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Harvest Estimates for Selected Marine Sport Fisheries in Southeast Alaska During 1994

by

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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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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDICES (Continued)

ABSTRACT

Creel surveys of the Juneau, Ketchikan, Sitka, Petersburg, and Wrangell marine sport fisheries for chinook salmon *Oncorhynchus tshawytscha* were conducted during 1994. 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, Petersburg, and Wrangell; 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. A coded wire tag sampling program conducted at Craig on Prince of Wales Island 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 except Sitka. 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 24,167 (SE = 939), and the estimated catch was 76,897 (SE = 3,981) in the boat sport fisheries monitored. Harvests of chinook salmon were lower than the long-term average in both the Juneau and Ketchikan fisheries. The largest percentage of Alaska hatchery chinook salmon was harvested in Ketchikan, where an estimated 41% of the harvest was of Alaska hatchery origin and 71% was of hatchery origin. Hatcheries produced about 37% of the chinook salmon harvest in Juneau, with Southeast Alaska hatcheries contributing 33% of the total harvest. The estimated Alaska hatchery contribution of chinook salmon was 12% in Sitka, 30% in Petersburg, and 16% in Wrangell. Hatcheries in Alaska, British Columbia, Washington, and Oregon produced about 46% of the monitored chinook salmon harvest and 22% of the total harvest was of Alaska hatchery origin.

An estimated 129,994 (SE = 9,379) coho salmon, 44,765 (SE = 4,286) pink salmon *Oncorhynchus gorbuscha*, 35,105 (SE = 1,756) Pacific halibut, and 12,105 (SE = 902) rockfish were also harvested in the sampled marine boat fisheries. The total harvest of coho salmon was the highest recorded in both Juneau and Ketchikan. Hatcheries produced 13% and 32% of the coho harvest, respectively. The Pacific halibut harvest of 8,843 (SE = 877) in Juneau was below the long-term average, and the Ketchikan harvest of 10,960 (SE = 982) was above average. The total rockfish harvest of 5,603 (SE = 564) in Ketchikan was less than half of the long term average. Shellfish effort was above average in the Juneau and Ketchikan fisheries, but Dungeness crab harvest was below average in Juneau and above average 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, Prince of Wales Island, and Haines (Figure 1).

Data on sport harvests of important fish species in Southeast Alaska have been collected both by postal survey and by onsite creel survey at various locations. The Statewide Harvest Survey (SWHS) is a postal survey which has provided annual estimates of sport effort and harvest by area since 1977 (Mills 1994). 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. 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 can be used for inseason management and also can 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 allocation (41,310 chinook salmon in 1992, 39,610 in 1993, and 39,600 in 1994) 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 were needed in the Ketchikan, Petersburg, Wrangell, Sitka, and Juneau boat fisheries during the major portion of the fishery for chinook salmon. In 1993, 79% of the total sport harvest of chinook salmon of Southeast Alaska occurred in the SWHS areas represented by these fisheries (Mills 1994). Sport harvests in other SWHS areas (Haines/Skagway, Glacier Bay, Yakutat, and Craig/Klawock) were determined to be too small or too dispersed to be effectively monitored with onsite creel surveys.

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. Lodges and charter boat operations were also contacted to try to obtain additional samples of coded wire tagged chinook salmon in voluntary sampling programs. Several terminal sport fisheries in fresh water for Alaska hatchery fish in the Petersburg and Juneau areas were not monitored with creel surveys, because 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

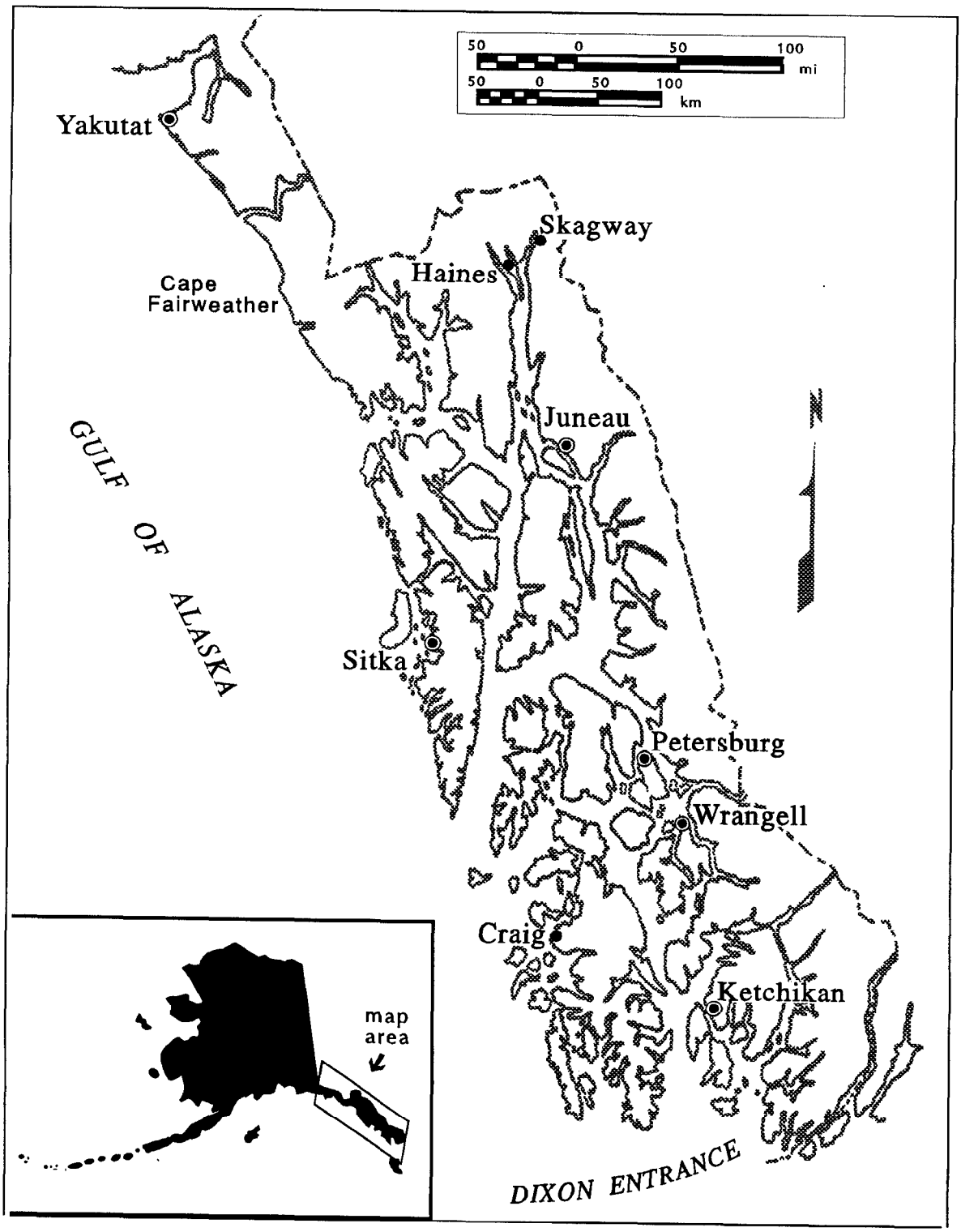

Figure 1.—Location of Juneau, Sitka, Petersburg, Wrangell, Ketchikan, and Craig in Southeast Alaska.

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 1994 as the current estimates of total harvests will be revised when final SWHS estimates are completed. A report detailing final estimates of quota harvests and Alaska hatchery contributions of chinook salmon will be finalized after SWHS estimates for the 1994 fishery are obtained.

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 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 into inside waters. Hatchery contributions for 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 Alaska Board of Fisheries and the International Pacific Halibut Commission (IPHC) 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 1994 by the Division of Sport Fish of the Alaska Department of Fish and Game (ADF&G) in the Ketchikan, Juneau, Sitka, Petersburg, and Wrangell areas. Results from creel surveys associated with a variety of roadside sport fisheries in Southeast Alaska are presented in other ADF&G Fishery Data Series reports.

REGULATIONS

Sport fishing regulations during 1994 were identical to those described in Suchanek and Bingham (1992), with the following exceptions:

- An emergency order (#1-2-94) reduced the chinook salmon bag limit for the Southeast Alaska (including Yakutat) marine sport fishery from two to one fish, and prohibited charter boat operators and crew from retaining chinook salmon while clients were on board. This emergency order was in effect from 15 April through 30 June 1994.
- An emergency order (#1-16-94) returned the bag and possession limit to two chinook salmon and rescinded the restriction on charter boat operators and crew. This emergency order was in effect from 1 July through 29 July 1994.
- An emergency order (#1-21-94) increased the bag and possession limit to three chinook salmon from 30 July through 31 December 1994. Throughout the season, the minimum size limit for chinook salmon was 28 inches.
- An emergency order (#1-6-94) closed Blind Slough and the Wrangell Narrows Terminal Harvest Area in Petersburg to sport fishing from 1 June through 31 July 1994.
- An emergency order (#1-13-94) changed the bag and possession limit to two chinook salmon 28 inches or more in length and two chinook salmon less than 28 inches in length in terminal fisheries for hatchery chinook in Neets Bay, Carroll Inlet, Earl West Cove, Auke Bay, and Gastineau Channel. This emergency order was in effect from 24 June through 31 August 1994.

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. 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).

OBJECTIVES

Primary goals of the 1994 Southeast Alaska marine boat sport fishery surveys were to obtain: (1) inseason estimates of regionwide harvest of chinook salmon; (2) estimates of region-wide harvest of chinook salmon of Alaskan hatchery origin and; (3) estimates of harvest of coho salmon of Alaska hatchery origin in Ketchikan, Sitka, and Juneau fisheries. To help measure program performance and achieve project goals, the following objectives were identified:

1. to estimate total sport harvest of chinook salmon landed in the following marine boat sport fisheries during the noted time periods in 1994:
   - Ketchikan from 25 April to 25 September;
   - Petersburg from 9 May to 17 July;
   - Wrangell from 9 May to 17 July;
   - Sitka from 25 April to 25 September;
   - Juneau from 25 April to 25 September;

   such that each individual estimate for the surveyed period was within ±20% of the true value 90% of the time;
2. to 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. to estimate the relative contribution of Alaska hatchery chinook salmon by coded wire tag lot to the Craig marine boat sport fishery from 9 May to 28 August; such that the total relative contribution estimate was within ±25 percentage points of the true value 90% of the time; and
4. to estimate the contribution of Alaska hatchery coho salmon by coded wire tag lot to the 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.

TASKS

In addition to meeting the primary objectives for monitoring the chinook salmon fishery (discussed above), there were also a number of additional tasks which addressed secondary data needs. To fulfill these data needs, additional tasks in 1994 included:

(1) estimating the biweekly harvest per unit effort (HPUE) for coho salmon in the Juneau and Ketchikan marine boat sport fisheries during 25 April to 25 September;

(2) estimating total sport angler effort, harvest and catch of coho salmon, pink

[1] Contribution in relative terms equals the contribution estimate divided by the total harvest.

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 25 April to 25 September;

(3) estimating the shellfish effort and harvest of Dungeness crab *Cancer magister*, Tanner crab *Chionoecetes spp.*, and king crab *Paralithodes spp.* in the Juneau, Ketchikan, Petersburg, and Wrangell marine boat sport fisheries during 25 April to 25 September; and shrimp landed by the Ketchikan, Petersburg, and Wrangell marine boat fisheries;

(4) estimating the age composition and mean length-at-age of chinook salmon harvested in the Juneau and Ketchikan marine boat sport fisheries during 25 April to 25 September;

(5) estimating the maturity composition of chinook salmon harvested in the Juneau marine boat sport fishery from 25 April to 3 July; and

(6) estimating the average weights of Pacific halibut harvested in the Juneau, Sitka, and Ketchikan marine boat sport fisheries from 25 April to 25 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.

STUDY DESIGN

Onsite Creel Survey Angler Effort, Catch, and Harvest Estimates

Direct expansion creel surveys were conducted of the Ketchikan, Petersburg, Wrangell, 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 the 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 2 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.

Four-stage sample surveys were conducted at Wrangell, and Sitka. For these surveys, 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 these surveys.

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

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. 1993). The design for the Wrangell survey was also similar to the survey conducted in 1993. The surveys at Sitka and Petersburg represented a slight restructuring compared to the surveys conducted at each of these locations in 1993. 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.

Estimates of harvested chinook salmon at each of the five 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 summation across strata. Estimates were obtained similarly for the three-stage designs, with the appropriate reordering of calculations.

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.

The procedures outlined in Bernard et al. (*In prep*) were used to estimate the optimal sampling fractions for allocation of resources among the strata for the surveys. Data from the most recent creel surveys (1992 and 1993) at each of these sites were used in estimating the sampling fractions. The actual allocation of sampling resources was also dependent upon logistical and fiscal constraints in addition to the optimal fractions desired.

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). 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 (CFMD) 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 contributions of both Alaskan and non-Alaskan hatchery chinook salmon according to procedures described by Clark and Bernard (1987) as adapted by Conrad and Larson (1987). 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.

Additional Coded Wire Tag Sampling

A technician sampled catches of chinook and coho salmon for the presence of a clipped adipose fin from boat parties returning to Craig harbors from 9 May through 18 September. Some

additional sampling for adipose clipped fish was also conducted in Ketchikan from 18 July to 25 September and in Juneau from 4 July through 16 October. Sampling was conducted Thursdays through Sundays from 1100 h to 2000 h in Craig.

Biweekly Estimates of Coho Salmon Harvest Per Unit Effort

Information collected during creel surveys of the Ketchikan and Juneau marine boat sport fisheries was 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:

$$hpue_k = qN + \varepsilon_k \qquad (1)$$

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).

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 (with the exception of the Sitka fishery) were sampled for scales for age determination. For the estimation of age composition of the harvest and for the 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). Estimates of age composition and mean length-at-age were obtained using standard procedures.

Pacific Halibut Harvest by Weight. As time permitted, Pacific halibut landed by boat anglers interviewed in the sampled fisheries were sampled for length. 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.

Data Collection

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, Petersburg, and Wrangell, numbers of shrimp harvested were also recorded in multiples of 10. All onsite interview data were recorded on ADF&G Marine Interview mark-sense forms (version 1.0).

In addition to interviewing boat-parties, creel technicians also sampled harvested fish as time allowed. 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." Heads from adipose finclipped fish were collected and identified with a uniquely numbered cinch strap.

Three scales were taken from the preferred area (Welander 1940 and INPFC 1958) of each chinook salmon sampled. Scales were then mounted on gum cards, and impressions were made in cellulose acetate (Clutter and Whitesel 1956). The 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.

Total lengths in millimeters from Pacific halibut sampled were also recorded. All data recording procedures were outlined in detail in site-specific Creel Technician Manuals; computer data files and analysis programs are listed in Appendix C1.

DATA ANALYSIS

Effort, Catch, and Harvest Estimates

Estimates of angler effort, catch, and harvest by species for the surveys at Petersburg, Wrangell, and Sitka were calculated according to standard direct expansion equations for stratified four-stage sampling designs (with locations, days, periods, and boat-parties as sampling units). Although the survey conducted of the Petersburg fishery was a three-stage design (with days, periods, and boat-parties as sampling units), the four-stage equations were used with the appropriate collapsing of the first sampling stage. Specific calculating procedures for the point estimates and their variances are described in Appendix A1.

The procedures used to calculate estimates for the surveys at Juneau and Ketchikan were appropriate for stratified three-stage sampling designs with days, locations, and boat-parties as sampling stages. The specific calculating procedures for the point estimates and their variances for the Juneau and Ketchikan surveys are described in Appendix A2.

Coho Salmon Harvest Per Unit Effort Estimates

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. 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.

Estimates of Contributions of Coded Wire Tagged Stocks

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 Clark and Bernard (1987).

Age, Length, and Weight Estimates

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.

Assumptions

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

1. Anglers accurately reported their hours of fishing effort and the number by species of fish released.
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 conditions 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:

Table 1.—Summary of estimated total and derby angler effort by target for the Southeast Alaska marine boat sport fisheries during 1994.

	TOTAL EFFORT BY TARGET					
Time period	**Ketchikan** 4/25-9/25	**Juneau** 4/25-9/25	**Sitka** 4/25-9/25	**Petersburg** 5/09-7/17	**Wrangell** 5/09-7/17	**Total**
Boat-hours	105,845	148,160	64,673	8,071	18,071	344,820
SE	8,254	10,819	2,719	546	1,416	13,960
Salmon-hours	230,372	320,385	123,971	12,853	38,537	726,118
SE	17,494	25,095	5,375	879	3,388	31,256
Bottomfish-hours[a]	56,092	63,398	43,363	6,552	9,196	178,601
SE	4,807	6,628	2,775	1,090	1,527	8,846
Angler-hours[b]	286,464	384,528	168,146	19,406	47,734	906,278
SE	19,920	30,522	7,414	1,539	4,055	37,445
% Salmon-hours[c]	80%	83%	74%	66%	81%	80%

	DERBY EFFORT BY TARGET				
Time period	**Ketchikan** 5/28-5/30 6/04-6/05 6/11-6/12	**Juneau** 8/19-8/21	**Sitka** 5/28-5/30 6/04-6/05	**Petersburg** 5/27-5/30	**Total**
Boat-hours	14,267	9,763	8,624	1,445	34,099
SE	2,544	1,361	448	82	2,924
Salmon-hours	30,344	26,044	19,258	3,402	79,048
SE	4,873	4,433	1,051	182	6,673
Bottomfish-hours	4,939	611	1,226	88	6,864
SE	747	158	237	50	801
Angler-hours	35,283	26,655	20,484	3,490	85,912
SE	5,457	4,490	1,101	230	7,156
% Salmon-hours[d]	13%	8%	16%	26%	11%

[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.

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

RESULTS

Detailed finfish effort and chinook salmon harvest results are presented here primarily for the Juneau 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, are found in Appendices B1 through B5. Appendices B6 through B10 present biweekly and total estimates and variances for effort, harvest, and catch for all species monitored for each boat fishery surveyed.

ANGLER EFFORT

An estimated 906,278 (SE = 37,445) angler-hours of effort were expended in the five marine boat sport fisheries during the time periods sampled (Table 1). Eighty percent of the total effort in angler-hours was targeted on salmon in Ketchikan, 83% in Juneau, 74% in Sitka, 66% in Petersburg, and 81% in Wrangell. Pacific halibut was the other major target species. Major salmon

Table 2.—Summary of estimated catches and harvests of chinook salmon in Southeast Alaska marine boat sport fisheries surveyed during 1994.

Total chinook salmon catches and harvests:

		Chinook ≥ 28"		Chinook < 28"		Total harvested	
Sport fishery	Time period	Catch	Harvest	Catch	Harvest	Number	SE
Ketchikan	4/25-9/25	3,522	3,312	24,208	62	3,374	354
Juneau	4/25-9/25	5,921	5,711	22,181	108	5,819	403
Sitka	4/25-9/25	16,107	13,135	2,513	4	13,139	762
Petersburg	5/09-7/17	709	698	367	0	698	67
Wrangell	5/09-7/17	1,218	1,137	151	0	1,137	93
Total		27,477	23,993	49,420	174	24,167	939

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	5/28-5/30 6/4-6/5 6/11-6/12	378[c]	612	0	0	612	85	18%
Juneau Golden North Salmon Derby	8/19-8/21	551	672	2	6	678	3	12%
Sitka Salmon Derby	5/28-5/30 6/4-6/5	909	1,820	0	0	1,820	101	14%
Petersburg Salmon Derby	5/27-5/30	211		0	0	211	0	30%

[a] Includes entered and take-home harvests.

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

[c] Most of these fish were not sold.

derbies in Ketchikan, Juneau, and Sitka increased the amount of effort targeted on salmon, as 13%, 8%, and 16% of the total salmon fishing effort, respectively, occurred during these short time periods.

CHINOOK SALMON FISHERIES

An estimated 24,167 chinook salmon (SE = 939) were harvested in all the sampled marine boat sport fisheries (Table 2). Most of the chinook salmon harvested were at least 28 inches in length, but an estimated 174 small (< 28 inches) chinook salmon were also harvested. The total catch of 49,420 small chinook salmon was nearly twice as large as the total catch of 27,477 large chinook salmon.

Harvest of chinook salmon in the Ketchikan King Salmon Derby composed 18% of the total chinook salmon harvested in the Ketchikan marine fishery. Twelve percent of the harvest of chinook salmon in the Juneau marine boat sport fishery was taken during the Juneau Golden North Salmon Derby, while 8% of the total salmon fishing effort was expended during this event (Table 1). A total of 929 chinook salmon was entered in the Ketchikan and Juneau derbies from a harvest of 1,290 fish during the derby time periods; 909 chinook salmon were entered in the Sitka Salmon Derby from a total harvest of 1,820 chinook salmon during the derby time period, making it the largest derby in Southeast Alaska in terms of fish entered; and 211 chinook salmon were entered in the Petersburg Salmon Derby, about 30% of the harvest in the surveyed fishery.

About 23% 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, 23% of the estimated harvest of chinook salmon were sampled, 19% in Sitka, 44% in Petersburg, and 24% in Wrangell.

An estimated 22% of the chinook salmon harvested in the marine boat fisheries were of Alaska hatchery origin (Table 3). Additional

Table 3.—Contributions of hatchery chinook salmon to sampled marine boat sport fisheries of Southeast Alaska, 1994.

Region or hatchery	Marine boat sport fishery JUN (4/25-9/25)	KTN (4/25-9/25)	PBG (5/09-7/17)	Sitka (4/25-9/25)	WRGL (5/09-7/17)	Total
Oregon	0	57	12	39	0	108
Washington	19	19	0	212	0	250
British Columbia	213	939	4	4,317	9	5,482
Non-Alaskan total	232	1,015	16	4,568	9	5,840
SE	164	572	15	980	8	1,146
Alaska						
Burnett Inlet	0	0	9	0	9	18
Carroll Inlet	0	505	0	0	41	546
Crystal Lake	35	86	158	0	129	408
Deer Mtn.	0	99	0	4	0	103
Gastineau	199	0	0	0	0	199
Hidden Falls	536	0	42	0	0	578
Little Port Walter	127	5	1	22	0	155
Medvejie	64	0	0	1,432	0	1,496
Neets Bay	23	459	0	0	0	482
Pt Armstrong	63	0	0	4	0	67
Sheldon Jackson	0	0	0	180	0	180
Snettisham	805	0	0	0	0	805
Tamgas Crk.	43	156	0	0	0	199
Whitman L.	0	68	0	0	0	68
Alaskan total	1,895	1,378	210	1,642	179	5,304
SE	301	391	74	385	79	636
Absolute precision[a] ($\alpha = 0.10$)	495	643	122	633	130	1,046
% Absolute precision[b]	8	19	17	5	11	8
All areas total	2,127	2,393	226	6,210	188	11,144
SE	343	693	76	1,053	80	1,311
Absolute precision ($\alpha = 0.10$)	564	1,140	125	1,732	132	2,157
% Absolute precision	10	34	18	13	12	9
Chinook salmon harvest	5,819	3,374	698	13,139	1,137	24,167
SE	403	354	67	762	93	939
% Alaska hatchery	33	41	30	12	16	22
% Total hatchery	37	71	32	47	17	46

[a] SE * 1.645.

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

hatchery fish originated in Oregon, Washington, and British Columbia, and, in aggregate, 46% of the chinook salmon harvested in boat fisheries originated in hatcheries. The Ketchikan fishery had the highest percentage of Alaska hatchery fish (41%), and the overall hatchery contribution to the Ketchikan fishery totaled 71%. 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 Southern Southeast Regional Aquaculture Association. About 33% of the chinook salmon harvest in the Juneau boat fishery was of Alaska hatchery origin. Alaska hatchery fish taken in Juneau came primarily from the Snettisham hatchery operated by ADF&G and the Hidden Falls hatchery operated by the Northern Southeast Regional Aquaculture Association. Twenty-three percent of the chinook salmon harvest in Petersburg came from the Crystal Lake hatchery operated by ADF&G.

Detailed contribution estimates by tag code are presented in appendices for the Ketchikan fishery (Appendix B12), Juneau fishery (Appendix B13), Sitka fishery (Appendix B14), Petersburg fishery (Appendix B15), and the Wrangell fishery (Appendix B16). In addition to the recoveries of hatchery origin fish, wild coded wire tagged chinook salmon were recovered from the Juneau fishery (Appendix B18). Total contributions of these tagged wild stocks could not be estimated as tagging fractions are unknown.

A total of 1,354 chinook salmon (Appendix B11) was examined for clipped adipose fins at the Craig marine boat sport fishery. Overall, 35% of the sample came from hatcheries. The tag codes recovered and the relative contribution to the fishery are presented in Appendix B17.

A total of 1,501 chinook salmon was successfully aged from the surveyed fisheries (Table 4 and Appendix B19). About 34% of the chinook salmon sampled lacked a freshwater annulus (age-0.), which usually indicates non-Alaskan origin (Van Alen 1988).

Table 4.—Summary of the age composition of chinook salmon sampled in selected marine sport fisheries in Southeast Alaska during 1994.

Freshwater age composition

Sport fishery	Age 0. Sample size	Age 0. %	Age 1. or more Sample size	Age 1. or more %	Total sampled
Ketchikan	59	40	90	60	149
Juneau non-derby	4	1	346	99	350
Juneau derby[a]	9	13	62	87	71
Petersburg	9	5	176	95	185
Wrangell	7	4	169	96	176
Craig	433	76	137	24	570
Total	521	35	980	65	1,501

Saltwater age composition

Sport fishery	Age .3 or less Sample size	Age .3 or less %	Age .4 or more Sample size	Age .4 or more %	Total sampled
Ketchikan	58	39	91	61	149
Juneau non-derby	144	41	206	59	350
Juneau derby[a]	64	90	7	10	71
Petersburg	48	26	137	74	185
Wrangell	51	29	125	71	176
Craig	294	52	276	48	570
Total	659	44	842	56	1,501

[a] Juneau Golden North Salmon Derby

Saltwater ages varied considerably; an estimated 90% of the chinook salmon harvested during the Juneau Golden North Salmon Derby were age-.3 or less while only 39% of the chinook salmon sampled in the Ketchikan fishery were age-.3 or less. The sampled harvest across all surveyed fisheries consisted of 45% males and 55% females. Mean length-at-age of sampled chinook salmon varied among fisheries surveyed (Appendix B20).

COHO SALMON FISHERIES

Harvests of coho salmon in the sampled fisheries totaled an estimated 129,994 fish (SE = 9,379) (Table 5). Only small percentages of the coho salmon fisheries in Petersburg and Wrangell were monitored as surveys were discontinued by July 18. The only monitored derby in which coho salmon were heavily targeted was the Juneau Golden North Salmon Derby, and an estimated 8,358 coho salmon (SE = 491) were taken during this event (Appendix B2).

Harvests of hatchery coho salmon were estimated from a sample of 16% 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 27,524 (SE = 4,722) 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 13% in Juneau to 21% in Sitka and 32% in Ketchikan. Some 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, while the Gastineau hatchery owned by Douglas Island Pink and Chum, Inc. contributed the most coho

Table 5.—Summary of estimated catch and harvest of coho salmon in Southeast Alaska marine boat sport fisheries surveyed during 1994.

Sport fishery	Time period	HARVEST Wild Estimate	Wild SE	Hatchery Estimate	Hatchery SE	Total Estimate	Total SE	Catch Estimate	Catch SE
Ketchikan	4/25–9/25	30,182	2,898	14,491	4,434	44,673	5,297	48,912	5,932
Juneau	4/25–9/25	53,958	7,296	8,260	990	62,218	7,363	64,348	7,581
Sitka	4/25–9/25	18,307	2,006	4,773	1,288	23,080	3,384	25,173	2,590
Petersburg	5/09–7/17	0	0	0	0	0	0	0	0
Wrangell	5/09–7/17	23	18	0	0	23	18	37	12
TOTAL		102,470	8,103	27,524	4,722	129,994	9,379	138,470	9,968

Table 6.—Contributions of hatchery coho salmon to sampled marine boat sport fisheries of Southeast Alaska, 1994.

Region or hatchery	Marine boat sport fishery JUN (4/25-9/25)	KTN (4/25-9/25)	Sitka (4/25-9/25)	Total
British Columbia	0	98	28	126
Non-Alaskan total	0	98	28	126
SE	0	40	31	51
Alaska				
Deer Mountain	0	774	0	774
Fort Richardson	0	21	0	21
Gastineau	7,828	0	0	7,828
Hidden Falls	406	0	392	798
Klawock	0	110	0	110
Medvejie	26	0	3,870	3,896
Neets Bay	0	11,163	0	11,163
Sheldon Jackson	0	0	44	44
Tamgas Creek	0	529	229	758
Whitman Lake	0	1,796	210	2,006
Total Alaska	8,260	14,393	4,745	27,398
SE	990	4,434	1,288	4,722
Absolute precision[a] ($\alpha = 0.10$)	1,629	7,294	2,119	7,768
% absolute precision[b]	3	16	9	6
Total all areas	8,260	14,491	4,773	27,524
SE	990	4,434	1,288	4,722
Absolute precision ($\alpha = 0.10$)	1,629	7,294	2,119	7,768
% absolute precision	3	16	9	6
Coho salmon harvest	62,218	44,673	23,080	129,971
SE	7,363	5,297	2,384	9,379
% Alaska hatchery	13	32	21	21
% total hatchery	13	32	21	21

[a] SE * 1.645.

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

salmon to the Juneau fishery. Additionally, some recoveries of coho salmon from wild stocks were obtained in the Ketchikan, Juneau, and Sitka fisheries (Appendix B25). As tagging fractions are currently unknown, total contributions of these wild-tagged stocks were not estimated.

A total of 4,910 coho salmon (Appendix B26) from the Craig marine boat sport fishery was examined for clipped adipose fins. The tag codes recovered and the relative contribution to the fishery are presented in Appendix B26. About 19% of the coho salmon sampled in Craig were from hatcheries, with the Klawock hatchery contributing 10% of the sample.

Table 7.—Harvest per unit effort (HPUE) for coho salmon (harvest per angler-hours of effort) by biweekly beriod in the Ketchikan, Juneau, and Sitka marine boat sport fisheries during 1994.

Harvest of coho salmon per angler-hour of effort[a]						
	Ketchikan		Juneau		Sitka	
Dates	HPUE	SE	HPUE	SE	HPUE	SE
6/06-6/19	0.018	0.004	0.008	0.002	0.002	0.001
6/20-7/03	0.024	0.004	0.034	0.006	0.007	0.002
7/04-7/17	0.090	0.011	0.125	0.016	0.051	0.011
7/18-7/31	0.139	0.025	0.211	0.016	0.245	0.019
8/01-8/14	0.181	0.019	0.290	0.016	0.348	0.032
8/15-8/28	0.316	0.022	0.339	0.025	0.458	0.039
8/29-9/11	0.203	0.016	0.279	0.022	0.311	0.045
9/12-9/25	0.352	0.032	0.403	0.124	0.167	0.100
All periods	0.134	0.006	0.173	0.006	0.145	0.008

[a] Does not include derby effort or harvest.

The HPUE for coho salmon for the Ketchikan, Juneau, and Sitka fisheries reached highs of 0.352 (SE = 0.032), 0.403 (SE = 0.124), and 0.458 (SE = 0.039) coho salmon per angler-hour of effort, respectively (Table 7). The peak in HPUE for coho salmon occurred in late August in Sitka, and late September in Juneau and Ketchikan. Sitka anglers experienced higher HPUE's 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 35,105 (SE = 1,756) 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 20.4 pounds in Juneau to 45.8 pounds in Sitka (Table 9). About 1,098,300 pounds of Pacific halibut were taken in the sampled fisheries, with about 55% of this harvest taken in Sitka.

Although rockfish are not a primary target of most Southeast Alaska marine boat sport anglers, an estimated 36,911 (SE = 2,071) rockfish were caught in the marine boat sport fisheries surveyed (Table 8). Only 12,105 (SE = 902) of the rockfish

Table 8.—Summary of estimated catch and harvest of Pacific halibut, rockfish, and lingcod in the Southeast Alaska marine boat sport fisheries sampled during 1994.

Sport fishery	Dates	Total catch	SE	Harvest	SE
		PACIFIC HALIBUT			
Ketchikan	4/25-9/25	13,809	1,247	10,960	982
Juneau	4/25-9/25	12,890	1,335	8,843	877
Sitka	4/25-9/25	18,418	1,744	13,185	1,133
Petersburg	5/09-7/17	1,407	263	1,121	201
Wrangell	5/09-7/17	1,037	173	996	166
	Total	47,561	2,545	35,105	1,756
		ROCKFISH			
Ketchikan	4/25-9/25	13,887	1,147	5,603	564
Juneau	4/25-9/25	919	205	702	136
Sitka	4/25-9/25	21,847	1,710	5,576	685
Petersburg	5/09-7/17	154	49	139	47
Wrangell	5/09-7/17	104	67	85	67
	Total	36,911	2,071	12,105	902
		LINGCOD			
Ketchikan	4/25-9/25	892	143	819	131
Juneau	4/25-9/25	19	17	19	17
Sitka	4/25-9/25	4,226	361	3,564	332
Petersburg	5/09-7/17	17	15	17	15
Wrangell	5/09-7/17	4	3	4	3
	Total	5,158	389	4,423	357

caught were retained (33%). Ketchikan anglers retained an estimated 40% (5,603) of the 13,887 rockfish caught. Sitka anglers retained an estimated 26% (5,576) of the 21,847 rockfish caught. Retention in Juneau, Petersburg, and Wrangell, where few were caught, was 76%, 90%, and 82%, respectively.

Major species composition of the rockfish harvest was determined for the Ketchikan, Sitka, Petersburg, and Wrangell fisheries (Table 10). Quillback rockfish *S. maliger* were most frequently taken in Ketchikan (36.9%), while yelloweye rockfish composed 33.8% of the Ketchikan rockfish harvest. Yelloweye rockfish *S. ruberrimus* were most often taken in Sitka (38.3%). and black rockfish *S. melanops* composed 36.8% 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 *Ophiodon elongatus* was another bottomfish species frequently harvested in the Sitka and Ketchikan 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 and the estimated harvest totaled 33,366 (SE = 4,196). Only 8,456 (SE = 787) pink salmon were harvested in Juneau as the retention rate was only 41% in comparison to the 79% observed in Ketchikan. Harvests of both chum and sockeye salmon were much less, totaling 10,902 chum salmon and 467 sockeye salmon for the sampled fisheries

Table 9.—Average length, round weight, and total round weight of Pacific halibut harvested in sampled Southeast Alaska marine boat sport fisheries during 1994.

Sport fishery	Survey period	Sample size	Total length		Average round wt. (lbs)	Estimated number harvested	Estimated total round wt. (thousand lbs.)
			Mean (cm)	SE (cm)			
Ketchikan	4/25–9/25	375	86.9	1.5	21.7	10,960	237.8
Juneau	4/25–9/25	138	81.7	2.1	20.4	8,843	180.4
Sitka	4/25–9/25	253	107.7	1.8	45.8	13,185	603.9
Petersburg/ Wrangell	5/09–7/17	196	100.4	1.9	36.0	2,117	76.2
Craig	5/09–9/04	1, 570	89.5	0.5	23.2		
All areas combined		2, 532	91.4	0.5	26.1	35,105	1,098.3

Table 10.—Rockfish composition in sampled marine boat sport fisheries during 1994. An estimated 702 rockfish were harvested in the Juneau marine boat sport fishery, and individual species were not identified.

Rockfish species	Ketchikan		Sitka		Petersburg		Wrangell	
	Harvest[a]	%	Harvest[a]	%	Harvest[a]	%	Harvest[a]	%
Quillback	2,067	36.9	706	12.7	26	18.8	0	0.0
Dusky	68	1.2	116	2.1	0	0.0	0	0.0
Copper	334	6.0	112	2.0	29	21.4	0	0.0
Black	316	5.7	2,053	36.8	9	6.8	0	0.0
Yelloweye	1,892	33.8	2,135	38.3	57	41.0	0	0.0
Silvergrey	315	5.6	159	2.9	17	12.0	85	100.0
Other non-pelagic	611	10.9	110	2.0	0	0.0	0	0.0
Other pelagic	0	0.0	186	3.3	0	0.0	0	0.0
Total	5,604		5,577		138		85	

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

combined. About 92% of the 407 Dolly Varden harvested were taken by Juneau anglers.

SHELLFISH FISHERIES

Shellfish effort and harvests of Dungeness, Tanner, and king crab were estimated for all of the marine boat sport fisheries except Sitka (Table 12). Shellfish effort in boat-days for the Juneau fishery (5,486 boat-days) was nearly four times that estimated for the Ketchikan fishery (1,439 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. The majority of the shrimp harvest (34,580 shrimp, SE = 3,241) occurred in Ketchikan, but shrimp harvests were also estimated in Petersburg and Wrangell.

DISCUSSION

As noted previously, onsite creel surveys provide data necessary for inseason management and they also can provide very 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 methods and coverage so that inseason estimates can be compared with Statewide Harvest Survey (SWHS) and onsite creel estimates from previous years.

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 1994.

Sport fishery	Time period	Pink salmon		Chum salmon		Sockeye salmon		Dolly Varden	
		Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
Ketchikan	4/25-9/25	42,057	33,366	6,125	5,818	159	159	0	0
Juneau	4/25-9/25	20,394	8,456	3,443	2,919	91	91	1,139	374
Sitka	4/25-9/25	7,357	2,828	3,380	2,157	211	211	396	33
Petersburg	5/09-7/17	53	53	8	8	6	6	0	0
Wrangell	5/09-7/17	62	62	0	0	0	0	5	0
Total		69,923	44,765	12,956	10,902	467	467	1,540	407

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 1994.

Sport fishery	Time period	Effort		Dungeness crab harvest	Tanner crab harvest	King crab harvest	Shrimp harvest
		Boat-days	SE				
Ketchikan	4/25-9/25	1,439	203	7,032	0	0	34,580
Juneau	4/25-9/25	5,486	447	6,786	2,328	5,925	...[a]
Petersburg	5/09-7/19	87	21	324	50	0	2,340
Wrangell	5/09-7/19	201	38	867	5	0	2,880
Total		7,213	493	15,009	2,383	5,925	39,800

[a] Shrimp harvest not estimated in Juneau.

Effort, harvest and total catch estimates from the five 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. This is especially true for species other than chinook salmon in fisheries near Petersburg and Wrangell where surveys occurred from 9 May through 17 July. Pacific halibut, coho salmon, and pink salmon are harvested in substantially larger numbers during 18 July through the end of September than during the period from 9 May through 17 July.

The estimates for chinook salmon in the Juneau and Ketchikan fisheries are incomplete because there were no surveys of: (1) all harvests occurring during 1 January–24 April and 26 September–31 December; (2) private moorages on the road system or remote moorages or docks inaccessible from the road system; (3) the night period from the end of civil twilight to the beginning of surveys at about 0800 h; and (4)boat-parties which are not counted or interviewed due to being missed by creel samplers. 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). 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 Petersburg and Wrangell fisheries were not surveyed in 1990 or 1991, but were consistently surveyed in the spring from 1983–1989 and during 1992 and 1993.

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

ANGLER EFFORT

Total effort in the Juneau fishery during 1994 (384,528 angler-hours) was 10% higher than in

Table 13.—Estimated angler effort in the Juneau and Ketchikan 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	4/17–10/1	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	4/14–10/5	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
		Average	276,314	77%	81,656	23%	358,389
	1994	4/25–9/25	320,385	83%	63,398	16%	384,528
		% of average	116%		78%		107%
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
		Average	185,237	73%	68,324	27%	253,771
	1994	4/25–9/25	230,372	80%	56,092	20%	286,464
		% of average	124%		82%		113%

1993 (349,965 angler-hours) and 7% higher than the 1983-1993 average of 358,389 angler-hours. In Ketchikan, total 1994 effort (286,464 angler-hours) was up 3% from the estimated effort in 1993 (276,969 angler-hours), and 13% above the 1984-1993 average of 253,771 angler-hours (Table 13). Average effort through 1993 (as determined from available data) for the Ketchikan fishery was about 71% of the Juneau average. In 1994 total effort in Ketchikan was 74% of that seen in Juneau.

In Juneau the estimated amount of salmon effort was 16% above average, while salmon effort in Ketchikan was 24% above average. Bottomfish effort in Juneau was 22% below average, while bottomfish effort in Ketchikan was 18% below the 1984-93 average. In Juneau and Ketchikan, 83% and 80%, respectively, of 1994 effort targeted on salmon, which was above long-term averages.

CHINOOK SALMON FISHERIES

Total harvests of chinook salmon for both the Juneau and Ketchikan marine boat fisheries were down from 1993 (Table 14). The Juneau harvest of 5,819 chinook salmon was 8% below the 1977-1993 average, but the Ketchikan harvest was 46% below the 1984-1993 average, and the lowest since 1984. Harvest of chinook salmon in the Juneau Golden North Salmon Derby was 93% of average.

Relative hatchery contributions to the Juneau and Ketchikan fisheries were higher than in 1993 (Table 15). An estimated 37% of the 1994 chinook salmon harvest in Juneau originated in hatcheries compared to the 1983-1993 average of 25%. In Ketchikan, an estimated 71% of the 1994 harvest originated in hatcheries in comparison to the average of 46%. Harvests of

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

Year	Juneau marine[a]	Juneau Golden North Derby	Ketchikan marine
1977	4,845	516	---
1978	3,020	250	---
1979	4,644	1,077	---
1980	5,552	477	---
1981	4,165	873	---
1982	4,670	1,016	---
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
1988	5,683	677	5,245
1989	7,074	609	5,752
1990	7,335	493	9,869
1991	12,234	522	12,730
1992	7,114	603	5,670
1993	8,337	243	5,277
Average	6,326	728	6,232
1994	5,819	678	3,374
% of average	92%	93%	54%

[a] Includes Juneau Golden North Salmon Derby harvest.

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 33% of the 1994 chinook salmon harvest in Juneau originated in Alaskan hatcheries, which was the highest percentage recorded. In Ketchikan, an estimated 41% of the 1994 harvest originated in Alaskan hatcheries in comparison to the average of 35%. This year was the third season that total harvest of wild and non-Alaskan hatchery fish taken by the sport fishery in Southeast Alaska was limited to a quota.

COHO SALMON FISHERIES

The 1994 harvest of 44,673 coho salmon in the Ketchikan area was the highest recorded and was 123% above the 1984-1993 average of 20,073 (Table 16). The Juneau area harvest of coho salmon (62,218 fish) was also the highest recorded and was nearly four times the 1977-1993 average of 15,722. The Juneau Golden North Salmon derby harvest of 8,358 coho salmon was also a record and was 233% above the 1977-1993 average of 2,511.

Harvest of coho salmon in both the Juneau and Ketchikan areas continues to be supplemented by

Table 15.—Estimated contributions of hatchery-produced chinook salmon to Juneau and Ketchikan marine boat sport fisheries as determined by onsite creel surveys, 1983–1994.

	Juneau marine				Ketchikan marine			
Year	Total	%	Alaska	%	Total	%	Alaska	%
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
1988	1,210	21	979	17	1,747	33	1,405	27
1989	1,018	14	865	12	2,992	52	2,082	36
1990	2,011	27	1,584	22	6,023	61	4,511	46
1991[a]	4,279	37	2,957	26	8,373	66	7,035	55
1992	2,958	42	1,762	25	3,628	64	2,604	46
1993	1,511	18	1,446	17	3,425	65	2,234	42
Average	1,613	25	1,257	22	2,861	46	2,174	35
1994	2,127	37	1,895	33	2,393	71	1,378	41

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

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

Year	Juneau marine[a]	Juneau Golden North Derby	Ketchikan marine
1977	13,084	3,625	---
1978	16,697	2,855	---
1979	10,150	3,224	---
1980	11,694	2,277	---
1981	8,661	1,174	---
1982	20,747	5,320	---
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
1988	12,017	1,453	5,525
1989	23,819	3,173	10,781
1990	26,343	1,914	33,661
1991	22,379	2,567	43,789
1992	18,482	2,166	22,688
1993	15,921	2,031	18,703
Average	15,722	2,511	20,073
1994	62,218	8,358	44,673
% of average	396%	333%	223%

[a] Includes Juneau Golden North Salmon Derby harvest.

hatchery contributions (Table 17). The estimated harvest of 8,260 (13% of total) hatchery coho salmon in Juneau was much greater than the 1993 contribution and more than ten times as much as the 1983-1993 average of 768. The increase in hatchery coho salmon harvests in the Juneau area was mostly due to returns to the Gastineau Hatchery owned by Douglas Island Pink and Chum, Inc. These returns also generated a substantial shoreline fishery in Gastineau Channel for coho salmon returning during late August through early October (Beers, *In press*).

The Ketchikan fishery has been much more dependent upon hatchery coho salmon than the Juneau fishery. About 14% of the 1984 to 1993 Ketchikan harvest originated in hatcheries (Table 17). In 1994, both the estimated harvest of 14,491 hatchery coho salmon and the 1994 hatchery contribution of 32% in Ketchikan were well above average.

Table 17.—Estimated contributions of hatchery-produced coho salmon to Juneau and Ketchikan marine boat sport fisheries as determined by onsite creel surveys, 1983–1994.

	Juneau marine		Ketchikan marine	
Year	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
1988	262	2	292	5
1989	930	4	1,147	11
1990	482	2	9,515	28
1991[a]	2,526	12	18,627	43
1992	905	5	9,588	42
1993	1,577	10	4,325	23
Average	768	5	6,282	14
1994	8,260	13	14,491	32

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

BOTTOMFISH FISHERIES

The 1994 harvest of Pacific halibut in the Juneau fishery (8,843) was 74% of the 1983-1993 average of 11,939 (Table 18). The Ketchikan harvest (10,960) was 15% above the 1984-1993 average of 9,537. Total estimated catch of Pacific halibut in the Juneau fishery (12,890) was 77% of the 1983-1993 average (16,846). The 1994 catch of Pacific halibut in Ketchikan (13,809) was 20% above the 1984-1993 average (11,509). Retention rates for Pacific halibut were slightly below average in Juneau and Ketchikan at 69% and 79%, respectively.

Rockfish harvests in the 1994 Ketchikan fishery (5,604) were 51% below the 1984-93 average of 11,538 (Table 19). Retention of rockfish at 40% was below the 1986-1993 average of 46%. Targeted and non-targeted HPUE and CPUE for rockfish were all below average.

Table 18.—Estimated harvest and catch of Pacific halibut in the Juneau and Ketchikan marine boat sport fisheries, 1983–1994.

	Juneau marine				Ketchikan marine			
Year	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
1988	12,672	5,027	17,699	72	7,317	1,338	8,655	85
1989	12,484	2,406	14,890	84	10,797	1,256	12,053	90
1990	11,774	4,018	15,792	75	7,419	1,281	8,700	85
1991	8,611	2,363	10,974	78	9,650	1,125	10,775	90
1992	9,265	2,554	11,819	78	10,257	2,582	12,839	80
1993	6,928	2,652	9,580	72	12,783	4,443	17,226	74
Average	11,939	4,907	16,846	71	9,537	1,971	11,509	83
1994	8,843	4,047	12,890	69	10,960	2,849	13,809	79
% of Average	74	82	77		115	145	120	

SHELLFISH FISHERIES

Harvests of shellfish in the Juneau and Ketchikan areas have been consistently estimated with creel surveys since 1988 (Table 20). Estimated shellfish effort of 5,456 boat-days in the Juneau area was well above average, as was the harvest of 5,925 king crab. Harvest of 2,328 Tanner crab in the Juneau area was above average; while the harvest of 6,786 Dungeness crab was below average. In Ketchikan, shellfish effort of 1,439 boat-days was the second highest recorded, and 19% above the 1988-1993 average of 1,212 boat-days. Dungeness crab harvest in Ketchikan of 7,032 was above the 1988-1993 average of 6,976. Shrimp harvest in the Ketchikan area during 1994 (34,580) was below average.

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. Individual estimates of chinook harvest were within our relative precision goal of ±20% of the true value 90% of the time at all locations (see Appendices B1 through B5). Similarly, contribution estimates of Alaska hatchery chinook salmon were within ±20 percentage points of absolute precision 90% of the time at all locations (Table 3). Absolute precision of the Alaska hatchery contribution estimates at all sites ranged from 5% to 19%.

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, since 1990 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 1994, the percent contribution of Alaskan hatchery chinook salmon to monitored marine boat sport fisheries averaged 22% and the total hatchery contribution averaged 46%. The number of hatchery coho salmon contributed to

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
Average		253,771	68,324	11,538	13,454	25,209	46	0.17	0.05	0.37	0.10
1994	4/25–9/25	286,464	56,092	5,604	8,283	13,887	40	0.10	0.02	0.25	0.05
% of average		113	82	49	62	55		59	40	68	50

[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] 1985 data not comparable because creel survey only lasted through 30 June instead of late September.

Table 20—Comparison of estimated shellfish effort and harvest for the Juneau and Ketchikan marine boat fisheries, 1988–1994.

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	
Mean	3,800	9,865	2,030	3,577	
1994	5,486	6,786	2,328	5,925	

KETCHIKAN FISHERY					
Year	Effort (boat-days)	Dungeness crab harvest	Tanner crab harvest	King crab harvest	Shrimp harvest
1988	1,398	9,043			27,643
1989	508	2,688			12,730
1990	614	3,367			17,130
1991	1,394	7,631			69,450
1992	1,387	10,227			130,720
1993	1,973	8,897			37,060
Mean	1,212	6,976			49,122
1994	1,439	7,032			34,580

the Ketchikan, Juneau, Sitka, and Craig sport fisheries was greater than 10% of the harvest. It is recommended that onsite creel surveys of marine 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 of Fish and Game to ensure the sport fishery does not exceed its allocation. In 1994, sampling of all major boat sport fisheries including those in Ketchikan, Juneau, Sitka, Petersburg, and Wrangell 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 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, Wrangell, and Sitka marine boat sport fishery during 1994.

Harvest as well as catch by species along with angler effort was estimated by the following procedures for each stratum with locations, days, periods, and boat-parties as sampling units for the surveys conducted at Petersburg, Wrangell, and Sitka.

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:

$$\bar{n}_{hjio} = \frac{\sum_{k=1}^{m_{hjio}} n_{hjiok}}{m_{hjio}} \quad \text{(A1.1)}$$

where: n_{hjiok} was 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} equaled 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:

$$\hat{N}_{hjio} = M_{hjio}\bar{n}_{hjio} \quad \text{(A1.2)}$$

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

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

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

where: p_{hji} was 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:

$$\hat{N}_{hji} = P_{hji}\bar{N}_{hji} \quad \text{(A1.4)}$$

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

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

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

-continued-

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

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

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

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

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

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

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

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

$$\hat{N}_h = Q_h\overline{N}_h \tag{A1.8}$$

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

Estimates of catch of each species was obtained 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):

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

-continued-

where: f_{1h}, f_{2hj}, f_{3hji}, and f_{4hjio} were 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^2_{1h} equaled the among access location variance component for the angler harvest estimate, which was obtained as;

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

S^2_{2hj} equaled the among day (within access location) variance component for the harvest estimate, obtained as;

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

S^2_{3hji} equaled the among sampling period variance component for the harvest estimate, obtained as;

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

and, s^2_{4hjio} equaled the among boat-party variance component for the harvest estimate, obtained as;

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

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 Petersburg) only one period was defined within a sampling day. The sampling day in these surveys was 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 equaled zero.

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Similarly, in applying these procedures to some strata only one location was defined. Accordingly, $q_h = Q_h = 1$, and $f_{1h} = 1$, and as such the first-stage variance term equaled zero. Note, that only one access location was 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 was defined as a separate stratum, so that $d_{hj} = D_{hj} = 1$, and $f_{2hj} = 1$, and as such the second-stage variance term equaled 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 equaled 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 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 A2.-Data analysis procedures for angler effort, catch, and harvest estimates for the Ketchikan and Juneau marine boat sport fishery during 1994.

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 obtained over all boat-parties interviewed at each sampled access location within each sampled day:

$$\bar{n}_{hij} = \frac{\sum_{k=1}^{m_{hij}} n_{hijk}}{m_{hij}} \qquad \text{(A2.1)}$$

where: n_{hijk} was the number of fish harvested by interviewed boat-party k at access location j during sampled day i within stratum h; and m_{hij} equaled 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:

$$\hat{N}_{hij} = M_{hij}\bar{n}_{hij}\ ; \qquad \text{(A2.2)}$$

where: M_{hij} equaled 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:

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

where: q_{hi} equaled 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:

$$\hat{N}_{hi} = Q_{hi}\bar{N}_{hi} \qquad \text{(A2.4)}$$

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

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Then the stratum mean daily harvest was obtained:

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

where: d_h equaled the number of days sampled within each stratum.

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

$$\hat{N}_h = D_h \overline{N}_h \tag{A2.6}$$

where: D_h equaled the total number of days in each stratum.

Estimates of catch of each species was obtained similarly by substituting the appropriate catch statistics for each species into equations A2.1 through 2.6, above. Similarly, the angler effort estimate was calculated by substitution.

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

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

where: f_{1h}, f_{2hi}, and f_{3hij} were 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 equaled the among day variance component for the angler harvest estimate, which was obtained as;

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

-continued-

S^2_{2hi} equaled the among access location (within day) variance component for the harvest estimate, obtained as;

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

and, s^2_{3hij} equaled the among boat-party variance component for the harvest estimate, obtained as;

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

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 A2.7 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 obtained 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 1994.

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:

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

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:

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

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:

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

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

Appendix A4.-Data analysis procedures for hatchery contributions for the Ketchikan, Petersburg, Wrangell, Sitka, Juneau, and Craig surveys of the marine boat sport fishery during 1994.

Hatchery contributions were estimated for the surveys using the procedures outlined by Clark and Bernard (1987). 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 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.

Approximate procedures adapted from Clark and Bernard (1987) and proposed by Conrad and Larson (1987) were used for variance estimates for estimating variances and standard errors. The equations presented in Clark and Bernard (1987) could not be used directly to estimate variances due to the presence of sampling error in the estimates of total harvest.

$$\hat{n}_{1_A t} = \left(\frac{\hat{N}_t}{n_{2t}}\right)\left(\frac{a_{1t}}{a_{2t}}\right)\left(\frac{m_{1t}}{m_{2t}}\right)\left(\frac{m_{cAt}}{\theta_A}\right) \qquad \text{(A4.1)}$$

The notation used in the following equations essentially follows that used by Clark and Bernard (1987), with additional subscripts used to denote individual biweekly period values. The first step involved estimating the contribution to each biweekly period in the fishery of each particular tag code (using equation [10] from Clark and Bernard 1987):

where: $\hat{n}_{1_A t}$ equaled the estimated number of salmon from a hatchery release identified by the unique tag code A, harvested in biweek t; $\hat{N}_t$ was the estimated total harvest of salmon (one particular species only) for biweek t; n_{2t} is number of salmon (one particular species only) inspected for missing adipose fins from the sampled harvest in biweek t; a_{1t} was the number of salmon with a missing adipose fin which were counted and marked with a head strap from biweek t; a_{2t} equaled the number of salmon heads previously marked with a head strap which arrived at the tag lab, from fish originally sampled from biweek t; m_{1t} was the number of coded wire tags which were detected in the salmon heads at the tag lab, from those salmon sampled in biweek t; m_{2t} equaled the number of coded wire tags which were removed from the salmon heads and decoded, from those salmon sampled in biweek t; m_{cAt} equaled the number of coded wire tags dissected out of the salmon heads and decoded as the unique tag code A, originally sampled from biweek t; and θ_A was the proportion of a particular hatchery release which contained a coded wire tag of the unique tag code A.

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.

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$$S^2_{\hat{n}_{1At}} = \left\{\left(\frac{1}{n_{2t}}\right)\left(\frac{a_{1t}}{a_{2t}}\right)\left(\frac{m_{1t}}{m_{2t}}\right)\left(\frac{1}{\theta_A}\right)\right\}^2 \left\{\hat{N}_t^2 \hat{V}\left[m_{cAt}\right] + m_{cAt}^2 \hat{V}\left[\hat{N}_t\right] - \hat{V}\left[\hat{N}_t\right]\hat{V}\left[m_{cAt}\right]\right\} \quad \text{(A4.2)}$$

Estimates of the variance for contributions calculated from tag code recoveries were estimated by following the approach proposed by Conrad and Larson (1987), in which the terms $\hat{N}_t$ and m_{cAt} were treated as random variates, and all other terms in equation A4.1 were treated as constants (accordingly the procedures outlined by Goodman (1960) was used for the second major term of equation A4.2):

where: $\hat{V}\left[\hat{N}_t\right]$ equaled the estimated variance of overall harvest estimate for biweek *t*, obtained from the harvest sampling program; $\hat{V}\left[m_{cAt}\right]$ was the variance of "random variate" m_{cAt}, approximated by the approach used by Clark and Bernard (1987; equation [12]);

$$\hat{V}\left[m_{cAt}\right] \approx \frac{n_{2t}(n_{2t}-1)a_{2t}(a_{2t}-1)m_{2t}(m_{2t}-1)\hat{n}_{1At}(\hat{n}_{1At}-1)\theta_A^2}{\hat{N}_t(\hat{N}_t-1)a_{1t}(a_{1t}-1)m_{1t}(m_{1t}-1)} \quad \text{(A4.3)}$$

$$+\frac{n_{2t}a_{2t}m_{2t}\hat{n}_{1At}\theta_A}{\hat{N}_t a_{1t} m_{1t}} - \left(\frac{n_{2t}a_{2t}m_{2t}\hat{n}_{1At}\theta_A}{\hat{N}_t a_{1t} m_{1t}}\right)^2.$$

The final step in calculating the variance of $\hat{n}_{1At}$ was to perform the following bias correction (Clark and Bernard 1987; equation [15]):

$$\hat{V}\left[\hat{n}_{1At}\right] = \left\{\frac{(\hat{N}_t-1)n_{2t}(a_{1t}-1)a_{2t}(m_{1t}-1)m_{2t}}{\hat{N}_t(n_{2t}-1)a_{1t}(a_{2t}-1)m_{1t}(m_{2t}-1)}\right\}\left\{S^2_{\hat{n}_{1At}}\right\}. \quad \text{(A4.4)}$$

Estimates of the variance of across biweek contributions by tag code, as well as by combined tag codes were obtained by summing the variances across the biweeks and tag codes, as appropriate. The resulting estimates of variance were assumed to be conservative in that the covariances among contribution estimates by tag code within each sampling biweek were assumed to be negative (Clark and Bernard 1987).

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

In applying these procedures to the Craig sampling data the observed harvest (i.e., n_2) was used in place of the unestimated total harvest. Accordingly, the reported estimates of hatchery contribution only apply to the sampled harvest. Also note that for the Craig survey the entire season's data was used in total to calculate the contributions, instead of calculating in a biweekly manner.

APPENDIX B - CREEL SURVEY STATISTICS

Appendix B1.-Estimated effort, harvest, and total catches for the Ketchikan marine boat sport fishery, 25 April - 25 September 1994.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort[b]			
Boat-hours	105,845	8,254	13%
Salmon-hours	230,372	17,494	12%
Halibut-hours	56,092	4,807	14%
Angler-hours	286,464	19,920	11%
Boat-days	27,960	2,132	13%
Finfish Harvests[c]			
Total Chinook Salmon ≥ 28"	3,312	353	18%
Derby Take-home	234	85	60%
Derby Entered	378	0	0%
Derby Take-home & Entered	612	85	23%
Total Chinook Salmon < 28"	62	26	69%
Coho Salmon	44,673	5,297	20%
Chum Salmon	5,818	644	18%
Sockeye Salmon	159	59	61%
Pink Salmon	33,366	4,196	21%
Pacific Halibut	10,960	982	15%
Lingcod	819	131	26%
Total Rockfish	5,604	564	17%
Quillback Rockfish	1,633	253	25%
Dusky Rockfish	54	24	73%
Copper Rockfish	264	71	44%
Black Rockfish	250	89	59%
Yelloweye Rockfish	1,495	231	25%
Silvergrey Rockfish	249	79	52%
Other Non-pelagic Rockfish	483	174	59%
Unidentified Rockfish	1,176	183	26%
Finfish Total Catch[c]			
Chinook Salmon ≥ 28"	3,522	360	17%
Chinook Salmon < 28"	24,208	2,826	19%
Coho Salmon	48,912	5,932	20%
Chum Salmon	6,125	648	17%
Pink Salmon	42,057	4,865	19%
Pacific Halibut	13,809	1,247	15%
Lingcod	892	143	26%
Total Rockfish	13,887	1,147	14%
Shellfish Effort and Harvest[c]			
Boat-days Fished	1,439	203	23%
Dungeness Crab Kept	7,032	1,290	30%
Shrimp Kept	34,580	3,241	15%

[a] Relative precision (α=0.10) = (SE * 1.645 / Estimate) * 100.

[b] Lingcod-hours and rockfish-hours not recorded.

[c] No Dolly Varden, steelhead trout, cutthroat trout, Tanner crab, king crab, or other pelagic rockfish were caught or harvested.

Appendix B2.-Estimated effort, harvest, and total catches for the Juneau marine boat sport fishery, 25 April - 25 September 1994.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort[b]			
Boat-hours	148,160	10,819	12%
Salmon-hours	320,385	25,095	13%
Halibut-hours	63,398	6,628	17%
Angler-hours	384,528	30,522	13%
Boat-days	36,713	2,379	11%
Finfish Harvests[c]			
Total Chinook Salmon ≥ 28"	5,711	402	12%
Derby Take-home	121	46	63%
Derby Entered	551	0	0%
Derby Take-home & Entered	672	46	11%
Total Chinook Salmon < 28"	108	35	53%
Derby Take-home	4	3	123%
Derby Entered	2	0	0%
Derby Take-home & Entered	6	3	82%
Coho Salmon	62,218	7,363	19%
Derby Take-home	1,672	491	48%
Derby Entered	6,686	0	0%
Derby Take-home & Entered	8,358	491	10%
Chum Salmon	2,919	316	18%
Derby Take-home	11	5	75%
Derby Entered	40	0	0%
Derby Take-home & Entered	51	5	16%
Sockeye Salmon	91	28	51%
Derby Take-home	0	0	0%
Derby Entered	2	0	0%
Derby Take-home & Entered	2	0	0%
Pink Salmon	8,456	787	15%
Derby Take-home	75	22	48%
Pacific Halibut	8,843	877	16%
Dolly Varden	374	84	37%
Lingcod	19	17	147%
Total Rockfish	702	136	32%
Finfish Total Catch[c]			
Chinook Salmon ≥ 28"	5,921	439	12%
Chinook Salmon < 28"	22,181	2,548	19%
Coho Salmon	64,348	7,581	19%
Chum Salmon	3,443	351	17%
Sockeye Salmon	91	28	51%
Pink Salmon	20,394	1,962	16%
Pacific Halibut	12,890	1,335	17%
Dolly Varden	1,139	209	30%
Steelhead Trout	6	5	137%
Lingcod	19	17	147%
Total Rockfish	919	205	37%
Shellfish Effort and Harvest[c]			
Boat-days Fished	5,486	447	13%
King Crab Kept	5,925	748	21%
Dungeness Crab Kept	6,786	883	21%
Tanner Crab Kept	2,328	625	44%

[a] Relative precision (α=0.10) = (SE * 1.645 / Estimate) * 100.

[b] Lingcod-hours, rockfish-hours, and shrimp harvest not recorded.

[c] No steelhead trout were harvested, and no cutthroat trout were caught or harvested.

Appendix B3.-Estimated effort, harvest, and total catches for the Sitka marine boat sport fishery, 25 April - 25 September 1994.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort[b]			
Boat-hours	64,673	2,719	7%
Salmon-hours	123,971	5,375	7%
Halibut-hours	43,363	2,775	11%
Angler-hours	168,146	7,414	7%
Boat-days	18,839	875	8%
Finfish Harvests[c]			
Total Chinook Salmon ≥ 28"	13,135	762	10%
Derby Take-home	911	101	18%
Derby Entered	909	0	0%
Derby Take-home & Entered	1,820	101	9%
Total Chinook Salmon < 28"	4	4	165%
Coho Salmon	23,080	2,384	17%
Chum Salmon	2,157	341	26%
Sockeye Salmon	211	81	63%
Pink Salmon	2,828	378	22%
Pacific Halibut	13,185	1,133	14%
Dolly Varden	33	21	105%
Lingcod	3,564	332	15%
Total Rockfish	5,577	685	20%
Quillback Rockfish	360	86	39%
Dusky Rockfish	59	37	103%
Copper Rockfish	57	26	75%
Black Rockfish	1,046	279	44%
Yelloweye Rockfish	1,088	163	25%
Silvergrey Rockfish	81	30	61%
Other Non-pelagic Rockfish	56	25	73%
Other Pelagic Rockfish	95	55	95%
Unidentified Rockfish	2,735	521	31%
Finfish Total Catch[c]			
Chinook Salmon ≥ 28"	16,107	956	10%
Chinook Salmon < 28"	2,513	331	22%
Coho Salmon	25,173	2,590	17%
Chum Salmon	3,380	592	29%
Pink Salmon	7,357	1,038	23%
Pacific Halibut	18,418	1,744	16%
Dolly Varden	396	305	127%
Lingcod	4,226	361	14%
Total Rockfish	21,847	1,710	13%

[a] Relative precision (α=0.10) = (SE * 1.645 / Estimate) * 100.

[b] Lingcod-hours and rockfish-hours were not recorded.

[c] 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, 9 May-17 July 1994.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort[b]			
Boat-hours	8,071	546	11%
Salmon-hours	12,853	879	11%
Halibut-hours	6,552	1,090	27%
Angler-hours	19,406	1,539	13%
Boat-days	1,881	122	11%
Finfish Harvests[c]			
Total Chinook Salmon ≥ 28"	698	67	16%
Derby Entered	211	0	0%
Pink Salmon	53	26	81%
Chum Salmon	8	5	103%
Sockeye Salmon	6	5	138%
Lingcod	17	15	146%
Pacific Halibut	1,121	201	30%
Total Rockfish	138	47	56%
Quillback Rockfish	22	20	150%
Copper Rockfish	25	20	132%
Black Rockfish	8	7	144%
Yelloweye Rockfish	48	23	29%
Silvergrey Rockfish	14	10	118%
Unidentified Rockfish	21	11	86%
Finfish Total Catch[c]			
Chinook Salmon ≥ 28"	709	68	16%
Chinook Salmon < 28"	367	77	35%
Pink Salmon	53	26	81%
Chum Salmon	8	5	103%
Sockeye Salmon	6	5	138%
Lingcod	17	15	146%
Pacific Halibut	1,407	263	31%
Total Rockfish	154	49	53%
Quillback Rockfish	22	20	150%
Copper Rockfish	25	20	132%
Black Rockfish	8	7	144%
Yelloweye Rockfish	49	23	29%
Silvergrey Rockfish	14	10	118%
Unidentified Rockfish	36	18	83%
Shellfish Effort and Harvest[c]			
Boat-days Fished	87	21	40%
Pots or Rings	202	54	44%
Dungeness Crab Kept	324	113	56%
Tanner Crab Kept	50	32	106%
Shrimp Kept	2,340	278	20%

[a] Relative precision (α=0.10) = (SE * 1.645 / Estimate) * 100.

[b] Lingcod-hours and rockfish-hours not recorded.

[c] No chinook salmon < 28" were harvested, and no coho salmon, Dolly Varden, steelhead trout, cutthroat trout, dusky rockfish, other pelagic rockfish, other non-pelagic rockfish, or king crab were caught or harvested.

Appendix B5.-Estimated effort, harvest, and total catches for the Wrangell marine boat sport fishery, 9 May-17 July 1994.

	Estimate	Standard Error	Relative Precision[a]
Finfish Effort[b]			
Boat-hours	18,071	1,416	13%
Salmon-hours	38,537	3,388	15%
Halibut-hours	9,196	1,527	27%
Angler-hours	47,734	4,055	14%
Boat-days	3,712	257	11%
Finfish Harvests[c]			
Total Chinook Salmon ≥ 28"	1,137	93	13%
Coho Salmon	23	8	57%
Pink Salmon	62	40	106%
Pacific Halibut	996	166	28%
Lingcod	4	3	124%
Total Rockfish	85	67	132%
Silvergrey Rockfish	4	3	124%
Unidentified Rockfish	81	63	128%
Finfish Total Catch[c]			
Chinook Salmon ≥ 28"	1,218	103	14%
Chinook Salmon < 28"	151	32	35%
Coho Salmon	37	12	54%
Pink Salmon	62	40	106%
Pacific Halibut	1,037	173	28%
Lingcod	4	3	124%
Dolly Varden	5	4	132%
Total Rockfish	104	67	107%
Silvergrey Rockfish	4	3	124%
Unidentified Rockfish	100	64	106%
Shellfish Effort and Harvest[c]			
Boat-days Fished	201	38	31%
Pots or Rings	291	56	32%
Dungeness Crab Kept	867	190	36%
Tanner Crab Kept	5	4	132%
Shrimp Kept	2,880	533	31%

[a] Relative precision = (Standard error * 1.645 / Estimate) * 100.

[b] Lingcod-hours and rockfish-hours not recorded.

[c] No chinook salmon < 28" and no Dolly Varden harvested; and no chum salmon, sockeye salmon, steelhead trout, cutthroat trout, black rockfish, copper rockfish, dusky rockfish, quillback rockfish, yelloweye rockfish, other pelagic or non-pelagic rockfish, or king crab were caught or harvested.

Appendix B6.-Estimated effort, harvest and catch for the Ketchikan marine boat sport fishery by seasonal period, 25 April - 25 September, 1994.

Seasonal period	Boat-hours Estimate	Boat-hours Variance	Salmon-hours Estimate	Salmon-hours Variance	Halibut-hours Estimate	Halibut-hours Variance	Angler-hours Estimate	Angler-hours Variance
25Apr-08May	471	29,474	709	152,512	404	50,130	1,113	226,651
09May-22May	3,442	649,770	7,007	3,968,490	2,357	701,362	9,364	6,977,403
23May-05Jun	2,396	274,721	6,282	2,161,207	559	44,935	6,841	2,438,866
Derby[a]	14,267	6,473,492	30,344	23,742,198	4,939	557,745	35,283	29,774,900
06Jun-19Jun	9,130	1,353,658	16,531	4,468,568	7,605	1,004,302	24,135	7,754,705
20Jun-03Jul	11,912	6,602,274	22,262	13,958,633	10,103	5,898,682	32,365	31,917,510
04Jul-17Jul	11,143	1,548,228	24,644	15,335,208	8,809	1,855,787	33,453	17,633,442
18Jul-31Jul	5,840	1,523,175	12,117	5,593,320	5,139	1,394,750	17,256	8,887,687
01Aug-14Aug	8,008	4,973,742	16,979	16,780,429	6,423	6,532,379	23,402	39,571,060
15Aug-28Aug	12,922	9,090,042	32,844	59,959,235	6,421	3,944,916	39,266	78,449,669
29Aug-11Sep	14,530	22,969,634	33,786	113,430,022	2,256	873,358	36,042	121,162,454
12Sep-25Sep	11,784	12,644,552	26,867	46,492,598	1,077	244,811	27,944	52,017,729
Total	105,845	68,132,762	230,372	306,042,420	56,092	23,103,157	286,464	396,812,076

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
25Apr-08May	184	4,572	9	78	9	78	9	78
09May-22May	1,161	72,047	156	1,417	156	1,417	443	33,645
23May-05Jun	655	22,024	205	3,486	183	1,924	486	50,452
Derby[a]	3,036	279,899	675	7,792	612	7,183	3,179	864,557
06Jun-19Jun	2,498	92,339	594	9,417	566	8,935	1,939	130,051
20Jun-03Jul	3,437	585,545	818	17,595	721	15,306	2,642	592,645
04Jul-17Jul	3,007	85,835	465	10,414	465	10,414	1,978	214,036
18Jul-31Jul	1,863	224,712	31	291	31	291	729	80,769
01Aug-14Aug	2,467	487,651	239	51,342	239	51,342	534	24,571
15Aug-28Aug	3,259	476,608	279	26,728	279	26,728	2,753	596,719
29Aug-11Sep	3,254	1,125,528	51	922	51	922	3,779	2,602,939
12Sep-25Sep	3,139	1,087,887	0	0	0	0	5,737	2,796,190
Total	27,960	4,544,647	3,522	129,482	3,312	124,540	24,208	7,986,652

Seasonal period	Chinook Salmon < 28" Harvested Estimate	Chinook Salmon < 28" Harvested Variance	Coho Salmon Total Catch Estimate	Coho Salmon Total Catch Variance	Coho Salmon Harvested Estimate	Coho Salmon Harvested Variance	Pink Salmon Total Catch Estimate	Pink Salmon Total Catch Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
23May-05Jun	0	0	114	3,014	78	1,718	0	0
Derby[a]	0	0	695	17,444	348	4,062	114	683
06Jun-19Jun	0	0	639	18,493	375	7,262	107	718
20Jun-03Jul	0	0	1,083	35,112	908	31,332	5,001	1,695,834
04Jul-17Jul	11	115	3,421	339,341	3,249	306,998	6,840	868,247
18Jul-31Jul	15	200	3,347	1,544,573	3,204	1,525,043	6,411	2,934,069
01Aug-14Aug	0	0	4,994	1,601,153	4,806	1,585,549	13,000	13,532,964
15Aug-28Aug	25	274	16,166	17,669,512	14,845	13,321,656	8,304	3,935,118
29Aug-11Sep	11	102	9,492	8,983,243	8,273	6,756,029	2,063	684,767
12Sep-25Sep	0	0	8,961	4,975,490	8,587	4,520,897	217	15,659
Total	62	691	48,912	35,187,375	44,673	28,060,546	42,057	23,668,059

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Appendix B6.-page 2 of 4.

Seasonal period	Pink Salmon Harvested Estimate	Pink Salmon Harvested Variance	Chum Salmon Total Catch Estimate	Chum Salmon Total Catch Variance	Chum Salmon Harvested Estimate	Chum Salmon Harvested Variance	Sockeye Salmon Catch and Harvest Estimate	Sockeye Salmon Catch and Harvest Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
23May-05Jun	0	0	0	0	0	0	0	0
Derby[a]	45	94	191	4,166	191	4,166	0	0
06Jun-19Jun	68	516	483	10,313	458	8,733	0	0
20Jun-03Jul	4,275	1,367,470	1,579	75,131	1,517	73,789	29	555
04Jul-17Jul	5,736	726,028	1,805	213,001	1,769	219,040	30	561
18Jul-31Jul	5,448	2,800,103	610	53,163	610	53,163	23	521
01Aug-14Aug	9,974	9,155,830	409	13,072	378	12,857	25	538
15Aug-28Aug	6,359	3,143,365	527	31,494	478	28,390	26	633
29Aug-11Sep	1,365	407,714	309	10,811	273	7,580	26	633
12Sep-25Sep	96	3,051	212	8,334	144	7,276	0	0
Total	33,366	17,604,171	6,125	419,485	5,818	414,994	159	3,441

Seasonal period	Pacific Halibut Catch Estimate	Pacific Halibut Catch Variance	Pacific Halibut Harvested Estimate	Pacific Halibut Harvested Variance	Rockfish Total Catch Estimate	Rockfish Total Catch Variance	Rockfish Harvested Estimate	Rockfish Harvested Variance
25Apr-08May	47	684	37	404	30	372	0	0
09May-22May	164	4,864	130	4,604	951	89,977	386	18,850
23May-05Jun	99	3,415	59	825	192	7,879	42	1,025
Derby[a]	1,289	37,234	1,015	23,944	1,598	90,148	553	14,923
06Jun-19Jun	1,879	147,664	1,373	83,479	1,747	126,065	500	14,478
20Jun-03Jul	3,455	512,421	2,501	230,294	2,364	212,976	1,072	53,708
04Jul-17Jul	2,322	231,532	1,757	84,699	2,126	141,731	771	17,438
18Jul-31Jul	730	36,338	650	21,350	1,161	137,893	576	60,201
01Aug-14Aug	1,875	368,464	1,662	320,408	1,055	168,108	492	44,071
15Aug-28Aug	1,341	163,069	1,178	146,180	1,345	160,090	705	65,746
29Aug-11Sep	524	46,413	514	44,660	769	106,300	327	21,627
12Sep-25Sep	84	4,102	84	4,102	549	75,048	180	6,562
Total	13,809	1,556,200	10,960	964,949	13,887	1,316,587	5,604	318,629

Seasonal period	Lingcod Catch Estimate	Lingcod Catch Variance	Lingcod Harvested Estimate	Lingcod Harvested Variance	Quillback Rockfish Catch and Harvest Estimate	Quillback Rockfish Catch and Harvest Variance	Dusky Rockfish Catch and Harvest Estimate	Dusky Rockfish Catch and Harvest Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	7	40	7	40	111	2,454	0	0
23May-05Jun	0	0	0	0	0	0	0	0
Derby[a]	102	1,317	95	1,292	59	464	0	0
06Jun-19Jun	134	4,016	82	875	158	3,000	20	327
20Jun-03Jul	210	3,968	205	3,964	436	27,398	0	0
04Jul-17Jul	126	1,785	126	1,785	220	5,196	23	150
18Jul-31Jul	58	1,260	58	1,260	149	4,990	0	0
01Aug-14Aug	72	1,254	72	1,254	114	4,291	0	0
15Aug-28Aug	115	3,740	106	3,801	271	14,278	0	0
29Aug-11Sep	0	0	0	0	71	1,405	11	102
12Sep-25Sep	68	2,973	68	2,973	44	484	0	0
Total	892	20,353	819	17,244	1,633	63,960	54	579

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Seasonal-period	Copper Rockfish Catch and Harvest Estimate	Copper Rockfish Catch and Harvest Variance	Black Rockfish Catch and Harvest Estimate	Black Rockfish Catch and Harvest Variance	Yelloweye Rockfish Catch and Harvest Estimate	Yelloweye Rockfish Catch and Harvest Variance	Silvergrey Rockfish Catch and Harvest Estimate	Silvergrey Rockfish Catch and Harvest Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	0	0	32	928	67	882	0	0
23May-05Jun	7	39	0	0	0	0	0	0
Derby[a]	3	9	70	3,481	127	1,698	21	122
06Jun-19Jun	43	952	15	98	48	244	0	0
20Jun-03Jul	22	244	56	2,559	260	5,659	76	1,601
04Jul-17Jul	24	213	0	0	276	4,848	13	62
18Jul-31Jul	0	0	33	363	190	5,759	8	171
01Aug-14Aug	0	0	8	64	265	24,192	17	108
15Aug-28Aug	0	0	0	0	199	9,329	82	3,229
29Aug-11Sep	51	1,084	36	464	63	818	32	914
12Sep-25Sep	114	2,569	0	0	0	0	0	0
Total	264	5,110	250	7,957	1,495	53,429	249	6,207

Seasonal-period	Other Non-pelagic Rockfish Catch and Harvest Estimate	Other Non-pelagic Rockfish Catch and Harvest Variance	Unidentified Rockfish Total Catch Estimate	Unidentified Rockfish Total Catch Variance	Unidentified Rockfish Harvested Estimate	Unidentified Rockfish Harvested Variance	Shellfish Boat-days Estimate	Shellfish Boat-days Variance
25Apr-08May	0	0	30	372	0	0	30	477
09May-22May	56	1,815	685	64,524	120	6,497	126	4,243
23May-05Jun	0	0	185	7,541	35	678	12	65
Derby[a]	12	28	1,307	79,676	262	6,508	98	438
06Jun-19Jun	79	4,114	1,384	115,711	136	2,241	136	1,815
20Jun-03Jul	112	1,407	1,402	93,211	108	1,986	143	1,652
04Jul-17Jul	51	385	1,520	117,980	165	3,150	228	2,861
18Jul-31Jul	91	20,714	689	43,192	105	2,845	309	21,019
01Aug-14Aug	0	0	651	56,468	88	1,161	41	956
15Aug-28Aug	60	1,691	733	53,827	93	2,653	149	2,577
29Aug-11Sep	0	0	506	76,376	64	5,601	116	2,689
12Sep-25Sep	22	121	369	68,486	0	0	51	2,532
Total	483	30,275	9,461	777,364	1,176	33,320	1,439	41,324

Seasonal-period	Shellfish Pots or Rings Estimate	Shellfish Pots or Rings Variance	Crab Boat-days Estimate	Crab Boat-days Variance	Crab Pots or Rings Estimate	Crab Pots or Rings Variance	Dungeness Crab Total Catch Estimate	Dungeness Crab Total Catch Variance
25Apr-08May	102	5,588	30	477	102	5,588	463	96,568
09May-22May	151	7,955	102	3,603	91	1,675	515	53,740
23May-05Jun	24	258	12	65	24	258	333	52,947
Derby[a]	294	10,324	78	337	228	8,605	1,672	460,536
06Jun-19Jun	307	7,064	63	416	180	5,704	808	55,154
20Jun-03Jul	474	18,660	119	1,568	377	17,226	2,263	600,410
04Jul-17Jul	543	25,872	170	2,188	377	17,745	5,190	3,308,833
18Jul-31Jul	563	54,126	309	21,019	563	54,126	4,729	4,037,891
01Aug-14Aug	124	6,720	25	269	91	3,195	974	363,765
15Aug-28Aug	361	34,113	100	1,446	295	33,013	2,730	3,060,698
29Aug-11Sep	247	11,374	35	716	71	2,865	764	436,285
12Sep-25Sep	128	15,828	0	0	0	0	0	0
Total	3,318	197,882	1,043	32,104	2,399	150,000	20,441	12,526,827

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Appendix B6.-Page 4 of 4.

Seasonal period	Dungeness Crab Harvested Estimate	Dungeness Crab Harvested Variance	Shrimp Harvested Estimate	Shrimp Harvested Variance
25Apr-08May	172	14,870	0	0
09May-22May	137	3,641	540	24,300
23May-05Jun	176	14,056	0	0
Derby[a]	509	16,973	670	8,870
06Jun-19Jun	329	9,843	12,800	2,828,400
20Jun-03Jul	625	51,001	5,100	1,318,610
04Jul-17Jul	1,673	282,424	2,630	131,650
18Jul-31Jul	2,270	1,083,723	730	50,110
01Aug-14Aug	355	49,147	1,240	134,580
15Aug-28Aug	613	115,109	990	86,130
29Aug-11Sep	173	23,124	2,180	220,840
12Sep-25Sep	0	0	7,700	5,698,000
Total	7,032	1,663,911	34,580	10,501,490

[a] Derby held on 28-30 May, 4-5 June, and 11-12 June.

Appendix B7.-Estimated effort, harvest and catch for the Juneau marine boat sport fishery by seasonal period, 25 April - 25 September, 1994.

Seasonal period	Boat-hours Estimate	Boat-hours Variance	Salmon-hours Estimate	Salmon-hours Variance	Halibut-hours Estimate	Halibut-hours Variance	Angler-hours Estimate	Angler-hours Variance
25Apr-08May	4,921	484,941	10,440	2,741,572	41	961	10,480	2,701,723
09May-22May	11,832	4,993,907	27,775	26,802,978	234	7,502	28,019	26,835,813
23May-05Jun	15,660	4,045,196	38,300	25,167,228	1,889	332,108	40,212	28,881,713
06Jun-19Jun	14,382	2,320,922	31,937	13,360,188	3,481	430,454	35,474	15,128,704
20Jun-03Jul	10,140	2,178,018	20,763	11,624,535	6,391	1,806,034	27,153	21,219,887
04Jul-17Jul	9,755	1,228,934	16,709	4,476,239	7,199	1,137,109	24,039	7,097,301
18Jul-31Jul	14,856	5,546,545	27,255	22,920,868	12,989	8,536,161	40,737	51,326,779
01Aug-14Aug	24,078	11,357,747	50,711	93,664,913	14,077	4,172,857	64,799	126,813,805
Derby[a]	9,763	1,851,488	26,044	19,651,773	611	25,110	26,655	20,164,567
15Aug-28Aug	21,368	80,405,161	47,845	395,387,061	10,556	26,258,735	58,400	611,177,442
29Aug-11Sep	9,924	2,366,166	18,454	10,682,516	5,708	1,187,764	24,185	16,851,512
12Sep-25Sep	1,481	273,495	4,152	3,288,663	222	29,744	4,375	3,365,044
Total	148,160	117,052,520	320,385	629,768,534	63,398	43,924,539	384,528	931,564,290

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
25Apr-08May	1,343	27,349	290	8,832	290	8,832	37	437
09May-22May	2,942	301,364	563	7,245	560	7,113	150	4,370
23May-05Jun	4,045	299,638	1,708	77,832	1,691	75,522	578	25,232
06Jun-19Jun	3,776	183,504	1,149	30,525	1,102	28,843	1,190	53,598
20Jun-03Jul	2,905	205,757	547	29,660	480	16,126	927	76,835
04Jul-17Jul	2,702	100,927	161	1,677	161	1,677	1,047	62,816
18Jul-31Jul	3,628	249,569	197	2,319	197	2,319	3,081	741,728
01Aug-14Aug	6,016	489,099	319	4,393	311	4,562	6,866	1,399,840
Derby[a]	1,475	38,265	679	2,254	672	2,098	2,776	207,673
15Aug-28Aug	4,797	3,607,423	222	27,370	161	13,626	4,141	3,614,242
29Aug-11Sep	2,662	131,462	66	510	66	510	601	74,872
12Sep-25Sep	422	25,520	20	178	20	178	787	228,745
Total	36,713	5,659,877	5,921	192,795	5,711	161,406	22,181	6,490,388

Seasonal period	Chinook Salmon < 28" Harvested Estimate	Chinook Salmon < 28" Harvested Variance	Coho Salmon Total Catch Estimate	Coho Salmon Total Catch Variance	Coho Salmon Harvested Estimate	Coho Salmon Harvested Variance	Pink Salmon Total Catch Estimate	Pink Salmon Total Catch Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
23May-05Jun	0	0	27	202	27	202	0	0
06Jun-19Jun	0	0	308	7,418	308	7,418	446	12,436
20Jun-03Jul	38	295	856	50,743	809	42,181	2,485	121,381
04Jul-17Jul	7	20	2,813	372,531	2,668	366,929	6,206	1,006,131
18Jul-31Jul	29	679	8,538	2,425,247	8,354	2,491,459	5,573	1,092,985
01Aug-14Aug	20	173	19,364	14,961,803	18,326	13,054,951	4,667	1,454,540
Derby[a]	6	10	8,680	291,358	8,358	241,457	214	1,760
15Aug-28Aug	0	0	16,475	37,347,125	16,287	36,165,515	780	159,910
29Aug-11Sep	8	54	5,810	1,422,913	5,688	1,353,587	23	241
12Sep-25Sep	0	0	1,477	594,364	1,393	487,894	0	0
Total	108	1,231	64,348	57,473,704	62,218	54,211,593	20,394	3,849,384

-continued-

Appendix B7.-page 2 of 3.

Seasonal period	Pink Salmon Harvested Estimate	Pink Salmon Harvested Variance	Chum Salmon Total Catch Estimate	Chum Salmon Total Catch Variance	Chum Salmon Harvested Estimate	Chum Salmon Harvested Variance	Sockeye Salmon Catch and Harvest Estimate	Sockeye Salmon Catch and Harvest Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
23May-05Jun	0	0	7	42	0	0	11	100
06Jun-19Jun	196	2,481	656	32,267	632	31,366	15	70
20Jun-03Jul	1,630	87,609	1,247	43,714	1,088	33,168	14	47
04Jul-17Jul	3,109	278,299	747	18,028	519	13,705	45	560
18Jul-31Jul	2,000	175,720	299	5,802	256	4,448	4	10
01Aug-14Aug	1,236	64,016	106	1,893	63	706	0	0
Derby[a]	75	494	51	29	51	29	2	0
15Aug-28Aug	202	10,514	235	18,744	215	14,197	0	0
29Aug-11Sep	8	52	56	979	56	979	0	0
12Sep-25Sep	0	0	39	1,444	39	1,444	0	0
Total	8,456	619,185	3,443	122,942	2,919	100,042	91	787

Seasonal period	Pacific Halibut Catch Estimate	Pacific Halibut Catch Variance	Pacific Halibut Harvested Estimate	Pacific Halibut Harvested Variance	Dolly Varden Total Catch Estimate	Dolly Varden Total Catch Variance	Dolly Varden Harvested Estimate	Dolly Varden Harvested Variance
25Apr-08May	0	0	0	0	127	3,375	46	949
09May-22May	8	62	8	62	102	4,503	33	517
23May-05Jun	286	11,109	198	3,497	94	2,958	60	1,710
06Jun-19Jun	689	43,833	436	11,951	358	15,444	124	1,752
20Jun-03Jul	1,515	81,949	1,121	43,159	211	9,537	71	1,666
04Jul-17Jul	1,502	128,897	906	35,395	99	5,775	19	313
18Jul-31Jul	2,749	324,736	1,825	142,829	59	925	17	113
01Aug-14Aug	3,142	439,510	1,956	117,502	0	0	0	0
Derby[a]	227	3,549	175	2,353	41	579	4	11
15Aug-28Aug	1,937	672,367	1,413	336,433	40	477	0	0
29Aug-11Sep	807	76,385	784	75,929	8	52	0	0
12Sep-25Sep	28	348	21	237	0	0	0	0
Total	12,890	1,782,745	8,843	769,347	1,139	43,625	374	7,031

Seasonal period	Steelhead Catch Estimate	Steelhead Catch Variance	Rockfish Catch Estimate	Rockfish Catch Variance	Rockfish Harvested Estimate	Rockfish Harvested Variance	Lingcod Catch and Harvest Estimate	Lingcod Catch and Harvest Variance
25Apr-08May	6	30	0	0	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
23May-05Jun	0	0	0	0	0	0	0	0
06Jun-19Jun	0	0	73	1,194	35	749	0	0
20Jun-03Jul	0	0	63	1,263	63	1,263	19	277
04Jul-17Jul	0	0	258	19,455	148	2,768	0	0
18Jul-31Jul	0	0	166	8,568	125	3,997	0	0
01Aug-14Aug	0	0	149	3,990	141	4,042	0	0
Derby[a]	0	0	4	10	4	10	0	0
15Aug-28Aug	0	0	121	5,364	101	3,250	0	0
29Aug-11Sep	0	0	85	2,290	85	2,290	0	0
12Sep-25Sep	0	0	0	0	0	0	0	0
Total	6	30	919	42,134	702	18,369	19	277

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Appendix B7.-Page 3 of 3.

Seasonal period	Shellfish Boat-days Estimate	Shellfish Boat-days Variance	Shellfish Pots or Rings Estimate	Shellfish Pots or Rings Variance	King Crab Boat-days Estimate	King Crab Boat-days Variance	King Crab Pots or Rings Estimate	King Crab Pots or Rings Variance
25Apr-08May	136	581	244	2,506	0	0	0	0
09May-22May	263	3,425	555	13,058	0	0	0	0
23May-05Jun	326	10,857	649	26,645	0	0	0	0
06Jun-19Jun	352	6,840	699	30,784	0	0	0	0
20Jun-03Jul	548	20,751	1,185	153,999	233	13,117	522	76,936
04Jul-17Jul	920	20,739	1,699	81,481	600	12,525	1,201	60,747
18Jul-31Jul	790	9,975	1,506	58,333	514	9,440	1,033	42,088
01Aug-14Aug	922	35,224	1,928	174,261	510	9,110	1,064	48,178
Derby[a]	59	264	136	1,809	18	29	40	235
15Aug-28Aug	639	78,957	1,324	361,367	397	28,200	854	137,051
29Aug-11Sep	444	11,021	816	27,669	313	7,694	611	15,700
12Sep-25Sep	87	780	181	3,063	67	535	142	2,413
Total	5,486	199,414	10,922	934,975	2,652	80,650	5,467	383,348

Seasonal period	King Crab Harvest Estimate	King Crab Harvest Variance	Dungeness Crab Harvest Estimate	Dungeness Crab Harvest Variance	Tanner Crab Harvest Estimate	Tanner Crab Harvest Variance
25Apr-08May	0	0	161	11,691	68	1,149
09May-22May	0	0	475	21,127	224	18,353
23May-05Jun	0	0	922	96,818	107	3,012
06Jun-19Jun	0	0	708	39,408	2	3
20Jun-03Jul	587	76,724	683	42,805	252	28,422
04Jul-17Jul	1,241	123,924	550	28,638	325	17,393
18Jul-31Jul	1,275	130,357	629	35,009	225	11,675
01Aug-14Aug	804	39,220	1,541	393,917	956	303,557
Derby[a]	92	978	66	782	7	39
15Aug-28Aug	686	88,272	739	90,483	13	167
29Aug-11Sep	1,032	92,644	193	9,579	136	6,662
12Sep-25Sep	208	7,619	119	9,493	13	70
Total	5,925	559,738	6,786	779,750	2,328	390,502

[a] Derby held on 19-21 August.

Appendix B8.-Estimated effort, harvest and catch for the Sitka marine boat sport fishery by seasonal period, 25 April - 25 September, 1994.

Seasonal period	Boat-hours Estimate	Boat-hours Variance	Salmon-hours Estimate	Salmon-hours Variance	Halibut-hours Estimate	Halibut-hours Variance	Angler-hours Estimate	Angler-hours Variance
25Apr-08May	1,672	105,987	3,360	485,224	617	61,949	3,977	797,146
09May-22May	3,677	269,889	7,556	1,639,402	1,300	78,688	8,856	2,005,911
Derby[a]	8,624	200,559	19,258	1,105,144	1,226	56,386	20,484	1,211,500
23May-05Jun	3,101	472,081	7,092	3,057,875	1,974	384,949	9,235	4,851,276
06Jun-19Jun	8,972	550,537	17,131	1,895,940	5,919	1,031,516	23,050	3,841,794
20Jun-03Jul	8,783	534,653	16,992	2,572,394	6,721	667,358	23,761	5,089,242
04Jul-17Jul	6,296	729,246	9,491	1,969,645	6,650	1,699,939	16,355	6,335,073
18Jul-31Jul	7,550	753,884	15,337	5,043,102	5,220	480,540	20,681	7,362,187
01Aug-14Aug	6,206	971,211	10,161	2,469,301	6,744	1,519,613	17,039	7,026,691
15Aug-28Aug	7,016	2,568,563	12,722	7,835,214	5,068	1,544,885	18,076	15,237,330
29Aug-11Sep	2,382	205,100	4,162	701,835	1,743	150,297	5,742	1,031,120
12Sep-25Sep	394	31,962	709	115,567	181	22,309	890	175,412
Total	64,673	7,393,672	123,971	28,890,643	43,363	7,698,429	168,146	54,964,682

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
25Apr-08May	543	10,890	587	16,117	482	10,459	11	114
09May-22May	1,139	19,150	1,017	34,519	894	25,665	35	199
Derby[a]	1,726	17,569	2,369	19,037	1,820	10,282	146	369
23May-05Jun	960	35,184	1,277	84,081	1,099	62,847	18	138
06Jun-19Jun	2,680	49,207	3,423	209,177	2,540	93,289	419	20,021
20Jun-03Jul	2,518	41,968	3,840	308,241	2,778	147,709	675	20,854
04Jul-17Jul	2,167	124,526	912	30,397	884	30,148	235	5,333
18Jul-31Jul	2,132	65,009	1,567	66,066	1,555	66,707	351	11,873
01Aug-14Aug	1,881	80,177	375	5,215	364	4,862	166	4,148
15Aug-28Aug	2,194	300,997	662	140,011	641	126,319	381	44,220
29Aug-11Sep	749	15,629	78	2,018	78	2,018	37	715
12Sep-25Sep	150	5,278	0	0	0	0	39	1,354
Total	18,839	765,584	16,107	914,879	13,135	580,305	2,513	109,338

Seasonal period	Chinook Salmon < 28" Harvested Estimate	Chinook Salmon < 28" Harvested Variance	Coho Salmon Total Catch Estimate	Coho Salmon Total Catch Variance	Coho Salmon Harvested Estimate	Coho Salmon Harvested Variance	Pink Salmon Total Catch Estimate	Pink Salmon Total Catch Variance
25Apr-08May	0	0	11	100	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
Derby[a]	0	0	4	9	4	9	14	26
23May-05Jun	0	0	0	0	0	0	0	0
06Jun-19Jun	0	0	103	1,866	64	503	364	7,662
20Jun-03Jul	4	13	214	2,960	198	2,893	295	9,578
04Jul-17Jul	0	0	878	76,008	869	76,446	774	213,203
18Jul-31Jul	0	0	5,808	1,163,184	5,665	1,142,138	524	18,829
01Aug-14Aug	0	0	6,465	1,113,543	5,712	902,566	3,193	534,074
15Aug-28Aug	0	0	9,072	4,157,773	8,354	3,382,241	2,175	294,140
29Aug-11Sep	0	0	2,471	180,459	2,067	168,614	18	150
12Sep-25Sep	0	0	147	9,655	147	9,655	0	0
Total	4	13	25,173	6,705,557	23,080	5,685,065	7,357	1,077,662

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Appendix B8.-page 2 of 3.

Seasonal period	Pink Salmon Harvested Estimate	Pink Salmon Harvested Variance	Chum Salmon Total Catch Estimate	Chum Salmon Total Catch Variance	Chum Salmon Harvested Estimate	Chum Salmon Harvested Variance	Sockeye Salmon Catch and Harvest Estimate	Sockeye Salmon Catch and Harvest Variance
25Apr-08May	0	0	0	0	0	0	0	0
09May-22May	0	0	0	0	0	0	0	0
Derby[a]	5	12	0	0	0	0	5	13
23May-05Jun	0	0	11	100	11	100	7	42
06Jun-19Jun	227	2,638	48	829	27	157	11	100
20Jun-03Jul	202	5,263	100	636	90	617	7	17
04Jul-17Jul	211	7,419	344	8,481	325	7,536	181	6,397
18Jul-31Jul	298	2,939	1,662	203,024	1,051	71,855	0	0
01Aug-14Aug	1,193	84,728	863	105,986	539	32,906	0	0
15Aug-28Aug	683	39,953	324	30,597	114	2,775	0	0
29Aug-11Sep	9	75	28	328	0	0	0	0
12Sep-25Sep	0	0	0	0	0	0	0	0
Total	2,828	143,027	3,380	349,981	2,157	115,946	211	6,569

Seasonal period	Pacific Halibut Catch Estimate	Pacific Halibut Catch Variance	Pacific Halibut Harvested Estimate	Pacific Halibut Harvested Variance	Dolly Varden Total Catch Estimate	Dolly Varden Total Catch Variance	Dolly Varden Harvested Estimate	Dolly Varden Harvested Variance
25Apr-08May	481	80,148	232	15,067	0	0	0	0
09May-22May	295	11,101	239	10,508	0	0	0	0
Derby[a]	388	17,655	306	8,695	0	0	0	0
23May-05Jun	1,375	274,930	933	96,644	21	378	21	378
06Jun-19Jun	2,686	245,337	1,691	93,159	37	586	0	0
20Jun-03Jul	1,987	88,213	1,597	61,242	0	0	0	0
04Jul-17Jul	1,946	198,413	1,371	120,277	330	92,174	4	10
18Jul-31Jul	2,519	251,157	1,794	119,489	8	54	8	54
01Aug-14Aug	2,445	197,575	1,873	140,652	0	0	0	0
15Aug-28Aug	3,209	1,492,593	2,476	575,491	0	0	0	0
29Aug-11Sep	1,066	183,107	652	41,210	0	0	0	0
12Sep-25Sep	21	546	21	546	0	0	0	0
Total	18,418	3,040,775	13,185	1,282,980	396	93,192	33	442

Seasonal period	Lingcod Catch Estimate	Lingcod Catch Variance	Lingcod Harvested Estimate	Lingcod Harvested Variance	Rockfish Catch Estimate	Rockfish Catch Variance	Rockfish Harvested Estimate	Rockfish Harvested Variance
25Apr-08May	33	259	15	133	130	2,205	38	344
09May-22May	90	933	62	401	689	18,847	239	4,526
Derby[a]	170	1,508	140	1,200	963	70,080	243	5,161
23May-05Jun	167	4,574	167	4,574	847	154,424	427	90,002
06Jun-19Jun	468	12,341	334	9,905	2,894	231,359	742	24,158
20Jun-03Jul	458	5,275	425	5,095	2,663	139,505	566	18,058
04Jul-17Jul	569	20,996	457	16,761	3,884	846,427	1,132	187,458
18Jul-31Jul	760	28,400	635	24,518	2,436	319,443	646	20,954
01Aug-14Aug	662	24,785	617	23,035	3,203	670,104	780	87,236
15Aug-28Aug	369	17,304	369	17,304	2,861	344,812	635	27,860
29Aug-11Sep	459	13,658	322	6,439	1,135	121,466	129	3,881
12Sep-25Sep	21	546	21	546	142	4,406	0	0
Total	4,226	130,579	3,564	109,911	21,847	2,923,078	5,577	469,638

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Appendix B8.-Page 3 of 3.

Seasonal period	Quillback Rockfish Catch and Harvest Estimate	Quillback Rockfish Catch and Harvest Variance	Dusky Rockfish Catch and Harvest Estimate	Dusky Rockfish Catch and Harvest Variance	Copper Rockfish Catch and Harvest Estimate	Copper Rockfish Catch and Harvest Variance	Black Rockfish Catch and Harvest Estimate	Black Rockfish Catch and Harvest Variance
25Apr-08May	11	114	0	0	0	0	0	0
09May-22May	58	500	0	0	22	412	73	1,524
Derby[a]	7	16	0	0	2	3	50	676
23May-05Jun	7	42	0	0	0	0	42	1,512
06Jun-19Jun	37	430	11	92	0	0	74	1,836
20Jun-03Jul	27	164	48	1,249	12	130	119	5,385
04Jul-17Jul	82	2,614	0	0	10	35	209	6,718
18Jul-31Jul	109	3,256	0	0	0	0	50	524
01Aug-14Aug	11	100	0	0	11	103	335	57,362
15Aug-28Aug	11	100	0	0	0	0	66	1,700
29Aug-11Sep	0	0	0	0	0	0	28	328
12Sep-25Sep	0	0	0	0	0	0	0	0
Total	360	7,336	59	1,341	57	683	1,046	77,565

Seasonal period	Silvergrey Rockfish Catch and Harvest Estimate	Silvergrey Rockfish Catch and Harvest Variance	Yelloweye Rockfish Catch and Harvest Estimate	Yelloweye Rockfish Catch and Harvest Variance	Other Non-pelagic Rockfish Catch and Harvest Estimate	Other Non-pelagic Rockfish Catch and Harvest Variance	Other Pelagic Rockfish Catch and Harvest Estimate	Other Pelagic Rockfish Catch and Harvest Variance
25Apr-08May	0	0	8	59	0	0	0	0
09May-22May	28	420	13	74	0	0	6	26
Derby[a]	5	3	52	453	9	52	39	1,059
23May-05Jun	0	0	32	465	0	0	0	0
06Jun-19Jun	21	370	184	2,311	28	412	0	0
20Jun-03Jul	14	53	88	877	0	0	4	11
04Jul-17Jul	5	19	190	9,113	0	0	46	1,881
18Jul-31Jul	0	0	97	1,230	8	62	0	0
01Aug-14Aug	8	54	135	1,994	0	0	0	0
15Aug-28Aug	0	0	234	8,557	11	100	0	0
29Aug-11Sep	0	0	55	1,312	0	0	0	0
12Sep-25Sep	0	0	0	0	0	0	0	0
Total	81	919	1,088	26,445	56	626	95	2,977

Seasonal period	Unidentified Rockfish Total Catch Estimate	Unidentified Rockfish Total Catch Variance	Unidentified Rockfish Harvested Estimate	Unidentified Rockfish Harvested Variance
25Apr-08May	111	2,045	18	156
09May-22May	489	15,037	39	590
Derby[a]	799	54,518	79	1,448
23May-05Jun	767	149,308	347	93,215
06Jun-19Jun	2,540	227,078	387	19,613
20Jun-03Jul	2,352	125,647	254	10,308
04Jul-17Jul	3,342	637,869	588	108,217
18Jul-31Jul	2,171	307,176	382	7,601
01Aug-14Aug	2,703	565,082	280	9,680
15Aug-28Aug	2,540	299,979	315	18,929
29Aug-11Sep	1,052	101,672	46	1,279
12Sep-25Sep	142	4,406	0	0
Total	19,008	2,489,817	2,735	271,036

[a] Derby held on 28-30 May and 4-5 June.

Appendix B9.-Estimated effort, harvest and catch for the Petersburg marine boat sport fishery by seasonal period, 25 April - 17 July, 1994.

Seasonal period	Boat-hours Estimate	Boat-hours Variance	Salmon-hours Estimate	Salmon-hours Variance	Halibut-hours Estimate	Halibut-hours Variance	Angler-hours Estimate	Angler-hours Variance
09May-22May	582	14,243	1,045	57,114	272	16,062	1,317	101,086
Derby[a]	1,445	6,749	3,402	33,027	88	2,512	3,490	52,975
23May-05Jun	969	94,121	1,675	264,610	730	282,610	2,405	653,690
06Jun-19Jun	1,813	72,574	2,948	201,806	1,359	214,717	4,308	578,719
20Jun-03Jul	2,010	60,922	2,868	169,052	2,073	210,665	4,941	478,928
04Jul-17Jul	1,252	49,001	915	47,090	2,030	462,590	2,945	503,653
Total	8,071	297,610	12,853	772,699	6,552	1,189,156	19,406	2,369,051

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
09May-22May	176	970	38	236	38	236	9	29
Derby[a]	257	242	218	74	211	0	45	18
23May-05Jun	175	2,700	90	1,920	90	1,920	15	140
06Jun-19Jun	437	3,224	176	1,516	176	1,516	162	3,956
20Jun-03Jul	514	4,573	170	745	166	743	103	1,190
04Jul-17Jul	322	3,228	17	87	17	87	33	529
Total	1,881	14,937	709	4,578	698	4,502	367	5,862

Seasonal period	Pink Salmon Catch and Harvest Estimate	Pink Salmon Catch and Harvest Variance	Chum Salmon Catch and Harvest Estimate	Chum Salmon Catch and Harvest Variance	Sockeye Salmon Catch and Harvest Estimate	Sockeye Salmon Catch and Harvest Variance	Lingcod Catch and Harvest Estimate	Lingcod Catch and Harvest Variance
09May-22May	0	0	0	0	0	0	0	0
Derby[a]	0	0	2	2	0	0	0	0
23May-05Jun	0	0	0	0	0	0	0	0
06Jun-19Jun	0	0	0	0	0	0	0	0
20Jun-03Jul	15	115	6	26	0	0	0	0
04Jul-17Jul	38	565	0	0	6	26	17	232
Total	53	680	8	28	6	26	17	232

Seasonal period	Pacific Halibut Total Catch Estimate	Pacific Halibut Total Catch Variance	Pacific Halibut Harvested Estimate	Pacific Halibut Harvested Variance	Rockfish Total Catch Estimate	Rockfish Total Catch Variance	Rockfish Harvested Estimate	Rockfish Harvested Variance
09May-22May	18	166	18	166	0	0	0	0
Derby[a]	3	2	3	2	4	8	4	8
23May-05Jun	80	5,120	80	5,120	25	260	10	80
06Jun-19Jun	286	11,454	280	11,498	20	237	20	237
20Jun-03Jul	687	35,495	421	7,335	22	99	22	99
04Jul-17Jul	333	16,961	319	16,300	83	1,770	82	1,770
Total	1,407	69,198	1,121	40,421	154	2,374	138	2,194

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Appendix B9.-Page 2 of 2.

Seasonal period	Quillback Rockfish Catch and Harvest Estimate	Quillback Rockfish Catch and Harvest Variance	Copper Rockfish Catch and Harvest Estimate	Copper Rockfish Catch and Harvest Variance	Black Rockfish Catch and Harvest Estimate	Black Rockfish Catch and Harvest Variance	Yelloweye Rockfish Catch and Harvest Estimate	Yelloweye Rockfish Catch and Harvest Variance
09May-22May	0	0	0	0	0	0	0	0
Derby[a]	0	0	0	0	0	0	0	0
23May-05Jun	0	0	0	0	0	0	0	0
06Jun-19Jun	0	0	0	0	0	0	17	232
20Jun-03Jul	0	0	4	10	8	48	4	10
04Jul-17Jul	22	412	21	378	0	0	28	274
Total	22	412	25	388	8	48	49	516

Seasonal period	Silvergrey Rockfish Catch and Harvest Estimate	Silvergrey Rockfish Catch and Harvest Variance	Unidentified Rockfish Total Catch Estimate	Unidentified Rockfish Total Catch Variance	Unidentified Rockfish Harvested Estimate	Unidentified Rockfish Harvested Variance	Shellfish Boat-days Estimate	Shellfish Boat-days Variance
09May-22May	0	0	0	0	0	0	27	99
Derby[a]	0	0	4	8	4	8	0	0
23May-05Jun	0	0	25	260	10	80	0	0
06Jun-19Jun	3	5	0	0	0	0	20	72
20Jun-03Jul	0	0	7	39	7	39	20	63
04Jul-17Jul	11	103	0	0	0	0	20	194
Total	14	108	36	307	21	127	87	428

Seasonal period	Shellfish Pots or Rings Estimate	Shellfish Pots or Rings Variance	Dungeness Crab Catch and Harvest Estimate	Dungeness Crab Catch and Harvest Variance	Tanner Crab Catch and Harvest Estimate	Tanner Crab Catch and Harvest Variance	Shrimp Catch and Harvest Estimate	Shrimp Catch and Harvest Variance
09May-22May	119	2,171	192	9,152	28	616	280	3,020
Derby[a]	0	0	0	0	0	0	0	0
23May-05Jun	0	0	0	0	0	0	0	0
06Jun-19Jun	25	113	70	1,716	0	0	110	1,030
20Jun-03Jul	31	201	48	1,658	22	412	1,250	45,960
04Jul-17Jul	27	404	14	168	0	0	700	27,440
Total	202	2,889	324	12,694	50	1,028	2,340	77,450

[a] Petersburg derby held on 27-30 May.

Appendix B10.-Estimated effort, harvest and catch for the Wrangell marine boat sport fishery by seasonal period, 25 April - 17 July, 1994.

Seasonal period	Boat-hours Estimate	Boat-hours Variance	Salmon-hours Estimate	Salmon-hours Variance	Halibut-hours Estimate	Halibut-hours Variance	Angler-hours Estimate	Angler-hours Variance
09May-22May	6,964	510,699	17,568	3,243,709	1,030	300,218	18,599	3,512,458
23May-05Jun	6,306	1,341,168	13,720	7,697,548	3,188	1,249,329	16,908	11,674,725
06Jun-19Jun	2,281	49,843	3,778	256,792	1,505	157,677	5,283	313,144
20Jun-03Jul	1,424	74,556	2,733	246,871	1,020	276,340	3,753	635,948
04Jul-17Jul	1,096	28,436	738	35,282	2,453	346,992	3,191	307,670
Total	18,071	2,004,702	38,537	11,480,202	9,196	2,330,556	47,734	16,443,945

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
09May-22May	1,393	22,822	445	2,467	410	1,912	77	621
23May-05Jun	1,206	35,790	275	3,154	234	1,699	22	100
06Jun-19Jun	543	2,528	275	2,594	270	2,588	15	124
20Jun-03Jul	356	4,151	204	2,369	204	2,369	16	96
04Jul-17Jul	214	847	19	93	19	93	21	92
Total	3,712	66,138	1,218	10,677	1,137	8,661	151	1,033

Seasonal period	Coho Salmon Total Catch Estimate	Coho Salmon Total Catch Variance	Coho Salmon Harvested Estimate	Coho Salmon Harvested Variance	Pink Salmon Catch and Harvest Estimate	Pink Salmon Catch and Harvest Variance	Dolly Varden Total Catch Estimate	Dolly Varden Total Catch Variance
09May-22May	0	0	0	0	0	0	5	20
23May-05Jun	0	0	0	0	0	0	0	0
06Jun-19Jun	0	0	0	0	0	0	0	0
20Jun-03Jul	4	12	4	12	0	0	0	0
04Jul-17Jul	33	136	19	60	62	1,620	0	0
Total	37	148	23	72	62	1,620	5	20

Seasonal period	Pacific Halibut Total Catch Estimate	Pacific Halibut Total Catch Variance	Pacific Halibut Harvested Estimate	Pacific Halibut Harvested Variance	Lingcod Catch and Harvest Estimate	Lingcod Catch and Harvest Variance	Rockfish Total Catch Estimate	Rockfish Total Catch Variance
09May-22May	131	4,054	101	1,479	0	0	13	51
23May-05Jun	223	4,749	220	4,721	4	10	87	4,451
06Jun-19Jun	157	1,207	152	1,267	0	0	0	0
20Jun-03Jul	171	9,448	171	9,448	0	0	4	12
04Jul-17Jul	355	10,612	352	10,513	0	0	0	0
Total	1,037	30,070	996	27,428	4	10	104	4,514

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Appendix B10.-Page 2 of 2.

Seasonal------- period----------	----------Rockfish---------- ----------Harvested---------- Estimate	 Variance	-----Silvergrey Rockfish------- -------Catch and Harvest-------- Estimate	 Variance	-----Unidentified Rockfish----- ----------Total Catch---------- Estimate	 Variance	-----Unidentified Rockfish----- ----------Harvested---------- Estimate	 Variance
09May-22May	3	4	0	0	13	51	3	4
23May-05Jun	78	4,416	4	10	83	4,040	74	4,005
06Jun-19Jun	0	0	0	0	0	0	0	0
20Jun-03Jul	4	12	0	0	4	12	4	12
04Jul-17Jul	0	0	0	0	0	0	0	0
Total	85	4,432	4	10	100	4,103	81	4,021

Seasonal------- period----------	----------Shellfish---------- ----------Boat-days---------- Estimate	 Variance	----------Shellfish---------- ----------Pots or Rings---------- Estimate	 Variance	----------Crab---------- ----------Boat-days---------- Estimate	 Variance	----------Crab---------- ----------Pots or Rings---------- Estimate	 Variance
09May-22May	45	272	49	458	45	272	49	458
23May-05Jun	67	297	91	788	61	208	84	735
06Jun-19Jun	57	406	123	1,486	49	402	98	1,068
20Jun-03Jul	32	448	28	388	32	448	28	388
04Jul-17Jul	0	0	0	0	0	0	0	0
Total	201	1,423	291	3,120	187	1,330	259	2,649

Seasonal------- period----------	---------Dungeness Crab--------- ----------Total Catch---------- Estimate	 Variance	---------Dungeness Crab--------- ----------Harvested---------- Estimate	 Variance	----------Tanner Crab---------- -------Catch and Harvest-------- Estimate	 Variance	----------Shrimp---------- -------Catch and Harvest-------- Estimate	 Variance
09May-22May	189	6,631	167	5,163	5	20	0	0
23May-05Jun	439	32,367	365	17,906	0	0	1,500	157,500
06Jun-19Jun	364	14,832	284	11,892	0	0	1,380	126,110
20Jun-03Jul	72	2,128	51	1,036	0	0	0	0
04Jul-17Jul	0	0	0	0	0	0	0	0
Total	1,064	55,958	867	35,997	5	20	2,880	283,610

Appendix B11.-Numbers of chinook salmon examined for coded wire tags in Southeast Alaska marine boat sport fisheries in 1994.

Sport Fishery	Seasonal Period	-----Chinook Salmon ≥ 28"----- Estimated Harvest	Number Sampled	Percent	-----Chinook Salmon < 28"----- Estimated Harvest	Number Sampled	Percent
Ketchikan	4/25-6/19	914	91	10	0	0	0
	Derby Entered[a]	378	94	25	0	0	0
	Derby Take-Home[a]	234	51	22	0	0	0
	6/20-7/31	1,217	128	11	26	4	15
	8/1-9/25	569	30	5	36	6	17
	Total	3,312	394	12	62	10	16
Juneau	4/25-6/19	3,643	517	14	0	0	0
	6/20-7/31	838	97	12	74	10	14
	8/1-9/25	558	97	17	28	6	21
	Derby Entered[b]	551	551	100	2	2	100
	Derby Take-Home[b]	121	29	24	4	1	25
	Total	5,711	1,291	23	108	19	18
Sitka	4/25-6/19	5,015	586	12	0	0	0
	Derby Entered[c]	909	909	100	0	0	0
	Derby Take-Home[c]	911	283	31	0	0	0
	6/20-7/31	5,217	629	12	4	1	25
	8/1-9/25	1,083	87	8	0	0	0
	Total	13,135	2,494	19	4	1	25
Petersburg	5/9-7/17	487	93	19	0	0	0
	Derby Entered[d]	211	210	99	0	0	0
	Total	698	303	43	0	0	0
Wrangell	5/9-7/17	1,137	276	24	0	0	0
Craig	5/9-9/18		1,354			7	
All Areas (except Craig)		23,993	4,758	20	175	31	18

[a] Derby held on 28-30 May, 4-5 June, and 11-12 June.

[b] Derby held on 19-21 August.

[c] Derby held on 28-30 May and 4-5 June.

[d] Derby held on 27-30 May.

Appendix B12.-Estimates of hatchery produced chinook salmon contributed to the Ketchikan marine boat sport fishery from 25 April to 25 September 1994.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Derby[a]			Non-derby 6/20-7/31			Non-derby 8/01-9/25			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	7	49							1	7	49
			02-01-29							1	19	374				1	19	374
		Conuma River	02-06-57				1	23	530							1	23	530
			02-13-17	1	11	125										1	11	125
		Gold River	02-49-40				1	28	920							1	28	920
		Kincolith CDP	02-11-20										1	41	4,665	1	41	4,665
		Kitimat River	02-15-60				1	89	9,724							1	89	9,724
		Nitinat River	02-06-32							1	224	52,761				1	224	52,761
		Robertson Creek	02-15-51							1	485	248,987				1	485	248,987
		Tenderfoot Creek	02-14-24				1	8	51							1	8	51
		Toboggan Creek CDP	02-11-57				1	4	11							1	4	11
		B.C. Total		1	11	125	6	159	11,285	3	728	302,122	1	41	4,665	11	939	318,197
Washington	NIFC	Quinault Lake Hatchery	21-28-26	1	19	353										1	19	353
		Washington Total		1	19	353										1	19	353
Oregon	ODFW	Mckenzie	07-57-32										1	56	9,137	1	56	9,137
		Salmon River	07-15-63										1	1		1	1	
		Oregon Total											2	57	9,137	2	57	9,137
Alaska	ADFG	Crystal Lake	04-34-09				2	86	4,200							2	86	4,200
		Deer Mountain	04-33-21				1	9	89							1	9	89
			04-33-24	1	17	289										1	17	289
			04-35-30				2	19	236							2	19	236
			04-35-32							1	31	1,006				1	31	1,006
			04-35-33	1	23	535										1	23	535
	MIC	Tamgas Creek	47-16-09	1	108	12,979	1	48	2,791							2	156	15,770
	NMFS	Little Port Walter	03-22-14				1	5	25							1	5	25
	SSRA	Carroll Inlet	04-32-49	1	106	11,822										1	106	11,822
			04-35-01							1	172	32,565				1	172	32,565
			04-35-02				1	39	1,498							1	39	1,498
			04-37-08							1	188	38,547				1	188	38,547

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Appendix B12.-Page 2 of 2.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Derby[a]			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	SSRA	Neets Bay	04-32-32	1	57	3,561										1	57	3,561
			04-32-52	1	87	8,371										1	87	8,371
		Neets Bay	04-32-55	1	146	23,829										1	146	23,829
			04-33-06				1	39	1,450							1	39	1,450
			04-34-49	1	76	6,082										1	76	6,082
			04-34-50				1	34	1,378							1	34	1,378
			04-35-07				1	20	373							1	20	373
		Whitman Lake	04-32-50	1	15	235										1	15	235
			04-35-04				1	7	48	2	46	1,073				3	53	1,121
		Alaska Total		9	635	67,703	12	306	12,088	5	437	73,191				26	1,378	152,982
		All Regions		11	665	68,181	18	465	23,373	8	1,165	375,313	3	98	13,802	40	2,393	480,669

[a] Derby held on 28-30 May, 4-5 June, and 11-12 June 1994.

[b] CDFO = Canada Department of Fisheries and Oceans, NIFC = Northwest Indian Fisheries Commission, ODFW = Oregon Department of Fish and Wildlife, ADFG = Alaska Department of Fish and Game, MIC = Metlakatla Indian Community, NMFS = National Marine Fisheries Service, 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 from 25 April to 25 September 1994.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Non-derby 6/20-7/31			Non-derby 8/01-9/25			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	02-15-33				1	139	22,007							1	139	22,007
			18-04-32							1	44	4,052				1	44	4,052
		Oweekeno	02-14-58										1	6	26	1	6	26
		CDP Snootli Creek	18-08-37										1	1	0	1	1	0
		Tenderfoot Creek	02-14-25				1	21	483							1	21	483
			02-15-40										1	2	2	1	2	2
		B.C. Total					2	160	22,490	1	44	4,052	3	9	28	6	213	26,570
Washington	WDF	Cowlitz	63-40-45							1	16	277				1	16	277
		Grays River	63-59-11										1	3	5	1	3	5
		Washington Total								1	16	277	1	3	5	2	19	282
Alaska	ADFG	Crystal Lake	04-36-04										1	8	56	1	8	56
			04-36-07										1	2	2	1	2	2
			04-36-08										1	5	21	1	5	21
			04-38-21							1	20					1	20	
		Snettisham	04-25-63				1	12	153							1	12	153
			04-31-36				1	12	156							1	12	156
			04-31-48										2	3	2	2	3	2
			04-31-58	1	10	93										1	10	93
			04-31-62										1	3	5	1	3	5
			04-31-63										1	6	28	1	6	28
			04-33-08	1	28	773										1	28	773
			04-33-42				1	46	2,324							1	46	2,324
			04-33-44	1	30	913										1	30	913
			04-33-56	1	23	525										1	23	525
			04-33-57	1	49	2,439										1	49	2,439
			04-33-58	1	56	3,292										1	56	3,292
			04-33-59	1	75	5,814										1	75	5,814
			04-33-60	2	57	1,650										2	57	1,650
			04-33-62	2	40	840	1	17	324							3	57	1,164
			04-34-01	2	21	226				1	9	71	3	5	3	6	35	300
			04-34-02										1	2	1	1	2	1
			04-34-03										1	4	9	1	4	9
			04-34-10	4	123	3,947							1	4	12	5	127	3,959
			04-34-14										1	9	64	1	9	64

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Appendix B13.-Page 2 of 3.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Derby[a]			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	ADFG	Snettisham	04-34-15				1	55	3,373							1	55	3,373
			04-35-61	1	37	1,398							1	4	14	2	41	1,412
			04-35-62										1	2	1	1	2	1
			04-36-01	1	28	797										1	28	797
			04-38-24							1	25	753				1	25	753
			04-40-31							1	10	251				1	10	251
	DIPC	Gastineau	04-36-09	3	65	1,562	1	25	660							4	90	2,222
			04-38-30	1	57	3,374							8	52	286	9	109	3,660
	MIC	Tamgas Creek	47-16-13	1	43	1,860										1	43	1,860
	NMFS	Little Port Walter	03-02-18				1	12	141							1	12	141
			03-02-27				1	7	50							1	7	50
			03-02-28							1	3	18	1	1	0	2	4	18
			03-02-29	1	7	49										1	7	49
			03-02-30										1	1	0	1	1	0
			03-16-18										1	1	0	1	1	0
			03-22-03	1	9	76										1	9	76
			03-22-05	1	13	185										1	13	185
			03-22-07	1	7	44										1	7	44
			03-22-17				1	16	274							1	16	274
			03-22-18										1	1	1	1	1	1
			03-22-20										1	1	0	1	1	0
			03-22-23										1	1	0	1	1	0
			03-22-26										2	2	0	2	2	0
			03-22-27										1	1	0	1	1	0
			03-22-28										1	2	1	1	2	1
			03-22-29										1	1	0	1	1	0
			03-22-30							1	7	44	1	1	0	2	8	44
			03-22-32										1	1	0	1	1	0
			03-62-37	1	9	82										1	9	82
			03-62-38	1	9	79										1	9	79
			03-63-30	1	7	42										1	7	42
			03-63-34	1	7	42										1	7	42
		Port Armstrong	04-36-19							1	16	248	1	3	6	2	19	254
			04-36-20							1	28	830	3	16	68	4	44	898
	NSRA	Hidden Falls	04-32-39	1	9	76										1	9	76
			04-35-46	1	146	22,077										1	146	22,077
			04-35-47										1	2	2	1	2	2
			04-35-48										1	1	0	1	1	0

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Appendix B13.-Page 3 of 3.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Derby[a]			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	NSRA	Hidden Falls	04-36-39										2	97	8,072	2	97	8,072
			04-36-40										3	57	1,018	3	57	1,018
			04-36-41										1	19	339	1	19	339
			04-36-42							1	100	10,833				1	100	10,833
			04-36-52										1	50	2,429	1	50	2,429
			04-36-55							1	5	26	3	3	0	4	8	26
			04-36-57							2	15	223	3	3	0	5	18	223
			04-36-58				1	12	144				4	4	0	5	16	144
			04-40-58				1	13	240							1	13	240
		Medvejie	04-36-48							1	64	4,420				1	64	4,420
	SSRA	Neets Bay	04-37-02				1	23	599							1	23	599
		Alaska Total		34	965	52,255	12	250	8,438	13	302	17,717	60	378	12,440	119	1,895	90,850
		All Regions		34	965	52,255	14	410	30,928	15	362	22,046	64	390	12,473	127	2,127	117,702

[a] Derby held on 19-21 August 1994.

[b] CDFO = Canada Department of Fisheries and Oceans, WDF = Washington Department of Fisheries, ADFG = Alaska Department of Fish and Game, DIPC = Douglas Island Pink and Chum, MIC = Metlakatla Indian Community, 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 from 25 April to 25 September 1994.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Derby[a]			Non-derby 6/20-7/31			Non-derby 8/01-9/25			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				2	9	41							2	9	41
			02-01-29	2	34	594				1	15	213				3	49	807
			02-01-30	2	37	687	1	2	2	1	15	215				4	54	904
			18-02-48	1	43	1,950										1	43	1,950
		Conuma River	02-06-54				2	179	16,244							2	179	16,244
			02-06-55	1	9	75	1	3	9							2	12	84
			02-06-58	1	56	3,454										1	56	3,454
			02-13-16				1	1	0							1	1	0
			02-13-19							1	204	43,150				1	204	43,150
			02-15-46	1	105	11,985	1	12	122							2	117	12,107
		Gold River PIP	02-01-27	1	53	2,910										1	53	2,910
			02-49-40	1	48	2,335										1	48	2,335
			18-02-02							1	8	57				1	8	57
			18-02-03	1	15	244										1	15	244
		Kincolith CDP	02-11-21	1	17	296										1	17	296
		Kitimat River	02-04-38				1	2	2							1	2	2
			02-15-60							1	139	20,039				1	139	20,039
			18-04-29							1	22	481				1	22	481
		Marble River PIP	02-04-61							1	11	116				1	11	116
		Masset CDP	02-05-16	1	9	67										1	9	67
		Nitinat River	08-28-53							1	19	358				1	19	358
			08-28-56	1	19	363										1	19	363
			18-03-27							1	213	47,027	1	314	105,464	2	527	152,491
		Oweekeno CDP	02-14-58							1	43	1,880				1	43	1,880
		Quinsam River	02-09-57							1	132	17,978				1	132	17,978
		Robertson Creek	02-01-45				1	1	0							1	1	0
			02-01-50										1	11	127	1	11	127
			02-01-53				1	3	9							1	3	9
			02-02-30							1	8	54				1	8	54
			02-04-42	1	15	238										1	15	238
			02-06-46	1	320	105,186				1	347	129,566				2	667	234,752
			02-08-18	1	13	156										1	13	156
			02-09-48	1	237	61,896										1	237	61,896
			02-09-49	1	365	146,795										1	365	146,795

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Appendix B14.-Page 2 of 3.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Derby[a]			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Robertson Creek	02-09-50				1	36	1,260							1	36	1,260
			02-09-51				2	95	4,383							2	95	4,383
			02-12-09										1	201	43,004	1	201	43,004
			02-15-49							2	523	151,805				2	523	151,805
			02-15-52				2	100	6,552							2	100	6,552
			02-15-53				2	149	14,559							2	149	14,559
			18-02-26							2	16	111				2	16	111
		Shuswap River	02-15-31				1	30	905							1	30	905
		Snootli Creek	02-14-59				1	2	1							1	2	1
			02-15-23				1	57	3,216							1	57	3,216
		B.C. Total		19	1,395	339,231	21	681	47,305	17	1,715	413,050	3	526	148,595	60	4,317	948,181
Washington	NIFC	Hoko River Pond	21-18-29							1	8	59				1	8	59
	NMFS	Bonneville	23-26-09	1	10	84										1	10	84
	USFWS	Makah NFH	05-19-55							1	88	7,910				1	88	7,910
		Yakima Net Pens	05-01-010314							1	13	170				1	13	170
	WDF	Eastbank	63-56-14	1	10	94										1	10	94
		Humptulips	63-07-56				1	4	11	1	29	833				2	33	844
		Lyons Ferry	63-41-43							1	13	161				1	13	161
		Similkameen Pond	63-07-59	1	15	215	1	6	31	1	16	267				3	37	513
		Washington Total		3	35	393	2	10	42	6	167	9,400				11	212	9,835
Oregon	ODFW	Bonneville	07-46-49	1	39	1,493										1	39	1,493
		Oregon Total		1	39	1,493										1	39	1,493
Alaska	ADFG	Deer Mountain	04-35-30				2	4	4							2	4	4
	NMFS	Little Port Walter	03-01-16				1	1	0							1	1	0
			03-02-22				1	1	0							1	1	0
			03-22-01	1	9	82										1	9	82
			03-63-29				1	1	0							1	1	0
			03-63-33							1	10	98				1	10	98
		Port Armstrong	04-32-12				1	4	14							1	4	14
	NSRA	Medvejie	04-01-010303	1	123	15,395										1	123	15,395
			04-07-03				2	28	355	4	505	70,069				6	533	70,424

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Appendix B14.-Page 3 of 3.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Derby[a]			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	NSRA	Medvejie	04-30-12				1	11	110							1	11	110
			04-32-26				1	42	1,754							1	42	1,754
			04-32-40	1	38	1,429										1	38	1,429
			04-34-26							1	69	4,897				1	69	4,897
			04-34-27	1	77	6,043	3	28	229							4	105	6,272
			04-34-30				1	31	963							1	31	963
			04-34-31	1	77	5,985										1	77	5,985
			04-34-32	1	9	86										1	9	86
			04-35-39							1	16	244				1	16	244
			04-35-41	1	14	198				1	13	161				2	27	359
			04-36-27				1	4	11							1	4	11
			04-36-28				1	38	1,413							1	38	1,413
			04-36-29				3	94	2,821							3	94	2,821
			04-36-44							2	215	24,096				2	215	24,096
	SJ	Sheldon Jackson	04-28-12							1	19	339				1	19	339
			04-32-21	1	38	1,480										1	38	1,480
			04-32-25							1	19	372				1	19	372
			04-34-35	1	94	9,614	1	10	97							2	104	9,711
		Alaska Total		9	479	40,312	20	297	7,771	12	866	100,276				41	1,642	148,359
		All Regions		32	1,948	381,429	43	988	55,118	35	2,748	522,726	3	526	148,595	113	6,210	1,107,868

[a] Derby held on 28-30 May and 4-5 June 1994.

[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, ADFG = Alaska Department of Fish and Game, NMFS = National Marine Fisheries Service, NSRA = Northern Southeast Regional Aquaculture Association, SJ = Sheldon Jackson College, USFWS = U.S. Fish and Wildlife Service.

[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 9 May to 17 July 1994.

Region	Agency[b]	Hatchery/ Release Site	Tag Code	Derby[a]			Non-derby 5/09-7/17			Total		
				Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Capilano River	02-51-48	1	4	10				1	4	10
		B.C. Total		1	4	10				1	4	10
Oregon	ODFW	Irrigon	07-00-16				1	12	219	1	12	219
		Oregon Total					1	12	219	1	12	219
Alaska	AAI	Burnett Inlet	04-34-41	1	9	75				1	9	75
	ADFG	Crystal Lake	04-34-06	2	24	258				2	24	258
			04-34-07	2	25	279				2	25	279
			04-36-04				1	43	2,031	1	43	2,031
			04-36-06	5	39	272				5	39	272
			04-36-08				1	27	800	1	27	800
	NMFS	Little Port Walter	03-22-31	1	1	0				1	1	0
	NSRA	Hidden Falls	04-28-15				1	42	1,822	1	42	1,822
		Alaska Total		11	98	884	3	112	4,653	14	210	5,537
		All Regions		12	102	894	4	124	4,872	16	226	5,766

[a] Derby held on 27-30 May 1993.

[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, 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 of hatchery produced chinook salmon contributed to the Wrangell marine boat sport fishery from 9 May to 17 July 1994.

Region	Agency[a]	Hatchery/ Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]
British Columbia	CDFO	Kitimat River	02-06-18	1	9	70
		B.C. Total		1	9	70
Alaska	AAI	Burnett Inlet	04-36-33	1	9	71
	ADFG	Crystal Lake	04-34-09	1	36	1,389
			04-36-04	1	30	910
			04-36-05	2	63	2,112
	SSRA	Carroll Inlet	04-37-07	1	41	1,771
		Alaska Total		6	179	6,253
		All Regions		7	188	6,323

[a] CDFO = Canada Department of Fisheries and Oceans, AAI = Alaska Aquaculture Incorporated, ADFG = Alaska Department of Fish and Game, 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 B17.-Estimates (from sampled fish only) of hatchery produced chinook salmon contributed to 1,354 chinook salmon examined during the Craig marine boat sport fishery from 9 May to 18 September 1994.

Region	Agency[a]	Hatchery/Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]	Relative Contribution
British Columbia	CDFO	Clayoquot	02-01-28	1	2	2	0.1%
			02-01-29	2	4	4	0.3%
			02-01-30	1	2	2	0.1%
			18-02-47	1	5	22	0.4%
			18-02-48	1	5	21	0.4%
		Clearwater River	02-05-13	1	1	1	0.1%
		Conuma River	02-06-54	1	27	713	2.0%
			02-06-55	1	1	0	0.1%
			02-06-56	1	10	93	0.7%
			02-06-57	3	19	103	1.4%
			02-06-58	2	13	69	1.0%
			02-13-18	1	28	750	2.1%
			02-15-45	1	10	84	0.7%
			02-15-46	1	12	129	0.9%
		Gold River	18-02-03	2	3	3	0.1%
		Kitimat River	02-06-18	1	2	2	0.1%
		Masset	02-05-17	1	1	0	0.1%
		Nitinat River	08-28-50	1	2	1	0.1%
			08-28-54	1	2	2	0.1%
			08-28-55	2	3	2	0.1%
		Oweekeno	02-01-23	1	3	8	0.1%
			02-03-45	1	2	3	0.1%
			02-14-58	1	6	29	0.4%
		Robertson Creek	02-01-47	1	1	0	0.1%
			02-01-48	2	2	0	0.1%
			02-01-51	1	1	0	0.1%
			02-02-31	1	1	0	0.1%
			02-04-42	2	4	3	0.3%
			02-08-18	2	3	1	0.1%
			02-09-49	1	41	1,670	3.0%
			02-15-49	1	27	696	2.0%
			02-15-50	1	61	3,686	4.5%
			02-15-51	1	51	2,539	3.8%
			02-15-53	1	35	1,190	2.6%
		San Juan River	02-52-62	1	1	0	0.1%
		Shuswap River	02-15-30	1	9	76	0.7%
			02-15-31	1	9	75	0.7%
			02-15-32	2	4	3	0.3%
		Sooke River	02-06-13	1	1	0	0.1%
		B.C. Total		49	414	11,982	30.6%
Washington	NIFC	Quinault Lake	21-18-46	1	7	38	0.5%
			21-20-10	1	1	0	0.1%
	WDFW	Humptulips	63-07-56	1	4	12	0.3%
		Similkameen Pond	63-07-59	3	6	5	0.4%
			63-56-13	1	2	2	0.1%
		Washington Total		7	20	57	1.5%
Oregon	ODFW	Trask	07-57-45	1	5	17	0.4%
		Oregon Total		1	5	17	0.4%
Alaska	ADFG	Deer Mountain	04-35-36	2	3	1	0.1%
	NMFS	Little Port Walter	03-21-41	1	1	0	0.1%
			03-63-29	1	1	0	0.1%

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Appendix B17.-Page 2 of 2.

Region	Agency[a]	Hatchery/Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]	Relative Contribution
Alalska	NSRA	Medvejie	04-34-27	1	9	81	0.7%
			04-35-40	1	2	1	0.1%
			04-36-25	1	11	112	0.8%
	SSRA	Carroll Inlet	04-32-47	1	10	89	0.7%
		Alaska Total		8	37	284	2.7%
		All Regions		65	476	12,340	35.2%

[a] CDFO = Canada Department of Fisheries and Oceans, NIFC = Northwest Indian Fisheries Commission, WDFW = Washingtion Department of Fish and Wildlife, ODFW = Oregon Department of Fish and Wildlife, ADFG = Alaska Department of Fish and Game, NMFS = National Marine Fisheries Service, NSRA = Northern Southeast Regional Aquaculture Association, 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 B18.-Estimates ot the number of wild coded wire tagged chinook salmon contributed to sampled marine boat sport fisheries of Southeast Alaska, 1994.

Juneau												
				Non-derby 4/25-6/19			Derby[a]			Total		
Region	Agency[b]	Release site	Tag Code	Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance
Alaska	ADFG	Chilkat River	04-33-37	1	9	76				1	9	76
		Kelsall River	04-33-47	1	9	76	2	2	0	3	11	76
		Total		2	18	152	2	2	0	4	20	152

[a] Juneau derby held on 19-21 August 1994.

[b] ADFG = Alaska Department of Fish and Game.

[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 B19.-Age composition of chinook salmon from selected Southeast Alaska sport fisheries, 1994.

Sport Fishery			Brood Year 1991 0.2	1991 1.1	1990 0.3	1990 1.2	1989 0.4	1989 1.3	1988 0.5	1988 1.4	1988 2.3	1987 1.5	1987 2.4	1986 2.5	Sample Size
Ketchikan	Males	n	1		3	1	4	7	1	14					31
		Percent	3.2		9.7	3.2	12.9	22.6	3.2	45.2					
		SE[a]	3.2		5.4	3.2	6.1	7.6	3.2	9.1					
	Females	n	1		7		9	8		18					43
		Percent	2.3		16.3		20.9	18.6		41.9					
		SE[a]	2.3		5.7		6.3	6.0		7.6					
	Total[b]	n	3		25	5	30	25	1	59		1			149
		Percent	2.0		16.8	3.4	20.1	16.8	0.7	39.5		0.7			
		SE[a]	1.2		3.1	1.5	3.3	3.1	0.7	4.0		0.7			
Juneau	Males	n				10		33		50	3	5	3		104
		Percent				9.6		31.7		48.1	2.9	4.8	2.9		
		SE[a]				2.9		4.6		4.9	1.6	2.1	1.6		
	Females	n		1		5		30		76	3	5			120
		Percent		0.8		4.2		25.0		63.3	2.5	4.2			
		SE[a]		0.8		1.8		4.0		4.4	1.4	1.8			
	Total[b]	n	1	2	3	36		93		192	9	10	4		350
		Percent	0.3	0.6	0.9	10.3		26.6		54.7	2.6	2.9	1.1		
		SE[a]	0.3	0.4	0.5	1.6		2.4		2.7	0.8	0.9	0.6		
Juneau Derby	Males	n													0
		Percent													
		SE[a]													
	Females	n	1		1	2		2							6
		Percent	16.7		16.7	33.3		33.3							
		SE[a]	16.7		16.7	21.1		21.1							
	Total[b]	n	2		7	31		23		5	1	2			71
		Percent	2.8		9.9	43.7		32.4		7.0	1.4	2.8			
		SE[a]	2.0		3.6	5.9		5.6		3.1	1.4	2.0			
Petersburg	Males	n						4		16					20
		Percent						20.0		80.0					
		SE[a]						9.2		9.2					
	Females	n			1		4	6		22		5			38
		Percent			2.6		10.5	15.8		57.9		13.2			
		SE[a]			2.6		5.0	6.0		8.1		5.6			
	Total[b]	n			3	4	8	41	1	110		16	2		185
		Percent			1.6	2.2	4.3	22.2	0.5	59.5		8.6	1.1		
		SE[a]			0.9	1.1	1.5	3.1	0.5	3.6		2.1	0.8		

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Appendix B19.-Page 2 of 2.

Sport Fishery			Brood Year 1991 0.2	1991 1.1	1990 0.3	1990 1.2	1989 0.4	1989 1.3	1988 0.5	1988 1.4	1988 2.3	1987 1.5	1987 2.4	1986 2.5	Sample Size
Wrangell	Males	n			2	3		10		22		3			40
		Percent			5.0	7.5		25.0		55.0		7.5			
		SE[a]			3.5	4.2		6.9		8.0		4.2			
	Females	n					1	9		29		4			43
		Percent					2.3	20.9		67.5		9.3			
		SE[a]					2.3	6.3		7.2		4.5			
	Total[b]	n	1		3	4	3	43		112		9	1		176
		Percent	0.6		1.7	2.3	1.7	24.4		63.6		5.1	0.6		
		SE[a]	0.6		1.0	1.1	1.0	3.2		3.6		1.7	0.6		
Craig	Males	n	1		19		16	6		16					58
		Percent	1.7		32.8		27.6	10.3		27.6					
		SE[a]	1.7		6.2		5.9	4.0		5.9					
	Females	n			22		30	2	1	7					62
		Percent			35.5		48.4	3.2	1.6	11.3					
		SE[a]			6.1		6.4	2.3	1.6	4.1					
	Total[b]	n	8		238	8	181	38	6	85	2	3		1	570
		Percent	1.4		41.6	1.4	31.8	6.7	1.1	14.9	0.4	0.5		0.2	
		SE[a]	0.5		2.1	0.5	2.0	1.0	0.4	1.5	0.2	0.3		0.2	

[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, 1994.

Sport Fishery			Brood Year 1991 0.2	1991 1.1	1990 0.3	1990 1.2	1989 0.4	1989 1.3	1988 0.5	1988 1.4	1988 2.3	1987 1.5	1987 2.4	1986 2.5	Sample Size
Ketchikan	Males	Mean	760		865	783	936	827	970	932					
		SE			26		59	16		17					
		n	1		3	1	4	7	1	14					31
	Females	Mean	720		817		903	867		942					
		SE			28		19	15		17					
		n	1		7		9	8		18					43
	Total[a]	Mean	735		848	747	923	844	970	950		850			
		SE	13		14	21	13	11		10					
		n	3		25	5	30	25	1	59		1			149
Juneau	Males	Mean				709		850		942	870	1,010	917		
		SE				13		12		11	75	73	33		
		n				10		33		50	3	5	3		104
	Females	Mean		480		705		817		889	807	918			
		SE				17		10		6	43	27			
		n		1		5		30		76	3	5			120
	Total[a]	Mean	660	500	847	704		824		911	818	964	895		
		SE		20	13	9		7		5	28	40	32		
		n	1	2	3	36		93		192	9	10	4		350
Juneau Derby	Males	Mean													
		SE													
		n													0
	Females	Mean			767	668		785							
		SE				8		40							
		n			1	2		2							5
	Total[a]	Mean	785		815	713		805		814	780	901			
		SE	65		16	10		12		39		101			
		n	2		7	31		23		5	1	2			71
Petersburg	Males	Mean						889		908					
		SE						29		21					
		n						4		16					20
	Females	Mean			715		918	840		917		945			
		SE					32	34		9		37			
		n			1		4	6		22		5			38
	Total[a]	Mean			803	721	913	827	960	909		942	890		
		SE			88	7	19	10		7		21	20		
		n			3	4	8	41	1	110		16	2		185

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Appendix B20.-Page 2 of 2.

Sport Fishery			Brood Year 1991 0.2	1991 1.1	1990 0.3	1990 1.2	1989 0.4	1989 1.3	1988 0.5	1988 1.4	1988 2.3	1987 1.5	1987 2.4	1986 2.5	Sample Size
Wrangell	Males	Mean			730	742		841		948		1,017			
		SE			0	22		23		11		43			
		n			2	3		10		22		3			40
	Females	Mean					885	888		914		978			
		SE						19		9		31			
		n					1	9		29		4			43
	Total[a]	Mean	710		810	759	905	864		924		1,002	910		
		SE			80	23	18	10		6		21			
		n	1		3	4	3	43		112		9	1		176
Craig	Males	Mean	715		852		914	878		974					
		SE			17		15	24		15					
		n	1		19		16	6		16					58
	Females	Mean			846		923	858	1,105	959					
		SE			7		10	23		28					
		n			22		30	2	1	7					62
	Total[a]	Mean	720		841	749	915	866	975	946	900	980		860	
		SE	25		3	14	4	7	33	7	100	31			
		n	8		238	8	181	38	6	85	2	3		1	570

[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 1994.

		Coho Salmon		
Sport Fishery	Seasonal Period	Estimated Harvest	Number Sampled	Percent
Ketchikan	4/25-7/31 non-derby	7,814	1,023	13
	Derby Entered[a]	0	0	0
	Derby Take-Home[a]	348	70	20
	8/01-9/25	36,511	3,626	10
	Total	44,673	4,719	11
Juneau	4/25-7/31	12,166	1,516	12
	8/01-9/25 non-derby	41,694	5,571	13
	Derby Entered[b]	6,686	6,686	100
	Derby Take-Home[b]	1,672	281	17
	Total	62,218	14,054	23
Sitka	4/25-7/31 non-derby	6,796	565	8
	Derby Entered[c]	0	0	0
	Derby Take-Home[c]	4	1	25
	8/01-9/25	16,280	1,067	7
	Total	23,080	1,633	7
Wrangell	5/9-7/19	23	5	22
Craig	5/9-9/18		4,910	
All Areas (except Craig)		129,994	20,411	16

[a] Derby held on 28-30 May, 4-5 June, and 11-12 June.

[b] Derby held on 19-21 August.

[c] Derby held on 28-30 May and 4-5 June.

Appendix B22.-Estimates of hatchery produced coho salmon contributed to the Ketchikan marine boat sport fishery from 25 April to 25 September 1994.

		Hatchery/		Non-derby 4/25-6/19			Derby[a]			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Total		
Region	Agency[b]	Release Site	Tag Code	Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Bella Bella CDP	18-01-41							1	7	49				1	7	49
		Fort Babine	18-01-45							1	17	338				1	17	338
		Hartley Bay	18-02-42										1	7	52	1	7	52
		Kispiox River	02-12-28				1	7	47							1	7	47
			02-12-30										1	11	121	1	11	121
			02-12-31										2	26	354	2	26	354
		Snootli Creek	18-08-38							1	23	653				1	23	653
		B.C. Total					1	7	47	3	47	1,040	4	44	527	8	98	1,614
Alaska	ADFG	Deer Mountain	04-01-011003							2	20	223	2	35	822	4	55	1,045
			04-37-54	1	18	354				4	54	1,211	1	21	463	6	93	2,028
			04-38-50							1	14	223				1	14	223
			04-38-51							2	38	835				2	38	835
			04-38-52							1	25	635				1	25	635
			04-38-53							5	50	628	2	36	947	7	86	1,575
			04-38-54							7	64	858	2	22	272	9	86	1,130
			04-38-55							4	133	6,293				4	133	6,293
			04-38-56							4	184	9,769	2	60	2,089	6	244	11,858
		Fort Richardson	31-21-38							1	21	555				1	21	555
		Klawock	04-38-60							1	110	15,473				1	110	15,473
	MIC	Tamgas Creek	47-16-55										1	159	28,219	1	159	28,219
			47-16-56										2	126	9,467	2	126	9,467
			47-16-57										3	244	25,126	3	244	25,126
	SSRA	Neets Bay	04-39-32										3	1,578	1,064,215	3	1,578	1,064,215
			04-39-35										4	6,776	14,686,388	4	6,776	14,686,388
			04-39-41										3	2,809	3,412,858	3	2,809	3,412,858
		Whitman Lake	04-39-43										4	770	220,293	4	770	220,293
			04-39-44										8	1,026	171,859	8	1,026	171,859
		Alaska Total		1	18	354				32	713	36,703	37	13,662	19,623,018	70	14,393	19,660,075
		All Regions		1	18	354	1	7	47	35	760	37,743	41	13,706	19,623,545	78	14,491	19,661,689

[a] Derby held on 28-30 May, 4-5 June, and 11-12 June 1994.

[b] CDFO = Canada Department of Fisheries and Oceans, 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 B23.-Estimates of hatchery produced coho salmon contributed to the Juneau marine boat sport fishery from 25 April to 25 September 1994.

				Non-derby 6/20-7/31			Non-derby 8/01-9/25			Derby[a]			Total		
Region	Agency[b]	Release Site	Tag Code	Rec[c]	Con[d]	Variance[e]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	DIPC	Gastineau	04-38-32				1	172	37,404				1	172	37,404
			04-40-39	2	255	33,460	13	1,111	165,110	44	462	4,397	59	1,828	202,967
			04-40-40				12	1,553	360,361	27	397	5,435	39	1,950	365,796
			04-40-41	1	252		12	647	56,199	32	399	10,376	45	1,298	66,575
			04-40-42				17	1,367	182,930	27	331	6,898	44	1,698	189,828
			04-40-43				9	634	65,893	24	248	2,311	33	882	68,204
	NSRA	Hidden Falls	04-07-07				2	222	33,587	2	20	181	4	242	33,768
			04-07-08				1	116	14,411	1	16	231	2	132	14,642
			04-40-54							2	32	475	2	32	475
		Medvejie	04-01-020901				1	26	677				1	26	677
		Total		3	507	33,460	68	5,848	916,572	159	1,905	30,304	230	8,260	980,336

[a] Derby held on 19-21 August 1994.

[b] DIPC = Douglas Island Pink and Chum, 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 B24.-Estimates of hatchery produced coho salmon contributed to the Sitka marine boat sport fishery from 25 April to 25 September 1994.

Region	Agency[a]	Hatchery/ Release Site	Tag Code	Non-derby 4/25-6/19			Non-derby 6/20-7/31			Non-derby 8/01-9/25			Total		
				Rec[b]	Con[c]	Variance[d]	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Snootli Creek	18-08-38	1	28	986							1	28	986
		B.C. Total		1	28	986							1	28	986
Alaska	MIC	Tamgas Creek	47-16-56							1	103	11,104	1	103	11,104
			47-16-57							1	126	16,616	1	126	16,616
	NSRA	Hidden Falls	04-07-07							1	392	168,473	1	392	168,473
		Medvejie	04-01-010912				1	15	237				1	15	237
			04-36-54							2	395	83,839	2	395	83,839
			04-39-16				1	76	6,106	1	198	42,818	2	274	48,924
			04-39-21				3	228	18,766	1	198	42,988	4	426	61,754
			04-39-22				1	76	6,106	1	70	5,110	2	146	11,216
			04-39-24				2	351	69,581	5	2,242	1,137,443	7	2,593	1,207,024
			04-40-55							1	21	452	1	21	452
	SJ	Sheldon Jackson	04-40-53							1	44	1,976	1	44	1,976
	SSRA	Whitman Lake	04-39-44				1	210	47,006				1	210	47,006
		Alaska Total					9	956	147,802	15	3,789	1,510,819	24	4,745	1,658,621
		All Regions		1	28	986	9	956	147,802	15	3,789	1,510,819	25	4,773	1,659,607

[a] CDFO = Canada Department of Fisheries and Oceans, MIC = Metlakatla Indian Community, 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 of the number of wild coded wire tagged coho salmon contributed to sampled marine boat sport fisheries of Southeast Alaska, 1994.

Ketchikan Fishery

Region	Agency[a]	Release Site	Tag Code	Non-derby 6/20-7/31			Non-derby 8/01-9/25			Total		
				Rec[b]	Con[c]	Variance[d]	Rec	Con	Variance	Rec	Con	Variance
British Columbia	CDFO	Zolzap Creek	18-09-29	1	17	370	1	26	807	2	43	1,177
		B.C. Total		1	17	370	1	26	807	2	43	1,177
Alaska	ADFG	Hugh Smith Lake	04-37-29				1	10	99	1	10	99
		Margaret Creek	04-39-08				2	17	172	2	17	172
		Alaska Total					3	27	271	3	27	271
		All Regions		1	17	370	4	53	1,078	5	70	1,448

Juneau Fishery

Region	Agency	Release Site	Tag Code	Non-derby 6/20-7/31			Non-derby 8/01-9/25			Derby[e]			Total		
				Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance	Rec	Con	Variance
Alaska	ADFG	Auke Creek	04-07-10				12	100	1,626	18	23	35	30	123	1,661
		Berners River	04-35-54				2	30	580	6	6	0	8	36	580
			04-40-23				11	65	456	15	25	76	26	90	532
			04-40-24	1	12	146	5	35	362	9	14	35	15	61	543
		Taku River	04-38-01							1	1	0	1	1	0
			04-38-02				6	56	768	3	3	0	9	59	768
		Total		1	12	146	36	286	3,792	52	72	146	89	370	4,084

Sitka Fishery

Region	Agency	Release Site	Tag Code	Non-derby 8/01-9/25			Total		
				Rec	Con	Variance	Rec	Con	Variance
Alaska	ADFG	Ford Arm Lake	04-38-07	1	14	188	1	14	188
		Total		1	14	188	1	14	188

[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 19-21 August.

Appendix B26.-Estimates of wild and hatchery produced coho salmon contributed to 4,910 coho salmon sampled from the Craig marine boat sport fishery from 9 May to 18 September 1994.

Region	Agency[a]	Hatchery/ Release Site	Tag Code	Rec[b]	Con[c]	Variance[d]	Relative Contribution
British Columbia	CDFO	Fort Babine	18-01-45	1	3	5	0.1%
		Hartley Bay	02-09-24	1	1	0	<0.1%
			18-05-33	1	3	8	0.1%
		Kispiox River	02-12-29	1	2	1	<0.1%
		Kitimat River	18-10-05	1	9	76	0.2%
		Lachmach River (wild)	08-01-25	1	1	0	<0.1%
		Masset	02-09-25	1	1	0	<0.1%
		Sewell Inlet	18-05-37	1	2	1	<0.1%
		Zolzap Creek (wild)	18-09-29	1	3	5	0.1%
		B.C. Total		9	25	96	0.5%
Alaska	ADFG	Crystal Lake	04-40-22	1	6	28	0.1%
		Earl West Cove	04-39-42	3	65	1,327	1.3%
		Hugh Smith Lake (wild)	04-40-16	2	2	0	<0.1%
		Klawock	04-37-55	3	12	34	0.2%
			04-38-06	1	4	10	0.1%
			04-38-60	7	127	2,174	2.6%
			04-38-61	9	286	8,733	5.8%
			04-38-62	5	45	351	0.9%
			04-39-01	2	24	261	0.5%
	MIC	Tamgas Creek	47-16-56	2	16	110	0.3%
			47-16-57	1	10	85	0.2%
	NSRA	Hidden Falls	04-07-07	1	11	104	0.2%
		Medvejie	04-39-21	1	5	24	0.1%
	SSRA	Nakat Inlet	04-39-40	1	10	84	0.2%
		Neets Bay	04-39-31	1	105	10,870	2.1%
			04-39-35	2	170	14,273	3.5%
		Whitman Lake	04-39-43	1	15	212	0.3%
			04-39-44	1	15	208	0.3%
		Alaska Total		44	928	38,888	18.9%
		All Regions		53	953	38,984	19.4%

[a] CDFO = Canada Department of Fisheries and Oceans, ADFG = Alaska Department of Fish and Game, MIC = Metlakatla Indian Comunity, NSRA = Northern Southeast Regional Aquaculture Association, 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 C - DATA FILES

Appendix C1. Computer data files and analysis programs developed for the 1994 Southeast Alaskan marine boat sport fishery survey . Data files (*.DTA and *.DAT) are archived with the Alaska Department of Fish and Game, Division of Sport Fish, Research and Technical Services Unit, 333 Raspberry Road, Anchorage, Alaska 99518-1599.

Effort, Catch, and Harvest Estimation Files, etc. (KMC94EST.ZIP, JMC94EST.ZIP, SMC94EST.ZIP, PMC94EST.ZIP, WMC94EST.ZIP).	
A0810M_4.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Ketchikan, 1994
B7600M_4.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) at Craig, 1994
C0820M_4.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Petersburg, 1994
C0810M_4.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Wrangell, 1994
E0810M_4.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Juneau, 1994
D0810M_4.DTA	Data file (ASCII) containing interview information recorded on mark-sense interview forms (MARINE INTERVIEW VERSION 1.0) recorded at Sitka, 1994
????94.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
????94ESS.SAS	SAS programs to create revised interview SAS save files from files created by ?MS93.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 '?'.
????93MSM.SAS	SAS programs to create SAS save files with only the sampling information associated with each sample for each survey from files created by ?MC94ESS.SAS. See above for explanation of '?'
????94EST.SAS	SAS programs to estimate effort, catch, and harvest with associated variances using SAS save files created by ?MC94ESS.SAS and ?MC94MSM.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 '?'

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Appendix C1. (Page 2 of 3).

Coded Wire Tag Contribution Estimation Files, etc. (CWT94.ZIP).	
94SPBAS.DTA	Data file from tag lab with sampling information for each biweekly period at each fishery.
94SPCON.DTA	Data file from tag lab with recovery information for each adipose fin clipped coho and chinook salmon sampled.
CWT94CHK.SAS	SAS program to compare 94SPCON.DTA & 94SPBAS.DTA for consistency errors.
SEW94VBN.SAS	SAS program to create creel estimate file for combining with tag data.
SEN94CWT.SAS	SAS program to do basic estimates.
SEN94CO1.SAS	SAS program to summarize contributions across tag codes for main tables.
SEN94CWP.SAS	SAS program to list tags, contributions, and variances for Appendices.

Age-weight-length (AWL) Files, etc. (AWL94.ZIP)	
A0810AC4.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, 1994
C0810AB4.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, 1994
C0820AB4.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, 1994
E0810AB4.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, 1994

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Appendix C1. (Page 3 of 3).

A0810AA4.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Ketchikan, 1994
B7600AB4.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Craig, 1994
C0810AA4.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Wrangell, 1994
C0820AA4.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Petersburg, 1994
D0810AA4.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Sitka, 1994
E0810AA4.DTA	Data file (ASCII) containing halibut AWL information recorded on mark-sense interview forms (ALTERNATE AGE WEIGHT LENGTH VERSION 1.0) recorded at Juneau, 1994
REF94CHI.SAS	SAS program to reformat chinook salmon AWL data
LF94CHI.SAS	SAS program to summarize chinook salmon AWL data
REF94HAL.SAS	SAS program to reformat halibut AWL data
LF94HAL.SAS	SAS program to summarize halibut AWL data