

JC-98-11 Cruise Report
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Scientists from the Auke Bay Laboratory of the National Marine Fisheries Service, Alaska Fisheries Science Center, conducted a 9-d cruise aboard the NOAA ship *John N. Cobb* in the northern region of southeastern Alaska from 20 July to 28 July 1998. This cruise was the third in a series of five monthly cruises scheduled to sample the inside inner channels, straits, and coastal waters of the region. The cruises are part of an annual research and monitoring effort for collecting abundance, size, and trophic data for juvenile salmon. This information will provide insight into processes affecting their marine survival and size and age at return. A major focus of the program is to use otolith marked juvenile salmon to assess stock-specific growth and survival and potential interactions between hatchery and wild stocks in the region.

Primary objectives of the cruises are to: 1) sample juvenile salmon (*Oncorhynchus* spp.) and ecologically related species with a rope trawl, 2) collect associated physical and biological data with each trawl haul, and 3) examine the spatial and temporal occurrence of juvenile chum salmon (*O. keta*) and pink salmon (*O. gorbuscha*) and their predators, diets, and prey.

Sampling was scheduled at twenty four stations throughout the inside and coastal waters of the northern region (north of latitude 57° N) of southeastern Alaska (Table 1). At each station, the sampling protocol involved: one 20-min trawl haul, one CTD cast, one double oblique bongo tow, one 20-m vertical plankton tow, and in coastal waters only, one deep vertical plankton tow. An exception to this protocol was the sampling at Auke Bay Monitor (ABM) station where three additional vertical hauls were planned and trawling was not scheduled on account of the shallow depth. Certain stations were selected for repetitive sampling as time and weather allowed.

Trawl gear:

Fish were sampled using a Nordic¹ 264 rope trawl fished directly astern the NOAA ship *John N. Cobb* at the surface. The mouth opening of the trawl was 20 m deep and 35 m wide and it was spread apart by a pair of 3.0 m Lite trawl doors. The trawl was fished fully open with 75 fathoms of main warp out for a duration of 20 min at a speed of 1.5 m/sec (3 knots). Trawl

¹Reference to trade names does not imply endorsement by the National Marine Fisheries Service.

speed was monitored from the vessel using a flowmeter with an electromagnetic sensor (Marsh McBirney, Inc., Model 2000-21). To fish the headrope of the trawl at the surface, a cluster of three meshed A-4 Polyform buoys were tethered to each wing tip of the headrope and one A-3 Polyform float was clipped onto the center of the headrope. Mesh sizes ranged from 162.6 cm in the throat of the trawl near the jib lines to 8.9 cm in the cod end. A 6.1 m long, 0.8 cm knotless liner was sewn into the codend. To minimize the loss of fish behind the headrope, a small mesh panel of 10.2 cm mesh was incorporated along the jib lines on the top panel of the trawl between the head rope and the first 162.6 cm mesh.

Oceanographic sampling:

The physical and biological environment was monitored and sampled at each station immediately prior to or after each trawl haul. One CTD cast was made with a Sea-Bird SBE 19 Seacat profiler to 200 m or within 10 m of the bottom. One double oblique bongo tow was done to 200 m or within 20 m of the bottom using a 60-cm frame with 505 and 333 micron mesh nets.

Vertical plankton tows were made with a 50-cm frame and 243 micron mesh net to 20 m at each station, and in coastal transects only, a 57-cm frame and a 202 micron mesh net was deployed to 200 m or within 20 m of the bottom. General Oceanics or Roshiga flow meters were placed inside the bongo and deep conical nets. A Bendix time and depth recorder was used with the oblique tows to determine the maximum sampling depths. To assess zooplankton availability at the sampling stations, plankton collections from 20-m NORPAC vertical plankton hauls were settled over a 24 hr period in 1 L Imhof cones at the Laboratory.

Results:

Favorable weather conditions enabled us to sample all 24 stations according to the cruise plan, including repetitive sampling at 8 stations along two transects. The total sampling effort at all stations included: 31 trawl hauls, 24 bongo tows, 32 CTD casts, and 34 vertical plankton hauls.

A total of 4,862 fish and squid representing 19 species were sampled with the rope trawl (Table 2). Of the fish captured, 3,357 were measured for length and most were retained for later laboratory analysis. All five species of Pacific salmon were captured totaling 4,118 fish. Over 98% of the salmon caught were juveniles; less than 2% of the salmon were immature (13) and adult (23). In the 31 trawl hauls, frequency of occurrence was highest for juvenile pink, chum, sockeye (*O. nerka*), and coho (*O. kisutch*), salmon; they occurred in 77%, 77%, 74%, and 74% of the hauls, respectively. In contrast to the other species of juvenile salmon sampled, the occurrence of chinook salmon was only 16%. Of all fish species sampled, immature wolf-eels (*Anarrhichthys ocellatus*) had the next highest occurrence of 45%.

Temperature and salinity readings at 2-m depths differed between localities. In general, warmer temperatures and lower salinities occurred at the inside stations, whereas colder, more saline conditions occurred at the coastal stations (Table 3). Temperatures ranged from 10.7-14.8°C at inside stations and 8.5-13.8°C at coastal stations, while salinities ranged from 16.4-27.2 ‰ at inside stations and 29.7-31.4 ‰ at coastal stations.

Settled volumes of zooplankton also differed between localities but were highest at the inside stations (Table 2). Settled volumes in coastal localities ranged from 2-16 ml and averaged 6.2 ml, whereas settled volumes in strait and inshore localities ranged from 5-26 ml and averaged 13.3 ml.

Juvenile salmon occurrence differed by habitat and offshore distance. Catch per haul of juvenile salmon was highest in strait habitats (272.9) as opposed to coastal (46.6) and inshore (18.7) habitats (Table 3). Along the offshore transects in the coastal habitats, juvenile salmon occurred out to 41 km offshore, however only one juvenile salmon was captured in three trawl hauls 47-65 km offshore. Along these same offshore transects, catch per haul of juvenile salmon along the three sampling intervals closer to shore were 99.7, 72.0, and 62.3, at the 0-10, 11-25, and 26-40 km offshore distances; respectively.

Twelve adipose fin clipped juvenile salmon were examined for internally planted coded-wire tags (CWTs) (Table 5). Eight CWTs were recovered from five coho and three chinook salmon (*O. tshawytscha*). The additional four adipose fin clipped fish were coho and contained no CWTs. All CWT coho and chinook salmon were recovered in inside waters and originated from southeastern Alaska release localities. Migrations of the eight coho ranged from 70-375 km (1.4-2.7 km/d) whereas migrations of the three chinook salmon ranged from 25-95 km (0.5-1.8 km/d).

Onboard stomach analysis was done on 102 potential predators of juvenile salmon. Stomach contents were examined from the following species: 66 immature and adult spiny dogfish (*Squalus acanthias*), 12 immature chinook salmon, 12 adult pink salmon, 5 adult chum salmon, 2 adult coho salmon, 3 immature sablefish (*Anoplopoma fimbria*), 1 adult black rockfish (*Sebastes melanops*), and 1 adult starry flounder (*Platichthys stellatus*). Fish remains were observed in the salmon, the sablefish, and the spiny dogfish; the starry flounder and black rockfish stomachs were empty. Juvenile salmon (~12 cm) as prey were found in the stomachs of one dogfish and one sablefish.

Discussion:

This was the third of five scheduled cruises in 1998. Information from this cruise can be combined with the previous 1998 cruises (Cruise reports JC-98-05 and -08) and compared to the 1997 results (Cruise reports JC-97-06, -09, -11, -14, -17; Orsi *et al.* 1997; Murphy *et al.* In Prep).

Seasonal abundance and distribution of juvenile salmon in the marine waters of the northern region has been consistent between 1997 and 1998. In both years juveniles were absent in May and all five species occurred in June, particularly in strait habitats. In July, juveniles were still abundant in strait habitats, however catch rates (catch per haul) in coastal habitats dramatically increased from June to July in both 1997 (1 to 33) and 1998 (2 to 62). These data indicate that juveniles actively migrate from estuaries or nearshore habitats into the pelagic habitats sampled in late May and June and later are entering the ocean proper in large numbers in late June and July.

The relative abundances of some species of juvenile salmon in July differed between 1997 and 1998. This was particularly evident for pink and chum salmon. From 1997 to 1998 the catch per haul of pink salmon increased over threefold from 26 to 86, whereas the catch rates for chum salmon decreased over fourfold from 131 to 30. The ratio of pink to chum salmon was 0.2 in both June and July of 1997 and increased by over an order of magnitude to 2.7 and 3.0 in June and July of 1998. If the assumption is made that the majority of the marine mortality of pink salmon has already occurred by June and July, and trawl CPUE is an index of abundance, the adult pink salmon return may be an order of magnitude higher in the northern region in 1999 than the return to the region in 1998. The other species of salmon, which occurred in much lower abundances, did not differ as markedly between years; sockeye and coho were about twice as abundant in 1998 and chinook were about twice as abundant in 1997. These indices of abundance will be monitored in subsequent months of sampling and ultimately correlated with adult returns to determine if trawl CPUE can serve as an index of abundance.

Predation on juvenile salmon was observed for the first time on this cruise; no juvenile salmon had been observed in stomachs of potential predators sampled onboard during all five cruises in 1997 or in the earlier two cruises in 1998. The predation occurred in both strait and coastal habitats; 1 of 3 immature sablefish was preying on juvenile salmon in Chatham Strait and 1 of 66 spiny dogfish was preying on juvenile salmon in Icy Point. Observing predation on juvenile salmon at sea is rare. The sample size is small, but even the low rate of predation observed may be biologically significant if extrapolated over a more extensive temporal and spatial period.

Occurrence and origin of CWT chinook and coho recovered in July were similar between years. CWT chinook originating from the northern region of southeastern Alaska were recovered in 1997 (seven) and 1998 (three). For CWT coho salmon, one fish originating from the southern region of southeastern Alaska was recovered each year. However, in 1997 one CWT coho originating from the Columbia River Basin was recovered and in 1998 four CWT coho originating from the northern region of southeastern Alaska were recovered. Because CWT coho originating from the northern region of southeastern Alaska were also recovered in June of both years, this suggests that the residency of CWT coho originating from the northern region was more protracted in the study area in 1998 than in 1997.

All CWT recoveries in July of 1998 were from southeastern Alaska release localities, however, four of the twelve adipose-clipped juvenile salmon recovered did not contain CWTs. All four of these fish were coho salmon, three of which were the only adipose clipped fish recovered in coastal waters. In July of 1997 one CWT coho originating from the Columbia River Basin was recovered in coastal waters along one of the same coastal transects sampled in 1998. In recent years a large percentage of the hatchery component of coho salmon released from the Pacific Northwest have been marked with an adipose fin clip but without associated CWTs to allow for selective harvest of hatchery fish. Consequently, it is probable that some of these three adipose clipped juvenile coho recovered in the coastal waters in July of 1998 originated from the Pacific Northwest.

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- Table 1.--Localities and coordinates of stations sampled in the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 20-28 July 1998.

Locality	Station	Latitude	Longitude	Offshore	Inter-	
distance	Depth				transect	distance
Inshore stations						
Auke Bay	ABM	58° 22.00' N	134° 40.00' W	1.5 km	-----	60 m
Taku Inlet	TKI	58° 11.19' N	134° 11.71' W	2.2 km	-----	175 m
False Point Retreat	FPR	58° 22.00' N	135° 00.00' W	1.8 km	-----	680 m
Lower Favorite Channel	LFC	58° 20.98' N	134° 43.73' W	1.5 km	-----	75 m
Strait stations						
Upper Chatham Strait	UCA	58° 04.57' N	135° 00.08' W	3.2 km	3.2 km	400 m
	UCB	58° 06.22' N	135° 00.91' W	6.4 km	3.2 km	100 m
	UCC	58° 07.95' N	135° 01.69' W	6.4 km	3.2 km	100 m
	UCD	58° 09.64' N	135° 02.52' W	3.2 km	3.2 km	200 m
Icy Strait	ISA	58° 13.25' N	135° 31.76' W	3.2 km	3.2 km	128 m
	ISB	58° 14.22' N	135° 29.26' W	6.4 km	3.2 km	200 m
	ISC	58° 15.28' N	135° 26.65' W	6.4 km	3.2 km	200 m
	ISD	58° 16.38' N	135° 23.98' W	3.2 km	3.2 km	234 m
Coastal stations						
Cross Sound	CSA	58° 09.53' N	136° 26.96' W	3.2 km	3.2 km	300 m
	CSB	58° 10.91' N	136° 28.68' W	6.4 km	3.2 km	60 m
	CSC	58° 12.39' N	136° 30.46' W	6.4 km	3.2 km	200 m
	CSD	58° 13.84' N	136° 32.23' W	3.2 km	3.2 km	200 m
Icy Point	IPA	58° 20.12' N	137° 07.16' W	6.9 km	6.9 km	160 m
	IPB	58° 12.71' N	137° 16.96' W	23.4 km	16.8 km	130 m
	IPC	58° 05.28' N	137° 26.75' W	40.2 km	16.8 km	150 m
	IPD	57° 53.50' N	137° 42.60' W	65.0 km	24.8 km	1,300 m
Cape Edward	EDA	57° 39.00' N	136° 23.20' W	8.0 km	8.0 km	90 m
	EDB	57° 36.00' N	136° 34.40' W	20.0 km	12.0 km	185 m
	EDC	57° 32.50' N	136° 46.60' W	33.0 km	13.0 km	1,270 m
	EDD	57° 28.75' N	136° 56.60' W	47.0 km	13.0 km	1,800 m

Table 2.-- Life history stage, number captured, size, and frequency of occurrence of fish and squid captured in 31

hauls with a rope trawl in the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 20-28 July 1998.

Common name	Species	Life ² history stage	Number		Fork length (mm)			Percent frequency of occurrence
			captured	measured	min	max	x	
Pink salmon	<i>O. gorbuscha</i>	J	2,674	1,577	88	177	127.4	77
		A	12	12	337	597	486.8	26
Chum salmon	<i>Oncorhynchus keta</i>	J	917	863	81	189	133.7	77
	I	1	1	345	345	345.0	3	
A	8	8	570	703	652.6	16		
Sockeye salmon	<i>O. nerka</i>	J	255	255	79	190	139.0	74
	A	1	1	639	639	639.0	3	
Coho salmon	<i>O. kisutch</i>	J	203	111	335	213.2	74	
	A	2	2	613	622	617.5	6	
Chinook salmon	<i>O. tshawytscha</i>	J	33	33	114	224	165.9	16
	I	12	12	320	471	382.2	23	
Salmonid total			4,118	2,967				
Pacific herring	<i>Clupea harengus</i>	J, I, A	507	153	59	203	176.6	6
Squid ³	Gonatidae	J	32	32	21	55	29.6	10
Spiny dogfish	<i>Squalus acanthias</i>	I, A	66	66	386	692	547.7	3
Sablefish	<i>Anoplopoma fimbria</i>	J	56	56	92	154	129.1	6
	I	3	3	324	355	341.3	3	
Wolf-eel	<i>Anarrhichthys ocellatus</i>	I	44	44	291	607	482.2	45
Walleye pollock	<i>Theragra chalcogramma</i>	J	12	12	47	78	59.813	Crested
sculpin	<i>Blepsias bilobus</i>	J, I	9	60	89	73.8	16	
Capelin	<i>Mallotus villosus</i>	J	3	3	41	51	46.3	3
Prowfish	<i>Zaprora silenus</i>	J	3	3	71	76	73.3	10
Rockfish	<i>Sebastes</i> sp.	J	2	2	45	53	49.0	6
Unknown fish larvae		L	2	2	29	33	31.0	3
Pacific spiny lumpsucker	<i>Eumicrotremus orbis</i>	I	2	2	47	63	55.0	6
Black rockfish	<i>Sebastes melanops</i>	A	1	1	517	517	517.0	3
Starry flounder	<i>Platichthys stellatus</i>	A	1	1	290	290	290.0	3
Sturgeon poacher	<i>Agonus acipenserinus</i>	A	1	1	191	191	191.0	3
Non-salmonid total			744	390				
Totals			4,862	3,357				

²L = larvae

J = juvenile or post larvae in first year at sea (i.e., age -.0)

I = immature age -.1 or older in pre-spawn condition

A = adult approaching age of maturity.

³Mantle lengths

Table 3.--Temperatures, salinities, plankton volumes, and salmon catches at stations sampled in the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 20-28 July 1998. No trawling occurred at station ABM (Haul# 2068).

Date	Haul#	Station	2-m	2-m	20-m plankton		Salmon										
			temperature	salinity	volume (ml)		Juvenile					Immature		Adult			
			(°C)	(o/oo)	Zoop	Total	Pink	Chum	Sockeye	Coho	Chinook	Chinook	Chum	Pink	Chum	Coho	Sockeye
20 July	2038	TKI	10.7	16.4	16	22	-	-	3	6	29	-	-	1	-	-	-
21 July	2039	FPR	12.6	23.3	6	8	4	3	4	5	-	-	-	1	-	-	-
21 July	2040	ISA	12.8	25.2	16	26	107	47	26	21	-	2	-	-	-	-	-
21 July	2041	ISB	13.2	24.1	14	16	135	55	29	25	-	5	-	-	1	-	-
21 July	2042	ISC	14.8	19.7	20	39	1	1	1	-	-	-	-	-	-	-	-
21 July	2043	ISD	14.3	18.3	18	23	89	50	32	24	-	-	-	1	-	-	-
22 July	2044	UCA	12.3	27.2	4	4	3	3	-	22	2	1	-	4	2	-	-
22 July	2045	UCB	12.9	26.2	5	5	35	7	2	6	-	-	-	-	-	-	-
22 July	2046	UCC	13.4	24.6	6	6	111	34	11	21	-	1	-	2	-	1	-
22 July	2047	UCD	13.5	21.4	10	10	51	25	9	11	1	-	-	1	-	-	-
23 July	2048	ISA	13.5	22.9	26	34	523	214	27	17	1	1	-	-	-	-	-
23 July	2049	ISB	13.6	21.1	15	15	973	236	70	17	-	-	-	-	-	-	-
23 July	2050	ISC	13.6	22.1	18	27	100	61	15	6	-	1	-	-	-	-	-
23 July	2051	ISD	13.4	22.0	17	17	8	5	2	7	-	1	-	-	-	-	-
24 July	2052	IPA	12.0	30.6	10	10	23	14	1	-	-	-	-	-	-	-	-
24 July	2053	IPB	13.1	30.8	9	9	74	21	5	3	-	-	-	-	-	-	-
24 July	2054	IPC	13.2	30.9	16	16	59	19	3	-	-	-	-	-	-	-	-
24 July	2055	IPD	13.4	31.2	8	8	-	-	-	1	-	-	-	-	-	-	-
25 July	2056	EDA	13.7	31.1	7	7	-	-	-	2	-	-	-	-	-	-	-
25 July	2057	EDB	13.6	31.1	3	3	62	4	1	1	-	-	-	-	-	-	-
25 July	2058	EDC	13.6	31.1	5	5	58	32	4	1	-	-	1	-	1	-	-
25 July	2059	EDD	13.8	31.1	6	6	-	-	-	-	-	-	-	1	-	1	-
26 July	2060	IPA	12.7	29.7	8	8	193	62	4	-	-	-	-	-	3	-	1
26 July	2061	IPB	13.0	30.7	6	6	33	10	1	1	-	-	-	-	-	-	-
26 July	2062	IPC	13.5	31.0	8	8	5	1	3	2	-	-	-	-	-	-	-
26 July	2063	IPD	13.6	31.1	7	7	-	-	-	-	-	-	-	-	-	-	-
27 July	2064	CSA	12.1	31.0	2	2	-	-	-	-	-	-	-	-	-	-	-
27 July	2065	CSB	9.6	31.4	3	3	12	9	1	1	-	-	-	1	-	-	-
27 July	2066	CSC	9.7	31.3	5	5	13	2	-	-	-	-	-	-	1	-	-
27 July	2067	CSD	8.5	31.4	4	4	2	2	-	2	-	-	-	-	1	-	-
28 July	2068	ABM	13.1	20.3	12	15	na	na	na	na	na	na	na	na	na	na	na
28 July	2069	LFC	13.1	20.3	10	24	-	-	1	1	-	-	-	-	-	-	-
Total catch					2,674		917	255	203	33	12	1	12	8	2	1	

Table 4.--Catches of non-salmoid fish and squid by rope trawl haul at stations sampled in the northern region of southeastern Alaska off the NOAA ship *John N.*

Cobb, 20-28 July 1998. No trawling occurred at station ABM (Haul# 2068).

Date	Haul#	Station	PacificSpiny		Wolf- Sablefish	Walleye eel	Crested pollock	Crested sculpin	Capelin	Prowfish	Sebastes sp.	Unknown fish larvae	Pacific Spiny lumpsucker	Black rockfish	Starry flounder	Sturgeon Poacher	
			herring	Squid dogfish													
20 July	2038	TKI	505	-	-	-	-	2	-	-	-	-	-	-	1	1	
20 July	2039	FPR	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
21 July	2040	ISA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
21 July	2041	ISB	-	-	-	-	1	-	-	-	-	-	-	-	-	-21	
July	2042	ISC	-	-	-	-	-	2	-	-	-	-	-	-	-	-21	
July	2043	ISD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22 July	2044	UCA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22 July	2045	UCB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22 July	2046	UCC	-	-	-	3	-	-	-	-	-	-	-	-	-	-	
22 July	2047	UCD	-	-	-	-	2	-	3	-	-	-	-	-	-	-	
23 July	2048	ISA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23 July	2049	ISB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23 July	2050	ISC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23 July	2051	ISD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24 July	2052	IPA	-	-	66	-	2	-	-	-	-	-	-	-	-	-	
24 July	2053	IPB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24 July	2054	IPC	-	-	-	-	2	-	-	-	-	-	-	-	-	-	
24 July	2055	IPD	-	1	-	21	2	-	-	-	1	-	-	-	-	-	
25 July	2056	EDA	-	1	-	-	5	9	-	-	1	1	-	-	-	-	
25 July	2057	EDB	-	-	-	-	-	1	-	-	-	-	-	1	-	-	
25 July	2058	EDC	-	-	-	-	-	1	-	-	1	-	-	-	-	-	
25 July	2059	EDD	-	139	-	35	3	-	-	-	-	2	-	-	-	-	
26 July	2060	IPA	-	-	-	-	1	-	-	-	-	-	-	-	-	-	
26 July	2061	IPB	-	-	-	-	3	-	-	-	-	-	-	-	-	-	
26 July	2062	IPC	-	-	-	-	5	-	-	-	-	-	-	-	-	-	
26 July	2063	IPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27 July	2064	CSA	2	-	-	-	4	-	-	3	-	-	-	-	-	-	
27 July	2065	CSB	-	-	-	-	6	-	-	-	-	-	-	-	-	-	
27 July	2066	CSC	-	-	-	-	5	1	1	-	-	-	-	-	-	-	
27 July	2067	CSD	-	-	-	-	3	-	-	-	1	-	-	1	-	-	
28 July	2068	ABM	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
28 July	2069	LFC	-	-	-	-	-	-	-	-	-	-	1	-	-	-	
Total catch			507	141	66	59	44	12	9	3	3	2	2	2	1	1	1

Table 5.--Release and recovery information for coded-wire tagged juvenile salmon captured in the northern region of rope trawl haul off the NOAA ship *John N. Cobb*, 20-28 July 1998. Fish recovered that were adipose fin clipped but did not contain coded-wire tags are also reported.

Species	Release information					Recovery information					Days since release	Marine Distance traveled (km)	
	Coded-wire tag	Brood code year	Agency ⁴	Locality	Date	Size (mm)	Size (g)	Locality	(station code)Date	Size (mm)			Size (g)
Chinook	50:04/43	1996	DIPAC	Gastineau Channel, AK	06/02/98	-	24.1	Taku Inlet	(TKI) 07/20/98	195	95.1	48	25
Chinook	50:04/41	1996	DIPAC	Fish Creek, AK	05/28/98	-	27.2	Taku Inlet	(TKI) 07/20/98	192	85.5	53	35
Chinook	04:48/17	1996	HDFL	Hidden Falls, AK	05/29/98	-	39.2	Chatham Strait	(UCA) 07/22/98	224	160.2	54	95
Coho	04:01/03/11/03	1996	SSRAA	Neck Lake, AK	10/--/97	-	-	Chatham Strait	(UCC) 07/22/98	244	159.1	-	375
Coho	04:49/11	1996	HDFL	Kasnyku Bay, AK	06/03/98	-	22.2	Icy Strait	(ISA)07/23/98	209	112.8	50	130
Coho	04:49/10	1996	HDFL	Kasnyku Bay, AK	06/03/98	-	25.7	Icy Strait	(ISA)07/23/98	209	104.4	50	130
Coho	04:49/10	1996	HDFL	Kasnyku Bay, AK	06/03/98	-	25.7	Icy Strait	(ISA) 07/21/98	214	119.4	48	130
Coho	50:04/31	1996	DIPAC	Gastineau Channel, AK	06/02/98	-	17.0	Icy Strait	(ISD)07/23/98	203	99.4	51	70
Coho	No Tag	-	-	-	-	-	-	Icy Point	(IPB) 07/26/98	253	191.0	-	-
Coho	No Tag	-	-	-	-	-	-	Icy Point	(IPD) 07/24/98	335	407.8	-	-
Coho	No Tag	-	-	-	-	-	-	Cape Edward	(EDC) 07/25/98	273	271.5	-	-
Coho	No Tag	-	-	-	-	-	-	Icy Strait	(ISA)07/23/98	207	109.8	-	-

⁴ DIPAC = Douglas Island Pink and Chum
HDFL = Hidden Falls Hatchery
SSRAA = Southern Southeast Regional Aquaculture Association