May-21May	1,497	31,449	1,053	24,124	1,006	23,550	45	335
Derby[a]	1,726	11,058	2,381	36,763	2,085	19,713	242	811
22May-04Jun	1,075	27,196	1,336	174,392	1,268	157,608	134	3,686
05Jun-18Jun	3,065	54,323	5,825	415,946	5,411	352,683	251	6,407
19Jun-02Jul	2,717	70,791	3,678	339,379	3,327	273,214	264	4,084
03Jul-16Jul	1,862	78,307	1,087	66,483	1,065	65,030	355	33,766
17Jul-30Jul	1,739	63,538	1,438	95,054	1,382	88,048	125	2,179
31Jul-13Aug	1,287	42,305	293	11,499	293	11,499	241	18,383
14Aug-27Aug	1,894	38,054	122	1,819	122	1,819	88	1,478
28Aug-10Sep	623	11,570	32	270	32	270	73	1,492
11Sep-24Sep	364	6,224	0	0	0	0	0	0
Total	18,429	450,944	17,302	1,166,374	16,048	994,079	1,818	72,621

Seasonal period	Coho salmon total catch		Coho salmon harvested		Pink salmon total catch		Pink salmon harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	0	0	0	0
08May-21May	0	0	0	0	0	0	0	0
Derby[a]	9	19	7	9	0	0	0	0
22May-04Jun	8	62	8	62	0	0	0	0
05Jun-18Jun	273	6,599	195	1,607	11	56	0	0
19Jun-02Jul	568	10,966	511	8,723	48	243	29	159
03Jul-16Jul	1,050	222,977	1,019	224,524	109	2,154	94	1,938
17Jul-30Jul	442	11,406	411	8,601	1,176	209,743	591	47,304
31Jul-13Aug	1,269	166,535	1,243	158,846	1,812	240,639	731	59,944
14Aug-27Aug	7,682	1,247,342	7,347	1,155,457	1,283	65,598	811	32,792
28Aug-10Sep	1,094	171,476	1,018	156,626	328	54,297	126	9,190
11Sep-24Sep	408	42,687	256	12,493	51	1,324	0	0
Total	12,803	1,880,069	12,015	1,726,948	4,818	574,054	2,382	151,327

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Seasonal period	Chum salmon total catch		Chum salmon harvested		Sockeye salmon catch and harvest		Pacific halibut total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0			185	14,173
08May-21May	0	0	0	0	0	0	364	24,781
Derby[a]	14	35	14	35	0	0	302	5,007
22May-04Jun	0	0	0	0	0	0	748	153,564
05Jun-18Jun	64	605	52	462	14	112	2,852	619,940
19Jun-02Jul	221	4,645	114	798	0	0	3,418	616,938
03Jul-16Jul	142	2,016	134	2,172	0	0	3,801	602,256
17Jul-30Jul	220	6,448	165	3,592	30	759	2,679	263,859
31Jul-13Aug	260	9,054	246	7,869	280	57,734	1,670	250,110
14Aug-27Aug	331	18,696	192	5,006	82	5,725	2,439	206,116
28Aug-10Sep	24	127	15	107	8	59	500	17,783
11Sep-24Sep	0	0	0	0	0	0	156	899
Total	1,276	41,626	932	20,041	414	64,389	19,114	2,775,426

Seasonal period	Pacific halibut harvested		Lingcod total catch		Lingcod harvested		Dolly Varden total catch	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	156	12,327	97	3,659	74	3,327	21	399
08May-21May	233	6,690	252	12,179	144	4,985	0	0
Derby[a]	199	2,381	178	1,013	68	376	14	36
22May-04Jun	613	140,537	92	4,968	84	3,931	8	62
05Jun-18Jun	2,193	386,245	682	39,549	524	21,682	20	108
19Jun-02Jul	2,158	246,073	938	28,004	648	12,932	0	0
03Jul-16Jul	2,206	223,594	577	12,727	457	9,814	0	0
17Jul-30Jul	1,661	138,520	473	15,621	383	10,214	0	0
31Jul-13Aug	1,310	154,180	289	7,156	249	7,331	7	42
14Aug-27Aug	1,859	71,538	862	49,492	752	37,088	0	0
28Aug-10Sep	418	13,253	312	23,629	244	11,750	0	0
11Sep-24Sep	145	742	26	188	26	188	0	0
Total	13,151	1,396,080	4,778	198,185	3,653	123,618	70	647

Seasonal period	Dolly Varden harvested		Rockfish total catch		Rockfish harvested		Black rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	21	399	1,185	253,645	301	10,812	76	2,042
08May-21May	0	0	862	25,710	323	7,726	108	3,773
Derby[a]	9	22	1,852	102,382	149	2,520	9	25
22May-04Jun	0	0	1,117	91,541	109	2,945	17	131
05Jun-18Jun	4	12	5,990	578,628	1,154	82,577	332	31,344
19Jun-02Jul	0	0	5,235	562,743	1,387	96,136	414	19,062
03Jul-16Jul	0	0	3,329	598,905	1,162	56,716	137	3,326
17Jul-30Jul	0	0	2,227	235,869	447	13,543	119	2,631
31Jul-13Aug	0	0	2,541	245,513	677	40,328	309	21,128
14Aug-27Aug	0	0	4,031	400,538	1,611	81,704	476	23,256
28Aug-10Sep	0	0	915	98,568	203	8,578	77	2,802
11Sep-24Sep	0	0	648	56,224	153	1,761	11	47
Total	34	433	29,932	3,250,266	7,676	405,346	2,085	109,567

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Seasonal period	Copper rockfish harvested		Dusky rockfish harvested		Quillback rockfish harvested		Silvergrey rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	0	0	0	0	56	931	11	114
08May-21May	12	62	17	123	24	280	37	1,300
Derby[a]	5	12	7	33	5	12	0	0
22May-04Jun	0	0	25	559	42	1,554	0	0
05Jun-18Jun	42	492	4	12	156	4,407	64	920
19Jun-02Jul	16	79	17	120	87	2,052	8	24
03Jul-16Jul	0	0	17	90	37	273	5	19
17Jul-30Jul	13	134	7	48	93	1,771	0	0
31Jul-13Aug	0	0	21	154	50	1,151	73	1,599
14Aug-27Aug	24	480	0	0	30	510	24	72
28Aug-10Sep	0	0	0	0	5	26	20	355
11Sep-24Sep	5	30	11	122	32	753	5	30
Total	117	1,289	126	1,261	617	13,720	247	4,433

Seasonal period	Yelloweye rockfish harvested		Other non-pelagic rockfish harvested		Other pelagic rockfish harvested		Unidentified rockfish harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
24Apr-07May	63	2,646	0	0	11	114	84	6,384
08May-21May	49	400	11	103	0	0	65	1,627
Derby[a]	7	9	0	0	2	3	114	2,831
22May-04Jun	17	114	8	62	0	0	0	0
05Jun-18Jun	218	2,924	8	48	29	402	301	4,320
19Jun-02Jul	302	7,752	31	466	18	88	494	51,232
03Jul-16Jul	307	12,253	54	1,840	20	139	585	34,641
17Jul-30Jul	127	3,616	0	0	0	0	88	1,540
31Jul-13Aug	191	8,797	0	0	22	358	11	103
14Aug-27Aug	633	19,519	0	0	168	4,196	256	36,518
28Aug-10Sep	101	2,622	0	0	0	0	0	0
11Sep-24Sep	68	704	0	0	5	30	16	62
Total	2,083	61,356	112	2,519	275	5,330	2,014	139,258

[a] Derby held on 27–29 May and 3–4 June.

Appendix B8.–Estimated effort, harvest and catch for the Petersburg marine boat sport fishery by seasonal period, 8 May–16 July 1995.

Seasonal period	Boat-hours Estimate	Boat-hours Variance	Salmon-hours Estimate	Salmon-hours Variance	Bottomfish-hours Estimate	Bottomfish-hours Variance	Angler-hours Estimate	Angler-hours Variance
08May-21May	924	40,596	1,487	115,539	494	23,067	1,981	195,767
Derby[a]----------	2,267	4,498	5,453	60,671	32	512	5,485	60,959
22May-04Jun	1,305	137,593	2,915	1,051,603	500	45,650	3,415	1,404,518
05Jun-18Jun	2,630	160,388	3,262	499,722	3,424	375,437	6,686	1,338,795
19Jun-02Jul	1,180	33,749	1,598	95,825	1,403	106,627	3,001	278,010
03Jul-16Jul	1,373	59,827	479	51,341	3,357	341,270	3,836	530,512
Total	9,679	436,651	15,194	1,874,701	9,210	892,563	24,404	3,808,561

Seasonal period	Boat-days Estimate	Boat-days Variance	Chinook salmon ≥ 28" total catch Estimate	Chinook salmon ≥ 28" total catch Variance	Chinook salmon ≥ 28" harvested Estimate	Chinook salmon ≥ 28" harvested Variance	Chinook salmon < 28" total catch Estimate	Chinook salmon < 28" total catch Variance
08May-21May	248	2,096	59	236	46	183	13	65
Derby[a]----------	388	194	287	4	287	4	74	75
22May-04Jun	355	9,980	185	3,370	185	3,370	55	280
05Jun-18Jun	639	8,029	280	2,588	280	2,588	82	1,663
19Jun-02Jul	349	4,281	196	2,024	196	2,024	43	352
03Jul-16Jul	371	5,142	48	892	45	887	11	103
Total	2,350	29,722	1,055	9,114	1,039	9,056	278	2,538

Seasonal period	Chinook salmon < 28" harvested Estimate	Chinook salmon < 28" harvested Variance	Sockeye salmon catch and harvest Estimate	Sockeye salmon catch and harvest Variance	Pacific halibut total catch Estimate	Pacific halibut total catch Variance	Pacific halibut harvested Estimate	Pacific halibut harvested Variance
08May-21May	0	0	0	0	36	177	36	177
Derby[a]----------	0	0	0	0	12	10	12	10
22May-04Jun	0	0	0	0	85	670	85	670
05Jun-18Jun	0	0	0	0	736	45,064	568	19,518
19Jun-02Jul	20	152	0	0	588	56,843	294	8,336
03Jul-16Jul	0	0	31	677	1,478	105,842	715	23,067
Total	20	152	31	677	2,935	208,606	1,710	51,778

Seasonal period	Rockfish total catch Estimate	Rockfish total catch Variance	Rockfish harvested Estimate	Rockfish harvested Variance	Quillback rockfish harvested Estimate	Quillback rockfish harvested Variance	Yelloweye rockfish harvested Estimate	Yelloweye rockfish harvested Variance
08May-21May	16	128	8	128	8	48	0	0
Derby[a]----------	2	0	0	0	0	0	0	0
22May-04Jun	10	80	10	80	10	80	0	0
05Jun-18Jun	56	852	23	104	0	0	17	109
19Jun-02Jul	0	0	0	0	0	0	0	0
03Jul-16Jul	21	315	21	315	0	0	21	315
Total	105	1,375	62	627	18	128	38	424

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Seasonal period	Other non-pelagic rockfish harvested		Shellfish boat-days		Shellfish pots or rings		Dungeness crab harvested	
	Estimate	Variance	Estimate	Variance	Estimate	Variance	Estimate	Variance
08May-21May			38	182	91	1,510	215	10,426
Derby[a]----------	0	0	8	10	17	40	51	452
22May-04Jun	0	0	50	1,480	70	2,410	260	52,000
05Jun-18Jun	6	26	45	383	39	316	45	1,030
19Jun-02Jul	0	0	34	710	22	218	21	312
03Jul-16Jul	0	0	38	691	80	3,525	90	6,074
Total	6	26	213	3,456	319	8,019	682	70,294

Seasonal period	Tanner crab harvested		Shrimp harvested	
	Estimate	Variance	Estimate	Variance
08May-21May	16	192	2,070	102,440
Derby[a]----------	6	18	40	80
22May-04Jun	60	3,240	400	14,400
05Jun-18Jun	0	0	4,590	817,290
19Jun-02Jul	0	0	800	26,420
03Jul-16Jul	14	168	0	0
Total	96	3,618	7,900	960,630

[a] Petersburg derby held 26–29 May.

Appendix B9.–Recorded effort and harvest from the Wrangell marine boat catch sampling program by biweekly period, 1 May–16 July 1995.

Biweekly period[a]	Salmon-hours	Bottomfish-hours	Chinook salmon harvested	Chinook salmon sampled[b]	Halibut harvested	Crab boat-days	Crab pots or rings	Dungeness crab harvested
24Apr-07May[c]	381	44	6	6	4	6	8	25
08May-21May	3,089	202	73	73	38	4	7	6
22May-04Jun	2,988	324	106	102	43	6	12	51
05Jun-18Jun	744	257	45	42	41	24	21	89
19Jun-02Jul	255	382	7	5	39	2	1	10
03Jul-16Jul	145	665	11	10	98	0	0	0
Total	7,602	1,874	248	238	263	42	49	181

Biweekly period[a]	Tanner crab harvested	Shrimp boat-days	Shrimp pots or rings	Shrimp harvested
24Apr-07May[c]	0	0	0	0
08May-21May	0	9	14	880
22May-04Jun	2	4	6	280
05Jun-18Jun	22	0	0	0
19Jun-02Jul	0	1	5	80
03Jul-16Jul	0	5	3	10
Total	24	19	28	1,250

[a] Sampling was conducted 5 days per week by two samplers each working 7-hour shifts.

[b] Fish were examined for the presence or absence of the adipose fin, and heads were collected from fish with missing adipose fins.

[c] Sampling was only conducted during the second week of this biweekly period.

Appendix B10.–Recorded effort and harvest from the Craig marine boat catch sampling program by biweekly period, 1 May–10 September 1995.

Biweekly period[a]	Salmon-hours	Bottomfish-hours	Chinook salmon harvested	Chinook salmon sampled[b]	Coho salmon harvested	Coho salmon sampled[b]	Chum salmon harvested
24Apr-07May[c]	210	102	12	6	0	0	0
08May-21May	1,026	439	123	77	0	0	0
22May-04Jun	1,459	202	196	181	1	0	0
05Jun-18Jun	2,593	564	549	497	22	16	3
19Jun-02Jul	2,853	518	320	279	77	45	3
03Jul-16Jul	3,021	1,551	261	230	84	69	1
17Jul-30Jul	2,944	711	282	269	516	491	3
31Jul-13Aug	3,211	827	120	117	966	917	20
14Aug-27Aug	2,898	1,003	38	37	1,331	1,079	16
28Aug-10Sep	273	391	0	0	100	51	0
Total	20,487	6,306	1,901	1,693	3,097	2,668	46

Biweekly Period[a]	Pink salmon harvested	Halibut harvested	Lingcod harvested	Rockfish harvested	Crab boat-days	Crab pots or rings	Dungeness crab harvested
24Apr-07May[c]	0	14	0	32	2	6	30
08May-21May	0	188	14	72	9	14	42
22May-04Jun	0	189	10	61	5	10	43
05Jun-18Jun	5	437	102	143	12	20	60
19Jun-02Jul	37	363	49	93	8	17	35
03Jul-16Jul	21	817	124	189	16	26	56
17Jul-30Jul	61	366	40	113	19	21	32
31Jul-13Aug	426	524	129	209	13	32	44
14Aug-27Aug	374	541	82	145	11	23	50
28Aug-10Sep	4	83	32	65	3	6	24
Total	928	3,522	582	1,122	98	175	416

Biweekly Period[a]	Shrimp boat-days	Shrimp pots or rings	Shrimp harvested
24Apr-07May[c]	0	0	0
08May-21May	2	2	90
22May-04Jun	3	5	90
05Jun-18Jun	6	13	630
19Jun-02Jul	4	7	810
03Jul-16Jul	6	16	1,570
17Jul-30Jul	8	62	3,160
31Jul-13Aug	9	40	1,660
14Aug-27Aug	11	74	3,220
28Aug-10Sep	2	22	900
Total	51	241	12,130

[a] Sampling was conducted from 10 a.m. through 8 p.m. each Thursday through Sunday.

[b] Fish were examined for presence or absence of the adipose fin, and heads were collected from fish with missing adipose fins.

[c] Sampling was conducted only during the second week of this biweekly period.

Appendix B11.–Numbers of chinook salmon examined for coded wire tags in Southeast Alaska marine boat sport fisheries in 1995.

Sport fishery	Seasonal period	Chinook salmon ≥ 28" Estimated harvest	Number sampled	Percent	Chinook salmon < 28" Estimated harvest	Number sampled	Percent
Ketchikan	4/24-6/18	1,218	129	11	11	2	18
	Derby entered[a]	200	200	100	0	0	0
	Derby take-home[a]	215	46	21	0	0	0
	6/19-7/30	1,611	159	10	5	1	20
	7/31-9/24	232	22	9	7	1	14
	Total	3,476	556	16	23	4	22
Juneau	4/24-6/18	3,972	458	12	16	2	13
	6/19-7/30	1,403	170	12	45	6	13
	7/31-9/24	536	67	13	0	0	0
	Derby entered[b]	334	334	100	3	3	100
	Derby take-home[b]	56	8	14	6	6	100
	Total	6,301	1,037	16	70	17	24
Sitka	4/24-6/18	7,742	681	9	0	0	0
	Derby entered[c]	1,040	838	81	0	0	0
	Derby take-home[c]	1,045	268	26	0	0	0
	6/19-7/30	5,774	614	11	0	0	0
	7/31-9/24	447	29	6	0	0	0
	Total	16,048	2,430	15	0	0	0
Petersburg	5/8-7/16	752	121	16	20	6	30
	Derby entered[d]	253	240	95	0	0	0
	Derby take-home[d]	34	15	44	0	0	0
	Total	1,039	376	36	20	6	30
Wrangell	5/1-7/16		238			0	
Craig	5/1-9/10		1,693			0	
All areas (except Wrangell and Craig)		26,864	4,399	16	113	27	24

[a] Derby held 27–29 May, 3–4 June, and 10–11 June.

[b] Derby held 18–20 August.

[c] Derby held 27–29 May and 3–4 June.

[d] Derby held 26–29 May.

Appendix B12.–Estimates of hatchery produced chinook salmon contributed to the Ketchikan marine boat sport fishery, 24 April–24 September 1995.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/24-6/18			Derby[a]			Non-derby 6/19-7/30			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Kitimat River	02-03-10	1	89	7,859							1	89	7,859
		Nitinat River	18-07-21							1	43	1,828	1	43	1,828
		Robertson Creek	02-15-53				1	33	1,066				1	33	1,066
		B.C. Total		1	89	7,859	1	33	1,066	1	43	1,828	3	165	10,753
Alaska	AAA	Bell Island Net Pens	04-35-60	1	12	123							1	12	123
			04-37-51	1	12	121							1	12	121
	ADFG	Deer Mountain	04-35-31							2	63	2,032	2	63	2,032
			04-37-46	1	14	180							1	14	180
			04-37-50				1	1	0	1	13	155	2	14	155
			04-38-57							1	11	107	1	11	107
			04-38-58				1	1	0				1	1	0
			04-39-04				1	2	2				1	2	2
	MIC	Tamgas Creek	47-16-10	1	82	6,564							1	82	6,564
			47-16-13	1	49	2,329				1	65	4,104	2	113	6,433
			47-16-54				1	3	8				1	3	8
	SSRA	Carroll Inlet	04-37-08	1	123	15,014							1	123	15,014
			04-41-02							1	112	12,553	1	112	12,553
		Neets Bay	04-37-02				1	4	9	1	36	1,247	2	39	1,256
			04-39-38							1	77	5,921	1	77	5,921
		Whitman Lake	04-35-04	1	15	214	1	1	0	1	14	178	3	30	392
			04-37-04				1	11	102				1	11	102
			04-41-01				1	2	2				1	2	2
		Alaska Total		7	305	24,546	8	25	123	9	391	26,297	24	722	50,966
		All Regions		8	394	32,405	9	58	1,190	10	434	28,125	27	887	61,719

[a] Derby held on 27-29 May, 3-4 June, and 10-11 June 1994.

[b] CDFO = Canada Department of Fisheries and Oceans, AAA=American Aquaculture Association, ADFG = Alaska Department of Fish and Game, MIC = Metlakatla Indian Community, SSRA = Southern Southeast Regional Aquaculture Association.

[c] Rec = Number of fish recovered of noted tag code.

[d] Con = Estimated harvest (contribution) of the release of the noted tag code.

[e] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B13.–Estimates of hatchery produced chinook salmon contributed to the Juneau marine boat sport fishery 24 April–24 September 1995.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/24-6/18			Non-derby 6/19-7/30			Non-derby 7/31-9/24			Derby[a]			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Kitimat River	18-04-32	1	39	1,486										1	39	1,486
			18-09-02										1	5	17	1	5	17
		Snootli Creek	18-08-26										1	4	15	1	4	15
		B.C. Total		1	39	1,486							2	9	32	3	48	1,518
Oregon	ODF	Willamette Hatchery	07-59-22	1	12	135										1	12	135
		Oregon Total		1	12	135										1	12	135
Alaska	ADFG	Crystal Lake	04-01-011510										1	1	0	1	1	0
			04-38-21										3	4	2	3	4	2
			04-38-22	1	39	1,510	1	38	1,424							2	77	2,934
		Crystal Lake/ Earl West Cove	04-40-27	1	81	6,554										1	81	6,554
		Jerry Myers	04-38-13	1	9	78										1	9	78
	ADFG	Snettisham	04-31-34	1	10	96										1	10	96
			04-31-63	2	106	5,531							3	17	82	5	123	5,613
			04-33-57	1	80	6,308										1	80	6,308
			04-33-60	1	45	1,961										1	45	1,961
			04-34-01	3	44	608										3	44	608
			04-34-03	1	33	1,027										1	33	1,027
			04-34-04	1	34	1,114	1	32	973							2	66	2,087
			04-35-61	1	38	1,410										1	38	1,410
			04-36-01	1	37	1,312										1	37	1,312
			04-40-30				1	17	279							1	17	279
			04-40-31										1	4	9	1	4	9
			04-40-32				2	50	1,243							2	50	1,243
			04-40-33				1	30	871	1	31	924				2	61	1,795
			04-52-63				1	67	4,386							1	67	4,386
	DIPC	Gastineau	04-38-30	5	294	17,779	1	55	2,976				2	13	69	8	362	20,824
			04-40-44	1	64	3,986							1	7	41	2	71	4,027
	NSRA	Hidden Falls	04-36-39	1	171	29,123							1	19	329	2	190	29,452
			04-36-41										1	19	329	1	19	329
			04-36-55	1	9	76							1	1	0	2	10	76
			04-36-58										2	2	0	2	2	0
			04-39-27				1	298	88,219							1	298	88,219
			04-39-28	1	318	100,944							1	35	1,169	2	353	102,113
			04-39-29	1	540	290,620										1	540	290,620
			04-40-56				1	9	69	1	5	25	3	3	0	5	17	94

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Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/24-6/18			Non-derby 6/19-7/30			Non-derby 7/31-9/24			Derby[a]			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
	NSRA	Hidden Falls	04-40-57										3	3	0	3	3	0
			04-40-58	1	10								7	7	0	8	17	0
			04-40-59							2	14	99	2	2	0	4	16	99
			04-40-60										2	2	0	2	2	0
	NMFS	Little Port Walter	03-02-23	1	9	79										1	9	79
			03-02-28										1	1	0	1	1	0
			03-02-29										2	2	0	2	2	0
			03-22-19										1	1	0	1	1	0
			03-22-24										1	1	0	1	1	0
			03-22-28	1	15	204										1	15	204
			03-22-32	1	14	193							1	1	0	2	15	193
			03-22-35							1	9	77	1	1	0	2	10	77
			03-63-32							1	18	318	1	1	0	2	19	318
			03-63-35										1	1	0	1	1	0
			03-63-37										2	2	0	2	2	0
			03-63-45										2	2	0	2	2	0
			03-63-46				1	9	70				1	1	0	2	10	70
			03-63-47										5	5	0	5	5	0
			03-63-48				1	9	72							1	9	72
			03-63-49										2	2	0	2	2	0
	SSRA	Neets Bay	04-39-34										1	10	89	1	10	89
		Whitman Lake	04-35-04	1	12	141										1	12	141
		Alaska Total		30	2,012	470,654	12	614	100,582	6	77	1,443	56	170	2,119	104	2,873	574,798
		All Regions		32	2,063	472,275	12	614	100,582	6	77	1,443	58	179	2,151	108	2,933	576,451

[a] Derby held 18-20 August 1995.

[b] CDFO = Canada Department of Fisheries and Oceans, ODF = Oregon Department of Fisheries, ADFG = Alaska Department of Fish and Game, DIPC = Douglas Island Pink and Chum, NMFS = National Marine Fisheries Service, NSRA = Northern Southeast Regional Aquaculture Association, SSRA = Southern Southeast Regional Aquaculture Association.

[c] Rec = Number of fish recovered of noted tag code.

[d] Con = Estimated harvest (contribution) of the release of the noted tag code.

[e] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B14.–Estimates of hatchery produced chinook salmon contributed to the Sitka marine boat sport fishery, 24 April–24 September 1995.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/24-6/18			Derby[a]			Non-derby 6/19-7/30			Non-derby 7/31-9/24			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Clayoquot CDP	02-01-28				1	2	3							1	2	3
			02-01-29				1	2	3							1	2	3
			18-02-47				1	6	32				1	60	3,550	2	66	3,582
			18-02-48				2	12	63							2	12	63
		Clearwater R.	02-03-14				1	7	40							1	7	40
		Conuma River	02-06-56							1	100	9,944				1	100	9,944
			02-13-18				1	33	1,074							1	33	1,074
			02-15-45	1	91	8,212										1	91	8,212
			02-15-46	2	224	24,283	1	14	186	1	117	13,601				4	355	38,070
		Fort St. James	02-11-22	1	14	191										1	14	191
		Gold River PIP	18-02-01				1	1	0							1	1	0
			18-02-03							1	16	253				1	16	253
		Kitimat River	02-15-18				1	2	2							1	2	2
			02-15-20	1	21	413										1	21	413
		Marble River	02-10-49				2	23	330							2	23	330
			02-10-50				2	9	33							2	9	33
			02-10-51							1	38	1,425				1	38	1,425
		Nitinat River	02-14-56				1	27	682				1	258	66,434	2	285	67,116
			08-28-50				1	7	45							1	7	45
			18-03-29				2	100	4,914							2	100	4,914
			18-04-57				1	183	33,283							1	183	33,283
			18-07-21	1	42	1,728										1	42	1,728
		Oweekeno CDP	02-03-44				1	4	13							1	4	13
		Robertson Creek	02-15-49				1	124	15,300							1	124	15,300
			02-15-52	1	277	76,280										1	277	76,280
			02-15-53							1	346	119,112				1	346	119,112
			18-02-24	1	19	331	1	1	0							2	20	331
			18-02-26				1	1	0							1	1	0
			18-02-28							1	11	101				1	11	101
			18-06-20				1	46	2,109							1	46	2,109
		Shotbolt Bay	02-03-47				1	5	22							1	5	22
			02-14-19							1	11	119				1	11	119
		Shuswap River	18-03-41				1	6	30							1	6	30
		Snootli Creek	02-14-21	1	13	165	1	1	0							2	14	165
			02-14-30				1	19	358							1	19	358
			02-15-21				1	20	392							1	20	392
			18-08-37				2	7	28							2	7	28
		Sooke River PIP	02-06-11							1	11	112				1	11	112

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Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/24-6/18			Derby[a]			Non-derby 6/19-7/30			Non-derby 7/31-9/24			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Sooke River PIP	02-06-12							1	10	100				1	10	100
			02-06-14	1	13	145	1	1	0							2	14	145
		B.C. Total		10	714	111,748	32	663	58,942	9	660	144,767	2	318	69,984	53	2,355	385,441
Washington	NIFC	Hoko River Pond	21-20-18							2	33	562				2	33	562
			21-22-18	1	15	216										1	15	216
	WDF	Eastbank	63-11-19							1	52	2,631				1	52	2,631
		Humptulips	63-41-17							3	39	528				3	39	528
		Klickitat Hatchery	63-40-30	1	433	187,149										1	433	187,149
		Priest Rapids	63-40-57							1	252	63,045				1	252	63,045
		Quinault Lake	21-20-10							1	11	103				1	11	103
			21-28-26	1	21	416				1	18	291				2	39	707
		Similkameen	63-07-59							1	17	285				1	17	285
			63-44-17							1	15	220				1	15	220
			63-56-13							2	36	635				2	36	635
		Washington Total		3	469	187,781				13	473	68,300				16	942	256,081
Oregon	ODFW	Bonneville	07-14-17							1	13	147				1	13	147
		Elk River	07-57-01							1	11	100				1	11	100
		Irrigon	07-55-60							1	10	91				1	10	91
		Salmon River	07-57-07							1	19	344				1	19	344
		Oregon Total								4	53	682				4	53	682
Alaska	AAI	Burnett Inlet	04-36-33				1	11	116							1	11	116
	ADFG	Crystal Lake	04-36-08							1	52	2,658				1	52	2,658
		Deer Mountain	04-37-47				1	2	2							1	2	2
		Snettisham	04-33-57				1	11	109							1	11	109
	NMFS	Little Port Walter	03-02-29										1	13	169	1	13	169
			03-03-32										1	13	149	1	13	149
			03-22-19				1	1	0							1	1	0
			03-22-24				1	1	0							1	1	0
			03-22-35				1	5	21							1	5	21
		Port Armstrong	04-36-20				1	25	623							1	25	623
	NSRA	Hidden Falls	04-36-41				2	47	1,054							2	47	1,054
	NSRA	Medvejie	04-01-010303	3	533	95,474	5	90	1,531	1	149	22,107				9	772	119,112
			04-07-03	2	301	45,284	1	17	269	1	134	17,726				4	452	63,279
			04-35-39	1	21	409				1	17	286				2	38	695

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Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/24-6/18			Derby[a]			Non-derby 6/19-7/30			Non-derby 7/31-9/24			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	NSRA	Medvejie	04-35-41				1	2	2							1	2	2
			04-35-42				1	2	2							1	2	2
			04-36-26				2	9	32							2	9	32
			04-36-27	1	38	1,393										1	38	1,393
			04-36-28	1	135	17,999	1	14	173	1	113	12,686				3	262	30,858
			04-36-29				1	38	1,415							1	38	1,415
			04-36-44	2	310	48,571	5	138	5,678	2	290	42,345				9	738	96,594
			04-36-45	1	172	29,470	2	35	575	2	394	82,334				5	601	112,379
			04-36-46				2	33	523	1	138	18,947	1	162	26,038	4	333	45,508
			04-36-47	1	177	31,322	1	18	306							2	195	31,628
			04-36-48	3	444	66,354	5	118	4,171	1	124	15,361				9	686	85,886
			04-36-51	1	176	30,736	2	87	5,002							3	263	35,738
			04-36-53				1	140	19,329							1	140	19,329
			04-39-18	1	75	5,498										1	75	5,498
			04-39-19	1	75	5,498	2	15	100							3	90	5,598
			04-39-25	1	173	29,718										1	173	29,718
	SJ	Sheldon Jackson	04-37-20	1	69	4,726										1	69	4,726
			04-37-21	1	57	3,218	1	6	28							2	63	3,246
			04-40-52	1	112	12,326				1	94	8,685				2	206	21,011
	SSRA	Carroll Inlet	04-37-08	1	136	18,401										1	136	18,401
			04-41-02										1	122	14,704	1	122	14,704
		Neets Bay	04-37-02				1	4	15							1	4	15
		Whitman Lake	04-35-04				1	2	1							1	2	1
			04-37-04				1	2	4							1	2	4
			04-41-01				1	10	88							1	10	88
		Alaska Total		23	3,004	446,397	46	883	41,169	12	1,505	223,135	4	310	41,060	85	5,702	751,761
		All Regions		36	4,187	745,926	78	1,546	100,111	38	2,691	436,884	6	628	111,044	158	9,052	1,393,965

[a] Derby held on 27-29 May and 3-4 June 1995.

[b] CDFO = Canada Department of Fisheries and Oceans, NIFC = Northwest Indian Fisheries Commission, WDF = Washington Department of Fisheries, ODFW = Oregon Department of Fish and Wildlife, AAI = Alaska Aquaculture Incorporated, ADFG = Alaska Department of Fish and Game, NMFS = National Marine Fisheries Service, NSRA = Northern Southeast Regional Aquaculture Association, SJ = Sheldon Jackson College, SSRA = Southern Southeast Regional Aquaculture Association.

[c] Rec = Number of fish recovered of noted tag code.

[d] Con = Estimated harvest (contribution) of the release of the noted tag code.

[e] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B15.–Estimates of hatchery produced chinook salmon contributed to the Petersburg marine boat sport fishery from 8 May to 16 July 1995.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Derby[a]			Non-derby 5/08-7/16			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Clayoquot CDP	18-02-47	1	5	22				1	5	22
		Oweekeno CDP	02-03-45	1	2	3				1	2	3
			02-14-58	1	6	29				1	6	29
		Snootli Creek	18-08-27	1	9	69				1	6	69
		B.C. Total		4	22	123				4	22	123
Alaska	AAI	Burnett Inlet	04-36-33	1	2	4				1	2	4
	ADFG	Crystal Lake	04-34-06	1	13	144	1	52	2,625	2	65	2,769
			04-34-07	2	26	312	1	54	2,830	3	80	3,142
			04-36-06	3	25	183				3	25	183
			04-36-07	1	2	2				1	2	2
			04-36-08	2	11	45				2	11	45
			04-38-21	5	11	23	1	6	35	6	17	58
			04-38-22	2	9	35				2	9	35
			04-38-23	6	73	683	1	50	2,493	7	123	3,176
			04-40-29				1	79	6,119	1	79	6,119
		Crystal Lake/ Earl West Cove	04-36-04				1	66	4,343	1	66	4,343
	MIC	Tamgas Creek	47-16-51	1	5	22				1	5	22
	NMFS	Little Port Walter	03-22-06	1	1	0				1	1	0
			03-22-19	2	2	0	1	9	68	3	11	68
			03-22-20	1	1	0				1	1	0
			03-22-21	1	1	0				1	1	0
			03-22-27	2	2	0				2	2	0
			03-22-30	1	1	0	1	18	311	2	19	311
			03-22-32	1	1	1				1	1	1
			03-22-34	1	4	10				1	4	10
			03-63-33	2	2	0				2	2	0
			03-63-47	1	1	0				1	1	0
		Port Armstrong	04-36-19				1	12	136	1	12	136
	NSRA	Hidden Falls	04-36-43	1	20	366	1	81	6,511	2	101	6,877
	SSRA	Neets Bay	04-37-06	1	27	689				1	27	689
		Alaska Total		39	240	2,519	10	427	25,471	49	667	27,990
		All Regions		43	262	2,642	10	427	25,471	53	689	28,113

[a] Derby held on 26-29 May 1995.

[b] CDFO = Canada Department of Fisheries and Oceans, ODFW = Oregon Department of Fish and Wildlife, AAI = Alaska Aquaculture Incorporated, ADFG = Alaska Department of Fish and Game, MIC = Metlakatla Indian Community, NMFS = National Marine Fisheries Service, NSRA = Northern Southeast Regional Aquaculture Association.

[c] Rec = Number of fish recovered of noted tag code.

[d] Con = Estimated harvest (contribution) of the release of the noted tag code.

[e] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B16.-Estimates (from sampled fish only) of hatchery produced chinook salmon contributed to 238 chinook salmon examined during the Wrangell marine boat sport fishery from 1 May to 16 July 1995.

Region	Agency[a]	Hatchery/Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]	Relative Contribution
British Columbia	CDFO	Tenderfoot Creek	18-03-47	1	3	6	1.3%
		B.C. Total		1	3	6	1.3%
Alaska	ADFG	Crystal Lake	04-01-011510	1	1	0	0.4%
		Crystal Lake/ Earl West Cove	04-36-05	1	8	55	3.4%
			04-38-15	1	9	67	3.8%
			04-40-26	1	9	70	3.8%
	SSRA	Neets Bay	04-39-37	1	7	47	2.9%
		Whitman Lake	04-37-04	1	2	2	0.8%
		Alaska Total		6	36	242	15.1%
		All Regions		7	39	249	16.4%

[a] CDFO = Canada Department of Fisheries and Oceans, ADFG = Alaska Department of Fish and Game, SSRA = Southern Southeast Regional Aquaculture Association.

[b] Rec = Recovered number of fish of noted tag code from the sampled harvest.

[c] Con = Contribution to estimated harvest (from the sampled harvest only) of the release of the noted tag code.

[d] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B17.–Estimates (from sampled fish only) of hatchery produced and wild tagged chinook salmon contributed to 1,693 chinook salmon examined during the Craig marine boat sport fishery from 1 May to 10 September 1995.

Region	Agency[a]	Hatchery/Release Site	Tag Code	Recb	Conc	Varianced	Relative Contribution
British Columbia	CDFO	Clayoquot CDP	02-01-30	1	2	2	0.1%
			18-02-48	2	10	38	0.6%
		Clearwater River	02-03-14	2	3	1	0.2%
		Conuma River	02-13-16	3	3	0	0.2%
			02-13-17	2	2	0	0.1%
			02-13-18	1	26	672	1.5%
			02-13-19	2	53	1,344	3.1%
			02-15-45	2	18	149	1.1%
			02-15-46	5	61	674	3.6%
		Eagle River	02-14-45	1	4	9	0.2%
		Fort Babine CDP	02-10-38	1	1	0	0.1%
		Gold River PIP	18-02-01	1	1	0	0.1%
		Kitimat River	02-15-60	1	19	351	1.1%
			18-04-30	1	2	4	0.1%
			18-04-32	2	9	36	0.5%
		Marble River PIP	02-10-50	1	4	10	0.2%
		Nitinat River	08-28-49	1	2	2	0.1%
			08-28-56	2	4	4	0.2%
			18-03-28	2	81	3,179	4.8%
			18-03-29	1	40	1,543	2.4%
			18-04-62	2	39	716	2.3%
			18-07-21	1	4	14	0.2%
			18-07-22	3	14	49	0.8%
		Oweekeno CDP	18-04-39	1	5	21	0.3%
		Robertson Creek	02-15-51	1	48	2,276	2.8%
			02-15-53	1	33	1,066	1.9%
		Shuswap River	18-03-41	1	5	18	0.3%
		Snootli Creek	18-08-26	1	5	20	0.3%
		Sooke River PIP	02-06-14	1	1	0	0.1%
			18-05-27	1	2	2	0.1%
		Terrace CDP	02-11-37	1	1	0	0.1%
		B.C. Total		48	503	12,201	29.7%
Washington	NIFC	Quinault Lake	21-20-28	1	4	10	0.2%
	WDF	Hanford Reach (wild)	63-41-15	1	1	0	0.1%
	WDFW	Humptulips	63-41-17	1	1	0	0.1%
		Washington Total		3	6	10	0.3%
Alaska	ADFG	Deer Mountain	04-37-48	1	1	1	0.1%
	NMFS	Little Port Walter	03-22-26	1	1	0	0.1%
			03-22-28	1	2	1	0.1%
			03-22-31	1	1	0	0.1%
	NSRA	Medvejie	04-36-44	1	15	205	0.9%
			04-36-48	1	13	149	0.8%
			04-36-53	1	29	791	1.7%
		Alaska Total		7	61	1,147	3.6%
		All Regions		58	570	13,358	33.7%

[a] CDFO = Canada Department of Fisheries and Oceans, NIFC = Northwest Indian Fisheries Commission, WDF = Washington Department of Fisheries, WDFW = Washington Department of Fish and Wildlife, ADFG = Alaska Department of Fish and Game, NMFS = National Marine Fisheries Service, NSRA = Northern Southeast Regional Aquaculture Association.

[b] Rec = Recovered number of fish of noted tag code from the sampled harvest.

[c] Con = Contribution to Estimated harvest (from the sampled harvest only) of the release of the noted tag code.

[d] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B18.-Estimates of the number of wild coded wire tagged chinook salmon contributed to sampled marine boat sport fisheries of Southeast Alaska, 1995.

KETCHIKAN

				Non-derby 4/24-6/18			Total		
Region	Agency[a]	Release site	Tag Code	Rec[b]	Con[c]	Variance[d]	Rec	Con	Variance
Washington	WDF	Lewis River	63-42-06	1	7	50	1	7	50
		Total		1	7	50	1	7	50

SITKA

				Non-derby 4/24-6/18			Non-derby 6/19-7/30			Total		
Region	Agency[a]	Release site	Tag Code	Rec[b]	Con[c]	Variance[d]	Rec	Con	Variance	Rec	Con	Variance
Washington	WDF	Hanford Reach	63-41-15	1	13	146	1	18	312	2	31	458
		Lewis River	63-42-17	1	13	146				1	13	146
		Total		2	26	292	1	18	312	3	44	604

[a] WDF = Washington Department of Fisheries.

[b] Rec = Number of fish recovered of noted tag code.

[c] Con = Estimated harvest (contribution) of the release of the noted tag code.

[d] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B19.–Age composition of chinook salmon from selected Southeast Alaska sport fisheries in 1995.

SPORT FISHERY			BROOD YEAR 1992	1991		1990			1989			1988		1987	SAMPLE SIZE
			0.2	0.3	1.2	0.4	1.3	2.2	0.5	1.4	2.3	1.5	2.4	1.6	
Ketchikan	Males	n		7	8	11	21		1	12					60
		Percent		11.7	13.3	18.3	35.0		1.7	20.0					
		SE[a]		4.2	4.4	5.0	6.2		1.7	5.2					
	Females	n		6	4	6	23			21		2	1		63
		Percent		9.5	6.3	9.5	36.5			33.3		3.2	1.6		
		SE[a]		3.7	3.1	3.7	6.1			6.0		2.2	1.6		
	Total[b]	n		22	19	26	59		2	46		3	1		178
		Percent		12.4	10.7	14.6	33.1		1.1	25.8		1.7	0.6		
		SE[a]		2.5	2.3	2.7	3.5		0.8	3.3		1.0	0.6		
Juneau	Males	n		1	16		29	2		20		2	2	1	73
		Percent		1.4	21.9		39.7	2.7		27.4		2.7	2.7	1.4	
		SE[a]		1.4	4.9		5.8	1.9		5.3		1.9	1.9	1.4	
	Females	n			3	1	44	1		44		3	3		99
		Percent			3.0	1.0	44.4	1.0		44.4		3.0	3.0		
		SE[a]			1.7	1.0	5.0	1.0		5.0		1.7	1.7		
	Total[b]	n		2	44	1	127	5		97	2	7	6	1	292
		Percent		0.7	15.1	0.3	43.5	1.7		33.2	0.7	2.4	2.1	0.3	
		SE[a]		0.5	2.1	0.3	2.9	0.8		2.8	0.5	0.9	0.8	0.3	
Juneau Derby	Males	n	1	2	2		4								9
		Percent	11.1	22.2	22.2		44.4								
		SE[a]	11.1	14.7	14.7		17.6								
	Females	n		1	10		16								27
		Percent		3.7	37.0		59.3								
		SE[a]		3.7	9.5		9.6								
	Total[b]	n	1	6	46		45								98
		Percent	1.0	6.1	46.9		45.9								
		SE[a]	1.0	2.4	5.1		5.1								
Petersburg	Males	n		2	4	3	14		1	7		1			32
		Percent		6.3	12.5	9.4	43.8		3.1	21.9		3.1			
		SE[a]		4.3	5.9	5.2	8.9		3.1	7.4		3.1			
	Females	n		1	1	4	7			11		3			27
		Percent		3.7	3.7	14.8	25.9			40.7		11.1			
		SE[a]		3.7	3.7	7.0	8.6			9.6		6.2			
	Total[b]	n		8	17	7	55		1	33		8			129
		Percent		6.2	13.2	5.4	42.6		0.8	25.6		6.2			
		SE[a]		2.1	3.0	2.0	4.4		0.8	3.9		2.1			

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SPORT FISHERY			BROOD YEAR 1992	1991		1990			1989			1988		1987	SAMPLE SIZE
			0.2	0.3	1.2	0.4	1.3	2.2	0.5	1.4	2.3	1.5	2.4	1.6	
Wrangell	Males	n		2	3		5			3		1			14
		Percent		14.3	21.4		35.7			21.4		7.1			
		SE[a]		9.7	11.4		13.4			11.4		7.1			
	Females	n				1	2			10		1			14
		Percent				7.1	14.3			71.4		7.1			
		SE[a]				7.1	9.7			12.5		7.1			
	Total[b]	n		10	15	5	39	1		53	1	10	2		136
		Percent		7.4	11.0	3.7	28.7	0.7		39.0	0.7	7.4	1.5		
		SE[a]		2.2	2.7	1.6	3.9	0.7		4.2	0.7	2.2	1.0		
Craig	Males	n	1	33	4	72	17		5	30		4			166
		Percent	0.6	19.9	2.4	43.4	10.2		3.0	18.1		2.4			
		SE[a]	0.6	3.1	1.2	3.9	2.4		1.3	3.0		1.2			
	Females	n	3	76		148	33		4	69		1	1		335
		Percent	0.9	22.7		44.2	9.9		1.2	20.6		0.3	0.3		
		SE[a]	0.5	2.3		2.7	1.6		0.6	2.2		0.3	0.3		
	Total[b]	n	4	112	4	224	51		9	101		5	1		511
		Percent	0.8	21.9	0.8	43.8	10.0		1.8	19.8		1.0	0.2		
		SE[a]	0.4	1.8	0.4	2.2	1.3		0.6	1.8		0.4	0.2		
Sitka	Total[b]	n	2	32	24	86	104	1	2	89		4	3		347
		Percent	0.6	9.2	6.9	24.8	30.0	0.3	0.6	25.6		1.2	0.9		
		SE[a]	0.4	1.6	1.4	2.3	2.5	0.3	0.4	2.3		0.6	0.5		

[a] SE in percent.

[b] Includes sexed and unsexed chinook salmon.

Appendix B20.–Length-at-age in millimeters (from tip of snout to fork-of-tail) by sex for chinook salmon from selected Southeast Alaska sport fisheries, 1995.

SPORT FISHERY			BROOD YEAR 1992	1991		1990			1989			1988		1987	SAMPLE SIZE
			0.2	0.3	1.2	0.4	1.3	2.2	0.5	1.4	2.3	1.5	2.4	1.6	
Ketchikan	Males	Mean		866	773	963	907		1,131	968					
		SE		28	25	23	13			10					
		n		7	8	11	21		1	12					60
	Females	Mean		851	786	918	882			958		905	931		
		SE		29	46	28	16			17		49			
		n		6	4	6	23			21		2	1		63
	Total[a]	Mean		860	768	948	891		1,033	953		912	931		
		SE		17	16	15	9		98	10		29			
		n		22	18	26	59		2	46		3	1		177
Juneau	Males	Mean		800	703		812	708		954		883	913	950	
		SE			6		13	8		12		8	8		
		n		1	16		29	2		20		2	2	1	73
	Females	Mean			665	960	805	770		915		927	875		
		SE			14		11			9		31	5		
		n			3	1	44	1		44		3	2		98
	Total[a]	Mean		758	696	960	802	708		926	878	887	873	950	
		SE		43	5		6	18		6	13	37	23		
		n		2	44	1	127	5		97	2	7	5	1	291
Juneau Derby	Males	Mean	805	905	733		808								
		SE		10	13		15								
		n	1	2	2		4								9
	Females	Mean		780	731		820								
		SE			24		10								
		n		1	10		16								27
	Total[a]	Mean	805	795	711		795								
		SE		40	8		8								
		n	1	6	46		45								98
Petersburg	Males	Mean		860	700	903	815		1,020	894		1,020			
		SE		80	29	19	16			21					
		n		2	4	3	14		1	7		1			32
	Females	Mean		768	720	901	833			894		972			
		SE				22	26			17		41			
		n		1	1	4	7			11		3			33
	Total[a]	Mean		832	722	902	818		1,020	905		941			
		SE		29	10	14	9			10		24			
		n		8	16	7	54		1	32		8			126

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SPORT FISHERY			BROOD YEAR 1992 0.2	1991 0.3	1991 1.2	1990 0.4	1990 1.3	1990 2.2	1989 0.5	1989 1.4	1989 2.3	1988 1.5	1988 2.4	1987 1.6	SAMPLE SIZE
Wrangell	Males	Mean	935		757		864			983		1,100			
		SE	65		3		22			23					
		n	2		3		5			3		1			14
	Females	Mean				910	925			910		1,000			
		SE					65			14					
		n				1	2			10		1			14
	Total[a]	Mean	878		767	954	867	760		942	900	987	900		
		SE	30		6	16	12			8		31	30		
		n	10		14	5	38	1		53	1	10	2		134
Craig	Males	Mean	741	887	772	953	884		1,016	953		1,058			
		SE		11	21	7	17		13	11		76			
		n	1	33	4	72	17		5	30		4			166
	Females	Mean	740	881		946	889		966	949		1,001	903		
		SE	9	6		5	11		26	8					
		n	3	76		148	33		4	69		1	1		335
	Total[a]	Mean	740	881	772	948	887		994	959		1,047	903		
		SE	6	5	21	4	9		15	6		6			
		n	4	112	4	223	51		9	101		5	1		510
Sitka	Total[a]	Mean	783	864	743	917	897	840	1,028	921		940	957		
		SE	98	12	7	6	5		8	6		38	7		
		n	2	32	24	86	101	1	2	89		4	3		344

[a] Includes sexed and unsexed chinook salmon.

Appendix B21.–Numbers of coho salmon examined for coded wire tags in Southeast Alaska marine boat sport fisheries in 1995.

		Coho salmon		
Sport fishery	Seasonal period	Estimated harvest	Number sampled	Percent
Ketchikan	4/24-7/30 non-derby	3,458	288	8
	Derby entered[a]	0	0	0
	Derby take-home[a]	41	9	22
	7/31-9/24	15,666	2,398	15
	Total	19,165	2,695	14
Juneau	4/24-7/30	4,019	493	12
	7/31-9/24 non-derby	8,239	1,410	17
	Derby entered[b]	2,213	2,213	100
	Derby take-home[b]	701	93	23
	Total	15,172	4,209	28
Sitka	4/24-7/30 non-derby	2,144	244	11
	Derby entered[c]	0	0	0
	Derby take-home[c]	7	2	29
	7/31-9/24	9,864	711	7
	Total	12,015	957	8
Wrangell	5/1-7/16		1	
Craig	5/1-9/10		2,668	
All areas (except Wrangell and Craig)		46,352	7,861	17

[a] Derby held 27–29 May, 3–4 June, and 10–11 June.

[b] Derby held 18–20 August.

[c] Derby held 27–29 May and 3–4 June.

Appendix B22.–Estimates of hatchery produced coho salmon contributed to the Ketchikan marine boat sport fishery, 24 April–24 September 1995.

		Hatchery/		Non-derby 4/24-6/18[a]			Non-derby 6/19-7/30			Non-derby 7/31-9/24			Total		
Region	Agency[b]	Release Site	Tag Code	Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Fort Babine	02-12-49							1	18	324	1	18	324
		B.C. Total								1	18	324	1	18	324
Alaska	AAA	Bell Island Net Pens	04-42-59				1	10	98				1	10	98
	ADFG	Deer Mountain	04-39-61	1	18	317	3	32	349				4	50	666
			04-40-09				4	64	1,013				4	64	1,013
			04-40-10				4	53	755				4	53	755
			04-40-11				4	56	876				4	56	876
			04-41-36				1	16	241				1	16	241
			04-41-38				1	24	575				1	24	575
			04-41-39	1	30	845							1	30	845
			04-41-40				2	31	482				2	31	482
			04-41-41				2	48	1,226				2	48	1,226
	SSRA	Nakat Inlet	04-41-53							2	54	1,499	2	54	1,499
			04-41-54							2	53	1,346	2	53	1,346
		Neets Bay	04-41-44							2	784	326,420	2	784	326,420
			04-41-45							4	424	53,126	4	424	53,126
			04-41-47							6	3,105	1,955,431	6	3,105	1,955,431
			04-41-55							4	1,633	767,256	4	1,633	767,256
		Whitman Lake	04-41-50							7	426	29,257	7	426	29,257
			04-41-51							4	448	52,540	4	448	52,540
		Alaska Total		2	48	1,162	22	334	5,615	31	6,927	3,186,875	55	7,309	3,193,652
		All Regions		2	48	1,162	22	334	5,615	32	6,945	3,187,199	56	7,327	3,193,976

[a] Derby held 27-29 May, 3-4 June, and 10-11 June 1994.

[b] CDFO = Canada Department of Fisheries and Oceans, AAA=American Aquaculture Association, ADFG = Alaska Department of Fish and Game, SSRA = Southern Southeast Regional Aquaculture Association.

[c] Rec = Number of fish recovered of noted tag code.

[d] Con = Estimated harvest (contribution) of the release of the noted tag code.

[e] Variance = Variance of estimated harvest of the release of the noted tag code.

Appendix B23.–Estimates of hatchery produced coho salmon contributed to the Juneau marine boat sport fishery, 24 April–24 September 1995.

				Non-derby 7/31-9/24			Derby[a]			Total		
Region	Agency[b]	Release Site	Tag Code	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	BCFI	Burro Creek	04-40-48				1	1	0	1	1	0
	DIPC	Gastineau	04-42-46	2	161	13,448	1	88	6,109	4	249	19,557
			04-42-47	2	127	7,965	1	11	103	3	138	8,068
			04-42-48	2	158	13,006				2	158	13,006
			04-42-49	1	61	3,717	4	41	389	5	102	4,106
			04-42-50	4	331	28,768	1	11	103	5	342	28,871
	NSRA	Medvejie	04-01-020901	1	20	400				1	20	400
		Total		12	858	67,304	9	152	6,704	21	1,010	74,008

[a] Derby held on 18-20 August 1995.

[b] BCFI = Burro Creek Farms, Inc., DIPC = Douglas Island Pink and Chum, NSRA = Northern Southeast Regional Aquaculture Assoc.

Appendix B24.–Estimates of hatchery produced coho salmon contributed to the Sitka marine boat sport fishery, 24 April–24 September 1995.

Region	Agency[a]	Hatchery/ Release Site	Tag Code	Non-derby 6/19-7/30			Non-derby 7/31-9/24			Total		
				Rec[b]	Con[c]	Variance[d]	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Eagle River	18-12-07	1	9	75				1	9	75
		B.C. Total		1	9	75				1	9	75
Alaska	NSRA	Medvejie	04-41-15				2	181	16,287	2	181	16,287
			04-41-16				3	274	25,199	3	274	25,199
			04-41-17				13	986	87,603	13	986	87,603
			04-41-19				4	72	1,333	4	72	1,333
			04-01-010912				1	10	85	1	10	85
			04-01-021310				1	18	300	1	18	300
	SJ	Sheldon Jackson	04-43-06				1	185	33,978	1	185	33,978
	SSRA	Neets Bay	04-41-55				1	535	285,274	1	535	285,274
		Alaska Total					26	2,261	450,059	26	2,261	450,059
		All Regions		1	9	75	26	2,261	450,059	27	2,270	450,134

[a] CDFO = Canada Department of Fisheries and Oceans, NSRA = Northern Southeast Regional Aquaculture Association, SJ = Sheldon Jackson College, SSRA = Southern Southeast Regional Aquaculture Association.

[b] Rec = Number of fish recovered of noted tag code.

[c] Con = Estimated harvest (contribution) of the release of the noted tag code.

[d] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B25.-Estimates (from sampled fish only) of hatchery produced and wild tagged coho salmon contributed to 2,668 coho salmon examined during the Craig marine boat sport fishery from 1 May to 10 September 1995.

Region	Agency[a]	Hatchery/Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]	Relative Contribution
British Columbia	CDFO	Chehalis River	18-16-28	1	45	1,965	1.7%
		Kitimat River	02-13-41	1	10	91	0.4%
		Zolzap Creek (wild)	18-09-33	1	1	0	0.0%
		Klemtu CDP	02-12-62	1	2	1	0.1%
		B.C. Total		4	57	2,057	2.1%
Alaska	ADFG	Deer Mountain	04-41-40	1	1	0	0.0%
		Hugh Smith Lake (wild)	04-37-43	1	1	0	0.0%
		Klawock	04-38-19	2	25	295	0.9%
		Marx Creek	04-40-14	1	1	0	0.0%
	SSRA	Neets Bay	04-41-46	1	36	1,289	1.3%
		Alaska Total		6	65	1,583	2.4%
		All Regions		10	122	3,640	4.6%

[a] CDFO = Canada Department of Fisheries and Oceans, ADFG = Alaska Department of Fish and Game, SSRA = Southern Southeast Regional Aquaculture Association.

[b] Rec = Recovered number of fish of noted tag code from the sampled harvest.

[c] Con = Contribution to Estimated harvest (from the sampled harvest only) of the release of the noted tag code.

[d] Variance = Variance of the estimated harvest of the release of the noted tag code.

Appendix B26.–Estimated number of wild coded wire tagged coho salmon contributed in 1995 to sampled Southeast Alaska marine boat sport fisheries.

KETCHIKAN FISHERY

				Non-derby 7/31-9/24			Total		
Region	Agency[a]	Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]	Rec	Con	Variance
British Columbia	CDFO	Zolzap Creek	18-09-22	1	13	163	1	13	163
			18-09-33	1	8	51	1	8	51
		B.C. Total		2	21	214	2	21	214
Alaska	ADFG	Hugh Smith Lake	04-37-43	2	11	53	2	11	53
			04-37-44	2	18	157	2	18	157
		Alaska Total		4	29	210	4	29	210
		All Regions		6	50	424	6	50	424

JUNEAU FISHERY

				Non-derby 6/19-7/30			Non-derby 7/31-9/24			Derby[e]			Total		
Region	Agency	Release Site	Tag Code	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	ADFG	Auke Creek	04-07-14				3	22	146	4	4	0	7	26	146
		Berners River	04-39-56				2	16	112	3	3	0	5	19	112
			04-39-57							1	1	0	1	1	0
			04-39-58							1	1	0	1	1	0
			04-39-59				1	6	30	1	1	0	2	7	30
		Dredge Lake	04-43-22				2	16	112	2	2	0	4	18	112
		Duck Creek	04-43-23				1	6	30				1	6	30
		Taku River	04-38-01				1	6	31				1	6	31
			04-42-09				1	6	31	1	1	0	2	7	31
			04-42-10				4	31	220	3	3	0	7	34	220
			04-42-11	1	9	64							1	9	64
		Total		1	9	64	15	109	712	16	16	0	32	134	776

SITKA FISHERY

				Non-derby 6/19-7/30			Non-derby 7/31-9/24			Total		
Region	Agency	Release Site	Tag Code	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Zolzap Creek	18-09-33				1	12	142	1	12	142
		B.C. Total					1	12	142	1	12	142
Alaska	ADFG	Salmon Lake	04-42-17	1	11	103	3	54	938	4	65	1,041
		Alaska Total		1	11	103	3	54	938	4	65	1,041
		All Regions		1	11	103	4	66	1,080	5	77	1,183

[a] CDFO = Canada Department of Fisheries and Oceans, ADFG = Alaska Department of Fish and Game.

[b] Rec = Number of fish recovered of noted tag code.

[c] Con = Estimated harvest (contribution) of the release of the noted tag code.

[d] Variance = Variance of the estimated harvest of the release of the noted tag code.

[e] Juneau derby held on 18-20 August.

APPENDIX C: DATA FILES

Appendix C1.–Computer data files and analysis programs developed for the 1995 Southeast Alaska marine boat sport fishery survey. Data files are archived at the Alaska Department of Fish & Game, Division of Sport Fish, Research and Technical Services Unit, 333 Raspberry Road, Anchorage, Alaska 99518-1599.

Effort, Catch, and Harvest Estimation Files (in KMC95EST.ZIP, JMC95EST.ZIP, PMC95EST.ZIP, SMC95EST.ZIP, WMC95SAM.ZIP, and CRG95SAM.ZIP)	
A0810M_5.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Ketchikan, 1995
B7600M_5.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Craig, 1995
C0820M_5.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Petersburg, 1995
C0810M_5.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Wrangell, 1995
D0810M_5.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Sitka, 1995
E0810M_5.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Juneau, 1995
??S95.SAS	SAS programs to create basic interview SAS save files from mark-sense data files. '???' stands for each site respectively: KMC for Ketchikan, PMC for Petersburg, WMC for Wrangell, SMC for Sitka, JMC for Juneau
???95ESS.SAS	SAS programs to create revised interview SAS save files from files created by ?MS95.SAS. Revised files have stratification information added to them, have non fin-fish (i.e., shellfish) data removed, and/or have multi-line interviews collapsed to one record per interview. See above for explanation of '?'.
???95MSM.SAS	SAS programs to create SAS save files with only the sampling information associated with each sample for each survey from files created by ?MC95ESS.SAS. See above for explanation of '?'
???95EST.SAS	SAS programs to estimate effort, catch, and harvest with associated variances using SAS save files created by ?MC95ESS.SAS and ?MC95MSM.SAS. Program operates on one species at a time as determined by inputs in temporary input data files 'SPECLIST.DAT'. See above for explanation of '?'
Coded Wire Tag Contribution Estimation Files (in CWT95.ZIP)	
95BSE121.DTA	Data file from tag lab with sampling information for each biweekly period at each fishery.
95CON121.DTA	Data file from tag lab with recovery information for each adipose fin clipped coho and chinook salmon sampled.
SEW95VBN.SAS	SAS program to create creel estimate file for combining with tag data.
SEN95CWT.SAS	SAS program to do basic estimates.
SEN95CO1.SAS	SAS program to summarize contributions across tag codes for main tables.
SEN95CWP.SAS	SAS program to list tags, contributions, and variances for Appendices.
Age-weight-length (AWL) Files (in AWL95.ZIP)	
A0810AC5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Ketchikan, 1995
B7600AC5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Craig, 1995

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C0810AB5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Wrangell, 1995
C0820AB5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Petersburg, 1995
D0810AC5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Sitka, 1995
E0810AA5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Juneau, 1995
F0810AA5.DTA	Data file (ASCII) containing chinook salmon AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded during the Juneau derby, 1995
A0810AA5.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Ketchikan, 1995
B7600AA5.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Craig, 1995
C0810AA5.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Wrangell, 1995
C0820AA5.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Petersburg, 1995
D0810AA5.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Sitka, 1995
E0810AB5.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Juneau, 1995
REF95CHI.SAS	SAS program to reformat chinook salmon AWL data
LF95CHI.SAS	SAS program to summarize chinook salmon AWL data
REF95HAL.SAS	SAS program to reformat halibut AWL data
LF95HAL.SAS	SAS program to summarize halibut AWL data