



Supplement of

Unique benthic foraminiferal communities (stained) in diverse environments of sub-Antarctic fjords, South Georgia

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Overview

Table S1. Environmental parameters and sediment properties discussed in this study and used for the CCA analysis (Fig. 10).

Tables S2 to S4. Foraminiferal census data and diversity indices for the 63–125 μm and >125 μm fractions as well as the entire assemblage (>63 μm ; i.e., the >125 plus 63–125 μm fractions).

Tables S5 to S6. Results of the Q-mode principal component (PC) analysis for the >125 μm and >63 μm datasets.

Figs. S1 to S6. Scanning electron micrographs of benthic foraminiferal species encountered in this study.

Table S1. Environmental parameters and sediment properties discussed in this study and used for the CCA analysis (Fig. 10).

Station	Water depth (m)	Distance from major sediment source (km)	Distance from fjord's mouth (km)	Mean grain size (phi)	Sorting (phi)	Temp. (°C)	Salinity (PSU)	TS (%)	TOC (%)	$\delta^{13}\text{C}_{\text{sed}}$ (‰)
SG-01	111	4.6	4.4	6.22	1.60	0.85	33.9	0.11	0.52	-24.52
SG-03	250	10.0	0.0	6.20	1.41	0.5	34.35	0.10	0.60	-24.45
SG-04	135	2.1	2.8	5.03	1.54	0.2*	33.9*	0.07	0.50	-24.37
SG-06	121	11.9	8.0	7.21	1.20	0.6*	33.9*	0.11	0.56	-24.49
SG-07	250	12.6	4.4	6.64	1.39	0.5*	34.1*	0.14	0.63	-24.11
SG-08	23	20.3	7.6	6.66	1.54	1.0*	33.5*	0.25	1.00	-22.87
SG-09	60	20.3	7.7	7.25	1.28	1.6	33.8	0.07	0.47	-24.84
SG-10	114	19.1	7.2	7.32	1.16	0.6*	33.9*	0.09	0.50	-24.85
SG-11	240	18.4	7.6	6.74	1.37	1.1*	34.3*	0.10	0.49	-24.55
SG-12	21	0.6	9.9	6.66	1.39	1.3*	33.7*	0.26	1.09	-22.42
SG-13	28	1.2	16.0	5.92	1.87	2.0*	33.7*	0.27	0.35	-25.94
SG-14	155	3.2	13.8	6.89	1.31	0.4*	34.0*	0.10	0.44	-25.31
SG-15	51	7.5	10.8	7.11	1.29	1.6	33.8	0.10	0.56	-23.76
SG-16	136	2.6	14.6	7.06	1.32	0.4	33.9	0.09	0.41	-25.57
SG-17	92	1.1	5.7	6.59	1.46	0.3*	34.0*	0.08	0.96	-23.07
SG-18	102	2.8	5.7	6.13	1.55	0.3*	34.0*	0.14	1.28	-22.87
SG-20A	144	17.8	0.0	5.12	1.64	0.5	33.9	0.09	0.66	-23.51
SG-20B	106	17.8	0.0			1.0*	33.9*	<i>no sediment available</i>		
SG-21	252	18.7	0.7	6.44	1.45	1.4*	34.3*	0.08	0.64	-23.77
SG-22	45	0.8	6.5			2.0*	33.8*	<i>no sediment available</i>		
SG-24	190	7.9	18.0	5.66	2.34	0.3*	33.8*	0.19	0.35	-25.92
SG-26A	155	6.9	0.0	4.32	2.72	0.6*	34.0*	0.09	0.57	-23.82
SG-26B	123	6.9	0.0			0.7	34.0	<i>no sediment available</i>		
SG-27	136	4.6	2.4	6.21	1.61	0.7	34.0	0.09	0.98	-23.11
SG-28	37	2.7	4.6	5.87	1.63	2.3	33.8	0.38	2.92	-23.00
SG-29	46	6.2	2.5	2.59	0.80	2.1	33.8	0.07	0.23	-25.32
SG-30	60	5.9	0.8			1.9	33.9	<i>no sediment available</i>		
SG-31	188	8.5	17.4	0.14	0.42	0.3	33.8	0.19	0.46	-26.06
SG-32	194	11.8	14.1	5.28	1.60	0.3	34.0	0.15	0.27	-25.23

* direct measurement

[illegible]

[illegible]

Table S3. *Continues.*

Station	Taxa_S	Dominance_D	Simpson_1-D	Shannon_H	Evenness_e^H/S	Brillouin	Menhinick	Margalef	Equitability_J	Fisher_alpha	Berger-Parker	Chao-1
SG-01	12	0,22	0,78	1,73	0,47	1,64	0,83	2,06	0,69	2,76	0,3	15
SG-03	26	0,16	0,84	2,32	0,39	2,22	1,28	4,15	0,71	6,17	0,33	27,2
SG-04	19	0,22	0,78	2,01	0,39	1,94	0,85	2,9	0,68	3,91	0,39	19,5
SG-06	21	0,24	0,76	1,8	0,29	1,72	1,12	3,41	0,59	4,89	0,36	43,5
SG-07	24	0,13	0,87	2,39	0,45	2,27	1,32	3,97	0,75	5,96	0,22	29,3
SG-08	11	0,47	0,53	0,95	0,24	0,91	0,63	1,75	0,4	2,24	0,59	13,5
SG-09	11	0,64	0,36	0,89	0,22	0,84	0,61	1,73	0,37	2,2	0,8	12,5
SG-10	12	0,46	0,54	1,24	0,29	1,18	0,66	1,89	0,5	2,44	0,65	13,5
SG-11	23	0,3	0,7	1,8	0,26	1,69	1,31	3,84	0,57	5,75	0,5	28,6
SG-12	12	0,27	0,73	1,63	0,43	1,51	1	2,22	0,66	3,12	0,43	15
SG-13	5	0,59	0,41	0,86	0,47	0,77	0,57	0,92	0,53	1,2	0,75	5
SG-14	10	0,59	0,41	0,84	0,23	0,78	0,74	1,72	0,37	2,27	0,74	17,5
SG-15	19	0,29	0,71	1,72	0,29	1,63	1,07	3,13	0,58	4,44	0,47	22,3
SG-16	11	0,53	0,47	1,07	0,26	0,99	0,81	1,92	0,44	2,57	0,71	12
SG-17	21	0,17	0,83	2,13	0,4	2	1,34	3,64	0,7	5,51	0,26	33
SG-18	22	0,22	0,78	2,02	0,34	1,91	1,23	3,65	0,65	5,37	0,39	23
SG-20A	22	0,25	0,75	1,9	0,3	1,81	1,14	3,55	0,61	5,12	0,41	31,3
SG-20B	22	0,22	0,79	2,01	0,34	1,92	1,11	3,52	0,65	5,03	0,35	25,8
SG-21	32	0,12	0,88	2,61	0,43	2,47	1,7	5,28	0,75	8,54	0,25	36,7
SG-22	10	0,28	0,72	1,68	0,53	1,57	0,82	1,8	0,73	2,41	0,48	10
SG-24	8	0,25	0,75	1,57	0,6	1,46	0,75	1,48	0,75	1,96	0,32	8
SG-26A	25	0,3	0,7	1,85	0,25	1,73	1,43	4,19	0,57	6,43	0,51	43,3
SG-26B	23	0,13	0,87	2,35	0,46	2,24	1,26	3,79	0,75	5,62	0,2	28,3
SG-27	25	0,15	0,85	2,37	0,43	2,26	1,25	4	0,74	5,9	0,32	27
SG-28	9	0,21	0,79	1,81	0,68	1,47	1,7	2,4	0,82	4,59	0,36	19
SG-29	13	0,19	0,81	1,81	0,47	1,74	0,75	2,1	0,71	2,77	0,27	16
SG-30	16	0,27	0,73	1,68	0,33	1,61	0,81	2,51	0,61	3,36	0,39	19,3
SG-31	7	0,26	0,74	1,49	0,64	1,39	0,7	1,31	0,77	1,72	0,32	7
SG-32	11	0,63	0,37	0,87	0,22	0,83	0,58	1,7	0,36	2,15	0,79	14

Table S4. Foraminiferal census data and diversity indices for the entire assemblage (>63 µm; i.e., the >125 plus 63–125 µm fractions).

Station	<i>Psammosphaera fusca</i>	<i>Lagenammina</i> sp.	<i>Lagenammina</i> cf. <i>tubulata</i>	encrusting monothalamiids	<i>Hippocrepinella hirudinea</i>	<i>Proteonina decorata</i>	<i>Vanhoeffenella gaussi</i>	<i>Miliammina earlandi</i>	<i>Cribrostomoides jeffreysii</i>	<i>Cribrostomoides wiesneri</i>	<i>Veleroninoides scitulus</i>	<i>Ammobaculites rostratus</i>	<i>Ammodiscus incertus</i>	<i>Glomospira</i> sp.	<i>Portatrochammina wiesneri</i>	<i>Earlandammina bullata</i>	<i>Cylindragulimia alba</i>	<i>Pelosina</i> sp.	<i>Textularia earlandi</i>	<i>Reophax subfusiformis</i>	<i>Adercotryma glomeratum</i>	<i>Eggerella minuta</i>	<i>Pseudobolivina antarctica</i>	other agglutinated	<i>Cassidulinoides</i> aff. <i>parkerianus</i>	<i>Globocassidulina</i> aff. <i>rossensis</i>	<i>Cassidulina</i> sp.	<i>Trifarina earlandi</i>	<i>Bulimina aculeata</i>	<i>Stainforthia fusiformis</i>	<i>Bolivellina pseudopunctata</i>	<i>Buccella</i> sp.	<i>Astrononion echolsi</i>	<i>Pullenia subcarinata</i>	<i>Nonionoides grateloupii</i>	<i>Nonionella iridea</i>	<i>Epistominella</i> sp.	<i>Cibicides</i> sp.	<i>Rosalina globularis</i>	other <i>Rotaliida</i>	<i>Parafissurina felsinea</i>	<i>Hyalinonetrion gracillimum</i>	<i>Procerolagena gracilis</i>	<i>Parafissurina fusiformis</i>	other <i>Lagenidae</i>	<i>Gordiospira fragilis</i>	<i>Cornuspira antarctica</i>
SG-01						2,0		1,0	37,0			63,0			1,0					58,0				5,0	1,0	1,0		5,0			6,0	30,0				1,0	1,0										
SG-03	11,2				13,1			132,8	31,5	3,2		4,8	5,9		27,7		1,6	1,6	12,0	80,8			6,7	13,9	117,6	257,6	10,7	6,4	1,3	30,7	46,1		83,7	62,9	20,0	10,9	1,3			5,3	24,3	6,1	5,3	22,7	6,9	46,7	7,5
SG-04	6,0				18,0			678,0	78,0	20,0			14,0		52,0		10,0		26,0	34,0					754,0	560,0							48,0	46,0		16,0	16,0		8,0	186,0			122,0	22,0			
SG-06		4,0			4,0			193,3	410,7			12,0	4,0		90,7					242,7				12,0	229,3	832,0	8,0	4,0	12,0				38,7	4,0			21,3		4,0	10,7			66,7	21,3			8,0
SG-07								22,0	21,0		1,0	74,0	4,0		8,0	1,0				17,0			5,0	2,0	133,0	14,0	4,0			26,0	40,0		70,0	21,0	17,0	45,0		1,0		16,0	11,0	8,0	19,0	6,0		1,0	
SG-08								311,0	2,0						12,0				4,0	2,0			1,0		423,0	37,0	14,0			2,0	13,0					8,0		1,0	1,0	17,0			11,0	3,0		3,0	
SG-09								38,0							23,0					4,0			1,0		487,0	17,0	9,0				3,0		17,0			1,0	7,0		1,0			18,0			2,0		
SG-10					14,2			13,3	3,6						38,0					36,8					602,6	43,1	1,0				4,0		98,2		2,0			1,0	1,0	1,8	1,0		8,9			2,0	
SG-11	2,0				1,0	1,0		4,0	11,0			15,0	4,0		12,0	1,0		4,0		37,0			3,0	4,0	162,0	41,0		1,0	6,0	3,0	8,0	235,0		6,0	25,0	3,0	2,0	3,0	8,0	8,0	3,0		4,0				
SG-12								44,5							16,5								21,5	0,5	17,5	3,0	19,0			1,0	4,0					2,5	1,5				4,5		1,5	2,0			
SG-13	1,0							33,5											0,5					1,0								1,0		0,5		0,5				3,5		4,0	0,5				
SG-14								39,0							4,5				20,5	0,5					105,5	8,5	3,0	0,5		1,0	1,5		0,5		1,0		2,5			6,0	1,0						
SG-15					4,0			32,0	3,0			16,0			53,0				8,0	19,0		1,0	4,0	2,0	124,0	185,0	15,0	1,0			25,0	2,0	28,0	1,0	2,0		10,0		3,0			9,0		1,0			
SG-16								100,5				0,5			0,5				10,0				0,5	5,0		2,0				1,0						0,5		1,5			18,5						
SG-17					3,0			17,0	14,0			11,0	2,0		50,0		4,0	12,0	91,0			3,0	22,0		117,0	78,0	13,0	1,0		54,0	3,0		2,0	5,0		1,0	2,0			20,0	2,0	1,0	14,0				
SG-18	4,0							75,4	76,0		20,0	16,6			176,6		4,0		30,9			6,9	20,6	18,3	775,4	349,7	22,3			50,3	94,9	24,0	8,0				25,1			78,9	8,0	4,0	56,6	6,9		9,1	
SG-20A	21,3							80,0	98,7			36,0			236,0	9,3		10,7	37,3				8,0	10,7	926,7	1216,0	48,0	9,3		24,0	126,7	5,3	97,3	102,7	25,3	28,0	56,0			16,0	4,0	4,0	13,3	9,3		5,3	
SG-20B	4,7				2,3			27,8	51,5			9,2			264,2	2,3		4,7	13,7	4,6			9,1		583,3	321,3	13,7	53,8		20,6	38,9	23,4	32,7	37,3		11,4	38,9	2,3		4,7	16,2	2,3		41,6	4,6		7,0
SG-21	1,5	17,5						11,6	23,9	17,0	88,7	19,7	9,8		63,2	23,7			6,9	50,5	2,3	9,1	6,9	12,9	340,6	18,5	4,6	4,4	12,5	155,2	4,6	4,4	71,9	73,1	46,3	90,6	2,9		10,4			3,7		4,6	7,5		
SG-22	2,0					9,0		11,0	13,0						74,0		4,0		4,0						28,0	5,0									1,0												
SG-24	35,0				25,0			61,0																	6,0	2,0																	13,0		5,0		
SG-26A	1,9	3,2				1,9		9,6	22,0	3,2				1,3	80,9	5,6		1,9		3,2				8,0	14,0	279,5	391,5	14,7	29,6		4,0	8,5	22,6	3,8	40,9		17,3	16,0		3,8			1,9	39,1	5,9		
SG-26B	1,6	1,6						1,9	103,9		1,6	11,5	3,3		181,6	6,6			1,9	11,5		1,9	3,8	10,8	202,0	164,5	24,5	19,7		1,6	24,5	18,1	30,0	166,8	11,3	16,9	20,7		1,9	1,9		1,9	59,6	5,4			3,3
SG-27	4,0							88,0	293,6			12,0	98,1	55,2	575,2	64,8			12,8	8,0		12,8	29,9		946,9	238,9		20,0		4,3	59,7	36,0	143,5	114,1		12,8	68,3			65,3		41,9	113,9	8,5		4,0	
SG-28								1,5	0,5				0,5		1,5	0,5						1,5	0,5		3,5	6,0	10,5			2,5	32,0						7,0		3,0			5,0					
SG-29	5,0	1,0	58,0			57,0		6,0							28,0							1,0		3,0	91,0	94,0	3,0				21,0					2,0	27,0		4,0								
SG-30	5,3	13,3		3,9		107,5		64,0	38,2			2,7	2,5		82,5					2,7		1,2		8,8	432,4	528,8	7,4				30,8						52,9		10,3		1,2		11,1	3,7	1,2		
SG-31	21,0				32,0			68,0											1,0						3,0	4,0																18,0		2,0			
SG-32	1,6				1,0			47,0							4,6		3,2	13,6	33,8				1,0		540,2	31,2	3,0			9,0	1,0		92,8			3,0	4,0		2,0		2,0		14,8	1,0		2,0	

Table S4. Continues.

Station	<i>Lotostomoides calomorpha</i>	<i>Lenticulina</i> sp.	<i>Triloculina</i> <i>hornibrooki</i>	<i>Miliolinella</i> cf. <i>antarctica</i>	<i>Miliolinella</i> <i>lutea</i>	? <i>Miliolinella</i> sp.	<i>Pyrgo patagonica</i>	other <i>Miliolida</i>	total picked forams	total foraminifera per sample	% calcareous forms	Taxa_S	Dominance_D	Simpson_1-D	Shannon_H	Evenness_e^H/S	Brillouin	Menhinick	Margalef	Equitability_J	Fisher_alpha	Berger-Parker	Chao-1
SG-01									213	213,0	21,6	15	0,216	0,784	1,783	0,396	1,682	1,03	2,614	0,658	3,686	0,297	25,5
SG-03			6,4	3,2	1,3			3,2	769	1134,9	69,45	38	0,097	0,903	2,805	0,435	2,619	1,128	5,273	0,771	7,576	0,227	38
SG-04			730,0		32,0			4,0	827	3616,0	74,12	24	0,15	0,85	2,224	0,385	2,207	0,399	2,807	0,7	3,45	0,209	24
SG-06	4,0		6,7		4,0			4,0	668	2252,0	56,78	26	0,202	0,798	2,021	0,29	1,975	0,548	3,24	0,62	4,124	0,369	26
SG-07	25,0		59,0	27,0	1,0			4,0	703	703,0	77,95	31	0,082	0,918	2,849	0,557	2,761	1,169	4,576	0,83	6,635	0,189	36
SG-08	4,0		1,0						566	870,0	61,84	20	0,367	0,633	1,378	0,198	1,339	0,678	2,807	0,46	3,651	0,486	21,5
SG-09	1,0				41,0				670	670,0	90,15	16	0,539	0,461	1,182	0,204	1,141	0,618	2,305	0,426	2,946	0,727	19
SG-10				6,8	8,0			2,8	631	890,0	88,1	20	0,477	0,523	1,31	0,185	1,225	0,67	2,801	0,437	3,633	0,676	22
SG-11	5,0	2,0		1,0				2,0	627	627,0	84,21	33	0,219	0,781	2,135	0,256	2,048	1,318	4,968	0,611	7,418	0,375	35
SG-12				1,0	0,5			3,5	289	144,5	42,56	17	0,166	0,834	2,127	0,493	1,773	1,414	3,242	0,751	5,004	0,305	17,5
SG-13				1,0			3,5		101	50,5	30,69	12	0,458	0,542	1,337	0,317	0,839	1,689	2,857	0,538	4,977	0,654	18
SG-14			2,0				0,5	0,5	397	198,5	67,51	18	0,336	0,664	1,574	0,268	1,315	1,278	3,23	0,545	4,807	0,529	19,5
SG-15	2,0	23,0	1,0	4,0	13,0			1,0	632	632,0	77,53	30	0,146	0,854	2,429	0,378	2,345	1,193	4,497	0,714	6,551	0,293	33
SG-16			1,0	2,0	0,5		14,5		317	158,5	29,34	15	0,43	0,571	1,351	0,257	1,096	1,191	2,779	0,499	4,067	0,631	15,33
SG-17			1,0	1,0	3,0			1,0	548	548,0	58,21	29	0,118	0,882	2,492	0,417	2,4	1,239	4,44	0,74	6,529	0,214	32
SG-18	8,0		52,6	8,0	20,6				659	2051,4	78,11	29	0,189	0,811	2,297	0,343	2,224	0,64	3,674	0,682	4,782	0,378	29
SG-20A			69,3		24,0				716	3358,7	83,68	30	0,218	0,782	2,106	0,274	2,066	0,518	3,573	0,619	4,54	0,362	30
SG-20B			11,6	2,3					718	1662,2	76,28	31	0,192	0,809	2,211	0,294	2,104	0,76	4,05	0,644	5,409	0,351	31
SG-21	6,0	2,3	9,8	24,9	6,0		1,5	10,2	689	1281,5	71,51	40	0,109	0,891	2,793	0,408	2,612	1,117	5,462	0,757	7,839	0,265	40
SG-22									155	155,0	24,52	11	0,279	0,721	1,706	0,5	1,593	0,884	1,983	0,711	2,706	0,477	11
SG-24									131	148,0	18,24	8	0,265	0,735	1,557	0,593	1,47	0,658	1,401	0,749	1,812	0,412	8
SG-26A	5,6	1,3	2,7	1,9				1,9	660	1049,1	85,06	33	0,222	0,778	2,1	0,247	1,928	1,019	4,611	0,601	6,479	0,373	33
SG-26B		1,6	1,6					14,8	646	1136,1	69,77	35	0,114	0,886	2,536	0,361	2,346	1,038	4,846	0,713	6,837	0,178	35
SG-27	16,5		74,4	16,3	16,8	54,7		16,0	805	3327,2	62,3	33	0,133	0,867	2,578	0,399	2,518	0,572	3,948	0,737	5,089	0,284	33
SG-28					0,5				153	76,5	91,5	16	0,219	0,781	2,01	0,466	1,454	1,829	3,519	0,725	6,163	0,418	16
SG-29								1,0	402	402,0	60,45	16	0,16	0,84	2,061	0,491	1,99	0,798	2,501	0,743	3,333	0,234	17,5
SG-30			3,9		1,2	24,0		13,3	727	1454,8	77,14	26	0,234	0,766	1,928	0,264	1,833	0,682	3,437	0,592	4,496	0,363	26
SG-31									149	149,0	18,12	8	0,29	0,71	1,487	0,553	1,403	0,655	1,399	0,715	1,809	0,456	8
SG-32			22,6		1,0				620	835,4	87,34	23	0,438	0,562	1,437	0,183	1,348	0,796	3,273	0,458	4,375	0,646	25,5

Table S5. Results of the Q-mode principal component (PC) analysis for the >125 µm dataset. The PC scores >1 and <-1 (in bold) show significant contribution of the selected variables (foraminiferal species) for each foraminiferal assemblages, following Malmgren and Haq (1982). Nominative species are underlined.

Total variance explained	PC1 32.85	PC2 14.95	PC3 27.31	PC4 8.00	Total 83.10
<i>P. fusca</i>	-0.34	1.08	-0.18	-0.53	
<i>Lagenammina</i> sp.	-0.18	-0.29	-0.31	-0.46	
<i>L. tubulata</i>	-0.12	-0.31	-0.36	-0.37	
<i>H. hirudinea</i>	-0.33	1.08	-0.23	-0.48	
<i>P. decorata</i>	0.06	-0.39	-0.01	-1.05	
<u><i>M. earlandi</i></u>	0.05	5.51	0.07	0.22	
<i>C. jeffreysii</i>	-0.52	-0.29	1.05	1.73	
<i>C. wiesneri</i>	-0.13	-0.29	-0.33	-0.40	
<i>V. scitulus</i>	0.13	-0.38	-0.52	-0.03	
<u><i>A. rostratus</i></u>	-0.38	-0.18	-0.47	3.12	
<i>A. incertus</i>	-0.12	-0.30	-0.21	-0.37	
<i>P. wiesneri</i>	0.58	-0.04	0.19	-1.11	
<i>E. bullata</i>	-0.09	-0.33	-0.32	-0.35	
<i>Tex. earlandi</i>	-0.12	-0.26	-0.32	-0.48	
<i>R. subfusiformis</i>	-0.65	-0.11	0.43	2.73	
<u><i>C. aff. parkerianus</i></u>	5.68	-0.12	0.74	0.40	
<u><i>G. aff. rossensis</i></u>	-0.82	-0.23	5.51	-0.70	
<i>Cassidulina</i> sp.	-0.15	-0.19	-0.34	-0.46	
<i>Trif. earlandi</i>	-0.22	-0.32	-0.07	-0.26	
<i>B. aculeata</i>	-0.15	-0.29	-0.34	-0.34	
<i>S. fusiformis</i>	-0.15	-0.29	-0.34	-0.41	
<i>B. pseudopunctata</i>	-0.16	-0.27	-0.28	-0.44	
<i>Buccella</i> sp.	-0.15	-0.34	-0.15	-0.42	
<i>A. echolsi</i>	0.21	-0.33	-0.28	2.46	
<i>P. subcarinata</i>	-0.29	-0.31	0.25	1.36	
<i>R. globularis</i>	-0.17	-0.26	-0.30	-0.48	
<i>P. felsinea</i>	-0.09	-0.30	-0.19	-0.27	
<i>P. fusiformis</i>	-0.21	0.01	-0.09	-0.27	
<i>G. fragilis</i>	-0.21	0.10	-0.32	-0.43	
<i>C. antarctica</i>	-0.17	-0.22	-0.31	-0.41	
<i>Lenticulina</i> sp.	-0.18	-0.29	-0.31	-0.44	
<i>T. hornibrooki</i>	-0.02	-0.25	-0.28	0.12	
<i>M. cf. antarctica</i>	-0.07	-0.25	-0.39	0.08	
<i>M. lutea</i>	-0.14	-0.27	-0.34	-0.41	
? <i>Miliolinella</i> sp.	-0.16	-0.29	-0.30	-0.47	
<i>P. patagonica</i>	-0.23	0.19	-0.34	-0.36	

Table S6. Results of the Q-mode principal component (PC) analysis for the >63 µm dataset. The PC scores >1 and <-1 (in bold) show significant contribution of the selected variables (foraminiferal species) for each foraminiferal assemblages, following Malmgren and Haq (1982). Nominative species are underlined.

Total variance explained	PC1 31.00	PC2 17.47	PC3 28.12	PC4 5.39	Total 81.97
<i>P. fusca</i>	-0.40	0.72	-0.33	0.20	
<i>L. tubulata</i>	-0.22	-0.27	-0.39	0.25	
<i>H. hirudinea</i>	-0.40	0.71	-0.33	0.10	
<i>P. decorata</i>	-0.38	-0.35	0.04	0.87	
<u>M. earlandi</u>	-0.10	6.16	0.10	-0.21	
<u>C. jeffreysii</u>	-0.19	-0.33	0.78	-1.47	
<i>C. wiesneri</i>	-0.22	-0.25	-0.38	0.23	
<i>V. scitulus</i>	-0.02	-0.30	-0.49	0.16	
<u>A. rostratus</u>	0.35	-0.30	-0.26	-3.02	
<i>A. incertus</i>	-0.19	-0.27	-0.26	0.27	
<i>Glomospira</i> sp.	-0.24	-0.26	-0.38	0.30	
<u>P. wiesneri</u>	0.41	-0.41	1.00	2.53	
<i>E. bullata</i>	-0.17	-0.29	-0.38	0.29	
<i>Tex. earlandi</i>	-0.08	-0.03	-0.34	0.32	
<u>R. subfusiformis</u>	0.03	-0.22	0.64	-3.41	
<i>E. minuta</i>	-0.24	-0.27	-0.36	0.31	
<i>P. antarctica</i>	-0.17	0.10	-0.32	0.44	
<u>C. aff. parkerianus</u>	5.98	0.11	1.33	0.84	
<u>G. aff. rossensis</u>	-1.57	-0.23	5.86	-0.07	
<i>Cassidulina</i> sp.	-0.29	0.08	-0.11	0.86	
<i>Trif. earlandi</i>	-0.24	-0.29	-0.22	0.12	
<i>S. fusiformis</i>	0.34	-0.33	-0.32	-0.40	
<u>B. pseudopunctata</u>	-0.32	-0.21	0.37	1.25	
<i>Buccella</i> sp.	-0.23	-0.29	-0.29	0.34	
<u>A. echolsi</u>	1.15	-0.35	-0.29	-2.16	
<u>P. subcarinata</u>	0.01	-0.38	0.27	-1.23	
<i>N. grateloupii</i>	-0.06	-0.25	-0.37	-0.03	
<i>N. iridea</i>	0.27	-0.33	-0.47	-0.39	
<i>Epistominella</i> sp.	-0.33	-0.29	0.06	0.82	
<i>R. globularis</i>	-0.28	-0.20	-0.32	0.38	
<i>P. felsinea</i>	-0.14	-0.17	-0.03	-0.02	
<i>H. gracillimum</i>	-0.17	-0.26	-0.38	0.05	
<i>P. gracilis</i>	-0.20	-0.26	-0.37	0.18	
<i>P. fusiformis</i>	-0.18	0.71	0.00	0.20	
<i>G. fragilis</i>	-0.37	0.10	-0.23	0.07	
<i>C. antarctica</i>	-0.26	-0.19	-0.34	0.26	
<i>L. calomorpha</i>	-0.09	-0.26	-0.42	0.01	
<i>Lenticulina</i> sp.	-0.29	-0.26	-0.28	0.27	
<i>T. hornibrooki</i>	0.21	0.04	-0.27	-0.36	

<i>M. cf. antarctica</i>	-0.04	-0.19	-0.44	-0.01
<i>M. lutea</i>	-0.16	-0.24	-0.34	0.31
? <i>Miliolinella</i> sp.	-0.25	-0.26	-0.35	0.31
<i>P. patagonica</i>	-0.29	0.07	-0.41	0.21

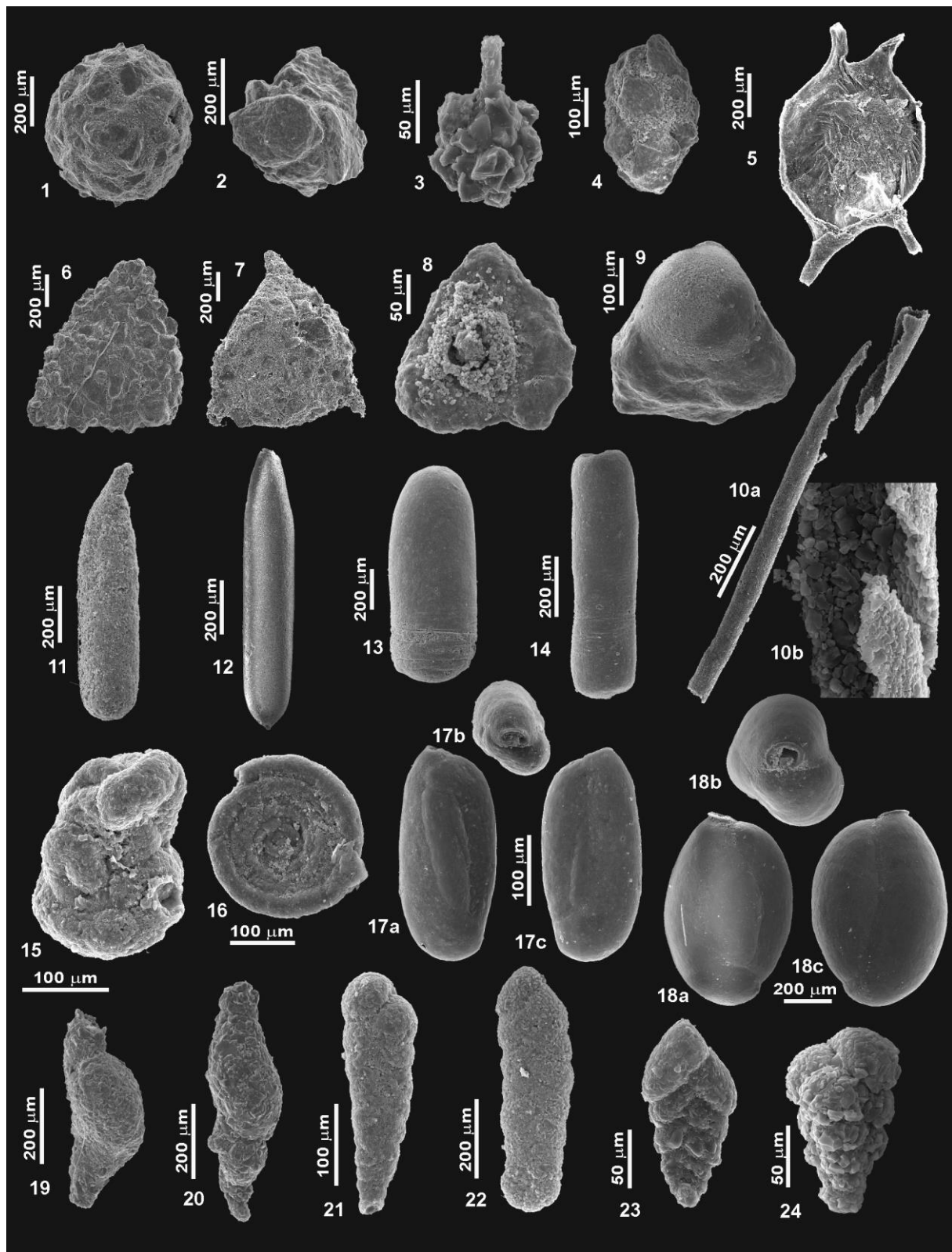


Fig. S1. Agglutinated foraminifera: 1-2. *Psammospaera fusca* Schulze, 1875, SG-24, SG-24; 3. *Lagenammina* cf. *tubulata* (Rhumbler, 1931), SG-21; 4. *Protonina decorata* Earland, 1933, SG-30; 5. *Vanhoeffenella gaussi* Rhumbler, 1905, SG-27; 6-7. *Astrorhiza triangularis* Earland, 1933, SG-30, SG-22; 8-9. Encrusting monothalamids, SG-29, SG-29; 10. *Bathysiphon* sp., SG-04; 11. *Pelosina variabilis* var. *constricta* Earland, 1933), SG-11; 12. *Cribrorhammina alba* (Heron-Allen and Earland, 1932), SG-21; 13-14. *Hippocrepinella hirudinea* Heron-Allen and Earland, 1932, SG-11,

SG-24; 15. *Glomospira* sp., SG-27; 16. *Ammodiscus incertus* Cushman, 1917, SG-27; 17. *Miliammina earlandi* Loeblich and Tappan, 1955, SG-27; 18. *Miliammina lata* Heron-Allen and Earland, 1930, SG-21; 19-20. *Reophax subfusiformis* Earland, 1933, SG-21, SG-17; 21. *Textularia earlandi* Parker, 1952, SG-27; 22. *Spiroplectammina biformis* (Parnmore roundedker and Jones, 1865), SG-22; 23. *Pseudobolivina antarctica* Wiesner, 1931, SG-27; 24. *Eggerella minuta* (Wiesner, 1931), SG-21.

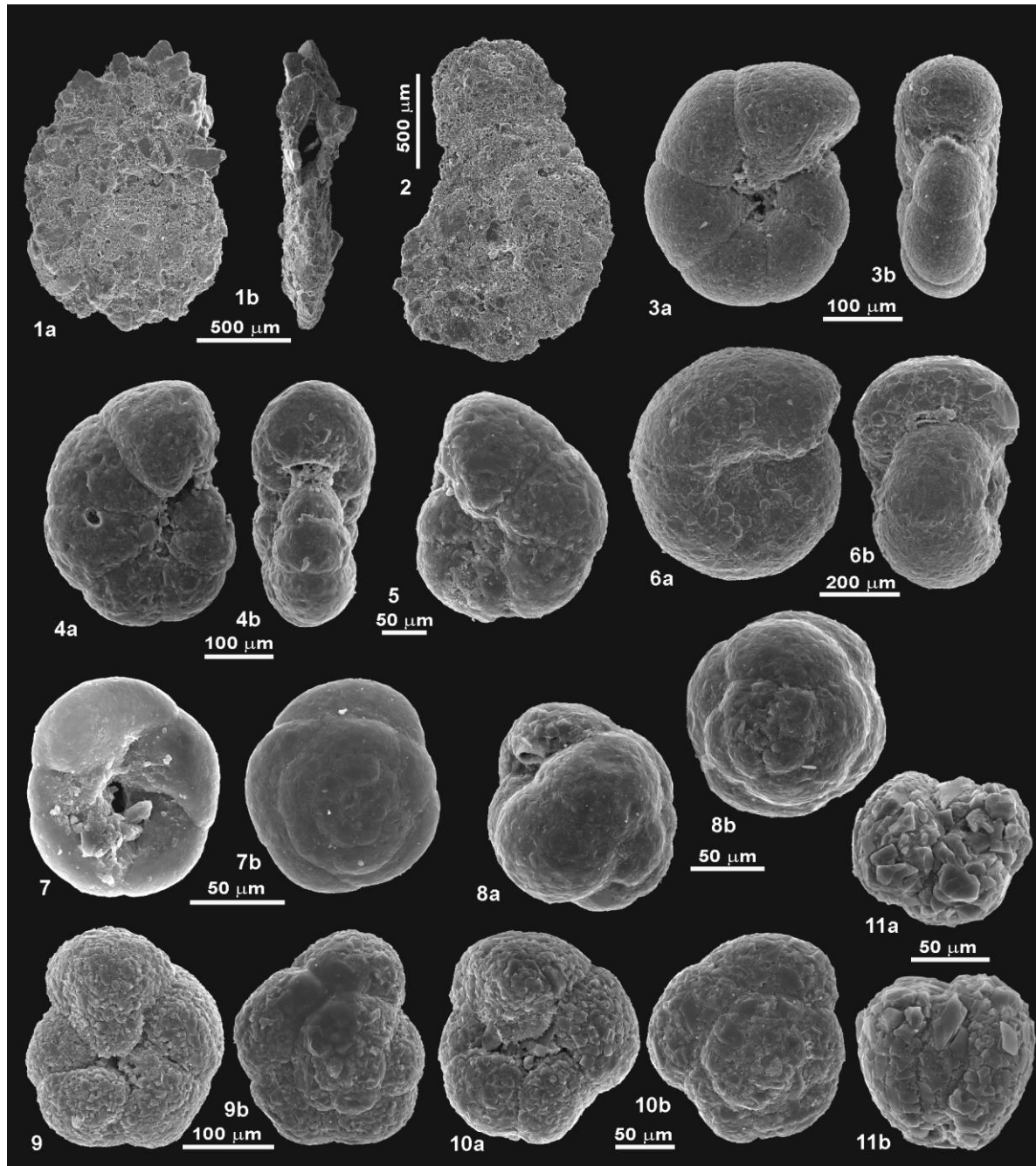


Fig. S2. Agglutinated foraminifera: 1-2. *Ammobaculites rostratus* Heron-Allen and Earland, 1929, SG-26B, SG-18; 3. *Cribrostomoides wiesneri* (Parr, 1950), SG-21; 4-5. *Cribrostomoides jeffreysii* (Williamson, 1858), SG-27, SG-27; 6. *Veleroninoides scitulus* (Brady, 1881), SG-21; 7. *Paratrochammina bartrami* (Hedley, Hurdle et Burdett, 1967), SG-29; 8. *Earlandamina bullata* (Höglund, 1947), SG-27; 9-10. *Portatrochammina antarctica wiesneri* (Parr, 1950), SG-28, SG-27; 11. *Adercotryma glomeratum* (Brady, 1878), SG-21.

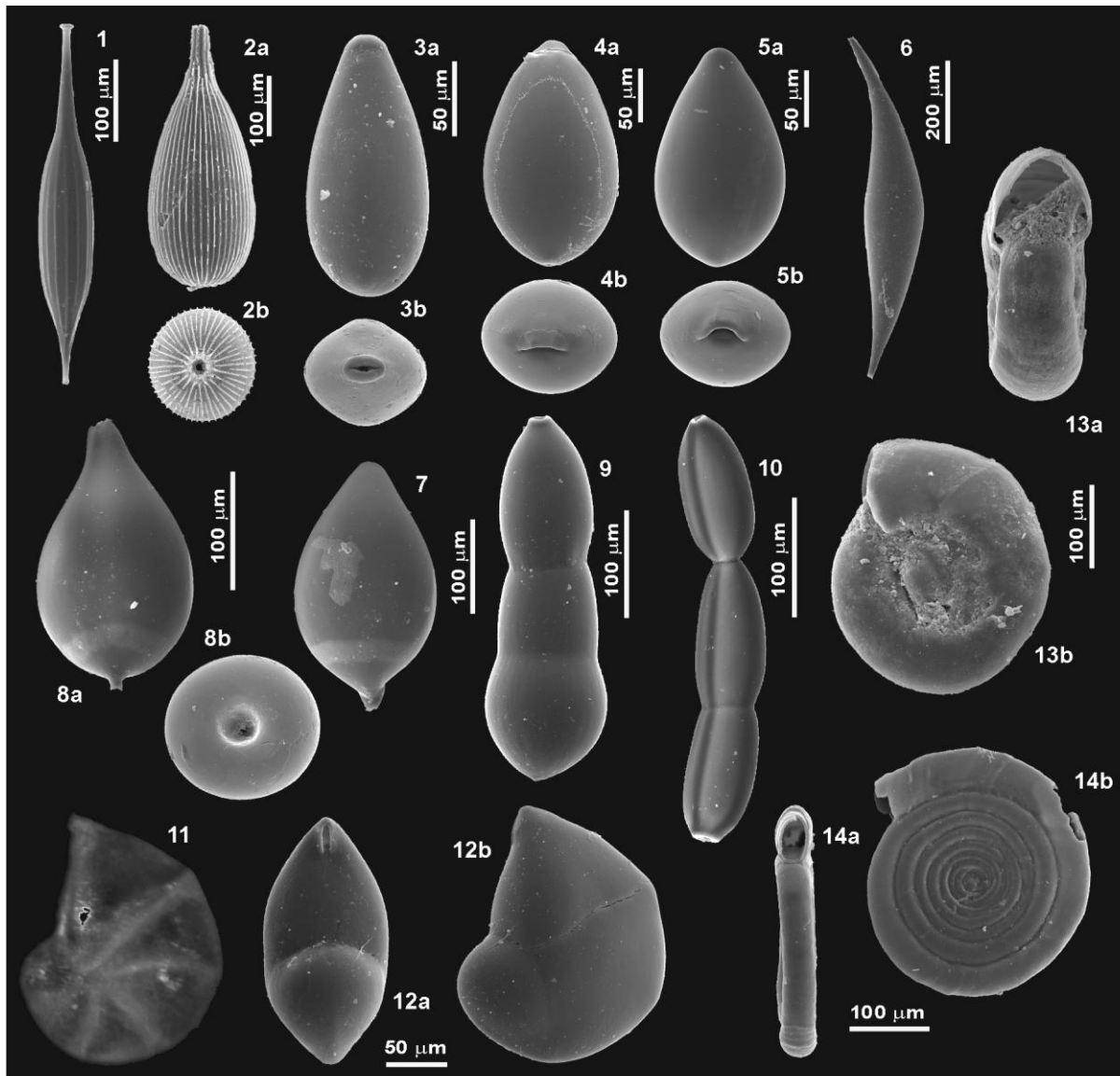


Fig. S3. Unilocular and some miliolid calcareous foraminifera: 1. *Procerolagena gracilis* (Williamson, 1848), SG-27; 2. *Lagena substriata* Williamson, 1848, SG-22; 3. *Fissurina* sp., SG-27; 4-5. *Parafissurina fusiformis* (Wiesner, 1931), SG-27, SG-21; 6. *Hyalinonettrion gracillimum* (Seguenza, 1862), SG-21; 7-8. *Parafissurina felsinea* (Fornasini, 1894), SG-27, SG-21; 9. *Nodosaria* sp., SG-11; 10. *Lotostomoides calomorpha* (Reuss, 1866), SG-24; 11-12. *Lenticulina* sp., SG-15; 13. *Gordiospira fragilis* Heron-Allen and Earland, 1932, SG-24; 14. *Cornuspira antarctica* Rhumbler 1931, SG-21.

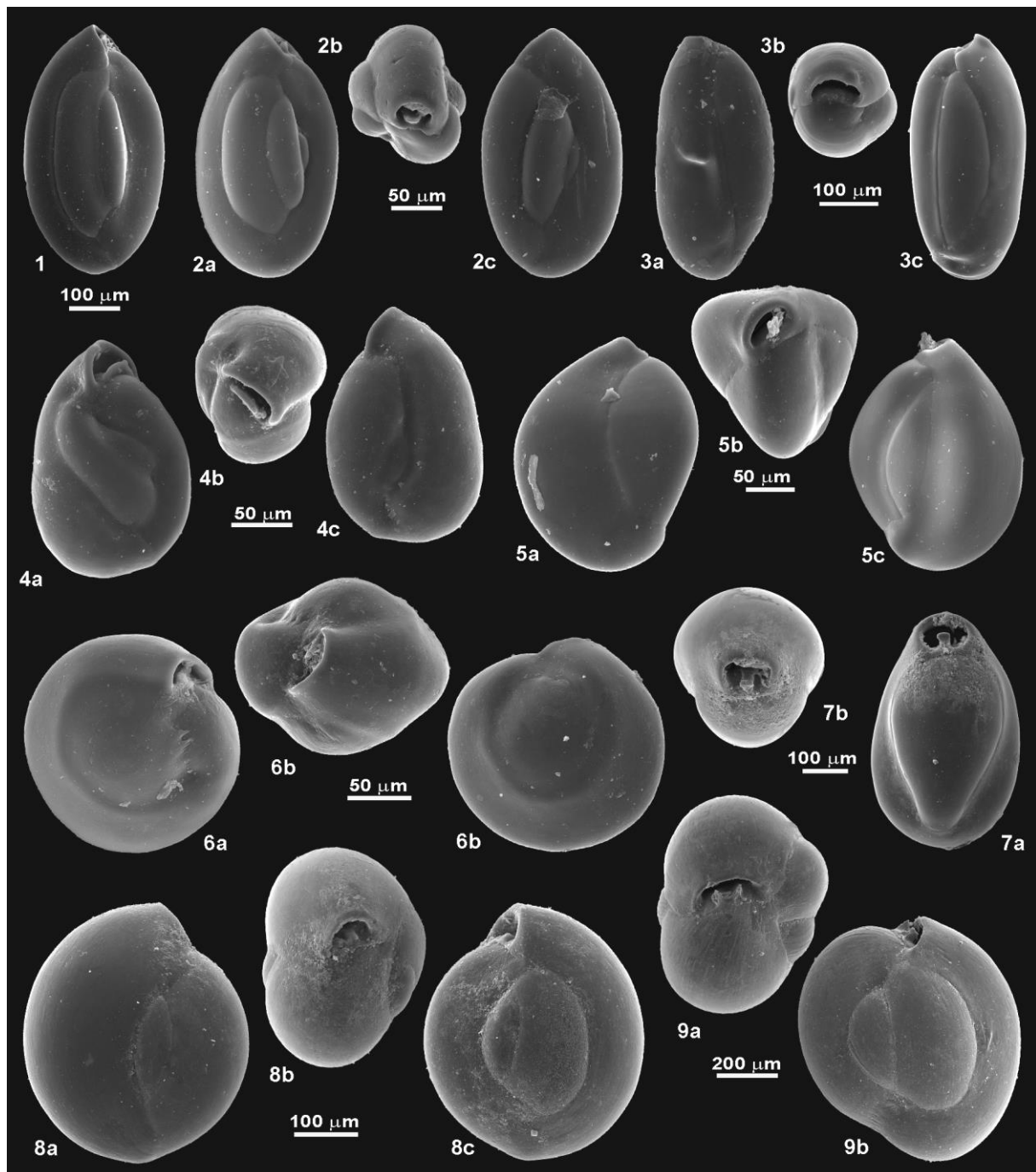


Fig. S4. Miliolid foraminifera: 1-2. *Triloculinella hornibrooki* (Vella, 1957), SG-04, SG-27; 3. *Miliolinella* cf. *antarctica* (Kennett, 1967), SG-07; 4. *Miliolinella lutea* (d'Orbigny, 1939) *sensu* Figueroa et al. (2006), SG-27; 5. *Quinqueloculina seminulum* (Linnaeus, 1758), SG-27; 6. ?*Miliolinella* sp., SG-27; 7. *Pyrgo patagonica* (d'Orbigny, 1839), SG-16; 8-9. *Miliolinella subrotunda* (Montagu, 1803), SG-07, SG-26B.

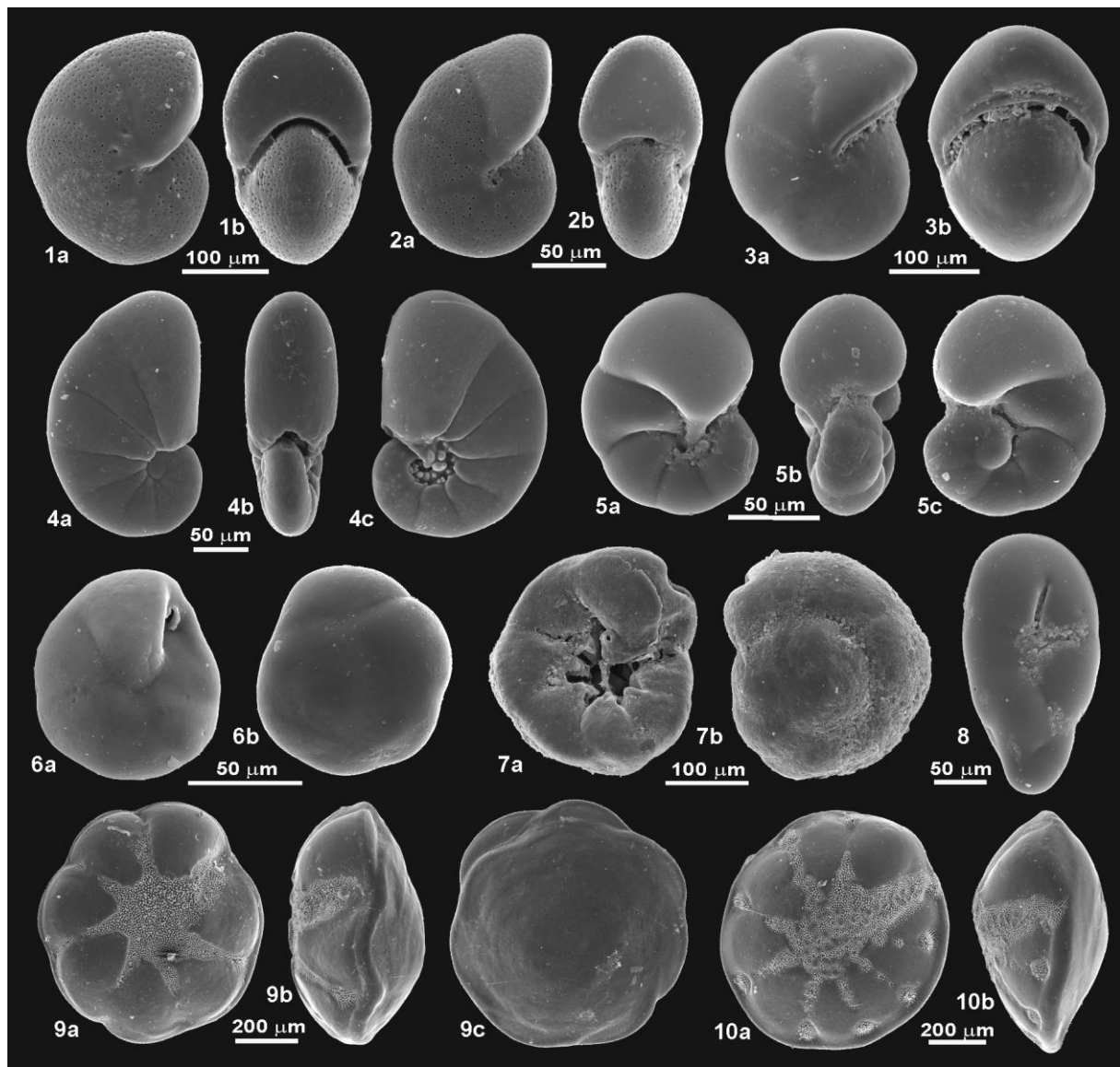


Fig. S5. Some rotalid foraminifera and *Robertinoides*: 1-2. *Astrononion echolsi* Kennett, 1967, SG-27, SG-21; 3. *Pullenia subcarinata* (d'Orbigny, 1839), SG-27; 4. *Nonionoides grateloupii* (d'Orbigny, 1839), SG-21; 5. *Nonionella iridea* Herron-Allen and Earland, 1932, SG-21; 6. *Epistominella* sp., SG-26B; 7. *Rosalina globularis* d'Orbigny, 1826, SG-15; 8. *Robertinoides* sp., SG-21; 9-10. *Buccella* sp., SG-26B, SG-26B.

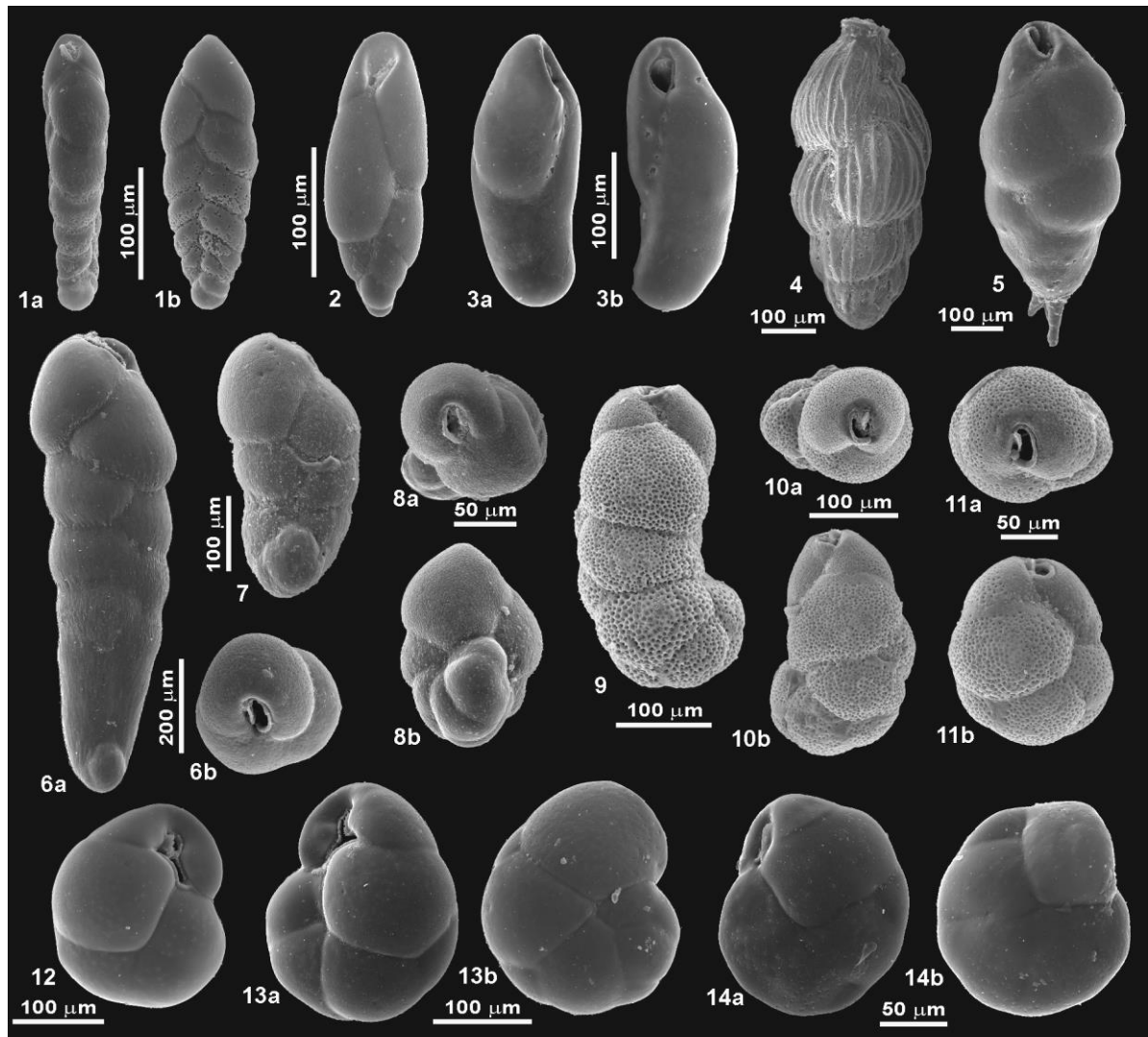


Fig. S6. Rotalid foraminifera: 1. *Bolivinellina pseudopunctata* (Höglund, 1947), SG-27; 2. *Stainforthia fusiformis* (Williamson, 1858), SG-21; 3. ?*Bulimina* sp., SG-21; 4. *Trifarina earlandi* (Parr, 1950), SG-27; 5. *Bulimina aculeata* d'Orbigny, 1826, SG-21; 6-11. *Cassidulinoides* aff. *parkerianus* Brady, 1881, SG-09, SG-09, SG-09, SG-17, SG-27, SG-27; images 6 to 8 show the smoothly-walled conical morphotype assigned by Heron-Allen and Earland (1929) and Earland (1933) to *Ehrenbergina crassa*; 12-13. *Globocassidulina* aff. *rossensis* Kennett, 1967, SG-27, SG-17; 14. *Cassidulina* sp., SG-12.