

Resurvey of the Aua Transect Prior to the Ship Removal

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On 16-18 October 1999, we measured 794 coral colonies and counted macroinvertebrates (in this case all were echinoderms) in 578 quadrats (0.25 m^2) taken at 10 stations along Mayor's 271 m Aua Line. The abundances of 31 species of corals along the transect are given in Table 1. The size-distributions of the 31 species of corals are given in Table 2. The percent living coral cover and number of coral colonies per m^2 for the entire communities at the ten stations along the transect are given in Table 3 for both 1998 and 1999. The abundances of seven species of echinoderms along the transects in 1998 and 1999 are given in Table 4.

The most striking event that has recently occurred has been the abundant recruitment of the delicate branching coral *Acropora nana* and the common sea cucumber *Stichopus chloronotus*. Jennifer Aicher mentioned that the abundant recruitment of *Acropora nana* is widespread around the island of Tutuila this year. Along the Aua Transect, 237 of the colonies counted were *Acropora nana*. The 78% increase in living coral cover and the nearly three-fold increase in coral abundance is largely a result of the abundant recruitment of *Acropora nana* and *Pocillopora damae*.

There was no terrestrial sediment observed. The fine-grained substrata were all white calcium carbonate sand, apparently of biogenic marine origin. The water was very clear. The corals seemed to be in good health. Crustose coralline algae, possibly *Porolithon onkodes*, was prevalent on all the hard substrata. Crustose coralline algae is especially favorable for coral recruitment and is generally indicative of a healthy coral reef. The sponges (*Dysidea herbacea*) and ascidians (*Lissoclinum patella* and *Diplosoma similis*) with symbiotic algae are sensitive to turbid water and their prevalence along the transect indicates that the waters on this reef flat are not as polluted as they once were, possibly because of the extension of the cannery outfalls from the inner to the outer harbor in 1992.

The coral community is typical of a reef flat of this kind, with a broad array of types, both long-lived and ephemeral. Slow-growing, long lived species such as the mound-shaped *Porites* were found all along the transect (Tables 1 and 2). Individuals up to 50 cm in diameter were observed all along the transect, although our quadrats did not actually fall on any of these larger colonies. The faster-growing, rapidly recruiting, branching species such as *Acropora* spp. and *Pocillopora* spp. were also prevalent.

Recruitment and healthy growth of corals was also observed around Vessel # 8. One individual colony of *Pocillopora verrucosa* growing on the bottom of the wreckage was already 31 X 22 cm in colony diameter.

Stichopus chloronotus is about $2 \frac{1}{2}$ times as common as last year (Table 4). It is unusual to find small echinoderm recruits, but this year, *Stichopus chloronotus* were found as small as 2.5 cm in length.

In summary, the coral community growing on the reef flat along the Aua Transect is in the best shape it has been for years. The permanent record of the coral community since 1917 provides science with an especially valuable long-term record of the response of coral-reef communities to various stresses.

Table 1. Numbers of corals per m² along the Aua Transect in October 19

Distance from shore (m)

271 259 247 233 213 183 160 140 122

<i>Pocillopora damicornis</i>		0.4	0.06	0.3	0.06	0.06			0.2
<i>Pocillopora danae</i>	11.2	4.3	3.6	0.2	0.3	0.06	0.2	0.1	0.06
<i>Pocillopora verrucosa</i>	1.2	1.3	0.4			0.4	0.06		0.2
<i>Pocillopora meandrina</i>	1.8	0.06			0.06		0.06		
<i>Acropora nana</i>	35.8	3.0	0.7				0.06		
<i>Acropora verweyi</i>		3.1	1.1						
<i>Acropora hyacinthus</i>		0.06							
<i>Acropora digitata</i>			0.06						
<i>Acropora aspera</i>						0.1			
<i>Montipora verrilli</i>		0.2	0.1		0.06				
<i>Montipora grisea</i>		0.06					0.06		
<i>Montipora sp.</i>			0.1						
<i>Porites spp. (mound)</i>	1.8	0.1	0.2	0.1	0.4	0.1	0.06	0.1	
<i>Porites randalli</i>	0.6	0.3							
<i>Porites lichen</i>	1.4		0.06						
<i>Porites rus</i>	0.6	0.6	0.06					0.06	
<i>Stylaraea punctata</i>					0.06				0.06
<i>Psammocora contigua</i>	1.4		1.1	0.5	0.1	0.3			
<i>Pavona divaricata/decussata</i>	13.6	1.2							
<i>Pavona divaricata</i>			0.5						
<i>Pavona decussata</i>			0.4		0.06				
<i>Pavona explanulata</i>		0.06							
<i>Galaxea fascicularis</i>	0.4								
<i>Favia matthaii</i>	0.2								
<i>Favites pentagona</i>		0.06	0.06						
<i>Favites abdita</i>	0.2								
<i>Goniastrea retiformis</i>				0.2					
<i>Leptastrea purpurea</i>				0.1	0.3	0.2	0.3		
<i>Cyphastrea sp.</i>					0.06				
<i>Millepora platyphylla</i>	5.0	0.1	0.1	1.4	3.7	2.0	2.2	0.7	
<i>Millepora tuberculosa</i>		0.06							
<i>Pocillopora eydouxi</i>		0.06							

<i>Favia matthaii</i>	20								
<i>Favites pentagona</i>		2	5						
<i>Favites abdita</i>	18								
<i>Goniastrea retiformis</i>				2.0 ± 0.5					
<i>Leptastrea purpurea</i>				2.3 ± 0.4	3.4 ± 1.3	2.3 ± 0.6	2.8 ± 1.6		
<i>Cyphastrea</i> sp.					2				
<i>Millepora platyphylla</i>	12 ± 16	4.5 ± 0.7	9.0 ± 0.0	8.2 ± 6.0	8.1 ± 6.2	14 ± 13	7.1 ± 5.7	7.9 ± 3.6	
<i>Millepora tuberculosa</i>		15							
<i>Pocillopora eydouxi</i>		24							

Table 3. Living coral cover and abundance of colonies along Aua Transect.

Percent living coral cover

	Distance from shore (m)									
	271	259	247	233	213	183	160	140	122	91
1999	23.9	4.6	1.9	1.1	2.7	3.9	1.1	0.5	0.4	0.2
1998		3.9	0.5	0.005	1.4	0.9	0.8	1.3	0.4	0.03

Number of colonies per m²

	Distance from shore (m)									
	271	259	247	233	213	183	160	140	122	91
1999	75	15	8.6	2.8	5.2	3.3	3.0	1.0	0.5	0.2
1998		7.0	0.4	0.07	0.8	1.2	0.5	0.7	0.7	0.5

Table 4.

	Distance from shore (m)									
	271	259	247	233	213	183	160	140	122	91
1999										
<i>Stichopus chloronotus</i>			0.06	5.3	5.5	6.5	2.7	1.8	2.7	1.4
<i>Holothuria atra</i>			0.06					0.1		
<i>Mespilia globulus</i>					0.06	1.0	3.5	1.2	0.06	
<i>Echinothrix diadema</i>		0.3	0.06			0.1		0.06		
<i>Echinometra matthaii</i>		0.06	0.2			0.1		0.1		
<i>Echinostrephus</i> sp.		0.06	0.06	0.06					0.06	
<i>Linckia laevigata</i>										
1998										
<i>Stichopus chloronotus</i>			0.05	2.6	4.2	1.6	0.2	0.6	0.4	0.2
<i>Holothuria atra</i>		0.07	0.05			0.05		0.05		0.2
<i>Mespilia globulus</i>							0.05			
<i>Echinothrix diadema</i>		0.07				0.05	0.05			
<i>Echinometra matthaii</i>						0.05			0.05	
<i>Echinostrephus</i> sp.					0.05	0.05				
<i>Linckia laevigata</i>							0.05			