

PILLAR CREEK HATCHERY ANNUAL MANAGEMENT PLAN, 2002

By

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**PILLAR CREEK HATCHERY ANNUAL MANAGEMENT PLAN
EXECUTIVE SUMMARY, 2002.**

New Projects for 2002: NONE

Cost Recovery Harvests for 2002: NONE

Project (Broodstock)	Projected 2002 ^a Enhanced Return	Planned 2002 Stocking ^b	Goals	
			2002 Eggs	2003 Juveniles ^b
Sockeye:				
Hidden Lake (A.L.)	48,600	54,500	83,000	54,500
Little Waterfall Lake (A.L.)	21,200 ^c	54,500	83,000	54,500
Big Waterfall Lake (A.L.)	0 ^c	38,500	60,000	38,500
Crescent Lake (A.L.)	11,000	38,500	60,000	38,500
Little Kitoi Lake (A.L.) ^d	900	0	0	0
Afognak Lake (A.L.)	8,200 ^e	0	0	0
A.L. Total	89,900	186,000	286,000	186,000
Malina Lake (M.L.)	20,700 ^e	0	0	0
Laura Lake (L.L.)	5,500 ^e	0	0	0
Spiridon Lake (S.L.; U.S.)	222,000	1,182,000	2,000,000	1,200,000
Little Kitoi Lake (S.L.)	3,300	0	0	0
S.L. & U.S. Total	225,300	1,182,000	2,000,000	1,200,000
Total Sockeye	341,400	1,368,000	2,286,000	1,386,000
Coho:				
Mayflower (B.L.)	840	11,200	7,500	6,500
Island (B.L.)	2,895	38,600	26,500	22,500
Dark (B.L.)	968	12,900	9,000	7,500
Mission (B.L.)	1,613	21,500	14,500	12,500
Potato Patch (B.L.)	1,223	16,300	11,000	9,500
Southern (B.L.)	450	6,000	4,000	3,500
Pony (B.L.)	263	3,500	2,500	2,100
Total Coho	8,250	110,000	75,000	64,100
Chinook:				
Monashka (K.R.)	0	63,000	300,000	35,000
Total Chinook	0	63,000	300,000	35,000

Brood stocks: A.L. - Afognak Lake; M.L. - Malina Lake; L.L. - Laura Lake; S.L. - Saltery Lake;
U.S. - Upper Station Lake; B.L. - Buskin Lake; K.R. - Karluk River

^a ADF&G forecast prepared by S. Honnold, except for coho by Len Schwarz.

^b All juvenile sockeye salmon releases are recommended to be presmolt except for a 522,000 fry release at Spiridon Lake.

^c The projected 2002 run to Little and Big Waterfall Lakes are combined.

^d Kitoi Bay area sockeye salmon 2002 projected run: Pillar = 900 (A.L.) early-run sockeye from Little Kitoi Lake stocking and 3,300 (S.L.) late-run sockeye salmon from Ruth Lake stocking. Kitoi Hatchery = 4,000 sockeye salmon from stocking S.L. and U.S. broodstock into Little Kitoi Lake, Kitoi Bay, Jennifer Lake, and Ruth Lake.

^e Does not refer to total run; only the portion that is a result of enhancement (stocking).

**Pillar Creek Hatchery summary of active (in use) sockeye salmon
Fish Transport Permits (FTP's):**

Project Name FTP Number	Issue Date	Expiration Date	Purpose
Afognak egg take 99A-0051	07/15/99	12/31/08	Allows egg take of 4,100,000 green eggs at Afognak Lake; incubation and rearing at PCH, and release of the resultant fry into Hidden, Waterfall, and Crescent Lakes.
Hidden Lake 99A-0053	07/15/99	12/31/08	Allows the release of up to 500,000 Afognak Lake stock fry, incubated and reared at PCH into Hidden Lake.
Hidden Lake 99A-0054	07/15/99	12/31/08	Allows the release of up to 500,000 Afognak Lake stock presmolt, incubated and reared at PCH into Hidden Lake
Little Waterfall 97A-0076	10/01/97	12/31/08	Allows the release of up to 200,000 Afognak Lake stock presmolt, incubated and reared at PCH into Little Waterfall Lake.
Big Waterfall 99A-0055	07/15/99	12/31/08	Allows the release of up to 250,000 Afognak Lake stock fingerling, incubated and reared at PCH into Big Waterfall Lake
Big Waterfall 02A-XXXX			Allows the release of Afognak Lake stock presmolt, incubated and reared at PCH into Big Waterfall Lake. AMP requests the release of 38,500 presmolt in 2002.
Crescent Lake 99A-0052	07/15/99	12/31/08	Allows the release of up to 500,000 Afognak Lake stock fingerling, incubated and reared at PCH into Crescent Lake.
Crescent Lake 02A-XXXX			Allows the release of Afognak Lake stock presmolt, incubated and reared at PCH into Crescent Lake. AMP requests the release of 38,500 presmolt in 2002.
Malina egg take 96A-0070	01/01/97	12/31/02	Allows egg take of 1,500,000 green eggs at Malina Lake, incubation and rearing at PCH, and release of progeny into Malina Lake.
Malina Lake 99A-0056	07/15/99	12/31/08	Allows the release of up to 500,000 Malina Lake stock fingerling, incubated and reared at PCH into Malina Lake.
Malina Lake 97A-0078	07/15/99	12/31/08	Allows the release of up to 300,000 Malina Lake stock presmolt, incubated and reared at PCH into Malina Lake.
Laura egg take 99A-0060	07/15/99	12/31/08	Allows egg take of 1,500,000 green eggs at Laura Lake, incubation and rearing at PCH, and release of progeny into Laura Lake.
Laura Lake 99A-0062	07/15/99	12/31/08	Allows the release of up to 200,000 Laura Lake stock fingerling, incubated and reared at PCH into Laura Lake.
Laura Lake 99A-0061	07/15/99	12/31/08	Allows the release of up to 200,000 Laura Lake stock presmolt, incubated and reared at PCH into Laura Lake.

-Continued-

**Pillar Creek Hatchery summary of active (in use) sockeye salmon
Fish Transport Permits (FTP): (page 2 of 2)**

Project Name FTP Number	Issue Date	Expiration Date	Purpose
Saltery egg take 97A-0071	08/31/97	12/31/08	Allows egg take of 9,800,000 green eggs at Saltery Lake, incubation and rearing at PCH, and release of progeny into Spiridon and Ruth Lakes.
Saltery egg take 02A-XXXX			Allows egg take of 2,000,000 green eggs at Saltery Lake, incubation and rearing at PCH, and transfer of eyed eggs to Kitoi Bay Hatchery and release of progeny into Spiridon and Ruth Lakes. This is a contingency plan for a potential water shortage in 2003.
Little Kitoi Lake 02A-XXXX			Allows egg take of 9,800,000 green eggs at L. Kitoi Lake, incubation and rearing at PCH, and release of progeny into Spiridon and Ruth Lakes. (Brood are Saltery Lake origin). The first egg take at this location is expected to occur in 2003.
Spiridon Lake 99A-0059	07/15/99	12/31/08	Allows the release of up to 7,000,000 Saltery Lake stock fingerling, incubated and reared at PCH into Spiridon Lake.
Spiridon Lake 02A-XXXX			Allows the release of up to 7,000,000 Saltery Lake stock fry, incubated and reared at PCH into Spiridon Lake.
Spiridon Lake 02A-XXXX			Allows the release of up to 1,000,000 Saltery Lake stock presmolt, incubated and reared at PCH into Spiridon Lake. The AMP requests the release of 660,000 presmolt in 2002.
Ruth Lake 99A-0058	07/15/99	12/31/08	Allows the release of up to 300,000 Saltery Lake stock fingerling, incubated and reared at PCH into Ruth Lake.

Bold denotes FTPs that require changes (e.g. stocking life stage or number stocked requires updating).

**Pillar Creek Hatchery summary of active (in use) coho salmon
Fish Transport Permits (FTP)s:**

Project Name FTP Number	Issue Date	Expiration Date	Purpose
Buskin egg take 93A-0105	09/15/93	12/31/03	Allows egg take of 150,000 green eggs at Buskin Lake; incubation and rearing at PCH, and release of the resultant fry in 5 anadromous and 2 landlocked systems in Chiniak Bay.
Mayflower 93A-0106	09/15/93	12/31/03	Allows the release of up to 13,000 Buskin Lake stock fry, incubated and reared at PCH into Mayflower Lake.
Island 93A-0107	09/15/93	12/31/03	Allows the release of up to 45,000 Buskin Lake stock fry, incubated and reared at PCH into Island Lake.
Dark 93A-0108	09/15/93	12/31/03	Allows the release of up to 15,000 Buskin Lake stock fry, incubated and reared at PCH into Dark Lake.
Mission 93A-0109	09/15/93	12/31/03	Allows the release of up to 24,500 Buskin Lake stock fry, incubated and reared at PCH into Mission Lake.
Potato Patch 93A-0110	09/15/93	12/31/03	Allows the release of up to 19,000 Buskin Lake stock fry, incubated and reared at PCH into Potato Patch Lake.
Pony 93A-0111	09/15/93	12/31/03	Allows the release of up to 4,200 Buskin Lake stock fry, incubated and reared at PCH into Pony Lake.
Southern 93A-0111	09/15/93	12/31/03	Allows the release of up to 7,000 Buskin Lake stock fry, incubated and reared at PCH into Southern Lake.

**Pillar Creek Hatchery summary of active (in use) chinook salmon
Fish Transport Permits (FTP)s:**

Project Name FTP Number	Issue Date	Expiration Date	Purpose
Karluk egg take 00A-0010	02/06/00	06/30/06	Allows egg take of 300,000 green eggs at Karluk River; incubation and rearing at PCH, and release of the resultant presmolt into Monashka Creek.

Pillar Creek Hatchery Annual Management Plan sockeye salmon calendar of events, 2001-2003.

Species	2001						2002						2003													
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	October
Afognak Lake Broodstock:																										
Hidden	117,200 Egg												54,500 Presmolt													
													83,000 Egg						54,500 Presmolt							
L. Waterfall	117,200 Egg												54,500 Presmolt													
													83,000 Egg						54,500 Presmolt							
B. Waterfall	82,800 Egg												38,500 Presmolt													
													60,000 Egg						38,500 Presmolt							
Crescent	82,800 Egg												38,500 Presmolt													
													60,000 Egg						38,500 Presmolt							
Saltery Lake Broodstock:																										
Spiridon	1,569,000 Egg						522,000 Fry						660,000 Presmolt													
													2,000,000 Egg						522,000 Fry 660,000 Presmolt							

Pillar Creek Hatchery Annual Management Plan chinook and coho salmon calendar of events, 2000-2004.

Species	2001						2002						2003																	
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	October				
Karluk River Broodstock:																														
	63,000 smolt (2000 egg take)																													
	86,120 Egg																		35,000 smolt											
													300,000 Egg																	
Buskin Lake Coho Broodstock:																														
Mayflower	14,800 Egg						11,200 Fingerling						7,500 Egg						6,500 Fingerling						7,500 Egg					
Island	51,300 Egg						38,600 Fingerling						26,500 Egg						22,500 Fingerling						26,500 Egg					
Dark	17,200 Egg						12,900 Fingerling						9,000 Egg						7,500 Fingerling						9,000 Egg					
Mission	28,500 Egg						21,500 Fingerling						14,500 Egg						12,500 Fingerling						14,500 Egg					
Potato Patch	21,600 Egg						16,300 Fingerling						11,000 Egg						9,500 Fingerling						11,000 Egg					
Southern	8,000 Egg						6,000 Fingerling						4,000 Egg						3,500 Fingerling						4,000 Egg					
Pony	4,600 Egg						3,500 Fingerling						2,500 Egg						2,100 Fingerling						2,500 Egg					

ABSTRACT

Pillar Creek Hatchery (PCH) was constructed in 1990 as a cooperative project between the Alaska Department of Fish and Game and the Kodiak Regional Aquaculture Association. The facility is located on the road system north of the city of Kodiak. The hatchery has a capacity to incubate 20 million salmon eggs and rear up to 16 million juvenile fish. Currently, the hatchery incubates and rears single stocks of chinook *Oncorhynchus tshawytscha* and coho *O. kisutch* salmon and two stocks of sockeye salmon *O. nerka*.

In 2002 about 186,000 juvenile sockeye salmon of Afognak Lake broodstock will be released into four lakes. Prior releases of this broodstock are expected to produce a return in 2002 of 89,900 adult sockeye salmon. Egg takes this fall will require about 400,000 Afognak Lake eggs for future releases.

In 2002 about 900 adult sockeye salmon of Afognak Lake broodstock are expected to return to Little Kitoi Lake as a result of past PCH stocking projects. Also in the Kitoi Bay area, prior releases to Ruth Lake are expected to produce a return of 3,300 adult sockeye salmon of Sallery Lake broodstock. PCH is not expected to stock either of these lakes in the future; stocking will occur from the Kitoi Bay Hatchery.

No releases will occur in Malina or Laura Lakes this year, although an estimated 26,200 adult sockeye salmon are expected to return to these lakes from prior stockings. No egg takes are planned for either of these lakes.

In 2002 about 1,182,000 juvenile sockeye salmon of Sallery Lake broodstock will be released into Spiridon Lake. In 2002 prior releases to Spiridon Lake are expected to produce a return of 222,000 adult sockeye salmon of both Upper Station and Sallery stocks (90% Sallery stock). Sallery Lake egg takes this fall will require about 1,600,000 eggs for future releases.

In 2002 about 110,000 juvenile coho salmon of Buskin Lake broodstock will be released into seven local lakes. Prior releases of this broodstock are expected to produce a return in 2002 of 4,520 adult coho salmon. Egg takes this fall will require about 75,000 eggs for future releases.

PCH will continue rearing juvenile chinook salmon of Karluk River broodstock for release in 2002 and 2003 at Monashka Creek. In 2002 about 63,000 chinook smolt will be released into Monashka Creek from the 2000 Karluk River egg take. Egg takes this fall will require about 300,000 eggs for future releases.

There are no cost recovery projects planned for this facility in 2002.

INTRODUCTION

Pillar Creek Hatchery (PCH) was constructed in 1990 as a cooperative project between the Alaska Department of Fish and Game (ADF&G) and the Kodiak Regional Aquaculture Association (KRAA). The facility is located on the Kodiak road system about seven miles north of the City of Kodiak (Figures 1 and 2). PCH was designed to increase salmon production for the Kodiak Management Area by using barren-lake systems to stock juvenile sockeye salmon *Oncorhynchus nerka* and coho salmon *O. kisutch* to produce adult returns for seine, set gillnet, and recreational fisheries. In addition, hatchery programs were expected to supplement wild stocks in attempts to rehabilitate depleted runs. PCH has the capacity to incubate 20 million salmon eggs and rear up to 16 million juveniles of all life stages (fry, fingerlings, presmolt, and smolt). The facility is operated primarily by funds provided by KRAA and to a lesser extent by the ADF&G Division of Sport Fish, the Kodiak Sport Fish Association (KSFA), and the Kodiak Association of Charterboat Operators (KACO). The KSFA and KACO provide funding for the egg take and rearing portion of a chinook salmon *O. tshawytscha* project.

The primary project facilitated by PCH is the stocking of sockeye salmon into Spiridon Lake (Figure 1). This project utilizes Spiridon Lake as a nursery lake to produce smolt, which (after leaving the lake) return as adults to provide a common property sockeye salmon fishery. A conservative stocking strategy has been adopted in order to minimize the impacts of rearing juvenile salmon on the standing crop of macrozooplankton in the lake. The current recommended stocking level is 522,000 fry and an October stocking of 660,000 presmolt. Late-run Upper Station sockeye salmon were used in the initial development stage of the project. A portion of eggs collected at Upper Station were incubated and reared to presmolt and smolt at Kitoi Bay Hatchery (KBH; McCullough and Aro *in press*). These juveniles were released at Little Kitoi Lake and estuary to develop a brood source at the KBH for the Spiridon Lake project. The sockeye salmon run to Little Kitoi, as a result of these releases, did not provide sufficient adults for broodstock.

The 1994 Hatchery Management Plan was amended to change the brood source for the Spiridon Lake project from late-run Upper Station to Saltery Lake sockeye salmon for an interim period, until the brood source goals were attained at Little Kitoi Lake. Research by ADF&G and the U.S. Fish and Wildlife Service (FWS) indicated that the Saltery Lake stock would be preferred for Spiridon Lake stocking (Honnold 1997, Honnold et al. 1999). The run timing of Saltery Lake sockeye salmon is about three weeks earlier than the late-run Upper Station sockeye stock. The broodstock requirements at KBH are expected to be easier to achieve using the Saltery Lake stock since adults are expected to return after the peak of the chum salmon run and before the peak of the pink salmon run (Figure 3). This brood source change was approved by the FWS for one year, 1994 (ADF&G 1994). In 1995 Upper Station sockeye salmon were again used for broodstock.

The approval to use Saltery Lake stock as the long-term brood source for Spiridon Lake was granted in 1997 by the Commissioner of ADF&G, representatives of the FWS, Kodiak Regional Planning Team, and KRAA. Saltery Lake stock will continue to be the brood source for the Spiridon Lake project in 2002. Little Kitoi Lake was stocked with Saltery Lake sockeye salmon stock from KBH for the first time in 1999 and this stocking will continue in 2002. The purpose of this project is to develop a run to Little Kitoi Lake that has Saltery Lake sockeye salmon run timing and to provide broodstock for Spiridon and Ruth Lakes stocking projects (McCullough et al. 2000).

PCH also provides early-run juvenile sockeye salmon for stocking several barren lakes in the Kodiak area. Hidden, Little Waterfall, Big Waterfall, and Crescent Lakes will be stocked with Afognak Lake sockeye salmon juveniles in 2002. Stocking of Afognak Lake sockeye has been discontinued at Little Kitoi and other Kitoi Bay area lakes to simplify broodstock development (McCullough et al. 2000; Figure 1).

Afognak Lake sockeye salmon eggs had higher survival at PCH than expected in 1992, 1994, 1996, and 1997. The resultant number of fry exceeded the overall stocking capacity of the barren lakes as identified in annual management plans (AMPs) for those years. The AMPs designated Afognak Lake as a contingency stocking location in the event that extra fry resulted from exceptional survival at PCH. Thus, fry were stocked back into Afognak Lake to avoid excess stocking levels at the barren systems, which are quite sensitive to predation effects (on zooplankton) by juvenile sockeye salmon. Afognak Lake saw an increase in the zooplankton population after lake enrichment began in 1990, the lakes zooplankton population peaked in 1996, declined in 1997 and remained at that level in 1998-1999, then dropped in 2000 to near prefertilization levels. The addition of nutrients (fertilization funded by KRAA) was discontinued in 2001. There are no plans to stock Afognak Lake in 2002. The proposed Afognak Lake egg-take goals for 2002 (stocking in 2003) have been lowered to avoid stocking excess fry. If excess fry are produced, they may be reared to presmolt stage and then apportioned among the barren lakes (Hidden, Little Waterfall, Big Waterfall, and Crescent). Barren lake stocking will be dependent upon sufficient zooplankton abundance as indicated by limnological data analyses. If the zooplankton forage base of the barren lakes is depressed, the excess juveniles may be destroyed rather than stocked.

Fertilization of Malina Lakes began in 1991 and sockeye salmon stocking began in 1992 to rehabilitate this depleted early run (Figure 1). Sockeye salmon eggs have been collected from the Malina Lakes adult salmon, incubated at PCH, and juveniles (fry, fingerling, and presmolt) stocked into the upper lake (1992-1999). The lake responded to fertilization; however, zooplankton density and biomass estimates have resulted in reduced stocking levels compared to planned stocking levels. These reduced levels are primarily due to increased natural fry recruitment as a result of increased escapements (McCullough et al. 2001). The maximum number of juveniles stocked into Upper Malina Lake has been about 500,000 as compared to the planned >1 million fry releases. From 1999 through 2001, the Malina Lake sockeye salmon escapement goals were met which negated the need for an egg-take to provide for stocking. In 2002 both lake fertilization and egg takes have been discontinued because of budget considerations and the stock is now considered rehabilitated (S. Honnold, ADF&G, Kodiak, personal communication).

Laura Lake has also been fertilized (1993-2000) and supplemented with sockeye fry (1994-1996 and 1999) of Laura Lake origin to rehabilitate the early run (Figure 1). Egg takes at this system have not met the desired goals due to difficulty in locating brood fish. As a result, the stocking level has not exceeded 200,000 juveniles. In 1996, 1997, and 1999 through 2001 sockeye salmon eggs were not collected at Laura Lake due to adequate adult escapement. In 2002 both lake fertilization and egg takes have been discontinued because of budget considerations and the stock is considered rehabilitated (S. Honnold, ADF&G, Kodiak, personal communication).

Lake enrichment to all Kodiak lakes will be discontinued in 2002.

Buskin Lake coho salmon were reared at PCH from 1995 through 2001 to provide juvenile salmon for road system stocking to enhance recreational fishing opportunities (Figure 2). In addition, Buskin Lake coho salmon eggs were used for several classroom incubation programs in Kodiak area schools. Prior to 1995 Little Kitoi and Monashka Creek coho salmon were used for these programs. Because these projects stocking locations drain into Chiniak Bay, the use of Buskin Lake (Chiniak Bay stock) coho salmon was recommended by the ADF&G genetics staff. In 2002 we propose continuing these stocking programs using Buskin Lake coho salmon as the brood source.

In January 2000 a permit alteration request (PAR) was approved for the Pillar Creek Hatchery Basic Management Plan (McCullough et al. 2000). The PAR provides for the development of a chinook salmon project for the Kodiak road system to enhance recreational fishing opportunities (Figure 2). About 125,000 chinook salmon eggs from the Karluk River, taken in 2000, were incubated and will be reared to smolt size at PCH. The resultant smolt will be released into Monashka Creek in the spring of 2002. This project continued in 2001 with eggs taken at Karluk River (86,120) to produce about 35,000 smolt for release in 2003. In 2002 we propose continuing this project with an egg take of 300,000 and a smolt release in 2004 of 75,000 chinook salmon smolt.

The City of Kodiak has work planned for 2003 on their water reservoirs. The Pillar Creek reservoirs supply water to the city and to the Pillar Creek Hatchery. A water shortage to the hatchery may result from this work. This may require a reduction in the use of Afognak Lake broodstock and a transfer of up to 2 million eyed Saltery Lake eggs to Kitoi Bay Hatchery in 2003 or 2004. A contingency FTP to transfer eyed Saltery Lake eggs from Pillar Creek Hatchery to Kitoi Bay Hatchery will be needed.

This management plan will continue to evolve in an effort to best take advantage of PCH facilities to enhance and rehabilitate Kodiak area salmon resources. There are many factors that have, and will continue to bring changes to this document. Inseason lake productivity assessment may result in adjustments to stocking densities in order to maintain optimal stocking levels.

2002 SOCKEYE SALMON RELEASES

Table 1 describes 2001 sockeye salmon egg takes, planned releases in 2002, projected returns in 2005 and 2006, and the status of FTPs. The stocking levels for 2002 may be adjusted after analysis of limnological and zooplankton data collected at each lake and/or because of rearing limitations at PCH (i.e., how many juvenile fish of each life stage can be cultured; McCullough et al. 2001). Appendices A through E describe PCH past, present, and proposed sockeye salmon egg takes and releases.

All sockeye will be transported by air as fed fry or presmolt to the remote lakes specified. Stocking of fry will correspond to the timing of each lake's plankton bloom (as determined by inseason limnology sampling). Fry will be released at the lake surface. Presmolt are scheduled for release by air dropping in mid to late October.

Early-Run Sockeye Salmon: Afognak Lake Donor Stock

In 2002 the Afognak Lake brood source presmolt will be released into Hidden (54,500 fish), Little Waterfall (54,500 fish), Big Waterfall (38,500 fish), and Crescent (38,500 fish) Lakes (Table 1). Stocking levels are altered from the numbers indicated in the 2001 PCH Annual Management Plan (McCullough et al. 2001) due to postseason limnology information. Fish releases are not planned for Afognak Lake in 2002. A total of about 186,000 early-run (Afognak Lake stock-2001 brood year) juveniles will be stocked in 2002.

Adult returns from early-run (Afognak Lake broodstock) stocking in 2002 are projected (based on survivals summarized in Appendix F) to be about 23,250 fish (Table 1). Of these 10,463 are expected to return in 2005 and 12,788 in 2006. The largest returns are expected at Hidden Lake (6,813) and Little Waterfall Lake (6,813), with the smallest returns to Big Waterfall Lake (4,813) and Crescent Lake (4,813). The run timing of these returns should be similar to Afognak Lake sockeye salmon (brood source), with runs beginning in late May, peaking in mid June, and ending by early July (Figure 4). This run timing affinity has been observed at terminal harvest areas (THAs) at both Foul Bay (Hidden Lake stocking) and Waterfall Bay (Little Waterfall Lake stocking; McCullough et al. 2001). Similar timing has been reported at Settler Cove (Crescent Lake run; D. Prokopowich, ADF&G, Kodiak, personal communication).

Late-Run Sockeye Salmon: Saltery Lake Donor Stock

Spiridon Lake will be stocked with about 522,000 Saltery Lake sockeye salmon fry and 660,000 presmolt in 2002 (Table 1). The fry stocking is approximately 75% less than previously planned. The increased presmolt release reflects concerns from limnology data that suggest that large numbers of fry are overgrazing the lake's zooplankton population (S. Honnold, ADF&G, Kodiak, personal communication).

Ruth Lake will not be stocked with juvenile sockeye salmon in 2002 to allow the lake's zooplankton population to recover from several years of low abundance (S. Honnold, ADF&G, Kodiak, personal communication; Table 1).

It is projected that 111,210 adult salmon will return in 2005 and 2006 as a result of fry and presmolt stocking in Spiridon Lake in 2002. Spiridon Lake adults should return in 2005 (51%; 57,222) and in 2006 (49%; 53,988) from these stockings (Table 1). The run timing of these fish should be similar to Saltery Lake sockeye salmon, with the initial run beginning in late June, peaking in early to mid July, and ending in mid August (Figure 5).

Overall, we expect PCH to stock about 186,000 early-run and 1,182,000 late-run sockeye juveniles (1,368,000 total) in 2002, which should produce about 23,250 early-run adults and 111,210 late-run adults (134,460 total; Table 1).

For the above projects, some FTPs need to be renewed (see summary of active FTPs section). FTP applications will be submitted by KRAA to the ADF&G permitting coordinators in Juneau for review and approval by the Commissioner of ADF&G prior to all egg takes and stocking in 2002 and 2003.

2002 COHO SALMON RELEASES: BUSKIN LAKE DONOR STOCK

Table 2 describes the 2001 coho salmon egg takes, 2002 planned releases, projected adult returns in 2004 and 2005, and the status of FTPs. In August 2002 approximately 110,000 coho salmon fingerlings will be released at seven lakes located near the Kodiak Island road system. These lakes include: Mayflower (11,159), Island (38,596), Dark (12,969), Mission (21,489), Potato Patch (16,286), Southern (6,032), and Pony (3,468) Lakes (Figure 2). The coho fingerlings will be transported from PCH by a truck-mounted transport tank to each stocking location, except for Southern Lake on Long Island where fry will be transported via float-plane or helicopter.

A small number of Buskin Lake coho salmon eggs will be used for educational programs in the Kodiak Island Borough school system. The current school program uses green eggs that are not part of the PCH operations.

Adult coho salmon returning in 2004 and 2005 to all stocked sites are expected to number about 9,198 salmon with the majority (8,278) returning in 2004 (Table 2). Appendix F provides the coho salmon survival assumptions used to estimate adult returns. Appendix G describes the history of coho salmon egg takes from Buskin Lake. The run timing should be similar to Buskin Lake coho, with fish returning in mid August, peaking in early September, and declining by late September (Figure 6).

2002 CHINOOK SALMON RELEASES: KARLUK RIVER DONOR STOCK

McCullough et al. (2000) describes the 2000 chinook salmon egg takes, 2002 planned releases, projected adult returns in 2003-2007, and the status of FTPs. Detailed project information can be found in unpublished reports (Len Schwarz, ADF&G, Division of Sport Fish, Kodiak; *Kodiak Road System King Salmon Enhancement Project Report, 2001 Season*) and memorandums (L. Schwarz, ADF&G, Kodiak, personal communication). In May 2002 about 63,000 chinook salmon smolt will be released into Monashka Creek near the Kodiak Island road system. The smolt will be transported from PCH by a truck-mounted transport tank to the stocking location at Monashka Creek.

Currently, the adult chinook salmon returning from 2003 through 2007 are expected to number about 630-1,890 salmon with the majority (365-1,096) returning in 2006. Appendix F provides the chinook salmon survival assumptions used to estimate adult returns. Appendix H describes the history of chinook salmon egg takes from the Karluk River. The run timing should be similar to Karluk River chinook, with fish returning in late May, peaking in mid June, and declining by early July (Figure 7).

ESCAPEMENT GOALS AND BROODSTOCK REQUIREMENTS, 2002

Early and late-run sockeye salmon escapement goals, minimum escapement goals allowing for egg takes, and projected brood numbers proposed by PCH in 2002 are described in Table 3. All egg takes will follow the criteria established in McCullough et al. (2001; egg-take and rehabilitation

criteria; adult removal criteria for the Afognak Lake sockeye salmon and Karluk River chinook salmon egg takes). In 1999 the KRPT and the ADF&G suggested that any escapement in excess of the minimum escapement goals for Afognak and Saltery Lakes sockeye salmon stocks would be available for broodstock collection. In 2001 the KRPT and the ADF&G agreed that if the spawning escapement for the Afognak Lake sockeye salmon and Karluk River chinook salmon was less than the lower escapement goal, 1% of the spawning escapement could be taken to allow for the continuation of enhancement projects (McCullough et al. 2001). Further discussions in 2001 and 2002 extended this egg-take guideline to all species and stocks in the Kodiak archipelago. The ADF&G does not believe these guidelines will significantly decrease future returns.

2002 SOCKEYE SALMON EGG TAKES (2003 STOCKING)

Table 4 describes the 2002 sockeye salmon egg takes, planned releases in 2003, projected returns in 2006 and 2007, and the status of FTPs. The stocking levels for 2003 may be adjusted inseason as a result of limnological analysis of zooplankton data collected at each lake and rearing limitations at PCH (i.e., how many of each life stage could be cultured).

Early-Run Sockeye Salmon: Afognak Lake Donor Stock

We propose the following stocking levels of Afognak Lake sockeye salmon in 2003: Hidden Lake - 54,500 presmolt; Little Waterfall Lake - 54,500 presmolt; Big Waterfall Lake - 38,500 presmolt; and Crescent Lake - 38,500 presmolt (Table 4).

A total of about 186,000 Afognak Lake brood source juveniles will be stocked in 2003. Egg-take goals will be based upon established egg-take criteria and the escapement level available for broodstock collection (McCullough et al. 2001; Table 3).

Late-Run Sockeye Salmon: Saltery Lake Donor Stock

We propose that approximately 1,182,000 Saltery Lake sockeye salmon fry and presmolt be stocked into Spiridon Lake in 2002 (Table 4). The 2003 stocking level is contingent upon the stability of the food base (zooplankton) in the lakes. If any negative response is observed in the lakes' zooplankton community as a result of the 2002 stocking, the proposed 2003 stocking level will be reduced. Inseason monitoring of the zooplankton community will be conducted in 2002 and 2003 and seasonal trends will be analyzed prior to the Saltery Lake egg take. The final stocking plan will be determined in August 2002. Egg-take goals will be based upon the level of escapement available for broodstock collection (Table 3).

To summarize, in 2003 we expect PCH to stock about 186,000 (Afognak Lake brood source) early-run juvenile sockeye salmon and 1,182,000 late-run (Saltery Lake brood source) sockeye salmon juveniles, for a total of about 1,368,000 juvenile sockeye salmon stocked from brood year 2002 (Table 4).

2002 COHO SALMON EGG TAKES (2003 STOCKING)

Table 5 describes proposed Buskin Lake brood source 2002 coho salmon egg takes, 2003 planned releases, projected adult returns in 2005 and 2006, and the status of FTPs. Appendix G describes the history and proposed egg-takes for the Buskin River coho stock.

2002 CHINOOK SALMON EGG TAKES (2004 STOCKING)

Table 6 describes proposed 2002 chinook salmon egg takes, 2004 planned release, adult returns, and the status of FTPs. The chinook salmon project is described in *Kodiak Road System King Salmon Enhancement Project Report, 2001 Season*, (unpublished report, L. Schwarz, ADF&G, Division of Sport Fish, Kodiak).

This project will use Karluk River chinook salmon eggs from brood year 2002 to produce smolt for release into Monashka Creek in 2004 (Figures 1 and 2). Appendix H describes the proposed egg take of Karluk River chinook stock; 120 adult chinook salmon (60 spawning pair) will be used to insure genetic stock integrity. We propose to take 300,000 chinook salmon eggs (brood year 2002) and release the resulting smolt (approximately 150,000) into Monashka Creek in year 2004. Adult chinook salmon produced from the smolt release in 2004 are projected to total 1,500-3,000 salmon. Most adult salmon will return in 2007 (330-990) and 2008 (870-2,610; Table 6).

SOCKEYE SALMON HARVEST AND MANAGEMENT

In 2002 the sockeye salmon runs to systems as a result of PCH stocking (in conjunction with lake enrichment at Little Waterfall, Little Kitoi, Afognak, Malina, and Laura Lakes) are estimated to amount to 352,400 salmon (Table 7). Hidden, Little Waterfall, Big Waterfall, Crescent, Little Kitoi, Spiridon, Ruth, and Jennifer Lakes are barriered systems without native salmon runs into the lakes. Salmon may be present in the lake outlet stream from marine waters to the salmon barrier. All sockeye salmon returning to these systems are available for harvest. Afognak, Malina, and Laura Lakes have anadromous salmon runs; hatchery produced fish will intermingle with the wild fish. We project that approximately 4,920 Afognak Lake, 12,420 Malina Lake, and 3,300 Laura Lake hatchery produced sockeye salmon will be harvested if the average exploitation rate is 60% (Chapman 1986); the remainder of enhanced fish would go toward escapement goals. Directed fisheries on Afognak, Malina, and Laura Lakes sockeye salmon runs may occur if the escapement goals are expected to be achieved.

Release Site: Hidden Lake

The Foul Bay (Hidden Lake; Figure 8) harvest strategy is designed to allow for the harvest of sockeye salmon produced from the Hidden Lake enhancement project and to provide for the

protection of wild salmon stocks returning to, or passing through, the Northwest Afognak Section of the Afognak District (Figure 9).

Hidden Lake sockeye salmon runs will be harvested in the Foul Bay THA (Figure 8; Alaska Administrative Code Chapter 18.375: 5 AAC 18.375). Fishing time directed at returning sockeye salmon is expected to begin on 9 June. The fishery directed at the Hidden Lake sockeye salmon run occurs prior to the arrival of most of the pink salmon and it is not expected to impact the pink salmon escapement. The lower pink salmon escapement objective for Hidden Lake Creek is 3,000 salmon (KNWR 1992). There is no escapement requirement for sockeye salmon in Hidden Creek as the lake is inaccessible due to a large barrier falls. The sockeye salmon harvest is expected to occur primarily in the Foul Bay THA; however, some sockeye salmon may be harvested in the Northwest Afognak Section (Figure 9). Any sockeye salmon from this enhancement project harvested from 6 July through 25 July in the Northwest Afognak Section will count towards the 15,000 sockeye salmon fishery threshold (5 AAC 18.363; Brennan et al. 2002). Wild sockeye salmon systems are not present within Foul Bay. All of the sockeye salmon harvested in the Foul Bay THA will be attributed to the Hidden Lake enhancement project.

The Foul Bay THA includes the area of Foul Bay east of 152°47.20' W long. (Figure 8). By regulation the only legal gear type for the THA is seine gear. Because a harvestable surplus of enhanced sockeye salmon is forecasted in the THA, continuous fishing periods will be allowed by the ADF&G beginning 9 June (Brennan et al. 2002). Since 1995 a weir has been installed annually on Hidden Lake Creek to ensure that the majority of Hidden Lake sockeye salmon are harvested in the common property fishery. Large build-ups of sockeye salmon have never been observed in front of the weir either before or during the commercial fishery.

The ADF&G genetics staff recommended that the barrier weir not be used in Hidden Lake Creek in 1998 in order to reduce the risks of straying (Honnold et al. 1998). Geneticists believe that substantial straying may occur if sockeye salmon are impeded from entering freshwater. Specifically, straying may increase substantially if returns arrive prior to the initial fishery opening on 9 June and are not allowed to escape into Hidden Lake Creek. In addition, fish that are not caught after 9 June may also stray since the weir will impede their migration into fresh water. In 1998, a barrier weir was installed in Hidden Lake Creek to determine the straying rate of the sockeye salmon (Wadle and Honnold 2000). This study indicated that it was unlikely that there was significant straying of enhanced sockeye salmon into nearby wild stock sockeye salmon systems. The Hidden Lake Creek fish weir will be installed in 2002, as recommended by Wadle and Honnold (2000).

The ADF&G recognizes that some incidental harvest of wild stocks (Thorsheim Lake or Long Lagoon sockeye salmon) could occur in the Foul Bay THA while the fishery is managed to harvest the Hidden Lake sockeye salmon run. The ADF&G could adjust the size of the THA to avoid the harvest of wild stocks and to target the Hidden Lake sockeye salmon. To date, age and scale pattern analysis of the harvests have indicated a minimal wild stock bycatch of less than 2% (Schrof et al. 2000; Honnold and Schrof 2001a). A reduction in the size of the THA is not expected in 2002.

Release Site: Crescent Lake

The purpose of the Crescent Lake stocking project is to provide additional sockeye salmon for harvest in the Settler Cove (Crescent Lake) area without compromising wild stock escapements, primarily Barabara Lake sockeye salmon (Figure 10).

The harvest of Crescent Lake sockeye salmon is expected to occur during fishing periods targeting early-run sockeye, pink, and chum salmon in the Central Section of the Northwest Kodiak District (Figure 9). Special openings are not expected to occur within the Settler Cove THA (Figure 10; 5 AAC 18.377). The fishery opens in the Central Section of the Northwest Kodiak District on 9 June and again on 14 June for 33-hour periods (Brennan et al. 2002). Additional fishing time is dependent on the run strength of early-run Karluk Lake sockeye salmon (5 AAC 18.362). In 2002 the Settler Cove THA could open if large numbers of sockeye salmon are not harvested during normal commercial fishery openings and are observed in the Settler Cove area. Broodstock collection is not required for the project, so all fish will be available for harvest. A barrier net is not necessary for this project since natural barriers prevent salmon access to the lake and villagers of Port Lions utilize all inriver escapement for subsistence purposes. Straying is not a concern for this project, since fish are allowed unimpeded access to freshwater and all are harvested.

Release Sites: Little and Big Waterfall Lakes

The Waterfall Bay harvest strategy allows for the harvest of enhanced sockeye salmon returning to Waterfall Bay and provides safeguards for wild salmon escapements. The sockeye salmon harvest is expected to occur in the Perenosa Bay Section (Figures 9 and 11). A THA is required to provide for an orderly harvest of enhanced sockeye salmon that have migrated past the traditional commercial fishing areas of the Perenosa Bay area (Figure 11; 5 AAC 18.376). Since escapement and broodstock are not required, all returning enhanced sockeye salmon will be available for harvest. Because a harvestable surplus of enhanced sockeye salmon is forecasted, continuous fishing will be allowed beginning 9 June. Since 1995 a fish barrier has been installed annually near the terminus of Little Waterfall Creek to assure that all Little Waterfall Lake sockeye salmon would be harvested. In 1996, prior to installation of the fish barrier net, about 6,000 sockeye salmon escaped into Little Waterfall Creek and congregated below the barrier falls, about 0.5 kilometer upstream. These fish moved in and out of the creek on the tides and many were eventually caught in the commercial fishery.

In 1998 ADF&G genetics staff recommended that the fish barrier should not be used in the Little Waterfall Creek terminus (Honnold et al. 1998). Geneticists have indicated that straying concerns, as described for the Hidden Lake Creek fish barrier, would also apply to this project. In 1998 the barrier net was installed and a straying study, similar to the study initiated for the Hidden Lake project, was implemented (Wadle and Honnold 2000). Results from this study indicated that it was unlikely that there was significant straying of enhanced sockeye salmon into wild stock sockeye salmon systems. The Little Waterfall Creek fish barrier will be installed in 2002, as recommended by Wadle and Honnold (2000). A fish barrier will not be used in the terminus of Big Waterfall Creek; all returning adults that are not harvested will have unimpeded access to freshwater upstream to the barrier falls.

In 1999 the Waterfall Bay THA was modified by the Alaska Board of Fisheries to include waters near the stream terminus of Big Waterfall Creek (5 AAC 18.376). By regulation, the only legal gear type for the Waterfall Bay THA is seine gear.

The ADF&G recognizes that an incidental harvest of wild salmon could occur in this area while the fishery is managed to harvest the enhanced Little and Big Waterfall Lakes sockeye salmon. To avoid harvesting wild stocks the ADF&G could adjust the size of the THA opened to commercial fishing. Wild early-run stocks that could potentially be in the THA include Pauls (Laura) and Portage Lake sockeye stocks; all of the aforementioned lakes are located in Perenosa Bay (Figure 11). To date, scale pattern and age analysis of harvest samples have indicated minimal wild stock harvest (< 2%; Schrof et al. 2000). In 2002 a reduction in the size of the Waterfall THA is not expected (Brennan et al. 2002).

Release Site: Little Kitoi Lake

The 2002 Little Kitoi Lake sockeye salmon run will be harvested incidentally during early pink and chum salmon fisheries in the Inner Kitoi, Outer Kitoi, Izhut, and Duck Bay Sections of the Afognak District (Figure 9; Brennan et al. 2002). The Little Kitoi Lake fish pass will remain closed and commercial fishing will occur in Kitoi Bay (McCullough and Aro *in press*). The objective is to prevent the sockeye salmon stock of Upper Station Lake origin from reproducing; once sockeye salmon stock of Saltery Lake origin return in substantial numbers (year 2003) the fish pass will be opened and commercial fishing will be restricted to aid in broodstock development. Fish that are not harvested will be collected in freshwater at the fish pass compound and donated to charities to eliminate any potential straying. The early sockeye salmon run (Saltery Lake broodstock) should begin in early June and continue through mid August (Figure 5). Commercial fishing time will occur beginning 9 June, targeting the early portion of the chum run, which is predominately male salmon. The Kitoi Bay Sections will close to commercial salmon fishing about 15 June, as needed to protect the chum salmon broodstock. Additional openings in the Kitoi Bay Sections are dependent upon the sockeye and chum salmon run strength and the progress of chum salmon broodstock collection. Currently, sockeye salmon broodstock collection is not required for this project, and all sockeye salmon returning to Kitoi Bay will be available for harvest.

Release Site: Afognak Lake

The 2002 Afognak Lake sockeye salmon run may provide for commercial fishing beginning as early as 9 June (5 AAC 18.365). Commercial fishing time in the Southeast Afognak Section (Figure 9), targeting Afognak Lake sockeye salmon, is dependent on achieving interim escapement goals through the Litnik weir (Brennan et al. 2002). The enhanced portion of the run will be harvested during commercial and subsistence fishing periods in the Southeast Afognak Section. Approximately 290 sockeye salmon will be required in 2002 for broodstock for stocking projects at Hidden, Little Waterfall, Big Waterfall, and Crescent Lakes (Table 4).

Release Site: Malina Lake

The 2002 Malina Lake sockeye salmon run should provide the minimum escapement requirement (10,000 salmon; Nelson and Lloyd 2001) and the run should be large enough for a commercial harvest (Table 7). A portion of this run will be harvested during fishing periods in the Southwest and to a lesser extent in the Northwest Sections of the Afognak District (Figure 9). The first commercial fishing period for the entire Southwest Afognak Section will be on 14 June. Additional fishing periods in June will depend on the Karluk sockeye salmon runs. In 2002 the Alaska Board of Fisheries approved a THA at the terminus of Malina Creek, to harvest salmon surplus to escapement requirements (statistical area 251-12; Figure 12). Commercial fishing within the Malina THA could begin as early as 9 June and, if escapement requirements are being met, may remain open continuously. A weir to enumerate the escapement is operated near the mouth of Malina Lake Creek from mid May through early July to provide sockeye salmon escapement counts (Figure 13). Inseason closed water adjustments for the Malina Lakes system will occur if it appears that the upper escapement goal of 20,000 will be exceeded (Brennan et al. 2002). Additional egg takes for this system are not planned.

Release Site: Laura Lake

In 2002 the Alaska Board of Fisheries approved a new section in Perenosa Bay (Pauls Bay Section, statistical area 251-85), modified the management plan, and adjusted the closed waters area at the terminus of Pauls Creek (Figure 11). For the Laura (Pauls) Lake system, surplus sockeye salmon will be harvested during fishing periods in the Perenosa and Pauls Bay Sections of the Afognak District (Figures 9 and 11). The Pauls Bay Section will remain closed if it appears that the minimum escapement (20,000) will not be reached (Brennan et al. 2002). A weir to enumerate the escapement is operated at the outlet of Pauls Lake (Laura Lake is upstream of Pauls Lake) from mid May through mid July to provide sockeye salmon escapement counts (Figure 14). Additional egg takes for this system are not planned.

Release Site: Spiridon Lake

The Spiridon Lake sockeye salmon management plan, 5 AAC 18.366, is designed to allow for the harvest of enhanced sockeye salmon returning to Spiridon Lake (Brennan et al. 2002; Figure 15) and to provide adequate protection for escapements of wild salmon stocks returning to streams in the area (Spiridon River sockeye, pink, chum, and coho salmon; stream number 254-401). The intent of this stocking project is to provide enhanced sockeye salmon in traditional commercial fishing areas in the Northwest Kodiak District (Figure 9). Harvests of Spiridon Lake sockeye salmon are expected to occur during openings directed to harvest Karluk Lake sockeye and west-side pink and chum salmon stocks (Brennan et al. 2002). A THA, however, is required to provide for an orderly harvest of enhanced sockeye salmon, that have migrated past the traditional commercial fishing areas of the Northwest Kodiak District. A series of falls prevents salmon from entering Spiridon Lake. A barrier seine was used from 1995 to 1997 to prevent sockeye salmon from entering Telrod Creek and to provide for increased harvest opportunities. Concerns were expressed by ADF&G genetics staff that the barrier seine may cause salmon to stray to nearby streams (Spiridon River) and intermingle with wild salmon stocks. The effect of the fish barrier on straying has not been analyzed. In 1994, 1998,

and from 1999 to 2001, when the fish barrier was not installed, about 5,000 sockeye were observed below the first barrier falls, which is about 0.5 kilometers upstream of the creek mouth (Greg Watchers, ADF&G, Kodiak, personal communication). Some of these fish were eventually harvested since they moved in and out of the creek, into the THA, with the tides. Since 1995 the fishery in the THA has been open continuously as soon as the first sockeye salmon return.

Hidden and Little Waterfall Lakes enhanced sockeye salmon returns were evaluated to assess the extent that barrier weir/nets influence adult salmon to stray to wild salmon systems (Wadle and Honnold 2000). This type of evaluation for Spiridon Lake sockeye would be problematic due to the low numbers of sockeye that escape into the nearest wild salmon system (Spiridon River). Enumeration and sampling of these fish would be difficult unless a weir were installed. Currently, the KRAA has indicated that they prefer not to incur the additional cost for evaluation of the Spiridon Lake enhancement project. Consequently, a fish barrier will not be installed at Telrod Cove in 2002. Foot surveys will be used to document the number of sockeye salmon that escape the commercial fishery and enter Telrod Creek. Closed water markers will be set in the location where the barrier seine was previously deployed to assure that intertidal habitat is not disturbed during fishing operations.

Since 1995 the THA has included all waters of Telrod Cove (5 AAC 18.366; Figure 15). When enhanced sockeye salmon are documented within the THA, a continuous fishing period will be announced by the ADF&G (Brennan et al. 2002). By regulation, the only legal gear type for the Spiridon Bay THA is seine gear.

The ADF&G recognizes that some incidental harvest of wild stocks could occur in this area while the fishery is managed to harvest the enhanced Spiridon Lake sockeye salmon. The ADF&G intends, however, to prevent jeopardizing the escapement of wild salmon stocks, specifically those returning to Spiridon River. The broodstock for this project was collected at Saltery Lake in 1994 on an experimental basis; in 1997 this stock was approved as the primary brood source for the project. The run timing of Saltery Lake sockeye salmon stock is approximately three weeks earlier (Figure 5) than the previous brood source (late-run Upper Station Lake sockeye salmon). Sockeye salmon returns in 2002 are expected to begin in late June and may extend until mid September as a result of the overlap of the two broodstocks. The THA will be monitored by ground crews beginning in mid June and continuing until the Saltery Lake run is over in about mid to late August. We expect few returns of Upper Station broodstock since this broodstock has not been released into Spiridon Lake since 1996 (Appendix A). After the ground crews depart, the THA will be monitored by aerial surveys until about mid September to determine if there were any returns of Upper Station stock.

Release Sites: Ruth and Jennifer Lakes

In 2002 Ruth and Jennifer Lakes enhanced sockeye salmon runs will be harvested incidentally during pink, chum, and coho salmon fisheries in the Kitoi, Izhut, and Duck Bay Sections of the Afognak District (Figure 9; Brennan et al. 2002).

Barrier falls in Ruth and Jennifer Lakes outlet streams prevent salmon from migrating into the lakes. Salmon are able to enter freshwater in the lower portion of the lakes outlet creeks up to the barrier

falls (McCullough et al. 2001). Broodstock is not collected at either lake, so all salmon will be available for harvest.

The run timing is expected to be similar to that described for Spiridon Lake runs, since both Saltery (Ruth Lake) and late-run Upper Station (Jennifer Lake) sockeye were used as broodstock (Figure 5).

General Conditions of Harvest Management, 2002

The primary objective of the PCH is to provide salmon for common property fisheries. It is recognized that a joint effort between the ADF&G and the KRAA is necessary to continue the operation of the hatchery at full production levels. The ADF&G Kodiak Area Management Biologist manages all salmon fisheries. Most enhanced salmon are expected to be harvested incidental to traditional fisheries targeting wild stocks. Most of the remaining enhanced salmon will be harvested in terminal and special harvest areas as announced by the Area Management Biologist.

When broodstock are taken from spawning systems with established escapement requirements, the number of fish used will not reduce the salmon spawning population below the adult removal criteria (Table 3; McCullough et al. 2001).

It is the goal of the KRAA to develop a late-run broodstock for egg takes at Little Kitoi Lake (McCullough and Aro *in press*). Beginning in 1999 Little Kitoi Lake was stocked with Saltery Lake presmolt, to provide substantial annual returns by 2003. Eggs from these adults will provide juvenile fish for stocking Spiridon and Ruth Lakes.

At this time, the PCH does not require Special Harvest Areas (SHA) for cost recovery harvests. There may be situations that arise that will require cost recovery of salmon from the enhancement projects (economic, broodstock, environmental disasters, or price dispute considerations). The KRAA may, in the future, propose that SHA be designated (KRAA 1998).

Special fisheries in the THAs and the Kitoi Bay SHA, prior to the 9 June commercial salmon opening, have been suggested as a means to reduce the risk of straying salmon from all enhancement sites. Special fisheries could occur if large numbers of enhanced salmon return prior to the 9 June commercial fishery or if price disputes delay normal fishing effort. If large numbers of salmon return to enhancement sites prior to 9 June or if commercial fishing activities do not occur within 48 hours of the initial fishery opening, the Kodiak Area Management Biologist and the KRAA will implement a harvest strategy to reduce the risk of straying salmon. The harvest strategy will include removal of any barrier nets or weirs to allow the enhanced salmon free access to freshwater; natural stream barriers will continue to prevent lake-access for the salmon. When fishing activity commences the barrier net or weir will be re-installed. The KRAA will help administer any special harvest operations in a similar manner as was implemented for the Kitoi Bay special cost recovery project in 1989. In that instance, as many fish as possible were harvested in as short a period as feasible to maintain an orderly fishery. The KRAA is in the process of drafting a detailed plan for implementation of cost recovery fisheries for their enhancement projects (L. Malloy, KRAA, Kodiak, personal communication). The KRAA-funded ADF&G crews will be located at any cost recovery site to monitor and document the fisheries and to address any straying concerns.

Spiridon Lake, Foul Bay, and Waterfall Bays salmon harvest information will be monitored through the ADF&G fish ticket database. Biological attributes from these harvests will be collected for age and sex composition data.

Harvest information from the Crescent Lake sockeye salmon run will be monitored through the ADF&G fish ticket database and subsistence permit reports. The projected harvest contribution from this project is determined by assigning all the THA catch as Crescent Lake produced sockeye. The run timing and location of the fishery (THA) provides for an isolated harvest of returning adults. The subsistence harvest is assigned through the ADF&G subsistence use reporting system. In addition, Port Lions residents provide estimates of the subsistence harvest to the ADF&G through interviewing of community members participating in the fishery.

Harvest information from the Kitoi Bay area sockeye salmon runs will also be monitored through the ADF&G fish ticket database. In 2002 an adult sampling program will be conducted to collect age composition, sex, and length data. In addition, a portion of the early-run fish stocked in Little Kitoi Lake were fin clipped prior to release and the harvest of adult sockeye salmon returning to Little Kitoi Lake will be examined for fin clips for run reconstruction of stock of origin.

ADDITIONAL MEASURES FOR WILDSTOCK PROTECTION

Genetics Policy

The ADF&G Genetics policy, as described in the 1998 Pillar Creek Hatchery AMP (Honnold et al. 1998), will be followed in 2002 for all projects.

Policies and Guidelines for Health and Disease Control

The State of Alaska Pathology Review Committee policy and guidelines (McGee 1995), as described in the 1998 Pillar Creek Hatchery AMP (Honnold et al. 1998), will be followed in 2002 for all projects.

SPECIAL STUDIES/RESEARCH

Since 1998 formal sockeye salmon run reconstruction analysis has not been conducted, as in earlier years, to delineate Spiridon Lake fish in the NW Kodiak District or in the SW Afognak Section commercial harvests (P. Nelson, ADF&G, Kodiak, personal communication). This was due to the run timing differences between the overlapping returns of Upper Station and Saltery Lake sockeye salmon. Due to the increased number of stocks, both local and non-local, present in the NW Kodiak District during the earlier Saltery Lake brood stock run timing, stock separation will most likely be ineffective. To reconstruct the recent Spiridon Lake sockeye contribution to the harvest in the SW Afognak Section and NW Kodiak District the average proportion of the Spiridon-bound sockeye salmon harvested in the Spiridon Lake THA from 1994 to 1997 (41%) was applied to the 1998

through 2001 THA harvest. The estimate of the Spiridon Lake sockeye salmon contribution to the 2001 westside commercial fishery (NW Kodiak and SW Afognak) was 146,678 salmon. Of this total 59,733 fish were harvested in the THA (Honnold and Schrof 2001b).

Smolt abundance will be estimated and samples collected for age and condition during their emigration from Spiridon and Little Kitoi Lakes as a check on stocking density and to assist with run forecasts (Salmon Research Staff, 2002). Smolt will also be sampled for condition and age at all other systems stocked with juvenile sockeye salmon. Stocked lakes will also be sampled to evaluate zooplankton abundance and water quality parameters. Several of the stocked lakes will also be monitored by townetting and hydroacoustics to evaluate juvenile sockeye salmon population trends.

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Table 1. Sockeye salmon egg takes (2001), planned releases (2002), projected returns (2005-2006), and fish transport permits (FTP), Kodiak Management Area.

Lake	Egg take		Releases ^a			Adult Returns ^b			FTP	
	eggs	adults	Number	size (g)	Date	2005	2006	Total	Number	Expires
<i>Early-Run (ER): donor stock Afognak Lake</i>										
Hidden	117,200	85	54,500	10.00	October	3,066	3,747	6,813	99A0054	12/31/08
LittleWaterfall	117,200	85	54,500	10.00	October	3,066	3,747	6,813	97A0076	12/31/08
Big Waterfall	82,800	60	38,500	10.00	October	2,166	2,647	4,813		
Crescent	82,800	60	38,500	10.00	October	2,166	2,647	4,813		
Total ER:	400,000	290	186,000			10,463	12,788	23,250		
<i>Late-Run (LR): donor stock Saltery Lake</i>										
Spiridon ^c	1,569,000	845	522,000	0.30	June	20,097	8,613	28,710	99A0059	12/31/08
			660,000	10.00	October	37,125	45,375	82,500		
Total LR:	1,569,000	845	1,182,000			57,222	53,988	111,210		
Total ER:	400,000	290	186,000			10,463	12,788	23,250		
Total LR:	1,569,000	845	1,182,000			57,222	53,988	111,210		
Grand Total:	1,969,000	1,135	1,368,000			67,685	66,776	134,460		

^a Expected release in 2002 are based on the current estimates of juveniles in PCH and 2001 lake limnology data.

^b Returns are based on standard juvenile to adult survival assumptions (Appendix F) and adult age compositions observed to date for escapements and harvests.

^c Saltery Lake has been the primary brood source since 1997.

Table 2. Coho salmon egg takes (2001), planned releases (2002), projected returns (2004-2005), and fish transport permits (FTP), Kodiak Management Area.

Lake	Egg take ^a		Releases			Adult Returns ^c		FTP	
	eggs	adults	Number ^b	size	Date	2004	2005	Number	Expires
Mayflower	14,800		11,159	Fingerling	August	653	73	93A0106	12/31/03
Island	51,300		38,596	Fingerling	August	2,258	251	93A0107	12/31/03
Dark	17,200		12,969	Fingerling	August	759	84	93A0108	12/31/03
Mission	28,500		21,489	Fingerling	August	1,257	140	93A0109	12/31/03
Potato Patch	21,600		16,286	Fingerling	August	953	106	93A0110	12/31/03
Southern	8,000		6,032	Fingerling	August	353	39	93A0112	12/31/03
Pony	4,600		3,468	Fingerling	August	203	23	93A0111	12/31/03
Total Road System	146,000	60	110,000	Fingerling	August	8,278	920	93A0105	12/31/03

^a Donor stock: Buskin River

^b Source: Statewide Stocking Plan For Recreational Fisheries, 2000-2004, ADF&G, Division of Sport Fish.

^c Assume 90% of adults return as age 1.1 fish; 10% as age 2.1 fish, (Len Schwarz, personal communication).

Table 3. Escapement goals, egg-take criteria, and projected brood numbers required for 2002 sockeye salmon egg takes.

Donor Stock ^a	Biological Escapement Goal Range	Egg-take Criteria		Brood Stock Required
		Allowable Escapement Range	Allowable Proportion Within Range	
Afognak Lake	40,000-60,000	>40,000	100%	1,200
		<40,000	1%	1%
Saltery Lake	15,000-30,000 ^b	>15,000	100%	3,700
		<15,000	1%	1%

^a Afognak Lake is the early-run brood source for enhancement projects at Hidden, Little and Big Waterfall, and Crescent Lakes. Saltery Lake is the late-run brood source for Spiridon and Ruth Lakes; and an additional 295 adults will be needed for Little Kitoi broodstock development (McCullough et al. *in press*).

^b Saltery Lake sockeye salmon escapement goal was changed in April 2001.

Table 4. Proposed sockeye salmon egg takes (2002), planned releases (2003), projected returns (2006-2007), and fish transport permits (FTP), Kodiak Management Area.

Lake	Egg take ^a		Releases ^a			Adult Returns ^b			FTP	
	eggs	adults	Number	size (g)	Date	2006	2007	Total	Number	Expires
Early-Run (ER): donor stock Afognak Lake										
Hidden	117,000	85	54,500	10.00	October	3,066	3,747	6,813	99A0054	12/31/08
L. Waterfall	117,000	85	54,500	10.00	October	3,066	3,747	6,813	97A0076	12/31/08
Big Waterfall	83,000	60	38,500	10.00	October	2,166	2,647	4,813		
Crescent	83,000	60	38,500	10.00	October	2,166	2,647	4,813		
Total ER:	400,000	290	186,000			10,463	12,788	23,250		
Late-Run (LR): donor stock Saltery Lake										
Spiridon ^c	1,600,000	845	522,000	0.30	June	20,097	8,613	28,710	99A0059	12/31/08
			660,000	10.00	October	37,125	45,375	82,500		
Total LR:	1,600,000	845	1,182,000			57,222	53,988	111,210		
Total ER:	400,000	290	186,000			10,463	12,788	23,250		
Total LR:	1,600,000	845	1,182,000			57,222	53,988	111,210		
Grand Total:	2,000,000	1,135	1,368,000			67,685	66,776	134,460		

^a Analysis of inseason zooplankton trends may change egg-take goals and stocking numbers.

^b Returns are based on standard juvenile to adult survival assumptions (Appendix F) and adult age compositions observed to date for escapements and harvests.

^c Saltery Lake has been the primary brood source since 1997.

Table 5. Proposed coho salmon egg takes (2002), planned releases (2003), projected returns (2005-2006), and fish transport permits (FTP), Kodiak Management Area.

Lake	Egg take ^a		Releases			Adult Returns ^c		FTP	
	eggs	adults	Number ^b	size	Date	2005	2006	Number	Expires
Mayflower	7,500		6,500	Fingerling	August	380	42	93A0106	12/31/03
Island	26,500		22,500	Fingerling	August	1,316	146	93A0107	12/31/03
Dark	9,000		7,500	Fingerling	August	439	49	93A0108	12/31/03
Mission	14,500		12,500	Fingerling	August	731	81	93A0109	12/31/03
Potato Patch	11,000		9,500	Fingerling	August	556	62	93A0110	12/31/03
Southern	4,000		3,500	Fingerling	August	205	23	93A112	12/31/03
Pony	2,500		2,100	Fingerling	August	123	14	93A111	12/31/03
Total Road System	75,000	60	64,100	Fingerling	August	3,750	417	93A0105	12/31/03

^a Donor stock: Buskin Lake

^b Source: Statewide Stocking Plan for Recreational Fisheries, 2000-2004, ADF&G Division of Sport Fish.

^c Assume 90% of adults return as age 1.1 fish; 10% as age 2.1 fish, (Len Schwarz, personal communication).

Table 6. Proposed chinook salmon egg take (2002), planned release (2004), projected returns (2005-2009), and fish transport permit (FTP), Kodiak Management Area.

River	Egg Take ^a		Releases ^b			Adult Returns ^c					FTP	
	eggs	adults	Number	size	Date	2005	2006	2007	2008	2009	Number	Expires
Monashka												
Creek	300,000	120	150,000	Smolt	Jun-03	30 ^d	195 ^d	330 ^d	870 ^d	75 ^d	00A-0010	6/30/06
						90 ^e	585 ^e	990 ^e	2,610 ^e	225 ^e	00A-0010	6/30/06

^a Donor stock: Karluk River

^b All of the smolt surviving from the 300,000 egg take will be released; 150,000 smolt are expected.

^c Assume % of adults return as age 1.1 (2 %); 1.2 (13%); 1.3 (22%); 1.4 (58%); 1.5 (5%)

^d Assumes a 1% survival from smolt to adult.

^e Assumes a 3% survival from smolt to adult.

Table 7. Estimated 2002 sockeye salmon runs as a result of Pillar Creek Hatchery stocking and lake enrichment.

Stock	Lake Location	Lake Type	Estimated Enhanced Run			
			Point	Range		
Early Run						
	Hidden	Barrier	48,600	32,400	to	64,800
	Big & Little Waterfall	Barrier	21,200	7,100	to	35,400
	Crescent	Barrier	11,000	4,600	to	18,600
	Little Kitoi	Barrier	900	600	to	1,400
	Afognak	Broodstock Source	8,200	5,400	to	11,000
	Malina	Rehabilitation Project	20,700	13,800	to	27,700
	Laura	Rehabilitation Project	5,500	2,700	to	8,200
	Total		116,100	66,600		167,100
Late Run						
	Spiridon	Barrier	222,000	144,000	to	299,000
	Little Kitoi ^a	Barrier	3,300	2,200	to	5,100
	Ruth	Barrier	5,800	3,500	to	8,000
	Jennifer	Barrier	5,200	2,600	to	7,800
	Total		236,300	152,300		319,900
Total Sockeye			352,400	218,900		487,000

Note: The total sockeye salmon run to Kitoi Bay area is an estimated 15,200 fish. This estimate includes Little Kitoi, Ruth, and Jennifer Lakes runs. Total run estimates (enhanced plus wild production) to anadromous systems (Afognak, Malina, and Laura Lakes) are not available.

^a The values for Little Kitoi Lake do not include Kitoi Bay Hatchery releases and estimated returns from those releases. The Kitoi production will be listed in the Kitoi Bay Hatchery Annual-Management Plan.

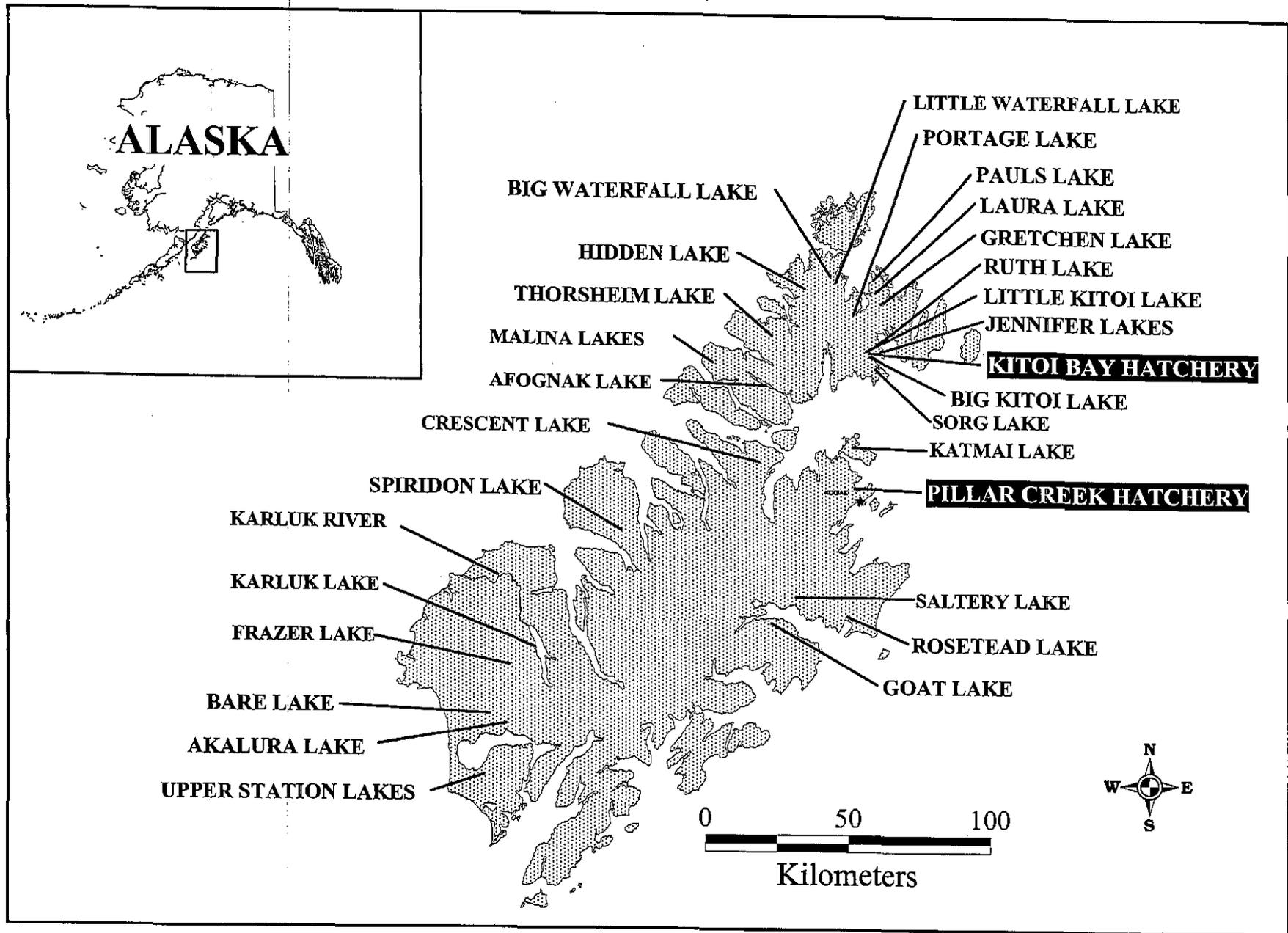


Figure 1. Locations of sockeye salmon enhancement and rehabilitation projects on Kodiak and Afognak Islands, 1951-2002.

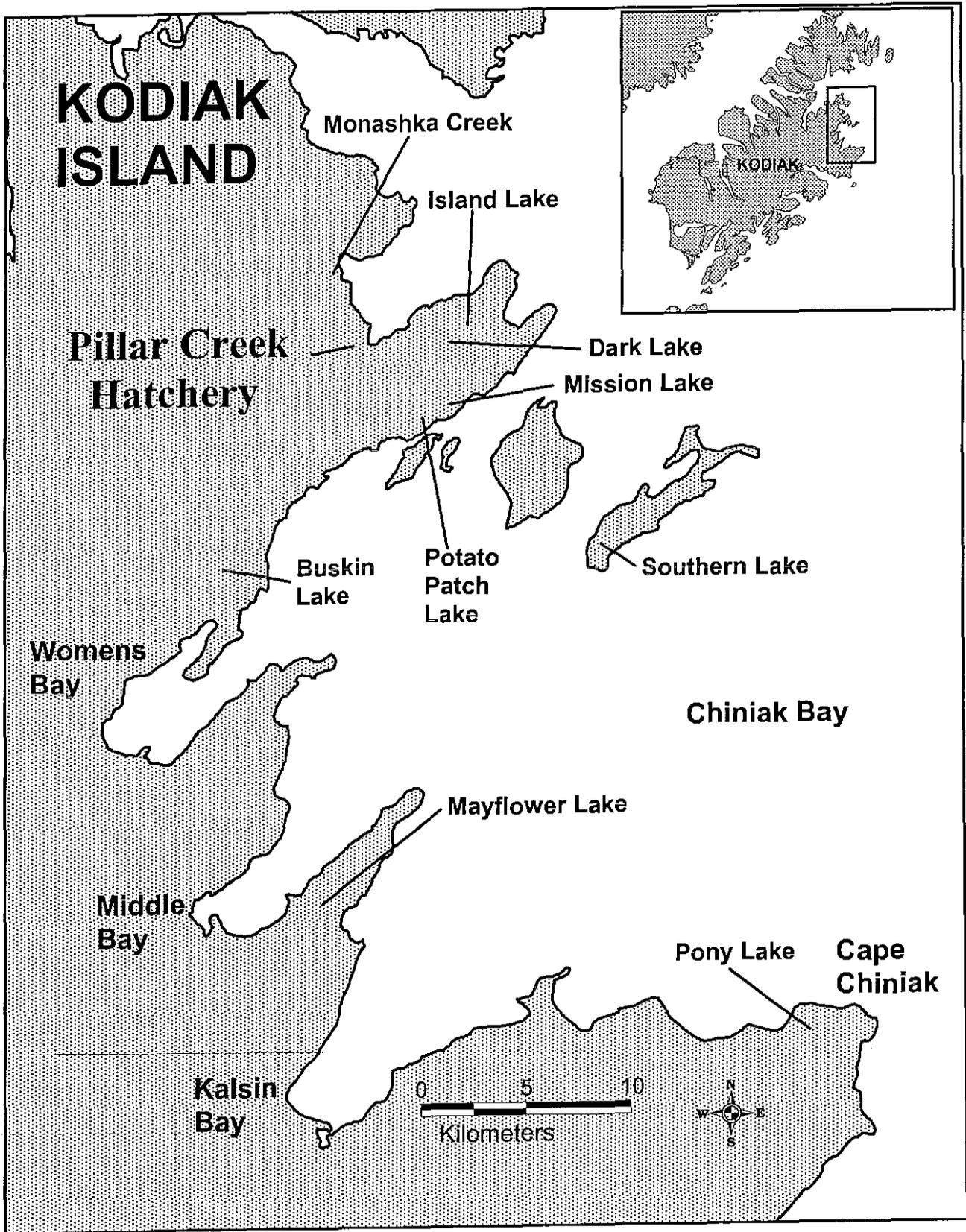


Figure 2. Locations of Kodiak Island road system lakes stocked with coho and chinook (Monashka Creek) salmon.

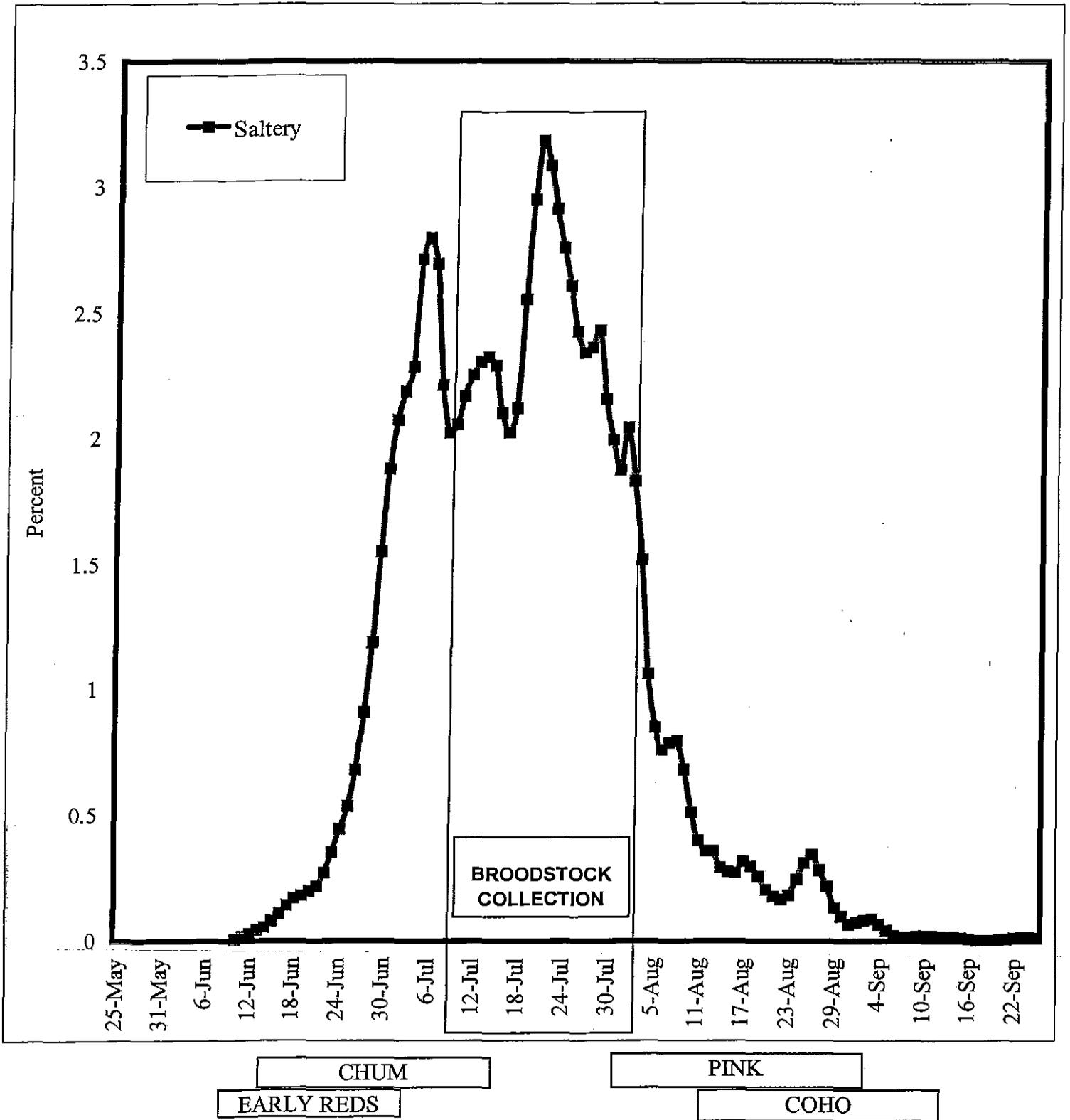


Figure 3. The run timing of salmon stocks returning to the Kitoi Bay Hatchery compared to the late-run Saltery sockeye salmon broodstock collection.

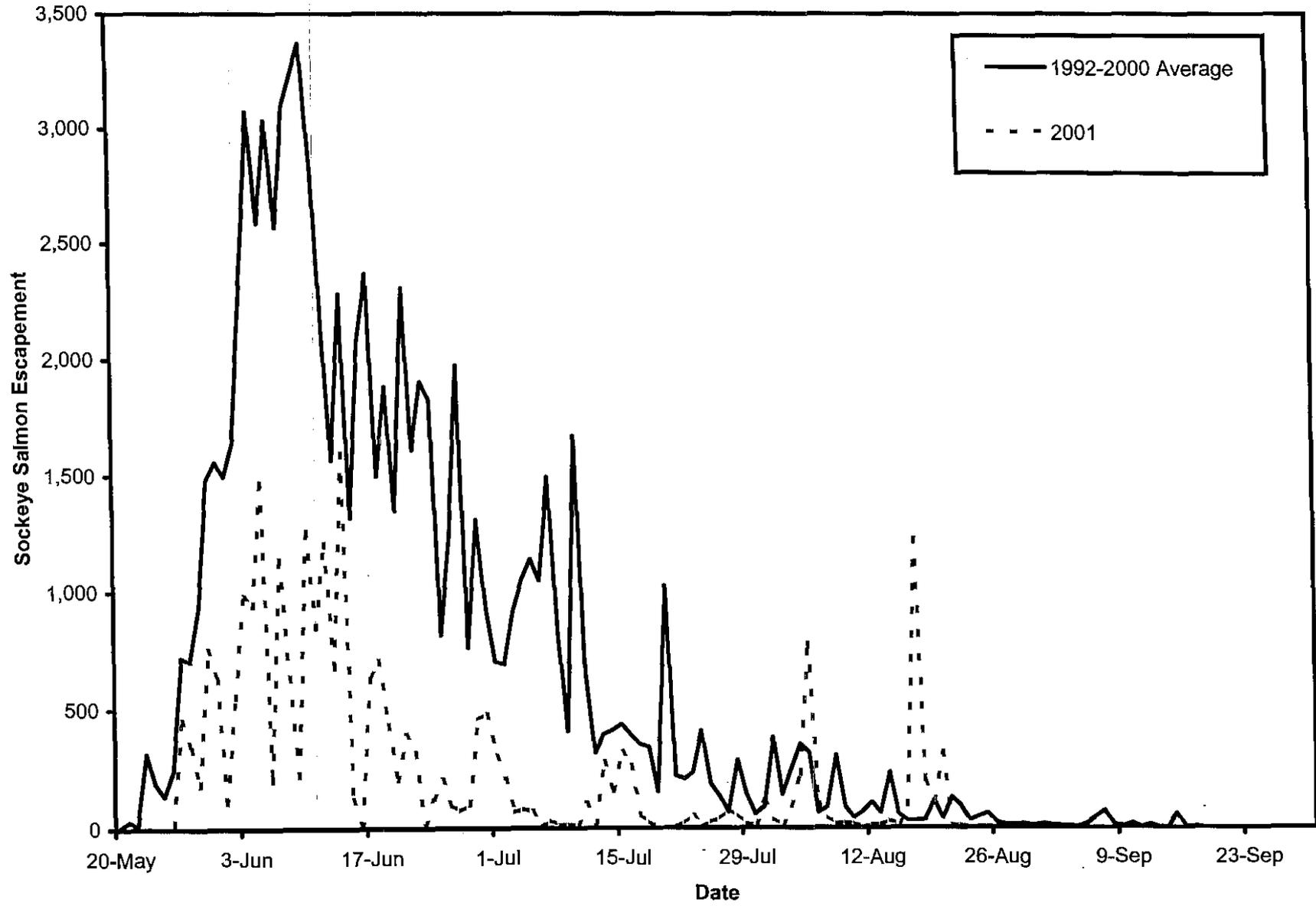


Figure 4. Afognak Lake (Litnik) sockeye salmon average escapement (1992-2000) compared to the 2001 escapement.

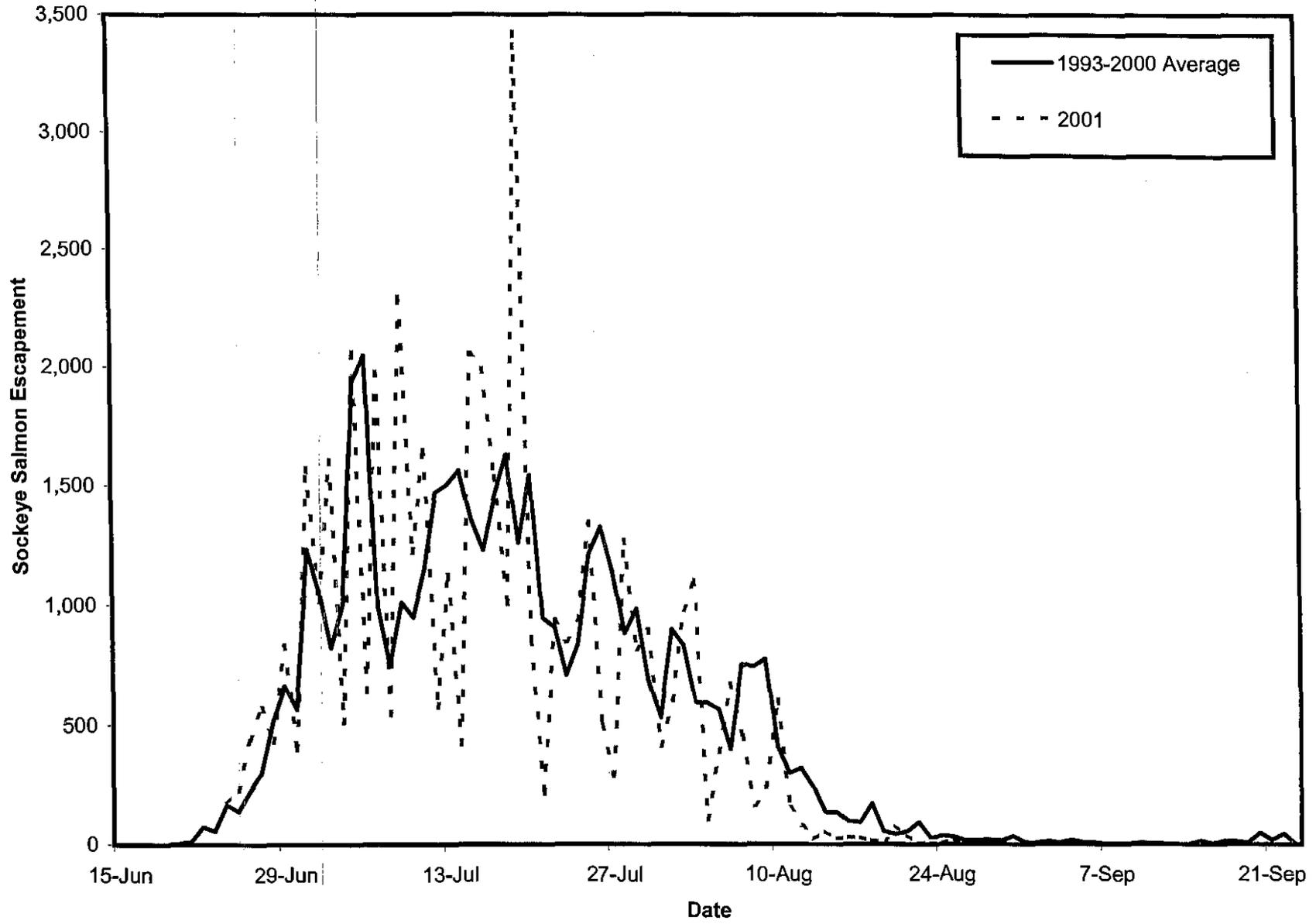


Figure 5. Saltery Lake sockeye salmon average escapement (1993-2000) compared to the 2001 escapement.

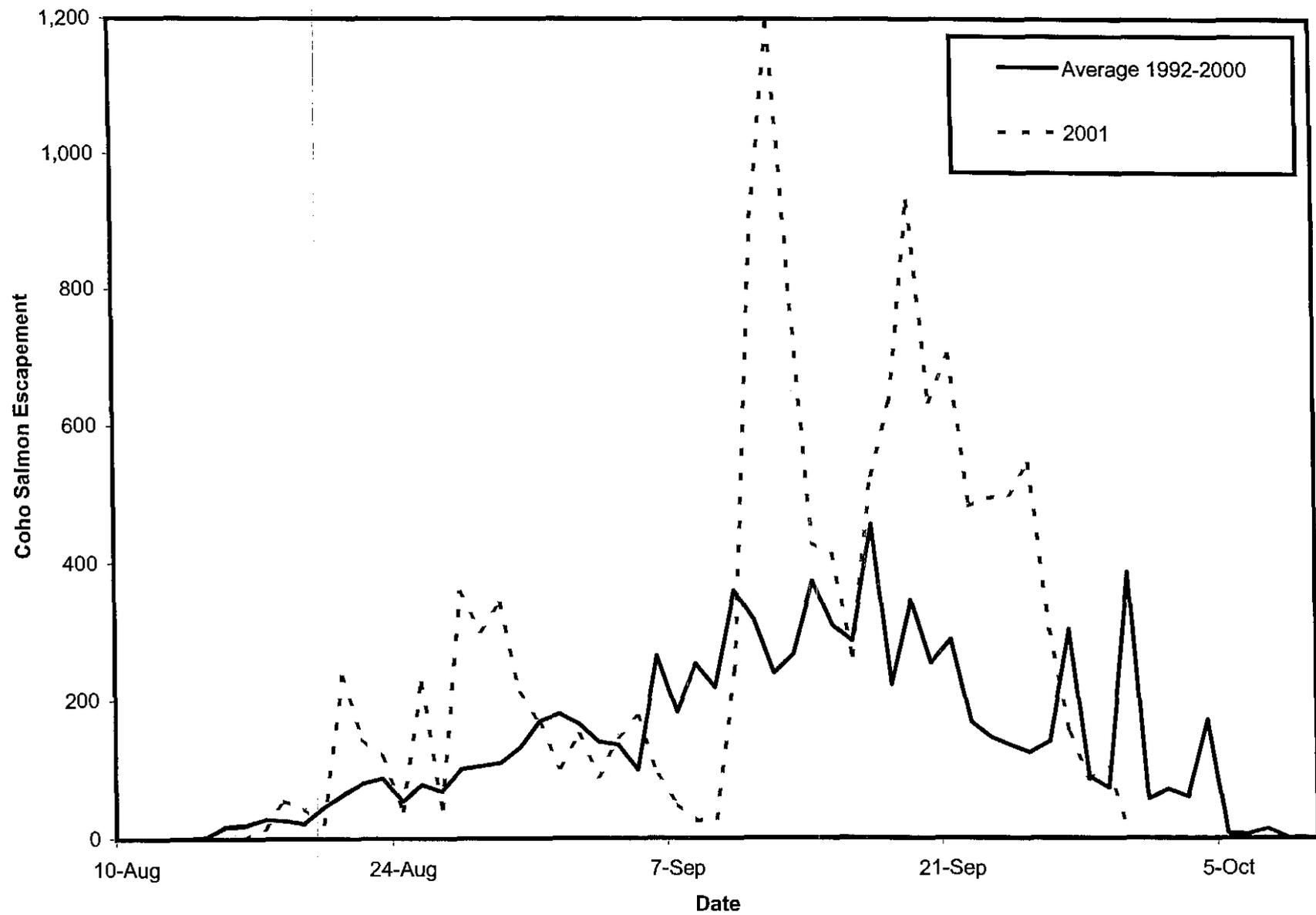


Figure 6. Buskin River coho salmon average escapement (1992-2000) compared to the 2001 escapement.

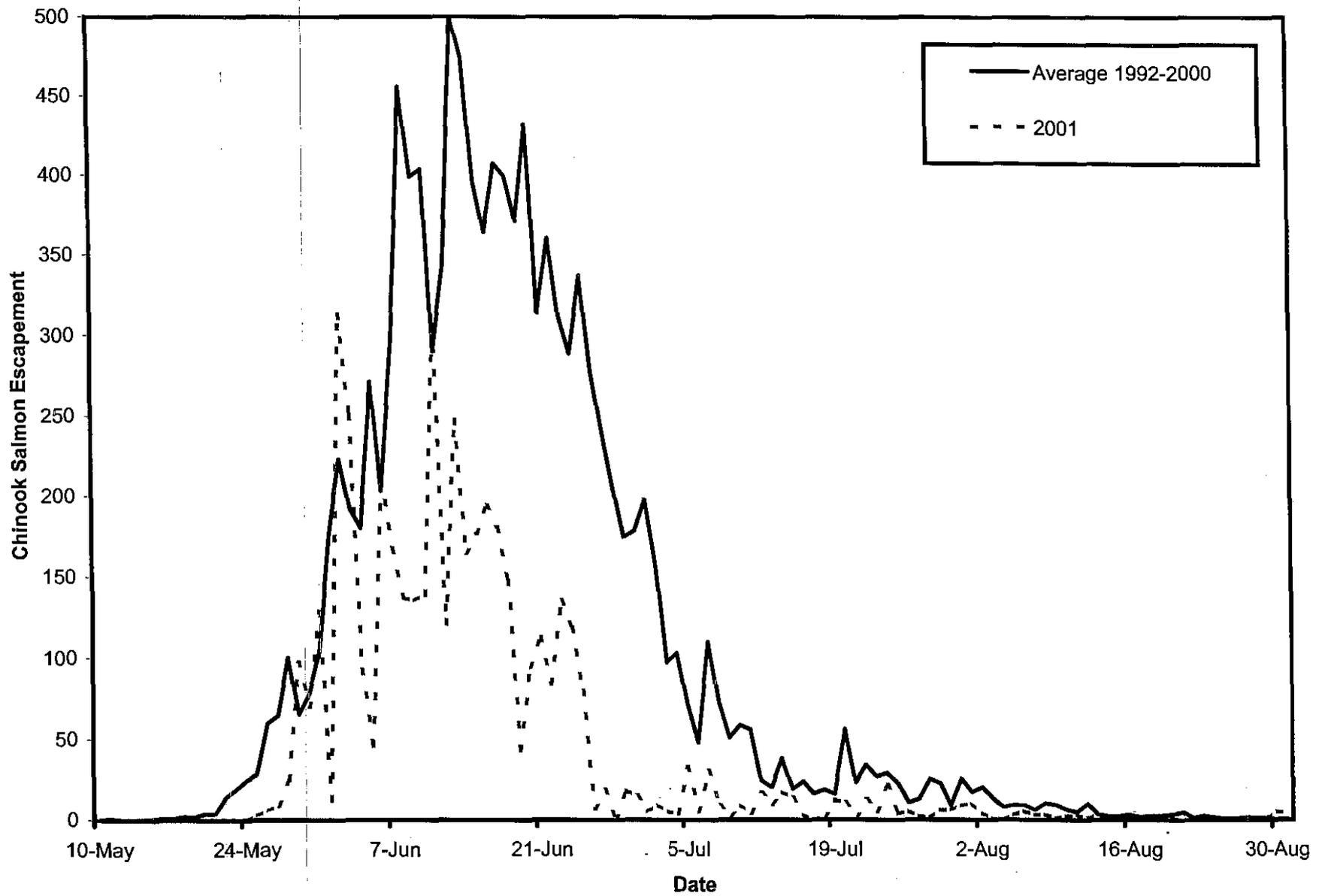


Figure 7. Karluk River chinook salmon average escapement (1992-2000) compared to the 2001 escapement.

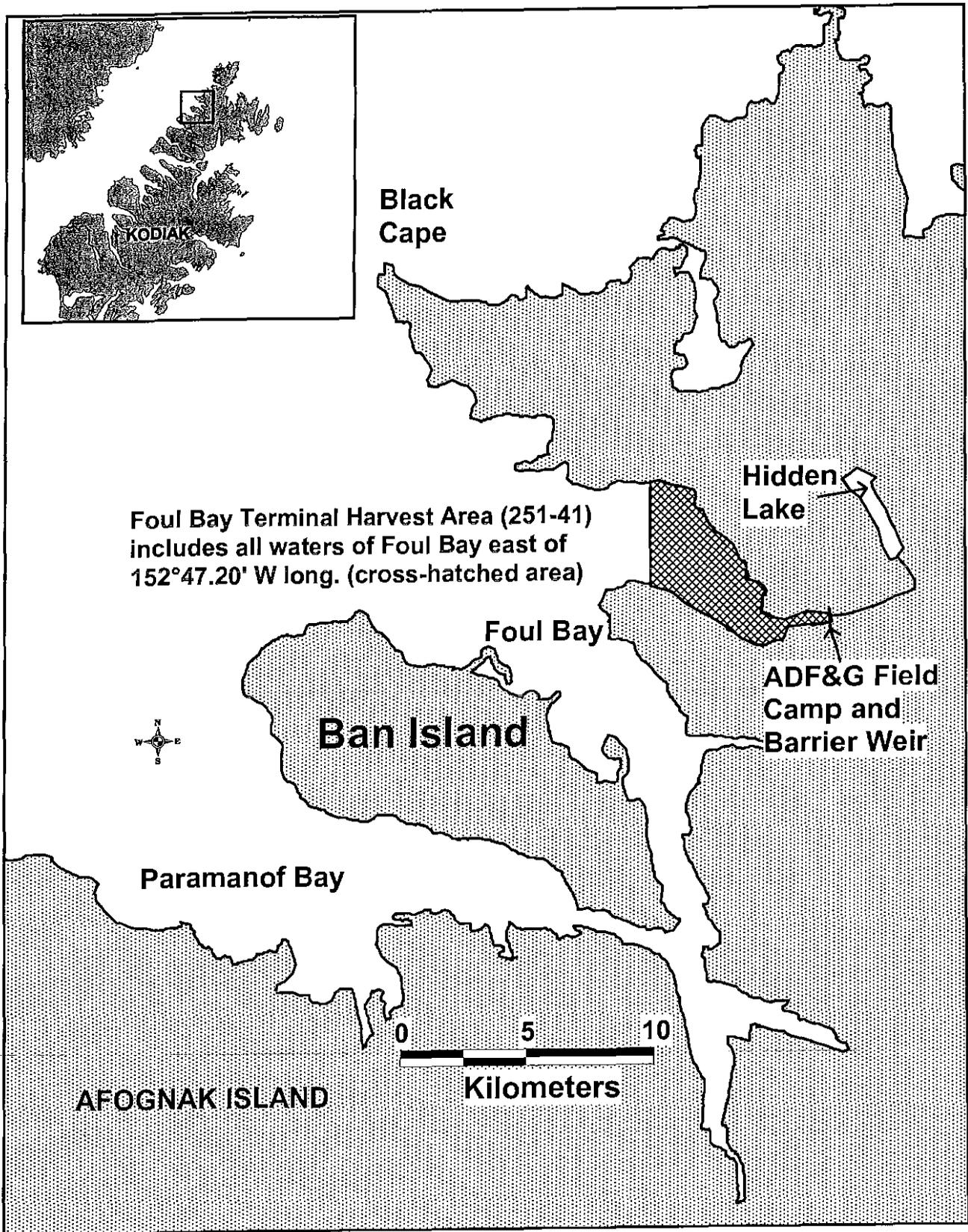


Figure 8. Location of the Foul Bay terminal harvest area, ADF&G field camp and fish weir at Hidden Creek, 2002.

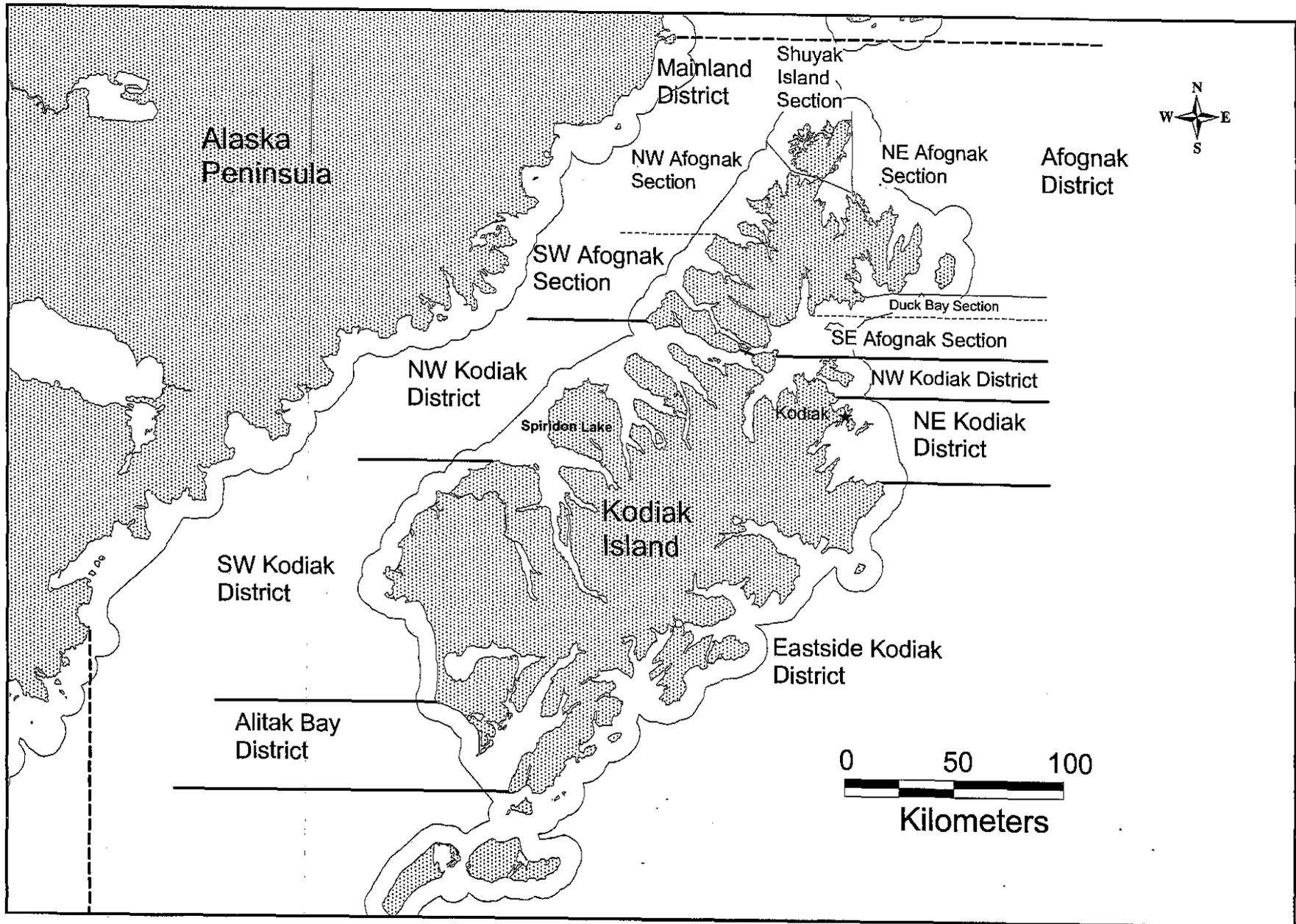


Figure 9. Map of the Kodiak Management Area depicting commercial fishing districts and selected sections.

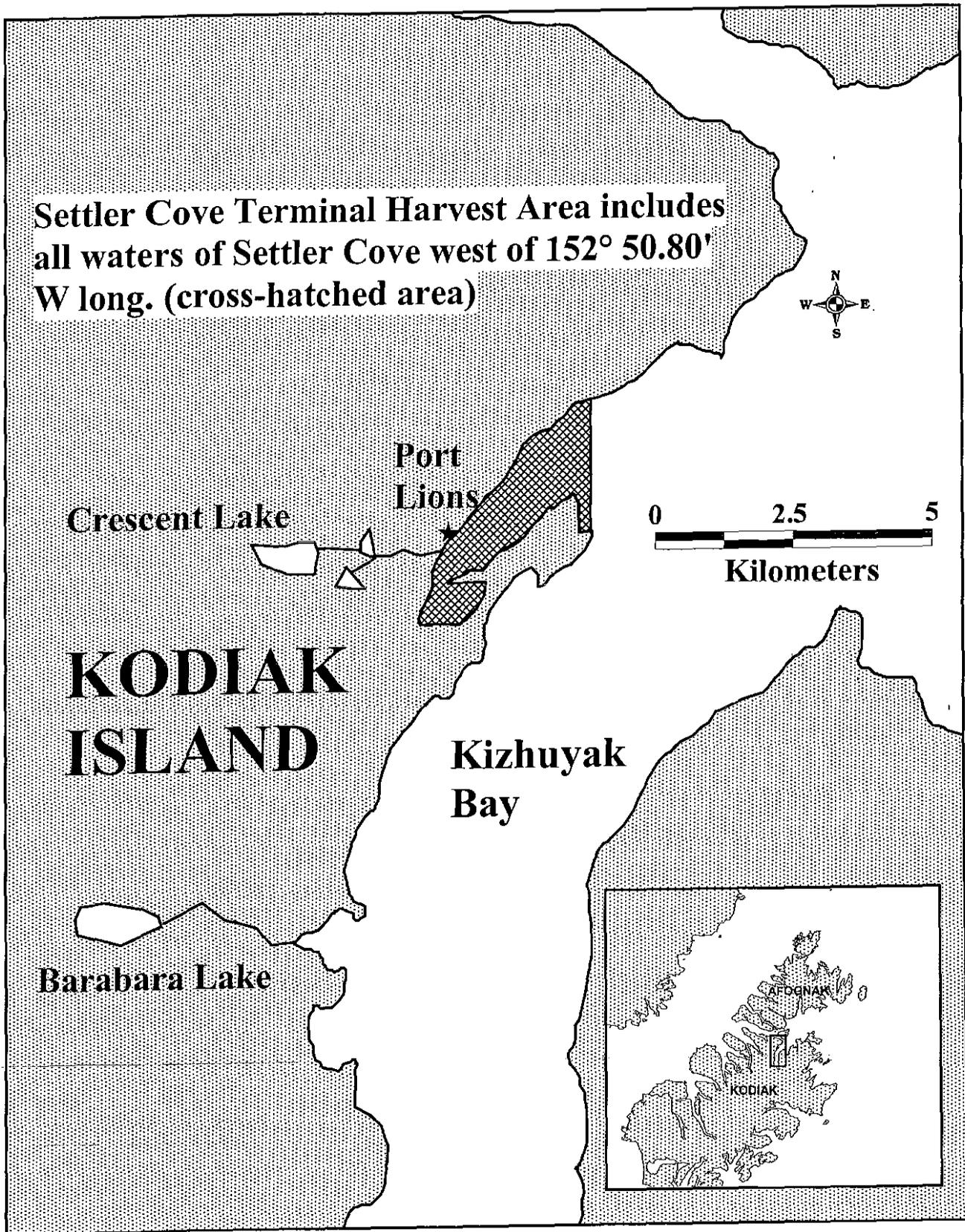


Figure 10. Settler Cove (Crescent Lake) terminal harvest area boundaries in Kizhuyak Bay, 2002.

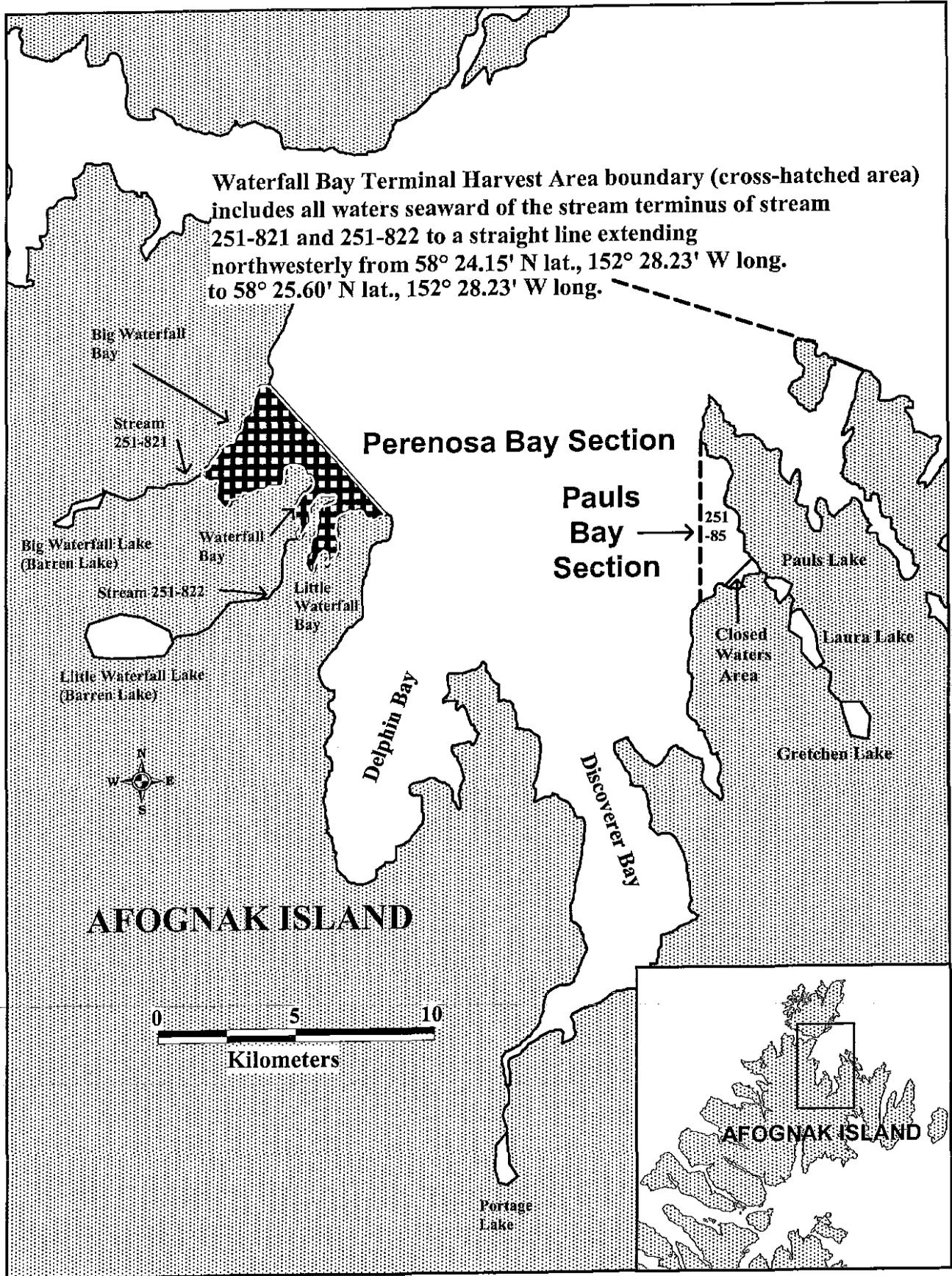


Figure 11. Waterfall Bay (Little and Big Waterfall Lakes) terminal harvest area and rehabilitation systems and the Pauls Bay Section in Perenosa Bay, 2002.

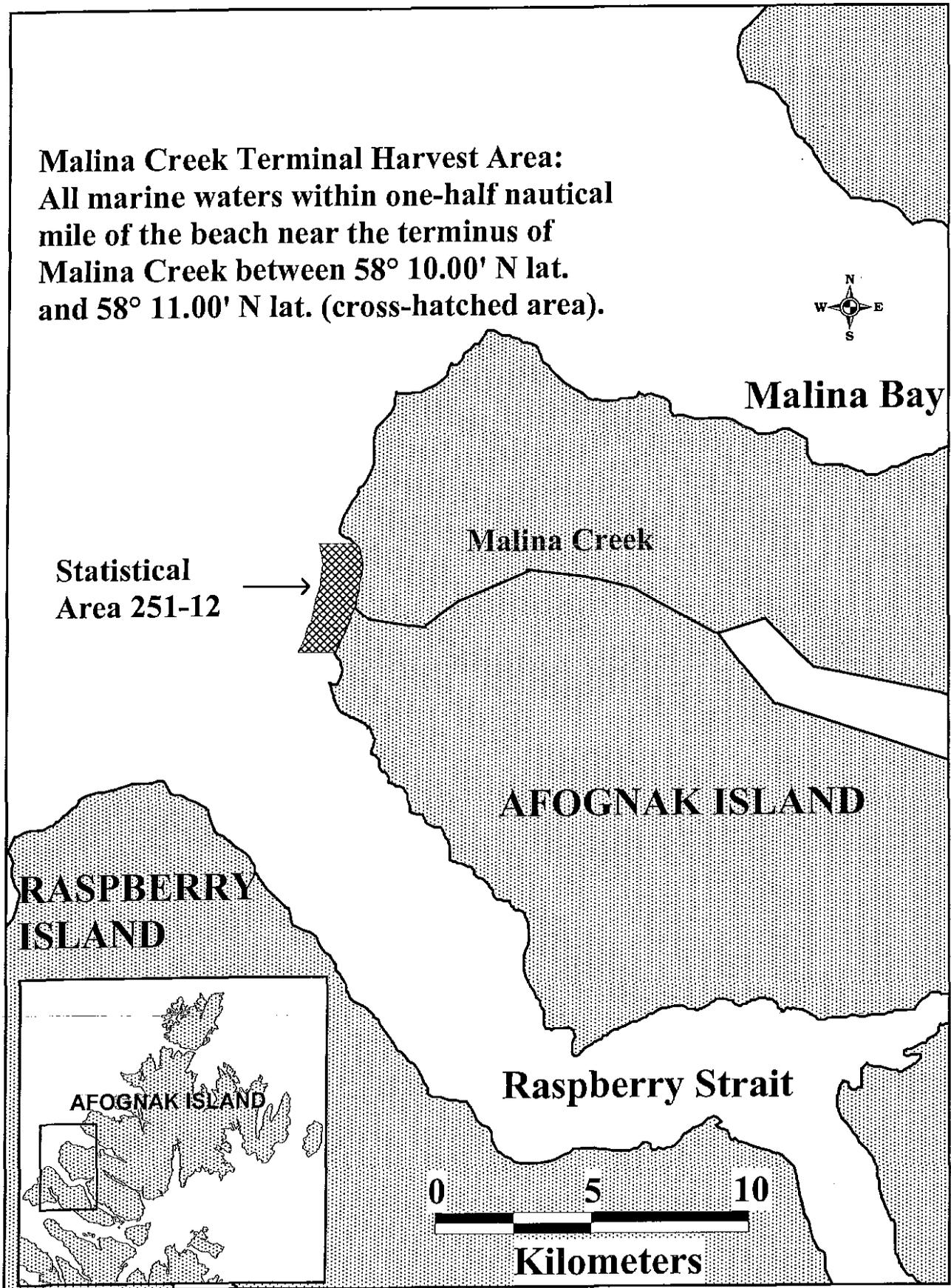


Figure 12. Location of the Malina Creek terminal harvest area, 2002.

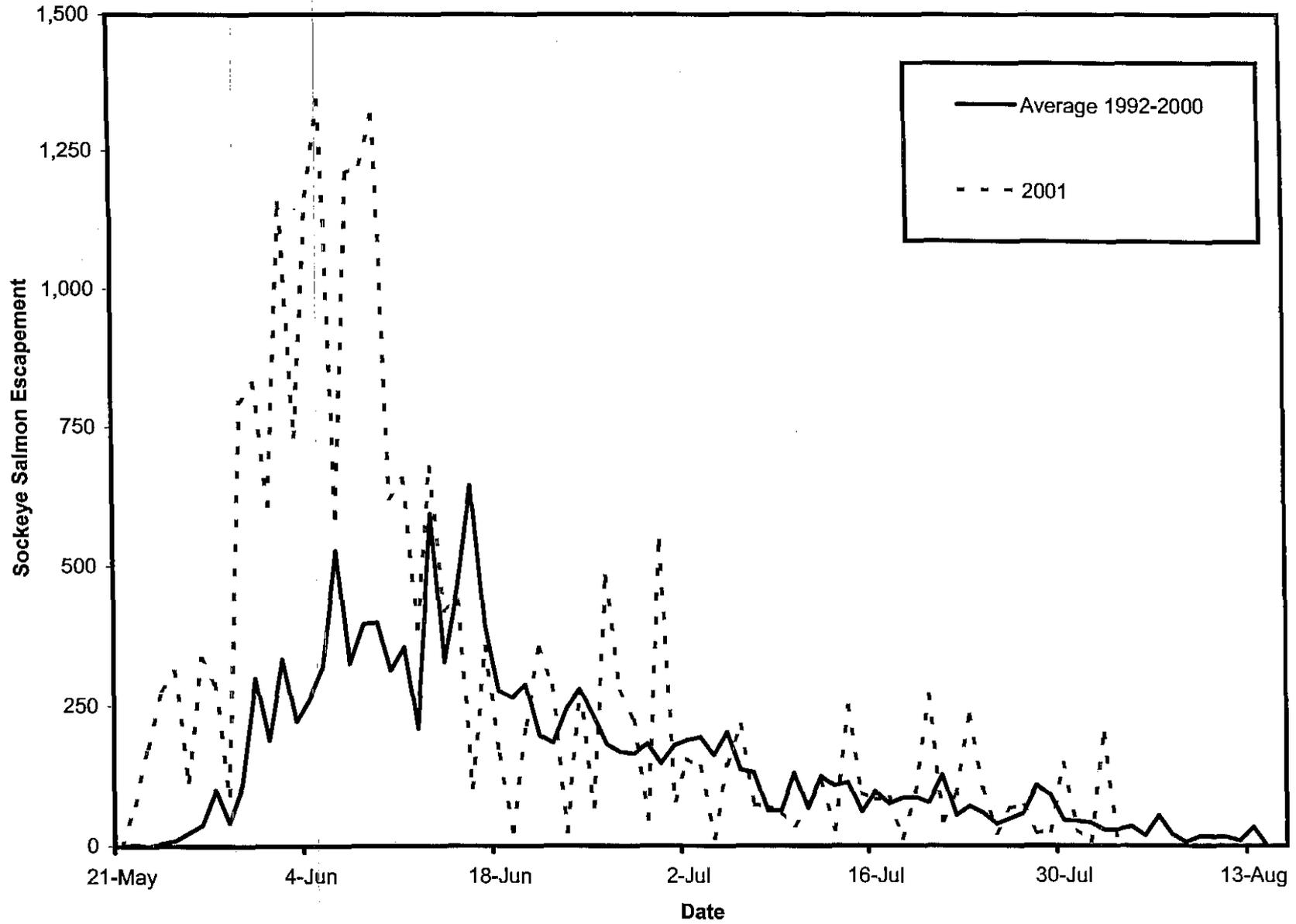


Figure 13. Malina Lake sockeye salmon average escapement (1992-2000) compared to the 2001 escapement.

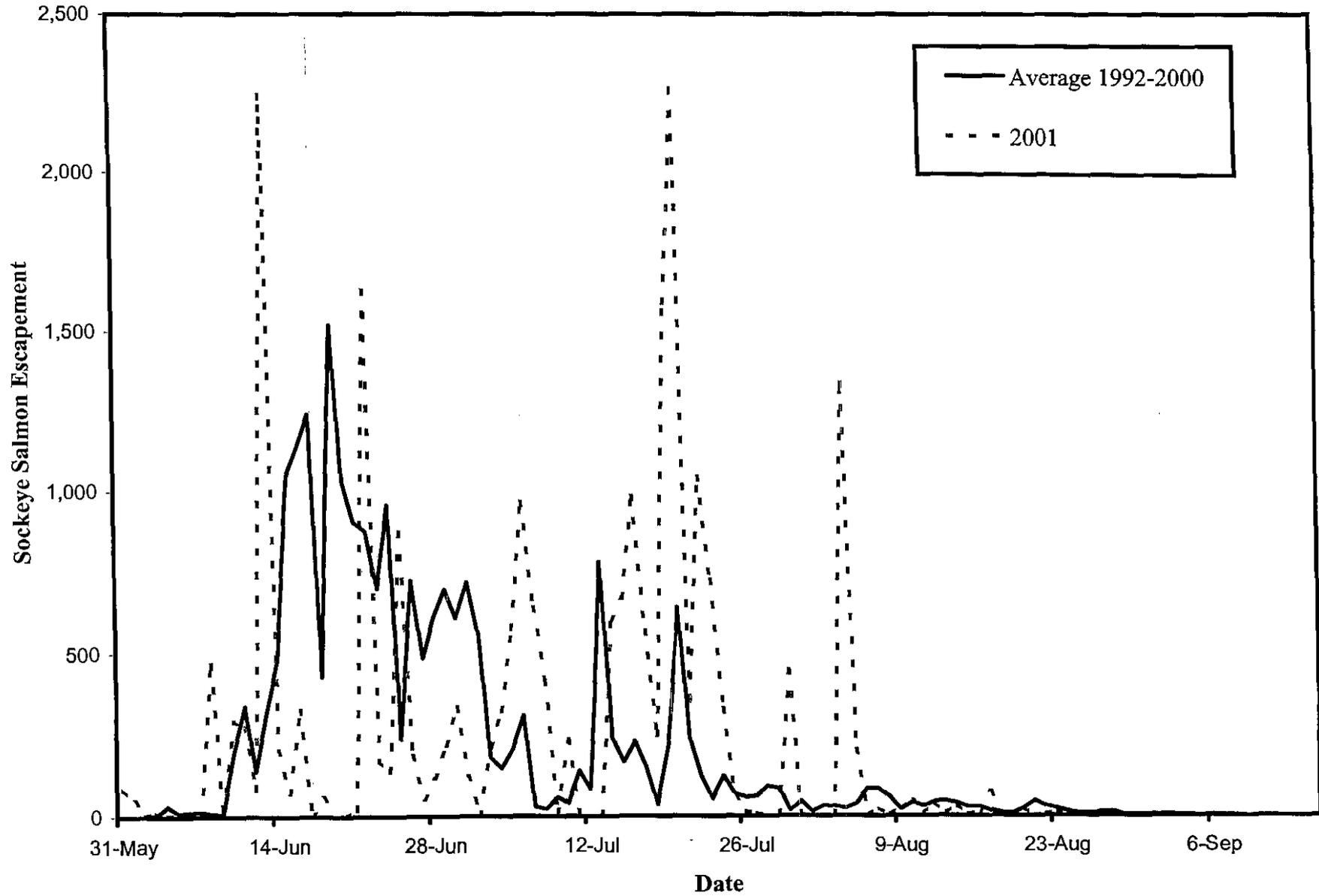


Figure 14. Laura (Pauls) Lake sockeye salmon average escapement (1992-2000) compared to the 2001 escapement.

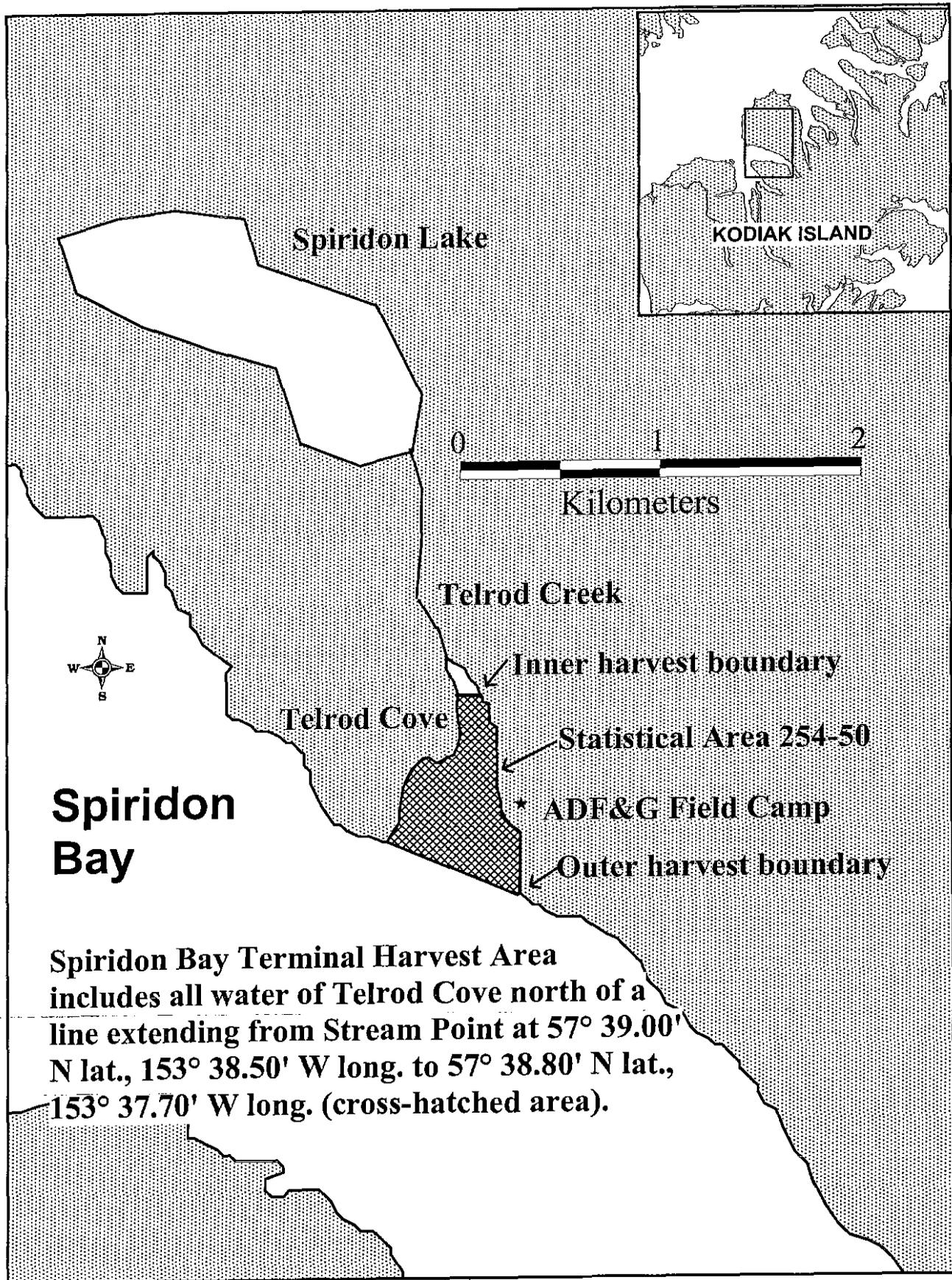
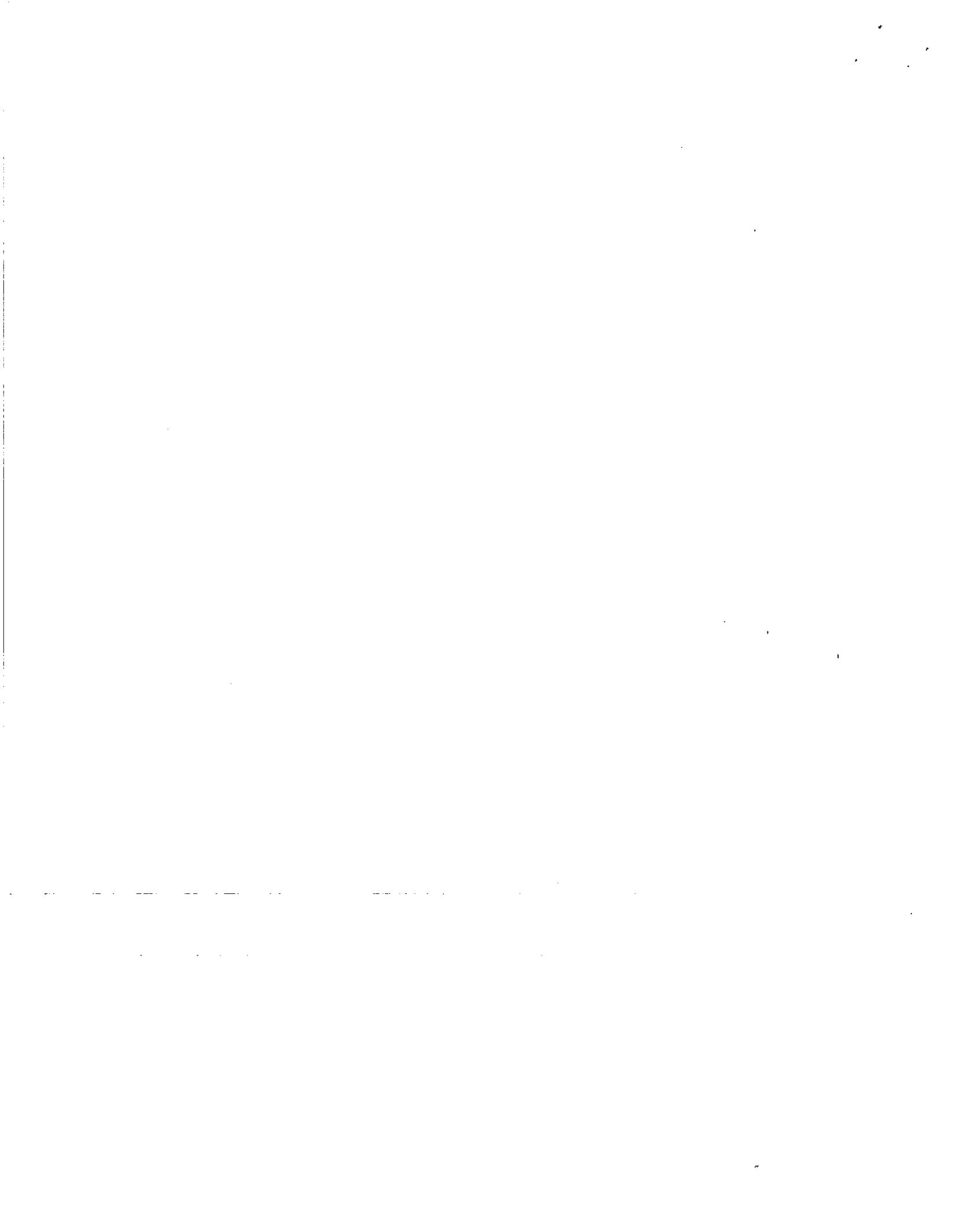


Figure 15. Spiridon Bay (Telrod Cove) terminal harvest area boundaries, and ADF&G camp located in Telrod Cove, 2002.

APPENDIX



Appendix A. Upper Station sockeye salmon egg takes, 1988-1996.

Brood Year	Adult Salmon	Eggs (millions)	Hatchery ^a	Number Stocked	Year Stocked	Stocking Location
1988	120	0.2	KBH	143,725	1989	Kitoi Bay
1989	3,000	5.0	PCH & KBH	249,346	1990	Spiridon Lake
				1,312,728	1990	Little Kitoi Bay
				578,932	1990	Little Kitoi Lake
1990	3,700	4.5	PCH	3,480,000	1991	Spiridon Lake
		1.5	KBH	1,250,000	1991	Little Kitoi Bay
1991	3,800	4.3	PCH	2,200,000	1992	Spiridon Lake
		2.3	KBH	1,463,000 ^b	1992	Little Kitoi Bay
1992	6,816	9.8	PCH	4,246,000	1993	Spiridon Lake
		1.9	KBH	52,418	1993	Little Kitoi Lake
				326,500	1994	Little Kitoi Bay
				180,000	1993	Jennifer Lake
1993	5,551	7.8	PCH	5,676,000	1994	Spiridon Lake
				370,000	1994	Jennifer Lake
		2.0	KBH	1,672,710	1994	Little Kitoi Bay
1994	200	0.3	PCH	200,000	1995	Jennifer Lake
	200	0.3	KBH	266,952	1995	Little Kitoi Lake
1995	3,668	6.2	PCH	4,844,000	1996	Spiridon Lake
		0.7	KBH	587,435	1997	Little Kitoi Bay
1996	4,810	9.8	PCH	6,700,000	1997	Spiridon Lake
				458,000	1997	Jennifer Lake

^a Pillar Creek Hatchery (PCH) and Kitoi Bay Hatchery (KBH).

^b An additional 182,000 fry of Afognak Lake stock were stocked into Little Kitoi Bay from Kitoi Bay Hatchery.

Additional egg-takes are not planned.

Appendix B. Pillar Creek Hatchery Afognak Lake sockeye salmon egg takes, 1991-2002.

Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1991	2,076	2.6	260,000	1992	Hidden Lake
			399,000	1992	Crescent Lake
			493,000	1992	Little Waterfall Lake
			96,000	1992	Big Waterfall Lake
			464,000	1992	Afognak Lake
			182,000	1992	Little Kitoi Bay
1992	1,890	2.7	554,600	1993	Hidden Lake
			202,000	1993	Crescent Lake
			205,000	1993	Little Waterfall Lake
1993	2,169	3.4	250,000	1994	Hidden Lake
			314,000	1994	Crescent Lake
			150,000	1994	Little Waterfall Lake
			183,000	1994	Little Kitoi Lake
			311,000	1994	Afognak Lake
			293,000	1994	Little Kitoi Bay
			3,500	1995	Little Kitoi Lake
			97,800	1995	Little Waterfall Lake
1994	1,190	1.6	98,650	1995	Hidden Lake
			90,200	1995	Crescent Lake
			100,000	1995	Little Waterfall Lake
			112,900	1995	Little Kitoi Lake
1995	1,440	2.2	390,800	1996	Hidden Lake
			427,000	1996	Crescent Lake
			82,300	1996	Little Waterfall Lake
			146,000	1996	Sorg Lake
			50,600	1996	Little Kitoi Lake
			528,000	1996	Afognak Lake
1996	1,700	2.2	455,200	1997	Hidden Lake
			432,000	1997	Crescent Lake
			246,800	1997	Little Waterfall Lake
			125,800	1997	Little Kitoi Lake
			328,300	1997	Afognak Lake
1997	1,600	2.4	340,400	1998	Hidden Lake
			571,000	1998	Crescent Lake
			237,300	1998	Little Waterfall Lake
			422,700	1998	Afognak Lake
1998	1,060	1.6	310,000	1999	Hidden Lake
			273,000	1999	Little Waterfall Lake
			42,000	1999	Big Waterfall Lake
			371,700	1999	Crescent Lake

-Continued-

Appendix B. (page 2 of 2)

Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1999	1,350	1.8	504,400	2000	Hidden Lake
			358,800	2000	Little Waterfall Lake
			124,400	2000	Big Waterfall Lake
			206,000	2000	Crescent Lake
2000	1,420	2.1	315,500	2001	Hidden Lake
			310,000	2001	Little Waterfall Lake
			224,300	2001	Big Waterfall Lake
			331,500	2001	Crescent Lake
2001	290	0.4	54,500	2002	Hidden Lake
			54,500	2002	Little Waterfall Lake
			38,500	2002	Big Waterfall Lake
			38,500	2002	Crescent Lake
2002	290	0.4 ^a	54,500	2003	Hidden Lake
			54,500	2003	Little Waterfall Lake
			38,500	2003	Big Waterfall Lake
			38,500	2003	Crescent Lake

^a Egg-take to be determined no later than August 1, 2002, pending limnology evaluation.

Appendix C. Pillar Creek Hatchery Malina Lake sockeye salmon egg takes, 1991-1998.

Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1991	120	0.141	85,000	1992	Malina Lake
1992	1,005	1.410	318,000	1993	Malina Lake
1993	644	0.930	547,000	1994	Malina Lake
1994	350	0.475	53,500	1995	Malina Lake
1995	400	0.590	426,300	1996	Malina Lake
1996	454	0.791	390,400	1997	Malina Lake
1997	470	0.800	350,500	1998	Malina Lake
1998 ^a	550	0.710	406,000	1999	Malina Lake

^a Escapement goal was achieved from 1999 to 2001 and no additional egg-takes are planned.

Appendix D. Pillar Creek Hatchery Laura Lake sockeye salmon egg takes, 1993-1998.

Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1993	218	0.30	117,000	1994	Laura Lake
1994	53	0.06	16,000	1995	Laura Lake
1995	170	0.20	182,000	1996	Laura Lake
1996 ^a	0	0.00	0	1997	Laura Lake
1997 ^a	0	0.00	0	1998	Laura Lake
1998 ^b	251	0.35	172,000	1999	Laura Lake

^a Escapement goal was achieved.

^b Escapement goal was achieved from 1999 to 2001 and no additional egg-takes are planned.

Appendix E. Sallery Lake sockeye salmon egg takes, 1994-2002.

Brood Year	Adult Salmon	Eggs (millions)	Hatchery ^a	Number Stocked	Year Stocked	Stocking Location
1994	4,238	7.60	PCH	4,599,000	1995	Spiridon Lake
1995	122	0.20	PCH	150,000	1996	Ruth Lake
1996	103	0.20	PCH	147,000	1997	Ruth Lake
1997	2,700	4.00	PCH	3,340,000	1998	Spiridon Lake
			PCH	100,000	1998	Ruth Lake
			KBH	106,658	1999	Little Kitoi Lake
1998	2,560	4.30	PCH	3,564,000	1999	Spiridon Lake
			PCH	66,500	1999	Ruth Lake
			KBH	98,737	1999	Little Kitoi Lake
			KBH	74,463	2000	Little Kitoi Lake
			KBH	23,756	2000	Little Kitoi Bay
1999	4,318	6.80	PCH	4,397,100	2000	Spiridon Lake
			PCH	78,700	2000	Ruth Lake
			KBH	154,039	2000	Little Kitoi Lake
2000	2,582	4.80	PCH	1,700,600	2001	Spiridon Lake
			PCH	0	2001	Ruth Lake
			KBH	282,089	2001	Little Kitoi Lake
2001	845	1.57	PCH	1,182,000	2002	Spiridon Lake
			PCH	0	2002	Ruth Lake
			KBH	250,000	2002	Little Kitoi Lake
2002 ^b	845	1.57	PCH	1,182,000	2003	Spiridon Lake
			PCH	0	2003	Ruth Lake
			KBH	250,000	2003	Little Kitoi Lake

^a Pillar Creek Hatchery (PCH), Kitoi Bay Hatchery (KBH).

^b Egg-take goal to be determined after inseason limnology evaluation and escapment results.

Appendix F. Sockeye, coho, and chinook salmon survival assumptions used to estimate adult returns for Pillar Creek Hatchery.

Life History Stage Size (g)	Adult Return System	
	Barren	Anadromous
Sockeye:		
fry 0.25 g	5.0%	2.0%
fingerling 1.5 g	8.0%	
pre-smolt 5.0 - 12.5 g	12.5%	
Coho:		
fry	NA	1.5%
fingerling 3.0 g	NA	6.5%
Chinook:		
smolt	NA	1.0 - 3.0%

Appendix G. Pillar Creek Hatchery coho salmon egg takes, 1991-2002.

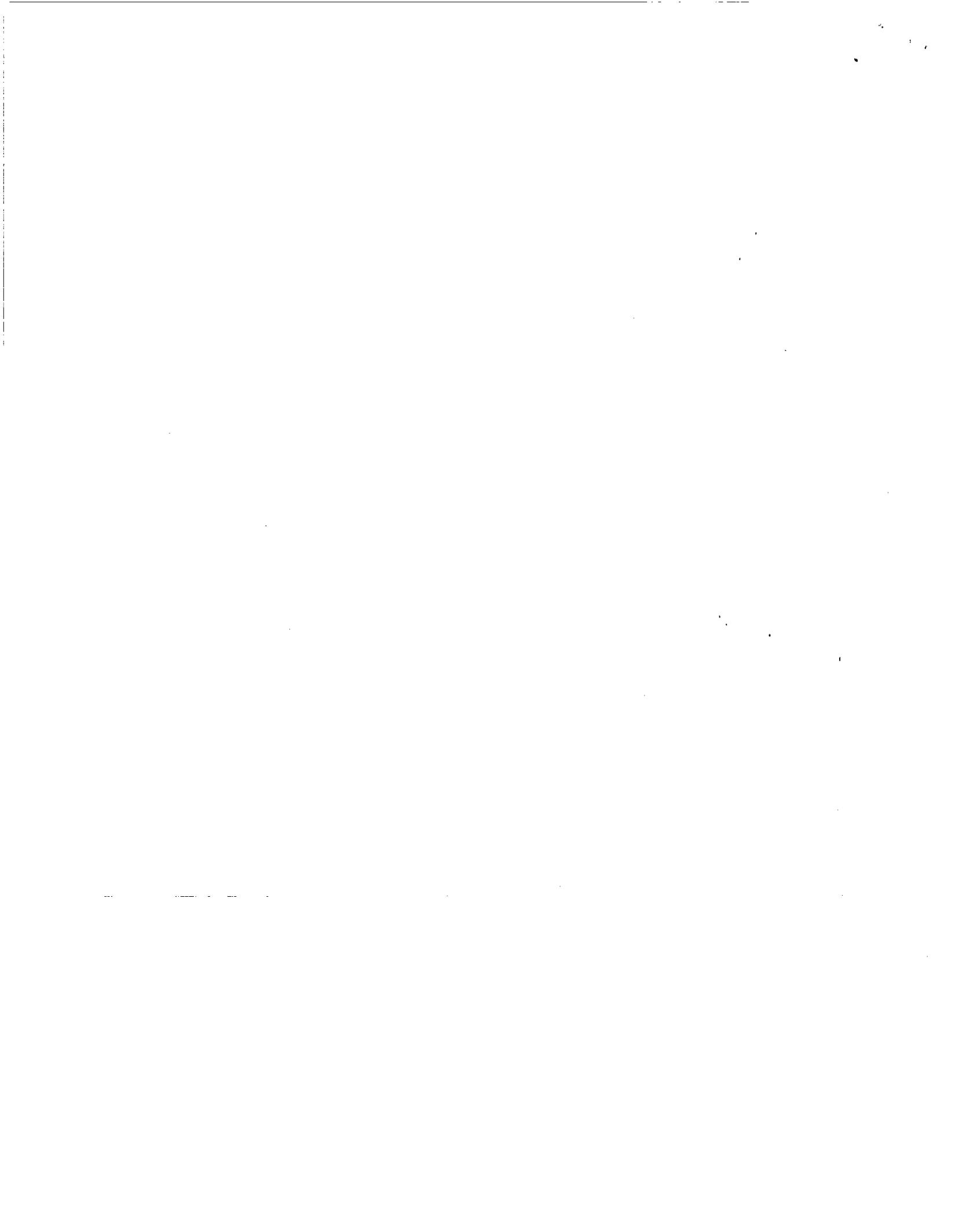
Brood Year	Adult Salmon	Green Eggs	Number Stocked	Year Stocked	Stocking Location
Monashka Creek stock:					
1991	25	60,100	52,000	1992	Monashka Creek
1992	6	10,500	9,000	1993	Monashka Creek
Buskin River stock:					
1993 ^a	78	156,000	136,200	1994	Kodiak Road
1994	56	98,000	76,140	1995	System Lakes ^b
1995	85	120,000	28,000	1996	"
1996	65	177,000	148,200	1997	"
1997	65	153,000	134,500	1998	"
1998	102	158,000	128,000	1999	"
1999	40	91,000	63,800	2000	"
2000	60	112,000	73,400	2001	"
2001	60	146,000	110,000	2002	"
2002	60	146,000	75,000	2003	"

^a Prior to 1993, Kitoi Bay Hatchery supplied juvenile coho salmon for stocking the road systems.

^b Road system lakes includes Southern Lake on Long Island.

Appendix H. Pillar Creek Hatchery Karluk River chinook salmon egg takes, 2000-2002.

Brood Year	Adult Salmon	Green Eggs	Number Stocked	Year Stocked	Stocking Location
2000	48	124,818	63,000	2002	Monashka Creek
2001	36	86,120	35,000	2003	Monashka Creek
2002	120	300,000	75,000	2004	Monashka Creek



SIGN-OFF

Chris L. Clevenger 6-3-02
Chris Clevenger: Pillar Creek Hatchery Manager Date

Steve Honnold 5/31/02
Steve Honnold: Kodiak Finfish Research Biologist, CFD Date

Jim McCullough 5/31/02
Jim McCullough: Regional Resource Development Biologist, CFD Date

Patti Nelson 5/31/02
Patti Nelson: Regional Finfish Research Supervisor, CFD Date

Kevin Brennan 6/4/02
Kevin Brennan: Area Finfish Management Biologist, CFD Date

Rodney D. Campbell 5/30/02
Rodney Campbell: Regional Finfish Management Supervisor, CFD Date

Denby Lloyd 6/4/02
Denby Lloyd: Regional Supervisor, CFD Date

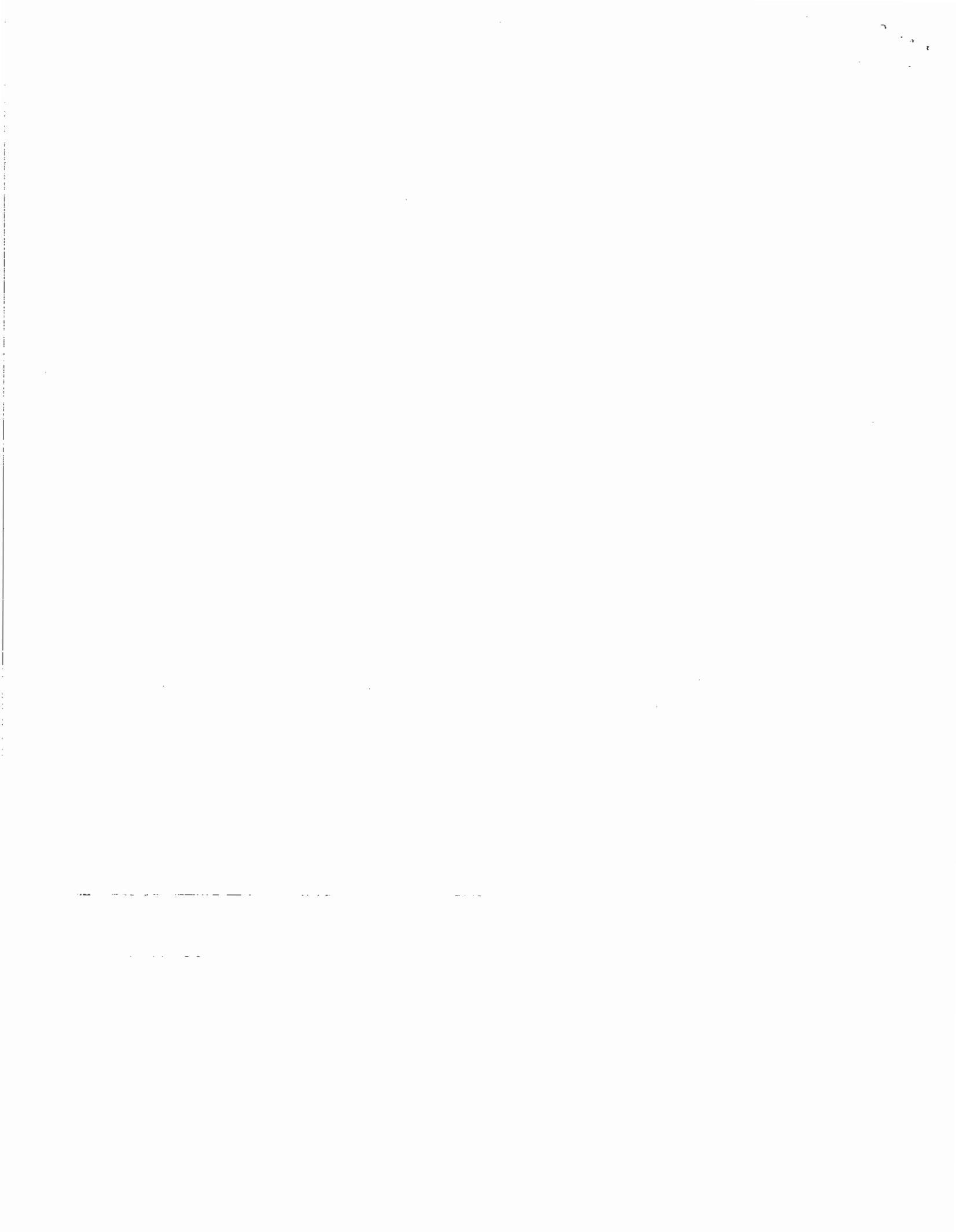
Len Schwarz 6/04/02
Len Schwarz: Area Biologist, Sport Fish Date

Robert Clark 6/10/02
Robert Clark: Sport Fish Regional Supervisor Date

Larry Malloy 6-03-02
Larry Malloy: Executive Director, KRAA Date

The 2002 Hatchery Management Plan for PCH is hereby approved:

Frank Hu 6-14-02
Commissioner, ADF&G Date



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