

# Southeast Alaska Coastal Monitoring Project

JC-04-11 July Cruise Report

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Scientists from the Marine Salmon Investigations Program at Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA Fisheries, a contractor, and University student conducted a 9-day cruise aboard the NOAA ship *John N. Cobb* in the marine waters of the northern region of southeastern Alaska 23-31 July 2004. This cruise took place in the third of five sampling periods scheduled for 2004, and was part of the Southeast Alaska Coastal Monitoring (SECM) Project. The SECM project was initiated in 1997 to study the habitat use and early marine ecology of juvenile Pacific salmon (*Oncorhynchus* spp) in inshore, strait, and coastal habitats along a primary seaward migration corridor used by juvenile salmon. These habitats span 250 km from near Juneau westward through Icy Strait to 65 km offshore in the Gulf of Alaska. Objectives for these monitoring cruises are to: 1) collect biological data on juvenile Pacific salmon (*Oncorhynchus* spp.) and other pelagic fish species from surface rope trawl samples; 2) monitor physical and biological oceanographic indices seasonally at sampling stations in inside, strait, and offshore habitats of juvenile salmon; and 3) conduct process studies focusing on bioenergetics of juvenile salmon.

Sampling in 2004 marks the eighth year of the SECM long-term study on how the intra- and inter-annual variability of physical and biological oceanographic indices relate to the distribution, abundance, growth, and survival of salmon and other fish populations at the same localities. The information collected will also provide insight into potential effects of climate change on stock-specific growth and recruitment of salmonids, and the utilization of marine habitat by key fish species.

## METHODS

Thirteen stations were scheduled for sampling during the July 2004 cruise (Table 1, Figure 1). Stations were located in Auke Bay and along three transects with four stations each in Upper Chatham Strait, Icy Strait, and off Icy Point. Oceanographic measurements were to be taken at all stations and trawling was to occur at all stations except Auke Bay and two of the outermost stations on the Icy Point transect (IPC and IPD). Rope trawl samples were to be replicated in strait habitats without taking the full suite of oceanographic samples.

### Oceanographic sampling:

The oceanographic sampling included physical and biological monitoring at each station. To examine horizontal water structure, temperature and salinity readings were continuously logged at one-minute intervals from 2-m depth using a SeaBird SBE-21<sup>1</sup> thermosalinograph. To examine vertical water structure, a Seabird SBE-19 conductivity-temperature-depth (CTD) profiler was deployed at each station to 200 m or within 10 m of the bottom, dependent on depth. Surface water samples were taken at each station for later determination of chlorophyll and nutrient content.

Zooplankton was sampled at each station with conical nets hauled vertically and a bongo net system towed obliquely. At each station, vertical plankton hauls were retrieved from a depth of 20 m using a 50-cm frame, 243-micron mesh (Norpac) net. At Auke Bay, and in the Icy Strait and Icy Point transects, vertical hauls were retrieved from a depth of 200 m or within 20 m of the bottom using a 57-cm frame, 202-micron mesh (WP-2) net. A Rigosha flow meter was used inside the vertical net frames to determine the amount of water volume sampled. Also most stations, 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. General Oceanics flow meters were placed inside each of the bongo nets to determine the amount of water volume sampled. A SeaBird SBE-39 depth and temperature recorder was used with the bongo nets to validate the maximum deployment depth of each tow. During replicate trawls, only the Norpac sample was collected; however, at the Icy Strait stations, a second double oblique bongo tow was done to 20 meters (28 m wire out at 45 degrees) to compare quantity and composition of zooplankton from the zone typically inhabited by juvenile salmon to that in deeper waters.

### Trawl Sampling:

Sampling for fish was accomplished with Nordic 264 rope trawl fished directly astern the *John N. Cobb* at the surface. The mouth opening of the trawl was approximately 20 m deep and 26 m wide, spread by a pair of 3.0 m Lite trawl doors. The trawl was fished fully open with 150 m of main warp out for a duration of 20 min at a speed of about 1.0-1.5 m/sec (2-3 knots). To fish the headrope of the trawl at the surface, a cluster of three meshed A-4 Polyform buoys was 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. Along the jib lines on the top panel of the trawl, between the head rope and the first 162.6 cm mesh, a small mesh panel of 10.2 cm mesh was incorporated to minimize the loss of fish aft of the headrope.

After each haul, the fish caught were anaesthetized with tricaine methanesulfonate, identified, enumerated, measured, and stomachs sampled (if appropriate). Fish were measured to the nearest mm fork length (FL) with a Limnoterra FMB IV electronic measuring board. The heads of all chinook (*O. tshawytscha*) and coho (*O. kisutch*) salmon lacking adipose fins were retained for the possible recovery of a coded-wire tag (CWT). Stomachs from potential predators of juvenile salmon were excised, weighed, and classified by fullness. The weight of the stomach contents was determined as the difference between the weight of the stomach and contents minus

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<sup>1</sup>Reference to trade names does not imply endorsement by the NOAA Fisheries.

the weight of the empty stomach. Stomach contents were removed and prey were generally identified to the family level and estimated to the nearest 10% of total volume.

#### Laboratory processing:

Data on settled volumes (SVs) of zooplankton in the 20-m vertical hauls and from decoded CWTs of fish lacking adipose fins are included in this report. Laboratory processing in progress includes 1) measurement of weight and condition of juvenile salmon; 2) determination of energetic content from frozen samples of juvenile pink (*O. gorbuscha*), chum (*O. keta*), and coho salmon; 3) examination for otolith thermal marks in frozen samples of juvenile chum, sockeye (*O. nerka*), coho, and chinook salmon; 4) scale samples of each species of juvenile salmon; 5) measurement of plankton displacement volumes of all Bongo net samples; 6) zooplankton species composition and abundance from all Norpac hauls and from Bongo net samples taken in Icy Strait stations; and 7) determination of the stomach contents of juvenile chum salmon.

## **RESULTS and DISCUSSION**

All thirteen stations scheduled for sampling in the northern region of southeastern Alaska were sampled (Table 1). Standard oceanographic sampling and surface trawling were conducted according to the following schedule:

Day 1: Auke Bay (1 station); Day 2: Icy Point transect (6 stations); Day 3: Icy Strait transect (4 stations); Day 4: Icy Strait transect (4 stations); Day 5: Upper Chatham Strait transect (4 stations); Day 6: Icy Strait transect (2 stations); Day 7: Icy Strait transect (2 stations); Day 8: Icy Strait transect (7 stations); and Day 9: transit to Juneau NMFS Subport.

Oceanographic sampling was accomplished at each station. A total of 30 CTD casts, 33 Norpac tows, 15 bongo tows (30 net samples), and 9 WP-2 tows were made during the cruise (Table 2). Water samples were also taken at all 13 stations for later analysis of chlorophyll and nutrients. In addition, shallow bongo samples were taken at the Icy Strait transect over 25-26 July and during the nocturnal haul at the ISC on 30 July.

Surface (2-m) temperatures and salinities ranged from 12.9 to 15.7°C and from 14.6 to 31.4 PSU (Table 3). Salinity followed the typical spatial pattern, lowest at the ABM station and increasing toward the Gulf of Alaska. Temperatures were lowest at station UCA on the Upper Chatham transect and highest at two stations (IPB and IPD) offshore in the Gulf of Alaska.

Zooplankton biomass, as determined from the SVs of the 20-m vertical tow samples, ranged from <1 to 200 ml (Table 3). No measurable phytoplankton was present at any station, indicating low primary production at this time. Zooplankton SVs were consistently highest at the furthest offshore station (IPD) in the Gulf of Alaska where salps predominated.

Juvenile salmon were caught at all strait stations and the two coastal stations sampled inside the continental shelf break, within 25 km of shore. A total of 1,368 fish was collected from 29 rope trawl hauls (Tables 3, 4, and 5). Juvenile salmon were the most frequently occurring taxon, with coho, pink, and chum salmon having the highest frequency of occurrence (79-86% of hauls). Among the juvenile salmon species, pink and chum salmon were most abundant, with total

catches of 585 and 237 (Tables 3 and 4); catches of juvenile coho and sockeye salmon were lower, whereas catches of juvenile chinook salmon were lowest. The 19 immature chinook salmon and 9 adult pink and caught were the most abundant of the larger salmon (Tables 3 and 5). Unlike most years of the SECM research, the catches in July (the traditional high month) were substantially lower than in June, and suggest a rapid seaward migration of juveniles in 2004.

A total of 342 non-salmonids were caught in the trawl (Tables 4 and 5). By species, the largest catches were 270 walleye pollock (*Theragra chalcogramma*) and 35 crested sculpin (*Blepsias bilobus*) and 14 squid (Goniatidae). Of the non-salmonids captured, crested sculpin (*Blepsias bilobus*) occurred the most frequently (48% of hauls), but only were found in the strait habitats. Two salmon sharks were caught in the trawl and were tagged and released. One was a female 195 cm fork length and tagged (# 98145) on 24 July at station IPB and the other was a male 200 cm fork length tagged (# 98132) on 26 July at station ISB.

Stock identification was readily available for salmon lacking the adipose fin that contained CWTs. Of the eight salmon lacking the adipose fin, five of the three chinook and two of the three coho contained CWTs (Table 6). All but two of the CWTs were from juveniles; the older fish were age 1.1 (one-ocean, stream-type) chinook salmon. All CWT fish were recovered in the strait habitat and all but one originated from localities within southeastern Alaska. The exception was a juvenile, stream-type chinook salmon from the Clackamas River, Oregon. In all eight years of SECM research, this is the first recovery of a juvenile chinook salmon from the Columbia River Basin in the inside waters of southeastern Alaska; all others in previous years have been recovered along the outside coast, typically in June.

Stomach analysis was done on potential predators of juvenile salmon while onboard the vessel. These predator species included: adult walleye pollock (45), immature and juvenile chinook salmon (20), adult pink salmon (7), adult coho salmon (2), and adult spiny dogfish (2) (*Squalus acanthias*). Of the 76 predators examined, 91% contained prey items (69) and 9% were empty (3 immature chinook salmon, 2 spiny dogfish, and 2 walleye pollock). The only fish that preyed on juvenile salmon was one of the adult coho salmon.

## ACKNOWLEDGMENTS

We acknowledge and compliment the command and crew of the NOAA ship *John N. Cobb* for their cooperation and performance during the cruise. Minor modifications in the sampling schedule to account for weather allowed us to achieve our scientific objectives.

Table 1. —Localities and coordinates of stations scheduled for oceanographic sampling in the marine waters of the northern region of southeastern Alaska using the NOAA ship *John N. Cobb*, 23-31 July 2004. Distance between stations within a transect is indicated in the “between km” column.

Locality	Station	North	West	Distance		Depth m
				offshore km	between km	
Auke Bay	ABM	58E 22.00'	134E 40.00'	1.5	—	60
Upper Chatham Strait	UCA	58E 04.57'	135E 00.08'	3.2	—	400
	UCB	58E 06.22'	135E 00.91'	6.4	3.2	100
	UCC	58E 07.95'	135E 01.69'	6.4	3.2	100
	UCD	58E 09.64'	135E 02.52'	3.2	3.2	200
Icy Strait	ISA	58E 13.25'	135E 31.76'	3.2	—	128
	ISB	58E 14.22'	135E 29.26'	6.4	3.2	200
	ISC	58E 15.28'	135E 26.65'	6.4	3.2	200
	ISD	58E 16.38'	135E 23.98'	3.2	3.2	234
Icy Point	IPA	58E 20.12'	137E 07.16'	6.9	—	160
	IPB	58E 12.71'	137E 16.96'	23.4	16.8	130
	IPC	58E 05.28'	137E 26.75'	40.2	16.8	150
	IPD	57E 53.50'	137E 42.60'	65.0	24.8	1,300

Table 2. —Oceanographic and biological samples collected in the marine waters of the northern region of southeastern Alaska using the NOAA ship *John N. Cobb*, 23-31 July 2004.

Date	Time	Haul#	Station	CTD	Plankton net samples			Water samples chlorophyll & nutrients	Rope trawl
					Norpac	Bongo	WP-2		
23 July	1030	8054	ABM	1	3	2	1	1	0
24 July	0740	8055	IPA	1	1	2	1	1	1
24 July	0950	8056	IPA	0	0	0	0	0	1
24 July	1130	8057	IPB	1	1	2	1	1	1
24 July	1330	8058	IPB	0	0	0	0	0	1
24 July	1530	8059	IPC	1	1	2	1	1	0
24 July	1750	8060	IPD	1	1	2	1	1	0
25 July	1000	8061	ISA	1	1	4 <sup>shallow 20 m</sup>	1	1	1
25 July	1205	8062	ISB	1	1	4 <sup>shallow 20 m</sup>	1	1	1
25 July	1645	8063	ISC	1 shallow	1	0	0	0	1
25 July	1830	8064	ISD	1 shallow	1	0	0	0	1
26 July	0720	8065	ISA	1 shallow	1	0	0	0	1
26 July	0900	8066	ISB	1 shallow	1	0	0	0	1
26 July	0945	8067	ISC	1	1	4 <sup>shallow 20 m</sup>	1	1	1
26 July	1400	8068	ISD	1	1	4 <sup>shallow 20 m</sup>	1	1	1
27 July	0720	8069	UCD	1 shallow	1	0	0	1	1
27 July	0900	8070	UCC	1 shallow	1	0	0	1	1
27 July	1045	8071	UCB	1 shallow	1	0	0	1	1
27 July	1330	8072	UCA	1 shallow	1	0	0	1	1
28 July	0814	8073	ISA	1 shallow	1	0	0	0	1
28 July	0940	8074	ISB	1 shallow	1	0	0	0	1
28 July	1200	8075	ISC	1 shallow	1	0	0	0	1
28 July	1450	8076	ISD	1 shallow	1	0	0	0	1
29 July	0740	8077	ISC	1 shallow	1	0	0	0	1
29 July	1050	8078	ISC	1 shallow	1	0	0	0	1
29 July	1220	8079	ISC	1 shallow	1	0	0	0	1
29 July	1355	8080	ISC	1 shallow	1	0	0	0	1
29 July	1530	8081	ISC	1 shallow	1	0	0	0	1
29 July	1700	8082	ISC	1 shallow	1	0	0	0	1
30 July	0830	8083	ISC	1 shallow	1	0	0	0	1
30 July	1020	8084	ISC	1 shallow	1	0	0	0	1
30 July	2359	8085	ISC	1	1	4 <sup>shallow 20 m</sup>	0	0	1
Total				30	33	30	9	13	29

Table 3. —Two meter depth temperatures and salinities, settled volumes (SVs) of plankton from 20-m vertical Norpac hauls, and catches of salmon with a rope trawl at stations sampled using the NOAA ship *John N. Cobb* in marine waters of the northern region of southeastern Alaska, 23-31 July 2004. All hauls except 8085 were made during daylight hours.

Date	Haul#	Station	Temp. (EC)	Salinity (PSU)	SVs plankton (ml)			Juvenile salmon					Immature	Adult		
					Zoop-	Phyto-	Total	Pink	Chum	Sockeye	Coho	Chinook	Chinook	Pink	Coho	
23 July	8054	ABM	14.6	14.6	12	0	12	—	—	—	—	—	—	—	—	—
24 July	8055	IPA	14.4	31.2	3	0	3	12	9	2	1	0	0	0	0	0
24 July	8056	IPA	15.0	31.3	—	—	—	21	9	0	4	0	0	0	0	0
24 July	8057	IPB	15.6	31.3	3	0	3	30	2	0	1	0	0	0	0	0
24 July	8058	IPB	15.7	31.3	—	—	—	10	3	0	4	0	0	0	0	0
24 July	8059	IPC	15.3	31.3	4	0	4	—	—	—	—	—	—	—	—	—
24 July	8060	IPD	15.7	31.4	200	0	200	—	—	—	—	—	—	—	—	—
25 July	8061	ISA	14.7	25.1	12	0	12	10	8	11	7	0	2	1	0	0
25 July	8062	ISB	15.1	23.7	8	0	8	16	10	3	1	0	0	0	0	0
25 July	8063	ISC	15.2	23.9	5	0	5	80	36	6	2	2	0	0	0	0
25 July	8064	ISD	15.4	17.2	2	0	2	3	1	1	0	0	0	0	0	0
26 July	8065	ISA	13.4	26.2	11	0	11	0	2	0	0	0	1	0	0	0
26 July	8066	ISB	15.3	19.8	3	0	3	2	1	0	2	0	0	0	0	0
26 July	8067	ISC	15.5	19.4	3	0	3	11	11	0	2	0	1	0	1	0
26 July	8068	ISD	15.6	19.1	6	0	6	0	0	1	0	0	0	1	0	0
27 July	8069	UCD	14.6	26.3	1	0	1	0	0	1	1	0	0	0	0	0
27 July	8070	UCC	14.9	27.3	1	0	1	6	2	0	1	0	1	0	0	0
27 July	8071	UCB	13.7	27.8	1	0	1	0	0	0	1	1	0	0	0	0
27 July	8072	UCA	12.9	28.3	1	0	1	0	0	1	0	0	0	0	1	0
28 July	8073	ISA	11.9	28.2	1	0	1	0	0	0	1	0	0	2	0	0
28 July	8074	ISB	14.4	26.2	1	0	1	2	5	2	2	0	0	0	0	0
28 July	8075	ISC	14.3	26.4	2	0	2	13	7	1	12	1	0	0	0	0
28 July	8076	ISD	14.3	26.5	2	0	2	22	9	0	3	0	0	0	0	0
29 July	8077	ISC	13.7	27.6	2	4	2	39	5	9	3	0	0	0	0	0
29 July	8078	ISC	14.0	26.1	2	0	2	8	4	4	1	0	0	0	0	0
29 July	8079	ISC	14.1	24.8	2	0	2	31	8	4	7	1	0	0	0	0
29 July	8080	ISC	14.3	24.0	3	0	3	10	2	0	13	0	9	0	0	0
29 July	8081	ISC	14.5	24.3	1	0	1	8	4	4	5	0	1	1	0	0
29 July	8082	ISC	14.0	26.4	2	0	2	6	2	8	1	0	0	1	0	0
30 July	8083	ISC	14.2	26.6	3	0	3	85	38	4	10	0	0	0	0	0
30 July	8084	ISC	14.2	26.0	4	0	4	106	26	7	5	0	0	0	1	0
30 July	8085	ISC	14.2	25.8	14	0	14	54	33	4	4	2	4	1	0	0
Total catch			—	—	—	—	—	585	237	73	94	7	19	9	2	0

Table 4.—Catches other than salmon from rope trawl hauls at stations in the marine waters of the northern region of southeastern Alaska using the NOAA ship *John N. Cobb*, 23-31 July 2004. All hauls except 8085 were made during daylight hours.

Date	Haul#	Station	Walleye pollock	Crested sculpin	Squid	Lampfish	Pacific herring	Salmon shark	Wolf- eel	Spiny dogfish	Pacific sandfish	Prowfish	Smooth lump.	P. spiny lump.
									0					
24 July	8055	IPA	0	0	4	0	0	0	0	0	0	1	0	0
24 July	8056	IPA	0	0	0	0	0	0	0	0	0	0	0	0
24 July	8057	IPB	0	0	0	0	0	1	0	0	0	0	0	0
24 July	8058	IPB	1	0	0	0	0	0	0	0	0	0	0	0
25 July	8061	ISA	124	7	0	0	0	0	0	0	0	0	0	0
25 July	8062	ISB	1	0	0	0	0	0	0	0	0	0	0	0
25 July	8063	ISC	0	0	0	0	0	0	1	0	0	0	0	0
25 July	8064	ISD	0	3	0	0	0	0	0	0	0	0	0	0
26 July	8065	ISA	4	4	0	0	0	0	0	0	0	0	0	1
26 July	8066	ISB	0	0	0	0	0	1	0	0	0	0	0	0
26 July	8067	ISC	0	1	0	0	0	0	0	0	0	0	0	0
26 July	8068	ISD	0	5	0	0	0	0	0	0	1	0	0	0
27 July	8069	UCD	0	0	0	0	0	0	0	0	0	0	0	0
27 July	8070	UCC	0	3	0	0	0	0	0	0	0	0	0	0
27 July	8071	UCB	0	2	0	0	0	0	0	0	0	0	0	0
27 July	8072	UCA	0	1	0	0	0	0	0	0	0	0	0	0
28 July	8073	ISA	37	2	0	0	0	0	0	0	0	0	1	0
28 July	8074	ISB	74	1	0	0	0	0	0	0	0	0	0	0
28 July	8075	ISC	0	0	0	0	0	0	0	0	0	0	1	0
28 July	8076	ISD	0	0	0	0	0	0	0	0	1	0	0	0
29 July	8077	ISC	0	1	0	0	0	0	0	0	0	0	0	0
29 July	8078	ISC	0	1	0	0	0	0	0	0	0	0	0	0
29 July	8079	ISC	0	0	0	0	0	0	0	0	0	0	0	0
29 July	8080	ISC	0	0	0	0	0	0	0	0	0	0	0	0
29 July	8081	ISC	0	2	0	0	0	0	0	0	0	0	0	0
29 July	8082	ISC	0	0	0	0	0	0	0	0	0	0	0	0
30 July	8083	ISC	0	0	0	0	0	0	1	0	0	0	0	0
30 July	8084	ISC	0	0	0	0	1	0	0	0	0	0	0	0
30 July	8085	ISC	29	2	10	9	0	0	0	0	0	0	0	0
Totals			270	35	14	9	1	2	2	2	2	2	2	1



Table 5—Length, percent frequency of occurrence, and life history stage of fish caught in 29 rope trawl hauls using the NOAA ship *John N. Cobb* in the marine waters of the northern region of southeastern Alaska, 23-31 July 2004. Portions of certain species were sampled for length; total numbers caught for these species were: 565 pink salmon, 270 walleye pollock, and 35 crested sculpins. Life history stage abbreviations are: L = larval fish, J = juvenile or post larvae in first year at sea (i.e. age -.0), I = immature age -.1 or older in pre-spawn condition, and A = mature adult or near age of maturity.

Common name	Species or family	n	Fork length (mm)			Frequency of occurrence	Life history stage
			min	max	mean		
Pink salmon	<i>Oncorhynchus gorbuscha</i>	507	91	168	129.1	79%	J
Chum salmon	<i>O. keta</i>	237	103	197	139.4	83%	J
Coho salmon	<i>O. kisutch</i>	94	157	249	203.1	86%	J
Sockeye salmon	<i>O. nerka</i>	73	95	180	137.4	62%	J
Chinook salmon	<i>O. tshawytscha</i>	7	188	305	228.4	21%	J
Chinook salmon	<i>O. tshawytscha</i>	19	320	480	410.5	24%	I
Pink salmon	<i>O. gorbuscha</i>	9	339	562	496.1	21%	A
Coho salmon	<i>O. kisutch</i>	2	599	810	704.5	7%	A
Total salmonids measured		948	—	—	—	—	—
Walleye pollock	<i>Theragra chalcogramma</i>	128	312	464	373.0	21%	I-A
Crested sculpin	<i>Blepsias bilobus</i>	33	80	137	108.5	48%	I-A
Walleye pollock	<i>Theragra chalcogramma</i>	2	47	60	53.5	7%	L
Pacific sandfish	<i>Trichodon trichodon</i>	2	80	89	84.5	7%	J
Wolf- Eel	<i>Anarrhichthys ocellatus</i>	2	250	360	305.0	7%	A
Salmon shark	<i>Lamna ditropis</i>	2	1950	2000	1975.0	7%	A
Spiny dogfish	<i>Squalus acanthias</i>	2	570	790	680.0	3%	A
Prowfish	<i>Zaprora silenus</i>	2	91	99	95.0	7%	J
Smooth lumpsucker	<i>Aptocyclus ventricosus</i>	2	139	210	174.5	7%	A
P. Spiny lumpsucker	<i>Eumicrotremus orbis</i>	1	51	51	51.0	3%	I
Pacific herring	<i>Clupea pallasii</i>	1	145	145	145.0	3%	I
Lampfish	Myctophidae	9	40	69	50.8	3%	I-A
Squid	Gonatidae	14	23	230	91.9	7%	I
Total non-salmonids measured		200	—	—	—	—	—
Total fish and squid measured		1,148	—	—	—	—	—

Table 6.—Release and recovery information for salmon lacking the adipose fin or contain coded-wire tags that were caught in rope trawl hauls using the NOAA ship *John N. Cobb* in the northern region of southeastern Alaska, 23-31 July 2004. Agency acronym definitions are: ADFG = Alaska Department of Fish and Game, ARMK = Armstrong Keta Hatchery, DIPAC = Douglas Island Pink and Chum Corporation, and NSRA = Northern Southeast Regional Aquaculture Association and ODFW = Oregon Department of Fish and Wildlife. Age notations are European, with the numeral before the decimal denoting the number of freshwater winters and the numeral following the decimal denoting marine winters.

Species	Release information						Recovery information						
	Tag code	Brood year	Agency	Locality	Date	g	Locality (station code) haul# - fish#	2004 date	mm	g	Age	Days since release	Distance traveled km
Chinook	04:04/53	2001	ADFG	Chilkat River, AK (Wild)	04/11/03	35.4	Icy Strait (ISC) 8081 - 22	07/29	460	1,150	1.1	475	150
Chinook	04:07/23	2001	DIPAC	Gastineau Ch., AK	06/12/03	24.7	Icy Strait (ISC) 8080 - 31	07/29	403	800	1.1	413	95
Chinook	04:08/56	2002	NSRA	Hidden Falls, AK	06/06/04	35.4	Icy Strait (ISC) 8063 - 71	07/25	227	167.8	1.0	49	130
Chinook	04:08/56	2002	NSRA	Hidden Falls, AK	06/06/04	35.4	Icy Strait (ISC) 8075 - 56	07/28	228	168.9	1.0	52	130
Chinook	09: 38/43	2002	ODFW	Clackamas R., OR	03/18/04	44.9	Icy Strait (ISC) 8063 - 127	07/25	305	390	1.0	129	1,500
Coho	04:09/54	2002	ARMK	Port Armstrong, AK	06/03/04	28.7	Icy Strait (ISC) 8075 - 7	07/28	217	116.5	1.0	55	235
Coho	04:48/43	2002	ARMK	Port Armstrong, AK	2004	---	Icy Strait (ISC) 8063 - 69	07/25	213	107.6	1.0	---	235
Coho	No Tag	---	---	---	---	---	Icy Strait (ISA) 8073 - 1	07/28	207	105.4	---	---	---

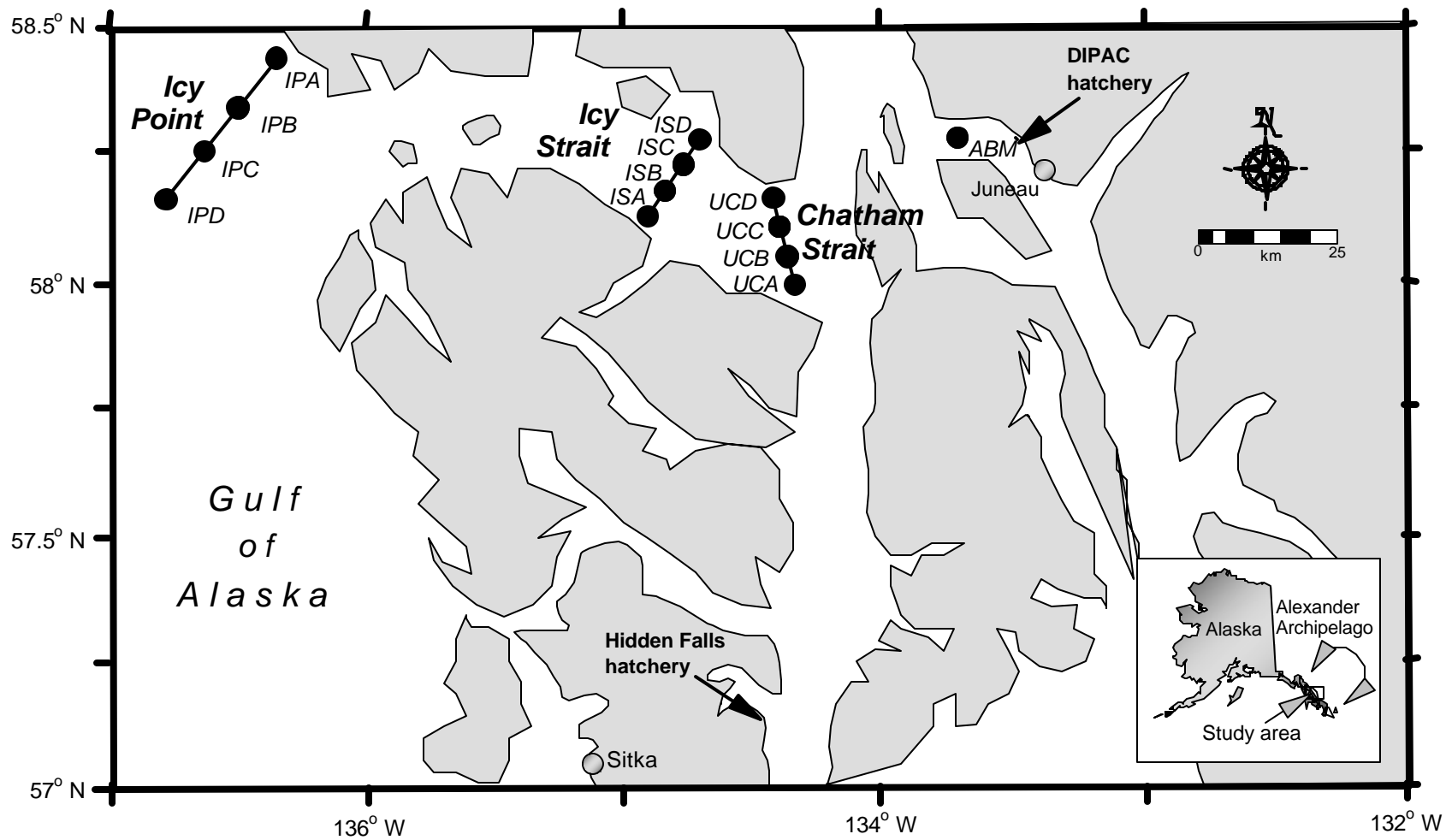


Figure 1. —Thirteen stations sampled in the marine waters of the northern region of southeastern Alaska using the NOAA ship *John N. Cobb*, 23-31 July 2004.