

Southeast Alaska Coastal Monitoring (SECM) Project

JC-02-05 Cruise Report

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Scientists from the Auke Bay Laboratory of the National Marine Fisheries Service, Alaska Fisheries Science Center, conducted a 4-d cruise aboard the NOAA ship *John N. Cobb* in the northern region of southeastern Alaska from 21 to 24 May. This cruise is the first of a series of four monthly monitoring cruises scheduled to sample the inside and coastal marine waters of southeastern Alaska in 2002. This begins a sixth year of study at the same stations in southeastern Alaska to examine intra- and inter-annual variability of physical and biological conditions and their influence on the growth and survival of Pacific salmon (*Oncorhynchus* spp.) and other fish populations. Objectives for these monitoring cruises are to: 1) monitor physical and biological oceanographic conditions at 13 stations throughout the region; and 2) sample juvenile salmon (*Oncorhynchus* spp.) and other pelagic fish species with a rope trawl.

Thirteen stations were scheduled for sampling during this cruise, spanning inside waters from near Juneau to 65 km offshore in the Gulf of Alaska (Figure 1; Table 1). Oceanographic measurements were planned for all 13 stations. Because of the absence of juvenile salmon in May of several prior years of sampling, trawling was not planned during this cruise, only a gear test haul to ensure that the trawl gear was operational.

Oceanographic sampling:

At each station the physical and biological environment was monitored, and throughout the cruise, 2-m temperature and salinity readings were logged onboard the vessel. A SeaBird¹ SBE-19 conductivity-temperature-depth (CTD) profiler was deployed at each station as depth permitted to 200 m or within 10 m of the bottom. Logging of 2-m temperatures and salinities was done each minute throughout the cruise with an onboard SeaBird SBE-21 thermosalinograph. Surface chlorophyll and nutrients were sampled from seawater collected with a bucket. Plankton was sampled with vertical hauls of conical nets and oblique hauls of a double bongo net. Vertical plankton tows were made with a 50-cm frame and 243 micron mesh net (NORPAC) from 20 m at each station, and an additional vertical haul was made with a 57-cm frame and 202 micron

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

mesh net (WP-2) from 200 m or within 20 m of the bottom at the Auke Bay, Icy Strait, and Icy Point stations. A Roshiga flow meter was used inside the 57-cm frame deep conical net to determine the amount of water volume sampled. Also at each station, 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 Bendix time depth recorder was used with the Bongo nets to validate the maximum deployment depth of each tow. Water samples were taken at selected stations for later examination of chlorophyll and nutrients.

Laboratory Processing:

Settled volumes of zooplankton from the 20-m vertical hauls were measured in the laboratory. Each sample of zooplankton was settled for a 24 hr period in an IMHOF 1000 ml cone to determine the settled volume for each station. This volume was partitioned into zooplankton and phytoplankton when possible and recorded to the nearest ml.

Results:

All 13 stations were sampled for oceanographic data during the cruise and the NORDIC 264 rope trawl was test fished. A total of 13 CTD casts, 15 vertical NORPAC tows, 16 bongo tows, 13 vertical WP-2 tows, and 13 water samples were completed (Table 2). Surface (2-m) temperatures and salinities ranged 6.1-10.8 °C and 27.6-32.2 PSU. Temperatures were warmest (≥ 8.0 °C) at the Auke Bay station and at the three furthest offshore stations along the Icy Point transect (i.e., IPB, IPC, and IPD). Salinities increased seaward from Auke Bay, Chatham Strait, Icy Strait, to Icy Point. Heavy concentrations of phytoplankton were present at most stations, particularly at the Icy and Chatham Strait stations as evidenced from the 20-m NORPAC hauls. Consequently, settled volumes of zooplankton had to be estimated at many stations, and ranged from 11-60 ml. Phytoplankton ranged from 0-75 ml at the stations, and was lowest at the Icy Point stations.

Acknowledgments:

We would like to acknowledge the command and crew of the NOAA ship *John N. Cobb* for their superb cooperation and performance for the duration of the cruise.

Table 1.--Localities and coordinates of stations scheduled for sampling in the marine waters of the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 21-24 May 2002.

Locality	Station	Latitude	Longitude	Offshore distance	Inter-transect distance	Depth
Auke Bay	ABM	58° 22.00' N	134° 40.00' W	1.5 km	-----	60 m
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
Icy Point	IPA	58° 20.12' N	137°07.16' W	6.9 km	16.8 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

Table 2.--Types of samples collected in the marine waters of the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 21-24 May 2002.

Date	Haul#	Station	CTD	Plankton net samples			Chlorophyll & nutrients	Rope ² trawl
				NORPAC 20-m	Bongo	WP-2		
21 May	6001	ABM	1	3	2 ³	1	1	0
22 May	6002	IPD	1	1	2	1	1	0
22 May	6003	IPC	1	1	2	1	1	0
22 May	6004	IPB	1	1	2	1	1	0
22 May	6005	IPA	1	1	2	1	1	0
23 May	6006	ISA	1	1	1	2 ⁴	1	0
23 May	6007	ISB	1	1	1	2 ⁴	1	0
23 May	6008	ISC	1	1	2	2 ⁴	1	0
23 May	6009	ISD	1	1	1	2 ⁴	1	0
24 May	6010	UCA	1	1	1	0	1	0
24 May	6011	UCB	1	1	0	0	1	0
24 May	6012	UCC	1	1	0	0	1	0
24 May	6013	UCD	1	1	0	0	1	0
Total			13	15	16	13	13	0

²One test rope trawl haul was made on this cruise with the cod-end open.

³One set of bongo haul samples was frozen for isotope and microscope analysis.

⁴One set of vertical samples was also taken from 20 m.

Table 3.--Two meter temperatures and salinities, and settled volumes of plankton from 20-m vertical Norpac hauls at stations sampled in the marine waters of the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 21-24 May 2002.

Date	Haul#	Station	<u>Two-meter depth</u>		Settled plankton volume (ml) from		
			temperatures (°C)	salinities (PSU)	<u>20-m Norpac hauls</u>		
					Zooplankton	Phytoplankton	Total
21 May	6001	ABM	10.8	27.6	23	12	35
					25	10	35
					28	10	38
22 May	6002	IPD	8.4	32.2	15	9	24
22 May	6003	IPC	8.3	32.2	15	10	25
22 May	6004	IPB	8.0	32.0	60	0	60
22 May	6005	IPA	7.6	31.5	11	5	16
23 May	6006	ISA	7.0	31.7	20	75	95
23 May	6007	ISB	6.1	31.8	20	65	85
23 May	6008	ISC	6.9	31.5	22	33	55
23 May	6009	ISD	6.4	31.5	20	17	37
24 May	6010	UCA	7.9	30.5	29	36	65
24 May	6011	UCB	7.5	30.9	32	33	65
24 May	6012	UCC	7.1	31.0	24	56	80
24 May	6013	UCD	6.6	31.3	15	32	47

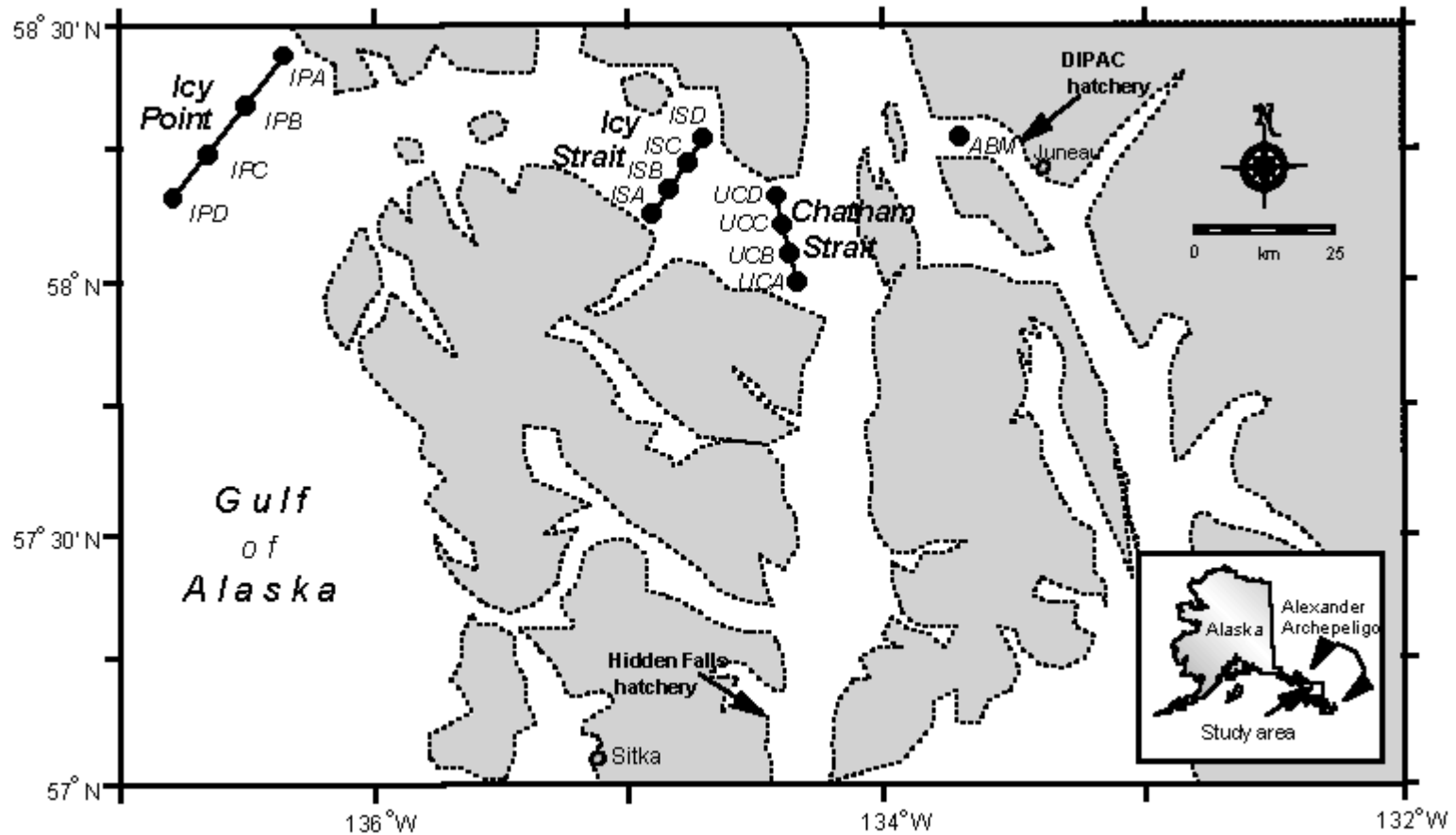


Figure 1.--Thirteen stations sampled in the marine waters of the northern region of southeastern Alaska off the NOAA ship *John N. Cobb*, 21-24 May 2002.