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SEDIMENTS AND SEDIMENTARY ENVIRONMENTS OF HENDERSON ISLAND

BY

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APPENDIX: FORAMINIFERAL COMPOSITION OF HENDERSON ISLAND BEACH SAND

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ISSUED BY
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APPENDIX : FORAMINIFERAL COMPOSITION OF HENDERSON ISLAND BEACH SAND

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Site location: Beach location 1 (see Figure 1)

Foraminiferal component by weight : 2.73 per cent (from 4.43 g sample).

SUPERFAMILY	FAMILY	No. of frags	%	F%	SF%
Textulariacea	Textulariidae				
	Textularia ?mayori	2	0.19		
				0.19	0.19
Tawitawiacea	Tawitawiidae				
	Tawitawia sp.	1	0.09		
				0.09	0.09
Lituolacea	Lituolidae				
	Triplasia sp.	4	0.38		
				0.38	0.38
Miliolacea	Miliolidae				
	Spiroloculina antillarum	1	0.09		
	Spiroloculina sp.	2	0.19		
	Quinqueloculina bidanta	2	0.19		
	Quinqueloculina polygona	7	0.67		
	Cruciloculina triangularis	7	0.67		
	Triloculina sidebottomi	23	2.19		
	Triloculina sp.	24	2.29		
				6.29	6.29
Soritacea	Peneroplidae				
	Peneroplis pertusus	1	0.09		
				0.09	
	Soritidae				
	Amphisorus sp.	13	1.24		
	Marginopora vertebralis	153	14.60		
				15.84	
	Alveolinidae				
	Borelis pulchra	1	0.09		
				0.09	0.09

SUPERFAMILY	FAMILY	No. of frags	%	F%	SF%
Discorbacea	Discorbidae				
	Discorbis ?mira	2	0.19		
	Tretomphalus atlanticus	5	0.48		
				0.67	0.67
Planorbulinacea	Cibicididae				
	Cibicides ?lobatulus	5	0.48		
				0.48	0.48
Asterigerinacea	Asterigerinidae				
	Asterigerina carinata	196	18.70		
				18.70	
	Amphisteginidae				
	Amphistegina lessonii	269	25.67		
				25.67	44.37
Cassidulinacea	Anomlinidae				
	Anomlinella rostrata	5	0.48		
				0.48	0.48
Acervulinacea	Homotrematidae				
	Homotrema rubrum	320	30.53		
				30.53	30.53
Rotaliacea	Rotaliidae				
	Ammonia becarri	1	0.09		
				0.09	
	Elphidiidae				
	Elphidiella sp.	1	0.09		
				0.09	0.09
Nummulitacea	Nummulitidae				
	Heterostegina depressa	2	0.19		
	Eponides repandus	1	0.09		
				0.28	0.28
	TOTALS	1048	99.96		

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Location	Environment	Sample	D_{50}	M_Z	σ_I	Sk_I	K_G
North Beach	Beach face	H1	-0.39	-0.26	1.01	+0.21	0.88
	Beach face	H2	-1.70	-1.71	0.71	+0.10	1.30
	Beach face	H3	+1.18	+0.91	1.44	-0.52	1.81
	Incipient dune	H4	+1.77	+1.71	0.42	0.16	1.01
	Beach face	H5	+0.36	-0.51	2.14	-0.45	1.25
	Beach face	H6	+0.36	-0.83	2.51	-0.54	1.37
	Beach face	H7	-3.67	-3.82	0.67	-0.29	0.65
	Beach face	H8	-2.25	-1.60	1.95	+0.43	0.57
North-west Beach	Beach face	H9	+0.57	+0.54	0.59	-0.16	1.26
North Beach	Reef-front terrace, -12m	H10	-0.52	-0.57	1.08	-0.12	1.17
	Reef-front terrace, -30m	H11	-1.75	-1.11	2.33	+0.33	0.56

Table 1. Characteristics of beach, incipient sand dune and fore-reef sediments at Henderson Island (ϕ units).

	Coral	Coralline algae	Halimeda	Foraminifera	Molluscs	(Echinoids, Bryozoans, Crustaceans)
Henderson Island	42	2	6+	18	17	1
Indo-Pacific Atolls [a]						
Bikini lagoon	1	–	43	8	8	35
Eniwetok lagoon	12	–	28	30	3	26
Cocos lagoon, Guam	45	18	11	3	15	–
Midway	25	35	6	14	12	8
Suwarrow, N. Cooks: [b]						
deep lagoon	3	–	62	27	6	1
shallow lagoon	8	5	4	64	12	1
patch reef	12	7	9	30	29	4
Great Barrier Reef: [a, c]						
Reef flat	15-28	4-8	11-34	14-54	6-11	9-13
Reef	20-40	17-40	10-30	8-20	4-15	<5
Inter-reef	5-10	0-15	5-65	15-40	20-35	5-30

+ includes other algal constituents
Sources : a = Orme (1977); b = Tudhope et al. (1985); c = Flood and Scoffin (1978)

Table 2. General composition of reef sediments, Henderson Island and other localities, Indo-Pacific reef province.

Constituent	Environment Fore-reef (%)	Beach (%)	Dune (%)
Coral	37.7 (18.8)	43.9 (24.1)	37.8 (8.5)
Mollusc	17.5 (5.6)	17.2 (1.1)	15.1 (2.1)
Coralline red algae	2.0 (1.0	1.7 (0.8)	2.6 (1.7)
Homotrema rubrum	0.3 (0.3)	0.5 (0.4)	0.1 (0.2)
Amphistegina lessonii	8.5 (10.6	9.5 (1.8)	8.5 (9.1)
Asterigerina carinata	0.7 (1.0)	1.5 (1.9)	0.4 (0.6)
Marginopora vertebralis	4.4 (3.9)	3.9 (1.7)	9.4 (11.9)
Heterostegina depressa	0.1 (0.2)	0.1 (0.2)	0.1 (0.2)
Other benthic foraminiferans	4.3 (2.5)	4.3 (0.3)	1.8 (3.1)
Other algae (+ *Halimeda*)	8.9 (10.2)	4.4 (2.7)	9.2 (0.0)
Echinoid	0.6 (0.4)	0.7 (0.5)	0.2 (0.3)
Lithoclasts	1.1 (1.7)	0.9 0.8)	0.4 0.6)
Others and unknowns	7.9 (3.30	7.1 (2.3)	4.4 (6.2)

Table 3. Component composition of Henderson Island sediments by environment. (Mean percentage composition, with standard deviation in parentheses).

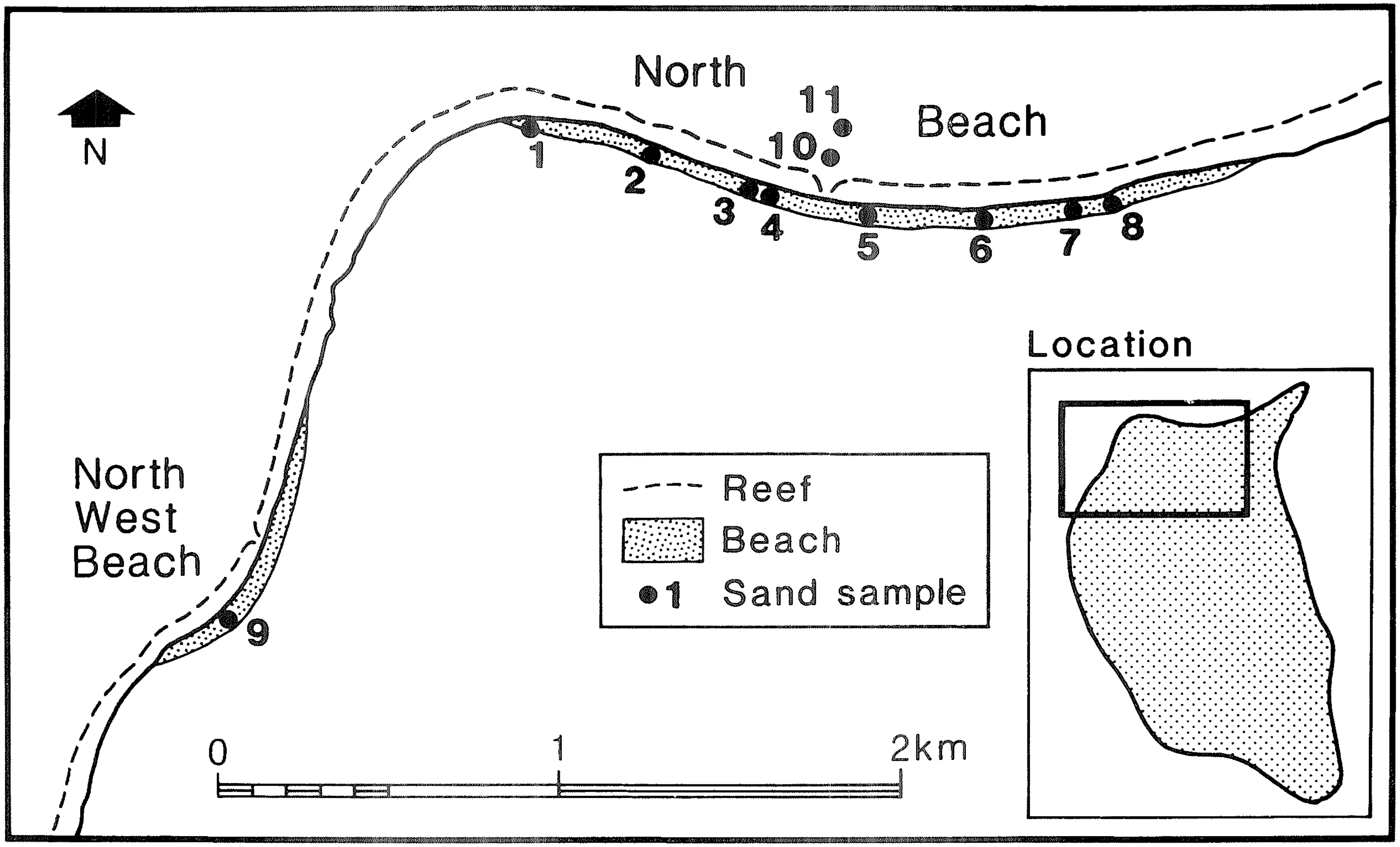

Figure 1. Location of sediment samples, Henderson Island

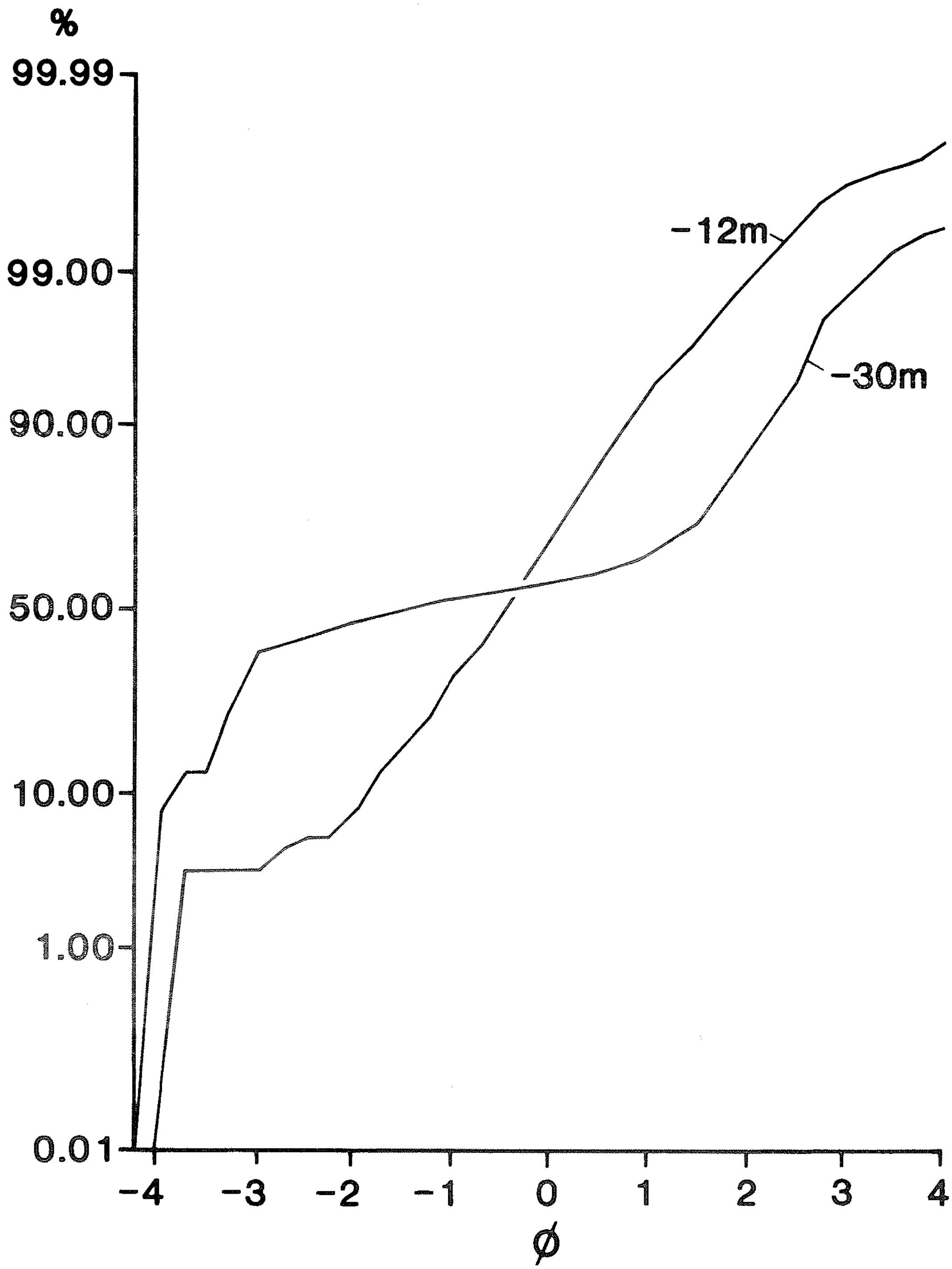

Figure 2. Cumulative frequency curves for fore-reef sediments, Henderson Island

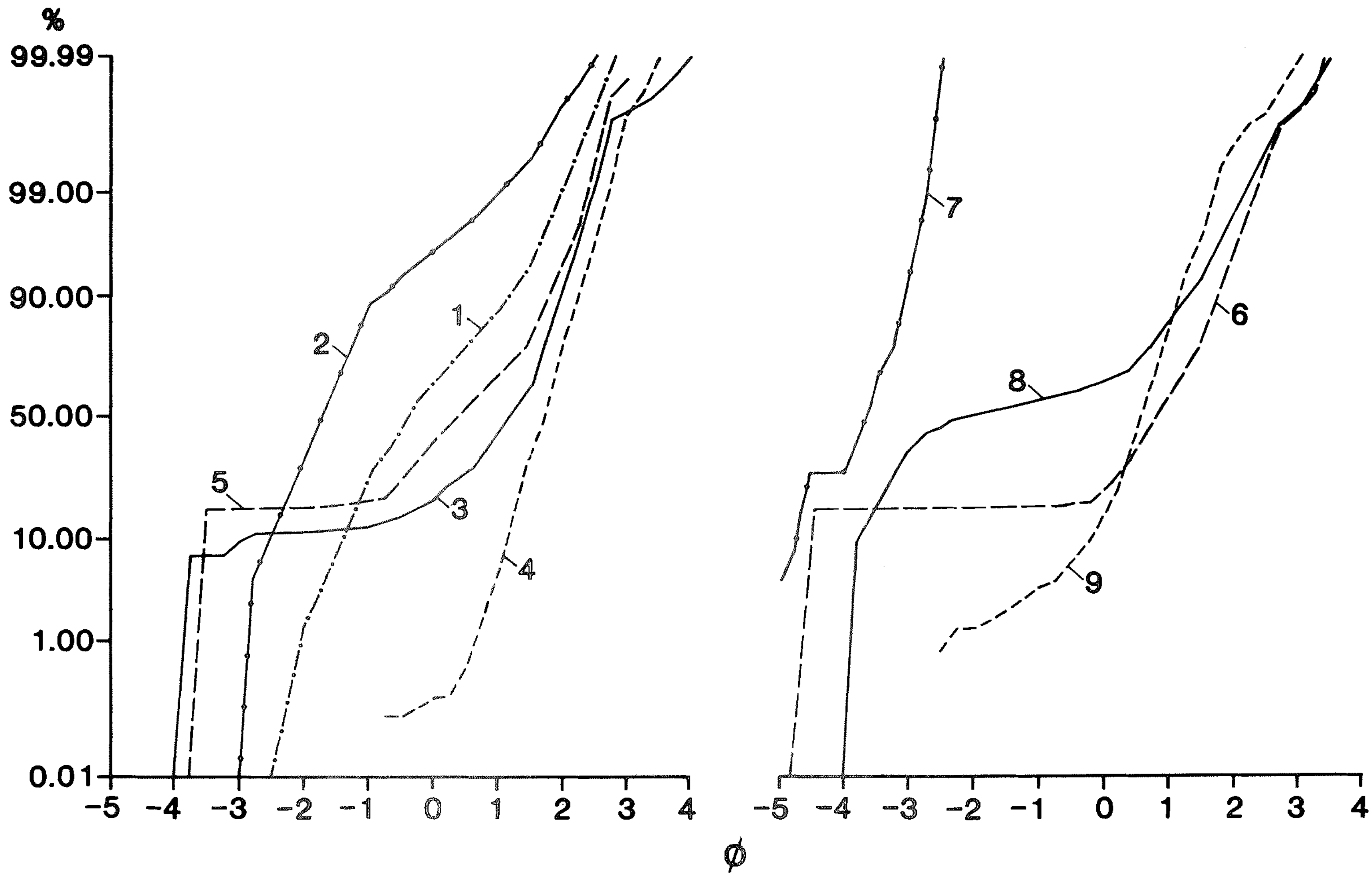

Figure 3. Cumulative size frequency curves for beach (1-3, 5-9) and incipient sand dune (4) sediments, Henderson Island

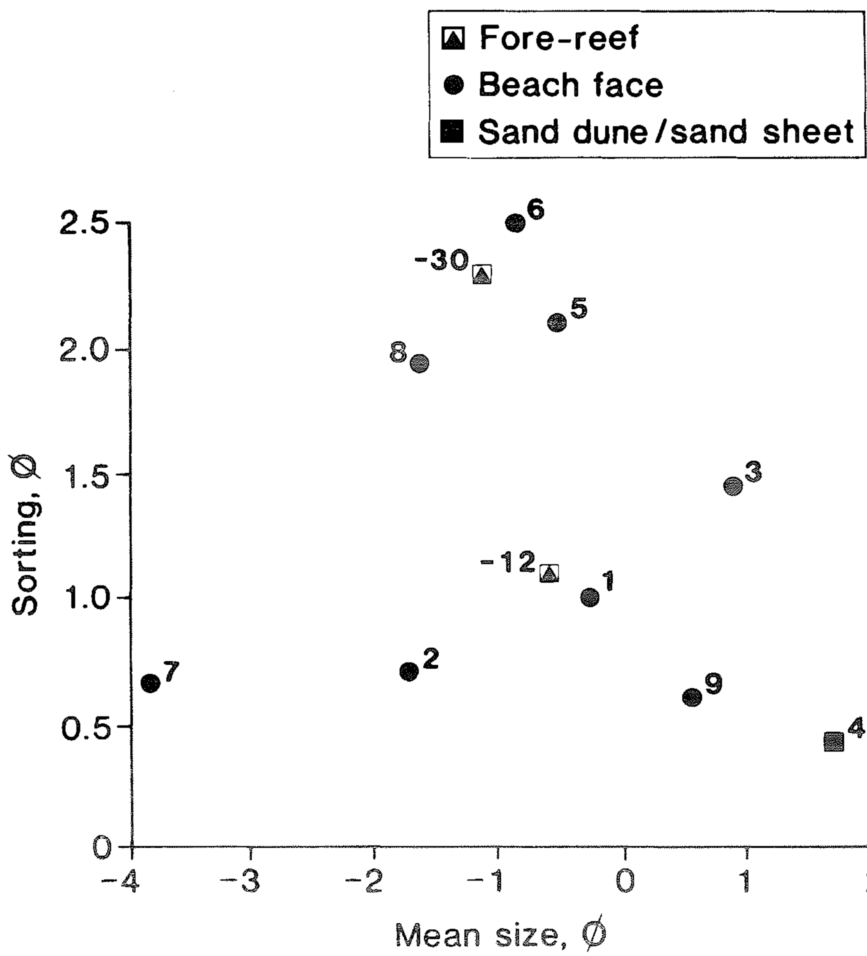

Figure 4. Mean size - sorting relationships, Henderson Island sediments.

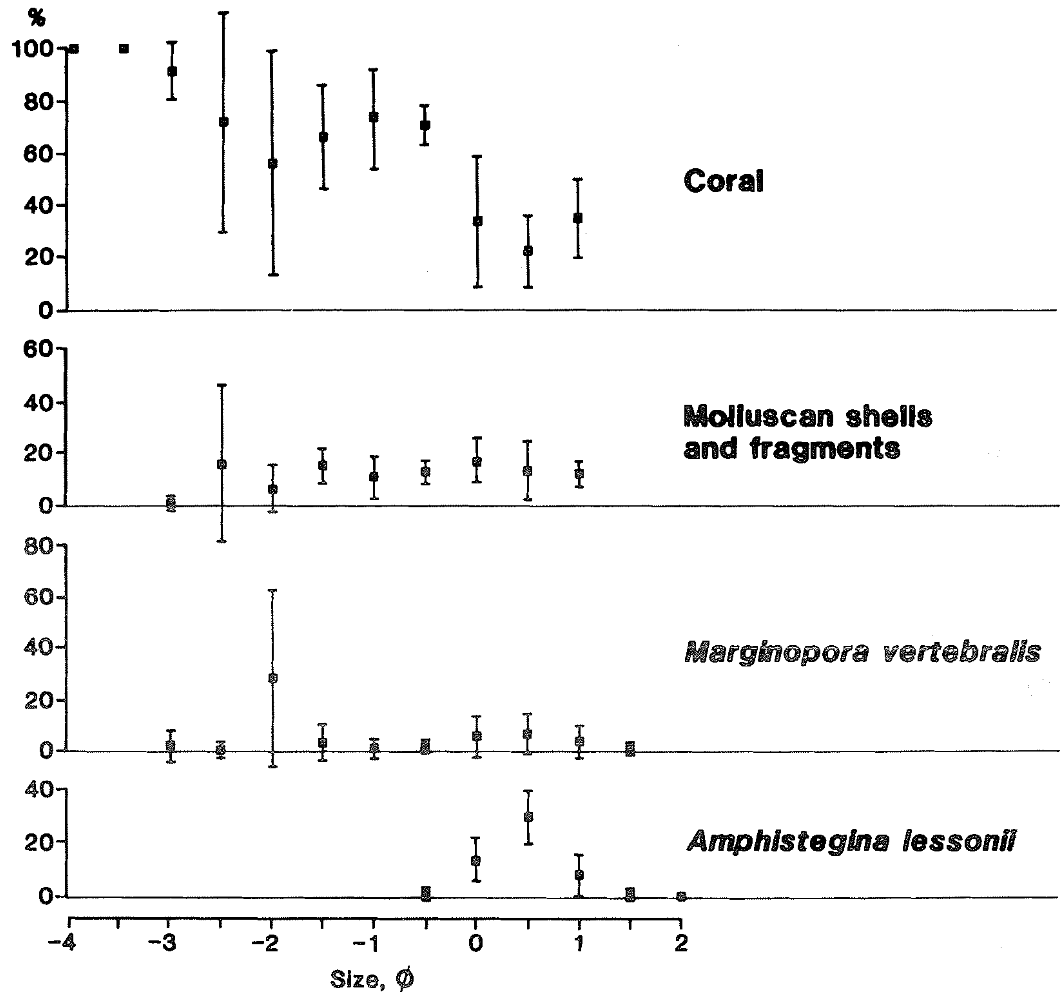

Figure 5. Percentage of selected sediment components by sediment size clases, Henderson Island sediments.