

PRELIMINARY CRUISE REPORT, W0302A
R/V WECOMA, 14-16 February 2003
GLOBEC NEP Long-Term Observations off Oregon

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P. Michael Kosro, P. A. Wheeler, W. T. Peterson Jack A. Barth, E. Sherr and B. Sherr

PURPOSE: To determine physical, plankton and nutrient/chemical conditions over the continental margin for climate change studies in NE Pacific. In particular, to make CTD and CTD/rosette and net tow stations along the Newport Hydro line, and to make continuous observations of currents using ADCP and of surface-layer temperature, salinity and fluorescence by means of ship's thru-flo system. Figure 1 shows the location of the CTD stations. Table 1 shows the CTD station positions, and Table 2 shows the biochemical sampling depths.

SAMPLING PLAN:

1. Use ship's intake continuously for Temperature, Salinity, and Fluorescence
2. Continuous ADCP Profiling (150 kHz transducer) for water velocity and backscattering for bio-acoustics.
3. Standard CTD Stations using SBE 9/11 plus CTD system for Temperature, Salinity, Fluorescence, Light Transmission, Oxygen, PAR.
4. Rosette sampling: 5 liter bottles for nutrients, and chlorophyll.
5. Vertical net tows: 1/2 meter nets 100 m to surface; Horizontal net tows with 1 m² MOCNESS.

CRUISE NARRATIVE

A brief overview of the cruise is presented here. An event log is provided in Table 3, and the participating personnel are listed in Table 4. Wecoma departed Newport at 1000 PST on 14 February 2003. CTD sampling started at NH-3. CTDs were completed at each station working out to NH-35, with vertical nets done at NH-5, NH-10, NH-15 and a MOCNESS tow done at NH-5. In order to complete most of the MOCNESS tows during darkness, the ship ran back to NH-15, and vertical net and MOCNESS tows were done working back out to NH-35. The winds gradually increased to over 30 kts., and at 0154 PST on 15 February, the MOCNESS tow at NH-35 was aborted due to poor weather conditions and problems with the winch cutting out. The ship transited to NH-85, the winds came down to 10 kts., and CTD casts were resumed at 0720 PST. CTD's were continued along the Newport Line working toward shore, with vertical net tows at NH-65, NH-45 and NH-35. The MOCNESS tow at NH-35 was successfully repeated in darkness at 1823 PST. At 2218 PST, the ship began to transit to Newport, arriving alongside the pier at Newport at 0030 PST on 16 February 200

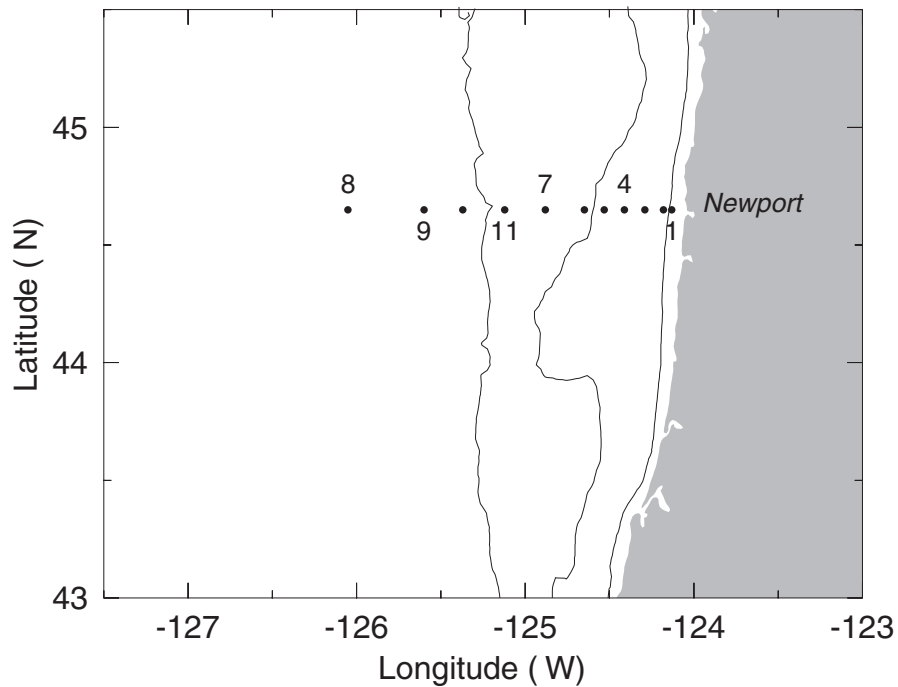


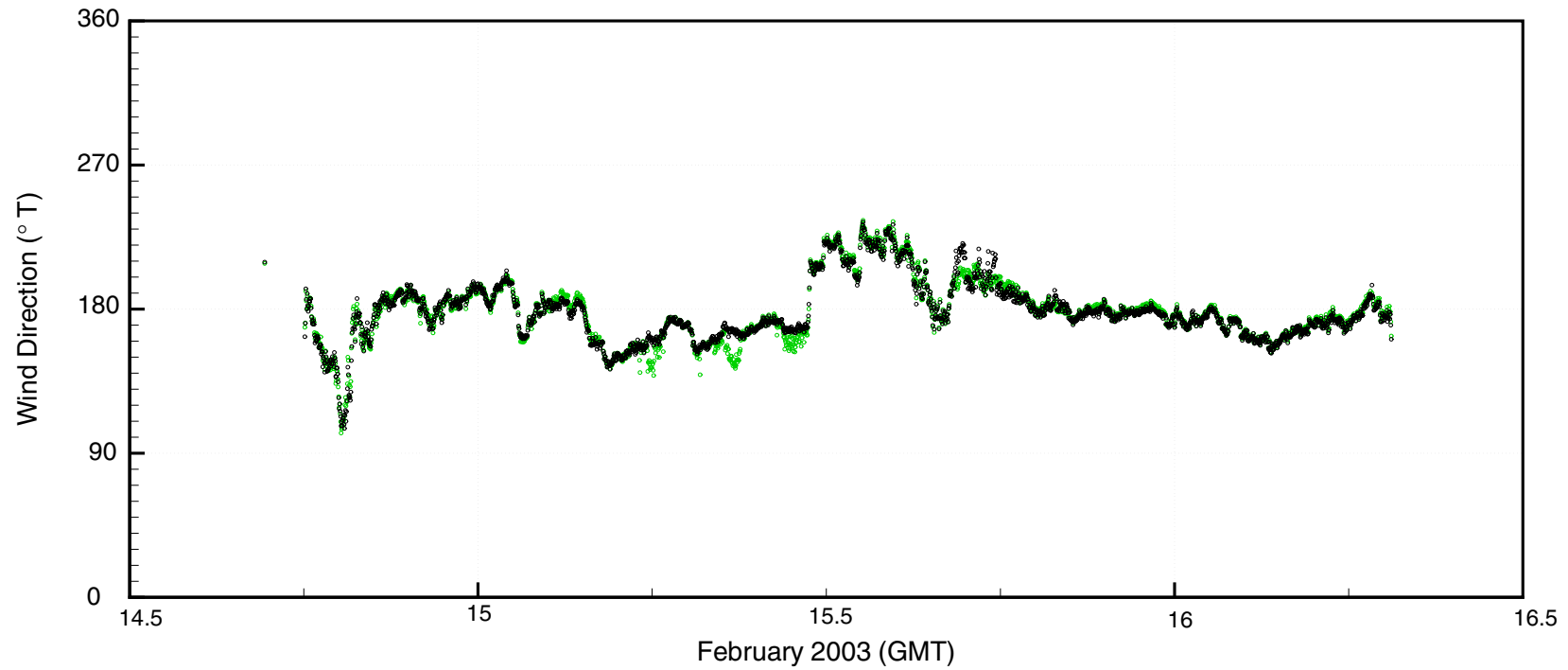
Figure 1. Location of CTD stations during W0302A.

PRELIMINARY RESULTS

Winds during the cruise were predominantly from the south, as is normal for this time of year. Winds from this direction cause downwelling, and drive northward flow along the coast.

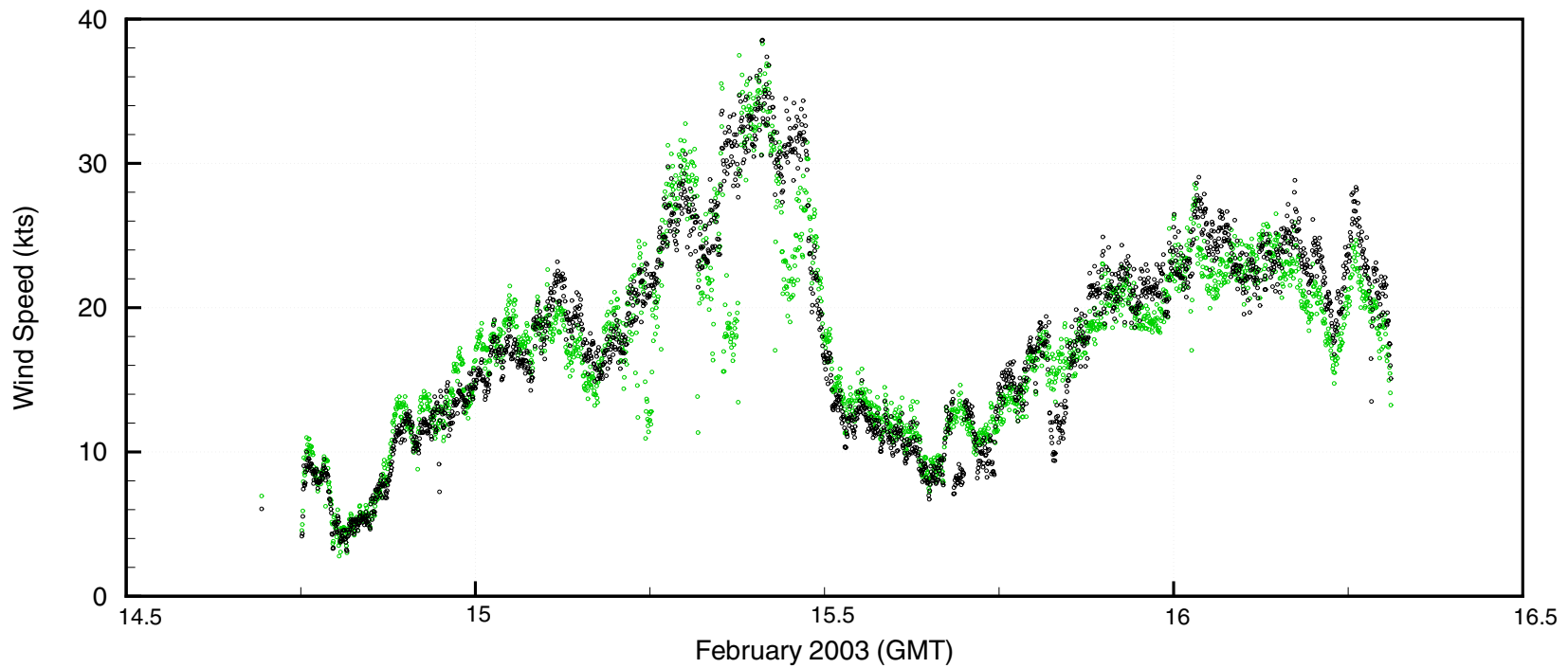
The attached zooplankton report was provided by Dr. Wm. Peterson, and the attached microzooplankton report was provided by Drs. Evelyn and Barry Sherr.

W0302A Wind Speed and Direction



.... Port

.... Starboard

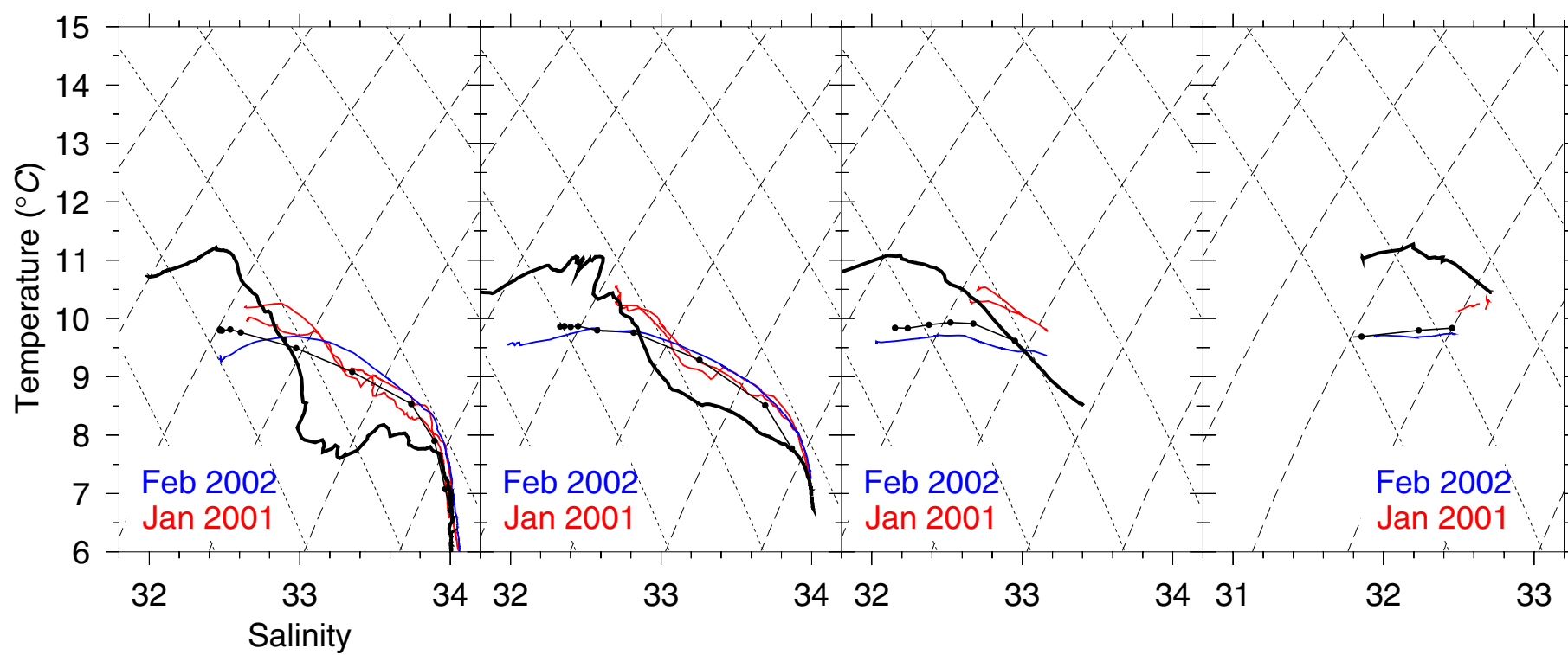


NH-35, Feb 2003

NH-25, Feb 2003

NH-15, Feb 2003

NH-5, Feb 2003

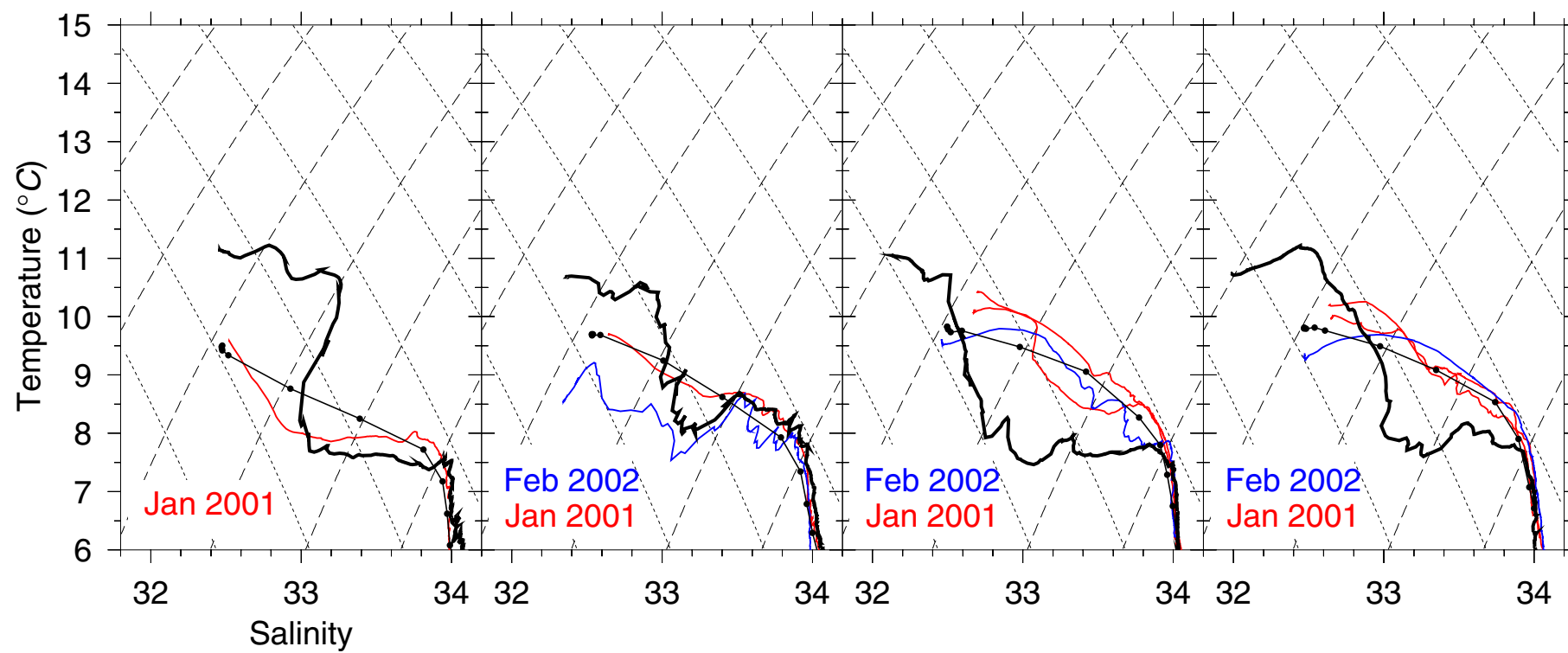


NH-85, Feb 2003

NH-65, Feb 2003

NH-45, Feb 2003

NH-35, Feb 2003



NH-55, Feb 2003

NH-20, Feb 2003

NH-10, Feb 2003

NH-3, Feb 2003

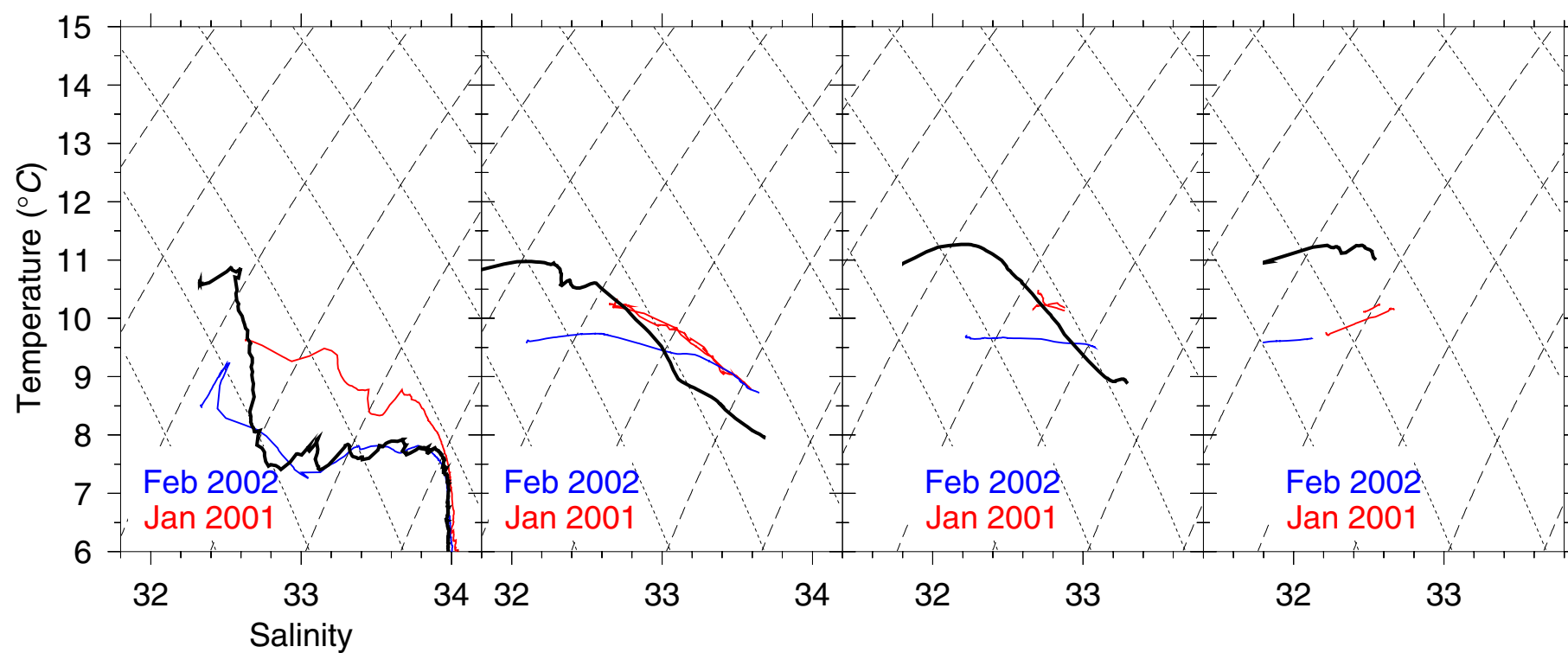


Table 1. CTD station positions during W0302A, and sampling at each station (C: Bio/Chem bottle sampling, N:half-meter vertical net tows, M:Mocness, O2:Oxygen samples, Z:Microzooplankton bottle sampling).

Station		Distance	Lat.	Long.	Bottom	Cast	Sampling
Name	No.	from shore	°N	°W	Depth	Depth	Type
		(km)			(m)	(db)	
NH-3	1	5.4	44.65	-124.13	48	42	Z
NH-5	2	9.1	44.65	-124.18	59	59	C,Z,N,M
NH-10	3	18.3	44.65	-124.29	80	80	N,Z
NH-15	4	27.6	44.65	-124.41	90	90	C,Z,N,M
NH-20	5	36.9	44.65	-124.53	141	141	N
NH-25	6	46.5	44.65	-124.65	293	293	C,Z,N,M
NH-35	7	65.0	44.65	-124.88	451	451	C,Z,N,M
NH-85	8	157.2	44.65	-126.05	2883	2883	C,Z
NH-65	9	121.5	44.65	-125.60	2862	2862	C,Z,N,O2
NH-55	10	103.2	44.65	-125.37	2866	2866	Z,O2
NH-45	11	83.3	44.65	-125.12	690	690	C,Z,N

Table 4. Names, affiliations, and responsibilities of scientific personnel participating on W0302A.

Robert L. Smith	Chief Scientist	OSU	CTD
Jane Fleischbein	Technician	OSU	CTD
Andy Ross	Technician	OSU	CTD, Oxygen
Hali Kugler	Student	OSU	CTD
David Lett	Observer	OSU	CTD
Jennifer Jarrell-Wetz	Technician	OSU	nuts, chl
Jennifer Harman	Technician	OSU	nuts, chl
Kerry Mammone	Technician	OSU	nuts, chl
Carlos López	Technician	OSU	microzooplankton
Julie Keister	Technician	HMSC	zooplankton
Leah Feinberg	Technician	HMSC	zooplankton
Caroline Tracy Shaw	Technician	HMSC	zooplankton
Mitch Vance	Technician	HMSC	zooplankton
Linda Faylor	Technician	OSU	martec
Daryl Swensen	Technician	OSU	martec

Table 2: Actual sample depths and types of sub samples for biological/chemical sampling during the February '03 LTOP GLOBEC cruise.

Station, Depth, Dist. From Shore	Sample Collection Depths (m)	Type of Sample Collected
NH-05, 59m, 9km	53, 50, 40, 30, 25, 20, 15, 10, 5, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths)
NH-15, 90m, 28km	85, 70, 60, 50, 40, 30, 20, 10, 5, 1.5	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths)
NH-25, 293m, 46km	287, 200, 150, 100, 70, 50, 40, 30, 20, 10, 5, 1.4	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths - except 287 and 200 m)
NH-35, 451m, 65km	428, 300, 150, 100, 70, 50, 40, 30, 20, 10, 5, 2	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (all depths - except 422 and 360 m)
NH-45, 690m, 83km	605, 500, 150, 100, 70, 61, 50, 40, 30, 20, 10, 1	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (all depths - except 605 and 500 m)
NH-65, 2862m, 121km	1005, 822, 150, 100, 70, 50, 40, 30, 20, 12, 10, 2	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (all depths - except 1005 and 822 m)
NH-85, 2883m, 157km	1002, 150, 100, 70, 50, 40, 30, 20, 10, 2.5	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths - except 1005 m)

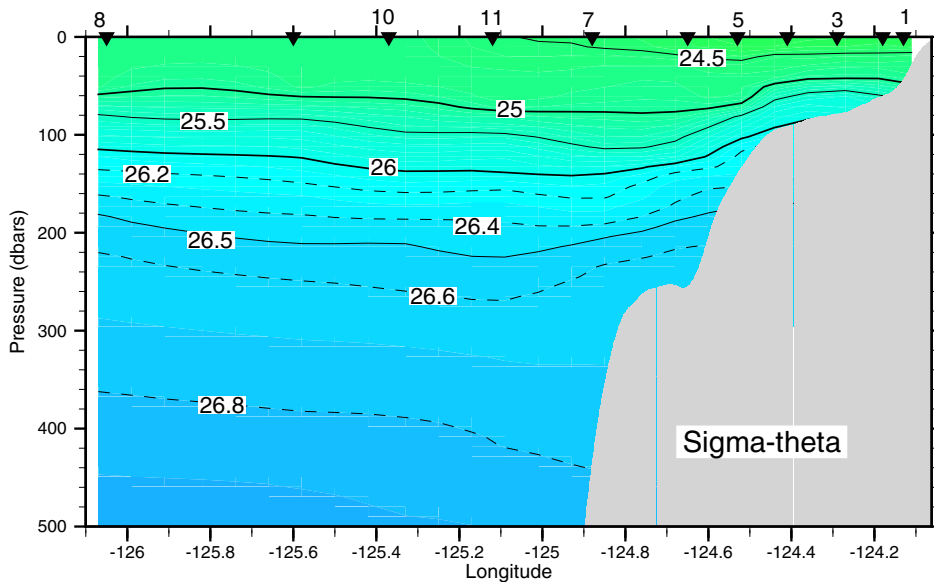
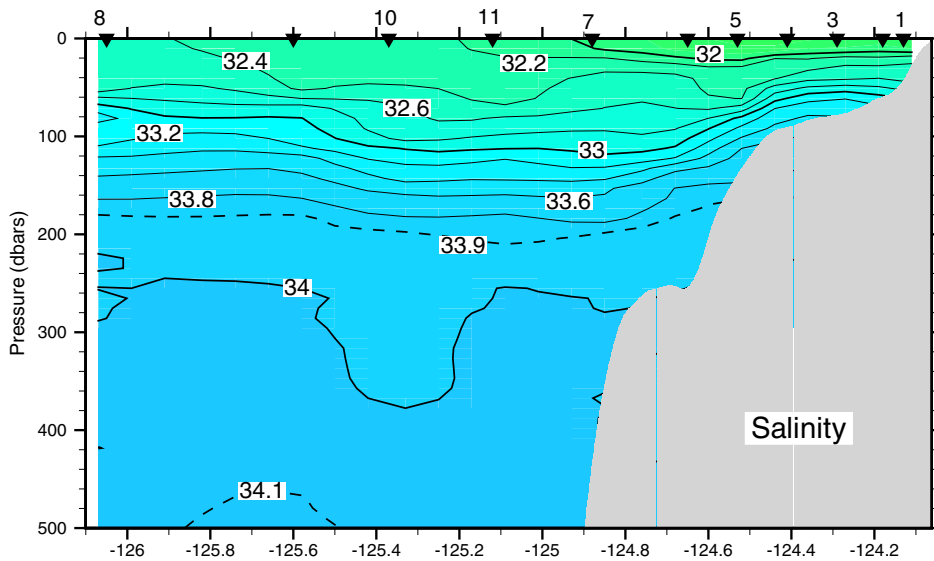
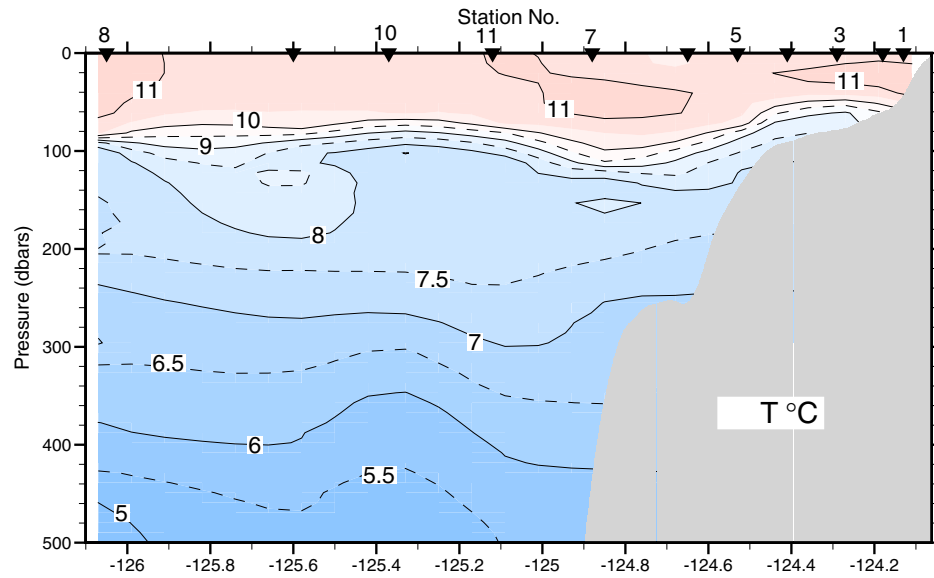
Table 3. R/V WECOMA Cruise W0302A

	Start	End	Sta.	Sta.	Latitude		Longitude		Bottom	Atmos	Wind	Wind	Event	Event ID
(UT)	Time	Time	No.	Name	(deg)	(min)	(deg)	(min)	Depth	Press	Dir.	Speed		
(UT)	(UT)								(m)	(mbar)	(deg T)	(kts)		
14-Feb	1800												Depart Newport	
	1800												Start echosounder	
	1801												Start DAS	
	1811												Start 150 kHz ADCP	
	1812												Start 75 kHz ADCP	
	1841												Start flo-thru and Fluorometer	
	1915		1	NH-3	44	39.1	-124	07.8	48	1016.9	110	5	CTD, mzp	WE04503.1
	1956		2	NH-5	44	39.1	-124	10.6	59	1016.4	175	5	CTD with biochem, mzp	WE04503.2
	2014			NH-5	44	39.0	-124	10.6					vertical net tow, 55 m	WE04503.3
	2022			NH-5	44	38.9	-124	10.6					Mocness deployed	WE04503.4
		2044			44	38.2	-124	10.5					Mocness aboard	WE04503.5
	2138		3	NH-10	44	39.2	-124	17.7	80	1014.8	175	10-12	CTD	WE04503.6
	2152			NH-10	44	39.1	-124	17.7					vertical net tow, 75 m	WE04503.7
	2238		4	NH-15	44	39.1	-124	24.7	90	1014.5	180	13	CTD with biochem, mzp	WE04503.8
	2256			NH-15	44	39.1	-124	24.7					vertical net tow, 85 m	WE04503.9
	2344		5	NH-20	44	39.1	-124	31.7	141	1013.8	180	14	CTD	WE04503.10
15-Feb	0032		6	NH-25	44	39.1	-124	39.0	293	1013.3	190	15	CTD with biochem, mzp	WE04603.1
	0148												air calibration of transmissometer	
	0158		7	NH-35	44	39.1	-124	53.0	451	1012.8	165	16	CTD with biochem, mzp	WE04603.2
	0418	0424		NH-15	44	39.1	-124	24.7		1011.6	145	18	vertical net tow, 85 m	WE04603.3
	0432			NH-15	44	38.9	-124	24.8					Mocness deployed	WE04603.4
		0455			44	38.1	-124	25.4					Mocness aboard	WE04603.5
	0542			NH-20	44	39.1	-124	31.7		1010.0	160	20	vertical net tow, 100 m	WE04603.6
	0631	0637		NH-25	44	39.1	-124	39.0		1009.9	170	26	vertical net tow, 100 m	WE04603.7
	0647			NH-25	44	38.9	-124	39.1		1009.9	170	26	Mocness deployed	WE04603.8
		0733			44	37.4	-124	40.6					Mocness aboard	WE04603.9
	0914	0920		NH-35	44	39.1	-124	53.1		1008.0	165	31	vertical net tow, 100 m	WE04603.10
	0934			NH-35	44	38.9	-124	52.9					Mocness deployed	WE04603.11
		0954			44	38.3	-124	52.7					Mocness aborted due to weather, winch	WE04603.12
	1520		8	NH-85	44	39.1	-126	03.0	2883	1006.8	190	10	CTD with biochem	WE04603.13
	1841		9	NH-65	44	39.1	-125	36.0	2862	1007.8			CTD with biochem, mzp	WE04603.14
	1936	1942		NH-65	44	39.1	-125	36.1					vertical net tow, 100 m	WE04603.15
	2139		10	NH-55	44	39.1	-125	22.0	2866	1006.5	178	19	CTD with oxygen	WE04603.16
	2347		11	NH-45	44	39.2	-125	07.0		1006.0	170	20	CTD with biochem	WE04603.17
16-Feb	0033	0038		NH-45	44	39.2	-125	07.1					vertical net tow, 100 m	WE04703.1
	0120												air calibration of transmissometer	
	0201	0208		NH-35	44	39.1	-124	53.0		1005.2	165	22	vertical net tow, 100 m	WE04703.2
	0223			NH-35	44	39.1	-124	53.0					Mocness deployed	WE04703.3

	Start	End	Sta.	Sta.	Latitude		Longitude		Bottom	Atmos	Wind	Wind	Event	Event ID
(UT)	Time	Time	No.	Name	(deg)	(min)	(deg)	(min)	Depth	Press	Dir.	Speed		
	(UT)	(UT)							(m)	(mbar)	(deg T)	(kts)		
16-Feb		0333			44	36.3	-124	52.6					Mocness aboard	WE04703.4
	0418												begin transit to Newport	
	0647												shut down echosounder	
	0723												shut down 150 kHz ADCP	
	0723												shut down 75 kHz ADCP	
	0726												shut down flow-thru and fluorometer	
	0728												shut down DAS	
	0830												arrive at pier in Newport	

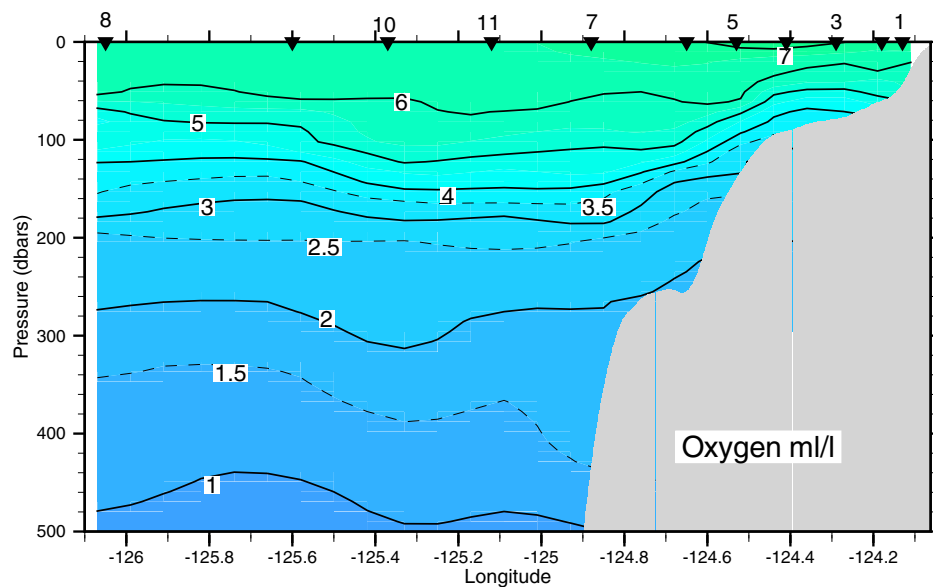
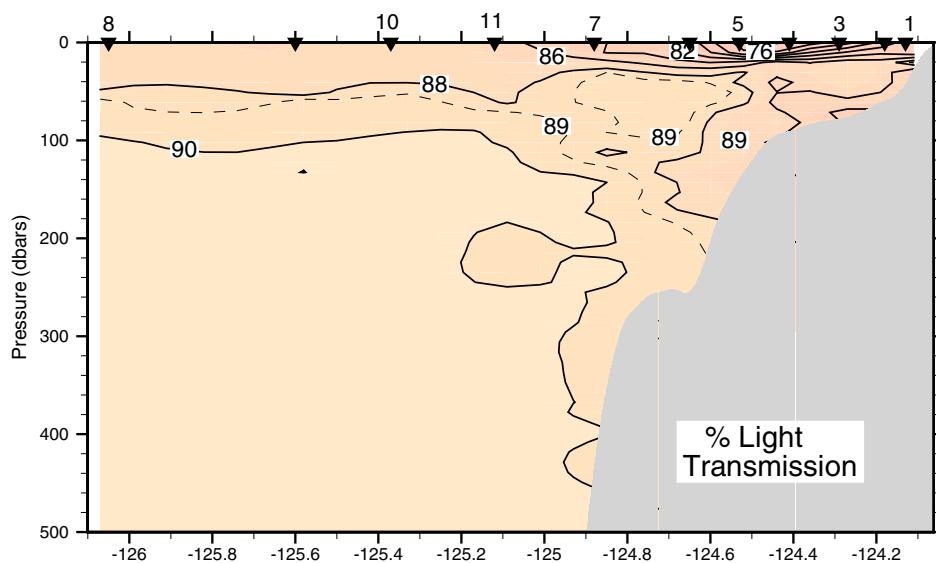
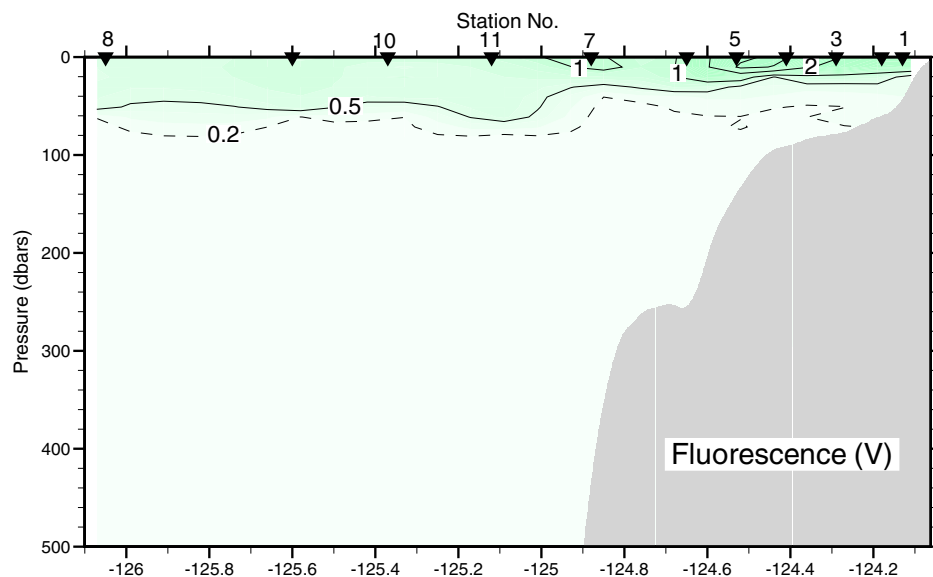
Newport Hydro Line 44° 39'N

14-15 February 2003



Newport Hydro Line 44° 39'N

14-15 February 2003



February 2003 GLOBEC LTOP Zooplankton Report
(Submitted by Julie Keister and Dr. Wm. Peterson, Oregon State University and NOAA)

MOCNESS Descriptions

NH5	12:30 h (local time)	water depth= 60m
50-20 m	shrimp larvae, copepods, Pleurobrachia, amphipods, chaetognaths	
20-10 m	shrimp larvae, Pleurobrachia, copepods, phytoplankton, 1 fish larva	
10-0 m	phytoplankton, Pleurobrachia, copepods	
NH15	20:30 h	water depth=100m
72-50 m	100 adult euphausiids, copepods, chaetognaths	
50-35 m	adult euphausiids, copepods, chaetognaths, phytoplankton	
35-20 m	adult euphausiids, phytoplankton, copepods	
20-10 m	copepods, 50 adult euphausiids, chaetognaths, Pleurobrachia	
10-0 m	copepods, chaetognaths, Pleurobrachia 2 adult euphausiids	
NH25	22:45 h	water depth=298m
235-200	Sergestid shrimp, Muggiaea, chaetognaths	
200-150	copepods, 4 Sergestids, chaetognaths	
150-100	copepods, 10 juvenile euphausiids, 1 Sergestids	
100-50	copepods, 2 Sergestids, furcilia	
50-35	copepods, 8 Sergestids, 4 adult euphausiids	
35-20	40 adult euphausiids, 4 Sergestids, copepods, juvenile euphausiids	
20-10	500 juvenile euphausiids	
10-0	~2000 adult euphausiids, copepods	
NH35	18:30 h	water depth=450m
350-250	Muggiaea, 11 myctophids, 5 Sergestid, copepods	
250-200	chaetognaths, 4 Sergestid shrimp, Muggiaea, 2 adult euphausiids, copepods	
200-150	7 Sergestid shrimp, copepods, 4 adult euphausiids, 1 squid	
150-100	2 shrimp, 9 Sergestids, 1 myctophid, 10 juvenile euphausiids, copepods, 1 fish larva	
100-50	11 Sergestid shrimp, juvenile euphausiids, copepods	
50-35	8 Sergestid shrimp, 50 adult euphausiids, copepods, juvenile euphausiids	
35-20	125 adult euphausiids, copepods, 6 Sergestid shrimp	
20-10	300 adult euphausiids, 5 Sergestid shrimp, chaetognaths, copepods	
10-0	1000's of juvenile euphausiids, few adult euphausiids, copepods, 6 Pleurobrachia	

Other zooplankton sampling:

- Vertical tows (0.5m diameter, 200µm mesh) from 100 meters (or from just above bottom) to surface were completed at stations NH1, NH5, NH10, NH15, NH20, NH25, NH35, NH45, and NH65.
- Euphausiids from station NH15 were incubated for molting rates and gut fluorescence analysis.

Microzooplankton Sampling

(Submitted by Carlos López and Drs. E. and B. Sherr, Oregon State University)

February, 2003 GLOBEC CRUISE W0302A:

**Primary goal: MICROZOOPLANKTON ABUNDANCE, BIOMASS, AND
GENERAL TAXONOMIC COMPOSITION:**

Table 5: Actual sample depths for collection of microzooplankton samples for bacterial counts (Flow Cytometry), dinoflagellate counts (Epifluorescence Microscopy), and ciliate counts (Inverted Scope Microscopy) during the W0302A.

Station	Sample Collection Depths (m)
NH-3	42, 22, 2
NH-5	50,30,20,15,10,5,2
NH-10	75,40,20,1
NH-15	70,50,30,20,10,5
NH-25	70,50,40,30,20,10,5,1
NH-35	70,40,30,20,10,50,2
NH-45	70,61,50,40,20,10,1
NH-55	50,20,2
NH-65	70,50,40,30,20,10,2
NH-85	70,50,40,30,20,10,2

No. of Samples = 60