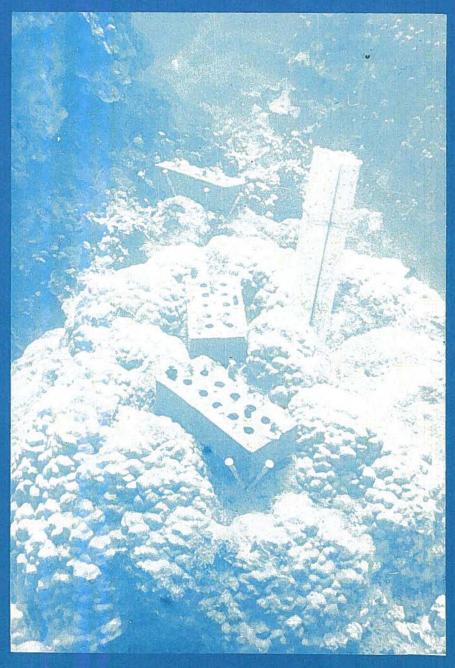
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GUAM'S REEFS AND BEACHES PART II SEDIMENTATION STUDIES AT FOUHA BAY AND YLIG BAY

Richard H. Randall and Charles Birkeland



UNIVERSITY OF GUAM MARINE LABORATORY

Technical Report No. 47
August 1978

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Part II

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Richard H. Randall and Charles Birkeland

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Bureau of Planning Government of Guam

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Introduction

Background and Objectives

Sediments on Guam's fringing reefs can be grouped into two broad categories. The first category of sediments is composed predominantly of organic carbonates derived from the skeletal remains of reef organisms and are thus called bioclastics. Such sediments are continuously produced with their composition and distribution being dependent upon the activities of grazing fishes, urchins, burrowing sponges, sipunculans, bivalves, and on factors such as community structure, wave exposure, current patterns, and reef morphology. The second category of sediments is composed mostly of detrital materials derived from the physical and chemical decomposition of the volcanic rocks of southern Guam. These materials consist of clay, silt, sand, rubble, organic detritus, and various kinds of dissolved materials.

Although reef communities are certainly affected by bioclastic sediments generated within the reef system, the organisms associated with reefs are generally adapted to such continuous long-term patterns of production and distribution. Sedimentation from terrestrial sources, though, is not so uniform in distribution and time. It is usually concentrated at river mouths and it comes in the form of pulses associated with periods of heavy rainfall resulting in high stream discharge rates. During periods of low rainfall, discharge is low and the water is relatively clear. Reef morphology and community structure are thereby naturally altered and adjusted to these rather unpredictable pulses of sedimentation near river and stream mouths which depend upon the size and nature of the drainage basin.

One of the principal effects on the marine environment from urbanization, agricultural and industrial development, and dredging and filling in of coastal areas is the impact of increased rates of sedimentation on the nearby reef systems. The effect of such activities on these reef systems range from negligible to catastrophic. It is well documented (Van Eepoel and Grigg, 1970; Maragos, 1972) that sedimentation has an adverse effect on planula settlement, coral growth, and reef development. Many other organisms associated with reefs are also badly affected. The development of fringing reefs is conspicuously altered, reduced, or absent in coastal river embayments where sedimentation rates are high. A gradient of decreased coral diversity is found from the mouths to the heads of these embayments. Such embayment areas can be used as natural laboratories to study the effects of terrestrial sediments on fringing reef systems.

Studies were conducted at two different river embayment locations to relate community structure to natural suspended sedimentation rates (Fig. 1). Ylig River and La Sa Fua River were selected as study sites

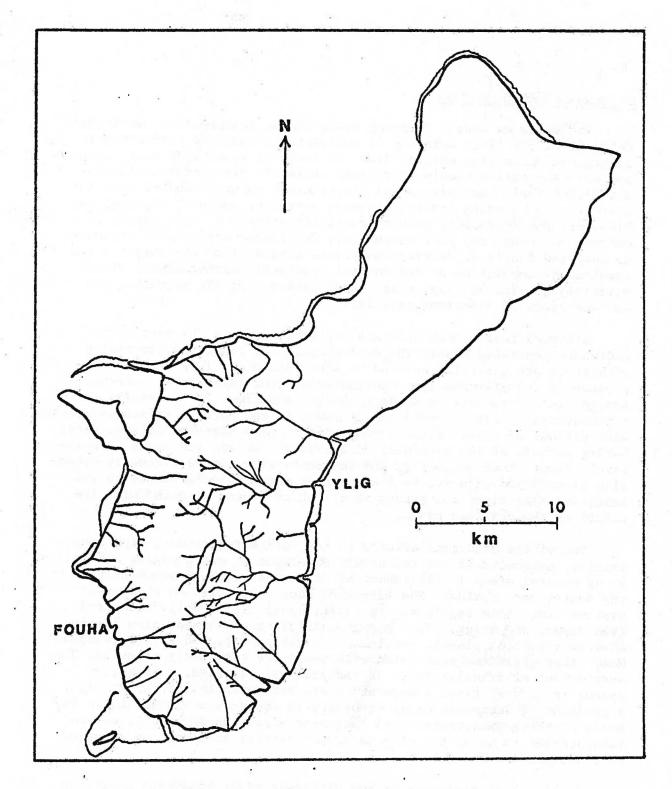


Fig. 1. Map of Guam showing the study sites at Fouha and Ylig Bays.

because a gradient of sedimentation rates were found where corals and most associated reef organisms are completely absent at the heads of the embayments, and become a diverse and well developed reef community at the mouths of the embayments.

The study was approached by measuring suspended sedimentation rates, total solids, pH, salinity, temperature and nutrient contents (phosphates and nitrates) in the water at eight stations along the gradient from the river mouths to the reef margins at La Sa Fua River (Fig. 2) and Ylig River (Fig. 3). These six factors will be analyzed for correlation with the biological components of the coral reef community.

By comparing the natural gradients of suspended sedimentation rates and community structure from the mouth to the head of these embayments, a cause and effect relationship can be determined. These values can be programmed with data from other reef environments to predict sedimentation impact due to increased input from land and coastal developments. These data will also be valuable in establishing performance standards for allowable sedimentation rates in reef environments.

General Description of the Bays

Although the geographic place names for the Fouha and Ylig study sites are referred to as bays (Figs. 2 and 3), the overall morphology of the two regions are more like submarine channels that penetrate through the fringing reefs from the outer margins to the river mouths at the shoreline. The sides of the submarine channels consist mostly of very steep slopes and cliff faces that are locally overhanging at many places along the upper part, and mostly steep slopes with fewer cliffs and overhanging walls along the lower part. The lower channel slopes at most places are buttressed with large boulders and blocks that have slumped downward from the upper channel walls. Some of the larger blocks are two or more meters across and give the lower channel areas much of their irregular relief. The channel floors composed for the most part of unconsolidated sediments of an undetermined thickness with a few mounds and pinnacles scattered along their length. In cross-section, at any one location, the channel floors are relatively flat, but along their length they slope gently downward from the river mouths in a seaward direction. Water depth in the channels range from 3 to 4 meters at the head to about 10 meters near the mouth at Fouha Bay and from 3 to 4 meters at the head to about 25 meters near the mouth at Ylig Bay. The principal physiographic features of the channel reefs and water depth are shown in vertical profile at each suspended sediment station at Fouha Bay in Figure 4, and at Ylig Bay in Figure 5.

Although the reef channel at Ylig Bay is considerably larger and somewhat deeper at the mouth than that at Fouha Bay, the principal differences between the two regions appear to be in the larger size of the drainage basin, and greater average, peak, and low flow discharge rates at the former. The drainage basin of the Ylig River is 6.58 sq. miles and based upon a 13 year period the average flow was 28.2 cfs, peak discharge

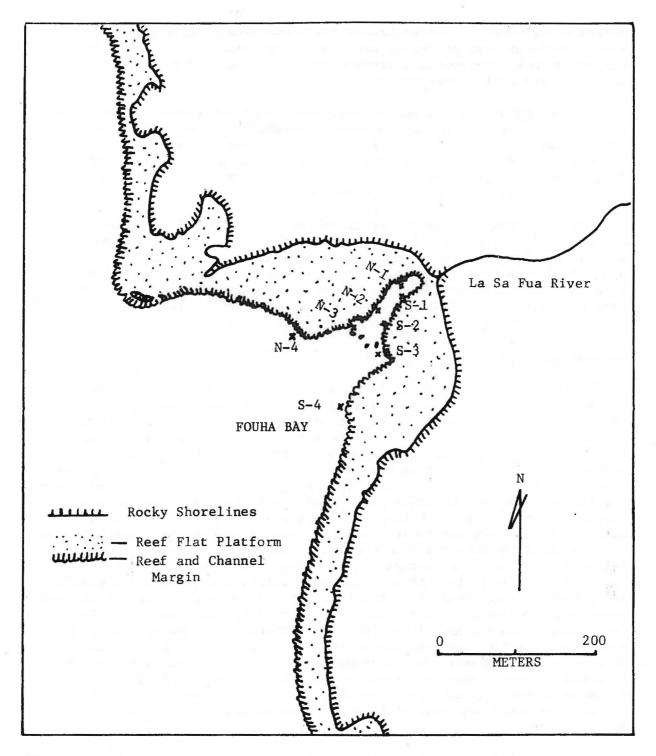


Fig. 2. Fouha Bay showing the locations of the sediment stations.

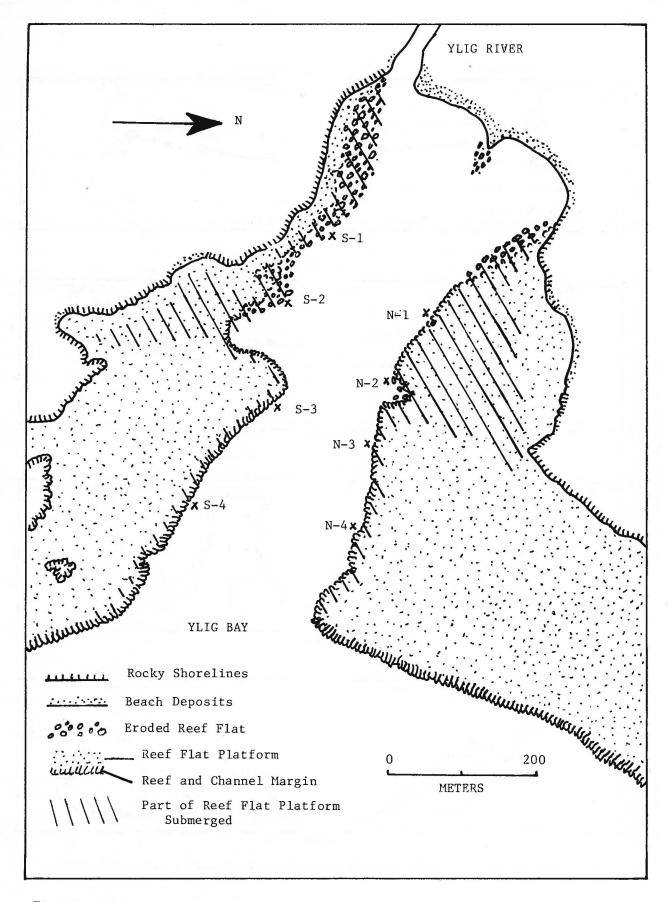


Fig. 3. Ylig Bay showing the location of the sediment stations.

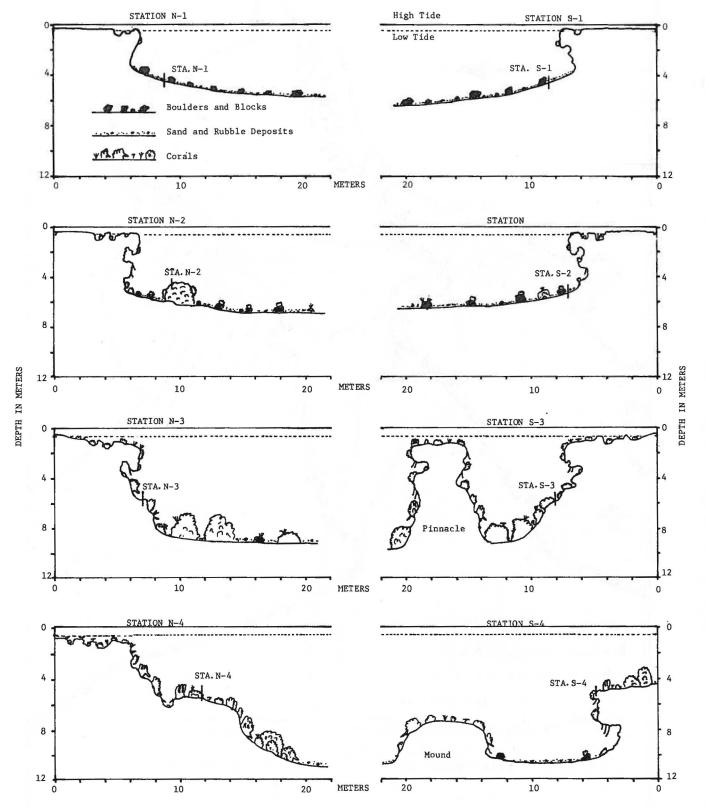
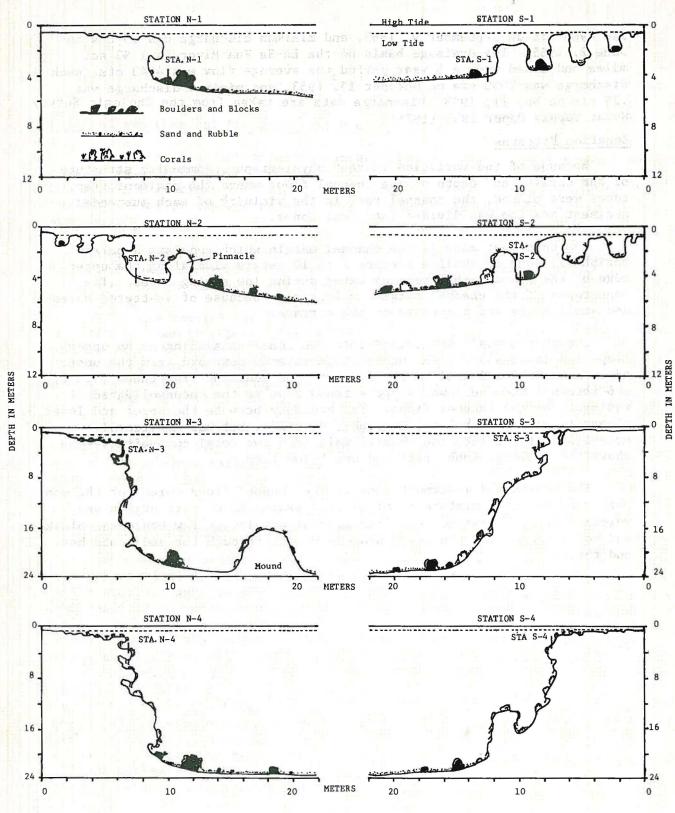


Fig. 4. Vertical profiles of the channel margin, slope, and floor in the vicinity of the sediment stations at Fouha Bay. Vertical exaggeration is X 1.



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DEPTH IN METERS

Fig. 5. Vertical profiles of the channel margin, slope, and floor in the vicinity of the sediment stations of Ylig Bay. Vertical exaggeration is X 1 for Stations N-1, N-2, S-1, and S-2 and X 2 for Stations N-3, N-4, S-3, and S-4.

was 4900 cfs on September 9, 1963, and minimum discharge was .5 cfs on June 2, 1965. The drainage basin of the La Sa Fua River is 1.93 sq. miles and based upon a 5 year period the average flow was 4.43 cfs, peak discharge was 1050 cfs on October 15, 1953, and minimum discharge was .29 cfs on May 11, 1958. Discharge data are taken from the Geologic Survey Water Supply Paper 1937 (1971).

Zonation Patterns

Because of the variation in reef physiography, community structure of the corals, and depth of the channel floor where the sediment trap tubes were placed, the channel reef in the vicinity of each suspended sediment station was divided into four zones.

The uppermost zone is the channel margin which consists a narrow peripheral band or shallow terrace 2 to 10 meters wide along the upper edge of the channel that retains water during low spring tides. The topography of the channel margin is irregular because of scattered holes and small knobs and pinnacles on the surface.

The channel wall is divided into two zones consisting of an upper slope and lower slope. The upper slope extends downward from the upper edge of the channel wall to the depth of the sediment trap tubes (3.8 to 4.6 meters) and the lower slope extends down to the unconsolidated sediments of the channel floor. The boundary between the upper and lower slopes is not a natural physiographic division, but was arbitrarily established to divided the channel wall into two coral communities—one above the sediment tube traps and one below them.

The fourth and lowermost zone is the channel floor which for the most part consists of a mixture of bioclastic sediments of reef origin and volcanic detrital sediments of terrestrial origin. A few boulders, blocks, and rocky mounds and pinnacles protude upward through the sediments here and there.

thuse two sets of tubes. As sign should be under the results were local

Physical and Chemical Characteristics of the Water

The physical and chemical characteristics of the water were sampled on four dates at three-month intervals in 1977, at ten stations in Fouha Bay and at eight stations in Ylig Bay. The sampling sites were each within a few decimeters of the apertures of the sediment trap tubes of each of the stations.

Water temperature was measured with a protected field thermometer which was taken underwater and laid near the sediment trap tubes for at least two minutes to allow the thermometer to equilibrate.

Water was sampled for chemical analysis by opening and closing the polyethylene sampling bottles underwater at the sampling stations. The bottles were then placed in an ice chest and transported to the freezer in the Water Resources Research Center (WRRC) laboratory room at the Marine Laboratory. The samples were analyzed for NO_3-N , NO_2-N and PO_4-P by the WRRC staff according to the methods of Strickland and Parsons (1968).

Salinity and pH were measured in samples brought to the surface in a plastic freezer jar. An American Optical Corporation refractometer was used to measure salinity. A Corning Model 610A portable pH meter was used to measure pH.

Measurement of Suspended Sediment Load

The suspended sediment load in the water column was measured at ten selected stations in Fouha Bay and at eight stations in Ylig Bay. Half of the stations were located along the north side of each bay and the other half of the stations were located at comparable locations along the south side of each bay. The first pair of stations (one on the north side of the bay, the other on the south side) was located where the first living coral colony was found as we swam seaward from the mouth of the river that emptied into the bay. The second pair of stations was found where living corals first became prevalent. The third pair of stations was located where the first living colony of Acropora was found and the fourth pair of stations was located where we judged the reef to be well developed and rich in species. A fifth pair of stations was established at Fouha Bay where the extent of coral cover and species richness have declined markedly as we moved seaward of the fourth stations. Stations were all established at depths of 3.8 to 4.6 m.

Suspended sediment load trap tubes consisted of PVC pipe (41 cm in length) that were strapped in groups of four (for replicate samples) to rebar rods. The rebar rods were hammered into the reef at the sampling stations to mark the location of the station and to keep the sediment tubes standing upright (see cover photograph). The apertures of half of the tubes

were bevelled and the aperatures of the other half of the tubes were left truncated (Fig. 6) to test for the differences in sampling results from these two sets of tubes. No significant differences in results were found, so the data from these two sets of tubes were pooled.

The aperture diameters of the tubes made from the PVC pipes ranged between 22.75 and 24.25 mm (23.7 + 0.44 mm), therefore the areas of the apertures ranged from 4.06 to $4.6\overline{2}$ cm² (\overline{Y} = 4.4 cm²).

The tubes were left out for 6 weeks if possible. On one occasion, hazardous surf conditions prevented us from collecting the tubes on schedule. The data from delayed collection were each corrected for comparison with data from six-week exposures as explained in the tables in which the data were given.

Rubber stoppers were placed in the apertures of the tubes before the tubes were collected and brought to the laboratory. At the Marine Laboratory, the sediment was rinsed from the tubes into clean beakers that had been previously weighed and labeled. Distilled water was poured into the beaker. The sediment was then allowed to settle for 24 hours. The water was then decanted and this rinsing procedure was continued for four days (four rinsings, each once a day) to get rid of the salts from the seawater. Then, after the fifth decanting, the beakers with the sediment were placed in the drying oven for four days at 80°C. On the fifth day, the beakers were placed in a desiccator and allowed to reach room temperature beside the microbalance overnight. The beaker with dried sediment was then weighed and the weight of the empty beaker was substracted.

Corals

The community structure of the corals was assessed at four zones in the vicinity of each of the suspended sediment stations (N-1 through N-4 and S-1 through S-4) at Fouha and Ylig Bays. The parameters assessed at each station were species diversity, frequency of occurrence, density, percent of substrate coverage, and colony size distribution data $(\bar{Y}$ - average size, s-standard deviation, and w-size range). The fifth pair of stations at Fouha Bay were assessed only for percent of substrate coverage.

Frequency of occurrence, density, and percent of substrate coverage were calculated by using a point-quadrat method. The quadrat consists of a square frame, 35 cm on a side, that was divided into a grid of 49 intersecting points by small plastic lines spaced 5 cm apart. The quadrat was randomly tossed at each of the four channel reef zones within an area that extended ten meters to the left and right of each sediment trap station.

Frequency of occurrence of a species within a zone was determined by totaling the number of quadrats that the species was present and dividing it by the total number of tosses. Percent of substrate coverage for each species within a zone was calculated by totaling the number of quadrat points overlying the species for all the quadrat tosses and dividing it by the total number of possible points (49 x number of tosses) X 100. Density of a species within a zone was determined by totaling the number of occurrences of the species within the quadrat for all the quadrat tosses

and dividing it by rise total area of all the cosses. A corn was renatoring to be within the confines of the quadrat if more than half of its area was made the quadrot frame. Colony size distribution which its established within a rine was raiculated by recording the name and dismeter, or gratest

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Fig. 6. Bevelled and truncated apertures on a set of suspended sediment load trap tubes.

and dividing it by the total area of all the tosses. A coral was considered to be within the confines of the quadrat if more than half of its area was inside the quadrat frame. Colony size distribution data for each species within a zone was calculated by recording the name and diameter, or greatest length and width, of all the colonies that occurred withing each quadrat toss. In order to acquire a greater number a data for size distribution calculations, the name and size of the coral nearest each of the outside corners of the quadrat frame were also recorded for each toss. Only colonies within a distance of one meter from the quadrat corners were measured.

Species diversity was acquired by listing all the species that were encountered during the point-quadrat sampling for frequency, density, percent of substrate coverage, and size distribution data. Additional species were also recorded from observations made during the study period by snorkeling and scuba diving in the general area of each sediment trap station.

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Results

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Temperature, pH and salinity

The physical characteristics of the water (temperature, pH and salinity) varied significantly from day to day in both Fouha Bay and Ylig Bay (Tables 1-6). There were no significant differences between stations with either pH or salinity, partly because they both varied greatly between dates across all stations (Tables 3-6). For example, all stations in the bays might have lower salinities after a heavy rain. No stations in these bays appeared to vary in a significantly different manner from other stations in either pH or salinity.

In Fouha Bay, a relatively small bay, there were no significant differences in water temperatures between stations (Table 1). This was partly because they all varied together between dates. In Ylig Bay, a larger bay, there was a very slight tendency for Station S-2 to have higher temperatures than the other stations. This was probably because Station S-2 was farther back into a shallow embayment off the main river channel than were the other stations. Partly because of this, there was a difference (just barely significant) between stations for water temperature in Ylig Bay (Table 2).

Temperature, pH and salinity were found to be of no value in our study as environmental factors to correlate with characteristics of the reef community. These environmental factors are of importance in influencing the characteristics of reef communities on a larger scale, but within the scale of our study areas these factors all varied significantly with time. There were no very significant differences between stations, therefore we cannot correlate reef characteristics with these environmental factors within these bays.

Nitrates and phosphates

As with temperature, pH and salinity, the nitrate and phosphate levels in the water generally varied so greatly between sample dates that it was very difficult to demonstrate differences between stations. Phosphate levels varied significantly between dates in both Fouha Bay and Ylig Bay and nitrate levels varied significantly between dates in Fouha Bay (Tables 7-9).

The variation from measurement error or differences in nitrate and phosphate levels was very great between water samples taken only moments apart. Variations between replicate samples at each station were so great that no significant differences could be found between stations on a given day in terms of phosphate levels in the water along the north side of bays versus the south sides in either bays (Fouha or Ylig), between

Table 1. Temperature (°C) of the water near the mouth of the sediment traps at the ten stations in Fouha Bay on the four collecting dates at 3-month intervals through the year.

e Cqui.	days religions	Collec	tion Dates	
	23 III 7 29 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	15 VI	22 IX	15 XII
	27.9			
5 - 2	28.0	28.9	29.8	28.2
5 - 3 _[217] and	28.2	28.8	29.2	28.2
- 14m arms	28.0	28.9	30.5	28.3
- 5		etilber Sperg (6,520s)	dirugie (forsd	
	28.0			
- 2 1 di ri	27.9 1 10	28.9	30.125	28.2
i = 30 i lingi	28.4 11s v	28.9	30.4	28.2
I - 4-noviyas	28.0	29.0	29.8	28.2
1 – 5			in these bays.	28.3

			ing in the state of the state o
			beirsv slavet
Stations	7	.055	1.10 ns
			The variation is speake lively was

Table 2. Temperature (°C) of the water near the mouth of the sediment traps at the eight stations in Ylig Bay on the four collecting dates at 3-month intervals through the year.

		Collection	Collection Dates	
STATIONS	30 III - 4 1977	22 VI 1977	29 IX 1977	22 XII 1977
S - 1	28.1	30.5	28.7	28.5
S - 2	28.1	30.3	30.2	29.0
s - 3	27.3	29.6	29.65	28.0
S - 4	27.2	29.8	29.45	27.9
N - 1	27.6	29.6	29.6	28.0
N - 2	27.7	29.8	29.8	28.5
N - 3	27.5	30.2	29.7	27.8
N - 4	27.4	29.6	29.75	27.85

Source of variation	<u>df</u>	MS	Fs
Dates	3	9.84	92.3***
Stations	7	.286	2.68*
Error	21	.1066	

Table 3. Water pH near the sediment traps at the ten stations in Fouha Bay on the four collecting dates at 3-month intervals through the year.

Collection Dates

issies at 1-month substante through the year

STATIONS	23 III 1977	15 VI 1977	22 IX 1977	15 XII 1977
s - 1	8.0	8.0	7.7	8.4
s - 2	8.0	8.0	7.7	8.4
s - 3	8.1	8.0	7.6	8.2
S - 4	8.05	7.9	7.8	8.2
s - 5	n, 3			8.25
N - 1	8.1	8.0	7.7	8.1
N - 2	7.95	7.9	7.8	8.1
N - 3	7.95	7.9	7.8	8.3
N - 4	8.05	7.9	7.7	8.15
N - 5				8.15

Source of variation	dŦ	apol off	Fs
Dates	3	.3502	48.4***
Stations	7	.0044	.603 ns
Error	21	.0072	

Table 4. Water pH near the sediment traps at the eight stations in Ylig Bay on the four collecting dates at 3-month intervals through the year.

		Collecti	ion Dates	
STATIONS	30 III 1977	22 VI 1977	29 IX 1977	22 XII 1977
S - 1	8.1	7.55	7.8	8.2
S - 2	8.2	7.5	8.0	8.2
s - 3	8.1	7.45	8.1	7.7
s - 4	8.1	7.45	8:0	7.9
N - 1	8.1	7.6	7.9	8.0
N - 2	8.1	7.55	8.1	8.1
N - 3	8.1	7.50	8.1	7.8
N - 4	8.0	7.55	8.1	7.8
	1000	2312		

Source of variation	<u>df</u>	<u>MS</u>	Fs	
Dates	3	.54	36.3***	
Stations	7	.01	.67 ns	3
Error	21	.0149		

Table 5. Water salinity (°/00) near the sediment traps at the ten stations in Fouha Bay on the four collecting dates at 3-month intervals through the year.

0 1		
COL	I octio	n Dates

STATIONS	23 III 1977	15 VI 1977	22 IX 1977	15 XII 1977
s - 1	34	35	33.3	36
S - 2	26	38	33.3	35
3 - 3	36	35	33.3	35
S - 4	. 36	35	34.4	36
S - 5				36
N - 1	35.5	35	32.2	35
N - 2	33	35	32.8	34
N - 3	35.5	35	33.3	34
1 - 4	35.5	35	34.4	35
N - 5				36

Source of	2.4			
variation	<u>df</u>	MS	<u>Fs</u>	
Dates	3	6.76	9.8**	
Stations	7	1.38	2.007	ns
Error	21	.690		

at the ten stations in Pouls and on the four collecting dates at 3-month interval through the water

Table 6. Water salinity near the sediment traps at the eight stations in Ylig Bay on the four collecting dates at 3-month intervals through the year.

		Collect	ion Dates	PRILITA
STATIONS	30 III 1977	22 VI 1977	29 IX (1.1.) 1977	22 XII 1977
s - 1	34	34.3	31	33
S - 2	34.5	32	32	34
s - 3	34	36	31.8	34
S - 4	35	34	32	34
N - 1	34.5	34	31.5	33
N - 2	34	34	31.5	34
N - 3	35	34	31.5	34
N - 4	34	34	32	35

Source of Variation	_df	_MS_	<u>Fs</u>	
Dates	3	12.19	25.8**	k
Stations	7	.466	.99	ns
Error	21	.474		

Table 7. Phosphate levels ($\mu g-at/1$) in the water near the sediment traps at the ten stations in Fouha Bay on the four collecting dates at 3-month intervals through the year.

	Co ₁	lec'	tion	Dates
--	-----------------	------	------	-------

STATIONS	23 III 1977	15 VI 1977	22 IX 1977	15 XII 1977
s - 1	.11	.20	.22	.19
S - 2	.12	.18	.19	.18
S - 3	.13	.20	.16	.14
s - 4	.14	.16	.15	.14
S - 5				.19
N - 1	.12	. 24	.18	.19
N - 2	.11	.14	.17	.18
N - 3	.13	.18	.20	.19
N - 4	.11	.15	.16	.17
N - 5				.15

Source of variation	_df	MS	Fs
Dates	3	.00695	24.3***
Stations	7	.0009	3.12*
Error	21	.0003	

Table 8. Phosphate levels (µg-at/1) in the water near the sediment traps at the eight stations in Ylig Bay on the four collecting dates at 3-month intervals through the year.

			Collecti	on Dates	
STATION	ITA EL S. Jes	30 III 1977	22 VI 1977	29 IX 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	22 XII 1977
s - 1		.19	.09	.09	.19
S - 2	67.	.16	.08	.09	.13
s - 3		.18	.10	.10	.23
S - 4		.19	.10	.12	.20
N - 1		.19	.16	.19	.20
N - 2		.05	.10	.10	.12
N - 3		.23	.08	.11	.14
N-4		.13	.07	.14	.13

Source of variation	<u>df</u>	MS	<u>Fs</u>
Dates	3	.0093	8.2*
Stations	7	.0033	2.9*
Error	21	.0011	

Table 9. Nitrate levels (μg -at/1) in the water near the sediment traps at the ten stations in Fouha Bay on the four collecting dates at 34month intervals through the year.

Collection Dates

STATIONS	23 III 1977		15 VI 1977	**************************************	22 IX 1977	15 XII 1977
s - 1	.25		.95		.21	1.8
S - 2	.49		1.2		.28	.59
S - 3	.39		.80		.37	.22
S - 4	.42		.82		.41	.17
S - 5						.17
N - 1	.42		.41		.21	.14
N - 2	.35		2.0		.23	.32
N - 3	.74		1.2		.34	. 47
N - 4	.28		.46		.28	.18
N - 5		374		4	15 15	.27

Source of variation	<u>df</u> '	<u>MS</u>	Fs	
Dates	3	.738	4.9*	
Stations	7	.156	1.04	ns
Error	21	.1506		

Table 10. Nitrate levels (µg-at/1) in the water near the sediment traps at the eight stations in Ylig Bay on the four collecting dates at 3-month intervals through the year.

Collection Dates

	30 III 1977			
S - 1	.62	1.1.3	2.6	.70
S - 2	.12	.32	1.3	1.4
S - 3	.21	4.3	.98	.40
	.28			
	.18			
N - 2	.16	.36	.65	.36
N - 3	.21	. 59	.70	.55
N-4			.89	
				party to the

Source of variation	d£	МS	_Fs
Dates	3	1.77	2.99 ns
Stations	7	.6127	1.04 ns
Error	21	.5915	

stations along a river mouth to the seaward gradient in either of the bays, or in the interaction between the side of the bay and the position along the seaward gradient (Tables 11 and 12). Similarily, no significant differences in nitrate levels could be found between any of these arrays of stations in Fouha Bay (Table 13).

A part of the variation between replicate samples in this study was undoubtedly caused by problems with laboratory methods, but probably another part of the variation was caused by changes in tidal state, wave action, turbulence, time of day, currents and weather. These sources of variation along with variation between dates were so large that precise measurements from a moment in time were of little, if any, value to our studies of the characteristics of the reef community within the scale of the studies. For these measurements to be of value, they should be taken very frequently or, alternatively, with some integrative measurement such as that by which suspended sediment load was determined. If this could be done, the measurements of nitrates and phosphates might be of value.

There appears to be a general trend for a decrease in nitrate and phosphate contents of water between river mouth and seaward stations. However, this trend was very vague. Statistical tests were performed on the eight possible comparisons of near shore versus offshore stations for phosphate or nitrate levels in water from the north or south sides of Fouha Bay or Ylig Bay. Only one of these comparisons showed a significant difference. There was a significantly greater concentration ($t_{s[6]=3.708**$) of phosphates at the nearshore Station N-1 (.18 \pm .02 µg - at/1) than at the offshore Station N-4 (.12 \pm .03 µg - at/1) in Ylig Bay. However, there was a lower concentration of phosphates at the nearshore Station S-1 than at the offshore Station S-4. Therefore, the general trend for a reduction in nutrients from nearshore to offshore stations was very weak if it existed at all. There was a significant difference between pairs of stations in Fouha Bay in terms of phosphate levels in the continuous gradient from nearshore to offshore stations (Table 7).

A paired comparison by a two-way anova with a randomized block design was made between comparable stations on north and south sides of each bay (Table 15). There were no differences in phosphate levels on the two sides in either bay. However, there was a significantly greater concentration of nitrates in the water along the south side of Ylig Bay than along the north side (Tables 14 and 15).

In summary, the variations between replicate samples and between dates were so great for the nitrate and phosphate data that it was difficult to determine any significant trends. There was a vague tendency for nitrates and phosphates to decrease along a nearshore to offshore gradient and there was a significantly greater concentration of nitrates along the south shore than along the north shore of Ylig Bay.

Table 11. Phosphate levels $(\mu g-at/\ell)$ in replicate samples in the water near the sediment traps at the ten stations in Fouha Bay on 15 XII 1977.

STATIONS	NORTH	SOUTH	Σ
1	.18	. 17	.75
	.20	20	
2	.18	.20	.71
	.17	.16	
3	.17	.14	.65
	.20	.14	
4	.15	.13	.61
	.18	.15	
5	.15	.20	.66
	.14	.17	
Σ	1.72	1.66	3.38

:h

Source of Variation	df	MS	_Fs_
North versus South	1	.00019	.6 ns
Stations along a seaward gradient	4	.00078	2.5 ns
Interaction of stations and side of bay	4	.00108	3.4 ns
Error	10	.00031	

Table 12. Phosphate levels ($\mu g-at/\ell$) in replicate samples in the water near the sediment traps at the eight stations in Ylig Bay on 1 II 1978.

STATIONS	NORTH	SOUTH	Σ
1	.13	.21	.79
	.28	.17	
2	.12	.11	.49
	.12	.14	
3	.14	.32	.73
	.14	.13	
4	.13	.23	. 65
	.13	.16	
Σ	1.19	1.47	2.66

Source of Variation	df	MS	Fs
North versus South	1	. 0055	1.34 ns
Stations along a seaward gradient	3	.0042	$1.02 \overline{ns}$
Interaction of stations and side of bay	3	.0022	.54 ns
Error	8	.0041	

Table 13. Nitrate levels (µg-at/l) in replicate samples in the water near the sediment traps at the ten stations in Fouha Bay on 8 II 1978.

STATION	NORTH	SOUTH	Σ	
1	.14		3.88	
	3.47	.16		
2	. 34	.20	1.81	
	. 84	.43		
3	. 23	.45	1.36	
	.20	.48		
4	.09	.14	.71	
	. 25	.23		
5	.04	. 27	.88	
	.30	.27		
Σ	5.9	2.74	8.64	N IV

Source of Variation	df	MS	<u>Fs</u>
North versus South	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	.497	.86 ns
Stations along a seaward gradient	4	.408	.71 ns
Interaction of stations and side of bay	4	.607	1.05 ns
Error	10	.576	A STATE OF THE STA

Table 14. Nitrate levels ($\mu g-at/\ell$) in replicate samples in the water near the sediment traps at the eight stations in Ylig Bay on 1 II 1978.

STATION	NORTH	SOUTH	Σ
1	. 48	.97	2.66
	.77	.44	
2	.29	1.7	3.63
	.44	1.2	
3	.73	.48	1.89
	.37	.31	
4	.68	.73	2.51
8.7	.37	.73	111 113 110
Σ	4.13	6.96	10.69

Source of Variation	df	MS	Fs
North versus South	1	.353	6.19*
Stations along a seaward gradient	3	.121	2.12 ns
Interaction of stations and side of bay	3	.286	5.02*
Error	8	.057	

Table 15. Paired comparisons of station S-1 versus N-1, S-2 versus N-2, S-3 versus N-3 and S-4 versus N-4, in terms of nitrate and phosphate contents of the water with all comparisons made between samples taken on the same dates. The data are given in Tables 11 through 14. The results of two-way anova are given here.

	5g : 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
a)	Nitrate levels in Fouha Bay	df	MS	Fs
	North versus South side of the bay Station pairs Error	1 16 16	.045 .273 .133	.34 <u>ns</u> 2.06 <u>ns</u>
b)	Phosphate levels in Fouha Bay			
		df	MS	Fs
	North versus South side of the bay Station pairs Error	1 16 16	.000026 .0018 .0004	.06 <u>ns</u> 4.26**
c)	Nitrate levels in Ylig Bay	<u>df</u>	MS	<u>Fs</u>
	North versus South side of the bay Station pairs Error	1 15 15	3.02 .83 .45	6.71* 1.84 <u>ns</u>
d)	Phosphate levels in Ylig Bay			
	An account available to the control of the control	df	MS	Fs
	North versus South side of the bay Station pairs Error	1 15 15	.0003 .0034 .0016	.18 <u>ns</u> 2.14 <u>ns</u>

Suspended sediment load

Measurements of suspended sediment loads were made for eight continuous 6-week periods of time at each of our stations in both Fouha Bay and Ylig Bay (Tables 16 and 17). (Some of the samples are missing because the missing sediment load trap tubes were torn away by heavy wave action. Two of the time periods were longer than six weeks because hazardous wave conditions prevented us from collecting them on schedule. Each of the data for the delayed collection were adjusted for comparison with data from 6-week exposures as explained at the bottom of the tables.)

In contrast to our nitrate and phosphate data, our continuous sampling of suspended sediment loads in tubes provided us with data that had essentially negligible variance between replicate samples (error variance, cf. Tables 18 and 19). Because of this, we could clearly determine the sources of variance (Tables 18 and 19). There was a significant difference between the suspended sediment loads from each of the stations. These differences were caused in large part by a major decrease in suspended sediment load along a gradient from the river mouth towards the open sea. The stations also differed significantly in a comparison of counterpart stations on the north and south sides of the bay. All stations on the south side of the bays differed from their counterpart stations on the north sides of the bays. However, the direction of these differences alternated. In Fouha Bay, Stations N-1, S-2, N-3 and S-4 had greater average suspended sediment loads than their respective counterparts S-1, N-2, S-3 and N-4. In Ylig Bay, Stations S-1, N-2, S-3 and N-4 had greater average suspended sediment loads than their respective counterparts N-1, S-2, N-3 and S-4.

There were also very significant differences between the average suspended sediment loads from different 6-week time periods (Tables 18 and 19). We observed these differences to be related to wave action. After periods of storm and heavy wave action, our suspended sediment load measurements were always larger.

The direction and strength of winds and wave action on both of the bays varied between time periods to the extent that the relative differences between stations changed with time, i.e., there was a significant interaction between time periods and stations (Tables 18 and 19).

Ylig Bay is a relatively large bay, with relatively great distances between stations, while Fouha Bay is smaller, with the stations closer together. Fouha Bay is generally protected from heavy wave action, but when occasionally subjected to storm waves the entire small bay is strongly affected. These aspects of a comparison between Fouha Bay and Ylig Bay can be observed in Tables 18 and 19. Note that the variance (MS = mean square) between 6-week periods is over three times as great as the variance between stations is nearly three times as great as the variance between 6-week periods

FOUHA BAY

Dates on which samples were taken 23 III 77 STATIONS 4 V 77 15 VI 77 28 VII 77 22 IX 77* 3 XI 77 15 XII 77 2 II 78** S - 1105.98 ± 11.80 10.57 + 2.17 $.61 \pm .01$ $1.39 \pm .73$ $3.04 \pm .26$ 92.4 ± 5.56 92.88 ± 10.98 4.31 ± 2.79 .23 + .09 72.80 ± 4.50 $.81 \pm .96$ S - 2.68 + .31 $1.97 \pm .91$ S - 31.94 + .18 $.12 \pm .01$ $.22 \pm .13$ $.91 \pm .22$ 16.04 ± 1.79 $.08 \pm .01$ $.30 \pm .08$.48 ± .12 $.87 \pm .20$ S - 41.16 + .20 8.72 ± 1.12 103.12 ± 9.88 S - 5 114.53 ± 7.04 N - 17.17 + .23.35 + .18 $1.66 \pm .13$ 2.78 + .20 90.83 ± 14.05 N-2 $2.79 \pm .05$ $.28 \pm .06$ 1.15 + .081.91 + .2846.65 + 9.12 37.64 + 2.0755.75 + 3.04 1.73 ± 1.19 2.36 + .28 $.98 \pm .07$ $1.28 \pm .04$ 35.32 ± 2.91 $1.10 \pm .66$ N - 3 $.33 \pm .11$ 22.82 + .83 31.28 ± 2.04 N-4 $.67 \pm .06$ $.11 \pm .02$.23 + .10 $.56 \pm .02$ 2.12 +.14 $.37 \pm .04$ N - 5 $8.95 \pm .37$ 3.21 ± 2.92

^{*}The data from this 8-week period were each adjusted for comparison with the data from the 6-week periods by multiplying by a conversion factor (6/8)

^{**}The data from this 7-week period were each adjusted for comparison with the data from the 6-week periods by multiplying by a conversion factor (6/7).

YLIG BAY

		1	Da	tes on which sam	ples were taken		1	
STATIONS	30 III 77	11 V 77	22 VI 77	4 VIII 77_	29 IX 77*	11 XI 77	22 XII 77	9 II 78**
S - 1	39.29 ± .99	35.55 ± .20	28.41 ± .99	29.15 ± 1.88	12.66 ± 3.00	56.70 ± .77	11.52 ± .92	51.51 ± 1.75
S - 2	4.35 ± .59	2.37 ± .09	1.16 ± .17	1.97 ± .55	1.28 ± .90	9.52 ± 1.12	4.26 ± .33	12.09 ± .47
s - 3	4.36 ± .15	4.11 ± .21	1.93 ± .50	1.42 ± .72	2.64 ± .12	13.32 ± .42	9.40 ± .42	8.87 ± .79
S - 4	3.23 ± .11	2.61 ± .18	1.32 ± .14	1.98 ± .12	1.18 ± .12	7.29 ± .27	3.17 ± 1.53	7.26 ± .27
N - 1	7.29 ± .67	6.46 ± .53	1.32 ± .83	1.98 ± .82	9.22 ± 3.49	33.83 ± 10.85	62.22 ± 1.01	22.98 ± 1.21
N - 2	7.16 ± .64	4.72 ± .52	1.43 ± .74	2.20 ± .65	7.36 ± 2.58	21.56 ± 1.34	7.06 ± .32	16.56 ± 7.20
N - 3	3.63 ± .13	3.26 ± .23	1.33 ± .29	2.03 ± .31	2.35 ± .35	7.03 ± .38	3.39 ± .22	10.71 ± .20
N - 4	3.78 ± .09	2.82 ± .10	1.77 ± .09	2.29 ± .38	1.67 ± .25	9.00 ± 1.21	2.81 ± .02	

^{*}The data from this 8-week period were each adjusted for comparison with the data from the 6-week periods by multiplying by a conversion factor (6/8).

^{**}The data from this 7-week period were each adjusted for comparison with the data from the 6-week periods by multiplying by a conversion factor (6/7).

Table 18. Analysis of sources of variation in suspended sediment load measurements in Fouha Bay.

Source of Variation	df	MS	Fs
Between 6-week periods	3	80.3	177.3***
Between stations	7	24.4	53.9***
Interaction of stations with 6-week periods	21	8.9	19.7***
Error (between 4 tubes at each station)	96	.453	

Table 19. Analysis of sources of variation in suspended sediment load measurements in Ylig Bay.

Source of Variation	df	MS	Fs
Between 6-week periods	6	967.6	323***
Between stations	7	2711.9	904***
Interaction of stations with 6-week periods	42	343.8	114.6***
Error (between 4 tubes of each station)	168	2.999)

Table 20. Average suspended sediment load measurements (gms dry weight) for 4.4 cm² I.D. tubes over 6-week periods at sampling stations in Fouha Bay and Ylig Bay from March 1977 through February 1978. (Refer to the text for the method of calculation used.)

	SIDE O	F BAY
STATION	SOUTH	NORTH
Fouha Bay		
1	38.8	42.1
2	24.65	18.5
3	6.04	11.9
4	6.25	1.24
5	38.6	4.20
Ylig Bay		
1	33.1	18.2
2	4.62	8.50
3	5.76	4.22
4	3.50	4.42

in Ylig Bay.

The differences in average suspended sediment load between stations might be related to characteristics of the marine communities at these stations. To obtain a comparative index of the suspended sediment load for each station, an average was taken over the eight 6-week period measurements for each station for which all eight sets of measurements were available (Table 20). Since data were missing for some of the stations during certain 6-week periods, and because there were significant differences between 6-week periods, the relative magnitudes of available measurements on suspended sediment loads from stations with missing 6-week periods were compared with measurements from the same 6-week periods from data of stations with complete data for eight 6-week periods. Because of the significant differences between 6-week periods, the average of suspended sediment load measurements from the incomplete stations were multiplied by a factor of a mean ratio from the complete stations of the total eight 6-week periods average from each station divided by the average of those 6-week periods that were available in the incomplete stations and were used in the comparisons. Although this derived index is weak because there is a significant interaction between stations and 6-week periods, the variance from the interaction is much less than the variances from the 6-week periods and stations (Tables 18 and 19). Therefore, the index we use is permissible and it is the best one we can derive under the circumstances.

Corals

The results of the survey of characteristics of the coral community are presented in Tables 21 to 29 and are discussed in the following section in relation to the suspended sediment load measurements. The distributions among the eight stations in both of the bays of each of the 161 species of corals are given in Table 21. The data on abundance and prevalence of each of the coral species are given in Table 22 for Fouha Bay and in Table 23 for Ylig Bay. Size distributions of coral populations on different zones of the reef are given for each of the stations for Fouha Bay in Table 24 and for Ylig Bay in Table 25. Frequency distributions for coral colony diameters for each of the zones at each of the stations are given in Tables 26 and 27 and the frequency distributions of colony growth forms are given in Tables 28 and 29.

Table 21. Species list of corals for Fouha and Ylig Bay Stations N-1 through N-4 and S-1 through S-4.

	1	1 1	F	OUHA B	AY STA	CIONS		- 1	1130	150	YL	IG BAY	STATI	ONS	<u> </u>	
CORALS	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-
LASS - ANTHOZOA	161 -		11	1 7	311			y =				11 fr 12		17	31005	
ORDER - SCLERACTINIA					1								11	. 19	II to	1
SUBORDER - ASTROCOENIINA	\$	-				- 1 -							11.			
FAMILY - ASTROCOENIIDAE			JI a		4	1					4.32					
Stylocoeniella armada (Ehrenberg)	1	x	x	X	11	х	х	x		х	х	x		x	х	X
Stylocoeniella guentheri (Bassett-Smith)	11 11 11 11	_		X	事		10				х	- T			X	
FAMILY - THAMNASTERIIDAE				* .	1			4 1				lan.		1		
Psammocora contigua (Esper)		x	х	X	-1	х	Х	X				х		X	х	
Psammocora digitata Milne-Edwards and Haime	J.		X	X				X	1			х		-	100	ł
Psammocora nierstraszi vander Horst	1		X	X	7	X	X	1			х	X		41 -	Х	
Psammocora (Plesioseris) haimeana Milne			1 6			1					10.5			1		1
Edwards and Haime		1	X	X	1	100	X	X			X	Х			X	1
Psammocora (Encrusting sp. 1)		X	Х	X	X	х	X	X		X	X	X		X	X	1
Psammocora (Ramose sp. 1)				X							х	X	4	X		
FAMILY - POCILLOPORIDAE			1 7					i X			4		The same of		1 52	
Stylophora mordax (Dana)		x	х	х		x	X	x			x	х	1		x	
Seriatopora hystrix (Dana)	10	1		X	1	4 L 1	1 24	1 2	17		x	*	1		73	
Pocillopora brevicornis Lamarck				1	1			17		No.	1	1 2				1
Pocillopora damicornis (Linnaeus)	5	x	x	X	x	х	х	X	x	x	x	x	х	х	x	-
Pocillopora danae Verrill		e de	x	X		1	X	X	1	X	- 7	X	1	1	x	t
Pocillopora elegans Dana			x	X	1		X	X 4	1		x	X	¢ n	1	X	
Pocillopora eydouxi Milne Edwards & Haime			- 7	X		4.	100	4 ×		х	1.5	х			X	
Pocillopora ligulata Dana			x	X				X			x	x		4.0	111 :	
Pocillopora meandrina Dana	-		X	X			X	X	1	x	x	x		x	х	
Pocillopora setchelli Hoffmeister			X	X		1112	X	X		X	X	x		- 1	X	
Pocillopora verrucosa (Ellis & Solander)			х	X				X		1	1	X	- 19	-44	1 3	
Pocillopora woodjonesi Vaughan			х	X	11	71	X	X	-			X		11 7	100-1	
Pocillopora (Ramose sp. 1)			X	X		-	X	X				Х			100	1

Table 21 continued

CONTRACT OF THE PARTY OF THE PA	71 4	-	F	OUHA B	AY STA	TIONS					YL	IG BAY	STATI	ONS		
 CORALS	N-1	N-2	N-3	N-4	S-1_	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-
Acropora brueggemanni (Brook)				X		1			T =						X	\top
Acropora delicatula (Brook)	X-		X			2 11/11/11						X		1 9		X
Acropora formosa (Dana)	15		X			1.4			11						1	X
Acropora humilis (Dana)			X	X			X	X		1		X			X	X
Acropora hystrix (Dana)			X	X			X	Х	11	1	X				X	X
Acropora irregularis (Brook)	100	100	X	X				X	-		X	X		1	X	X
Acropora kenti (Brook)	-9	1		X		1 1116	3	×		X					- 6	
Acropora monticulosa (Bruggemann)	# 1	11		X	2. 1		A 4	X			1	X			2	X
Acropora nana (Studer)				X	0 1			X				X		1		X
Acropora nasuta (Dana)	进 .		X	X		Х	X	X		1 1	1 65 1	X				X
Acropora ocellata Klunzinger				X	1 4 4	1. E	5	X	- 1	1		X			V	X
Acropora palifera (Lamarck)	ii ii		X	X	1	-		X	1		1	Х	10 10 0		1	X
Acropora palmerae Wells	-B				1		0.0	X			1	X			X	X
Acropora rambleri (Bassett Smith)	1	F 5					130	- 12			1	X		}	nite	
Acropora rayneri (Brook)		- 21		Y 1	7 77 -		7		!!	1	1					X
Acropora smithi (Brook)		10 -5	13.1	X	3 4	1	0	- 5				X				1 3
Acropora squarrosa (Ehrenberg)			17 17	X		11 12		. 8			1000	X			1	2
Acropora surculosa (Dana)	7		X	X	1	7.1.	X	X	11	1	X	х			Х	X
Acropora syringodes (Brook)				X	- 1	2		X	11		X	X		Х		X
Acropora valida (Dana)			1	X				X	11	1	1100	X		1		X
Acropora wardii Verrill		1	X	X		X	X	X]}			X		X	X.	X
Acropora (Corymbose sp. 1)		X	X	X	1	2	X	Х			Х	X	1 100		1	X
Acropora (Corymbose sp. 2)			X	X		- 1=	X	- 1]]-	X	X	Х			1	X
Astreopora gracilis Bernard			X	X	1			X			X					X
Astreopora listeri Bernard			1	X	10 h 1							X		1		
Astreopora myriophthalma (Lamarck)	1	X	X	X			X	X			X	X	i	1	X	X
Astreopora (Massive sp. 1)	30 1	1		X	9	- 67		- 1			1	X		1 1	1	
Montipora acanthella Bernard		Х				X			11		X			1.0	1	
Montipora caliculata (Dana)				X	- 4				11		1.31	1	7	X	100	
Montipora elschneri Vaughan		X	X	X		X	X	X	tt.	Х	X	X		Х	X	X
Montipora ehrenbergii Verrilli					20 6	H L						X		ł		1
Montipora foliosa (Pallas)				X		-	11.0	1 10	4			X			1	X
Montipora foveolata (Dana)	100		X	X		N.	X	X	111111111111111111111111111111111111111		X	X		1		X
Montipora granulosa Bernard		1		X		-			11	1	1	X	I HOW	4		1
Montipora hoffmeisteri Wells		X	X	X		X	X	X	11	X	X	X		х	X	X
Montipora lobulata Bernard		1	х	х			Х	X	}}	Х		X		X	X	X
Montipora monasteriata (Forskaal)				X								x	1 15			

Faria prulosa (Elais and adianders	a 13		F	DUHA BA	Y STA	CIONS		11 1			YLI	G BAY	STATIC	ONS		-
LEACORALSTING (DELIN)	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S
Montipora patula Verrill	212	19 11	x	X		ANT T	填三計	X	45-	X	XX	7	THE PARTY	ME I	X	1
Montipora sinensis Bernard			1	X		i		1 1			X	X		11		Ì
Montipora socialis Bernard	- I		X	х			х	x				X		1		
Montipora tuberculosa (Lamarck)			X	X	1	x	Х	X	11 1	1				x	х	1
Montipora verrilli Vaughan -	5 1	x	X	X 4		х	X	X	x	x	X	x	x	X	X	
Montipora verrucosa (Lamarck)			· X	VX 1	1	a tel	х	X			X	X		x	X	
Montipora (Tuberculate sp. 1)	4	x	X	X		x	ХX	X		X	X	X		X	X	
Montipora (Tuberculate sp. 2)		X	X	X	- 1	X	x	X	1	X	X	X	1 ;		X	
Montipora (Tuberculate sp. 3)		a 1		4. 8			2 1	8			χ	X .		X	8	
Montipora (Papillate sp. 1)	1	1 b	X	X		10	х	х		1.0	X	X	1	1 1	X	1
Montipora (Papillate sp. 2)			X	X	1 1	7	X	X		1	1	X		x	X	
Montipora (Foeolate sp. 1)		1	2	X			11 1	Type T	10	9	1	X		. %	7.	
Montipora (Glabrous sp. 1)			x	X			- N	Tarre I	1		1	X		x		
Agariciella planulata (Dana) Pavona clavus (Dana) Pavona decussata Dana Pavona divaricata (Lamarck) Pavona maldivensis (Gardiner) Pavona minuta Wells Pavona varians Verrill Pavona (Polyastra) obtusata (Quelch)	x	X X X	X X X X	X X X X X X		X X X	X X X	X X X		x x x	X X X X	X X X X X		X X	X X X X	
Pavona (Polyastra) venosa Ehrenberg		X	X	Х	1	Х	Х	X		X	X	X		X	X	1
Pavona (Pseudocolumnastraea) pollicata Wells			X	Х	1 1		X	- 1				X	1	1 1	X	Ш
Pavona (Polyastra) (Encrusting) sp. 1	10	Х	X	Х			Х	X	1	X	X	X		1 = 4	X	
Pavona (Explanate sp. 1)			X	X	1 - 1	1	1	13			X			1- 7		1
Leptoseris hawaiiensis Vaughan Leptoseris incrustans (Quelch)			X	X			X			1	X	X	3 11	1	X	1
Leptoseris mycetoseroides Wells	4	X	X	X	(B	Х	X	X			X	X		1	X	13
Pachyseris speciosa (Dana)	1, 1		X	X			X				X	X		1 - 4	X	12
Tachyseris speciosa (Dalla)	4	5 5 1	A	A		3	X	X	4.	- 3	X	\mathbf{X}_{i}	2-T [5-2	X	1
FAMILY - SIDERASTREIDAE		-	+	Ry Is	الحاورات	15.47			in-	- 1755	LATE	7371	177 for	3		1
	1	1.3		Li				12.2.3	La Pin			12			100	
Coscinaraea columna (Dana)			х	X			х	х		7		x				

THEA - PROPERTY BELIEVE		1	F	DUHA B	AY STA	TIONS		-1			YL	LG BAY	STATIC	NS		
CORALS	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S-3	s-
FAMILY - FUNGIIDAE	Haber and		13	1 1	10	1		I X		To the		¥.			TX.	
Fungia (Verrillofungia) concinna Verrill		į.	х	7	1		1 4	1 44		1	1-7	11 7				
Fungia (Fungia) fungites (Linnaeus)		10	х	1 9	2				+	1	x	1		11		
Fungia (Pleuractis) scutaria (Lamarck)			X	1 3	1		X	×		100	I Z:	A hay			122	
FAMILY - PORITIDAE	-					1 50	1 6	1 X2		100	X	11.2	14- 2		1	
Goniopora arbuscula Umbgrove	£ -=	1 .	4	1/ 31		4 7			il.	10	1 1			S K		
Goniopora columna Dana	1	San Sa		X	1	2	1 2	X	+	113	X	4 4		11 2	1 40	
Goniopora lobata Milne-Edwards and Haime	1	3	X			for "	X	100		1	X	10.6			X	13
Goniopora tenuidens (Quelch)		1	x	X	1-						1	X			X	
Porites andrewsi Vaughan	All Z	1 X	X	X		J. K	X	X			X	X		1	X	1
Porites annae Crossland		1	^	X	200	1	X	X	100	1	X	X			X	
Porites australiensis Vaughan		x	X	X	1	x	X	x	P	44	v		1	X		
Porites lutea Milne-Edwards and Haime	x	X	X	X	x	X	X	x	X	X	X	X	x	X	X	
Porites lobata Dana		X	X	X		X	X	X	Α	Α.	x	x	^	X	X	1
Porites murrayensis Vaughan		1	X	X			X	A	1	1	X	X	1	Α.	^	
Porites lichen Dana			X	X	800		X	x			Α	X	110	x		
Porites mordax Dana		7	1	X	100	17	X	X	7	1100	X		1	1	1	
Porites superfusa Gardiner			1	X				X		x	X	x		x	x	
Porites (Synaraea) convexa Verrill	ji.	X	X	X		X	X	X		117	X	X		100	X	
Porites (Synaraea) horizontalata Hoffmeister		X	X	X		X	X	X		1	X	X	5	1	X	
Porites (Synaraea) iwayamaensis Eguchi	1	X.	X	Х	-		X	X			X	X	1	110	x	
Porites (Synaraea) monticulosa (Dana)		37	X	X		X	1 4			1 70	X	X	1, 1,7111		X	1
Porites (Synaraea) vaughani Crossland		X	X	X		X	X	X	1	1 80	X	XX:		1 Acres	X	
Alveopora (Explanate sp. 1)	45 61		- X	X			-	X	11		X	X		X	X	
JBORDER - FAVIINA		3 8		1 3	170	1 5	, ž	4		11.8		111	- 5	1 × 1	1 2	
FAMILY - FAVIIDAE				4.3		1	X		- American		1	1 2			i	1
Favia favus (Forskaal)	Though .	x	X	x		x	x	x		x	x	v	12-	v		1.
Favia matthai Vaughan	E	1 Lines	X	X	1111	^	X	x	14-	^	X	X	14	X	X	1
Favia pallida (Dana)	3-3	x	X	X	1000	x	X	X	1,44-7	Χ.	X	X	x	х	X	1
Favia rotulosa (Ellis and Solander)	-	1=-		17. 4	18 8	TANK T	A	A	177	A .	A	X	^	A	^	1 '
Favia rotumana (Gardiner)	1		X	х			x	x			x	X			-	1
Favia russelli (Wells)		x	X	x	1.	x	X	X			X	X			x	Ι,

Table 21. continued

	ļ	-	F	OUHA B	AY STA	TIONS					YL	IG BAY	STATI	ONS	_12	
CORALS	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S-3	s-
Favia speciosa (Dana)		1, 1	х.	х	1	1 12	x	x		X	X	x		x	x	X
Favia stelligera (Dana)			X	х				X				X			X	X
Favites abdita (Ellis and Solander)	1		X	X		1		X				X			1	X
Favites flexuosa (Dana)	A			X	1 6			X		1	x	x		1 1 2	x	X
Favites virens (Dana)	1		x	X		x	x	-		1	,	x			1	1 ^
Oulophyllia crispa (Lamarck)	li .	1	X	X		1	1 "		-		x	^	1	1		X
Goniastrea edwardsi Chevalier	1	X	X	X		x	х	x	_	x -	1000	x		x	x	x
Goniastrea pectinata (Ehrenberg)	1		X	x		1	X	A		1	X	x		^	x	X
Goniastrea retiformis (Lamarck)	1	x	x	X		X -	x	x		x	X	X				1
Platygyra daedalea (Ellis and Solander)	į į	1	X	x			X	x	11	1	X	X	X	X	X	X
Platygyra pini Chevalier	1		X	X			X	X		x	X	X		Α.	X	1 .
Leptoria phrygia (Ellis and Solander)		1 * X	x	X		x	X	x		X	X	X				X
Hydnophora microconos (Lamarck)			X	X		^	Λ	x	1	X	X		i	X	X	X
Plesiastrea versipora (Lamarck)		1	Δ	x				X		Α.		X		, x	X	X
Montastrea curta (Dana)			x	x			x	X			X		1		X	X
Diploastrea heliopora (Lamarck)			X	X	1	400	A	X			x	X			X	X
Leptastrea bottae (Milne-Edwards and Haime)			x	^				Α			X	X	1			X
Leptastrea immersa Klunzinger	ď	1.5	Α			1				X			1	1 1 2		1
Leptastrea purpurea (Dana)		x	x	х]	H	X						1 .
Leptastrea transversa (Klunzinger)	Ð	x	X	X		Х	X	X		X	X	X		X	X	X
Cyphastrea myriophthalma (Lamarck)		^	X				X	X			X	X	X		X	X
Cyphastrea serailia (Forskaal)	1	x	X	X		x	-	X	H		X			X		
Cyphastrea (Encrusting sp.)	H .	^	Α	X		A	X	X		1 1	X	X			X	X
Echinopora lamellosa (Esper)	H	1		Х		1	_				1	X		1		
Ecultopota lamellosa (Espel)			X	Х		X	X	Х		X	1	X				X
FAMILY - OCULINIDAE			1 8	1.1			1 1			Hi					1	
Galaxea clavus (Dana)								11 1							1	
			X								X	1				
Galaxea fascicularis (Linnaeus)			Х	X			X				X	X			X	
Acrhelia horrescens (Dana)	f .	1 1 1		Х	- 1 1		,			1 7		1	1		1	
FAMILY - MUSSIDAE														- L A		1
Lobophyllia corymbosa (Forskaal)		122	х	х			x	x		_ (=	x	x				x
Lobophyllia costata (Dana)		x	X	X	11/4		-	X	11	1	x	1		1		x
Lobophyllia hemprichii (Ehrenberg)			X	X		-	x	X			A	x			x	^
Symphillia valenciennesii Milne-Edwards & Hai				x		1	_ A	A	11	1	1	^	1	l l	^	

PROBLEM STREET STREET	11 12		F	DUHA B	AY STA	TIONS			- 11		YL	LG BAY	STATI	ONS		
CORALS	N-1	N-,2	N-3	N-4	S-1	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S~3	s-
Acanthastrea echinata (Dana)		X	x	X		x	х	Х		x	x	X		x	x	X
Acanthastrea hillae Wells		1	X	X		195	Х	Х			х	li,			"	
FAMILY - PECTINIIDAE		4	- 0				-		i.						1	
Echinophyllia aspera (Ellis and Solander) Mycedium (Explanate sp. 1)			х	X X		- 4	X X	х		х	x x	X X		1 <	X X	X
SUBORDER - CARYOPHYLLIINA FAMILY - CARYOPHYLLIIDAE							- 1		31							
Euphyllia glabrescens (Chamisso and Eysenhard Euphyllia (Ramose sp. 1)	t)		Х			Х	x							X	x	x
Plerogyra sinuosa (Dana)		طلسا	X					х	316	15 16	X	х			X	X
Desmophyllum (Solitary sp. 1)		130	X	X		1.7	X	Х		7.4	1 1	X	1		1.1	X
Polycyathus verrilli Duncan		-	X	g 1=	200	- 1	1 12	- 1		111				and a		
SUBORDER - DENDROPHYLLIINA FAMILY - DENDROPHYLLIIDAE				3 - 1			1		3 1		1					
Turbinaria (Foliaceous sp. 1)		-	x	х				X				х				x
ORDER - COENOTHECALIA FAMILY - HELIOPORIDAE																
Heliopora coerulea (Pallas)			х	х				х		-		х				x
CLASS - HYDROZOA			01			9		1		3			7,2			-
ORDER - MILLEPORINA RESIDENT TO THE STATE OF				1		ĸĺ.	K					- [7
Millepora dichotoma Forskaal			x	X	X,		X	X		-2-1	X	x				x
Millepora foveolata Crossland		X	X	X		1. 1.	X	Х		X	X	X		x	X	X
Millepora platyphylla Hemprich & Ehrenberg		X	X	X	100	T. ALL	X	X		-		X	TV/ 25	21157	X	X

Table 21. continued

Progesta therestons			2 .	F	OUHA B	AY STA	TIONS	- milder i		end the	. 15	YL	G BAY	STATIC	NS		
CORALS	1182	N-1	N-2	N-3	N-4	S-1	S-2	S-3	S-4	N-1	N-2	N-3	N-4	S-1	S-2	S-3	s-
ORDER - STYLASTERINA FAMILY - STYLASTERIDAE	102 1156 102 120		φ. 1 P					ing.	1				-6-5	*	- (C		
Distichopora sp. 1	w <u>. 1</u> 22				х			V	х		22 111	х	X.	1 T			X
TOTAL GENERA FOR STATIONS	1284 133	2	17	40	42	3	18	32	35	3	16	34	38	6	17	31	3
TOTAL SPECIES FOR STATIONS	450 go 444	2	39	116	142	3	40	89	104	3	38	94	127	6	42	85	11
TOTAL GENERA - FOUHA 46	YLIG 44				1.95	1	15	Т	7	2	2.60		- Special Cold	3.34	41		
TOTAL SPECIES - FOUHA 155	YLIG <u>159</u>			111		- 54	- 19	Sun			3112		74, 75	130	. 3 . di		
of of the sections of the section of				64	134		90	25 107		,	7			1 4 3			
Cal 17 - Since control		ere i.	- 1	35.7		100	#	765	1	-days			/().te	14 - A P		1	
Trans Inch	al a the st	in in it	-40	200.	190	60 TH	e d	11.07		2	*air	15	c sign	R SHI	uotex	51	
		137		145	giorn	211		/	<u>ju čina</u>	28F3)	1		ele M				
	1		12.00	Ledirel) Pakett.	11		A CONTRACTOR	A STATE OF THE PARTY OF THE PAR		The state of		1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	THE STREET	111 E27	01.51.70	
	e armaner a	21 21 - 134 21 - 134		1	GER Y	VAE			rohes	773			Lite	2 1	(874°1		
Authors (A) peak the life of the contract of t	martent of a	a bind Salad Salad	ರಾವರು ಕ್ರಮಾ	s yar sibkq	ur Fo	not a	i riengi i mingi	ent s d	negam		18 6		111 200		150 E-		

w

Table 22. Coral frequency, density, and percent of substrate coverage at Fouha Bay sediment stations N-1 through N-4 and S-1 through S-4.

Asterisks (*) indicate that coral frequency and density data were not collected.

A Company	CHAI	NNEL MAI	RGIN	UI	PER SLO	PE	L	OWER SLO	PE	С	HANNEL FI	LOOR
	Frequency	Density	Percent Coverage	Frequency	Density	Percent Coverage	Frequency	Density	Percent Coverage	Frequency	Density	Percent
FOUHA BAY STATION N-1	(20 (Quadrats	5)	(20	Quadra	ts)	(20	Quadrat	s)	(20	Quadrats)	
Porites <u>lutea</u>	No Cora	als Enco	ountered	.05	.66	.32	.07	.45	.58	No Co	rals Enco	ounter
Totals	ļ	- 3-		1	.66	.32	.07	.45	.58			
FOUHA BAY - STATION N-2	(20 (Quadrat	3)	(16	Quadra	ts)	(11	Quadrat	s)	(16	Quadrats)	
Cyphastrea serailia Pavona (P.) obtusata Porites lutea Porites (S.) vaughani Psammocora (massive sp. 2) Psammocora (Encrusting sp. 1)	TIME T		ount ered	.06	.39 1.56	.89 4.34	.07 .14 .07	.57 1.14 .57	.37 3.71 .37 3.15	.13 .06 .06	1.17 .39 .39	2.6 .3 .1 2.8
Totals Totals	. 43.20 E				1.95	5.23		2.85	7.60		2.34	6.0
FOUHA BAY - STATION N-3	(20 (Quadrats	3)	(20	Quadra	ts)	(10	Quadrat	s)	(32	Quadrats)	
Acanthastrea echinata Agariciella Cyphastrea serailia Favia pallida Favia russelli Galaxea fascicularis Goniastrea edwardsi Goniastrea retiformis		.63 .31 .31 1.88	.10 .51 .10 .10 3.67	.05 .10	.31 .63	1.53	*	*	.07	P	*	.0
Leptastrea purpurea	. 20	1.56	1.44	5			*	*	.07	7 1		
<u>leptoseris incrustans</u> <u>Millepora dichotoma</u> Millepora foveolata							*	*	.12	*	*	.6

	СНА	NNEL MA	RGIN	υ	PPER SL	OPE	I	OWER SLO	OPE	CH	ANNEL FI	LOOR
100 May 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Frequency	Density	Percent Coverage	Frequency	Density	Percent	Frequency	Density	Percent	Frequency	Density	Percent
STATION N-3 continued	1971			17.		1		1111	We T		747	
Montipora elschneri Montipora foveolata Montipora hoffmeisteri	.05	.31	.20	.05	.31	1.33						
Montipora verrilli Montipora (Tuberculate sp. 1)	.05	.31	1.44	.15	1.56	1.43				*	*	.07
Pavona (P.) venosa Platygyra pini Pocillopora damicornis	.05	. 31	.10	.10	.63	2.35	- 11			*	*	.01
Pocillopora danae Porites (S.) convexa Porites (S.) iwayamaensis	.05	.31	.10	.25	1.56	7.65 2.24	*	*	37.88			
Porites lobata Porites lutea District Di	.05	.31	.10 2.35	.10	.63	.20	*	*	.05 5.29	*	*	3.7
Porites (S.) vaughani Psammocora contigua Psammocora (Encrusting sp. 1)	.10	.63	.20	.20	1.56	2.35						
tylophora mordax				.05	.31	.10	*	*	.01			
Totals		8.12	11.02	Yra	9.69	28.47			43.59	1 6		4.4
FOUHA BAY - STATION N-4	(20	Quadra	ts)	45	Quadrat	1 11 11	(3	5 Quadra	ts)	(3:	2 Quadra	its)
Acanthastrea <u>echinata</u> Acanthastrea hillae Acropora humilis	.05	.31	.31	.10	. 63	.20	*	*	.63			
cropora irregularis	.05	.31	.10 .71	. 110 . 25	190	11				ı		
cropora surculosa cropora wardi cropora (Corymbose sp.1,	.10 .15	1.26 .94 .31	.51 .41 .51	.05	1.25	.31	÷ -			No Con	rals End	ountere
streopora myriophthalma yphastrea serailia iploastrea heliopora	.05	.31	. 20	.05	.31	2.45	4 1 4 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	*	.08	1		
reproductive nettopora	1 1	gi amed		5.55						8		

Table 22. continued

	CHANNEL MAR	RGIN	UPPER S	LOPE	L	OWER SLO	PE	CHA	NNEL FLO	OR
ANSTRUMENT DESCRIPTION OF THE PROPERTY OF THE	Frequency	Percent Coverage	Frequency	Percent	Frequency	Density	Percent Coverage	Frequency	Density	Percent
TATION N-4 continued			1 14,050 40						H 1	
avia favus Favia pallida Pavia rotumana	.0531	.10	.05 .31 .10 .63 .05 .31	.41	*	*	93	1 W n		
avia russelli			.05 .31							
alaxea fascicularis	.05 .31	.10	11 -		. 0					
oniastrea edwardsi oniastrea retiformis	.20 1.57	1.54	.10 .63 .15 .94	1.54	A Part of Parts					
eptastrea purpurea	.05 .31	.10	.15 1.56		110000000			4-		
eptastrea transversa eptoria phrygia	.10 .63	.20	.05 .31	1.22		*	06			
eptoseris incrustans	121		.05 .31	.41	*	*	.06			
bophyllia costata 11epora platyphylla			.10 .63							
ontipora elschneri			.05 .31		*	*	. 05			
ontipora foveolata	VEL - I'm the second		.05 .31							
ontipora hoffmeisteri			100	1.2	*	*	.09	1 to 6 to 10		
ontipora tuberculosa			1/15		*	*	. 48	1 3 m		
ontipora verrilli			.30 2.50	2.24	*	*	.48			
avona (P.) venosa	ole of the best of the		.05 .31	.20						
latygyra daedalea	field land		.15 .94							
ocillopora damicornis			05 .31	.10				1 10		
ocillopora danae	.05 .31	.10	1 10 . 5		15 15 15 1			I 20 -		
ocillopora meandrina	.05 .31	.10						t		
ocillopora setchelli	.20 1.56	.83	.05 .31		*	*	44.24	4		
orites (S.) convexa	.05 .31	10	.05 .31	.41	*	*	.94			
orites lobata	.05 .31	.10	.25 1.88	4.70	*	*	.62			
orites <u>lutea</u> orites murrayensis	.13 .94	.01	.05 .31				. 02			
sammocora contigua	.10 .94	.31	.05 .51	1.02	1					
tylocoeniella armata tylophora mordax		1	.05 .31		*	*	.06	179		
Totals	12.19	6.84	17.50	25.92	3		48.66			

Harris and the same of the sam	CHANNEL MARGIN	UPPER SLOPE	LOWER SLOPE	CHANNEL FLOOR
instrea recilornis nupliora aicvournes instrea purgeras instrea	Frequency Density Percent Coverage	Frequency Density Percent Coverage	Frequency Density Percent Coverage	Frequency Density Percent Coverage
FOUHA BAY - STATION S-1	(20 Quadrats)	(20 Quadrats)	(20 Quadrats)	(20 Quadrats)
Pocillopora damicornis Porites lutea Totals	No Corals Encountered	No Corals Encountered	.05 .31 .10 .20 .62 .30	No Corals Encountered
FOUHA BAY - STATION S-2	(20 Quadrats)	(20 Quadrats)	(20 Quadrats)	(20 Quadrats)
Agariciella Cyphastrea serailia	A STATE OF	.05 .31 .71	.05 .31 .51	(15 Suadrats)
Favia pallida Leptoseris incrustans Montipora hoffmeisteri	.05 .31 .20	.05 .31 .10 .10 .63 .61	.15 1.57 .71 .05 .31 .51	
Montipora tuberculosa Montipora verrilli Montipora (orange polyp)	37 77	.05 .31 .51 .25 1.56 2.65 .05 .31 .20		.05 .31 .41
Pavona (P.) obtusata Pavona (P.) venosa Pocillopora damicornis	.31 = 10 - 00	.05 .31 1.22 .10 .63 2.45 .05 .31 .41	39 - 39	vente Errorenda
Porites lutea Porites (S.) vaughani Psammocora (Encrusting sp. 1)	.20 2.19 2.25	.20 1.88 3.27 .10 .63 3.87	.15 .94 1.33 .05 .31 .10	.10 .94 .61
Stylophora mordax		:05 .31 .20		
Totals 20	2.50 2.45	7.50 16.21	3.44 3.16	1.25 1.02
FOUHA BAY - STATION S-3	(20 Quadrats	(20 Quadrats)	(25 Quadrats)	(15 Quadrats)
Acropora wardi Cyphastrea serailia Goniastrea retiformis	.10 .63 .41	.05 .31 .10	* * 1.24	No Corals Encountered
Leptastrea purpurea Montipora elschneri Montipora hoffmeisteri Montipora socialis	.05 .31 .10 .05 .31 .20	.05 .31 .41	* * 13.96 * * 3.41 1.71	and and a second

SCHOOL IN THREE CONTROLS	СНА	NNEL MAI	RGIN	U	PPER SLO	OPE	Ly	LOWER SLO	OPE	C	HANNEL FLO	OR
THE COURT OF THE C	Frequency	Density	Percent	Frequency	Density	Percent	Frequency	Density	Percent	Frequency	Density	Percent
TATION S-3 continued				1 1			-1			1	Burg. 1913	i sorte
ontipora verrilli	14			.10	.63	2.66	*	*	11 17	-		,
ontipora (Tuberculate sp. 1)				1 .10	• 03	2.00	1	*	11.17	1	-	
avona (P.) obtusata	.05	.31	2.24	.04	.31	.31	*	*	5.28 1.70	-		3. BES
avona (P.) venosa	.05	.31	.20	.04			*	*	.10	5 1		
avona (Explanate sp. 1)			- 20	.05	.31	.51	1		•10			
ocillopora elegans	-1 1				430		*	*	.47			
orites australiensis	.05	.31	.10	1			1 1		• 47			
orites (S.) convexa				.05	.31	.10	*	*	10.65	Ğ -		
orites (S.) horizontalata						3.	*	*	.88			
orites (S.) iwayamaensis	.05	.31	. 20	.10	. 63	3.16	3, 1					
orites lobata	.05	.31	.31	.05	.31	.10	13-					
orites lutea) ()	.30	2.20	8.28	.25	1.87	7.86	*	*	.98	No Co	rals Encou	intere
orites (S.) vaughani	9			.10	.63	.20	9 }					
sammocora contigua	.10	. 94	.31				15			- 1	100	
sammocora (Encrusting sp. 1)				.10	. 63	.71	1 1					
tylocoeniella armata	= 1					8.4	*	*	.10			
Totals	8 / 1	5.94	12.35	6	6.25	16.12	3 1		51.65			
OUHA BAY - STATION S-4	(2	0 Quadra	its)	(20	Quadra	ts)	(26 Quadra	ts)	(15 Quadrat	s)
cropora surculosa	.10	.63	.61	:05	.31	.41	1			1		
cropora wardi	.10	.63	.71	-	1 312					-		A Che
yphastrea myriophthalma	.05	.31	.20	.05	.31	.10	*	*.	.04	3)		
hinopora lamellosa	1						*	*	.16			
via pallida 111.63	. 05	.31	.20	.10	.63	.20	*	() < *	.78	No Co	rals Encou	ntere
avia rotumana a da	.05	.31	.10	.05	.31	.10	*	*	.02	9 = 1		
via russelli	.05	.31	.10							to it is		
oniastrea edwardsi	.05	.31	.20	.10	.63	. 20	1			form for		
niastrea retiformis	.15	.94	.71	.15	.94	1.02		**		1		
ydnophora microconos	.05	.31	.20	1								
eptastrea purpurea	.05	.31	.10	.15	. 94	.41				1		
eptastrea transversa	.05	.31	. 20	.05	.31	.71				. 1		
				1			1			1		

Table 22. continued

	CH	ANNEL MA	RGIN	U	PPER SLO	PE		ower si	OPE	CHAN	NEL FLOOR
	Frequency	Density	Percent Coverage	Frequency	Density	Percent	Frequency	Density	Percent	Frequency	Density Percent
STATION S-4 continued	+			£1.							
Lobophyllia corymbosa Lobophyllia hemprichii Millepora platyphylla	.05 .05 .10	.31 .31 .63	.41 1.74 .41						·		
Millepora foveolata Montipora elschneri	.10	.63	1.94				*	*	.67		
Montipora foveolata Montipora hoffmeisteri	.05	.31	.31	.05	.31	1.02	*	*	.92		
Montipora tuberculosa Montipora verrilli	.05	.31 .31	1.85	.05	.31 1.56	.92 4.70	*	. *	1.54		
Montipora (Tuberculate sp. 1) Platygyra daedalea	.15	. 94	.61	0.5	21	10	*	*	.02	· .	
Platygyra pini Pocillopora damicornis Pocillopora verrucosa	.05	.31	.20	.05	.31	.10	*	*	. 62		
Porites (S.) convexa Porites lobata	.05	.31	.10	.10	.63 .94	.92 .31			.02	No Cor	als Encounte
Porites lutea Psammocora (Encrusting sp. 1)	.55	3.45	4.82	.25	2.50	6.02	*	*	13.03		
Stylocoeniella armata Stylophora mordax	.10	.63	.51	.05	.31	.31	*	*	.07		
Turbinaria sp. 1	les mes	1 25 ,	erias ji	-18		1 .	*	*	. 24	- 1	
Totals		13.75	16.84		11.56	18.06			18.11		
				1	7 8		- 1		7 4 7 2	0.5 To	F-77
20											
	Parameter Control						1 111			ansimilar :	

4

Table 23. Coral frequency, density, and percent of substrate coverage at Ylig Bay sediment stations N-1 through N-4 and S-1 through S-4.

Asterisks (*) indicate that coral frequency and density data were not collected.

	CHANNEL MARGIN	UPPER SLOPE	LOWER SLOPE	CHANNEL FLOOR
	Frequency Density Percent Coverage	Frequency Density Percent Coverage	Frequency Density Percent Coverage	Frequency Density Percent Coverage
YLIG BAY - STATION N-1	(20 Quadrats)	(20 Quadrats)	(100 Quadrats)	(35 Quadrats)
Porites lutea	No Corals Encountered	No Corals Encountered	* * .01	No Corals Encountered
YLIG BAY - STATION N-2	(33 Quadrats)	(17 Quadrats)	(20 Quadrats)	(15 Quadrats)
Favia pallida Goniastrea retiformis	No Corals Encountered	.06 .34 .36	.10 .63 .61	.07 .42 .14
Leptastrea purpurea Montipora lobulata Montipora verrilli Montipora (Tuberculate sp. 1)	102 131 II Saw	.06 .74 .48 .12 .74 5.88	.10 .94 1.02 .05 .31 .20 .10 .63 .91 .05 .31 .41	P3
Pocillopora damicornis Corres es Pocillopora setchelli Porites lutea de Posicio de Porites de Posicio de Posic	05 11 1:85 05 31 10 10 30 10	.12 .34 1.20 .06 .74 .96	.05 .31 .31 .05 .31 .82	.07 .42 .41
Totals recommend	+ 102 10T . 100	2.90 8.88	3.43 4.28	.84 .55
YLIG BAY - STATION N-3	(32 Quadrats)	(35 Quadrats)	(12 Quadrats)	(30 Quadrats)
Acropora irregularis Favia favus Favia pallida Goniastrea retiformis	.03.02.20 .26 .26	.03 .18 .52 .09 .54 .41 .09 .54 2.39	* * .01 * * .57	No Corals Encountered
Goniopora (large lobate) pare Leptastrea purpurea	.03 .18 1.75	.03 .18 .17		
Leptastrea transversa Montipora hoffmeisteri Montipora verrilli Montipora verrucosa	A Calculation	.03 .18 .12 .59 .20 2.32 6.01	* * 2.41 * * 1.10 * * .57	Seanatey Seanatey
Montipora sinensis Montipora (Papillate sp. 1) Montipora (Tuberculate sp. 1)	CHANNEL MARGIN	.06 .36 .23 .03 .18 2.86	1 Personal Plants 22.47	in the second of the second
	I produce to			1

Table 23 . continued

	CHA	NNEL MA	RGIN	יט	PPER SI	LOPE	L	OWER SLO	PE	CHA	NNEL F	LOOR
	Frequency	Density	Percent Coverage	Frequency	Density.	Percent Coverage	Frequency	Density	Percent	Frequency	Density	Percent
STATION N-3 continued.				11 1			1 1	14				
Pavona (P.) obtusata				2. 1			*	*	.42			
Pavona (P.) venosa	4			.03	.18	.52			with T	5 3		
Pocillopora damicornis	4 4 3 4			.06	.36	.35	*	*	.04			
ocillopora setchelli				.09	.54	.35						
Porites lutes	.03	.20	2.93	27.0		15 1	*	*	16.56	No Cor	als En	countered
Sammocora (Encrusting sp. 1)				.03	.18	1.34	*	*	. 25			
Totals	7	.40	3.19		6.1	17.61			44.40			
LIG BAY - STATION N-4	(45	Quadra		(26	Quadrat		(16	Quadrats		(16 0	uadrat	s)
CHARLE TO A STATE OF THE STATE				24								
cropora irregularis	1			.04	.24	.09						
yphaetrea (Encrusting sp. 1)				-22			*	*	.01	240		
avia matthai				. 04	. 24	.63	I					
avia pallida	.04	. 28	.23	1			*	*	.16			
avia rotumana	10			.08	.48	.86	* to 1	*	.02	1		
avia russelli	.02	. 14	.09	. 04	. 24	.30						
avia speciosa	.02	.14	.32	100			*	*	.03	*	*	.0
alaxea fascicularis				137			*	*	.02			
oniastrea retiformis	.04	. 28	.23									
oniopora tenuidens				75						*	*	. 8
eliopora coerulea				.04	. 24	2.51						
ydnophora microconos	1 1 1			.04	. 24	.16	1					
eptastrea purpurea							*	*	.06			
eptoseris mycetiserioides				.04	.72	.30				ì		
er⊭lina ampliata							*	*	.02			
ontipora erhrenbergii	1			.08	. 48	.86						
ontipora lobulata	1 -			.12	.72	2.28	*	*	.83			
ontipora verrilli	.11	1.11	2.12	.27	1.91	8.47	*	*	.79			
ontipora verrucosa	A			***						*	*	.0:
ontipora (Glabrous sp. 1)	.02	. 14	.18	7 8.								
avona minuta	7 4			7 5			*	*	1.57	*	*	.6
avona (P.) obtusata	1 2 3 3						*	*	3.95	*	*	.0:
ocillopora meandrina	. 04	.28	.14				1			1		

Table 23. continued

	CHANNEL MARGIN	UPPER SLOPE	LOWER SLOPE	CHANNEL FLOOR
Weight out the second	Frequency Density Percent Coverage	Frequency Density Percent Coverage	Frequency Density Percent Coverage	Frequency Density Percent Coverage
STATION N-4 continued	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		all a Time and	
Pocillopora setchelli Plerogyra sinuosa	.02 .14 .05	.04 .24 .24	* * .07	<u> </u>
Porites (S.) horizontalata Porites (S.) iwayamaensis		.08 .48 .94	* * ,05 * * .17	-
Porites lutea Psammocora (Encrusting sp. 1)	.11 1.38 1.49	.15 2.87 4.40	* * 12.62 * * 4.90	
Stylocoeniella armata	.02 .14 .05	.04 .24 .09	* * .01	
Totals	4.03 4.92	9.38 22.13	25.28	1.56
YLIG BAY - STATION S-1	(20 Quadrats)	(20 Quadrats)	(40 Quadrats)	(40 Quadrats)
Porites lutea	No Corals Encountered	.05 .31 1.22	No Corals Encountered	No Corals Encountered
Totals		.31 1.22	1 l	
YLIG BAY - STATION S-2	(20 Quadrats)	(20 Quadrats)	(20 Quadrats)	(20 Quadrats)
Favia favus Favia pallida	The second of	.05 .31 .61	.05 .31 .10 .10 .63 .20	.05 .31 .10
Goniastrea retiformis Montipora hoffmeisteri Montipora lobulata Montipora verrilli	.05 .31 .10	.05 .31 .10 .10 .63 .71 .15 .94 2.35 .10 .63 1.33	.10 .63 1.33 .05 .31 .71	.05 .31 .31 .05 .71
Montipora (Tuberculate sp. 1) Pocillopora damicornis	.05 .31 .10	.05 .31 .61	.05 .31 .10 .05 .31 .20	.05 .31 .20
Porites lutea Psammocora contigua	.05 .31 .20 .05 .31 .10	.10 .63 2.24	.15 .94 2.35	.05 .31 .10
Totals	1.24 .50	3.76 7.95	3.44 4.99	1.24 1.42

Table 23. continued

	CHANNEL MARGIN	t	PPER SLO	OPE	1	OWER SLOE	?E	CHANNEL FLOOR
	Frequency Density Percent Coverage	Frequency	Density	Percent Coverage	Frequency	Density	Percent Coverage	Frequency Density Percent
YLIG RAY - STATION S-3	(32 Quadrats).	100	32 Quadi	rats)	(16	Quadrats	3)	(8 Quadrats)
Acanthastrea echinata	No Corals Encountered	.06	.39	.57	1 -			No Corals Encountere
Acropora wardi		.03	.20	.06	-2			
Alveopora (Explanate sp. 1)					*	*	.89	1
Favia favus	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•			*	*	.27	
Favia pallida		1			*	*	.15	
Pavia speciosa		.03	.20	.06	*	*	1.16	1
avia stelligera	the first term are well to			.00	*	*	.93	
Goniastrea edwardsi					*	*	.54	1
Goniastrea retiformis		.22	1.76	4.59			. 54	
Hydnophora microconos		.22	1.70	4.39	*	*	.91	
eptastrea purpurea		.03	.20	.38	*	*	.37	191 11
eptoria phrygia	3 32 00 2 50	.03	.20	.30	*	*	.89	- I
ontipora hoffmeisteri					*	*	3.54	
	1	.06	.59	.77	1	•	3.34	1
ontipora lobulata ontipora verrilli						*	10.01	
		.13	.98	3.44	1 2	*	10.21	4
ontipora verrucosa	- 10 - 4*	0.0	20	0.00	, *	*	2.21	
fontipora (Papillate sp. 2)		.06	.39	3.32	1.			1
iontipora (Tuberculate sp. 1)					*	*	1.75	
ocillopora damicornis	4 14		0-197		*	*	.05	
ocillopora setchelli		.03	.20	.38	1			
orites lutea		.03	.20	3.13				i e
Stylocoeniella armata		.03	. 20	.13				
Totals			5.27	16.83			23.87	
YLIG BAY - STATION S-4	(29 Quadrats)		37 Quadr	rats)	(1	6 Quadrat	s)	(8 Quadrats)
Acanthastrea echinata	1 1 1 H ~ V	.05	.34	.17				No Corals Encountere
Acropora irregularis	.03 .22 .21		.34	.11	1			
cropora nana	1	.03	.17	.17				
Acropora surculosa	.03 .22 .35		.17	•50	*	*	1.22	
cropora wardi	.03 .22 .07		• /	•30				
	1.03 1.22 1.07	75			*	*	1 (2	3 4 4
Alveopora (Explanate sp. 1)		0.0			*	*	1.63	# # # # # # # # # # # # # # # # # # #
Favia stelligera		41			~	*	1.02	

	CHANN	EL MARG	IN	וט	PPER SLO	OPE	L	OWER SLO	PE	CHA	NNEL FLOOR
Actopora Wiedi Alveonoca (Explina i for in Pavda scelliggia	Frequency	Density	Percent Coverage	Frequency	Density	Percent	Frequency	Density	Percent	Frequency	Density
TATION S-4 continued							112			1	
oniastrea edwardsi				.03	.17	.06	*	*	1.02		
oniastrea retiformis ydnophora microconos	.10	.63	2.32	.19	1.51	2.26	*	*	1.34		
eptastrea purpurea	.03	.22	. 21				+ 41		1,07	- 72	
eptastrea transversa	1			.03	.17	.11				-	
eptoria phrygia	.14	1.07	2.26	.05	. 34	.77	- 1				
ontastrea curta ontipora lobulata				.03	.17	.17	*	*	16.36		
ontipora verrilli				.16	1.01	1.87			10.30		
ontipora (Papillate sp. 2)				.03	.17	.61	- 1-				
ontipora (Papillate sp. 1)		•		.05	.34	.88			0.56		
vona varians atygyra pini				12.			*	*	8.56		
ocillopora brevicornis	1			.03	.17	.06	12 12		.30		
ocillopora eydouxi				.03	.17	.83					
ocillopora meandrina				.03	.17	.71		Ÿ.		No Cor	als Encounter
ocillopora setchelli	.03	.22 1.51	.07 .42	.19	1.18	2.86	*	*	.58 1.46		
orites superfusa orites (S.) vaughani	.03	.22	.07	.03	.17	.11	1 1		1.40		
tylocoeniella armata					10	100	*	*	.03	190 B	
Totals	1	4.53	5.98	•	6.76	12.25	1 7		33.80		
Figure Serve	+								3	4 1	
STANDORED CARD FEBRUARY AND A	1 1			48			. 1			12	
a cobort and				- 11							
Acethagire , echinica	1			400							
THE HAY - STALLOW AND A	b-									11 71-1	3 Typ 2004 94
	1 24										
				8 1	4						
							1				

Table 24. Size distribution of corals at Fouha Bay Stations N-1 through N-4 and S-1 through S-4.

			CHANNE	L MARG	IN	L	UPPER	SLOPE		i	LOWE	R SLOPE			CHANNEL	FLOOR	
Control of the Contro		n	Ţ	s	w	n	. T	s	W	n	Ţ	s	w	n	Ÿ	s	w
Fouha Bay - Station N-1		-6	1		1		1.	1. 1			-1	767	"			112	
Pavona divaricata Porites lutea		4	6.5	3.7	3-11	1	8.0	x =				- =					
TOTALS	1 - 1	4	6.5	3.7	3-11	1	8.0	-	E-27		1 .		9-2		T. E. Se	13	
Fouha Bay - Station N-2	1 (4)	4					"Lini			1		T.	18.				
Acropora (Corymbose sp. 1)	1					1	15.0	1					+				
Astreopora myriophthalma	. 1				11	1	13.0			1	8.0	_		l	- 11 11	100	
Cyphastrea serailia										2	6.7	2.9	6-8				
Favia pallida									1		31 31			1	5.0	i -	-
Favia russelli	- 1	1								1	4.0	l -	1 -				
Goniastrea retiformis	-				-11	1	6.0		-	1	-	1 =					
Leptastrea purpurea	- 1							- 1		1	4.0	-	-	1	3.0	-	-
Leptastrea transversa		1		1 1		1	6.0	-	-					41	les i		1
Lobophyllia costata				-11			41 11		1	1	8.0	-	-				
Millepora platyphylla		1								1			1	1	8.0		-
Millepora verrucosa Montipora acanthella	1						ł	1			30.0	11.3	00 00	1	29.0	-	-
	1	4		j				Ì	1	2	29.0	11.3	22-38	1		1	1
Montipora elschneri Montipora hoffmeisteri		7.0				1	12.0	t _		1	29.0	-	7	1	8.0	_	_
Montipora verrilli		_		120		2	18.5	16.3	7-30			1	1	1	0.0		
Montipora (Tuberculate sp. 1)				100		-	10.5	10.3	1-30	1	29.0	_	1 -		1700		
Montipora (Tuberculate sp. 2)	1						1	1		1	25.0			2	70.0	7.1	65-7
Pavona decussata									1	ī	22.0	l -	1 -	-	, , , ,		1
Pavona divaricata									1	ī	20.0	1 _	_		}		
Pavona (P.) obtusata								1	1	2	17.0	12.7	8-26			1	
Pavona (P.) (Encrusting sp. 1)						1	6.0	-						1		1	1
Pocillopora damicornis				1 7		1	5.0	-	-					1	4.0	-	-
Porites australiensis					-)				400		1	21.0	-	-
Porites lutea	-	4	4.3	2.6	2-8	2	36.5	47.4	3-75	12.							1
Porites (S.) vaughani		11 -	iii 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1			Sp ve			-0	11			1	6.0	-	-
Psammocora (Encrusting sp. 1)	=	Ure	17.	100					1	1	22.0	-	-				
Psammocora (Massive sp. 2)		1.15	The Car							1	3.0		-1			Pa 7	Post Me
Stylophora mordax			4 6	at-off				1		751				1	6.0	- 0.1	-
TOTALS		4	4.3	2.6	2-8	10	16.54	22 0	3-75	17	17.9	11 9	3-38	11	10.0	05.5	1
Total		7	7.5	2.0		10	10.54	22.0	3-73	11/	1/.9	11.2	3730	111	20.9	25.6	3-7

		CHAN	NEL MA	RGIŅ		UPPI	ER SLOP	E		LOWE	R SLOPE			CHAN	NEL FLO	OR
	n	Ÿ	s	w	n	Ÿ	5	w	n	Ÿ	8	w	n	Ÿ	8	W
ouha Bat - Station N-3				21 9 4		ın	•			-						
Acanthastrea echinata	8	7.1	2.6	4-12	1	12.0	-							-	ĺ	
Acanthastrea hillae				i	1	31.6	-						1			1
Acropora hystrix			1		1	8.0	-	-			l	1	1	1	1	
Acropora humilis	1		t		2	25.0	4.2	22-28	1.5		(1		1
Acropora nasuta	. 7	6.6	3.9	3-12	l										l	1
Acropora surculosa	1	8.0		-	2	11.5	0.7	11-12			1			-	ł	
Acropora wardii	1	1	1	1	2	20.5	13.4	11–30			}	1				2
Agariciella planulata	1	1	i	1	2	37.6	17.5	25.2-50	1	85.0	-			}		4
Alveopora (Explanate sp. 1)	1	i	1		1	}	(1.6)		2	77.5	60.1	35-120			1	1
Coscinaraca columna	1	t		1	1	200.0	-	-		14.	1					1
Cyphastrea myriophthalma	1		1	1	3	20.3	8.7	13-30	6	8.0	3.2	B.5-13			l	
Echinopora lamellosa	1	i	1	1	1	40.0	- 1	-				1				1
Favia favus	1	i	1	1	2	5.0	1.4	4-6			1		ł	ŧ	1.0	
Favia pallida	7	6.4	2.9	3-11		i e			7	7.9	5.9	1-15.3	4		1	,
Favia russelli	2	3.5	0.7	3-4	5	8.0	3.4	4-13				1		1	1	1
Galaxea fascicularis	4	5.7	1.2	4-6.8	2	15.0	4.2	12-18			ł	1		1		
Goniastrea edwardsi	2	7.9	1.3	7-8.8	2	13.5	2.1	12-15			1	1	1	8.9	1 -	-
Goniastrea pectinata				1	2	34.0	22.6	18-50				1	1		1	
Goniastrea retiformis	13	13.8	8.1	2-32	3	20.7	10.3	12-32			1	1	1	1		1
Leptastrea purpurea	9	5.5	4.8	2.8-18.2		1					1	1]	ļ		
Leptoria phrygia	7	11.3	6.1	3.5-22	3	23.3	7.6	18-32			1	1	1	_		
Leptoseris incrustans			1	1	-				14	5.6	5.1	1.5-21.2	4	1		
Leptoseris mycetoseroides	1			1	3	7.7	3.8	5-12					1		1	
Lobophyllia costata					1	50.0	-									
Millepora dichotoma			1		6	12.2	8.7	4-28	7	9.5	5.2	4.2-18.2				1
Millepora foveolata			1								100		2	38.3	8.1	32.5
Millepora platyphylla	2	125.0	7.1	120-130	1		1 1						1			1
Montrastrea curta	4	7.6	3.1	4.6-11	1	8.0	1 - 1	-								1
Montipora elschneri	5	7.6	4.3	3-12	2	100.0	0.0	100-100					1			Q1
Montipora foveolata	3	44.9	15.6	33.8-55.9				1.3		F 4 -	ļ		()	
Montipora hoffmeisteri	1	1			2	32.0	11.3	24-40				1				
Montipora verrilli	1 2	20.0	18.5	6.9-33	5	12.8	11.2	4-32			1		1	<u> </u>	-	1
Montipora (Tuberculate sp. 1)	1 -]		-	1	35.0	-						2	12.3	7.9	6.7
Montipora (Clabrana ap. 1)		1	1	1			{		-1	25.0	-	-				1
Montipora (Glabrous sp. 1)	1	1	1		1						1		1		1	1

Table 24 continued

		CHAN	NEL MAI	RGIN		UPP	ER SLO	PE		LOWE	R SLOPE			CHAN	NEL FLOOI	R
Education (Section)	n	Ÿ	8	w	n	Ÿ	s	w.	n	Ţ	8	W	n	Ÿ	8	W
Montipora (Papillate sp. 1)	1	13.0	1-1		NA.	er.		10.17	1	56.0	-4	_		mark.		21 100
Pachyseris speciosa Polycyathus verrilli	1	1.0			7.1				-	30.0		19.		100	12	
Pavona minuta	1 1	1.0		10.1	1	59.0	_	-		H		11,21				
Pavona varians	- 1			- 0 %	3	10.3	8.4	5-20	*	Pa-		0				16
Pavona (P.) obtusata	2	11.0	1.4	10-12	3	71.0	27.6	45-100					3)		1	
Pavona (P.) pollicata	1 1	11.0	1. 117	10 12	1	71.0		13 200	1	38.7	1 100	1	14. 1	13 11 1		
	1.1		1		2	52.5	47.4	19-86	-			7	1	6.3	_	~
Pavona (P.) venosa	1	8.0		** A	5	91.6	48.0	45-170						2 4 1	1	- 1
Platygyra daedolea	1	3.0			3	64.0	34.2	32-100		- 6			11.0			15
Platygyra pini	+	3.0			3	4.0	1.7	3-6					4	4.1	1.7	2-5.
Pocillopora damicornis	2	9.0	5.7	5-13	3	13.8	4.2	12-17		9 30		l ft		11 40	1	10000
Pocillopora danae	1	25.0	3.7	3-13	1	19.0	7.2	12 1	1	1						- 1
Pocillopora setchelli	1	25.0	-	4 1	1	30.0			123				4.			i.
Pocillopora verrucosa	= ## D		- 12		1	16.0	HIPCT	1,00	110		1 10 11	1 1 1			1	
Pocillopora (Ramose sp. 1)	4	31.2	31.8	12.2-78.7	2	45.7	6.1	41.4-50	7	10.00				1		1.
Porites australiensis	4	31.2	31.0	12.2-70.7	2	97.5	31.8	75-120	1		1	1			1	
Porites murrayensis	7	5.1	3.2	3-12	2	4.8	1.1	4-5.5	5	4.0	3.0	1.5-7.5	1	1 1	1	1 1
Porites lobata	11	18.3	15.2	2-55	-	69.1	74.2	23-200	2	101.1		8.2-184		17.4	24.0	3-11
Porites lutea	hr l	18.3	13.2	2-33	5	98.6	74.0	24.5-200	20	70.3	87.2	2.4-290				
Porites (S.) convexa	1 1				1	63.2	74.0	24.3-200	120	70.3	1 07.2	2.4 230				
Porites (S.) horizontalata				- E	1	86.0	76.4	32-140	2	175.0	106.1	100-250		- 1	V-11	
Porites (S.) iwayamaensis			1	- Y	2		70.4	32-140	1 4	11/3.0	1.00.1	100-250				
Porites (S.) monticulosa	81.4.5		7 3	la la	T	70.7	1.	2-6		•				100	1 1	1.74
Porites (S.) vaughani		7.1			5	4.4	1.5	2-6	1	90.0	100	114				
Psammocora contigua	- 8	6.9	3.9	3-14.1	40		- 1	. A#	1	90.0					10	
Psammocora (Encrusting sp. 1)				150	1	184.4	1.	, - 20		F	1	1		- 40		48
Stylophora mordax	1				4	11.0	6.8	4-20	1 ,	20						- 15.
Turbinaria (Explanate sp. 1)				-1.	1	80.0	1 7	- 6	1	3.9		7.5			- 1	됩
TOTALS	115	12.9	19.2	1-130	113	37.3	45.3	2-200	71	38.2	64.0	1-290	32	16.1	21.2	2-11
ouha Bay - Station N-4			並			10 10 14	a ingli	YEAR THE	1	- 02	1-1-	2 2	E	i ji		s į,
Colored Revises	13 11 1 2		1 3	-131		14		-						N- C	als Enco	
Acanthastrea echinata	1.11			1	2	4.0	0.0	4-4	1			0.50		NO COL	als Enco	uncered
Acanthastrea hillae	LL E	grand -	- de	Se Spireling	5	101.6	73.4	30-200	8	12.1	16.3	3-52	1		4 7 E.	and a little
Acropora humilis	4	10.3	1.7	8-12	1	22.0	-	72 - 118		i i				21	1	E I
Acropora hystrix	2	19.5	4.9	16-23	3	15.0	3.0	12-18								
Acropora irregularis	2	7.5	2.1	6-9		685-5	1.19		1	10000	11055	77		A SHIP THE R	a Right	1
Acropora kenti				177	2	33.2	1.1	32.4-34			12			18		

yours Tringgards Voluball protrie		CHAI	NNEL MA	RGIN		UPP	ER SLOI	PE		LOWE	R SLOP	E		CHA	NNEL FLOO	R
Acropora instils	n	Y 1.0	5	we we	n	Ţ	s	w	n	Ÿ	s	w	n	Ÿ	8	
Acropora nana a septem	3	7.0	5.6	2-13		\$ 1107	135	[Q.,				44		E	
Acropora nasuta.	11	10.8	7.0	4-26.9					1	2.2						
Acropora squarrosa					2	12.5	0.7	12-13			1.0		Í		1 1	
Acropora surculosa	8	6.8	2.1	4-11	5	9.8	3.1	7-15	3	-		F-100			-1-	
Acropora wardii	4	7.0	1.4	6-9	1	11.0	17.5		11 11	1	13-1	100				
Acropora (Corymbose sp. 1)	2	11.0	7.1	6-16			1 1				-3					1
Agariciella planulata		11			2	44.5	6.4	40-49				1 1			1	1
Alveopora (Explanate sp. 1)					2	68.0	22.6	52-84				1 1	- 1		1	1
Astreopora myriophthalma		14 60	1	1.10	1	52.7	-		1						1	1
Cyphastrea serailia	1	4.6	-	-	2	5.5	0.7	5-6	7	7.0	3.3	2.2-12.6				1
Diploastrea heliopora	2	36.0	19.9	21.9-50	-		1. 1	4.4				i.	i	1	1	1
Favia favus	100		1		1	6.9		1 14	2	16.5	8.3	10.6-22.4				- 5
Favia pallida	2	6.5	2.2	4.9-8	2	8.0	0.0	8-8	1	67.1	- \	5 1 T 1.10-	194			4
Favia rotumana	1	8.0	_	_	1	10.0	1 1-		. (L 1	. 7		1		1	1
avia russelli					1	6.0	12	-	C. 1.	0. 1		1 1 1 1 2	101			
avia stelligera				10	2	31.8	3.1	29.6-34	10	1 10	1	10 10 10 0				
Favites flexuosa	1	29.0	-		1				100				H.		1 - 1	
Favites virens					1	37.0	-			1 10						1
Galaxea fascicularis	1	7.0	1 74	111111111111111111111111111111111111111	1	- 1		1 1 5	1	7.5					1	
Goniastrea edwardsi		4 0	- 1		2	13,3	1.0	12.6-14	2	60.0	14.1	50-70			- ,-	
Goniastrea pectinata	1 1		1	1	1	50.0	-	- 17	1			30.70				
Goniastrea retiformis	12	8.7	3.9	4.9-19	8	22.9	21.3	4-56			1				1	
Goniopora arbuscula	1	22.0	1 2			22.7	22.5	7 30			1				4 -	1
Hydnophora microcenos	1	12.0	I	1 1 2			100	- 6			1					
Leptastrea purpurea	1	6.0			6	6.2	2.4	4-10	1						1	
Leptastrea transversa	ī	12.0	1 -		1	38.7		7-10	1	1	1.3		- 1			
Leptoria phrygia	3	14.4	4.2	12-19.2	-	30.7	13.5		1							
Leptoseris incrustans			1 1	12 17.2	1	1		1 = 1					- 1		1	
Lobophyllia corymbosa	1			1 1 1 1	7	54.3	26.5	30-100	9	4.7	3.1	2-10.9				1 5
Lobophyllia costata				1	5	41.1	15.0	25-64	1	1					10.14	1
Lobophyllia costata Lobophyllia hemprichii				1 -	8	62.1	29.8	25-100		1	-1				1 10	1
Millepora platyphylla	- 1 1	5	0. 1.		2	20.6	23.4	4-37.1				1 A E 1			1	
Montipora caliculata	1	1.19.9	110	100	1	20.0	23.4	4-5/.1	1	Fig. 11 #1	1	=				
Montipora elschneri	3	26.7	7.6	20-35	2	33.0	14.9	22.4-43.5	2	11.6	106	11.2-12	1		1-1-1-1-1	117
Montipora foveolata	1	30.4		20-33	2	57.8	38.3	30.7-84.9		11.0	0.0	11.2-12			eq - 6	
Montipora hoffmeister		30.4	S- >-		1	35.0	30.3	30.7-04.9	4	19.3	6.8	12 20 2				1
The state of the s			TENET	A WELL	- 1	33.0	() = V	3.1.17	14	13.3	10.0	12-28.3	- 1		CHANNEL P	THIN

Table 24 . continued

		CHAN	NEL MAI	RGIN		UPPE	R SLOP	E _.		LOWE	R SLOP	E		CHAN	VEL FLOO	R
	n	Ţ	8	W	n	Ţ	s	w .	n	Ŧ	s	w	n	Ÿ	8	w
Ontipora sinensis	1	25,7			ril .	45 77 77	-			7 -	101					
ontipora socialis	ī	100.0	-	_	2	37.5	21.8	22-52.9						111111		1 1
ontipora tuberculosa	1	105.0			-				6	9.9	4.1	3.9-16.1	- 1			
ontipora verrilli	4	14.3	5.9	8-22	7	14.4	9.0	6-30	17	9.6	6.7	1.7-23.3	- 1			i
ontipora verrucosa	-4	14.5	3.7	_ 0 22	3	31.7	27.8	10-63	-	111				11.		1
ontipora (Tuberculate sp. 1)	1		0.00	***	2	22.5	3.5	20-25			1			- "		1
ontipora (Tuberculate sp. 2)	1	1 1 1			2	49.9	6.7	45-54.8			1 -					1
ontipora (Foveolate sp. 1)					1	100.0	0./	43-34.0		- 1	1		1			1
avona clavus			1		2	18.0	0.0	18-18			1					1
avona (P.) obtusata			1	11 1/ 7	4	10.0	0.0	10-10		10 to 10	1					1
avona (P.) venosa	2	12.9	2.6	11-14.7] ,	15.5							1.			1
latramet daddlag	- 1				1	15.5	-	11 06 1			-					
latygyra daedalea					3	18.5	6.9	14-26.4	200	011 0	200	18-200	1		= 1	1
latygyra pini		1		1	4	52.3	21.4	22-72	6	81.3	72.6	18-200	I			1
ocillopora damicornis	1	8.0	-	-	1	6.0	-	-	1			-	1			1
ocillopora danae	2	6.5	0.7	6-7	2	10.3	5.0	11-17		l	1				(F)	1
ocillopora elegans					2	33.0	0.0	33-33								1
ocillopora eydouxi	1	16.2	- 1	-	2	41.5	0.0	41.5-41.5	-		1					1
ocillopora meandrina	6	5.8	4.8	2-15							1	1				-
ocillopora setchelli	5	6.9	2.2	4-9.8	2	17.3	2.5	15.5-19		100	1			~		1
ocillopora verrucosa		11111			2	27.3	4.6	22-30	1	30.0	1 -	-				
ocillopora woodjonesi	1.		[1	28.0	_	-)	ì						1
ocillopora (Ramose sp. 1)		- 111	1	1	1	16.0	1	_		1						1
orites annae	1	6.0	- 1	_	-				. 1		1	1	4			1
orites australiensis	1	1 0.0			1	45.0				- 1	1				E FILE	
orites lobata	16	6.3	2.0	4.9-10	-	1	1		4	26.2	24.6	5.3-54.8				1
orites lutea	5	27.2	22.1	8-60	6	36.1	33.1	8-98.7		27.0	4 7	21.5-32.5				1
orites mordax	1	21.2	22.1	0-00	3	30.7	9.2	20-36	"	27.0	1	-1.5-52.5		12/01		
orites murrayensis			1			38.9	9.2	20-36			1					
	1	22.0	1	L 1	1			-		05.0	L 20 .	2 200	- }-			P
orites (S.) convexa	1	22,0	1 -	-	1	28.3	-	T	9	95.0	128.4	3-390	1			1
orites (S.) iwayamaensis	1	22.0	-	-			, ,				1		. 1			
orites (S.) vaughani	4	6.0	0.8	5-7	6	4.7	1.5	2-6			j i					
sammocora contigua	. 7	6.6	6.3	2-20						4.92	1					
tylocoeniella armata	3	2.3	0.6	2-3	1	4.0	-	-	1			To Sugar	- 1			
tylophora mordax	3	8.3	2.1	6-10	4	18.5	10.7	8-30	5	12.2	6.8	3-20		18 1		1
urbinaria (Explanate sp. 1)					2	64.9	6.9	60-69.8	2							1
TOTALS	121	11.8	12.2	2-100	147	31.7	29.5	2-200	87	27.3	53.3	1.7-390		ea na		

t	•	•	
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		CHAN	NEL MA	RGIN	1 :	UPP	ER SLOE	E	-	LOWE	R SLOP	E		CHAN	NEL FLOO)R
TEP TO THE TOTAL	n	Ÿ	s	w	n	Ÿ	s	W	n	Ÿ	8	w	n	Ÿ	s	w
ouha Bay - Station S-1				Agrico					The second		- 1	1				
Pociliopora damicornis Pordtes lutea Psammocora (Encrusting sp. 1)	1	4.0	-	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 2	6.4 15.0	3.0	3-10 8-22	3 7 1	5.3 41.3 44.3	1.2 23.5	4-6 8-71 -	2	2.5	0.7	2-3
TOTALS	1	4.0			7	8.9	6.3	3-22	11	31.8	24.9	4-71	2	2.5	0.7	2-3
ouha Bay - Station S-2			F = 1 11				7 3					4 21 N				1
Acanthastrea hillae Agariciella planulata Acropora nasuta Acropora wardii Cyphastrea serailia	1 3	4.0 12.7	8.5	- 4-21	1 2 1 1	20.0 14.2 3.0 12.0	3,8	8-20.4 - -	1	18.0	_	8 E	Î		_	å
Echinopora lamellosa Euphyllia glabrescens Favia pallida Favia russelli Favites viren	1	8.0	-	1-/-)	1 1 2 2 1	22.0 7.0 10.0 6.0 27.0	4.2	7-13 4-8	1	16.0		5 NT 10 NT 10 NT			1 v	,
Goniastrea retiformis Leptastrea purpurea Leptoria phrygia	4 4 1	12.0 5.0 9.0	5.6	7-19 3-8 -	2	7.5	4.9	4–11	1	10.0	12 3		3 4	10.3 5.5	7.8	3-
Leptoseris incrustans Montipora acanthella Montipora elschneri	154			8333	2	20.3		- 14.1-26.5 11-13.9	5	6.0 11.0	2.0	4-8	-	: le		
Montipora hoffmeisteri Montipora tuberculosa Montipora verrilli Montipora (Tuberculate sp. 1)	1	18.0	-	<u> </u>	2 1 5	12.5 9.5 18.5	6.5	12-26.1	1 2 1	21.0 20.0 12.0	2.8	18-22	2	17.0	5.7	13-
Pavona divaricata Pavona (P.) obtusata Pavona (P.) venosa Pocillopora damicornis		ndittin LESTA		n de	1 3 1	26.2 52.1 10.0	29.5	32-86	1 3 1	16.2 21.3	3.1	18-24 -	1 2	71.2 8.5	- 2.1	7-1
Porites australiensis Porites lobata Porites lutea Porites (S.) convexa	13	23.7	22.0	8-93	1 6 1	6.0 30.1 130.0	36.3	4-78.8	8	53.8	3.1 75.0	6-12 5-200	1 5	4.0 23.2	_ 27.9	4-

Table 24. continued

	- 1	CHAI	NEL MAR	GIN		UPPI	ER SLOP	E	1	LOWE	R SLOP	E	1	CHAN	NEL FLOO	R
	n	Ÿ	8	W	n	Ÿ	6	W	n	Ÿ	5	w	n	Ÿ	s	w
Porites (S.) horizontalata	Į.	1 5274) a c	1	25.3	D40 W	11 70 1		14	j.: ".					-
Porites (S.) moniticulosa		1	1		-2				1	41.0	-	_	1			ĺ
Porites (S.) vaughani	1	3.0	- 1			1 34 4			1	5.0	12-14	E Carrie			7	i i
Psammocora contigua	2	3.5	0.7	3-4		A SHIP			1	4.0	8-				Bo	
Psammocora (Encrusting sp. 1)		4 25 6	1 1		2	63.7	47.6	30-97.3	2	4.5	2.1	3-6				1
Stylocoeniella armata	1					# 7 AT X	1,756		1	111			2	5.0	1.4	4-6
Stylophora mordax	1.	T M	57.9	e lives	2	19.5	19.1	6-33	2	11.0	9.9	4-18		_		
THE PERSON OF PERSONS ASSESSED.		0.00							1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				~		
TOTALS	31	15.0	16.4	3-93	43	24.2	27.8	3-130	37	21.4	38.1	3-200	20	15.3	20.0	3-7
uha Bay - Station S-3		I				1 70							1			i =
Acanthastrea echinata	1	8.0	1 _ 1		1	6.0	2.8	4-8			100					1
Acanthastrea hillae	1	0.0	1 - 1		2		2.0	4-0		100			3			
		1 7 1	1 1		1	20.0	1, -	16.40	1				1			1
Agariciella planulata		10.0	1	0.10	4	27.0	11.0	16-40	1	7			1	**	3 (8)	1.
Acropora humilis	2	10.0	2.8	8-12	1,1		1		1				1		1	
Acropora hystrix		10.0	1 1		1	6.0	, C Q	1- 7-74	1	1 2 -	100					1
Acropora nasuta	1	13.0	-	-	1	8.0	1.7	- T	1		1			3		
Acropora surculosa	2	7.0	1.4	6-8	3	9.3	3.1	6-12	1			fra ear and				
Acropora wardii			1 1			13.20			1		1	1	1	1-	1	
Coscinaraca columna	1	32.5	- 1	-			11.3		1.			4	1			1
Cyphastrea serailia	1	14.0	- 1	-	1	8.0	- 1		1	20.8	-	-	1			
Echinophyllia aspera		,	1 1		1	13.0	- 1	-	1	COLUMN TO	1 1		1			
Echinopora lamellosa		100	2 1		1	41.5	- 1			1	1 1		1	•		
Euphyllia glabrescens	1	4.0	1	T 1694	100	15,500	13.13		1 2	p 1,011.			1		-	1
Favia matthai	2	5.2	1.6	4-6.3		1.200		1	1 16	\$ 51 W						j
Favia pallida	1	6.0	- 1	-	3	8.0	4.0	4-12	1	18.10	*****		1		1	
Favia retumana		10			1	6.0	-		100	The same			1			1
Favites virens	1131				1	27.0	-X-1	1 P. T. H.	1 - 1		1				t = 1	3
Galaxea fascicularis	1	6.0	- 1		1	8.0	-	1 - 3								
Goniastrea edwardsi	3	7.7	1.5	6-9	2	9.0	1.4	8-10							1	•
Goniastrea retiformis	6	10.9	9.5	4-29.9	4	15.3	6.4	8-22	1		1	1		E 1 22		
Leptastrea purpurea	1	5.7	16-13		3	6.3	4.9	3-12						\$	9 - 12	
Leptoseris transversa	1	27.3	- 1		1	41.0	-		1.		1		1			1.
Leptoseris incrustans	144	3			10		7 7 7 7		2	5.0	1.4	4-6	1	8.0	- 1	-
Leptoseris mycetoseroides							(1	37.9	-	-	1			(
Leptoria phrygia	1 1	5.7	-	-		filte	EF 12		1	11000			1	- 12		1

	- t	CHAN	inel mar	GIN		UPP	ER SLO	PE	1	LOWE	R SLOP	E		CHAN	NEL FLOO	R
eologes is, incresions onloges incresions	n	Ÿ	S	w	n	Ÿ	8	w	n	Ŧ	s	w	n	Ÿ	8	
Millepora dichotoma	1	5.0	_		1	6.3							-1	- (
illepora foveolata	1 6				1	48.0	- 1	i - 1	3			- 1	1	17	- 10	
fillepora platyphylla					1	61.0		- 1	- 3		3		- 7	1	5	
fontipora elschneri	1	22.0	- 1		1	40.5	- :	_	1			1	7			1
fontipora foveolata	11 7 1		- 1		3	24.7	7.0	18-42				- m il	1		<u> </u>	
Montipora hoffmeisteri	1	18.0	-	1	1	24.0	- 1	/	5	29.7	11.2	18-45.5	1			
fontipora socialis		5/10	1 1	-	-	07.0	1 49		2	24.5		23.2-25.7		- 1		
fontipora tuberculosa			1 1		1	22.0		_	2	29.8		22.5-37		- 1		
fontipora verrilli	2	17.0	7.1	12-22	8	32.2	22.3	14-80	4	29.0		9.5-41.5		1		
Ontipora (Papillate sp. 1)	li	14.0	1 '- 1	12 22	ľ	32.0		1 100	7	-5.0	120.0	313 1213		- 4	- 1	
fontipora (Tuberculate sp. 1)	1 -	14.0	- 1	-		10.0			2	17.4	0.1	17.3-17.5				25
avona minuta	4 1 1				1	120.0	1	7 1	3	50.7	33.9			1		
	4 5	22.0			1 2	24.5	12.0	16-33	10	7.2		3.7-12	- 1		1	
avona (P.) obtusata	1	32.0	-					16-33	10	1.2	3.0	3.7-12	- 1	ji	1	
avona (P.) pollicata	11 1				1	11.0	- 1	- 1		, -	1 , ,	2 5 5 5		ì	1	1
Pavona (P.) venosa	1	10.2	1 7 1	4.4	9.	9,1		0-7, 1	2	4.5	1.4	3.5-5.5	1	- 1	1	X
Pavona (Explanate sp. 1)	I I	1710	- 1		2	160.7		141.4-180	- 4		1		- 1	- 4		
latygyra daedalea	11 11 1		1 1		2	11.0	9.9	4-18	1						- 1	1
latygyra pini	1 3 3	10'0	1 i		1	13.5	-	- 5	1		9		- 1			1
ocillopora damicornis	1	6.0	- 1	-	4	8.0	2.2	6-11	1			- 1		- 0	1	1
ocillopora danae	1 1	9.0	- 1	-	3	9.0	2.6	7-12	- 1			e i P				1
ocillopora elegans	1	. n :	- 1			rolp 1	1.7	-4 1	1	13.1	-	- 1	1			1
ocillopora meandrina	1				1	12.0	- 1	- 1				4	- 1	4		1
Pocillopora setchelli	4		1 1		1	8.0	-	(7.6	1		
ocillopora woodjonesi	1				1	20.0		1 15 - 10	1.				5.		7	
Pocillopora (Ramose sp. 1)	1	7.0	(J)	1-1	1 7	24, 0	YE 18 3	ir-for: -	1 1	14 7	18 3		1	1		100
orites australiensis	1	8.0	- 1	- /	3			1 1			- 1		- 1			i
Porites lobata	7	6.3	2.9	4-12	4	5.3	2.2	3-8	- #	73 1	0.3	17 11	70			
Porites lutea	9	50.7	40.2	5-120	8	43.7	35.8	4-118	1	18.8	-	_3 3				1
Porites mordax	1	5.0	_	17.2014	3	69.6	56.4	29.7-109.	5	4 0 1		- 11		- 1		
Porites murrayensis	1 5	17	100		0	22.0	-		1	F 0 3			0			
Porites (S.) convexa		7:10	- 1		1	4.0	-	_ 1	2	40.8	20.9	26-55.5				*
Porites (S.) horizontalata					1	1	1 : 3	i i	20	3.6	1.6			1		
Porites (S.) iwayamaensis	1	29.7	- 11		3	118	88.0	29-205	7	1 6 4	[116	-		
Porites (S.) vaughani	1	27.,		1	1	5.5	-									
Psammocora contigua	3	6.3	3.8	2-8.9	.5	3.3		6	17		à.	Fx 1		1		- 11
	٦	0.5	3.0	2.0.9	5	22.3	17.4	7-42.4								
Sammocora (Encrusting sp. 1)	1	CHVIS	ACT HER		1	22.3	17.4	7-42.4					- (7.7542		

Table 24. continued' CHANNEL FLOOR CHANNEL MARGIN UPPER SLOPE LOWER SLOPE n 3.5-3.9 2 3.7 0.3 Stylocoeniella armata 1 4.0 13.0 Stylophora mordax 8.0 19.7 30.8 1.4-180 1 3-205 60 2-120 24.9 31.2 59 16.5 22.1 TOTALS Fouha Bay - Station S-4 13.0 Acanthastrea echinata 4.0 Acropora humilis 5.7-8 8.0 1.6 1 6.9 Acropora surculosa 1 2 12.5 6.4 8-17 9.0 Acropora wardii 1 4.0 1 5.9 Cyphastrea myriophthalma 9.4 2.8 4-8 2 6.0 Cyphastrea serailia 42.0 Diploastrea heliopora 11.0 Echinophyllia aspera 1 12.0 Echinopora lamellosa 1.4 5-7 Favia favus 2 6.0 2-21.9 2-14 11 5.8 5.6 5.5 4-18 10 7.2 4.0 5 9.6 Favia pallida 1 4.0 12.0 1 7.0 1 Favia rotumana 4.9 Favia russelli 12.0 3.1 8-14 11.3 Favia stelligera 1 16.2 Favites abdita 2.1 15-18 2 16.5 Favites flexuosa 4-21 8.0 10.5 7.3 1 Goniastrea edwardsi 12.0 1 8.0 1 Goniastrea pectinata 6-8 1 13.5 9.4 7-30 3 7.0 1.0 Goniastrea retiformis 1 18.0 Goniopora columna 12.0 Hydnophora microconos 2-22 3 9.3 11.0 1 4.0 Leptastrea purpurea 2.8 0.8 14.8-16 2 15.4 1 12.4 Leptastrea transversa 22.0 1 16.0 Leptoria phrygia 150.0 1 Leptoseris mycetoseroides 19.9-28 14.0 24.0 5.7 Lobophyllia cerymbose Lobophyllia costata 1 120.0 -1 37.2 Lobophyllia hemprichii 08.7 13.3-167 2 35.2 3.1 33-37. 2 90.2 Millepora foveolata 1 17.7 2 2.1 6-8.9 7.5 Millepora platyphyllia

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		CHAI	NNEL MAR	RGIN	. 1.	UPPI	ER SLOI	PE	1.	LOWER	R SLOP	E		CHAN	NEL FLOO	R
(*) 1 (*) (*) (*) (*) (*) (*) (*) (*) (*) (*)	n	Ţ	s	w	n	Ŧ	8	W	n	Ÿ	s	w	n	Ÿ	8	
Iontastrea curta	1	8.2	2 - 1,		8 1	37.6			62			-	1	1		
iontipora elschneri	4		1 5					er .	4	11.6	4.1	6.7-16.2		Ī	1 1	1
Montipora foveolata	2	8.9	1.3	8-9.8	2	22.0	0.0	22-22				1 1	1	- A.		
Montipora hoffmeisteri	1	92.0	- 1	1 4	1	39.0	0.75	1 (21 14	1	28.6	-	- 1			1	
fontipora tuberculosa	1	25.7	- 1	_ !	1	13.0.	24	살			1					1
fontipora verrilli	ī	4.0	_	_	5	19.1	18.3	6-49.8	10	9.0	7.8	2.8-28.1				1
Montipora verrucosa	1	7:0		1		-7.1	12000	.,,,,					- 1			ł
fontipora (Tuberculate sp. 1)	1 -	7.0			1	21.0	8.21	40 1	1	4.6		_	ŷ.			ļ
Montipora (Tuberculate sp. 1)			4 - 1		1	71.0			_	4.0	1					
fontipora (Tuberculate sp. 2)	1 - 1			_ 1	1	26.3	10									1
Pavona (P.) obtusata	114.1			590 SA 11	i	33.0		_	ĵ.							
avona (P.) venosa	13		1 1	(0 100			7.1	6-21						- 4		1
Platygyra daedalea	4	38.2	54.7	6.9-120	5	14.4	7.1	500 DESERVED						- 8		}
Platygyra pini				19 15	1	6.0	-	- 1		100 0			1	28.0		
Plesiastrea versipora				- 1		Sent L		E . 1	1	100.0	-	_	1	20.0	_	1
Pocillopora damicornis	1	6.0	- 1	-	1	8.0	- 1	- :			. 3					
Pocillopora danae	1	6.4	-		1	6.0	-	-					8			,
Pocillopora elegans	1	28.0	12						-					11	l j	
ocillopora ligulata			1 1		1	13.2	- 3	-				1		1 41		1
ocillopora meandrina		= 1			1	6.0	- 1			- 3			7		1	1
Ocillopora verrucosa	2	17.5	6.4	13-22	1	24.8	- 1		1	23.5	-	-				
Pocillopora woodjonesi					2	18.8	0.8	18.2-19.3	1	7				1 11		t
Pocillopora (Ramose sp. 1)	1	4.5	1 _ 1	1	3 1		- 1			- 4	- 1		1			l
	1	4.0		Janes II	3	5.3	1.2	4-6	j.	3						ł
Porites lobata	12	19.4	13.8	6-50.2		42.2	36.7	2-120	20	16.3	18.2	1-50.3	4			•
Porites lutea	12	17.4	15.0	0-30.2	2	72.0	93.3	6-138					1	1		ı
Porites (S.) convexa	١,	8.5	4 1	_ 4	1	20.8	-	-		1	- 4	1		- 5		
Psammocora (Encrusting sp. 1)	1	8.3	1 -	n	+	20.0		_	8	2.8	1.0	1.6-4.2	- 2			1
Stylocoeniella ormata	1 -	7 .	121	4 10	5	13.0	9.7	7-30	٥	2.0	1.0	1.0 4.2				
Stylophora mordax	7	7.6	3.6	4-12				7-30		14.4	. A					
Turbinaria (Explanate sp. 1)					1	65.0	- 1	-	1	14.4						
TOTALS	76	18.7	27.6	4-167	93	20.2	24.2	2-138	63	14.2	24.1	1-150	1	28.0		-
pa v 20 300 pay pa _ pake bu	1 4 5	97	4					-	- 1	100						
	7		1 7-1	April 1	U		7.00	7 - 7	17	Į.	Trans.		12	6		
												- 1				
	1	4,145,0	WEST FETE	-12			el ni			1781	SLIP			1000	10 4 10 10	

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Table 25. Size distribution of coral species at Ylig Bay Stations N-1 through N-4 and S-1 through S-4

And the second of the second o	n			C-1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		011	ER SLOI	. 45	12	33	SLOP				EL FLOOR	
		7	s	w	n	₹	s	W	n	Ÿ	8	w	n	¥	s	W
lig Bay - Station N-1		Tida.	l it		17/16		100			and and	the .	اميال				
(2) (2) (2) (2) (2) (2) (2) (2) (2) (2)	P. a		1							12.0		3	NT.	Corals	Facust	
Montipora verrilli	No	Corals :	ncoun	ered	,	6.0	1	7	1	12.0	2	T - 1	NO	Corais	Encounte	red
Pocillopora damicornis	8.0	1	- 1		1	0.0	_		2	6.0	2.8	4-8	3	0		
Porites lutea	1.3		1			1 50 7	12 5	- III	1	0.0	2.0	4-0		1	1	
TOTALS	134	E 1921	3		1	6.0	1-		3	8.0	4.0	4-12	11			1
lig Bay - Station N-2	ut E	ļ		1		1 6	1	ł		1 -	Ļ.		(1	47	1 -	
CHANGE AND THE RELEASE				4.0		9 5.1							ı,	14.0		
Acanthastrea echinata	4	1 1 11 1		8			2	2.115/ v.T.9 ii		-A	7		1	14.0	_	7.
Acropora kenti	1 15				4	23.3	4.6	18-29		11:	18	3 m				
Acropora (Corymbose sp. 2)	1	12.0	-	-		1: 0:1				Y				F		
Echinophyllia aspera	1	3.0	-	-							100		8	3		
Echinopora lamellosa	E		1 %		1	31.0	in - "	-		4 3.7	126	1 6	-	1	1	
Favia favus	1.0							1.000	1		72	1	1	12.4	· -	_
Favia pallida	1	7.7	-	-		1 2	0.1		3	8.4	4.0	6-13	1	6.0	-	_
Favia speciosa					2	15.9	8.3	10-21.8				7	1	3.0	-	_
Goniastrea edwardsi		-	17	7.	1	6.3	-	-		The state		3	1	1	į.	1
Goniastrea retiformis					3	24.4	5.9	19.6-31	3	19.6	4.9	14-23		11	1 1	/
Hydnophora microconos			- 6	1	1	30.5	-	2 2	1.	1	20 m					í
Leptastrea immersa				li.	1	25.0	-	-		7		1		1.5		
Leptastrea purpurea	4	13.6	3.2	9.8-16.9					5	8.0	4.2	3-12.2		1		
Leptoria phrygia	1		160		1	13.0	_	-		7	7	1	1.4	4 -	T.	
Montipora hoffmeisteri	6	100			1	15.0	1	-		-	7	1	1			
Montipora lobulata					1	31.5	-	2	1	95.3	· -	-	1	56.7	I	i -
Montipora patula					1	14.1	4 -	-					7			
Montipora verrilli		-		Production of	1	41.0	repair our	4	1	95.5	-	41. na			+14-19-1	
Montipora (Tuberculate sp. 1)				enjanche An		10.00	1 1	- 5	1	29.9	1,2	- 0-32	7		1 1 1 6	
Montipora (Tuberculate sp. 2)						1							1	18.9	-	_
Pavona divaricata	1	1 7		200		1000		1 4 1 4 104		1 6	5 6	A STEEL PA	1	18.2	-	-
Pocillopora damicornis				8 (5)	3	18.8	12.2	5.7-29.9	12	7.0	4.3	2-14.7	1	19.5	ig = 10	-
Pocillopora danae	1	7.0	and a face of	en Linkson	a Far	400	- Line		60.0	adula sale		A LONG	- War 10		den an	
Pocillopora eydouxi	1	41.0	1 1	100	1	2.0		-		1 1	185	1-	1 1	- 5	8	
Pocillopora meandrina	i	18.2	_	10 - 10 l	ī	9.2	_	_			1, 4					
Pocillopora setchelli	1	10.2	1	an Lin	2	17.0	2.8	15-19		11.23		le fi		1000	CALE LEG	

		CHAN	NEL MA	RGIN	. 1	UPP	ER SLO	PE .		LOWE	R SLOE	PE	1	CHAN	NEL FLOO	R
	n	Ÿ	s	w	n	Ÿ	s	w	n	Ÿ	8	w	n	Ϋ́	8	w
Platygyra pini Porites lutea	3	84.4	98.4	24.9-198	.4	19.3	6.7	9.4-24.3	5	22.4	9.8	10-35	1	22.0		-
TOTALS	13	30.5	51.4	3-198	29	20.4	9.4	2-41	31	17.2	22.4	2-95.5	9	19.0	15.5	3-56
g Bay - Station N-3				1	4		1		14				. 1			
Acanthastrea echinata Acanthastrea hillae Acropora hystrix Acropora irregularis	1	15.8	-	- 1	1 1 1 2	15.8 122.0 8.2 12.0	- - - 7.8	- - 6.5 - 17.5							1	v
Acropora (Corymbose sp. 1) Acropora (Corymbose sp. 2) Agariciella planulata	1	19.0	-	_	2	14.9	12.9	24-5.7	1	31.4	- 6	-	ł			
Alveopora (Explanate sp. 1) Astreopora myriophthalma Favia favus Favia pallida	3	10.0	3.5	6-12	1 1 3	9.4 6.9 7.4	- 2.6	- - 5-10.2	1 1 1 3	27.0 22.0 7.7 17.1	- - 12.1	- - 6-30				5
Favia speciosa Favites flexuosa Galaxea clavus	í	5.5	-	-	3	7.7 23.0	4.7	4-13	1	7.7	-	-	Ì	- 1		
Goniastrea edwardsi Goniastrea retiformis Goniopora tenuidens	3	23.8	15.3	6.9-36.7	6	13.1 9.7	3.0 5.8	10.6-16.5 4-18.8		ı			1	6.0	_	-
Goniopora columna Hydnophora microconos Leptastrea purpurea	3	16.0 12.0	7.8	7-21	1 1 1	44.2 11.7 12.6	-	= = =	1	9.2	_			late to the		
Leptastrea transversa Leptoria phrygia Leptoseris hawaiiensis			aranje.		1	10.2	-	-	1	7.3	3	_			iyar i R	**
Millepora dichotoma Millepora elschneri Montipora hoffmeisteri	1	12.0	-	- V	1 2	35.0 42.2	31.3	- 20-64.3	1	6.7		- 1.7-43.5	4 1			
Montipora patula Montipora sinensis		68, 23	c erie		1 2	49.9	1.1	9.4-11		TYBERK!			2.1	· Harris	FEEDE	
Montipora verrilli Montipora verrucosa	6	30.3	18.0	7.7-59	6	11.5	5.7	4-19.9	6	14.6	14.0	2.6-41.5			1111	

Table 25. continued

	-	CHAN	NEL MA	RGIN		UPPE	R SLOP	E		LOWER	SLOP	E		CHAN	NEL FLOO	R
	n	Ÿ	8	w	. n	Ÿ	s	w	n	Ÿ	8	w	n	Ÿ	S	w
Montipora (Papillate sp. 1) Montipora (Tuberculate sp. 1)		la de la constante de la const	Ì.,	13	2	9.2	4.0	6.3-12	8	47.7	62.6	2.1-190		ya, E		- 1
Montipora (Tuberculate sp. 2)					1	164.9	-	- 1		000.0						
Pavona minuta						57.5	23.3	41-73.9	1	200.0	8.7	4.2-20.5				
Pavona (P.) obtusata					2	57.5 125.5	151.2	37.4-300	1	46.9	-	1				
Pavona (P.) venosa					,	123.3	131.2	37.4-300	ī	120.0	-	-				
Pavona (Encrusting sp. 1) Pocillopora damicornis	- 1	1 1 - 5			5	9.7	3.7	5-14.9		10.2	-	-				Į.
Pocillopora danae	1	9.1	-	A De of	2	40.4	7.6	35-45.7		-	1				1 - 11 - 1	
Pocillopora ligulata	1	20.0	-	-			1									
Pocillopora meandrina	2	15.7	1.8	14.4-17	2	6.9	1.6	5.7-8		- I						
Pocillopora setchelli	1	14.0	-		5	12.4	5.1	8-21		,, ,	1000	3-129			4	1
Porites lutea	3	45.1	3.8	40.9-48.3	1	23.7.0	- 1	-	4	41.4	60.0	3-129	0			1
Porites superfusa	1	6.0	:		,	40.2	11 5	41-57.3	11	5.0	3.7	1.2-12.1				
Psammocora (Encrusting sp. 1)					2	49.2	11.5	41-37.5	1 **	3.0	1 3.7	1.2 12.1				3
TOTALS	29	20.8	14.7	5.5-59	67	29.0	50.3	4-300	59	25.0	40.5	1.2-200	1	6.0	_	
Bay - Station N-4					1	1 11				¥] 3	1 H H, H,		<u> </u>	738- 11	
Bay - Station N-4.		100		1						1 100					1	1
Acanthastrea échinata					1	8.0	-	- 1		2.0						
Acropora humilis	1	11.2	-	11.0												1
Acropora irregularis	1	30.5	-	p 9 =	1	5.0	-	-				2 12 11		i i		
Acropora nana	1	8.9	-	-	1	11.0										
Acropora wardii	1	19.0 12.0	-		1	11.0	- 1					1				
Acropora (Corymbose sp. 1)	1	15.4	_			1				1	F					
Acropora surculosa Alveopora (Explanate sp. 1)	1 -	13.4	1	1. 22					1	28.2	N-	- 1	1			
Cyphastrea (Encrusting sp. 1)	- 35	ā -					9 -		1	8.4	-	J		F [7]		10
Echinophyllia aspera									1	10.2	-	·	1	12.0	-	-
Favia favus	1	7.0	-	-								+ -		h = -		
Favia matthai	1	11.0	-	F - 1	2	11.0	4.2	8-14		11.5	0.7	11-12		1		2.
Favia pallida	3	6.7	1.1	6-8		7.0	, ,	6 5 0	2 2	11.5 10.1	9.0	3.7-16.4			1	
Favia rotumana	1	31.5		7.00	2	7.3	1.1	6.5-8	4	10.1	9.0	3.7-10.4	-	7.0	The state of the s	
Favia russelli	2	7.9 14.5	1.3	7-8.8 7-18.4	1	18.4		_	2	8.0	4.9	4.5-11.4	1	4.0	-	-
Favia speciosa	3	12.2	0.3	/-10.4	1 1	10.4			-	0.0	1	54			10 10	- N
Favia stelligera	1 -	12.2	1			1										

Table 25. continued

		CHANNEL MARGIN				UPPER SLOPE				LOWER SLOPE					CHANNEL FLOOR			
	THE ROSENT	n	Ÿ	s	w	n	Ÿ	8	w	n	Ÿ	8	w	n	Ϋ́	s	W	
	Favites flexuosa	1	18.1		ps. 12		12			3.	1.4	1-14					3	
	Favites virens	1 1	11.0	1 - 5	1						11 3 3	1			1	1		
٠	Galaxea fascicularis	1	8.2	-	9.8			1 1		1	13.3							
	Goniastrea edwardsi	1	4.5	- 5	_		1				13.3		- 1			1	1	
	Goniastrea pectinata	4 1			- 2	1	12.1	_	. = <u>-</u>	11	1 * * 1	- 1	14		1	1	1	
	Goniastrea retiformis	2	19.6	0.1	19.5-19.7	-	1				41-1	1 - 1	7					
	Goniopora teniduens	1.1			1-200		1					1	_ 13	2	17.5	107	0 0 05	
	Heliopora coerulea	11.4	1, 10	- 1	- 11	1	53.0	1 1			11 11 3	i	1	-	17.5	10.7	9.9-25	
	Hydnophora microconos	1 1	3 1 6	- 1		î	8.1			- 4					1		1	
	Leptastrea purpurea	1	12.0	74 1	1 - 8					1	23.5		1	3	4.1	2 1	1076	
	Leptastrea transversa	1.	7077	9 9		1	17 TOS 1			1	15.0			ر	4.1	3.1	0.7-6.7	
	Leptoria phrygia	1	28.0	-				1 1		1	15.0	1 - 1	- C (a)		ł	il		
	Leptoseris mycetoseroides			.4		3	9.7	4.6	7-15			1					1	
	Merulina ampliata	1	6.5	_ 1	- 1	1	1	1 7.0	/-13	1	13.0	1			ľ	ł	4	
	Millepora dichotoma	1	8.1	1 - 1	_					-	13.0				1	1		
	Millepora platyphylla	1	24.0	-	CONTRACT IN						1			83		1 .	J	
	Montastrea curta	1	6.5	_	Eube 1		Fire a	161.00	354	20	The half	0 9	1 20 100	11	Brig.			
	Montipora elschneri			1		1	28.1	- 1	_						ì			
	Montipora ehrenbergii	41 4	m.			2	14.2	8.2	8.4-20		- 21	1	1 7 05			Í.	4	
	Montipora hoffmeisteri	1 1			1 4	ī	14.0		0.4-20		1	1	1	- 1		1		
	Montipora lobulata	1	-6-1 ×	755	to repart	5	13.6	10.0	3.5-28.3	6	23.9	118 5	3.4-49.8	2	36.5	8.8	30.3-42	
	Montipora sinensis	4 11	ANT CO.		i - 1	li	50.0	-	-	ľ	23.7	120.5	3.4-49.0	_] 30.3	0.0	30.3-42.	
	Montipora verrilli	8	18.6	11.4	3.4-31.9	7	25.3	19.6	9.8-56.8	12	21.4	14.1	2-43			1	4	
	Montipora verrucosa	1 1	50.0			li	62.0	-	7.0 30.0	1	21.4	1	2-43	2	2.0	0.0	2-2	
	Montipora (Papillate sp. 1)	2	21.5	3.5	19-24		02.0	1 1			ł			-	2.0	0.0	2-2	
	Montipora (Glabrous sp. 1)	1	10.6	-		-	1 mg 1		2 1 1						5 515		4	
	Montipora (Foveolate sp. 1)	and the second				1	77.0	1 - 1	_		1 1 2 1				1	1	1	
	Pavona minuta	14				-	1277		10-175	1	107.0			1.	160.1	179.5	63.2-429	
	Pavona (P.) obtusata	1 1		1 1			100		- H	3	97.0	71 6	53.1-179.		8.6	6.7	2.2-17.	
	Pavona (P.) venosa	1 6				1	29.1	-	_		100°U	71.0	33.1-179.	0 5	0.0	1 0.7	2.2-17.	
	Pavona (Foliaceous sp. 1)	1 1	8.1	-	_ =	3	199 E		No. 1		10 1 2						9	
	Platygyra daedalea		172/-			1	41.0	- 1		8	47.7	0.0	7-100		1		4	
	Plerogyra sinuosa	1	IL /			12	9.3	TO THE	777-73	3	13.6	8.3	8.7-23.2				- 1	
	Pocillopora damicornis	1	6.0		- Land	1	4.0		and the last of the last of		13.0	3.3	3.7-23.2		-		سند سددال	
	Pocillopora danae	2		12.0	3-20	1	4	. 5		14	À .		P. A.		. Law Polls	8	- 12	
	Pocillopora elegans			1		1	27.0	- 1	DESTRUCTION OF			1						
	Pocillopora eydouxi	1 1	41.0	52 153	TIM . DI .	1	fedit -	1103	and a limple		13863	- 41 LP			- 4" 1AH	RET FILE	Ož.	
	Aller A Children and Children Commence	1 2	71.0		HIS I		1 1	-	7		7.77	- 7						

Table 25, continued

		CHA	RGIN	UPPER SLOPE					LOWE	R SLOP	E	CHANNEL FLOOR				
LECTURE AS TRE	n Ÿ		s	s w		Ŧ	w	n	Ÿ	s	w	n	Ÿ	s	w	
Pocillopora ligulata	1	29.3	11-	E	1	12.0	1	3 15	1		3	1	18			1 4
Pocillopora meandrina.	4	17.7	9.5	9-31	1	L = 871	1	1 12		12 15						1
Pocillopora setchelli	3	7.7	6.4	4-15	1	8.9	- 1	J E	1	1-11-	1.3) - : :		1	11 = =	
Pocillopora verrucosa				-	1	21.0		E								
Pocillopora woodjonesi	1	28.0	12.	- 1			11 22			11 14 1			13			1.0
Pocillopora (Ramose sp. 1)	1	12.8	-	<u>-</u> 11 -		1 1000	100	1 - L	+				11	100		
Porites australiensis	10	66.6	63.2	6.3-190				-	1				4	7 10 0	120 9	
Porites lobata	1	9.0	103.2	0.5 250	1			<u> </u>		(3)	No.			12 77 1		1
Porites lutea	8	10.2	4.5	4.9-19.4	13	25.4	35.2	6-134.2	1	45.0	1		I-	33.0	_	_
	10	10.2	1	4.5-15.4	1 13	23.4	33.2	0-134.2	î	7.9	<u> </u>	_	1	33.0		1
Porites murrayensis	3	4.3	1.5	3-6	1	I Suit			1	/.,	3-		1	1 1 1 2	1	
Porites superfusa))	4.3	1.0	3-0			1 2		1	40.2					1 :-	10
Porites (S.) convexa	- 1	1			1	07.1		- 16	1			in and	-34		t to	1
Porites (S.) horizontalata						27.1	-	8-94	1	21.9 120.0	1			111	1 12 "	
Porites (S.) iwayamaensis			1		3	37.4	49.0	8-94	T	120.0	7	11 -	1.5			
Porites (S.) monticulosa					-	154.9	- 1						3		11	
Porites (S.) vaughani	1				1	6.0	1 - 1	-		4				1 770		7
Psammocora contigua	1	7.0	1 -	Time-			1 1	4 72		96	14.				1	1
Psammocora nierstraszi	- 17			to a	1	A 20 1	1 - 1	- -	4	78.9	74.1	11.8-145	1	111		1.7
Psammocora (P.) haimeana					1		1 - 1	-			1		5	29.2	22.3	5.5-5
Psammocora (Encrusting sp. 1)	1 1	32.0	-	-	2	60.5	27.6	41-80	1	58.4	100		110			4
Stylocoeniella armata	1	4.0	1 -		1	12.0		7 - 1	3.5	5.8	0.1	5.7-5.9	1	6.0	11.	-
Stylophora mordax	11-1			F (2)	1	12.0							1	1		- 1
TOTALS	80	20.4	28.7	2,4-190	65	23.7	29.2	3.5-154.	48	30.6	38.2	2-179.	6 27	37.4	81.6	0.7-
Bay - Station S-1					÷ :	4 6							-	ļ.,		ţ,
Favia pallida				J.	1	9.0		200		941			1	No Co	rals Enc	ounter
Goniastrea retiformis	1 1	8.0		_	1	14. 4.4		1 5		41	1000			l P	12	
Leptastrea transversa	1 -	0.0			1	49.8	1 _ 1					1			1	
Montipora verrilli	1		1		1	63.6	1 - 1									
			47 10	Transport of	7	10.0	3.1	6-12		-1-1					I b	
Pocillopora damicornis		4		- 19	2	71.0	15.6	60-82	5	11.6	6.0	6-20		10.7	1	The same
Porites lutea				0.7	1 2		1		٦	- 1-10-12 14		1 2 /2017			100	1
TOTALS	1	8.0	THERE IN	80174-	12	28.0	27.8	6-82	4	11.5	6.0	6–20	12	i, iii	1955 EL	1 14
	7	75		1.		1		- 12	8.			30 Table 30 Table 3		13 11		1
							1 1				1 1				1	1

Table 25 . continued'

TOTAL	-4-7	CHAN	NEL MAR	GIN	17	UPPI	ER SLOP	E		LOWER	R SLOPI	8		CHAN	NEL FLOO	R
, वर्षा प्राच्छ देगाः वर्षे । , वर्षा प्राच्या वर्षे प्रस्ति ।	n	Ÿ	s	W	n	Ÿ	s	W	п	Ÿ	5	W	п	Ÿ	8	w
g Bay - Station S-2	din)						1-		- 1				11	1	<u>.</u>	1
TO THE EAST LASE STORING P	1 2 X						1			11 11 11 11	1 1				1	
'Acanthastrea echinata	11 8	1	1		1	8.4	1 - 11	1			1 1	7		1	1	1
Acropora syringodes	11 11				1	8.0	- 1	- 1				- 1		1 54	1	Lynn
Acropora wardii					11	6.0	-	_								1
Cyphastrea myriophthalma									4		1 1	_1	1	14.3	-	1 -
Euphyllia (Ramose sp. 1)			- 4						1	10.0	-	-				
Favia favus		4			3	6.3	1.5	5-8	1	13.0	-		3	7.7	2.1	6-
Favia pallida	1	5.0	-			217	1	No. of the last	3	12.3	3.1	9-15	124	33.		1
	11 -	H .)	1		1 1	7.0	l - II							- 1		1
Favia speciosa Goniastrea edwardsi	111	100	1 1		2	6.0	2.8	4-8			511		1	7.8	1	T
	1 1	20.2			11	8.0	53 - 0 1		2	8.1	5.7	4-12.1				1
Goniastrea retiformis	1 -	20.2	- 1		1	0.0			- 1				1	19.8	-	1 -
Hydnophora microconos	1 1	1			1	8.4	_ 1				2 m.P	- 11	_			-
Leptoria phrygia	1 1 1	2 1			2	77.4	32.0	54.8-100			1 1				1 . 1	1
Millepora foveolata	11.				12	17.4	32.01	34.6-100	- 4				1	25.0		4
Montipora caliculata	1 1				1 . 1	26.7						1 1 T	1	23.0		
Montipora elschneri	1 - 1		1		1 1	36.7		8-45		48.1	45.3	16-80.1	1	14.0		
Montipora hoffmeisteri					2	26.5	26.2	4 Fig. (2.77)	2		43.3	10-00.1	i	22.4		1 .
Montipora lobulata	4		2 11		3	26.3	16.2	16-45	1	17.8	- 1	4 = -	1	22.4		1 -
Montipora tuberculosa	15 1	1				- 4	1		1	49.0	- 1	- N		1		1
Montipora verrilli	1 1	1 1			2	27.9	5.4	24-31.7						100.0		1
Montipora verrucosa	- 1	-1 -1										100	1	120.0	- 1	-
Montipora (Tuberculate sp. 1)	1 1	202				10.18			1	26.0	- 1		1	57.0		1 -
Montipora (Glabrous sp. 1)	1 1	O or it				1	1 1				1		1	12.2	-	1 -
Montipora (Papillate sp. 2)		- 10	d a		1		1 1	-			1 1	e El 🖟	1	84.8	-	1 -
Montipora (Tuberculate sp. 3)	1 1				1	70.0	-	-				- 4				1
Pavona (P.) obtusata		改 十二十			1 1	22.0	-	- 1					1	1		
Pavona (P.) venosa	3 - 1	- 1				2.4					1 1		1	14.0	-	1 -
Platygyra daedalea	1 1	- 1 - 1	V			5 5		- 4	1	19.1	-	1		371		1
Pocillopora damicornis	7	3.1	1.1	2-5	3	6.6	3.9	3.7-11	1	9.7	1 - 1					
Pocillopora meandrina	1 1 2	-			1	50	4. (* 2)						1	31.0	-	* ,-
Porites annae	1 1	9.0		No.	7		15		J. A.			- 1			1 2 1-	
	1	7.5			1	21.0	_ [- 1				- Til []		Line		
Porites australiensis	Ĩ	114 146	1 WY		1-1	20 mm	5-1704		1	9.0		_		1221.10		
Porites lobata	2	27.0	18.4	14-40	2	42.0	39.6	14-70	4	28.4	12.3	10-35	2	18.5	12.0	10-
Porites lutea	1	12.0	10.4	14-40	1	8.0	1 33.0								1	
Psammocora contigua	1 1	12.0	1 - 1	-	1 - 1	0.0	_	_			1 1			1	1	

To the second se		CHAI	NNEL MAI	RGIN	= 1	UPP	ER SLO	PE .		LOWE	R SLOP	E		CHAN	NEL FLOO	R
	n	Ÿ	s	w	n	Ÿ	s	w	n	Ÿ	s	w	n	Ÿ	8	w
Psammocora (Encrusting sp. 1)				0 1123	1	141.0	-	- <u>-</u> 1	1	24.7		1 7 2 3 1 1		70.		5 551-1
Psammocora (Ramose sp. 1)	4	7.1	7.9	2.5-19	1	7.0	-	-			100	273, 10	1		1	
TOTALS	17	8.9	10.0	2-40	32	25.9	31.5	4-141	20	22.1	17.9	4-80.1	1,7.	28.4	31.1	6-12
g Bay - Station S-3										E - 01	Ti.	111			17	7 11
g Bay - Station 5-3		11155	1		6,10	1	-	-								1
A south a dealer and a selection of the		35.0			3	11.7	7.4	6-20	-				N	o Coral	s Encour	tere
Acanthastrea echinata	1				3	11.3	4.5	7-16	1	33.1	-					
Acropora hystrix	3	9.4	3.9	5-12.6		11.5	7.5									
Acropora irregularis	13	7.4	3.9	3-12.0	1	18.0	-	_					1			
Acropora palmerae					1	12.4	-	_					- 1		11	
Acropora surculosa					i	8.0						(n)	-			
Acropora wardii				ľ	1 -	0.0			1	36.3	-					1
Alveopora (Explanate sp. 1)		1			1	8.0	_		- 1	00.0		-1	- 1			1
Cyphastrea serailia					2	7.2	0.4	6.9-7.5	2	9.7	1.6	8.5-10.8				12
Favia favus	1		Marie 1	man in the	-	1.2	1 0.4	0.5 7.5	3	19.7	5.7	16-26.3				1
Favia matthai		1 50		3,000	1	5.3		A	2	10.4		7.5-13.3	2		tere i	ł
Favia pallida	- 1				1	8.0			- 1	10.4	1					
Favia russelli					1	13.0	5.7	8.9-17	2	13.2	5.6	9.2-17.1				
Favia speciosa	1				2	21.0	1 -	0.9-17	1	37.4	-					j
Favia stelligera					1 .	21.0	-	_	2	10.4	2.6	8.5-12.2			į.	
Favites flexuosa	1.		1	4-8	16	5.7	1.5	4-8	2	10.4	2.0	0.3 12.2			1	1
Galaxea fascicularis	4	6.0	1.6	4-8		14.9	2.3	12.2-16.4	5	11.3	64	3.5-21				
Goniastrea edwardsi				7.5.40	3		17.8	10-59	,	11.5	10.4	3.3-21				
Goniastrea retiformis	3	21.8	16.6	7.5-40	10	32.5	117.8	10-39	, 1	36.9	-	1	- 1			1
Hydnophora microconos		6 7	i :			07.0	200	6.5-47.5	1	23.7	1	1	- 1-			1
Leptastrea purpurea	1				2	27.0	29.0			15.7	10.7	3.4-27.9	- 1		1	
Leptoria phrygia				H	1	17.8	10.3	8-26.5	4 1	13.7	10.7	3.4-21.9	- 1		All to	
Montastrea curta	-				1	12.8			- 1	05.0	100	7.4-41.5	1		i i	
Montipora hoffmeisteri	1								7	25.0	12.3	7.4-41.3	- 1			
Montipora lobulata					3	42.6	31.9	14.1-77			1					ia.
Montipora patula					1	29.3	-	4-65		00.0	1.0 -	7 22	1			
Montipora tuberculosa			1			To the state of	7	A CONTRACTOR	5	20.8	10.7	7-33		-	shirm up	-
Montipora verrilli			_ 11.		5	30.2	22.1	5-55.8			46.5	11-110.9				
Montipora verrucosa					1	22.0			2	32.5	34.3	8.2-56.7	-			
Montipora (Papillate sp. 2)			1 1	Service Control	2	39.5	30.8	17.7-61.2	i	28.4				100		

Table 25. continued CHANNEL FLOOR CHANNEL MARGIN UPPER SLOPE LOWER SLOPE 14-81 Pavona varians 37.0 38.1 Pavona (P.) obtusata 3 47.8 11-101 46.7 24.8 18.4-63 Platygyra (P.) venosa 34.5 Pavona (P.) (Encrusting sp. 1) 8.0 Platygyra pini 26.5 Pocillopora damicornis 2 3.7 2.9 2-7 1 6.0 1 2.0 1 4.0 Pocillopora danae Pocillopora eydouxi 1 37.8 1 10.0 Pocillopora meandrina 2 19.3 6.7 14.5-24 Pocillopora setchelli Porites australiensis 14.0 8.5 8-20 Porites lobata 1 6.4 3 68.7 8-133 Porites lutea 54.0 1 9.0 Stylocoeniella armata TOTALS 9.7 86 2-133 45 25.6 29.6 3.4-110.9 11.1 2-40 21.4 23.1 Ylig Bay - Station S-4 3 1-8.8 Acanthastrea echinata 4.3 4.1 Acropora humilis 18.0 2 3.4 7.2 - 12Acropora hystrix 9.6 1 5.3 4.9-6 Acropora irregularis 14.1 3 0.6 3 9.7 4.6 7-15 8.8 Acropora nana 1 7.0 Acropora nasuta 3 8.8 2.9 6.3 - 12Acropora palmerae 1 18.8 1 20.1 Acropora surculosa 12.2 Acropora valida 6.0 1 Acropora wardii 1 6.0 Acropora (Corymbose sp. 1) 14.0 1 Acropora (Corymbose sp. 2) 15.0 3 4.9-24.7 5 19.2 14.4 14.2 5.1-35.1 Alveopora (Explanate sp. 1) 9.9 Cyphyastrea serailia 1 6.7 1 41.0 Diploastrea helioporia 2 1.5 0.7 1-2 Distichopora (sp. 1) 1 11.0 Echinophyllia aspera 0.7 Favia favus 1 6.0 Favia matthai

Table 25. continued

Platygyra pini

Pocillopora brevicornis

Pocillopora damicronis

Pocillopora eydouxi Montastrea curata

LOWER SLOPE CHANNEL FLOOR CHANNEL MARGIN UPPER SLOPE Favia pallida 11.0 12.1 Favia rotumana 1 9.3 Favia russelli 2 2.3 4-7.2 5.6 Favia speciosa 12.4 Favia stelligera 8.5 4-21 1 41.1 12.3 18.3 Favites abdita Favites flexuosa 1 24.0 3 4-21 19.8 4.9 15.3-26.8 Goniastrea edwardsi 14.6 9.2 4.9-23.8 Goniastrea retiformis 24.4 6.1 17.9-30 9 15.4 5.4 Goniopora tenvidens 3 15.0 7.8 6-20 Hydnophora microconos 1 12.9 46.9 Leptastrea purpurea 11.0 2 5.0 0.1 4.9-5 Leptastrea transversa 11-31.7 Leptoria phrygia 22.3 8.9 2 18.4 4.4 15.3-21.5 9.0 8.4 Leptoseris hawaiiensis 6.7 Leptoseris incrustans 7.2 Leptoseris (Explanate sp. 1) Millepora dichotoma 7.3 2 69.0 41-97 Millepora foveolata B9.6 62.0 Millepora platyphylla Montastrea curta 1 6.4 1 12.7 1 101.0 Montipora hoffmeisteri 12.2 5.2-52 21.9 19.0 5.7-57.2 Montipora lobulata 20 17.6 6 8 2-38.7 16.2 12.4 Montipora verrilli 1 10.1 Montipora verrucosa 1 25.7 Montipora (Papillate sp. 1) 2 37.1 10.0 30-44.2 Montipora (Papillate sp. 2) 1 28.5 Montipora (Tuberculate sp. 1) 12 21.5 20.0 29.5 4.8-93.4 Pavona varians 3.4-60.8 31.6 Pavona (P.) obtusata 22.4 2 22.5 20.5 8-37 24.4 13.7 9.9-37.4 Pavona (P.) venosa Pavona (P.) (Encrusting sp. 1) 1 19.4 Platygyra daedalea 14.5 12.7 3.2-28.3

1

1

1

9.2

4.8

3

		CHAN	NEL MAI	RGIN		UPPE	R SLOP	E		LOWE	R SLOP	E		CHAN	NEL FLOO	R
Transfer of the second	n	Ţ		w	n	₹	8	w	n	Ŧ	s	w	'n	Ţ	s	w
Pocillopora meandrina Pocillopora setchelli Porites australiensis Porites lobota	1	4.9	-	-	1 9	20.5	8.2	- 5-24.9	10	6.0	8.2	1-25.4 4-8				
Porites lutea Porites murrayensis Porites superfusa Porites (S.) convexa Porites (S.) horizontalata	11	3.5	1.4	2-5	3 1	2.7 104.0	1.2	2-4	3 2	6.3	2.1	4-8 12.7-49	1	34.0		200
Porites (S.) iwayamaensis Porites (S.) vaughan Psammocora nierstraszi Psammocora digitata	1	6.3	- 1	-	1 1 1 1 1	36.0 5.5 81.0 40.6	- <u>-</u>		1						100	
Psammocora (Encrusting sp. 1) Stylocoeniella armata Stylophora mordax	1 1 1	62.0 4.0 8.7	-	=					3	3.3	2.3				, T	× 1
TOTALS	45	13.6	13.4	2-62	96	19.3	20.4	1-104	72	16.7	16.0	1-93.4	17	19.0	14.3	5.7-57
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						11 1									- VIII	

Table 26. Frequency distribution of coral colony diameters at Fouha Bay Stations N-1 through N-4 and S-1 through S-4.

		ST	TAT:	LON	N-	1	ST	ATIO	N N-	2	ST	TATIO	N N	-3	STA	ATION	N-4		SI	ATIO	N S-	-1	S	I TAT	ON S-	-2	s	TATI	ON S	-3	S'	TATI	ON S	-4	
SIZE RANGE	(cm)	Margin	Upper	Slope	Slope	Floor	Margin	Upper Slove	Lower	Floor	Margin	Upper	Lower	Floor	Margin	Upper	Lower Slope	Floor	Margin	Upper Slope	Lower Slope	Floor	Margin	Upper Slope	Lower Slope	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower Slope	Floor	тот
0 - 5 5 - 10 0 - 15 5 - 20 0 - 25 5 - 30 0 - 35 5 - 40 0 - 45 5 - 50 0 - 65 5 - 60 0 - 65 5 - 70 0 - 65 5 - 70 0 - 85 5 - 80 0 - 85 5 - 90 0 - 95 5 - 100 ver 100					The second secon	and the second of the second s	3 1	1	3 5 1 4 3 1	4	47 25 19 10 4 3 1	15 16 16 13 5 8 6 3 2 4 3 1 2 2 2 2	21 16 7 4 2 1 3 .2 1 1 1 2 7	8 11 3 3 1 2 2 1	22 55 20 8 7 3 2 1 1	14 23 17 10 14 12 8 10 7 5 5 5 2 2 2 1 1 4 2	19 24 10 9 5 5 2 1 1 2	and the proceedings of the control o	1	1	1 1 1 1 1 1 1 1 1 1	2	7 8 4 6 3 1 1	5 10 8 3 3 6 2 1	994664111	6 8 1 1 1 1	13 23 7 1 4 3 4 1	9 26 13 11 8 3 4 4 6 1 1	20 13 3 5 4 4 4 2 1 1	1	10 30 13 9 3 3 1 2 1	27	29 14 6 3 2 2 2 2 1	1	2 3 1 1 1
TOTAL		4	1	2000	0	0	4	9	l 17	11	115	} 5 113	71	32	121	147	87	0	Two Street	7	11	2	31	43	37	20	59	93	l 60	1	76	93	63	1	13

Table 27. Frequency distribution of coral colony diameters at Ylig Bay Stations N-1 through N-4 and S-1 through S-4.

	ST	ATIO	N N-	1	ST	ATIO	N N-	2	ST	ATIC	ON N-	-3	STA	TION	N-4		ST	ATIO	N S-	1	S	ATIC	N S-	-2	S	TATI	ON S	-3	S	ITAT	ON S	-4	200
IZE RANGE (cm)	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower Slope	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper	Lower	Floor	Margin	Upper Slope	Lower	Floor	тот
0 - 5 5 - 10 0 - 15 5 - 20 0 - 25 5 - 30 0 - 35 5 - 40 0 - 45 5 - 50 0 - 55 5 - 60 0 - 65 5 - 70 0 - 75 5 - 80 0 - 85 5 - 90 0 - 95 5 - 100 ever 100	the state of the s	1			1 3 2 3 1 1 1 1	1 5 4 3 8 8 3 4 4 1 1 Constitution of the state of the st	7 8 7 1 4 1 1 1 2 2	1 1 2 3 1 1	8 5 6 2 1 1 1 2 2 1 1	7 17 18 7 2 2 2 2 3 2 1 1	14 15 5 7 2 4 4 1		7 24 16 14 3 5 5 2	5 20 1.5 7 1 4 4 1 1 1 2	5 8 9 4 5 2 2 1 4 1 1 2	7 6 2 1 1 2 1 2 1 2		1 2	2 1 1	a destruit sandamentaria and esta conserva da destruitada diserva a destruita a consideramental destruitada des	11 2 1 1	12 22 3 1 1 2 2	1 5 4 3 1 1 1 3 3 1 1	1. Section 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3622	12 25 9 12 7 5 3 1 3 1 2 2	2 10 9 5 3 6 2 4 2		13 10 8 5 3 1	20 20 11 12 13 5 1 3 5 1	15 16 11 11 4 5 3 2 1 2 2	1	137 239 158 113 67 48 36 22 29 17
TOTAL	0	1	3 22.4	0		29 IVL1	31	9	29	67	59	1	80	65	48	27	1	12	4	0	17	32	20	17	14	86	45	0	45	96	72	17	940

73

Table 28. Frequency distribution of coral colony growth forms at Fouha Bay Stations N-1 through N-4 and S-1 through S-4.

		ST	ATIO	N N-	1	ST	ATIO	N N-	2	ST	TATIO	N N-	-3	STA	TIO	N-4	4	ST	ATIO	N S-	-1	S	ITAT I	ON S	-2	S	TATI	ON S	3-3	S	TATI	ON S	-4	1
COLONY FORM	in Dec	Margin	Upper	Lawer	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	TOTA
Arborescent	Vitta in				100						6	7		3	_ 2				4	,						1	1				1			20
Cespitose			4	T			1	17	2	11	14	1	4	29	19	5		100	5	3	2	2		4	2	6	15	1		13	12	1		152
Corymbose		4		W.			1			8	9			29	10	1						1	4			5	4	+ 1	1	4	3	34		117
Massive						4	3	2	2	57	34	15	23_	34	43	27		1	2	7		19	15	11	9	30	31	3	8	41	47	25	1	486
Encrusting		Ĺ		Ì			4	8	6	30	23	7	4	19	40	38				1		6	14	10	8	9	27	17		12	20	Į.	21	303
Columnar	1	1	Yest.			17		2			11	23	111	6	6	16		30		1		3	3	4		5	6	23		18	6	1	Jià)	114
Explanate Plates								2	i	2	12	18	1		5								6	7	1	1	7	16	1	¥.	3	3	31	8.5
Foliose	No.	ľ	1			1		2	12		1		101					17.53	i		YΩ	8	17	1		1 5			3.1	19			14	
Flabellate Plates		ir.			. 7	Ţ			1	2			1		2	Į.							1 3		TE.		1		ij	2	1			9
Free (Fungiids)		12			10. 10. 21. 41.		ijā	10.3										13 m		ď,	D Ki	20.4	7		8		76		1	2.5	181 3	10.11	13	7. C
Phaceloid	1	1	W to			1 12	34	1	1.4	4	3			1	20	100		17			1 3	Н	1	-	2	1	2.7	7		4	1	P		38
Solitary	1	Į	II V	-1	1	l¥a.	. Diji	65.5		17	TOX	k-3	+	div.	THIN	N-4	Į.g	VI.) (1)	-1		ÍW.	进	+5	31	711	IK Y	51	3,5	11	45 H	31		1
TOTAL	or ope	4	1	0	0	4	9	17 (10%)	11	115	113	71	32	121	147	87	0	1	7	11	2	31	43	37	20	59	93	60	1	76	93	63	1	1330

Table 29. Frequency distribution of coral colony growth forms at Ylig Bay Stations N-1 through N-4 and S-1 through S-4.

- THE ELA	ST	ATION	N-	1	ST	ATIC	N N-	-2	S	TATI	ON N	-3	S	TATI	ON 1	1-4	ST	ATIO	N S-	1	SI	TATI	ON S	-2	SI	TATI	ON S-	-3	ST	ATIO	N S-	4	
COLONY FORM	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper	Lower	Floor	Margin	Upper Slope	Lower	Floor	Margin	Upper Slope	Lower	Floor	TOTA												
Arborescent	(a -)	1	1		1				1	4	1		4	1	1										3		T.		1	4	2		23
Cespitose		1			2	7	12	1	5	13	1		14	5	10			6			13	6	1	1		11	SDE		6	16	11	4	142
Corymbose					1	4	-10		1	2		3	7.	2	1	Li						1	8.	1	1	2		Dis.	6	4		3	32
Massive			2		4	11	12	4	10	23	11	1	36	24	6	4	1	4	4		4	11	12	8	5	28	20	(22)	10	28	13	3	299
Encrusting			1		4	6	7	3	11	24	36		16	23	17	13		2		7		14	6	7	1	21	23		22	26	28	6	317
Columnar					1				1		2	7		4	3				5					1	if	3	entra .	1		2	1	1	16
Explanate Plates					1	1		. 1	1	1	9	1		5	4	10										6	2		İ	14	16	7	76
Foliose								1	3.3	J.			1		2				7	1	1				3	170	110			1	1	i i	6
Flabellate Plates												17	1	1				1		- 1						T	17		Ì	1			3
Free (Fugniids)						į.			7.7														11.	7		199		are.		1	# 12 1		0
Phaceloid				1 19	5	Ŷ	3		a		1	3	1	19	4			2		i in		d j	1		4	15	# F	音		61	1 10		26
TOTAL	0	1	3	0	13	29	31	9	29	67	59	1	80	65	48	27	1	12	4	0	17	32	20	17	14	86	45	0	45	96	72	17	940
	usper :			NT :	31.9		1000		21			ASI	1,74,				eri,			LDTI				9-1									

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fourth stations sched to have a kigaer "Lin o' cornover

As we moved along the river channel in the bay from the river mouth towards the open sea, there was a marked decrease in suspended sediment load and there was a marked increase in the complexity of the coral community. There was a six-fold (south side of the bay) to thirty-four-fold (north side of the bay) decrease in suspended sediment load between the first and fourth stations in Fouha Bay and a four-fold (north) to nine-fold (south) decrease in suspended sediment load between the first and fourth stations in Ylig Bay (Table 20). As we moved out of Fouha Bay to the fifth station, the suspended sediment load began to increase again (Table 20). This was possibly because heavier wave action on the open coast kept more materials in suspension.

As the suspended sediment load generally decreased along the shore-to-seaward gradient, the complexity of the coral community and the prevalence of corals generally increased. Between the first and fourth stations in both Fouha Bay and Ylig Bay, the numbers of coral species increased from less than ten to over one hundred (Table 21), the number of genera of corals increased from less than ten to thirty-five or over (Table 21), and the percent of the solid substrate occupied by corals increased from less than 2% to over 12% (Tables 22 and 23).

If the average suspended sediment load for 4.4 cm² over 6-week periods was in the range of 30 to 40 gms dry weight, then we would expect a depauperate coral community of less than 10 species covering less than 2% of the solid substrate to persist. If the average suspended sediment load was in the range of one to 6 gms dry weight, then we would expect a rich coral community of over 100 species covering over 12% of the solid substrate to develope. Suspended sediment loads with ranges between the above ranges would produce coral communities with intermediate species richness of corals and proportions of solid substrata occupied by corals.

Suspended sediment load is one of many factors that influence the structures of the coral communities in Fouha Bay and Ylig Bay. Water temperature, pH, salinity, nitrate content and phosphate content may influence the structures of coral communities on a larger scale of reference, but with the scope of this study in the two bays, these factors varied with time to such a large extent that the differences in magnitude of these factors between stations was generally negligible or confused.

When comparing the size distributions of the coral populations at the different stations, we find the third stations to have the most evenly proportioned size distributions (Tables 26 and 27). This suggests that recruitment and mortality may be relatively regular and therefore the populations of corals may be relatively stable at the third stations. At the other stations, there are relatively more corals in the small size classes and relatively few in the large size classes. This suggests that even if recruitment is greater, the mortality is also greater. Even the

fourth stations appear to have a higher rate of turnover in the coral populations than do the third stations. The relative evenness of distribution into size classes in the third stations suggests that both recruitment and mortality are relatively less sporadic than at other stations.

A similar examination of size distribution of the coral populations between the margins, the upper slopes, the lower slopes and the floors reveals that the coral populations on the slopes have the most even age distributions (Tables 26 and 27). The upper slope populations appear to have relatively steady recruitment with the greatest survival of juveniles to adulthood and old age. The lower slope populations are also relatively stable, but there appears to be more turnover, i.e., there is relatively more recruitment and fewer corals in the larger size classes on the lower slope than on the upper slope. The populations on the reef margin appear to have a lot of recruitment, but also high mortality. The coral populations on the channel floor are very depauperate because of very low success of recruitment. This is probably mainly because of the accumulation of sediments on the channel floor which usually bury and smother settling planulae and juvenile corals.

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