U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

3209 Frederic Street
Pascagoula, MS 39567

Cruise Report

Date Submitted: 06/16/2015

Platform: NOAA Ship GORDON GUNTER

Cruise Number: 15-01

Project Title: SEAMAP Winter Ichthyoplankton

Cruise Dates: 03/03/2015 - 04/02/2015

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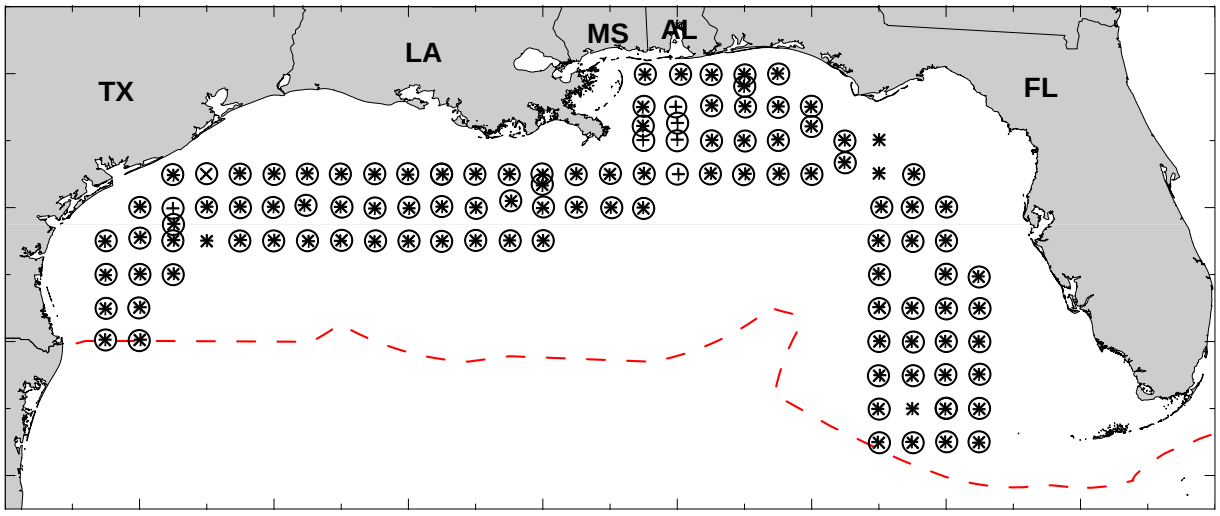
Director, SEFSC

CRUISE RESULTS

Southeast Area Monitoring and Assessment Program (SEAMAP) 2015 Winter Plankton Survey

NOAA Ship *Gordon Gunter* Cruise 15-01
3 March – 2 April 2015



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INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) Ship *Gordon Gunter* departed Pascagoula, MS 3 March 2015 to initiate the Southeast Area Monitoring and Assessment Program (SEAMAP) Winter Plankton Survey in the northern Gulf of Mexico (GOM). The SEAMAP Program is a cooperative State/Federal/University program designed to collect biological and environmental data from waters of the U.S. GOM. During the winter survey, plankton samples were collected from a systematic grid of stations to assess distribution, occurrence and abundance of the early life stages of a variety of species of fishes and invertebrates. The survey specifically targeted larvae of grouper, tilefish and other winter spawning species. A total of 113 stations were sampled in the northern GOM from Texas over to Florida during the 29 days at sea (Leg 1, 3 March–14 March and Leg 2, 17 March– 2April 2015).

The survey was originally scheduled to depart February 27, however, departure was delayed four days due to repairs needed on the MSD system breakers and a main shut-off for the water intake. In order to avoid the worst of an approaching cold front, sampling was begun in the east and moved quickly to the south end of the trackline. As Leg 1 progressed, slower transit speeds between stations of consistently less than 10 kt, further impacted by currents and weather, also affected sampling efficiency. Due to these combined factors, initially 24 stations were dropped from Leg 1. One full station was also skipped during Leg 1 due to inclement weather in the area of the station (high winds/lightening). Two CTD casts at stations 002 and 003 were also skipped due to problems with the conducting cable, which was successfully repaired. The ship departed on time March 17th for Leg 2 of the survey and was able to resume sampling immediately, which allowed ten of the stations dropped during Leg 1 to be sampled at the beginning of the leg, with only minor diversions along the Leg 2 track line. Three additional Leg 1 dropped stations were sampled at the end of Leg 2.

The Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS) system was not operational soon enough prior to this survey, so the decision was made to not conduct MOCNESS tows during the survey.

OBJECTIVES

1. Assess the occurrence, abundance and geographical distribution of the early life stages of winter spawning fishes; especially grouper and tilefish species, from the continental shelf, the shelf edge, and deep Gulf waters using a bongo frame fitted with 335 µm nets and a neuston frame fitted with a 950 µm net at selected SEAMAP stations. Mesh sizes reported here do not represent actual changes in standard SEAMAP gear (i.e. 333 µm and 947 µm mesh) but only a change in the accuracy at which mesh aperture size can be measured by the manufacturer.

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,

Table 2 Cont.

fluorescence, dissolved oxygen, and turbidity using a CTD at SEAMAP stations.

b) Measure chlorophyll *a* in replicate water samples taken at surface, maximum chlorophyll layer and near bottom (to a maximum of 200 m) depths using bench top fluorometry.

c) Detect and measure frontal features along the survey cruise track using data from the ship's Fluoro-thermosalinograph flow-through system (TSG).

3. Collect detailed observations (i.e., identification, number, volume, bell diameter) on net caught jellyfish and ctenophores.

4. Map the distribution of fish eggs and invertebrate zooplankton along the cruise track using a Continuous Underway Fish Egg Sampler (CUFES).

5. Collect Acoustics data using the EK60 array at all four frequencies (18, 39, 120, and 200 kHz)

SURVEY RESULTS
Ichthyoplankton Data

Survey Design

A predefined cruise track of 131 stations, approximately 30 nm apart in a systematic grid, were targeted for this survey.

Sampling Methodology

Sample and data collection were implemented in accordance with procedures outlined in the SEAMAP data collections manual. Plankton samples were taken with the standard 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. A 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 0.950 mm mesh neuston net attached to a 1 x 2 m metal frame that was towed for 10 min at a vessel speed sufficient to keep the net opening half submerged in the water maintaining a sampling depth of 0.5 m. Preservation protocol called for the left bongo samples to be preserved in 10% formalin and then transferred to new 95% ETOH after 36 h. The original standard SEAMAP method of initial preservation in 10% formalin for 48 h was changed to 36 h in order to improve long term storage for genetic analysis. The right bongo and neuston samples were initially preserved in 95% ETOH and then transferred to new 95% ETOH after 24 h.

Zooplankton and fish egg samples were collected between stations using a CUFES. Water sampled by the CUFES was pumped from the center sea chest which had an intake approximately 3 m below the surface of the water. Seawater was filtered through a 0.505 mm sieve within the CUFES and collected over 30 min intervals between

stations.

CTD casts were conducted at each station and water was collected at the surface, chlorophyll maximum depth, and bottom depth, which was then used for chlorophyll extraction and measurement.

Collection Summary

Ichthyoplankton samples were collected at 113 stations by the NOAA Ship *Gordon Gunter* during this survey (Figure 1). A total of 47 stations were sampled during Leg 1 resulting in 47 right bongo, 47 left bongo, and 45 neuston samples (Table 1). A total of 66 stations were sampled on Leg 2 resulting in 66 right bongo, 66 left bongo, and 62 neuston samples (Table 1). One CTD cast was cancelled due to lightening (station 094), and two neuston tows were cancelled due to high winds (station 046 and 047). Three neuston samples were not kept due to the excessively large amount of biomass collected during the 10 min tow. No left bongo sample was saved at station 078 due to a crack in the cod end.

Jellyfish and ctenophores collected in bongo and neuston nets were thoroughly rinsed, removed from the plankton samples, and noted in the database. These organisms were identified, counted, and measured using graduated containers. Data were also recorded on data sheets for each station.

Sargassum spp. collected in bongo and neuston nets were thoroughly rinsed, removed from the plankton sample, and volume measured. The amount of *Sargassum* spp. in each net was recorded in the database.

Sample Processing/Archival Storage

Plankton samples were assigned SEAMAP numbers at sea on the NOAA Ship *Gordon Gunter* (Table 2). Right bongo samples and neuston samples will be shipped to ZSIOP Gdynia, Poland for sorting. All left bongo samples will be deposited in the SEAMAP Invertebrate Archive at Gulf Coast Research Laboratory, University of Southern Mississippi, Ocean Springs, MS for storage.

Environmental Data

Environmental data were collected with a Seabird SBE 9/11 Plus CTD at a total of 110 stations from the NOAA Ship *Gordon Gunter* during the survey. A cast to near bottom or a maximum depth of 200 m was conducted at all stations. The Seabird SBE 9/11 Plus CTD was used with a dual suite of the following sensors: SBE 03 temperature sensor, SBE digiquartz pressure sensor, and SBE 43 dissolved oxygen sensor. Only a single Wetlabs Wetstar fluorometer and Wetlabs C-Star transmissometer were used because of space limitations on the CTD. Additional environmental and station information was accessed from shipboard sensors 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. Each sampling event was conducted through the SCS and data (environmental and biological) were ingested into a Microsoft Access database.

Water samples were taken at all stations using Niskin bottles attached to a SBE

carousel sampler. Target depths for the water samples were at the surface (d5 m), chlorophyll maximum, and near-bottom (up to 200 m maximum). At stations where the water column was shallow and well mixed, only surface and bottom water samples were taken. Triplicate, 200 ml subsamples from the three sampled depths were analyzed for chlorophyll *a* concentration (µg/L) using a Turner Designs 10-AU-005 benchtop fluorometer with a 10-040R optical kit and the modified Welshmeyer method. Chlorophyll readings from each sample depth were averaged (Table 3) and entered into the Microsoft Access database. The CTD and chlorophyll data were processed at sea and ingested into the database. A copy of the database and CTD casts will be kept at the NOAA Laboratory in Pascagoula, MS.

Salinity (PSU), sea temperature (º C), and dissolved oxygen (mg/L) were recorded from the sensors on the CTD for the same depths as water samples for the chlorophyll *a* measurements. Near surface (d 5 m depth) values of sea temperature, dissolved oxygen, and salinity at stations sampled are presented in Figures 2-4. Chlorophyll *a* concentrations measured with the Turner benchtop fluorometer are presented in Figure 5.

A total of 572 near-surface fish egg and invertebrate zooplankton samples were collected between stations using a CUFES (Table 1, Figure 6). CUFES samples will remain at the NOAA/NMFS Mississippi Laboratories for sorting and analysis. These samples were collected along the trackline.

Throughout the cruise, an SBE TSG equipped with a Turner Designs 10-AU fluorometer continuously measured surface salinity, temperature, and fluorescence. These data were recorded on a dedicated computer and backed up daily to the ship's server. This complete dataset was copied off the ship's server and returned to the NMFS Pascagoula Laboratory for analysis and archiving.

Acoustic data was recorded continuously throughout the survey for all four frequencies; 18, 38, 120, 200 kHz. The resulting data files will be processed at the NOAA/NMFS Mississippi Laboratory at Stennis Space Center.

A new version of the Scientific Computing System (SCS) was installed on all of the scientific computers aboard *Gunter*, just prior to survey departure. This change caused a variety of problems in the data during the cruise. Errors caused by the R.M. Young Meteorological Translator crossing data were fixed at sea, and most of the logging issues in the ELG logging files were minimized by moving depth values to the end of the row of data. Timeout settings in events caused issues and longer timeout values minimized the errors. Post-cruise editing and investigations of problems is still underway to recover as much lost data as possible.

Table 2 Cont.

CRUISE PARTICIPANTS

Leg 1 (3 March – 14 March 2015)

Name / Title / Organization
Pam Bond / Field Party Chief / NMFS, Pascagoula, MS
Andy Millet / Fishery Biologist / Riverside[1], Pascagoula, MS
Denice Drass / Fishery Biologist / NMFS, Pascagoula, MS
John Moser / Fishery Biologist / NMFS, Pascagoula, MS
Alonzo Hamilton / Fishery Biologist / NMFS, Pascagoula, MS

[1] – Riverside Technology, Inc.

Leg 2 (17 March – 2 April 2015)

Name / Title / Organization
Pam Bond / Field Party Chief / NMFS, Pascagoula, MS
Andy Millet / Fishery Biologist / Riverside[1], Pascagoula, MS
Kim Johnson / Fishery Biologist / NMFS, Pascagoula, MS
Chrissy Stepongzi/ Fishery Biologist / Riverside[1], Pascagoula, MS
Madalyn Meaker / Fishery Biologist / Riverside[1], Pascagoula, MS
Julia West / Teacher-At-Sea / Brattleboro, VT

[1] – Riverside Technology, Inc.

Table 2 Cont.

Table 1. Summary of valid ichthyoplankton collections taken during the 2015 Winter SEAMAP Plankton survey aboard the NOAA Ship *Gordon Gunter*.

Leg	Right Bongo (0.335 mm)	Left Bongo (0.335 mm)	Neuston (0.950 mm)	CTD Casts	CUFES
I	47	47	45	45	268
II	66	65	62	65	304
Total	113	112	107	110	572

Table 2. Summary of plankton sampling effort during the Winter SEAMAP Plankton Survey conducted from the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015. P-sta = Pascagoula station number; S-Sta = SEAMAP station number; SAMPLE = SEAMAP sample number; RB = Right Bongo; LB = Left Bongo; NN = Neuston; Preservative = Initial preservative; FORM = Formalin; ETOH = Ethyl alcohol; DATE = Date in GMT; 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	B159	48898	RB	95% ETOH	4 Mar 15	29.00943	-85.50975
001	B159	48899	LB	10% Form	"	29.00943	-85.50975
001	B159	49000	NN	95% ETOH	"	29.00244	-85.51219
002	B155	49001	RB	95% ETOH	5 Mar 15	29.01436	-84.9969
002	B155	49002	LB	10% Form	"	29.01436	-84.9969
002	B155	49003	NN	95% ETOH	"	29.01007	-84.9955
003	B154	49004	RB	95% ETOH	"	28.51511	-84.99775
003	B154	49005	LB	10% Form	"	28.51511	-84.99775
003	B154	49006	NN	95% ETOH	"	28.51013	-85.00027
004	B150	49007	RB	95% ETOH	"	26.51331	-85.00147
004	B150	49008	LB	10% Form	"	26.51331	-85.00147
004	B150	49009	NN	95% ETOH	"	26.50218	-84.98684
005	B149	49010	RB	95% ETOH	6 Mar 15	26.00594	-84.98721
005	B149	49011	LB	10% Form	"	26.00594	-84.98721
005	B149	49012	NN	95% ETOH	"	26.00206	-84.99396
006	B073	49013	RB	95% ETOH	"	25.49755	-84.98584
006	B073	49014	LB	10% Form	"	25.49755	-84.98584
006	B073	49015	NN	95% ETOH	"	25.49045	-84.99745
007	B007	49016	RB	95% ETOH	"	24.99474	-85.01631
007	B007	49017	LB	10% Form	"	24.99474	-85.01631
007	B007	49018	NN	95% ETOH	6 Mar 15	24.99212	-85.00521
008	B072	49019	RB	95% ETOH	"	24.49784	-85.01664
008	B072	49020	LB	10% Form	"	24.49784	-85.01664
008	B072	49021	NN	95% ETOH	"	24.48913	-85.00041
009	B263	49022	RB	95% ETOH	"	24.50221	-84.5118
009	B263	49023	LB	10% Form	"	24.50221	-84.5118
009	B263	49024	NN	95% ETOH	"	24.48818	-84.49714
010	B128	49025	RB	95% ETOH	"	24.50216	-84.01416
010	B128	49026	LB	10% Form	"	24.50216	-84.01416
010	B128	49027	NN	95% ETOH	"	24.502	-84.00026
011	B125	49028	RB	95% ETOH	7 Mar 15	24.48993	-83.5149
011	B125	49029	LB	10% Form	"	24.48993	-83.5149
011	B125	49030	NN	95% ETOH	"	24.49686	-83.5108
012	B124	49031	RB	95% ETOH	"	24.99012	-83.50933
012	B124	49032	LB	10% Form	"	24.99012	-83.50933
012	B124	49033	NN	95% ETOH	"	24.99526	-83.50606
013	B129	49034	RB	95% ETOH	"	24.9941	-84.01439
013	B129	49035	LB	10% Form	"	24.9941	-84.01439
013	B129	49036	NN	95% ETOH	"	24.99656	-84.00748
014	B262	49037	RB	95% ETOH	"	25.00017	-84.50409

Table 2 Cont.

P-sta	S-Sta	Smp #	GEAR	Preservative	Date	Lat	Lon
014	B262	49038	LB	10% Form	7 Mar 15	25.00017	-84.50409
014	B262	49039	NN	95% ETOH	"	24.99207	-84.49695
015	B148	49040	RB	95% ETOH	"	25.49788	-84.51277
015	B148	49041	LB	10% Form	"	25.49788	-84.51277
015	B148	49042	NN	95% ETOH	8 Mar 15	25.48645	-84.49877
016	B130	49043	RB	95% ETOH	"	25.50022	-84.01816
016	B130	49044	LB	10% Form	"	25.50022	-84.01816
016	B130	49045	NN	95% ETOH	"	25.50229	-84.00876
017	B123	49046	RB	95% ETOH	"	25.51005	-83.51297
017	B123	49047	LB	10% Form	"	25.51005	-83.51297
017	B123	49048	NN	95% ETOH	"	25.51106	-83.50645
018	B122	49049	RB	95% ETOH	"	25.99964	-83.51702
018	B122	49050	LB	10% Form	"	25.99964	-83.51702
018	B122	49051	NN	95% ETOH	"	25.99898	-83.50972
019	B131	49052	RB	95% ETOH	"	26.00447	-84.01307
019	B131	49053	LB	10% Form	"	26.00447	-84.01307
019	B131	49054	NN	95% ETOH	"	26.00194	-84.00496
020	B147	49055	RB	95% ETOH	"	26.0017	-84.51315
020	B147	49056	LB	10% Form	"	26.0017	-84.51315
020	B147	49057	NN	95% ETOH	"	25.99461	-84.50133
021	B146	49058	RB	95% ETOH	9 Mar 15	26.50417	-84.51149
021	B146	49059	LB	10% Form	"	26.50417	-84.51149
021	B146	49060	NN	95% ETOH	"	26.49936	-84.50219
022	B132	49061	RB	95% ETOH	"	26.50508	-84.01539
022	B132	49062	LB	10% Form	"	26.50508	-84.01539
022	B132	49063	NN	95% ETOH	"	26.49729	-84.00623
023	B121	49064	RB	95% ETOH	9 Mar 15	26.5013	-83.51041
023	B121	49065	LB	10% Form	"	26.5013	-83.51041
023	B121	49066	NN	95% ETOH	"	26.49713	-83.50294
024	B120	49067	RB	95% ETOH	"	26.97195	-83.52244
024	B120	49068	LB	10% Form	"	26.97195	-83.52244
024	B120	49069	NN	95% ETOH	"	26.96716	-83.51614
025	B133	49070	RB	95% ETOH	"	27.01105	-84.01126
025	B133	49071	LB	10% Form	"	27.01105	-84.01126
025	B133	49072	NN	95% ETOH	"	27.00757	-84.00712
026	B151	49073	RB	95% ETOH	10 Mar 15	27.01325	-85.007
026	B151	49074	LB	10% Form	"	27.01325	-85.007
026	B151	49075	NN	95% ETOH	"	27.0035	-84.99799
027	B152	49076	RB	95% ETOH	"	27.50907	-85.01284
027	B152	49077	LB	10% Form	"	27.50907	-85.01284
027	B152	49078	NN	95% ETOH	"	27.50646	-85.00487
028	B144	49079	RB	95% ETOH	"	27.50713	-84.51048
028	B144	49080	LB	10% Form	"	27.50713	-84.51048
028	B144	49081	NN	95% ETOH	"	27.49923	-84.50185
029	B134	49082	RB	95% ETOH	"	27.51084	-84.01094
029	B134	49083	LB	10% Form	"	27.51084	-84.01094
029	B134	49084	NN	95% ETOH	"	27.50685	-84.00448
030	B135	49085	RB	95% ETOH	"	28.01357	-84.0031
030	B135	49086	LB	10% Form	"	28.01357	-84.0031
030	B135	49087	NN	95% ETOH	"	28.01122	-83.99714
031	B143	49088	RB	95% ETOH	"	28.01326	-84.50352
031	B143	49089	LB	10% Form	"	28.01326	-84.50352

Table 2 Cont.

P-sta	S-Sta	Smp #	GEAR	Preservative	Date	Lat	Lon
031	B143	49090	NN	95% ETOH	10 Mar 15	28.00742	-84.50329
032	B153	49091	RB	95% ETOH	11 Mar 15	28.01566	-84.96829
032	B153	49092	LB	10% Form	"	28.01566	-84.96829
032	B153	49093	NN	95% ETOH	"	28.00685	-84.96152
033	B142	49094	RB	95% ETOH	"	28.50476	-84.47826
033	B142	49095	LB	10% Form	"	28.50476	-84.47826
033	B142	49096	NN	95% ETOH	"	28.49884	-84.47896
034	B160	49097	RB	95% ETOH	"	28.67705	-85.51448
034	B160	49098	LB	10% Form	"	28.67705	-85.51448
034	B160	49099	NN	95% ETOH	"	28.67025	-85.50771
035	B164	49100	RB	95% ETOH	"	28.51104	-86.00986
035	B164	49101	LB	10% Form	"	28.51104	-86.00986
035	B164	49102	NN	95% ETOH	"	28.50217	-86.00143
036	B165	49103	RB	95% ETOH	"	29.21224	-86.00983
036	B165	49104	LB	10% Form	"	29.21224	-86.00983
036	B165	49105	NN	95% ETOH	12 Mar 15	29.21514	-85.99935
037	B166	49106	RB	95% ETOH	"	29.50528	-86.01285
037	B166	49107	LB	10% Form	"	29.50528	-86.01285
037	B166	49108	NN	95% ETOH	"	29.50589	-86.00608
038	B168	49109	RB	95% ETOH	"	30.002	-86.51014
038	B168	49110	LB	10% Form	"	30.002	-86.51014
038	B168	49111	NN	95% ETOH	"	29.9994	-86.49892
039	B169	49112	RB	95% ETOH	"	29.51037	-86.49694
039	B169	49113	LB	10% Form	"	29.51037	-86.49694
039	B169	49114	NN	95% ETOH	"	29.50122	-86.49927
040	B170	49115	RB	95% ETOH	"	29.01804	-86.50395
040	B170	49116	LB	10% Form	12 Mar 15	29.01804	-86.50395
040	B170	49117	NN	95% ETOH	"	29.00728	-86.50032
041	B002	49118	RB	95% ETOH	"	29.00327	-87.01131
041	B002	49119	LB	10% Form	"	29.00327	-87.01131
041	B002	49120	NN	95% ETOH	"	28.99649	-87
042	B171	49121	RB	95% ETOH	13 Mar 15	29.51307	-86.99302
042	B171	49122	LB	10% Form	"	29.51307	-86.99302
042	B171	49123	NN	95% ETOH	"	29.50409	-86.99235
043	B320	49124	RB	95% ETOH	"	29.81068	-87.00826
043	B320	49125	LB	10% Form	"	29.81068	-87.00826
043	B320	49126	NN	95% ETOH	"	29.81545	-87.00151
044	B172	49127	RB	95% ETOH	"	29.9936	-87.0032
044	B172	49128	LB	10% Form	"	29.9936	-87.0032
044	B172	49129	NN	95% ETOH	"	29.98839	-86.99811
045	B174	49130	RB	95% ETOH	"	29.52585	-87.4876
045	B174	49131	LB	10% Form	"	29.52585	-87.4876
045	B174	49132	NN	95% ETOH	"	29.52385	-87.48717
046	B322	49133	RB	95% ETOH	"	29.26345	-87.99859
046	B322	49134	LB	10% Form	"	29.26345	-87.99859
047	B176	49135	RB	95% ETOH	14 Mar 15	29.50453	-88.0231
047	B176	49136	LB	10% Form	"	29.50453	-88.0231
048	B173	49137	RB	95% ETOH	18 Mar 15	29.97995	-87.48456
048	B173	49138	LB	10% Form	"	29.97995	-87.48456
048	B173	49139	NN	95% ETOH	"	29.98302	-87.48835
049	B177	49140	RB	95% ETOH	"	29.99131	-87.93994
049	B177	49141	LB	10% Form	"	29.99131	-87.93994

Table 2 Cont.

P-sta	S-Sta	Smp #	GEAR	Preservative	Date	Lat	Lon
049	B177	49142	NN	95% ETOH	18 Mar 15	29.99091	-87.94338
050	B178	49143	RB	95% ETOH	"	29.98596	-88.48273
050	B178	49144	LB	10% Form	"	29.98596	-88.48273
050	B178	49145	NN	95% ETOH	"	29.98869	-88.4788
051	B179	49146	RB	95% ETOH	"	29.50027	-88.51666
051	B179	49147	LB	10% Form	"	29.50027	-88.51666
051	B179	49148	NN	95% ETOH	"	29.5062	-88.50561
052	B323	49149	RB	95% ETOH	"	29.21929	-88.51333
052	B323	49150	LB	10% Form	"	29.21929	-88.51333
052	B323	49151	NN	95% ETOH	"	29.21866	-88.50978
053	B180	49152	RB	95% ETOH	"	29.00853	-88.51061
053	B180	49153	LB	10% Form	"	29.00853	-88.51061
054	B001	49154	RB	95% ETOH	19 Mar 15	29.01443	-88.00092
054	B001	49155	LB	10% Form	"	29.01443	-88.00092
055	B252	49156	RB	95% ETOH	"	28.51295	-87.50002
055	B252	49157	LB	10% Form	"	28.51295	-87.50002
055	B252	49158	NN	95% ETOH	"	28.50766	-87.50682
056	B081	49159	RB	95% ETOH	"	28.49862	-87.98395
056	B081	49160	LB	10% Form	"	28.49862	-87.98395
057	B251	49161	RB	95% ETOH	"	28.51331	-88.49661
057	B251	49162	LB	10% Form	"	28.51331	-88.49661
057	B251	49163	NN	95% ETOH	"	28.50376	-88.48314
058	B250	49164	RB	95% ETOH	"	28.00067	-88.50844
058	B250	49165	LB	10% Form	"	28.00067	-88.50844
058	B250	49166	NN	95% ETOH	"	27.98646	-88.50327
059	B083	49167	RB	95% ETOH	"	28.00191	-88.99194
059	B083	49168	LB	10% Form	19 Mar 15	28.00191	-88.99194
059	B083	49169	NN	95% ETOH	"	28.00073	-88.98001
060	B184	49170	RB	95% ETOH	20 Mar 15	28.49074	-89.00808
060	B184	49171	LB	10% Form	"	28.49074	-89.00808
060	B184	49172	NN	95% ETOH	"	28.50192	-88.9999
061	B186	49173	RB	95% ETOH	"	28.50697	-89.50198
061	B186	49174	LB	10% Form	"	28.50697	-89.50198
061	B186	49175	NN	95% ETOH	"	28.49848	-89.50343
062	B185	49176	RB	95% ETOH	"	28.00795	-89.49093
062	B185	49177	LB	10% Form	"	28.00795	-89.49093
062	B185	49178	NN	95% ETOH	"	28.00623	-89.49658
063	B061	48900	RB	95% ETOH	"	27.50847	-89.99624
063	B061	48901	LB	10% Form	"	27.50847	-89.99624
063	B061	48902	NN	95% ETOH	"	27.50584	-89.99313
064	B016	48903	RB	95% ETOH	"	27.99278	-90.0067
064	B016	48904	LB	10% Form	"	27.99278	-90.0067
064	B016	48905	NN	95% ETOH	"	28.00175	-89.99626
065	B325	48906	RB	95% ETOH	21 Mar 15	28.33086	-90.00851
065	B325	48907	LB	10% Form	"	28.33086	-90.00851
065	B325	48908	NN	95% ETOH	"	28.34136	-90.00993
066	B189	48909	RB	95% ETOH	"	28.48676	-90.00237
066	B189	48910	LB	10% Form	"	28.48676	-90.00237
066	B189	48911	NN	95% ETOH	"	28.49501	-90.00546
067	B191	48912	RB	95% ETOH	"	28.49964	-90.49473
067	B191	48913	LB	10% Form	"	28.49964	-90.49473
067	B191	48914	NN	95% ETOH	"	28.49722	-90.5008

Table 2 Cont.

P-sta	S-Sta	Smp #	GEAR	Preservative	Date	Lat	Lon
068	B190	48915	RB	95% ETOH	21 Mar 15	28.09969	-90.46989
068	B190	48916	LB	10% Form	"	28.09969	-90.46989
068	B190	48917	NN	95% ETOH	"	28.09611	-90.47298
069	B247	48918	RB	95% ETOH	"	27.50987	-90.49493
069	B247	48919	LB	10% Form	"	27.50987	-90.49493
069	B247	48920	NN	95% ETOH	"	27.50706	-90.4883
070	B060	48921	RB	95% ETOH	"	27.50561	-91.00113
070	B060	48922	LB	10% Form	"	27.50561	-91.00113
070	B060	48923	NN	95% ETOH	"	27.50862	-90.99948
071	B017	48924	RB	95% ETOH	22 Mar 15	28.00324	-90.99827
071	B017	48925	LB	10% Form	"	28.00324	-90.99827
071	B017	48926	NN	95% ETOH	"	27.9954	-90.99448
072	B194	48927	RB	95% ETOH	"	28.50297	-90.99755
072	B194	48928	LB	10% Form	"	28.50297	-90.99755
072	B194	48929	NN	95% ETOH	"	28.50121	-91.00208
073	B196	48930	RB	95% ETOH	"	28.49655	-91.49161
073	B196	48931	LB	10% Form	"	28.49655	-91.49161
073	B196	48932	NN	95% ETOH	"	28.49791	-91.49842
074	B195	48933	RB	95% ETOH	"	28.01391	-91.50086
074	B195	48934	LB	10% Form	"	28.01391	-91.50086
074	B195	48935	NN	95% ETOH	"	28.01487	-91.50667
075	B246	48936	RB	95% ETOH	"	27.5004	-91.49499
075	B246	48937	LB	10% Form	"	27.5004	-91.49499
075	B246	48938	NN	95% ETOH	"	27.49822	-91.50233
076	B057	48939	RB	95% ETOH	"	27.49718	-92.00575
076	B057	48940	LB	10% Form	"	27.49718	-92.00575
076	B057	48941	NN	95% ETOH	22 Mar 15	27.49996	-91.99452
077	B022	48942	RB	95% ETOH	23 Mar 15	27.98951	-91.9903
077	B022	48943	LB	10% Form	"	27.98951	-91.9903
077	B022	48944	NN	95% ETOH	"	27.99866	-91.99016
078	B201	48945	RB	95% ETOH	"	28.49245	-92.00751
078	B201	48946	NN	95% ETOH	"	28.49861	-92.00853
079	B203	48947	RB	95% ETOH	"	28.49594	-92.50306
079	B203	48948	LB	10% Form	"	28.49594	-92.50306
079	B203	48949	NN	95% ETOH	"	28.50062	-92.50151
080	B202	48950	RB	95% ETOH	"	27.9862	-92.50276
080	B202	48951	LB	10% Form	"	27.9862	-92.50276
080	B202	48952	NN	95% ETOH	"	27.98966	-92.49916
081	B245	48953	RB	95% ETOH	"	27.49142	-92.50455
081	B245	48954	LB	10% Form	"	27.49142	-92.50455
081	B245	48955	NN	95% ETOH	"	27.49939	-92.49598
082	B056	48956	RB	95% ETOH	24 Mar 15	27.50385	-93.01397
082	B056	48957	LB	10% Form	"	27.50385	-93.01397
082	B056	48958	NN	95% ETOH	"	27.51257	-92.9942
083	B023	48959	RB	95% ETOH	"	28.0106	-93.01234
083	B023	48960	LB	10% Form	"	28.0106	-93.01234
083	B023	48961	NN	95% ETOH	"	28.01014	-93.00077
084	B208	48962	RB	95% ETOH	"	28.5003	-92.99704
084	B208	48963	LB	10% Form	"	28.5003	-92.99704
084	B208	48964	NN	95% ETOH	"	28.50082	-93.0033
085	B210	48965	RB	95% ETOH	"	28.51102	-93.50897
085	B210	48966	LB	10% Form	"	28.51102	-93.50897

Table 2 Cont.

P-sta	S-Sta	Smp #	GEAR	Preservative	Date	Lat	Lon
085	B210	48967	NN	95% ETOH	24 Mar 15	28.50459	-93.50552
086	B209	48968	RB	95% ETOH	"	28.03591	-93.5494
086	B209	48969	LB	10% Form	"	28.03591	-93.5494
086	B209	48970	NN	95% ETOH	"	28.03691	-93.53639
087	B244	48971	RB	95% ETOH	"	27.49739	-93.48578
087	B244	48972	LB	10% Form	"	27.49739	-93.48578
087	B244	48973	NN	95% ETOH	25 Mar 15	27.5023	-93.49443
088	B053	48974	RB	95% ETOH	"	27.51404	-93.99557
088	B053	48975	LB	10% Form	"	27.51404	-93.99557
088	B053	48976	NN	95% ETOH	"	27.50735	-94.00259
089	B216	48977	RB	95% ETOH	"	28.01244	-94.00909
089	B216	48978	LB	10% Form	"	28.01244	-94.00909
089	B216	48979	NN	95% ETOH	"	28.0085	-94.01053
090	B215	48980	RB	95% ETOH	"	28.50807	-93.99894
090	B215	48981	LB	10% Form	"	28.50807	-93.99894
090	B215	48982	NN	95% ETOH	"	28.50335	-93.99891
091	B218	48983	RB	95% ETOH	"	28.51249	-94.50963
091	B218	48984	LB	10% Form	"	28.51249	-94.50963
091	B218	48985	NN	95% ETOH	"	28.50621	-94.50719
092	B217	48986	RB	95% ETOH	"	28.01417	-94.50367
092	B217	48987	LB	10% Form	"	28.01417	-94.50367
092	B217	48988	NN	95% ETOH	"	28.00825	-94.50232
093	B243	48989	RB	95% ETOH	26 Mar 15	27.51596	-94.50004
093	B243	48990	LB	10% Form	"	27.51596	-94.50004
093	B243	48991	NN	95% ETOH	"	27.50686	-94.50648
094	B224	48992	RB	95% ETOH	"	27.50688	-94.99971
094	B224	48993	NN	95% ETOH	26 Mar 15	27.49775	-95.00076
094	B224	48994	LB	10% Form	"	27.50688	-94.99971
095	B223	48995	RB	95% ETOH	"	28.01331	-94.99666
095	B223	48996	LB	10% Form	"	28.01331	-94.99666
095	B223	48997	NN	95% ETOH	"	28.00791	-95.00055
096	B222	48998	RB	95% ETOH	"	28.49952	-95.01576
096	B222	48999	LB	10% Form	"	28.49952	-95.01576
096	B222	49179	NN	95% ETOH	"	28.50188	-95.00968
097	B228	49180	RB	95% ETOH	"	28.48479	-95.49743
097	B228	49181	LB	10% Form	"	28.48479	-95.49743
097	B228	49182	NN	95% ETOH	"	28.48874	-95.50312
098	B226	49183	RB	95% ETOH	"	27.98829	-95.50381
098	B226	49184	LB	10% Form	"	27.98829	-95.50381
099	B234	49185	RB	95% ETOH	27 Mar 15	27.49575	-96.51788
099	B234	49186	LB	10% Form	"	27.49575	-96.51788
099	B234	49187	NN	95% ETOH	"	27.50006	-96.50811
100	B237	49188	RB	95% ETOH	"	26.99099	-96.50915
100	B237	49189	LB	10% Form	"	26.99099	-96.50915
100	B237	49190	NN	95% ETOH	"	26.99616	-96.50239
101	B239	49191	RB	95% ETOH	28 Mar 15	26.48997	-96.51184
101	B239	49192	LB	10% Form	"	26.48997	-96.51184
101	B239	49193	NN	95% ETOH	"	26.49187	-96.50342
102	B316	49194	RB	95% ETOH	"	26.0283	-96.5126
102	B316	49195	LB	10% Form	"	26.0283	-96.5126
102	B316	49196	NN	95% ETOH	"	26.02064	-96.51488
103	B030	49197	RB	95% ETOH	"	26.02814	-95.9874

Table 2 Cont.

P-sta	S-Sta	Smp #	GEAR	Preservative	Date	Lat	Lon
103	B030	49198	LB	10% Form	28 Mar 15	26.02814	-95.9874
103	B030	49199	NN	95% ETOH	"	26.02304	-95.99935
104	B240	49200	RB	95% ETOH	"	26.51192	-95.99061
104	B240	49201	LB	10% Form	"	26.51192	-95.99061
104	B240	49202	NN	95% ETOH	"	26.50743	-96.00419
105	B031	49203	RB	95% ETOH	"	27.01045	-95.98905
105	B031	49204	LB	10% Form	"	27.01045	-95.98905
105	B031	49205	NN	95% ETOH	"	27.00709	-95.99322
106	B232	49206	RB	95% ETOH	"	27.55807	-95.98837
106	B232	49207	LB	10% Form	"	27.55807	-95.98837
106	B232	49208	NN	95% ETOH	"	27.5499	-95.99284
107	B231	49209	RB	95% ETOH	29 Mar 15	28.01332	-95.99171
107	B231	49210	LB	10% Form	"	28.01332	-95.99171
107	B231	49211	NN	95% ETOH	"	28.00881	-95.99435
108	B326	49212	RB	95% ETOH	"	27.75705	-95.49081
108	B326	49213	LB	10% Form	"	27.75705	-95.49081
108	B326	49214	NN	95% ETOH	"	27.75198	-95.4946
109	B225	49215	RB	95% ETOH	"	27.51397	-95.49196
109	B225	49216	LB	10% Form	"	27.51397	-95.49196
109	B225	49217	NN	95% ETOH	"	27.50874	-95.50056
110	B242	49218	RB	95% ETOH	"	27.01416	-95.49168
110	B242	49219	LB	10% Form	"	27.01416	-95.49168
110	B242	49220	NN	95% ETOH	"	27.0054	-95.49834
111	B253	49221	RB	95% ETOH	01 Apr 15	28.50665	-86.48338
111	B253	49222	LB	10% Form	"	28.50665	-86.48338
111	B253	49223	NN	95% ETOH	"	28.50268	-86.49242
112	B080	49224	RB	95% ETOH	01 Apr 15	28.50509	-86.98853
112	B080	49225	LB	10% Form	"	28.50509	-86.98853
112	B080	49226	NN	95% ETOH	"	28.49806	-87.00445
113	B175	49227	RB	95% ETOH	"	29.00914	-87.4853
113	B175	49228	LB	10% Form	"	29.00914	-87.4853
113	B175	49229	NN	95% ETOH	"	28.99877	-87.48119

Table 3. Summary of average chlorophyll a measurements at three depths (surface, chlorophyll maximum, and bottom) for each station during the 2015 Winter SEAMAP Plankton Survey conducted aboard the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015. P-Sta # = Pascagoula station number; D-Code = Sample location in water column (S = Surface, C-Max = Chlorophyll maximum, Max-D = Bottom or maximum depth of 200 m); Depth = Sample depth (m); Chl-a = averaged Chlorophyll a measurement (µg/L).

P-Sta #	D-Code	Depth	Chl-a
001	S	3.1	2.143
001	C- MAX	13	2.703
001	MAX-D	73.7	1.583
004	S	3.6	0.221
004	C- MAX	36.8	1.037
004	MAX-D	201.2	0.356
005	S	3.1	0.196
005	C- MAX	54.8	0.885
005	MAX-D	202.2	0.019
006	S	2.4	0.126
006	C- MAX	72	0.494
006	MAX-D	200.4	0.009
007	S	2.9	0.180
007	C- MAX	69.9	0.925
007	MAX-D	200.5	0.027
008	S	2.9	0.219
008	C- MAX	66	0.972
008	MAX-D	199.6	0.034
009	S	2.7	0.265
009	C- MAX	49.7	1.267
009	MAX-D	198.9	0.014
010	S	3.7	0.264
010	C- MAX	55.3	1.183
010	MAX-D	201.9	0.009
011	S	3.8	0.173
011	C- MAX	51.7	1.217
011	MAX-D	202.5	0.010
012	S	3.4	0.380
012	C- MAX	53.4	1.160
012	MAX-D	68.3	0.747
013	S	2.4	0.014
013	C- MAX	54.9	0.091
013	MAX-D	125.2	0.002
014	S	3.5	0.023
014	C- MAX	47.9	0.661
014	MAX-D	200.1	0.054
015	S	3.3	0.530
015	C- MAX	42.4	0.723
015	MAX-D	201.4	0.060
016	S	3.2	0.408
016	C- MAX	38.7	1.055
016	MAX-D	140.8	0.025
017	S	2.9	0.530
017	MAX D	68.6	1.017
018	S	3.6	0.456
018	MAX D	63.5	0.876
019	S	4.2	0.583
019	C- MAX	36.6	1.497
019	MAX-D	138.4	0.035
020	S	3.7	0.470
020	C- MAX	34.5	0.910
020	MAX-D	201.8	0.020
021	S	3.5	0.334
021	C- MAX	63.8	0.683
021	MAX-D	197.3	0.022
022	S	2.6	0.434
022	C- MAX	58.7	0.880
022	MAX-D	125.7	0.025
023	S	2.9	0.340
023	MAX D	56.9	1.015
024	S	2.6	0.263
024	MAX D	52.8	0.623
025	S	3	0.452
025	C- MAX	47	1.124
025	MAX-D	83.6	0.523
026	S	3.3	0.391
026	C- MAX	54.4	1.042
026	MAX-D	200.5	0.007
027	S	2.7	0.410
027	C- MAX	25.9	0.598
027	MAX-D	200	0.013
028	S	2.2	0.496
028	C- MAX	50.4	1.192
028	MAX-D	130.6	0.042
029	S	2.6	0.391
029	MAX D	59.1	0.700
030	S	2.6	0.320
030	MAX D	46.3	0.838
031	S	2.4	0.657
031	C- MAX	44.6	0.935

Table 3 continued.

P-Sta #	D-Code	Depth	Chl-a
031	MAX-D	77.2	0.555
032	S	3.4	1.190
032	C- MAX	22.8	1.142
032	MAX-D	201.9	0.014
033	S	1.9	0.284
033	MAX D	45.6	0.568
034	S	2.4	0.193
034	C- MAX	62	0.281
034	MAX-D	179.3	0.105
035	S	2.6	0.226
035	C- MAX	58.3	1.043
035	MAX-D	200.3	0.021
036	S	2.5	0.540
036	C- MAX	28.4	1.192
036	MAX-D	190.4	0.030
037	S	2.7	1.053
037	MAX D	56.4	0.522
038	S	2.1	0.265
038	MAX D	58.2	1.112
039	S	2.7	0.302
039	C- MAX	51.6	0.355
039	MAX-D	202	0.025
040	S	2.9	0.340
040	C- MAX	38.1	0.510
040	MAX-D	199.4	0.012
041	S	2.9	0.523
041	C- MAX	74.4	0.585
042	MAX-D	4.2	0.423
042	C- MAX	53.8	0.495
042	MAX-D	202.5	0.019
043	S	2.3	0.797
043	C- MAX	14.2	0.838
043	MAX-D	189	0.076
044	S	2.6	0.565
044	MAX D	81	1.202
045	S	3.2	0.510
045	C- MAX	30.1	0.515
045	MAX-D	64.2	0.319
048	S	2.6	0.567
048	MAX D	29.5	2.162
049	S	2.5	2.863
049	MAX D	22.4	1.505
050	S	2.6	2.650
050	MAX D	25.7	3.422
051	S	2.8	4.213
051	C- MAX	4.2	4.440
051	MAX-D	47.7	0.520
052	C- MAX	22.3	1.772
052	MAX-D	111.7	0.172

P-Sta #	D-Code	Depth	Chl-a
053	S	2.5	0.466
053	C- MAX	29	1.270
053	MAX-D	200.1	0.014
054	S	2.3	0.246
054	C- MAX	55.9	1.250
054	MAX-D	202	0.007
055	S	2.2	0.185
055	C- MAX	54.9	1.827
055	MAX-D	201.6	0.019
056	S	2.3	0.180
056	C- MAX	48.5	1.245
056	MAX-D	201.7	0.010
057	S	2.6	0.363
057	C- MAX	54.2	0.845
057	MAX-D	200.2	0.005
058	S	2.7	0.278
058	C- MAX	54.9	1.142
058	MAX-D	200.8	0.006
059	S	2.9	0.209
059	C- MAX	47.6	1.283
059	MAX-D	201.7	0.012
060	S	2.8	0.892
060	C- MAX	62.4	0.790
060	MAX-D	200.6	0.013
061	S	2.2	7.367
061	MAX D	201.4	0.015
062	S	2.3	0.266
062	C- MAX	42.1	1.135
062	MAX-D	201	0.031
063	S	2.6	0.122
063	C- MAX	83.3	1.073
063	MAX-D	200.2	0.008
064	S	2.5	0.211
064	C- MAX	84.7	1.163
064	MAX-D	199.6	0.011
065	S	2.8	0.288
065	C- MAX	62	1.127
065	MAX-D	106.5	0.091
066	S	2.4	0.269
066	C- MAX	50.5	1.843
066	MAX-D	83.1	0.147
067	S	2.2	0.261
067	MAX D	38.2	2.277
068	S	2.2	0.244
068	C- MAX	74.9	1.238
068	MAX-D	142.1	0.176
069	S	2.5	0.137
069	C- MAX	87.9	0.730
069	MAX-D	200.8	0.007

Table 3 continued.

P-Sta #	D-Code	Depth	Chl-a
070	S	2.3	0.162
070	C- MAX	57.2	1.190
070	MAX-D	199.7	0.006
071	S	2.6	0.314
071	C- MAX	57.1	1.063
071	MAX-D	166.1	0.026
072	S	2.2	2.568
072	C- MAX	10.2	3.975
072	MAX-D	32.7	2.507
073	S	2.4	0.359
073	MAX D	45.7	2.842
074	S	3.2	0.308
074	C- MAX	45.3	1.014
074	MAX-D	151.1	0.049
075	S	2.6	0.342
075	MAX D	200.6	0.009
076	S	2.7	0.321
076	MAX D	199.7	0.020
077	C- MAX	37	0.643
077	MAX-D	118.4	0.017
078	S	2.8	0.295
078	MAX D	48.7	2.677
079	S	3.3	0.357
079	MAX D	46.2	1.640
080	S	2.4	0.324
080	C- MAX	66.6	1.665
080	MAX-D	108.5	0.095
081	S	4	0.160
081	C- MAX	64.3	0.993
081	MAX-D	199.4	0.023
082	S	2.8	0.163
082	C- MAX	90.6	0.927
083	S	2.3	0.300
083	C- MAX	39.7	1.260
083	MAX-D	106.2	0.575
084	S	2.1	0.277
084	MAX D	44.8	0.995
085	S	2.7	0.305
085	MAX D	41.6	2.789
086	S	3	0.212
086	C- MAX	35.1	1.207
086	MAX-D	86.1	0.262
087	S	2.4	0.138
087	C- MAX	68.2	1.098
087	MAX-D	200	0.004
088	S	2.8	0.175
088	C- MAX	37.8	1.115
088	MAX-D	201.1	0.007
089	S	2.8	0.154
089	C- MAX	40.3	1.473
089	MAX-D	82.1	0.910
090	S	2.6	0.297
090	MAX D	39.3	1.312
091	S	3.1	0.266
091	MAX D	36.1	0.558
092	S	2.8	0.291
092	C- MAX	26.4	1.318
092	MAX-D	72.7	0.850
093	S	3.6	0.191
093	C- MAX	44.1	1.490
093	MAX-D	200.7	0.009
095	S	2.7	0.277
095	C- MAX	29.2	2.087
095	MAX-D	79.9	0.740
096	S	2.6	0.428
096	MAX D	31.3	0.778
097	S	3.2	0.607
097	MAX D	24.5	3.068
098	S	4.1	0.430
098	C- MAX	31.4	5.350
098	MAX-D	55.3	1.122
099	S	2.4	0.251
100	S	3.3	0.220
100	C- MAX	51.5	1.163
100	MAX-D	136.1	0.347
101	S	3.2	0.415
101	C- MAX	47.7	0.832
101	MAX-D	82.1	0.808
102	S	2.6	0.273
102	C- MAX	29.3	1.188
102	MAX-D	60.4	1.030
103	S	2.5	0.246
103	C- MAX	60.8	1.328
103	MAX-D	200.4	0.019
104	S	3.4	0.273
104	C- MAX	69.6	0.853
104	MAX-D	198.5	0.013
105	S	2.9	0.214
105	C- MAX	62.2	0.915
105	MAX-D	199.9	0.011
106	S	3.1	0.199
106	C- MAX	63.5	1.540
106	MAX-D	176.1	0.042
107	S	2.8	0.277
107	MAX D	43.9	1.993
108	S	49.3	0.802
108	MAX D	102.5	0.482
109	S	3.2	0.254

Table 3 continued.

P-Sta #	D-Code	Depth	Chl-a
109	C- MAX	69.5	1.060
109	MAX-D	201.6	0.010
110	S	2.2	0.175
110	C- MAX	68.9	0.843
110	MAX-D	199.9	0.009
111	S	2.7	0.144
111	C- MAX	52.5	1.622
111	MAX-D	200	0.010
112	S	2.7	0.161
112	C- MAX	47.8	0.868
112	MAX-D	200.2	0.007
113	S	2.8	0.179
113	C- MAX	50.4	1.183
113	MAX-D	201.6	0.009

Figure 1. Plankton stations completed during the SEAMAP Winter Plankton Survey aboard the NOAA Ship *Gordon* Gunter, cruise GU-15-01, 3 March – 2 April 2015. Completed bongo tows are represented by a plus, neuston tows are represented by an "X", and CTD casts are represented by open circles.

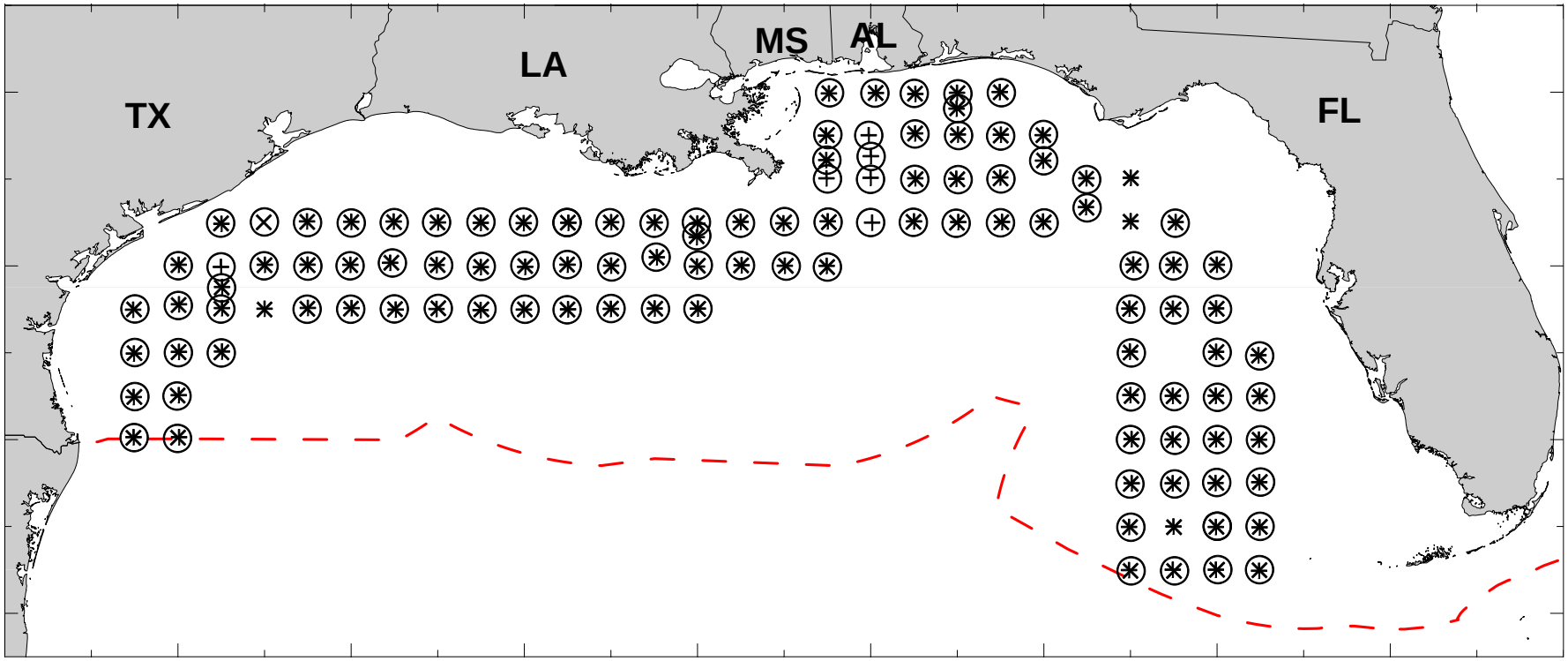

Figure 2. Sea temperature (º C) near the surface (d 5 m depth) at plankton stations during the SEAMAP Winter Plankton Survey aboard the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015.

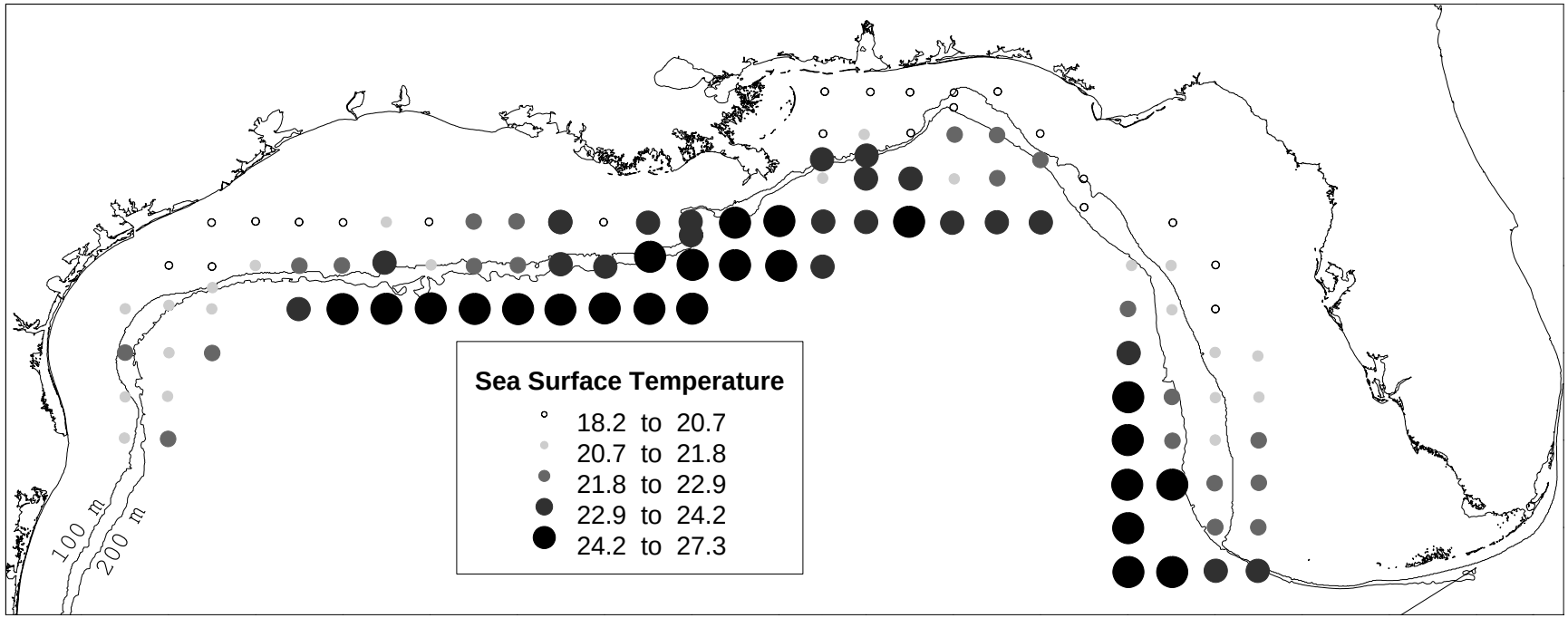

Figure 3. Dissolved oxygen (mg/L) near the surface (d 5 m depth) at plankton stations during the SEAMAP Winter Plankton Survey aboard the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015.

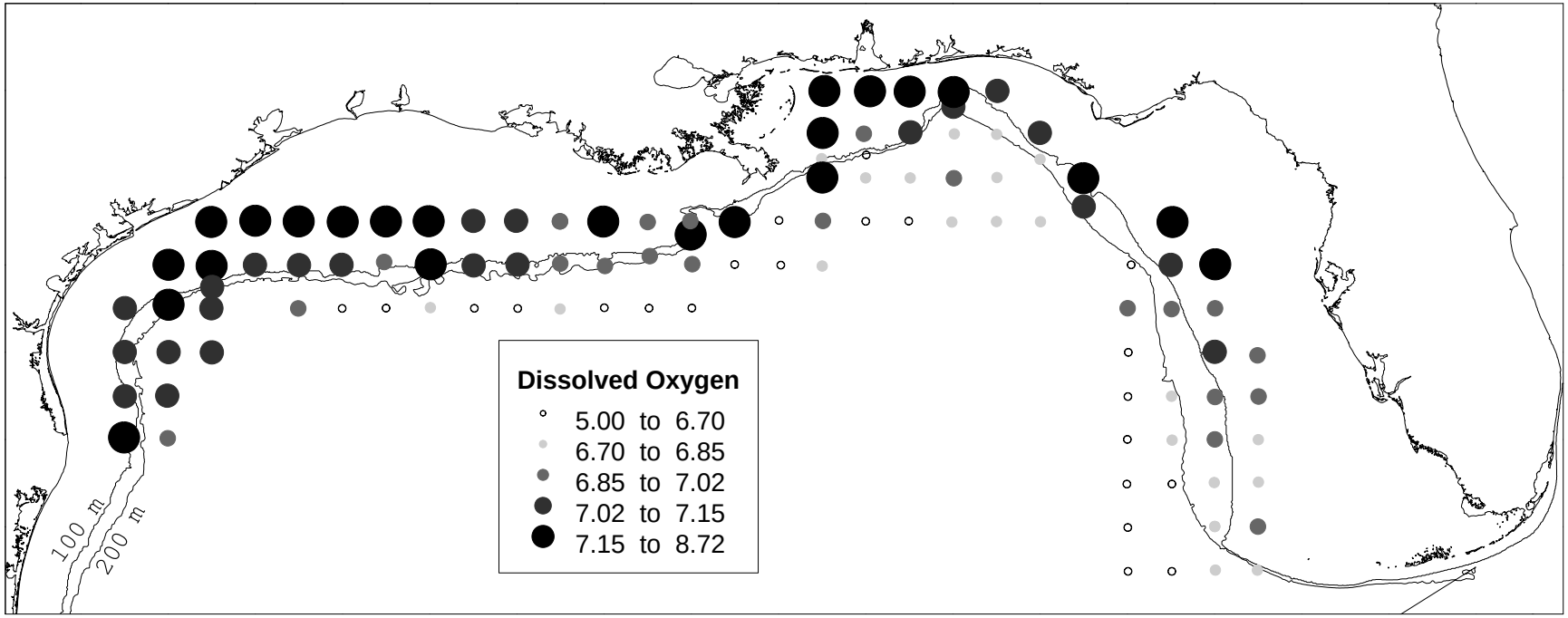

Figure 4. Salinity (PSU) near the surface (d 5 m depth) at plankton stations during the SEAMAP Winter Plankton Survey aboard the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015.

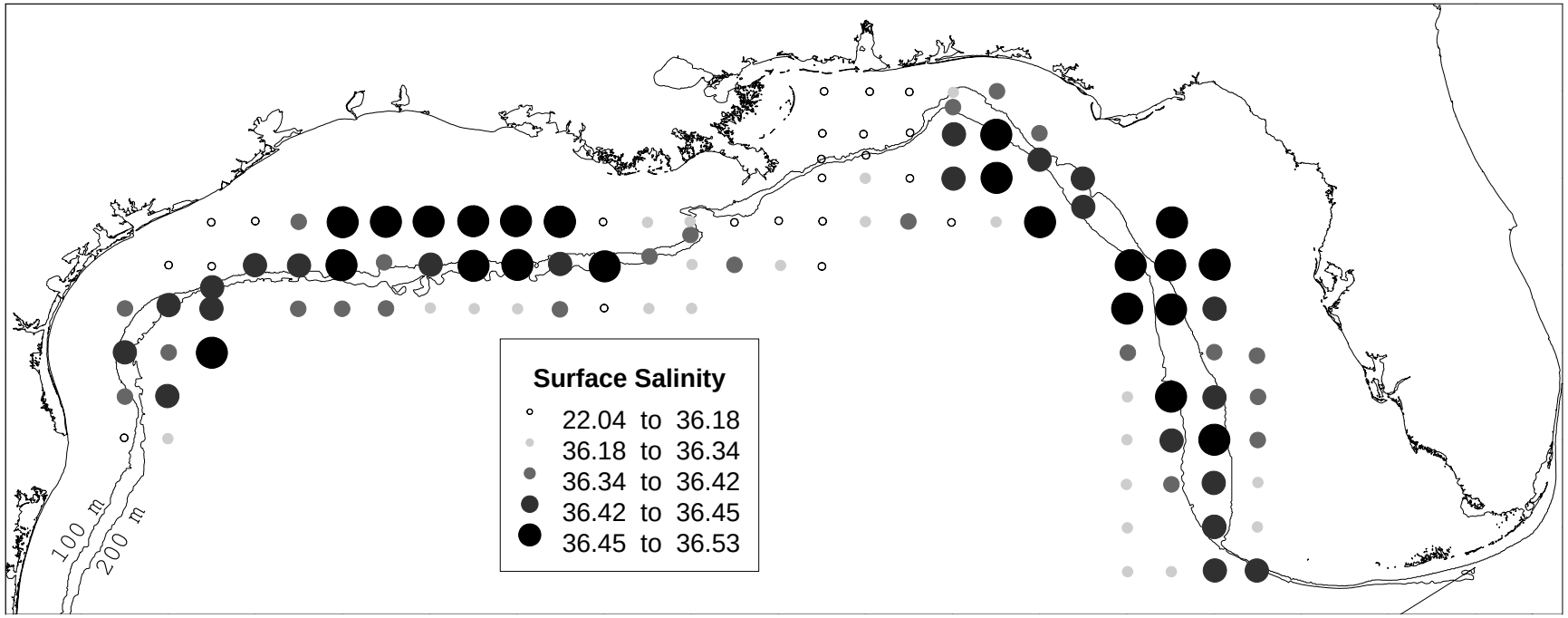

Figure 5. Averaged chlorophyll a concentrations (µg/L) near the surface (d 5 m depth) at plankton stations during the SEAMAP Winter Plankton Survey aboard the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015.

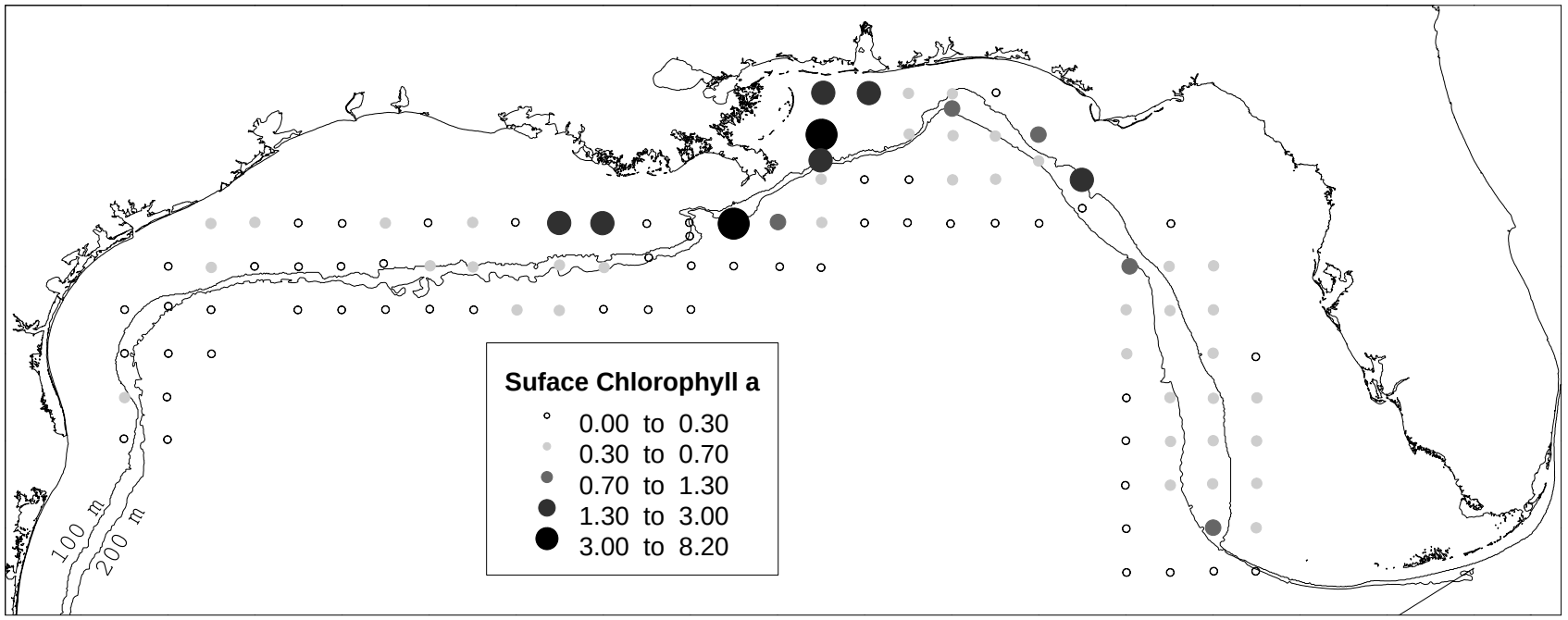

Figure 6. Locations of CUFES samples taken during the SEAMAP Winter Plankton Survey aboard the NOAA Ship *Gordon Gunter*, cruise GU-15-01, 3 March – 2 April 2015.