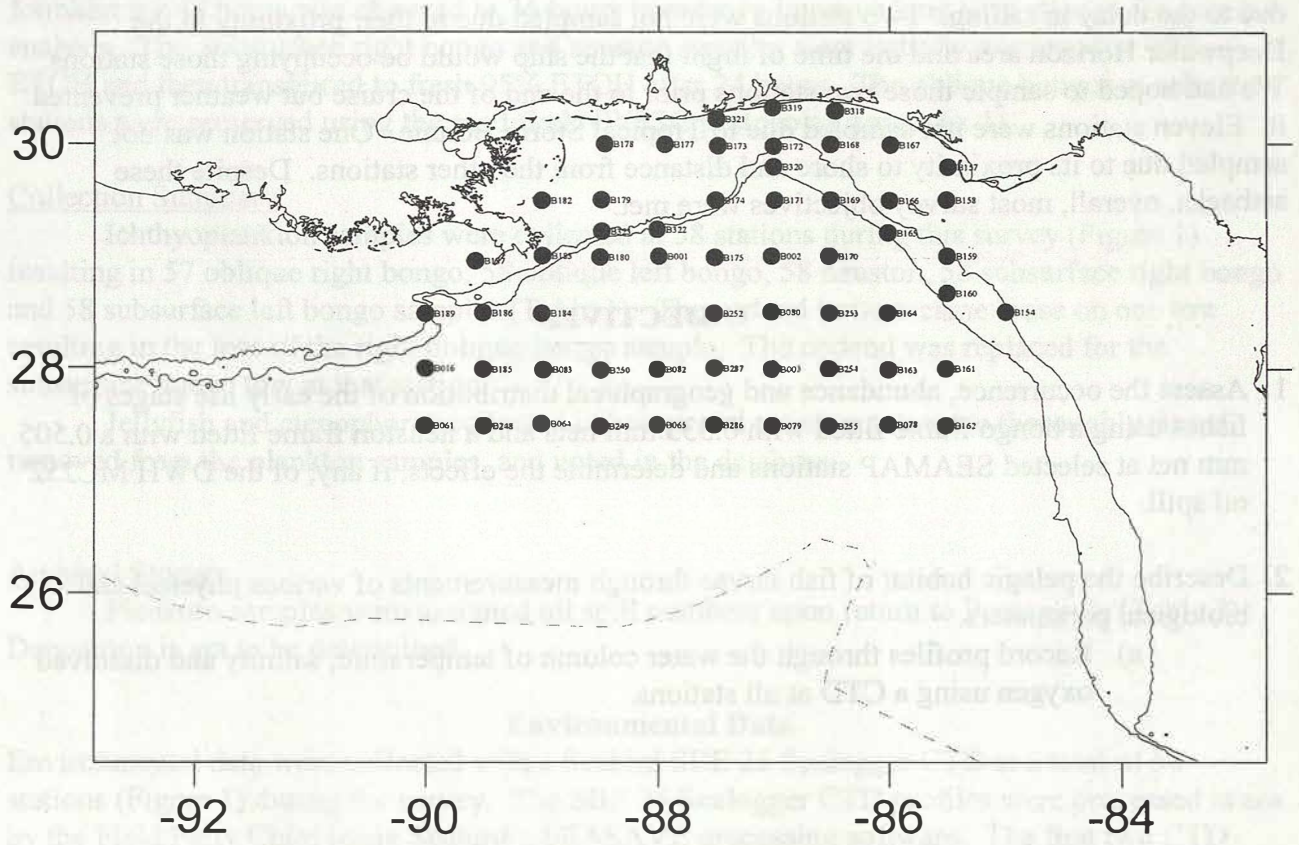
CRUISE RESULTS

Deepwater Horizon MC252

Deepwater Horizon Oil Plankton Survey

NOAA Ship *Delaware II* Cruise DL-10-07
July 14-24, 2010



U.S. Department of Commerce
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INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) Ship *Delaware II* departed Pascagoula, MS on 14 July 2010 to initiate plankton sampling in the Gulf of Mexico. The objective of the cruise was to collect samples to monitor the effects of the oil spill. Samples were collected from selected stations for the ecotoxicology group at the Northwest Fisheries Science Center (NWFSC). Subsurface samples were collected at each station for the Gulf Coast Research Laboratory to examine the effects of the oil spill on invertebrate larvae including crabs and shrimp.

A total of 11 successful sea days was worked during the cruise: 14-24 July 2010. The first leg of the survey had been scheduled to depart on 13 July but sailing was delayed until 0800 of the 14th to allow time to finish setup for the plankton cruise. Four stations were not sampled due to the delay in sailing. Two stations were not sampled due to their proximity to the Deepwater Horizon area and the time of night that the ship would be occupying those stations. We had hoped to sample those two stations prior to the end of the cruise but weather prevented it. Eleven stations were not sampled due to Tropical Storm Bonnie. One station was not sampled due to its proximity to shore and distance from the other stations. Despite these setbacks, overall, most survey objectives were met.

OBJECTIVES

1. Assess the occurrence, abundance and geographical distribution of the early life stages of fishes using a bongo frame fitted with 0.335 mm nets and a neuston frame fitted with a 0.505 mm net at selected SEAMAP stations and determine the effects, if any, of the DWH MC252 oil spill.

2. Describe the pelagic habitat of fish larvae through measurements of various physical and biological parameters.
    a) Record profiles through the water column of temperature, salinity and dissolved oxygen using a CTD at all stations.

SURVEY RESULTS

Ichthyoplankton Data

Survey Design

A predefined cruise track of 78 standard SEAMAP stations, approximately 30 nautical miles apart in a systematic grid, were targeted for this survey (Figure 1). Standard SEAMAP plankton gear used at each station consisted of a bongo net, neuston net, and a CTD (as described above).

Sampling Methodology

Samples and data collection were implemented in accordance with procedures outlined in the SEAMAP data collections manual. Plankton samples were taken with the standard

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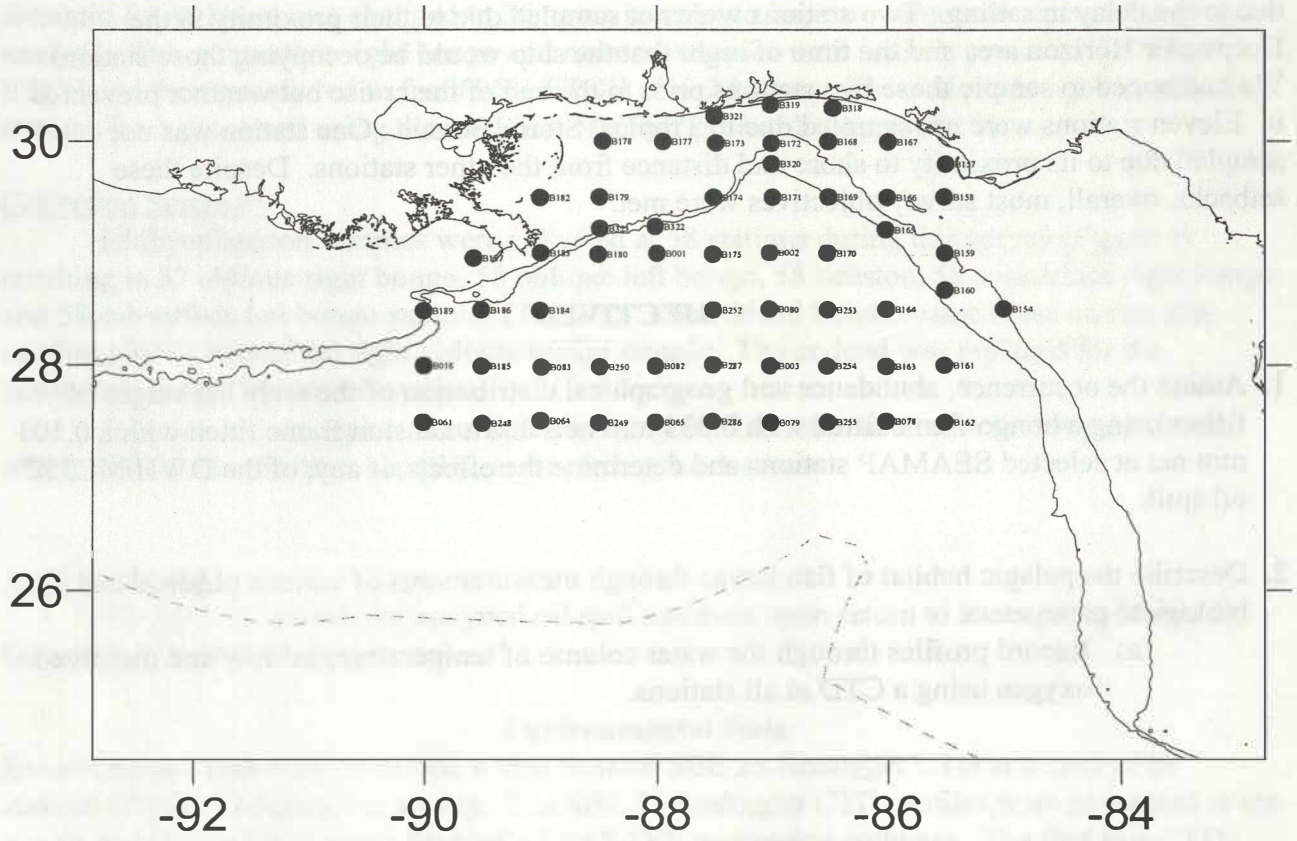

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SEAMAP 61 cm bongo frame outfitted with two 0.335 mm mesh nets and towed in an oblique path from near bottom or 200 m maximum depth to the surface. An SBE19 Seacat Profiler was attached on the towing wire above the frame to provide real time depth readings along with temperature and salinity. A flowmeter mounted inside each side of the bongo frame measured the volume filtered during the tow. Plankton samples were also taken using a 0.505 mm mesh neuston net attached to a 1 x 2 m metal frame that was towed for 10 min at a vessel speed (~ 2 kts) sufficient to keep the net opening half submerged in the water maintaining a sampling depth of 0.5 m. Subsurface samples were taken with the 0.335 mm mesh bongo nets towed for 10 min at the same vessel speed (~ 1.5-2 kt) as the regular neuston. Preservation protocol called for the subsurface left bongo samples to be preserved in 10% formalin and then transferred to fresh 95% ETOH after 36 hours. The original standard SEAMAP method of initial preservation in 10% formalin for 48 hours was changed to 36 hours in order to improve long term storage for genetic analysis. The subsurface right bongo and neuston samples were initially preserved in 95% ETOH and then transferred to fresh 95% ETOH after 24 hours. The oblique bongos at selected stations were preserved using the modified NWFSC protocols (Appendix 1).

Collection Summary

Ichthyoplankton samples were collected at 58 stations during this survey (Figure 1) resulting in 57 oblique right bongo, 58 oblique left bongo, 58 neuston, 58 subsurface right bongo and 58 subsurface left bongo samples (Table 1). The codend bottom came loose on one tow resulting in the loss of the right oblique bongo sample. The codend was replaced for the subsurface bongo tow at that station.

Jellyfish and ctenophores collected in bongo and neuston nets were thoroughly rinsed, removed from the plankton samples, and noted in the database.

Archival Storage

Plankton samples were assigned oil spill numbers upon return to Pascagoula (Table 3). Deposition is yet to be determined.

Environmental Data

Environmental data were collected with a Seabird SBE 25 Sealogger CTD at a total of 58 stations (Figure 1) during the survey. The SBE 25 Sealogger CTD profiles were processed at sea by the Field Party Chief using Seabird's SEASAVE processing software. The first two CTD casts were full of data spikes so these profiles were not included in the database. Information from shipboard sensors was accessed via the Scientific Computer System (SCS), which continuously displayed and recorded the ship's position, heading, speed, wind direction, wind speed, barometric pressure, sea surface temperature, air temperature and water depth. All environmental data and data from the ship's SCS were returned to the NMFS Pascagoula Laboratory for editing, analysis and archival storage.

Salinity (PSU), sea temperature (° C), and dissolved oxygen (mg/L) were recorded from the sensors on the CTD and summarized in Table 3. Near surface ($\leq$10 m depth) plots of sea temperature (° C), salinity (PSU), and dissolved oxygen (mg/L) are presented in Figures 2 - 4.

CRUISE PARTICIPANTS

(14 – 24 July 2010)

Name / Title / Organization

Denice Drass / Field Party Chief / NMFS, Pascagoula, MS
Adam Pollack / Fishery Biologist / IAP[1], Pascagoula, MS
Jeremy Hall / Fishery Biologist / NMFS, Miami, FL
Jennifer Ford / Volunteer / Gautier, MS

[1] - IAP World Services

Submitted by:

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20 Aug 2010
Date

Approved by:

Dr. Lisa Desfosse, Director
Mississippi Laboratories

Date

Dr. Bonnie Ponwith, Center Director
Southeast Fisheries Science Center

09/22/10
Date

Table 1. Summary of valid ichthyoplankton collections taken during *Delaware II* Plankton Cruise, 14 - 24 July 2010.

Leg / Vessel	CTD Casts	Right Bongo	Left Bongo	Neuston	Subsurface Right Bongo	Subsurface Left Bongo
		(0.335 mm)	(0.335 mm)	(0.505 mm)	(0.335 mm)	(0.335 mm)
Delaware II	58	57	58	58	58	58
Total	58	57	58	58	58	58

Table 2. Summary of plankton sampling effort during the Plankton Survey conducted from the NOAA Ship *Delaware II*, cruise DL-10-07, 14 – 24 July 2010. P-Sta # = Pascagoula station number; S-Sta # = SEAMAP station number or other station identifier; Smp # = SEAMAP sample number; RB = Right Bongo; LB = Left Bongo; NN = Neuston; Preservative = Initial preservative; Form = Formalin; ETOH = Ethanol; Paraform = Paraformaldehyde; Date = GMT date; Lat = Latitude of sample in decimal degrees; Lon = Longitude of sample in decimal degrees.

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
001	B178	DH142	RB	70% ETOH	7/14/2010	30.00122	-88.47341
001	B178	DH143	LB	4% Paraform	7/14/2010	30.00122	-88.47341
001	B178	DH144	NN	95% ETOH	7/14/2010	29.99883	-88.47647
001	B178	DH145	RB	95% ETOH	7/14/2010	29.99894	-88.47344
001	B178	DH146	LB	10% Form	7/14/2010	29.99894	-88.47344
002	B177	DH147	RB	70% ETOH	7/14/2010	29.99779	-87.9477
002	B177	DH148	LB	4% Paraform	7/14/2010	29.99779	-87.9477
002	B177	DH149	NN	95% ETOH	7/14/2010	29.99343	-87.94586
002	B177	DH150	RB	95% ETOH	7/15/2010	29.98907	-87.94218
002	B177	DH151	LB	10% Form	7/15/2010	29.98907	-87.94218
003	B173	DH152	RB	70% ETOH	7/15/2010	29.98555	-87.48559
003	B173	DH153	LB	10% Form	7/15/2010	29.98555	-87.48559
003	B173	DH154	NN	95% ETOH	7/15/2010	29.98227	-87.48779
003	B173	DH155	RB	95% ETOH	7/15/2010	29.97918	-87.49249
003	B173	DH156	LB	10% Form	7/15/2010	29.97918	-87.49249
004	B321	DH157	RB	95% ETOH	7/15/2010	30.22483	-87.49898
004	B321	DH158	LB	10% Form	7/15/2010	30.22483	-87.49898
004	B321	DH159	NN	95% ETOH	7/15/2010	30.22345	-87.50302
004	B321	DH160	RB	95% ETOH	7/15/2010	30.23623	-87.50322
004	B321	DH161	LB	10% Form	7/15/2010	30.23623	-87.50322
005	B319	DH162	RB	95% ETOH	7/15/2010	30.32831	-87.00761
005	B319	DH163	LB	10% Form	7/15/2010	30.32831	-87.00761

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
005	B319	DH164	NN	95% ETOH	7/15/2010	30.33086	-86.99924
005	B319	DH165	RB	95% ETOH	7/15/2010	30.33201	-86.99003
005	B319	DH166	LB	10% Form	7/15/2010	30.33201	-86.99003
006	B172	DH167	RB	95% ETOH	7/15/2010	29.98316	-86.9997
006	B172	DH168	LB	10% Form	7/15/2010	29.98316	-86.9997
006	B172	DH169	NN	95% ETOH	7/15/2010	29.97898	-87.00763
006	B172	DH170	RB	95% ETOH	7/15/2010	29.98402	-87.0158
006	B172	DH171	LB	10% Form	7/15/2010	29.98402	-87.0158
007	B320	DH172	RB	95% ETOH	7/15/2010	29.79973	-86.99832
007	B320	DH173	LB	10% Form	7/15/2010	29.79973	-86.99832
007	B320	DH174	NN	95% ETOH	7/15/2010	29.79867	-87.00523
007	B320	DH175	RB	95% ETOH	7/15/2010	29.79709	-87.011
007	B320	DH176	LB	10% Form	7/15/2010	29.79709	-87.011
008	B168	DH177	RB	95% ETOH	7/15/2010	30.00002	-86.50592
008	B168	DH178	LB	10% Form	7/15/2010	30.00002	-86.50592
008	B168	DH179	NN	95% ETOH	7/15/2010	29.99743	-86.50972
008	B168	DH180	RB	95% ETOH	7/15/2010	29.99581	-86.51548
008	B168	DH181	LB	10% Form	7/15/2010	29.99581	-86.51548
009	B318	DH183	NN	95% ETOH	7/15/2010	30.29518	-86.46127
009	B318	DH184	RB	95% ETOH	7/15/2010	30.30015	-86.46565
009	B318	DH185	LB	10% Form	7/15/2010	30.30015	-86.46565
010	B167	DH186	RB	95% ETOH	7/16/2010	29.99683	-85.99491
010	B167	DH187	LB	10% Form	7/16/2010	29.99683	-85.99491
010	B167	DH188	NN	95% ETOH	7/16/2010	30.00196	-86.00298
010	B167	DH189	RB	95% ETOH	7/16/2010	30.0005	-85.99325
010	B167	DH190	LB	10% Form	7/16/2010	30.0005	-85.99325
011	B157	DH191	RB	95% ETOH	7/16/2010	29.79951	-85.50294
011	B157	DH192	LB	10% Form	7/16/2010	29.79951	-85.50294
011	B157	DH193	NN	95% ETOH	7/16/2010	29.79434	-85.49768
011	B157	DH194	RB	95% ETOH	7/16/2010	29.78977	-85.4971
011	B157	DH195	LB	10% Form	7/16/2010	29.78977	-85.4971
012	B158	DH196	RB	95% ETOH	7/16/2010	29.50566	-85.51658
012	B158	DH197	LB	10% Form	7/16/2010	29.50566	-85.51658
012	B158	DH198	NN	95% ETOH	7/16/2010	29.5008	-85.51139
012	B158	DH199	RB	95% ETOH	7/16/2010	29.49373	-85.51342
012	B158	DH200	LB	10% Form	7/16/2010	29.49373	-85.51342
013	B166	DH201	RB	95% ETOH	7/16/2010	29.49944	-86.00218
013	B166	DH202	LB	10% Form	7/16/2010	29.49944	-86.00218
013	B166	DH203	NN	95% ETOH	7/16/2010	29.50105	-85.99285
013	B166	DH204	RB	95% ETOH	7/16/2010	29.50284	-85.98827
013	B166	DH205	LB	10% Form	7/16/2010	29.50284	-85.98827
014	B169	DH206	RB	95% ETOH	7/16/2010	29.50425	-86.50391
014	B1690	DH207	LB	10% Form	7/16/2010	29.50425	-86.50391
014	B169	DH208	NN	95% ETOH	7/16/2010	29.49939	-86.49129
014	B169	DH209	RB	95% ETOH	7/16/2010	29.49562	-86.48519
014	B169	DH210	LB	10% Form	7/16/2010	29.49562	-86.48519
015	B171	DH211	RB	95% ETOH	7/16/2010	29.50091	-86.98874
015	B171	DH212	LB	10% Form	7/16/2010	29.50091	-86.98874
015	B171	DH213	NN	95% ETOH	7/16/2010	29.49598	-86.97679
015	B171	DH214	RB	95% ETOH	7/16/2010	29.49861	-86.98527
015	B171	DH215	LB	10% Form	7/16/2010	29.49861	-86.98527
016	B174	DH216	RB	95% ETOH	7/16/2010	29.5	-87.50564
016	B174	DH217	LB	10% Form	7/16/2010	29.5	-87.50564
016	B174	DH218	NN	95% ETOH	7/17/2010	29.50083	-87.49464
016	B174	DH219	RB	95% ETOH	7/17/2010	29.50232	-87.48861
016	B174	DH220	LB	10% Form	7/17/2010	29.50232	-87.48861

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
017	B175	DH221	RB	95% ETOH	7/17/2010	28.98913	-87.51318
017	B175	DH222	LB	10% Form	7/17/2010	28.98913	-87.51318
017	B175	DH223	NN	95% ETOH	7/17/2010	28.99404	-87.50395
017	B175	DH224	RB	95% ETOH	7/17/2010	28.99423	-87.49896
017	B175	DH225	LB	10% Form	7/17/2010	28.99423	-87.49896
018	B002	DH226	RB	95% ETOH	7/17/2010	29.00123	-87.01528
018	B002	DH227	LB	10% Form	7/17/2010	29.00123	-87.01528
018	B002	DH228	NN	95% ETOH	7/17/2010	29.00373	-87.00341
018	B002	DH229	RB	95% ETOH	7/17/2010	29.00363	-86.99737
018	B002	DH230	LB	10% Form	7/17/2010	29.00363	-86.99737
019	B170	DH231	RB	95% ETOH	7/17/2010	29.00088	-86.51587
019	B170	DH232	LB	10% Form	7/17/2010	29.00088	-86.51587
019	B170	DH233	NN	95% ETOH	7/17/2010	29.00178	-86.50433
019	B170	DH234	RB	95% ETOH	7/17/2010	29.00129	-86.49803
019	B170	DH235	LB	10% Form	7/17/2010	29.00129	-86.49803
020	B165	DH236	RB	95% ETOH	7/17/2010	29.21128	-86.01626
020	B165	DH237	LB	10% Form	7/17/2010	29.21128	-86.01626
020	B165	DH238	NN	95% ETOH	7/17/2010	29.20578	-86.00691
020	B165	DH239	RB	95% ETOH	7/17/2010	29.20215	-86.00257
020	B165	DH240	LB	10% Form	7/17/2010	29.20215	-86.00257
021	B159	DH241	RB	95% ETOH	7/17/2010	29.00389	-85.51168
021	B159	DH242	LB	10% Form	7/17/2010	29.00389	-85.51168
021	B159	DH243	NN	95% ETOH	7/17/2010	29.00241	-85.49931
021	B159	DH244	RB	95% ETOH	7/17/2010	29.00125	-85.4915
021	B159	DH245	LB	10% Form	7/17/2010	29.00125	-85.4915
022	B160	DH246	RB	95% ETOH	7/17/2010	28.67374	-85.51176
022	B160	DH247	LB	10% Form	7/17/2010	28.67374	-85.51176
022	B160	DH248	NN	95% ETOH	7/18/2010	28.66859	-85.49606
022	B160	DH249	RB	95% ETOH	7/18/2010	28.66453	-85.4882
022	B160	DH250	LB	10% Form	7/18/2010	28.66453	-85.4882
023	B154	DH251	RB	95% ETOH	7/18/2010	28.50585	-85.01366
023	B154	DH252	LB	10% Form	7/18/2010	28.50585	-85.01366
023	B154	DH253	NN	95% ETOH	7/18/2010	28.49821	-85.00494
023	B154	DH254	RB	95% ETOH	7/18/2010	28.49391	-85.00039
023	B154	DH255	LB	10% Form	7/18/2010	28.49391	-85.00039
024	B161	DH256	RB	95% ETOH	7/18/2010	27.9994	-85.51599
024	B161	DH257	LB	10% Form	7/18/2010	27.9994	-85.51599
024	B161	DH258	NN	95% ETOH	7/18/2010	28.0035	-85.51041
024	B161	DH259	RB	95% ETOH	7/18/2010	28.00528	-85.50723
024	B161	DH260	LB	10% Form	7/18/2010	28.00528	-85.50723
025	B162	DH261	RB	95% ETOH	7/18/2010	27.49465	-85.51433
025	B162	DH262	LB	10% Form	7/18/2010	27.49465	-85.51433
025	B162	DH263	NN	95% ETOH	7/18/2010	27.50604	-85.50853
025	B162	DH264	RB	95% ETOH	7/18/2010	27.50694	-85.50435
025	B162	DH265	LB	10% Form	7/18/2010	27.50694	-85.50435
026	B078	DH266	RB	95% ETOH	7/18/2010	27.50016	-86.01298
026	B078	DH267	LB	10% Form	7/18/2010	27.50016	-86.01298
026	B078	DH268	NN	95% ETOH	7/18/2010	27.50728	-86.00432
026	B078	DH269	RB	95% ETOH	7/18/2010	27.50948	-85.99905
026	B078	DH270	LB	10% Form	7/18/2010	27.50948	-85.99905
027	B163	DH271	RB	95% ETOH	7/18/2010	27.98859	-86.01114
027	B163	DH272	LB	10% Form	7/18/2010	27.98859	-86.01114
027	B163	DH273	NN	95% ETOH	7/18/2010	27.99595	-86.00703
027	B163	DH274	RB	95% ETOH	7/18/2010	27.99828	-86.00489
027	B163	DH275	LB	10% Form	7/18/2010	27.99828	-86.00489
028	B164	DH276	RB	95% ETOH	7/19/2010	28.49703	-86.01306

Table 2 continued

P-Sta2 #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon2
0282	B164	DH277	LB	10% Form	7/19/2010	28.49703	-86.013062
028	B1642	DH278	NN	95% ETOH	7/19/2010	28.50027	-85.996082
028	B164	DH279	RB	95% ETOH	7/19/2010	28.5005	-85.988652
028	B164	DH280	LB	10% Form	7/19/2010	28.5005	-85.988652
029	B253	DH281	RB	95% ETOH	7/19/2010	28.49199	-86.5134 2
029	B253	DH282	LB	10% Form	7/19/2010	28.49199	-86.51342
029	B253	DH283	NN	95% ETOH	7/19/2010	28.49689	-86.500752
029	B253	DH284	RB	95% ETOH	7/19/2010	28.49965	-86.49382
029	B253	DH285	LB	10% Form	7/19/2010	28.49965	-86.49382
030	B254	DH286	RB	95% ETOH	7/19/2010	27.99125	-86.51814
030	B254	DH287	LB	10% Form	7/19/2010	27.99125	-86.518142
030	B254	DH288	NN	95% ETOH	7/19/2010	27.99285	-86.515222
030	B254	DH289	RB	95% ETOH	7/19/20102	27.9951	-86.514632
030	B254	DH290	LB	10% Form	7/19/2010	27.9951	-86.51463
031	B255	DH291	RB	95% ETOH	7/19/2010	27.49203	-86.515122
0312	B255	DH292	LB	10% Form	27/19/2010	27.49203	-86.51512
031	B255	DH293	NN	95% ETOH	7/19/2010	27.49838	-86.505822
031	B255	DH294	RB	95% ETOH	7/19/2010	27.5042	-86.505182
031	B255	DH295	LB	10% Form	7/19/2010	27.5042	-86.505182
032	B079	DH296	RB	95% ETOH	7/19/2010	27.48969	-87.009882
032	B079	DH297	LB	10% Form	7/19/2010	27.48969	-87.00988
032	B079	DH298	NN	95% ETOH	7/19/2010	27.49703	-87.002572
032	B079	DH299	RB	95% ETOH	7/19/2010	27.50064	-86.998472
032	B079	DH300	LB	10% Form	7/19/2010	27.50064	-86.998472
033	B003	DH301	RB	95% ETOH	7/19/2010	27.99218	-87.01419
033	B003	DH302	LB	10% Form	7/19/2010	27.99218	-87.014192
033	B003	DH303	NN	95% ETOH	7/19/2010	27.99369	-87.008322
033	B003	DH304	RB	95% ETOH	7/19/2010	27.99402	-87.005032

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	2 Lat	Lon
033	B003	DH305	LB2	10% Form	7/19/2010	27.99402	-87.005032
034	B080	DH306	RB2	95% ETOH	7/20/2010	28.50158	-87.018582
034	B080	DH307	LB	10% Form	7/20/2010	28.50158	-87.018582
034	B080	DH308	NN2	95% ETOH	7/20/2010	28.50406	-87.007332
034	B080	DH309	RB	95% ETOH	7/20/2010	28.50781	-86.999342
034	B080	DH310	LB2	10% Form	7/20/2010	28.507812	-86.999342
035	B252	DH311	RB	95% ETOH	7/20/2010	28.49188	-87.512652
035	B252	DH312	LB	10% Form	7/20/2010	28.49188	-87.51265
0352	B252	DH313	NN	95% ETOH	7/20/2010	28.49398	-87.50435
035	B252	DH314	RB	95% ETOH	7/20/2010	28.49554	-87.499592
035	B252	DH315	LB	10% Form	7/20/2010	28.49554	-87.499592
036	B287	DH316	RB	95% ETOH	7/20/2010	27.99849	-87.514492
036	B287	DH317	LB	10% Form	7/20/2010	27.99849	-87.51449
0362	B287	DH318	NN	95% ETOH	7/20/2010	28.00104	-87.50862
036	B287	DH319	RB	95% ETOH	7/20/2010	28.00164	-87.504072
0362	B287	DH320	LB	10% Form	7/20/2010	28.00164	-87.504072
0372	B286 2	DH321 2	RB2	70% ETOH2	7/20/2010	27.49654	-87.517592
037	B286	DH322 2	LB	4% Paraform	7/20/2010	27.49654	87.51759
0372	B286	DH323	NN	95% ETOH	7/20/2010	27.49928	-87.508362
0372	B2862	DH3242	RB2	95% ETOH2	7/20/2010	27.500232	-87.501852
0372	B2862	DH325 2	LB2	2 10% Form	7/20/2010	27.50023	-87.501852
0382	B065	DH326	RB	70% ETOH	7/20/2010	27.49548	-88.01552
038	B065	DH327 2	LB	4% Paraform	7/20/2010	27.49548	-88.0155
0382	B065	DH328	NN	95% ETOH	7/20/2010	27.49932	-88.004292
0382	B0652	DH329	RB2	95% ETOH	7/20/2010	27.50046	-87.997692
0382	B065	DH330	LB	10% Form	7/20/2010	27.50046	-87.99769
0392	B082	DH331	RB	70% ETOH	7/20/2010	27.9911	-88.015132
0392	B0822	DH332 2	LB2	4% Paraform	7/20/2010	27.99112	-88.015132

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
039	B082	DH333	NN	95% ETOH	7/20/2010	27.99282	-88.01022
039	B082	DH334	RB	95% ETOH	7/20/2010	27.99122	-88.00676
039	B082	DH335	LB	10% Form	7/20/2010	27.99122	-88.00676
040	B250	DH336	RB	70% ETOH	7/21/2010	27.98649	-88.50153
040	B250	DH337	LB	4% Paraform	7/21/2010	27.98649	-88.50153
040	B250	DH338	NN	95% ETOH	7/21/2010	27.99182	-88.496832
040	B250	DH339	RB	95% ETOH	7/21/2010	27.99283	-88.49419
040	B250	DH340	LB	10% Form	7/21/2010	27.99283	-88.49419
041	B249	DH341	RB	70% ETOH	7/21/2010	27.48999	-88.5094
041	B249	DH342	LB	4% Paraform	7/21/2010	27.48999	-88.5094
041	B249	DH343	NN	95% ETOH	7/21/2010	27.49428	-88.500062
041	B249	DH344	RB	95% ETOH	7/21/2010	27.49189	-88.5014
041	B249	DH345	LB	10% Form	7/21/2010	27.491892	-88.5014
042	B064	DH346	RB	95% ETOH	7/21/2010	27.50644	-89.01158
042	B064	DH347	LB	10% Form	7/21/2010	27.50644	-89.01158
042	B064	DH348	NN	95% ETOH	7/21/2010	27.51343	-89.00098
042	B064	DH349	RB	95% ETOH	7/21/2010	27.50566	-88.99739
042	B064	DH350	LB	10% Form	7/21/2010	27.50566	-88.99739
043	B083	DH351	RB	95% ETOH	7/21/2010	27.98505	-89.00001
043	B083	DH352	LB	10% Form	7/21/2010	27.98505	-89.00001
043	B084	DH353	NN	95% ETOH	7/21/2010	27.99188	-88.99654
043	B084	DH354	RB	95% ETOH	7/21/2010	27.99235	-88.99549
043	B084	DH355	LB	10% Form	7/21/2010	27.99235	-88.995492
044	B184	DH356	RB	70% ETOH	7/21/2010	28.49089	-89.0126
044	B184	DH357	LB	4% Paraform	7/21/2010	28.49089	-89.0126
044	B184	DH358	NN	95% ETOH	7/21/2010	28.49239	-89.00684
044	B184	DH359	RB	95% ETOH	7/21/2010	28.49318	-89.00223
044	B184	DH360	LB	10% Form	7/21/2010	28.49318	-89.00223

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
045	B186	DH361	RB	95% ETOH	7/22/2010	28.49544	-89.51077
045	B186	DH362	LB	10% Form	7/22/2010	28.49544	-89.51077
045	B186	DH363	NN	95% ETOH	7/22/2010	28.49695	-89.50452
045	B186	DH364	RB	95% ETOH	7/22/2010	28.49557	-89.50248
045	B186	DH365	LB	10% Form	7/22/2010	28.49557	-89.50248
046	B185	DH366	RB	95% ETOH	7/22/2010	27.989682	-89.51165
046	B185	DH367	LB	10% Form	7/22/2010	27.98968	-89.51165
046	B185	DH368	NN	95% ETOH	7/22/2010	27.99897	-89.50739
046	B185	DH369	RB	95% ETOH	7/22/2010	28.00243	-89.50502
046	B185	DH370	LB	10% Form	7/22/2010	28.00243	-89.50502
047	B248	DH371	RB	95% ETOH	7/22/2010	27.48949	-89.50552
047	B248	DH372	LB	10% Form	7/22/2010	27.48949	-89.5055
047	B248	DH373	NN	95% ETOH	7/22/2010	27.49654	-89.49766
047	B248	DH374	RB	95% ETOH	7/22/2010	27.50025	-89.49247
047	B248	DH375	LB	10% Form	7/22/2010	27.50025	-89.49247
048	B061	DH376	RB	95% ETOH	7/22/2010	27.49087	-90.01158
048	B061	DH377	LB	10% Form	7/22/2010	27.49087	-90.01158
048	B061	DH378	NN	95% ETOH	7/22/2010	27.49571	-90.003982
048	B061	DH379	RB	95% ETOH	7/22/2010	27.50006	-89.99597
048	B061	DH380	LB	10% Form	7/22/2010	27.50006	-89.99597
049	B016	DH381	RB	95% ETOH	7/22/2010	27.99338	-90.00535
049	B016	DH382	LB	10% Form	7/22/2010	27.99338	-90.00535
049	B016	DH383	NN	95% ETOH	7/22/2010	27.99542	-89.99453
049	B016	DH384	RB	95% ETOH	7/22/2010	27.99612	-89.9947
049	B016	DH385	LB	10% Form	7/22/2010	27.99612	-89.9947
050	B189	DH386	RB	95% ETOH	7/22/2010	28.48881	-90.00398
050	B189	DH387	LB	10% Form	7/22/2010	28.48881	-90.00398
050	B189	DH388	NN	95% ETOH	7/22/2010	28.48713	-89.99992

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
050	B189	DH389	RB	95% ETOH	7/22/2010	28.48547	-89.9978
050	B189	DH390	LB	10% Form	7/22/2010	28.48547	-89.9978
051	B187	DH391	RB	70% ETOH	7/23/2010	28.95659	-89.57558
051	B187	DH392	LB	4% Paraform	7/23/2010	28.95659	-89.57558
051	B187	DH393	NN	95% ETOH	7/23/2010	28.95978	-89.570550
051	B187	DH394	RB	95% ETOH	7/23/2010	28.96165	-89.56568
051	B187	DH395	LB	10% Form	7/23/2010	28.96165	-89.56568
052	B183	DH396	RB0	70% ETOH	7/23/2010	29.00277	-89.00618
052	B183	DH397	LB0	4% Paraform	7/23/2010	29.00277	-89.00618
052	B1830	DH398	NN0	95% ETOH	7/23/2010	29.00008	089.008090
0520	B183	DH399	RB0	95% ETOH	7/23/2010	29.00275	-89.017830
0520	B183	DH4000	LB	10% Form	7/23/2010	29.00275	-89.01783
0530	B180	DH401	RB	70% ETOH	7/23/2010	28.99115	-88.512370
053	B180	DH402	LB	4% Paraform	7/23/2010	28.99115	-88.51237
053	B180	DH403	NN	95% ETOH	7/23/2010	28.99239	-88.50009
053	B180	DH404	RB	95% ETOH	7/23/2010	28.9964	-88.49593
053	B180	DH405	LB	10% Form	7/23/2010	28.9964	-88.49593
054	B001	DH406	RB	70% ETOH	7/23/2010	28.99938	-88.00025
054	B001	DH407	LB	4% Paraform	7/23/2010	28.99938	-88.00025
054	B001	DH408	NN	95% ETOH	7/23/2010	28.99404	-87.99694
054	B0010	DH409	RB	95% ETOH	7/23/2010	28.99562	-87.99026
0540	B001	DH410	LB	10% Form	7/23/2010	28.99562	-87.99026
055	B322	DH411	RB	70% ETOH	7/23/2010	29.23943	-88.01548
055	B322	DH412	LB	4% Paraform	7/23/2010	29.23943	-88.01548
055	B322	DH413	NN	95% ETOH	7/23/2010	29.23458	-88.00593
055	B322	DH414	RB	95% ETOH	7/23/2010	29.23896	-88.00321
055	B322	DH415	LB	10% Form	7/23/2010	29.23896	-88.00321
056	B323	DH416	RB	70% ETOH	7/23/2010	29.22106	-88.497170
056	B323	DH417	LB	4% Paraform	7/23/2010	29.22106	-88.49717
056	B323	DH418	NN	95% ETOH	7/23/2010	29.2239	-88.50378
056	B323	DH419	RB	95% ETOH	7/24/2010	29.22024	-88.51144
056	B323	DH420	LB	10% Form	7/24/2010	29.22024	-88.51144
057	B182	DH421	RB	70% ETOH	7/24/2010	29.49666	-89.01048
057	B182	DH422	LB	4% Paraform	7/24/2010	29.49666	-89.01048
057	B182	DH423	NN	95% ETOH	7/24/2010	29.49976	-89.007290
057	B182	DH424	RB	95% ETOH	7/24/2010	29.50258	-89.0043
057	B182	DH425	LB	10% Form	7/24/2010	29.50258	-89.0043
058	B179	DH426	RB	70% ETOH	7/24/2010	29.5027	-88.50118
058	B179	DH427	LB	4% Paraform	7/24/2010	29.5027	-88.50118
058	B179	DH428	NN	95% ETOH	7/24/2010	29.50518	-88.49911
058	B179	DH429	RB	95% ETOH	7/24/2010	29.50359	-88.49805
058	B179	DH430	LB	10% Form	7/24/2010	29.50359	-88.498050

Table 3. Summary of environmental data recorded near the surface (≤10 m depth) using CTD sensors and benchtop Chlorophyll *a* analysis during *Delaware II* cruise 10-07.

Measurement	Mean	Minimum	Maximum	No. of Samples
Sea Temperature (° C)	29.67	27.15	31.46	56
Salinity (ppt)	33.11	19.54	36.32	56
Dissolved Oxygen (mg/L)	6.28	5.22	7.4	56

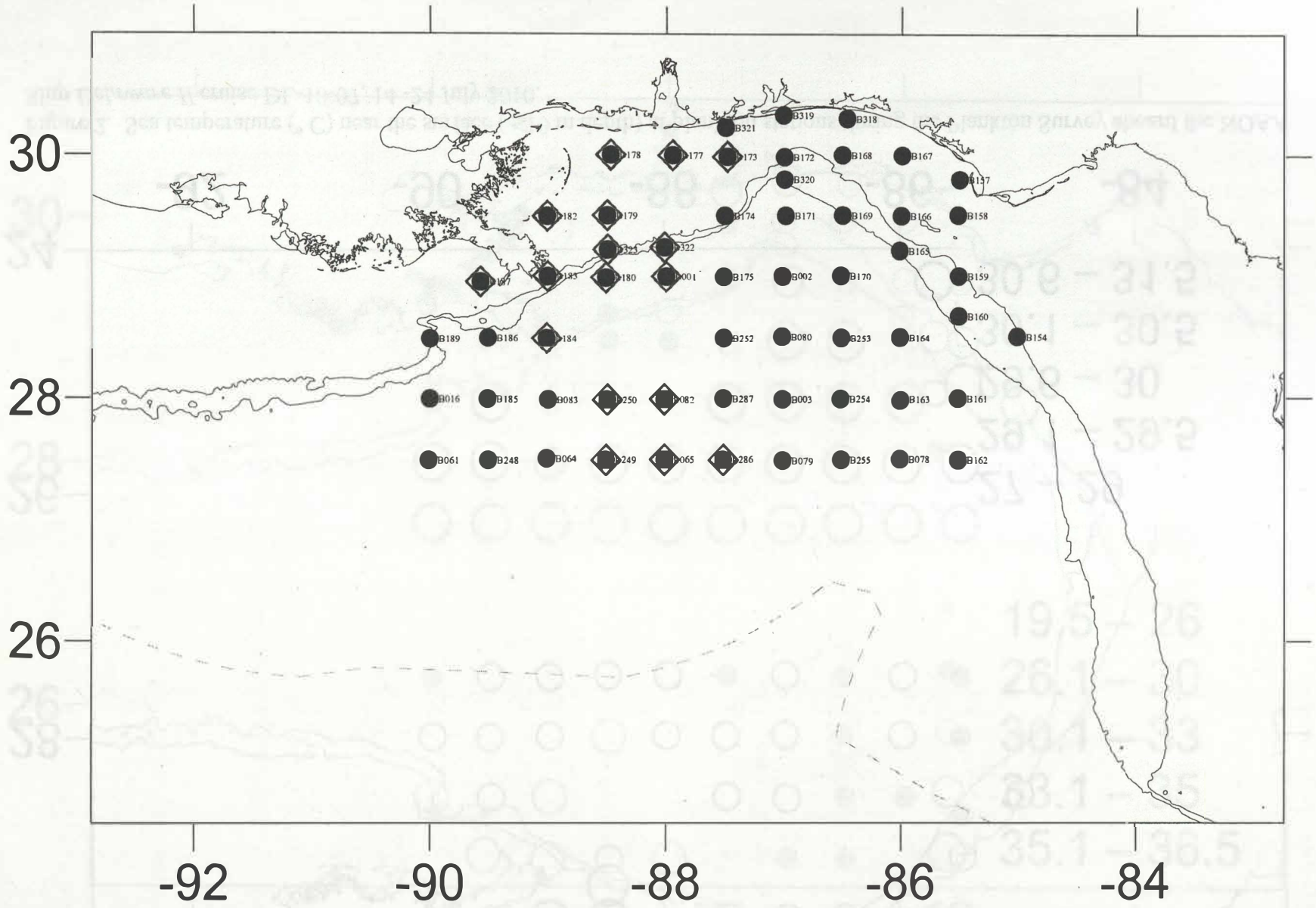

Figure 1. Plankton stations completed aboard the NOAA Ship *Delaware II*, cruise DL-10-07, 14 -24 July 2010. Diamonds indicate where the NW preservation protocols were used for the oblique bongo samples.

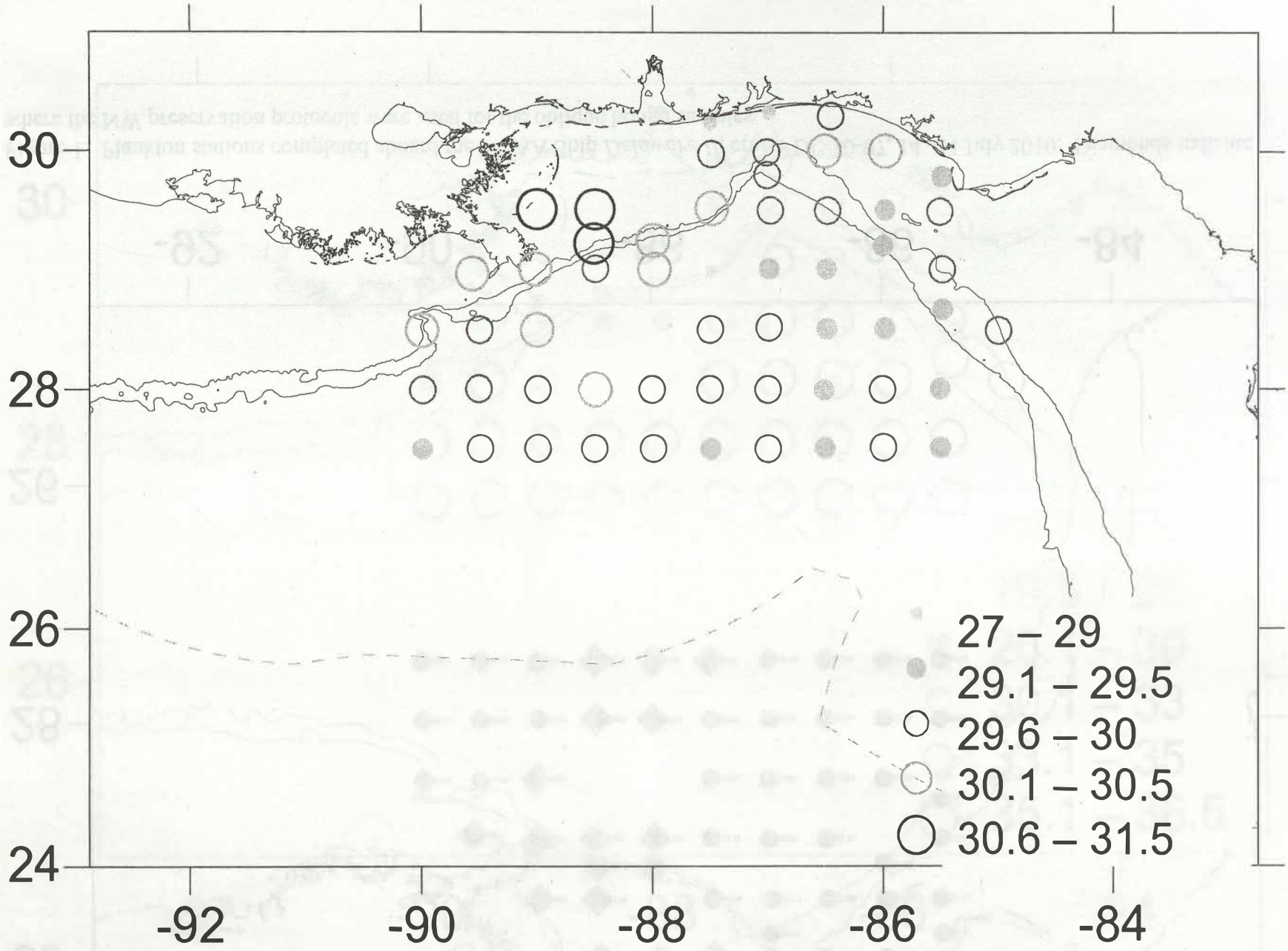

Figure 2. Sea temperature (° C) near the surface (≤10 m depth) at plankton stations during the Plankton Survey aboard the NOAA Ship *Delaware II* cruise DL-10-07, 14 -24 July 2010.

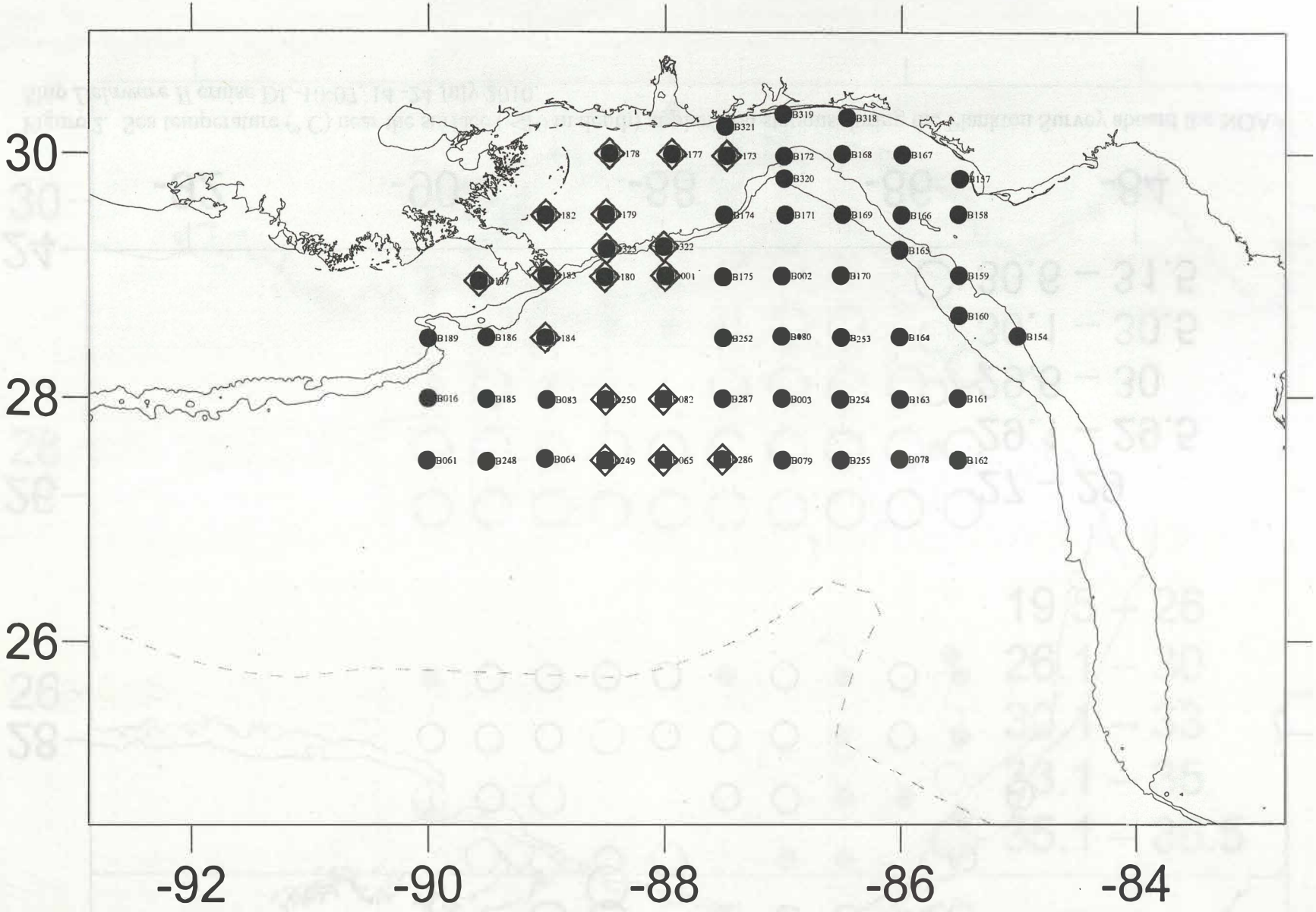

Figure 1. Plankton stations completed aboard the NOAA Ship *Delaware II*, cruise DL-10-07, 14 -24 July 2010. Diamonds indicate where the NW preservation protocols were used for the oblique bongo samples.

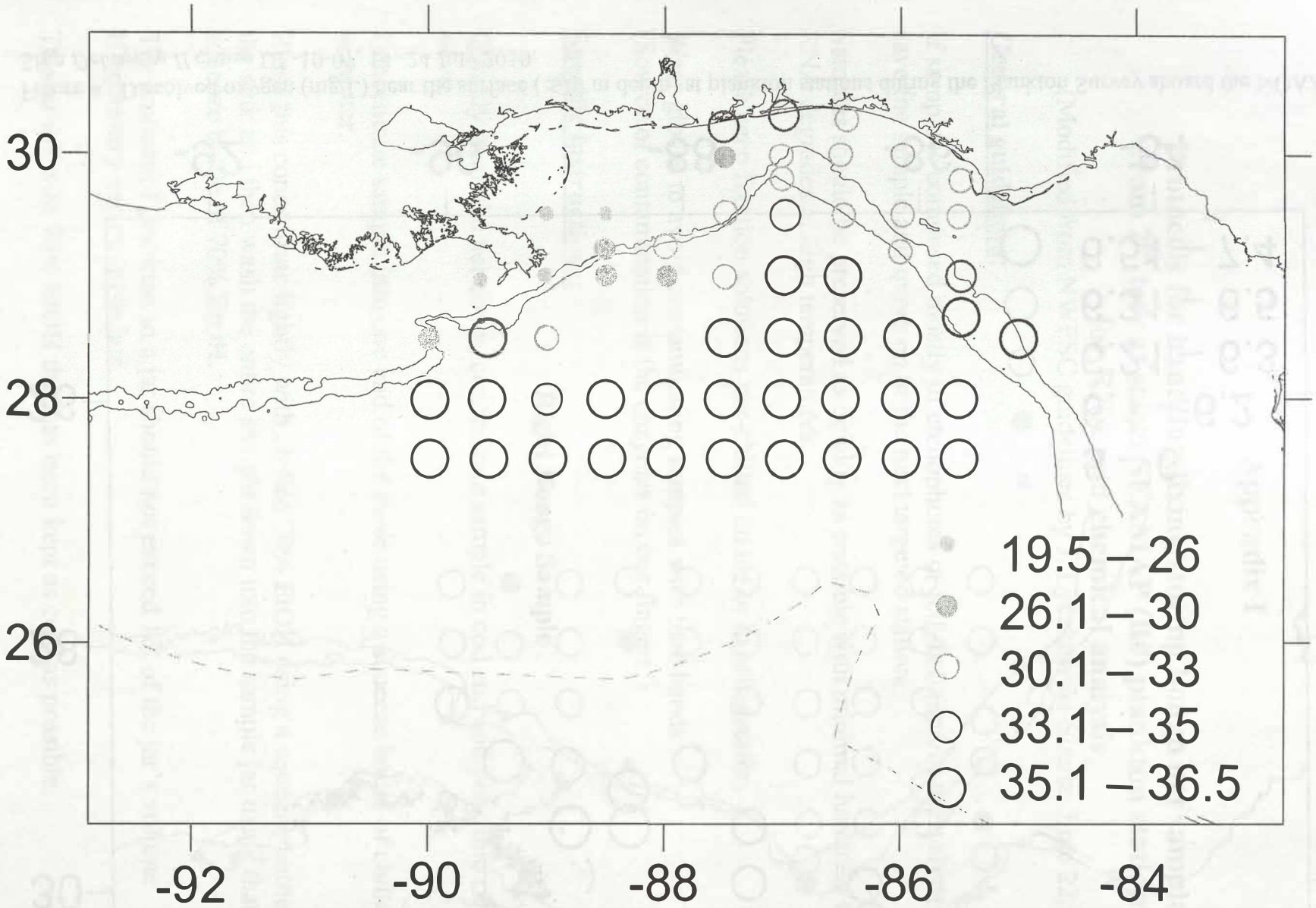

Figure 3. Salinity (PSU) near the surface (≤10 m depth) at plankton stations during the Plankton Survey aboard the NOAA Ship *Delaware II* cruise DL-10-07, 14 -24 July 2010.

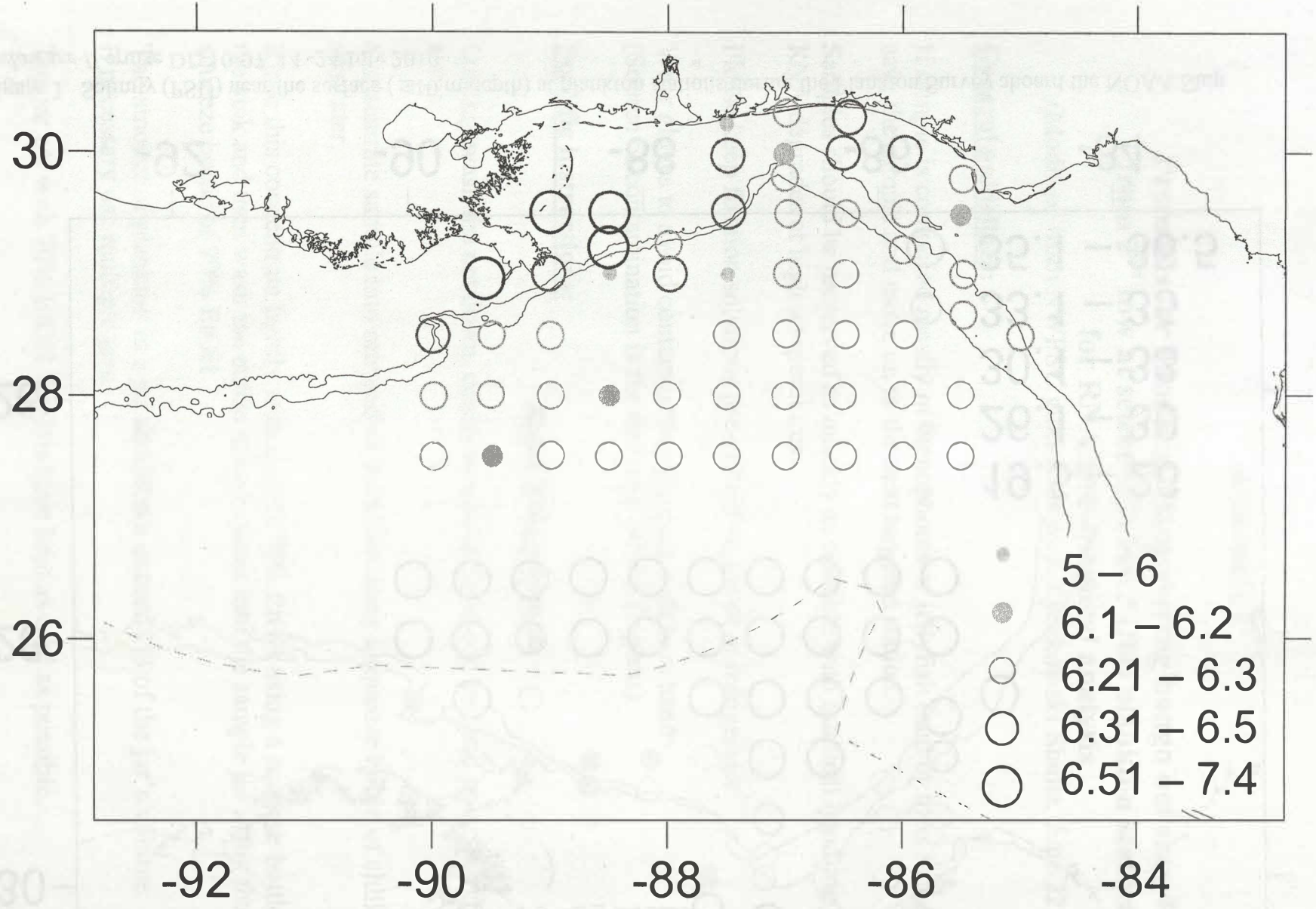

Figure 4. Dissolved oxygen (mg/L) near the surface (≤10 m depth) at plankton stations during the Plankton Survey aboard the NOAA Ship *Delaware II* cruise DL-10-07, 14 -24 July 2010.

Appendix I

Protocols for handling/fixing/storing bongo net samples from 2nd tow at select SEAMAP (B#) plankton stations for RNA and chemical analysis

(Modified from NWFSC guidelines by J. Lyczkowski-Shultz, June 22, 2010)

General guidelines:

If sample is composed mostly of ctenophores or jellyfish (and/or their slime) do not save the sample and move on to the next targeted station.

Samples should be preserved as quickly as possible with minimal handling because RNA degrades at high temperatures.

Please keep fixation solutions pre-chilled on ice or in refrigerator.

Wear gloves to avoid contaminating samples with bare hands.
(Source of contamination is the enzymes on our fingers!)

Specific instructions:

Right Bongo Sample

Quickly wash the net down, concentrate sample in cod end and pour into collecting sieve.

Concentrate sample into one end of the sieve using a squeeze bottle of chilled seawater.

Rinse this concentrate lightly with chilled 70% EtOH using a squeeze bottle over the sink and then wash the entire sample down into the sample jar using that same squeeze bottle of 70% EtOH.

The amount of plankton in a jar should not exceed 1/3 of the jar's volume.
If necessary use multiple jars.

Top jar off with 70% EtOH that has been kept as cool as possible.

Change to new 70% EtOH after 24 hours.

Label samples on the outside of jar (lid) only using SEAMAP plankton labels. More complete labels will be filled out at the Lab.

Record samples in data log.

Left Bongo Sample

Quickly wash down the net, concentrate sample in cod end and pour into a collecting sieve.

Concentrate sample into one end of the sieve using a squeeze bottle of chilled seawater.

With a clean (not previously used) plastic spoon gently transfer 2 to 10 gm of sample into an IChem jar. An exact weight is not necessary, an estimate is acceptable. (Speedy handling of the sample is more important.)

Freeze this portion of the left sample for analytical chemistry.
Store in -20˚C freezer. Label samples on the outside of jar (lid) only.

Rinse the remaining sample in the sieve lightly with chilled 4% buffered paraformaldehyde solution using a squeeze bottle over the sink and then wash the entire sample down into the sample jar using that same squeeze bottle of 4% buffered paraformaldehyde solution.

The amount of plankton in a jar should not exceed 1/3 of the jar's volume.
If necessary use multiple jars.

After 6 hours drain sample through a sieve to remove the paraformaldehyde solution and add full strength methanol to the sample jar(s).

Label samples on the outside of jar (lid) only using SEAMAP plankton labels. More complete labels will be filled out at the Lab.

Record both frozen and preserved samples in data log.