Southeast Alaska Coastal Monitoring Project

JC-03-02 Cruise Report **24 December 2003**

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Biologists Bruce Wing and Molly Sturdevant from the Auke Bay Laboratory of the National Marine Fisheries Service, Alaska Fisheries Science Center, conducted a 5-day cruise aboard the NOAA ship *John N. Cobb* in the northern region of southeastern Alaska 20-25 May 2003. This cruise was the first of six monitoring cruises to sample the inside and coastal marine waters of southeastern Alaska in 2003 for the Southeast Coastal Monitoring (SECM) project. This is the seventh year of sampling the same stations during the late spring and summer as part of the long-term monitoring of intra- and inter-annual variability of physical and biological conditions influencing the growth and survival of Pacific salmon (*Oncorhynchus* spp.) and other fish populations.

Objectives for these SECM cruises are to: 1) monitor thermal and salinity structure of the water column, sample nutrients, and determine zooplankton biomass and composition at thirteen stations from Auke Bay to 65 km west of Icy Point (Table 1); 2) obtain representative samples of zooplankton for caloric content; and 3) sample juvenile salmon and other pelagic fish species with a rope trawl. Because of the absence of juvenile salmon in May during past years sampling, we planned only a series of "shake down" hauls to ensure that the trawl gear was operational and ready for future cruises.

METHODS

Oceanographic Sampling

Oceanographic and biological sampling was conducted at 13 stations (Table 1, Figure 1). Two-m temperatures and salinities throughout the cruise were logged with an onboard SeaBird SBE-21[1] 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 meters of bottom at stations shallower than 200 m. Surface phytoplankton nutrients and surface chlorophyll concentrations at each station were filtered from 200 ml water samples collected by bucket. The nutrient and chlorophyll samples were frozen immediately after collection for later analysis in the laboratory.

Zooplankton Sampling

[1]Reference to trade names does not imply endorsement by the NMFS.

Zooplankton was sampled with a 0.5-m diameter NORPAC net, a 57-cm diameter WP-2 net, and 60 cm Bongo nets. The NORPAC net was 243µ mesh, the WP-2 net 202µ mesh and the bongo system had 505µ and 335µ mesh nets. The NORPAC and WP-2 nets were equipped with Roshiga flow meters. The bongo net was equipped with General Oceanic flowmeters and a Bendix Model T-1 bathykymograph. The NORPAC and WP-2 were used for vertical tows while the Bongo nets were towed obliquely. All NORPAC vertical tows were from 20 meters. The WP-2 and Bongo tows were to 200 m or within 20 m of bottom. All zooplankton samples, except four Bongo net samples, were fixed in a 5% formalin-seawater solution for later examination.

RESULTS and **DISCUSSION**

All thirteen stations were sampled during the cruise and replicate sampling was accomplished at nine stations (Table 2). Ambient light levels ranged 3-988 W/m^2 during the sampling (Table 2).

Twenty-two CTD casts, 13 phytoplankton nutrient samples, 13 surface chlorophyll samples, 26 NORPAC tows, 13 WP-2 tows, and 18 Bongo net tows were completed (Table 2). Four sets of the Bongo net samples were frozen, one from each transect, for later calorimetry studies. Settled volumes of plankton from the NORPAC tows ranged 0-290 ml (phyto) and 5-85 ml (zoop).

Although the vessel departure was delayed one day by engine problems, the weather was favorable, allowing us to work the Icy Point transect first on May 21. These offshore stations require relatively low wind and wave conditions. However, wind and wave conditions did not permit onboard sorting of the second bongo net samples from station IPA, consequently these samples were frozen for sorting on shore in the laboratory.

Sampling on the Icy Strait and Chatham Strait transects was completed on May 22nd and 23rd followed by a "shake down" trial of the NORDIC rope trawl in Upper Chatham Strait transect on May 23rd.

Replicate sampling with the NORPAC net and CTD on the Icy Strait and Upper Chatham transects were completed on May 23rd and May 24th respectively. A second set of the surface trawl was made en route from station UCD to Auke Bay.

Early departure from the Upper Chatham Strait enabled completion of the Auke Bay Monitor (ABM) station on May 24th and replicate sampling at that station the morning of May 25.

Because the vessel needed to run at least 12 hours continuously the first day after engine repairs and because the weather was good on the 20th of May the vessel command took opportunity to test a new computerized mapping system which resulted in a refined contour chart of bottom topography in the vicinity of the Upper Chatham Strait transect.

ACKNOWLEDGMENTS

We thank the command and crew of the NOAA ship *John N. Cobb* for their cooperation and performance for the duration of the cruise.

Table 1.—Localities and coordinates of stations sampling in marine waters of the northern region of southeastern Alaska using the NOAA ship *John N. Cobb*, 20-25 May 2003.

Habitat	Station	Latitude North	Longitude West	Distance offshore km	Distance between km	Depth m
Inshore						
		Auke Bay station				
	ABM	58° 22.00'	134° 40.00'	1.5	—	60
Strait						
		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
Coastal						
		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 different habitat types sampled monthly in marine waters of the northern region of southeastern Alaska, 20-25 May 2003.

				Data collection type					
				CTD	Surface	Surface	Zooplankton tows		
Date	Time	Haul#	Station	cast	nutrients	chlorophyll	NORPAC	WP-2	Bongo
21 May	0720	7001	IPD	1	1	1	1	1	1
21 May	1000	7002	IPC	1	1	1	1	1	1
21 May	1200	7003	IPB	1	1	1	1	1	1
21 May	1400	7004	IPA	1	1	1	1	1	2[1]
22 May	0715	7005	ISA	1	1	1	1	1	1
22 May	0810	7006	ISB	1	1	1	1	1	1
22 May	0935	7008	ISC	1	1	1	1	1	1
22 May	1110	7007	ISD	1	1	1	1	1	2[1]
23 May	0915	7009	UCA	1	1	1	1	1	1
23 May	1030	7010	UCB	1	1	1	1	1	1
23 May	1245	7011	UCC	1	1	1	1	1	2[1]
23 May	1430	7012	UCD	1	1	1	1	1	2[1]
23 May	1700	7013	ISA	1	0	0	1	0	0
23 May	1755	7014	ISB	1	0	0	1	0	0
23 May	1805	7015	ISC	1	0	0	1	0	0
23 May	1830	7016	ISD	1	0	0	1	0	0
24 May	1015	7017	UCA	1	0	0	1	0	0
24 May	1035	7018	UCB	1	0	0	1	0	0
24 May	1100	7019	UCC	1	0	0	1	0	0
24 May	1125	7020	UCD	1	0	0	1	0	0
24 May	1450	7021	ABM	1	1	1	3	1	2[1]
25 May	0720	7022	ABM	1	0	0	3	0	0
Total				22	13	13	26	13	18

[1]Extra Bongo net tow made to collect frozen zooplankton samples for calorific determination.

Table 3.—Ambient light levels and settled volumes of plankton from NORPAC vertical (20-m) tows in marine waters of the northern region of southeastern Alaska, 20-25 May 2003.

Date	Time	Haul#	Station	Light level (W/m^2)	Plankton settled volume		
					Zooplankton	Phytoplankton	Total
21 May	0720	7001	IPD	988	55	0	55
21 May	1000	7002	IPC	398	5	0	5
21 May	1200	7003	IPB	862	29	0	29
21 May	1400	7004	IPA	735	15	0	15
22 May	0715	7005	ISA	3	18	2	20
22 May	0810	7006	ISB	96	16	2	18
22 May	0935	7008	ISC	170	33	0	33
22 May	1110	7007	ISD	162	25	5	30
23 May	0915	7009	UCA	68	85	5	90
23 May	1030	7010	UCB	84	42	3	45
23 May	1245	7011	UCC	115	60	0	60
23 May	1430	7012	UCD	77	47	0	47
23 May	1700	7013	ISA	93	23	1	24
23 May	1755	7014	ISB	43	33	1	34
23 May	1805	7015	ISC	31	10	290	300
23 May	1830	7016	ISD	28	20	130	150
24 May	1015	7017	UCA	148	29	1	30
24 May	1035	7018	UCB	148	27	0	27
24 May	1100	7019	UCC	149	28	0	28
24 May	1125	7020	UCD	141	35	0	35
24 May	1450	7021	ABM	260	8	12	20
25 May	0720	7022	ABM	35	11	14	25

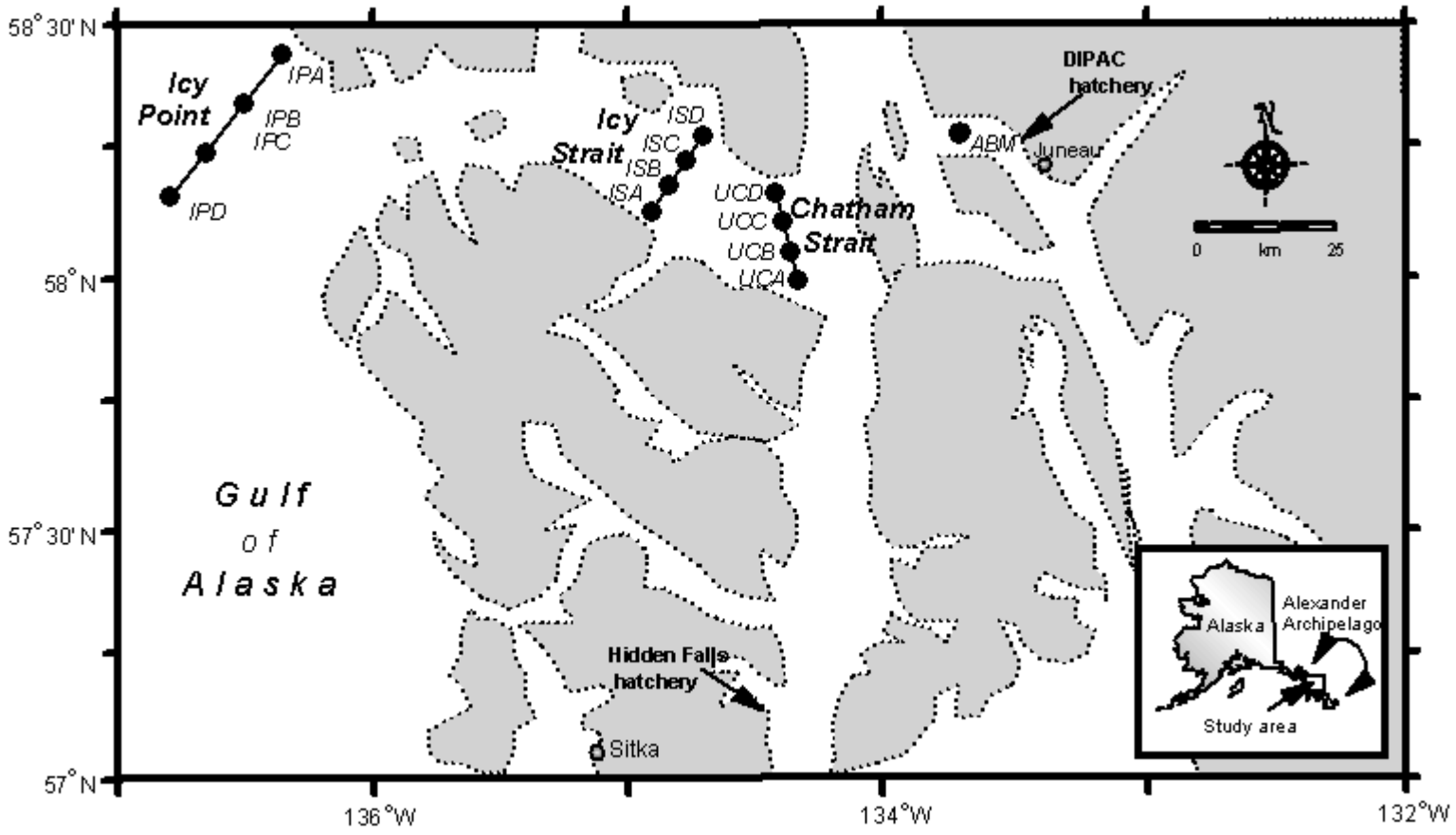

Figure 1.—Locations of stations sampled in marine waters of the northern region of southeastern Alaska, 20-25 May 2003.