

**AREA MANAGEMENT REPORT FOR THE SPORT
FISHERIES OF SOUTHEAST ALASKA, 2001**

by

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Alaska Department of Fish and Game

Division of Sport Fish



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Weights and measures (metric)		General		Mathematics, statistics, fisheries	
centimeter	cm	all commonly accepted abbreviations.	e.g., Mr., Mrs., a.m., p.m., etc.	alternate hypothesis	H_A
deciliter	dL			base of natural logarithm	e
gram	g	all commonly accepted professional titles.	e.g., Dr., Ph.D., R.N., etc.	catch per unit effort	CPUE
hectare	ha	and	&	coefficient of variation	CV
kilogram	kg	at	@	common test statistics	F, t, χ^2 , etc.
kilometer	km	compass directions:		confidence interval	C.I.
liter	L			correlation coefficient	R (multiple)
meter	m	east	E	correlation coefficient	r (simple)
metric ton	mt	north	N	covariance	cov
milliliter	ml	south	S	degree (angular or temperature)	$^\circ$
millimeter	mm	west	W	degrees of freedom	df
		copyright	©	divided by	÷ or / (in equations)
		corporate suffixes:		equals	=
		Company	Co.	expected value	E
		Corporation	Corp.	fork length	FL
		Incorporated	Inc.	greater than	>
		Limited	Ltd.	greater than or equal to	≥
Weights and measures (English)		et alii (and other people)	et al.	harvest per unit effort	HPUE
cubic feet per second	ft ³ /s	et cetera (and so forth)	etc.	less than	<
foot	ft	exempli gratia (for example)	e.g.,	less than or equal to	≤
gallon	gal	id est (that is)	i.e.,	logarithm (natural)	ln
inch	in	latitude or longitude	lat. or long.	logarithm (base 10)	log
mile	mi	monetary symbols (U.S.)	\$, ¢	logarithm (specify base)	log ₂ , etc.
ounce	oz	months (tables and figures): first three letters	Jan, ..., Dec	mid-eye-to-fork	MEF
pound	lb	number (before a number)	# (e.g., #10)	minute (angular)	'
quart	qt	pounds (after a number)	# (e.g., 10#)	multiplied by	x
yard	yd	registered trademark	®	not significant	NS
Spell out acre and ton.		trademark	™	null hypothesis	H_0
		United States (adjective)	U.S.	percent	%
Time and temperature		United States of America (noun)	USA	probability	P
day	d	U.S. state and District of Columbia abbreviations	use two-letter abbreviations (e.g., AK, DC)	probability of a type I error (rejection of the null hypothesis when true)	α
degrees Celsius	$^\circ\text{C}$			probability of a type II error (acceptance of the null hypothesis when false)	β
degrees Fahrenheit	$^\circ\text{F}$			second (angular)	"
hour (spell out for 24-hour clock)	h			standard deviation	SD
minute	min			standard error	SE
second	s			standard length	SL
Spell out year, month, and week.				total length	TL
				variance	var
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				

FISHERY MANAGEMENT REPORT NO. 02-06

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ABSTRACT

Sport fishery management actions taken in Southeast Alaska during 2001 are summarized along with a description of the region and its sport fisheries. The region is divided into seven areas for management purposes and management and research activities along with issues in each area are described.

Key words: Southeast Alaska, sport fishery, fisheries management, Ketchikan, Prince of Wales, Petersburg, Wrangell, Sitka, Juneau, Haines, Skagway, Glacier Bay, Yakutat, surveys, access project, emergency order, management action

INTRODUCTION

The Southeast Region of the Division of Sport Fish, Alaska Department of Fish and Game (ADF&G), encompasses all waters of Alaska from Dixon Entrance on the south to Cape Suckling on the north (Figure 1). Southeast Alaska provides a large variety of both freshwater and saltwater sport fishing opportunities for anglers. Effort and harvests for the fisheries of Southeast Alaska are estimated through mail surveys which have been conducted annually since 1977 (Mills 1979–1994, Howe et al. 1995, 1996, 2001a, 2001b, 2001c, 2001d, Walker et al. *In prep.*). About 20% of all angler-days of sport fishing effort in Alaska are expended in Southeast Alaska.

This report summarizes sport fishery management actions, issues, and activities in Southeast Alaska during 2001. Similar reports were previously published for 1998–2000 (Suchanek et al. 2001a, 2001b, and Suchanek et al. 2002). Prior to 1998, the only published Southeast Alaska area management report overviewed 1994 fisheries by species (Bentz et al. 1996).

Primarily anglers provide funding for Southeast Alaska sport fish management and research programs. The Federal Aid in Sport Fish Restoration Act (Wallop-Breaux), whose funds are received via federal excise taxes on sport fishing equipment and fuels, provides about 46% of the total budget. Sales of Alaska sport fishing licenses and tags (Fish and Game Fund) provide 47% of the budget. Small contracts, federal subsistence funds, U.S. Canada Letter of Agreement funds, and the Southeast Alaska

Sustainable Salmon Fund provide the remaining 7% of the budget.

The Wallop-Breaux Amendment mandated that at least 15% of annual federal aid funding go toward recreational power boating access projects. The Sport Fish Division Access Program is a statewide effort designed to improve angler access to the state's sport fishing resources. Access projects undertaken are categorized into either large "CIP" projects for developing or improving major facilities or "Small Access Site Maintenance" projects for small repairs or improvements at existing sites. Projects are also classified as either "motorized boating" projects or "non-boating" projects. Funds spent on "non-boating" projects do not count toward the 15% mandatory spending.

The primary mission of ADF&G is to manage, protect, maintain, and improve the fish, game, and aquatic plant resources of Alaska. The department's primary goals are to ensure that Alaska's renewable fish and wildlife resources and their habitats are conserved and managed on the sustained yield principle, and that use and development of these resources are in the best interest of the economy and well-being of the people of the State. To achieve this mission for the State's sport fisheries and sport fishery resources, the Division of Sport Fish developed the three following primary goals: 1) conservation of wild stocks of sport fish; 2) a diversity of recreational fishing opportunities; and 3) optimum social and economic benefits from recreational fisheries. In 2001, the Division initiated a strategic planning process that will redefine our goals and objectives and affect future programs. The planned completion date is October 2002.

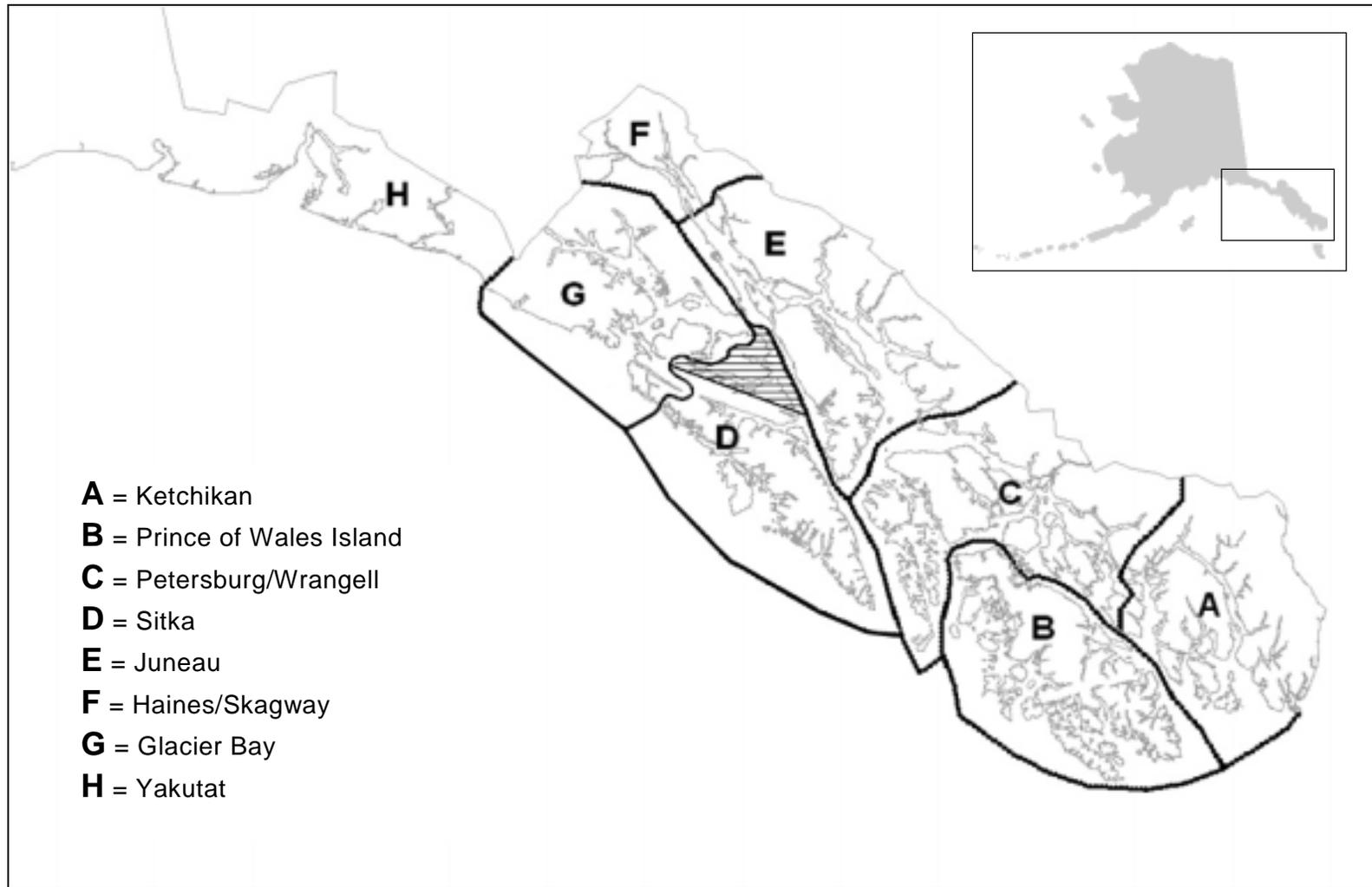


Figure 1.—Boundaries of the seven management areas and eight harvest survey reporting areas (A–H) in Southeast Alaska. The Juneau management area includes the Glacier Bay mail survey area and the hatched portion of the Sitka mail survey area. In 2000, the boundary between the Sitka and Glacier Bay harvest survey areas was modified (see Figure 2).

MANAGEMENT AREAS

Sport fish management and research programs for Southeast Alaska are conducted from ADF&G offices located in Ketchikan, Klawock, Petersburg, Sitka, Juneau, Haines, and Yakutat. For administrative purposes, these offices each correspond to surrounding management areas (Figure 1). These management areas also closely correspond to the eight survey areas for which harvests are estimated through a statewide mail survey (Howe et al. 2001d). The areas listed in the mail survey include: Ketchikan (A); Prince of Wales Island (B); Kake, Petersburg, Wrangell, and Stikine (C); Sitka (D); Juneau (E); Haines-Skagway (F); Glacier Bay (G); and Yakutat (H). Prior to 2000 the Glacier Bay area was managed from the Juneau office. In 2000, however, the boundary of the Glacier Bay area was modified, and a small part of this area is now managed from the Sitka office. Part of the northern half of Chichagof Island is managed from the Juneau office, but corresponds to a portion of the Sitka area in mail surveys (Figure 2).

SPORT FISHERIES

Southeast Alaska provides major sport fishing opportunities for several fish species that are limited in distribution in Alaska. In 2000, for example, Southeast Alaska provided 95% of the cutthroat trout *Oncorhynchus clarki* and 60% of the steelhead *O. mykiss* sport catches in Alaska (Walker et al. *In prep.*). Major opportunities for salmon and bottomfish also abound as the region also produced the following percentages of total Alaska sport harvests in 2000: 36% of chinook salmon *O. tshawytscha*, 31% of coho salmon *O. kisutch*, 29% of Pacific halibut *Hippoglossus stenolepis*, 53% of rockfish *Sebastes*, and 65% of lingcod *Ophiodon elongatus*.

EFFORT

Fishing effort (and harvest) estimates for all fisheries in SE Alaska are obtained from the Statewide Harvest Survey (Howe et al. 2001d). The timing of this survey is such that the most recent data (2001) is not available until October 2002. For some fisheries, on-site creel surveys

provide effort (and harvest estimates) and are presented in this report.

Most sport fishing effort in Southeast Alaska (80%) occurs in salt water; the remaining 20% occurs in fresh water (Figure 3). Marine angling effort increased from about 200,000 angler-days in 1980 to about 435,000 in 2000. Similarly, freshwater effort increased from about 50,000 angler-days in 1980 to about 106,000 angler-days in 2000. Most of the recent increases in fishing effort have been due to increases in nonresident fishing effort as Alaska resident fishing effort has been stable.

Creel survey information and local knowledge by area management biologists was used to estimate effort for each major species of sport fish in Southeast Alaska during 1998 (Suchanek et al. 2001a). Target species vary substantially, depending on whether anglers are fishing from a boat or shore in marine waters or in fresh water. Over 75% of the regionwide fishing effort was targeted on chinook salmon, coho salmon, or bottomfish (primarily Pacific halibut). About 44% of freshwater fishing effort was for trout or char (primarily Dolly Varden *Salvelinus malma*), while only about 4% of marine fishing effort was for these species. About two-thirds of all fishing effort was for anadromous salmon species.

HARVEST OR TOTAL CATCH OF IMPORTANT SPECIES

The most important fisheries, in terms of angler participation and economic value, in the region are those for anadromous salmon. Sport harvests of coho and chinook salmon in Southeast Alaska have increased greatly in recent years (Figure 4). In 1980, sport harvests of chinook totaled about 20,000 but from 1997 to 2000 averaged about 66,000. The chinook salmon harvest would have been even greater in recent years, except that the sport fishery has been allocated a fixed percentage of the quota set under the U.S./Canada Pacific Salmon Treaty since 1992. Coho salmon harvests increased almost sevenfold, from about 33,000 in 1980 to an average of nearly 229,000 from 1997 to 2001. Pink salmon *O. gorbuscha* harvests increased from about 35,000 in 1980 to an average of 73,000 from 1996–2000.

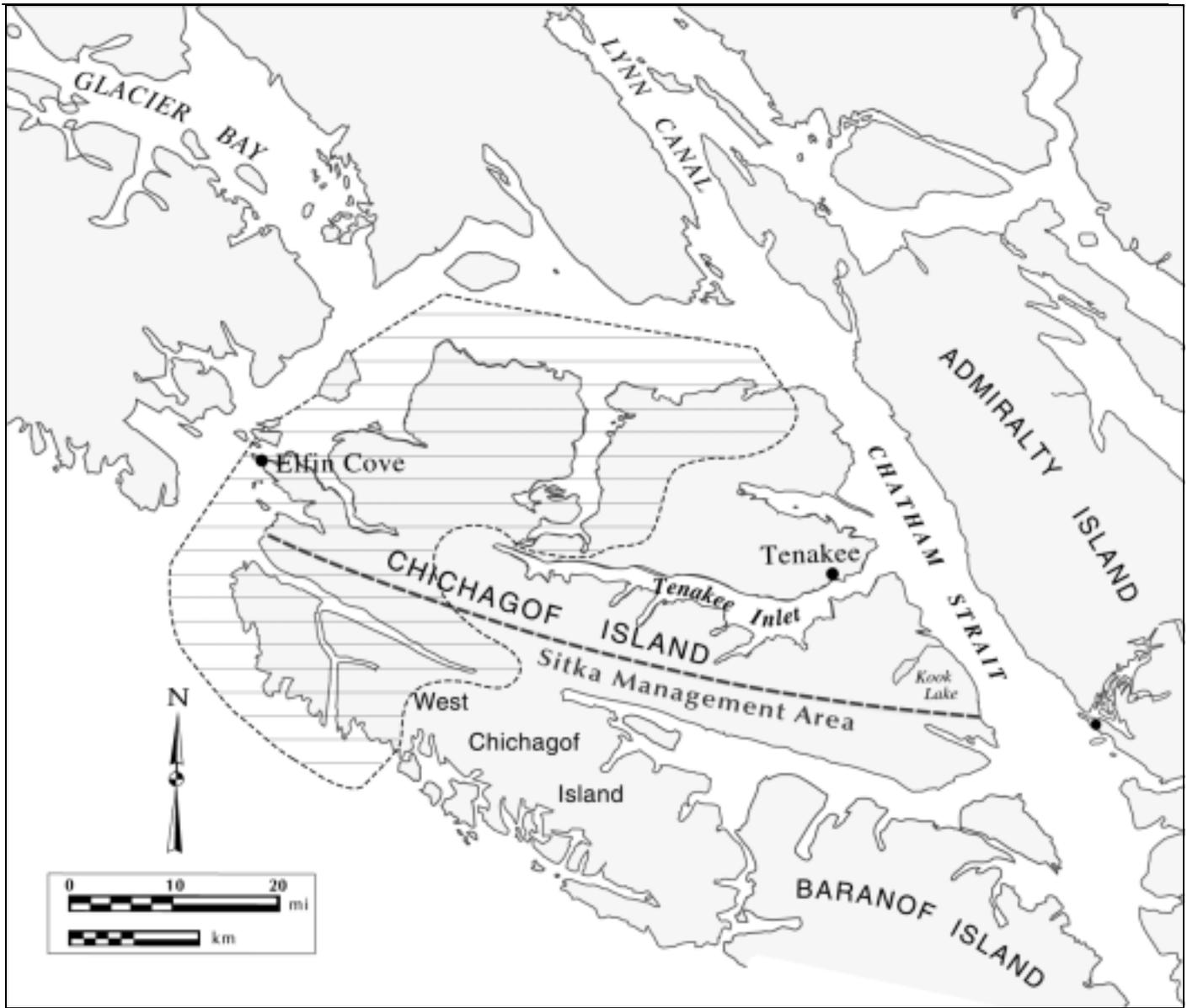


Figure 2.—Additional area (hatched) added to Glacier Bay SWHS area after boundary change implemented in 2000 survey.

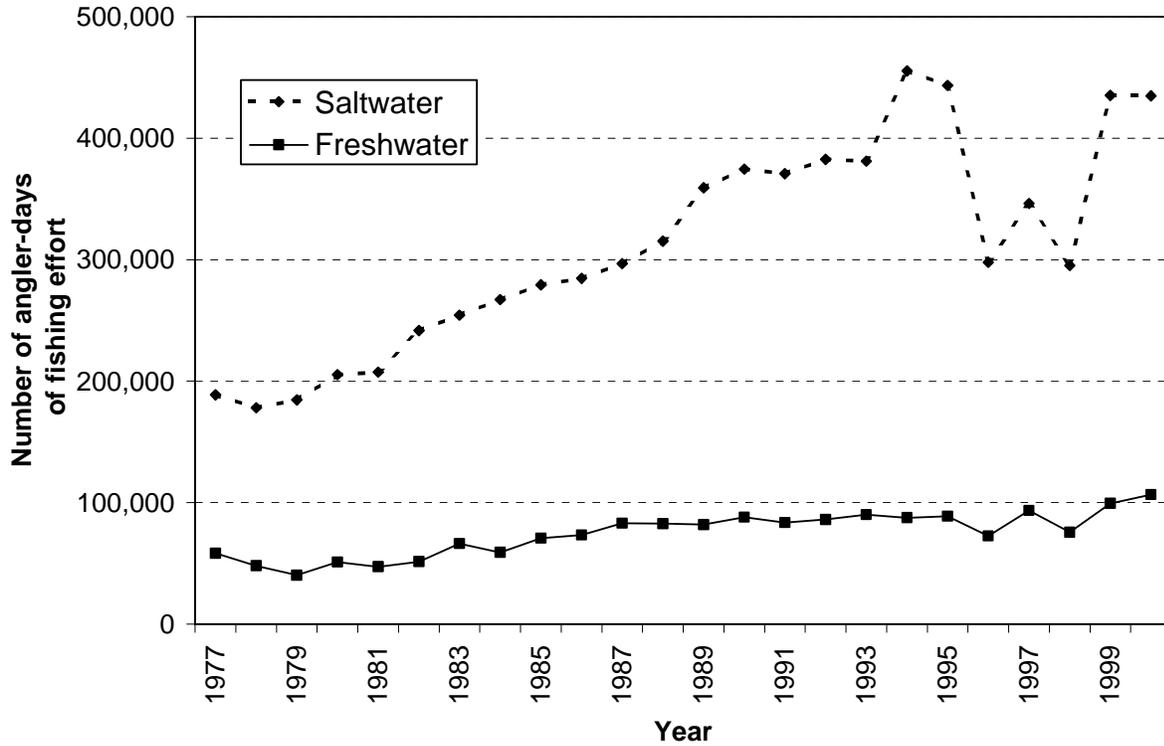


Figure 3.—Estimated angler-days of fishing effort in salt water and fresh water in Southeast Alaska, 1977–2000.

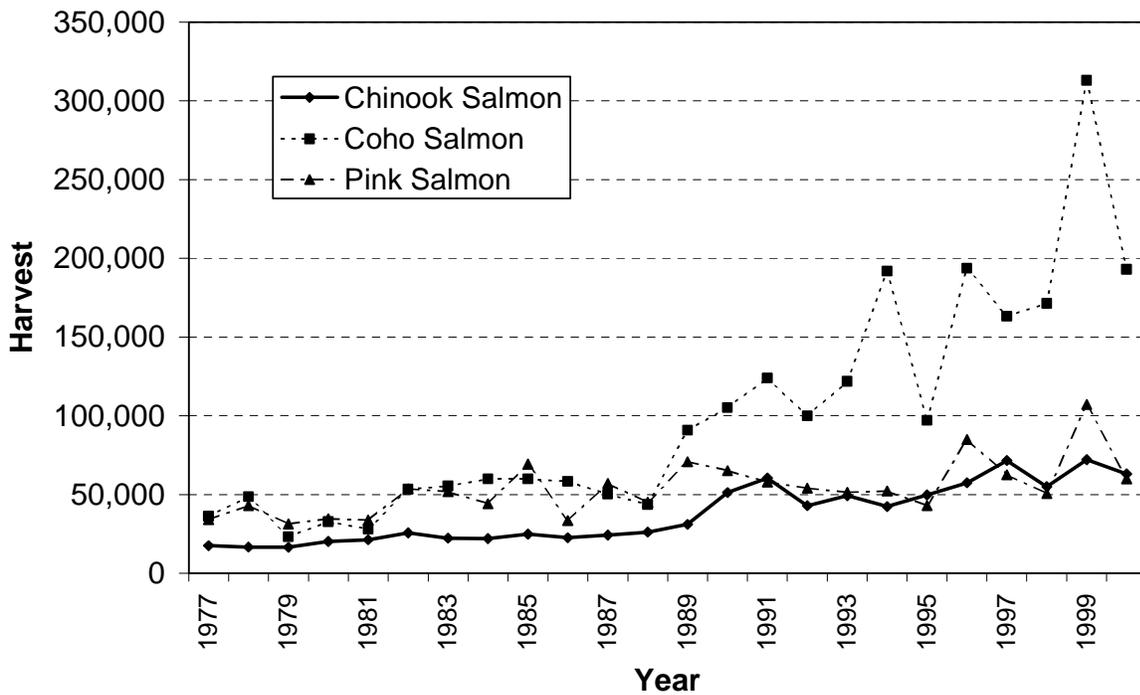


Figure 4.—Estimated sport harvests of chinook, coho, and pink salmon in Southeast Alaska, 1977–2000.

The next most important fisheries in Southeast Alaska are those for bottomfish, including primarily Pacific halibut, rockfish, and lingcod (Figure 5). Pacific halibut harvests have increased from about 6,000 fish in 1978 to an average of 105,000 from 1996 to 2000. Rockfish harvests increased steadily from 1977 to 1988 when they peaked at 57,000, declined for several years to a low of 26,000, and then increased again to a peak of 71,000 in 1999. Since lingcod distribution is limited primarily to the outer coast, harvests have been occurred primarily in the Sitka and Prince of Wales areas. Lingcod harvests averaged about 19,500 annually for the last five years.

The most important trout and char fisheries are those for Dolly Varden, cutthroat trout, and steelhead. Dolly Varden harvests peaked in the mid 1980s at about 60,000 and have since declined to average about 22,000 from 1996–2000 (Figure 6). Only about 1 out of 5 Dolly Varden caught are harvested. Cutthroat trout harvests declined from about 23,000 in the late 1970s to about 15,000 in 1993. In 1994, more restrictive regulations (minimum size limits, reduced bag limits, and gear restrictions) were placed on all cutthroat trout fisheries and since then the harvest has averaged about 5,000. Since these restrictive management actions were taken, only about 1 of every 9 cutthroat caught has been harvested. A minimum size limit for steelhead was also enacted in 1994, and harvests in the last 5 years have averaged about 200 from an average annual catch of over 18,000. Prior to 1994, steelhead harvests had averaged 3,200 with a peak of 5,400 in 1989.

REGIONWIDE ACTIONS AND ISSUES

CHINOOK SALMON MANAGEMENT

Chinook salmon are fully allocated in Southeast Alaska among user groups. A quota, established under the U.S./Canada Pacific Salmon Treaty, limits the harvest of chinook salmon by all commercial and sport fisheries in Southeast Alaska. The BOF has allocated a share of this quota to the sport fishery and the rest to various commercial fisheries. In 2001, management of the sport fishery for chinook salmon was changed substantially under the revised management plan passed by the BOF.

Preseason Management

Management of chinook salmon in Southeast Alaska is based on abundance. A coast wide model projects the abundance of chinook and calculates a preseason abundance index, which correlates to a preliminary chinook salmon quota for Southeast Alaska. Since the preseason abundance index is usually not received until late April, the bag and possession limits and other measures for the coming year are based on the prior year's abundance index until the new preseason abundance index is obtained. Since the 2000 abundance index was 1.14, the appropriate regulations (1 king salmon bag and possession limit and 3 king salmon annual limit) were implemented by emergency order on January 1, 2001 (E.O. 1-01-02). On April 27, 2001, the chinook salmon preseason abundance index of 1.14 (identical to the 2000 preseason abundance index) was announced. This resulted in an all-gear quota of 189,940 fish, of which the sport fishery was allocated a harvest target of 34,636 fish (excluding most harvests of Alaska hatchery fish and harvest in the Situk River).

For preseason abundance index levels between 1.1 and 1.2, the revised Southeast Alaska King Salmon Management Plan mandates that the chinook salmon bag and possession limit be 1 fish 28 inches or more for all anglers, and that the annual limit for nonresident anglers be reduced from 4 to 3. Since these regulations had already been implemented by E.O. 1-01-01, no additional changes were required. As directed under the management plan, these regulations were made effective for the entire season. It was anticipated that, under these regulations, the sport fishery would exceed its allocation by about 3%.

Creel survey data were used to project total harvest and treaty harvest for 2001. Final estimates will not be available until the statewide harvest survey is completed for 2001. The preliminary harvest was 67,921 king salmon of which approximately 23,100 were Alaska Hatchery fish. The estimated harvest of treaty fish was 46,500 king salmon. Based on the preseason abundance index (1.14) the sport harvest was about 11,900 fish above the 20% allocation. The postseason abundance index for the 2001 season was 1.28, which corresponds to a sport allocation of 46,120. Based on the post-

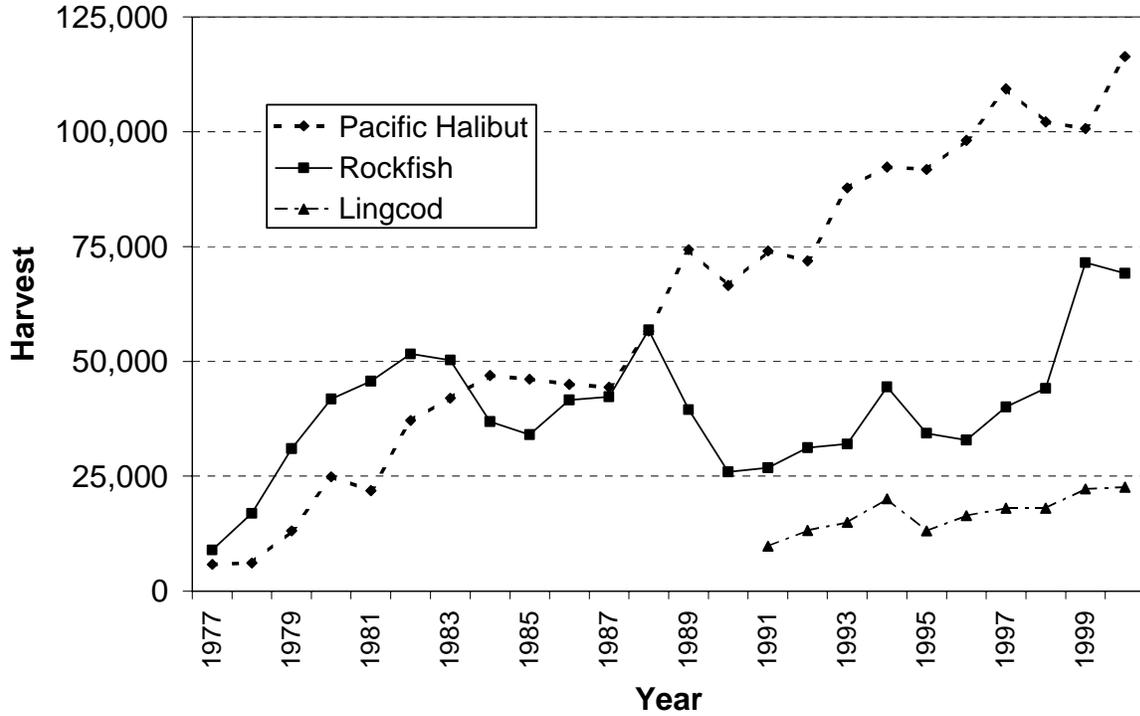


Figure 5.—Estimated sport harvests of Pacific halibut, rockfish, and lingcod in Southeast Alaska, 1977–2000.

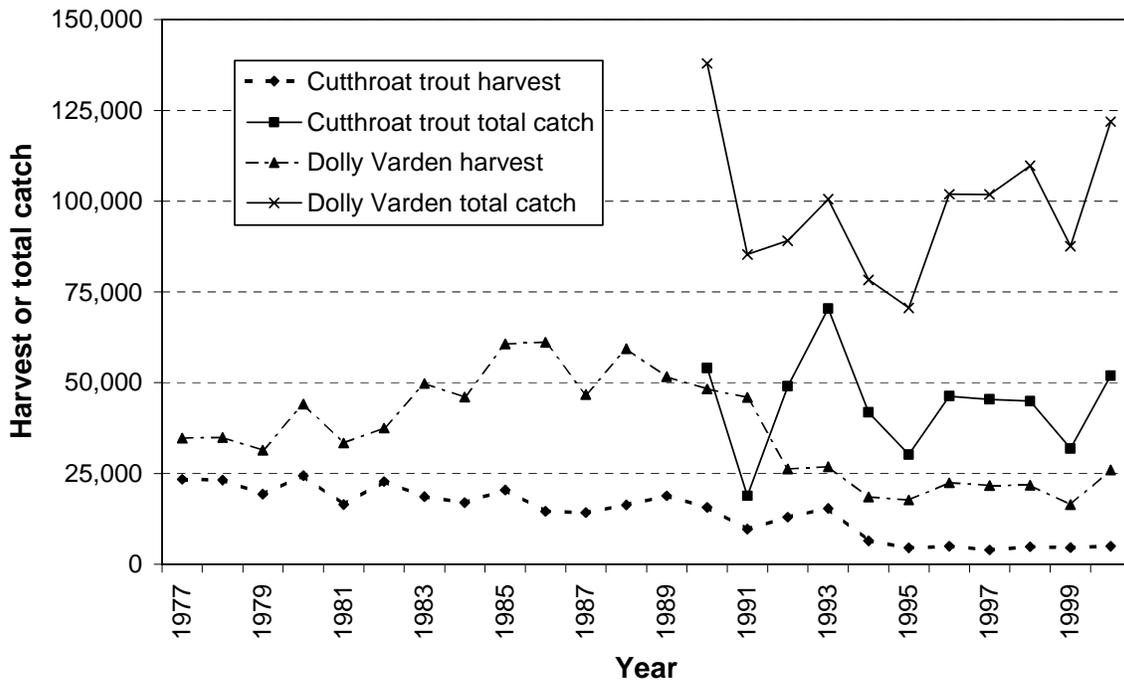


Figure 6.—Estimated sport harvests of cutthroat trout and Dolly Varden in Southeast Alaska, 1977–2000, and total catches of these species, 1990–2000.

season abundance index the sport fishery exceeded its 2001 allocation by 380 treaty king salmon.

Terminal Harvest Area Management

Regulations provide for increased bag limits to increase harvests of Alaska hatchery chinook salmon in terminal areas. In 2001, bag limits were increased in a number of both freshwater and marine areas to harvest excess hatchery chinook salmon, including jacks <28 inches in length. These areas are described for each management area later in the report. Most of these Alaska hatchery chinook salmon did not count toward the allocation. In addition, chinook salmon caught in many of these areas (where limits were ≥ 3 chinook salmon ≥ 28 inches in length) did not count toward nonresident annual limits.

LINGCOD MANAGEMENT

In February 2000, the Alaska Board of Fisheries substantially changed management of lingcod fisheries in Southeast Alaska in response to indications of a widespread decline in abundance. The BOF established a guideline harvest level (GHL) management approach for sport and commercial fisheries in Southeast Alaska, allocated the GHL among sport and commercial fisheries in each of seven management areas, and reduced allowable harvests by setting the GHL lower than recent harvest levels.

Under this management strategy, the sport fishery is managed on an annual basis to maintain lingcod harvests at or below harvest allocations, in lbs., for each of seven management areas. Following each season, past harvest trends are evaluated to determine whether management action is necessary. If harvests substantially exceed the allocations, restrictions are applied the following season. Similarly, if harvests fall well below the allocations, restrictions are eased. To achieve harvest reductions, the BOF delegated the department additional authority to adjust size and annual limits for guided and nonresident anglers only, and to require that, for areas in which size limits are in effect, lingcod may be landed only by hand or with a landing net. Landing requirements that prohibit the use of gaff hooks will reduce incidental mortality.

The harvest allocation for the sport fishery in northern Southeast Alaska (Central and Northern Southeast Outside and Northern Southeast Inside Sections; 5 AAC 28.105) and along the outer coast of Prince of Wales Island (Southern Southeast Outside Section) represented only about 45–60% of the lingcod harvest potential, in lbs., in 2001. Harvest potential was based on the most recent available harvest estimates (1997–1999) and considering effort and harvest trends observed in charter logbook and creel survey data through 2000. To stay within guidelines set by the BOF, the 2001 sport harvest of lingcod in these areas needed to be reduced from recent levels by about 45%. Similarly, harvest potential near Yakutat (Icy Bay and Eastern Yakutat Sections) needed to be reduced by about 25%. Recent harvests near Ketchikan (Southern Southeast Inside Section) were less than the GHL.

Beginning May 16, the lingcod bag and possession limits for all anglers fishing in the marine waters of Southeast Alaska was therefore reduced from 2 fish per day, 4 in possession to 1 fish per day, 2 in possession (E.O. 1-04-01). In northern Southeast Alaska and the Yakutat area, a minimum size limit of 39 inches was implemented for guided and nonresident anglers, and lingcod could be landed only by hand or with a landing net. This area included marine waters north of a line between Hazy, Coronation, Kuiu, and Kupreanof islands and the mainland and south of Cape Suckling on the mainland. Along the outer coast of Prince of Wales Island, a minimum size limit of 34 inches was implemented. Management actions were also taken in commercial fisheries to meet their respective allocations.

Because the department wished to increase biological sampling of lingcod for better determination of length and sex composition, the BOF also passed a regulation allowing ADF&G to prohibit heading or filleting lingcod until the fish had been offloaded. E.O. 1-03-01 also required that marine boat anglers possessing sport caught lingcod and returning to any ports with creel sampling programs could not fillet, mutilate, or discard the head of lingcod until offloaded, unless they were preserved or had been consumed onboard. This regulation was enacted for Ketchikan, Craig, Klawock, Sitka, Juneau, Petersburg, Wrangell, and Haines for creel survey periods in each communities.

Trends in charter logbook and creel survey data indicate that sport harvest (in pounds) continued to substantially exceed allocations in northern Southeast Alaska and along the outer coast of Prince of Wales Island for 2001. These trends suggest that restrictions implemented in 2001 reduced the number of fish harvested, relative to 1998–1999 harvest estimates, by about 25%. However, the mean weight of lingcod sampled in Craig, Sitka and Yakutat was larger than expected. Harvests (in pounds) near Ketchikan and Yakutat were similar in magnitude to allocations, based on similar trends.

PROHIBITION ON HEADING OR FILLETING OF SALMON

In 1998, the BOF gave ADF&G the authority to prohibit heading or filleting of Chinook and coho salmon when and where creel sampling programs were in place. This regulation was intended to provide increased recoveries of coded wire tags (CWTs) implanted in chinook and coho salmon for estimation of the contributions of both wild and hatchery stocks. This was especially important regarding Alaska hatchery chinook salmon since these fish generally do not count toward the annual quota.

Since 1998, enactment of this regulation, in combination with increased catch sampling efforts, increased sampling rates for chinook salmon from 18% to near 30% in subsequent years. Coho sampling rates increased from 15% in 1997 to over 30% in subsequent years. The heading and filleting regulation was again enacted in 2001 for marine boat anglers returning to any harbors or boat launches connected to the following ports during the following time periods (E.O. 1-03-01):

Juneau and Sitka:

April 23–September 23

Ketchikan:

May 7–September 23

Craig and Klawock:

May 7–September 9

Petersburg:

May 7–July 8

Haines:

May 7–June 24

Wrangell:

April 30–July 1

Anglers were allowed to gut and gill chinook and coho salmon before returning to port, and anglers could fillet and head chinook and coho salmon on their boats once they had returned to a docking facility and tied their boat up to a float. Overall CWT sampling rates for 2001 remained excellent at 28% for chinook salmon and 29% for coho salmon.

GUIDE REGISTRATION AND LICENSING

A total of 550 registered saltwater sport guiding businesses had inseason mailing addresses in Southeast Alaska in 2001. These businesses were linked with 954 guides with inseason mailing addresses in Southeast Alaska. Guides and businesses with permanent mailing addresses in Southeast Alaska totaled 780 and 574, respectively, for 2001. More businesses (601) indicated that they intended to provide guide services in saltwater in Southeast Alaska only while 30 additional businesses indicated that they would provide marine guide services in both Southeast and Southcentral Alaska. Freshwater guide services in Southeast Alaska were to be provided by up to 380 businesses. Most of these statistics were about 10% below the registration totals for 2000.

All vessels used in charter/guided sport fishing activities were again required to be licensed with Commercial Fisheries Entry Commission (CFEC) in 2001. CFEC licensed a total of 1,200 vessels with home ports in Southeast Alaska in 2001. This is about an 8% decline in the number of registered vessels as in 2000. This total includes those used in fresh water or for transporting anglers to shore as well as those used for marine charters.

CHARTER LOGBOOK PROGRAM

The mandatory saltwater charter vessel logbook program first implemented in 1998 was continued in 2001. Operators were again required to submit logbook information to the department on a weekly basis.

Forms were received from 676 vessels documenting marine charter boat sport fishing activities in Southeast Alaska during 2001. This was a decrease of about 3% from the number of active vessels (697) in Southeast Alaska during 2000.

The distribution of reported logbook effort and harvest by mail survey area indicated that the Sitka area was the most heavily used area in Southeast Alaska (Table 1). Overall, charter clients expended 111,119 angler-days of salmon fishing effort and 71,211 angler-days of bottomfishing effort (many fished for both targets on a given day) in Southeast Alaska. This was an increase of 2% in salmon fishing effort and a decrease of 5% in bottomfishing effort from that reported in 2000. Reported harvests included about 40,400 chinook salmon, 222,000 coho salmon, 50,000 pink salmon, 93,000 Pacific halibut, 8,000 lingcod, and 41,000 rockfish. Salmon harvests for all species were greater than those reported for 2000 while there was a decrease in reported harvests of all bottomfish (Pacific halibut, lingcod, and rockfish).

PACIFIC HALIBUT MANAGEMENT

During 2001, changes to the sport charter industry for the taking of Pacific halibut developed rapidly in both Southeast and Southcentral Alaska. A push for regulating the halibut sport charter industry dates as far back as 1993, with an original proposal for fishery regulation submitted to the North Pacific Fisheries Management Council (NPFMC) by commercial fishing interests in Southcentral Alaska. The original proposal of 1993 led to committee work, whose members composed a 6 item “Problem Statement” which eventually blossomed into a guideline harvest level (GHL) concept for the charter vessel fleets in International Pacific Halibut Commission (IPHC) Areas 2C and 3A. The GHL concept continued to evolve from 1995 to early 1997 and included mention of moratoriums, caps, integration with the existing commercial Individual Fishing Quota (IFQ) system, and even included an outside economic analysis by the Institute of Social and Economic Research (ISER) in Anchorage.

The NPFMC reviewed a revised analysis of alternatives for the GHL concept in April 1997, at which time they directed their staff to “*further condense the study to a shorter, more readable document for public review*”. The staff’s revision was presented to NPFMC members in May 1997 and final action was taken in September of that same year. But due to lack of regulatory structure

(e.g., management tools such as bag limits, line limits, etc.), they were unable to proceed with implementation by the National Marine Fisheries Service (NMFS). The Secretary of Commerce published the intent of the NPFMC in the Federal Register as a “notice” rather than as a regulation at that time. Work continued on development of the GHL, and involved not only NPFMC analytical staff, but also staff from ADF&G who were most knowledgeable about onsite survey data. Onsite survey data was key for development of the management “tools” necessary for implementation. By late 1999, NPFMC staff tasked with conducting the necessary analysis of 4 preferred alternatives had successfully presented their results to the NPFMC’s Statistical and Science Committee (SSC) and Advisory Panel (AP) and were given approval to seek public comment on their final draft analysis. The draft document “*Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a regulatory amendment to implement management measures under a guideline harvest level and/or moratorium for halibut in Areas 2C and 3A*” was released for public review and comment in early January, 2000.

In February 2000, the NPFMC adopted GHLs for the charter vessel fleets in both IPHC Areas 2C and 3A after review and evaluation of written and oral testimony. Each GHL was based on 125% of the 1995–1999 average halibut harvest (biomass in pounds) by the guided fishery as determined by numbers of fish estimated via the SWHS and average weights determined by onsite biological sampling. The 2001 GHL in IPHC Area 2C (Southeast Alaska south of Cape Spencer) was set at 1,432,000 pounds, and would be reduced in proportion to reductions in area abundance as determined by the IPHC annually. The first step reduction would be 15%, and additional annual 10% step reductions would occur accordingly as abundance levels declined. This management scheme was to be responsive to changes in abundance as determined by the IPHC’s CEY (Constant Exploitation Yield) model. The plan would also allow the GHL to “step-up” when abundance levels returned to pre-reduction levels.

If harvests exceeded the GHL in a given year, then restrictions that would reduce the projected

Table 1.—Marine charter logbook effort and harvest by clients by mail survey area for Southeast Alaska (based on area fished), 2001.

Mail survey area	Client angler-days ^a		Harvests of important species					
	Salmon	Bottomfish	Chinook salmon	Coho salmon	Pink salmon	Pacific halibut	Lingcod	Rockfish
Ketchikan	24,453	6,045	4,807	26,580	25,031	6,523	468	3,509
Prince of Wales I.	22,318	19,326	7,811	73,655	10,836	29,150	3,099	11,657
Petersburg/Wrangell	2,809	4,262	1,099	2,444	1,637	4,705	69	693
Sitka ^b	35,022	23,861	19,360	87,423	3,940	32,349	2,388	15,860
Juneau	13,755	6,709	2,841	12,646	6,726	7,697	119	5,245
Haines/Skagway	3,134	337	1,335	19	32	171	0	4
Glacier Bay ^b	7,603	8,682	2,346	14,979	2,103	8,585	985	3,461
Yakutat	2,097	2,706	792	4,072	27	4,204	1,081	977
Total	111,119	71,211	40,391	221,818	50,332	93,384	8,209	41,406
Change from 2000	2%	-5%	34%	97%	15%	-1%	-42%	-17%
Change from 1999	7%	30%	15%	19%	-11%	34%	-26%	44%

^a Client angler-days for salmon and bottomfish should not be summed because many anglers fish for both types of fish on the same trip. Summing across the two types of fisheries will produce an overestimate of total client angler-days fished.

^b The northern boundary between the Sitka and Glacier Bay SWHS areas was revised in 2000 so that the size of the Glacier Bay area was significantly increased.

harvest (trip limits, prohibition of retention by captain and crew, etc.) would be implemented the following year. Depending on the amount of reduction necessary, the management measures would be reviewed and adjusted after evaluating the response of charter harvests to the management measures.

During the process of reviewing and analyzing the GHL alternatives in 1999, a select group of industry representatives was at work devising a proposal that would parallel the existing commercial IFQ system. Initial review on this amendment was heard in December 2000. Final action by the council occurred in February 2001 when they accepted an IFQ program for charter operators in IPAC areas 2C and 3A. In all likelihood, this system will not be in place and functional until at least 2003 (and more likely 2004) leaving the GHL management scheme in place until then. Initial allocations will be based on data collected in the 1998 and 1999 Saltwater

Charter Vessel Logbook administered by ADF&G. Charter businesses were also required to be active in 2000 in order to qualify for the IFQ program.

In 2000 the Statewide Harvest Survey estimated that 57,208 halibut were harvest in area 2C. Based on creel sampling the average weight was 19.8 pounds, for a total harvest of 1,132,147 pounds. This is 21% under the GHL of 1.4 million pounds. Based on preliminary projections made by ADF&G staff for 2001, it appears that the Southeast (Area 2C) charter vessel fleet remained under the GHL by about 500,000 pounds (0.93 million pounds vs. 1.43 set by the original GHL). Therefore, restrictions in 2002 will not be necessary given the small changes in the GHL due to the SWHS revisions.

A summary of fishery performance statistics for monitored Pacific halibut fisheries in Southeast Alaska for 2001 can be found in a report presented to the IPHC (White and Jaenicke, *unpublished*).

The council in October 2000 adopted subsistence regulations on a statewide basis. They established a daily harvest limit of 20 halibut and a gear limit of 30 hooks. More liberal limits were granted for the Alaska Peninsula/Aleutian Islands area. Subsistence eligibility was granted to 117 rural communities and members of 120 Alaska federally recognized tribes. In 2001, the Council asked the Board of Fisheries to recommend changes to the subsistence halibut regulations on an area by area basis. The Board held public hearings in Sitka, Cordova, Kodiak, and Homer to obtain recommendations. In Southeast Alaska, the Board recommended to the Council that halibut regulations in the Sitka LAMP area be consistent with existing regulations—i.e., 1 line, 2 hooks, 2 halibut per day. No other changes were recommended for Southeast Alaska. The Council will take final action on the halibut subsistence regulations in 2002.

FEDERAL SUBSISTENCE MANAGEMENT

Under delegation by the Federal Subsistence Board, the U.S. Forest Service (USFS) implemented two inseason management actions in 2001. Federal and non-federal (sport and subsistence) fisheries at Redoubt Lake (E.O. 1-20-01) and Salmon Lake (E.O. 1-21-01) were closed concurrently by the USFS and ADF&G due to poor sockeye returns and to avoid excessive effort from displaced Redoubt fishers on the relatively small Salmon Lake sockeye population. These closures, in which federal and state fishery managers took parallel action, was similar to coordinated action taken in 2000 for the same reason. Closures to all users became effective July 13, 2001 in the lake drainages and adjacent saltwater areas, after escapement was projected to reach a level similar to average for non-enhanced returns to the Redoubt Lake system.

The second inseason management action occurred on the Klawock Lake system, where the ADF&G and the USFS restricted fisheries after coho salmon escapement and hatchery brood stock were projected to fall short of goals. USFS reduced the daily limit in Klawock River and Lake from 20 to 2 coho salmon per household. This action became effective November 2, 2001; one day after Sport Fish Division closed all waters of the drainage to the retention of coho salmon (E.O. 1-32-01).

The Federal Subsistence Board published 25 regulatory proposals, including three deferred from the 2001–2002 regulatory year and a Request for Reconsideration submitted by ADF&G, to change federal subsistence regulations for the 2002–2003 regulatory year. The Southeast Regional Advisory Council met October 15–19, 2001 to deliberate each proposal and on December 11–14, the Federal Subsistence Board acted on them. Board action relevant to sport fishing resulted in the following changes to federal regulations. The Board:

- provided for the taking of coho salmon in Southeast Alaska, excluding sections 3A, 3B, and 3C, in waters under federal jurisdiction under the terms of a federal subsistence fishing permit. Under the new regulations, there is no closed season for coho salmon, the daily harvest limit is 20 coho per household, and the annual limit is 40. Only dip nets, spears, gaffs, and rod and reel may be used; bait may be used from September 15 through November 15; and incidentally caught trout and sockeye may not be retained unless taken by gaff or spear.
- closed the Redoubt Lake drainage to sockeye fishing for non-federally qualified users and required fishing for sockeye in the drainage to be conducted only under the terms of a federal subsistence permit. Established by regulation an open season from June 1 to August 15 and a possession limit per individual and household of 10 sockeye salmon. Specified that only spears, gaffs, dip nets and rod and reel may be used.
- required a federal permit to take trout and char and allowed the harvest of cutthroat and rainbow trout and Dolly Varden char in all waters of Southeast Alaska. In all waters (except Baranof Lake, Florence Lake, Hasselborg Lake and River, Mirror Lake, Virginia Lake, and Wilson Lake where more liberal bag limits apply) Dolly Varden and cutthroat and rainbow trout may be harvested in accordance with Alaska sport fishing seasons and harvest limits under 5 AAC 47; only rod and reel is allowed as gear, and bait is prohibited unless specifically permitted under 5 AAC 47.

- required a federal permit to take steelhead in Hamilton Bay and Kadake Bay Rivers.

The Board also rejected several key proposals or portions thereof with significant ramifications to the sport fishery. A number of proposals that sought to provide for more explicit regulation of the federal subsistence fishery for coho salmon also sought to close areas to non-federally qualified use of coho. While the Board did provide for the taking of coho under a federal subsistence permit, it did not close areas to non-federal use as proposed. Similarly, except for Redoubt Lake, the Board did not implement a federal permit requirement for the taking of sockeye salmon or close areas to non-federally qualified use of sockeye as proposed. The Board also rejected a proposal to increase harvest limits and allow the use of bait for steelhead on Prince of Wales Island. Finally, the Board rejected the Request for Reconsideration of Board action taken in December 2000 that closed the Falls Lake drainage and streams draining into Gut and Pillar Bays to the harvest of sockeye by non-federally qualified users. The Board again deferred proposal 01-27, which requests subsistence fisheries for sockeye, coho and chinook salmon on the Stikine River.

Following the Board meeting, federal staff clarified methods and means, i.e. the use of rod and reel, and permit requirements for steelhead in the Situk and Ahrnklin Rivers administratively. federal regulations were changed to stipulate that steelhead may only be taken in the Situk and Ahrnklin Rivers under the authority of a federal subsistence fishing permit. Prior to this change, federal regulations required users to obtain a permit issued by the state; state regulations prohibit the use of rod and reel as subsistence gear. This administrative change was made to clarify that rod and reel is allowable gear for steelhead in the Situk and Ahrnklin Rivers under the terms of a federal permit.

Division staff participated throughout the Federal Subsistence Board regulatory process by commenting on regulatory proposals, assisting USFS staff by providing information used in the federal staff analyses, reviewing and commenting on those analyses, and directly in interagency staff, Regional Advisory Council and Federal Subsistence Board meetings.

In October 2000, Division staff submitted pre-proposals for five stock monitoring projects: steelhead weirs at Kadake Creek and Hamilton River, steelhead escapement monitoring on Prince of Wales Island, a cutthroat trout production project, and a coho and sockeye stock monitoring project at Salmon Lake near Sitka. Subsequently, the Salmon Lake project was funded for federal fiscal years 2001–2003 and implemented during the 2001 season. The implementation of this project is discussed in the Sitka Area section of this report. Division staff submitted no additional projects for funding consideration during 2001.

ENHANCEMENT

Hatchery chinook and coho salmon are released in large numbers in Southeast Alaska and provide substantial fishing opportunities for sport anglers. All enhancement programs in Southeast are conducted by private nonprofit hatcheries. Although Crystal Lake Hatchery is a Sport Fish Division facility, it has been operated under contract by the Southern Southeast Regional Aquaculture Association (SSRAA) since July 1, 2000. Sport Fish Division also provides funding to SSRAA and Douglas Island Pink and Chum Inc. (DIPAC) to release chinook salmon in the Ketchikan and Juneau areas. In 2001, about 7.72 million chinook salmon smolts were released by hatcheries throughout Southeast Alaska. Of these, about 1.89 million chinook smolts were paid for by sport anglers. Chinook releases paid for by sport anglers included about 750,000 smolts in the Ketchikan area, 600,000 in the Petersburg area, 600,000 in the Juneau area, and 30,000 in Skagway. About 180,000 coho smolts released in the Petersburg area from Crystal Lake hatchery were also funded, in part, by sport anglers. Hatchery released coho smolts and fry in Southeast Alaska totaled 16.76 million during 2001.

A large number of chinook salmon taken in Southeast Alaska originate from hatcheries in British Columbia, with others taken from hatcheries in Washington and Oregon. Much smaller numbers of non-Alaskan hatchery coho salmon are also taken. Detailed estimates of hatchery contributions for both Alaskan and non-Alaskan stocks taken by marine boat sport fisheries of Southeast Alaska are presented in Hubartt et al. (*In prep.*).

AREA SPECIFIC PROGRAMS, ACTIONS AND ISSUES

KETCHIKAN AREA

The Ketchikan management area includes all freshwater and saltwater systems from the middle of the Cleveland Peninsula south to the Alaska/Canada border in Dixon Entrance (Figure 7). The area includes the communities of Ketchikan, Metlakatla, Meyers Chuck, and Hyder, and numerous islands—the largest of which are Revillagigedo, Annette, and Gravina. The major marine sport fisheries in the Ketchikan area are for chinook salmon, coho salmon, pink salmon, and bottomfish (Pacific halibut, rockfish, and lingcod). Major freshwater sport fisheries include steelhead, cutthroat trout, Dolly Varden, coho, pink, and sockeye salmon. Permanent Sport Fish management staff consists of a Fishery Biologist III, Stephen Hoffman, and an administrative assistant, Jodi Goffinet, both stationed in Ketchikan.

Local Management and Research Programs

Marine Creel

The 2001 season marked the ninth year of expanded marine creel surveys in the Ketchikan area. Up to 4 technicians were employed between late April and the end of September to interview anglers at major harbors and boat launches for harvest information and collection of coded wire tag (CWT) data. Estimates generated from this study indicated that anglers harvested 5,607 chinook salmon, 26,693 coho salmon, 16,341 pink salmon, 3,206 chum salmon, 17 sockeye salmon, 4,664 Pacific halibut, 489 lingcod and 3,089 rockfish during 2001 (Hubartt et al. *In prep.*). In addition, local anglers harvested 4,002 Dungeness crab and 99,190 shrimp. Overall, Chinook, coho, and chum salmon plus lingcod, and shrimp harvest in 2001 were above the 5-year average while pink and sockeye salmon, along with halibut, rockfish and Dungeness crab were below the 5-year average.

Salmon Research

Three major salmon research programs were active in the Ketchikan area in 2001. Chinook salmon research entailed inserting coded wire tags

(CWTs) into juvenile chinook salmon prior to leaving the Unuk River, adult escapement surveys, and adult mark-recapture studies in this drainage. The CWT studies were undertaken to determine fisheries interceptions and exploitation. Escapement surveys were conducted via a helicopter to monitor long-term trends, and mark-recapture studies were conducted to estimate total escapement. Coho salmon research on the Unuk River included marking of juvenile coho salmon with CWTs to determine fisheries interceptions, adult escapement surveys via helicopter for trend monitoring, and mark-recapture studies of returning adults to estimate total escapement into the drainage. Similar studies on Chinook and coho salmon were also conducted in the Chickamin River drainage in 2001.

Trout Research

No trout research occurred in this area in 2001 due to budget reductions.

Management Actions

Ketchikan Creek Management

Ketchikan Creek was closed to sport fishing for all species from May 16 through September 14, by regulation. Above average returns of hatchery chinook and coho salmon, coupled with excellent returns of wild pink salmon, enabled the opening of this drainage by Emergency Order on August 23, 2001 (E.O. 1-27-2001). It opened Ketchikan Creek from August 24 through September 14 with a bag limit of two king salmon over 28" and two king salmon under 28". The standard bag limit of two other salmon in combination was also allowed during this period

Pink Salmon

The pink salmon bag limit in the Ketchikan area was maintained at 6 fish per day and 12 in possession. Slightly below average returns of wild pink salmon prevented expansion of limits for this species.

Sockeye and Chum Salmon

The sockeye and chum salmon bag and possession limits in the Ketchikan area were maintained at 6 per day and 12 in possession. Below average sockeye and slightly above average returns of chum salmon precluded expansion of sport limits.

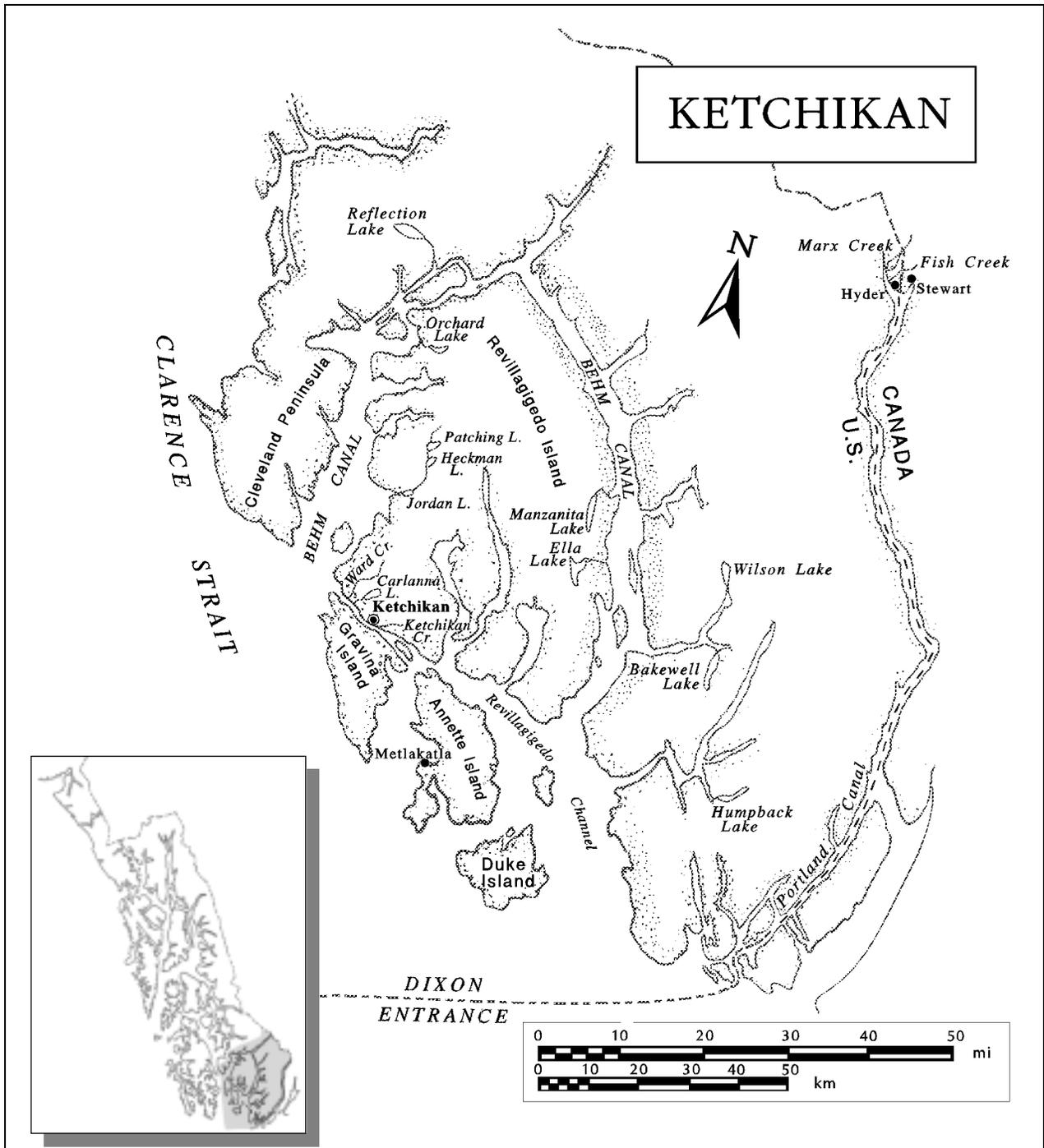


Figure 7.-Ketchikan management area.

Chinook Salmon

The chinook salmon bag and possession limits were increased in two terminal fishery areas near Ketchikan (Mountain Point and Neets Bay) to harvest surplus hatchery produced fish. From June 16 through July 31, 2001 the bag and possession limit was increased to twelve king salmon of any size (E.O. 1-12-01). In addition, the department implemented a personal use gillnet fishery for residents in the Herring Cove terminal harvest area 3 days per week between July 1 and July 31 (E.O. 1-17-2001). This fishery was opened to harvest surplus chinook salmon returning to the Whitman Lake hatchery (operated by SSRAA) located on Herring Cove Creek. Drift gillnets 60 feet or less were allowed with a limit of 50 chinook salmon of any size.

Surveys

Salmon

Chinook salmon escapement surveys were conducted by helicopter and/or foot on several area index streams to obtain yearly trend comparisons (Table 2). Escapement counts on three Ketchikan area chinook salmon index streams were higher than the previous year and slightly lower on one stream. Survey counts on the Unuk and Chickamin rivers were the highest since 1986 while the Keta River count was the highest since 1993. The Blossom River was the only system where the escapement count was below the lower end of its escapement goal range in 2001.

Helicopter/foot/weir escapement surveys were also conducted on 16 of 17 coho salmon index streams in the Ketchikan area (Table 3). Coho salmon escapement counts on average were over 22% higher than the prior 5-year average (1996–2000). Counts in 11 streams were above the count from the prior year, and counts in 8 streams were below the prior year.

Steelhead

Research conducted on steelhead in the Ketchikan area in 2001 consisted of repetitive snorkel surveys of adult escapement in 4 index streams. These counts are used to track escapement trends in area streams. Peak survey counts for 2001 in all four of the index streams were above the 2000 totals (Table 4). However, counts in three of the streams were slightly below the prior 4-year

Table 2.–Helicopter escapement survey peak counts of chinook salmon in Ketchikan area index systems, 1988–2001.

Year	Blossom	Keta	Unuk	Chickamin
1988	384	575	1,746	786
1989	344	1,155	1,149	934
1990	257	606	591	564
1991	239	272	655	487
1992	150	217	874	346
1993	303	362	1,068	389
1994	161	306	711	388
1995	217	175	722	356
1996	220	297	1,167	422
1997	132	246	636	272
1998	91	106	840	391
1999	212	276	680	492
2000	231	300	1,341	801
2001	204	343	2,019	1,010
Lower goal	250	250	650	450
Upper goal	500	500	1,500	900

averages, and significantly higher in only one stream, Humpback Creek. Since snorkel surveys count a higher percentage of the total escapement, it can be misleading to compare 2000 data to foot counts made prior to 1997.

Enhancement

Chinook salmon

This was the sixth year of a Cooperative Agreement (96-004) between ADF&G, Division of Sport Fish, and SSRAA to release chinook salmon smolts at their Neets Bay and Whitman Lake hatchery facilities. The goal of this agreement is to jointly finance the release of 650,000 chinook salmon smolts at Neets Bay (250,000 from SSRAA plus 400,000 from Crystal Lake Hatchery which is operated under contract by SSRAA) and 760,000 at Whitman Lake (SSRAA produced fish) to enhance local sport and commercial fisheries. In 2001, 650,000 smolts were released at Neets Bay and 750,000 at Whitman Lake. Adult returns from these releases will begin in the year 2003 when 2 ocean adults

Table 3.—Peak helicopter, foot, or weir escapement survey counts of coho salmon in Ketchikan area streams, 1995–2001.

Stream name (survey type)	1995	1996	1997	1998	1999	2000	2001	2000 % of 5-year mean
Barrier Creek (H)	220	230	NS	50	25	72	15	16%
Blossom River (H)	800	829	1,143	1,004	598	1,354	1,561	159%
Carroll Creek (H)	400	240	140	24	425	275	173	78%
Choca Creek (H)	180	220	175	190	225	180	450	227%
Eulachon River (H)	435	383	420	460	657	600	929	184%
Fish Creek (Hyder) (F)	95	465	258	502	800	923	1,229	208%
Grant Creek (H)	94	92	30	130	127	94	110	116%
Herman Creek (H)	250	94	75	94	75	135	80	85%
Hugh Smith Creek (W)	1,758	964	732	1,129	1,238 ^a	684	1,580	166%
Humpback Creek (H)	82	440	32	256	520	102	506	187%
Humpy Creek (H)	185	80	NS	NS	107	50	NS	
Indian Creek (H)	600	570	100	304	356	380	1,140	333%
Keta River (H)	1,155	1,506	571	1,169	1,895	1,619	422	31%
King Creek (H)	415	457	55	411	627	620	891	205%
Klahini River (H)	165	40	60	120	150	110	151	157%
Marten River (H)	1,385	1,924	759	1,961	1,518	1,421	1,956	129%
McDonald L (Hatchery Cr.) (F)	561	335	552	710	258	250	89	21%
Reflection L (Upper Short Cr.) (H)	42	312	NS	71	NS	NS		
Tombstone River (H)	2,446	1,806	847	666	840	1,672	505	43%
							Mean	122%

H = helicopter, F = foot, W = weir, NS = not surveyed.

^a Incomplete weir count because of extended high water in 1999.

Table 4.—Annual peak steelhead escapement counts for Ketchikan area streams, 1995–2001. The 1995–1996 surveys were by foot while the 1997–2001 surveys were snorkel surveys.

Stream	1995	1996	1997	1998	1999	2000	2001	Average snorkel count 1997 to 2000
White River	77	42	84	86	60	38	48	67
Ketchikan Creek	16	42	48	47	19	15	24	32
Naha River	33	37	20	31	49	NS	NS	—
Ward Creek	NS	NS	10	41	NS	NS	NS	—
McDonald Lake	66	60	145	86	100	47	74	95
Humpback Creek	27	20	91	24	4	7	95	32

NS = not surveyed

(\approx 28 inches in length) will return followed by increased returns of 3-ocean fish in 2004, 4-ocean in 2005, and 5-ocean in 2006.

In addition to the chinook salmon releases from this project, the Deer Mountain hatchery, owned and operated by Ketchikan Indian Corporation (KIC), released 133,000 chinook salmon smolts into Ketchikan Creek as part of its ongoing hatchery program. No divisional funds were used to pay for this project.

The Metlakatla Indian Corporation (MIC) operates the Tamgas Hatchery located on Annette Island Reserve south of Ketchikan. This facility releases 1.2 million chinook smolts each year to enhance island fisheries. The releases from this facility also contribute to off-island fisheries such as the Ketchikan sport fishery. No divisional funds were used to fund this project.

Coho and Chum Salmon

The Division is not involved in either coho or chum salmon enhancement in the Ketchikan area. SSRAA released 4.5 million coho salmon at its Neets Bay and Whitman Lake facilities in 2001. Ketchikan Indian Corporation also funded releases of approximately 57,500 summer run coho salmon in Ketchikan Creek and 75,000 in Ward Lake. MIC's Tamgas hatchery on Annette Island released over 6.8 million coho salmon smolts. All three of these programs benefit commercial and sport fisheries in the Ketchikan area. SSRAA also released 71.0 million summer-run and 32.0 million fall-run chum salmon at its Neets Bay facility in 2001. Chum returns from 1997–1998 releases were good, and sport fishermen in the local area benefited from these releases.

Rainbow Trout and Steelhead

The Division is not involved in either rainbow trout or steelhead enhancement in the Ketchikan area other than to provide triploid rainbow trout eggs to KIC. These eggs are shipped to the Deer Mountain Hatchery where KIC raises them for release in the Ketchikan Creek City Park Kids Day fishery and to enhance the sport fisheries in Carlanna and Harriet Hunt lakes. In 2001, KIC released 2,200 triploid rainbows in the City Park Kids Fishing Day project, plus 15,000 in Harriet Hunt Lake and 4,200 fish in Carlanna Lake. KIC released 8,700 steelhead fingerlings.

Access Projects

In 2001, Ketchikan area staff were involved in review and/or development of one boat ramp project, one trail project, and one fishing pier project (Table 5).

Other Issues

Hydroelectric Projects

Division staff reviewed and made field inspection trips to five different hydroelectric projects in 2001 (Table 6). Considerable staff time was spent reviewing these projects, attending interagency meetings, and working with consultant firms involved with these projects.

Timber Harvest

Logging activities continued to be planned or implemented in the Ketchikan area during 2001 (Table 7). Twelve different timber harvest plans were reviewed and comments provided to Habitat Division staff concerning potential impacts on various freshwater sport fisheries.

Table 5.–Ketchikan area access projects, 2001.

City/ Borough	Project title	Amenities	Type ^a	Funding status	Cost	Status
Hyder	Hyder Boat Launch Improvements	Marine ramp, parking, float	B	FY 98	\$105,000	Out to bid by DOT in 2002
Ketchikan	Herring Cove Access Improvements	Trail	N	FY 99	\$174,000	on hold
Ketchikan	Thomas Basin Fishing Pier	Fishing dock	N	FY 99	\$100,000	on hold

^a B = boating, N = non-boating

Table 6.–Hydroelectric projects in the Ketchikan area, 2001.

Name	Status	Species of concern
Ketchikan Lakes	Re-licensed with state and federal stipulations.	All species of salmon; steelhead; rainbow, brook, and cutthroat trout; and Dolly Varden in lake.
Connell Lake	1 st stage consultation. ADF&G drafting study needs.	All species of salmon; steelhead; rainbow and cutthroat trout; Dolly Varden.
Whitman Lake	1 st stage consultation. ADF&G drafting study needs.	Dolly Varden, cutthroat trout
Mahoney Lake	Currently licensed, awaiting construction, compliance monitoring.	Sockeye, coho, pink, and chum salmon; steelhead; rainbow and cutthroat trout. Arctic grayling in upper Mahoney Lake
Swan Lake	Currently licensed, fisheries monitoring studies under review.	Dolly Varden, kokanee, cutthroat trout

Table 7.–Ketchikan area timber harvest plans, 2001.

Name	Status
Slide Ridge Timber Sale	EA Scoping Underway
Northside Timber Sale	EA Scoping Underway
Boundary Timber Sale	EA Scoping Underway
Southside Timber Sale	EA Scoping Underway
KRD Area Thinning Proposal	EA Scoping Underway
N. Revillagigedo Island	Timber harvest continuing
Upper Carroll Inlet	Timber sales released. Road construction started.
Sea Level – Thorne Arm	FEIS completed; sales being released
Emerald Bay	In USFS planning stage; ROD out soon
Gravina Island	In USFS planning stage; DEIS out soon
Licking Creek (Carroll Inlet)	DEIS out soon for review
Knot (salvage sale – Carroll Inlet)	EA completed
Several DNR timber sales	In planning phase
Ketchikan Gateway Borough	Timber sale completed; roads to be “put to bed soon”
Sea Alaska – Cleveland Peninsula	In planning phase; LTF permit renewed with herring stips.
Salty Timber Sale (USFS – George Inlet)	EA completed, sale area active
Mahoney Lake (Cape Fox Corp.)	Road constructed; logging completed 12/99, except for helicopter units
Clover Passage (Cape Fox Corp.)	Road construction beginning.
Rainbow Creek (Cape Fox Corp.)	Roads constructed; logging completed 8/99, except for helicopter units

Federal Subsistence Fishery Management

The federal government officially assumed management of freshwater systems on federal lands in 2000. Ketchikan area residents, with the exception of west Saxman residents, are considered urban and therefore not eligible to

participate in federal subsistence fisheries. Federal management of freshwater systems in the Ketchikan area in 2001 did not result in any restrictions on other user groups. Future action by the federal government is anticipated to include restrictions on urban and nonresident sport fishermen.

PRINCE OF WALES ISLAND AREA

The Prince of Wales Island (PWI) management area includes all freshwater systems draining Prince of Wales Island and a number of adjacent smaller islands (Figure 8). The major marine fisheries of the area are for chinook salmon, coho salmon, pink salmon, and bottomfish (Pacific halibut, rockfish, and lingcod). Major freshwater sport fisheries include steelhead, cutthroat trout, Dolly Varden, coho salmon, pink salmon, and sockeye salmon. Permanent Sport Fish management staff consists of one Fishery Biologist II, Steven McCurdy, stationed in Klawock.

Local Management and Research Programs

Marine Catch Sampling

A marine CWT sampling project was operated for the eighth season on the west coast of PWI. Two technicians sampled harbors, boat launches, and lodges in Craig and Klawock from late April through mid-September to collect CWT information from salmon harvests of charter and non-charter anglers returning to port in these locations. Harvest estimates for the various important species caught in marine waters off PWI are derived from the Statewide Harvest Survey (SWHS) and only inseason CWT and fishery performance data are collected by the technicians. Preliminary creel harvest and CWT data collected in 2001 indicated that 6,965 chinook salmon were harvested by the sport fishery on PWI. Of these about 10% were from Alaska hatcheries and 15% were from non-Alaskan hatcheries (primarily Canada). Tamgas Creek, Crystal Lake/Neets Bay, Medvejie, and Whitman Lake hatcheries were the primary Alaskan hatcheries stocks caught in PWI in 2001. A total of 8,334 Alaskan hatchery produced coho salmon were harvested in the PWI area. This comprised 15% of the total coho harvest, with the local Klawock hatchery providing the majority almost half of the Alaska Hatchery contribution.

Salmon Research

A new coho salmon research project was begun in the fall of 2001. The Chuck Creek project is a component of the new sentinel watershed moni-

toring program funded by the Southeast Alaska Sustainable Salmon Fund. Components of this project included capturing coho salmon smolts and tagging them with coded wire tags, counting the number of returning adults past a weir each year, and evaluating habitat usage by adult and juvenile coho salmon. In 2001, the coho salmon weir was installed and operated for the first time. A total of 1,350 adult coho salmon were counted past the weir in 2001.

Management Actions

In 2001, two emergency orders were enacted specific to the PWI area. On September 26, emergency order 1-31-01 was issued, providing for bait use in the lower Klawock River. Angler opportunity for harvest of hatchery and wild stock coho salmon increased due to this action. On October 30, emergency order 1-32-01 was issued, closing all waters within the Klawock River Drainage to the retention of coho salmon by sport anglers. This order was issued to ensure that escapement goals were met. Although the intent of these two orders seem to contradict each other, the original order allowing for the use of bait was issued when over 20,000 adult coho had returned to the Klawock River (far exceeding both the escapement goal of 6,000 adults, and the hatchery brood stock goals of 2,900 fish). However, hatchery cost recovery harvest of over 14,000 fish reduced the number of fish available for escapement, and by late October it was necessary to restrict the fishery to help meet the escapement goal. In addition, the U.S. Forest Service reduced the subsistence limit from 20 coho salmon per day to 2 per day for federally qualified subsistence users.

Escapement Surveys

Coho Salmon

Coho salmon escapements into 5 PWI streams were monitored by means of foot or helicopter surveys (Table 8). Multiple foot surveys were conducted on "108" Creek, Shaheen Creek, Port St. Nicholas Creek, Maybeso Creek, and Harris River. In past years the Harris River and Maybeso Creek have been surveyed from a helicopter near the peak of counts. Due to poor weather conditions this year, several attempts at helicopter surveys were cancelled; instead, both

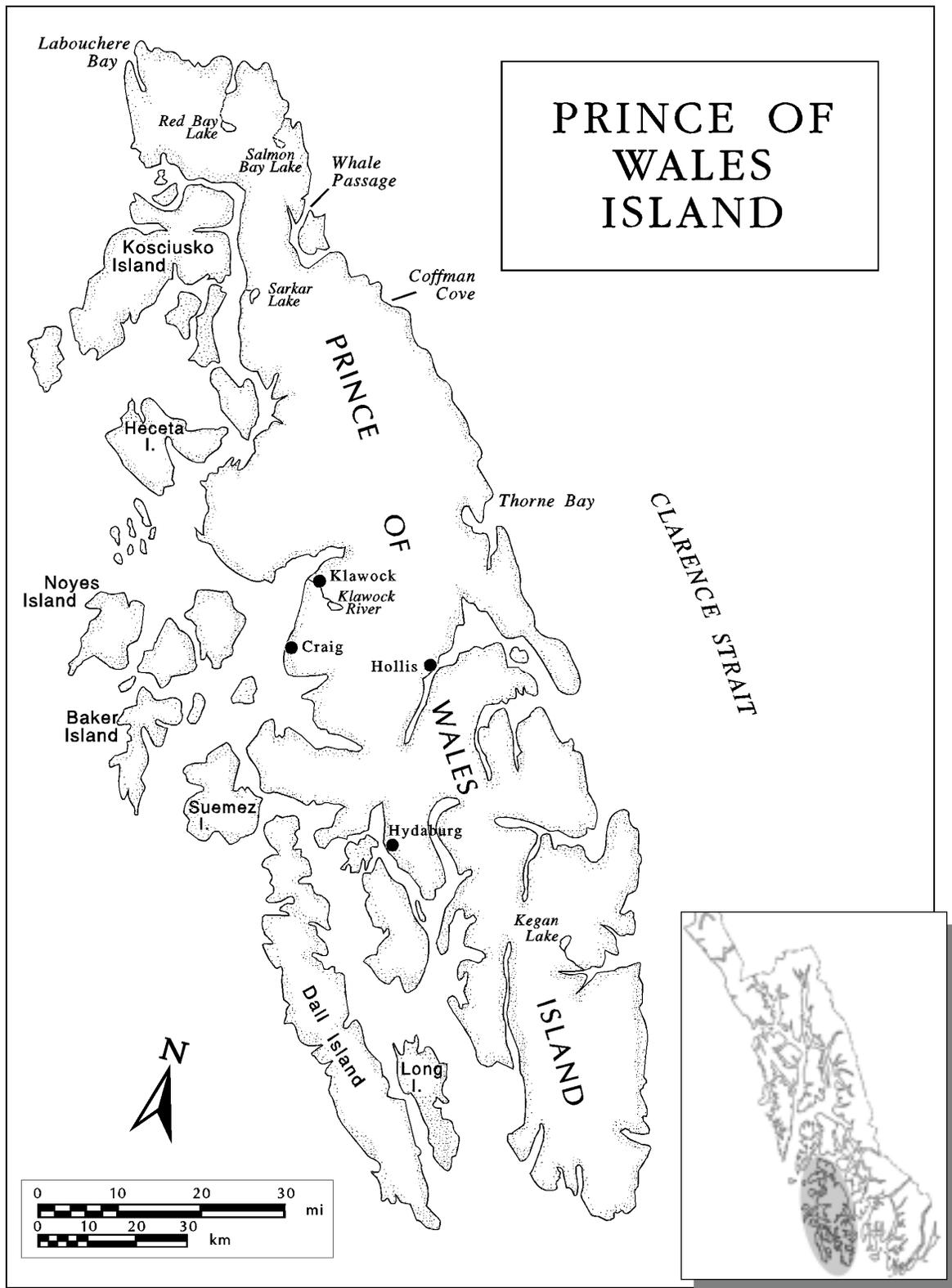


Figure 8.—Prince of Wales Island management area.

Table 8.—Peak helicopter or foot escapement survey counts of coho salmon in Prince of Wales area streams, 1996–2001.

Stream name (survey type)	1996	1997	1998	1999	2000	5-yr mean (96–00)	2001	2001 % of mean
“108” Creek (F)	601	163	242	163	151	264	301	114%
Harris River (H)	483	NS ^a	839	321	851	624	633 ^F	102%
Maybeso River (H)	221	NS	81	183	186	168	62 ^F 186	37%
Port St. Nicholas Creek (F)	32	53	52	54	55	49	28	57%
Shaheen Creek (F)	193	63	153	155	135	140	25	18%

H = helicopter, F = foot

^a NS = not surveyed.

streams were surveyed by foot. Although peak counts in three of the five streams surveyed were well below the five year average, this is likely due to poor counting conditions (high water) rather than a lack of fish.

Steelhead

Snorkel surveys to obtain peak spawner counts in two index streams (Harris River and Eagle Creek) were objectives of the PWI steelhead research project in 2001 (Table 9). Due to a lack of manpower, Eagle Creek was not surveyed in 2001. Information derived from these surveys is used to monitor trends in area streams for any future inseason or Board of Fisheries actions. Since snorkel surveys count a higher percentage of the total escapement, it can be misleading to compare 2001 data to foot counts made prior to 1997. The Harris River peak count in 2001 was 100 fish. This is about 25% below the prior 4-year average.

Enhancement

The department did not conduct any enhancement projects on PWI in 2001. The Prince of Wales Island Hatchery Association (POWHA) which operates the Klawock Hatchery released 1,596,381 coho salmon smolts, 317,492 sockeye salmon fry, and 1,866 steelhead smolts in 2001. A total of 21,978 coho and 6,914 sockeye salmon returned to Klawock Lake. The return of hatchery steelhead was not documented in 2001. Approximately 25% of the coho returning to the Klawock River were hatchery produced (based on CWT data collected by the hatchery).

As previously mentioned, the coho salmon sport fishery was closed by emergency order and the federal subsistence harvest limit was reduced because the coho salmon escapement goal, 6,000 fish had not been reached. The primary cause was excessive cost recovery harvest by POWHA. In the fall, ADF&G met with POWHA staff to develop methods to ensure that meeting the escapement goal became the top priority. It was decided that weekly escapement goals would be established and that no cost recovery or brood stock harvest would occur until the weekly escapement goal was met. These revised hatchery harvest and brood stock practices will be included in the 2002 Annual Management Plan for Klawock Hatchery.

The Southern Southeast Regional Aquaculture Association (SSRAA) released 1,941,766 pre-smolt coho salmon into Neck Lake and 443,240 sockeye salmon smolts into the outlet stream from Neck Lake. The projects were funded by SSRAA. Anglers utilized coho salmon returning to Neck Lake outlet stream and in the saltwater. Unlike most areas of Southeast Alaska, no enhancement of chinook salmon took place on PWI in 2001.

Access Projects

The Hollis boat ramp improvements have been delayed by the Alaska Department of Transportation pending possible relocation of the ramp to Clark Bay. Site visits and meetings with USFS were conducted regarding the Klawock Lake boat ramp project to discuss the design, cooperative agreements, and the NEPA process.

Table 9.—Annual peak steelhead escapement counts for Prince of Wales Island area index systems, 1996–2001. The 1996 surveys were by foot or weir while the 1997–2001 surveys were snorkel surveys.

Index system	1996	1997	1998	1999	2000	5-yr mean (96–00)	2001	2001 % of mean
Eagle Creek	17	90	56	118 ^a	82	60	NS	–
Harris River	67	104	156	192	79	133	100	75%

^a Eagle Creek closed to fishing due to low early snorkel counts and illegal harvest of steelhead early in the season during 1999.

Habitat Issues

Water Use Projects

PWI sport fish staff spent considerable time in 2001 reviewing and making field inspections of several operational and proposed hydroelectric projects on PWI. Field inspections were conducted at the Black Bear Lake hydro project, and the proposed hydroelectric project on the south fork of Black Bear Creek, as well as the proposed Three Mile Creek Klawock City water project. Numerous interagency meetings concerning these projects were also attended.

Road Construction

Sport fish staff continued monitoring the federal highway Big Salt Road project in 2001 (17 miles of realignment and paving). Many bridge and culvert crossings were monitored throughout the year. Numerous water quality and fish passage problems continue to be addressed with this project.

Federal Subsistence

New federal subsistence regulations for the harvest of coho salmon and steelhead were enacted in 2001. Federal rules allow the harvest of 20 coho salmon per day and no annual limit for rural residents in Areas 3A, 3B, and 3C. Steelhead harvest is limited to one steelhead per day 36 inches or larger and a two fish annual limit. In both cases, a State of Alaska sport fishing license is not required. It is anticipated that federally qualified subsistence users will continue to propose increased harvest limits, lower length limits, and more liberal methods and means for steelhead and other species on PWI. In 2001 there appeared to be confusion among federally qualified subsistence users as to the new regulations and what was required to participate in these fisheries. It appeared that during 2001, the majority of local residents continued to harvest fish in fresh water under current state sport fish or subsistence regulations. This is expected to change as local fishermen become more familiar with the new federal subsistence regulations.

PETERSBURG/WRANGELL AREA

The Petersburg/Wrangell management area includes the islands of Kuiu, Kupreanof, Mitkof, Zarembo, Etolin, and Wrangell and all mainland waters in the vicinity of these islands (Figure 9). The area's major sport fisheries occur in marine waters for chinook and coho salmon along with bottomfish (Pacific halibut and rockfish). The major freshwater sport fisheries include chinook and coho salmon, steelhead, cutthroat trout, and Dolly Varden. Permanent Sport Fish management staff consists of one Fishery Biologist III, Dean Beers, stationed in Petersburg.

Local Management and Research Programs

Salmon

Salmon management and research plans focused primarily on wild chinook salmon stocks from the Stikine River, wild coho salmon at Slippery Creek (Kuiu Island), and local chinook salmon releases from Crystal Lake Hatchery at Blind Slough near Petersburg. Sport fisheries target wild stocks during late May and early June while hatchery returns peak near the end of June and early July in the Wrangell Narrows terminal harvest area.

The Stikine River is one of the 2 largest producers of chinook salmon in Southeast Alaska (Pahlke 1997). To track rebuilding efforts, a cooperative program that began in 1996 continued in 2001 between Sport Fish Division, the Canada Department of Fisheries and Oceans, and the Tahltan Band to estimate escapement and the inriver harvest rate of Stikine River chinook salmon. So far, results from the study estimated that a spawning abundance of 15,616 large chinook salmon would, on average, produce maximum sustained yield.

In 2001, additional stock assessment programs using CWTs were initiated on the Stikine River to determine marine survival, smolt abundance, exploitation rate and production of both chinook and coho salmon.

A stock assessment program for coho salmon at Slippery Creek on Kuiu Island that began in 1999 continued in 2001. This project is a cooperative project with the U.S. Forest Service and is one of

several coho stock assessment programs ADF&G is developing to provide timely data about run strength for inseason management. A Fishery Data Series report titled "Production of Coho Salmon from Slippery Creek, 1999–2000" was published in November of 2001. The report details coho salmon production from the lake, including smolt abundance, harvest, exploitation rate, and total run.

In the spring of 2001, 19,192 coho salmon smolts were coded wire tagged below the lake outlet and sampled for age, length and weight. The adult escapement of coho salmon was monitored in the fall to document the 2000–2001 smolt to adult run. A total of 2,674 adult coho salmon were counted at the fish pass, of which 952 were missing adipose fins (Beers *In prep.*).

Creel Census

A dockside monitoring program (creel survey) to estimate Alaska hatchery chinook salmon contributions and track local catch rates in both Petersburg and Wrangell was continued in 2001 as part of the regionwide inseason chinook salmon management program. The preliminary 2001 harvest estimate of Chinook salmon in Petersburg-Wrangell, based on the dockside creel, was 8,090 fish. The average harvest-per-unit-effort was about 25% higher than the previous five years. Coho salmon sampling was discontinued in 2001 at both Petersburg and Wrangell due to budget cuts.

Trout

At a public meeting, the Wrangell Advisory Committee informed the department that they would continue efforts to liberalize regulations on steelhead and cutthroat trout through the federal subsistence regulatory process.

Management Actions

Wrangell Narrows Terminal Harvest Area Management

A return of 7,800 chinook salmon was forecast for the terminal waters of Wrangell Narrows which encompasses waters in section 6A south of 56° 46' N. latitude (Martinsen's dock) and east of the longitude of the northern tip of Woewodski Island. Under the Wrangell Narrows-Blind Slough

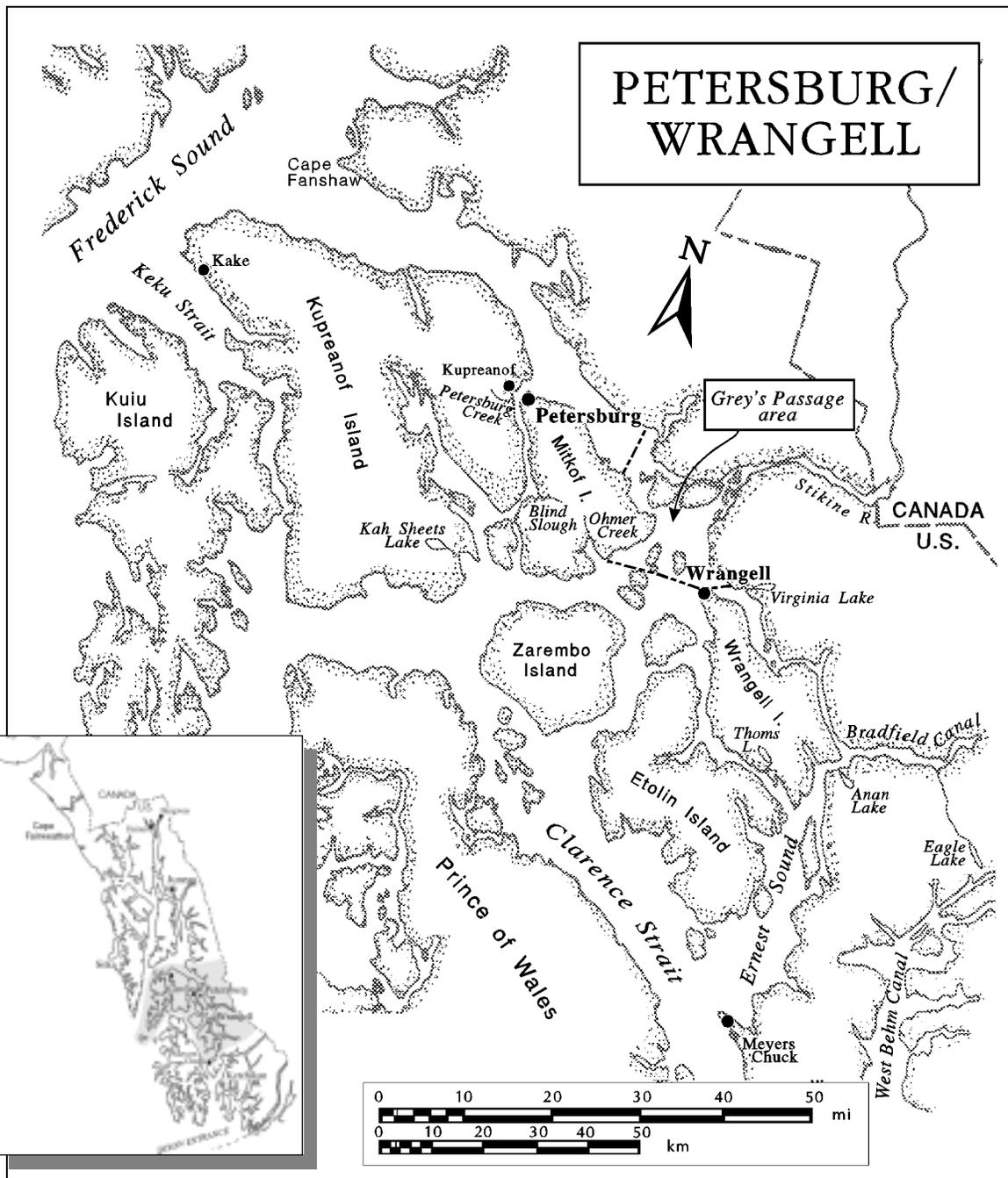


Figure 9.—Petersburg/Wrangell management area.

Terminal Harvest Area Management Plan, the terminal waters of Wrangell Narrows were opened by emergency order to a bag limit of 4 chinook salmon 28 inches or larger and 8 chinook salmon less than 28 inches in length from June 1 through

July 31 (E.O. 1-05-01). The freshwater portion of the chinook sport fishery in Blind Slough is open all year. The sport bag limit in this area was increased to 4 chinook salmon 28 inches or larger and 4 chinook salmon less than 28 inches. Bait

was allowed in Blind Slough beginning June 15, and salmon hooked elsewhere than in the mouth could be retained.

Earl West Cove Terminal Harvest Area Management

The Earl West Cove Chinook salmon returns are managed similar to other commercial surplus hatchery Chinook returns in Southeast. The terminal harvest area in Eastern Passage near Wrangell was opened to two king salmon 28 inches or more in length and two king salmon less than 28 inches in length between Monday, June 11 through Friday, August 31, 2001 (E.O. 1-10-01).

Surveys

Sport Fish staff are responsible for adult steelhead surveys and insuring enough adult coho and Chinook salmon are available to maintain broodstock at Crystal Lake Hatchery while Commercial Fisheries staff conducted coho salmon surveys.

Petersburg Creek

Three weekly snorkel surveys for adult steelhead were conducted from late April to the middle of May. A peak count of 64 fish was observed on April 20 under excellent visibility and low water conditions. High water levels and funding cuts prevented counts during the peak of the run in early May.

Slippery Creek

Two snorkel surveys for adult steelhead were conducted (April 18 and May 10). A peak count of 42 fish was observed on May 10 under normal visibility and water conditions. An attempt was made to count all steelhead past the fishpass beginning April 1. It was determined that the fishpass needed to be modified so that fish could not escape downstream before closing the trap door. The trap was later modified so that the project could be performed in 2002.

Enhancement

SSRAA continued operation of Crystal Lake Hatchery, which was the last state owned and operated hatchery in Southeast Alaska. The hatchery will be fully funded from FY2001 through FY2005, with a combination of state

funding, SSRAA funding, and Southeast Sustainable Salmon Funding. Chinook and coho salmon releases to Crystal Creek met or exceeded goals.

Two broods of chinook salmon, Andrews Creek and Chickamin River, are reared at Crystal Lake Hatchery. Survival of the Andrews Creek stock was reduced by a bacterial gill disease outbreak in January 2001. Survival of these fish from egg to smolt was only 45%. The loss of these fish will impact the Anita Bay release in 2002. Crystal Creek sport releases are expected to be at or near the normal goal. Chickamin River stock did not suffer increased mortality, even though they were incubated in the same water supply. The Annual Management Plan for the hatchery was modified to increase the production of coho salmon for release into Crystal Creek in 2002 to take advantage of the extra raceway space made available by the high mortality.

Crystal Lake Hatchery chinook salmon returns are allocated between commercial and sport user groups under the terms of the Wrangell Narrows-Blind Slough Terminal Harvest Area Management Plan (5 AAC 33.381). During years of low expected returns, the entire run (in excess of those needed for egg takes) is allocated to the sport fishery. At higher projected returns the commercial fisheries take an increasingly large share of the harvest. On average the sport fishery has harvested 51% of the chinook salmon returning to Crystal Lake since 1995 (Table 10).

In 2001, 5,900 adult chinook salmon were allocated to the marine boat fishery, shoreline fishery, and broodstock maintenance; the commercial fishery was allocated 1,900 chinook salmon. About 1,000 chinook salmon are required for broodstock maintenance to meet release goals at Blind Slough (600,000 smolts) and Anita Bay (400,000 smolts). Both releases are Andrew Creek broodstock.

The hatchery also maintains a small coho release program, using Crystal Creek stock, to mitigate loss of coho salmon spawning habitat caused by the construction of Crystal Creek Hatchery. The release goal is 100,000 coho smolts each year. Coho salmon produced at Crystal Lake Hatchery are caught in salt water and fresh water terminal harvest areas. Since 1995, the average sport fishery harvest has been 762 coho salmon (Table 11).

Table 10—Contributions of Crystal Lake hatchery chinook salmon to sport and commercial fisheries, 1995–2000. Statewide harvest survey estimates won't be available for 2001, until fall 2002.

Year	Sport			Sport total	Commercial			Percent sport
	Mixed saltwater boat ^a	Terminal saltwater boat ^b	Terminal shoreline ^c		Mixed stock ^d	Terminal ^e	Commercial total	
1995	465	737	391	1,593	2,923	1,165	4,088	28%
1996	474	1,867	672	3,013	3,807	1,933	5,740	34%
1997 ^f	280	851	1,204	2,335	1,307	801	2,108	53%
1998	257	968	774	1,999	1,181	0	1,181	63%
1999	190	1,935	2,343	4,468	1,782	268	2,050	69%
2000	476	2,563	2,000	5,039	2,316	1,329	3,645	58%

^a Estimated from regionwide dockside creel sampling programs.

^b Statewide harvest survey (includes adult and jack chinook salmon) estimate.

^c Statewide harvest survey (includes both freshwater and estuary/saltwater shoreline adult and jack chinook harvest) estimate.

^d Estimated from regionwide commercial port sampling programs.

^e Fish ticket information.

^f First year under the Wrangell Narrows/Blind Slough Terminal Harvest Area Management Plan.

Table 11.—Contributions of Crystal Lake hatchery coho salmon to sport and commercial fisheries, 1995–2000. Statewide harvest survey estimates won't be available for 2001, until fall 2002.

Year	Sport			Sport total	Commercial total ^d	Personal use total ^e	Percent sport
	Mixed saltwater boat ^a	Terminal saltwater boat ^b	Terminal shoreline ^c				
1995	0	704	915	1,619	975	198	58%
1996	37	604	128	778	1,884	105	28%
1997	158	147	384	805	2,202	177	25%
1998	0	66	167	248	1,185	170	16%
1999	39	1,270	415	570	5,365	115	9%
2000	48	21	480	549	3,173	148	14%

^a Estimated from regionwide dockside creel sampling programs.

^b Statewide harvest survey estimate.

^c Statewide harvest survey (includes both freshwater and estuary/saltwater shoreline harvest) estimate.

^d Estimated from regionwide commercial port sampling programs.

^e Personal use harvest reports.

Access Projects

The South Harbor launch ramp and parking expansion project was completed in mid July 2001. The project replaced the old ramp and added more boat trailer and vehicle parking spaces.

Other Issues

Subsistence

The department submitted a Request for Reconsideration (RFR01-01) in mid April, asking the Federal Subsistence Board to reconsider its closure

of streams draining into Gut Bay, Falls Lake, and Pillar Creek in Southeast Alaska to the harvest of sockeye salmon by non-federally qualified subsistence users. In October, the Southeast Regional Advisory Council voted in opposition to the department's RFR. The Council felt that competition from sport users, occupying the best locations, and conservation concerns at all three locations are negatively impacting subsistence users.

Habitat

The City of Petersburg continued the relicensing of the Blind Slough Hydroelectric Project (FERC Project No. P-201-AK). On March 30, Petersburg Municipal Power & Light provided a sixth month update which included a temperature analysis that the department requested on Blind Slough from the bridge above Crystal Lake Hatchery to Blind River rapids 2.3 miles below the confluence of Crystal Creek and Blind River. Critical fisheries issues included maintaining adequate flows to sustain Crystal Lake Hatchery, Crystal Creek, and Blind River. Several times during the 1990s, low flows, high temperature, and low dissolved oxygen combined to kill as many as 1,500 chinook salmon in Crystal Creek, which threatened broodstock recovery programs. The Sunrise Lake Water Supply and Hydroelectric Project on Woronkofski Island (near Wrangell) remained on hold while the City of Wrangell determines if they want to fund environmental studies necessary for licensing.

SITKA AREA

The Sitka management area includes all waters of Baranof Island, Yakobi Island, and Chichagof Island west of a line extending from Point Hayes to Column Point (Figure 10). Sitka (about 8,000 residents) is the only large community located within the Sitka Management Area. Smaller communities include Pelican, Baranof Warm Springs and Port Alexander. The Sitka management area provides about 20% of the sport fishing effort in Southeast Alaska. Permanent Sport Fish management staff consists of one Fishery Biologist III, Robert Chadwick. The Regional Management Coordinator, Thomas Brookover, is also stationed in Sitka.

The Sitka area supports one of the largest marine sport fisheries in Southeast Alaska. According to

the most recent Sport Fish Statewide Harvest Survey data, in 2000, more chinook salmon were harvested in the Sitka marine fishery than in any other marine fishery in Alaska. In 2000, marine angling comprised 92% of the sport fishing effort in the Sitka area. Marine sport fishing effort in the Sitka area had increased more rapidly than most other areas in Southeast Alaska, from about 40,000 angler-days in 1980 to over 105,000 in 1999. In 2000, marine effort decreased to 84,300 angler days. Freshwater fishing effort in the Sitka area had increased from about 6,000 angler-days in 1987 to 8,400 angler-days in 1999, but decreased to 6,300 in 2000.

Local Management and Research Programs

Marine Creel

Since 1992, a marine creel survey has been conducted in Sitka as part of an expanded regional program to monitor sport harvests of chinook salmon in Southeast Alaska. Primary goals of the program are to estimate inseason regionwide harvests of chinook salmon, chinook salmon of Alaska hatchery origin, and coho salmon of Alaska hatchery origin in the Ketchikan, Juneau and Sitka fisheries. Additional tasks include estimating angler effort, harvest and catch of all Pacific salmon species, Pacific halibut, lingcod, rockfish and Dolly Varden; harvest per unit effort (HPUE) for chinook and coho salmon and Pacific halibut; and average weights of Pacific halibut and lingcod harvested in the above fisheries. Five technicians were employed to conduct the creel survey of the Sitka marine boat fishery from April 23 to September 23, 2001.

Catch rates for chinook salmon in the Sitka marine fishery were outstanding for most of the 2001 season, except during early July when catch rates were below average. Sport anglers harvested an estimated 20,794 chinook salmon in the Sitka marine sport fishery. This is up 20% from 2000 but is 10% below the recent 5-yr average. This represents the third largest harvest in the Sitka sport fishery and comprised approximately 34% of the total sport harvest of chinook salmon in Southeast Alaska. Contributions of non-Alaska hatchery stocks were down in 2001. Alaska hatcheries contributed about 15%; this is above the recent 5-year average of 11%. Non-Alaska

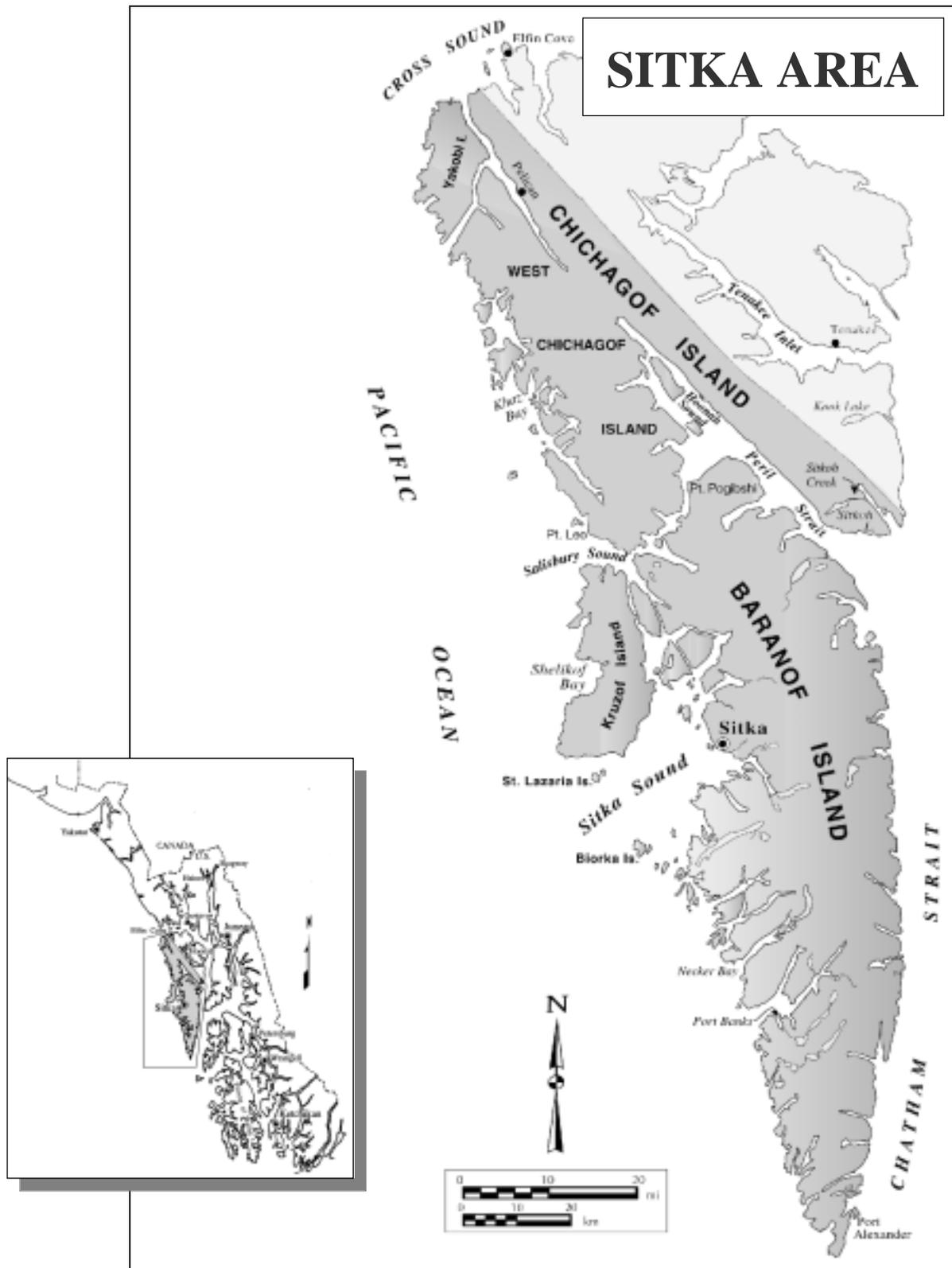


Figure 10.—Sitka management area.

hatcheries contributed about 8% of the Sitka Chinook harvest, which is below the 5-year average of 33%.

Coho salmon began to show in the Sitka fishery about two weeks later than average, catches continued to improve through July, and peaked in the latter half of July—two weeks earlier than the 5-year average peak. From the beginning of June through the end of August, Sitka coho catch rates were significantly above both the 5-year average. The hatchery contribution was 16% and almost entirely comprised of Alaska hatchery production. Neets Bay stocks were again taken in large numbers, which accounted for 34% of the hatchery fish and 6% of all coho salmon taken near Sitka. The second largest Alaskan coho hatchery stock to contribute to the Sitka marine fishery was the Port Armstrong stock with 26% of hatchery fish and 4% of all coho taken near Sitka.

Most sport fishing effort for bottomfish was directed at areas outside of Sitka Sound. Catch rates for Pacific halibut were higher relative to previous years and rates averaged about two angler-hours per halibut kept.

Redoubt Lake and Bay Creel Survey

Redoubt Lake is a meromictic lake located at the head of Redoubt Bay on the west side of Baranof Island, 10.7 km south of Sitka. No other meromictic lake is known to approach Redoubt in size or in the depth of the chemocline and monimolimnium.

Redoubt Lake supports populations of sockeye, pink, chum and coho salmon, as well as Dolly Varden, steelhead, and cutthroat trout. But only sockeye salmon have been the focus of commercial, sport and subsistence fisheries. Records dating from the early 1800s indicate that Redoubt Lake supported annual harvests in excess of 50,000 sockeye salmon during Russian occupation. Prior to 1999, Redoubt Lake sockeye returns supported the largest subsistence fishery in the Sitka Area, and also supported a saltwater sport fishery at the head of Redoubt Bay. A few Redoubt sockeye salmon are probably also harvested incidentally by commercial troll, seine and gillnet fisheries.

Subsistence harvest reports, returned by approximately 80% of subsistence permit holders,

provide an index of subsistence fishing effort and harvest for Redoubt Lake and Bay but underestimate actual effort and harvest because not all permit holders submit reports. Sport harvests of sockeye salmon have been estimated for the Sitka area since 1977 through the Statewide Harvest Survey (SWHS) and via an on-site marine creel survey conducted for the port of Sitka since 1992. On-site estimates for the Redoubt Bay sport fishery were not available before 1999.

By 1980, concern over Redoubt Lake sockeye salmon developed based on visual observations of low escapements and, in 1984, the USFS, ADF&G, and Northern Southeast Aquaculture Association (NSRAA) joined in an effort to enhance sockeye production through lake fertilization. A weir operated in conjunction with the fertilization project provided escapement estimates that increased from an average of 7,400 (1982–1988) to 37,600 fish (1989–1999) (Table 12). Fertilization efforts ended in 1997 but then resumed in 1999.

Large returns in recent years have contributed to increases in annual sport and subsistence harvests of sockeye salmon at Redoubt Lake and Bay. As marine sport fishing effort near Sitka has increased and regulations have become more restrictive, anglers have sought out alternative fishing opportunities, including salt water angling for sockeye salmon at the head of Redoubt Bay. Similar to the trend in increasing escapement estimates, subsistence harvests at Redoubt Lake increased from an average of 150 (1982–1988) to 3,200 fish (1989–1999), and sport harvests in the Sitka area increased from 600 (1977–1987) to 2,000 fish (1988–1998). The 1999 sport harvest of sockeye in the Sitka area (7,566) was larger than any previous year, and the 1999 subsistence harvest at Redoubt Lake (5,299) was second only to that in 1990.

In 2001, a creel survey project, conducted in conjunction with the USFS, was originally scheduled from June 11 to August 19. However, as of July 11, low counts of sockeye salmon returning to the Redoubt system prompted a closure of the sport and subsistence sockeye fisheries at the Redoubt on July 14. Because of this early closure, low fishing effort and harvest was observed in both the subsistence and sport

Table 12.—Escapements and reported subsistence harvest of sockeye salmon at Redoubt Lake along with estimated sport harvests of sockeye salmon in the Sitka SWHS area, 1982–2001.

Year	Escapement	Subsistence harvest	Sport harvest
1982	442	99	628
1983	2,525	36	382
1984	11,545	175	635
1985	10,799	97	210
1986	9,588	96	366
1987	13,581	199	447
1988	3,590	334	3,147
1989	29,945	2,625	2,148
1990	72,781	5,346	1,344
1991	45,252	3,102	810
1992	10,266	96	434
1993	24,854	2,320	1,126
1994	39,449	4,120	2,138
1995	34,457	2,968	1,579
1996	18,931	3,297	3,041
1997	28,436	2,253	3,509
1998	51,185	4,262	3,781
1999	57,593	5,299	7,566
2000	3,032	n/a	2,382
2001	4,449	16	n/a

fisheries at the Redoubt area during 2001. For all the fisheries, the total estimated effort was 173 hours and total sockeye salmon harvest was 50 fish. For the subsistence fishery the estimated effort was 42 hours and the harvest was 32 sockeye salmon. For the sport fishery 118 hours were expended to harvest 8 sockeye salmon in the subsistence fishing area. In marine waters adjacent to the outlet of Redoubt Lake, the sport fishery was observed during the course of the subsistence creel survey. In this area an estimated 13 hours of effort were expended to harvest 12 sockeye salmon.

This project is scheduled to continue in 2002. Information from this study will be used to: evaluate the quality of existing harvest estimation programs with respect to the Redoubt fisheries; in combination with escapement data, assist agencies in evaluating and maintaining subsistence and

sport fishing opportunities near Sitka and provide information for use in regulating the fisheries to ensure sustainability of the Redoubt sockeye run.

Silver Bay and Salmon Lake Coho and Sockeye Salmon Management

Increasing interest in and effort on sockeye and coho salmon in Silver Bay and Salmon Lake has led to the development and implementation of a program to assess and better manage these fisheries. This program was initiated as a response to information that indicated a change in the status of coho salmon in Salmon Lake. From 1984 to 1990, annual spawning escapements of coho salmon in Salmon Lake declined steadily from 1,500 to 200 fish, and exploitation of the stock in commercial and sport fisheries increased from 36% to 74% (Schmidt 1996). Since 1990, fishing effort has continued to increase in the commercial purse seine and sport fisheries, but annual spawning escapements have not been estimated until 2001. A CWT study completed in 1995 indicated that the 1995 exploitation of Salmon Lake coho salmon was high, and the resulting escapement was likely low.

Beginning in 1998, ADF&G and NSRAA initiated a cooperative effort to conduct snorkel surveys of the main inlet streams of Salmon Lake during October (the assumed peak spawning period), to assess the potential for survey counts to indicate trends in escapement. Peak survey counts in 1998, 1999, and 2001 were 132, 107, and 83 large adults, respectively.

At the February 2000 meeting, the Board of Fisheries acted on a number of proposals that indirectly impact coho salmon returning to Salmon Lake. At the meeting, members of the public, staff, and Board also voiced concern over the status of this stock. In response, the Board directed ADF&G to work closely with NSRAA and other stakeholders to develop a stock assessment program for Salmon Lake coho. The Board also directed ADF&G to conservatively manage fisheries that harvest Salmon Lake coho conservatively.

As a result of the Board’s direction, a cooperative agreement between ADF&G, NSRAA, USFS, and the Sitka Tribe of Alaska (STA) was established to conduct research on both coho and sockeye stocks in Salmon Lake. This cooperative project

involves the estimation of sockeye and coho escapements as well as other biological variables including, lake productivity, sockeye biomass, and coho pre-smolt abundance. To achieve the goal of estimating these statistics, a weir and field camp was built at the outlet of Salmon Lake.

In April and May of 2001, ADF&G and STA cooperatively designed and built the floating weir and field camp at Salmon Lake. Both ADF&G and STA staff manned the weir between June 1 and November 1, 2001. Through the 2001 field season, all immigrating fish were counted by the weir staff, which also collected biological and limnological data. NSRAA tagged Salmon Lake coho pre-smolt in October.

In 2001, 1,060 coho and 1,132 sockeye were counted through the weir. Because the weir was found to not be fish-tight at short high-water intervals, a series of mark-recapture experiments were conducted to estimate coho and sockeye escapements. The mark-recapture experiments resulted in estimates of 2,607 sockeye (SE = 132) and 1,700 (SE = 64) coho. On October 20, 2001, a peak count of 83 adult coho salmon was observed during a snorkel survey of the inlet stream system. This peak coho count represents approximately 5% of the estimated total escapement, a relatively low index of escapement compared to other streams in the region (Jones and McPherson 1997).

During October 2001, NSRAA tagged and released 4,895 coho pre-smolt. Most of these fish will smolt during 2002. Recoveries from the commercial fishery and escapement sampling in 2003 will provide an estimate of pre-smolt abundance in 2001. In addition, adult harvest and pre-smolt survival will be estimated through the recoveries of these fish.

Nakwasina River Coho Salmon Stock Assessment

The Nakwasina River drainage is one of the larger river systems on Baranof Island and one of 6 systems in the Sitka Management Area surveyed annually for escapement of coho salmon. The Nakwasina River is important to area sport fisheries because it supports a significant population of coho salmon, is easily accessed from Sitka, and is one of the few rivers in Sitka Sound that attracts freshwater sport fishing effort

for coho salmon. From 1984 to 2000, estimated angler effort expended in Nakwasina Sound and river ranged from 31 to 891 angler days. In the 1960s, the majority of the anadromous portion of the Nakwasina River valley, including riparian zones, was clearcut to the stream bank (G. Killinger, Sitka Ranger District, U.S. Forest Service, Sitka, personal communication). Nakwasina River coho salmon are of special concern because of the potential risk of excessive exploitation in combination with likely impacts to the stock from habitat damage.

The Nakwasina River has been the subject of a coho assessment project since 1998 that supplements foot surveys that have been conducted since 1988. Between 1988 and 2001, peak coho salmon escapement counts have ranged from 104 (1988) to 753 (2001). Average survey counts in the Nakwasina River represent the second largest for streams surveyed in the Sitka area.

In 1998, Division staff began a CWT project for coho salmon in the Nakwasina River to estimate smolt abundance and the harvest of this stock in commercial and sport fisheries. This ongoing investigation will be used to assess whether current regulations ensure sustained yield of this stock and provide for maximum sport fishing opportunity.

In 2001, 99 adult coho salmon bearing CWTs from the Nakwasina River were recovered in random sampling of marine fisheries. The recoveries of fish bearing the three tag codes represented in the Nakwasina River were in approximately the same proportions as the outgoing smolt in 2000. This indicates that smolt survival in the Nakwasina River is not size dependant, as we previously believed might have been the case.

The project was expanded in 2000 to estimate the abundance of coho salmon spawners in the Nakwasina. In 2001 an open-population mark-recapture experiment was conducted simultaneously with CWT recovery efforts in the Nakwasina River during fall 2001. From September 25 to December 18, 2001, 1,009 coho salmon were captured, examined for tags, and marked. Results will be presented in detail in a Division of Sport Fish Fishery Data Series (FDS) report in 2002.

Baited minnow traps were again fished in the lower Nakwasina River from April 17 through May 17, 2001, and 10,381 coho salmon smolt ≥ 70 mm FL were marked with an adipose finclip, given a CWT, and released alive. Smolt data collected in 2001 will be reported along with adult harvest and recovery data collected in 2002 in a FDS report in 2003.

Baranof Lake Research

Baranof Lake is relatively unique among large lakes in Southeast Alaska in that it supports only one species of fish, cutthroat trout. Physical and biological data were first collected from Baranof Lake in 1981 (Schmidt 1982). The average length of cutthroat trout in the 1981 sample (primarily sport caught) was 350 mm FL and fish up to 500 mm FL were collected, indicating that the potential for a high-quality fishery existed in Baranof Lake.

A research project at Baranof Lake is underway to estimate maximum sustained yield (MSY) of cutthroat trout. This MSY project is taking place at lakes having relatively high (Baranof Lake) and low (Turner Lake) densities of cutthroat trout; we believe that most of the lakes in Southeast Alaska will fall somewhere within the spectrum of these high- and low-production examples.

Data collection and subsequent analysis to estimate MSY and natural survival (and mortality) rates at Baranof Lake will be completed as part of this research plan. MSY estimates will be based on sampling events separated by 4 years, the period during which recruitment from a parent brood to sampling gear is largely complete. Since annual sampling in each system began in 1994, the first estimates of MSY will be available in 2000. Since multiple (perhaps 3) estimates of MSY for each system are probably needed to insure robustness of the relationships, the experiment at Baranof Lake will extend through the year 2002. Other benefits of the sampling include direct estimates of the natural survival rate, among the first for cutthroat trout in Alaska (Table 13).

During May and June, 1994, an inseason mark-recapture abundance experiment was conducted at Baranof Lake (Der Hovanisian and Marshall 1995). The abundance of cutthroat trout ≥ 180 mm FL was estimated at 12,186 (SE = 888) for a

density of approximately 38 fish per hectare. This density ranked Baranof Lake foremost among carefully studied large lakes (Florence, Wilson, Hasselborg and Turner lakes) in Southeast Alaska. Subsequent Jolly-Seber abundance estimates for the years 1995 to 2000 ranged from 5,529 to 7,865 cutthroat trout ≥ 180 mm FL (Table 13).

Three 10-day sample trips to Baranof Lake were conducted between May 8 and July 28, 2001; 2,228 cutthroat trout ≥ 180 mm FL were captured, tagged (or previous tags recorded), and released. Approximately 18% of the fish captured had been marked during previous years. Preliminary analysis of the 2001 Baranof data (inseason estimate) generated an abundance estimate of 6,949 (SE = 636), which is similar to the previous Jolly-Seber estimates.

Lake Stocking Projects

Swan Lake

Swan Lake, located in downtown Sitka, is the site of an annual Junior Trout Derby for young anglers. Each year, Sport Fish Division supplements the rainbow trout population in Swan Lake with subcatchable rainbow trout from Sukoi Lake, Kruzof Island. The purpose of this program is to improve angler success by increasing the availability of rainbow trout in Swan Lake. Its objectives are to produce 200 angler-days of fishing effort and to provide for a harvest of 150 rainbow trout each year. The Statewide Stocking Plan permits transport of up to 300 fish annually.

On June 25 and 26, 2001, five hoop traps were baited with salmon eggs and set along the Sukoi Lake perimeter in 2.5 to 4 feet of water. Traps were checked and rebaited at least once during the 2-day period. Hook and line gear was used (8 hours effort) both days to supplement hoop trap catches.

In Sukoi Lake, 310 fish were captured: 270 rainbow trout were caught in hoop traps and an additional 40 caught by hook and line. Trapping CPUE during the 2-day period averaged 27 rainbow trout per trap-day and varied between sites. Hook and line CPUE averaged 5.1 rainbow trout per angler-hour.

A number of captured fish were released and not transported after showing signs of stress. All rainbow trout caught were marked with an upper

Table 13.—Estimated abundance and survival of cutthroat trout ≥ 180 mm FL and angler effort (number of anglers and angler-days fished), harvest and total catch of cutthroat trout at Baranof Lake, 1990–2001. Fishing effort, harvest, and catch statistics from SWHS.

Year	Abundance ^a	SE	Survival rate	SE	Number of anglers	Angler-days fished	Harvest	Catch
1990					426	617	426	1,413
1991					319	497	392	654
1992					399	608	422	1,952
1993					362	842	841	2,943
1994	12,186	888	0.42	0.03	321	693	361	4,304
1995	7,224	533	0.58	0.05	451	1,109	218	1,940
1996	7,050	612	0.52	0.05	234	364	144	2,192
1997	5,582	487	0.61	0.06	671	1,111	337	2,910
1998	7,794	759	0.46	0.04	513	702	223	2,888
1999	6,961	652			320	498	95	1,020
2000	5,812	537			369	750	159	1,476
2001	6,949	636						

^a Petersen estimate for 1994, Jolly-Seber estimates for 1995–2000, preliminary Petersen estimate for 2001 (i.e., not all abundance assumptions statistically tested).

caudal clip. On May 26, 2001, 307 rainbow trout were successfully transported from Sukoi Lake in an aerated tank via floatplane and introduced to Swan Lake.

The Junior Trout Derby during 2001 was held on June 16. Anglers were provided buckets to hold fish alive for transport to the derby check station. Fish received at the derby were identified by species, measured to the nearest $\frac{1}{8}$ inch, and examined for an upper caudal mark by USFS United States Forest Service staff with the assistance of Alaska Department of Fish and Game staff. Most anglers chose to release their fish. Forty cutthroat trout, 33 rainbow trout, and 4 Dolly Varden for a total of 77 fish were sampled at the derby station. Upper caudal clips were observed on 8 rainbow trout. Only 7 trout over 11 inches were sampled.

Beaver Lake

Beaver Lake, 5 miles south of Sitka, supports the only Arctic grayling fishery near a roadside in Southeast Alaska. Recent enhancement efforts at Beaver Lake began in 1986 with the introduction of 10,000 Arctic grayling sac fry, and continued with stocking 15,000 Arctic grayling sac fry each

year. The purpose of this program was to increase Arctic grayling sport fishing opportunities in Beaver Lake by supplementing an existing Arctic grayling stock originally introduced in 1965. The objectives were to generate at least 750 angler-days of fishing effort and provide for a harvest of 250 Arctic grayling per year. From 1988 through 1998, annual harvests of Arctic grayling averaged 56 fish (range 0–418). This program was discontinued after 1997 due to low brood stock abundance and recent policy restrictions placed on transporting fish over large distances. In 1999, sampling conducted cooperatively by Sport Fish Division, USFS Sitka Ranger District, and Sitka High School students indicated that abundance of Arctic grayling in Beaver Lake is low (Suchanek et al. 2000–1999 AMR). On August 2, 2001, 1,000 .5-g fingerlings from the Fort Richardson hatchery were released in Beaver Lake

Management Actions

Sockeye Salmon Restrictions

Sockeye salmon returning to small lake systems such as Falls Lake, Salmon Lake, Klag Bay, and Hoktaheen Lake support on site subsistence

fisheries. These sockeye returns also support sport harvests to a lesser extent and are taken incidentally in more distant marine commercial and sport fisheries. Based on staff observations, public reports, and sockeye salmon behavior, the vast majority of on site harvests occur in salt water.

Subsistence fisheries target sockeye salmon under a subsistence fishing permit system administered by ADF&G area offices. Permits are issued to individual households and list general permit conditions such as area restrictions, seasons, individual and household possession limits by area, and requirements for harvest reporting to ADF&G. Permits issued from the Sitka office identify 15 locations, including Falls Lake, Klag Bay, Salmon Lake and Hoktaheen Lake, which are open to subsistence fishing for sockeye salmon. Sport fishing at these locations is managed under regionwide regulations, which specify bag limits of 6 chum, 6 pink, and 6 sockeye salmon (16 inches or more in length) with possession limits of 12 for each species. Prior to 1999, subsistence and sport fishing regulations at these locations remained unchanged for at least the previous 10 years.

Limited information prevents an assessment of stock status, subsistence needs, and management efficacy at Falls Lake, Salmon Lake, Klag Bay, or Hoktaheen Lake. Currently, there are no on-site harvest monitoring or stock assessment projects at these sites. Subsistence harvest reports, returned by 80% of permit holders on average from 1985 through 2001, provide an index of subsistence fishing effort and harvest for each system but underestimate actual effort and harvest because not all permit holders submit reports. Harvest reports indicate an increasing trend in number of permits fished and harvest at Falls Lake (maximum harvest = 1,270 in 2001) and the other three systems. Sport fishing effort and harvest is known to occur at these locations but is not estimated for each system exclusively by the Statewide Harvest Survey because sport anglers using these sites are infrequently surveyed. No guided harvest was reported on saltwater charter vessel logbooks for these locations in 1998; although 32 and 18 fish were reported in 1999 and 2000, respectively. Based on public reports, questionnaire response rates and logbook data; sport fishing effort and harvest at these locations

is low relative to the subsistence fisheries. A weir operated at Falls Lake from 1981–1985, 1987 and 1989 provided complete counts of sockeye salmon escapement that ranged from 1,278 to 5,789 and showed no apparent trend.

Prior to the 1999 season, a review of subsistence harvest reporting in the Sitka area revealed a trend of increasing subsistence permits and harvests of sockeye salmon at Falls Lake, Klag Bay, Salmon Lake and Hoktaheen Lake. The review indicated that reported harvest timing occurred over a shorter period than permitted seasons at a number of locations, including Falls Lake. Consistent with the trend in annual harvests, public complaints concerning the illegal use of fishing gear (blocking streams with gillnets, seining schools of fish with gillnets) also increased from year to year.

To address these issues, management staff modified subsistence restrictions on the Sitka permit as a short-term measure and decided to seek funding for stock assessment programs that would provide information necessary to determine stock status and appropriate fishing regulations as a long-term goal. In spring 1999, subsistence permits issued from the Sitka office were modified to reduce fishing time at 13 of the 15 locations, including each of the four locations above, to align the season with existing run and harvest timing. Possession limits were also reduced at three locations, including Klag Bay and Hoktaheen Lake. Also in 1999, ADF&G submitted a request to the Federal Subsistence Board to fund a stock assessment project at Falls Lake, which was subsequently approved to begin in the 2001 field season. In fall 2001, ADF&G submitted a proposal to the Federal Subsistence Board for funding for a stock assessment project at Klag Bay to begin summer 2002. That proposal was approved by the Staff Technical Committee and awaits review by the Regional Advisory Committee and Federal Subsistence Board.

In 2001, sport fishing bag and possession limits were reduced to 3 sockeye salmon greater than 16 inches in length per day and 6 in possession at Falls Lake, Klag Bay, Salmon Lake and Hoktaheen Lake. These restrictions became effective June 7 and remained in effect for the duration of 2001 (E.O. 1-06-01). These restrictions in the subsistence and sport fisheries were implemented as a

precautionary step until stock status could be assessed by the pending Falls Lake project and to avoid more substantial restrictions in the future. By aligning subsistence fishing seasons with existing run and harvest timing, managers intended to reduce the rate of increase in subsistence harvests at Falls Lake and aid enforcement efforts to prevent illegal fishing. The intent of sport fishing restrictions was identical to the rationale for restricting the subsistence fishery: to prevent or slow any increase in sport harvests as a precautionary measure until results became available from the pending stock status project.

Chinook Salmon Terminal Harvest Area Management

On the basis of projections by Northern Southeast Regional Aquaculture Association (NSRAA), surplus hatchery-produced chinook salmon were expected to return to the Hidden Falls terminal harvest area in 2001. The BOF, under 5 AAC 75.005, authorized the department to increase bag and possession limits and liberalize methods and means, by emergency order, when hatchery-produced fish escape through existing fisheries to designated harvest areas in numbers that exceed brood stock or cost recovery goals. In response to the surplus projection, the bag and possession limits in the Hidden Falls terminal harvest area were increased to 4 chinook salmon, of which no more than 2 could be 28 inches or more in length, from June 18 through July 31, 2001 (E.O. 1-13-01).

Early cost-recovery chinook harvests in the Bear Cove Special Harvest Area indicated that brood stock and cost recovery goals would likely be met in 2001. Bag limits were increased in Silver Bay with the intent that the Medvejie (Bear Cove) Special Harvest Area may close to sport fishing later, should progress toward cost recovery and brood stock goals slow. Beginning June 22 and remaining in effect through July 31, 2001, the bag and possession limit in Silver Bay was increased to 4 chinook salmon, only 2 of which could be 28 inches or more in length (E.O. 1-15-01). The area opened included marine waters of Silver Bay east of a line from Entry Point to Silver Point.

Swan Lake's Junior Trout Derby Regulations

The BOF adopted 5AAC 47.045. CUTTHROAT AND RAINBOW TROUT MANAGEMENT PLAN to provide harvest opportunities for trout in fresh

waters near Southeast Alaska communities that fit specific criteria. Under the plan, the department may open, by emergency order, a season and designate one freshwater lake near a community to allow the use of bait, eliminate the minimum size limit for trout, and establish a bag and possession limit of two fish if that community does not have nearby fresh waters where anglers can fish for trout with bait throughout the year. Sitka fits that definition. The plan also requires that the fresh water must be close to a community that has good road, trail, or boat access to the fresh water; and the fresh water must be landlocked or otherwise inaccessible to sea-run trout. Swan Lake meets those criteria. Since 1985, the department has annually stocked 300 rainbow trout in Swan Lake to provide additional freshwater fishing opportunity in Sitka. The Sitka Rotary club conducts an annual Junior Trout Derby to introduce young anglers to sport fishing. Emergency order 1-14-01, issued on June 16, 2001, superseded the regulatory prohibition of bait and minimum size limits during the derby to allow young anglers to catch stocked fish.

Redoubt Lake Sockeye Salmon Closure

Sport and subsistence fisheries at Redoubt Lake and Bay were closed concurrently with action taken by the USFS that closed fisheries under federal jurisdiction in waters that apply. Effective July 13, 2001, all saltwater areas within Redoubt Bay east of the longitude of Road Island and all freshwater drainages flowing into that portion of Redoubt Bay were closed to retention of sockeye salmon by sport anglers from July 14 through December 31, 2001 (E.O. 1-20-01).

From June 13 through July 9, 1,039 sockeye salmon were counted through a weir operated by the USFS at the outlet of Redoubt Lake. Based on past weir data, about 16% of annual escapements are counted at the weir through July 11, and the 2001 escapement was projected to reach only 7,571 sockeye. That level represented only 21% of the average (1989–1999) escapement of 36,000 sockeye, and was the second lowest since 1989.

Freshwater Chinook Salmon Fishery Allowed in Sawmill and Salmon Lake Creek

Local Sitka streams do not support wild populations of chinook salmon, but chinook salmon were observed in Sawmill Creek, Indian River, and 17 were caught at the Salmon Lake

weir. Observations of chinook salmon in Sawmill Creek on August 22 indicated that hatchery-produced king salmon have strayed from their production areas to local rivers. Regulations changing bag and possession limits were justified according to provisions in 5 AAC 47.055 (k) (1) and 5AAC 75.003 (2) (b) to allow harvest of surplus king salmon by sport anglers. Bag and possession limits in the waters of Sawmill and Salmon Lake creeks are established at 5 king salmon less than 28 inches in length and five 28 inches or more in length (E.O. 1-28-01).

Silver Bay and Salmon Lake Coho Salmon Management

A cooperative agreement between ADF&G, NSRAA, USFS and STA (Sitka Tribe of Alaska) was established to conduct research on both coho and sockeye stocks in Salmon Lake beginning in 2001. This project provided the first inseason estimate of coho salmon escapement in Salmon Lake since 1990. From June 1 to September 11, 2001, 189 coho salmon were counted through the Salmon Lake weir. From 1984 to 1990, annual coho salmon escapements by September 11 at Salmon Lake ranged from 25 to 45% and averaged 35% of the total run. The 2001 escapement was projected to be in the lower range of escapements counted by weir from 1984 to 1990. However, it remained unknown how the 2001 escapement would relate to escapements from 1997–2000, when similar management actions were necessary. Because past management actions resulted in a sustainable population and total escapement could not be sufficiently projected for 2001 to compare with past weir counts, a reduction in the bag and possession limit to 1 one coho per day, 2 two in possession, in Silver Bay and the Salmon Lake drainage was implemented (E.O. 1-29-01).

Bear Cove Coho Salmon Restrictions

Coho returning to Medvejie Hatchery were not expected to meet brood stock needs due to low ocean survival. Ocean survival of coho salmon returning to Medvejie Hatchery was estimated at 3.7%. This was less than a third of the average (1990 to 2000). As of September 10, 2001, no coho salmon had been observed at the hatchery raceway. A closure of the sport fishery was therefore necessary to ensure coho salmon brood stock needs at Medvejie Hatchery (E.O. 1-30-01).

Surveys

Sitka area streams are surveyed annually to count steelhead and coho salmon. Peak counts are used as indices of spawning escapement to depict long-term trends in spawning abundance. In addition, razor clams are being monitored on an important local beach.

Steelhead

Beginning in 1973, stream surveys have been conducted to count spawning steelhead in Sitkoh Creek, and, beginning in 1993, Ford Arm Creek (Table 14). Visual surveys conducted by foot were replaced with snorkel surveys in 1996 (Sitkoh Creek) and 1997 (Ford Arm Creek) because snorkel surveys were found to observe a higher proportion of steelhead populations (Johnson and Jones 1998). Observers attempt to conduct surveys once per week for three consecutive weeks during May to ensure a count during the week of peak inriver abundance. In 2001, the steelhead surveys were limited due to funding shortfalls. Therefore peak counts were not identified.

Two surveys, were conducted in Sitkoh Creek May 4 and May 16, 2001. The highest count occurred May 4 and was the third lowest since 1996, when snorkel surveys were initiated. While results suggest spawning abundance in 2001 was below the average observed from 1996–1999, surveys conducted during 2001 may not have been conducted during the week of peak inriver abundance and therefore may not be comparable with past surveys.

The peak count for Ford Arm could not be identified. Only one count of 110 steelhead was conducted on May 3, 2001. This was the third highest count since the inception of snorkel surveys in 1997 and was conducted a week earlier than the previously documented earliest peak count.

Coho Salmon

Sport and Commercial Fisheries staff conduct annual foot, snorkel, and aerial surveys of streams in the Sitka area to count spawning escapements of coho salmon. Coho escapement counts ranged from slightly low to above average for the six systems surveyed (Table 15). Peak counts for three (Sinitzin, Nakwasina, and Eagle River) of

Table 14.–Peak escapement counts of steelhead in the Sitka Area , 1973–2001.

Stream	Year	Survey type (no.)	Peak survey date	Peak count
Sitkoh Creek	1973	Foot (1)	04/27	33
	1976	Foot (1)	05/17	18
	1978	Foot (1)	05/16	17
	1980	Foot (1)	06/02	42
	1981	Foot (1)	06/03	42
	1982	Foot (2)	05/30	58
	1983	Foot (1)	05/17	143
	1984	Foot (1)	05/11	92
	1985	Foot (1)	05/21	115
	1986	Foot (1)	05/21	58
	1987	Foot (1)	05/20	107
	1988	Foot (1)	05/24	17
	1989	Foot (1)	05/18	20
	1991	Foot (1)	05/14	40
	1993	Foot (1)	05/14	23
	1994	Foot (1)	05/16	67
	1995	Foot (2)	05/09	81
	1996	Snorkel (2)	05/14	270
	1997	Snorkel (1)	05/20	329
	1998	Snorkel (2)	05/12	154
1999	Snorkel (2)	05/19	120	
2000	Snorkel (2)	05/04	112	
Ford Arm Creek	1993	Foot (3)	07/14	31
	1994	Foot (1)	05/17	67
	1995	Foot (3)	05/24	75
	1996	Foot (1)	05/16	125
	1997	Snorkel (2)	05/16	197
	1998	Snorkel (2)	05/11	103
	1999	Snorkel (3)	05/18	89
	2000	Snorkel (4)	05/26	134
2001	Snorkel (1)	05/03	110	

the six systems were well above average; the counts in St. John Baptist Bay Creek and Black River were near average. Starrigavan was 18% below average. Observer visibility and survey conditions in 2001 were fair to good for most surveys.

Federal Subsistence Management

In 2001, the Federal Subsistence Board deliberated on seven federal subsistence proposals that were specific to the Sitka area, all of which were submitted by STA. Five of these proposals requested a closure to non-federally qualified users and an establishment of a federal subsistence coho and sockeye fishery in the Whale Bay, Redfish Bay, Redoubt Bay, Leo’s Anchorage, and Klag Bay (including Sister and Anna Lakes). The remaining two proposals for Necker Bay and Ford Arm Bay asked for the same closures to non-federally qualified users and the establishment of a federal subsistence sockeye fishery only. The Southeast RAC supported the closure to non-federally qualified uses requested in all seven proposals, but tabled the coho component of the five proposals since a proposal establishing a Southeast wide federal subsistence fishery, that would include these areas, had already been proposed, and supported by the SERAC. Both the department and federal staff opposed these proposals for the following reasons: the FSB does not have jurisdiction over marine waters identified in the proposals, closing these areas to non-federally qualified users would unnecessarily restrict non-federal fisheries because there are no conservation problems, and divergence between state and federal programs would increase public confusion and impact the ability to monitor harvest. Additional concerns of the department were the incidental harvests of non-targeted species with a proposed year-round federal subsistence season, harvest limits that would allow overfishing, and an unclear identification of subsistence needs.

The proposal concerning the Redoubt area was the only proposal passed by the FSB. The Board closed the federally managed waters to non-federally qualified users and established a federal subsistence sockeye fishery with a daily limit of 10 sockeye and an annual limit of 50, but did not approve the marine jurisdictional aspects in the original proposal. A federal subsistence permit program and reporting requirement was also established for the Redoubt federal subsistence sockeye fishery.

Razor Clam Monitoring

Prior to 1994, Kruzof Island beaches supported the primary sport, personal use and subsistence

Table 15.—Peak escapement counts of coho salmon in the Sitka Area by date, 1980–2001.

Year	Sinitzin Creek		St. John Baptist Bay Creek		Starrigavan River		Eagle River		Nakwasina River		Black River	
	Peak survey date / type ^a	Peak count	Peak survey date / type ^a	Peak count	Peak survey date / type ^a	Peak count	Peak survey date / type ^a	Peak count	Peak survey date / type ^a	Peak count	Peak survey date / type ^a	Peak count
1980	30-Sep / F	39	9-Oct / F	26	ns ^b / F		ns ^b		29-Oct / F	70	26-Oct / F	328
1981	6-Oct / F	85	14-Oct / F	51	20-Oct / F	170	22-Sep / F	27	7-Oct / F	780	ns ^b	
1982	20-Oct / F	46	ns ^b		21-Oct / F	317	ns ^b		ns ^b		ns ^b	
1983	27-Sep / F	31	13-Oct / F	12	6-Oct / F	45	ns ^b		14-Oct / F	217	ns ^b	
1984	10-Oct / F	160	10-Oct / F	154	10-Oct / F	385	ns ^b		10-Oct / F	715	3-Oct / H	425
1985	15-Oct / F	144	8-Oct / F	109	11-Oct / F	193	ns ^b		7-Oct / F	408	7-Oct / H	1,628
1986	30-Sep / F	4	10-Oct / F	9	10-Oct / F	57	26-Sep / F	245	28-Oct / F	275	10-Oct / H	312
1987	23-Sep / F	32	23-Sep / F	9	9-Oct / F	36	24-Sep / F	167	30-Oct / F	47	9-Oct / H	262
1988	3-Oct / F	56	3-Oct / F	71	12-Oct / F	45	2-Sep / F	10	27-Oct / F	104	10-Oct / H	280
1989	5-Oct / F	76	5-Oct / F	89	13-Oct / F	101	2-Oct / F	130	19-Oct / F	129	13-Oct / H	181
1990	1-Oct / F	80	1-Oct / F	35	17-Oct / F	39	2-Oct / S	214	31-Oct / F	195	4-Oct / H	842
1991	1-Oct / F	186	10-Oct / F	107	2-Oct / F	142	17-Oct / S	454	25-Oct / F	621	17-Oct / H	690
1992	23-Sep / F	265	14-Oct / F	110	12-Oct / F	241	6-Oct / S	629	30-Oct / F	654	6-Oct / H	866
1993	7-Oct / F	213	6-Oct / F	90	13-Oct / F	256	13-Oct / S	513	ns ^b		7-Oct / H	764
1994	30-Sep / F	313	30-Sep / F	227	11-Oct / F	304	1-Oct / S	717	14-Oct / F	404	14-Oct / H	758
1995	26-Sep / F	152	5-Oct / F	99	6-Oct / F	272	5-Oct / S	336	29-Sep / F	626	27-Sep / H	1,265
1996	2-Oct / F	150	2-Oct / S	201	17-Oct / F	59	30-Sep / S	488	30-Oct / F	553	30-Sep / H	385
1997	29-Sep / F	90	30-Sep / S	68	27-Oct / F	55	30-Sep / S	296	14-Nov / F	239	30-Sep / H	686
1998	1-Oct / F	109	9-Oct / S	57	8-Oct / F	123	9-Oct / S	300	2-Nov / F	653	8-Oct / H	1,520
1999	11-Oct / S	48	29-Oct / S	25	8-Oct / S	166	ns ^b		12-Nov / S	291	4-Oct / H	1,590
2000	26-Sep / F	62	26-Sep / S	32	8-Oct / S	144	29-Sep / S	108	8-Nov / F	419	2-Oct / H	880
Mean (80–00)		111		79		158		309		389		759
5-yr mean (96–00)		92		77		109		298		431		1,012
2001	5-Oct / F	132	4-Oct / S	80	3-Oct / S	130	4-Oct / S	417	14-Nov / F	753	4-Oct / H	1,080

^a F = foot, S = snorkel, and H = helicopter.

^b ns = not surveyed.

fisheries for razor clams in the Sitka area. Fisheries were concentrated at Kamenoi Beach in an area about 0.7 km long which is exposed to the ocean swell and occurred during minus tides when weather conditions were favorable. From 1977 through 1986, trends in annual harvests of razor clams in the Sitka area were stable and averaged about 8,700 clams (Mills 1988). After 1986, annual harvests declined until 1993, when 1,000 clams were taken (Mills 1994).

During spring 1993, numerous reports from the public indicated a substantial decrease in number of razor clams on Kamenoi Beach. Department surveys of the fishery during April and May low tides documented a general lack of success. Experienced clam diggers interviewed had been able to find very few clams. Potential causes of the decline are changes in tidal currents, beach composition and/or topography, increased predation by sea otters, overexploitation, and disease.

In response, the waters of Sitka Sound were closed to the taking of razor clams in 1993, and in 1994, Sport Fish Division initiated annual surveys to monitor the abundance and size and age compositions of razor clams on Kamenoi Beach. Each year during minus tides in May or June, two people each dig for one hour throughout the known razor clam distribution. The number of clams dug is used as an index to identify long-term trends in abundance levels. All clams collected are measured for length and aged to identify successful reproduction and relative size and age composition.

One survey was conducted in 2001. On June 4, two people dug 80 clams in 1 hour, during a -3.3 tide with little swell or wind (Table 16). This

represents the third lowest index count since 1994. To ensure continued recovery of this razor clam population, sport, personal use, and subsistence fisheries remained closed to the taking of razor clams in 2001.

Access Projects

Discussions concerning expansion of the existing parking lot at the Starrigavan boat launch facility continued with ADF&G, DNR, and State Parks Staff, but the project has not yet been funded. Specifically, discussed was expanding the existing parking lot to the north by 15 feet to provide for 14 parking spaces for vehicles only (without trailers). Currently, vehicles without trailers park in existing spaces for vehicles with trailers, rendering the spaces for trailers unusable. During weekends in the summer, parking space is fully utilized and overflow must use more distant parking areas.

Beginning in 2000 and continued in 2001, the concept of a second fish cleaning facility located toward the south end of the city harbor system was discussed with City Harbor Department staff. However, the City is not pursuing this project at this time. One difficulty inherent to this potential project continues to be a lack of land access.

The concept of a boat launch facility, including boat ramp, float, parking and picnicking areas, was also discussed with staff of the City Parks and Recreation Department. In 2000, the City submitted a funding request for such a facility at Herring Cove in Silver Bay. In 2001, ADF&G allocated \$150,000 to conduct a feasibility study, starting in 2002 for this site.

Table 16.--Razor clam indices for Kamenoi Beach, 1994–2001.

Year	Age									Total
	1	2	3	4	5	6	7	8	9	
1994	56	44	24	13	10	7	3	1		158
1995	22	43	38	10	9	2	7			131
1996	8	20	30	36	6	4	1	2	1	108
1997	1	4	61	19	5	4				94
1998	5	16	10	39	5	1				77
1999		21	25	42	20	3				111
2000		2	9	13	8	1				33
2001	7	9	20	27	12	4		1		80

JUNEAU/GLACIER BAY AREA

The Juneau management area includes all marine and fresh waters in the vicinity of Admiralty Island, Douglas Island, Northern Chichagof Island, Lynn Canal, and the immediate Juneau area (Figure 11). Included in this area is the Glacier Bay harvest area as reported in the Statewide Harvest Survey. The major Juneau area sport (or personal use) fisheries are in marine waters for chinook salmon, coho salmon, Pacific halibut, king crab, and Dungeness crab, and in fresh water for coho salmon, cutthroat trout, Dolly Varden, and steelhead. Sport Fish area management staff consists of one permanent Fishery Biologist III, Mark Schwan, and a Fishery Biologist II assistant, Brian Glynn.

Local Management and Research Programs

There were a variety of research and stock assessment programs conducted in the Juneau management area by divisional and other departmental staff in 2001. Almost all of these are ongoing programs designed to track the status of fish stocks and fisheries in order to adequately manage stocks for sustained yield and to meet quota and allocation requirements as established by the Alaska Board of Fisheries.

The Division of Sport Fish conducted full stock assessment programs on the Taku River for both chinook and coho salmon in 2001. These programs consisted of implanting juveniles of both species with coded wire tags as the fish migrated down river to the sea. Returning adult chinook and coho salmon were captured with one or two fish wheels and gill nets at Canyon Island, and then these tagged fish were recovered upstream in Canadian fisheries or during spawning ground surveys later in the season to determine the marked rate. This information, along with tag recoveries from common property fisheries, allows the department to estimate contribution to fisheries, the escapement, total return, and exploitation. The Division of Commercial Fisheries conducted a similar coho salmon stock assessment program at the Berners River north of Juneau, and also conducted king crab stock assessment surveys in surrounding marine waters, with special emphasis in subdistrict 11A.

National Marine Fisheries Service personnel and departmental staff worked cooperatively at the Auke Creek weir in conducting a multi-species stock assessment program on the fishes of Auke Creek and Auke Lake. Results of the Auke Creek investigations are summarized in an annual report prepared by the weir staff (Taylor and Lum, *unpublished*).

Trout and char research projects were also conducted in the Juneau management area. As part of the Auke Creek investigations, cutthroat trout, Dolly Varden, and a few steelhead smolts were captured and counted at the weir as they left Auke Lake. Results are described in Lum et al. 2001. The trout research staff continued work at Turner Lake in the Juneau management area aimed to assess the effects of the trout catch-and-release regulation in place for that lake and also to determine what level of harvests of cutthroat trout are sustainable, through a surplus production investigation.

The Juneau marine creel survey program again provided important inseason information concerning the local marine boat sport fishery. Dockside interviews were conducted from late April to late September. This program has gone through many iterations but is likely the longest running on-site marine creel program in Alaska.

Spring chinook salmon fishing began relatively strong due to an early showing of Taku-bound fish, but catch rates quickly dropped and remained rather average for the remainder of the season. Exploitation seems low, as the Taku River escapement was up and the return of hatchery kings to local release sites was very strong relative to other years and how the fishery performed. Douglas Island Pink and Chum, Inc. (DIPAC) hatcheries contributed 46% of the local marine boat sport harvest of chinook salmon this season. The local pink salmon returns were at best average and the chum salmon return was weak. Coho salmon fishing was a relative bright spot with catches at or above average over most of the season, plus a strong late-season showing. However, given how strong the Taku and Berners escapements ended up, as with kings, the exploitation was lower than expected. DIPAC coho salmon contributed approximately 14% of the local marine boat coho harvest.

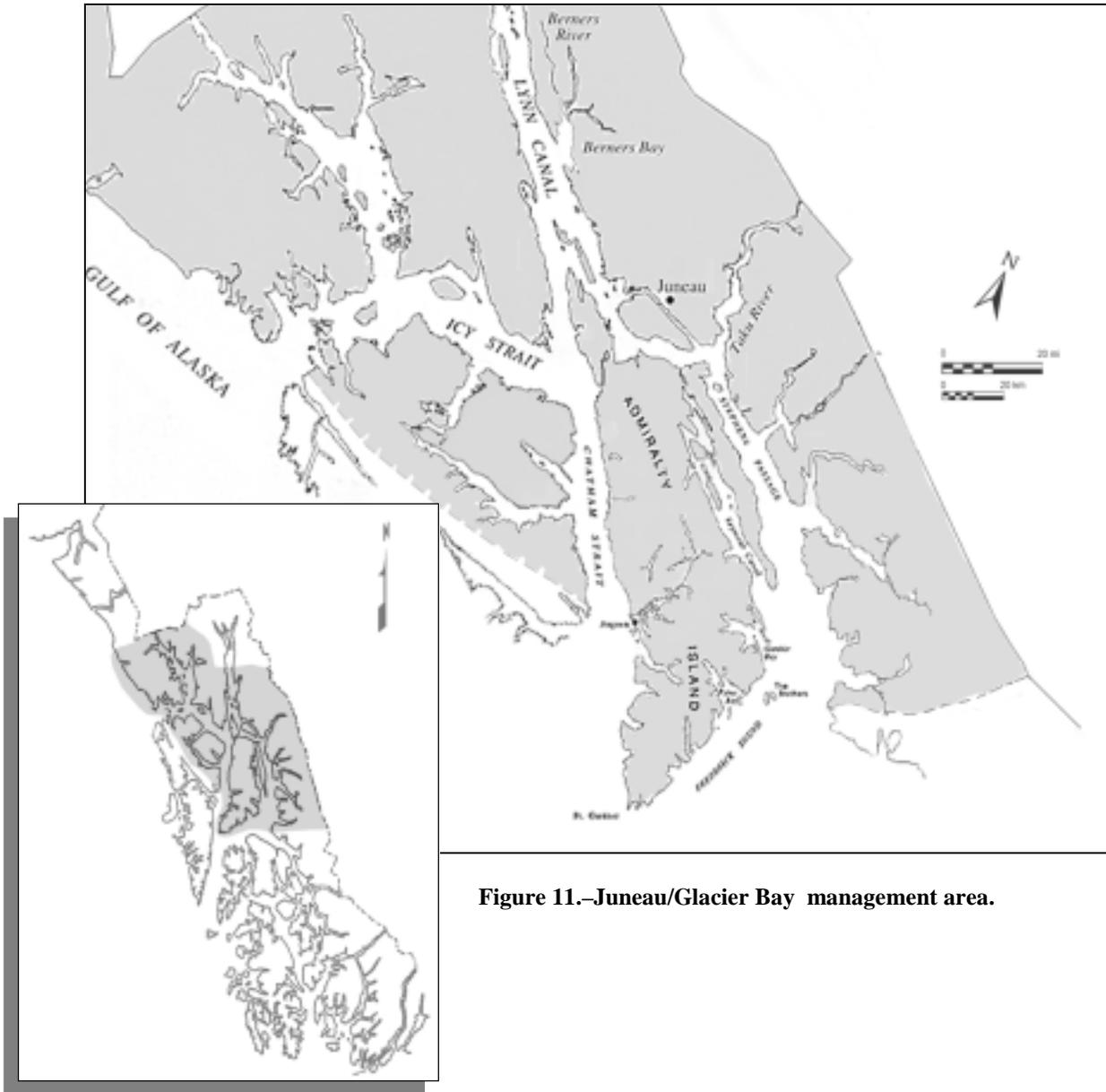


Figure 11.—Juneau/Glacier Bay management area.

The halibut fishery continued to decline and the poor fishing success disturbed many local anglers. In fact, the harvest of Pacific halibut in the Juneau sport fishery was the lowest in 22 years (1979). However, the harvest was not a result solely of declining angler success, as targeted effort dropped precipitously in 2001 as well. Some local anglers attribute the deterioration of the local sport fishery to the changes made to the commercial halibut fishery in 1997, when the IFQ commercial halibut fishery was implemented. Estimates of effort, harvest, catch, and contributions of wild and hatchery stocks all

appear in an annual FDS report covering harvest studies of selected marine sport fisheries (Hubartt et al. *In prep.*).

Management Actions

Chinook Salmon Terminal Harvest Area Management

On June 9, 2001, an emergency order (E.O. 1-08-01) opened a saltwater area around Juneau to additional harvest of surplus hatchery-produced chinook salmon. The bag and possession limit in this saltwater area was four chinook salmon, of

which no more than three could be 28 inches or more in length. This regulation remained in effect through August 31, 2001. The terminal area included all contiguous marine waters east of a line from Indian Point, in Auke Bay, to the tip of False Outer Point on North Douglas Island, and waters west of the Juneau-Douglas Bridge. Since the bag limit in this area allowed retention of at least three chinook salmon 28 inches or longer, chinook salmon taken in this terminal area by nonresidents did not count toward their annual limit, and there was no harvest-recording requirement.

The department, at the same time, opened all freshwater drainages crossed by the Juneau City and Borough road system that were open to sport fishing, to chinook salmon fishing (E.O. 1-09-01). The bag and possession limit in these freshwater areas was the same as in the saltwater terminal area: four chinook salmon, of which no more than three could be 28 inches or more in length. This regulation remained in effect through September 30, 2001. Anglers were also permitted the following methods and means at Fish Creek Pond: use of bait, retention of chinook salmon hooked elsewhere than in the mouth, and use of fixed or weighted hooks and lures and multiple hooks with a gap between the point and shank larger than $\frac{1}{2}$ inch.

Saltwater Closure Adjacent to Auke Creek

A small area of Auke Bay, immediately off the mouth of Auke Creek, was closed to all sport fishing from June 29 through September 14, 2001 (E.O. 1-16-01). The affected area was inside of a line extending from the Auke Bay Laboratory's boat dock south to the nearest of two white buoys marking the location of the laboratory's salt water intake pipe, then continuing to an identical second buoy, and finally extending to a departmental regulatory marker on the Fritz Cove shoreline.

This action was necessary to protect adult sockeye salmon returning to the Auke Lake system. The projected escapement of sockeye salmon to Auke Lake in 2001 was approximately 2,200, far short of the escapement goal of 5,000 fish. Although this area was already closed to retention of sockeye salmon, some anglers targeting returning hatchery-released chinook salmon were keeping sockeye salmon. Moreover, weir staff have

documented that up to 10% of the sockeye salmon seen at the Auke Creek weir have snagging injuries that likely resulted in mortality prior to spawning. Since more chinook salmon would be milling at the mouth of Auke Creek, it was necessary to push the sport fishery away from the mouth of the creek. The resulting escapement totaled 3,963 adult sockeye salmon, better than projected, but still well below the goal. The escapement certainly benefited from the fishery restriction at the mouth of the creek, but it appeared to be a very good year for sockeye salmon in general, perhaps indicating better than average marine survivals.

Twin Lakes Stocking

The department contracts with Douglas Island Pink and Chum, Inc. (DIPAC) to annually stock Twin Lakes with 10,000 catchable chinook or coho salmon. This stocking supports Family Fishing Day and sport fishing at the lake throughout the year. In 2001, DIPAC once again placed approximately half of the fish in Twin Lakes in April, to provide space for young-of-the-year fry in raceways. The remainder of the fish were stocked in late May, several weeks prior to Family Fishing Day. The fishing during Family Fishing Day was outstanding, as fish were well distributed and many close to shore, providing excellent fishing for everyone. Moreover, shoreline areas were clear of milfoil, which in some prior years has restricted shoreline fishing. See more on this issue in the "Other Issues" sections.

Windfall Lake Sockeye Fishery

By regulation anglers are allowed to fish the Windfall Lake outlet area for sockeye salmon only on Wednesdays and Saturdays during the month of June, with the fishing area closed completely the remainder of the time during June and July. Windfall Lake and inlets are closed year round to the retention of sockeye salmon by sport anglers. The outlet creek fishery was again visited and monitored during most of the open days of the 2001 fishing season. The fishery again appeared to be orderly and popular. A subsequent index spawner survey in Slate Creek showed a continued strengthening in escapement, with a foot survey count of 855 sockeye salmon.

King Crab Personal Use Fishery

The red and blue king crab stock in the immediate Juneau area (District 11-A) is managed under a comprehensive allocation plan that shares the available harvest between the commercial fishery (40%), summer personal-use fishery (50%), and winter personal use fishery (10%). In 1999, the Alaska Board of Fisheries amended the plan to direct the Department to allow the personal-use fishery to take the all the available crab in the District 11-A during years when the general commercial fishery does not open.

The Commercial Fish Division manages the personal use (PU) shellfish fisheries in the Juneau area and a permit is required to take red or blue king crab from District 11-A for personal use. The winter 2001 PU fishery was closed by regulation on March 31. The Commercial Fisheries staff, through their June surveys of the area, determined that the available harvest in 11-A in 2001 was 132,000 pounds. Given the specifications in the management plan, this translated to approximately 9,000 crabs for the summer personal-use fishery and 1,800 crabs for the winter personal-use fishery. When the summer PU king crab fishery reopened on July 1, the bag limit in 11-A was set at 2 crabs (the limit was 3 in adjacent northern waters). There was also a household summer, seasonal limit in District 11A of 10 king crabs per person or 20 crabs per household with 2 or more people. These regulations remained in effect for the remainder of the year. The commercial fishery in 11-A opened with the general fishery on November 1, but closed earlier than most of the region, during the morning of November 6.

Escapement Surveys

Coho Salmon

Escapement of coho salmon to five streams along the Juneau road system was monitored by multiple foot surveys. The five streams combined provide an index of stock strength in the Juneau area and are also utilized to supplement abundance estimates of coho escapement on a regional level.

Escapements were, generally speaking, up in 2001 compared to 2000. Only Montana and Steep Creek were above the historic average, but three

of the streams were above the recent 5-year average and one (Switzer) matched the recent 5-year average. Only Peterson Creek was disappointingly low, just barely reaching into the bottom of the established escapement goal range (Table 17). The index count at Jordan Creek was the highest since 1994 and was substantially higher than the recent 5-year average.

Additional valuable information was obtained on Jordan Creek. The consulting firm of SWCA that is preparing the EIS for the airport's runway safety expansion and wildlife hazard assessment projects funded an adult coho salmon weir project upon the suggestion by ADFG. This weir was operational from early September into early November. There were 525 adult coho counted at the weir. Six adipose-clipped coho salmon were captured during the immigration. These fish were killed and the heads delivered to the tag lab. One of these fish had no tag, one was from the DIPAC production release, and the other four were from the outbreeding depression study. All of the outbreeding depression fish were adipose clipped and tagged. Therefore, we can assume none of these fish actually spawned in Jordan Creek this year, thanks to the weir. The DIPAC production coho program only tags about 10% of these fish, so perhaps another 9 or 10 unmarked DIPAC coho salmon spawned in Jordan Creek this fall.

Steelhead

Peak counts of steelhead escapement in Peterson Creek on the Juneau road system and Pleasant Bay Creek in lower Seymour Canal were again monitored in 2001 to provide an annual index of steelhead abundance. Because of the relatively low number of fish in a given steelhead population, these escapements are monitored through weekly "snorkel surveys" as opposed to the foot surveys used for monitoring coho escapements. In a snorkel survey, two observers count the number of steelhead seen while snorkeling along a given reach of stream.

Peterson Creek and Pleasant Bay Creek were selected as the best indicator streams in the Juneau area based primarily on the relatively short length of stream accessible to returning steelhead spawners. The barrier falls on each of these two streams limits the upstream migration of steelhead to a distance that can be surveyed in its entirety in

Table 17.—Average peak counts of coho salmon during foot surveys of Juneau area index systems for 1981–2000 in comparison to 2001 peak counts and escapement goals.

	Jordan Creek	Montana Creek	Peterson Creek	Steep Creek	Switzer Creek
1981–2000 average	221	913	274	256	87
2001 peak count	119	1,119	106	366	50
2001 % of average	54	123	39	143	57
Point esc. goal	150	450	200	150	50
Esc. goal range	75–200	200–500	100–350	100–300	25–75
2001 at goal?	yes	yes	yes	no	yes

only a few hours. Additionally, they are extremely popular among sport anglers, as Peterson is easily accessed from the Juneau road system, and Pleasant Bay provides a larger population of fish in a pristine setting.

Because snorkel surveys of Peterson and Pleasant Bay Creeks have only been conducted since 1994 and 1996 respectively, we are still learning about variability in annual run strength and peak timing. Still, given this limitation, results from the 2001 survey were again mixed. Peterson Creek counts (Figure 12) were typical or slightly stronger compared to prior years, whereas the Pleasant Bay peak count of 48 was again quite poor relative to prior years.

Access Projects

In 2001, planning efforts were still underway for the three launch ramp improvement projects on the Juneau road system; Amalga Harbor, Douglas Harbor and the North Douglas Launch Ramp. Construction on these projects was initially slated for 2001, but should now commence in 2002. The Douglas Harbor boat launch ramp project will be the Sport Fish Division’s contribution to the city’s Douglas Harbor expansion project. Work at Amalga Harbor will include dredging to provide use of the launch at low tide, replacing the boarding float, and redesigning the upland portion of the facility to increase the number of parking spaces. The North Douglas project will consist of replacing the existing ramp surface. In shoreline access, plans are still underway for a small project to improve shoreline fishing access at Cowee Creek.

Other Issues

Twin Lakes Water and Milfoil Management

Last year I reported on the replacement of the large plate valves at the entrance to the two large culverts under Egan Highway that connect Twin Lakes to Gastineau Channel. The plates had rusted over time and were so disintegrated that they no longer served to hold water in the basins. Preceding the placement of the new valves, the old valves were removed and the lakes were left to drain and receive Gastineau Channel water as the tides dictated. Owing to delays, the lakes remained “drained” for some time and salt water replaced the residual standing waters at the bottom of each basin.

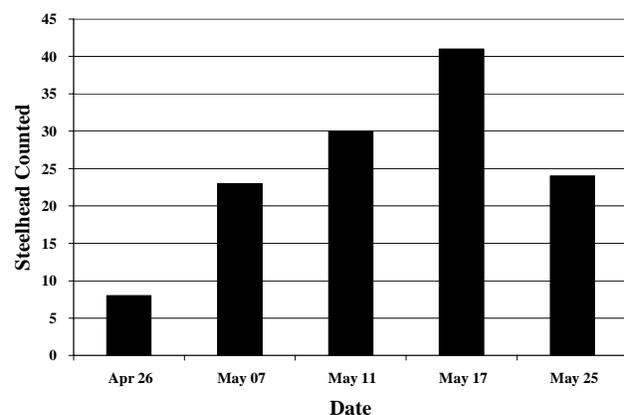


Figure 12.—Weekly steelhead escapement counts at Peterson Creek Juneau, 2001.

Of interest was, what would be the impact of the salt water in the basins on the aquatic vegetation; i.e., would the northern water milfoil be killed or exhibit retarded growth the following summer? When the south lake was finally ready for filling, the plate valve was closed and the lake filled by use of water from the Salmon Creek pipe and precipitation. The north basin was not filled until later in the spring, and the plate valves were operated in a manner to allow salt water to flood the basin, resulting in a very brackish impoundment. Last summer, the south basin water was surprisingly fresh, but a resident limnologist was not the least bit surprised, saying that the morphometry of the lake, and basin orientation with regard to prevailing winds would provide strong mixing and dilution of the residual salt, and the basin would not re-stratify.

Through the summer, Juneau Parks and Recreation staff maintained a flow of Salmon Creek water into the south basin to maintain water quality. It became clear that through the summer, the proliferation of milfoil seen in recent years did not occur. There was some milfoil in the south basin but in very low abundance compared to previous years. There never appeared to be the dense growth along the shorelines nor the large surface masses in the basin with the dense floral stalks growing above the surface of the lake in mid summer. In the north basin, milfoil seemed nonexistent. In fall, staff from the Juneau Parks and Recreation Department had to drain the north basin again to complete some concrete restoration at the gate that drains into Vanderbilt Creek. When the lake was drained to an extremely low level, it was clear there was virtually no milfoil biomass on the floor of the north basin. The change was extremely dramatic.

Therefore, I believe the improvements to the culvert valves and the ability to retain water in the lake, plus the treatment of salt water, effectively eliminated the milfoil problem. Perhaps there will need to be periodic draining and flooding with salt water in the south basin, and a need to maintain the north basin as a brackish water body, but this is very simple and environmentally friendly as compared to treating the lakes with herbicides, which some people were promoting. Finally, I appreciate the efforts of Bob Grochow of Parks and Recreation. He worked hard to bring the

project to completion and restore the basins' ability to hold water, as well as working with us in attempting to control the milfoil in the lakes.

Jordan Creek Smolt Study

Jordan Creek is an anadromous fish stream that has been impacted by extensive urban and residential development within Juneau's Mendenhall Valley. Portions of upper Jordan Creek are somewhat less exposed to development due to the location of the creek on the eastern edge of the valley. Still, the low gradient of the stream in this area reduces the potential for flushing the heavy silt deposits that have occurred as a result of construction activities and erosion out of near vertical tributaries.

Much of the lower half of the creek has been channelized where it passes through the center of a small business district and eventually a long culvert beneath the taxiway and runway of the airport. In 1998, the creek's poor water quality (deposits of silt and debris, and low dissolved oxygen) resulted in it being listed as a "Tier 1" impaired water body under Section 303(d) of the Clean Water Act. In the last seven years, index survey counts of coho salmon escapement in Jordan Creek have averaged only 58 fish compared to an average 337 fish during the seven years (1988–1994). Contrary to these findings, recommendations opposing restoration of fish habitat in Jordan Creek and in favor of relocating the creek away from the airport property have been suggested in *The Wildlife Hazard Assessment for the Juneau International Airport* (Wilmoth et al. 2001); a report contracted by the Juneau International Airport as a result of past aircraft bird strikes. Additional culverting of the creek on airport property could also occur if a proposal to widen and extend the runway and taxiway is adopted.

In spring 2001, the Assistant Area Management Biologist, with support from other staff, installed a smolt weir in Jordan Creek below Yandukin Blvd. on airport property. A surprisingly large number of coho salmon smolts (>26,000) were found emigrating from Jordan Creek despite very poor parent year escapements (Figure 13). However, Jordan Creek does not have an obvious source of "nomadic" juvenile coho that may have supplemented the 2001 emigration.

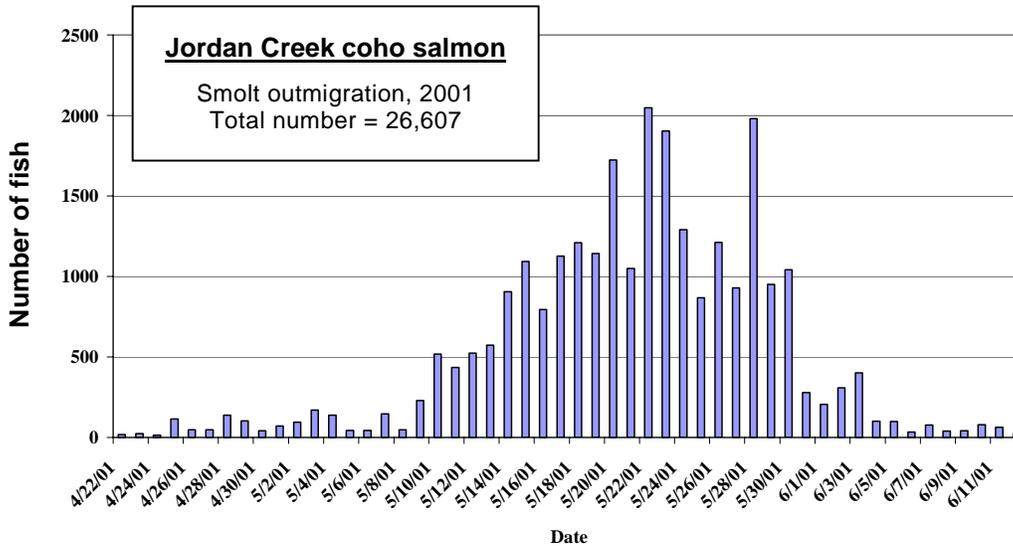


Figure 13. Daily counts of outmigrating coho salmon smolts at Jordan Creek, 2001.

Unlike Duck Creek, Jordan Creek is not a tributary of the Mendenhall River; however, it does empty into an estuarine area that is common to the Mendenhall and several other nearby coho producing drainages. Past studies and anecdotal observations in Jordan Creek have documented extremely high rearing coho densities and scale patterns indicating a period of estuarine growth. All of this information suggests that at least some of the 26,000 smolts emigrating from Jordan Creek may have utilized the higher productivity of the wetlands for rearing; either as migrants from some nearby drainages, or more simply as native Jordan stock that reared there on an occasional basis.

As a follow-up to this study, the Assistant Management Biologist will repeat this study in 2002. In addition, Duck Creek will be added and all coho salmon smolts captured at the respective smolt weirs will be coded-wire-tagged and identified (as a CWT fish only) externally through removal of their adipose fin.

Chinook Salmon Broodstock Development at Gastineau (Macaulay) Hatchery

The current fish genetics policy states that a particular stock of salmon cannot be used at more than three production-level hatcheries in the region. Gastineau Hatchery has been trying to change its chinook salmon stock from Andrew

Creek because it is used at too many other hatcheries in Southeast Alaska. An alternative stock from King Salmon River has been under development for some time, but for a variety of reasons, the King Salmon River stock no longer was deemed viable stock for brood development. Rather than work toward an exemption from the genetic policy, hatchery and departmental personnel began to consider the Tahini River chinook salmon stock, which is being used in enhancement projects in the Haines and Skagway areas, as a potential replacement brood for the Juneau king salmon enhancement program.

The people of Skagway, DIPAC, and departmental staff cooperated to develop a plan to place Tahini River chinook salmon eggs taken from adult chinook salmon returning to Burro Creek and Pullen Creek near Skagway into Gastineau Hatchery for rearing and subsequent release as smolts back in the Skagway area. The first 100,000 chinook salmon alevins were transported to Juneau in December, 1998 and held through 1999. About 91,000 smolts were transferred to and released at Pullen Creek in the spring of 2000.

Unfortunately, in 1999, only about 34,000 to 35,000 eggs were obtained and approximately 32,000 smolts were raised, transported, and released at Skagway in spring 2001. Hatchery personnel were much more successful obtaining

eggs from the return of adults in 2000, and 122,000 king salmon eggs were transported to Macaulay Hatchery for incubation and rearing, with a release date for the subsequent smolts of spring 2003.

The plan is to develop a return of chinook salmon to the Skagway area sufficient to provide enough eggs from the Tahini Stock for a complete replacement of the eggs needed to sustain the Juneau chinook program at DIPAC's Macaulay Hatchery.

Hatchery Chinook Salmon Terminal Escapements and Associated Issues

Hatchery chinook salmon return annually to established smolt release locations. DIPAC personnel reported a very strong return of chinook salmon to the hatchery. Sport Fish staff once again conducted several surveys of Fish Creek for destructive sampling of mature chinook salmon. About 150 chinook were killed and examined for missing adipose fins. Heads of finclipped fish were removed, and the length and sex of these fish were recorded, along with a head sample number.

The escapement of chinook salmon to Fish Creek was exceptionally strong. And, although there were no complete foot surveys conducted, it was apparent from counting fish in the reach below the highway and comparing the patterns of fish in the reaches up through the fish sampling areas that there were at least 1,000 chinook in the stream. This far exceeded the number of fish back in previous years. It would be great if the public could utilize more of these fish. Perhaps snagging should be permitted in the creek above the pond, or a personal-use fishery allowed.

Chinook returning to the mouth of Auke Creek were slow to show at the weir, and ultimately the number of fish taken at the weir was relatively modest, especially given the large return to Fish Creek and Macaulay Hatchery. Hundreds of fish held off the outlet of a culvert adjacent to the public boat launch ramp in Auke Bay, creating what might be called an attractive nuisance, as anglers seeking these fish used the launch ramp as a fishing pier. Harbor staff began to enforce their ordinance prohibiting fishing from the launch ramp.

Montana Creek was surveyed in mid August through the gorge stretch between the two angler access trail points near the rifle range. More than 30 chinook salmon were seen in this reach, which

is certainly more than what is usually seen. A complete survey of the creek for escaped chinook salmon was not done.

Auke Lake Dolly Varden and Cutthroat Trout

The outmigration of sea-run Dolly Varden and cutthroat trout from Auke Lake reversed the trend of decreasing numbers in 2001. This was good news. Collectively, staff really do not have a good understanding what is driving the year to year variability in the number of outmigrating sea-run Dolly Varden and cutthroat trout. With regard to Dolly Varden, it may be driven in large part by the fishes' choice of overwintering location, as they have several lakes to "choose" from in the immediate area. The same could be true for the sea-run cutthroat trout.

North Douglas/Peterson Creek and the Proposed Golf Course

Staff participated in numerous meetings, both internally and public forums, dealing with the proposed golf course on northwest Douglas Island. Habitat staff devoted substantial time to labor-intensive field work on the Peterson Creek drainage to better describe fish habitat in order to minimize impacts to fish resources if the course is built. The applicants for the course were resentful that ADF&G added new anadromous fish habitat on the project site, but this is something the applicants should have examined and never did. Meetings and negotiations were still ongoing at year's end. It appears the department position is to do the best possible job to protect fish and wildlife habitat but not to the point that the project won't be permitted.

Juneau Airport Runway Safety Area and Wildlife Hazards Assessment EIS

Staff attended meetings and worked with Habitat staff to help shape the studies supporting the EIS that will lead to how the Juneau Airport will expand the runways as mandated by the FAA. Moreover, because of the excessive removal of trees along lower Jordan Creek, and the resulting outcry from the public because of a fear that similar actions might be taken along the airport dike trail, consultants included additional future airport activities in the EIS. The issue of wildlife management centers on reducing the potential for airplanes striking birds. And, because large birds

like herons, gulls, and eagles are attracted to fish, the airport not only plans to discourage stream habitat restoration of Jordan and Duck Creek, but actions such as the tree removal along Jordan Creek is an example where airport personnel will take advantage of opportunities to actually degrade and destroy fish habitat on airport property. On the positive side, airport personnel have been supportive of projects such as the juvenile and adult weirs on Jordan Creek and allowed us to place these weirs on airport property, which provided a much higher level of security and protection from vandalism. By the end of 2001, the consultants (SWCA from Salt Lake City) were writing sections for the draft EIS.

HAINES/SKAGWAY AREA

The Haines/Skagway management area includes all waters from Point Sherman to the Canadian border, including Lynn Canal and all drainages entering it (Figure 14). The major fisheries in the area are in saltwater for chinook salmon and Pacific halibut and in freshwater for cutthroat trout, Dolly Varden, coho, sockeye, and pink salmon. Two major drainages support substantial sport fisheries in the Haines area: the Chilkoot and Chilkat rivers. The Skagway area has limited fisheries resources and relies more on hatchery production to provide sport fishing opportunities. Permanent Sport Fish management staff consists of one Fishery Biologist III, Randolph Ericksen, stationed in Haines.

Local Management and Research Programs

Chinook Salmon

The Chilkat River is considered the third or fourth largest producer of chinook salmon in Southeast Alaska (Pahlke 1997). A spring sport fishery in Chilkat Inlet near Haines targets mature chinook salmon returning to the Chilkat River. A creel survey has been used to estimate effort and chinook harvest in this fishery since 1984. Historically, this fishery harvested up to 1,700 chinook salmon annually (Table 18). From 1981 through 1992, the escapement was monitored through survey counts on clearwater tributaries to the Chilkat River as an index of abundance. Restrictive management of the fishery began in

1987 when high harvests of chinook salmon in the sport fishery coincided with low numbers of fish observed in spawning tributaries. The restrictions culminated with a closure of the spring fishery in 1991 and 1992.

Mark-recapture experiments have been used to estimate the abundance of large chinook salmon entering the Chilkat River since 1991. Inriver abundance of large chinook salmon has varied between 2,035 and 8,100 fish (Table 18). These studies showed that escapements were higher than expected and the fishery was reopened in 1993. Since then, the estimated harvest of chinook salmon in the spring fishery has averaged about 250 fish despite liberalized harvest regulations. It is unclear whether the high harvests observed during the mid 1980s were the result of higher effort, larger returns of chinook salmon to the Chilkat River, or both. The effort, catch, and harvest of Chilkat River chinook salmon in the Haines spring marine boat fishery dropped to its lowest level in 2000, corresponding to the lowest escapement on record. The Chilkat chinook salmon return improved in 2001 and effort and harvest in this fishery increased (Table 18).

Management of Chilkat River chinook salmon has been largely passive in recent years. For example, Chilkat Inlet off the mouth of the river is closed to sport fishing April 15 to July 15 by regulation. However, our goal is to take more active management in the future. Beginning in 1998, we began forecasting the return of large chinook salmon to Lynn Canal based on the previous year's sibling return (e.g., the return of age 1.3 fish in 2000 is used to forecast the return of age 1.4 fish in 2001). The 2001 pre-season forecast (3,371, 80% CI = 2,392–4,350) was reasonably close to the post-season estimate (4,471, SE = 592) of the return. If future forecasts prove reliable, we plan to develop a management plan for Chilkat River chinook salmon that includes sport, commercial, and subsistence fisheries.

The Burro Creek Hatchery (operated by Burro Creek Farms) and Jerry Myers Hatchery (operated by the Skagway High School) have been releasing chinook salmon smolts in the Skagway area for a number of years (Table 19). These releases were increased from 1992 to 1994 under an agreement with the Hidden Falls hatchery operated by NSRAA. Hidden Falls was allowed

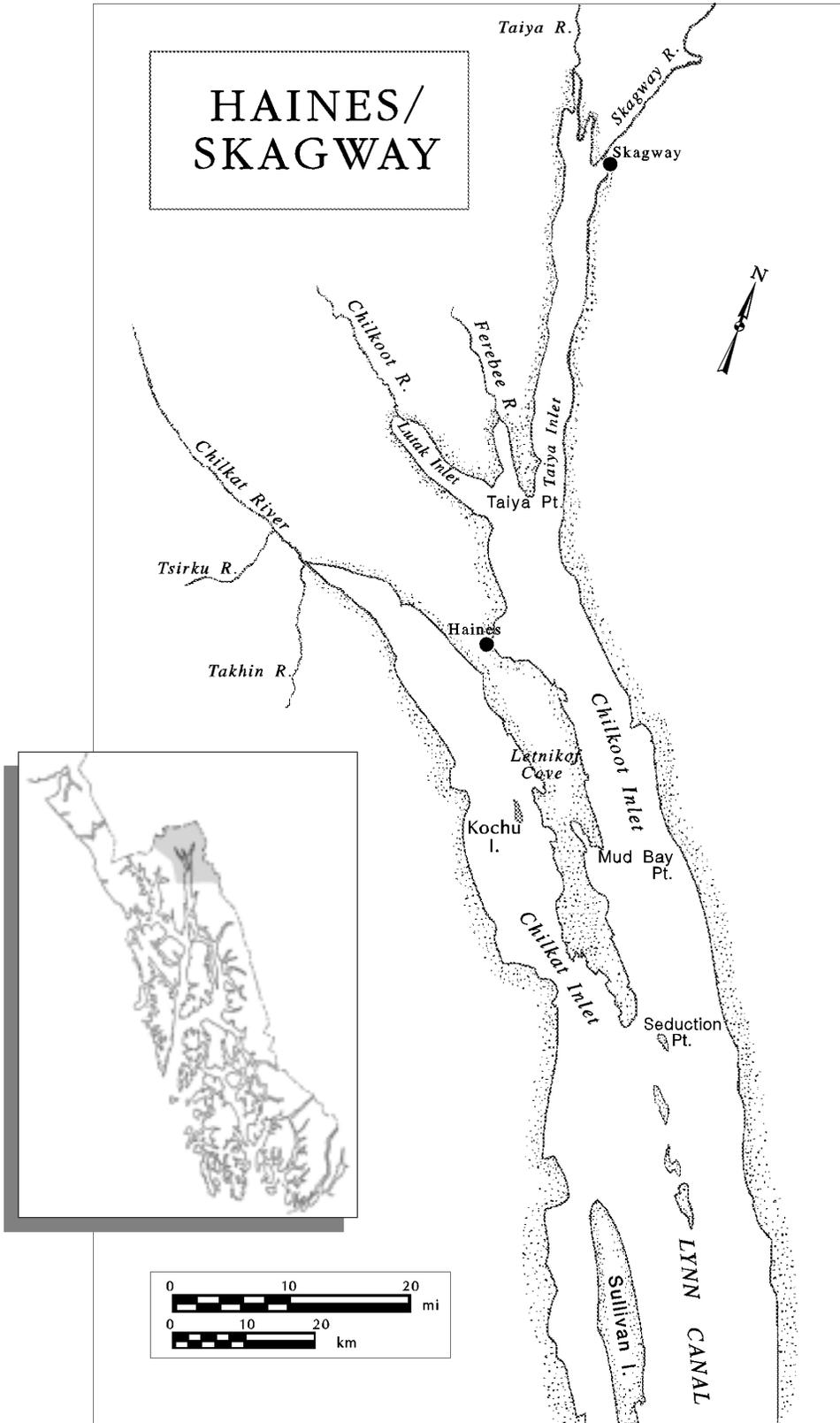


Figure 14.–Haines/Skagway management area.

Table 18.—Estimated angler effort, catch and harvest of large (≥ 28 in.) chinook salmon in the spring Haines marine boat sport fishery, 1984–2001, and abundance of large (\geq age 1.3) chinook salmon entering the Chilkat River, 1991–2001. Data through 2000 from tables in Ericksen (2001a) and 2001 data from Ericksen (*In prep.*).

Year	Salmon hrs-effort	SE	Chinook salmon				CPUE ^a	Inriver abundance ^b	SE
			Catch	SE	Harvest	SE			
1984	9,855	c	1,072	c	1,072	c	0.109		
1985	20,582	c	1,705	c	1,696	c	0.083		
1986	32,533	c	1,659	c	1,638	c	0.051		
1987	22,848	2,191	1,094	189	1,094	189	0.048		
1988	32,723	3,476	505	103	481	101	0.015		
1989	9,363	922	237	42	235	42	0.025		
1990	11,972	1,169	248	60	241	57	0.021		
1991			Fishery closed					5,897	1,005
1992			Fishery closed					5,284	949
1993	9,069	1,479	349	63	314	55	0.038	4,472	851
1994	7,682	597	269	41	220	32	0.035	6,795	1,057
1995	8,606	483	255	42	228	41	0.030	3,790	805
1996	9,596	866	367	43	354	41	0.038	4,920	751
1997	8,758	697	381	46	381	46	0.044	8,100	1,193
1998	7,546	747	222	60	215	56	0.029	3,675	565
1999	6,097	734	184	24	184	20	0.030	2,271	408
2000	4,043	532	103	34	49	12	0.025	2,035	334
2001	5,107	508	199	26	185	26	0.039	4,268	592
1984–1990 avg.	19,982		931		922		0.050		
1993–2001 avg.	7,389		229		237		0.034	4,481	
1984–2001 avg.	12,899		553		537		0.041	4,682	

a Catch of large (≥ 28 inches) chinook salmon per salmon hour of effort.

b Abundance of large (\geq age 1.3) chinook salmon entering the Chilkat River. No estimates available prior to 1991.

c No variances available for 1984–1986.

to discontinue use of the Tahini River brood stock under the condition that the remaining brood be released in Taiya Inlet near Skagway. As a result, the number of hatchery chinook salmon returning to the Skagway area increased for several years. In 1998, Burro Creek hatchery sustained damage due to a flood and subsequent fire. As a result, all eggs were transferred to Macaulay Hatchery. The resulting smolt (91,600) were released in Pullen Creek in 2000. Since that time, eggs collected from Pullen Creek and Burro Creek have been incubated at the McCauley and Jerry Meyers hatcheries for release in the Skagway area. McCauley Hatchery has conducted these releases as a component of their program to develop the

Tahini River stock as the primary brood for release in the Juneau and Skagway areas.

A growing charter boat industry targeting these hatchery fish has taken advantage of increased numbers of cruise ship passengers arriving in Skagway. We hired a nonpermanent Skagway employee in 2001 to sample for CWTs two days a week. During 2001, 7% (SE = 2%) of the small and 13% (SE = 4%) of the large chinook salmon sampled were missing adipose fins (Table 20). Although all but one of the successfully decoded tags were of Alaska hatchery origin, only 80% of the large and 60% of the small were from the Skagway area releases. The non-Alaskan fish was from the Fallert Creek hatchery in Washington.

Table 19.—Number of hatchery chinook salmon smolts released in the Skagway area by brood year and facility, 1987–2001.

Facility	Brood year	Date released	Number of smolt released
Jerry Myers	85	6/16/87	6,060
Jerry Myers	86	6/10/88	4,659
Jerry Myers	87	6/10/89	1,730
Jerry Myers	88	6/8/90	6,431
Jerry Myers	89	6/19/91	7,152
Jerry Myers	90	6/10/92	11,905
Hidden Falls	90	5/20/92	30,223
Jerry Myers	91	6/11/93	12,859
Hidden Falls	91	5/22/93	56,415
Burro Creek	91	6/3/93	8,572
Jerry Myers	92	6/11/94	1,650
Hidden Falls	92	5/20/94	38,789
Burro Creek	92	6/5/94	8,749
Jerry Myers	93	6/10/95	5,595
Burro Creek	93	6/10/95	1,903
Jerry Myers	94	5/24/96	1,507
Burro Creek	94	6/15/96	34,895
Burro Creek	95	6/21/97	12,815
Jerry Myers	96	6/10/98	8,631
Burro Creek	96	6/14/98	15,956
Jerry Myers	97	5/31/99	1,856
Macaulay	98	6/02/00	91,618
Macaulay	99	6/12/01	32,123

Coho Salmon

The Chilkat River supports one of the largest freshwater sport fisheries for coho salmon in the Southeast region, with annual harvests averaging about 1,000 coho salmon. This system also contributes a significant number of coho salmon to commercial troll, gillnet and seine fisheries in northern Southeast Alaska. Research conducted during the 1980s on coho salmon stocks in Lynn Canal suggests that these stocks are subjected to very high (over 85%) exploitation rates (Elliott and Kuntz 1988, Shaul et al. 1991). We initiated a program to coded wire tag coho salmon smolt in the Chilkat River in 1999. During the spring of 1999, we tagged 25,915 coho smolts in the drainage. These fish returned as adults during fall

Table 20.—Number of small and large chinook salmon sampled for missing adipose fins at the Skagway Boat Harbor during 2001.

Date	Examined for ad-clips		Ad-clipped	
	Small	Large	Small	Large
6/19	0	0	0	0
6/26	13	8	0	2
7/03	2	0	0	0
7/10	8	1	0	0
7/11	9	2	0	0
7/17	8	3	0	0
7/18	8	1	0	0
7/24	0	0	0	0
7/25	3	1	1	0
7/26	3	0	2	0
7/31	5	4	1	0
8/02	7	4	1	2
8/07	6	1	0	0
8/08	13	4	0	1
8/14	20	6	2	1
8/15	16	9	0	0
8/21	8	6	1	0
8/22	10	3	0	1
8/28	14	5	2	0
8/29	16	5	2	1
Total	169	63	12	8

of 2001. Chilkat River coho salmon were sampled in various fishery harvests throughout Southeast Alaska, and in Chilkat River fishwheels during 2001. Results of this study are that 1,185,805 (SE = 164,121) coho salmon smolt emigrated from the Chilkat River in 2000, and most of the estimated harvest in 2001 occurred in the commercial troll and Lynn Canal drift gillnet fisheries (Ericksen *In prep.*). During the spring of 2001, we tagged 35,997 coho salmon smolt in the drainage. These fish will return as adults in 2002.

Peak survey counts of coho salmon to the Chilkat River in 2001 were above the long-term average. (Table 21). The current management program for Chilkat River coho salmon relies on postseason monitoring of escapements by an “index system”, where survey counts are conducted on four streams: Clear Creek, Spring Creek, Tahini River,

Table 21.—Peak counts of coho salmon during surveys of four index streams to the Chilkat River, 1987–2001, and mark-recapture estimates of escapement, 1990 and 1998.

Year	Peak survey counts					Mark-recap. estimate	SE	Ratio
	Spring Creek	Kelsall River	Tahini River	Clear Creek	Combined			
1987	84	184	696	23	987			
1988	83	152	539	35	809			
1989	48	182	981	134	1,345			
1990	79	328	2,448	150	3,005	80,700	9,984	0.0372
1991	176	392	1,707	135	2,410			
1992	174	266	1,077	700	2,217			
1993	95	115	947	460	1,617			
1994	398	440	4,419	381	5,638			
1995	253	178	1,029	177	1,637			
1996	180	157	381	290	1,008			
1997	204	129	643	250	1,226			
1998	264	262	638	275	1,439	37,132 ^a	7,432	0.0388
1999	324	202	930	195	1,651			
2000	302	551	1,302	420	2,575			
2001	441	221	1,252	1,285	3,199			
Average	207	251	1,266	327	2,051	58,916		0.0380

^a 1998 mark-recapture estimate from Ericksen (1999).

and Kelsall River. The number of adult coho spawners is counted in one day during peak spawning. These index counts appear to reflect abundance trends in the Chilkat drainage given comparisons with two years of mark-recapture estimates (Table 21). However, these index counts represent only 3.8% of the total escapement in the drainage, making them a relatively poor management tool.

Sockeye Salmon

The Chilkoot Lake and River sport fishery is one of the largest freshwater sport fisheries in Southeast Alaska. Sockeye salmon returning to the Chilkoot River drainage support important sport, commercial, and subsistence fisheries in the area. Although the sport fishery typically harvests fewer than 1,000 sockeye salmon per year, it has been very popular with residents and visitors to the area. CF Division monitors the escapement of sockeye salmon into the drainage using a weir. The weir count in 2001 was above the lower end

of the escapement goal (total goal range = 52,500–91,500) for the first time in 8 years (Figure 15). As a result, management of this fishery was less restrictive than in recent years and the sport harvest of sockeye increased to historical levels (Figure 15).

Pink Salmon

The escapements of pink salmon into the Chilkoot River during 1998 and 1999 were the highest on record (Figure 16). The 2001 escapement remained above average. The large escapements are primarily a result of restrictive management of the Lynn Canal commercial gillnet fishery to protect Chilkoot sockeye salmon.

Dolly Varden

The Chilkoot Lake and River sport fishery maintains the largest harvest of Dolly Varden in the region. This harvest peaked in 1985 at over 14,000 Dolly Varden and steadily declined until 1994 (Figure 17), suggesting the population might

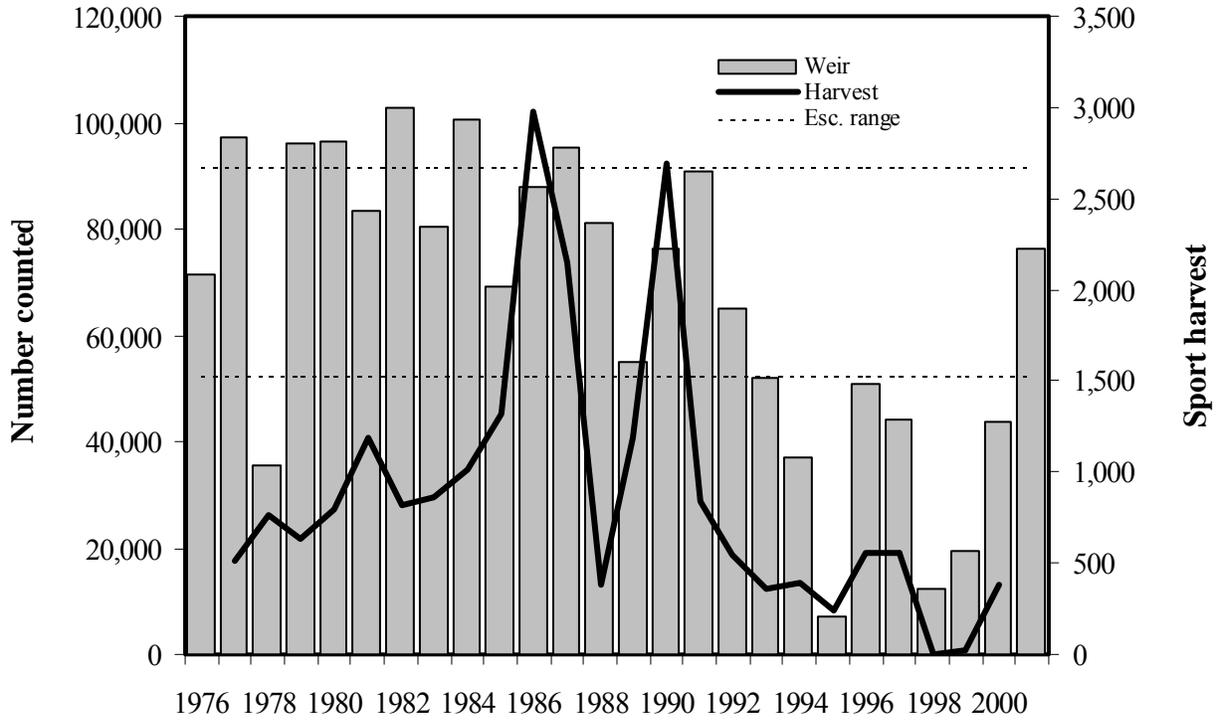


Figure 15.—Number of sockeye salmon counted through the Chilkoot River weir (1976–2001) and total harvest in the Chilkoot River/Lake sport fishery (1977–2001).

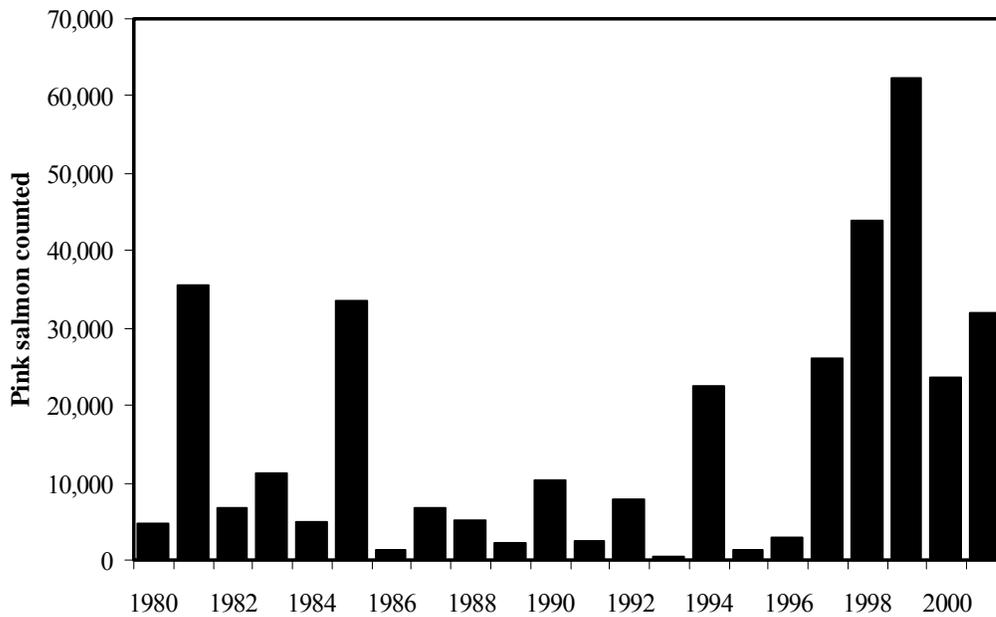


Figure 16.—Number of pink salmon counted through the Chilkoot River weir (1980–2001).

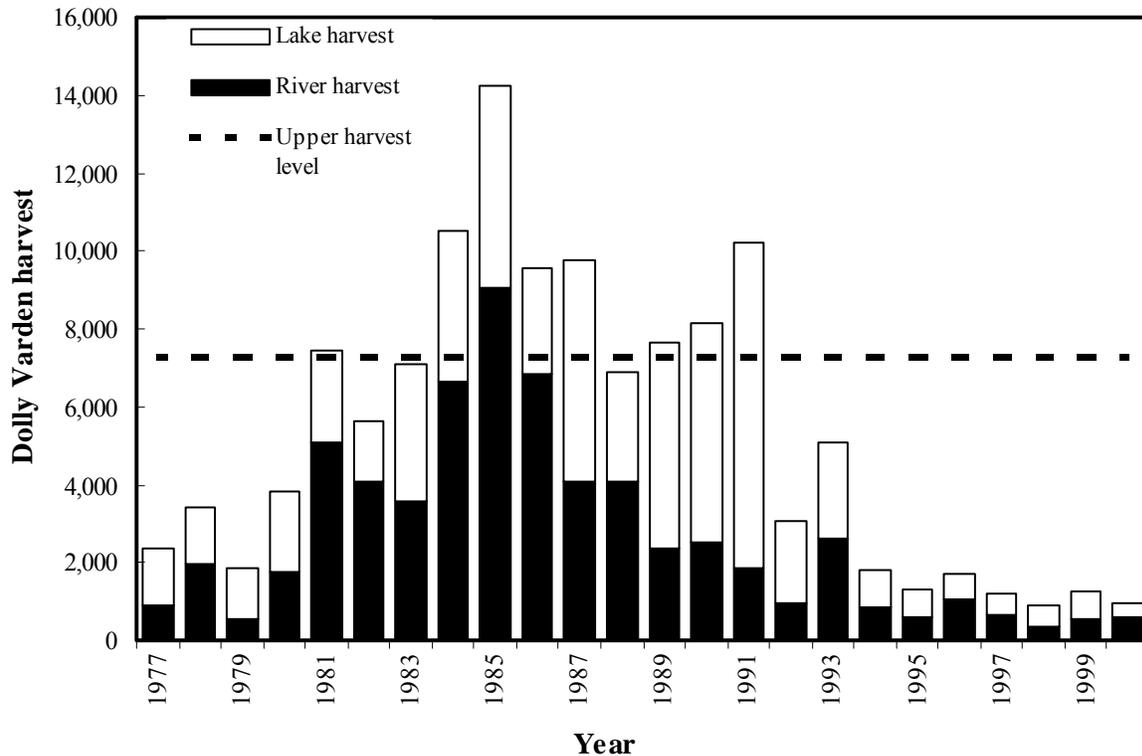


Figure 17.—Harvest of Dolly Varden in the Chilkoot River/Lake sport fishery, 1977–2000.

have been overexploited. As a result of this decline, the bag limit in the drainage was reduced from 10 to 2 per day in 1994. Since 1994, the harvest has leveled out at about 1,400 Dolly Varden per year. Because of the importance of the Chilkoot Dolly Varden sport fishery, research was conducted on the population during 1997 and 1998. During the winter of 1997–1998, we estimated that 109,152 (SE = 21,065) Dolly Varden ≥ 220 mm FL overwintered in Chilkoot Lake (Ericksen 2000b). A per-recruit analysis of the population indicated that at similar population levels, the harvest should not exceed 7,300 fish annually (Ericksen 2000b). Thus, current harvest levels are well within acceptable limits.

Management Actions

Skagway Chinook Salmon Terminal Harvest Area Management

Two emergency orders were issued during 2001 related to sport fishing for hatchery chinook salmon returning to the Skagway Area. The purpose of the first emergency order was to liberalize bag and

possession limits for chinook salmon and to close small areas to sport fishing to allow sufficient numbers of chinook salmon to escape for broodstock needs. Anglers fishing in Taiya Inlet north of the latitude of Taiya Point were allowed to keep small chinook salmon (E.O. 1-11-01). The bag and possession limit in Taiya Inlet was 1 chinook salmon 28 inches or more in length, and 1 chinook salmon less than 28 inches in length. This area was opened to allow harvest of surplus hatchery-produced chinook salmon released at Burro Creek and Pullen Creek.

Chinook salmon returning to Pullen Creek must migrate into the stream through a culvert accessible only during high tide. Hatchery fish must therefore mill in saltwater off the mouth of the stream until a sufficient high tide allows them to pass through the culvert. A similar situation occurs at the mouth of Burro Creek where fish mill in salt water before migrating upstream. These fish are vulnerable to sport fishing in these areas. To ensure that enough chinook salmon entered Pullen Creek and Burro Creek for brood

stock needs, the area of Taiya Inlet north of a line extending from a department marker on the Broadway Dock, to a department marker on the ore terminal dock; and the area enclosed in a 1,500 foot radius around the mouth of Burro Creek were closed to sport fishing by emergency order (E.O. 1-11-01) from June 13 through August 31, 2001.

The second emergency order (E.O. 1-26-01) opened king salmon fishing in Pullen Creek and reopened saltwater areas that were closed by the earlier emergency order. Anglers fishing in Pullen Creek near Skagway were allowed to keep 6 king salmon 28 inches or more in length and 6 king salmon less than 28 inches in length from Tuesday, August 21, through Saturday, September 15. In addition, all areas of Taiya Inlet north of the latitude of Taiya Point were opened to king salmon fishing from Tuesday, August 21, through Friday, August 31, 2001. The daily bag and possession limit in Taiya Inlet was 1 king salmon 28 inches or more in length and 1 king salmon less than 28 inches in length. These areas were opened to allow harvest of surplus hatchery-produced king salmon released at Burro Creek and Pullen Creek. Hatchery-produced king salmon returning to those streams exceeded broodstock needs at local hatcheries. Therefore, the department increased bag limits to provide recreational anglers with the opportunity to harvest surplus hatchery fish. The limits are less in salt water because not all king salmon caught in Taiya Inlet were of hatchery origin.

Chilkoot Drainage Sockeye Actions

Three emergency orders were issued during 2001 related to sport fishing for sockeye salmon in the Chilkoot drainage. The first closed the Chilkoot sport fishery above the weir to retention of sockeye salmon and reduced the bag and possession limit to 1 sockeye below the weir effective July 3 through October 15 (E.O. 1-18-01). The early return of sockeye salmon to the Chilkoot Lake and River was projected to be well below the escapement goal (16,500–31,500). By July 1, 8,213 sockeye salmon had been counted through the Chilkoot River weir. On average, 78% of the early return had passed through the weir by this date. Therefore, the early return was not expected to reach the lower end of the escapement goal (16,500–31,500) and restrictions on the Chilkoot Lake and River sockeye salmon sport fishery were necessary.

The last two emergency orders concerning Chilkoot River sockeye salmon increased bag and possession limits in the Chilkoot River drainage. The bag and possession limit in the Chilkoot River below the weir was increased to 6 sockeye salmon on July 21 (E.O. 1-24-01) after the late return was projected to exceed the lower end of the escapement goal (34,000–60,000). Therefore, an increase in the bag and possession limit below the weir was warranted. Chilkoot Lake and the river above the weir remained closed to retention of sockeye salmon to protect early run sockeye salmon already in the drainage. However, by August 6, 59,648 sockeye salmon were counted through the Chilkoot River weir. This was well above the 10-year average (29,081) counted through the weir by this date, and the escapement of sockeye salmon was projected to exceed the upper limit of the escapement range (52,500 to 91,500). As a result, the bag and possession limit was increased to 9 sockeye salmon in the entire drainage effective August 8 (E.O. 1-25-01). With the projected large escapement, increasing daily sport fishing bag limits for sockeye salmon in Chilkoot Lake and River allowed additional harvest without endangering escapement goals.

Access Projects

About 2 miles of trail were constructed to Walker Lake in 2001. Walker Lake is a relatively large lake (123 acres) located in a scenic wilderness setting. The resident population of Dolly Varden has been underutilized in the past because of poor access. This trail opened fishing access to the lake.

Discussions continued with the City of Haines regarding the Portage Cove boat launch, and with Division of Parks (DOP) regarding improvements to the Chilkat State Park boat launch. DOP began design for the improvements in anticipation of work in 2002.

Other Issues

Land Use

Work proceeded on the Haines Highway realignment project. Construction was completed on the first phase (Muncaster Creek to Little Boulder Creek), and the second phase (Little Boulder Creek to the border) continued. In addition, work on the Skagway Airport expansion was completed. All of these projects impacted fish habitat and required

extensive mitigation work. This included extending a clearwater stream and creation of wetlands at 37 mile on the inside of the new highway.

Two hydropower projects near Skagway were active during 2001. Goat Lake Hydro went into operation in December of 1997 and planning and design continued on the Otter (Kasidaya) Creek Hydro project. Goat Lake was stocked with Arctic grayling in 1994 and 1995. These fish have survived and successfully spawned. It is unclear how a spring drawdown will affect future spawning success of the grayling. ADF&G requested that Alaska Power and Telephone conduct studies to determine whether grayling can access the spawning stream during the spring drawdown period. Kasidaya Creek is a high-gradient glacial stream that flows directly into Taiya Inlet. Fish habitat is limited to the intertidal reaches of the stream.

Skagway Chinook Enhancement

Skagway residents are actively pursuing ways to increase the number of chinook salmon released

in their area. With the conclusion of releases of Hidden Falls fish and the imminent sale and/or closure of the Burro Creek Hatchery, another rearing facility was needed to continue smolt releases in the area. Douglas Island Pink and Chum, Inc. (DIPAC) is currently working with the city of Skagway to cooperatively develop the Tahini River broodstock for potential use in Skagway and at DIPAC's Macaulay facility near Juneau. DIPAC is also working with the city of Skagway on plans to construct and operate a new facility located on the mouth of Pullen Creek. The facility would replace the existing Jerry Myers Hatchery and be available to Skagway High School students to continue their hatchery curriculum. The hatchery would recover their costs by charging tourists for hatchery tours. DIPAC released 32,123 chinook smolt in Pullen Creek in 2001 (Table 19) and was holding about 120,000 chinook fry (2000 brood year) and 105,000 chinook eggs (2001 brood year) in 2001 for release in the Skagway area.

YAKUTAT AREA

The Yakutat management area includes all waters of Alaska draining into the Gulf of Alaska from Cape Suckling to Cape Fairweather (Figure 18). The major fisheries of the Yakutat area are in salt water for Pacific halibut, coho salmon, and chinook salmon, and in fresh water for steelhead, chinook salmon, coho salmon, and sockeye salmon. Permanent Sport Fish management staff consists of one Fishery Biologist III, Robert Johnson, stationed in Yakutat.

Local Management and Research Programs

Yakutat Marine Catch Sampling and Situk River Creel

The Yakutat area sport lingcod fishery takes place primarily within the Icy Bay Groundfish Management area. The guideline harvest level for the sport fishery within this area is set at 33,000 pounds. For several years, the sport lingcod fishery has exceeded this harvest level. As a result, effective Wednesday, May 16, 2001, new lingcod length and bag restrictions were imposed (E.O. 1-04-01) to reduce the Yakutat area lingcod harvest. The new regulations reduced the lingcod limit from 2 fish per day, 4 in possession to 1 fish per day, 2 in possession for all anglers. Additionally, a minimum size limit of 39 inches was established for guided and nonresident anglers in Yakutat and northern Southeast Alaska. To test the effect of these new regulations, a technician contacted anglers returning to the Yakutat harbor from August 18 through August 31 and sampled lengths and counted numbers of lingcod harvested. As a result, 747 anglers were interviewed, and 152 lingcod were sampled for length and sex. A comparison of lingcod harvested during the same time period during 2000 and 2001 indicates that the new lingcod regulations did not reduce the numbers of lingcod harvested, and had the additional (negative) effect of increasing the average weight of fish landed. Consequently, further changes need to be implemented to reduce the lingcod harvest in the Yakutat area. Additionally, 552 halibut were measured, and 10 coded wire tagged salmon were recovered.

From June 6 through July 27, the technician interviewed anglers from the Situk River chinook

salmon fishery which resulted in an estimated preliminary sport harvest of only 52 large (≥ 28 inches in length) chinook salmon. The low harvest can be attributed to the average-sized run, and the management actions described below, which were taken to assure attainment of the escapement goal. Scale samples were also collected from chinook salmon harvested in the Situk fishery.

Situk River Steelhead Escapement Monitoring

The Situk River produces the largest run of steelhead in Southeast Alaska. Recent runs of steelhead to the river have varied between about 5,800 and 9,200 fish. This is the largest known spring run of steelhead in Alaska; however, Karluk River in Southwest Alaska supports a fall steelhead population of similar magnitude. Low steelhead numbers in 1991 and 1992 in the Situk River helped prompt conservation concerns that resulted in regional regulations to reduce harvests to a minimum (i.e., artificial unbaited lures only, with only one fish ≥ 36 inches in total length per day, and two per season).

Steelhead abundance is currently monitored by counting emigrant adults (kelts) at a weir and by counting adults in float surveys (Johnson and Jones 2001). Weir kelt counts from 1994 through 1999 suggest an overall improved run strength. The Situk steelhead population attracts a substantial number of anglers. During 2000, it was estimated that more than 15,000 steelhead were caught in the Situk River and none of these fish were reported harvested. Between May 2 and August 8, 2001, 6,400 steelhead were counted as they emigrated downstream through a weir located 1.2 miles upstream of the Lower Landing on the Situk River. This count was down from the 9,204 steelhead counted in 1999, which was the highest count since the early 1950s. The peak of emigration occurred June 1, when 519 steelhead were counted downstream through the weir. A total of 632 steelhead were sampled for length, scales, sex, and condition.

One total-river float survey, and one additional survey from Nine Mile Bridge downstream were conducted during the spring of 2001. The highest float survey index count occurred on May 18 when 4,981 steelhead were counted from Situk Nine Mile Bridge downstream (78% of total weir count),

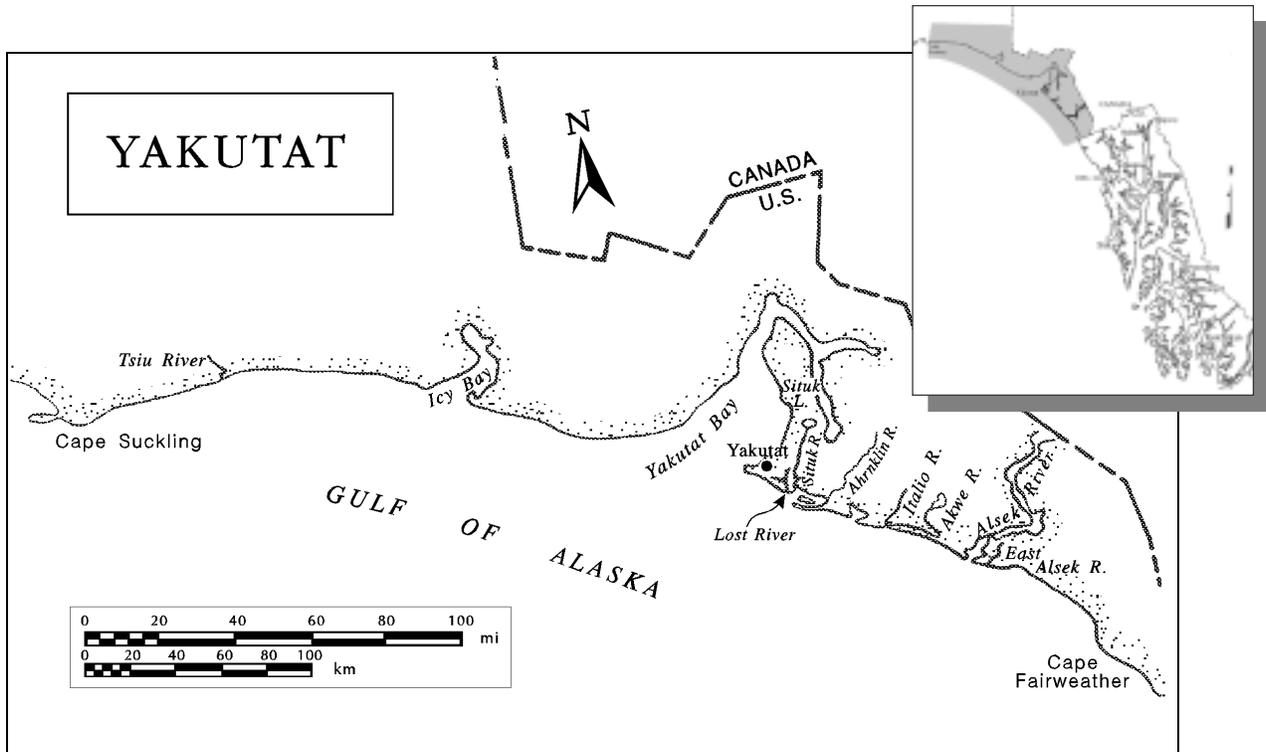


Figure 17.—Yakutat management area.

during good conditions. In general, fish were fairly well distributed from the bridge (river mile 13) down to approximately river mile 5, where fish density tended to decline downstream to the weir.

Alsek River Chinook Salmon Project

The abundance of chinook salmon returning to the Alsek River was estimated in 2001 with an ongoing mark-recapture program (Pahlke and Etherton 2002.). The preliminary estimate of chinook salmon escapement for the Alsek drainage was 11,000 fish, up from about 9,000 estimated in 2000. A total of 1,825 chinook salmon were counted at the Kluksu River weir in the Yukon Territory, about 14% of the estimated total spawning escapement. This is similar to previous years where the weir count has represented between 13 and 24% of the estimated total escapement to the drainage.

Management Actions

Situk River Chinook Salmon Management

The Situk River is managed for a chinook salmon escapement of 450 to 750 large (age 3-ocean or

older) fish with a midpoint of 600 large chinook salmon as the goal. Returns are highest when escapements are between 600 and 1,100 large spawners, and returns are lower when escapements are above or below that range; the magnitude of reduction dependent on how far away.

Managers projected that the 2001 Situk River chinook salmon escapement goal would exceed 750 large fish early in the season due in part to good ocean survival rates. At this level, the Situk-Ahrnklin Inlet and Lost River Chinook Salmon Commercial Fishery Management Plan directs the department to provide a sport fishery in the Situk River with a daily bag limit of one chinook salmon with a 20-inch minimum size. The bag limit in the Situk River for chinook salmon ≥ 20 inches in length was therefore set at one fish per day and two in possession on June 5, 2001 (E.O. 1-07-01).

The chinook salmon fishery was monitored with a sampling program to estimate chinook salmon harvest and age at length in the sport fishery. By July 6, managers projected that the 2001 Situk

River chinook salmon escapement would fall close to the lower end of the escapement goal range. At this level, the Situk-Ahrnklin Inlet and Lost River Chinook Salmon Commercial Fishery Management Plan directs the department to restrict the sport harvest of king salmon greater than 20 inches. As a result, E.O. 1-19-01 was issued, effective July 7, 2001, prohibiting the retention of king salmon greater than 20 inches in length.

The weir count on July 19 was 578 large king salmon, and managers projected that the 2001 Situk River chinook salmon escapement would now fall close to the optimum escapement goal. As a result, the sport fishery was reopened to one large king salmon per day downstream from the markers located approximately 300 feet below the Situk River Weir (E.O. 1-23-01).

The preliminary 2000 Situk River 3-ocean-age chinook salmon escapement was 672 large fish.

Situk River Sockeye Salmon Management

The escapement range for sockeye salmon in the Situk River is 30,000–70,000 fish. The specific escapement goal is 50,000 fish. Sockeye run strength during 2001 started off strong, and then tracked between the midpoint and upper escapement goal range during the entire season. As a result, no emergency management actions were required. The final Situk River sockeye escapement for 2001 was 60,334 fish.

East Alsek River Sockeye Management

The East River and Doame River system is managed for an optimum escapement goal of 40,000 sockeye salmon, with a range of 26,000 to 57,000 spawners. As of July 9, 2001, only 1,100 sockeye salmon had been observed during aerial surveys of the East Alsek River. Similarly low numbers of sockeye salmon had been observed in the nearby Doame River. This amounted to approximately 12% of past surveys on this date. As a result, managers announced that retention of sockeye salmon in the sport fishery was prohibited in the East Alsek River drainage, Doame River drainage, and estuary, effective Saturday, July 14 to assist in achieving desired escapement levels (E.O. 1-22-01). ADF&G staff continued to monitor the number of salmon

entering the East and Doame River systems, however, the run strength of the East Alsek and Doame River systems did not improve dramatically and ended the season with a peak survey of only 17,000 and 1,545 sockeye salmon, respectively.

Surveys

In addition to the steelhead escapement surveys conducted on the Situk River discussed above, the Situk River was surveyed on September 1, and again on September 11 for coho salmon. A total of 3,120 and 5,030 coho salmon were counted, under very poor and fair conditions, respectively.

The Old Situk River was surveyed on October 22, 2001, when 3,260 coho were observed. This was the highest number of coho ever observed for this date and system. The loss of our primary survey pilot affected the ability to perform some escapement surveys. September and October were unusually dry this fall.

Access Projects

Improvements to the Yakutat boat harbor launch continued slowly. Land clearing and slope grading have not progressed much since last year. Recently completed trails along the Situk River up from the Lower Landing and near the Middle Situk cabins were inspected.

Other Issues

Development of a Local Area Management Plan for Pacific halibut by local user groups continues slowly. Revision of the Situk River Management Plan continued with the U. S. Forest Service, Yakutat Tlingit Tribe, and the City and Borough of Yakutat, and State of Alaska (The "Partners") participating.

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