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U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

**BENTHIC FORAMINIFERAL CENSUS DATA FROM SURFACE  
SEDIMENT SAMPLES, WESTERN GULF OF MEXICO  
(LOUISIANA AND TEXAS  
CONTINENTAL SHELF AND SLOPE)**

Lisa E. Osterman, Maria Erlandsen, and Elizabeth D. Castenson

U.S. Geological Survey, MS 926A, Reston VA 20192, USA

Open-File Report 01-182

This report is preliminary and has not been edited for conformity with the U.S.  
Geological Survey editorial standards

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## **Introduction**

In order to understand prehistoric environmental conditions, the modern environmental preferences of benthic foraminifers must be understood. This report documents the occurrence and taxonomy of benthic foraminifers in surface sediment samples of gravity and box cores collected in transects of the Texas and Louisiana continental shelf and slope. This census data will improve our understanding of the environmental preferences of benthic foraminifers and provide a basis for the interpretation of past faunal fluctuations in future down core studies.

## **Methods and Materials**

Gravity cores were collected along the Texas and Louisiana continental shelf and slope during the 94H cruise of the *R/V Gyre* as part of LATEX (Louisiana-Texas Shelf Physical Oceanography Program). In a few instances box cores were collected due to the compacted nature of the sediment (Table 1). Before the cores were capped

they were kept vertical to allow the settling of any suspended sediment. The upper 3-cm of seventy-four cores were used for this study (Table 1). Water depths for the samples ranges from 10 to 1020 meters water depth (mwd). The samples were soaked in a dilute calgon solution and agitated for 30 minutes to assist in disaggregation, then wet sieved at 63 $\mu$ m. The washed residue was oven dried at  $\leq 50^{\circ}$  C, then dry sieved at 125  $\mu$ m.

## **Faunal analysis**

All samples contained abundant benthic foraminifera and a representative subsample of approximately 300 specimens was obtained for faunal analysis with a microsplitter (Table 2). Benthic foraminifers were hand picked from the >125 $\mu$ m faunal split and then placed on standard 60 square micropaleontological slides to be sorted by species. Identification of the benthic foraminifer species was made using standard literature. The taxonomy of



## Acknowledgments

Thanks to Drs. Niall Slowey and Dan Bean (Department of Oceanography, Texas A & M University) for providing access to the Gyre 94H core samples. The cores were collected as part of LATEX (Louisiana-Texas Shelf Physical Oceanography Program), sponsored by the Mineral Mines service of the Department of Interior.

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**Table 1. GYRE 94H Core locations**

Core	Type	Latitude	Longitude	Core length (cm)	Water depth (m)	Sample Depth (cm)
2	G	27.814728	94.006212	105	210	1-3
4	G	27.819218	93.550705	86.7	195	1-3
6	G	27.840913	93.098072	100	200	1-3
8	G	27.920497	92.624938	78.5	195	1-3
10	G	27.925063	91.962685	48	137	1-3
12	G	27.944462	91.544287	85	232	1-3
14	G	28.010628	91.102127	68.5	130	1-3
16	G	28.049297	90.645897	90	165	1-3
17	G	27.660417	90.496470	91	906	1-3
19A	B	27.862687	90.500232	36.5	640	1-3
22A/B	B	28.076970	90.502660	27/30	144	1-3
23	G	28.175080	90.502425	81.5	98	1-3
25	B	28.355877	90.507625	25	48	1-3
27	G	28.529925	90.506670	36	35	1-3
29	G	28.736683	90.507525	46.5	16	1-3
31	G	28.900795	90.511002	60.6	13	1-3
34	G	29.036190	92.007548	51	15	1-3
35	G	28.838505	92.001408	80	24	1-3
36	G	28.632965	92.002795	71.5	38	1-3
37	G	28.450057	92.001843	60	53	1-3
38	G	28.245038	91.996538	84.3	68	1-3
39	B	28.044522	91.999912	28.5	103	1-3
41	G	27.752817	91.992048	71.5	480	1-3
43	G	27.543898	91.993635	61	720	1-3
44	G	27.457552	93.008502	40	926	1-3
46	G	27.659995	92.999102	68	302	1-3
48	G	27.881863	93.002063	66.5	184	1-3
49	G	28.031283	92.994310	54	97	1-3
50	G	28.312578	92.998335	28.5	53	1-3
51	G	28.532383	92.992285	48.5	42	1-3
53	G	28.965618	93.002888	40.5	21	1-3
54	G	29.167610	93.004665	32	17	1-3
55	G	29.367843	93.000647	23.5	15	1-3
56	G	29.571208	93.006675	24	10	1-3
57	G	29.534758	94.006927	52	10	1-3
59A	G	29.166782	94.002835	25	16	1-3
61	G	28.763548	94.003670	36.5	23	1-3
62	G	28.564087	94.001892	71	34	1-3
63	G	28.363480	94.001817	48	48	1-3
64	G	28.146605	94.065317	75.5	63	1-3
65	G	27.994760	94.132672	34	78	1-3
66	G	27.795478	94.198032	87	260	1-3
68	G	27.665407	94.228823	29	374	1-3
70	G	27.469840	94.270947	60	974	1-3
71A	G	28.263827	94.542973	33.5	44	1-3
72	G	28.438820	94.590350	56	38	1-3
73	G	28.619218	94.644167	56	29	1-3
74	G	28.798462	94.695330	34.5	18	1-3
75	G	28.981252	94.744642	40	17	1-3
76	G	29.168175	94.806887	36.7	14	1-3
77	G	28.620793	95.493042	75	18	1-3
78	G	28.452168	95.390717	49.5	29	1-3
79	G	28.274108	95.296560	59	37	1-3
80	G	28.084315	95.199712	52	52	1-3
81	G	27.901258	95.105393	24	105	1-3
82	G	27.808028	95.057600	93.5	264	1-3
84	G	27.623360	94.950797	74.5	691	1-3
86	G	27.391692	95.639902	100.5	895	1-3
88	G	27.527657	95.788653	82	503	1-3
90	G	27.691848	95.979147	82.7	95	1-3
91	G	27.812613	96.133805	71.5	62	1-3
92	G	27.969648	96.316093	66	35	1-3
93	G	28.129840	96.504607	51.6	19	1-3
94	G	27.237702	97.158140	52.8	24	1-3
95	G	27.209198	96.938418	90	42	1-3
96	G	27.186435	96.715390	81.5	70	1-3
97	G	27.152092	96.497130	82	112	1-3
98	G	27.134730	96.380695	89	179	1-3
100	G	27.101072	96.213390	79	428	1-3
102	G	27.072083	95.981592	84	705	1-3
103	G	26.026220	95.972715	103	1020	1-3
105	G	26.011388	96.192378	111	640	1-3
109	G	26.012960	96.860155	38.5	34	1-3
111	G	26.147860	96.330560	104.8	236	1-3

Table 2-Agglutinated foraminifers in Gyre 94H coretops

Gyre 94H Core #	water depth	% sample examined	<i>Ammodiscus reesi</i>	<i>Ammotium salsum</i>	<i>Bigenera irregularis</i>	<i>Cribrostomoides</i> spp.	<i>Cyclamina cancellata</i>	<i>Discamina compressa</i>	<i>Gaudryina atlantica</i>	<i>Gaudryina minuta</i>	<i>Glomospira charoides</i>	<i>Goesella mississippiensis</i>	<i>Haplophragmoides bradyi</i>	<i>Hyperammina elongata</i>	<i>Karreriella apicularis</i>	<i>Karreriella bradyi</i>	<i>Milliamina horrida</i>	<i>Pseudoclavulina mexicana</i>	<i>Reophanus oviculus</i>	<i>Reophanus scorpiurus</i>	<i>Reophax guttifer</i>	<i>Rhabdammina</i> spp.	<i>Saccamina difflugiformis</i>	<i>Textularia candeina</i>	<i>Textularia conica</i>	<i>Textularia mayori</i>	<i>Textularia mexicana</i>	<i>Trochammina inflata</i>	<i>Trochammina squamata</i>	<i>Trochammina</i> spp.	other Agglutinated species
2	210	50.00																													
4	195	12.50																													
6	200	0.78	1																												
8	195	12.50	1	3																											
10	137	25.00				1																									
12	232	6.25	1	1		2																									
14	130	6.25	1																												
16	165	12.50	1																												
17	906	75.00	2			3	2	1																							
19	640	50.00				2	2	2																							
22	144	6.25																													
23	98	12.50		1	8	3																									
25	48	3.13			17	59																									
27	35	6.25		2	15																										
29	16	6.25		19	17																										
31	13	12.50		46	18																										
34	15	12.50		68	23																										
35	24	3.13		8	38																										
36	38	1.56			15																										
37	53	25.00		13	58																										
38	68	3.13			113																										
39	103	12.50				2																									
41	480	4.69	1			2																									
43	720	100.00	7			1	2	1																							
44	926	100.00	1			3	5																								
46	302	3.13																													
48	184	1.56				1																									
49	97	12.50	1		10																										
50	53	50.00		2	62																										
51	42	3.13		1	32																										
53	21	3.13		14	47																										
54	17	3.13		37	43																										
55	15	12.50		109	27																										
56	10	6.25		168																											
57	10	4.69		148																											
59	16	6.25		17	25																										
61	25	0.78		1	8																										
62	34	0.78			40																										
63	48	1.56		1	63																										
64	63	25.00		1	104																										
65	78	0.78	1		42																										
66	260	25.00	1			2			6	4																					
68	374	0.34																													

Table 2-Agglutinated foraminifers in Gyre 94H coretops

Gyre 94H Core #	water depth	% sample examined	<i>Ammodiscus reesi</i>	<i>Ammotium salsum</i>	<i>Bigenera irregularis</i>	<i>Cibrostomoides spp.</i>	<i>Cyclamina cancellata</i>	<i>Discamina compressa</i>	<i>Gaudryina atlantica</i>	<i>Gaudryina minuta</i>	<i>Glomospira charoides</i>	<i>Goesella mississippiensis</i>	<i>Haplophragmoides bradyi</i>	<i>Hyperammina elongata</i>	<i>Karreriella apicularis</i>	<i>Karreriella bradyi</i>	<i>Milliamina horrida</i>	<i>Pseudoclavulina mexicana</i>	<i>Reophanus oviculus</i>	<i>Reophanus scorpiurus</i>	<i>Reophax guttifer</i>	<i>Rhabdammina spp.</i>	<i>Saccamina difflugiiformis</i>	<i>Textularia candeina</i>	<i>Textularia conica</i>	<i>Textularia mayori</i>	<i>Textularia mexicana</i>	<i>Trochammina inflata</i>	<i>Trochammina squamata</i>	<i>Trochammina spp.</i>	other Agglutinated species
70	974	25.00																													
71	44	0.78		1	27		1																			16					
72	38	0.39			22												15								22						
73	29	0.94			17																			2		16					
74	18	0.78		3	29																				8						
75	17	3.13		15	47																		7								
76	14	50.00																													
77	18	12.50		2	22																										
78	29	3.13		1	5																										
79	37	0.78			14																					3					
80	52	1.56			53																					18					
81	105	1.56			4																					28					
82	264	6.25																													
84	691	25.00	3																												
86	895	50.00	8																												
88	503	100.00																													
90	95	3.13			17																										
91	62	6.25			45																										
92	35	6.25		1	14																										
93	19	12.50		1	14																										
94	24	100.00		1	14																										
95	42	100.00		3	37																										
96	70	50.00		6	31																										
97	112	12.50																													
98	179	25.00																													
100	428	25.00																													
102	705	50.00	1																												
103	1020	25.00	3																												
105	640	100.00	2																												
109	34	12.50		3	33																										
111	236	50.00																													



Table 2-Calcareous Foraminifera in Gyre 94H coretops

Gyre	94H Core #
water depth	% sample examined
2	210 50.00
4	195 12.50
6	200 0.78
8	195 12.50
10	137 25.00
12	232 6.25
14	130 6.25
16	165 12.50
17	906 75.00
19	640 50.00
22	144 6.25
23	98 12.50
25	48 3.13
27	35 6.25
29	16 6.25
31	13 12.50
34	15 12.50
35	24 3.13
36	38 1.56
37	53 25.00
38	68 3.13
39	103 12.50
41	480 4.69
43	720 100.00
44	926 100.00
46	302 3.13
48	184 1.56
49	97 12.50
50	53 50.00
51	42 3.13
53	21 3.13
54	17 3.13
55	15 12.50
56	10 6.25
57	10 4.69
59	16 6.25
61	25 0.78
62	34 0.78
63	48 1.56
64	63 25.00
65	78 0.78
66	260 25.00
68	374 0.34
Ammonia parkinsoniana	3
Amphicoryne hirsuta	8
Amphistigereina lessoni	9
Archaias compressus	1
Bolivina puchella var. primitiva	1
Bolivina subspinienscens	2
Brizalina barbata	1
Brizalina fragilis	1
Brizalina goesii	6
Brizalina lowmani	6
Brizalina striatula var. spinata	2
Brizalina subaerariensis var. mexicana	174
Brizalina translucens	108
Buccella hanni	33
Bulimina aculeata	182
Bulimina affinis	27
Bulimina alazanensis	70
Bulimina marginata	34
Bulimina mexicana	17
Buliminella elegantissima	41
Buliminella morgani	2
Cancris aurculus	41
Cassidulina curvata	2
Cassidulina laevigata	16
Cassidulina reniforme	24
Cibicides robertsoniana	51
Cibicides rugosus	1
Cibicides spp.	3
Cibicoides incrassatus	1
Cibicoides io	2
Cibicoides mollis	1
Cibicoides pachyderma	53
Comuspira planorbis	53
Dentalina spp.	6
Discocorbinella bertheloti	6
Eherenbergina spinea	5
Elphidium crispum	8
Elphidium discoidale	1
Elphidium excavatum	1
Elphidium poeyanum	1
Epistominella vitrea	1
Eponides antillarum	5
Eponides regularis	9
Eponides repandus	10
Eponides sp.	4
Eponides turgidus	10
Fontbotia wuellerstorfi	8
Fronducularia sagittula	17
Fursenkoina pontoni	3
Fursenkoina spp.	5
Gavelinopsis translucens	5
Glandulina laevigata	2
Globocassidulina subglobosa	1
Guttalina australis	1





## 94H coretops

Gyre 94H Core #		water depth	% sample examined	
70	974	25.00		<i>Ammonia parkinsoniana</i>
71	44	0.78	16	<i>Amphicoryne hirsuta</i>
72	38	0.39	15	<i>Amphistigereina lessoni</i>
73	29	0.94	22	<i>Archaias compressus</i>
74	18	0.78	50	<i>Bolivina puchella</i> var. <i>primitiva</i>
75	17	3.13	120	<i>Bolivina subsp. n. n.</i>
76	14	50.00	333	<i>Bolivina subsp. n. n.</i>
77	18	12.50	124	<i>Brizalina barbata</i>
78	29	3.13	77	<i>Brizalina fragilis</i>
79	37	0.78	18	<i>Brizalina goesii</i>
80	52	1.56	5	<i>Brizalina lowmani</i>
81	105	1.56	5	<i>Brizalina striatula</i> var. <i>spinata</i>
82	264	6.25	2	<i>Brizalina subaerariensis</i> var. <i>mexicana</i>
84	691	25.00	1	<i>Brizalina translucens</i>
86	895	50.00		<i>Buccella hanni</i>
88	503	100.00	4	<i>Bulimina aculeata</i>
90	95	3.13	10	<i>Bulimina affinis</i>
91	62	6.25	20	<i>Bulimina alazanensis</i>
92	35	6.25	87	<i>Bulimina marginata</i>
93	19	12.50	136	<i>Bulimina mexicana</i>
94	24	100.00	246	<i>Buliminella elegantissima</i>
95	42	100.00	78	<i>Buliminella morgani</i>
96	70	50.00	27	<i>Cancris auriculus</i>
97	112	12.50		<i>Cassidulina curvata</i>
98	179	25.00		<i>Cassidulina laevigata</i>
100	428	25.00	3	<i>Cassidulina reniforme</i>
102	705	50.00		<i>Cibicides robertsoniana</i>
103	1020	25.00	1	<i>Cibicides rugosus</i>
105	640	100.00	2	<i>Cibicides spp.</i>
109	34	12.50	54	<i>Cibicidoides incrassatus</i>
111	236	50.00		<i>Cibicidoides io</i>
				<i>Cibicidoides mollis</i>
				<i>Cibicidoides pachyderma</i>
				<i>Comuspira planorbis</i>
				<i>Dentalina</i> spp.
				<i>Discocorbinella bertheloti</i>
				<i>Eherenbergina spinea</i>
				<i>Elphidium crispum</i>
				<i>Elphidium discoidale</i>
				<i>Elphidium excavatum</i>
				<i>Elphidium poeyanum</i>
				<i>Epistominella vitrea</i>
				<i>Eponides antillarum</i>
				<i>Eponides regularis</i>
				<i>Eponides repandus</i>
				<i>Eponides</i> sp.
				<i>Eponides turgidus</i>
				<i>Fontbotia wuellerstorfi</i>
				<i>Fronducularia sagittula</i>
				<i>Fursenkoina pontoni</i>
				<i>Fursenkoina</i> spp.
				<i>Gavelinopsis translucens</i>
				<i>Glandulina laevigata</i>
				<i>Globocassidulina subglobosa</i>
				<i>Guttalina australis</i>



Table 2-Calcareous Foraminifers in Gyre 94H coretops

1	Gyrodina altiformis	66	5	535	9
25	Gyrodina neosoldani	74		403	59
	Hanzawai concentrica	68		312	46
	Latacarinina pauperata	53		371	35
	Lenticulina calcur	24		461	40
	Lenticulina iota	45		564	69
	Lobatula lobatulus	59		382	0
	Marginulina marginulinoides	43		359	24
	Melonis barleeianum	27		443	14
	Miliolinella fichtelina			346	40
	Miliolinella subrotunda			346	103
	Neobaculanella cassis			377	17
	Neolenticulina peregrina			363	26
	Nodosaria spp.			384	38
	Nodosariidae spp.			514	56
	Nonionella opima			650	50
	Orodosalis umbonatus			422	40
	Osangularia cultur			500	63
	Other Calcareous species			553	27
	Other miliolid species			371	15
	Peneropolis proteus			728	22
	Planorbulina mediterranensis			578	77
	Planulina exoma			792	61
	Planulina foveolata			539	41
	Pseudononion atlanticum			346	36
	Pseudononion guateloupi			491	39
	Pseudononion sp.#1			304	46
	Pseudononion sp. #2			368	36
	Pseudonodosaria comatula			470	91
	Pullina bulloides			293	18
	Pullina quinqueloba				
	Pyrgo murrhina				
	Pyrgo nasutus				
	Pyrgo spp.				
	Quinqueloculina bicarinata				
	Quinqueloculina compta				
	Quinqueloculina dimidiata				
	Quinqueloculina spp.				
	Rectobolivina advena				
	Reussella spinulosa				
	Robertinoides charlottensis				
	Rosalina bahamensis				
	Rosalina concinna				
	Rosalina floridensis				
	Rosalina subarauca				
	Saracenaria spp.				
	Siphonina pulchra				
	Spirolaccamina spp.				
	Takayanagia delicata				
	Trifarina bella				
	Trifarina bradyi				
	Triloculinella tegminus				
	Uvigerina auberiana				
	Uvigerina flinti				
	Uvigerina laevis				
	Uvigerina peregrina				
	Valvulina laevigata				
	Total Calc. & Agglut.				
	Total Agglutinated				



## APPENDIX 1 GULF OF MEXICO FORAMINIFERS

### AGGLUTINATED SPECIES

*Ammodiscus reesi* LeRoy, 1975, Micropaleo., v. 21, p.425, pl.2, fig. 7.

*Ammotium salsum* Cushman and Brönniman, 1948, Cush. Found. Foram. Res., Contr., v. 24, pt. 2, p. 39, pl7, fig. 9.

*Bigeneria irregularis* Phlegar and Parker, 1951, Geol. Soc. Amer. Mem 46, pt. II, p. 4, pl.1. fig. 16-21.

*Cribrostomoides* spp. assorted rare species

*Cyclammia cancellata* H.B. Brady, 1976 (M.S.) Proc. Roy. Soc., v. 25, p.214 (nomen nudum): 1884, Rept. Voy. Challenger, Zool., v.9, p. 351, pl. 37, fig. 8-16.

*Discammia compressa* (Göess) = *Lituolina irregularis* Roemer var. *compressa* Göess, 1882, K. Scenska Vetenskapakad. Förhandl. Handl., v. 19, n. 4, p. 141.

*Gaudryina atlantica* (Bailey) = *Textularia atlantica* Bailey, 1851, Smithsonian Contrib., v. 2, art. 3, p. 12., fig. 38-43. Note: large triserial species with depressed sutures and pronounced ridges.

*Gaudryina minuta* Earland, 1929, Discovery Repts. v. 10, p. 121, pl. 5, fig. 45-46. Note: small-sized, medium-grained triserial cone.

*Glomospira charoides* (Jones and Parker) = *Troccamina squamata* var. *charoides* Jones and Parker, 1860, Quart. Jour. Geol. Soc. London, v. 16, p. 304.

*Goesella mississippiensis* Parker (1954), p. 495, pl. 3, figs. 13, 14, 19. Note: large fine-grained initially triserial agglutinate

*Haplophragmoides bradyi* (Robertson) fine grained troccamidid

*Hyperammia elongata* Brady, 1878, Ann Mag. Nat. History, ser. 5, 1, p. 433, pl. 20, fig 2a,b. Note: fine grained agglutinated tube

*Karrerella apicularis* (Cushman) = *Gaudryina apicularis* Cushman, 1911, U.S. Nat. Mus. Bull. v. 71, pt. 2, p. 69, figs 110a, b.

*Karrerella bradyi* (Cushman) = *Gaudryina bradyi* Cushman, 1911, U.S. Nat. Mus. Bull. v. 71, pt. 2, p. 67, figs 107 a-c

*Milliamina horrida* (Cushman)= *Quinqueloculina horrida* Cushman, 1947, Contr. Cushman Lab Foram. Res., v. 23, pt. 88. Pl. 19, fig. 1.

*Nouria* (Heron-Allen and Earland)= SEE POAG 1981. Parker (1954) includes this species in taxonomic notes (p. 504) and states that *Nouria* sp. is very fragile (p. 476). Identified types at U.S. National Museum show *Nouria* to be more elongated and more well-cemented than *Saccamina*, but the globuline chamber arrangement of *Nouria* is not always easily seen. The Phlegar and Parker (1953) identified material of *Nouria* looks like the *Protonina atlantica* illustrations (Phleger and Parker, 1953, but I did not check the type. Curiously Poag's 1981 specimens of *Nouria* are lost.

In the Gyre94H core tops the sac-like agglutinated specimens are identified as *Saccamina*, and *Nouria* was not recognized. *Nouria* is most likely an opportunistic agglutinated species, and may be the species identified as *Saccamina* (Phleger and Parker, 1953) along the western side of the delta. The dominance of these opportunistic agglutinated species, regardless of the identification, is suspected to be the result of decalcification of calcareous foraminifers due to "increasing acidity of samples after collection" (Parker, 1954, p. 474).

*Pseudoclavulina mexicana* (Cushman) = *Clavulina humilis* Brady var. *mexicana* Cushman, 1922, Bull. 104, U.S. National Museum, pt. 3, p. 83, pl. 16, figs. 1-3. Note: initial part triserial with latter chambers uniserial, often fine grained

*Reophanus oviculus* (Brady) = *Reophax ovicula* Brady, 1879, Quart. J. Micro. Sci., n. ser., 19, p. 20-62.

*Reophanus scorpiurus* (Montfort) = *Reophax scorpiurus* Note coarse to medium grained multichambered

*Reophax guttifer* (Brady) = *Lituola (Reaphax) guttifera* Brady, 1881. Ueber einige arktische Tiefsee-Foraminiferen gesammelt während der österreichisch-ungarischen Nordpol-Expedition den Jahren 1872-74: Denkschriften der Kaiserlichen Akademie der Wissenschaften Wein Mathematisch-naturwissenschaftlichen Classe, v. 43, p. 9-110.

*Rhabammina* spp. assorted coarse grained tubes

*Saccammina difflugiformis* (Brady) = *Reophax difflugiformis* Brady, 1879, Notes on some of the Reticularian Rhizopoda of the *Challenger* Expedition: Quarterly J. of Micro. Sci., new series, v. 19, p. 51, pl. 4, figs. 3a,b.

*Technitella legumen* Norman, Note: present in a few samples and counted as other agglutinated species

*Textularia candeina* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 143, pl. 1, figs. 25-27. Note round form with typical textularia aperture

*Textularia conica* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 143, pl. 1, figs. 19-20. Note: angular form

*Textularia mayori* Cushman, 1922, Publ. 311 Carnegie Instit. Washington, v.17, p. 23, pl.2, fig. 3. Note: Spikey form found in shallow water

*Textularia mexicana* Cushman, 1922, Bull. 104, U.S. National Museum, pt. 3, p. 17, pl. 2, fig. 9. Note: form with strongly raised ribs

*Trochammina inflata* (Montagu) = *Nautilus inflatus* Montague, 1808, Testacea Britannica, Supplement, p. 81, pl. 18, fig. 3.

*Trochammina squamata* Parker and Jones, 1865, Phil. Trans., p. 407, pl. 15, figs 30, 30 a-c, *Trochammina* spp. other unnamed species

## CALCAREOUS SPECIES

*Ammonia parkinsoniana* (d'Orbigny) = *Rosalina parkinsoniana* d'Orbigny, 1939, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 99, pl. 4, fig. 25-27. NOTE: According to Loeblich and Tappan (1994) *A. tepida* is about the same size as *A. parkinsoniana* (d'Orbigny), but *A. tepida* is thicker with a more open and ornamented umbilicus. Poag (1981) considers *A. parkinsoniana* (d'Orbigny) as the thicker variety with open umbilicus and *A. parkinsoniana* (d'Orbigny) forma *tepida* as the smaller, thinner-walled variant (exactly opposite). I do not differentiate the two species.

*Amphicoryne hirsuta* (d'Orbigny) = *Nodosaria hirsuta* d'Orbigny, 1826, Ann. Sci. Nat., v. 7, p. 252, no. 7

*Amphistigerina lessonii* d'Orbigny, 1826, Ann. Sci. Nat., v. 7, p. 304, no. 3, pl. 17, figs. 1-4.



- Archais compressus* (d'Orbigny) = *Orbiculina compressus*, d'Orbigny, 1939, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 73, pl. 8, fig. 4-7.
- Articulina mayori* Cushman, 1922, Pub. Carnegie Inst. Was., p. 71, pl. 13, fig. 5. Note: rarely occurring and included in other calcareous foraminifers
- Bolivina pulchella* (d'Orbigny) var. *primitiva* Cushman, 1930, Bull. Fla. State Geol. Surv., v. 4, p. 47, pl. 8, fig. 12
- Bolivina subspinensis* = *Bulimina tenuis* Phleger and Parker, 1951, GSA Mem. 46, pt. 2, p. 16, pl. 7, figs. 33 a, b, 34a, b.
- Brizalina barbata* (Phleger and Parker) = *Bolivina barbata* Phleger and Parker, 1951, GSA Mem. 46, pt II, p. 13, pl. 6, figs 12a, b, 13..
- Brizalina fragilis* (Phleger and Parker) = *Bolivina fragilis* Phleger and Parker, 1951, GSA Mem. 46, pt II, p. 13, pl. 6, figs. 14, 23, 24a, b...
- Brizalina goëssii* (Cushman) = *Bolivina goëssii* Cushman, 1922, Bull. Nat. Mus., pt. 3, pt. 34, pl. 6. fig. 5.
- Brizalina lowmani* (Phleger and Parker) = *Bolivina lowmani* Phleger and Parker, 1951, GSA Mem. 46, pt II, p. 13, pl. 6, figs. 20a, b, 21.
- Brizalina striatula* Cushman var. *spinata* Cushman = *Bolivina striatula* Cushman var. *spinata* Cushman, 1936, Spec. pub. n. 6, Cushman Lab. For am. Res., p. 59, pl. 8, figs. 9a, b.
- Brizalina subaenariensis* Cushman var. *mexicana* Cushman = *Bolivina subaenariensis* Cushman var. *mexicana* Cushman, 1922 Bull. Nat. Mus., pt. 3, pt. 47, pl. 8. fig. 1
- Brizalina translucens* (Phleger and Parker) = *Bolivina translucens* Phleger and Parker, 1951, GSA Mem. 46, pt II, p. 15, pl. 7, figs. 13, 14a, b.
- Buccella hanni* (Phleger and Parker) = *Eponides hanni* Phleger and Parker, 1951, GSA Mem. 46, pt. 2, p. 21, pl. 11, figs. 1a, b, 2a, b.
- Bulimina aculeata* d'Orbigny, 1826, Ann. Sci. Nat. v. 7, p. 269, n. 7.
- Bulimina affinis* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 105, pl. 2, fig. 25-26.
- Bulimina alazanensis* Cushman, 1927, J. Paleo., v. 1, p. 161, pl. 25, fig. 4.
- Bulimina marginata* d'Orbigny, 1826, Ann. Sci. Nat., v. 7, p. 269, no. 4, pl. 12 figs 10-12.
- Bulimina mexicana* Cushman = *Bulimina inflata* Seguenza var. *mexicana* Cushman, 1922, Bull. 104, U.S. Nat. Mus., pt. 3, p. 95, pl. 21, fig. 2.
- Buliminella elegantissima* (d'Orbigny) = *Bulimina elegantissima* d'Orbigny, 1839, Voy. Amér. Mérid., v. 5, pt. 5, "Foraminifères" p. 51, pl. 7, figs. 13, 14.
- Buliminella morgani* Anderson, 1961, LA Geol. Bull n. 35, pt II, p. 87, pl. 19, fig. 10.
- Cancris auriculus* (Fichtel and Moll) = *Nautilus auricula* var.  $\beta$  Fichtel and Moll, 1798, p. 108, pl. 20, fig. a-c. NOTE: this is the *Cancris sagra* (d'Orbigny) of Anderson, 1961.
- Cassidulina curvata* Phleger and Parker, 1951, GSA Mem. 46, pt II, p. 26, pl. 14, figs 5a, b.
- Cassidulina laevigata* d'Orbigny, 1926, Ann. Sci. Nat. v. 7, p. 282, n. 1, pl. 15, figs. 4. 5.
- Cassidulina reniforme* (Nørvang) = *Cassidulina crassa* d'Orbigny var. *reiniforme* Nørvang, 1945, The zoology of Iceland. *Foraminifera* 2(2): 1-79.
- Chilostomella oolina* Schwager, 1878, Bol. Com. Geol, Ital., v. 9, p. 527, pl. 1, fig. 16. NOTE: included in other calcareous species

***Cibicides robertsoniana*** (H. B. Brady) = *Truncatulina robertsonianus*, Brady, 1981, Quart. Journ. Micr. Sci., v.21, p. 65. Note: imperforate umbonal side with clear umbo through which the earlier whorls are often visible.

***Cibicides rugosus*** Phleger and Parker, 1951, GSA Memoir 46, pt.2, p.31, pl.17, figs. 5a, b; 6a, b. Note: Planoconvex with strongly rugose umbonal side, similar to *F. wuellerstorffi*

***Cibicides* spp.** other unnamed *Cibicides*

***Cibicidoides incrassatus*** (Fichtel and Moll) = *Nautilus incrassatus* Fichtel and Moll, 1798, Test. Micr., 1803 edition, p. 38, pl. 4, figs. a-c. NOTE: Large asymmetrical biconvex shaped species with broadly rounded periphery. Coarsely pitted perforations bordered by imperforate sutural bands, and thickly calcified plug on involute side. On evolute spiral side central umbilicus surrounded by a deep trench extending all the way around. Includes *Cibicides corpulentus* (Phleger and Parker) = *Cibicides robustus* Phleger and Parker 1951, GSA Memoir 46, pt.2, p.32, pl.17 figs. 1a, b; 2a, b; 3a, b; 4a, b

***Cibicidoides io*** (Cushman) = *Cibicides pseudoungerians* (Cushman) var. *io* Cushman, 1931, Bull. 104, U.S. National Museum, pt. 8, p. 125, pl. 23, fig. 1. Note: smooth surface with deeply pitted perforations. Straight sutures with slightly depressed umbo. Laterally compressed (flatter) biconvex test. NO KEEL, NO CENTRAL BOSS, Pronounced trench on evolute side that extends half way around central umbilical area

***Cibicidoides mollis*** (Phleger and Parker) = *Cibicides mollis* Phleger and Parker 1951, GSA Memoir 46, pt.2, p.30, pl.16 figs. 7a, b; 8a, b; 9a, b. Note: lobate periphery and keel (more pronounced in earlier chambers), variably biconvex with thin smooth and coarsely perforate walls.

***Cibicidoides pachyderma*** (Rzehak) = *Truncatulina pachyderma* Rzehak, 1886, Naturf. Ver. Brünn, Verh., Brünn, Bd. 24 (1885), p. 87, pl. 1, fig. 5 a-c. (see Morkoven, et al., 1986, p. 68-71). NOTE: this species has been referred to by many names including: *Planulina floridana* (Cushman) = *Truncatulina floridana* Cushman, 1919. U.S. Geological Survey Bull. 676, p. 62, pl.19, fig.2. (see Loeblich and Tappan 1994, p. 149, pl. 312, fig. 9-14)/ *Planulina floridana* (sublittoral) of Poag 1981/ *Cibicides pseudoungerianus* (Cushman)/ *Cibicides cicatricosus* (Schwager) in Bock. Most illustrations show *P. floridans* has arcuate sutures (and *C. umbonatus* has straighter sutures). My original concept of this species was with arcuate sutures and no boss. However, the type illustration (Rzehak) shows straight sutures and no boss, and the lectotype (Morkoven) has curved sutures and a boss. So there appears to be a variable genotype.

**Description:** numerous narrow coarsely perforate straight to arcuate chambers, raised sutures possible, low biconvex shape with peripheral shelf. Imperforate umbo but no central boss, final two chambers extend towards the umbilicus.

Some specimens of *C. pachyderma* (*P. floridans*) appear to grade into *C. umbonatus*. *Cibicides umbonatus* (Phleger and Parker, 1951. Plate 17, fig 7a, b, 8a, b.) is described as having a thin, coarsely perforate, biconvex test with a narrow keel, 9-11 chambers, slightly depressed straight to slightly curved sutures with a definite umbo of clear shell material. Poag (1981) defines a thinner walled *C. pachyderma* (*P. floridans*, sublittoral) with a boss, that I would identify as *C. umbonatus*. Therefore, there seems to be a gradation between *C. pachyderma* (*P. floridans*) and *C. umbonatus* that makes them sometimes difficult to distinguish, so I have lumped it together as *Cibicidoides pachyderma*. If *C. umbonatus* is a species and not a synonymy of *C. pachyderma* (*P. floridans*), then it is very rare.

***Cornuspira planorbis*** Schultze, 1854, Organismus Polythal., p. 40, pl.2, fig. 21.



*Dentalina communis* Note: included in *Dentalina* spp.

*Discocorbinella bertheloti* (d'Orbigny) = *Rosalina bertheloti* d'Orbigny, 1839b, p. 135, pl. 1, fig. 28-30.

*Ehrenbergina spinea* Cushman, 1935, Smiths. Misc. Coll., v. 91, n. 21, p. 8, pl. 3, figs. 10, 11.

*Elphidium crispum* (Linné) = *Nautilus crispis* Linné, 1758, p. 709 NOTE: Lots of (20) chambers, ID as *Elphidium* cf. *fimbriatulum* (Cushman) in Phleger and Parker (1951) pl. 5, fig. 12.

*Elphidium discoidale* (d'Orbigny) = *Polystomella discoidalis* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 56, pl. 6, figs. 23, 24.

*Elphidium excavatum* (Terquem) = *Polystomella excavata* Terquem, 1876, Société Dunquerquoise, Memoires, v. 19 (1874-75) p. 429.

*Elphidium poeyanum* (d'Orbigny) = *Polystomella poeyana* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 55, pl. 6, figs. 25, 26 NOTE: Characteristic semicircular openings along sutures.

*Epistominella vitrea* Parker, in Parker, Phleger, and Peirson, 1953, Cushman Foundation Sp. Pub n. 2, p. 9, pl. 4, fig. 34-36, 40, 41.

*Eponides antillarum* (d'Orbigny) = *Rotalina antillarum* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 75, pl. 5, figs. 4-6. NOTE: round

*Eponides regularis* Phleger and Parker, 1951, GSA Mem. 46, pt. 2, p.21, pl. 11, figs.19a, b, 2a, b.

*Eponides repandus* (Fichtel and Moll) = *Nautilus repandus* Fichtel and Moll, 1803, Test. Micr., p. 35, pl. 3, figs. a-d. NOTE: wide sutures often with a white mottled spots on the clear test

*Eponides turgidus* Phleger and Parker, 1951, GSA Mem. 46, pt. 2, p.22, pl. 11, figs. 9a, b,

*Fontbotia wuellerstorfi* (Schwager) = *Anomalina wuellerstorfi* Schwager, 1866, Fossile foraminiferen von Kar-Nicobar, Geol. Theil, vol. 2, no. 1, Geologische Beobachtungen, no. 2, Paläontologische Mittheilungen, p. 258, pl. 7, figs. 105, 107.

*Fronidularia sagittula* van den Brock = *Fronidularia alata* d'Orbigny var. *sagittula* van den Brock, 1876, Soc. Belge. Micr., Ann., Tome 2, pp. 113, 115, pl. 2, figs. 12, 14.

*Fursenkoina pontoni* (Cushman) = *Virgulina pontoni* Cushman, 1932, Contr. Cushman Lab. Foram. Res 8, pt. 1, p. 17, pl. 3, fig. 7.

*Fursenkoina* spp. other unidentified *Fursenkoina*

*Gavelinopsis translucens* (Phleger and Parker) = "*Rotalia*" *translucens* Phleger and Parker 1951, GSA Mem. 46, pt. 2, p.24, pl. 12, figs. 11a, b, 12a, b

*Glandulina laevigata* (d'Orbigny) = *Nodosaria laevigata* d'Orbigny 1826, Ann. Sci. Nat., ser. 1, vol. 7, p. 252, pl. 10, figs. 1-3.

*Globocassidulina subglobosa* (Brady) = *Cassidulina subglobosa* Brady, 1881, Quart. Journ. Micr. Sci., v.21, p. 30 (p. 60)

*Guttalina australis* d'Orbigny, 1839, Voy. Amér. Mérid., v. 5, pt. 5, "Foraminifères" p. 60, pl. 1, figs. 1-4. Note: this is a wider more globular species. Type illustration shows that striations cover only the lower 1/2 to 2/3 of test, but collections show many specimens with the pronounced striations extending all the way to the aperture. (*Guttalina pulchella* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminifères", p. 129, pl. 2, fig. 4-6 is a long thin specimen with very fine striations all the way to the top of the test.)

*Gyrodina altiformis* R.E. and K.C. Stewart, 1930, Jour. Paleo., v. 4, p. 67, pl. 9, fig. 2a-c.

- Gyroidina neosoldanii* Brotzen, 1936, Arsbok Sverig. Geol. Unders. V. 30, n. 3, p. 158
- Hanzawaia concentrica* (Cushman) = *Truncatulina concentrica* Cushman, 1918, U.S.G.S. Bull. 676, p. 64, pl. 21, fig. 3.
- Latacarinina pauperata* (Parker and Jones) = *Pulvinulina repanda* (Fichtel and Moll) var. *menardii* (d'Orbigny) subvar. *pauperata* Parker and Jones, 1865, Phil. Trans. Roy. Soc., v. 155, p. 359, pl. 16, figs. 50-51.
- Lenticulina calcur* (Linné) = *Nautilus calcur* Linné, 1767, Syst. Nat. 12<sup>th</sup> ed., p. 1162, n. 272
- Lenticulina iota* (Cushman) = *Cristellaria iota* Cushman, 1923, Bull. 104, U.S. Nat. Mus., pt. 4, p. 111, pl. 29, fig. 2, pl. 30, fig. 1.
- Lobatula lobatulus* (Walker and Jacob) = *Nautilus lobatulus* Walker and Jacob, 1789, in Kanmacher, F., Chap. XI, p. 629-645, pl. XIV.
- Marginulina marginulinoides* (Göes) = *Cristellaria aculeata* var. *marginulinoides* Göes, 1896, Bull. Mus. Comp. Zool., v. 29, p. 56, pl. 5, figs. 15, 16. Note: most common form, included in *Marginulopsis* spp.
- Melonis barleeianum* (Williamson) = *Nonionina barleeana* Williamson, 1858, On the Recent Foraminifera of Great Britain: Roy. Soc. Pub., p. 32, pl. 3, figs. 68-69.
- Miliolinella fichtelina* (d'Orbigny) = *Triloculina fichteliana* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Phys. Pol. Nat. Cuba "Foraminiferes", p. 171, pl. 9, figs. 8-10. NOTE: Striated form
- Miliolinella subrotunda* (Montague) = *Vermiculum subrotundum* Montague 1803. Note: Type species concept was revised with the establishment of neotype for *M. subrotunda* in 1974. Includes *Pateoris hauerinoides* (Rhumbler)-Loeblich and Tappan 1953, pl. 7, fig. 8-12. Note: Description is quinquiloculine to planispiral chambers with 2-5-7 chambers visible in last whorl, rounded periphery. Terminal arched aperture is open and rarely may have a small flap or nub, but not a large flap.
- Neobaculariella cassis* (d'Orbigny) = *Vertebralina cassis* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Fis. Pol. Nat. Cuba "Foraminiferes", p. 166, pl. 9, figs 3,4. Note: most common species included in *Neobaculariella* spp.
- Neolenticulina peregrina* (Schwager) = *Cristellaria peregrina* Schwager, 1866, *Novara*. Expedition, Geol. Thiel, v.2, p. 245. Pl. 7, fig. 89. Note: More commonly referred to as *Lenticulina perigrina*
- Nodosaria albatrossi* Cushman = *Nodosaria vertabralis* (Batsch), var. *albatrossi* Cushman, 1923, Bull. 104, U.S. Nat. Mus., pt. 4, p. 87, pl. 15, fig. 1. Note: included in *Nodosaria* spp.
- Nodosaria pyrula* d'Orbigny, 1826, Ann. Sci. Nat., v. 7, p. 253, no. 13. Note: included in *Nodosaria* spp.
- Nodosariidae* spp. includes assorted species of the genera *Lagena*, *Fissurina* and *Oolina*
- Nonionella opima* Cushman, 1947, Cont. Cushman Lab. Foram Res., v. 23, pt. 4, p. 90, pl. 20, figs 1-3.
- Oridorsalis umbonatus* (Reuss) = *Rotalina umbonatus* Reuss, 1851, Zeitschrift der Deutschen Geologischen Gesellschaft, Berlin, vol. 3, p. 75, pl. 5, figs. 35 a-c. Note: *O. umbonatus* includes individuals identified as *Eponides tener* by other authors.
- Osangularia cultur* (Parker and Jones) = *Panorbulina cultur* Parker and Jones, 1865, Phil. Trans., p. 421, pl. 19, fig 1,
- Peneropolis proteus* d'Orbigny = *Peneroplis protea* d'Orbigny, 1839, in Ramone de la Sagra, Hist. Phys. Pol. Nat. Cuba "Foraminiferes", p. 60, pl. 8 figs. 7-11.



*Planorbulina mediterranensis* d'Orbigny, 1826, Ann. Sci. Nat., v. 7, p. 280, n. 2, pl. 14, figs. 4-6.

*Planulina exorna* Phleger and Parker, 1951, GSA Mem. 46, pt. 2, p. 32, pl. 18, figs. 5a, b, 6a, b, 7a, b, 8a, b.

*Planulina foveolata* (Brady) = *Anomolina foveolata* Brady 1884, Rept. Voy. *Challenger*, Zool., v. 9, p. 676, pl. 94, figs. 1 a-c.

*Pseudononion atlanticum* (Cushman) = *Nonionella atlantica* Cushman, 1947, Cont. Cush. Lab. Foram. Res., v. 23, pt. 4, p. 11, pl. 5, figs. 21-23.

*Pseudononion grateloupi* (d'Orbigny) = *Nonionina grateloupi* d'Orbigny, 1826, Ann. Sci. Nat. v.7, p. 294, n. 19. NOTE: Rare specimen with large flaring last chamber.

*Pseudononion* sp #1 unnamed species

*Pseudononion* sp #2 unnamed species

*Pseudonosaria comatula* (Cushman) = *Nodosaria comatula* Cushman, 1923, Bull. 104, U.S. Nat. Mus., pt. 4, p. 83, pl. 14, fig. 5.

*Pullina bulloides* (d'Orbigny) = *Nonionina billoides* d'Orbigny, 1826, Ann. Sci. Nat. v.7, p. 293,

*Pullina quinqueloba* (Reuss) = *Nonionina quinqueloba* Reuss, 1851, Zeitschr. Deutsch. Geol. Ges., v. 3, p. 71, pl. 5, fig. 31.

*Pyrgo murrhina* (Schwager) = *Biloculina murrhina* Schwager, 1866, Geologischer Theil, v. 2, no. 1, Geologische Beobachtungen, no. 2, Paläontologische Mittheilungen, p. 187-268.

*Pyrgo nasutus* Cushman, 1935, Smithsonian Misc. Coll., v. 91, n. 21, p. 7, pl. 3, figs. 1-4.

*Pyrgo* spp. Includes other unidentified *Pyrgo* spp.

*Quinqueloculina bicarinata* d'Orbigny, 1826, Ann. Sci. Nat. v.7, p. 302. NOTE: this is the triangular shaped form with no striations

*Quinqueloculina compta* Cushman, 1947, Contr. Cushman Lab. Foram. Res., v. 23, pt. 4, p. 87, pl. 19, fig. 2. Note: elongated form

*Quinqueloculina dimidiata* Terquem, 1876, Essai sur le classement des animaux que vivent sur la plage et dans le environs le Dunkerque, p. 81, pl. 4-, figs. 5 a-c.

*Quinqueloculina* spp. assorted other species of the genera

*Rectobolivina advena* Cushman = *Siphogenerina advena* Cushman, 1922, Carnegie Inst., Washington, Pub. 311, p. 35, pl. 5, fig. 2.

*Reussella spinulosa* (Reuss) = *Verneuilina spinulosa* Reuss, 1850, Denkschriften Kaiser. Akad. Der Wissensch. Math. - Natur. Classe. 1, 374. NOTE checked *Reussella spinulose* (Reuss) var. *atlantica* Cushman, 1947 Cont. Cush. Lab. Foram. Res., v. 23, pt. 4, p. 91, pl. 20, figs. 6-7, but I believe it to be the same.

*Robertinoides charlottensis* (Cushman,) = *Cassidulina charlottensis* Cushman, 1925, Contr. Cushman Lab. Foram. Res., vol. 1, pt. 2, p. 41, pl. 6, figs. 6, 7.

*Rosalina bahamensis* Todd and Low, 1971, U.S.G.S., Prof. Paper 683-C, p. C14, pl. 3 fig. 2.

*Rosalina concinna* (Brady) = *Discorbina concinna* Brady, 1884, Rept. Voy. *Challenger*, Zool., v. 9, p. 646, pl. 90, fig. 7, 8.

*Rosalina floridensis* (Cushman) = *Discorbis bertheloti* var. *floridensis* Cushman, 1930, Jour. Paleont., v. 40, n.4, p. 364. Pl. 33, figs. 13 a-c.

***Rosalina subarauca*** (Cushman) = *Discorbis subarauca* Cushman, 1922, Carnegie Inst., Washington, Pub. 311, p. 41, pl. 7, figs. 1, 2, NOTE: see Poag (1981) p. 81, pl. 41, fig. 1, pl. 42, figs. 1a,b.

***Saracenaria*** spp. assorted species of this genera

***Siphonina pulchra*** Cushman, 1919, Publ. 291, Carnegie Instit. Washington, p. 42, pl. 14, fig. 7 a-c.

***Spirolaccamina*** spp assorted species of the genera.

***Takayanagia delicata*** (Cushman) = *Cassidulina delicata* Cushman, 1927, Scripps Inst. Oceanogr. Bull., Thech Ser., v. 1, n. 10, p. 168, pl. 6, fig.5. Note: Identification based on Nomura 1983, pt 1, p. 52 and compared with Matoba 1990 BENTHOS 90 field trip records. Note: most commonly identified as *Cassidulina subglobosa*

***Trifarina bella*** (Phleger and Parker) = *Angulogerina bella* Phleger and Parker, 1951, GSA Mem. 46, pt II, p. 12, pl. 6, figs. 7, 8.

***Trifarina bradyi*** Cushman, 1923, Bull. 104, U.S. Nat. Mus., pt. 4, p. 99, pl. 22, figs. 3-9.

***Triloculinella tegminis*** (Loeblich and Tappan) = *Scutuloris tegminus* Loeblich and Tappan, 1953, Studies of Arctic Foraminifera, Smithsonian Miscellaneous Collections, v. 121, no. 7, p. 41, pl. 6, fig. 10; includes *Miliolinella chukchiensis* (Loeblich and Tappan) 1953, pl. 7, fig. 7

***Quinqueloculina subrotunda*** (Montague) Todd and Low, 1967; and *Quinqueloculina subrotunda* (Montague?) Cushman, 1948. Note: quinqueloculine or cryptoquinqueloculine with three to five chambers visible. Semicircular aperture at the end of last chamber is nearly filled with a broad low flap, which leaves a slitlike crescentic opening

***Uvigerina auberiana*** d'Orbigny

***Uvigerina flinti*** Cushman 1923, Bull. 104, U.S. Nat. Mus., pt. 4, p. 165, pl. 42, figs.13.

***Uvigerina laevis*** Goës = *Uvigerina auberiana* d'Orbigny forma *laevis* 1923, Bull. Mus. Com. Zool. V. 29, p. 51,

***Uvigerina peregrina*** Cushman 1923, Bull. 104, U.S. Nat. Mus., pt. 4, p. 166, pl. 42, figs. 7-10.

***Valvulina laevigata*** Phlegar and Parker, 1951, GSA Mem. 46, pt. 2, p.25, pl. 13, figs. 11a, b, 12a, b.