

## **Southeast Alaska Coastal Monitoring Project**

**JC-06-08 Cruise Report**

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Prepared by  
Emily A. Fergusson, Bruce L. Wing, and Brandon Howard\*  
Auke Bay Laboratory, 11305 Glacier Highway  
Juneau, Alaska 99801-8626  
Tel (907) 789-6613, TEL (907) 789-6043 FAX (907) 789-6094  
E-mail: [emily.fergusson@noaa.gov](mailto:emily.fergusson@noaa.gov) & [bruce.wing@noaa.gov](mailto:bruce.wing@noaa.gov)

\*contractor

Scientists from the Marine Salmon Investigations Program at Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service conducted a 4-day cruise aboard the NOAA ship *John N. Cobb* in the marine waters of the northern region of southeastern Alaska, from 22 to 25 May 2005. This cruise, JC-05-06, was the first in a series of four Southeast Alaska Coastal Monitoring (SECM) Project cruises scheduled for 2005.

The SECM project was initiated in 1997 to study the habitat and early marine ecology of juvenile Pacific salmon (*Oncorhynchus* spp.) in inshore, strait, and coastal habitats along their primary seaward migration corridor, as well as to examine the intra- and inter-annual variability of physical and biological oceanographic indices in relation to the distribution, abundance, growth, and survival of salmon and other fish populations at the same localities. These habitats span from near Juneau 250 km westward through Icy Strait, culminating 64 km offshore in the Gulf of Alaska. Objectives for these cruises were to: 1) collect biological data on juvenile Pacific salmon and other pelagic fish species from surface rope trawl samples and 2) monitor physical and biological oceanographic indices seasonally at sampling stations in these habitats.

Sampling in 2005 marks the ninth year of the SECM long-term study. The information collected will also provide insight into potential effects of oceanographic changes on stock-specific growth and recruitment of salmonids, interactions between hatchery and wild stocks of juvenile salmon, and the utilization of marine habitat by key fish species. Although new funding sources have led to changes in some objectives this year, the May cruise follows the standard protocol used in previous years.

### **METHODS**

Thirteen stations were scheduled for sampling on cruise JC-05-06 (Table 1, Figure 1). Stations were located in Auke Bay (1), Upper Chatham Strait (4), Icy Strait (4), and Icy Point (4). Low abundances of target fish species in past years caused us to concentrate on oceanographic observations during the May cruise.

### Oceanographic sampling:

Oceanographic and biological sampling was conducted at 13 stations (Table 1, Figure 1). Three-meter depth temperatures and salinities throughout the cruise were logged with an onboard SeaBird SBE-21<sup>1</sup> thermosalinograph. At each station oceanographic profiles of salinity and temperature were taken with a SeaBird SBE-19 conductivity-temperature-depth (CTD) profiler. Profile depths were to 200 m or within 10 m of bottom at stations shallower than 200 m. Surface water samples were taken at each station, filtered, and frozen for later determination of chlorophyll and nutrient content.

### Zooplankton Sampling:

At least one shallow (20 m) vertical tow was made at each station with a 50-cm, 243- $\mu$ m mesh NORPAC net. One deep vertical tow was made at the inshore and coastal stations with a 57-cm, 202- $\mu$ m mesh WP-2 net. One deep, double oblique bongo (60-cm, 333- $\mu$ m and 505- $\mu$ m mesh) tow was made at all stations, except those in Upper Chatham Strait. The WP-2 and bongo tows sampled to a depth of 200 m or within 20 m of the bottom at stations shallower than 200 m (Table 2). A Vemco minilog data logger was used with the bongo tows to record the maximum sampling depths. General Oceanics or Rigosha flow meters were placed inside the WP-2 and bongo net frames for calculation of filtered water volumes.

### Laboratory processing:

Laboratory processing of zooplankton samples are underway at the ABL Fish-Energy-Diet-Zooplankton "FEDZ" lab. All NORPAC samples were measured for settled volumes (SVs) of zooplankton, that data are included in this report. Displacement volumes on all bongo samples will be measured. Microscopic analysis of zooplankton species composition and abundance estimation will be done for:

- 1) All samples taken at Auke Bay Monitor;
- 2) NORPAC and bongo samples taken at Icy Strait; and
- 3) WP-2 and bongo samples taken at Icy Point.

All water samples will be processed for chlorophyll and nutrient concentrations. An annual data report of these laboratory analyses is presented in a North Pacific Anadromous Fish Commission document lagging one year behind the year of sample collection.

## **RESULTS and DISCUSSION**

Sampling was conducted according to the following schedule at the thirteen stations:

Day 1: Depart NMFS Subport in Juneau and transit to Icy Point.

Day 2: Conduct oceanographic sampling at the Icy Point transect.

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

Day 3: Conduct oceanographic sampling at the Icy Strait and Upper Chatham Strait transects.

Day 4: Conduct oceanographic sampling at Auke Bay Monitor and return to NMFS Subport in Juneau.

Oceanographic sampling was accomplished at all stations. A total of 13 CTD casts, 13 water samples, 15 NORPAC tows, 5 WP-2 tows, and 18 bongo tows (two samples taken during each tow) were made during the cruise (Table 2). Surface (3-m) temperatures and salinities ranged from 9.3 to 12.3°C and from 21.6 to 31.5 PSU (Table 3). Settled volumes of zooplankton from the 20-m vertical NORPAC samples ranged from 4.0 to 27.0 ml; phytoplankton was not detected in any of the NORPAC samples (Table 3).

### **ACKNOWLEDGMENTS**

We acknowledge and compliment the command and crew of the NOAA ship *John N. Cobb* for their cooperation and performance during the cruise. We appreciate their willingness to be flexible with the sampling schedule in order to complete all of the cruise objectives.

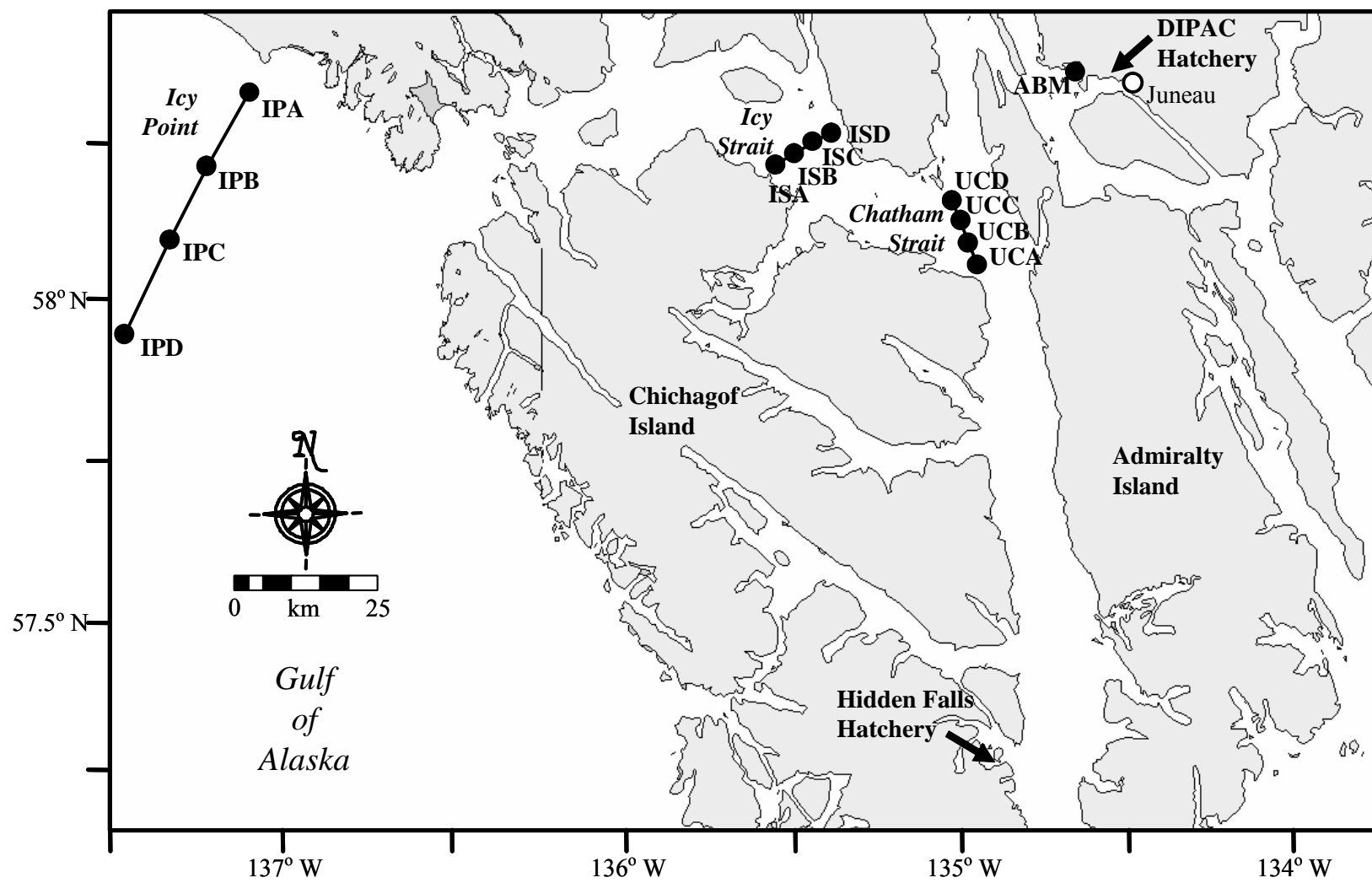


Figure 1.—Locations of stations sampled in marine waters of the northern region of southeastern Alaska, 22-25 May 2005.

Table 1.—Localities and coordinates of stations sampled in marine waters of the northern region of southeastern Alaska, 22-25 May 2005.

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

Table 2.—Types of data collected at stations sampled in marine waters of the northern region of southeastern Alaska, 22-25 May 2005.

Date	Time	Haul #	Station	Data collection type				
				CTD cast	Bongo	NORPAC vertical	WP-2 vertical	Chlorophyll & nutrients
23 May	8:14	9002	IPA	1	2	1	1	1
23 May	10:30	9003	IPB	1	2	1	1	1
23 May	12:16	9004	IPC	1	2	1	1	1
23 May	14:30	9005	IPD	1	2	1	1	1
24 May	15:23	9006	ISA	1	2	1	0	1
24 May	14:19	9007	ISB	1	2	1	0	1
24 May	13:02	9008	ISC	1	2	1	0	1
24 May	12:00	9009	ISD	1	2	1	0	1
24 May	7:36	9010	UCA	1	0	1	0	1
24 May	8:28	9011	UCB	1	0	1	0	1
24 May	9:14	9012	UCC	1	0	1	0	1
24 May	10:00	9013	UCD	1	0	1	0	1
25 May	12:58	9001	ABM	1	2	3	1	1
<b>Total</b>				13	9	13	5	13

Table 3.—Temperature (3-m), salinity (3-m), and NORPAC (20-m) zooplankton settled volume at stations sampled in marine waters of the northern region of southeastern Alaska, 22-25 May 2005.

Date	Haul #	Station	Temp. (°C)	Salinity (PSU)	Settled volumes (ml)		
					Zoo-	Phyto-	Total
23 May	9002	IPA	9.3	31.1	6.5	0.0	6.5
23 May	9003	IPB	10.7	31.5	4.0	0.0	4.0
23 May	9004	IPC	10.7	31.4	5.0	0.0	5.0
23 May	9005	IPD	11.0	31.4	4.0	0.0	4.0
24 May	9006	ISA	9.3	29.9	11.5	0.0	11.5
24 May	9007	ISB	11.5	28.6	27.0	0.0	27.0
24 May	9008	ISC	10.7	28.9	20.0	0.0	20.0
24 May	9009	ISD	11.0	28.5	18.0	0.0	18.0
24 May	9010	UCA	10.7	28.9	17.0	0.0	17.0
24 May	9011	UCB	10.0	29.9	18.0	0.0	18.0
24 May	9012	UCC	10.4	29.0	13.0	0.0	13.0
24 May	9013	UCD	9.9	28.9	20.0	0.0	20.0
25 May	9001	ABM	12.3	21.6	8.8	0.0	8.8