



# **Biological and Geochemical Data of Gravity Cores from Mobile Bay, Alabama**

By Kathryn A. Richwine, Marci Marot, Christopher G. Smith, Lisa E. Osterman, and C. Scott Adams

Open-File Report 2013-1240

**U.S. Department of the Interior  
U.S. Geological Survey**

**U.S. Department of the Interior**

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U.S. Geological Survey, Reston, Virginia: 2013

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Richwine, K.A., Marot, M., Smith C.G., Osterman L.E., and Adams, C.S., 2013, Biological and geochemical data of gravity cores from Mobile Bay, Alabama: U.S. Geological Survey Open-File Report 2013-1240, 20 p.

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## Conversion Factors

Multiply	By	To obtain
Length		
centimeter (cm)	0.394	inch (in.)
millimeter (mm)	0.039	inch (in.)
meter (m)	3.281	foot (ft)
kilometer (km)	0.621	mile (mi)
meter (m)	1.094	yard (yd)
Area		
square centimeter (cm <sup>2</sup> )	0.001	square foot (ft <sup>2</sup> )
square meter (m <sup>2</sup> )	10.76	square foot (ft <sup>2</sup> )
square centimeter (cm <sup>2</sup> )	0.155	square inch (ft <sup>2</sup> )
Volume		
liter (L)	33.82	ounce, fluid (fl. oz)
liter (L)	2.113	pint (pt)
liter (L)	1.057	quart (qt)
liter (L)	0.264	gallon (gal)
cubic meter (m <sup>3</sup> )	264.2	gallon (gal)
cubic meter (m <sup>3</sup> )	35.31	cubic foot (ft <sup>3</sup> )
cubic meter (m <sup>3</sup> )	1.308	cubic yard (yd <sup>3</sup> )
Mass		
gram (g)	0.035	ounce, avoirdupois (oz)
kilogram (kg)	2.205	pound avoirdupois (lb)
Pressure		
kilopascal (kPa)	0.010	atmosphere, standard (atm)
Energy		
joule (J)	0.000	kilowatthour (kWh)
Radioactivity		
becquerel per liter (Bq/L)	27.027	picocurie per liter (pCi/L)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$^{\circ}\text{F}=(1.8\times^{\circ}\text{C})+32$$

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$^{\circ}\text{C}=(^{\circ}\text{F}-32)/1.8$$

# Biological and Geochemical Data of Gravity Cores from Mobile Bay, Alabama

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## Introduction

A study was conducted to understand the marine-influenced environments of Mobile Bay, Alabama, by collecting a series of box cores and gravity cores. One gravity core in particular demonstrates a long reference for changing paleoenvironmental parameters in Mobile Bay. Due to lack of abundance of foraminifers and (or) lack of diversity, the benthic foraminiferal data for two of the three gravity cores are not included in the results. The benthic foraminiferal data collected and geochemical analyses in this study provide a baseline for recent changes in the bay.

## Data Collection and Processing

### Gravity Core Collection

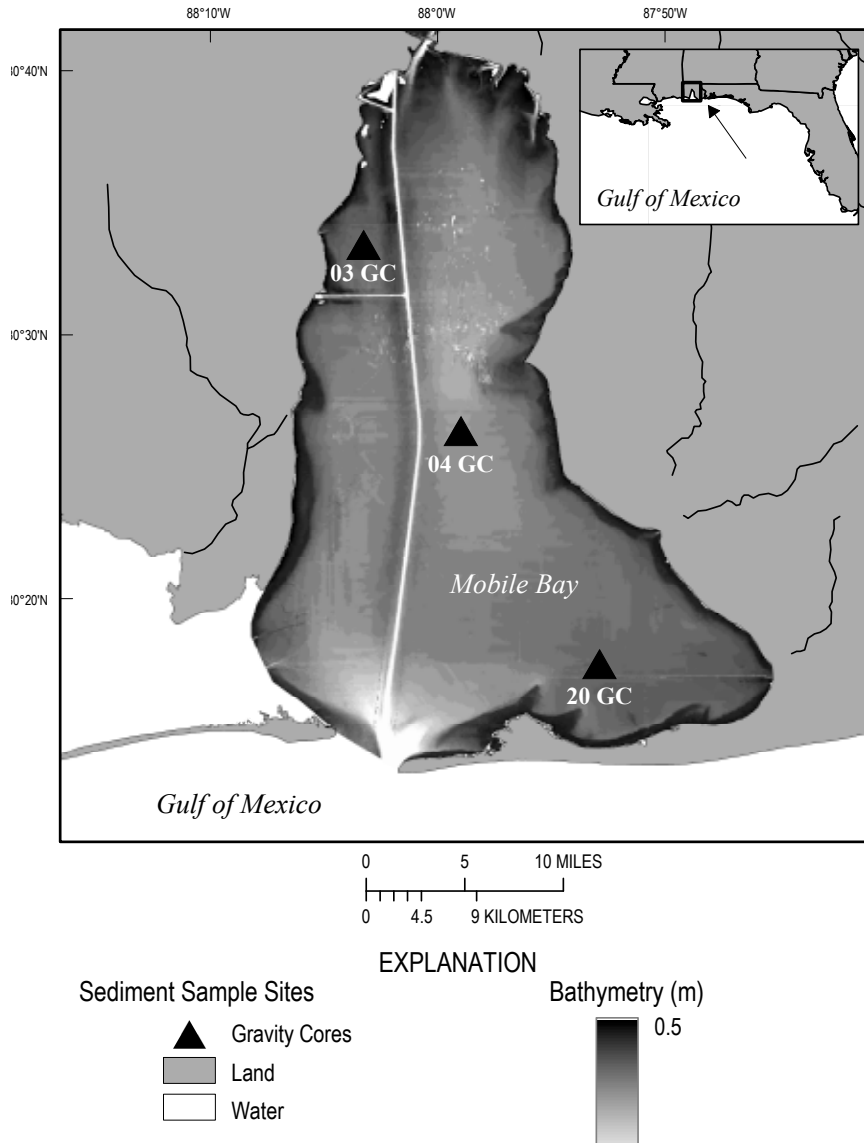
During the August 2010 research cruise, three gravity cores were collected aboard the U.S. Geological Survey (USGS) RV *Gilbert* (table 1; fig. 1). The gravity core samples were refrigerated after collection and then extruded and subsampled at 1-centimeter (cm) intervals within 48 hours of collection. The samples were refrigerated and transported to the U.S. Geological Survey foraminiferal laboratory in St. Petersburg, Florida, where they remained refrigerated until laboratory processing.

### Geochemical Processing and Analyses

For geochemical analyses, all gravity cores were subsampled at 1-cm resolution for the upper 50 cm and 2-cm resolution below 50 cm. A split of each subsample was processed for basic sediment characteristics (dry bulk density and porosity) and bulk organic matter content (tables 2–4). Porosity and dry bulk density were determined on 20 mL (with 0.5 mL resolution) of wet sediment packed into a syringe with 0.5 mL graduations. Porosity (j, -) was determined as the fraction of mass loss relative to the initial mass after drying at 60 °C for 48 hours. Salt mass contributions were removed under the assumption that pore water salinity was equivalent to bottom water salinity. Dry bulk density ( $\rho_b$ , g cm<sup>-3</sup>) was determined as the dry

**Table 1.** Mobile Bay Gravity Core sample locations

Gravity Core Site Name	Date	Latitude (°N)	Longitude (°W)	Water Depth (m)	Temperature (°C)	Salinity	DO	pH
MB0810-GC03	8/6/2010	30.557	88.054	3	30.74	12.14	3.89	7.56
MB0810-GC04	8/6/2010	30.439	87.983	3.8	30.35	16.43	1.05	7.38
MB0810-GC20	8/5/2010	30.291	87.883		31.03	16.45	1.91	7.41



**Figure 1.** Location map showing sampling sites in Mobile Bay, Alabama. Gravity cores were collected at these sites in August 2010. See Table 1 for more information.

mass normalized to the standardized 20 mL volume. Bulk organic matter content was determined by loss-on-ignition on dried, homogenized samples. A small aliquot of each sample (3–5 grams [g]) was briefly weighed in porcelain crucibles and combusted at 450 °C in a muffle furnace for 6 hours. Samples were held at 60 °C in the furnace until post-combustion weights could be recorded. The loss-on-ignition or organic matter content were estimated by the ratio of mass loss during combustion to original sediment mass. Approximately 10 percent of the samples were replicated.

Total organic carbon (TOC), total nitrogen (TN), and the stable isotopic signature ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ , in standard per mil notation) of each were measured on dried, gravity core subsamples (tables 2–4). Sample preparation follows that outlined by Harris and others (2001). Each homogenized, dried sediment sample was pre-weighed in a 5 x 9 millimeter (mm) silver capsule (Costech, Inc.). Inorganic carbon was removed by fumigating with concentrated hydrochloric (HCl) acid for 4 to 6 hours. Silver capsules were sealed and

**Table 2.** Mobile Bay MB0810-03GC geochemical data

MB0810-03GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)
0.5	-26.60	4.77	1.365	0.177	9.02
1.5	-26.35	4.67	1.206	0.155	9.06
2.5	-26.35	4.20	1.094	0.151	8.47
3.5	-26.34	4.21	0.791	0.096	9.55
4.5	-26.33	4.27	0.996	0.126	9.25
5.5	-26.50	6.19	1.054	0.096	12.77
6.5	-27.06	3.59	1.471	0.152	11.28
7.5	-26.95	5.41	1.716	0.134	14.93
8.5	-26.27	4.80	1.365	0.148	10.77
9.5	-26.15	4.54	1.354	0.166	9.51
10.5	-26.18	3.76	1.301	0.160	9.47
11.5	-26.27	4.41	1.284	0.137	10.91
12.5	-26.13	4.77	1.381	0.149	10.78
13.5	-26.09	4.57	1.198	0.138	10.12
14.5	-26.12	5.70	1.205	0.108	13.06
15.5	-26.03	6.14	1.211	0.105	13.40
16.5	-26.08	4.12	1.223	0.129	11.05
17.5	-25.48	4.06	1.081	0.141	8.94
18.5	-25.43	7.77	1.115	0.102	12.76
19.5	-25.52	6.35	0.988	0.101	11.37
20.5	-25.36	5.73	0.869	0.087	11.68
21.5	-25.40	6.14	0.972	0.093	12.16
22.5	-25.23	4.01	0.982	0.139	8.21
23.5	-25.29	3.59	0.992	0.170	6.82
24.5	-25.24	2.71	0.959	0.253	4.41
25.5	-25.36	4.50	0.917	0.131	8.15
26.5	-25.32	4.27	0.880	0.130	7.90
27.5	-25.74	4.22	0.804	0.102	9.20
28.5	-25.63	4.11	0.867	0.103	9.79
29.5	-25.45	4.20	0.845	0.107	9.25
30.5	-25.64	2.95	0.970	0.165	6.85
31.5	-25.42	5.63	1.070	0.111	11.20
32.5	-25.43	3.66	1.016	0.146	8.11
33.5	-25.48	3.18	0.982	0.158	7.23
34.5	-25.62	4.29	1.061	0.133	9.27
35.5	-25.67	4.70	1.322	0.133	11.54
36.5	-25.91	4.58	1.228	0.128	11.14

MB0810-03GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)
37.5	-26.17	4.53	1.043	0.108	11.22
38.5	-26.18	3.96	0.950	0.106	10.49
39.5	-26.17	3.18	1.056	0.119	10.36
41	-26.08	3.05	0.930	0.111	9.75
43	-26.09	2.74	0.910	0.126	8.44
45	-26.02	3.77	0.983	0.104	11.03
47	-26.03	3.56	0.968	0.108	10.49
49	-26.10	3.50	0.958	0.101	11.02
51	-26.53	4.72	1.155	0.098	13.73
55	-26.08	2.97	0.903	0.112	9.43
59	-26.14	3.82	0.893	0.107	9.76
63	-26.06	3.43	0.890	0.109	9.49
67	-26.16	2.85	0.903	0.111	9.45
71	-26.07	4.33	0.888	0.104	9.97
75	-26.04	3.09	0.856	0.099	10.02
79	-25.77	3.95	0.900	0.094	11.12
83	-25.84	3.65	0.844	0.106	9.25
87	-25.79	2.76	0.855	0.097	10.28
91	-25.77	3.06	0.850	0.101	9.79
95	-25.86	3.17	0.885	0.108	9.51
99	-25.79	3.33	0.891	0.109	9.48
103	-25.74	2.81	0.896	0.119	8.76

**Table 3.** Mobile Bay MB0810-04GC geochemical data

MB0810-04GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)	MB0810-04GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)
0.5	-26.95	4.71	2.18	0.270	9.42	39.5	-24.91	2.82	1.49	0.208	8.33
1.5	-27.65	4.16	2.41	0.255	11.01	41	-25.02	3.44	1.50	0.215	8.12
2.5	-31.41	3.46	3.67	0.270	15.84	43	-25.04	2.67	1.48	0.226	7.63
3.5	-29.68	3.28	2.82	0.261	12.57	45	-25.05	2.88	1.45	0.204	8.30
4.5	-29.24	3.22	2.64	0.260	11.81	47	-25.10	2.50	1.38	0.202	7.99
5.5	-29.52	3.29	2.84	0.226	14.61	49	-25.00	3.43	1.36	0.176	9.06
6.5	-27.27	4.25	1.95	0.223	10.19	51	-25.02	2.16	1.37	0.230	6.95
7.5	-27.32	4.09	1.86	0.207	10.47	55	-25.24	2.56	1.27	0.214	6.89
8.5	-27.48	3.63	1.81	0.201	10.52	59	-25.31	2.56	1.31	0.195	7.83
9.5	-25.75	3.92	1.52	0.204	8.67	63	-25.50	2.49	1.33	0.193	8.01
10.5	-26.06	4.04	1.52	0.188	9.45	67	-25.47	2.43	1.27	0.187	7.88
11.5	-25.89	3.15	1.50	0.206	8.47	71	-25.69	2.85	1.36	0.168	9.43
12.5	-25.15	4.45	1.35	0.176	8.94	75	-25.48	2.55	1.30	0.187	8.09
13.5	-25.38	2.96	1.42	0.200	8.23	79	-25.37	2.24	1.27	0.185	8.01
14.5	-25.19	4.34	1.40	0.193	8.50	83	-25.29	2.63	1.30	0.175	8.64
15.5	-24.73	3.68	1.36	0.198	8.03	87	-25.19	3.06	1.30	0.194	7.76
16.5	-24.96	3.09	1.45	0.208	8.09	91	-24.98	2.54	1.23	0.169	8.47
17.5	-24.79	3.73	1.38	0.208	7.76	95	-24.96	2.24	1.24	0.163	8.86
18.5	-25.05	3.71	1.33	0.176	8.80	99	-25.01	2.53	1.30	0.173	8.75
19.5	-25.50	4.14	1.39	0.182	8.94	103	-25.16	3.36	1.29	0.148	10.19
20.5	-25.52	2.59	1.39	0.208	7.79	107	-25.15	2.64	1.28	0.160	9.31
21.5	-25.43	3.52	1.39	0.206	7.90	111	-25.13	3.08	1.34	0.180	8.68
22.5	-25.67	4.03	1.47	0.190	9.03	115	-25.12	3.22	1.32	0.190	8.08
23.5	-25.43	3.46	1.48	0.219	7.90	119	-25.14	2.79	1.34	0.186	8.41
24.5	-25.43	3.73	1.44	0.196	8.59	123	-25.13	2.92	1.38	0.176	9.15
25.5	-25.44	3.65	1.51	0.193	9.14	127	-25.19	2.66	1.27	0.162	9.13
27.5	-25.43	3.36	1.47	0.216	7.91	131	-25.41	3.70	1.37	0.159	10.00
28.5	-25.45	2.72	1.48	0.219	7.88	135	-25.29	3.26	1.36	0.156	10.11
29.5	-25.52	3.41	1.48	0.200	8.60	139	-25.32	2.83	1.37	0.160	10.01
30.5	-25.48	3.07	1.47	0.213	8.07	143	-25.28	2.79	1.36	0.175	9.02
31.5	-25.62	3.15	1.48	0.212	8.11	147	-25.23	2.48	1.38	0.174	9.20
32.5	-25.59	3.61	1.49	0.198	8.74	151	-25.29	2.82	1.40	0.167	9.78
33.5	-25.59	2.81	1.49	0.204	8.49	155	-25.22	3.52	1.35	0.155	10.16
34.5	-25.54	3.35	1.50	0.202	8.70	159	-25.33	3.13	1.32	0.156	9.89
35.5	-25.40	3.45	1.53	0.205	8.67	163	-25.31	2.60	1.34	0.188	8.28
36.5	-25.26	3.17	1.40	0.188	8.64	167	-25.29	2.48	1.37	0.180	8.87
37.5	-24.98	3.02	1.39	0.226	7.17	171	-25.38	2.20	1.32	0.176	8.77
38.5	-24.99	2.42	1.48	0.215	8.02	175	-25.46	2.57	1.38	0.175	9.19



**Table 3—Continued.** Mobile Bay MB0810-04GC geochemical data

MB0810-04GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)
179	-25.44	2.93	1.32	0.172	8.95
183	-25.59	3.03	1.29	0.155	9.66
187	-25.35	2.92	1.25	0.180	8.12
191	-25.19	2.02	1.06	0.150	8.25
195	-25.39	2.83	1.23	0.177	8.06
199	-25.48	2.56	1.27	0.171	8.67
203	-25.16	2.53	1.22	0.157	9.05
207	-25.11	3.47	1.17	0.137	9.96
211	-25.17	3.02	1.16	0.151	8.96
215	-25.05	3.43	1.21	0.148	9.55

**Table 4.** Mobile Bay MB0810-20GC geochemical data

MB0810-20GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)	Merged TOC	TOC (mg/g)
0.5	-26.26	4.55	2.66	0.293	10.59	2.66	26.60
1.5						2.59	25.90
2.5	-25.14	4.33	2.00	0.336	6.94	2.63	26.30
3.5	-25.11	4.85	1.93	0.299	7.53	1.88	18.80
4.5	-24.98	4.24	1.97	0.340	6.73	2.38	23.80
5.5						2.77	27.70
6.5	-25.15	3.89	1.80	0.322	6.50	2.44	24.40
8.5	-25.31	4.99	1.63	0.202	9.42	1.92	19.20
9.5	-25.33	4.16	1.63	0.256	7.42	1.85	18.50
10.5	-25.25	4.04	1.63	0.270	7.04	1.82	18.20
12.5	-25.15	4.07	1.65	0.262	7.37	1.71	17.10
14.5	-25.18	3.61	1.64	0.264	7.24	1.61	16.10
15.5	-25.21	5.48	1.65	0.217	8.88	1.62	16.20
16.5	-25.16	4.89	1.64	0.210	9.11	1.60	16.00
18.5	-24.63	5.51	1.40	0.170	9.58	1.59	15.90
20.5	-24.82	5.56	1.41	0.160	10.25	1.53	15.30
21.5	-24.51	4.96	1.31	0.186	8.20	1.54	15.40

**Table 4—Continued.** Mobile Bay MB0810-20GC geochemical data

MB0810-20GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)	Merged TOC	TOC (mg/g)
22.5	-24.59	4.53	1.25	0.211	6.92	1.57	15.70
24.5	-24.57	4.04	1.31	0.213	7.16	1.48	14.80
26.5	-24.81	3.47	1.23	0.227	6.31	1.37	13.70
27.5	-24.51	4.53	1.22	0.166	8.51	1.28	12.80
28.5	-22.84	6.79	1.01	0.160	7.40	1.23	12.30
30.5	-24.23	3.18	1.26	0.235	6.26	1.24	12.40
32.5	-24.30	4.20	1.18	0.173	7.97	1.23	12.28
33.5	-24.31	5.83	1.22	0.143	10.10	1.22	12.16
34.5	-24.48	4.76	1.14	0.163	8.17	1.01	10.13
36.5	-24.12	6.64	1.21	0.137	10.24	1.26	12.63
38.5	-24.32	4.04	1.20	0.180	7.74	1.18	11.82
39.5	-24.44	4.70	1.20	0.161	8.66	1.22	12.23
40.5						1.14	11.45
42.5						1.21	12.06
43	-24.33	4.23	1.19	0.204	6.85		
44.5						1.20	11.95
45.5						1.20	11.99
47	-24.23	4.67	1.20	0.172	8.15		
49						1.19	11.88
51	-23.80	4.20	1.15	0.192	7.01		
53						1.20	12.04
57	-23.84	4.01	1.18	0.194	7.10	1.15	11.53
61	-23.90	3.56	1.25	0.193	7.56	1.18	11.80
65	-23.88	3.75	1.35	0.190	8.30	1.25	12.52
69	-24.08	3.59	1.41	0.188	8.70	1.35	13.50
73	-24.15	3.95	1.50	0.193	9.08	1.41	14.07
77	-24.02	2.96	1.49	0.213	8.16	1.50	15.03
81	-23.91	3.00	1.37	0.189	8.47	1.49	14.90
85	-23.93	2.59	1.43	0.211	7.90	1.37	13.74
89	-23.85	2.50	1.34	0.197	7.93	1.43	14.30
93	-23.97	2.82	1.33	0.186	8.34	1.34	13.39
97	-24.06	2.36	1.32	0.201	7.62	1.33	13.30
101	-24.12	2.48	1.28	0.186	8.04	1.32	13.15
105	-24.20	2.36	1.30	0.174	8.72	1.28	12.81
109	-24.06	2.73	1.34	0.186	8.42	1.30	13.05

**Table 4—Continued.** Mobile Bay MB0810-20GC geochemical data

MB0810-20GC depth (cm)	d13C	d15N	%OC	%ON	C:N Molar (Avg)	Merged TOC	TOC (mg/g)
113	-24.08	2.82	1.31	0.183	8.35	1.34	13.41
117	-24.16	2.83	1.28	0.174	8.56	1.31	13.14
121	-24.13	3.05	1.20	0.174	8.06	1.28	12.77
125	-24.07	2.91	1.12	0.165	7.89	1.20	12.00
129	-23.99	3.12	1.15	0.162	8.28	1.12	11.20
133	-23.96	2.82	1.15	0.166	8.09	1.15	11.50
137	-23.93	3.30	1.17	0.150	9.07	1.15	11.50
141	-24.01	2.93	1.18	0.161	8.51	1.17	11.66
145	-24.08	2.90	1.22	0.169	8.47	1.18	11.77
149	-23.98	3.51	1.20	0.125	11.20	1.22	12.25
153	-23.92	3.35	1.21	0.141	9.98	1.20	12.02
157	-23.97	2.94	1.21	0.155	9.06	1.21	12.06
161	-23.95	2.71	1.19	0.164	8.43	1.21	12.06
165	-24.01	3.37	1.19	0.137	10.11	1.19	11.87
169	-23.96	3.23	1.16	0.132	10.18	1.19	11.92
173	-24.09	3.46	1.16	0.141	9.62	1.16	11.56
177	-24.14	2.98	1.16	0.146	9.23	1.16	11.63
181	-24.15	2.76	1.22	0.166	8.59	1.16	11.57
185	-24.23	3.16	1.17	0.153	8.91	1.22	12.20
189	-24.13	2.83	1.09	0.154	8.21	1.17	11.69
193	-24.25	2.75	1.05	0.146	8.37	1.09	10.86
197	-24.23	2.71	1.03	0.152	7.87	1.05	10.51
201	-24.00	3.06	1.09	0.142	8.92	1.03	10.25
205	-24.08	3.33	1.01	0.117	10.04	1.09	10.89
209	-24.03	3.60	0.97	0.108	10.45	1.01	10.10
213	-24.01	2.76	0.99	0.127	9.07	0.97	9.73
217	-24.03	3.11	1.01	0.126	9.31	0.99	9.88
221	-23.90	3.20	1.03	0.126	9.55	1.01	10.09
225	-23.93	2.66	1.05	0.141	8.66	1.03	10.32
229	-23.88	2.93	0.95	0.121	9.18	1.05	10.46
233	-23.98	2.66	0.97	0.130	8.67	0.95	9.52
237	-23.88	2.96	0.94	0.114	9.65	0.97	9.67
241	-23.87	3.40	1.00	0.115	10.10	0.94	9.42
245	-24.09	2.82	1.05	0.128	9.57	1.00	9.95
249						1.05	10.55

kept in a dry environment until analysis. A PDZ Europa ANCA-GSL elemental analyzer interfaced to a PDZ Europa 20-20 isotope ratio mass spectrometer (Sercon Ltd., Cheshire, UK) was used to measure TOC, TN, and respective isotopes by the Stable Isotope Facility at the University of California, Davis. Every third sample was replicated to evaluate sample heterogeneity. Standard deviations of  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  on all 85 replicates were 0.4 and 4.8 percent, respectively. The  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  are presented as per mil differences relative to the reference standards Vienna PeeDee Belemnite (VPDB) and Air, respectively.

The gravity core MB08-10-20GC was also analyzed for total sediment metal concentrations. The sediment aliquot used was of the same resolution as mentioned for other geochemical analyses. Sediment samples were digested and analyzed for a suite of 42 elements using a combination of inductively coupled plasma–atomic emission spectrometry (ICP–AES) and inductively coupled plasma–mass spectrometry (ICP–MS) by the Central Mineral and Environmental Resources Science Center (CMERSC) Analytical Chemistry group. Laboratory procedures involved full digestion of sediment sample (0.5–5 g) using a mixture of hydrochloric (HCl), nitric ( $\text{HNO}_3$ ), perchloric ( $\text{HClO}_4$ ), and hydrofluoric (HF) acids at low temperature (Harris and others, 2001). Digestate was diluted with dilute HCl or  $\text{HNO}_3$  at a known ratio and prepared for sample analysis by using ICP-AES and (or) ICP-MS. Results for the full 42 element suite are presented in table 5.

**Table 5.** Mobile Bay MB0810-20GC metals data

MB0810-20GC depth (cm)	Al (%)	Ca (%)	Fe (%)	K (%)	Mg (%)	Na (%)	Ti (%)	Ba (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Mn (ppm)	Mo (ppm)	Ni (ppm)	Pb (ppm)	Sn (ppm)	Th (ppm)	V (ppm)	Zn (ppm)
0.5	8.31	0.5	4.92	1.23	1.05	1.43	0.43	305	17.4	82	21.8	995	1.47	32.8	25.1	3.4	12.9	120	139
2.5	8.53	0.49	4.90	1.30	1.09	1.54	0.42	297	17.1	82	21.7	1060	1.41	33.3	25.5	2.8	12.2	119	136
3.5	8.52	0.52	4.95	1.29	1.11	1.52	0.42	304	17.1	83	27.9	1060	1.49	33.7	25.3	2.8	12.6	119	138
4.5	8.53	0.52	4.87	1.28	1.12	1.53	0.42	300	17.0	80	22.9	1020	1.44	33.3	25.1	2.8	12.5	119	136
6.5	8.36	0.51	4.85	1.26	1.10	1.49	0.42	298	14.7	78	21.7	957	1.42	33.0	25.7	2.7	13.0	113	135
8.5	8.73	0.42	5.11	1.31	1.12	1.48	0.43	310	15.4	85	22.3	862	1.38	33.9	27.1	3.0	13.4	123	144
9.5	8.71	0.36	5.07	1.33	1.10	1.41	0.43	310	15.5	84	21.4	802	1.34	33.4	26.5	2.9	13.6	119	141
10.5	8.70	0.34	5.03	1.34	1.11	1.43	0.43	317	15.1	82	20.8	772	1.34	33.8	25.7	2.8	12.3	119	142
12.5	8.97	0.32	5.09	1.33	1.10	1.39	0.43	309	17.9	83	21.7	727	1.39	34.5	27.0	2.9	13.1	124	142
14.5	8.99	0.29	5.04	1.36	1.12	1.44	0.44	315	17.8	83	22.1	722	1.29	34.2	27.0	2.8	13.0	123	143
15.5	9.00	0.29	5.15	1.35	1.12	1.50	0.43	314	17.9	86	23.7	714	1.38	35.1	27.2	2.9	13.3	121	145
16.5	9.22	0.32	5.16	1.36	1.10	1.38	0.44	311	18.1	86	22.9	814	1.41	35.8	28.0	2.9	13.3	127	144
18.5	10.1	0.32	5.38	1.38	1.11	1.28	0.47	306	18.8	87	25.8	1170	1.55	38.9	30.0	3.1	14.3	134	142
20.5	10.2	0.34	5.41	1.37	1.11	1.25	0.46	307	18.6	89	26.1	1010	1.62	40.0	29.3	3.1	14.0	138	142
21.5	10.5	0.31	5.66	1.44	1.10	1.31	0.51	308	18.9	99	28.9	1210	1.68	39.9	29.7	3.2	14.3	139	141
22.5	10.6	0.32	5.55	1.38	1.11	1.31	0.48	307	18.8	86	28.6	1390	1.76	41.7	29.5	3.3	14.0	141	143
24.5	10.6	0.42	5.47	1.38	1.10	1.28	0.47	317	18.7	154	27.4	1010	1.78	40.3	28.9	3.2	13.9	144	137
26.5	10.9	0.36	5.49	1.40	1.08	1.31	0.48	324	19.1	92	27.7	798	1.86	40.7	29.8	3.3	14.6	140	136
27.5	10.9	0.48	5.51	1.40	1.09	1.33	0.49	324	18.7	91	28.5	841	1.94	41.9	29.2	3.4	14.5	138	137
28.5	10.9	0.39	5.44	1.37	1.07	1.34	0.48	321	18.6	87	29.8	884	1.92	41.3	29.1	3.1	14.4	137	133
30.5	10.7	0.49	5.39	1.36	1.08	1.31	0.48	311	18.8	93	28.0	807	2.00	41.1	29.1	4.2	14.6	136	133
32.5	10.7	0.58	5.29	1.42	1.11	1.32	0.49	318	18.0	92	26.8	827	2.00	39.9	27.2	3.1	13.9	140	127

**Table 5—Continued.** Mobile Bay MB0810-20GC metals data

MB0810-20GC depth (cm)	Al (%)	Ca (%)	Fe (%)	K (%)	Mg (%)	Na (%)	Ti (%)	Ba (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Mn (ppm)	Mo (ppm)	Ni (ppm)	Pb (ppm)	Sn (ppm)	Th (ppm)	V (ppm)	Zn (ppm)
33.5	10.6	0.46	5.26	1.43	1.09	1.33	0.48	311	17.9	95	35.8	889	1.99	40.4	26.9	3.2	13.8	138	128
34.5	10.7	0.54	5.22	1.45	1.13	1.38	0.48	324	18.2	95	25.9	905	1.82	40.3	26.2	3.1	13.7	139	129
36.5	10.3	0.45	5.11	1.39	1.13	1.41	0.48	303	16.7	90	24.3	939	1.81	38.5	24.9	2.9	13.2	130	121
38.5	10.8	0.33	5.25	1.45	1.18	1.46	0.49	314	17.6	94	25.5	722	1.86	42.3	25.5	2.9	13.6	138	131
39.5	10.9	0.33	5.27	1.45	1.21	1.49	0.48	312	19.0	93	25.7	785	1.83	40.6	26.5	3.0	13.9	140	129
43	10.7	0.39	5.31	1.43	1.21	1.49	0.49	311	19.5	97	25.0	914	1.91	41.8	26.8	3.0	14.2	145	131
47	10.3	0.63	5.14	1.4	1.22	1.46	0.47	299	17.5	183	23.7	946	1.76	40.4	24.2	2.9	13.1	145	124
51	10.4	0.60	5.21	1.39	1.23	1.52	0.47	282	17.4	164	21.4	914	1.83	39.3	24.3	2.8	13.2	140	124
55	10.2	0.56	5.15	1.36	1.21	1.53	0.47	271	15.0	100	21.0	891	1.75	40.5	24.7	2.9	13.6	141	127
59	9.81	0.50	4.99	1.36	1.25	1.53	0.46	279	16.9	96	20.9	911	1.63	38.3	23.3	2.7	13.2	130	123
63	9.20	0.43	4.96	1.37	1.26	1.55	0.44	284	16.7	95	18.9	793	1.39	36.0	22.5	2.7	12.6	128	121
67	7.93	0.41	4.64	1.34	1.20	1.45	0.39	274	17.0	81	22.5	631	1.02	30.4	20.7	2.2	12.2	110	111
71	8.21	0.33	4.77	1.38	1.27	1.48	0.4	286	17.2	82	26.3	614	1.15	31.5	21.6	2.4	12.9	113	115
75	7.79	0.36	4.68	1.4	1.23	1.51	0.38	282	16.5	81	15.8	606	1.48	30.4	20.9	2.4	12.5	113	109
79	8.16	0.82	4.68	1.45	1.30	1.46	0.39	298	17.1	84	16.4	639	1.47	31.2	21.2	2.3	12.7	111	112
83	8.25	0.35	4.84	1.48	1.30	1.41	0.39	298	17.6	84	16.8	657	1.82	32.1	21.5	2.5	12.8	112	115
87	7.99	0.48	4.88	1.42	1.27	1.41	0.39	295	17.5	85	15.9	657	2.45	30.3	20.8	2.4	12.3	111	121
91	8.25	0.46	4.80	1.46	1.29	1.45	0.40	303	18.1	82	16.7	688	2.96	31.0	21.2	2.5	13.1	111	109
95	8.19	0.66	4.86	1.46	1.27	1.48	0.40	295	16.9	82	15.5	700	3.14	31.3	20.6	2.5	12.6	114	111
99	8.03	0.59	4.73	1.45	1.24	1.43	0.38	300	17.2	80	15.6	697	2.96	30.4	20.8	2.4	12.4	104	109
103	8.02	0.51	4.66	1.46	1.26	1.39	0.39	303	17.1	79	15.3	700	2.57	30.0	21.1	2.5	12.5	109	111
107	8.05	0.53	4.66	1.45	1.27	1.36	0.39	299	16.4	135	15.0	740	2.09	30.3	20.0	2.4	12.1	115	110
111	8.04	0.46	4.72	1.45	1.27	1.35	0.39	296	16.1	120	15.9	752	1.79	30.5	20.8	2.4	12.4	108	110
115	8.04	0.40	4.66	1.46	1.28	1.39	0.39	301	16.3	80	15.7	703	1.64	30.2	20.5	2.4	12.3	108	110
119	7.89	0.68	4.70	1.45	1.26	1.41	0.38	301	17.1	82	15.7	705	1.85	30.3	20.2	2.3	12.4	107	110
123	7.87	0.58	4.80	1.43	1.25	1.34	0.40	297	15.6	83	15.5	717	2.04	29.9	19.6	2.4	12.0	105	110
127	7.89	0.77	4.73	1.43	1.26	1.35	0.39	295	16.0	82	15.5	733	2.63	29.6	19.8	2.4	12.0	103	110
131	7.84	0.58	4.67	1.42	1.27	1.36	0.37	294	16.5	80	15.7	726	2.69	29.6	20.3	2.3	12.4	109	109
135	7.90	0.57	4.78	1.45	1.30	1.39	0.38	297	16.3	78	15.4	720	2.79	29.8	20.2	2.3	12.4	104	109
139	7.95	0.63	4.84	1.44	1.30	1.36	0.39	298	16.4	173	15.4	749	3.65	30.8	20.1	2.3	12.4	105	112
143	7.90	0.63	4.80	1.45	1.27	1.29	0.39	293	15.6	78	18.3	762	4.60	30.4	20.2	2.3	12.4	110	111
147	7.92	0.69	4.84	1.46	1.29	1.26	0.39	299	15.8	82	17.5	814	5.52	30.6	21.0	2.3	13.2	108	112
151	7.86	0.80	4.84	1.46	1.32	1.32	0.39	298	16.1	77	15.9	789	4.46	29.4	20.2	2.5	12.6	112	109
155	8.22	0.90	4.98	1.52	1.35	1.40	0.40	311	16.2	79	17.6	812	4.34	30.5	20.8	2.5	12.5	113	114
159	7.98	0.67	4.87	1.45	1.31	1.34	0.39	295	15.8	83	15.4	791	3.73	30.5	19.9	2.4	12.1	107	111
163	8.08	0.68	4.88	1.49	1.32	1.41	0.39	301	15.8	73	16.8	795	4.24	30.3	19.8	2.4	12.2	113	110
167	8.05	0.76	4.80	1.48	1.34	1.37	0.40	301	15.7	150	16.9	765	3.81	30.7	20.0	2.4	12.2	112	112
171	8.04	0.58	4.84	1.49	1.32	1.34	0.39	300	15.9	86	18.9	768	4.01	30.7	20.4	2.5	12.4	112	113

**Table 5—Continued.** Mobile Bay MB0810-20GC metals data

MB0810-20GC depth (cm)	Al (%)	Ca (%)	Fe (%)	K (%)	Mg (%)	Na (%)	Ti (%)	Ba (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Mn (ppm)	Mo (ppm)	Ni (ppm)	Pb (ppm)	Sn (ppm)	Th (ppm)	V (ppm)	Zn (ppm)
175	8.06	0.55	4.85	1.47	1.31	1.29	0.39	300	16.2	80	17.0	736	3.22	30.6	20.0	2.5	12.1	110	111
179	8.34	0.47	4.98	1.50	1.32	1.35	0.38	303	15.9	83	16.5	765	3.81	31.3	21.0	2.5	12.9	112	116
183	8.31	0.58	4.87	1.52	1.32	1.34	0.40	305	16.2	84	16.9	783	3.09	31.4	21.5	2.5	13.0	114	115
187	8.04	0.42	4.68	1.48	1.30	1.29	0.38	302	15.4	80	16.1	694	2.61	30.3	20.1	2.5	12.1	108	113
191	8.12	0.44	4.76	1.5	1.30	1.32	0.39	300	15.5	82	15.7	711	2.52	30.5	20.4	2.5	12.1	109	114
195	7.90	0.50	4.66	1.46	1.27	1.25	0.39	298	15.1	73	15.5	703	2.43	29.0	19.5	2.5	11.9	112	111
199	8.09	0.51	4.73	1.48	1.28	1.30	0.39	296	15.3	75	15.9	764	2.29	30.8	20.3	2.6	12.1	112	113
203	7.65	0.62	4.49	1.41	1.22	1.23	0.38	283	14.7	78	31.2	677	2.11	56.0	19.6	2.4	11.9	103	123
207	7.43	0.77	4.44	1.39	1.22	1.20	0.38	284	14.2	72	15.3	667	2.17	28.3	19.0	2.3	11.8	105	106
211	7.64	0.71	4.64	1.40	1.23	1.23	0.39	280	14.5	79	19.2	703	2.57	28.9	19.1	2.5	11.5	107	106
215	7.56	0.77	4.60	1.36	1.24	1.21	0.38	278	15.0	75	17.3	731	3.35	28.9	19.6	2.4	12.2	106	106
219	7.66	0.84	4.58	1.38	1.27	1.23	0.38	280	14.5	78	16.4	756	5.70	28.5	19.7	2.4	11.8	101	106
223	7.51	0.82	4.58	1.35	1.24	1.18	0.37	275	13.7	81	15.9	783	5.87	28.1	20.0	2.2	12.5	99	103
227	6.74	0.85	4.20	1.24	1.11	1.06	0.36	251	13.0	74	14.9	713	4.22	25.6	18.0	2.2	10.9	87	96
231	6.98	0.72	4.31	1.28	1.15	1.15	0.36	258	13.4	66	18.7	707	3.39	26.6	18.5	2.2	11.3	98	98
235	6.89	1.03	4.39	1.26	1.12	1.11	0.36	257	13.7	73	14.8	739	3.90	26.1	18.7	2.2	11.4	90	95
239	7.12	1.10	4.47	1.30	1.14	1.10	0.35	261	14.1	75	15.8	824	5.08	26.8	18.9	2.2	11.8	93	96
243	7.78	0.89	4.64	1.41	1.22	1.08	0.39	287	14.9	82	16.2	779	5.06	29.0	20.8	2.5	12.4	102	106

## Foraminiferal Processing

Per standard protocol, 20 cubic centimeter (cm<sup>3</sup>) subsamples were taken from gravity core samples using a 0.5 milliliter (mL) graduated syringe (Richwine and Osterman, 2012). When a sample contained less than 20 cm<sup>3</sup>, the entire sample was processed. Sediment samples for faunal analyses were wet sieved by soaking in water with a small amount of 10 percent Sodium hexametaphosphate solution, slowly agitated for up to 1 hour to aid disaggregation, and then washed over a stainless-steel, 63-micron (µm) sieve. The >63-µm fractions were oven dried at ≤60 degrees Celsius (°C) and then dry sieved at 125 µm. Percent mud was determined by the mass of the >63-µm and the initial sample mass minus water content. The foraminifers were picked, identified, and counted from the >125-µm fraction (table 6). All foraminiferal identifications are listed in Appendix 1. Processed gravity-core samples contained abundant benthic foraminifers. In all but a few cases, a representative subsample of approximately 300 specimens was obtained for faunal analysis using a microsplitter. The split-size fraction was spread across a 45-square, hole-punched tray, and each specimen was dropped through a hole onto a stationary 60-square micropaleontology slide to later be identified and counted.

**Table 6.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Hayesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarckiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammonium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Miliammina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC density values	Merged 20 GC and BC depths (cm)
0.5	9.38	81	12	21											138	3	37	292	6	20	155.7	61.0	7.2	31.8	333.6	0.5			
1.5	15.63	138	60	51	1	20													270	5	20	86.4	0.0	26.7	73.3	340.8	1.5		
2.5	9.38	130	54	72		6						1			23	1	24	311	8	20	165.9	15.4	25.1	59.2		2.5			
3.5	7.81	100	111	71	3	12		1			1				61	2	26	388	10	2	17	292.1	22.9	22.2	54.4	84.533	3.5		
4.5	3.13	58	91	44		12									150	1	15	371	7	20	593.6	44.7	15.1	40.2	68.4	4.5			
5.5	18.75	92	105	69		13									2	1	3	285	7	2	14	108.6	2.1	28.8	69.1		5.5		
6.5	25.00	152	76	47		3									8	2	4	292	7	20	58.4	4.8	17.1	78.1	131.867	6.5			
7.5	12.50	67	97	37		12		1							113	1	10	338	8	20	135.2	36.7	14.5	48.5		7.5			
8.5	10.94	95	59	40		3									89	1	4	291	7	20	133.0	32.3	14.8	52.9	178.133	8.5			
9.5	21.88	48	17	9		2									281	3	13	373	7	20	85.3	79.6	2.9	17.4	207.271	9.5			
10.5	100.00	83	22	34		3									9	2	3	156	7	20	7.8	9.0	23.7	67.3		10.5			
11.5	25.00	47	14	14		2									279	4	8	368	7	20	73.6	79.1	4.3	16.6	134.886	11.5			
12.5	31.25	47	23	19		8									167	1	8	273	7	20	43.7	64.5	9.9	25.6		12.5			
13.5	100.00	29	9	8											229	8	25	308	6	17	18.1	85.1	2.6	12.3	88.9	13.5			
14.5	37.50	5													267	1	8	281	4	20	37.5	98.2	0.0	1.8	119.914	14.5			
15.5	100.00	3		3											267		10	283	4	20	14.2	97.9	1.1	1.1		15.5			
16.5	100.00														175	1	3	179	3	20	9.0	100.0	0.0	0.0	93.3	16.5			
17.5	100.00	33	3	5											100	2	1	144	6	20	7.2	71.5	3.5	25.0	60.1	17.5			
18.5	15.63	53	6	4											129	1	0	193	5	20	61.8	67.4	2.1	30.6		18.5			
19.5	25.00	158	10	10		3									205	1		387	6	20	77.4	53.2	3.4	43.4	56.659	19.5			
20.5	50.00	23	1	1											229	3	2	259	6	20	25.9	90.3	0.4	9.3		20.5			
21.5	37.50	156	12	5		1									1	178	1	354	7	20	47.2	50.8	1.7	47.5	23.825	21.5			
22.5	25.00	72	1	4		3									162	2		244	6	20	48.8	67.2	2.9	29.9		22.5			
23.5	12.50	111	46	24		3		1							151	1	1	338	8	20	135.2	45.3	8.0	46.4	12.5	23.5			
24.5	4.69	80	9	8		2						1			191			291	6	20	310.4	65.6	3.4	30.6	48.33	24.5			
25.5	25.00	138	17	17	2	1		1							225	3	2	406	9	20	81.2	56.7	4.9	38.2		25.5			
26.5	12.50	132	9	10		6						1			129	1		288	7	20	115.2	45.1	5.6	49.0	29.85	26.5			
27.5	9.38	133	94	74	2	12		1		2	3		1		46			368	10	20	196.3	12.5	23.9	61.7		27.5			
28.5	15.63	173	50	14		2									29	1		269	6	20	86.1	11.2	5.9	82.9	49.4	28.5			
29.5	21.88	87	90	34	1	12				1					98	1		324	8	20	74.1	30.6	14.5	54.6	90	29.5			
30.5	12.50	95	74	55	2	18									41	1	2	288	8	2	20	115.2	15.3	26.0	58.7		30.5		
31.5	6.25	55	103	123	23	42		5	1		4		4		1			361	10	2	20	288.8	0.3	52.1	43.8	63.3	31.5		
32.5	3.13	123	87	67	10	8						1			7			303	7	20	484.8	2.3	28.1	69.3	115.2	32.5			

**Table 6—Continued.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Hayesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarckiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammotium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Milammina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC density values	Merged 20 GC and BC depths (cm)
33.5	25.00	177	49	23	2			3							83	2	339	7	20	67.8	25.1	7.4	66.7			196.267	33.5		
34.5	4.69	144	94	45	3	2									7	1	296	7	20	315.7	2.7	16.9	80.4			86.08	34.5		
35.5	25.00	90	96	54	9	6		1	1	2					42	2	2 305	11	20	61.0	15.1	22.6	61.0			74.057	35.5		
36.5	12.50	171	27	91		1									2		292	5	20	116.8	0.7	31.5	67.8			115.2	36.5		
37.5	100.00	26	10	4		1									158	3	2 204	7	20	10.2	79.9	2.5	17.6			288.8	37.5		
38.5	100.00	8													103	2	2 115	4	20	5.8	93.0	0.0	7.0			484.8	38.5		
39.5	100.00	9		1											302	4	10 326	5	20	16.3	96.9	0.3	2.8			67.8	39.5		
40.5	56.25	7		1											281	9	18 316	5	20	28.1	97.5	0.3	2.2	315.733		40.5			
41.5	100.00	75	18	39		1									81	5	219	6	1 20	11.0	39.3	18.3	42.5			61	41.5		
42.5	15.63	77	69	98	5	10									42	1	1 303	8	20	97.0	14.5	37.3	48.2			116.8	42.5		
43.5	25.00	128	33	172	3	11		3			3				63		416	8	1 20	83.2	15.1	44.7	38.7			10.2	43.5		
44.5	10.94	86	41	148		15						4			18		312	6	20	142.6	5.8	52.2	40.7			5.75	44.5		
45.5	15.63	74	57	119		12		3		2					28		2 297	8	20	95.0	10.1	44.1	44.1			16.3	45.5		
46.5	7.81	75	30	144	8	5			1			1		1	23		1 289	10	20	185.0	8.7	54.3	36.3			28.089	46.5		
47.5	12.50	90	55	125	5	21		3							23		1 323	8	2 20	129.2	7.4	46.7	44.9			10.95	47.5		
48.5	18.75	100	38	154	7	10									3		1 313	7	20	83.5	1.3	54.6	44.1			96.96	48.5		
49.5	9.38	81	74	138	9	19		4		1					21		347	8	1 20	185.1	6.1	47.8	44.7			83.2	49.5		
50.5	6.25	105	13	147	2	1			1						10	3	282	8	20	225.6	4.6	53.2	41.8			142.629	50.5		
51.5	12.50	83	39	159	4	13		1							30		329	7	20	131.6	9.1	53.5	37.1			95.04	51.5		
52.5	9.38	225	32	111	3	3									7		381	6	20	203.2	1.8	30.7	67.5			184.96	52.5		
53.5	12.50	83	76	206	7	20		1		3					42		438	8	20	175.2	9.6	53.2	36.3			129.2	53.5		
54.5	21.88	120	23	129	6	10									4		1 293	7	20	67.0	1.7	49.5	48.8			83.467	54.5		
55.5	9.38	60	49	149	3	25				2					11	2	2 303	9	20	161.6	5.0	58.4	36.0			185.067	55.5		
56.5	6.25	109	16	103	6	13									18		265	6	20	212.0	6.8	46.0	47.2			225.6	56.5		
57.5	15.63	64	81	100	1	40		3		1					61		351	8	20	112.3	17.4	40.2	41.3			131.6	57.5		
58.5	12.50	126	22	110	2	6									3		269	6	20	107.6	1.1	43.9	55.0			203.2	58.5		
59.5	12.50	81	62	119	4	49		4		4					52		375	8	20	150.0	13.9	45.9	38.1			175.2	59.5		
60.5	9.38	184	21	89	3	11									2		310	6	20	165.3	0.6	33.2	66.1			66.971	60.5		
61.5	12.50	247	19	61	6	14		3		1	1				53		2 407	10	20	162.8	13.5	19.9	65.4			161.6	61.5		
62.5	10.94	137	11	23	4	1									26		202	6	20	92.3	12.9	13.9	73.3			212	62.5		
64.5	6.25	178	20	38	12	5									49		302	6	1 20	241.6	16.2	18.2	65.6			112.32	63.5		
65.5	18.75	169	14	32	10	12		6							48		291	7	20	77.6	16.5	18.6	62.9			107.6	64.5		
66.5	31.25	55	0	2	2	1									169	1	230	6	20	36.8	73.9	2.2	23.9			150	65.5		



**Table 6—Continued.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Haymesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarckiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammotium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Miliammina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC density values	Merged 20 GC and BC depths (cm)
67.5	50.00	77	2	10				2							224			315	5	20	31.5	71.1	3.2	25.1		165.333	66.5		
68.5	43.75	122	11	22	12	3									36		1	207	7	20	23.7	17.9	17.9	64.3		162.8	67.5		
69.5	28.13	108	15	29	21			6	2	1					5			187	8	1	20	33.2	2.7	26.7	65.8		92.343	68.5	
70.5	28.13	165	14	26	29	4									9			247	6	20	43.9	3.6	23.9	72.5		241.6	70.5		
71.5	37.50	107	3	39	18	1									2			170	6	20	22.7	1.2	34.1	64.7		77.6	71.5		
72.5	18.75	159	3	29	35	5									4		1	236	7	20	62.9	2.1	29.2	68.6		36.8	72.5		
73.5	25.00	67	28	28	30	14									23			190	6	20	38.0	12.1	37.9	50.0		31.5	73.5		
74.5	100.00	47		13	7	1									93		1	3	165	7	20	8.3	58.8	12.7	28.5		23.657	74.5	
76.5	9.38	166	5	64	22	3									50			310	6	20	165.3	16.1	28.7	55.2		33.244	75.5		
77.5	37.50	96	17	42	25	11		6							40			237	7	2	20	31.6	16.9	32.9	47.7		43.911	76.5	
78.5	25.00	68	6	75	22										25			196	5	20	39.2	12.8	49.5	37.8		22.667	77.5		
79.5	15.63	75	28	79	29	10		4							10			235	7	1	20	75.2	4.3	50.2	43.8		62.933	78.5	
80.5	12.50	46	36	93	48	18			1						3		3	248	8	1	25	79.4	2.4	64.1	33.1		38	79.5	
82.5	50.00	84	7	38	31	2		2							2		1	167	8	20	16.7	1.8	42.5	54.5		8.25	80.5		
83.5	50.00	105		17	19										14		1	2	158	6	20	15.8	10.8	22.8	66.5		165.333	82.5	
84.5	21.88	67	1	13	12										24		1		118	6	20	27.0	21.2	21.2	57.6		31.6	83.5	
85.5	25.00	181		15	30	11									2			239	5	20	47.8	0.8	23.4	75.7		39.2	84.5		
86.5	25.00	109	9	32	32	6									18			206	6	20	41.2	8.7	34.0	57.3		75.2	85.5		
87.5	25.00	183		38	13	6									14			254	5	20	50.8	5.5	22.4	72.0		79.36	86.5		
88.5	12.50	109	15	39	39	11									2			215	6	20	86.0	0.9	41.4	57.7		16.7	88.5		
89.5	9.38	142	3	49	25	5									15		1	240	7	20	128.0	6.7	32.9	60.4		15.8	89.5		
90.5	18.75	86		20	25	2									37			170	5	20	45.3	21.8	27.6	50.6		26.971	90.5		
91.5	12.50	36	2	33	6													77	4	20	30.8	0.0	50.6	49.4		47.8	91.5		
92.5	7.81	89	28	65	33	21			1						3			240	7	20	153.6	1.3	49.6	48.8		41.2	92.5		
93.5	9.38	148	6	67	19	6									48		1	295	8	20	157.3	16.6	31.2	52.2		50.8	93.5		
94.5	18.75	136		52	22	1		4							5			220	6	20	58.7	2.3	34.1	61.8		86	94.5		
95.5	12.50	170	4	81	9	6									3			273	6	20	109.2	1.1	35.2	63.7		128	95.5		
96.5	6.25	76	2	118	9	2												207	5	20	165.6	0.0	62.3	37.7		45.333	96.5		
97.5	12.50	90		152	9	3									1			255	5	20	102.0	0.4	64.3	35.3		30.8	97.5		
98.5	6.25	78	2	189	13	6									1			289	6	20	231.2	0.3	72.0	27.7		153.6	98.5		
99.5	2.34	57	7	107	9	3									2			185	6	20	394.7	1.1	64.3	34.6		157.333	99.5		
100.5	6.25	77	12	138	39	7									3			276	6	20	220.8	1.1	66.7	32.2		58.667	100.5		
101.5	9.38	122	4	96	11	2												235	5	20	125.3	0.0	46.4	53.6		109.2	101.5		

**Table 6—Continued.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Haymesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarkiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammotium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Milammina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC density values	Merged 20 GC and BC depths (cm)
102.5	12.50	161	1	95	32	6									5			300	6	20	120.0	1.7	44.3	54.0	165.6	102.5			
103.5	9.38	110	2	128	12	7									2			261	6	20	139.2	0.8	56.3	42.9	102	103.5			
104.5	18.75	79	6	131	14	4	2											236	6	20	62.9	0.0	63.1	36.0	231.2	104.5			
105.5	9.38	109	2	146	15													272	4	20	145.1	0.0	59.2	40.8	394.667	105.5			
106.5	9.38	115	3	98	18	7	6								2			249	7	20	132.8	0.8	49.4	47.4	220.8	106.5			
107.5	12.50	120		93	8	1									2			224	5	20	89.6	0.9	45.5	53.6	125.333	107.5			
108.5	15.63	92	31	126	21	9	3								2	1		285	8	20	91.2	1.1	54.7	43.2	120	108.5			
109.5	9.38	113	11	137	13	9									1	2		286	8	20	152.5	1.0	55.6	43.4	139.2	109.5			
110.5	4.69	67	18	125	28	17	1								1			257	7	20	274.1	0.4	66.1	33.1	62.933	110.5			
111.5	14.06	89	2	111	7										1			210	5	20	74.7	0.5	56.2	43.3	145.067	111.5			
112.5	31.25	107	4	61	23	2									1			198	6	20	31.7	0.5	43.4	56.1	132.8	112.5			
113.5	15.63	104		58	9	1									5			177	5	20	56.6	2.8	38.4	58.8	89.6	113.5			
114.5	50.00	151	1	45	15	7	1								9			229	7	20	22.9	3.9	29.3	66.4	91.2	114.5			
115.5	12.50	130	10	31	17	5												193	5	20	77.2	0.0	27.5	72.5	152.533	115.5			
116.5	23.44	160	3	28	17	1									1			210	6	20	44.8	0.5	21.9	77.6	274.133	116.5			
117.5	7.81	192	4	42	18	1									4			261	6	20	167.0	1.5	23.4	75.1	74.667	117.5			
118.5	12.50	136	1	50	17	1												205	5	20	82.0	0.0	33.2	66.8	31.68	118.5			
119.5	6.25	113	7	39	28	1									1			189	7	20	151.2	0.5	36.0	63.5	56.64	119.5			
120.5	31.25	175		96	17	1									1			290	5	20	46.4	0.3	39.3	60.3	22.9	120.5			
121.5	6.25	140	8	65	16	3									4			236	5	20	188.8	1.7	35.6	62.7	77.2	121.5			
122.5	4.69	179	4	101	17	1									1			303	6	20	323.2	0.3	39.3	60.4	44.8	122.5			
123.5	3.13	149	7	99	16	6									1			278	6	20	444.8	0.4	43.5	56.1	167.04	123.5			
124.5	9.38	167	2	74	18	3												264	5	20	140.8	0.0	36.0	64.0	82	124.5			
125.5	3.13	114	6	133	15	3												271	6	20	433.6	0.0	55.7	44.3	151.2	125.5			
126.5	3.13	95	11	82	39	5									1			233	6	20	372.8	0.4	54.1	45.5	46.4	126.5			
127.5	7.81	130	5	120	13	2												270	5	20	172.8	0.0	50.0	50.0	188.8	127.5			
128.5	7.81	94	11	96	28										3			232	5	20	148.5	1.3	53.4	45.3	323.2	128.5			
129.5	7.81	120	4	121	5	1												251	5	20	160.6	0.0	50.6	49.4	444.8	129.5			
130.5	3.91	121	24	119	17	12												293	5	20	375.0	0.0	50.5	49.5	140.8	130.5			
131.5	7.03	110		110	8	4												232	4	20	165.0	0.0	52.6	47.4	433.6	131.5			
132.5	9.38	104	21	123	27	17												292	5	20	155.7	0.0	57.2	42.8	372.8	132.5			
133.5	10.94	105		45	9	3									1			163	5	20	74.5	0.6	35.0	64.4	172.8	133.5			
134.5	21.88	108	8	88	19	6									3			232	6	20	53.0	1.3	48.7	50.0	148.48	134.5			

**Table 6—Continued.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Haymesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarckiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammotium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Miliammina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC density values	Merged 20 GC and BC depths (cm)
135.5	6.25	96	14	163	8															281	4	20	224.8	0.0	60.9	39.1	160.64	135.5	
136.5	18.75	115	7	150	19	6									2					299	6	20	79.7	0.7	58.5	40.8	375.04	136.5	
137.5	6.25	113	4	143	12	4														276	5	20	220.8	0.0	57.6	42.4	164.978	137.5	
138.5	3.13	89	3	114	11	4									2					223	6	20	356.8	0.9	57.8	41.3	155.733	138.5	
139.5	25.00	77		102	13															192	3	20	38.4	0.0	59.9	40.1	74.514	139.5	
140.5	50.00	64	1	93	18															176	4	20	17.6	0.0	63.1	36.9	53.029	140.5	
141.5	6.25	96	8	159	23	3														289	5	20	231.2	0.0	64.0	36.0	224.8	141.5	
142.5	12.50	73	1	143	11	2														230	5	20	92.0	0.0	67.8	32.2	79.733	142.5	
143.5	7.03	63	1	115	17															196	4	20	139.4	0.0	67.3	32.7	220.8	143.5	
144.5	1.56	56	19	122	17	8				1					1					224	7	3	20	716.8	0.4	65.6	33.5	356.8	144.5
145.6	3.91	82	6	227	10	4									1					330	6	20	422.4	0.3	73.0	26.7	38.4	145.5	
146.5	3.13	63	10	175	19	2									1					270	6	20	432.0	0.4	72.6	27.0	17.6	146.5	
147.5	2.34	78	6	125	32	4														245	5	20	522.7	0.0	65.7	34.3	231.2	147.5	
148.5	4.69	78	6	204	16	4									1					309	6	20	329.6	0.3	72.5	27.2	92	148.5	
149.5	1.56	62	6	102	19	6														195	5	20	624.0	0.0	65.1	34.9	139.378	149.5	
150.5	6.25	62	1	116	25	1														205	5	20	164.0	0.0	69.3	30.7	71.6	150.5	
151.5	6.25	88	6	154	23	4														275	5	20	220.0	0.0	65.8	34.2	422.4	151.6	
152.5	15.63	94	4	89	8										2					197	5	20	63.0	1.0	49.2	49.7	432	152.5	
153.5	12.50	98	1	96	7	1														203	5	20	81.2	0.0	51.2	48.8	522.667	153.5	
154.5	10.94	55	3	69	24	7									1					159	6	20	72.7	0.6	62.9	36.5	329.6	154.5	
155.5	7.81	100		67	8	2									1					178	5	20	113.9	0.6	43.3	56.2	624	155.5	
156.5	17.19	118	2	110	16	6														252	5	20	73.3	0.0	52.4	47.6	164	156.5	
157.5	5.47	92	1	85	5	3														187	6	20	171.0	0.0	49.7	49.7	220	157.5	
158.5	7.81	88	11	79	22	11									1					212	6	20	135.7	0.5	52.8	46.7	63.04	158.5	
159.5	15.63	114		87	9	1									1					212	5	20	67.8	0.5	45.8	53.8	81.2	159.5	
160.5	3.13	56	15	151	19	9														251	6	20	401.6	0.0	71.3	28.3	72.686	160.5	
161.5	50.00	69	5	20	20	1									7					122	6	20	12.2	5.7	33.6	60.7	113.92	161.5	
162.5	75.00	91		52	13	2									1					159	6	20	10.6	0.6	42.1	57.2	73.309	162.5	
163.5	31.25	87		40	40	2									3					172	5	20	27.5	1.7	47.7	50.6	170.971	163.5	
164.5	100.00	60		60	8										1					129	4	20	6.5	0.8	52.7	46.5	135.68	164.5	
165.5	6.25	64		89	89	5									2					249	5	20	199.2	0.8	73.5	25.7	67.84	165.5	
166.5	3.13	71	11	129	8	2														221	5	1	20	353.6	0.0	62.9	37.1	401.6	166.5
167.5	18.75	81	1	116	116															314	4	20	83.7	0.0	73.9	26.1	12.2	167.5	

**Table 6—Continued.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Hayesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarckiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammotium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Mitammmina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC density values	Merged 20 GC and BC depths (cm)
168.5	12.50	75	1	44	10	4									5				139	6	20	55.6	3.6	41.7	54.7	10.6	168.5		
169.5	100.00	55	3	19	19	2									6				104	6	20	5.2	5.8	38.5	55.8	27.52	169.5		
170.5	18.75	49	7	26	19	9									2				112	6	20	29.9	1.8	48.2	50.0	6.45	170.5		
171.5	4.69	71	33	177	13	8													302	5	20	322.1	0.0	65.6	34.4	199.2	171.5		
172.5	18.75	100	16	99	25	1													241	5	20	64.3	0.0	51.9	48.1	353.6	172.5		
173.5	100.00	45		20	20	1													86	4	20	4.3	0.0	47.7	52.3	83.733	173.5		
174.5	18.75	79	3	142	9														233	4	20	62.1	0.0	64.8	35.2	55.6	174.5		
175.5	1.56	51	10	123	24	6		1	1										216	7	20	691.2	0.0	70.8	28.2	5.2	175.5		
176.5	75.00	116		10	3										4		1		134	5	20	8.9	3.7	9.7	86.6	29.867	176.5		
177.5	31.25	160	13	42	8	5									6				234	6	20	37.4	2.6	23.5	73.9	322.133	177.5		
178.5	31.25	103	17	102	15														237	4	20	37.9	0.0	49.4	50.6	64.267	178.5		
179.5	43.75	99	15	128	8										2				252	5	20	28.8	0.8	54.0	45.2	4.3	179.5		
180.5	6.25	30	29	114	37	22				5									237	6	20	189.6	0.0	73.0	24.9	62.133	180.5		
181.5	37.50	79	10	137	10	5													241	5	20	32.1	0.0	63.1	36.9	69.12	181.5		
182.5	75.00	48	8	113	13	3									1				186	6	20	12.4	0.5	69.4	30.1	8.933	182.5		
183.5	25.00	96	2	91	24	2				2									217	6	20	43.4	0.0	53.9	45.2	37.44	183.5		
184.5	50.00	59	1	52	13										1				126	5	20	12.6	0.8	51.6	47.6	37.92	184.5		
185.5	75.00	85		56	9														150	3	20	10.0	0.0	43.3	56.7	28.8	185.5		
186.5	75.00	19	3	28	49	4													103	5	20	6.9	0.0	78.6	21.4	189.6	186.5		
187.5	100.00	9		1											5				15	3	20	0.8	33.3	6.7	60.0	32.133	187.5		
188.5	9.38	65	9	107	26	9				2					1				219	7	20	116.8	0.5	64.8	33.8	12.4	188.5		
189.5	100.00	3													2				5	2	20	0.3	40.0	0.0	60.0	43.4	189.5		
190.5	50.00	34	2	70	13	10									3				132	6	20	13.2	2.3	70.5	27.3	12.6	190.5		
191.5	25.00	99	10	132	11	5									2				259	6	20	51.8	0.8	57.1	42.1	10	191.5		
192.5	100.00	5		2											1				8	3	20	0.4	12.5	25.0	62.5	6.867	192.5		
193.5	37.50	90	4	103	10	2													209	5	20	27.9	0.0	55.0	45.0	116.8	194.5		
195.5	3.13	90	15	151	16	10				2		1							285	7	20	456.0	0.0	62.1	36.8	13.2	196.5		
196.5	100.00	67	6	80	3	2		1							1				160	7	20	8.0	0.6	53.1	45.6	51.8	197.5		
200.5	3.13	45	26	172	11	7													261	5	27	309.3	0.0	72.8	27.2	27.867	199.5		
202.5	18.75	96	8	135	12	4	1												256	6	20	68.3	0.0	59.0	40.6	456	201.5		
204.5	75.00	120	1	47		5													173	4	20	11.5	0.0	30.1	69.9	8	202.5		
205.5	3.13	31	16	98	14	4													163	5	17	306.8	0.0	71.2	28.8	309.333	206.5		
206.7	3.91	77	18	121	13	5		2		1									237	7	20	303.4	0.0	58.6	40.1	68.267	208.5		

**Table 6—Continued.** Mobile Bay MB0810-20GC foraminiferal sample counts

MB0810-20GC depth (cm)	% sample examined	<i>Ammonia parkersoniana</i>	<i>Ammonia tepida</i>	<i>Elphidium excruciatum</i>	<i>Elphidium mexicanum</i>	<i>Elphidium poeyanum</i>	<i>Glandulina laevigata</i>	<i>Haymesina germanica</i>	Other calcareous	<i>Pseudonion atlanticum</i>	<i>Quinqueloculina compta</i>	<i>Quinqueloculina lamarckiana</i>	Other miliolids	<i>Rosalina floridensis</i>	Other agglutinated	<i>Ammonium salsus</i>	<i>Ammobaculites exiguus</i>	<i>Milammina fusca</i>	<i>Paratrochammina simplissima</i>	Number of foraminifers (N)	Number of species (S)	Ostracods	Volume (mL)	Number of foraminifers per cc (density)	Percent agglutinated species	Percent <i>Elphidium</i> spp.	Percent <i>Ammonia</i> spp.	Number of foraminifers per cc (density) Merged 20GC and BC values	Merged 20 GC and BC depths (cm)
208.9	25.00	122	77	1	2	4														206	5	20	41.2	0.0	38.8	59.2	11.533	210.5	
209.5	1.56	37	15	93	9	6														160	5	20	512.0	0.0	67.5	32.5	306.824	211.5	
210.5	18.75	106	2	87	6	6	8													215	6	20	57.3	0.0	46.0	50.2	303.36	212.7	
212.5	10.94	105	4	76	3		8													196	5	20	89.6	0.0	40.3	55.6	41.2	214.9	
214.5	25.00	141	1	75	12		3													232	5	20	46.4	0.0	37.5	61.2	512	215.5	
215.5	6.25	53	23	183	19	8			1											287	6	20	229.6	0.0	73.2	26.5	57.333	216.5	
216.5	3.13	68	13	171	11	4														267	5	2	20	427.2	0.0	69.7	30.3	89.6	218.5
218.5	7.81	91	6	157	5	7	2								2					270	7	1	20	172.8	0.7	62.6	35.9	46.4	220.5
219.5	6.25	76	20	191	12	5				1										305	6	7	20	244.0	0.0	68.2	31.5	229.6	221.5
220.5	2.34	44	25	188	11	13				5										286	6	3	20	610.1	0.0	74.1	24.1	427.2	222.5
222.5	3.91	63	24	172	12	13														284	5	2	20	363.5	0.0	69.4	30.6	172.8	224.5
223.5	3.13	27	19	100	15	6		2												169	6	20	270.4	0.0	71.6	27.2	244	225.5	
224.5	2.34	50	25	133	15	7				2										232	6	2	20	494.9	0.0	66.8	32.3	610.133	226.5
226.5	1.56	73	16	159	16	11			1	1										277	7	5	20	886.4	0.0	67.1	32.1	363.52	228.5
228.5	6.25	111	9	100	14	4														238	5	20	190.4	0.0	49.6	50.4	270.4	229.5	
229.5	2.34	58	9	146	9	10			2											234	6	20	499.2	0.0	70.5	28.6	494.933	230.5	
230.5	4.69	107	15	121	9	8														260	5	20	277.3	0.0	53.1	46.9	886.4	232.5	
232.5	25.00	75	65	4																144	3	20	28.8	0.0	47.9	52.1	190.4	234.5	
233.5	1.17	62	5	124	4	3														198	5	20	844.8	0.0	66.2	33.8	499.2	235.5	
234.5	3.13	75	8	147	12	1								1						244	6	1	20	390.4	0.4	65.6	34.0	277.333	236.5
235.5	3.13	43	14	130	1	4														192	5	20	307.2	0.0	70.3	29.7	28.8	238.5	
236.5	6.25	126	96	6	1															229	4	20	183.2	0.0	45.0	55.0	844.8	239.5	
238.5	1.56	39	9	136	2	2														188	4	20	601.6	0.0	74.5	25.5	390.4	240.5	
240.5	1.56	47	2	190	1	4														244	5	20	780.8	0.0	79.9	20.1	307.2	241.5	
242.5	25.00	104	1	117	7					1										230	5	13	70.8	0.0	53.9	45.7	183.2	242.5	
																												601.6	244.5
																												780.8	246.5
																												70.769	248.5

## Core Splicing

Foraminiferal counts and geochemical analyses were completed on box (BC) and gravity (GC) cores separately. The data indicated that the top of the gravity core was absent and/or compressed by six centimeters (cm) and the upper box core provided a more complete record. To merge the box and gravity core data sets, we present data values for the upper 19.5 cm of the box core. From 20.5 to 29.5 cm in BC (=14.5 to 23.5 cm in GC) the merged data consists of mean values for gravity and box core samples. Below 30.5 cm (=24.5 cm in GC) the presented data is solely from the gravity core offset downward by six cm. Both complete and merged data are presented in Tables 2-6. Foraminiferal (Richwine and Osterman, 2012) and geochronological (Marot and Smith, 2012) from MB0810-20BC data are published separately.

## Acknowledgments

We thank Andrew Atchison, Chris Reich, and Caitlin Reynolds (USGS, St. Petersburg Coastal and Marine Science Center) for help with sample collection and processing. Tim Dellpenna (Texas A&M University at Galveston) graciously allowed the use of the box core. Captain Rich Young (USGS, St. Petersburg Coastal and Marine Science Center) assisted in the box coring cruise.

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- Richwine, K.A., Osterman, L.E., 2012. *Benthic foraminiferal census data from Mobile Bay, AL-Counts of surface samples and box cores*. U.S. Geological Survey Data Series 704 available only online at <http://pubs.usgs.gov/ds/704/>.

## Appendix 1. Mobile Bay foraminifers.

Following are the taxonomic citations for foraminifers that appear in the benthic foraminiferal counts of MB0810-20GC Table 6.

### AGGLUTINATED FORAMINIFERS

*Ammobaculites exiguus* Cushman and Bronniman, 1948, Contributions from the Cushman Laboratory for Foraminiferal Research, v. 24, pt. 2, p. 39, pl. 7, figs. 7, 8.

*Ammotium salsus* Cushman and Bronniman, 1948, Contributions from the Cushman Laboratory for Foraminiferal Research, v. 24, pt. 2, p. 16, pl. 3, figs. 7–9.

*Miliammina fusca* (Brady) = *Quinqueloculina fusca* Brady, 1870, Annals and Magazine of Natural History, ser. 4, v. 6, p. 286, pl. 11, figs. 2, 3.

#### **Other Agglutinated—any other agglutinated species.**

*Paratrochammina simplissima* (Cushman and McCulloch) = *Trochammina pacifica* Cushman, 1925, var. simplex Cushman and McCulloch, 1939, Allen Hancock Pacific Expeditions, v. 6, n. 1, p. 104, pl. 11, fig. 4.

### CALCAREOUS FORAMINIFERS

*Ammonia parkinsoniana* (d'Orbigny) = *Rosalina parkensoniana* d'Orbigny, 1939, in Ramone de la Sagra, Histoire physique, politique et naturelle de l'île de Cuba "Foraminiferes," p. 99, pl. 4, figs. 25–27.

*Ammonia tepida* (Cushman) = *Rotalina beccarri* (Linne) var. *tepada* Cushman, 1926, Publications of the Carnegie Institute, Washington, no. 334, p. 79, pl. 1.

*Elphidium excavatum* (Terquem) = *Polystomella excavata* Terquem, 1876, Societe Dunquerqueoise, Memoires, v. 19 (1874–75), p. 429, pl. 2, figs. A–d. Note: includes *Elphidium gunteri* Cole 1931 especially in the lower part of the core.

*Elphidium mexicanum* = *Elphidium incertum* (Williamson) var. *mexicanum* Kornfeld, 1931, Contributions from the Department of Geology, Stanford Univ., v. 1, no. 3, p. 89, pl. 16, figs. 1, 2.

*Elphidium poeyanum* (d'Orbigny) = *Polystomella poeyana* d'Orbigny, 1839, in Ramone de la Sagra, Histoire physique, politique et naturelle de l'île de Cuba "Foraminiferes," p. 55, pl. 6, figs. 25, 26.

*Glandulina laevigata* (d'Orbigny) = *Nodosaria (les Glandulines) laevigata* d'Orbigny, 1826, Tableau methodique de la classe des Cephalopodes, Annales des Sciences Naturelles v. 7, p. 252.

*Haynesina germanica* (Ehrenburg) = *Nonionina germanica*, Ehrenburg, 1840, Koenigliche Preuss Akademie Der Wissenschaften, v. 11, p. 23, pl. 1, figs. 1a–g.

#### **Other Calcareous—any other calcareous species.**

#### **Other Milliolids includes any other *Quinqueloculina* spp., *Triloculina* spp., etc.**

*Pseudononion atlanticum* (Cushman) = *Nonionella atlantica* Cushman, 1947, Contributions from the Cushman Foundation for Foraminiferal Research, v. 23, pt. 4, p. 11, pl. 5, figs. 21–23.

*Quinqueloculina compta* Cushman, 1947, Contributions from the Cushman Foundation for Foraminiferal Research, v. 23, pt. 4, p. 87, pl. 19, fig. 2.

*Quinqueloculina lamarckiana* d'Orbigny, Phleger and Parker, 1951, Geological Society of America Memoir, 46, pt. II, p. 7, pl. 4, figs. 1a, b; 2a, b.

*Rosalina floridensis* (Cushman) = *Discorbis bertheloti* var. *floridensis* Cushman, 1930, Journal of Paleontology, v. 40, no. 4, p. 364, pl. 33, figs. 13a–c.

## Appendix 2. Elemental Explanation.

Ag – silver  
Al – aluminum  
As – arsenic  
Ba – barium  
Be – beryllium  
Bi – bismuth  
C – carbon  
Ca – calcium  
Cd – cadmium  
Ce – cerium  
Cl – chlorine  
Co – cobalt  
Cr – chromium  
Cs – cesium  
Cu – copper  
Fe – iron  
Ga – gallium  
H – hydrogen  
In – indium  
K – potassium  
La – lanthanum  
Li – lithium  
Mg – magnesium  
Mn – manganese

Mo – molybdenum  
N – nitrogen  
Na – sodium  
Nb – niobium  
Ni – nickel  
O – oxygen  
P – phosphorus  
Pb – lead  
Rb – rubidium  
S – sulfur  
Sb – antimony  
Sc – scandium  
Sn – tin  
Sr – strontium  
Te – tellurium  
Th – thorium  
Ti – titanium  
Tl – thallium  
U – uranium  
V – vanadium  
W – tungsten  
Y – yttrium  
Zn – zinc