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: 12/14/2017

Platform: NOAA Ship GORDON GUNTER

Cruise Number: GU-17-04

Project Title: SEAMAP Fall Ichthyoplankton

Cruise Dates: 09/04/2017 - 09/30/2017

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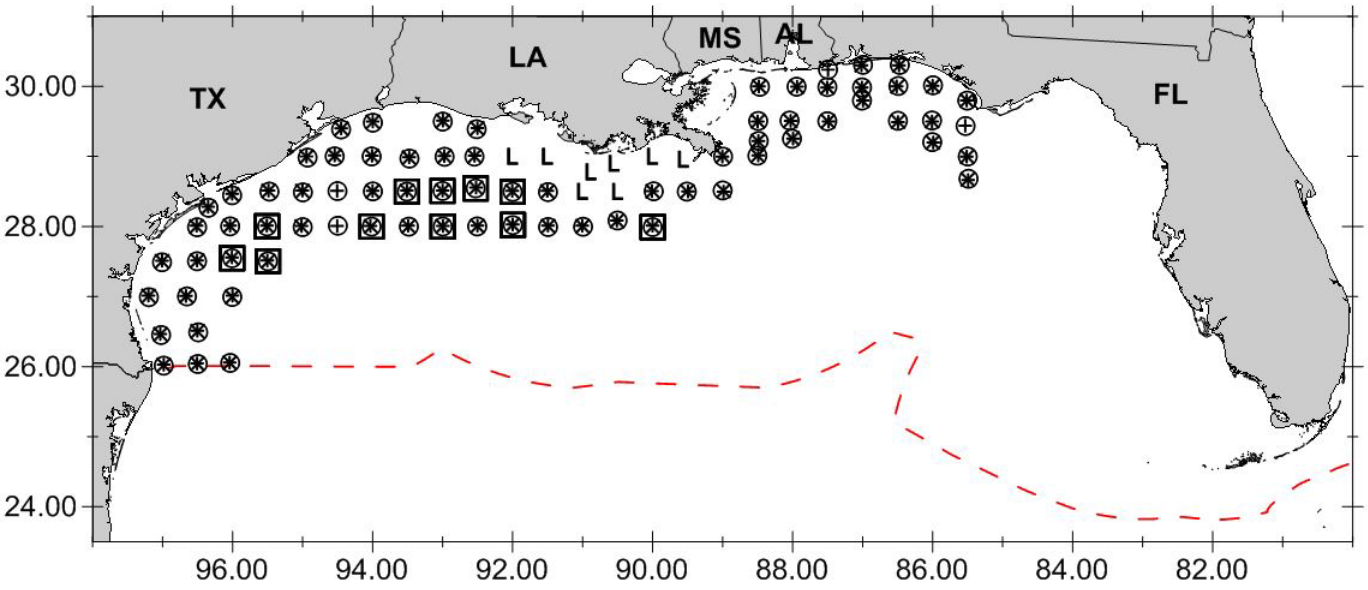
CRUISE RESULTS

Southeast Area Monitoring and Assessment Program (SEAMAP) 2017 Fall Ichthyoplankton Survey

NOAA Ship *Gordon Gunter* Cruise GU-17-04
September 4 – September 30, 2017



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INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) Ship *Gordon Gunter* departed Pascagoula, MS on 4 September 2017 to initiate the Southeast Area Monitoring and Assessment Program (SEAMAP) Fall Ichthyoplankton Survey in the 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 fall plankton survey samples are 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, specifically targeting larval red drum, red snapper, other snapper species, king mackerel, and Spanish mackerel. A total of 22 successful sea days were worked during the entire survey (4 – 30 Sept).

The ship was originally scheduled to depart on September 1, but sailing was delayed three days and did not depart until September 4 in order to accomplish repairs to one of the winches used for gear sampling. In addition, two major hurricanes impacted the survey considerably. Hurricane Harvey pummeled the Texas coast from 17 August to 03 September with catastrophic amounts of rain inundation. The fall plankton survey is designed to begin sampling near Brownsville, TX, working East through the first leg of the survey and continuing East towards Key West, FL during Leg 2. While winch repairs were ongoing, the CO and FPC were also closely monitoring the movement of Hurricane Irma that was setting its sights on Florida. With the knowledge that the predicted track of the storm could change, and all safe ports in the western Gulf already closed by H. Harvey, a mutual decision was made between the CO and FPC to keep sampling to within a 12-16 hour steam of home port during Leg 1. After contacting the Mississippi and Alabama SEAMAP partners, the Gunter sampled all nearby stations (normally sampled by the state partners) and then returned to the Pascagoula dock to wait out the final movement and any effects of Hurricane Irma. The few days left of Leg 1 were sampled, then Leg 2 departed on time beginning at the mouth of the MS river working West as far as we could (depending upon H. Harvey damage). With careful planning and operations, the ship was able to get to all targeted stations in the western Gulf.

OBJECTIVES

1. Assess the occurrence, abundance and geographical distribution of the early life stages of fall spawning fishes, especially king and Spanish mackerel, red drum, and snappers, on U.S. continental shelf waters in the GOM using a 61 cm bongo frame fitted with 0.335 mm nets, and a neuston frame fitted with a 0.950 mm net at selected (SEAMAP) stations in support of annual stock assessments.

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, fluorescence, dissolved oxygen, and turbidity using a CTD at SEAMAP stations.
b. Measure chlorophyll *a* in replicate water samples taken at surface, mid or 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 TSG.

3. Map the distribution of fish eggs and invertebrate zooplankton along the cruise track using a CUFES.

4. Measure the vertical distribution of fish larvae by sampling at discrete depths in the water column at selected locations along the SEAMAP plankton survey grid using a 1 m^2 Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS) during both legs of the survey.

5. Collect detailed observations (i.e. identification, number, volume, bell diameter) of net-caught jellyfish and ctenophores.

6. Collect volumetric measurements of net caught *Sargassum* spp.

7. Collect CUFES samples along the cruise track normally sampled by the Louisiana, Mississippi, and Alabama state partners.

8. Assess the occurrence and abundance of marine debris and microplastics in the northern GOM in collaboration with a graduate student at Dauphin Island Sea Lab (DISL).

9. Collect data on bird species composition, geographic location, and abundance using a 300-m wide strip transect protocol as part of the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPSS) science plan in collaboration with bird observers from Terra Mar Applied Sciences.

10. The continental shelf waters of the northwestern Gulf of Mexico (GOM) experienced a massive pulse of freshwater input as a result of record-breaking rainfall from Hurricane Harvey. The timing, magnitude, and constituent loads of Harvey flood waters drive shifts in plankton community composition and distribution patterns on the Louisiana-Texas shelf. The timing of this disturbance coincides with the summer-fall spawning seasons for economically important fisheries (e.g. red drum, sea trouts, snappers) raising additional questions of longer term effects of food web disruptions on recruitment. We propose to examine how planktonic systems (from pico- to ichthyoplankton) respond to

large, seasonally anomalous floodwater plumes generated by events like Hurricane Harvey. These post-Harvey data will be compared to immediately preceding and long-term data (SEAMAP) collected in the area.

SURVEY RESULTS
Ichthyoplankton Data

Survey Design

A predefined cruise track of 143 standard Fall SEAMAP stations, approximately 30 nm apart in a systematic grid, were targeted. Standard SEAMAP plankton gear used at each station consisted of a bongo net, a neuston net, and a CTD. MOCNESS tows were focused over areas where large numbers of snapper larvae have been collected during past surveys and were planned at 24 of the 143 standard stations. The Louisiana Department of Wildlife and Fisheries (LDWF) planned on sampling eight of the standard SEAMAP stations, the University of Southern Mississippi (USM) planned on sampling eight stations, and the Alabama Department of Conservation and Natural Resources (AL DCNR) planned on sampling three stations.

Microplastic samples were collected at targeted stations throughout the gulf that have not been sampled in previous surveys for a total of 18 planned stations. Samples taken for a National Science Foundation (NSF) grant were primarily targeted near the Galveston area and along the southern Texas coast. The GoMMAPPSS bird observer program surveyed during daylight hours between stations from the flying bridge of the ship with great results (Appendix 1).

Sampling Methodology

Samples and data collection were implemented in accordance with procedures outlined in the SEAMAP data collections manual. SEAMAP 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 SBE19plus V2 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. SEAMAP 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 (~ 2 kt) sufficient to keep the net opening half submerged in the water maintaining a sampling depth of 0.5 m. In areas with a high density of *Sargassum* spp. or jellyfish, the total tow time was reduced to a minimum of 5 min. Preservation protocol called for the left bongo samples to be preserved in 10% formalin and then transferred to fresh 95% EtOH after 36 h. The right bongo and neuston samples were initially preserved in 95% EtOH and then transferred to fresh 95% EtOH after 24 h.

Additional plankton samples were taken using a 1 m^2 MOCNESS during Leg 2 only. The MOCNESS carries nine 0.505 μm nets to collect samples at discrete depths,

however only a maximum of seven were used on this survey. One net was used in an oblique tow (Net 0) from the surface to the bottom or a maximum depth of 130 m. The remaining nets sampled set depth bins between 10–20 m depending on the water depth at each station. Winch and ship speeds were maintained at rates that would result in filtered water volumes of 250-350 m^3 per depth bin. In order to ensure enough volume was filtered for each depth bin, a 'bounce' method had to be used during the retrieval for some depth bins. The MOCNESS was brought up to the top of the depth bin, lowered back down to the bottom of the bin, and then brought back up to the top. This method allowed for consistency in sampling each of the depth bins during the tow. Oblique samples (Net 0) were given to NSF grant volunteer for immediate sorting at sea. The remaining samples (Nets 1-6) were initially preserved in 95% EtOH and transferred to fresh 95% EtOH after 24 h. Microplastic samples were collected with bongo and neuston tows using the same methodology described above, however, both nets used a smaller mesh size. The microplastic bongo frame used two 0.202 mm mesh nets, and the neuston frame used a 0.500 mm mesh net.

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 μm sieve within the CUFES and collected over 30 min intervals between stations. CUFES samples were preserved in 95% EtOH, but were not transferred to fresh preservative.

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. Water samples were also collected for both the microplastic and Texas A&M sampling.

Collection Summary

Ichthyoplankton samples were collected at a total of 74 stations resulting in 74 right bongo, 74 left bongo, 71 neuston, and 11 MOCNESS tows consisting of 61 samples (Tables 1 and 2; Figure 1). Twenty-four samples were collected for microplastics analysis and samples were collected at 11 stations for the NSF grant, generating 18 additional samples (Table 1; Figure 2). Two hundred and seventy-nine CUFES samples were collected during transit between stations (Table 1 and Figure 3), though due to time constraints no CUFES samples were taken over the Louisiana sampled station areas. No neuston tow was completed at station 014 due to winds. Neuston samples at stations 024, 049, and 050 were discarded due to large amounts of jellyfish in the sample. MOCNESS tows at stations 030, 054, and 061 were cancelled due to time concerns. The depth sensor was not reading correctly at the beginning of the MOCNESS tow at station 032 and was not recoverable for depth, so all samples from that tow were discarded. LDWF was able to complete eight stations (B187, B188, B192, B193, B197, B191, B194, and B200). All AL DCNR and USM stations were completed by NMFS in order to stay close to home port while awaiting Hurricane Irma.

Jellyfish and ctenophores collected in bongo, neuston and MOCNESS nets were thoroughly rinsed, removed from the plankton samples, and noted in the database. These organisms were identified, counted, and measured using graduated containers.

Sargassum spp. collected in any of the nets was 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 (Table 2). Right bongo, neuston, and MOCNESS (nets 1-6) samples will be shipped to the Sea Fisheries Institute, Plankton Sorting and Identification Center, Gdynia, Poland for sorting. The left bongos will be deposited in the SEAMAP Invertebrate Archive at GCRL, USM, Ocean Springs, MS. Net 0 samples from the MOCNESS were given to the NSF grant volunteer. All CUFES samples were stored in the bunker facility at Stennis Space Center, MS.

Data on gelatinous organisms and *Sargassum* spp. collected during the cruise will be archived at NMFS Pascagoula Laboratory for future analysis.

Environmental Data

Environmental data were collected with a Seabird SBE 9/11plus CTD at a total of 74 stations during the survey. The SBE 9/11plus CTD profiles were processed at sea by the FPC and Watch Leaders using Seabird's SEASAVE processing software and uploaded after each station to an FTP site for real-time use. 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

Water samples for chlorophyll analysis were taken at 74 stations where the Seabird SBE 9/11 Plus CTD was deployed, using niskin bottles attached to a SBE Carousel sampler (Table 3). Standard SEAMAP target sampling depths were: surface, chlorophyll maximum, and near-bottom (up to 200 m maximum). Samples were analyzed for chlorophyll *a* concentrations (µg/L) at sea using a Turner Designs Trilogy Laboratory Fluorometer equipped with a Chlorophyll *a* Non-Acidification module. Standard protocol for SEAMAP stations calls for analysis of duplicate water samples from each of the three target depths. However, at shallower stations where the water column was well mixed and no chlorophyll maximum was present, only surface and bottom samples were taken. All replicates at each sample depth were averaged and entered into the Microsoft Access database.

Salinity (PSU), temperature (º C), dissolved oxygen (mg/L), fluorescence (µg/L), and transmissivity were recorded from the CTD sensors for the same depths as water samples for the chlorophyll *a* measurements. Near surface (≤ 5 m depth) comparisons of

sea temperature, salinity, dissolved oxygen, and chlorophyll *a* concentrations for stations are presented in Figures 4 through 7.

Throughout the cruise, a SBE21 TSG equipped with a Turner Designs 10-AU fluorometer continuously measured surface salinity, temperature, and fluorescence. A dedicated computer recorded all the information and was 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.

CRUISE PARTICIPANTS

Leg I (4 Sept – 14 Sept 2017)

Name / Title / Organization

Pam Bond / Field Party Chief / NMFS, Pascagoula, MS
Denice Drass / Fishery Biologist / NMFS, Pascagoula, MS
Glenn Zapfe / Fishery Biologist / NMFS, Pascagoula, MS
John Moser / Fishery Biologist / NMFS, Pascagoula, MS
Mark Grace / Fishery Biologist / NMFS, Pascagoula, MS

Leg II (17 Sept – 30 Sept 2017)

Name / Title / Organization

Pam Bond / Field Party Chief / NMFS, Pascagoula, MS
Denice Drass / Fishery Biologist / NMFS, Pascagoula, MS
Mark Grace / Fishery Biologist / NMFS, Pascagoula, MS
Alonzo Hamilton / Fishery Biologist / NMFS, Pascagoula, MS
Shannan McAskill / Volunteer / Texas A&M University, Corpus Christi
Caitlin Wessel / Volunteer / Dauphin Island Sea Lab, Dauphin Island, AL
Sarah Schmid / Volunteer / Dauphin Island Sea Lab, Dauphin Island, AL
Chris Haney / Volunteer / Bird Observer, Terra Mar Applied Science, LLC
Matt Love / Volunteer / Bird Observer, Terra Mar Applied Science, LLC

Table 1. Summary of valid SEAMAP ichthyoplankton collections taken during the 2017 Fall SEAMAP Plankton survey aboard NOAA Ship *Gordon Gunter* GU-17-04 and state agency vessel.

Leg	CTD Casts	Right Bongo	Left Bongo	Neuston	MOCNESS (tows/samples)	CUFES	Microplastics (bongo/neuston)	H. Harvey (Geist) (bongo/neuston)
		(0.335 mm)	(0.335 mm)	(0.950 mm)	(0.505 mm)	(0.505)	(0.202mm/ 0.505mm)	(0.335 mm/ 0.950 mm)
I	25	25	25	23	0/0	72	3/3	0/0
II	49	49	49	48	11/61	207	9/9	11/7
Total	**74**	**74**	**74**	**71**	**11/61**	**279**	**12/12**	**11/7**
LDWF	--	8	8	8	--	--	--	--
Total	--	**8**	**8**	**8**	--	--	--	--

Table 2. Summary of plankton sampling effort during the Fall SEAMAP Plankton Survey conducted from NOAA Ship *Gordon Gunter*, cruise GU-17-04, 4 – 30 September 2017. P-Sta # = Pascagoula station number; S-Sta # = SEAMAP station number; Smp # = SEAMAP sample number; RB = Right Bongo; LB = Left Bongo; NN = Neuston; MOC = MOCNESS; Preservative = Initial preservative; Form = Formalin; EtOH = Ethanol; 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	B183	52292	RB	95% ETOH	05-Sep-17	28.996	-89.003
001	B183	52293	LB	10% Form	05-Sep-17	28.996	-89.003
001	B183	52294	NN	95% ETOH	05-Sep-17	29.005	-88.999
002	B180	52295	RB	95% ETOH	05-Sep-17	29.014	-88.492
002	B180	52296	LB	10% Form	05-Sep-17	29.014	-88.492
002	B180	52297	NN	95% ETOH	05-Sep-17	29.013	-88.499
003	B323	52298	RB	95% ETOH	05-Sep-17	29.22	-88.49
003	B323	52299	LB	10% Form	05-Sep-17	29.22	-88.49
003	B323	52300	NN	95% ETOH	05-Sep-17	29.219	-88.495
004	B179	52301	RB	95% ETOH	05-Sep-17	29.497	-88.5
004	B179	52302	LB	10% Form	05-Sep-17	29.497	-88.5
004	B179	52303	NN	95% ETOH	05-Sep-17	29.502	-88.496
005	B178	52304	RB	95% ETOH	05-Sep-17	29.999	-88.482
005	B178	52305	LB	10% Form	05-Sep-17	29.999	-88.482
005	B178	52306	NN	95% ETOH	05-Sep-17	29.997	-88.476
006	B176	52307	RB	95% ETOH	05-Sep-17	29.505	-88.028
006	B176	52308	LB	10% Form	05-Sep-17	29.505	-88.028
006	B176	52309	NN	95% ETOH	05-Sep-17	29.508	-88.035
007	B322	52310	RB	95% ETOH	06-Sep-17	29.255	-87.994
007	B322	52311	LB	10% Form	06-Sep-17	29.255	-87.994
007	B322	52312	NN	95% ETOH	06-Sep-17	29.257	-88.003
008	B174	52313	RB	95% ETOH	06-Sep-17	29.498	-87.486
008	B174	52314	LB	10% Form	06-Sep-17	29.498	-87.486
008	B174	52315	NN	95% ETOH	06-Sep-17	29.501	-87.496
009	B320	52316	RB	95% ETOH	06-Sep-17	29.797	-86.995
009	B320	52317	LB	10% Form	06-Sep-17	29.797	-86.995
009	B320	52318	NN	95% ETOH	06-Sep-17	29.797	-87.005
010	B169	52319	RB	95% ETOH	06-Sep-17	29.488	-86.495
010	B169	52320	LB	10% Form	06-Sep-17	29.488	-86.495
010	B169	52321	NN	95% ETOH	06-Sep-17	29.499	-86.495
011	B165	52322	RB	95% ETOH	06-Sep-17	29.197	-85.991
011	B165	52323	LB	10% Form	06-Sep-17	29.197	-85.991
011	B165	52324	NN	95% ETOH	06-Sep-17	29.201	-85.999
012	B160	52325	RB	95% ETOH	07-Sep-17	28.662	-85.493
012	B160	52326	LB	10% Form	07-Sep-17	28.662	-85.493
012	B160	52327	NN	95% ETOH	07-Sep-17	28.672	-85.497
013	B159	52328	RB	95% ETOH	07-Sep-17	28.998	-85.514
013	B159	52329	LB	10% Form	07-Sep-17	28.998	-85.514

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
013	B159	52330	NN	95% ETOH	07-Sep-17	28.997	-85.507
014	B158	52331	RB	95% ETOH	07-Sep-17	29.437	-85.534
014	B158	52332	LB	10% Form	07-Sep-17	29.437	-85.534
015	B157	52333	RB	95% ETOH	07-Sep-17	29.798	-85.513
015	B157	52334	LB	10% Form	07-Sep-17	29.798	-85.513
015	B157	52335	NN	95% ETOH	07-Sep-17	29.798	-85.511
016	B166	52336	RB	95% ETOH	07-Sep-17	29.497	-86.009
016	B166	52337	LB	10% Form	07-Sep-17	29.497	-86.009
016	B166	52338	NN	95% ETOH	07-Sep-17	29.506	-86.009
017	B167	52339	RB	95% ETOH	07-Sep-17	30.006	-86
017	B167	52340	LB	10% Form	07-Sep-17	30.006	-86
017	B167	52341	NN	95% ETOH	07-Sep-17	30.006	-85.997
018	B168	52342	RB	95% ETOH	07-Sep-17	30.001	-86.514
018	B168	52343	LB	10% Form	07-Sep-17	30.001	-86.514
018	B168	52344	NN	95% ETOH	07-Sep-17	30.001	-86.501
019	B318	52345	RB	95% ETOH	08-Sep-17	30.298	-86.481
019	B318	52346	LB	10% Form	08-Sep-17	30.298	-86.481
019	B318	52347	NN	95% ETOH	08-Sep-17	30.301	-86.474
020	B319	52348	RB	95% ETOH	08-Sep-17	30.301	-87.016
020	B319	52349	LB	10% Form	08-Sep-17	30.301	-87.016
020	B319	52350	NN	95% ETOH	08-Sep-17	30.303	-87.011
021	B172	52351	RB	95% ETOH	08-Sep-17	29.983	-87.011
021	B172	52352	LB	10% Form	08-Sep-17	29.983	-87.011
021	B172	52353	NN	95% ETOH	08-Sep-17	29.984	-87.009
022	B173	52354	RB	95% ETOH	08-Sep-17	29.984	-87.507
022	B173	52355	LB	10% Form	08-Sep-17	29.984	-87.507
022	B173	52356	NN	95% ETOH	08-Sep-17	29.986	-87.505
023	B177	52357	RB	95% ETOH	12-Sep-17	29.996	-87.937
023	B177	52358	LB	10% Form	12-Sep-17	29.996	-87.937
023	B177	52359	NN	95% ETOH	12-Sep-17	29.996	-87.94
024	B321	52360	RB	95% ETOH	12-Sep-17	30.237	-87.495
024	B321	52361	LB	10% Form	12-Sep-17	30.237	-87.495
025	B184	52362	RB	95% ETOH	13-Sep-17	28.497	-88.986
025	B184	52363	LB	10% Form	13-Sep-17	28.497	-88.986
025	B184	52364	NN	95% ETOH	13-Sep-17	28.51	-88.989
026	B186	52365	RB	95% ETOH	18-Sep-17	28.499	-89.494
026	B186	52366	LB	10% Form	18-Sep-17	28.499	-89.494
026	B186	52367	NN	95% ETOH	18-Sep-17	28.499	-89.506
027	B189	52368	RB	10% Form	18-Sep-17	28.503	-90.01
027	B189	52369	LB	95% ETOH	18-Sep-17	28.503	-90.01
027	B189	52370	NN	95% ETOH	18-Sep-17	28.503	-89.998
028	B016	52371	RB	95% ETOH	18-Sep-17	28.011	-90.001
028	B016	52372	LB	10% Form	18-Sep-17	28.011	-90.001
028	B016	52373	NN	95% ETOH	18-Sep-17	27.998	-90
028	B016	52374	MOC 1	95% ETOH	18-Sep-17	27.984	-89.997
028	B016	52375	MOC 2	95% ETOH	18-Sep-17	27.984	-89.997
028	B016	52376	MOC 3	95% ETOH	18-Sep-17	27.984	-89.997
028	B016	52377	MOC 4	95% ETOH	18-Sep-17	27.984	-89.997

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
028	B016	52378	MOC 5	95% ETOH	18-Sep-17	27.984	-89.997
028	B016	52379	MOC 6	95% ETOH	18-Sep-17	27.984	-89.997
029	B190	52380	RB	95% ETOH	19-Sep-17	28.086	-90.51
029	B190	52381	LB	10% Form	19-Sep-17	28.086	-90.51
029	B190	52382	NN	95% ETOH	19-Sep-17	28.08	-90.508
030	B017	52383	RB	95% ETOH	19-Sep-17	28.011	-91.005
030	B017	52384	LB	10% Form	19-Sep-17	28.011	-91.005
030	B017	52385	NN	95% ETOH	19-Sep-17	28.004	-91
031	B195	52386	RB	95% ETOH	19-Sep-17	28.013	-91.495
031	B195	52387	LB	10% Form	19-Sep-17	28.013	-91.495
031	B195	52388	NN	95% ETOH	19-Sep-17	28.004	-91.492
032	B196	52389	RB	95% ETOH	19-Sep-17	28.508	-91.504
032	B196	52390	LB	10% Form	19-Sep-17	28.508	-91.504
032	B196	52391	NN	95% ETOH	19-Sep-17	28.498	-91.501
033	B201	52395	RB	95% ETOH	19-Sep-17	28.508	-92.005
033	B201	52396	LB	10% Form	19-Sep-17	28.508	-92.005
033	B201	52397	NN	95% ETOH	19-Sep-17	28.502	-92.003
033	B201	52398	MOC 1	95% ETOH	19-Sep-17	28.487	-92.002
033	B201	52399	MOC 2	95% ETOH	19-Sep-17	28.487	-92.002
033	B201	52400	MOC 3	95% ETOH	19-Sep-17	28.487	-92.002
033	B201	52401	MOC 4	95% ETOH	19-Sep-17	28.487	-92.002
034	B022	52402	RB	95% ETOH	20-Sep-17	28.028	-91.999
034	B022	52403	LB	10% Form	20-Sep-17	28.028	-91.999
034	B022	52404	NN	95% ETOH	20-Sep-17	28.024	-92
034	B022	52405	MOC 1	95% ETOH	20-Sep-17	28.018	-91.993
034	B022	52406	MOC 2	95% ETOH	20-Sep-17	28.018	-91.993
034	B022	52407	MOC 3	95% ETOH	20-Sep-17	28.018	-91.993
034	B022	52408	MOC 4	95% ETOH	20-Sep-17	28.018	-91.993
034	B022	52409	MOC 5	95% ETOH	20-Sep-17	28.018	-91.993
034	B022	52410	MOC 6	95% ETOH	20-Sep-17	28.018	-91.993
035	B202	52411	RB	95% ETOH	20-Sep-17	28.013	-92.502
035	B202	52412	LB	10% Form	20-Sep-17	28.013	-92.502
035	B202	52413	NN	95% ETOH	20-Sep-17	28.006	-92.504
036	B203	52414	RB	95% ETOH	20-Sep-17	28.555	-92.522
036	B203	52415	LB	10% Form	20-Sep-17	28.555	-92.522
036	B203	52416	NN	95% ETOH	20-Sep-17	28.551	-92.525
036	B203	52417	MOC 1	95% ETOH	20-Sep-17	28.540	-92.533
036	B203	52418	MOC 2	95% ETOH	20-Sep-17	28.540	-92.533
036	B203	52419	MOC 3	95% ETOH	20-Sep-17	28.540	-92.533
036	B203	52420	MOC 4	95% ETOH	20-Sep-17	28.540	-92.533
037	B204	52421	RB	95% ETOH	20-Sep-17	29.008	-92.544
037	B204	52422	LB	10% Form	20-Sep-17	29.008	-92.544
037	B204	52423	NN	95% ETOH	20-Sep-17	29.002	-92.545
038	B205	52424	RB	95% ETOH	20-Sep-17	29.405	-92.503
038	B205	52425	LB	10% Form	20-Sep-17	29.405	-92.503
038	B205	52426	NN	95% ETOH	20-Sep-17	29.4	-92.506
039	B206	52427	RB	95% ETOH	20-Sep-17	29.512	-92.996
039	B206	52428	LB	10% Form	20-Sep-17	29.512	-92.996

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
039	B206	52429	NN	95% ETOH	20-Sep-17	29.506	-92.997
040	B207	52430	RB	95% ETOH	21-Sep-17	29.005	-92.976
040	B207	52431	LB	10% Form	21-Sep-17	29.005	-92.976
040	B207	52432	NN	95% ETOH	21-Sep-17	29	-92.974
041	B208	52433	RB	95% ETOH	21-Sep-17	28.514	-92.999
041	B208	52434	LB	10% Form	21-Sep-17	28.514	-92.999
041	B208	52435	NN	95% ETOH	21-Sep-17	28.51	-93.001
041	B208	52436	MOC 1	95% ETOH	21-Sep-17	28.509	-93.002
041	B208	52437	MOC 2	95% ETOH	21-Sep-17	28.509	-93.002
041	B208	52438	MOC 3	95% ETOH	21-Sep-17	28.509	-93.002
042	B023	52439	RB	95% ETOH	21-Sep-17	28.008	-92.996
042	B023	52440	LB	10% Form	21-Sep-17	28.008	-92.996
042	B023	52441	NN	95% ETOH	21-Sep-17	28.003	-92.999
042	B023	52442	MOC 1	95% ETOH	21-Sep-17	27.995	-92.991
042	B023	52443	MOC 2	95% ETOH	21-Sep-17	27.995	-92.991
042	B023	52444	MOC 3	95% ETOH	21-Sep-17	27.995	-92.991
042	B023	52445	MOC 4	95% ETOH	21-Sep-17	27.995	-92.991
042	B023	52446	MOC 5	95% ETOH	21-Sep-17	27.995	-92.991
043	B209	52447	RB	95% ETOH	21-Sep-17	28.01	-93.492
043	B209	52448	LB	10% Form	21-Sep-17	28.01	-93.492
043	B209	52449	NN	95% ETOH	21-Sep-17	28.003	-93.487
044	B210	52450	RB	95% ETOH	21-Sep-17	28.513	-93.51
044	B210	52451	LB	10% Form	21-Sep-17	28.513	-93.51
044	B210	52452	NN	95% ETOH	21-Sep-17	28.505	-93.51
044	B210	52453	MOC 1	95% ETOH	22-Sep-17	28.491	-93.508
044	B210	52454	MOC 2	95% ETOH	22-Sep-17	28.491	-93.508
044	B210	52455	MOC 3	95% ETOH	22-Sep-17	28.491	-93.508
045	B211	52456	RB	95% ETOH	22-Sep-17	28.988	-93.477
045	B211	52457	LB	10% Form	22-Sep-17	28.988	-93.477
045	B211	52458	NN	95% ETOH	22-Sep-17	28.982	-93.478
046	B214	52459	RB	95% ETOH	22-Sep-17	29.009	-94.008
046	B214	52460	LB	10% Form	22-Sep-17	29.009	-94.008
046	B214	52461	NN	95% ETOH	22-Sep-17	29.006	-94.011
047	B213	52462	RB	95% ETOH	22-Sep-17	29.498	-93.998
047	B213	52463	LB	10% Form	22-Sep-17	29.498	-93.998
047	B213	52464	NN	95% ETOH	22-Sep-17	29.491	-93.997
048	B220	52465	RB	95% ETOH	22-Sep-17	29.401	-94.449
048	B220	52466	LB	10% Form	22-Sep-17	29.401	-94.449
048	B220	52467	NN	95% ETOH	22-Sep-17	29.395	-94.445
049	B219	52468	RB	95% ETOH	22-Sep-17	29.014	-94.542
049	B219	52469	LB	10% Form	22-Sep-17	29.014	-94.542
049	B219	52470	NN	95% ETOH	22-Sep-17	29.01	-94.542
050	B218	52471	RB	95% ETOH	23-Sep-17	28.509	-94.508
050	B218	52472	LB	10% Form	23-Sep-17	28.509	-94.508
051	B215	52473	RB	95% ETOH	23-Sep-17	28.509	-94
051	B215	52474	LB	10% Form	23-Sep-17	28.509	-94
051	B215	52475	NN	95% ETOH	23-Sep-17	28.503	-93.999
052	B216	52476	RB	95% ETOH	23-Sep-17	28.008	-94.032

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
052	B216	52477	LB	10% Form	23-Sep-17	28.008	-94.032
052	B216	52478	NN	95% ETOH	23-Sep-17	28.001	-94.022
052	B216	52479	MOC 1	95% ETOH	23-Sep-17	27.986	-94.018
052	B216	52480	MOC 2	95% ETOH	23-Sep-17	27.986	-94.018
052	B216	52481	MOC 3	95% ETOH	23-Sep-17	27.986	-94.018
052	B216	52482	MOC 4	95% ETOH	23-Sep-17	27.986	-94.018
053	B217	52483	RB	95% ETOH	23-Sep-17	28.007	-94.506
053	B217	52484	LB	10% Form	23-Sep-17	28.007	-94.506
053	B217	52485	NN	95% ETOH	23-Sep-17	28.0095	-94.5018
054	B223	52486	RB	95% ETOH	23-Sep-17	28.007	-95.015
054	B223	52487	LB	10% Form	23-Sep-17	28.007	-95.015
054	B223	52488	NN	95% ETOH	23-Sep-17	27.998	-95.013
055	B222	52489	RB	95% ETOH	24-Sep-17	28.513	-95.003
055	B222	52490	LB	10% Form	24-Sep-17	28.513	-95.003
055	B222	52491	NN	95% ETOH	24-Sep-17	28.505	-95.002
056	B221	52492	RB	95% ETOH	24-Sep-17	28.999	-94.944
056	B221	52493	LB	10% Form	24-Sep-17	28.999	-94.944
056	B221	52494	NN	95% ETOH	24-Sep-17	28.995	-94.943
057	B228	52495	RB	95% ETOH	24-Sep-17	28.512	-95.486
057	B228	52496	LB	10% Form	24-Sep-17	28.512	-95.486
057	B228	52497	NN	95% ETOH	24-Sep-17	28.508	-95.484
058	B226	52498	RB	95% ETOH	24-Sep-17	28.013	-95.51
058	B226	52499	LB	10% Form	24-Sep-17	28.013	-95.51
058	B226	52500	NN	95% ETOH	24-Sep-17	28.005	-95.51
058	B226	52501	MOC 1	95% ETOH	24-Sep-17	27.998	-95.507
058	B226	52502	MOC 2	95% ETOH	24-Sep-17	27.998	-95.507
058	B226	52503	MOC 3	95% ETOH	24-Sep-17	27.998	-95.507
058	B226	52504	MOC 4	95% ETOH	24-Sep-17	27.998	-95.507
059	B225	52505	RB	95% ETOH	24-Sep-17	27.515	-95.503
059	B225	52506	LB	10% Form	24-Sep-17	27.515	-95.503
059	B225	52507	NN	95% ETOH	24-Sep-17	27.505	-95.492
059	B225	52508	MOC 1	95% ETOH	25-Sep-17	27.499	-95.491
059	B225	52509	MOC 2	95% ETOH	25-Sep-17	27.499	-95.491
059	B225	52510	MOC 3	95% ETOH	25-Sep-17	27.499	-95.491
059	B225	52511	MOC 4	95% ETOH	25-Sep-17	27.499	-95.491
059	B225	52512	MOC 5	95% ETOH	25-Sep-17	27.499	-95.491
059	B225	52513	MOC 6	95% ETOH	25-Sep-17	27.499	-95.491
060	B232	52514	RB	95% ETOH	25-Sep-17	27.559	-96.009
060	B232	52515	LB	10% Form	25-Sep-17	27.559	-96.009
060	B232	52516	NN	95% ETOH	25-Sep-17	27.549	-96.009
060	B232	52517	MOC 1	95% ETOH	25-Sep-17	27.556	-96.011
060	B232	52518	MOC 2	95% ETOH	25-Sep-17	27.556	-96.011
060	B232	52519	MOC 3	95% ETOH	25-Sep-17	27.556	-96.011
060	B232	52520	MOC 4	95% ETOH	25-Sep-17	27.556	-96.011
060	B232	52521	MOC 5	95% ETOH	25-Sep-17	27.556	-96.011
060	B232	52522	MOC 6	95% ETOH	25-Sep-17	27.556	-96.011
061	B231	52523	RB	95% ETOH	25-Sep-17	28.013	-96.036
061	B231	52524	LB	10% Form	25-Sep-17	28.013	-96.036

Table 2 continued

P-Sta #	S-Sta #	Smp #	Gear	Preservative	Date	Lat	Lon
061	B231	52525	NN	95% ETOH	25-Sep-17	28.009	-96.035
062	B230	52526	RB	95% ETOH	25-Sep-17	28.467	-96.006
062	B230	52527	LB	10% Form	25-Sep-17	28.467	-96.006
062	B230	52528	NN	95% ETOH	25-Sep-17	28.457	-96.009
063	B327	52529	RB	95% ETOH	25-Sep-17	28.28	-96.349
063	B327	52530	LB	10% Form	25-Sep-17	28.28	-96.349
063	B327	52531	NN	95% ETOH	25-Sep-17	28.273	-96.348
064	B233	52532	RB	95% ETOH	25-Sep-17	28.01	-96.514
064	B233	52533	LB	10% Form	25-Sep-17	28.01	-96.514
064	B233	52534	NN	95% ETOH	26-Sep-17	27.999	-96.516
065	B234	52535	RB	95% ETOH	26-Sep-17	27.515	-96.507
065	B234	52536	LB	10% Form	26-Sep-17	27.515	-96.507
065	B234	52537	NN	95% ETOH	26-Sep-17	27.512	-96.506
066	B235	52538	RB	95% ETOH	26-Sep-17	27.512	-97.007
066	B235	52539	LB	10% Form	26-Sep-17	27.512	-97.007
066	B235	52540	NN	95% ETOH	26-Sep-17	27.503	-97.007
067	B051	52541	RB	95% ETOH	26-Sep-17	27.014	-97.202
067	B051	52542	LB	10% Form	26-Sep-17	27.014	-97.202
067	B051	52543	NN	95% ETOH	26-Sep-17	27.008	-97.201
068	B328	52544	RB	95% ETOH	26-Sep-17	27.009	-96.666
068	B328	52545	LB	10% Form	26-Sep-17	27.009	-96.666
068	B328	52546	NN	95% ETOH	26-Sep-17	27.007	-96.66
069	B031	52547	RB	95% ETOH	26-Sep-17	27.015	-96.002
069	B031	52548	LB	10% Form	26-Sep-17	27.015	-96.002
069	B031	52549	NN	95% ETOH	26-Sep-17	26.995	-96.006
070	B239	52550	RB	95% ETOH	27-Sep-17	26.512	-96.504
070	B239	52551	LB	10% Form	27-Sep-17	26.512	-96.504
070	B239	52552	NN	95% ETOH	27-Sep-17	26.504	-96.5
071	B238	52553	RB	95% ETOH	27-Sep-17	26.466	-97.032
071	B238	52554	LB	10% Form	27-Sep-17	26.466	-97.032
071	B238	52555	NN	95% ETOH	27-Sep-17	26.461	-97.03
072	B032	52556	RB	95% ETOH	27-Sep-17	26.028	-96.984
072	B032	52557	LB	10% Form	27-Sep-17	26.028	-96.984
072	B032	52558	NN	95% ETOH	27-Sep-17	26.022	-96.984
073	B316	52559	RB	95% ETOH	27-Sep-17	26.046	-96.508
073	B316	52560	LB	10% Form	27-Sep-17	26.046	-96.508
073	B316	52561	NN	95% ETOH	27-Sep-17	26.042	-96.502
074	B030	52562	RB	95% ETOH	27-Sep-17	26.058	-96.042
074	B030	52563	LB	10% Form	27-Sep-17	26.058	-96.042
074	B030	52564	NN	95% ETOH	27-Sep-17	26.054	-96.04

Table 3. Summary of average chlorophyll *a* measurements at three depths (surface, chlorophyll maximum, and bottom) for each station where the CTD was deployed during the 2017 Fall SEAMAP Plankton Survey conducted from NOAA Ship *Gordon Gunter* cruise GU-17-04, 4 – 30 September 2017. P-Sta # = Pascagoula station number; S-Sta # = SEAMAP station number or other station identifier; Depth = Depth (meters); D-Code = Sample location (meters) in water column (S = Surface, MAX = Chlorophyll maximum, B = Bottom); Chl-a = Chlorophyll *a* measurement (µg/L).

P-Sta #	S-Sta #	Depth	D-Code	Chl-a
001	B030	2.33	S	0.461
001	B183	1.25	S	20.1
001	B183	75.76	B	0.28
002	B180	1.69	S	0.61
002	B180	200.6	B	0.04
003	B323	1.74	S	3.87
003	B323	7.84	MAX	1.92
003	B323	116.28	B	0.11
004	B179	1.63	S	2.86
004	B179	7.51	MAX	1.46
004	B179	48.96	B	0.25
005	B178	1.16	S	1.23
005	B178	11.39	MAX	5.85
005	B178	25.97	B	0.9
006	B176	0.63	S	0.86
006	B176	40.28	B	0.6
007	B322	2.21	S	0.61
007	B322	200.37	B	0.03
008	B174	1.82	S	0.36
008	B174	17.2	MAX	1.57
008	B174	66.9	B	0.07
009	B320	2.28	S	0.43
009	B320	31.58	MAX	0.62
009	B320	190.19	B	0.01

P-Sta #	S-Sta #	Depth	D-Code	Chl-a
010	B169	0.01	S	0.51
010	B169	21.51	MAX	0.81
010	B169	200.46	B	0.01
011	B165	1.58	S	0.56
011	B165	193.83	B	0.01
012	B160	1.49	S	0.32
012	B160	29.83	MAX	0.82
012	B160	175.51	B	0.01
013	B159	1.37	S	0.31
013	B159	37.39	MAX	0.63
013	B159	70.86	B	0.23
014	B158	2.19	S	0.45
014	B158	18.68	B	0.52
015	B157	2.06	S	1.41
015	B157	18.49	B	1.01
016	B166	1.94	S	0.61
016	B166	21.64	MAX	0.91
016	B166	56.62	B	0.23
018	B168	1.88	S	0.25
018	B168	17.7	MAX	0.8
018	B168	50.83	B	0.43
019	B318	1.93	S	0.45
019	B318	22.82	B	0.89
020	B319	1.37	S	0.38

Table 3 continued

P-Sta #	S-Sta #	Depth	D-Code	Chl-a
020	B319	18.08	B	0.4
021	B172	1.3	S	0.31
021	B172	16.92	MAX	0.74
021	B172	72.95	B	0.19
022	B173	2.04	S	0.32
022	B173	27.38	B	0.74
023	B177	2.05	S	1.31
023	B177	22.84	B	0.85
024	B321	1.65	S	4.82
024	B321	10.63	B	2.71
025	B184	1.64	S	0.15
025	B184	74.03	MAX	0.82
025	B184	199.91	B	0.02
026	B186	2.03	S	0.15
026	B186	74.05	MAX	0.62
026	B186	201.54	B	0.05
027	B189	1.55	S	0.21
027	B189	48.02	MAX	0.24
027	B189	201.54	B	0.04
028	B016	1.83	S	0.09
028	B016	62.87	MAX	1.05
028	B016	201.09	B	0
029	B190	1.93	S	0.13
029	B190	50.53	MAX	0.6
029	B190	138.62	B	0.02
030	B017	2.26	S	0.21
030	B017	56.07	MAX	1
030	B017	163.56	B	0.04

P-Sta #	S-Sta #	Depth	D-Code	Chl-a
031	B195	2.19	S	0.24
031	B195	65.14	MAX	0.79
031	B195	159.23	B	0.02
032	B196	1.46	S	0.33
032	B196	38.55	MAX	1.26
032	B196	45.26	B	0.44
033	B201	1.67	S	0.35
033	B201	16.99	MAX	2.07
033	B201	47.52	B	1.03
034	B022	1.77	S	0.16
034	B022	65.96	MAX	0.73
034	B022	111.9	B	0.09
035	B202	1.63	S	0.19
035	B202	34.07	MAX	0.73
035	B202	107.98	B	0.03
036	B203	2.4	S	0.19
036	B203	45.53	B	1.04
037	B204	1.16	S	0.38
037	B204	14.26	MAX	0.96
037	B204	22.33	B	0.67
038	B205	1.8	S	2.01
038	B205	7.31	B	3.05
039	B206	1.54	S	2.03
039	B206	9.34	B	0.97
040	B207	2.16	S	0.26
040	B207	21.58	B	0.36
041	B208	1.86	S	0.25
041	B208	42.58	B	1.84

Table 3 continued

P-Sta #	S-Sta #	Depth	D-Code	Chl-a
042	B023	1.53	S	0.27
042	B023	56.98	MAX	0.91
042	B023	107.92	B	0.14
043	B209	1.75	S	0.24
043	B209	62.78	MAX	0.68
043	B209	97.43	B	0.37
044	B210	1.89	S	0.35
044	B210	28.31	MAX	0.87
044	B210	40.35	B	1.52
045	B211	1.99	S	0.25
045	B211	18.91	B	1.33
046	B214	1.72	S	0.26
046	B214	18.75	B	1.01
047	B213	1.69	S	1.25
047	B213	10.39	B	0.64
048	B220	1.9	S	0.99
048	B220	10.46	B	1.16
049	B219	2.45	S	2.45
049	B219	16.34	B	1.38
050	B218	1.55	S	0.24
050	B218	34.87	B	0.97
051	B215	1.87	S	0.16
051	B215	38.09	B	1.16
052	B216	1.95	S	0.15
052	B216	67.57	MAX	0.71
052	B216	81.35	B	0.4
053	B217	1.87	S	0.22
053	B217	49.68	MAX	0.77
053	B217	67.65	B	0.46
054	B223	3.1	S	0.2
054	B223	45.29	MAX	0.81
054	B223	81.05	B	0.38
055	B222	2.11	S	0.27
055	B222	11.36	MAX	0.87
055	B222	30.72	B	0.71
056	B221	2.28	S	0.27
056	B221	25.08	B	1.49
057	B228	2.88	S	0.23
057	B228	25.08	B	0.52
058	B226	1.75	S	0.31
058	B226	43.94	MAX	0.75
058	B226	53.11	B	0.9
059	B225	2.02	S	0.14
059	B225	89.17	MAX	0.61
059	B225	199.84	B	0.02
060	B232	2.7	S	0.16
060	B232	83.8	MAX	0.39
060	B232	167.96	B	0.09
061	B231	2.4	S	0.25
061	B231	42.2	B	0.49
062	B230	1.71	S	1.11
062	B230	15.21	B	0.57
063	B327	2.04	S	2.51
063	B327	17.78	B	0.65
064	B233	2.57	S	1.78
064	B233	24.05	B	0.49

Table 3 continued

P-Sta #	S-Sta #	Depth	D-Code	Chl-a
065	B234	2.98	S	0.21
065	B234	48.02	MAX	0.35
065	B234	71.11	B	0.28
066	B235	2.38	S	0.44
066	B235	25.32	B	0.61
067	B051	2.6	S	0.31
067	B051	24.37	B	0.53
068	B328	2.2	S	0.25
068	B328	51.63	MAX	0.86
068	B328	88.56	B	0.41
069	B031	1.88	S	0.38
069	B031	46.8	MAX	0.92
069	B031	201.62	B	0.01
070	B239	1.4	S	0.14
070	B239	60.5	MAX	0.51
070	B239	83.04	B	0.27
071	B238	2.26	S	0.25
071	B238	27.94	B	0.73
072	B032	1.82	S	0.23
072	B032	25.94	B	0.67
073	B316	2.61	S	0.28
073	B316	54.61	MAX	0.73
073	B316	59.82	B	0.56
074	B030	1.98	S	0.13
074	B030	100.06	MAX	0.4
074	B030	201.3	B	0.01

Figure 1. Plankton stations completed during the SEAMAP Fall Plankton Survey aboard NOAA Ship *Gordon Gunter*, cruise GU-17-04, 4 – 30 September 2017. Stations completed by LDWF are also included. Open circles denote locations of CTD casts; a + indicates a bongo tow; an X indicates a Neuston tow; an open square indicates a MOCNESS tow; and an "L" indicates stations sampled by Louisiana.

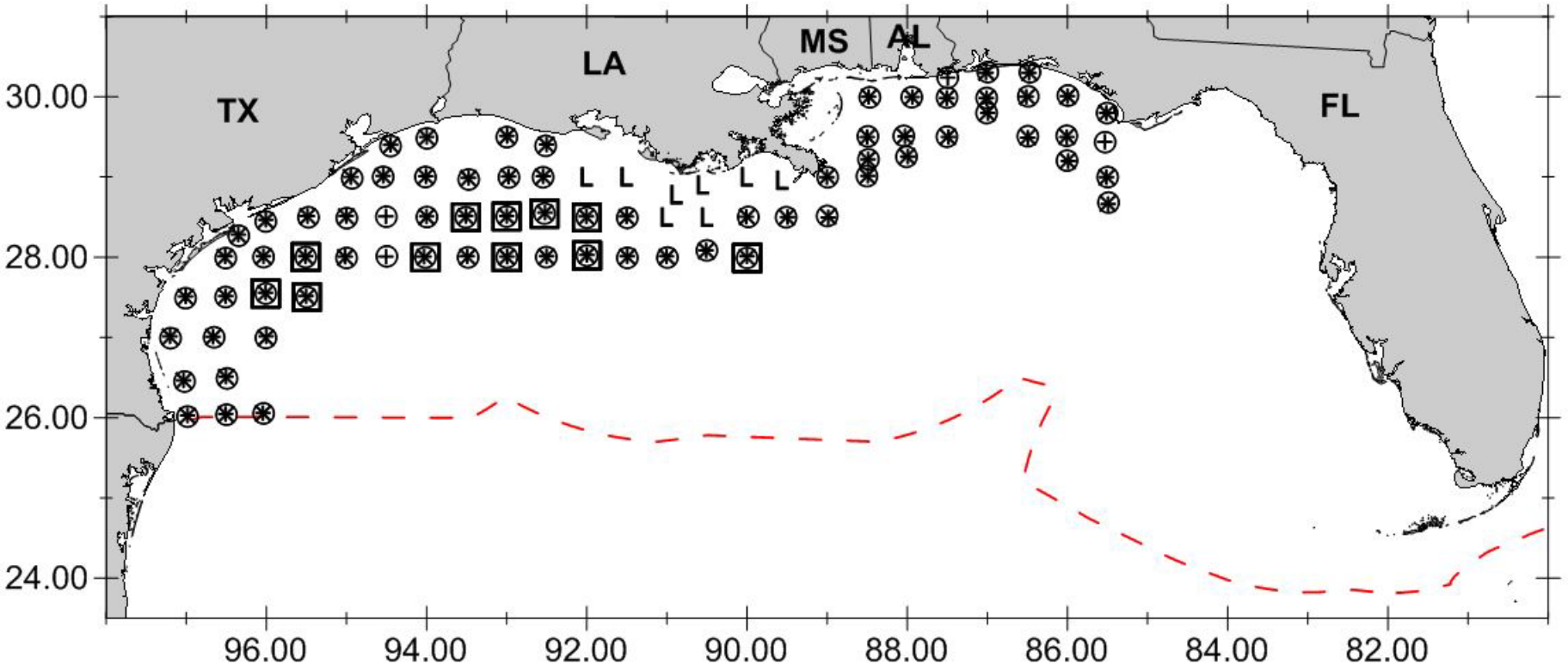


Figure 2. Locations of stations where the microplastic project and NSF grant project samples were collected during the SEAMAP Fall Plankton Survey aboard NOAA Ship *Gordon Gunter* cruise GU-17-04, 4 – 30 September 2017. Open squares are microplastic stations; closed diamonds are NSF grant project stations; and open diamonds are where MOCNESS Net 0 samples were saved for NSF grant project.

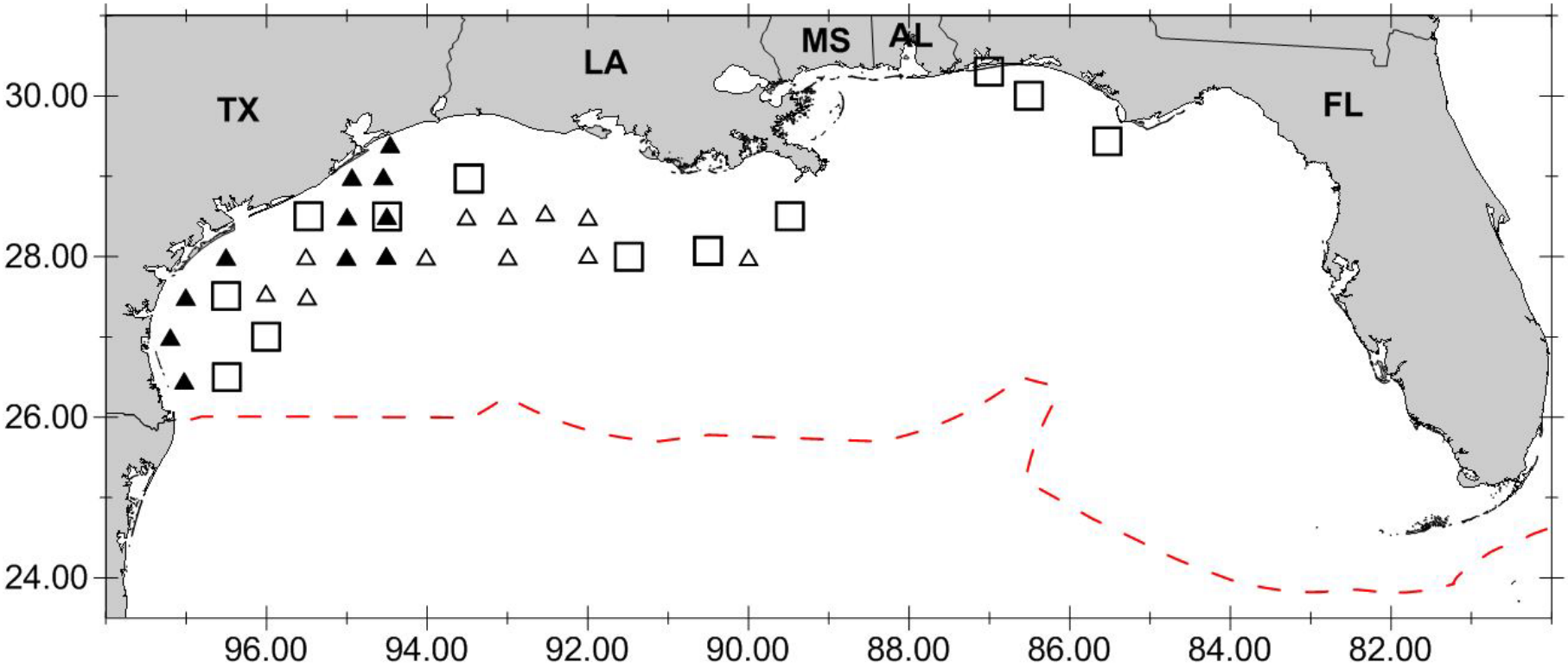


Figure 3. Locations of CUFES samples taken during the SEAMAP Fall Plankton Survey aboard the NOAA Ship *Gordon Gunter*, cruise GU-17-04, 4 – 30 September 2017.

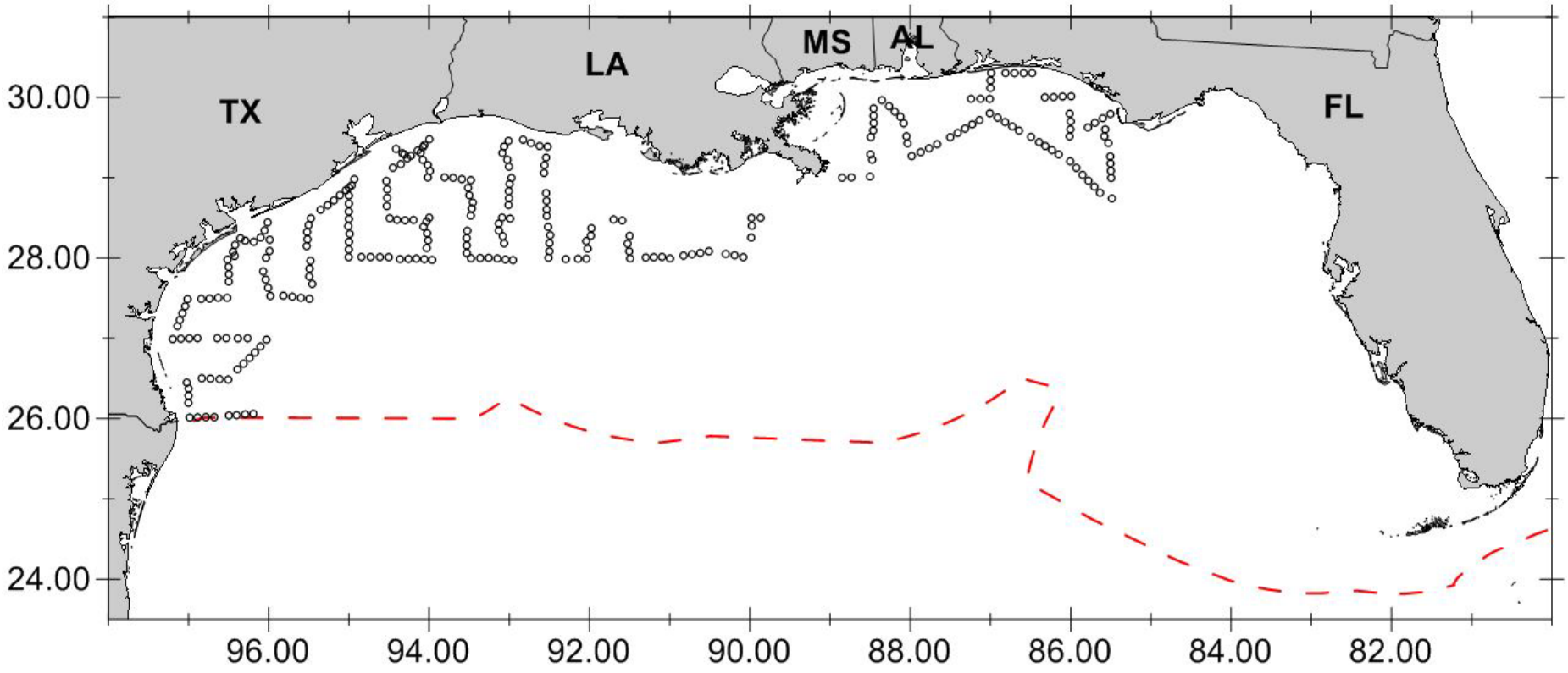


Figure 4. Sea temperature (º C) near the surface (≤ 3 m depth) at plankton stations during the SEAMAP Fall Plankton Survey aboard NOAA Ship *Gordon Gunter* cruise GU-17-04, 4 – 30 September 2017.

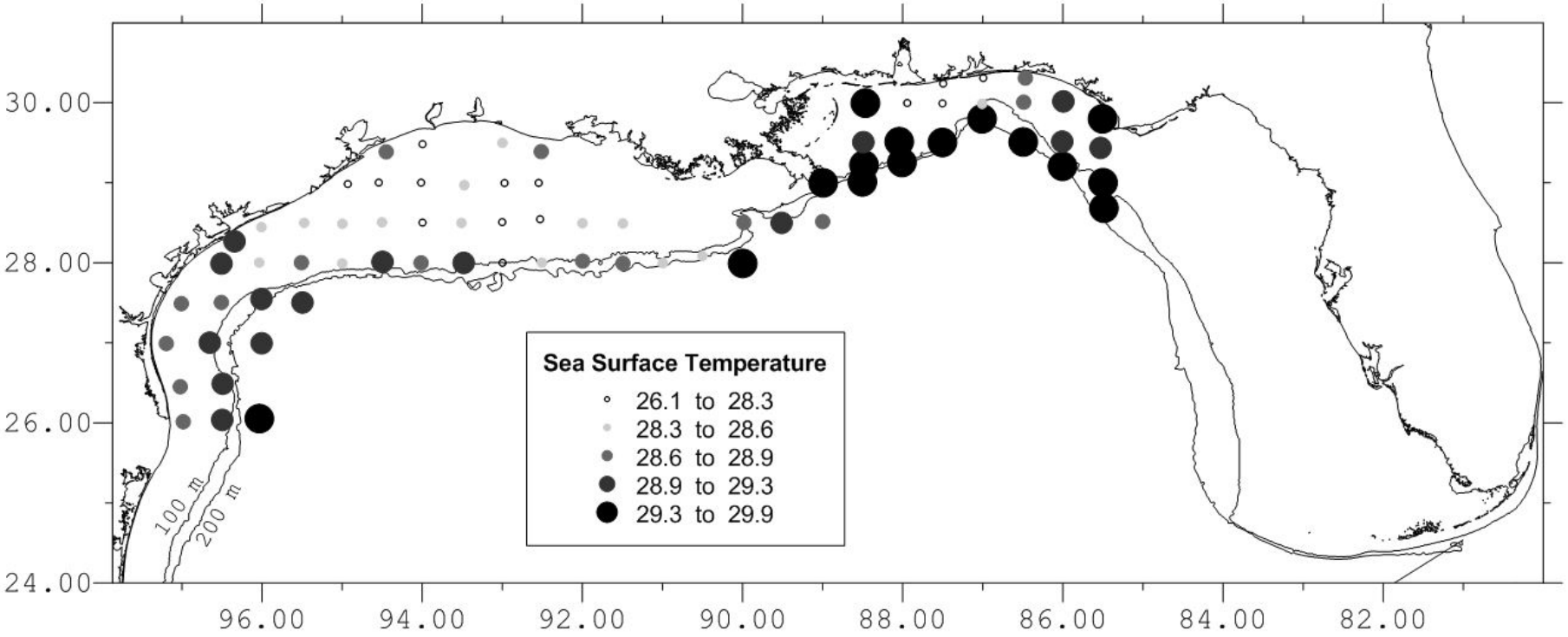


Figure 5. Salinity near the surface (≤ 4 m depth) at plankton stations during the SEAMAP Fall Plankton Survey aboard NOAA Ship *Gordon Gunter* cruise GU-17-04, 4 – 30 September 2017.

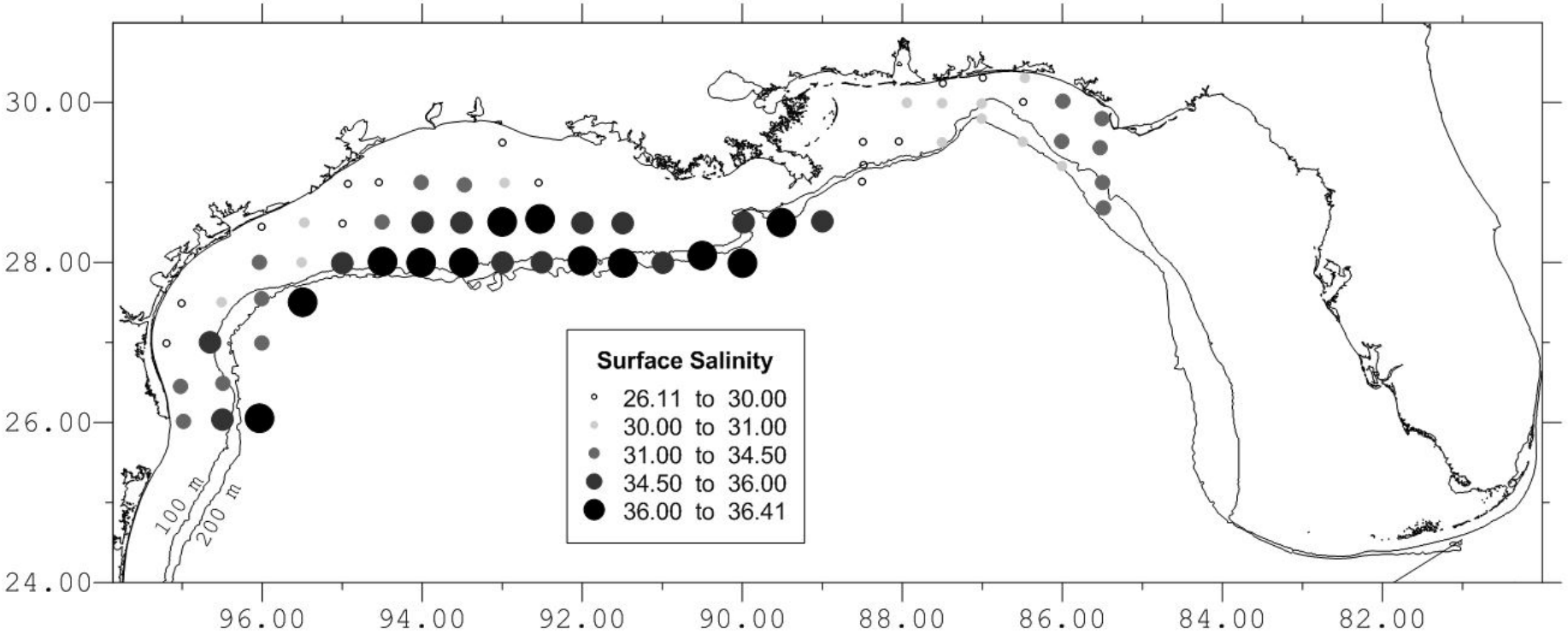


Figure 6. Dissolved oxygen (mg/L) near the surface (≤ 3 m depth) at plankton stations during the SEAMAP Fall Plankton Survey aboard NOAA Ship *Gordon Gunter* cruise GU-17-04, 4 – 30 September 2017.

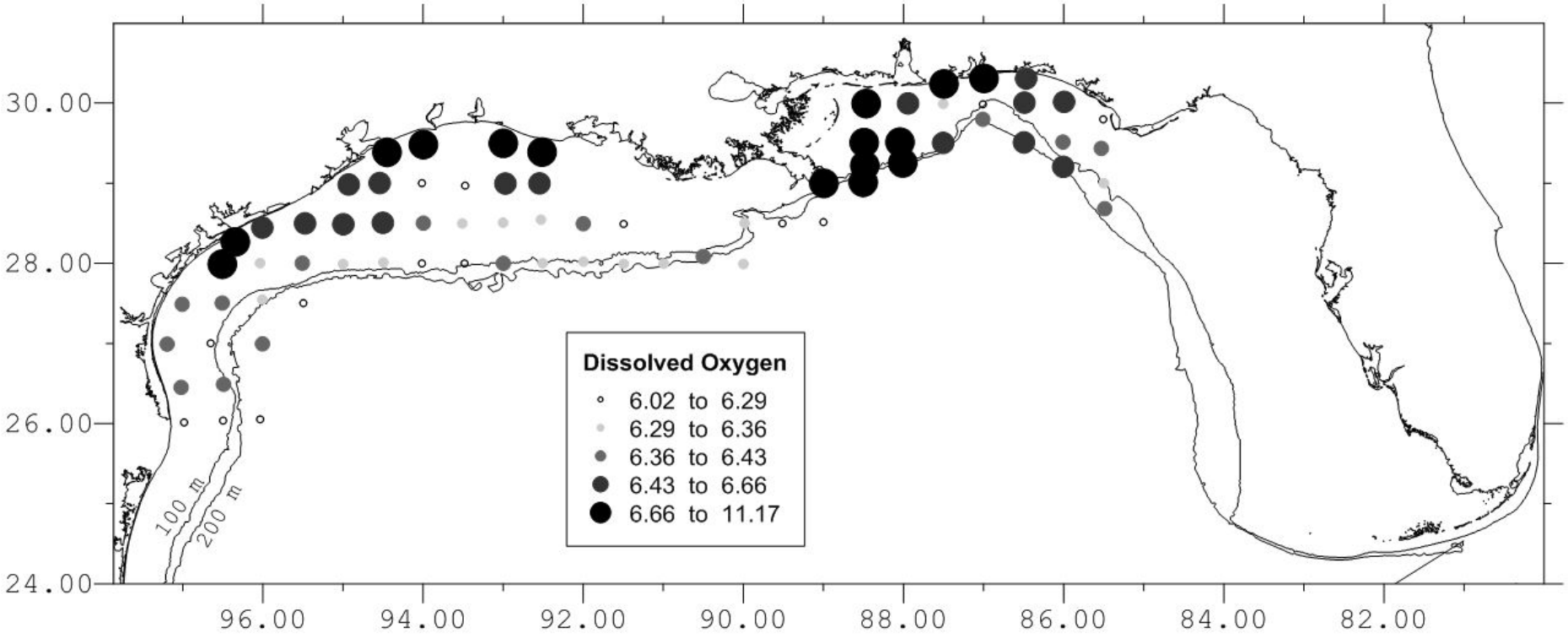
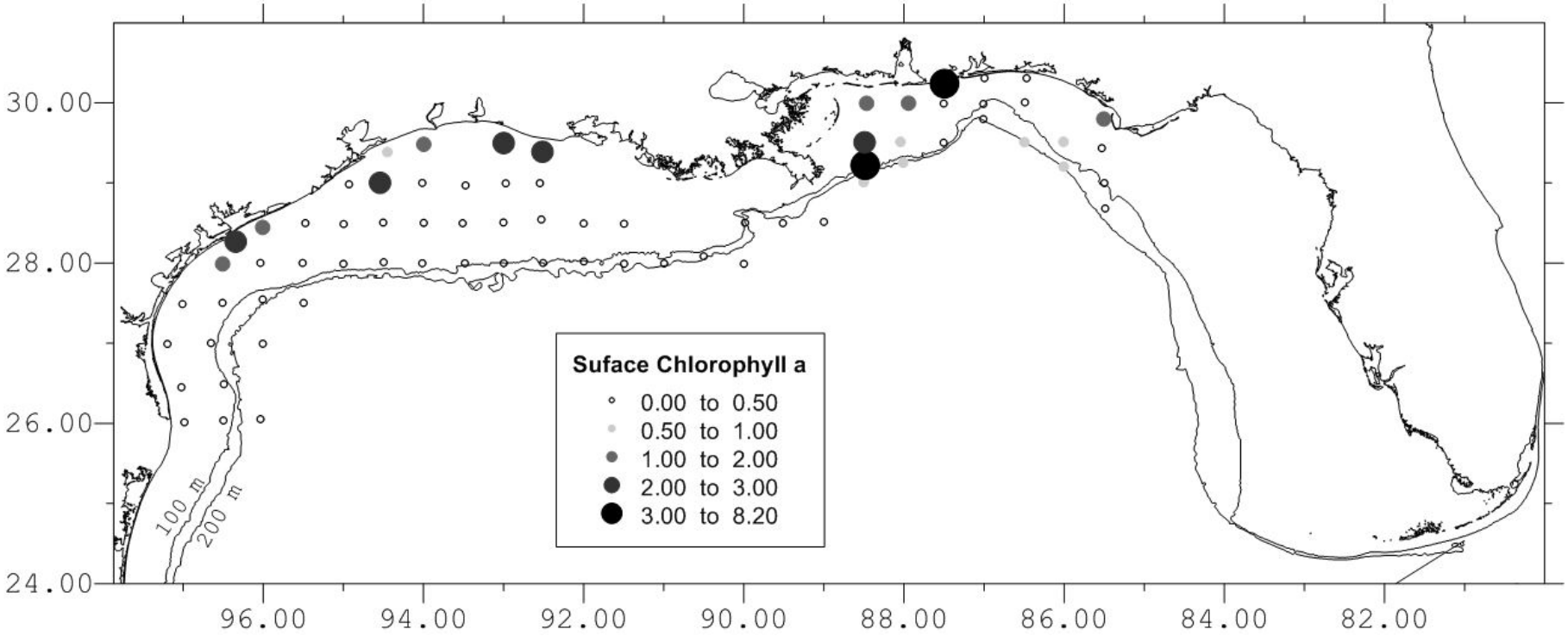


Figure 7. Surface chlorophyll a (µg/L) near the surface (≤ 3 m depth) at plankton stations during the SEAMAP Fall Plankton Survey aboard NOAA Ship *Gordon Gunter* cruise GU-17-04, 4 – 30 September 2017.



Appendix 1. Cruise report from GoMMAPPS program coordinator, Chris Haney.

GoMMAPPS seabird trip report to NOAA
17 - 30 September 2017
Fall Plankton Survey, Leg 2
R/V *GORDON GUNTER*, R-336

Summary: The Gulf of Mexico (GoM) region is critical in affording key breeding, staging, and wintering habitats for North America's avifauna. Yet limited information is available to characterize the species composition, distribution, and abundance of birds Gulf-wide, particularly given the large number of energy-related platforms (in the Central and Western Planning Areas), and cumulative level of oil and gas activity in the northern GoM region (2012, 2013). The Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) Seabird Project anticipates being the most spatially and temporally extensive avian research effort ever conducted in the northern GoM. The GoMMAPPS Seabird Project will document the distribution, abundance, and diversity of birds so as to better inform regulatory decisions influencing conservation of migratory avian resources (Seabird Science Plan 2016).

From 17 – 30 September 2017, two GoMMAPPS seabird observers accompanied the fall plankton cruise Leg 2 aboard the *R/V Gordon Gunter* based at the NOAA National Marine Fisheries Service, Pascagoula, MS. Chris Haney and Matt Love conducted counts of all birds detected within a 300-m strip transect while the ship was underway (Balance and Force 2016). Observers counted these and seabirds outside the strip transect for ~110 hours over 13 calendar days. No time that was scheduled to be surveyed was lost to weather conditions or to mechanical issues. Daily survey time ranged from ~4.0 to 12 hrs.

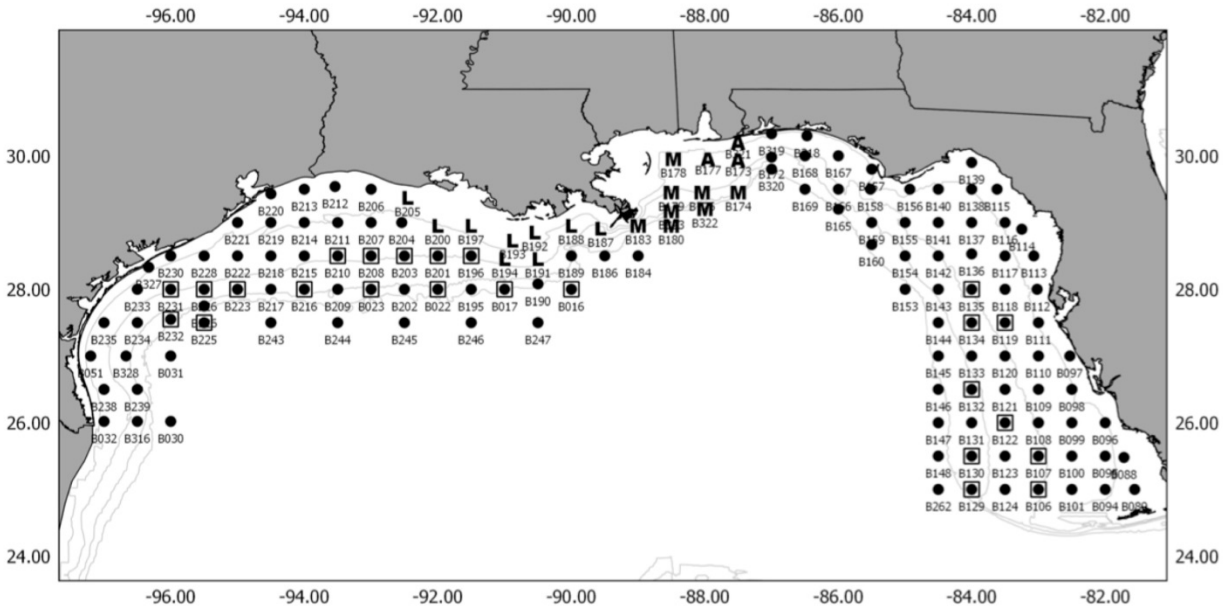


Figure 1. Map of the sampling stations for the NOAA fall 2017 plankton survey aboard the *R/V Gordon Gunter*. GoMMAPPS observers conducted strip transect surveys during daylight hours between stations, as well on the day of embarkation (17 September) from Pascagoula, and for two long transit days back to port (28-29 September). NOTE: During Leg 2 of the NOAA fall plankton survey, only that portion of the Gulf of Mexico west of about stations B183 and B184 was surveyed.

This GoMMAPPS seabird survey was extremely successful and will provide key information for decision-makers. In general, spatial coverage from the R/V *Gordon Gunter* during this leg was widespread in the Central and Western

Planning Areas over continental shelf habitats (***Figure 1***). Observers detected 20 different species of pelagic, offshore, and coastal marine birds, as well as a number of migrating passerines, shorebirds, raptors, and wading birds. The total count and the birds per day exceeded by a factor of three the encounter rates from any single GoMMAPPS survey conducted to date. By September 29, sightings of at least 7,860 individual birds were entered into the SEEBIRD database, for a detection rate of >600 birds/d or almost 70 birds/hr on Leg 2 of the NOAA 2017 fall plankton survey.

SPECIES LIST

- red-necked phalarope
- parasitic jaeger
- long-tailed jaeger
- laughing gull
- sooty tern
- bridled tern
- least tern
- black tern
- common tern
- Forster's tern
- royal tern
- sandwich tern
- tropicbird sp.
- Cory's shearwater
- Audubon's shearwater
- magnificent frigatebird
- masked booby
- brown booby
- double-crested cormorant
- brown pelican