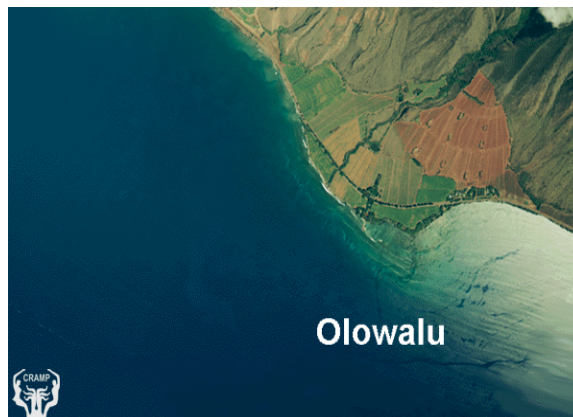


Olowalu, Maui

20° 48.505' N 156° 36.693' W

Management Status: Open Access

Area Description: Inland forest reserve, watershed (Olowalu stream drainage). Shoreline transition from sugarcane to urban development (pending). Shoreline eroding. Narrow olivine sand beach. Basalt cobble subtidal zone with gradually sloping seaward reef platform. Complex subtidal topography with extensive spur and groove system, sand channels and aggregated coral formations (large *Porites lobata* heads). Coral cover increases seaward. Southern site exposed to south swell and corresponding sedimentation / high turbidity.



Limited tourist and fishing activity.

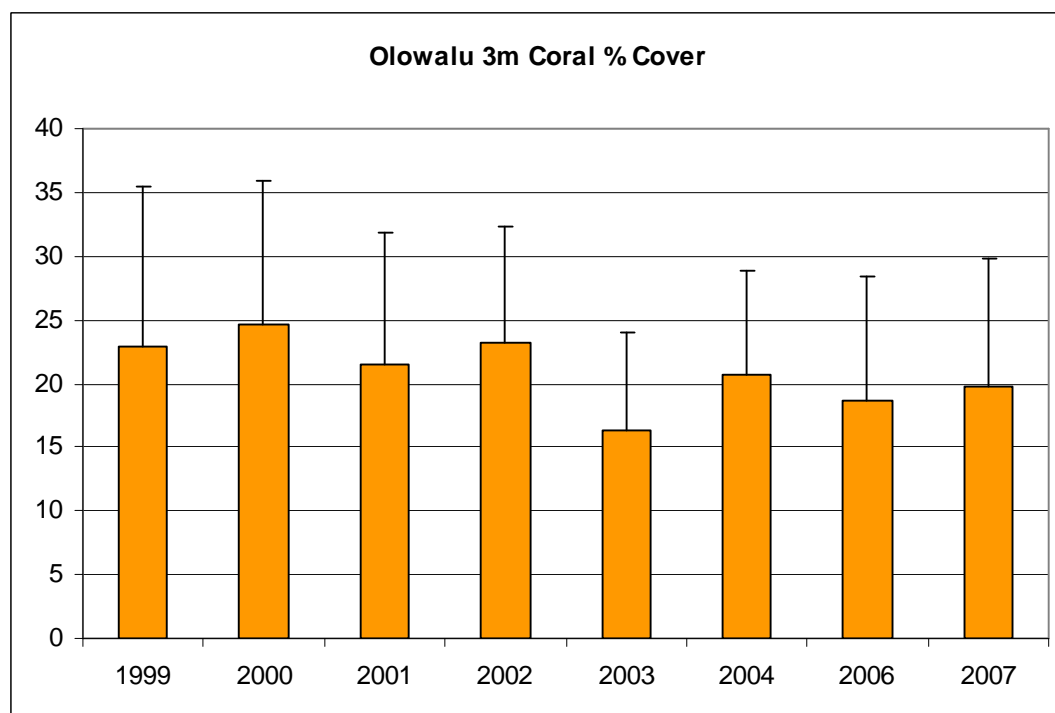
Benthic Habitat Data: 3 m

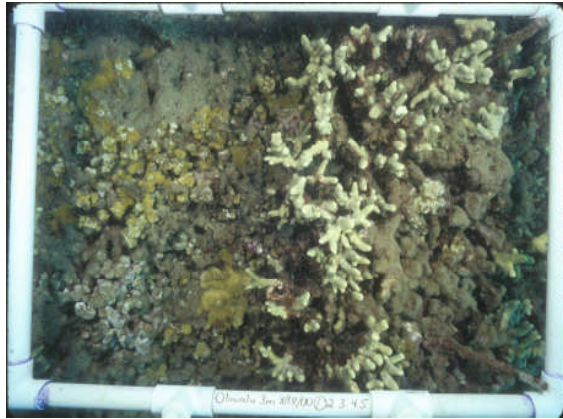
	Depth (m)	Rugosity	Sediment Composition (% wt.)		Sediment Grain Size (% wt.)			
			LOI	H ₂ CO ₃	Gravel	Coarse	Fine	Silt
Mean	3	1.52	3.18	41.95	11.71	29.09	58.79	0.41
S.D.		0.10	0.16	2.07	8.40	13.36	21.77	01

Video Transect data (3 m):

Species	% Cover:		1999		2000		2001		2002		2003	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Cyphastrea ocellina</i>	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0	0
<i>Fungia scutaria</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Leptastrea purpurea</i>	0.1	0.2	0.3	0.7	0.1	0.2	0.1	0.2	0.1	0.4	0	0
<i>Montipora flabellata</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Montipora patula</i>	2.5	3.6	2.8	2.7	3.0	5.0	1.8	2.2	1.8	2.2	1.8	2.2
<i>Montipora studeri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Montipora capitata</i>	6.6	5.3	5.9	5.0	6.4	5.2	8.1	5.7	5.0	5.0	2.7	2.7
<i>Pavona duerdeni</i>	1.7	2.3	1.6	2.1	1.5	2.6	1.7	2.1	0.6	1.4	0.6	1.4
<i>Pavona maldivensis</i>	0	0	0	0	0.0	0.1	0	0	0	0	0	0
<i>Pavona varians</i>	0.5	0.8	1.0	1.3	0.5	0.5	0.6	0.6	0.2	0.5	0.2	0.5
<i>Pocillopora damicornis</i>	0	0	0.0	0.1	0.0	0.1	0.0	0.1	0	0	0	0
<i>Pocillopora eydouxi</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pocillopora ligulata</i>	0	0	0	0	0	0	0	0	0	0.1	0.4	0.4
<i>Pocillopora meandrina</i>	0.8	1.3	1.8	1.8	1.2	1.4	1.8	2.1	1.3	1.6	1.3	1.6
<i>Porites brighami</i>	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0	0	0	0
<i>Porites compressa</i>	4.1	6.5	3.8	5.5	3.4	5.5	3.6	6.1	2.2	3.9	2.2	3.9
<i>Porites evermanni</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Porites lichen</i>	0	0	0.1	0.1	0.0	0.1	0.3	0.2	0	0	0	0
<i>Porites lobata</i>	6.1	13.8	7.1	13.3	5.1	9.5	4.8	9.4	5.1	8.9	5.1	8.9
<i>Porites rus</i>	0.6	1.8	0.0	0.1	0.2	0.5	0.1	0.4	0.0	0.1	0.0	0.1
<i>Psammocora nierstraszi</i>	0.1	0.2	0.2	0.2	0.0	0.1	0.2	0.2	0	0	0	0
Unknown Coral	0	0	0	0	0	0	0	0	0	0	0	0
Total Coral	22.9	12.5	24.6	11.3	21.5	10.3	23.1	9.1	16.3	7.7	7.7	7.7
Species Richness:	12		14		15		14		9		9	
Macroalgae	0.2	0.2	0.2	0.2	0.1	0.1	0.7	0.5	3.2	3.6	3.2	3.6

Species	% Cover: 2005		2006		2007	
	Mean	SD	Mean	SD	Mean	SD
<i>Cyphastrea ocellina</i>	0	0	0	0	0	0
<i>Fungia scutaria</i>	0	0	0	0	0	0
<i>Leptastrea purpurea</i>	0	0	0	0	0	0
<i>Montipora flabellata</i>	0	0	0	0	0	0
<i>Montipora patula</i>	2.1	2.7	2.8	2.6	2.6	4.6
<i>Montipora studeri</i>	0	0	0	0	0	0
<i>Montipora capitata</i>	4.4	3.2	6.3	3.7	5.5	2.5
<i>Pavona duerdeni</i>	0.4	0.9	0.8	1.6	1.0	1.6
<i>Pavona maldivensis</i>	0	0	0	0	0	0
<i>Pavona varians</i>	0.3	0.6	0.2	0.4	0.3	0.9
<i>Pocillopora damicornis</i>	0	0	0	0	0.0	0.1
<i>Pocillopora eydouxi</i>	0	0	0	0	0	0
<i>Pocillopora ligulata</i>	0.0	0.1	0	0	0	0
<i>Pocillopora meandrina</i>	0.6	0.9	0.9	1.5	0.5	1.2
<i>Porites brighami</i>	0	0	0	0	0	0
<i>Porites compressa</i>	0	0	0	0	0	0
<i>Porites evermanni</i>	0	0	0	0	0	0
<i>Porites lichen</i>	0	0	0	0	0	0
<i>Porites lobata</i>	8.8	11.3	7.6	10.7	9.3	8.3
<i>Porites rus</i>	0	0	0.1	0.3	0.4	1.4
<i>Psammocora nierstraszi</i>	0	0	0	0	0	0
Unknown Coral	0	0	0	0	0	0
Total Coral	16.6	11.7	18.7	9.7	19.7	10.2
Species Richness:	7		7		8	
Macroalgae	1.8	1.8	2.8	2.2	0	0





Photoquadrat Data (3m): Photo analysis pending

Findings: Initial coral cover rank is 25 among 60 reefs. Coral stayed roughly the same between the 2 sampling periods. Low macroalgae coverage. High percentage of crustose coralline algae and turf algae. High percentage of fine sediments with high content of terrigenous material. *Porites lichen*, *P. rus* and *Psammocora nierstraszi* presence notable as these species are not common to sites surveyed.

Olowalu, Maui

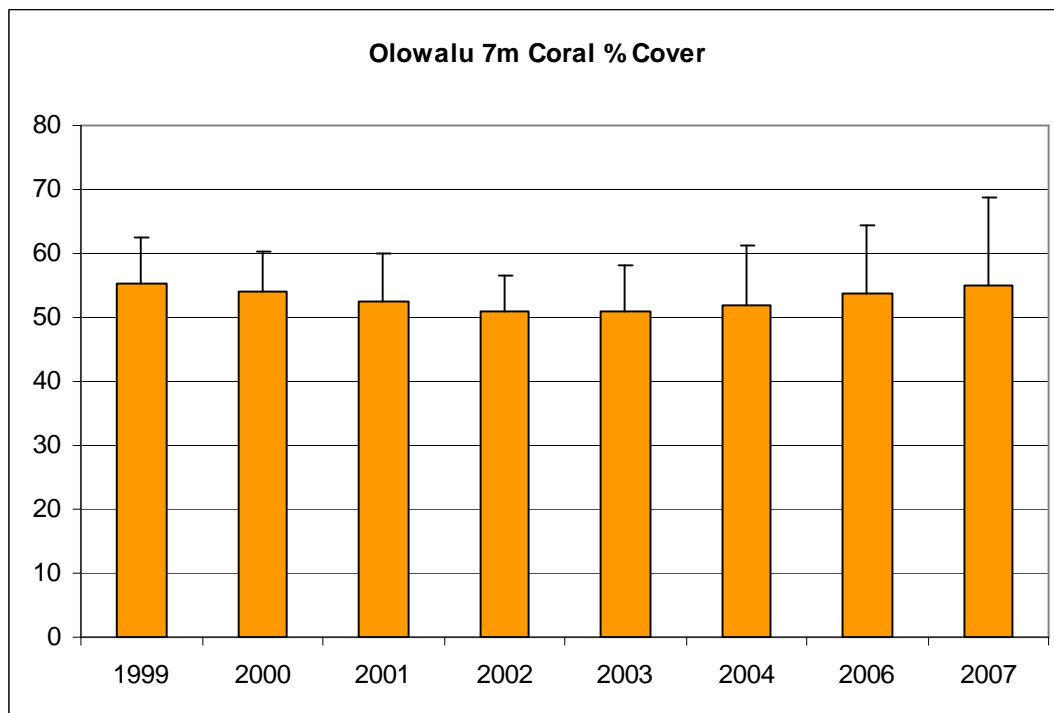
Benthic Habitat: 7 m

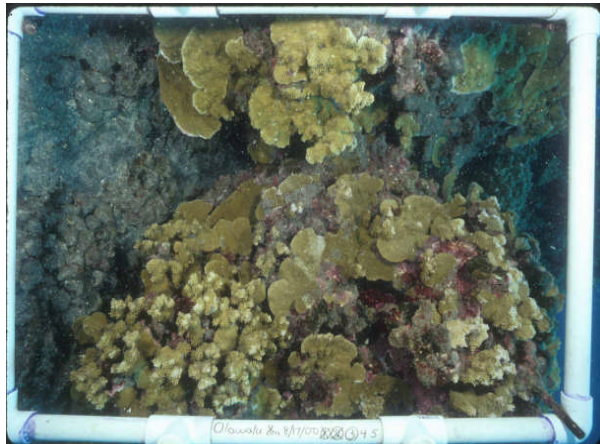
	Depth (m)	Rugosity	Sediment Composition (% wt.)		Sediment Grain Size (% wt.)			
			LOI	H ₂ CO ₃	Gravel	Coarse	Fine	Silt
Mean	7	1.90	3.79	28.22	0.62	11.35	87.17	0.86
S.D.		0.39	0.26	0.61	05	0.95	1.00	00

Video Transect data (7 m):

Species	% Cover:		1999		2000		2001		2002		2003	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Cyphastrea ocellina</i>	0.0	0.1	0.1	0.1	0	0	0	0	0	0	0	0
<i>Fungia scutaria</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Leptastrea purpurea</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Montipora flabellata</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Montipora patula</i>	15.1	2.7	15.4	3.5	16.5	6.4	14.1	4.1	12.6	6.2		
<i>Montipora studeri</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Montipora capitata</i>	21.1	10.2	20.3	10.8	17.5	7.7	19.5	8.2	22.1	8.5		
<i>Pavona duerdeni</i>	0.4	0.6	0.3	0.5	0.1	0.2	0.1	0.2	0.1	0.3		
<i>Pavona maldivensis</i>	0	0	0	0	0	0	0.0	0.1	0	0		
<i>Pavona varians</i>	0.0	0.1	0.4	0.6	0.1	0.2	0.3	0.4	0.1	0.2		
<i>Pocillopora damicornis</i>	0	0	0	0	0	0	0	0	0	0		
<i>Pocillopora eydouxi</i>	0	0	0	0	0	0	0	0	0.1	0.2		
<i>Pocillopora ligulata</i>	0	0	0	0	0	0	0	0	0	0		
<i>Pocillopora meandrina</i>	1.7	1.0	1.7	0.9	1.4	1.0	1.5	0.6	1.4	1.3		
<i>Porites brighami</i>	0	0	0	0	0	0	0	0	0	0		
<i>Porites compressa</i>	1.6	2.4	1.3	2.3	2.0	3.0	1.2	1.8	0.2	0.4		
<i>Porites evermanni</i>	0	0	0	0	0	0	0	0	0	0		
<i>Porites lichen</i>	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0	0		
<i>Porites lobata</i>	15.5	12.7	14.4	11.3	15.1	12.9	14.2	11.8	14.3	12.8		
<i>Porites rus</i>	0	0	0	0	0	0	0	0	0.1	0.2		
<i>Psammocora nierstraszi</i>	0	0	0	0	0	0	0.0	0.1	0	0		
Unknown Coral	0.0	0.1	0	0	0	0	0	0	0	0		
Total Coral	55.4	7.0	54.0	6.2	52.6	3.8	50.9	2.8	51.0	1.8		
Species Richness:	10		9		8		10		9			
Macroalgae	0.0	0.1	0.1	0.2	0	0	0.0	0.1	0.1	0.2		

Species	% Cover:		2004		2006		2007		Mean	SD	Mean	SD
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
<i>Cyphastrea ocellina</i>	0	0	0	0	0	0	0	0				
<i>Fungia scutaria</i>	0	0	0	0	0	0	0	0				
<i>Leptastrea purpurea</i>	0	0	0	0	0	0	0	0				
<i>Montipora flabellata</i>	0	0	0.1	0.3	0	0	0	0				
<i>Montipora patula</i>	13.3	3.0	12.7	4.1	14.8	5.3						
<i>Montipora studeri</i>	0	0	0	0	0	0	0	0				
<i>Montipora capitata</i>	21.9	10.5	23.0	10.1	23.3	12.0						
<i>Pavona duerdeni</i>	0	0	0.3	0.5	0.2	0.5						
<i>Pavona maldivensis</i>	0	0	0	0	0	0						
<i>Pavona varians</i>	0.1	0.2	0.0	0.1	0	0						
<i>Pocillopora damicornis</i>	0	0	0	0	0.1	0.3						
<i>Pocillopora eydouxi</i>	0	0	0	0	0	0						
<i>Pocillopora ligulata</i>	0.2	0.6	0.0	0.1	0	0						
<i>Pocillopora meandrina</i>	1.5	1.2	1.4	1.6	0.3	0.5						
<i>Porites brighami</i>	0	0	0	0	0	0						
<i>Porites compressa</i>	0.1	0.4	0	0	0	0						
<i>Porites evermanni</i>	0	0	0	0	0	0						
<i>Porites lichen</i>	0	0	0	0	0	0						
<i>Porites lobata</i>	14.3	7.5	15.8	12.3	16.4	11.4						
<i>Porites rus</i>	0	0	0.6	1.9	0	0						
<i>Psammocora nierstraszi</i>	0	0	0	0	0	0						
Unknown Coral	0	0	0	0	0	0						
Total Coral	51.4	8.3	53.9	10.6	55.0	13.7						
Species Richness:	7		9		6							
Macroalgae	0.2	0.3	0.3	0.5	0.0	0.1						





Photoquadrat Data (7 m): Photo analysis pending

Findings: Initial coral cover rank is 8 among 60 reefs. Coral stayed roughly the same between the 2 sampling periods. Low macroalgae coverage. High percentage of crustose coralline algae and turf algae. High percentage of fine sediments with high content of terrigenous material. *Porites lichen* presence notable as this species is not common to sites surveyed.

Olowalu, Maui

Fish Data: 3 m and 7 m

Species	Density (#/125m ²)				Biomass (g/125m ²)			
	3 m		7 m		3 m		7 m	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Abudefduf abdominalis</i>			19.5	9.1			955.5	496.2
<i>Acanthurus leucopareius</i>	0.5	1.0			5.5	11.1		
<i>Acanthurus nigrofuscus</i>	51.0	7.4	33.0	12.9	2150.4	381.3	1118.9	358.4
<i>Acanthurus olivaceus</i>	19.0	38.0	1.5	3.0	3441.6	6883.2	271.7	543.4
<i>Acanthurus triostegus</i>	5.5	11.0			450.7	901.4		
<i>Canthigaster amboinensis</i>	1.0	1.2			28.5	35.2		
<i>Canthigaster jactator</i>	5.0	4.2	2.0	2.8	33.6	28.6	10.4	15.4
<i>Cephalopholis argus</i>			2.5	1.0			1627.3	1445.9
<i>Chaetodon lunula</i>	0.5	1.0			34.0	68.0		
<i>Chaetodon multicinctus</i>			4.0	3.3			117.1	95.6
<i>Chaetodon ornatissimus</i>	3.0	3.5	2.0	2.8	473.1	546.9	291.3	432.2
<i>Chaetodon quadrimaculatus</i>	1.5	1.9	2.0	2.8	115.6	147.5	128.3	170.1
<i>Chaetodon trifascialis</i>			3.0	2.0			114.0	78.1
<i>Chaetodon unimaculatus</i>	1.0	2.0	1.5	1.9	57.6	115.2	86.4	110.3
<i>Chlorurus sordidus</i>	3.5	3.4			599.8	820.7		
<i>Chromis ovalis</i>	0.5	1.0	1.0	2.0	1.2	2.4	6.5	13.1
<i>Chromis vanderbilti</i>			42.5	26.1			153.3	110.1
<i>Cirripectes vanderbilti</i>	0.5	1.0	0.5	1.0	2.1	4.2	3.0	6.0
<i>Coris gaimard</i>	0.5	1.0			2.0	3.9		
<i>Ctenochaetus strigosus</i>	18.5	12.8	23.0	12.8	1302.3	958.8	1914.9	1118.3
<i>Forcipiger flavissimus</i>	0.5	1.0			23.4	46.8		
<i>Gomphosus varius</i>	5.0	1.2	3.5	1.0	102.8	23.6	106.0	71.1
<i>Halichoeres ornatissimus</i>			1.5	1.0			13.7	9.3
<i>Kyphosus species</i>	1.0	1.2			167.5	194.3		
<i>Labroides phthirophagus</i>	0.5	1.0			2.2	4.4		

<i>Melichthys niger</i>	9.0	6.2	15.5	14.5	3544.4	2372.4	5670.9	5704.4
<i>Melichthys vidua</i>			0.5	1.0			166.9	333.8
<i>Monotaxis grandoculis</i>			1.0	1.2			364.1	427.4
<i>Mulloidichthys flavolineatus</i>			1.0	1.2			273.6	319.5
<i>Naso lituratus</i>	2.5	1.9	2.5	1.9	731.4	545.1	474.1	366.5
<i>Naso unicornis</i>	0.5	1.0	0.5	1.0	96.8	193.5	84.2	168.5
<i>Ostracion meleagris</i>	0.5	1.0			1.7	3.5		
<i>Oxycheilinus unifasciatus</i>			0.5	1.0			59.3	118.5
<i>Paracirrhites forsteri</i>	0.5	1.0			60	120		
<i>Parupeneus cyclostomus</i>	0.5	1.0			20.9	41.9		
<i>Parupeneus multifasciatus</i>	0.5	1.0	1.0	1.2	88.5	177.1	98.2	144.6
<i>Plectroglyphidodon imparipennis</i>	0.5	1.0			1.8	3.5		
<i>Plectroglyphidodon johnstonianus</i>			1.0	1.2			10	11.5
<i>Rhinecanthus rectangulus</i>	1.5	1.0			168.3	112.2		
<i>Scarus psittacus</i>	2.0	2.8	0.5	1.0	14.5	16.7	189.8	379.6

Olowalu, Maui

Fish Data: 3 m and 7 m

Species	Density (#/125m ²)				Biomass (g/125m ²)			
	3 m		7 m		3 m		7 m	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Scarus rubroviolaceus</i>	0.5	1.0	4.0	4.3	318.7	637.5	1450.7	1514.9
<i>Stegastes fasciolatus</i>	2.0	2.8	2.0	1.6	25.7	43.6	65.4	98.5
<i>Stethojulis balteata</i>	10	0	3.5	1.0	135.6	38.3	47.7	16.0
<i>Sufflamen bursa</i>			2.5	1.0			216.5	83.6
<i>Thalassoma duperrey</i>	26.5	6.8	32.0	6.7	688.7	77.2	689.3	238.8
<i>Zebrasoma flavescens</i>			1.0	2.0			94.2	188.5
<i>Zebrasoma veliferum</i>	0.5	1.0			180.3	360.7		
Total/Depth Avg ± SD:	176.0	3.7	212.0	4.0	15071.3	468.3	16873.2	474.6
Species Richness	34		32					
Species Diversity	2.13		2.36					

Findings: Among 60 reefs, Olowalu 3m ranked 41 in species richness, 39 in density, 29 in biomass, and 37 in diversity. Olowalu 7m ranked 23 in species richness, 28 in density, 22 in biomass, and 17 in diversity. The most abundant species were the Brown surgeonfish (*Acanthurus nigrofuscus*) and the Blackfin chromis (*Chromis vanderbilti*) at the 3m and 7m reefs respectively. The species with the highest biomass was the Black durgon (*Melichthys niger*) at both the 3m and 7m reefs respectively. No rare or unusual species observed.