Tables

Table 1. Summary of monitoring dates and 411 samples collected. SAR = shallow units, SNR = shallow natural reef, MAR = mid-depth units, MNR = mid-depth natural reef, DAR = deep units, DNR = deep natural reef, BH = Bahia Honda rubble reefs, AMS = American Shoal rubble reefs.

Date	Water temp. (°C)		SAR	SNR	MAR	MNR	DAR	DNR	BH	AMS
6/27/88	28.0				2					
6/30/88	29.0		3		2		2			
7/23/88	30.0		3		2		2			
7/25/88	30.0			12						
8/10/88	29.0		3		2		2			
9/18/88	28.0		3		2		2			
9/20/88	28.0					2		3		
9/22/88	29.0					4				
10/2/88	28.5	*	3	12						
10/22/88	27.0							8		
10/23/88	27.0				2	8	2			
12/7/88	22.0		3	3						
12/11/88	24.0			9						
12/31/88	24.5				2		2			
2/4/89	25.0		3	12						
3/14/89	22.0				2		2			
3/19/89	22.0					8		6		
4/8/89	25.0	*	3	12						
5/6/89	28.0				2	4	2	2		
5/7/89	28.0					4		6		
6/4/89	27.0		3	4						
6/24/89	28.0				2	5	2	2		
6/25/89	27.0					3		6	3	
7/17/89	30.0									2
7/31/89	30.0		3	2					15	
8/2/89	30.0			10						8
8/12/89	30.5								8	14
9/2/89	29.5				2	4	2	2		
9/3/89	29.5					4		6		
10/7/89	28.5		3	12						
11/4/89	25.0				2	4	2	1		
11/5/89	26.0					4		6		
1/7/90	23.0				2	2	2	2		
1/11/90	22.0					6		6		
2/10/90	23.0		3	11						
3/3/90	23.5				2	5	2	2		

Table 1. Summary of monitoring dates and 411 samples collected. SAR = shallow units, SNR = shallow natural reef, MAR = mid-depth units, MNR = mid-depth natural reef, DAR = deep units, DNR = deep natural reef, BH = Bahia Honda rubble reefs, AMS = American Shoal rubble reefs. (cont.)

Date	Water temp. (°C)	SAR	SNR	MAR	MNR	DAR	DNR	BH	AMS
3/4/90	23.0				3		6		
4/7/90	24.5 *	3	12						
5/6/90	26.0 *			2	4	2	2		
6/18/90	26.0 *				4		2		
6/18/90	28.5	3							
6/30/90	29.0			2		2			
Total:		42	111	32	78	30	68	26	24

* Water temperature data from Sombrero Reef, obtained from the SEASCAPE program of the Florida Institute of Oceanography.

Table 2. One hundred and seventy-nine species censused at artificial and natural reefs from June 1988 to June 1990.

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
ABU SAXA	*Abudefduf saxatilis*	Sergeant major	POMACENTRIDAE	Damselfishes	ml
ACA BAHI	*Acanthurus bahianus*	Ocean surgeon	ACANTHURIDAE	Surgeonfishes	ml
ACA CHIR	*Acanthurus chirurgus*	Doctorfish	ACANTHURIDAE	Surgeonfishes	ml
ACA COER	*Acanthurus coeruleus*	Blue tang	ACANTHURIDAE	Surgeonfishes	ML
ALU SCHO	*Aluterus schoepfi*	Orange filefish	BALISTIDAE	Leather jackets	ml
ALU SCRI	*Aluterus scriptus*	Scrawled filefish	BALISTIDAE	Leather jackets	ml
AMB PINO	*Amblycirrhitus pinos*	Redspotted hawkfish	CIRRHITIDAE	Hawkfishes	ML
ANI SURI	*Anisotremus surinamensis*	Black margate	HAEMULIDAE	Grunts	P,R
ANI VIRG	*Anisotremus virginicus*	Porkfish	HAEMULIDAE	Grunts	S,R,ml
APO BINO	*Apogon binotatus*	Barred cardinalfish	APOGONIDAE	Cardinalfishes	ml
APO MACU	*Apogon maculatus*	Flamefish	APOGONIDAE	Cardinalfishes	ML
APO PSEU	*Apogon pseudomaculatus*	Twospot cardinalfish	APOGONIDAE	Cardinalfishes	ML
APO SPE	*Apogon* sp.	Unid. cardinalfish	APOGONIDAE	Cardinalfishes	ml
ARC PROB	*Archosargus probatocephalus*	Sheepshead	SPARIDAE	Porgies	P,R
AST STEL	*Astrapogon stellatus*	Conchfish	APOGONIDAE	Cardinalfishes	
AUL MACU	*Aulostomus maculatus*	Trumpetfish	AULOSTOMIDAE	Trumpetfishes	
BAL CAPR	*Balistes capriscus*	Gray triggerfish	BALISTIDAE	Leather jackets	P,R
BAL VETU	*Balistes vetula*	Queen triggerfish	BALISTIDAE	Leather jackets	R,ML
BOD PULC	*Bodianus pulchellus*	Spotfin hogfish	LABRIDAE	Wrasses	ML
BOD RUFU	*Bodianus rufus*	Spanish hogfish	LABRIDAE	Wrasses	ML
CAL BAJO	*Calamus bajonado*	Jolthead porgy	SPARIDAE	Porgies	P,R
CAL CALA	*Calamus calamus*	Saucereye porgy	SPARIDAE	Porgies	P,R
CAL SPE.	*Calamus* sp.	Unid. porgy	SPARIDAE	Porgies	P,R
CAN MACR	*Cantherhines macrocerus*	Whitespotted filefish	BALISTIDAE	Leather jackets	ml
CAN PULL	*Cantherhines pullus*	Orangespotted filefish	BALISTIDAE	Leather jackets	ml
CAN ROST	*Canthigaster rostrata*	Sharpnose puffer	TETRAODONTIDAE	Puffers	ML
CAR BART	*Caranx bartholomaei*	Yellow jack	CARANGIDAE	Jacks	R
CAR CRYS	*Caranx crysos*	Blue runner	CARANGIDAE	Jacks	R
CAR LATU	*Caranx latus*	Horse-eye jack	CARANGIDAE	Jacks	R
CAR RUBE	*Caranx ruber*	Bar jack	CARANGIDAE	Jacks	
CAR SPE.	*Caranx* sp.	Unid. jack	CARANGIDAE	Jacks	
CEN UNDE	*Centropomus undecimalis*	Snook	CENTROPOMIDAE	Snooks	R
CHA CAPI	*Chaetodon capistratus*	Foureye butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA FABE	*Chaetodipterus faber*	Spadefish	EPHIPPIDAE	Spadefishes	S,R
CHA OCEL	*Chaetodon ocellatus*	Spotfin butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA SEDE	*Chaetodon sedentarius*	Reef butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA STRI	*Chaetodon striatus*	Banded butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHI SCHO	*Chilomycterus schoepfi*	Striped burrfish	DIODONTIDAE	Spiny puffers	ML
CHR CYAN	*Chromis cyanea*	Blue chromis	POMACENTRIDAE	Damselfishes	ML
CHR ENCH	*Chromis enchrysurus*	Yellowtail reeffish	POMACENTRIDAE	Damselfishes	ML
CHR INSO	*Chromis insolata*	Sunshinefish	POMACENTRIDAE	Damselfishes	ML
CHR MULT	*Chromis multilineata*	Brown chromis	POMACENTRIDAE	Damselfishes	ml

Table 2. One hundred and seventy-nine species censused at artificial and natural reefs from June 1988 to June 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
CHR SCOT	*Chromis scotti*	Purple reeffish	POMACENTRIDAE	Damselfishes	ML
CLE PARR	*Clepticus parrai*	Creole wrasse	LABRIDAE	Wrasses	ML
CLU SPE.	*Clupeidae*	Unid. herring	CLUPEIDAE	Herrings	
COR GLAU	*Coryphopterus glaucofraenum*	Bridled goby	GOBIIDAE	Gobies	ml
COR PERS	*Coryphopterus personatus*	Masked goby	GOBIIDAE	Gobies	ml
DAS AMER	*Dasyatis americana*	Southern stingray	DASYATIDAE	Stingrays	
DEC MACA	*Decapterus macarellus*	Mackerel scad	CARANGIDAE	Jacks	
DEC PUNC	*Decapterus punctatus*	Round scad	CARANGIDAE	Jacks	
DEC SPE.	*Decapterus* sp.	Unid. scad	CARANGIDAE	Jacks	
DIO HOLO	*Diodon holocanthus*	Balloonfish	DIODONTIDAE	Porcupinefishes	ml
DIO HYST	*Diodon hystrix*	Porcupinefish	DIODONTIDAE	Porcupinefishes	ml
DIP FORM	*Diplectrum formosum.*	Sand perch	SERRANIDAE	Sea basses	
ECH NAUC	*Echeneis naucrates*	Sharksucker	ECHENEIDAE	Remoras	ml
EMB PAND	*Emblemaria pandionis*	Sailfin blenny	CLINIDAE	Clinids	ml
EPI ADSC	*Epinephelus adscensionis*	Rock hind	SERRANIDAE	Sea basses	S,ml
EPI CRUE	*Epinephelus cruentatus*	Graysby	SERRANIDAE	Sea basses	ml
EPI FULV	*Epinephelus fulvus*	Coney	SERRANIDAE	Sea basses	ML
EPI GUTT	*Epinephelus guttatus*	Red hind	SERRANIDAE	Sea basses	S,ml
EPI NORI	*Epinephelus morio*	Red grouper	SERRANIDAE	Sea basses	P,R
EPI SPE.	*Epinephelus* sp.	Unid. grouper	SERRANIDAE	Sea basses	
EPI STRI	*Epinephelus striatus*	Nassau grouper	SERRANIDAE	Sea basses	P,R
EQU ACUM	*Equetus acuminatus*	High-hat	SCIAENIDAE	Drums	ML
EQU LANC	*Equetus lanceolatus*	Jacknife-fish	SCIAENIDAE	Drums	ML
EQU UMBR	*Equetus umbrosus*	Cubbyu	SCIAENIDAE	Drums	ml
FIS SPE.	*Fistularia* sp.	Unid. cornetfish	FISTULARIDAE	Cornetfishes	ml
GER CINE	*Gerres cinereus*	Yellowfin mojarra	GERREIDAE	Mojarras	
GIN CIRR	*Ginglymostoma cirratum*	Nurse shark	ORECTOLOBIDAE	Nurse sharks	ml
GOB OCEA	*Gobiosoma oceanops*	Neon goby	GOBIIDAE	Gobies	ML
GOB XANT	*Gobiosoma xanthiprora*	Yellowprow goby	GOBIIDAE	Gobies	ml
GYM FUNE	*Gymnothorax funebris*	Green moray	MURAENIDAE	Morays	ml
GYM MORI	*Gymnothorax moringa*	Spotted moray	MURAENIDAE	Morays	ML
GYM VICI	*Gymnothorax vicinus*	Purplemouth moray	MURAENIDAE	Morays	ml
HAE ALBU	*Haemulon album*	Margate	HAEMULIDAE	Grunts	S,R
HAE AURO	*Haemulon aurolineatum*	Tomtate	HAEMULIDAE	Grunts	S
HAE FLAV	*Haemulon flavolineatum*	French grunt	HAEMULIDAE	Grunts	S
HAE MELA	*Haemulon melanurum*	Cottonwick	HAEMULIDAE	Grunts	S
HAE PLUM	*Haemulon plumieri*	White grunt	HAEMULIDAE	Grunts	S
HAE SCIU	*Haemulon sciurus*	Bluestriped grunt	HAEMULIDAE	Grunts	S
HAE SPE.	*Haemulon* sp.	Unid. grunt	HAEMULIDAE	Grunts	
HAE STRI	*Haemulon striatum*	Striped grunt	HAEMULIDAE	Grunts	
HAL BIVI	*Halichoeres bivittatus*	Slippery dick	LABRIDAE	Wrasses	ml
HAL GARN	*Halichoeres garnoti*	Yellowhead wrasse	LABRIDAE	Wrasses	ML
HAL MACU	*Halichoeres maculipinna*	Clown wrasse	LABRIDAE	Wrasses	ML
HAL RADI	*Halichoeres radiatus*	Puddingwife	LABRIDAE	Wrasses	ML

Table 2. One hundred and seventy-nine species censused at artificial and natural reefs from June 1988 to June 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
HAL SPE.	*Halichoeres* sp.	Unid. wrasse	LABRIDAE	Wrasses	ml
HAR SPE.	*Harengula* sp.	Unid. sardine	CLUPEIDAE	Herrings	
HEM NOVA	*Hemipteronotus novacula*	Pearly razorfish	LABRIDAE	Wrasses	ml
HEM SPE.	*Hemipteronotus* sp.	Unid. razorfish	LABRIDAE	Wrasses	
HEM SPLE	*Hemipteronotus splendens*	Green razorfish	LABRIDAE	Wrasses	ml
HOL ASCE	*Hotocentrus adscensionis*	Squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL BERM	*Holacanthus bermudensis*	Blue angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CILI	*Holacanthus ciliaris*	Queen angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CORU	*Holocentrus coruscus*	Reef squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL MARI	*Holocentrus marianus*	Longjaw squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL RUFU	*Holocentrus rufus*	Longspine squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL SPE.	*Holocentrus* sp.	Unid. squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL TRIC	*Holacanthus tricolor*	Rock beauty	POMACANTHIDAE	Angelfishes	ML
HYP BERM	*Hypleurochilus bermudensis*	Barred blenny	BLENNIIDAE	Combtooth blennies	ml
HYP GEMM	*Hypoplectrus gemma* *	Blue hamlet	SERRANIDAE	Sea basses	ml
HYP NIGR	*Hypoplectrus nigricans* *	Black hamlet	SERRANIDAE	Sea basses	ml
HYP PUEL	*Hypoplectrus puella* *	Barred hamlet	SERRANIDAE	Sea basses	ml
HYP UNIC	*Hypoplectrus unicolor*	Butter hamlet	SERRANIDAE	Sea basses	ml
lOG CALL	*loglossus calliurus*	Blue goby	GOBIIDAE	Gobies	
lOG HELE	*loglossus helenae*	Hovering goby	GOBIIDAE	Gobies	ml
KYP SECT	*Kyphosus sectatrix*	Bermuda chub	KYPHOSIDAE	Sea chubs	
LAC BICA	*Lactophrys bicaudalis*	Spotted trunkfish	OSTRACIIDAE	Boxflshes	ml
LAC MAXI	*Lachnolaimus maximus*	Hogfish	LABRIDAE	Wrasses	P,R
LAC QUAD	*Lactophrys quadricornis*	Scrawled cowfish	OSTRACIIDAE	Boxfishes	ml
LAC TRIO	*Lactophrys triqueter*	Smooth trunkflsh	OSTRACIIDAE	Boxfishes	ml
LOOT ANAL	*Lutjanus analis*	Mutton snapper	LUTJANIDAE	Snappers	P,R
LUT APOD	*Lutjanus apodus*	Schoolmaster	LUTJANIDAE	Snappers	S,R
LUT BUCC	*Lutjanus buccanella*	Blackfin snapper	LUTJANIDAE	Snappers	P,R
LUT CYAN	*Lutjanus cyanopterus*	Cubera snapper	LUTJANIDAE	Snappers	P,R
LUT GRIS	*Lutjanus griseus*	Gray snapper	LUTJANIDAE	Snappers	P,R
LUT SYNA	*Lutjanus synagris*	Lane snapper	LUTJANIDAE	Snappers	P,R
MAL PLUM	*Malacanthus plumieri*	Sand tilefish	MALACANTHIDAE	Tilefishes	S,R
MAL SPE.	*Malacoctenus* sp.	Unid. blenny	CLINIDAE	Clinids	
MAL TRIA	*Malacoctenus triangulatus*	Saddled blenny	CLINIDAE	Clinids	ML
MIC CHRY	*Microspathodon chrysurus*	Yellowtail damselfish	POMACENTRIDAE	Damselfishes	ML
MON CILI	*Monacanthus ciliatus*	Fringed filefish	BALISTIDAE	Leatherjackets	ml
MON HISP	*Monacanthus hispidus*	Planehead filefish	BALISTIDAE	Leatherjackets	ml
MON SETI	*Monacanthus setifer*	Pygmy filefish	BALISTIDAE	Leatherjackets	ml
MOM SPE.	*Monacanthus* sp.	Unid. filefish	BALISTIDAE	Leatherjackets	ml
MON TUCK	*Monacanthus tuckeri*	Slender filefish	BALISTIDAE	Leatherjackets	ML
MUL MART	*Mulloidichthys martinicus*	Yellow goatfish	MULLIDAE	Goatfishes	S

Table 2. One hundred and seventy-nine species censused at artificial and natural reefs from June 1988 to June 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
MUR MILI	*Muraena miliaris*	Goldentail moray	MURAENIDAE	Morays	ml
MYC BOMA	*Mycteroperca bonaci*	Black grouper	SERRANIDAE	Sea basses	P,R
MYC MICR	*Mycteroperca microlepis*	Gag	SERRANIDAE	Sea basses	P,R
MYC PHEN	*Mycteroperca phenax*	Scamp	SERRANIDAE	Sea basses	P,R
MYC SPE.	*Mycteroperca* sp.	Unid. grouper	SERRANIDAE	Sea basses	P,R
MYR JACO	*Myripristes jacobus*	Blackbar soldierfish	HOLOCENTRIDAE	Squirrelfishes	ml
OCY CHRY	*Ocyurus chrysurus*	Yellowtail snapper	LUTJANIDAE	Snappers	P,R
0D0 DENT	*Odontoscion dentex*	Reef croaker	SCIAENIDAE	Drums	
OPI AURI	*Opistognathus aurifrons*	Yellowhead jawfish	OPISTOGNATHIDAE	Jawfishes	ML
PAR FURC	*Paranthias furcifer*	Creole-fish	SERRANIDAE	Sea basses	ML
PAR HARM	*Parablennius marmoreus*	Seaweed blenny	BLENNIIDAE	Combtooth blennies	ML
PEM SCHO	*Pempheris schomburgki*	Glassy sweeper	PEMPHERIDAE	Sweepers	
POM ARCU	*Pomacanthus arcuatus*	Gray angelfish	POMACANTHIDAE	Angelfishes	ML
POM DIEM	*Pomacentrus diencaeus*	Longfin damselfish	POMACENTRIDAE	Damselfishes	ML
POM FUSC	*Pomacentrus fuscus*	Dusky damselfish	POMACENTRIDAE	Damselfishes	ml
POM LEUC	*Pomacentrus leucostictus*	Beaugregory	POMACENTRIDAE	Damselfishes	ML
POM PART	*Pomacentrus partitus*	Bicolor damselfish	POMACENTRIDAE	Damselfishes	ML
POM PARU	*Pomacanthus paru*	French angelfish	POMACANTHIDAE	Angelfishes	ML
POM PLAN	*Pomacentrus planifrons*	Three spot damselfish	POMACENTRIDAE	Damselfishes	ML
POM VARI	*Pomacentrus variabilis*	Cocoa damselfish	POMACENTRIDAE	Damselfishes	ML
PRI AREN	*Priacanthus arenatus*	Bigeye	PRIACANTHIDAE	Bigeyes	S
PSE MACU	*Pseudupeneus maculatus*	Spotted goatfish	MULLIDAE	Goatfishes	ml
RAC CANA	*Rachycentron canadum*	Cobia	RACHYCENTRIDAE	Cobias	P,R
RYP SAPO	*Rypticus saponaceus*	Greater soapfish	GRAMMISTIDAE	Soapfishes	
SCA COEL	*Scarus coelestinus*	Midnight parrotfish	SCARIDAE	Parrotfishes	ml
SCA COER	*Scarus coeruleus*	Blue parrotfish	SCARIDAE	Parrotfishes	ml
SCA CRIS	*Scartella cristata*	Molly miller	BLENNIIDAE	Combtooth blennies	ML
SCA CROI	*Scarus croicensis*	Striped parrotfish	SCARIDAE	Parrotfishes	ML
SCA GUAC	*Scarus guacamaia*	Rainbow parrotfish	SCARIDAE	Parrotfishes	ml
SCA SPE.	*Scarus* sp.	Unid. parrotfish	SCARIDAE	Parrotfishes	ml
SCA TAEN	*Scarus taeniopterus*	Princess parrotfish	SCARIDAE	Parrotfishes	ml
SCA VETU	*Scarus vetula*	Queen parrotfish	SCARIDAE	Parrotfishes	ml
SCO MACU	*Scomberomorus maculatus*	Spanish mackerel	SCOMBRIDAE	Mackerels/Tunas	P,R
SCO PLUM	*Scorpaena plumieri*	Scorpion fish	SCORPAENIDAE	Scorpion fishes	ml
SCO REGA	*Scomberomorus regalis*	Cero mackerel	SCOMBRIDAE	Mackerels/Tunas	P,R
SER BALD	*Serranus baldwini*	Lanternfish	SERRANIDAE	Sea basses	ML
SER DUME	*Seriola dumerili*	Greater amberjack	CARANGIDAE	Jacks	P,R
SEP SUBL	*Serranus subligarius*	Belted sandfish	SERRANIDAE	Sea basses	ml
SEP TABA	*Serranus tabacarius*	Tobaccofish	SERRANIDAE	Sea basses	ML
SEP TIGR	*Serranus tigrinus*	Harlequin bass	SERRANIDAE	Sea basses	ML

Table 2. One hundred and seventy-nine species censused at artificial and natural reefs from June 1988 to June 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
SPA AURO	*Sparisoma aurofrenatum*	Redband parrotfish	SCARIDAE	Parrotfishes	ML
SPA CHRY	*Sparisoma chrysopterum*	Redtail parrotfish	SCARIDAE	Parrotfishes	ml
SPA RADI	*Sparisoma radians*	Bucktooth parrotfish	SCARIDAE	Parrotfishes	ml
SPA SPE.	*Sparisoma* sp.	Unid. parrotfish	SCARIDAE	Parrotfishes	ml
SPA VIRI	*Sparisoma viride*	Stoplight parrotfish	SCARIDAE	Parrotfishes	ml
SPH BARR	*Sphyraena barracuda*	Barracuda	SPHYRAENIDAE	Barracudas	P
SPH PICU	*Sphyraena picudilla*	Southern sennet	SPHYRAENIDAE	Barracudas	
SPH SPEM	*Sphoeroides spengleri*	Bandtail puffer	TETRAODONTIDAE	Puffers	
SYM FOET	*Synodus foetens*	Inshore lizardfish	SYNODONTIDAE	Lizardfishes	
SYM INTE	*Synodus intermedius*	Sand diver	SYNODONTIDAE	Lizardfishes	
SYM SPE.	*Synodus* sp.	Unid. lizardfish	SYNODONTIDAE	Lizardfishes	
THA BIFA	*Thalassoma bifasciatum*	Bluehead	LABRIDAE	Wrasses	ML
TRA FALC	*Trachinotus falcatus*	Permit	CARANGIDAE	Jacks	P
TRA GOOD	*Trachinotus goodei*	Palometa	CARANGIDAE	Jacks	
URO JAMA	*Urolophus jamaicensis*	Yellow stingray	DASYATIDAE	Stingrays	ml

[Δ] Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life
* Color variants of *H. unicolor.*

Table 3. One hundred and seventy-nine species censused at reefs from June 1988 to June 1990, by family.

FAMILY	FAMILY NAME	SP CODE	SPECIES	COMMON NAME	VALUE[Δ]
ACANTHURIDAE	Surgeonfishes	ACA BAHI	*Acanthurus bahianus*	Ocean surgeon	ml
ACANTHURIDAE	Surgeonfishes	ACA CHIR	*Acanthurus chirurgus*	Doctorfish	ml
ACANTHURIDAE	Surgeonfishes	ACA COER	*Acanthurus coeruleus*	Blue tang	ML
APOGONIDAE	Cardinalfishes	APO BINO	*Apogon binotatus*	Barred cardinalfish	ml
APOGONIDAE	Cardinalfishes	APO MACU	*Apogon maculatus*	Flamefish	ML
APOGONIDAE	Cardinalfishes	APO PSEU	*Apogon pseudomaculatus*	Twospot cardinalfish	ML
APOGONIDAE	Cardinalfishes	APO SPE.	*Apogon* sp.	Unid. cardinalfish	ml
APOGONIDAE	Cardinalfishes	AST STEL	*Astrapogon stellatus*	Conchfish	
AULOSTOMIDAE	Trumpetfishes	AUL MACU	*Aulostomus maculatus*	Trumpetfish	
BALISTIDAE	Leather jackets	ALU SCHO	*Aluterus schoepfi*	Orange filefish	ml
BALISTIDAE	Leather jackets	ALU SCRI	*Aluterus scriptus*	Scrawled filefish	ml
8ALISTIDAE	Leather jackets	BAL CAPR	*Balistes capriscus*	Gray triggerfish	P,R
BALISTIDAE	Leather jackets	BAL VETU	*Balistes vetula*	Queen triggerfish	R,ML
BALISTIDAE	Leather jackets	CAM MACR	*Cantherhines macrocerus*	Whitespotted filefish	ml
BALISTIDAE	Leather jackets	CAN PULL	*Cantherhines pullus*	Orangespotted filefish	ml
BALISTIDAE	Leatherjackets	MON CILI	*Monacanthus ciliatus*	Fringed filefish	ml
BALISTIDAE	Leather jackets	MON HISP	*Monacanthus hispidus*	Planehead filefish	ml
BALISTIDAE	Leather jackets	MON SETI	*Monacanthus setifer*	Pygmy filefish	ml
BALISTIDAE	Leatherjackets	HON SPE.	*Monacanthus* sp.	Unid. filefish	ml
BALISTIDAE	Leather jackets	MON TUCK	*Monacanthus tuckeri*	Slender filefish	ML
BLENNIIDAE	Combtooth blennies	HYP BERM	*Hypleurochilus bermudensis*	Barred blenny	ml
BLENNIIDAE	Combtooth blennies	PAR HARM	*Parablennius marmoreus*	Seaweed blenny	ML
BLENNIIDAE	Combtooth blennies	SCA CRIS	*Scartella cristata*	Molly miller	ML
CARANGIDAE	Jacks	CAR BART	*Caranx bartholomaei*	Yellow jack	R
CARANGIDAE	Jacks	CAR CRYS	*Caranx crysos*	Blue runner	P
CARANGIDAE	Jacks	CAR LATU	*Caranx latus*	Horse-eye jack	R
CARANGIDAE	Jacks	CAR RUBE	*Caranx ruber*	Bar jack	
CARANGIDAE	Jacks	CAR SPE.	*Caranx* sp.	Unid. jack	
CARANGIDAE	Jacks	DEC MACA	*Decapterus macarellus*	Mackerel scad	
CARANGIDAE	Jacks	DEC SPE.	*Decapterus* sp.	Unid. scad	
CARANGIDAE	Jacks	DEC PUNC	*Decapterus punctatus*	Round scad	
CARANGIDAE	Jacks	SEP DUNE	*Seriola dumerili*	Greater amberjack	P,R
CARANGIDAE	Jacks	IRA FALC	*Trachinotus falcatus*	Permit	P
CARANGIDAE	Jacks	IRA GOOD	*Trachinotus goodei*	Palometa	
CENTROPOMIDAE	Snooks	CEN UNDE	*Centropomus undecimalis*	Snook	R
CHAETODONTIDAE	Butterflyfishes	CHA CAPI	*Chaetodon capistratus*	Foureye butterflyfish	ML
CHAETODONTIDAE	Butterflyfishes	CHA OCEL	*Chaetodon ocellatus*	Spotfin butterflyfish	ML
CHAETODONTIDAE	Butterflyfishes	CHA SEDE	*Chaetodon sedentarius*	Reef butterflyfish	ML
CHAETODONTIDAE	Butterflyfishes	CHA STRI	*Chaetodon striatus*	Banded butterflyfish	ML
CIRRHITIDAE	Hawkfishes	AMB PINO	*Amblycirrhitus pinos*	Redspotted hawkfish	ML
CLINIDAE	Clinids	EMS PAND	*Emblemaria pandionis*	Sailfin blenny	ml
CLINIDAE	Clinids	MAL SPE.	*Malacoctenus* sp.	Unid. blenny	
CLINIDAE	Clinids	MAL TRIA	*Malacoctenus triangulatus*	Saddled blenny	ML

Table 3. One hundred and seventy-nine species censused at reefs from June 1988 to June 1990, by family.

FAMILY	FAMILY NAME	SP CODE	SPECIES	COMMON NAME	VALUE[Δ]
CLUPEIDAE	Herrings	CLU SPE.	Clupeidae	Unid. herring	
CLUPEIDAE	Herrings	HAR SPE.	*Harengula* sp.	Unid. sardine	
DASYATIDAE	Stingrays	DAS AMER	*Dasyatis americana*	Southern stingray	
DASYATIDAE	Stingrays	URO JAMA	*Urolophus jamaicensis*	Yellow stingray	ml
DIODONTIDAE	Porcupinefishes	DIO HOLO	*Diodon holocanthus*	Balloonfish	ml
DIODONTIDAE	Porcupinefishes	DIO HYST	*Diodon hystrix*	Porcupinefish	ml
DIODONTIDAE	Spiny puffers	CHI SCHO	*Chilomycterus schoepfi*	Striped burrfish	ML
ECHENEIDAE	Remoras	ECH NAUC	*Echeneis naucrates*	Sharksucker	ml
EPHIPPIDAE	Spadefishes	CHA FABE	*Chaetodipterus faber*	Spadefish	S,R
FISTULARIDAE	Cornetfishes	FIS SPE.	*Fistularia* sp.	Unid. cornetfish	ml
GERREIDAE	Mojarras	GER CINE	*Gerres cinereus*	Yellowfin mojarra	
GOBIIDAE	Gobies	COR GLAU	*Coryphopterus glaucofraenum*	Bridled goby	ml
GOBIIDAE	Gobies	COP PERS	*Coryphopterus personatus*	Masked goby	ml
GOBIIDAE	Gobies	GOB OCEA	*Gobiosoma oceanops*	Neon goby	ML
GOBIIDAE	Gobies	GOB XANT	*Gobiosoma xanthiprora*	Yellowprow goby	ml
GOBIIDAE	Gobies	IOG CALL	*loglossus calliurus*	Blue goby	
GOBIIDAE	Gobies	IOG HELE	*loglossus helenae*	Hovering goby	ml
GRAMMISTIDAE	Soapfishes	RYP SAPO	*Rypticus saponaceus*	Greater soapfish	
HAEMULIDAE	Grunts	ANI SURI	*Anisotremus surinamensis*	Black margate	P,R
HAEMULIDAE	Grunts	ANI VIRG	*Anisotremus virginicus*	Porkfish	S,R, ml
HAEMULIDAE	Grunts	HAE ALBU	*Haemulon album*	Margate	S,R
HAEMULIDAE	Grunts	HAE AURO	*Haemulon aurolineatum*	Tomtate	S
HAEMULIDAE	Grunts	HAE FLAY	*Haemulon flavolineatum*	French grunt	S
HAEMULIDAE	Grunts	HAE MELA	*Haemulon melanurum*	Cottonwick	S
HAEMULIDAE	Grunts	HAE PLUM	*Haemulon plumieri*	White grunt	S
HAEMULIDAE	Grunts	HAE SCIU	*Haemulon sciurus*	Bluestriped grunt	S
HAEMULIDAE	Grunts	HAE SPE.	*Haemulon* sp.	Unid. grunt	
HAEMULIDAE	Grunts	HAE STRI	*Haemulon striatum*	Striped grunt	
HOLOCENTRIDAE	Squirrelfishes	HOL ASCE	*Holocentrus adscensionis*	Squirrelfish	ml
HOLOCENTRIDAE	Squirrelfishes	HOL CORU	*Holocentrus coruscus*	Reef squirrelfish	ml
HOLOCENTRIDAE	Squirrelfishes	HOL MARI	*Holocentrus marianus*	Longjaw squirrelfish	ml
HOLOCENTRIDAE	Squirrelfishes	HOL RUFU	*Holocentrus rufus*	Longspine squirrelfish	ml
HOLOCENTRIDAE	Squirrelfishes	HOL SPE.	*Holocentrus* sp.	Unid. squirrelfish	ml
HOLOCENTRIDAE	Squirrelfishes	MYR JACO	*Myripristes jacobus*	Blackbar soldierfish	ml
KYPHOSIDAE	Sea chubs	KYP SECT	*Kyphosus sectatrix*	Bermuda chub	
LABRIDAE	Wrasses	SOD PULC	*Bodianus pulchellus*	Spotfin hogfish	ML
LABRIDAE	Wrasses	SOD RUFU	*Bodianus rufus*	Spanish hogfish	ml
LABRIDAE	Wrasses	CLE PARR	*Clepticus parrai*	Creole wrasse	ml
LABRIDAE	Wrasses	HAL BIVI	*Halichoeres bivittatus*	Slippery dick	ml
LABRIDAE	Wrasses	HAL GARM	*Halichoeres garnoti*	Yellowhead wrasse	ML
LABRIDAE	Wrasses	HAL MACU	*Halichoeres maculipinna*	Clown wrasse	ML
LABRIDAE	Wrasses	HAL RADI	*Halichoeres radiatus*	Puddingwife	ML
LABRIDAE	Wrasses	HAL SPE.	*Halichoeres* sp.	Unid. wrasse	ml
LABRIDAE	Wrasses	HEM NOVA	*Hemipteronotus novacula*	Pearly razorfish	ml
LABRIDAE	Wrasses	HEN SPLE	*Hemipteronotus splendens*	Green razorfish	ml
LABRIDAE	Wrasses	HEN SPE.	*Hemipteronotus* sp.	Unid. razorfish	
LABRIDAE	Wrasses	LAC MAXI	*Lachnolaimus maximus*	Hogfish	P,R
LABRIDAE	Wrasses	THA BIFA	*Thalassoma bifasciatum*	Bluehead	ML
LUTJANIDAE	Snappers	LUT ANAL	*Lutjanus analis*	Mutton snapper	P,R

Table 3. One hundred and seventy-nine species censused at reefs from June 1988 to June 1990, by family.

FAMILY	FAMILY NAME	SP CODE	SPECIES	COMMON NAME	VALUE[Δ]
LUTJANIDAE	Snappers	LUT APOD	*Lutjanus apodus*	Schoolmaster	S,R
LUTJANIDAE	Snappers	LUT BUCC	*Lutjanus buccanella*	Blackfin snapper	P,R
LUTJANIDAE	Snappers	LUT CYAN	*Lutjanus cyanopterus*	Cubera snapper	P,R
LUTJANIDAE	Snappers	LUT GRIS	*Lutjanus griseus*	Gray snapper	P,R
LUTJANIDAE	Snappers	LUT SYNA	*Lutjanus synagris*	Lane snapper	P,R
LUTJANIDAE	Snappers	OCY CHRY	*Ocyurus chrysurus*	Yellowtail snapper	P,R
MALACANTHIDAE	Tilefishes	HAL PLUM	*Malacanthus plumieri*	Sand tilefish	S,R
MULLIDAE	Goatfishes	MUL MART	*Mulloidichthys martinicus*	Yellow goatfish	S
MULLIDAE	Goatfishes	PSE MACU	*Pseudupeneus maculatus*	Spotted goatfish	ml
MURAENIDAE	Morays	GYM FUME	*Gymnothorax funebris*	Green moray	ml
MURAENIDAE	Morays	GYM NORI	*Gymnothorax moringa*	Spotted moray	ML
MURAENIDAE	Morays	GYM VICI	*Gymnothorax vicinus*	Purplemouth moray	ml
MURAENIDAE	Morays	MUR MILI	*Muraena miliaris*	Goldentail moray	ml
OPISTOGNATHIDAE	Jawfishes	OPT AURI	*Opistognathus aurifrons*	Yellowhead jawfish	ML
ORECTOLOBIDAE	Nurse sharks	GIN CIRR	*Ginglymostoma cirratum*	Nurse shark	ml
OSTRACIIDAE	Boxfishes	LAC BICA	*Lactophrys bicaudalis*	Spotted trunkfish	ml
OSTRACIIDAE	Boxflshes	LAC QUAD	*Lactophrys quadricornis*	Scrawled cowfish	ml
OSTRACIIDAE	Boxfishes	LAC TRIO	*Lactophrys triqueter*	Smooth trunkfish	ml
PEMPHERIDAE	Sweepers	PEN SCHO	*Pempheris schomburgki*	Glassy sweeper	
POMACANTHIDAE	Angelfishes	HOL BERM	*Holacanthus bermudensis*	Blue angelfish	ML
POMACANTHIDAE	Angelfishes	HOL CILI	*Holacanthus ciliaris*	Queen angelfish	ML
POMACANTHIDAE	Angelfishes	HOL TRIC	*Holacanthus tricolor*	Rock beauty	ML
POMACANTHIDAE	Angelfishes	POM ARCU	*Pomacanthus arcuatus*	Gray angelfish	ML
POMACANTHIDAE	Angelfishes	POM PARU	*Pomacanthus paru*	French angelfish	ML
POMACENTRIDAE	Damselfishes	ABU SAXA	*Abudefduf saxatilis*	Sergeant major	ml
POMACENTRIDAE	Damselfishes	CHR CYAN	*Chromis cyanea*	Blue chromis	ML
POMACENTRIDAE	Damselfishes	CHR ENCH	*Chromis enchrysurus*	Yellowtail reeffish	ML
POMACENTRIDAE	Damselfishes	CHR INSO	*Chromis insolata*	Sunshinefish	ML
POMACENTRIDAE	Damselfishes	CHR Mull	*Chromis multilineata*	Brown chromis	ml
POMACENTRIDAE	Damselfishes	CHR SCOT	*Chromis scotti*	Purple reeffish	ML
POMACENTRIDAE	Damselfishes	MIC CHRY	*Microspathodon chrysurus*	Yellowtail damselfish	ML
POMACENTRIDAE	Damselfishes	POM DIEM	*Pomacentrus diencaeus*	Longfin damselfish	ML
POMACENTRIDAE	Damselfishes	POM FUSC	*Pomacentrus fuscus*	Dusky damselfish	ml
POMACENTRIDAE	Damselfishes	POM LEUC	*Pomacentrus leucostictus Beaugregory*	ML	
POMACENTRIDAE	Damselfishes	POM PART	*Pomacentrus partitus*	Bicolor damselfish	ML
POMACENTRIDAE	Damselfishes	POM PLAN	*Pomacentrus planifrons*	Three spot damselfish	ML
POMACENTRIDAE	Damselfishes	POM VARI	*Pomacentrus variabilis*	Cocoa damselfish	ML
PRIACANTHIDAE	Bigeyes	PRI AREN	*Priacanthus arenatus*	Bigeye	S
RACHYCENTRIDAE	Cobias	RAC CANA	*Rachycentron canadum*	Cobia	P,R
SCARIDAE	Parrotfishes	SCA COEL	*Scarus coelestinus*	Midnight parrotfish	ml
SCARIDAE	Parrotfishes	SCA COER	*Scarus coeruleus*	Blue parrotfish	ml
SCARIDAE	Parrotfishes	SCA CROI	*Scarus croicensis*	Striped parrotfish	ML
SCARIDAE	Parrotfishes	SCA GUAC	*Scarus guacamaia*	Rainbow parrotfish	ml
SCARIDAE	Parrotfishes	SCA SPE.	*Scarus* sp.	Unid. parrotfish	ml
SCARIDAE	Parrotfishes	SCA TAEN	*Scarus taeniopterus*	Princess parrotfish	ml
SCARIDAE	Parrotfishes	SCA VETU	*Scarus vetula*	Queen parrotfish	ml
SCARIDAE	Parrotfishes	SPA AURO	*Sparisoma aurofrenatum*	Redband parrotfish	ML

Table 3. One hundred and seventy-nine species censused at reefs from June 1988 to June 1990, by family.

FAMILY	FAMILY NAME	SP CODE	SPECIES	COMMON NAME	VALUE[Δ]
SCARIDAE	Parrotfishes	SPA CHRY	*Sparisoma chrysopterum*	Redtail parrotfish	ml
SCARIDAE	Parrotfishes	SPA RADI	*Sparisoma radians*	Bucktooth parrotfish	ml
5CARIDAE	Parrotfishes	SPA SPE.	*Sparisoma* sp.	Unid. parrotfish	ml
SCARIDAE	Parrotfishes	SPA VIRI	*Sparisoma viride*	Stoplight parrotfish	ml
SCIAENIDAE	Drums	EQU ACUM	*Equetus acuminatus*	High-hat	HI
SCIAENIDAE	Drums	EQU LANC	*Equetus lanceolatus*	Jacknife-fish	ML
SCIAENIDAE	Drums	EQU UMBR	*Equetus umbrosus*	Cubbyu	ml
SCIAENIDAE	Drums	ODO DENT	*Odontoscion dentex*	Reef croaker	
SCDMBRIDAE	Mackerels/Tunas	SCO MACU	*Scouberomorus maculatus*	Spanish mackerel	P,R
SCOMBRIDAE	Mackerels/Tunas	SCO REGA	*Scomberomorus regalis*	Cero mackerel	P,R
SCORPAENIDAE	Scorpion fishes	SCO PLUM	*Scorpaena plumieri*	Scorpion fish	ml
SERRANIDAE	Sea basses	MYC SPE.	*Mycteroperca* sp.	Unid. grouper	P,R
SERRANIDAE	Sea basses	DIP FORM	*Diplectrum formosum*	Sand perch	
SERRANIDAE	Sea basses	EPI ADSC	*Epinephelus adscensionis*	Rock hind	S,ml
SERRANIDAE	Sea basses	EPI CRUE	*Epinephelus cruentatus*	Graysby	ml
SERRANIDAE	Sea basses	EPI FULV	*Epinephelus fulvus*	Coney	ML
SERRANIDAE	Sea basses	EPI GUTT	*Epinephelus guttatus*	Red hind	S,ml
SERRANIDAE	Sea basses	EPI MORI	*Epinephelus morio*	Red grouper	P,R
SERRANIDAE	Sea basses	EPI SPE.	*Epinephelus* sp.	Unid. grouper	
SERRANIDAE	Sea basses	EPI STRI	*Epinephelus striatus*	Nassau grouper	P,R
SERRANIDAE	Sea basses	HYP GEMM	*Hypoplectrus gemma* *	Blue hamlet	ml
SERRANIDAE	Sea basses	HYP NIGR	*Hypoplectrus nigricans* *	Slack hamlet	ml
SERRANIDAE	Sea basses	HYP PUEL	*Hypoplectrus puella* *	Barred hamlet	ml
SERRANIDAE	Sea basses	HYP UNIC	*Hypoplectrus unicolor*	Butter hamlet	ml
SERRANIDAE	Sea basses	MYC BONA	*Mycteroperca bonaci*	Black grouper	P,R
SERRANIDAE	Sea basses	MYC MICR	*Mycteroperca microlepis*	Gag	P,R
SERRANIDAE	Sea basses	MYC PHEN	*Mycteroperca phenax*	Scamp	P,R
SERRANIDAE	Sea basses	PAR FURC	*Paranthias furcifer*	Creole-fish	ML
SERRANIDAE	Sea basses	SER BALD	*Serranus baldwini*	Lanternfish	ML
SERRANIDAE	Sea basses	SER SUBL	*Serranus subligarius*	Belted sandfish	ml
SERRANIDAE	Sea basses	SEP TABA	*Serranus tabacarius*	Tobaccofish	ML
SERRANIDAE	Sea basses	SER TIGR	*Serranus tigrinus*	Harlequin bass	ML
SPARIDAE	Porgies	ARC PROS	*Archosargus probatocephalus*	Sheepshead	P,R
SPARIDAE	Porgies	CAL BAJO	*Calamus bajonado*	Jolthead porgy	P,R
SPARIDAE	Porgies	CAL CALA	*Calamus calamus*	Saucereye porgy	P,R
SPARIDAE	Porgies	CAL SPE.	*Calamus* sp.	Unid. porgy	P,R
SPHYRAENIDAE	Barracudas	SPH BARR	*Sphyraena barracuda*	Barracuda	P
SPHYRAENIDAE	Barracudas	SPH PICU	*Sphyraena picudilla*	Southern sennet	
SYNODONTIDAE	Lizardfishes	SYN FOET	*Synodus foetens*	Inshore lizardfish	
SYNODONTIDAE	Lizardfishes	SYN INTE	*Synodus intermedius*	Sand diver	
SYNODONTIDAE	Lizardfishes	SYN SPE.	*Synodus* sp.	Unid. lizardfish	
TETRAODONTIDAE	Puffers	CAN ROST	*Canthigaster rostrata*	Sharpnose puffer	ML
TETRAODONTIDAE	Puffers	SPH PEN	*Sphoeroides spengleri*	Bandtail puffer	

[Δ] Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life

* Color variants of *H. unicolor.*

Table 4. One hundred and eight species censused at fabricated units from June 1988 to June 1990.

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
ABU SAXA	*Abudefduf saxatilis*	Sergeant major	POMACENTRIDAE	Damselfishes	ml
ACA BAHI	*Acanthurus bahianus*	Ocean surgeon	ACANTHURIDAE	Surgeonfishes	ml
ACA CHIR	*Acanthurus chirurgus*	Doctorfish	ACANTHURIDAE	Surgeonfishes	ml
ACA COER	*Acanthurus coeruleus*	Blue tang	ACANTHURIDAE	Surgeonfishes	ML
ALU SCHO	*Aluterus schoepfi*	Orange filefish	BALISTIDAE	Leather jackets	ml
ALU SCRI	*Aluterus scriptus*	Scrawled filefish	BALISTIDAE	Leather jackets	ml
ANI VIRG	*Anisotremus virginicus*	Porkfish	HAEMULIDAE	Grunts	S,R,ml
APO PSEU	*Apogon pseudomaculatus*	Twospot cardinalfish	APOGONIDAE	Cardinalfishes	ML
APO SPE.	*Apogon* sp.	Unid. cardinalfish	APOGONIDAE	Cardinalfishes	
AST STEL	*Astrapogon stellatus*	Conchfish	APOGONIDAE	Cardinalfishes	
BOD PULC	*Bodianus pulchellus*	Spotfin hogfish	LABRIDAE	Wrasses	ML
BOD RUFU	*Bodianus rufus*	Spanish hogfish	LABRIDAE	Wrasses	ML
CAL CALA	*Calamus calamus*	Saucereye porgy	SPARIDAE	Porgies	P,R
CAL SPE.	*Calamus* sp.	Unknown porgy	SPARIDAE	Porgies	P,R
CAN ROST	*Canthigaster rostrata*	Sharpnose puffer	TETRAODONTIDAE	Puffers	ML
CAR BART	*Caranx bartholomaei*	Yellow jack	CARANGIDAE	Jacks	R
CAR CRYS	*Caranx crysos*	Blue runner	CARANGIDAE	Jacks	R
CAR RUBE	*Caranx ruber*	Bar jack	CARANGIDAE	Jacks	
CHA OCEL	*Chaetodon ocellatus*	Spotfin butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA SEDE	*Chaetodon sedentarius*	Reef butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA STRI	*Chaetodon striatus*	Banded butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHR ENCH	*Chromis enchrysurus*	Yellowtail reeffish	POMACENTRIDAE	Damselfishes	ML
CHR INSO	*Chromis insolata*	Sunshinefish	POMACENTRIDAE	Damselfishes	ML
CHR MULT	*Chromis multilineata*	Brown chromis	POMACENTRIDAE	Damselfishes	ml
CHR SCOT	*Chromis scotti*	Purple reeffish	POMACENTRIDAE	Damselfishes	ML
CLE PARR	*Clepticus parrai*	Creole wrasse	LABRIDAE	Wrasses	ML
COR GLAU	*Coryphopterus glaucofraenum*	Bridled goby	GOBIIDAE	Gobies	ml
DEC MACA	*Decapterus macarellus*	Mackerel scad	CARANGIDAE	Jacks	
DEC PUNC	*Decapterus punctatus*	Round scad	CARANGIDAE	Jacks	
DEC SPE.	*Decapterus* sp.	Unid. scad	CARANGIDAE	Jacks	
DIP FORM	*Diplectrum formosum*	Sand perch	SERRANIDAE	Sea basses	
ECH NAUC	*Echeneis naucrates*	Sharksucker	ECHENEIDAE	Remoras	ml
EMB PAND	*Emblemaria pandionis*	Sailfin blenny	CLINIDAE	Clinids	ml
EPI ADSC	*Epinephelus adscensionis*	Rock hind	SERRANIDAE	Sea basses	ml
EPI CRUE	*Epinephelus cruentatus*	Graysby	SERRANIDAE	Sea basses	ml
EPI FULV	*Epinephelus fulvus*	Coney	SERRANIDAE	Sea basses	ml
EPI GUTT	*Epinephelus guttatus*	Red hind	SERRANIDAE	Sea basses	ml
EQU ACUM	*Equetus acuminatus*	High-hat	SCIAENIDAE	Drums	ML
EQU LANC	*Equetus lanceolatus*	Jacknife-fish	SCIAENIDAE	Drums	ML
GIN CIRR	*Ginglymostoma cirratum*	Nurse shark	ORECTOLOBIDAE	Carpet sharks	ml
GOB OCEA	*Gobiosoma oceanops*	Neon goby	GOBIIDAE	Gobies	ML
GYM MORI	*Gymnothorax moringa*	Spotted moray	MURAENIDAE	Morays	ML
HAE ALBU	*Haemulon album*	Margate	HAEMULIDAE	Grunts	S,R
HAE AURO	*Haemulon aurolineatum*	Tomtate	HAEMULIDAE	Grunts	S
HAE FLAV	*Haemulon flavolineatum*	French grunt	HAEMULIDAE	Grunts	S

Table 4. One hundred and eight species censused at fabricated units from June 1988 to June 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
HAE MELA	*Haemulon melanurum*	Cottonwick	HAEMULIDAE	Grunts	S
HAE PLUM	*Haemulon plumieri*	White grunt	HAEMULIDAE	Grunts	S
HAE SPE.	*Haemulon* sp.	Unidentified grunt	HAEMULIDAE	Grunts	
HAE STRI	*Haemulon striatum*	Striped grunt	HAEMULIDAE	Grunts	
HAL BIVI	*Halichoeres bivittatus*	Slippery dick	LABRIDAE	Wrasses	ml
HAL GARN	*Halichoeres garnoti*	Yellowhead wrasse	LABRIDAE	Wrasses	ML
HAL RADI	*Halichoeres radiatus*	Puddingwife	LABRIDAE	Wrasses	ML
HAL SPE.	*Halichoeres* sp.	Unid. wrasse	LABRIDAE	Wrasses	
HEM SPE.	*Hemipteronotus* sp.	Unid. razorfish	LABRIDAE	Wrasses	
HEM SPLE	*Hemipteronotus splendens*	Green razorfish	LABRIDAE	Wrasses	ml
HOL BERM	*Holacanthus bermudensis*	Blue angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CILI	*Holacanthus ciliaris*	Queen angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CORU	*Holocentrus coruscus*	Reef squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL MARI	*Holocentrus marianus*	Longjaw squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL SPE.	*Holocentrus* sp.	Unid. squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL TRIC	*Holacanthus tricolor*	Rock beauty	POMACANTHIDAE	Angelfishes	ML
IOG HELE	*loglosus helenae*	Hovering goby	GOBIIDAE	Gobies	ml
KYP SECT	*Kyphosus sectatrix*	Bermuda chub	KYPHOSIDAE	Sea chubs	
LAC BICA	*Lactophrys bicaudalis*	Spotted trunkfish	OSTRACIIDAE	Boxfishes	ml
LAC MAXI	*Lachnolaimus maximus*	Hogfish	LABRIDAE	Wrasses	P,R
LAC QUAD	*Lactophrys quadricornis*	Scrawled cowfish	OSTRACIIDAE	Boxfishes	ml
LAC TRIQ	*Lactophrys triqueter*	Smooth trunkfish	OSTRACIIDAE	Boxfishes	ml
LUT ANAL	*Lutjanus analis*	Mutton snapper	LUTJANIDAE	Snappers	P,R
LUT BUCC	*Lutjanus buccanella*	Blackfin snapper	LUTJANIDAE	Snappers	P,R
LUT CYAN	*Lutjanus cyanopterus*	Cubera snapper	LUTJANIDAE	Snappers	P,R
LUT GRIS	*Lutjanus griseus*	Gray snapper	LUTJANIDAE	Snappers	P,R
MAL SPE.	*Malacoctenus* sp.	Unid. blenny	CLINIDAE	Clinids	
MAL TRIA	*Malacoctenus triangulatus*	Saddled blenny	CLINIDAE	Clinids	ML
MIC CHRY	*Microspathodon chrysurus*	Yellowtail damselfish	POMACENTRIDAE	Damselfishes	ML
MON CILI	*Monacanthus ciliatus*	Fringed filefish	BALISTIDAE	Leather jackets	ml
MON HISP	*Monacanthus hispidus*	Planehead filefish	BALISTIDAE	Leather jackets	ml
MON SPE.	*Monacanthus* sp.	Unid. filefish	BALISTIDAE	Leatherjackets	ml
MYC BONA	*Mycteroperca bonaci*	Black grouper	SERRANIDAE	Sea basses	P,R
MYC MICR	*Mycteroperca microlepis*	Gag	SERRANIDAE	Sea basses	P,R
MYC SPE.	*Mycteroperca* sp.	Unid. grouper	SERRANIDAE	Sea basses	P,R
OCY CHRY	*Ocyurus chrysurus*	Yellowtail snapper	LUTJANIDAE	Snappers	P,R
OPI AURI	*Opistognathus aurifrons*	Yellowhead Jawfish	OPISTOGNATHIDAE	Jawfishes	ML
PAR FURC	*Paranthias furcifer*	Creole-fish	SERRANIDAE	Sea basses	ML
PAR MARM	*Parablennius marmoreus*	Seaweed blenny	BLENNIIDAE	Combtooth blennies	ML
POM ARCU	*Pomacanthus arcuatus*	Gray angelfish	POMACANTHIDAE	Angelfishes	ML
POM LEUC	*Pomacentrus leucostictus*	Beaugregory	POMACENTRIDAE	Damselfishes	ML
POM PART	*Pomacentrus partitus*	Bicolor damselfish	POMACENTRIDAE	Damselfishes	ML
POM PARU	*Pomacanthus paru*	French angelfish	POMACANTHIDAE	Angelfishes	ML
POM PLAN	*Pomacentrus planifrons*	Three spot damselfish	POMACENTRIDAE	Damselfishes	ML

Table 4. One hundred and eight species censused at fabricated units from June 1988 to June 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
POM VARI	*Pomacentrus variabilis*	Cocoa damselfish	POMACENTRIDAE	Damselfishes	ML
PSE MACU	*Pseudupeneus maculatus*	Spotted goatfish	MULLIDAE	Goatfishes	ml
RAC CANA	*Rachycentron canadum*	Cobia	RACHYCENTRIDAE	Cobias	P,R
RYP SAPO	*Rypticus saponaceus*	Greater soapfish	GRAMMISTIDAE	Soapfishes	
SCA CROI	*Scarus croicensis*	Striped parrotfish	SCARIDAE	Parrotfishes	ML
SCA SPE.	*Scarus* sp.	Unid. parrotfish	SCARIDAE	Parrotfishes	ml
SCO PLUM	*Scorpaena plumieri*	Scorpion fish	SCORPAENIDAE	Scorpionfishes	ml
SCO REGA	*Scomberomorus regalis*	Cero mackerel	SCOMBRIDAE	Mackerels/Tunas	P,R
SER BALD	*Serranus baldwini*	Lanternfish	SERRANIDAE	Sea basses	ML
SER DUME	*Seriola dumerili*	Greater amberjack	CARANGIDAE	Jacks	P,R
SER TABA	*Serranus tabacarius*	Tobaccofish	SERRANIDAE	Sea basses	ML
SER TIGR	*Serranus tigrinus*	Harlequin bass	SERRANIDAE	Sea basses	ML
SPA AURO	*Sparisoma aurofrenatum*	Redband parrotfish	SCARIDAE	Parrotfishes	ML
SPA CHRY	*Sparisoma chrysopterum*	Redtail parrotfish	SCARIDAE	Parrotfishes	ml
SPH BARR	*Sphyraena barracuda*	Barracuda	SPHYRAENIDAE	Barracudas	R
SYN FOET	*Synodus foetens*	Inshore lizardfish	SYNODONTIDAE	Lizardfishes	
THA BIFA	*Thalassoma bifasciatum*	Bluehead	LABRIDAE	Wrasses	ML
TRA FALC	*Trachinotus falcatus*	Permit	CARANGIDAE	Jacks	R
URO JAMA	*Urolophus jamaicensis*	Yellow stingray	DASYATIDAE	Stingrays	ml

[Δ] Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life
* Color variants of *H. unicolor.*

Table 5. One hundred and three species censused at bridge rubble reefs in Hawk Channel from June to August 1989.

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
ABU SAXA	*Abudefduf saxatilis*	Sergeant major	POMACENTRIDAE	Damselfishes	ml
ACA BAHI	*Acanthurus bahianus*	Ocean surgeon	ACANTHURIDAE	Surgeonfishes	ml
ACA CHIP	*Acanthurus chirurgus*	Doctorfish	ACANTHURIDAE	Surgeonfishes	ml
ACA COER	*Acanthurus coeruleus*	Blue tang	ACANTHURIDAE	Surgeonfishes	ML
AMB PINO	*Amblycirrhitus pinos*	Redspotted hawkfish	CIRRHITIDAE	Hawkfishes	ML
ANI VIRG	*Anisotremus virginicus*	Porkfish	HAEMULIDAE	Grunts	S,R
APO MACU	*Apogon maculatus*	Flamefish	APOGONIDAE	Cardinalfishes	ML
APO PSEU	*Apogon pseudomaculatus*	Twospot cardinalfish	APOGONIDAE	Cardinalfishes	ML
ARC PROB	*Archosargus probatocephalus*	Sheepshead	SPARIDAE	Porgies	P,R
AUL MACU	*Aulostomus maculatus*	Trumpetfish	AULOSTOMIDAE	Trumpetfishes	
CAL BAJO	*Calamus bajonado*	Jolthead porgy	SPARIDAE	Porgies	P,R
CAL CALA	*Calamus calamus*	Saucereye porgy	SPARIDAE	Porgies	P,R
CAN ROST	*Canthigaster rostrata*	Sharpnose puffer	TETRAODONTIDAE	Puffers	ML
CAR BART	*Caranx bartholomaei*	Yellow jack	CARANGIDAE	Jacks	R
CAR CRYS	*Caranx crysos*	Blue runner	CARANGIDAE	Jacks	R
CAR RUBE	*Caranx ruber*	Bar jack	CARANGIDAE	Jacks	
CAR SPE.	*Caranx* sp.	Unid. jack	CARANGIDAE	Jacks	
CEN UNDE	*Centropomus undecimalis*	Snook	CENTROPOMIDAE	Snooks	R
CHA CAPI	*Chaetodon capistratus*	Foureye butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA FABE	*Chaetodipterus faber*	Atlantic Spadefish	EPHIPPIDAE	Spadefishes	S,R
CHA OCEL	*Chaetodon ocellatus*	Spotfin butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA SEDE	*Chaetodon sedentarius*	Reef butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CLU SPE.	*Clupeidae*	Unid. herring	CLUPEIDAE	Herrings	
COR GLAU	*Coryphopterus glaucofraenum*	Bridled goby	GOBIIDAE	Gobies	ml
DEC SPE.	*Decapterus* sp.	Unid. scad	CARANGIDAE	Jacks	
DIO HYST	*Diodon hystrix*	Porcupinefish	DIODONTIDAE	Porcupinefishes	ml
EPI ADSC	*Epinephelus adscensionis*	Rock hind	SERRANIDAE	Sea basses	S,ml
EPI CRUE	*Epinephelus cruentatus*	Graysby	SERRANIDAE	Sea basses	ml
EPI FULV	*Epinephelus fulvus*	Coney	SERRANIDAE	Sea basses	ML
EPI GUTT	*Epinephelus guttatus*	Red hind	SERRANIDAE	Sea basses	S,ml
EPI MORI	*Epinephelus morio*	Red grouper	SERRANIDAE	Sea basses	P,R
EPI STRI	*Epinephelus striatus*	Nassau grouper	SERRANIDAE	Sea basses	P,R
EQU ACUM	*Equetus acuminatus*	High-hat	SCIAENIDAE	Drums	ML
EQU UMBR	*Equetus umbrosus*	Cubbyu	SCIAENIDAE	Drums	ml
GER CINE	*Gerres cinereus*	Yellowfin mojarra	GERREIDAE	Mojarras	
GOB OCEA	*Gobiosoma oceanops*	Neon goby	GOBIIDAE	Gobies	ML
GYM FUNE	*Gymnothorax funebris*	Green moray	MURAENIDAE	Morays	ml
GYM MORl	*Gymnothorax moringa*	Spotted moray	MURAENIDAE	Morays	ML
HAE ALBU	*Haemulon album*	Margate	HAEMULIDAE	Grunts	S,R
HAE AURO	*Haemulon aurolineatum*	Tomtate	HAEMULIDAE	Grunts	S
HAE FLAY	*Haemulon flavolineatum*	French grunt	HAEMULIDAE	Grunts	S
HAE PLUM	*Haemulon plumieri*	White grunt	HAEMULIDAE	Grunts	S

Table 5. One hundred and three species censused at bridge rubble reefs in Hawk Channel from June to August 1989 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
HAE SCIU	*Haemulon sciurus*	Bluestriped grunt	HAEMULIDAE	Grunts	S
HAE SPE.	*Haemulon* sp.	Unid. grunt	HAEMULIDAE	Grunts	
HAE STRI	*Haemulon striatum*	Striped grunt	HAEMULIDAE	Grunts	
HAL BIVI	*Halichoeres bivittatus*	Slippery dick	LABRIDAE	Wrasses	ml
HAL GARN	*Halichoeres garnoti*	Yellowhead wrasse	LABRIDAE	Wrasses	ML
HAL RADI	*Halichoeres radiatus*	Puddingwife	LABRIDAE	Wrasses	ML
HAL SPE.	*Halichoeres* sp.	Unid. wrasse	LABRIDAE	Wrasses	
HAR SPE.	*Harengula* sp.	Unid. sardine	CARANGIDAE	Jacks	
HOL BERM	*Holacanthus bermudensis*	Blue angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CILI	*Holacanthus ciliaris*	Queen angelfish	POMACANTHIDAE	Angelfishes	ML
HOL RUFU	*Holocentrus rufus*	Longspine squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL TRIC	*Holacanthus tricolor*	Rock beauty	POMACANTHIDAE	Angelfishes	ML
HYP GEMM	*Hypoplectrus gemma**	Blue hamlet	SERRANIDAE	Sea basses	ml
HYP NIGR	*Hyploplectrus nigricans**	Black hamlet	SERRANIDAE	Sea basses	ml
HYP PUEL	*Hypoplectrus puella**	Barred hamlet	SERRANIDAE	Sea basses	ml
HYP UNIC	*Hypoplectrus unicolor*	Butter hamlet	SERRANIDAE	Sea basses	ml
IOG CALL	*loglossus calliurus*	Blue goby	GOBIIDAE	Gobies	ML
LAC BICA	*Lactophrys bicaudalis*	Spotted trunkfish	OSTRACIIDAE	Boxfishes	ml
LAC MAXI	*Lachnolaimus maximum*	Hogfish	LABRIDAE	Wrasses	P,R
LAC QUAD	*Lactophrys quadricornis*	Scrawled cowfish	OSTRACIIDAE	Boxfishes	ml
LUT ANAL	*Lutjanus analis*	Mutton snapper	LUTJANIDAE	Snappers	P,R
LUT GRIS	*Lutjanus griseus*	Gray snapper	LUTJANIDAE	Snappers	P,R
LUT SYNA	*Lutjanus synagris*	Lane snapper	LUTJANIDAE	Snappers	P,R
MAL TRIA	*Malacoctenus triangulatus*	Saddled blenny	CLINIDAE	Clinids	ml
MUL MART	*Mulloidichthys martinicus*	Yellow goatfish	MULLIDAE	Goatfishes	S
MYC BONA	*Mycteroperca bonaci*	Black grouper	SERRANIDAE	Sea basses	P,R
MYC MICR	*Mycteroperca microlepis*	Gag	SERRANIDAE	Sea basses	P,R
MYC PHEN	*Mycteroperca phenax*	Scamp	SERRANIDAE	Sea basses	P,R
MYC SPE.	*Mycteroperca* sp.	Unid. grouper	SERRANIDAE	Sea basses	P,R
MYR JACO	*Myripristes jacobus*	Blackbar soldierfish	HOLOCENTRIDAE	Squirrelfishes	ml
OCY CHRY	*Ocyurus chrysurus*	Yellowtail snapper	LUTJANIDAE	Snappers	P,R
ODO DENT	*Odontoscion dentex*	Reef croaker	SCIAENIDAE	Drums	
OPI AURI	*Opistognathus aurifrons*	Yellowhead jawfish	OPISTOGNATHIDAE	Jawfishes	ML
PAR MARM	*Parablennius marmoreus*	Seaweed blenny	BLENNIIDAE	Blennies	ML
POM ARCU	*Pomacanthus arcuatus*	Gray angelfish	POMACANTHIDAE	Angelfishes	ML
POM FUSC	*Pomacentrus fuscus*	Dusky damselfish	POMACENTRIDAE	Damselfishes	ml
POM LEUC	*Pomacentrus leucostictus*	Beaugregory	POMACENTRIDAE	Damselfishes	ML
POM PART	*Pomacentrus partitus*	Bicolor damselfish	POMACENTRIDAE	Damselfishes	ML
POM PARU	*Pomacanthus paru*	French angelfish	POMACANTHIDAE	Angelfishes	ML
POM PLAN	*Pomacentrus planifrons*	Three spot damselfish	POMACENTRIDAE	Damselfishes	ML

Table 5. One hundred and three species censused at bridge rubble reefs in Hawk Channel from June to August 1989 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
POM VARI	*Pomacentrus variabilis*	Cocoa damselfish	POMACENTRIDAE	Damselfishes	ML
PRI AREN	*Priacanthus arenatus*	Bigeye	PRIACANTHIDAE	Bigeye	S
PSE MACU	*Pseudupeneus maculatus*	Spotted goatfish	MULLIDAE	Goatfishes	ml
SCA COEL	*Scarus coelestinus*	Midnight parrotfish	SCARIDAE	Parrotfishes	ml
SCA COER	*Scarus coeruleus*	Blue parrotfish	SCARIDAE	Parrotfishes	ml
SCA CRIS	*Scartella cristata*	Molly miller	BLENNIIDAE	Combtooth blennies	ML
SCA CROI	*Scarus croicensis*	Striped parrotfish	SCARIDAE	Parrotfishes	ML
SCA GUAC	*Scarus guacamaia*	Rainbow parrotfish	SCARIDAE	Parrotfishes	ml
SCA VETU	*Scarus vetula*	Queen parrotfish	SCARIDAE	Parrotfishes	ml
SCO PLUM	*Scorpaena plumieri*	Scorpion fish	SCORPAENIDAE	Scorpionfishes	ml
SCO REGA	*Scomberomorus regalis*	Cero mackerel	SCOMBRIDAE	Mackerels/Tunas	P,R
SER BALD	*Serranus baldwini*	Lanternfish	SERRANIDAE	Sea basses	ML
SER SUBL	*Serranus subligarius*	Belted sandfish	SERRANIDAE	Sea basses	ml
SER TIGR	*Serranus tigrinus*	Harlequin bass	SERRANIDAE	Sea basses	ML
SPA AURO	*Sparisoma aurofrenatum*	Redbud parrotfish	SCARIDAE	Parrotfishes	ML
SPA CHRY	*Sparisoma chrysopterum*	Redtail parrotfish	SCARIDAE	Parrotfishes	ml
SPA SPE.	*Sparisoma* sp.	Unid. parrotfish	SCARIDAE	Parrotfishes	ml
SPA VIRI	*Sparisoma viride*	Stoplight parrotfish	SCARIDAE	Parrotfishes	ml
SPH BARR	*Sphyraena barracuda*	Barracuda	SPHYRAENIDAE	Barracudas	R
SPH PEN	*Sphoeroides spengleri*	Bandtail puffer	TETRAODONTIDAE	Puffers	
SYN FOET	*Synodus foetens*	Inshore lizardfish	SYNODONTIDAE	Lizardfishes	
THA BIFA	*Thalassoma bifasciatum*	Bluehead	LABRIDAE	Wrasses	ML
TRA FALC	*Trachinotus falcatus*	Permit	CARANGIDAE	Jacks	R

[Δ] Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life

* Color variants of *H. unicolor.*

Table 6. One hundred and fifty-three species censused on all natural reefs from July 1988 to May 1990.

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
ABU SAXA	*Abudefduf saxatilis*	Sergeant major	POMACENTRIDAE	Damselfishes	ml
ACA BAHI	*Acanthurus bahianus*	Ocean surgeon	ACANTHURIDAE	Surgeonfishes	ml
ACA CHIR	*Acanthurus chirurgus*	Doctorfish	ACANTHURIDAE	Surgeonfishes	ml
ACA COER	*Acanthurus coeruleus*	Blue tang	ACANTHURIDAE	Surgeonfishes	ML
ALU SCRI	*Aluterus scriptus*	Scrawled filefish	BALISTIDAE	Leatherjackets	ml
AMB PINO	*Amblycirrhitus pinos*	Redspotted hawkfish	CIRRHITIDAE	Hawkfishes	ML
ANI SURI	*Anisotremus surinamensis*	Black margate	HAEMULIDAE	Grunts	P,R
ANI VIRG	*Anisotremus virginicus*	Porkfish	HAEMULIDAE	Grunts	S,R,ml
APO BINO	*Apogon binotatus*	Barred cardinalfish	APOGONIDAE	Cardinalfishes	ml
APO MACU	*Apogon maculatus*	Flamefish	APOGONIDAE	Cardinalfishes	ML
APO PSEU	*Apogon pseudomaculatus*	Twospot cardinalfish	APOGONIDAE	Cardinalfishes	ML
APO SPE.	*Apogon* sp.	Unid. cardinalfish	APOGONIDAE	Cardinalfishes	ml
AUL MACU	*Aulostomus maculatus*	Trumpetfish	AULOSTOMIDAE	Trumpetfishes	
BAL CAPR	*Balistes capriscus*	Gray triggerfish	BALISTIDAE	Leather jackets	P,R
BAL VETU	*Balistes vetula*	Queen triggerfish	BALISTIDAE	Leather jackets	R,ml
BOD PULC	*Bodianus pulchellus*	Spotfin hogfish	LABRIDAE	Wrasses	ML
BOD RUFU	*Bodianus rufus*	Spanish hogfish	LABRIDAE	Wrasses	ML
CAL BAJO	*Calamus bajonado*	Jolthead porgy	SPARIDAE	Porgies	P,R
CAL CALA	*Calamus calamus*	Saucereye porgy	SPARIDAE	Porgies	P,R
CAN MACR	*Cantherhines macrocerus*	Whitespotted filefish	BALISTIDAE	Leather jackets	ml
CAN PULL	*Cantherhines pullus*	Orangespotted filefish	BALISTIDAE	Leather jackets	ml
CAN ROST	*Canthigaster rostrata*	Sharpnose puffer	TETRAODONTIDAE	Puffers	ML
CAR BART	*Caranx bartholomaei*	Yellow jack	CARANGIDAE	Jacks	R
CAR CRYS	*Caranx crysos*	Blue runner	CARANGIDAE	Jacks	R
CAR LATU	*Caranx latus*	Horse-eye jack	CARANGIDAE	Jacks	R
CAR RUBE	*Caranx ruber*	Bar jack	CARANGIDAE	Jacks	
CHA CAPI	*Chaetodon capistratus*	Foureye butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA FABE	*Chaetodipterus faber*	Atlantic Spadefish	EPHIPPIDAE	Spadefishes	S,R
CHA OCEL	*Chaetodon ocellatus*	Spotfin butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA SEDE	*Chaetodon sedentarius*	Reef butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHA STRI	*Chaetodon striatus*	Banded butterflyfish	CHAETODONTIDAE	Butterflyfishes	ML
CHI SCHO	*Chilomycterus schoepfi*	Striped burrfish	DIODONTIDAE	Porcupinefishes	ml
CHR CYAN	*Chromis cyanea*	Blue chromis	POMACENTRIDAE	Damselfishes	ML
CHR ENCH	*Chromis enchrysurus*	Yellowtail reeffish	POMACENTRIDAE	Damselfishes	ML
CHR INSO	*Chromis insolata*	Sunshinefish	POMACENTRIDAE	Damselfishes	ML
CHR MULT	*Chromis multilineata*	Brown chromis	POMACENTRIDAE	Damselfishes	ml
CHR SCOT	*Chromis scotti*	Purple reeffish	POMACENTRIDAE	Damselfishes	ML
CLE PARR	*Clepticus parrai*	Creole wrasse	LABRIDAE	Wrasses	ML
COR GLAU	*Coryphopterus glaucofraenum*	Bridled goby	GOBIIDAE	Gobies	ml
COR PERS	*Coryphopterus personatus*	Masked goby	GOBIIDAE	Gobies	ml
DAS AMER	*Dasyatis americana*	Southern stingray	DASYATIDAE	Stingrays	
DEC PUNT	*Decapterus punctatus*	Round scad	CARANGIDAE	Jacks	
DEC SPE.	*Decapterus* sp.	Unid. scad	CARANGIDAE	Jacks	

Table 6. One hundred and fifty-three species censused on all natural reefs from July 1988 to May 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
DIO HOLO	*Diodon holocanthus*	Balloonfish	DIODONTIDAE	Porcupinefishes	ml
DIO HYST	*Diodon hystrix*	Porcupinefish	DIODONTIDAE	Porcupinefishes	ml
ECH NAUC	*Echeneis naucrates*	Sharksucker	ECHENEIDAE	Remoras	ml
EMB PAND	*Emblemaria pandionis*	Sailfin blenny	CLINIDAE	Clinids	ml
EPI ADSC	*Epinephelus adscensionis*	Rock hind	SERRANIDAE	Sea basses	S,ml
EPI CRUE	*Epinephelus cruentatus*	Graysby	SERRANIDAE	Sea basses	ml
EPI FULV	*Epinephelus fulvus*	Coney	SERRANIDAE	Sea basses	ML
EPI GUTT	*Epinephelus guttatus*	Red hind	SERRANIDAE	Sea basses	S,ml
EPI MORI	*Epinephelus morio*	Red grouper	SERRANIDAE	Sea basses	P,R
EPI SPE.	*Epinephelus* sp.	Unid. grouper	SERRANIDAE	Sea basses	
EPI STRI	*Epinephelus striatus*	Nassau grouper	SERRANIDAE	Sea basses	P,R
EQU ACUM	*Equetus acuminatus*	High-hat	SCIAENIDAE	Drums	ML
EQU LANC	*Equetus lanceolatus*	Jacknife-fish	SCIAENIDAE	Drums	ML
FIS SPE.	*Fistularia* sp.	Unid cornetfish	FISTULARIDAE	Cornetfishes	
GER CINE	*Gerres cinereus*	Yellowfin mojarra	GERREIDAE	Mojarras	
GIN CIRR	*Ginglymostoma cirratum*	Nurse shark	ORECTOLOBIDAE	Carpet sharks	ml
GOB OCEA	*Gobiosoma oceanops*	Neon goby	GOBIIDAE	Gobies	ML
GOB XANT	*Gobiosoma xanthiprora*	Yellowprow goby	GOBIIDAE	Gobies	ml
GYM FUNE	*Gymnothorax funebris*	Green moray	MURAENIDAE	Morays	ml
GYM MORI	*Gymnothorax moringa*	Spotted bray	MURAENIDAE	Morays	ML
GYM VICI	*Gymnothorax vicinus*	Purplemouth moray	MURAENIDAE	Morays	ml
HAE ALBU	*Haemulon album*	Margate	HAEMULIDAE	Grunts	S
HAE AURO	*Haemulon aurolineatum*	Tomtate	HAEMULIDAE	Grunts	S
HAE FLAV	*Haemulon flavolineatum*	French grunt	HAEMULIDAE	Grunts	S
HAE MELA	*Haemulon melanurum*	Cottonwick	HAEMULIDAE	Grunts	S
HAE PLUM	*Haemulon plumieri*	White grunt	HAEMULIDAE	Grunts	S
HAE SCIU	*Haemulon sciurus*	Bluestriped grunt	HAEMULIDAE	Grunts	S
HAE SPE.	*Haemulon* sp.	Unidentified grunt	HAEMULIDAE	Grunts	
HAE STRI	*Haemulon striatum*	Striped grunt	HAEMULIDAE	Grunts	
HAL BIVI	*Halichoeres bivittatus*	Slippery dick	LABRIDAE	Wrasses	ml
HAL GARN	*Halichoeres garnoti*	Yellowhead wrasse	LABRIDAE	Wrasses	ML
HAL MACU	*Halichoeres maculipinna*	Clown wrasse	LABRIDAE	Wrasses	ML
HAL RADI	*Halichoeres radiatus*	Puddingwife	LABRIDAE	Wrasses	ML
HAL SPE.	*Halichoeres* sp.	Unid. wrasse	LABRIDAE	Wrasses	
HEM NOVA	*Hemipteronotus novacula*	Pearly razorfish	LABRIDAE	Wrasses	ml
HEM SPLE	*Hemipteronotus splendens*	Green razorfish	LABRIDAE	Wrasses	ml
HOL ASCE	*Holocentrus adscensionis*	Squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL BERM	*Holacanthus bermudensis*	Blue angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CILI	*Holacanthus ciliaris*	Queen angelfish	POMACANTHIDAE	Angelfishes	ML
HOL CORU	*Holocentrus coruscus*	Reef squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL MARI	*Holocentrus marianus*	Longjaw squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml

Table 6. One hundred and fifty-three species censused on all natural reefs from July 1988 to May 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE$^{\Delta}$
HOL RUFU	*Holocentrus rufus*	Longspine squirrelfish	HOLOCENTRIDAE	Squirrelfishes	ml
HOL TRIC	*Holacanthus tricolor*	Rock beauty	POMACANTHIDAE	Angelfishes	ML
HYP BERM	*Hypleurochilus bermudensis*	Barred blenny	BLENNIIDAE	Combtooth blennies	ml
HYP GEMM	*Hypoplectrus gemma* *	Blue hamlet	SERRANIDAE	Sea basses	ml
HYP NIGR	*Hypoplectrus nigricans**	Black hamlet	SERRANIDAE	Sea basses	ml
HYP PUEL	*Hypoplectrus puella**	Barred hamlet	SERRANIDAE	Sea basses	ml
HYP UNIC	*Hypoplectrus unicolor*	Butter hamlet	SERRANIDAE	Sea basses	ml
lOG CALL	*loglossus calliurus*	Blue goby	GOBIIDAE	Gobies	
lOG HELE	*loglossus helenae*	Hovering goby	GOBIIDAE	Gobies	ml
LAC BICA	*Lactophrys bicaudalis*	Spotted trunkfish	OSTRACIIDAE	Boxfishes	ml
LAC MAXI	*Lachnolaimus maximus*	Hogfish	LABRIDAE	Wrasses	P,R
LAC QUAD	*Lactophrys quadricornis*	Scrawled cowfish	OSTRACIIDAE	Boxfishes	ml
LUT ANAL	*Lutjanus analis*	Mutton snapper	LUTJANIDAE	Snappers	P,R
LUT APOD	*Lutjanus apodus*	Schoolmaster	LUTJANIDAE	Snappers	P,R
LUT BUCC	*Lutjanus buccanella*	Blackfin snapper	LUTJANIDAE	Snappers	P,R
LUT GRIS	*Lutjanus griseus*	Gray snapper	LUTJANIDAE	Snappers	P,R
LUT SYNA	*Lutjanus synagris*	Lane snapper	LUTJANIDAE	Snappers	P,R
MAL PLUM	*Malacanthus plumieri*	Sand tilefish	MALACANTHIDAE	Tilefishes	S,R
MAL TRIA	*Malacoctenus triangulatus*	Saddled blenny	CLINIDAE	Clinids	ML
MIC CHRY	*Microspathodon chrysurus*	Yellowtail damselfish	POMACENTRIDAE	Damselfishes	ML
MON CILI	*Monacanthus ciliatus*	Fringed filefish	BALISTIDAE	Leather jackets	ml
MON HISP	*Monacanthus hispidus*	Planehead filefish	BALISTIDAE	Leather jackets	ml
MON SETI	*Monacanthus setifer*	Pygmy filefish	BALISTIDAE	Leatherjackets	ml
MON SPE.	*Monacanthus* sp.	Unid filefish	BALISTIDAE	Leather jackets	ml
MON TUCK	*Monacanthus tuckeri*	Slender filefish	BALISTIDAE	Leather jackets	ml
MUL MART	*Mulloidichthys martinicus*	Yellow goatfish	MULLIDAE	Goatfishes	S
MUR MILI	*Muraena miliaris*	Goldentail moray	MURAENIDAE	Morays	ml
MYC BONA	*Mycteroperca bonaci*	Black grouper	SERRANIDAE	Sea basses	P,R
MYC MICR	*Mycteroperca microlepis*	Gag	SERRANIDAE	Sea basses	P,R
MYC SPE.	*Mycteroperca* sp.	Unid. grouper	SERRANIDAE	Sea basses	P,R
OCY CHRY	*Ocyurus chrysurus*	Yellowtail snapper	LUTJANIDAE	Snappers	P,R
ODO DENT	*Odontoscion dentex*	Reef croaker	SCIAENIDAE	Drums	
OPI AURI	*Opistognathus aurifrons*	Yellowhead jawfish	OPISTOGNATHIDAE	Jawfishes	ML
PAR MARM	*Parablennius marmoreus*	Seaweed blenny	BLENNIIDAE	Blennies	ML
PEM SCHO	*Pempheris schomburgki*	Glassy sweeper	PEMPHERIDAE	Sweepers	
POM ARCU	*Pomacanthus arcuatus*	Gray angelfish	POMACANTHIDAE	Angelfishes	ML
POM DIEN	*Pomacentrus diencaeus*	Longfin damselfish	POMACENTRIDAE	Damselfishes	ML
POM FUSC	*Pomacentrus fuscus*	Dusky damselfish	POMACENTRIDAE	Damselfishes	ml
POM LEUC	*Pomacentrus leucostictus*	Beaugregory	POMACENTRIDAE	Damselfishes	ML
POM PART	*Pomacentrus partitus*	Bicolor damselfish	POMACENTRIDAE	Damselfishes	ML
POM PARU	*Pomacanthus paru*	French angelfish	POMACANTHIDAE	Angelfishes	ML

Table 6. One hundred and fifty-three species censused on all natural reefs from July 1988 to May 1990 (cont.).

SP CODE	SPECIES	COMMON NAME	FAMILY	FAMILY NAME	VALUE[Δ]
POM PLAN	*Pomacentrus planifrons*	Three spot damselfish	POMACENTRIDAE	Damselfishes	ML
POM VARI	*Pomacentrus variabilis*	Cocoa damselfish	POMACENTRIDAE	Damselfishes	ML
PSE MACU	*Pseudupeneus maculatus*	Spotted goatfish	MULLIDAE	Goatfishes	ml
RYP SAPO	*Rypticus saponaceus*	Greater soapfish	GRAMMISTIDAE	Soapfishes	
SCA COEL	*Scarus coelestinus*	Midnight parrotfish	SCARIDAE	Parrotfishes	ml
SCA COER	*Scarus coeruleus*	Blue parrotfish	SCARIDAE	Parrotfishes	ml
SCA CRIS	*Scartella cristata*	Molly miller	BLENNIIDAE	Combtooth blennies	ML
SCA CROI	*Scarus croicensis*	Striped parrotfish	SCARIDAE	Parrotfishes	ML
SCA GUAC	*Scarus guacamaia*	Rainbow parrotfish	SCARIDAE	Parrotfishes	ml
SCA SPE.	*Scarus* sp.	Unid. parrotfish	SCARIDAE	Parrotfishes	ml
SCA TAEN	*Scarus taeniopterus*	Princess parrotfish	SCARIDAE	Parrotfishes	ml
SCA VETU	*Scarus vetula*	Queen parrotfish	SCARIDAE	Parrotfishes	ml
SCO MACU	*Scomberomorus maculatus*	Spanish mackerel	SCOMBRIDAE	Mackerels/Tunas	P,R
SCO PLUM	*Scorpaena plumieri*	Scorpion fish	SCORPAENIDAE	Scorpionfishes	ml
SCO REGA	*Scomberomorus regalis*	Cero mackerel	SCOMBRIDAE	Mackerels/Tunas	P,R
SER BALD	*Serranus baldwini*	Lanternfish	SERRANIDAE	Sea basses	ML
SER DUME	*Seriola dumerili*	Greater amberjack	CARANGIDAE	Jacks	P,R
SER TABA	*Serranus tabacarius*	Tobaccofish	SERRANIDAE	Sea basses.	ML
SER TIGR	*Serranus tigrinus*	Harlequin bass	SERRANIDAE	Sea basses	ML
SPA AURO	*Sparisoma aurofrenatum*	Redband parrotfish	SCARIDAE	Parrotfishes	ML
SPA CHRY	*Sparisoma chrysopterum*	Redtail parrotfish	SCARIDAE	Parrotfishes	ml
SPA RADI	*Sparisoma radians*	Bucktooth parrotfish	SCARIDAE	Parrotfishes	ml
SPA SPE.	*Sparisoma* sp.	Unid. parrotfish	SCARIDAE	Parrotfishes	ml
SPA VIRI	*Sparisoma viride*	Stoplight parrotfish	SCARIDAE	Parrotfishes	ml
SPH BARR	*Sphyraena barracuda*	Barracuda	SPHYRAENIDAE	Barracudas	R
SPH PICU	*Sphyraena picudilla*	Southern sennet	SPHYRAENIDAE	Barracudas	
SYM FOET	*Synodus foetens*	Inshore lizardfish	SYNODONTIDAE	Lizardfishes	
SYN SPE.	*Synodus* sp.	Unid. lizardfish	SYNODONTIDAE	Lizardfishes	
THA BIFA	*Thalassoma bifasciatum*	Bluehead	LABRIDAE	Wrasses	ML
TRA GOOD	*Trachinotus goodei*	Palometa	CARANGIDAE	Jacks	
URO JAMA	*Urolophus jamaicensis*	Yellow stingray	DASYATIDAE	Stingrays	ml

[Δ] Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life

* Color variants of *H. unicolor.*

Table 7. Summary of monitoring at shallow fabricated unit 1 (SAR1) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=14)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ACA BAHI	21	7	50.0%	1.50	2.44	8	0	7.3	2	18
ACA CHIR	32	8	57.1%	2.29	2.92	10	0	13.3	4	28
ACA COER	16	13	92.9%	1.14	0.53	2	0	9.3	3	18
ANI VIRG	27	8	57.1%	1.93	3.22	11	0	6.9	1	25
APO PSEU	16	7	50.0%	1.14	1.88	7	0	4.6	3	6
BOD RUFU	4	2	14.3%	0.29	0.83	3	0	3.8	3	5
CAN ROST	23	7	50.0%	1.64	1.91	5	0	4.7	1	8
CAR BART	2	1	7.1%	0.14	0.53	2	0	30.0	30	30
CHA SEDE	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
CHR MULT	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
DIP FORM	1	1	7.1%	0.07	0.27	1	0	10.0	10	10
ECH NAUC	2	1	7.1%	0.14	0.53	2	0	15.0	15	15
EMB PAND	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
EPI ADSC	4	4	28.6%	0.29	0.47	1	0	11.5	8	15
EPI CRUE	1	1	7.1%	0.07	0.27	1	0	15.0	15	15
EQU ACUM	1	1	7.1%	0.07	0.27	1	0	2.0	2	2
GIN CIRR	1	1	7.1%	0.07	0.27	1	0	160.0	160	160
GOB OCEA	2	1	7.1%	0.14	0.53	2	0	4.0	3	5
HAE AURO	30	2	14.3%	2.14	5.79	20	0	2.0	1	2
HAE MELA	1	1	7.1%	0.07	0.27	1	0	8.0	8	8
HAE SPE.	16	2	14.3%	1.14	4.00	15	0	1.2	1	4
HAE STRI	15	1	7.1%	1.07	4.01	15	0	2.0	1	2
HAL BIVI	113	14	100.0%	8.07	5.58	23	0	7.4	4	12
HAL GARN	2	2	14.3%	0.14	0.36	1	0	2.0	2	2
HAL RADI	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
HOL CORU	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
HOL SPE.	6	2	14.3%	0.43	1.16	4	0	5.3	4	7
LAC MAXI	2	2	14.3%	0.14	0.36	1	0	27.5	25	30
LAC QUAD	1	1	7.1%	0.07	0.27	1	0	15.0	15	15
MAL TRIA	2	1	7.1%	0.14	0.53	2	0	4.0	4	4
OCY CHRY	1	1	7.1%	0.07	0.27	1	0	7.0	7	7
OPI AURI	5	1	7.1%	0.36	1.34	5	0	5.0	4	6
PAR MARM	28	6	42.9%	2.00	3.21	11	0	3.6	2	6
POM ARCU	22	13	92.9%	1.57	0.65	2	0	31.5	25	40
POM PART	2	2	14.3%	0.14	0.36	1	0	4.5	4	5
SCA CRIS	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
SYN FOET	1	1	7.1%	0.07	0.27	1	0	7.0	7	7
THA BIFA	232	13	92.9%	16.57	9.01	31	0	4.5	1	10

NO. SAMPLES = 14
NO. SPECIES = 38
TOT. INDIVIDUALS = 638

Table 8. Summary of monitoring at shallow fabricated unit 2 (SAR2) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=14)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
ACA BAHI	11	4	28.6%	0.79	1.48	4	0	5.8	3	8
ACA CHIR	20	9	64.3%	1.43	1.40	4	0	15.1	3	30
ACA COER	10	2	14.3%	0.71	1.98	7	0	5.0	4	6
ANI VIRG	22	10	71.4%	1.57	1.45	4	0	5.8	1	28
APO PSEU	9	5	35.7%	0.64	1.15	4	0	3.9	3	4
800 RUFU	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
CAL CALA	1	1	7.1%	0.07	0.27	1	0	40.0	40	40
CAN ROST	19	11	78.6%	1.36	1.34	5	0	3.5	2	6
CHA SEDE	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
CHR ENCH	1	1	7.1%	0.07	0.27	1	0	2.0	2	2
CHR MULT	5	4	28.6%	0.36	0.63	2	0	4.2	2	5
CHR SCOT	1	1	7.1%	0.07	0.27	1	0	1.0	1	1
COR GLAU	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
DIP FORM	2	1	7.1%	0.14	0.53	2	0	7.0	6	8
ECH NAUC	1	1	7.1%	0.07	0.27	1	0	25.0	25	25
EMB PAND	1	1	7.1%	0.07	0.27	1	0	2.0	2	2
EQU ACUM	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
GIN CIRR	1	1	7.1%	0.07	0.27	1	0	266.0	266	266
GOB OCEA	4	2	14.3%	0.29	0.83	3	0	3.8	3	5
HAE AURO	5	1	7.1%	0.36	1.34	5	0	1.0	1	1
HAE SPE.	50	1	7.1%	3.57	13.36	50	0	1.0	1	1
HAL BIVI	134	13	92.9%	9.57	4.22	16	0	6.4	2	12
HAL GARN	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
HAL RADI	5	4	28.6%	0.36	0.63	2	0	6.4	4	8
HEM SPE.	5	2	14.3%	0.36	1.08	4	0	5.8	4	8
LAC MAXI	4	4	28.6%	0.29	0.47	1	0	25.0	20	30
MAL TRIA	5	3	21.4%	0.36	0.74	2	0	4.0	2	5
MON SPE.	1	1	7.1%	0.07	0.27	1	0	5.0	5	5
MYC MICR	1	1	7.1%	0.07	0.27	1	0	80.0	80	80
MYC SPE.	2	2	14.3%	0.14	0.36	1	0	5.0	5	5
OCY CHRY	1	1	7.1%	0.07	0.27	1	0	5.0	5	5
OPI AURI	2	1	7.1%	0.14	0.53	2	0	6.0	6	7
PAR MARM	39	10	71.4%	2.79	2.58	7	0	3.8	2	6
POM ARCU	10	6	42.9%	0.71	0.91	2	0	33.2	30	35
POM PART	22	5	35.7%	1.57	2.90	9	0	3.2	1	6
POM VARI	1	1	7.1%	0.07	0.27	1	0	2.0	2	2
SCA CRIS	2	2	14.3%	0.14	0.36	1	0	5.0	5	5
SCA CROI	2	1	7.1%	0.14	0.53	2	0	2.0	1	2
SCA SPE.	4	1	7.1%	0.29	1.07	4	0	3.0	2	4
SER TIGR	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
THA BIFA	270	13	92.9%	19.29	13.60	40	0	4.2	1	8
URO JAMA	1	1	7.1%	0.07	0.27	1	0	25	25	25

NO. SAMPLES = 14
NO. SPECIES = 43
TOT. INDIVIDUALS = 681

Table 9. Summary of monitoring on shallow fabricated unit 3 (SAR3) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=14)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
ACA BAHI	36	13	92.9%	2.57	2.24	8	0	10.9	3	26
ACA CHIR	27	9	64.3%	1.93	2.23	8	0	15.4	4	25
ACA COER	16	6	42.9%	1.14	1.61	4	0	6.3	2	18
ANI VIRG	12	8	57.1%	0.86	0.86	2	0	19.8	4	28
APO PSEU	35	11	78.6%	2.50	2.62	9	0	3.5	2	6
AST STEL	1	1	7.1%	0.07	0.27	1	0	5.0	5	5
CAN ROST	17	10	71.4%	1.21	1.31	4	0	3.6	1	6
CAR RUBE	6	3	21.4%	0.43	0.94	3	0	18.0	8	30
CHA OCEL	12	6	42.9%	0.86	1.03	2	0	12.8	10	18
CHA SEDE	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
CHR MULT	1	1	7.1%	0.07	0.27	1	0	6.0	6	6
COR GLAU	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
DIP FORM	2	2	14.3%	0.14	0.36	1	0	10.0	8	12
EMB PAND	2	2	14.3%	0.14	0.36	1	0	4.5	4	5
EPI CRUE	1	1	7.1%	0.07	0.27	1	0	3.0	3	3
GIN CIRR	1	1	7.1%	0.07	0.27	1	0	190.0	190	190
GOB OCEA	3	2	14.3%	0.21	0.58	2	0	3.7	3	4
HAE ALBU	1	1	7.1%	0.07	0.27	1	0	40.0	40	40
HAE AURO	29	3	21.4%	2.07	6.91	26	0	2.3	1	6
HAE MELA	3	3	21.4%	0.21	0.43	1	0	5.7	4	7
HAE PLUM	1	1	7.1%	0.07	0.27	1	0	5.0	5	5
HAE SPE.	16	5	35.7%	1.14	1.79	5	0	3.7	1	6
HAE STRI	1	1	7.1%	0.07	0.27	1	0	6.0	6	6
HAL BIVI	142	13	92.9%	10.14	5.68	20	0	6.7	2	12
HAL RADI	2	2	14.3%	0.14	0.36	1	0	3.5	3	4
HEM SPE.	2	1	7.1%	0.14	0.53	2	0	4.0	3	5
HOL BERM	3	3	21.4%	0.21	0.43	1	0	23.7	1	35
HOL CILI	1	1	7.1%	0.07	0.27	1	0	28.0	28	28
HOL MARI	3	1	7.1%	0.21	0.80	3	0	6.0	6	6
LAC BICA	1	1	7.1%	0.07	0.27	1	0	6.0	6	6
LAC MAXI	9	7	50.0%	0.64	0.74	2	0	26.1	15	35
LUT ANAL	3	3	21.4%	0.21	0.43	1	0	38.3	35	40
MAL SPE.	2	1	7.1%	0.14	0.53	2	0	3.0	3	3
MAL TRIA	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
PAR MARM	32	8	57.1%	2.29	2.64	7	0	3.9	2	5
POM ARCU	14	10	71.4%	1.00	0.78	2	0	29.9	2	40
POM LEUC	2	1	7.1%	0.14	0.53	2	0	3.0	3	4
POM PART	7	4	28.6%	0.50	0.94	3	0	1.9	1	3
POM PARU	1	1	7.1%	0.07	0.27	1	0	30.0	30	30
POM VARI	3	3	21.4%	0.21	0.43	1	0	3.0	1	5
SCA CRIS	5	3	21.4%	0.36	0.74	2	0	4.2	3	5
SPH BARR	1	1	7.1%	0.07	0.27	1	0	4.0	4	4
SYN INTE	1	1	7.1%	0.07	0.27	1	0	10.0	10	10
THA BIFA	222	13	92.9%	15.86	10.06	38	0	4.5	1	8

NO. SAMPLES = 14
NO. SPECIES = 45
TOT. INDIVIDUALS = 683

Table 10. Combined summary of monitoring on 3 shallow fabricated units from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=42)	SAMPLE FREQUENCY %	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	SAMP. FREQ. RANGE Low	FISH LENGTH (cm) Mean	FISH LENGTH (cm) Mm.	FISH LENGTH (cm) Max.
ABU SAXA	2	2	4.8%	0.05	0.22	1	0	3.5	3	4
ACA BAHI	68	24	57.1%	1.62	2.17	8	0	9.0	2	26
ACA CHIR	79	26	61.9%	1.88	2.24	10	0	14.5	3	30
ACA COER	42	21	50.0%	1.00	1.48	7	0	7.1	2	18
ANI VIRG	61	26	61.9%	1.45	2.10	11	0	9.0	1	28
APO PSEU	60	23	54.8%	1.43	2.09	9	0	3.8	2	6
AST STEL	1	1	2.4%	0.02	0.15	1	0	5.0	5	5
BLE CRIS	8	6	14.3%	0.19	0.51	2	0	4.4	3	5
BOD RUFU	5	3	7.1%	0.12	0.50	3	0	3.8	3	5
CAL CALA	1	1	2.4%	0.02	0.15	1	0	40.0	40	40
CAN ROST	59	28	66.7%	1.40	1.52	5	0	4.0	1	8
CAR BART	2	1	2.4%	0.05	0.31	2	0	30.0	30	30
CAR RUBE	6	3	7.1%	0.14	0.57	3	0	18.0	8	30
CHA OCEL	12	6	14.3%	0.29	0.71	2	0	12.8	10	18
CHA SEDE	3	3	7.1%	0.07	0.26	1	0	3.3	3	4
CHR ENCH	1	1	2.4%	0.02	0.15	1	0	2.0	2	2
CHR MULT	7	6	14.3%	0.17	0.44	2	0	4.3	2	6
CHR SCOT	1	1	2.4%	0.02	0.15	1	0	1.0	1	1
COR GLAU	2	2	4.8%	0.05	0.22	1	0	3.5	3	4
DIP FORM	5	4	9.5%	0.12	0.40	2	0	8.8	6	12
ECH NAUC	3	2	4.8%	0.07	0.34	2	0	18.3	15	25
EMB PAND	4	4	9.5%	0.10	0.30	1	0	3.8	2	5
EPI ADSC	4	4	9.5%	0.10	0.30	1	0	11.5	8	15
EPI CRUE	2	2	4.8%	0.05	0.22	1	0	9.0	3	15
EQU ACUM	2	2	4.8%	0.05	0.22	1	0	3.0	2	4
GIN CIRR	3	3	7.1%	0.07	0.26	1	0	205.3	160	266
GOB OCEA	9	5	11.9%	0.21	0.65	3	0	3.8	3	5
HAE ALBU	1	1	2.4%	0.02	0.15	1	0	40.0	40	40
HAE AURO	64	6	14.3%	1.52	5.20	26	0	2.1	1	6
HAE MELA	4	4	9.5%	0.10	0.30	1	0	6.3	4	8
HAE PLUM	1	1	2.4%	0.02	0.15	1	0	5.0	5	5
HAE SPE.	82	8	19.0%	1.95	8.00	50	0	1.6	1	6
HAE STRI	16	2	4.8%	0.38	2.32	15	0	2.3	1	6
HAL BIVI	389	40	95.2%	9.26	5.15	23	0	6.8	2	12
HAL GARN	3	3	7.1%	0.07	0.26	1	0	2.3	2	3
HAL RADI	8	7	16.7%	0.19	0.45	2	0	5.4	3	8
HEM SPE.	7	3	7.1%	0.17	0.70	4	0	5.3	3	8
HOL BERM	3	3	7.1%	0.07	0.26	1	0	23.7	1	35
HOL CILI	1	1	2.4%	0.02	0.15	1	0	28.0	28	28
HOL CORU	1	1	2.4%	0.02	0.15	1	0	3.0	3	3
HOL MARI	3	1	2.4%	0.07	0.46	3	0	6.0	6	6
HOL SPE.	6	2	4.8%	0.14	0.68	4	0	5.3	4	7
LAC BICA	1	1	2.4%	0.02	0.15	1	0	6.0	6	6
LAC MAXI	15	13	31.0%	0.36	0.58	2	0	26.0	15	35
LAC QUAD	1	1	2.4%	0.02	0.15	1	0	15.0	15	15
LUT ANAL	3	3	7.1%	0.07	0.26	1	0	38.3	35	40
MAL SPE.	2	1	2.4%	0.05	0.31	2	0	3.0	3	3
MAL TRIA	8	5	11.9%	0.19	0.55	2	0	4.0	2	5
MON SPE.	1	1	2.4%	0.02	0.15	1	0	5.0	5	5
MYC MICR	1	1	2.4%	0.02	0.15	1	0	80.0	80	80
MYC SPE.	2	2	4.8%	0.05	0.22	1	0	5.0	5	5
OCY CHRY	2	2	4.8%	0.05	0.22	1	0	6.0	5	7
OPI AURI	7	2	4.8%	0.17	0.82	5	0	5.3	4	7

Table 10. Combined summary of monitoring on 3 shallow fabricated units from June 1988 - June 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=42)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
PAR MARM	99	24	57.1%	2.36	2.77	11	0	3.8	2	6
POM ARCU	46	29	69.0%	1.10	0.85	2	0	31.4	2	40
POM LEUC	2	1	2.4%	0.05	0.31	2	0	3.0	3	4
POM PART	31	11	26.2%	0.74	1.84	9	0	3.0	1	6
POM PARU	1	1	2.4%	0.02	0.15	1	0	30.0	30	30
POM VARI	4	4	9.5%	0.10	0.30	1	0	2.8	1	5
SCA CROI	2	1	2.4%	0.05	0.31	2	0	2.0	1	2
SCA SPE.	4	1	2.4%	0.10	0.62	4	0	3.0	2	4
SER TIGR	1	1	2.4%	0.02	0.15	1	0	3.0	3	3
SPH BARR	1	1	2.4%	0.02	0.15	1	0	4.0	4	4
SYN FOET	1	1	2.4%	0.02	0.15	1	0	7.0	7	7
SYN INTE	1	1	2.4%	0.02	0.15	1	0	10.0	10	10
TRA BIFA	724	39	92.9%	17.24	10.90	40	0	4.4	1	10
URO JAMA	1	1	2.4%	0.02	0.15	1	0	25.0	25	25

NO. SAMPLES = 42
NO. SPECIES = 67
TOT. INDIVIDUALS = 2002

Table 11. Percent of species shared by artificial reefs (AR), between artificial reefs and natural reefs (NR) and between prefabricated units and bridge rubble sites. Censuses conducted June 1988 - June 1990.

Reefs compared	% shared of total species	
SAR1 and SAR2	53%	(28/53)
SAR1 and SAR3	43%	(25/58)
SAR2 and SAR3	40%	(25/63)
All SAR	33%	(22/67)
MAR1 and MAR2	55%	(40/73)
DAR1 and DAR2	59%	(41/69)
AMS and BH	57%	(59/103)

Reefs compared	% shared of total species	% of AR species shared with NR	AR species as % of total	% of NR species at AR
SARC to SNR	44% (52/119)	78% (52/67)	56% (67/119)	50% (52/104)
MARC to MNR	44% (57/130)	78% (57/73)	56% (73/130)	50% (57/114)
DARC to DNR	42% (52/125)	75% (52/69)	55% (69/125)	48% (52/109)
HAWKC to MNR	55% (77/140)	75% (77/103)	74% (103/140)	68% (77/114)

Reefs compared	% shared of total species	% of MARC species shared with HAWKC	% of total at MARC	% of HAWKC species at MARC
MARC to HAWKC	42% (52/124)	71% (52/73)	59% (73/124)	50% (52/103)

Table 12. Summary of censuses on the shallow natural reef (SNR) from July 1988 - April 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=111)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	10	7	6.3%	0.09	0.39	3	0	6.9	3	12
ACA BAHI	381	91	82.0%	3.43	2.88	12	0	13.7	3	25
ACA CHIR	253	74	66.7%	2.28	2.80	15	0	13.4	3	25
ACA COER	1011	95	85.6%	9.11	16.34	110	0	19.2	3	40
ALU SCRI	1	1	0.9%	0.01	0.09	1	0	25.0	25	25
AMB PINO	3	2	1.8%	0.03	0.21	2	0	5.0	5	5
ANI VIRG	130	38	34.2%	1.17	3.62	27	0	18.0	4	40
AUL MACU	8	4	3.6%	0.07	0.40	3	0	30.1	10	50
BOD RUFU	13	9	8.1%	0.12	0.42	2	0	6.2	2	12
CAL BAJO	1	1	0.9%	0.01	0.09	1	0	20.0	20	20
CAL CALA	99	51	45.9%	0.89	1.27	5	0	18.7	4	28
CAN PULL	1	1	0.9%	0.01	0.09	1	0	8.0	8	8
CAN ROST	75	49	44.1%	0.68	0.91	4	0	5.6	2	10
CAR BART	8	6	5.4%	0.07	0.32	2	0	29.5	16	50
CAR CRYS	10	4	3.6%	0.09	0.56	5	0	24.3	15	28
CAR LATU	1	1	0.9%	0.01	0.09	1	0	45.0	45	45
CAR RUBE	31	5	4.5%	0.28	1.54	10	0	19.7	5	35
CHA CAPI	228	94	84.7%	2.05	1.34	6	0	7.8	3	12
CHA OCEL	38	18	16.2%	0.34	0.85	4	0	12.3	5	18
CHA SEDE	26	22	19.8%	0.23	0.50	2	0	6.5	3	12
CHA STRI	36	23	20.7%	0.32	0.68	2	0	11.5	6	15
CHR CYAN	24	10	9.0%	0.22	1.00	9	0	4.5	2	10
CHR MULT	2	1	0.9%	0.02	0.19	2	0	5.0	5	5
CHR SCOT	1	1	0.9%	0.01	0.09	1	0	4.0	4	4
CUR GLAU	24	10	9.0%	0.22	0.81	5	0	4.6	4	6
DIO HOLO	10	10	9.0%	0.09	0.29	1	0	12.6	10	18
DIO HYST	3	3	2.7%	0.03	0.16	1	0	18.0	14	20
ECH NAUC	1	1	0.9%	0.01	0.09	1	0	6.0	6	6
EPI ADSC	15	12	10.8%	0.14	0.44	3	0	19.9	6	40
EPI CRUE	35	26	23.4%	0.32	0.67	4	0	13.8	7	20
EPI FULV	5	5	4.5%	0.05	0.21	1	0	16.8	6	30
EPI GUTT	4	4	3.6%	0.04	0.19	1	0	13.5	11	16
EPI STRI	1	1	0.9%	0.01	0.09	1	0	30.0	30	30
EQU ACUM	103	14	12.6%	0.93	5.84	56	0	11.2	7	14
GIN CIRR	1	1	0.9%	0.01	0.09	1	0	80.0	80	80
GOB OCEA	81	14	12.6%	0.73	2.95	25	0	3.0	2	5
GYM FUNE	1	1	0.9%	0.01	0.09	1	0	110.0	110	110
GYM MORI	3	3	2.7%	0.03	0.16	1	0	41.7	40	45
RAE AURO	806	16	14.4%	7.26	35.65	300	0	3.8	2	10
HAE FLAV	82	7	6.3%	0.74	4.32	40	0	5.9	3	15
HAE MELA	135	9	8.1%	1.22	5.27	35	0	15.0	4	25
HAE PLUM	1821	80	72.1%	16.41	28.99	120	0	16.3	2	30
HAE SCIU	634	38	34.2%	5.71	15.14	100	0	19.4	10	35
HAE SPE.	135	2	1.8%	1.22	10.03	100	0	4.3	3	6
HAE STRI	213	2	1.8%	1.92	19.01	200	0	4.2	3	25
HAL BIVI	484	76	68.5%	4.36	4.24	18	0	7.4	3	12
HAL GARN	660	105	94.6%	5.95	5.03	40	0	7.6	2	18
HAL MACU	139	59	53.2%	1.25	1.50	6	0	8.1	3	13

Table 12. Summary of censuses on the shallow natural reef (SNR) from July 1988 - April 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=111)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
HAL RADI	45	35	31.5%	0.41	0.78	6	0	6.3	4	15
HAL SPE.	8	4	3.6%	0.07	0.44	4	0	10.5	4	18
HEM NOVA	1	1	0.9%	0.01	0.09	1	0	5.0	5	5
HEM SPLE	2	1	0.9%	0.02	0.19	2	0	6.0	6	6
HOL BERM	63	43	38.7%	0.57	0.85	4	0	27.9	15	40
HOL CILI	23	18	16.2%	0.21	0.51	2	0	22.9	5	30
HOL TRIC	73	41	36.9%	0.66	1.00	4	0	8.6	2	18
HYP BERM	1	1	0.9%	0.01	0.09	1	0	6.0	6	6
HYP GEMM*	3	3	2.7%	0.03	0.16	1	0	7.7	6	10
HYP NIGR*	1	1	0.9%	0.01	0.09	1	0	10.0	10	10
HYP PUEL*	5	5	4.5%	0.05	0.21	1	0	6.4	5	8
HYP UNIC	13	10	9.0%	0.12	0.40	2	0	6.5	4	9
IOG CALL	1	1	0.9%	0.01	0.09	1	0	5.0	5	5
IOG HELE	2	1	0.9%	0.02	0.19	2	0	4.0	4	4
LAC BICA	7	7	6.3%	0.06	0.24	1	0	11.7	2	18
LAC MAXI	89	53	47.7%	0.80	1.36	11	0	21.5	10	40
LAC QUAD	6	6	5.4%	0.05	0.23	1	0	30.0	25	40
LUT ANAL	1	1	0.9%	0.01	0.09	1	0	40.0	40	40
MAL TRIA	8	6	5.4%	0.07	0.35	3	0	4.6	4	6
MIC CHRY	5	5	4.5%	0.05	0.21	1	0	8.0	7	11
MON CILI	1	1	0.9%	0.01	0.09	1	0	15.0	15	15
MON SETI	1	1	0.9%	0.01	0.09	1	0	15.0	15	15
MON SPE.	1	1	0.9%	0.01	0.09	1	0	25.0	25	25
MON TUCK	5	5	4.5%	0.05	0.21	1	0	4.6	3	6
MUL MART	1	1	0.9%	0.01	0.09	1	0	16.0	16	16
MUR MILI	2	2	1.8%	0.02	0.13	1	0	35.0	30	40
MYC BONA	19	17	15.3%	0.17	0.44	3	0	36.3	20	50
MYC MICR	1	1	0.9%	0.01	0.09	1	0	45.0	45	45
OCY CHRY	103	28	25.2%	0.93	2.80	20	0	12.7	3	30
OPI AURI	51	16	14.4%	0.46	1.59	12	0	5.9	4	8
POM ARCU	68	43	38.7%	0.61	0.85	3	0	28.5	3	38
POM DIEN	5	4	3.6%	0.05	0.25	2	0	4.0	1	7
POM FUSC	13	10	9.0%	0.12	0.40	2	0	6.2	4	8
POM LEUC	5	5	4.5%	0.05	0.21	1	0	6.4	4	8
POM PART	4493	104	93.7%	40.48	22.67	103	0	4.4	2	8
POM PARU	10	9	8.1%	0.09	0.32	2	0	23.7	1	35
POM PLAN	22	13	11.7%	0.20	0.77	7	0	4.7	2	10
POM VARI	150	78	70.3%	1.35	1.24	6	0	4.9	2	9
PSE MACU	62	31	27.9%	0.56	1.15	6	0	12.1	6	20
SCA COER	1	1	0.9%	0.01	0.09	1	0	5.0	5	5
SCA CROI	538	106	95.5%	4.85	4.30	27	0	7.1	2	18
SCA GUAC	40	14	12.6%	0.36	1.44	13	0	38.1	15	55
SCA SPE.	23	6	5.4%	0.21	1.05	8	0	5.5	4	10
SCA VETU	15	8	7.2%	0.14	0.51	3	0	12.7	6	25
SCO PLUM	1	1	0.9%	0.01	0.09	1	0	30.0	30	30
SCO REGA	12	5	4.5%	0.11	0.59	5	0	35.3	30	40
SER BALD	9	7	6.3%	0.08	0.33	2	0	4.9	3	6
SER TABA	1	1	0.9%	0.01	0.09	1	0	5.0	5	5
SER TIGR	142	81	73.0%	1.28	1.10	4	0	7.1	3	10
SPA AURO	231	83	74.8%	2.08	2.06	12	0	9.9	1	28
SPA CHRY	37	18	16.2%	0.33	1.22	11	0	16.2	5	22
SPA RADI	3	3	2.7%	0.03	0.16	1	0	8.7	8	9

Table 12. Summary of censuses on the shallow natural reef (SNR) from July 1988 - April 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=111)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
SPA SPE.	9	4	3.6%	0.08	0.47	4	0	6.4	4	18
SPA VIRI	66	41	36.9%	0.59	0.98	6	0	11.3	4	45
SPH BARR	5	4	3.6%	0.05	0.25	2	0	66.8	25	130
SYN FOET	1	1	0.9%	0.01	0.09	1	0	28.0	28	28
SYN SPE.	1	1	0.9%	0.01	0.09	1	0	6.0	6	6
THA BIFA	2731	102	91.9%	24.60	20.88	150	0	6.4	2	12
URO JAMA	15	15	13.5%	0.14	0.34	1	0	28.6	20	35

* Color variants of *H. unicolor.*

NO. SAMPLES = 111
NO. SPECIES = 104
TOT. INDIVIDUALS = 17038

Table 13. Summary of monitoring on mid-depth fabricated unit 1 (MAR1) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=16)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	13	6	37.5%	0.81	1.28	4	0	8.8	6	12
ACA BAHI	133	15	93.8%	8.31	3.96	15	0	19.1	4	30
ACA CHIR	42	11	68.8%	2.63	3.22	12	0	20.2	10	30
ACA COER	68	16	100.0%	4.25	3.11	12	1	17.2	5	30
ANI VIRG	18	11	68.8%	1.13	0.89	2	0	18.9	15	25
APO PSEU	43	8	50.0%	2.69	6.29	24	0	3.1	2	6
APO SPE.	2	1	6.3%	0.13	0.50	2	0	6.0	6	6
CAL CALA	1	1	6.3%	0.06	0.25	1	0	16.0	16	16
CAN ROST	42	14	87.5%	2.63	2.09	7	0	5.0	2	10
CAR RUBE	18	5	31.3%	1.13	2.60	10	0	16.4	10	30
CHA OCEL	23	12	75.0%	1.44	0.96	3	0	12.1	6	20
CHA SEDE	23	13	81.3%	1.44	0.89	3	0	8.2	3	12
CHR MULT	1	1	6.3%	0.06	0.25	1	0	2.0	2	2
COR GLAU	126	8	50.0%	7.88	10.26	27	0	3.5	2	5
DEC MACA	150	1	6.3%	9.38	37.50	150	0	17.0	16	18
DEC PUNC	20	2	12.5%	1.25	3.87	15	0	11.5	10	15
DEC SPE.	50	1	6.3%	3.13	12.50	50	0	25.0	25	25
DIP FORM	8	3	18.8%	0.50	1.32	5	0	7.3	3	12
ECH NAUC	1	1	6.3%	0.06	0.25	1	0	8.0	8	8
EPI CRUE	25	13	81.3%	1.56	1.09	4	0	8.9	5	14
EPI GUTT	1	1	6.3%	0.06	0.25	1	0	8.0	8	8
GOB OCEA	3	1	6.3%	0.19	0.75	3	0	4.0	4	4
HAE ALBU	2	2	12.5%	0.13	0.34	1	0	22.0	14	30
HAE AURO	522	4	25.0%	32.63	124.69	500	0	4.1	2	10
HAE FLAV	3	1	6.3%	0.19	0.75	3	0	8.0	8	8
HAE MELA	15	7	43.8%	0.94	1.39	4	0	10.9	6	18
HAE SPE.	14	2	12.5%	0.88	2.50	9	0	4.4	2	6
HAE STRI	306	2	12.5%	19.13	74.91	300	0	5.0	2	8
HAL BIVI	53	12	75.0%	3.31	2.89	10	0	8.7	4	15
HAL GARN	56	6	37.5%	3.50	11.17	45	0	4.3	1	8
HAL RADI	1	1	6.3%	0.06	0.25	1	0	4.0	4	4
HEM SPLE	3	2	12.5%	0.19	0.54	2	0	8.0	6	12
MON CILI	2	1	6.3%	0.13	0.50	2	0	2.0	2	2
LAC BICA	2	2	12.5%	0.13	0.34	1	0	16.0	12	20
LAC MAXI	20	11	68.8%	1.25	1.24	4	0	24.1	15	35
LUT BUCC	5	4	25.0%	0.31	0.60	2	0	7.8	2	12
LUT GRIS	1	1	6.3%	0.06	0.25	1	0	40.0	40	40
MAL SPE.	1	1	6.3%	0.06	0.25	1	0	2.0	2	2
MAL TRIA	1	1	6.3%	0.06	0.25	1	0	2.0	2	2
MON HISP	1	1	6.3%	0.06	0.25	1	0	12.0	12	12
MYC BONA	1	1	6.3%	0.06	0.25	1	0	35.0	35	35
OCY CHRY	168	7	43.8%	10.50	25.16	98	0	26.1	15	35

Table 13. Summary of monitoring on mid-depth fabricated unit 1 (MAR1) from June 1988 - June 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=16)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
POM ARCU	19	11	68.8%	1.19	0.91	2	0	27.5	20	35
POM PART	30	5	31.3%	1.88	4.56	18	0	2.8	1	4
POM PLAN	1	1	6.3%	0.06	0.25	1	0	1.0	1	1
PSE MACU	5	4	25.0%	0.31	0.60	2	0	8.8	6	10
RYP SAPO	1	1	6.3%	0.06	0.25	1	0	30.0	30	30
SCA CROI	1	1	6.3%	0.06	0.25	1	0	6.0	6	6
SCO PLUM	1	1	6.3%	0.06	0.25	1	0	20.0	20	20
SER DUNE	22	2	12.5%	1.38	5.24	21	0	43.3	40	50
SER TIGR	3	3	18.8%	0.19	0.40	1	0	3.7	2	5
SPA AURO	2	1	6.3%	0.13	0.50	2	0	16.0	2	30
SPH BARR	2	2	12.5%	0.13	0.34	1	0	90.0	80	100
THA BIFA	319	12	75.0%	19.94	23.52	75	0	4.1	1	10
URO JAMA	1	1	6.3%	0.06	0.25	1	0	20.0	20	20

NO. SAMPLES = 16
NO. SPECIES = 55
TOT. INDIVIDUALS = 2395

Table 14. Summary of monitoring on mid-depth fabricated unit 2 (MAR2) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=16)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	26	11	68.8%	1.63	1.78	5	0	9.2	5	12
ACA BAHI	90	16	100.0%	5.63	3.34	12	1	20.6	15	30
ACA CHIR	50	9	56.3%	3.13	4.56	17	0	19.7	14	30
ACA COER	53	15	93.8%	3.31	3.42	14	0	11.0	2	25
ALU SCHO	1	1	6.3%	0.06	0.25	1	0	10.0	10	10
ALU SCRI	1	1	6.3%	0.06	0.25	1	0	30.0	30	30
ANI VIRG	16	12	75.0%	1.00	0.82	3	0	17.8	3	22
APO PSEU	66	8	50.0%	4.13	8.35	33	0	4.0	2	8
CAL CALA	1	1	6.3%	0.06	0.25	1	0	15.0	15	15
CAN ROST	41	12	75.0%	2.56	2.06	7	0	5.4	1	12
CAR RUBE	86	3	18.8%	5.38	17.58	70	0	20.7	20	24
CHA OCEL	9	5	31.3%	0.56	0.89	2	0	13.6	12	15
CHA SEDE	14	8	50.0%	0.88	1.02	3	0	8.6	6	10
CHA STRI	1	1	6.3%	0.06	0.25	1	0	12.0	12	12
CHR INSO	2	2	12.5%	0.13	0.34	1	0	3.5	3	4
COR GLAU	147	10	62.5%	9.19	11.10	35	0	3.3	2	5
DEC MACA	150	1	6.3%	9.38	37.50	150	0	17.0	16	18
DEC SPE.	50	1	6.3%	3.13	12.50	50	0	25.0	25	25
DIP FORM	1	1	6.3%	0.06	0.25	1	0	8.0	8	8
EPI CRUE	12	7	43.8%	0.75	1.06	3	0	8.3	5	12
EPI GUTT	2	1	6.3%	0.13	0.50	2	0	7.0	6	8
EQU ACUM	6	5	31.3%	0.38	0.62	2	0	6.5	1	10
EQU LANC	2	2	12.5%	0.13	0.34	1	0	5.0	4	6
GOB OCEA	3	2	12.5%	0.19	0.54	2	0	3.3	3	4
GYM MORI	8	7	43.8%	0.50	0.63	2	0	36.3	20	60
HAE AURO	117	5	31.3%	7.31	16.21	60	0	4.6	2	8
HAE FLAV	40	6	37.5%	2.50	4.56	16	0	7.5	4	12
HAE MELA	135	9	56.3%	8.44	14.04	45	0	9.0	2	20
HAE SPE.	145	2	12.5%	9.06	34.94	140	0	3.1	2	6
HAE STRI	2	1	6.3%	0.13	0.50	2	0	5.0	4	6
HAL BIVI	55	13	81.3%	3.44	2.45	8	0	7.4	4	14
HAL GARN	55	7	43.8%	3.44	5.54	15	0	4.7	2	8
HAL RADI	1	1	6.3%	0.06	0.25	1	0	20.0	20	20
HOL BERM	9	5	31.3%	0.56	0.96	3	0	28.1	4	38
HOL CILI	2	2	12.5%	0.13	0.34	1	0	28.0	28	28
HOL CORU	7	2	12.5%	0.44	1.21	4	0	6.6	6	8
LAC BICA	1	1	6.3%	0.06	0.25	1	0	15.0	15	15
LAC MAXI	17	9	56.3%	1.06	1.48	5	0	22.1	14	30
LAC QUAD	1	1	6.3%	0.06	0.25	1	0	30.0	30	30
LAC TRIQ	1	1	6.3%	0.06	0.25	1	0	20.0	20	20
LUT ANAL	1	1	6.3%	0.06	0.25	1	0	45.0	45	45
LUT BUCC	2	2	12.5%	0.13	0.34	1	0	4.5	4	5
MON HISP	2	1	6.3%	0.13	0.50	2	0	16.0	15	18

Table 14. Summary of monitoring on mid-depth fabricated unit 2 (MAR2) from June 1988 - June 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=16)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
MYC SPE.	3	2	12.5%	0.19	0.54	2	0	5.3	4	6
OCY CHRY	169	8	50.0%	10.56	16.50	50	0	25.7	18	35
PAR MARM	6	4	25.0%	0.38	0.72	2	0	4.3	3	5
POM ARCU	13	9	56.3%	0.81	0.83	2	0	28.9	25	35
POM PART	37	9	56.3%	2.31	4.53	18	0	2.9	1	4
POM PARU	7	4	25.0%	0.44	0.81	2	0	26.1	25	30
PSE MACU	1	1	6.3%	0.06	0.25	1	0	14.0	14	14
RYP SAPO	2	2	12.5%	0.13	0.34	1	0	25.0	25	25
SCO REGA	8	1	6.3%	0.50	2.00	8	0	35.0	30	40
SER TIGR	4	3	18.8%	0.25	0.58	2	0	3.8	3	5
SPA AURO	1	1	6.3%	0.06	0.25	1	0	15.0	15	15
SPA CHRY	1	1	6.3%	0.06	0.25	1	0	12.0	12	12
SPH BARR	2	2	12.5%	0.13	0.34	1	0	97.5	75	120
SYN FOET	1	1	6.3%	0.06	0.25	1	0	25.0	25	25
THA BIFA	340	14	87.5%	21.25	21.29	65	0	4.1	1	10

NO. SAMPLES = 16
NO. SPECIES = 58
TOT. INDIVIDUALS = 2026

Table 15. Combined summary of monitoring on 2 mid-depth fabricated units from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=32)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	39	17	53.1%	1.22	1.58	5	0	9.1	5	12
ACA BAHI	223	31	96.9%	6.97	3.86	15	0	19.7	4	30
ACA CHIR	92	20	62.5%	2.88	3.89	17	0	19.9	10	30
ACA COER	121	31	96.9%	3.78	3.25	14	0	14.5	2	30
ALU SCHO	1	1	3.1%	0.03	0.18	1	0	10.0	10	10
ALU SCRI	1	1	3.1%	0.03	0.18	1	0	30.0	30	30
ANI VIRG	34	23	71.9%	1.06	0.84	3	0	18.4	3	25
APO PSEU	109	16	50.0%	3.41	7.31	33	0	3.6	2	8
APO SPE.	2	1	3.1%	0.06	0.35	2	0	6.0	6	6
CAL CALA	2	2	6.3%	0.06	0.25	1	0	15.5	15	16
CAN ROST	83	26	81.3%	2.59	2.05	7	0	5.2	1	12
CAR RUBE	104	8	25.0%	3.25	12.55	70	0	20.0	10	30
CHA OCEL	32	17	53.1%	1.00	0.02	3	0	12.5	6	20
CHA SEDE	37	21	65.6%	1.16	0.99	3	0	8.4	3	12
CHA STRI	1	1	3.1%	0.03	0.18	1	0	12.0	12	12
CHR INSO	2	2	6.3%	0.06	0.25	1	0	3.5	3	4
CHR Mull	1	1	3.1%	0.03	0.18	1	0	2.0	2	2
COR GLAU	273	18	56.3%	8.53	10.53	35	0	3.4	2	5
DEC MACA	300	2	6.3%	9.38	36.89	150	0	17.0	16	18
DEC PUNC	20	2	6.3%	0.63	2.77	15	0	11.5	10	15
DEC SPE.	100	2	6.3%	3.13	12.30	50	0	25.0	25	25
DIP FORM	9	4	12.5%	0.28	0.96	5	0	7.3	3	12
ECH NAUC	1	1	3.1%	0.03	0.18	1	0	8.0	8	8
EPI CRUE	37	20	62.5%	1.16	1.14	4	0	8.7	5	14
EPI GUTT	3	2	6.3%	0.09	0.39	2	0	7.3	6	8
EQU ACUM	6	5	15.6%	0.19	0.47	2	0	6.5	1	10
EQU LANC	2	2	6.3%	0.06	0.25	1	0	5.0	4	6
GOB OCEA	6	3	9.4%	0.19	0.64	3	0	3.7	3	4
GYM MORI	8	7	21.9%	0.25	0.51	2	0	36.3	20	60
HAE ALBU	2	2	6.3%	0.06	0.25	1	0	22.0	14	30
HAE AURO	639	9	28.1%	19.97	88.41	500	0	4.2	2	10
HAE FLAY	43	7	21.9%	1.34	3.42	16	0	7.6	4	12
HAE MELA	150	16	50.0%	4.69	10.53	45	0	9.2	2	20
HAE SPE.	159	4	12.5%	4.97	24.72	140	0	3.2	2	6
HAE STRI	308	3	9.4%	9.63	53.00	300	0	5.0	2	8
HAL BIVI	108	25	78.1%	3.38	2.64	10	0	8.0	4	15
HAL GARN	111	13	40.6%	3.47	8.67	45	0	4.5	1	8
HAL RADI	2	2	6.3%	0.O6	0.25	1	0	12.0	4	20
HEM SPLE	3	2	6.3%	0.09	0.39	2	0	8.0	6	12
HOL BERM	9	5	15.6%	0.28	0.73	3	0	28.1	4	38
HOL CILI	4	3	9.4%	0.13	0.42	2	0	15.0	2	28
HOL CORU	7	2	6.3%	0.22	0.87	4	0	6.6	6	8
LAC BICA	3	3	9.4%	0.09	0.30	I	0	15.7	12	20

Table 15. Combined summary of monitoring on 2 mid-depth fabricated units from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=32)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
LAC MAXI	37	20	62.5%	1.16	1.35	5	0	23.2	14	35
LAC QUAD	1	1	3.1%	0.03	0.18	1	0	30.0	30	30
LAC TRIQ	1	1	3.1%	0.03	0.18	1	0	20.0	20	20
LUT ANAL	1	1	3.1%	0.03	0.18	1	0	45.0	45	45
LUT BUCC	7	6	18.8%	0.22	0.49	2	0	6.9	2	12
LUT GRIS	1	1	3.1%	0.03	0.18	1	0	40.0	40	40
MAL SPE	1	1	3.1%	0.03	0.18	1	0	2.0	2	2
MAL TRIA	1	1	3.1%	0.03	0.18	1	0	2.0	2	2
MON HISP	3	2	6.3%	0.09	0.39	2	0	14.7	12	18
MYC BONA	1	1	3.1%	0.03	0.18	1	0	35.0	35	35
MYC SPE	3	2	6.3%	0.09	0.39	2	0	5.3	4	6
OCY CHRY	337	15	46.9%	10.53	20.93	98	0	25.9	15	35
PAR MARM	6	4	12.5%	0.19	0.54	2	0	4.3	3	5
POM ARCU	32	20	62.5%	1.00	0.88	2	0	28.1	20	35
POM PART	67	14	43.8%	2.09	4.47	18	0	2.8	1	4
POM PARU	7	4	12.5%	0.22	0.61	2	0	26.1	25	30
POM PLAN	1	1	3.1%	0.03	0.18	1	0	1.0	1	1
PSE MACU	6	5	15.6%	0.19	0.47	2	0	9.7	6	14
RYP SAPO	3	3	9.4%	0.09	0.30	1	0	26.7	25	30
SCA CROI	1	1	3.1%	0.03	0.18	1	0	6.0	6	6
SCO PLUM	1	1	3.1%	0.03	0.18	1	0	20.0	20	20
SCO REGA	8	1	3.1%	0.25	1.41	8	0	35.0	30	40
SER DUME	22	2	6.3%	0.69	3.71	21	0	43.3	40	50
SER TIGR	7	6	18.8%	0.22	0.49	2	0	3.7	2	5
SPA AURO	3	2	6.3%	0.09	0.39	2	0	15.7	2	30
SPA CHRY	1	1	3.1%	0.03	0.18	1	0	12.0	12	12
SPH BARR	4	4	12.5%	0.13	0.34	1	0	93.8	75	120
SYN FOET	1	1	3.1%	0.03	0.18	1	0	25.0	25	25
THA BIFA	659	26	81.3%	20.59	22.08	75	0	4.1	1	10
URO JAMA	1	1	3.1%	0.03	0.18	1	0	20.0	20	20

NO. SAMPLES = 32
NO. SPECIES = 73
TOT. INDIVIDUALS = 4421

Table 16. Percent shared of the 15 most frequent, abundant, and heaviest species in various comparisons of reefs.

Reefs compared	% shared of top 15 species by frequency	% shared of top 15 species by total number	% shared of top 15 species by biomass
SARC to SNR	33%	26%	
SARC to MARC	50%	36%	25%
SARC to DARC	32%	30%	30%
SNR to MNR	58%	36%	
SNR to DNR	20%	25%	
MARC to MNR	27%	30%	
MARC to DARC	48%	25%	43%
MARC to HAWKC	31%	15%	
MNR to DNR	41%	36%	
DARC to DNR	22%	15%	30%
BHA to AMS	30%	50%	50%
HAWKC to SNR	33%	25%	
HAWKC to MNR	20%	15%	
HAWKC to DNR	7%	20%	
Similarity among replicates of fabricated units			
MAR1 to MAR2	72%	67%	
DAR1 to DAR2	88%	76%	

Table 17. Ranking of 15 most frequent and 15 most abundant species at the mid-depth fabricated units from June 1988 - June 1990.

Species	% Frequency	Species	Total No.
		Mid-depth Fabricated Unit 1 (N = 16)	
Blue tang	100.0%	Tomtate	522
Ocean surgeon	93.8%	Bluehead wrasse	319
Sharpnose puffer	87.5%	Striped grunt	306
Graysby	81.3%	Yellowtail snapper	168
Reef butterflyfish	81.3%	Mackerel scad	150
Spotfin butterflyfish	75.0%	Ocean surgeon	133
Slippery dick	75.0%	Masked goby	126
Bluehead wrasse	75.0%	Blue tang	68
Gray angelfish	68.8%	Yellowhead wrasse	56
Hogfish	68.8%	Slippery dick	53
Doctorfish	68.8%	Unid. scad	50
Porkfish	68.8%	Twospot cardinalfish	43
Masked goby	50.0%	Doctorfish	42
Twospot cardinalfish	50.0%	Sharpnose puffer	42
Yellowtail snapper	43.8%	Bicolor damselfish	30
		Mid-depth Fabricated Unit 2 (N = 16)	
Ocean surgeon	100.0%	Bluehead wrasse	340
Blue tang	93.8%	Yellowtail snapper	169
Bluehead wrasse	87.5%	Mackerel scad	150
Slippery dick	81.3%	Masked goby	147
Porkfish	75.0%	Unid. grunt	145
Sharpnose puffer	75.0%	Cottonwick	135
Sergeant major	68.8%	Tomtate	117
Masked goby	62.5%	Ocean surgeon	90
Bicolor damselfish	56.3%	Bar jack	86
Hogfish	56.3%	Twospot cardinalfish	66
Cottonwick	56.3%	Yellowhead wrasse	55
Gray angelfish	56.3%	Slippery dick	55
Doctorfish	56.3%	Blue tang	53
Twospot cardinalfish	50.0%	Doctorfish	50
Yellowtail snapper	50.0%	Unid. scad	50
Reef butterflyfish	50.0%		

Table 18. Summary of censuses on the mid-depth natural reef (MNR) from September 1988 - May 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=78)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	12	6	7.7%	0.15	0.63	4	0	6.6	5	10
ACA BAHI	175	64	82.1%	2.24	2.36	15	0	15.6	4	25
ACA CHIR	121	45	57.7%	1.55	2.10	10	0	15.9	5	25
ACA COER	102	49	62.8%	1.31	1.45	9	0	12.9	4	25
AMB PINO	9	8	10.3%	0.12	0.36	2	0	5.1	4	6
ANI VIRG	30	21	26.9%	0.38	0.74	3	0	21.6	14	30
APO BINO	5	3	3.8%	0.06	0.34	2	0	3.8	2	5
APO MACU	23	2	2.6%	0.29	1.83	12	0	4.0	3	5
APO PSEU	5	3	3.8%	0.06	0.34	2	0	5.2	4	6
BAL VETU	1	1	1.3%	0.01	0.11	1	0	25.0	25	25
BOD PULC	1	1	1.3%	0.01	0.11	1	0	3.0	3	3
BOD RUFU	16	13	16.7%	0.21	0.49	2	0	9.1	2	25
CAL BAJO	2	1	1.3%	0.03	0.23	2	0	16.0	8	25
CAL CALA	46	29	37.2%	0.59	0.92	4	0	19.3	6	30
CAN MACR	2	2	2.6%	0.03	0.16	1	0	27.0	16	38
CAN PULL	2	2	2.6%	0.03	0.16	1	0	27.5	25	30
CAN ROST	125	53	67.9%	1.60	1.44	6	0	4.7	2	8
CAR BART	5	3	3.8%	0.06	0.34	2	0	48.2	45	50
CAR CRYS	27	3	3.8%	0.35	2.36	20	0	19.8	15	25
CAR RUBE	8	4	5.1%	0.10	0.50	3	0	20.0	15	25
CHA CAPI	187	65	83.3%	2.40	1.59	6	0	6.9	4	12
CHA OCEL	37	20	25.6%	0.47	0.88	4	0	12.2	10	15
CHA SEDE	120	55	70.5%	1.54	1.41	7	0	8.4	3	12
CHA STRI	14	9	11.5%	0.18	0.53	2	0	11.6	8	15
CHI SCHO	1	1	1.3%	0.01	0.11	1	0	10.0	10	10
CHR CYAN	453	70	89.7%	5.81	5.09	28	0	6.5	2	13
CHR ENCH	1	1	1.3%	0.01	0.11	1	0	3.0	3	3
CHR INSO	5	4	5.1%	0.06	0.29	2	0	3.4	2	4
CHR MULT	240	33	42.3%	3.08	6.70	34	0	8.3	3	13
CHR SCOT	83	16	20.5%	1.06	3.78	28	0	3.0	1	7
CLE PARR	47	10	12.8%	0.60	2.32	14	0	4.3	1	10
COR GLAU	52	8	10.3%	0.67	2.38	13	0	4.1	3	5
COR PERS	15	2	2.6%	0.19	1.49	13	0	3.9	2	5
DEC SPE.	725	1	1.3%	9.29	82.09	725	0	20.0	20	20
DIO HOLO	1	1	1.3%	0.01	0.11	1	0	15.0	15	15
ECH NAUC	3	3	3.8%	0.04	0.19	1	0	12.0	11	13
EPI ADSC	10	6	7.7%	0.13	0.49	3	0	13.4	12	15
EPI CRUE	103	50	64.1%	1.32	1.41	7	0	14.0	4	46
EPI FULV	5	5	6.4%	0.06	0.25	1	0	12.6	8	20
EPI GUTT	14	12	15.4%	0.18	0.45	2	0	16.4	8	25
EPI MORI	1	1	1.3%	0.01	0.11	1	0	45.0	45	45
EPI SPE.	1	1	1.3%	0.01	0.11	1	0	12.0	12	12

Table 18. Summary of censuses on the mid-depth natural reef (MNR) from September 1988 - May 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=78)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
EPI STRI	1	1	1.3%	0.01	0.11	1	0	65.0	65	65
EQU ACUM	9	8	10.3%	0.12	0.36	2	0	8.3	6	11
GIN CIRR	2	1	1.3%	0.03	0.23	2	0	280.0	280	280
GOB OCEA	209	31	39.7%	2.68	5.77	29	0	3.5	1	5
GOB XANT	1	1	1.3%	0.01	0.11	1	0	3.0	3	3
GYM FUNE	2	2	2.6%	0.03	0.16	1	0	125.0	100	150
GYM MORI	3	3	3.8%	0.04	0.19	1	0	31.7	20	45
HAE ALBU	1	1	1.3%	0.01	0.11	1	0	30.0	30	30
HAE AURO	2140	11	14.1%	27.44	99.73	700	0	4.9	3	10
HAE FLAV	316	10	12.8%	4.05	23.43	200	0	5.3	3	14
HAE MELA	7	2	2.6%	0.09	0.56	4	0	17.1	9	30
HAE PLUM	61	19	24.4%	0.78	2.12	12	0	20.6	15	27
HAE SCIU	115	14	17.9%	1.47	6.64	48	0	22.1	15	25
HAE SPE.	3500	5	6.4%	44.87	289.60	2500	0	3.0	2	6
HAE STRI	4	2	2.6%	0.05	0.36	3	0	5.3	4	6
HAL BIVI	88	30	38.5%	1.13	2.37	14	0	7.6	4	12
HAL GARN	477	74	94.9%	6.12	4.60	27	0	6.8	1	15
HAL MACU	16	13	16.7%	0.21	0.49	2	0	9.0	6	14
HAL RADI	7	7	9.0%	0.09	0.29	1	0	6.6	4	10
HOL BERM	51	40	51.3%	0.65	0.80	4	0	29.1	5	40
HOL CILI	17	12	15.4%	0.22	0.57	3	0	23.6	8	35
HOL TRIC	75	46	59.0%	0.96	1.07	5	0	8.8	3	22
HYP BERM	1	1	1.3%	0.01	0.11	1	0	7.0	7	7
HYP GEMM *	12	10	12.8%	0.15	0.43	2	0	7.4	5	11
HYP NIGR *	1	1	1.3%	0.01	0.11	1	0	6.0	6	6
HYP PUEL *	4	4	5.1%	0.05	0.22	1	0	8.8	6	12
HYP UNIC	28	22	28.2%	0.36	0.62	2	0	7.2	3	12
IOG CALL	2	2	2.6%	0.03	0.16	1	0	4.5	4	5
IOG HELE	5	2	2.6%	0.06	0.41	3	0	4.0	3	4
LAC BICA	11	10	12.8%	0.14	0.39	2	0	14.4	6	25
LAC MAXI	60	37	47.4%	0.77	0.92	3	0	22.3	15	44
LAC QUAD	11	10	12.8%	0.14	0.39	2	0	24.3	18	30
LUT ANAL	1	1	1.3%	0.01	0.11	1	0	35.0	35	35
LUT SYNA	1	1	1.3%	0.01	0.11	1	0	30.0	30	30
MAL PLUM	1	1	1.3%	0.01	0.11	1	0	15.0	15	15
MAL TRIA	5	4	5.1%	0.06	0.29	2	0	5.0	5	6
MON SETI	1	1	1.3%	0.01	0.11	1	0	14.0	14	14
MON TUCK	6	6	7.7%	0.08	0.27	1	0	4.3	4	5
MYC BONA	7	5	6.4%	0.09	0.37	2	0	49.1	35	60
MYC MICR	1	1	1.3%	0.01	0.11	1	0	28.0	28	28
MYC SPE.	1	1	1.3%	0.01	0.11	1	0	18.0	18	18

Table 18. Summary of censuses on the mid-depth natural reef (MNR) from September 1988 - May 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=78)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
OCY CHRY	150	27	34.6%	1.92	5.34	40	0	21.0	4	35
OPI AURI	10	6	7.7%	0.13	0.54	4	0	7.2	3	12
PEM SCHO	1	1	1.3%	0.01	0.11	1	0	10.0	10	10
POM ARCU	27	21	26.9%	0.35	0.64	3	0	25.4	18	35
POM DIEN	7	5	6.4%	0.09	0.40	3	0	4.9	3	6
POM FUSC	14	11	14.1%	0.18	0.48	2	0	5.6	4	8
POM LEUC	4	4	5.1%	0.05	0.22	1	0	4.8	4	6
POM PART	3699	78	100.0%	47.42	22.65	104	5	4.1	1	7
POM PARU	3	2	2.6%	0.04	0.25	2	0	26.7	25	30
POM PLAN	41	22	28.2%	0.53	1.02	5	0	5.0	2	9
POM VARI	112	55	70.5%	1.44	1.26	7	0	5.4	2	10
PSE MACU	49	25	32.1%	0.63	1.23	7	0	11.9	5	25
RYP SAPO	1	1	1.3%	0.01	0.11	1	0	22.0	22	22
SCA COEL	1	1	1.3%	0.01	0.11	1	0	30.0	30	30
SCA COER	11	5	6.4%	0.14	0.68	5	0	33.0	20	40
SCA CROI	246	65	83.3%	3.15	2.42	9	0	8.0	3	18
SCA GUAC	3	2	2.6%	0.04	0.25	2	0	51.0	45	58
SCA SPE.	3	2	2.6%	0.04	0.25	2	0	7.7	4	15
SCA TAEN	5	3	3.8%	0.06	0.37	3	0	11.0	5	20
SCA VETU	10	7	9.0%	0.13	0.44	2	0	14.8	6	25
SCO MACU	4	1	1.3%	0.05	0.45	4	0	40.0	30	50
SCO PLUM	2	2	2.6%	0.03	0.16	1	0	22.5	20	25
SCO REGA	6	5	6.4%	0.08	0.31	2	0	33.8	25	50
SER BALD	2	2	2.6%	0.03	0.16	1	0	6.0	6	6
SER DUME	15	2	2.6%	0.19	1.59	14	0	77.0	35	80
SER TABA	13	11	14.1%	0.17	0.44	2	0	6.1	2	13
SER TIGR	94	52	66.7%	1.21	1.06	4	0	6.4	3	11
SPA AURO	162	64	82.1%	2.08	1.56	6	0	10.1	2	26
SPA CHRY	19	9	11.5%	0.24	1.18	10	0	15.4	5	22
SPA VIRI	32	24	30.8%	0.41	0.69	3	0	15.8	4	30
SPH BARR	2	1	1.3%	0.03	0.23	2	0	105.0	90	120
SPH PICU	2	1	1.3%	0.03	0.23	2	0	30.0	30	30
THA BIFA	2255	77	98.7%	28.91	16.00	100	0	6.0	1	11
URO JAMA	5	5	6.4%	0.06	0.25	1	0	27.6	20	30

* = Color variants of *H. unicolor*.

NO. SAMPLES = 78
NO. SPECIES = 114
TOT. INDIVIDUALS = 17106

Table 19. Summary of monitoring on deep fabricated unit 1 (DAR1) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=15)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ACA BAHI	1	1	6.7%	0.07	0.26	1	0	20.0	20	20
ACA CHIR	22	6	40.0%	1.47	2.61	8	0	21.9	15	30
ACA COER	8	3	20.0%	0.53	1.25	4	0	12.8	10	16
ALU SCRI	1	1	6.7%	0.07	0.26	1	0	50.0	50	50
ANI VIRG	1	1	6.7%	0.07	0.26	1	0	1.0	1	1
APO PSEU	81	8	53.3%	5.40	9.14	34	0	3.6	1	6
APO SPE.	6	2	13.3%	0.40	1.30	5	0	2.3	1	4
BOD PULC	6	2	13.3%	0.40	1.12	4	0	4.0	2	7
CAL CALA	1	1	6.7%	0.07	0.26	1	0	25.0	25	25
CAN ROST	29	11	73.3%	1.93	1.87	6	0	4.3	2	8
CAR BART	1	1	6.7%	0.07	0.26	1	0	60.0	60	60
CAR CRYS	6	2	13.3%	0.40	1.12	4	0	18.0	15	20
CAR RUBE	12	2	13.3%	0.80	2.60	10	0	23.3	20	28
CHA OCEL	14	7	46.7%	0.93	1.03	2	0	10.9	8	12
CHA SEDE	9	6	40.0%	0.60	0.83	2	0	5.9	3	10
CHR ENCH	10	3	20.0%	0.67	1.84	7	0	1.9	1	2
CHR INSO	10	5	33.3%	0.67	1.35	5	0	2.1	1	3
CHR SCOT	4	3	20.0%	0.27	0.59	2	0	2.5	1	3
COR GLAU	120	9	60.0%	8.00	9.03	24	0	3.3	2	6
ECH NAUC	1	1	6.7%	0.07	0.26	1	0	11.0	11	11
EPI CRUE	33	14	93.3%	2.20	1.37	6	0	7.5	2	15
EPI GUTT	1	1	6.7%	0.07	0.26	1	0	4.0	4	4
GYM MORI	1	1	6.7%	0.07	0.26	1	0	30.0	30	30
HAE STRI	1	1	6.7%	0.07	0.26	1	0	6.0	6	6
HAL BIVI	34	9	60.0%	2.27	2.49	6	0	6.2	4	12
HAL GARN	43	8	53.3%	2.87	4.60	16	0	3.9	1	8
HAL SPE.	1	1	6.7%	0.07	0.26	1	0	6.0	6	6
HOL BERM	2	1	6.7%	0.13	0.52	2	0	2.0	2	3
HOL CILI	3	3	20.0%	0.20	0.41	1	0	4.0	3	5
LAC BICA	1	1	6.7%	0.07	0.26	1	0	16.0	16	16
LAC MAXI	14	11	73.3%	0.93	0.70	2	0	26.2	16	35
LUT ANAL	2	2	13.3%	0.13	0.35	1	0	67.5	55	80
LUT BUCC	28	6	40.0%	1.87	4.66	18	0	5.1	2	10
LUT GRIS	77	9	60.0%	5.13	7.47	26	0	31.5	15	60
MON CILI	1	1	6.7%	0.07	0.26	1	0	2.0	2	2
MYC BONA	1	1	6.7%	0.07	0.26	1	0	4.0	4	4
MYC SPE.	2	1	6.7%	0.13	0.52	2	0	3.0	2	4
OCY CHRY	64	8	53.3%	4.27	5.52	15	0	24.9	14	40
PAR FURC	6	5	33.3%	0.40	0.63	2	0	9.7	5	16
PAR MARM	4	2	13.3%	0.27	0.70	2	0	3.5	2	4
POM ARCU	6	3	20.0%	0.40	0.83	2	0	29.0	18	35
POM PART	129	9	60.0%	8.60	10.39	26	0	3.2	1	6
POM PARU	7	5	33.3%	0.47	0.74	2	0	27.6	25	35
POM VARI	1	1	6.7%	0.07	0.26	1	0	7.0	7	7

Table 19. Summary of monitoring on deep fabricated unit 1 (DAR1) from June 1988 - June 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=15)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
SCA CRIS	1	1	6.7%	0.07	0.26	1	0	4.0	4	4
SCA SPE.	1	1	6.7%	0.07	0.26	1	0	3.0	3	3
SER BALD	2	1	6.7%	0.13	0.52	2	0	4.0	3	5
SER DUME	9	5	33.3%	0.60	0.99	3	0	35.0	18	50
SER TABA	2	2	13.3%	0.13	0.35	1	0	3.0	2	4
SER TIGR	6	5	33.3%	0.40	0.63	2	0	3.5	2	5
SPH BARR	1	1	6.7%	0.07	0.26	1	0	80.0	80	80
THA BIFA	200	14	93.3%	13.33	12.09	32	0	4.4	1	10
TRA FALC	2	2	13.3%	0.13	0.35	1	0	50.0	50	50

NO. SAMPLES = 15
NO. SPECIES = 53
TOT. INDIVIDUALS = 1029

Table 20. Summary of monitoring on deep fabricated unit 2 (DAR2) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=15)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ACA BAHI	6	2	13.3%	0.40	1.12	4	0	24.7	15	30
ACA CHIR	52	12	80.0%	3.47	2.42	7	0	23.0	15	35
APO PSEU	36	8	53.3%	2.40	3.18	9	0	2.8	1	5
APO SPE.	1	1	6.7%	0.07	0.26	1	0	2.0	2	2
BOD PULC	5	4	26.7%	0.33	0.62	2	0	3.4	1	5
BOD RUFU	2	2	13.3%	0.13	0.35	1	0	4.0	3	5
CAL CALA	3	3	20.0%	0.20	0.41	1	0	28.3	25	35
CAL SPE.	1	1	6.7%	0.07	0.26	1	0	25.0	25	25
CAN ROST	31	10	66.7%	2.07	2.52	8	0	4.7	1	10
CAR BART	4	2	13.3%	0.27	0.80	3	0	44.8	30	80
CAR CRYS	1	1	6.7%	0.07	0.26	1	0	25.0	25	25
CAR RUBE	8	1	6.7%	0.53	2.07	8	0	22.0	20	25
CHA OCEL	21	12	80.0%	1.40	0.83	2	0	13.0	10	15
CHA SEDE	11	9	60.0%	0.73	0.70	2	0	6.7	2	10
CHR ENCH	13	3	20.0%	0.87	2.39	9	0	2.0	1	2
CHR SCOT	1	1	6.7%	0.07	0.26	1	0	1.0	1	1
CLE PARR	1	1	6.7%	0.07	0.26	1	0	4.0	4	4
COR GLAU	178	9	60.0%	11.87	12.44	34	0	3.4	2	5
DEC PUNC	1000	1	6.7%	66.67	258.20	1000	0	18.0	15	20
EPI ADSC	1	1	6.7%	0.07	0.26	1	0	2.0	2	2
EPI CRUE	21	11	73.3%	1.40	1.18	3	0	7.5	2	14
EPI FULV	2	1	6.7%	0.13	0.52	2	0	5.0	5	5
EPI GUTT	1	1	6.7%	0.07	0.26	1	0	10.0	10	10
EQU ACUM	1	1	6.7%	0.07	0.26	1	0	1.0	1	1
GYM MORI	1	1	6.7%	0.07	0.26	1	0	40.0	40	40
HAL BIVI	50	12	80.0%	3.33	2.38	8	0	6.7	4	10
HAL GARN	40	11	73.3%	2.67	3.66	12	0	4.1	1	10
HAL SPE.	1	1	6.7%	0.07	0.26	1	0	3.0	3	3
HOL BERM	1	1	6.7%	0.07	0.26	1	0	25.0	25	25
HOL CILI	2	2	13.3%	0.13	0.35	1	0	3.0	2	4
HOL TRIC	2	2	13.3%	0.13	0.35	1	0	6.5	3	10
IOG HELE	2	2	13.3%	0.13	0.35	1	0	3.0	2	4
KYP SECT	1	1	6.7%	0.07	0.26	1	0	20.0	20	20
LAC BICA	3	3	20.0%	0.20	0.41	1	0	15.3	15	16
LAC MAXI	23	13	86.7%	1.53	0.99	3	0	25.0	14	35
LAC QUAD	2	2	13.3%	0.13	0.35	1	0	28.0	26	30
LUT ANAL	3	3	20.0%	0.20	0.41	1	0	50.0	30	80
LUT BUCC	9	2	13.3%	0.60	2.06	8	0	2.9	2	4
LUT CYAN	1	1	6.7%	0.07	0.26	1	0	110.0	110	110
LUT GRIS	77	10	66.7%	5.13	6.52	17	0	30.8	12	50
MIC CHRY	1	1	6.7%	0.07	0.26	1	0	1.0	1	1
MYC SPE.	2	1	6.7%	0.13	0.52	2	0	2.0	2	2

Table 20. Summary of monitoring on deep fabricated unit 2 (DAR2) from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=15)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
OCY CHRY	167	13	86.7%	11.13	13.34	49	0	24.3	15	35
PAR FURC	1	1	6.7%	0.07	0.26	1	0	9.0	9	9
PAR MARM	6	5	33.3%	0.40	0.63	2	0	4.5	2	9
POM ARCU	11	7	46.7%	0.73	0.88	2	0	31.2	25	40
POM PART	28	6	40.0%	1.87	2.83	9	0	2.1	1	3
POM PARU	4	3	20.0%	0.27	0.59	2	0	27.8	25	30
POM VARI	1	1	6.7%	0.07	0.26	1	0	2.0	2	2
PSE MACU	1	1	6.7%	0.07	0.26	1	0	15.0	15	15
RAC CANA	1	1	6.7%	0.07	0.26	1	0	120.0	120	120
RYP SAPO	3	3	20.0%	0.20	0.41	1	0	17.0	6	25
SER DUME	36	4	26.7%	2.40	5.70	21	0	25.3	15	30
SER TIGR	1	1	6.7%	0.07	0.26	1	0	3.0	3	3
SPH BARR	3	3	20.0%	0.20	0.41	1	0	100.0	80	110
THA BIFA	175	11	73.3%	11.67	15.76	56	0	3.8	1	10
TRA FALC	1	1	6.7%	0.07	0.26	1	0	50.0	50	50

NO. SAMPLES = 15
NO. SPECIES = 57
TOT. INDIVIDUALS = 2063

Table 21. Combined summary of monitoring on 2 deep fabricated units from June 1988 - June 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=30)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ACA BAHI	7	3	10.0%	0.23	0.82	4	0	24.0	15	30
ACA CHIR	74	18	60.0%	2.47	2.67	8	0	22.6	15	35
ACA COER	8	3	10.0%	0.27	0.91	4	0	12.8	10	16
ALU SCRI	1	1	3.3%	0.03	0.18	1	0	50.0	50	50
ANI VIRG	1	1	3.3%	0.03	0.18	1	0	1.0	1	1
APO PSEU	117	16	53.3%	3.90	6.90	34	0	3.4	1	6
APO SPE.	7	3	10.0%	0.23	0.94	5	0	2.3	1	4
BOD PULC	11	6	20.0%	0.37	0.89	4	0	3.7	1	7
BOD RUFU	2	2	6.7%	0.07	0.25	1	0	4.0	3	5
CAL CALA	4	4	13.3%	0.13	0.35	1	0	27.5	25	35
CAL SPE.	1	1	3.3%	0.03	0.18	1	0	25.0	25	25
CAN ROST	60	21	70.0%	2.00	2.18	8	0	4.5	1	10
CAR BART	5	3	10.0%	0.17	0.59	3	0	47.8	30	80
CAR CRYS	7	3	10.0%	0.23	0.82	4	0	19.0	15	25
CAR RUBE	20	3	10.0%	0.67	2.31	10	0	22.8	20	28
CHA OCEL	35	19	63.3%	1.17	0.95	2	0	12.1	8	15
CHA SEDE	20	15	50.0%	0.67	0.76	2	0	6.4	2	10
CHR ENCH	23	6	20.0%	0.77	2.10	9	0	2.0	1	2
CHR INSO	10	5	16.7%	0.33	0.99	5	0	2.1	1	3
CHR SCOT	5	4	13.3%	0.17	0.46	2	0	2.2	1	3
CLE PARR	1	1	3.3%	0.03	0.18	1	0	4.0	4	4
COR GLAU	298	18	60.0%	9.93	10.86	34	0	3.3	2	6
DEC PUNC	1000	1	3.3%	33.33	182.57	1000	0	18.0	15	20
ECH NAUC	1	1	3.3%	0.03	0.18	1	0	11.0	11	11
EPI ADSC	1	1	3.3%	0.03	0.18	1	0	2.0	2	2
EPI CRUE	54	25	83.3%	1.80	1.32	6	0	7.5	2	15
EPI FULV	2	1	3.3%	0.07	0.37	2	0	5.0	5	5
EPI GUTT	2	2	6.7%	0.07	0.25	1	0	7.0	4	10
EQU ACUM	1	1	3.3%	0.03	0.18	1	0	1.0	1	1
GYM MORI	2	2	6.7%	0.07	0.25	1	0	35.0	30	40
HAE STRI	1	1	3.3%	0.03	0.18	1	0	6.0	6	6
HAL BIVI	84	21	70.0%	2.80	2.46	8	0	6.5	4	12
HAL GARN	83	19	63.3%	2.77	4.08	16	0	4.0	1	10
HAL SPE.	4	3	10.0%	0.13	0.43	2	0	4.3	3	6
HOL BERM	3	2	6.7%	0.10	0.40	2	0	9.7	2	25
HOL CILI	5	5	16.7%	0.17	0.38	1	0	3.6	2	5
HOL TRIC	2	2	6.7%	0.07	0.25	1	0	6.5	3	10
IOG HELE	2	2	6.7%	0.07	0.25	1	0	3.0	2	4
KYP SECT	1	1	3.3%	0.03	0.18	1	0	20.0	20	20
LAC BICA	4	4	13.3%	0.13	0.35	1	0	15.5	15	16
LAC MAXI	37	24	80.0%	1.23	0.90	3	0	25.5	14	35
LAC QUAD	2	2	6.7%	0.07	0.25	1	0	28.0	26	30

Table 21. Combined summary of monitoring on 2 deep fabricated units from June 1988 - June 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=30)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
LUT ANAL	5	5	16.7%	0.17	0.38	1	0	57.0	30	80
LUT BUCC	37	8	26.7%	1.23	3.60	18	0	4.5	2	10
LUT CYAN	1	1	3.3%	0.03	0.18	1	0	110.0	110	110
LUT GRIS	154	19	63.3%	5.13	6.89	26	0	31.1	12	60
MIC CHRY	1	1	3.3%	0.03	0.18	1	0	1.0	1	1
MON CILI	1	1	3.3%	0.03	0.18	1	0	2.0	2	2
MYC BONA	1	1	3.3%	0.03	0.18	1	0	4.0	4	4
MYC SPE.	4	2	6.7%	0.13	0.51	2	0	2.5	2	4
OCY CHRY	231	21	70.0%	7.70	10.62	49	0	24.5	14	40
PAR FURC	7	6	20.0%	0.23	0.50	2	0	9.6	5	16
PAR HARM	10	7	23.3%	0.33	0.66	2	0	4.1	2	9
POM ARCU	17	10	33.3%	0.57	0.86	2	0	30.4	18	40
POM PART	157	15	50.0%	5.23	8.23	26	0	3.0	1	6
POM PARU	11	8	26.7%	0.37	0.67	2	0	27.6	25	35
POM VARI	2	2	6.7%	0.07	0.25	1	0	4.5	2	7
PSE MACU	1	1	3.3%	0.03	0.18	1	0	15.0	15	15
RAC CANA	1	1	3.3%	0.03	0.18	1	0	120.0	120	120
RYP SAPO	3	3	10.0%	0.10	0.31	1	0	17.0	6	25
SCA CRIS	1	1	3.3%	0.03	0.18	1	0	4.0	4	4
SCA SPE.	1	1	3.3%	0.03	0.18	1	0	3.0	3	3
SER BALD	2	1	3.3%	0.07	0.37	2	0	4.0	3	5
SER DUME	45	9	30.0%	1.50	4.13	21	0	27.2	15	50
SER TABA	2	2	6.7%	0.07	0.25	1	0	3.0	2	4
SER TIGR	7	6	20.0%	0.23	0.50	2	0	3.4	2	5
SPH BARR	4	4	13.3%	0.13	0.35	1	0	95.0	80	110
THA BIFA	375	25	83.3%	12.50	13.83	56	0	4.1	1	10
TRA FALC	3	3	10.0%	0.10	0.31	1	0	50.0	50	50

NO. SAMPLES = 30
NO. SPECIES = 69
TOT. INDIVIDUALS = 3092

Table 21a. Ranking of the 15 most frequent and 15 most abundant species on the deep fabricated units from June 1988 - June 1990.

Species	% Frequency	Species	Total No.
		Deep Fabricated Unit 1 (N = 15)	
Graysby	93.3%	Bluehead wrasse	200
Bluehead wrasse	93.3%	Bicolor damselfish	129
Hogfish	73.3%	Masked goby	120
Sharpnose puffer	73.3%	Twospot cardinalfish	81
Bicolor damselfish	60.0%	Gray snapper	77
Masked goby	60.0%	Yellowtail snapper	64
Slippery dick	60.0%	Yellowhead wrasse	43
Gray snapper	60.0%	Slippery dick	34
Yellowhead wrasse	53.3%	Graysby	33
Yellowtail snapper	53.3%	Sharpnose puffer	29
Twospot cardinalfish	53.3%	Blackfin snapper	28
Spotfin butterflyfish	46.7%	Doctorfish	22
Reef butterflyfish	40.0%	Spotfin butterflyfish	14
Blackfin snapper	40.0%	Hogfish	14
Doctorfish	40.0%	Bar jack	12
		Deep Fabricated Unit 2 (N = 15)	
Hogfish	86.7%	Round scad	1000
Yellowtail snapper	86.7%	Masked goby	178
Slippery dick	80.0%	Bluehead wrasse	175
Doctorfish	80.0%	Yellowtail snapper	167
Spotfin butterflyfish	80.0%	Gray snapper	77
Bluehead wrasse	73.3%	Doctorfish	52
Graysby	73.3%	Slippery dick	50
Yellowhead wrasse	73.3%	Yellowhead wrasse	40
Sharpnose puffer	66.7%	Greater amberjack	36
Gray snapper	66.7%	Twospot cardinalfish	36
Masked goby	60.0%	Sharpnose puffer	31
Reef butterflyfish	60.0%	Bicolor damselfish	28
Twospot cardinalfish	53.3%	Hogfish	23
Gray angelfish	46.7%	Spotfin butterflyfish	21
Bicolor damselfish	40.0%	Graysby	21

Table 22. Summary of censuses on the deep natural reef (DNR) from September 1988 to May 1990.

Species	Total Indiv.	SAMPLE FREQUENCY (N=68)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ACA BAHI	34	21	30.9%	0.50	0.95	5	0	16.7	10	30
ACA CHIR	38	22	32.4%	0.56	0.95	4	0	17.2	10	25
ACA COER	19	11	16.2%	0.28	0.86	6	0	18.2	10	25
AMB PINO	2	2	2.9%	0.03	0.17	1	0	5.5	5	6
ANI SURI	3	1	1.5%	0.04	0.36	3	0	30.0	25	35
ANI VIRG	12	11	16.2%	0.18	0.42	2	0	19.8	15	25
APO SPE.	80	1	1.5%	1.18	9.70	80	0	4.0	2	5
AUL MACU	2	2	2.9%	0.03	0.17	1	0	31.5	25	38
BAL CAPR	2	2	2.9%	0.03	0.17	1	0	30.0	30	30
BOD PULC	159	52	76.5%	2.34	2.06	9	0	8.6	2	24
BOD RUFU	24	19	27.9%	0.35	0.62	2	0	7.2	3	18
CAL CALA	21	10	14.7%	0.31	0.89	5	0	21.8	14	35
CAN MACR	2	2	2.9%	0.03	0.17	1	0	27.5	25	30
CAN ROST	88	45	66.2%	1.29	1.19	4	0	4.9	2	9
CAR BART	58	8	11.8%	0.85	3.04	15	0	28.6	15	40
CAR CRYS	1	1	1.5%	0.01	0.12	1	0	24.0	24	24
CAR RUBE	9	4	5.9%	0.13	0.75	6	0	23.8	14	30
CHA CAPI	111	46	67.6%	1.63	1.38	5	0	7.2	4	14
CHA FABE	2	2	2.9%	0.03	0.17	1	0	36.0	27	45
CHA OCEL	49	25	36.8%	0.72	0.97	3	0	12.0	6	18
CHA SEDE	129	57	83.8%	1.90	1.20	6	0	9.3	4	16
CHA STRI	4	3	4.4%	0.06	0.29	2	0	8.8	7	10
CHR CYAN	226	61	89.7%	3.32	2.91	12	0	6.5	1	12
CHR ENCH	89	23	33.8%	1.31	2.46	10	0	2.7	1	5
CHR INSO	460	53	77.9%	6.76	8.16	41	0	3.7	1	7
CHR MULT	20	5	7.4%	0.29	1.95	16	0	3.7	2	10
CHR SCOT	1396	48	70.6%	20.53	39.93	275	0	2.8	1	8
CLE PARR	64	11	16.2%	0.94	2.59	14	0	3.6	1	22
COR GLAU	34	7	10.3%	0.50	1.64	8	0	3.8	3	5
COR PERS	874	39	57.4%	12.85	20.50	125	0	2.9	1	5
DAS AMER	1	1	1.5%	0.01	0.12	1	0	80.0	80	80
DEC PUNC	2500	2	2.9%	36.76	217.11	1500	0	16.0	15	17
DIO HOLO	1	1	1.5%	0.01	0.12	1	0	14.0	14	14
DIO HYST	1	1	1.5%	0.01	0.12	1	0	30.0	30	30
ECH NAUC	2	2	2.9%	0.03	0.17	1	0	16.5	15	18
EMB PAND	1	1	1.5%	0.01	0.12	1	0	3.0	3	3
EPI ADSC	25	12	17.6%	0.37	0.88	4	0	14.4	6	28
EPI CRUE	105	48	70.6%	1.54	1.43	9	0	14.5	5	22
EPI FULV	5	4	5.9%	0.07	0.31	2	0	15.0	12	20
EPI GUTT	5	3	4.4%	0.07	0.40	3	0	12.4	6	15
EPI STRI	2	2	2.9%	0.03	0.17	1	0	40.0	30	50
EQU ACUM	88	26	38.2%	1.29	2.53	10	0	10.7	6	15

Table 22. Summary of censuses on the deep natural reef (DNR) from September 1988 to May 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=68)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
EQU LANC	12	10	14.7%	0.18	0.46	2	0	16.2	12	22
FIS SPE.	1	1	1.5%	0.01	0.12	1	0	20.0	20	20
GER CINE	12	2	2.9%	0.18	1.15	9	0	18.8	15	20
GOB OCEA	32	14	20.6%	0.47	1.19	6	0	3.3	2	5
GYM FUME	4	4	5.9%	0.06	0.24	1	0	105.0	60	140
GYM MORI	2	2	2.9%	0.03	0.17	1	0	47.5	45	50
GYM VICI	1	1	1.5%	0.01	0.12	1	0	80.0	80	80
HAE AURO	3630	22	32.4%	53.38	126.50	600	0	15.8	4	22
HAE FLAV	202	47	69.1%	2.97	3.75	18	0	14.6	2	22
HAE MELA	13	3	4.4%	0.19	1.08	8	0	16.7	13	25
HAE PLUM	603	35	51.5%	8.87	20.61	100	0	18.0	10	28
HAE SCIU	182	25	36.8%	2.68	6.86	45	0	20.0	12	26
HAE SPE.	2591	8	11.8%	38.10	244.63	2000	0	2.9	2	3
HAL BIVI	3	2	2.9%	0.04	0.27	2	0	11.0	7	15
HAL GARN	197	54	79.4%	2.90	2.65	15	0	9.7	2	20
HAL MACU	1	1	1.5%	0.01	0.12	1	0	6.0	6	6
HOL ASCE	1	1	1.5%	0.01	0.12	1	0	13.0	13	13
HOL BERM	15	14	20.6%	0.22	0.45	2	0	21.3	8	35
HOL CILI	7	4	5.9%	0.10	0.46	3	0	11.4	4	25
HOL CORU	9	9	13.2%	0.13	0.34	1	0	15.8	10	20
HOL MARI	2	2	2.9%	0.03	0.17	1	0	10.0	10	10
HOL RUFU	1	1	1.5%	0.01	0.12	1	0	13.0	13	13
HOL TRIC	187	67	98.5%	2.75	1.32	7	0	10.7	2	25
HYP GEMM *	7	4	5.9%	0.10	0.46	3	0	9.3	5	11
HYP NIGR *	1	1	1.5%	0.01	0.12	1	0	8.0	8	8
HYP PUEL *	3	2	2.9%	0.04	0.27	2	0	9.3	7	12
HYP UNIC	87	55	80.9%	1.28	0.88	3	0	8.3	4	15
IOG SPE.	11	2	2.9%	0.16	1.22	10	0	2.2	1	4
LAC BICA	4	4	5.9%	0.06	0.24	1	0	14.3	12	15
LAC MAXI	43	31	45.6%	0.63	0.81	3	0	23.9	6	50
LAC QUAD	2	2	2.9%	0.03	0.17	1	0	23.5	17	30
LUT ANAL	5	3	4.4%	0.07	0.36	2	0	44.2	25	80
LUT APOD	5	1	1.5%	0.07	0.61	5	0	15.0	12	18
LUT BUCC	263	39	57.4%	3.87	5.95	30	0	14.1	8	25
LUT GRIS	76	15	22.1%	1.12	4.47	35	0	35.9	15	50
LUT SYNA	544	28	41.2%	8.00	16.25	90	0	17.0	10	43
MON HISP	1	1	1.5%	0.01	0.12	1	0	18.0	18	18
MON SETI	5	3	4.4%	0.07	0.36	2	0	17.2	14	18
MUL MART	51	7	10.3%	0.75	3.02	20	0	14.6	10	20
MYC BONA	10	8	11.8%	0.15	0.43	2	0	42.9	12	80
MYC SPE.	2	2	2.9%	0.03	0.17	1	0	20.0	10	30
OCY CHRY	118	40	58.8%	1.74	2.39	12	0	21.9	8	45

Table 22. Summary of censuses on the deep natural reef (DNR) from September 1988 to May 1990 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=68)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
0D0 DENT	50	1	1.5%	0.74	6.06	50	0	4.0	3	5
OPI AURI	2	1	1.5%	0.03	0.24	2	0	7.0	7	8
PAR MARM	1	1	1.5%	0.01	0.12	1	0	6.0	6	6
POM ARCU	22	14	20.6%	0.32	0.74	3	0	28.0	20	40
POM FUSC	16	13	19.1%	0.24	0.52	2	0	6.4	3	10
POM LEUC	5	3	4.4%	0.07	0.40	3	0	5.6	3	10
POM PART	1566	67	98.5%	23.03	12.54	55	0	4.0	1	9
POM PARU	8	7	10.3%	0.12	0.37	2	0	17.8	10	35
POM PLAN	4	4	5.9%	0.06	0.24	1	0	7.8	5	12
POM VARI	77	40	58.8%	1.13	1.20	4	0	5.2	2	9
PSE MACU	165	49	72.1%	2.43	2.35	10	0	16.4	10	26
RYP SAPO	1	1	1.5%	0.01	0.12	1	0	25.0	25	25
SCA CRIS	2	2	2.9%	0.03	0.17	1	0	5.5	5	6
SCA CROI	212	61	89.7%	3.12	2.34	12	0	10.6	2	22
SCA TAEN	3	3	4.4%	0.04	0.21	1	0	16.7	10	20
SCA VETU	2	2	2.9%	0.03	0.17	1	0	8.0	4	12
SCO PLUM	5	4	5.9%	0.07	0.31	2	0	24.4	12	30
SCO REGA	7	4	5.9%	0.10	0.46	3	0	39.0	28	50
SER DUME	14	5	7.4%	0.21	0.96	7	0	40.2	10	60
SER TABA	16	9	13.2%	0.24	0.67	3	0	9.0	5	13
SER TIGR	2	2	2.9%	0.03	0.17	1	0	4.0	4	4
SPA AURO	118	56	82.4%	1.74	1.22	5	0	11.6	4	20
SPA SPE.	1	1	1.5%	0.01	0.12	1	0	12.0	12	12
SPA VIRI	6	5	7.4%	0.09	0.33	2	0	19.2	15	32
SYN SPE.	I	1	1.5%	0.01	0.12	1	0	20.0	20	20
THA BIFA	453	54	79.4%	6.66	6.70	33	0	5.7	2	12
TRA GOOD	3	1	1.5%	0.04	0.36	3	0	40.0	40	40
URO JAMA	1	1	1.5%	0.01	0.12	1	0	60.0	60	60

* = Color variants of *H. unicolor*.

NO. SAMPLES = 68
NO. SPECIES = 109
TOT. INDIVIDUALS = 18457

Table 23. Summary of monitoring at the Bahia Honda bridge rubble reefs from June to August 1989.

Species	Total Indiv.	SAMPLE FREQUENCY (N=26)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	14	6	23.1%	0.54	1.33	6	0	3.4	2	5
ACA BAHI	14	5	19.2%	0.54	1.36	6	0	14.9	10	20
ACA CHIR	75	23	88.5%	2.88	1.82	6	0	16.3	2	25
ACA COER	79	24	92.3%	3.04	1.87	7	0	12.9	3	25
AMB PINO	1	1	3.8%	0.04	0.20	1	0	6.0	6	6
ANI VIRG	130	26	100.0%	5.00	4.05	15	1	11.8	2	29
APO MACU	1	1	3.8%	0.04	0.20	1	0	5.0	5	5
APO PSEU	11	3	11.5%	0.42	1.33	6	0	3.7	2	6
ARC PROB	3	3	11.5%	0.12	0.33	1	0	31.7	25	35
CAL BAJO	1	1	3.8%	0.04	0.20	1	0	25.0	25	25
CAL CALA	3	1	3.8%	0.12	0.59	3	0	22.0	20	23
CAN ROST	35	15	57.7%	1.35	1.41	4	0	5.8	4	9
CAR BART	1	1	3.8%	0.04	0.20	1	0	50.0	50	50
CAR CRYS	3	1	3.8%	0.12	0.59	3	0	5.0	5	6
CAR RUBE	13	3	11.5%	0.50	1.42	5	0	8.7	6	10
CAR SPE.	2	1	3.8%	0.08	0.39	2	0	30.0	30	30
CEN UNDE	76	8	30.8%	2.92	7.38	35	0	71.3	35	90
CHA CAPI	3	2	7.7%	0.12	0.43	2	0	6.3	6	7
CHA FABE	1	1	3.8%	0.04	0.20	1	0	50.0	50	50
CHA OCEL	23	12	46.2%	0.88	1.07	3	0	11.5	6	14
CHA SEDE	4	4	15.4%	0.15	0.37	1	0	5.8	5	7
CLU SPE.	300	1	3.8%	11.54	58.83	300	0	4.0	3	5
COR GLAU	174	15	57.7%	6.69	7.91	25	0	4.4	2	6
DEC SPE.	300	3	11.5%	11.54	41.37	200	0	5.9	4	8
EPI ADSC	2	2	7.7%	0.08	0.27	1	0	16.5	15	18
EPI CRUE	14	12	46.2%	0.54	0.65	2	0	12.4	8	20
EPI FULV	2	2	7.7%	0.08	0.27	1	0	8.0	8	8
EPI GUTT	1	1	3.8%	0.04	0.20	1	0	12.0	12	12
EPI MORI	1	1	3.8%	0.04	0.20	1	0	50.0	50	50
EPI STRI	3	2	7.7%	0.12	0.43	2	0	43.3	30	60
EQU ACUPI	5	3	11.5%	0.19	0.57	2	0	9.6	8	11
EQU UMBR	2	2	7.7%	0.08	0.27	1	0	10.0	10	10
GOB OCEA	1	1	3.8%	0.04	0.20	1	0	4.0	4	4
GYM MORI	1	1	3.8%	0.04	0.20	1	0	40.0	40	40
HAE ALBU	4	3	11.5%	0.15	0.46	2	0	21.8	18	25
HAE AURO	19955	26	100.0%	767.50	870.73	3500	30	9.0	2	22
HAE FLAV	10	4	15.4%	0.38	1.02	4	0	11.7	10	14
HAE PLUM	154	22	84.6%	5.92	8.10	37	0	15.7	6	25
HAE SCIU	157	13	50.0%	6.04	10.75	35	0	18.2	12	25
HAE SPE.	325	2	7.7%	12.50	58.84	300	0	6.7	2	8
HAE STRI	4	1	3.8%	0.15	0.78	4	0	16.0	15	17
HAL BIVI	139	21	80.8%	5.35	6.05	25	0	7.6	3	15
HAL RADI	5	3	11.5%	0.19	0.57	2	0	7.6	6	10

Table 23. Summary of monitoring at the Bahia Honda bridge rubble reefs from June to August 1989 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=26)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
HAL SPE.	1	1	3.8%	0.04	0.20	1	0	8.0	8	8
HAR SPE.	670	3	11.5%	25.77	117.58	600	0	7.0	6	7
HOL BERM	31	17	65.4%	1.19	1.17	4	0	15.7	2	32
HOL CILI	35	20	76.9%	1.35	1.32	6	0	13.8	3	25
HOL TRIC	1	1	3.8%	0.04	0.20	1	0	8.0	8	8
HYP GEMM*	1	1	3.8%	0.04	0.20	1	0	8.0	8	8
HYP PUEL*	6	3	11.5%	0.23	0.65	2	0	8.3	7	10
HYP UNIC	14	11	42.3%	0.54	0.71	2	0	5.6	4	8
IOG CALL	3	1	3.8%	0.12	0.59	3	0	6.0	5	8
LAC MAXI	46	17	65.4%	1.77	3.27	17	0	19.0	4	40
LAC QUAD	1	1	3.8%	0.04	0.20	1	0	30.0	30	30
LUT ANAL	1	1	3.8%	0.04	0.20	1	0	35.0	35	35
LUT GRIS	164	20	76.9%	6.31	6.18	20	0	24.7	12	40
LUT SYNA	89	12	46.2%	3.42	5.79	22	0	16.5	10	30
Hut. MART	1	1	3.8%	0.04	0.20	1	0	9.0	9	9
MYC BONA	30	14	53.8%	1.15	1.41	5	0	47.0	6	100
MYC MICR	71	21	80.8%	2.73	2.32	11	0	18.0	6	40
MYC PHEN	1	1	3.8%	0.04	0.20	1	0	16.0	16	16
MYC SPE.	13	3	11.5%	0.31	1.57	8	0	17.9	5	45
MYR JACO	3	1	3.8%	0.12	0.59	3	0	8.0	8	8
OCY CHRY	10	3	11.5%	0.38	1.27	6	0	17.2	4	25
000 DENT	3276	16	61.5%	126.00	303.31	1400	0	5.5	2	15
PAR MARM	7	3	11.5%	0.27	0.87	4	0	5.0	4	6
POM ARCU	34	21	80.8%	1.31	1.05	5	0	27.7	12	50
POM FUSC	42	15	57.7%	1.62	2.43	12	0	5.4	3	8
POM LEUC	1	1	3.8%	0.04	0.20	1	0	4.0	4	4
POM PART	5	4	15.4%	0.19	0.49	2	0	4.4	4	6
POM PARU	8	7	26.9%	0.31	0.55	2	0	20.9	12	28
POM PLAN	1	1	3.8%	0.04	0.20	1	0	2.0	2	2
POM VARI	250	26	100.0%	9.62	5.57	19	1	4.3	2	10
PRI AREN	3	2	7.7%	0.12	0.43	2	0	33.3	14	45
SCA COEL	4	3	11.5%	0.15	0.46	2	0	28.0	7	40
SCA COER	3	2	7.7%	0.12	0.43	2	0	26.7	6	40
SCA CROI	156	24	92.3%	6.00	4.57	15	0	7.2	2	16
SCA GUAC	25	8	30.8%	0.96	2.11	9	0	47.2	35	60
SCA VETU	1	1	3.8%	0.04	0.20	1	0	18.0	18	18
SCO PLUM	1	1	3.8%	0.04	0.20	1	0	15.0	15	15
SCO REGA	6	3	11.5%	0.23	0.71	3	0	30.3	30	32
SER BALD	4	2	7.7%	0.15	0.61	3	0	5.5	5	7
SER SUBL	3	2	7.7%	0.12	0.43	2	0	5.7	5	7
SER TIGR	3	2	7.7%	0.12	0.43	2	0	6.7	6	8
SPA AURO	29	12	46.2%	1.12	1.73	6	0	9.5	4	24

Table 23. Summary of monitoring at the Bahia Honda bridge rubble reefs from June to August 1989 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=26)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
SPA CHRY	7	3	11.5%	0.27	1.00	5	0	18.3	15	25
SPA SPE.	6	2	7.7%	0.23	0.99	5	0	6.7	5	8
SPA VIRI	5	4	15.4%	0.19	0.49	2	0	8.6	7	10
SPH BARR	5	5	19.2%	0.19	0.40	1	0	81.0	40	125
SPH PEN	1	1	3.8%	0.04	0.20	1	0	7.0	7	7
THA BIFA	20	11	42.3%	0.77	0.99	3	0	6.7	4	10
TRA FALC	1	1	3.8%	0.04	0.20	1	0	40.0	40	40

* = Color variants of *H. unicolor*.

NO. SAMPLES = 26
NO. SPECIES = 90
TOT. INDIVIDUALS = 27151

Table 24. Summary of monitoring at the American Shoal bridge rubble reefs in July and August 1989.

Species	Total Indiv.	SAMPLE FREQUENCY (N=24)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ACA BAHI	36	15	62.5%	1.50	1.50	5	0	17.7	10	25
ACA CHIR	32	16	66.7%	1.33	1.40	5	0	16.8	12	25
ACA COER	15	10	41.7%	0.63	0.88	3	0	11.9	6	18
ANI VIRG	102	19	79.2%	4.25	6.33	29	0	15.6	2	25
APO PSEU	4	2	8.3%	0.17	0.64	3	0	4.5	3	5
AUL MACU	3	3	12.5%	0.13	0.34	1	0	34.0	22	40
CAL CALA	2	2	8.3%	0.08	0.28	1	0	12.0	6	18
CAN ROST	35	17	70.8%	1.46	1.50	6	0	6.0	3	9
CAR BART	11	2	8.3%	0.46	2.04	10	0	23.6	20	40
CAR CRYS	1	1	4.2%	0.04	0.20	1	0	18.0	18	18
CAR RUBE	38	8	33.3%	1.58	2.65	8	0	9.6	6	14
CEN UNDE	8	6	25.0%	0.33	0.64	2	0	62.5	55	70
CHA CAPI	3	3	12.5%	0.13	0.34	1	0	7.7	7	8
CHA OCEL	28	17	70.8%	1.17	0.87	2	0	12.6	8	15
CHA SEDE	1	1	4.2%	0.04	0.20	1	0	8.0	8	8
COR GLAU	64	10	41.7%	2.67	3.99	12	0	4.4	3	5
DIO HYST	1	1	4.2%	0.04	0.20	1	0	45.0	45	45
EPI ADSC	3	2	8.3%	0.13	0.45	2	0	12.0	4	18
EPI CRUE	9	8	33.3%	0.38	0.58	2	0	11.8	8	15
EQU ACUM	21	9	37.5%	0.88	2.44	12	0	10.6	8	12
EQU UMBR	17	9	37.5%	0.71	1.20	4	0	12.1	8	15
GER CINE	55	13	54.2%	2.29	3.52	15	0	18.5	12	28
GOB OCEA	12	8	33.3%	0.50	0.78	2	0	4.0	3	5
GYM FUNE	1	1	4.2%	0.04	0.20	1	0	100.0	100	100
HAE ALBU	2	1	4.2%	0.08	0.41	2	0	25.0	25	25
HAE AURO	10207	24	100.0%	425.29	438.18	2000	12	16.0	10	20
HAE FLAV	22	5	20.8%	0.92	3.08	15	0	9.9	6	15
HAE PLUM	3225	24	100.0%	134.38	77.81	300	12	18.2	10	25
HAE SCIU	834	22	91.7%	34.75	30.68	111	0	18.2	10	25
HAL BIVI	97	19	79.2%	4.04	4.12	17	0	7.3	4	16
HAL GARN	11	5	20.8%	0.46	0.98	3	0	8.3	4	15
HAL SPE.	1	1	4.2%	0.04	0.20	1	0	15.0	15	15
HOL BERM	21	12	50.0%	0.88	1.03	3	0	18.0	1	26
HOL CILI	13	9	37.5%	0.54	0.93	4	0	18.8	10	28
HOL RUFU	2	1	4.2%	0.08	0.41	2	0	16.0	15	17
HOL TRIC	9	6	25.0%	0.38	0.77	3	0	6.9	4	10
HYP GEMM *	5	4	16.7%	0.21	0.51	2	0	7.2	5	8
HYP NIGR *	1	1	4.2%	0.04	0.20	1	0	8.0	8	8
HYP PUEL *	9	6	25.0%	0.38	0.77	3	0	7.8	4	10
HYP UNIC	12	8	33.3%	0.50	0.83	3	0	9.1	4	20
IOG CALL	5	1	4.2%	0.21	1.02	5	0	7.0	6	8
IOG SPE.	2	1	4.2%	0.08	0.41	2	0	6.0	6	6
LAC BICA	1	1	4.2%	0.04	0.20	1	0	22.0	22	22

Table 24. Summary of monitoring at the American Shoal bridge rubble reefs in July and August 1989 (cont.).

Species	Total Indiv.	SAMPLE FREQUENCY (N=24)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
LAC MAXI	18	12	50.0%	0.75	0.90	3	0	23.2	14	40
LUT GRIS	56	7	29.2%	2.33	5.22	20	0	22.1	12	45
LUT SYNA	249	20	83.3%	10.38	10.75	30	0	16.7	10	22
MAL TRIA	1	1	4.2%	0.04	0.20	1	1	5.0	5	5
MAL MART	22	3	12.5%	0.92	3.06	14	0	23.4	15	28
MYC BONA	1	1	4.2%	0.04	0.20	1	0	50.0	50	50
MYC MICR	15	8	33.3%	0.63	1.06	4	0	15.1	6	25
OCY CHRY	34	13	54.2%	1.42	1.69	5	0	21.6	12	35
ODO DENT	32	10	41.7%	1.33	2.14	8	0	13.3	6	18
OPT AURI	1	1	4.2%	0.04	0.20	1	0	6.0	6	6
POM ARCU	22	14	58.3%	0.92	0.93	3	0	27.1	12	40
POM FUSC	24	11	45.8%	1.00	1.50	6	0	7.5	6	9
POM LEUC	4	2	8.3%	0.17	0.56	2	01	5.0	3	6
POM PART	51	15	62.5%	2.13	2.58	10	0	4.3	2	7
POM PARU	3	3	12.5%	0.13	0.34	1	0	14.3	3	20
POM PLAN	3	2	8.3%	0.13	0.45	2	0	7.3	6	8
POM VARI	71	20	83.3%	2.96	2.66	8	0	4.5	2	8
PRI AREN	160	8	33.3%	6.67	17.35	75	0	24.5	14	35
PSE MACU	46	17	70.8%	1.92	2.02	8	0	16.8	12	22
SCA CRIS	1	1	4.2%	0.04	0.20	1	0	5.0	5	5
SCA CROI	190	24	100.0%	7.92	3.89	20	2	9.7	2	20
SCA VETU	1	1	4.2%	0.04	0.20	1	0	15.0	15	15
SCO PLUM	1	1	4.2%	0.04	0.20	1	0	22.0	22	22
SER TIGR	4	2	8.3%	0.17	0.56	2	0	8.5	8	10
SPA AURO	70	21	87.5%	2.92	2.10	8	0	12.6	5	22
SPA CHRY	6	3	12.5%	0.25	0.68	2	0	16.0	12	18
SPA VIRI	6	3	12.5%	0.25	0.68	2	0	11.0	6	15
SPH BARR	3	3	12.5%	0.13	0.34	1	0	101.7	90	125
SPH PEN	1	1	4.2%	0.04	0.20	1	0	9.0	9	9
SYN FOET	1	1	4.2%	0.04	0.20	1	0	30.0	30	30
THA BIFA	57	12	50.0%	2.38	3.25	12	0	6.5	2	11
TRA FALC	3	2	8.3%	0.13	0.45	2	0	103.3	80	130

* = Color variants of *H. unicolor*.

NO. SAMPLES = 24
NO. SPECIES = 72
TOT. INDIVIDUALS = 16138

Table 25. Combined summary of monitoring for Bahia Honda and American Shoal reefs from June to August 1989.

Species	Total Indiv.	SAMPLE FREQUENCY (N=50)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
ABU SAXA	14	6	12.0%	0.28	0.99	6	0	3.4	2	5
ACA BAHI	50	20	40.0%	1.00	1.50	6	0	16.9	10	25
ACA CHIR	107	39	78.0%	2.14	1.80	6	0	16.5	2	25
ACA COER	94	34	68.0%	1.88	1.90	7	0	12.8	3	25
AMB PINO	1	1	2.0%	0.02	0.14	1	0	6.0	6	6
ANI VIRG	232	45	90.0%	4.64	5.23	29	0	13.4	2	29
APO MACU	1	1	2.0%	0.02	0.14	1	0	5.0	5	5
APO PSEU	15	5	10.0%	0.30	1.05	6	0	3.9	2	6
ARC PROB	3	3	6.0%	0.06	0.24	1	0	31.7	25	35
AUL MACU	3	3	6.0%	0.06	0.24	1	0	34.0	22	40
CAL BAJO	1	1	2.0%	0.02	0.14	1	0	25.0	25	25
CAL CALA	5	3	6.0%	0.10	0.46	3	0	18.0	6	23
CAN ROST	70	32	64.0%	1.40	1.44	6	0	5.9	3	9
CAR BART	12	3	6.0%	0.24	1.42	10	0	25.8	20	50
CAR CRYS	4	2	4.0%	0.08	0.44	3	0	8.3	5	18
CAR RUBE	51	11	22.0%	1.02	2.15	8	0	9.4	6	14
CAR SPE.	2	1	2.0%	0.04	0.28	2	0	30.0	30	30
CEN UNDE	84	14	28.0%	1.68	5.45	35	0	70.4	35	90
CHA CAPI	6	5	10.0%	0.12	0.39	2	0	7.0	6	8
CHA FABE	1	1	2.0%	0.02	0.14	1	0	50.0	50	50
CHA OCEL	51	29	58.0%	1.02	0.98	3	0	12.1	6	15
CHA SEDE	5	5	10.0%	0.10	0.30	1	0	6.2	5	8
CLU SPE.	300	1	2.0%	6.00	42.43	300	0	4.0	3	5
COR GLAU	238	25	50.0%	4.76	6.59	25	0	4.4	2	6
DEC SPE.	300	3	6.0%	6.00	30.12	200	0	5.9	4	8
DIO HYST	1	1	2.0%	0.02	0.14	1	0	45.0	45	45
EPI ADSC	5	4	8.0%	0.10	0.36	2	0	13.8	4	18
EPI CRUE	23	20	40.0%	0.46	0.61	2	0	12.2	8	20
EPI FULV	2	2	4.0%	0.04	0.20	1	0	8.0	8	8
EPI GUTT	1	1	2.0%	0.02	0.14	1	0	12.0	12	12
EPI MORI	1	1	2.0%	0.02	0.14	1	0	50.0	50	50
EPI STRI	3	2	4.0%	0.06	0.31	2	0	43.3	30	60
EQU ACUM	26	12	24.0%	0.52	1.75	12	0	10.4	8	12
EQU UMBR	19	11	22.0%	0.38	0.90	4	0	11.8	8	15
GER CINE	55	13	26.0%	1.10	2.67	15	0	18.5	12	28
GOB OCEA	13	9	18.0%	0.26	0.60	2	0	4.0	3	5
GYM FUNE	1	1	2.0%	0.02	0.14	1	0	100.0	100	100
GYM MORI	1	1	2.0%	0.02	0.14	1	0	40.0	40	40
HAE ALBU	6	4	8.0%	0.12	0.44	2	0	22.8	18	25
HAE AURO	30162	50	100.0%	603.24	711.88	3500	12	11.4	2	22
HAE FLAV	32	9	18.0%	0.64	2.25	15	0	10.4	6	15
HAE PLUM	3379	46	92.0%	67.58	84.13	300	0	18.0	6	25
HAE SCIU	991	35	70.0%	17.82	24.15	111	0	19.0	10	25

Table 25. Combined summary of monitoring for Bahia Honda and American Shoal reefs from June to August 1989.

Species	Total Indiv.	SAMPLE FREQUENCY (N=50)	%	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	Low	FISH LENGTH (cm) Mean	Mm.	Max.
HAE SPE.	325	2	4.0%	6.50	42.50	300	0	6.7	2	8
HAE STRI	4	1	2.0%	0.08	0.57	4	0	16.0	15	17
HAL BIVI	236	40	80.0%	4.72	5.20	25	0	7.5	3	16
HAL GARN	11	5	10.0%	0.22	0.71	3	0	8.3	4	15
HAL RADI	5	3	6.0%	0.10	0.42	2	0	7.6	6	10
HAL SPE.	2	2	4.0%	0.04	0.20	1	0	11.5	8	15
HAR SPE.	670	3	6.0%	13.40	84.99	600	0	7.0	6	7
HOL BERM	52	29	58.0%	1.04	1.11	4	0	16.6	1	32
HOL CILI	48	29	58.0%	0.96	1.21	6	0	15.2	3	28
HOL RUFU	2	1	2.0%	0.04	0.28	2	0	16.0	15	17
HOL TRIC	10	7	14.0%	0.20	0.57	3	0	7.0	4	10
HYP GEMM*	6	5	10.0%	0.12	0.39	2	0	7.3	5	8
HYP NIGR*	1	1	2.0%	0.02	0.14	1	0	8.0	8	8
HYP PUEL*	15	9	18.0%	0.30	0.71	3	0	8.0	4	10
HYP UNIC	26	19	38.0%	0.52	0.76	3	0	7.2	4	20
IOG CALL	8	2	4.0%	0.16	0.82	5	0	6.6	5	8
IOG SPE.	2	1	2.0%	0.04	0.28	2	0	6.0	6	6
LAC BICA	1	1	2.0%	0.02	0.14	1	0	22.0	22	22
LAC MAXI	64	29	58.0%	1.28	2.47	17	0	20.2	4	40
LAC QUAD	1	1	2.0%	0.02	0.14	1	0	30.0	30	30
LUT ANAL	1	1	2.0%	0.02	0.14	1	0	35.0	35	35
LUT GRIS	220	27	54.0%	4.40	6.03	20	0	24.0	12	46
LUT SYNA	338	32	64.0%	6.76	9.15	30	0	16.6	10	30
MAL TRIA	1	1	2.0%	0.02	0.14	1	0	5.0	5	5
MUL MART	23	4	8.0%	0.46	2.15	14	0	22.7	9	28
MYC BONA	31	15	30.0%	0.62	1.16	5	0	47.1	6	100
MYC MICR	86	29	58.0%	1.72	2.10	11	0	17.5	6	40
MYC PHEN	1	1	2.0%	0.02	0.14	1	0	16.0	16	16
MYC SPE.	8	1	2.0%	0.16	1.13	8	0	17.9	5	45
MYR JACO	3	1	2.0%	0.06	0.42	3	0	8.0	8	8
OCY CHRY	44	16	32.0%	0.88	1.56	6	0	20.6	4	35
ODO DENT	3308	26	52.0%	66.16	225.61	1400	0	5.6	2	18
OPI AURI	1	1	2.0%	0.02	0.14	1	0	6.0	6	6
PAR MARM	7	3	6.0%	0.14	0.64	4	0	5.0	4	6
POM ARCU	56	35	70.0%	1.12	1.00	5	0	27.5	12	50
POM FUSC	66	26	52.0%	1.32	2.04	12	0	6.2	3	9
POM LEUC	5	3	6.0%	0.10	0.42	2	0	4.8	3	6
POM PART	56	19	38.0%	1.12	2.05	10	0	4.3	2	7
POM PARU	11	10	20.0%	0.22	0.46	2	0	19.1	3	28
POM PLAN	4	3	6.0%	0.08	0.34	2	0	6.0	2	8
POM VARI	321	46	92.0%	6.42	5.52	19	0	4.3	2	10
PRI AREN	163	10	20.0%	3.26	12.34	75	0	24.7	14	45
PSE MACU	46	17	34.0%	0.92	1.69	8	0	16.8	12	22

Table 25. Combined summary of monitoring for Bahia Honda and American Shoal reefs from June to August 1989.

Species	Total Indiv.	SAMPLE FREQUENCY (N=50)	SAMPLE FREQUENCY %	Mean Abund.	Stand. Dev.	SAMP. FREQ. RANGE High	SAMP. FREQ. RANGE Low	FISH LENGTH (cm) Mean	FISH LENGTH (cm) Mm.	FISH LENGTH (cm) Max.
SCA COEL	4	3	6.0%	0.08	0.34	2	0	28.0	7	40
SCA COER	3	2	4.0%	0.06	0.31	2	0	26.7	6	40
SCA CRIS	1	1	2.0%	0.02	0.14	1	0	5.0	5	5
SCA CROI	346	48	96.0%	6.92	4.32	20	0	8.6	2	20
SCA GUAC	25	8	16.0%	0.50	1.58	9	0	47.2	35	60
SCA VETU	2	2	4.0%	0.04	0.20	1	0	16.5	15	18
SCO PLUM	2	2	4.0%	0.04	0.20	1	0	18.5	15	22
SCO REGA	6	3	6.0%	0.12	0.52	3	0	30.3	30	32
SER BALD	4	2	4.0%	0.08	0.44	3	0	5.5	5	7
SER SUBL	3	2	4.0%	0.06	0.31	2	0	5.7	5	7
SER TIGR	7	4	8.0%	0.14	0.50	2	0	7.7	6	10
SPA AURO	99	33	66.0%	1.98	2.10	8	0	11.7	4	24
SPA CHRY	13	6	12.0%	0.26	0.85	5	0	17.2	12	25
SPA SPE.	6	2	4.0%	0.12	0.72	5	0	6.7	5	8
SPA VIRI	11	7	14.0%	0.22	0.58	2	0	9.9	6	15
SPH BARR	8	8	16.0%	0.16	0.37	1	0	88.8	40	125
SPH PEN	2	2	4.0%	0.04	0.20	1	0	8.0	7	9
SYN FOET	1	1	2.0%	0.02	0.14	1	0	30.0	30	30
THA BIFA	77	23	46.0%	1.54	2.48	12	0	6.5	2	11
TRA FALC	4	3	6.0%	0.08	0.34	2	0	87.5	40	130

* = Color variants of *H. unicolor*.

NO. SAMPLES = 50
NO. SPECIES = 103
TOT. INDIVIDUALS = 43289

Table 26. Summary of settler and colonizer species at the shallow fabricated units from June 1988 to June 1990.

SETTLER SPECIES					COLONIZER SPECIES				
Species	Total Indiv.	% Freq. (N=42)	Biomass kg	Value*	Species	Total Indiv.	% Freq. (N=42)	Biomass kg	Value*
1 THA BIFA	724	92.9%	0.58	ML	1 ACA CHIR	79	61.9%	4.10	ml
2 HAL BIVI	389	95.2%	1.47	ml	2 LAC MAXI	15	31.0%	5.16	P,R
3 PAR MARM	99	57.1%	0.05	ml	3 CHA OCEL	12	14.3%	0.77	ML
4 HAE SPE.	82	19.0%	0.01	S	4 HAL RADI	8	16.7%		ML
5 ACA BAHI	68	57.1%	1.27	ml	5 HEM SPE.	7	7.1%	0.01	ml
6 HAE AURO	64	14.3%	0.02	S	6 OPI AURI	7	4.8%	0.01	ML
7 ANI VIRG	61	61.9%	2.55	S,R,ml	7 HOL SPE.	6	4.8%	0.01	ml
8 APO PSEU	60	54.8%	0.07	ML	8 CAR RUBE	6	7.1%	0.51	
9 CAN ROST	59	66.7%	0.05	ML	9 BOD RUFU	5	7.1%		ML
10 POM ARCU	46	69.0%	44.02	ML	10 DIP FORM	5	9.5%	0.05	
11 ACA COER	42	50.0%	0.53	ML	11 EPI ADSC	4	9.5%	0.09	S,ml
12 POM PART	31	26.2%	0.02	ML	12 HAE MELA	4	9.5%	0.02	S
13 HAE STRI	16	4.8%			13 CHA SEDE	3	7.1%		ML
14 GOB OCEA	9	11.9%		ML	14 HOL MARI	3	2.4%	0.03	ml
15 SCA CRIS	8	14.3%	0.01	ml	15 GIN CIRR	3	7.1%	174.64	ml
16 MAL TRIA	8	11.9%		ML	16 LUT ANAL	3	7.1%	2.84	P,R
17 CHR MULT	7	14.3%	0.01	MIL	17 ECH NAUC	3	4.8%	0.19	
18 POM VARI	4	9.5%		ML	18 MYC SPE.	2	4.8%		ml
19 SCA SPE.	4	2.4%		ML	19 ABU SAXA	2	4.8%		ml
20 EMB PAND	4	9.5%		ml	20 CAR BART	2	2.4%	1.02	R
21 HOL BERM	3	7.1%	0.93	ML	21 MYC MICR	1	2.4%	8.61	P,R
22 HAL GARN	3	7.1%		ML	22 SYN INTE	1	2.4%	0.01	
23 SCA CROI	2	2.4%		ML	23 CAL CALA	1	2.4%	1.32	P,R
24 EPI CRUE	2	4.8%	0.05	ml	24 POM PARU	1	2.4%	0.84	ML
25 POM LEUC	2	2.4%		ML	25 HAE ALBU	1	2.4%	1.25	S,R
26 OCY CHRY	2	4.8%	0.01	P,R	26 LAC BICA	1	2.4%	0.02	ml
27 EQU ACUM	2	4.8%		ML	27 SYN FOET	1	2.4%		
28 COR GLAU	2	4.8%		ml	28 HAE PLUM	1	2.4%		S,R
29 MAL SPE.	2	2.4%			29 LAC QUAD	1	2.4%	0.08	ml
30 CHR SCOT	1	2.4%		ML	30 HOL CILI	1	2.4%	0.53	ML
31 SER TIGR	1	2.4%		ML	31 MON SPE.	1	2.4%		ml
32 CHR ENCH	1	2.4%		ML	32 AST STEL	1	2.4%		
33 HOL CORU	1	2.4%			33 URO JAMA	1	2.4%	0.15	
34 SPH BARR	1	2.4%		R					
Total	1810		51.65		Total	192		202.26	

* Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life: ml, secondary marine life.

Table 27. Summary of settler and colonizer species at the mid-depth fabricated units from June 1988 to June 1990.

SETTLER SPECIES					COLONIZER SPECIES				
Species	Total Indiv.	% Freq. (N=32)	Biomass kg	Value*	Species	Total Indiv.	% Freq. (N=32)	Biomass kg	Value*
1 ACA COER	121	96.9%	10.94	ML	1 ACA BAHI	223	96.9%	35.37	ml
2 CAN ROST	83	81.3%	0.13	ML	2 HAL BIVI	108	78.1%	0.67	ml
3 THA BIFA	659	81.3%	0.43	ML	3 ACA CHIR	92	62.5%	14.52	ml
4 ANI VIRG	34	71.9%	5.12	S,R,ml	4 LAC MAXI	37	62.5%	9.07	P,R
5 CHA SEDE	37	65.6%	0.63	ML	5 POM ARCU	32	62.5%	23.57	ML
6 EPI CRUE	37	62.5%	0.36	ml	6 CHA OCEL	32	53.1%	1.93	ML
7 COR GLAU	273	56.3%	0.14	ml	7 ABU SAXA	39	53.1%	0.89	ml
8 APO PSEU	109	50.0%	0.10	ML	8 OCY CHRY	337	46.9%	94.67	P,R
9 HAE MELA	150	50.0%	2.39	S	9 CAR RUBE	104	25.0%	12.69	
10 POM PART	67	43.8%	0.03	ML	10 GYM MORI	8	21.9%	0.68	ML
11 HAL GARN	111	40.6%	0.09	ML	11 PSE MACU	6	15.6%	0.11	ml
12 HAE AURO	639	28.1%	0.64	S	12 POM PARU	7	12.5%	3.82	ML
13 HAE FLAV	43	21.9%	0.34	S	13 SPH BARR	4	12.5%	23.93	R
14 LUT BUCC	7	18.8%	0.02	P,R	14 DIP FORM	9	12.5%	0.05	
15 SER TIGR	7	18.8%	0.01	ML	15 LAC BICA	3	9.4%	0.43	ml
16 HOL BERM	9	15.6%	4.56	ML	16 RYP SAPO	3	9.4%	0.63	
17 EQU ACUM	6	15.6%	0.02	ML	17 DEC PUNC	20	6.3%	0.46	
18 HAE SPE.	159	12.5%	0.10	S	18 DEC MACA	300	6.3%	22.46	
19 PAR MARM	6	12.5%		ML	19 HEM SPLE	3	6.3%	0.02	ml
20 GOB OCEA	6	9.4%		ML	20 HOL CORU	7	6.3%	0.04	ml
21 HAE STRI	308	9.4%	0.79		21 EPI GUTT	3	6.3%	0.02	S,ml
22 HOL CILI	4	9.4%	1.06	ML	22 MON HISP	3	6.3%	0.17	ml
23 EQU LANC	2	6.3%		ML	23 DEC SPE.	100	6.3%	24.20	
24 SPA AURO	3	6.3%	0.21	ml	24 HAL RADI	2	6.3%	0.12	ML
25 CHR INSO	2	6.3%		ML	25 HAE ALBU	2	6.3%	0.41	S,R
26 MYC SPE.	3	6.3%		P,R	26 CAL CALA	2	6.3%	0.17	P,R
27 MAL SPE.	1	3.1%		ml	27 SER DUME	22	6.3%	28.19	P,R
28 MAL TRIA	1	3.1%		ML	28 URO JAMA	1	3.1%	0.07	ml
29 POM PLAN	1	3.1%		ML	29 LUT ANAL	1	3.1%	1.54	P,R
30 MYC BONA	1	3.1%	0.61	P,R	30 CHA STRI	1	3.1%	0.05	ML
31 CHR MULT	1	3.1%		ml	31 ALU SCHO	1	3.1%	0.02	ml
					32 SPA CHRY	1	3.1%	0.03	ml
Total	2890		28.7		33 SCA CROI	1	3.1%		ML
					34 ALU SCRI	1	3.1%	0.39	ml
					35 SCO REGA	8	3.1%	2.85	P,R
					36 SYN FOET	1	3.1%	0.13	
					37 LAC QUAD	1	3.1%	0.39	ml
					38 LUT GRIS	1	3.1%	0.96	P,R
					39 SCO PLUM	1	3.1%	0.17	ml
					40 LAC TRIQ	1	3.1%	0.25	ml
					41 ECH NAUC	1	3.1%	0.01	ml
					42 APO SPE.	1	3.1%	0.01	ml
					Total	1531		306.16	

* Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life: ml, secondary marine life.

Table 28. Summary of settler and colonizer species at the deep fabricated units from June 1988 to June 1990.

SETTLER SPECIES					COLONIZER SPECIES				
Species	Total Indiv.	% Freq. (N=30)	Biomass kg	Value*	Species	Total Indiv.	% Freq. (N=30)	Biomass kg	Value*
1 EPI CRUE	54	83.3%	0.34	ml	1 LAC MAXI	37	80.0%	11.99	P,R
2 THA BIFA	375	83.3%	0.25	ML	2 HAL BIVI	84	70.0%	0.28	ml
3 CAN ROST	60	70.0%	0.06	ML	3 OCY CHRY	231	70.0%	55.79	P,R
4 HAL GARN	83	63.3%	0.05	ML	4 LUT GRIS	154	63.3%	71.29	P,R
5 COR GLAU	298	60.0%	0.14	ml	5 CHA OCEL	35	63.3%	1.89	ML
6 APO PSEU	117	53.3%	0.09	ml	6 ACA CHIR	74	60.0%	18.21	ml
7 POM PART	157	50.0%	0.09	ML	7 POM ARCU	17	33.3%	14.71	ML
8 CHA SEDE	20	50.0%	0.15	ML	8 SER DUNE	45	30.0%	15.62	P,R
9 LUT BUCC	37	26.7%	0.02	P,R	9 POM PARU	11	26.7%	7.15	ML
10 PAR MARM	10	23.3%	0.01	ml	10 LUT ANAL	5	16.7%	15.65	P,R
11 SER TIGR	7	20.0%		ML	11 CAL CALA	4	13.3%	1.84	P,R
12 BOD PULC	11	20.0%	0.01	ML	12 LAC BICA	4	13.3%	0.56	ml
13 CHR ENCH	23	20.0%	0.01	ML	13 SPH BARR	4	13.3%	24.8	R
14 PAR FURC	7	20.0%	0.09	ML	14 HAL SPE.	4	10.0%		ml
15 HOL CILI	5	16.7%	0.01	ML	15 CAR CRYS	7	10.0%	1.01	R
16 CHR INSO	10	16.7%		ML	16 CAR RUBE	20	10.0%	3.67	
17 CHR SCOT	5	13.3%		ML	17 ACA BAHI	7	10.0%	1.38	ml
18 APO SPE.	7	10.0%		ml	18 TRA FALC	3	10.0%	11.39	R
19 HOL TRIC	2	6.7%	0.02	ML	19 CAR BART	5	10.0%	9.93	R
20 POM VARI	2	6.7%		ML	20 ACA COER	8	10.0%	0.46	ML
21 BOD RUFU	2	6.7%		ML	21 RYP SAPO	3	10.0%	0.16	
22 EPI GUTT	2	6.7%	0.01	S,ml	22 LAC QUAD	2	6.7%	0.66	ml
23 MYC SPE.	4	6.7%		P,R	23 IOG HELE	2	6.7%		
24 HOL BERM	3	6.7%	0.07	ML	24 GYM MORI	2	6.7%	0.15	ML
25 SER TABA	2	6.7%		ML	25 LUT CYAN	1	3.3%	26.73	P,R
26 MON CILI	1	3.3%		ml	26 PSE MACU	1	3.3%	0.06	ml
27 MIC CHRY	1	3.3%		ML	27 DEC PUNC	1000	3.3%	89.11	
28 CLE PARR	1	3.3%		ML	28 RAC CANA	1	3.3%	1.92	P ,R
29 SER BALD	2	3.3%		ML	29 ECH NAUC	1	3.3%	0.02	
30 SCA SPE.	1	3.3%		ml	30 KYP SECT	1	3.3%	0.18	
31 EQU ACUM	1	3.3%		ML	31 BLE CRIS	1	3.3%		ml
32 EPI ADSC	1	3.3%		S,ml	32 EPI FULV	2	3.3%		ml
33 MYC BONA	1	3.3%		P,R	33 CAL SPE.	1	3.3%	0.35	R,S
34 ANI VIRG	1	3.3%		S,R,ml	34 ALU SCRI	1	3.3%	0.99	ml
					35 HAE STRI	1	3.3%		S
Total	1313		1.42						
					Total	1779		387.95	

* Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life: ml, secondary marine life.

Table 29. Summary of settler and colonizer species at the Bahia Honda bridge rubble reefs from June to August 1989.

SETTLER SPECIES					COLONIZER SPECIES				
Species	Total Indiv.	% Freq. (N=26)	Biomass kg	Value*	Species	Total Indiv.	% Freq. (N=26)	Biomass kg	Value*
1 HAE AURO	19955	100.0%	163.61	5	1 HAE PLUM	154	84.6%	11.24	5
2 POM VARI	250	100.0%	0.51	ML	2 HAE SCIU	157	50.0%	18.35	S
3 ANT VIRG	130	100.0%	9.11	S,R,ml	3 HYP UNIC	14	42.3%	0.04	ml
4 ACA COER	79	92.3%	4.61	ML	4 CEN UNDE	76	30.8%	452.51	R
5 SCA CROI	156	92.3%	0.95	ml	5 SCA GUAC	25	30.8%	51.97	ml
6 ACA CHIR	75	88.5%	5.82	ML	6 SPH BARR	5	19.2%	18.96	R
7 POM ARCU	34	80.8%	22.37	ML	7 ACA BAHI	14	19.2%	1.03	ml
8 MYC MICR	71	80.8%	5.87	P,R	8 HAE FLAV	10	15.4%	0.31	S
9 HAL BIVI	139	80.8%	0.72	ml	9 SPA VIRI	5	15.4%	0.07	ml
10 LUT GRIS	164	76.9%	39.11	P,R	10 SCO REGA	6	11.5%	1.39	P,R
11 HOL CILI	35	76.9%	2.38	ML	11 CAR RUBE	13	11.5%	0.11	R
12 LAC MAXI	46	65.4%	6.25	P,R	12 DEC SPE.	300	11.5%	0.57	
13 HOL BERM	31	65.4%	2.91	ML	13 HYP PUEL*	6	11.5%	0.06	ml
14 ODO DENT	3276	61.5%	5.91		14 HAE ALBU	4	11.5%	0.79	S,R
15 CAN ROST	35	57.7%	0.28	ML	15 PAR MARM	7	11.5%	0.01	ML
16 POM FUSC	42	57.7%	0.20	ml	16 ARC PROB	3	11.5%	2.46	S,R
17 COR GLAU	174	57.7%	0.19	ml	17 HAL RADI	5	11.5%	0.03	ML
18 MYC BONA	30	53.8%	46.97	P,R	18 HAR SPE.	670	11.5%	2.74	
19 CHA OCEL	23	46.2%	1.07	ML	19 SPA CHRY	7	11.5%	0.71	ml
20 EPI CRUE	14	46.2%	0.41	ml	20 MYC SPE.	13	11.5%	1.81	P,R
21 SPA AURO	29	46.2%	0.41	ml	21 PRI AREN	3	7.7%	1.65	5
22 LUT SYNA	89	46.2%	7.00	P,R	22 EPI STRI	3	7.7%	3.75	P,R
23 THA BIFA	20	42.3%	0.05	ML	23 EQU UMBR	2	7.7%	0.03	ml
24 POM PARU	8	26.9%	2.18	ML	24 SPA SPE.	6	7.7%	0.04	
25 ABU SAXA	14	23.1%	0.02	ml	25 EPI ADSC	2	7.7%	0.14	S,ml
26 POM PART	5	15.4%	0.01	ML	26 EPI GUTT	1	3.8%	0.03	S,ml
27 CHA SEDE	4	15.4%	0.02	ML	27 CAR CRYS	3	3.8%	0.01	R
28 OCY CHRY	10	11.5%	0.92	P,R	28 GYM MORI	1	3.8%	0.11	ML
29 SCA COEL	4	11.5%	1.65	ml	29 CAR BART	1	3.8%	2.26	R
30 APO PSEU	11	11.5%	0.01	ML	30 CAR SPE.	2	3.8%	1.02	
31 EQU ACUM	5	11.5%	0.06	ML	31 CAL CALA	3	3.8%	0.74	P,R
32 CHA CAPI	3	7.7%	0.02	ML	32 LUT ANAL	1	3.8%	0.72	P,R
33 SER BALD	4	7.7%	0.01	ML	33 CAL BAJO	1	3.8%	0.38	P,R
34 HAE SPE.	325	7.7%	1.46		34 CHA FABE	1	3.8%	0.07	S
35 EPI FULV	2	7.7%	0.02	ml	35 SCA VETU	1	3.8%	0.01	ml
36 SER SUBL	3	7.7%	0.02	ml	36 HYP GEMM*	1	3.8%	0.01	ml
37 SER TIGR	3	7.7%	0.01	ML	37 MYC PHEN	1	3.8%	0.05	P,R
38 SCA COER	3	7.7%	1.02	ml	38 EPI MORI	1	3.8%	1.76	P,R
29 APO MACU	1	3.8%		ML	39 SCO PLUM	1	3.8%	0.07	ml

Table 29. Summary of settler and colonizer species at the Bahia Honda bridge rubble reefs from June to August 1989 (cont.).

SETTLER SPECIES					COLONIZER SPECIES				
Species	Total Indiv.	% Freq. (N=26)	Biomass kg	Value*	Species	Total Indiv.	% Freq. (N=26)	Biomass kg	Value*
40 GOB OCEA	1	3.8%		ML	40 SPH PEN	1	3.8%	0.01	
41 POM PLAN	1	3.8%		ML	41 HOL TRIC	1	3.8%	0.02	ML
42 MUL MART	1	3.8%	0.07	S	42 IOG CALL	3	3.8%	0.01	
43 POM LEUC	1	3.8%		ML	43 HAE STRI	4	3.8%	0.38	
					44 MYR JACO	3	3.8%	0.05	ml
Total	25306		334.21		45 LAC QUAD	1	3.8%	0.39	ml
					46 HAL SPE.	1	3.8%	0.01	
					47 CLU SPE.	300	3.8%	0.27	
					48 AMB PINO	1	3.8%		ML
					49 TRA FALC	1	3.8%	1.96	R
					Total	1845		581.11	

* = Color variants of *H. unicolor*.

* Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life: ml, secondary marine life.

Table 30. Summary of settler and colonizer species at the American Shoal bridge rubble reefs from July to August 1989.

SETTLER SPECIES					COLONIZER SPECIES				
Species	Total Indiv.	% Freq. (N=24)	Biomass kg	Value*	Species	Total Indiv.	% Freq. (N=24)	Biomass kg	Value*
1 SCA CROI	190	100.0%	2.66	ml	1 HAE PLUM*	3225	100.0%	359.24	S
2 HAE AURO	10207	100.0%	735.66	S	2 HAE SCIU	834	91.7%	94.32	S
3 SPA AURO	70	87.5%	1.91	ml	3 CHA OCEL	28	70.8%	1.51	ML
4 POM VARI	71	83.3%	0.16	ML	4 PSE MACU	46	70.8%	3.66	ml
5 LUT SYNA	249	83.3%	19.95	P,R	5 ACA BAHI	36	62.5%	4.09	ml
6 ANI VIRG	102	79.2%	9.10	S,R,ml	6 GER CINE	55	54.2%	8.19	
7 HAL BIVI	97	79.2%	0.39	ml	7 LAC MAXI	18	50.0%	4.40	P,R
8 CAN ROST	35	70.8%	0.13	ML	8 POM FUSC	24	45.8%	0.27	ml
9 ACA CHIR	32	66.7%	2.68	ml	9 ODO DENT	32	41.7%	0.80	
10 POM PART	51	62.5%	0.09	ML	10 EQU UMBR	17	37.5%	0.43	ml
11 POM ARCU	22	58.3%	13.56	ML	11 PRI AREN	160	33.3%	34.95	S
12 OCY CHRY	34	54.2%	5.83	P,R	12 CAR RUBE	38	33.3%	0.42	
13 THA BIFA	57	50.0%	0.10	ML	13 EPI CRUE	9	33.3%	0.22	S
14 HOL BERM	21	50.0%	2.74	ML	14 LUT GRIS	56	29.2%	9.69	P,R
15 COR GLAU	64	41.7%	0.06	ml	15 CEN UNDE	8	25.0%	35.15	R
16 ACA COER	15	41.7%	0.70	ML	16 HAE FLAV	22	20.8%	0.40	S
17 HOL CILI	13	37.5%	1.97	ML	17 HYP GEMM*	5	16.7%	0.03	ml
18 EQU ACUM	21	37.5%	0.36	ML	18 SPH BARR	3	12.5%	22.95	R
19 MYC MICR	15	33.3%	0.73	P,R	19 CHA CAPI	3	12.5%	0.04	ML
20 HYP UNIC	12	33.3%	0.13	ml	20 AUL MACU	3	12.5%	0.29	
21 GOB OCEA	12	33.3%	0.05	ML	21 MUL MART	22	12.5%	4.82	S
22 HYP PUEL*	9	25.0%	0.05	ml	22 SPA CHRY	6	12.5%	0.39	ml
23 HOL TRIC	9	25.0%	0.10	ML	23 CAR BART	11	8.3%	2.08	R
24 HAL GARN	11	20.8%	0.07	ML	24 CAL CALA	2	8.3%	0.09	P,R
25 POM PARU	3	12.5%	0.25	ML	25 TRA FALC	3	8.3%	32.80	R
26 SPA VIRI	6	12.5%	0.17	ml	26 SER TIGR	4	8.3%	0.04	ML
27 APO PSEU	4	8.3%	0.01	ML	27 OPI AURI	1	4.2%		ML
28 POM PLAN	3	8.3%	0.03	ML	28 SPH PEN	1	4.2%	0.01	
29 EPI ADSC	3	8.3%	0.08	S,ml	29 HAE ALBU	2	4.2%	0.60	S,R
30 POM LEUC	4	8.3%	0.01	ML	30 IOG SPE.	2	4.2%		
31 CHA SEDE	1	4.2%	0.02	ML	31 SYN FOET	1	4.2%	0.22	
					32 GYM FUNE	1	4.2%	2.11	ml
Total	11443		799.75		33 SCA CRIS	1	4.2%		ml
					34 SCA VETU	1	4.2%	0.06	ml
					35 MAL TRIA	1	4.2%		ML
					36 MYC BONA	1	4.2%	1.91	P,R
					37 LAC BICA	1	4.2%	0.29	ml
					38 HAL SPE.	1	4.2%	0.05	
					39 IOG CALL	5	4.2%	0.01	
					40 CAR CRYS	1	4.2%	0.13	R
					41 SCO PLUM	1	4.2%	0.22	ml
					42 HYP NIGR*	1	4.2%	0.01	ml
					43 HOL RUFU	2	4.2%	0.15	ml
					44 DIO HYST	1	4.2%	3.09	ml
					Total	4695		630.13	

* = Color variants of *H. unicolor*.

* Economic value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life: ml, secondary marine life.

Table 31. Comparison of 15 most frequent, abundant, and heaviest species at shallow fabricated units to the shallow natural reef, June 1988 to June 1990.

SAR Combined (N = 42)

Species	% Frequency	Species	Total No.	Species	Biomass (kg)
Slippery dick	95.2	Bluehead wrasse	724	Nurse shark	174.64
Bluehead wrasse	92.9	Slippery dick	389	Gray angelfish	44.02
Gray angelfish	69.0	Seaweed blenny	99	Gag grouper	8.61
Sharpnose puffer	66.7	Unid. grunt	82	Hogfish	5.16
Doctorfish	61.9	Doctorfish	79	Doctorfish	4.10
Porkfish	61.9	Ocean surgeon	68	Mutton snapper	2.84
Ocean surgeon	57.1	Tomtate	64	Porkfish	2.55
Seaweed blenny	57.1	Porkfish	61	Ocean surgeon	1.70
Twospot cardinalfish	54.8	Twospot cardinalfish	60	Slippery dick	1.47
Blue tang	50.0	Sharpnose puffer	59	Saucereye porgy	1.32
Hogfish	31.0	Gray angelfish	46	Margate	1.25
Bicolor damselfish	26.2	Blue tang	42	Yellow jack	1.02
Unid. grunt	19.0	Bicolor damselfish	31	Blue angelfish	0.93
Puddingwife	16.7	Striped grunt	16	French angelfish	0.84
Four species	14.3	Hogfish	15	Spotfin butterflyfish	0.77

Shallow Natural Reef (N = 111)

Species	% Frequency	Species	Total No.
Striped parrotfish	95.5	Bicolor damselfish	4493
Yellowhead wrasse	94.6	Bluehead wrasse	2731
Bicolor damselfish	93.7	White grunt	1821
Bluehead wrasse	91.9	Blue tang	1011
Blue tang	85.6	Tomtate	806
Foureye butterflyfish	84.7	Yellowhead wrasse	660
Ocean surgeon	82.0	Bluestriped grunt	634
Redband parrotfish	74.8	Striped parrotfish	538
Harlequin bass	73.0	Slippery dick	484
White grunt	72.1	Ocean surgeon	381
Cocoa damsel	70.3	Doctorfish	253
Slippery dick	68.5	Redband parrotfish	231
Doctorfish	66.7	Foureye butterflyfish	228
Clown wrasse	53.2	Striped grunt	213
Hogfish	47.7	Cocoa damselfish	150

Table 32. Comparison of the 15 most frequent, abundant, and heaviest species at mid-depth units to the mid-depth natural reef, June 1988 to June 1990.

MAR Combined (N = 32)

Species	% Frequency	Species	Total No.	Species	Biomass (kg)
Blue tang	96.9	Bluehead wrasse	659	Yellowtail snapper	94.67
Ocean surgeon	96.9	Tomtate	639	Ocean surgeon	35.37
Bluehead wrasse	81 3	Yellowtail snapper	337	Greater amberjack	28 19
Sharpnose puffer	81.3	Striped grunt	308	Unid. scad	24.20
Slippery dick	78.1	Mackerel scad	300	Barracuda	23.93
Porkfish	71.9	Bridled goby	273	Gray angelfish	23 57
Reef butterflyfish	65.6	Ocean surgeon	223	Mackerel scad	22.46
Graysby	62.5	Unid. grunt	159	Doctorfish	14.52
Doctorfish	62.5	Cottonwick	150	Bar jack	12.69
Hogfish	62.5	Blue tang	121	Blue tang	10.94
Gray angelfish	62.5	Yellowhead wrasse	111	Hogfish	9.07
Bridled goby	56.3	Twospot cardinalfish	109	Porkfish	5.12
Spotfin butterflyfish	53.1	Slippery dick	108	Blue angelfish	4 56
Sergeant major	53.1	Bar jack	104	French angelfish	3.82
Twospot cardinalfish	50.0	Unid. scad	100	Cero mackerel	2.85
Cottonwick	50.0				

Mid-depth Natural Reef (N = 78)

Species	% Frequency	Species	Total No.
Bicolor damselfish	100.0	Bicolor damselfish	3699
Bluehead wrasse	98.7	Unid. grunt	3500
Yellowhead wrasse	94.9	Bluehead wrasse	2255
Blue chromis	89.7	Tomtate	2140
Striped parrotfish	83.3	Unid. scad	725
Foureye butterflyfish	83.3	Yellowhead wrasse	477
Redband parrotfish	82.1	Blue chromis	453
Ocean surgeon	82.1	French grunt	316
Cocoa damselfish	70.5	Striped parrotfish	246
Reef butterflyfish	70.5	Brown chromis	240
Sharpnose puffer	67.9	Neon goby	209
Harlequin bass	66.7	Foureye butterflyfish	187
Graysby	64.1	Ocean surgeon	175
Blue tang	62.8	Redband parrotfish	162
Rock beauty	59.0	Yellowtail snapper	150

Table 33. Comparison of the 15 most frequent, abundant, and heaviest species at the deep fabricated units to the deep natural reef, June 1988 to June 1990.

DAR Combined (N = 30)

Species	% Frequency	Species	Total No.	Species	Biomass (kg)
Bluehead wrasse	83.3	Round scad	1000	Round scad	89.10
Graysby	83.3	Bluehead wrasse	375	Gray snapper	68.49
Hogfish	80.0	Bridled goby	298	Yellowtail snapper	55.55
Slippery dick	70.0	Yellowtail snapper	231	Cubera snapper	26.73
Yellowtail snapper	70.0	Bicolor damselfish	157	Barracuda	25.43
Sharpnose puffer	70.0	Gray snapper	154	Doctorfish	18.46
Yellowhead wrasse	63.3	Twospot cardinalfish	117	Greater amberjack	16.54
Spotfin butterflyfish	63.3	Slippery dick	84	Mutton snapper	16.37
Gray snapper	63.3	Yellowhead wrasse	83	Gray angelfish	14.82
Doctorfish	60.0	Doctorfish	74	Hogfish	11.95
Bridled goby	60.0	Sharpnose puffer	60	Permit	11.76
Twospot cardinalfish	53.3	Graysby	54	Yellow jack	10.43
Bicolor damselfish	50.0	Greater amberjack	45	French angelfish	7.21
Reef butterflyfish	50.0	Blackfin snapper	37	Bar jack	3.67
Greater amberjack	30.0	Hogfish	37	Ocean surgeon	2.16

Deep Natural Reef (N = 68)

Species	% Frequency	Species	Total No.	Species	Biomass (kg)
Bicolor damselfish	98.5	Tomtate	3630	Tomtate	257.30
Rock beauty	98.5	Unid. grunt	2591	Round scad	155.60
Striped parrotfish	89.7	Round scad	2500	White grunt	67.21
Blue chromis	89.7	Bicolor damselfish	1566	Gray snapper	53.20
Reef butterflyfish	83.8	Purple reeffish	1396	Greater amberjack	53.12
Redband parrotfish	82.4	Masked goby	874	Lane snapper	47.08
Butter hamlet	80.9	White grunt	603	Blue-striped grunt	28.23
Yellowhead wrasse	79.4	Lane snapper	544	Yellow jack	25.86
Bluehead wrasse	79.4	Sunshinefish	460	Yellowtail snapper	20.93
Sunshinefish	77.9	Bluehead wrasse	263	Gray angelfish	14.96
Spotfin hogfish	76.5	Blackfin snapper	263	Spotted goatfish	12.70
Spotted goatfish	72.1	Blue chromis	226	French grunt	12.42
Graysby	70.6	Striped parrotfish	212	Hogfish	12.19
Purple reeffish	70.6	French grunt	202	Green moray	9.69
French grunt	69.1	Yellowhead wrasse	197	Black grouper	8.47

Table 34. Comparison of the 15 most frequent, abundant, and heaviest species at the American Shoal and Bahia Honda bridge rubble reefs, June to August 1989.

American Shoal bridge rubble reefs (N = 24)

Species	% Frequency	Species	Total No.	Species	Biomass (kg)
Tomtate	100.0%	Tomtate	10207	Tomtate	735.66
Striped parrotfish	100.0%	White grunt	3225	White grunt	359.24
White grunt	100.0%	Bluestriped grunt	834	Bluestriped grunt	94.32
Bluestriped grunt	91.7%	Lane snapper	249	Snook	35.15
Redband parrotfish	87.5%	Striped parrotfish	190	Bigeye	34.95
Cocoa damselfish	83.3%	Bigeye	160	Permit	32.80
Lane snapper	83.3%	Porkfish	102	Barracuda	22.95
Slippery dick	79.2%	Slippery dick	97	Lane snapper	19.95
Porkfish	79.2%	Cocoa damselfish	71	Gray angelfish	13.56
Spotfin butterflyfish	70.8%	Redband parrotfish	70	Gray snapper	9.69
Spotted goatfish	70.8%	Bridled goby	64	Porkfish	9.10
Sharpnose puffer	70.8%	Bluehead wrasse	57	Yellowfin mojarra	8.19
Doctorfish	66.7%	Gray snapper	56	Yellowtail snapper	5.83
Ocean surgeon	62.5%	Yellowfin mojarra	55	Yellow goatfish	4.82
Bicolor damselfish	62.5%	Bicolor damselfish	51	Hogfish	4.40

Bahia Honda bridge rubble reefs (N = 26)

Species	% Frequency	Species	Total No.	Species	Biomass (kg)
Porkfish	100.0%	Tomtate	19955	Snook	452.51
Cocoa damselfish	100.0%	Reef croaker	3276	Tomtate	163.61
Tomtate	100.0%	Unid. Harengula	670	Rainbow parrotfish	51.97
Blue tang	92.3%	Unidentified grunt	325	Black grouper	46.97
Striped parrotfish	92.3%	Unid. scad	300	Gray snapper	39.11
Doctorfish	88.5%	Unid clupeid	300	Gray angelfish	22.37
White grunt	84.6%	Cocoa damselfish	250	Barracuda	18.96
Gray angelfish	80.8%	Bridled goby	174	Bluestriped grunt	18.35
Slippery dick	80.8%	Gray snapper	164	White grunt	11.24
Black grouper	80.8%	Bluestriped grunt	157	Porkfish	9.11
Queen angelfish	76.9%	Striped parrotfish	156	Lane snapper	7.00
Gray snapper	76.9%	White grunt	154	Hogfish	6.25
Blue angelfish	65.4%	Slippery dick	139	Reef croaker	5.91
Hogfish	65.4%	Porkfish	130	Gag	5.87
Reef croaker	61.5%	Lane snapper	89	Doctorfish	5.82

Table 35. Comparison of the 15 most frequent and abundant species on artificial and natural reefs at similar depths; Hawk Channel rubble reefs (June-August 1989) and the mid-depth natural reef (September 1988-June 1990).

Species	% Frequency	Species	Total No.
	Hawk Channel rubble reefs combined (N = 50)		
Tomtate	100.0	Tomtate	30162
Striped parrotfish	96.0	White grunt	3379
Cocoa damselfish	92.0	Reef croaker	3308
White grunt	92.0	Bluestriped grunt	991
Porkfish	90.0	Unid. clupeid	670
Slippery dick	80.0	Striped parrotfish	346
Doctorfish	78.0	Lane snapper	338
Gray angelfish	70.0	Unid. grunt	325
Bluestriped grunt	70.0	Cocoa damselfish	321
Blue tang	68.0	Unid. clupeid	300
Redband parrotfish	66.0	Unid. scad	300
Sharpnose puffer	64.0	Bridled goby	238
Lane snapper	64.0	Slippery dick	236
Blue angelfish	58.0	Porkfish	232
Spotfin butterflyfish	58.0	Gray snapper	220
Queen angelfish	58.0		
Gag	58.0		
Hogfish	58.0		
	Mid-depth Natural Reef (N = 78)		
Bicolor damselfish	100.0	Bicolor damselfish	3699
Bluehead wrasse	98.7	Unid. grunt	3500
Yellowhead wrasse	94.9	Bluehead wrasse	2255
Blue chromis	89.7	Tomtate	2140
Striped parrotfish	83.3	Unid. scad	725
Foureye butterflyfish	83.3	Yellowhead wrasse	477
Redband parrotfish	82.1	Blue chromis	453
Ocean surgeon	82.1	French grunt	316
Cocoa damselfish	70.5	Striped parrotfish	246
Reef butterflyfish	70.5	Brown chromis	240
Sharpnose puffer	67.9	Neon goby	209
Harlequin bass	66.7	Foureye butterflyfish	187
Graysby	64.1	Ocean surgeon	175
Blue tang	62.8	Redband parrotfish	162
Rock beauty	59.0	Yellowtail snapper	150

Table 36. Occurrence and rank of the 15 most frequent species at artificial reefs.

Species	SARC	MARC	DARC	BH	AMS	N = 5
1 Doctorfish	5	8	10	5	13	5
2 Slippery dick	1	5	4	7	8	5
3 Hogfish	11	8	3	13		4
4 Porkfish	5	6		1	8	4
5 Sharpnose puffer	4	3	4		10	4
6 Bicolor damselfish	12		13		14	3
7 Bluetang	10	1		4		3
8 Bluehead wrasse	2	3	1			3
9 Gray angelfish	3	8		7		3
10 Ocean surgeon	7	1			14	3
11 Spotfin butterflyfish		13	7		10	3
12 Twospot cardinalfish	9	15	12			3
13 Cocoa damselfish				1	6	2
14 Gray snapper			7	11		2
15 Graysby		8	1			2
16 Reef butterflyfish		7	13			2
17 Striped parrotfish				4	1	2
18 Tomtate				1	1	2
19 White grunt				6	1	2
20 Black grouper				7		1
21 Blue angelfish				13		1
22 Bluestriped grunt					4	1
23 Bridled goby			10			1
24 Cottonwick		15				1
25 Greater amberjack			15			1
26 Lane snapper					6	1
27 Puddingwife	14					1
28 Queen angelfish				11		1
29 Redband parrotfish					5	1
30 Reef croaker				15		1
31 Sergeant major		13				1
32 Seaweed blenny	7					1
33 Spotted goatfish					10	1
34 Unid. grunt	13					1
35 Yellowhead wrasse			7			1
36 Yellowtail snapper			4			1

Table 37. Occurrence and rank of the 15 most abundant species at artificial reefs.

Species	SARC	MARC	DARC	BH	AMS	N = 5
1 Slippery dick	2	13	8	13	8	5
2 Bluehead wrasse	1	1	2		12	4
3 Bridled goby		6	3	8	11	4
4 Tomtate	7	2		1	1	4
5 Bicolor damselfish	13		5		15	3
6 Gray snapper			6	9	13	3
7 Lane snapper			15	15	4	3
8 Porkfish	8			14	7	3
9 Twospot cardinalfish	9	12	7			3
10 Unid. grunt	4	8		4		3
11 Blue tang	12	10				2
12 Bluestriped grunt				10	3	2
13 Cocoa damselfish				7	9	2
14 Doctorfish	5		10			2
15 Ocean surgeon	6	7				2
16 Sharpnose puffer	10		11			2
17 Striped grunt	14	4				2
18 Striped parrotfish				11	5	2
19 Unid. scad		15		5		2
20 White grunt				12	2	2
21 Yellowhead wrasse		11	9			2
22 Yellowtail snapper		3	4			2
23 Bar jack		14				1
24 Bigeye					6	1
25 Blackfin snapper			14			1
26 Cottonwick		9				1
27 Gray angelfish	11					1
28 Graysby			12			1
29 Greater amberjack			13			1
30 Hogfish	15					1
31 Mackerel scad		5				1
32 Redband parrotfish					10	1
33 Reef croaker				2		1
34 Round scad			1			1
35 Seaweed blenny	3					1
36 Unid. clupeid				6		1
37 Unid. herring				3		1
38 Yellowfin mojarra					14	1

Table 38. Occurrence and rank of the 15 heaviest species at artificial reefs.

Species	SARC	MARC	DARC	BH	AMS	N = 5
1 Gray angelfish	2	6	9	6	9	5
2 Hogfish	4	11	10	12	15	5
3 Barracuda		5	5	7	7	4
4 Doctorfish	5	8	6	15		4
5 Porkfish	7	12		10	11	4
6 French angelfish	14	14	13			3
7 Gray snapper			2	5	10	3
8 Ocean surgeon	8	2	15			3
9 Yellowtail snapper		1	3		13	3
10 Mutton snapper	6		8			2
11 Bar jack		9	14			2
12 Blue angelfish	13	13				2
13 Bluestriped grunt				8	3	2
14 Gag	3			14		2
15 Greater amberjack		3	7			2
16 Lane snapper				11	8	2
17 Permit			11		6	2
18 Snook				1	4	2
19 Tomtate				2	1	2
20 White grunt				9	2	2
21 Yellow jack	12		12			2
22 Bigeye					5	1
23 Black grouper				4		1
24 Blue tang		10				1
25 Cero mackerel		15				1
26 Cubera snapper			4			1
27 Mackerel scad		7				1
28 Margate	11					1
29 Nurse shark	1					1
30 Rainbow parrotfish				3		1
31 Reef croaker					15	1
32 Round scad			1			1
33 Saucereye porgy	10					1
34 Slippery dick	9					1
35 Spotfin butterflyfish	15					1
36 Unid. scad		4				1
37 Yellow goatfish					14	1
38 Yellowfin mojarra					12	1

Table 39. Summary of species by trophic level at mid-depth fabricated units, June 1988 to June 1990.

Species	Trophic Level [Δ]	% Freq. (N = 32)	Total No.	Biomass (kg)	Value [◊]
BROWSERS					
CAN ROST	B,H	81.3%	83	0.13	ML
POM ARCU	B	62.5%	32	23.57	ML
HOL BERM	B	15.6%	9	4.56	ML
POM PARU	B	12.5%	7	3.82	ML
LAC BICA	B	9.4%	3	0.43	ml
HOL CILI	B	9.4%	4	1.06	ML
LAC TRIQ	B	3.1%	1	0.25	ml
LAC QUAD	B	3.1%	1	0.39	ml
Subtotal			140	34.21	
FISHES					
OCY CHRY	F,Ma	46.9%	337	94.67	P,R
GYM MORI	F,Ma	21.9%	8	0.68	ML
DIP FORM	F,Mi,Ma	12.5%	9	0.05	
SPH BARR	F	12.5%	4	23.93	R
MYC SPE.	F	6.3%	3		P,R
SER DUME	F	6.3%	22	28.19	P,R
SCO REGA	F	3.1%	8	2.85	P,R
LUT GRIS	F,Ma	3.1%	1	0.96	P,R
MYC BONA	F	3.1%	1	0.61	P,R
SYN FOET	F	3.1%	1	0.13	
SCO PLUM	F	3.1%	1	0.17	ml
Subtotal			395	152.24	
HERBIVORES					
ACA COER	H	96.9%	121	10.94	ML
ACA BAHI	H	96.9%	223	35.37	ml
ACA CHIR	H	62.5%	92	14.52	ml
COR GLAU	H	56.3%	273	0.14	ml
SPA AURO	H	6.3%	3	0.21	ml
SCA CROI	H	3.1%	1		ML
POM PLAN	H	3.1%	1		ML
ALU SCHO	H	3.1%	1	0.02	ml
SPA CHRY	H	3.1%	1	0.03	ml
ALU SCRI	H	3.1%	1	0.39	ml
Subtotal			717	61.62	

Table 39. Summary of species by trophic level at mid-depth fabricated units, June 1988 to June 1990 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 32)	Total No.	Biomass (kg)	Value [◊]
MICRO & MACROINVERTIVORE					
HAL BIVI	Mi,Ma	78.1%	108	0.67	ml
ANI VIRG	Ma	71.9%	34	5.12	P,R,ml
CHA SEDE	ML	65.6%	37	0.63	ML
LAC MAXI	Ma	62.5%	37	9.07	P,R
EPI CRUE	Ma	62.5%	37	0.36	ml
CHA OCEL	ML	53.1%	32	1.93	ML
HAL GARN	Mi,Ma	40.6%	111	0.09	ML
SER TIGR	ML	18.8%	7	0.01	ML
LUT BUCC	Mi,Ma,F	18.8%	7	0.02	P,R
PSE MACU	ML	15.6%	6	0.11	ml
EQU ACUM	ML	15.6%	6	0.02	ML
RYP SAPO	Ma,F	9.4%	3	0.63	
GOB OCEA	ML	9.4%	6		ML
EQU LANC	ML	6.3%	2		ML
HOL CORU	Ma,Mi	6.3%	7	0.04	ml
CAL CALA	Ma	6.3%	2	0.17	S,R
EPI GUTT	Ma	6.3%	3	0.02	S,ml
HAE ALBU	Ma,Mi	6.3%	2	0.41	S,R
HAL RADI	Mi,Ma	6.3%	2	0.12	ML
MON HISP	Mi,Ma	6.3%	3	0.17	ml
HEM SPLE	Mi,Ma	6.3%	3	0.02	ml
CHA STRI	ML	3.1%	1	0.05	ML
LUT ANAL	Ma,F	3.1%	1	1.54	P,R
URO JAMA	Ma	3.1%	1	0.07	ml
Subtotal			458	21.3	

Table 39. Summary of species by trophic level at mid-depth fabricated units, June 1988 to June 1990 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 32)	Total No.	Biomass (kg)	Value [◊]
PLANKTIVORES					
THA BIFA	P,Mi	81.3%	659	0.43	ML
ABU SAXA	P	53.1%	39	0.89	ml
APO PSEU	P	50.0%	109	0.10	ML
HAE MELA	P,Mi	50.0%	150	2.39	
POM PART	P,H	43.8%	67	0.03	ML
HAE AURO	P,Mi	28.1%	639	0.04	S
CAR RUBE	P,F	25.0%	104	12.69	
HAE FLAV	P,Mi,Ma	21.9%	43	0.33	S
HAE SPE.	P,Mi	12.5%	159	0.10	S
PAR MARM	?	12.5%	6		ml
HAE STRI	P,Mi	9.4%	308	0.79	S
DEC SPE.	P	6.3%	100	24.21	
CHR INSO	P	6.3%	2		ML
DEC PUNC	P	6.3%	20	0.46	
DEC MACA	P	6.3%	300	22.46	
MAL SPE.	P,Mi	3.1%	1		ml
APO SPE.	P	3.1%	2	0.01	ml
MAL TRIA	P,Mi	3.1%	1		ml
ECH NAUC	P	3.1%	1	0.01	
CHR Mull	P	3.1%	1		ML
Subtotal			2711	64.94	
Total			4421	334.31	

[Δ] Trophic level: B, browser; F, piscivore; H, herbivore; ML, microinvertivore; Ma, macroinvertivore; P, planktivore.

[◊] Value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life.

Table 40. Summary of species by trophic level at deep fabricated units. June 1988 to June 1990.

Species	Trophic Level [Δ]	% Freq. (N = 30)	Total No.	Biomass (kg)	Value [◊]
BROWSERS					
CAN RUST	B,H	70.0%	60	0.05	ML
POM ARCU	B	33.3%	17	14.82	ML
POM PARU	B	26.7%	11	7.21	ML
HOL CILI	B	16.7%	5	0.01	ML
LAC BICA	B	13.3%	4	0.56	ml
LAC QUAD	B	6.7%	2	0.66	ml
HOL TRIC	B	6.7%	2	0.02	ML
HOL BERM	B	6.7%	3	0.36	ML
Subtotal			104	23.69	
PISCIVORES					
OCY CHRY	F,Ma	70.0%	231	55.55	P,R
LUT GRIS	F,Ma	63.3%	154	68.49	P,R
SER DUME	F	30.0%	45	16.54	P,R
SPH BARR	F	13.3%	4	25.43	R
CAR BART	F	10.0%	5	10.43	R
CAR CRYS	F	10.0%	7	1.05	R
MYC SPE.	F,Ma	6.7%	4		P,R
GYM MORI	F,Ma	6.7%	2	0.16	ML
MYC BONA	F,Ma	3.3%	1		P,R
EPI ADSC	F,Ma	3.3%	1		S,ml
LUT CYAN	F,Ma	3.3%	1	26.73	P,R
RAC CANA	F,Ma	3.3%	1	1.92	P,R
Subtotal			456	206.3	
HERBIVORES					
COR GLAU	H	60.0%	298	0.14	ml
ACA CHIR	H	60.0%	74	18.46	ml
ACA COER	H	10.0%	8	0.46	ML
ACA BAHI	H	10.0%	7	2.16	ml
POM VARI	H	6.7%	2		ML
SCA SPE.	H	3.3%	1		ml
ALU SCRI	H	3.3%	1	0.99	ml
KYP SECT	H	3.3%	1	0.18	
MIC CHRY	H	3.3%	1		ML
SCA CRIS	H	3.3%	1		ml
Subtotal			394	22.39	

Table 40. Summary of species by trophic level at deep fabricated units. June 1988 to June 1990 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 30)	Total No.	Biomass (kg)	Value [◊]
MICRO & MACROINVERTIVORES					
EPI CRUE	Ma	83.3%	54	0.34	ml
LAC MAXI	Ma	80.0%	37	11.95	P,R
HAL BIVI	Mi,Ma	70.0%	84	0.28	ml
HAL GARN	Mi,Ma	63.3%	83	0.07	ML
CHA OCEL	ML	63.3%	35	1.96	ML
CHA SEDE	ML	50.0%	20	0.15	ML
LUT BUCC	Ma	26.7%	37	0.02	P,R
SER TIGR	ML	20.0%	7		ML
BOD PULC	Mi,Ma	20.0%	11	0.01	ML
LUT ANAL	Ma,F	16.7%	5	16.37	P,R
CAL CALA	Ma	13.3%	4	1.85	P,R
RYP SAPO	Ma,F	10.0%	3	0.16	
TRA FALC	Ma	10.0%	3	11.76	R
HAL SPE.	ML	10.0%	4		ml
SOD RUFU	Mi,Ma	6.7%	2		ML
SER TABA	ML	6.7%	2		ML
EPI GUTT	Ma	6.7%	2	0.01	S,ml
EQU ACUM	ML	3.3%	1		ML
EPI FULV	Ma,F	3.3%	2		ml
CAL SPE.	Ma	3.3%	1	0.35	P,R
PSE MACU	ML	3.3%	1	0.06	ml
SER BALD	ML	3.3%	2		ML
ECH NAUC	ML	3.3%	1	0.02	ml
ANI VIRG	Ma	3.3%	1		S,R,ml
MON CILI	Mi,Ma	3.3%	1		ml
Subtotal			403	45.36	

Table 40. Summary of species by trophic level at deep fabricated units. June 1988 to June 1990 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 30)	Total No.	Biomass (kg)	Value [◊]
PLANKTIVORES					
THA BIFA	P,Mi	83.3%	375	0.25	ML
APO PSEU	P	53.3%	117	0.08	ML
POM PART	P,H	50.0%	157	0.10	ML
PAR MARM	?	23.3%	10	0.01	ML
CHR ENCH	P	20.0%	23	0.01	ML
PAR FURC	?	20.0%	7	0.09	ML
CHR INSO	P	16.7%	10		ML
CHR SCOT	P	13.3%	5		ML
APO SPE.	P	10.0%	7		ml
CAR RUBE	P	10.0%	20	3.67	
lOG HELE	P	6.7%	2		ml
CLE PARR	P	3.3%	1		ML
HAE STRI	P,Mi	3.3%	1		
DEC PUNC	P	3.3%	1000	89.1	
Subtotal			1735	93.31	
Total			3092	391.05	

[Δ] Trophic level: B, browser; F, piscivore; H, herbivore; ML, microinvertivore; Ma, macroinvertivore; P, planktivore.

[◊] Value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life.

Table 41. Summary of species by trophic level at the deep natural reef from September 1988 to May 1990.

Species	Trophic Level [Δ]	% Freq. (N = 68)	Total No.	Biomass (kg)	Value [◊]
BROWSERS					
HOL TRIO	B	98.5%	187	7.10	ML
CAN ROST	B,H	66.2%	88	0.18	ML
HOL BERM	B	20.6%	15	3.40	ML
POM ARCU	B	20.6%	22	14.96	ML
POM PARU	B	10.3%	B	1.32	ML
LAC BICA	B	5.9%	4	0.48	ml
HOL CILI	B	5.9%	7	0.27	ML
LAC QUAD	B	2.9%	2	0.44	ml
Subtotal			333	28.15	
PISCIVORES					
OCY CHRY	F,Ma	58.8%	118	20.93	P,R
LUT GRIS	F,Ma	22.1%	76	53.20	P,R
MYC BONA	F	11.8%	10	8.47	P,R
CAR BART	F	11.8%	58	25.86	R
SER DUME	F	7.4%	14	53.12	P,R
GYM FUNE	F,Ma	5.9%	4	9.69	ML
EPI FULV	F,Ma	5.9%	5	0.25	ml
SCO REGA	F	5.9%	7	3.44	P,R
SCO PLUM	F	5.9%	5	1.50	ml
EPI GUTT	F,Ma	4.4%	5	0.14	S
AUL MACU	F	2.9%	2	0.16	
MYC SPE.	F	2.9%	2	0.20	P,R
EPI STRI	F,Ma	2.9%	2	1.94	P,R
GYM MORI	F,Ma	2.9%	2	0.40	ML
GYM VICI	F	1.5%	1	1.26	ml
SYN SPE.	F	1.5%	1	0.06	
LUT APOD	F,Ma	1.5%	5	0.31	S,R
CAR CRYS	F	1.5%	1	1.29	R
TRA GOOD	F	1.5%	3	5.88	
Subtotal			321	188.1	

Table 41. Summary of species by trophic level at the deep natural reef from September 1988 to May 1990 (cont.).

Species	Trophic Level Δ	% Freq. (N = 68)	Total No.	Biomass (kg)	Value ◊
HERBIVORES					
SCA CROI	H	89.7%	212	4.35	ML
SPA AURO	H	82.4%	118	2.47	ml
POM VARI	H	58.8%	77	0.28	ML
ACA CHIR	H	32.4%	38	3.56	ml
ACA BAHI	H	30.9%	34	3.58	ml
ACA COER	H	16.2%	19	2.94	ML
COR GLAU	H	10.3%	34	0.02	ml
SPA VIRI	H	7.4%	6	0.84	ml
POM PLAN	H	5.9%	4	0.05	ML
POM LEUC	H	4.4%	5	0.02	ML
SCA TAEN	H	4.4%	3	0.21	ml
SCA CRIS	H	2.9%	2		ml
SCA VETU	H	2.9%	2	0.02	ml
CAN MACR	H,B	2.9%	2	0.74	ml
SPA SPE.	H	1.5%	1	0.02	ml
Subtotal			557	19.1	
MICRO & MACROINVERTIVORES					
CHA SEDE	ML	83.8%	129	3.30	ML
HYP UNIC	ML	80.9%	87	0.79	ml
HAL GARN	Mi,Ma	79.4%	197	2.31	ML
BOD PULC	Mi,Ma	76.5%	159	1.64	ML
PSE MACU	ML	72.1%	165	12.70	ml
EPI CRUE	Ma	70.6%	105	4.97	ml
HAE FLAV	Mi,Ma,P	69.1%	202	12.42	S
CHA CAPI	ML	67.6%	111	1.43	ML
LUT BUCC	Mi,Ma,F	57.4%	263	4.80	P,R
HAE PLUM	Mi,Ma,P	51.5%	603	67.21	S
LAO MAXI	Ma	45.6%	43	12.19	P,R
LUT SYNA	Ma,F	41.2%	544	47.08	P,R
EQU ACUM	ML	38.2%	88	1.58	ML
CHA OCEL	ML	36.8%	49	2.58	ML
HAE SCIU	Mi,Ma,P	36.8%	182	28.23	S
HAE AURO	Mi,P	32.4%	3630	257.3	S
SOD RUFU	Mi,Ma	27.9%	24	0.16	ML
GOB OCEA	ML	20.6%	32	0.01	ML
EPI ADSC	Ma	17.6%	25	1.14	S,ml
ANI VIRG	Ma	16.2%	12	2.28	S,R,ml
EQU LANC	ML	14.7%	12	0.65	ML

Table 41. Summary of species by trophic level at the deep natural reef from September 1988 to May 1990 (cont.).

Species	Trophic Level Δ	% Freq. (N = 68)	Total No.	Biomass (kg)	Value ◊
CAL CALA	Ma	14.7%	21	5.05	P,R
HOL CORU	Ma,Ni	13.2%	9	0.70	ml
SER TABA	ML	13.2%	16	0.23	ML
MUL MART	ML	10.3%	51	1.99	S
HYP GEMM *	ML	5.9%	7	0.11	ml
CHA STRI	ML	4.4%	4	0.08	ML
MON SETI	Mi,Ma	4.4%	5	0.43	ml
LUT ANAL	Ma,F	4.4%	5	7.27	P,R
HAE MELA	Mi,P	4.4%	13	1.20	S
CHA FABE	Ma	2.9%	2	2.78	5
GER CINE	ML	2.9%	12	2.42	
HAL BIVI	Mi,Ma	2.9%	3	0.05	ml
HYP PUEL *	ML	2.9%	3	0.06	ml
HOL MARI	Ma	2.9%	2	0.06	ml
BAL CAPR	Ma	2.9%	2	1.09	P,R
SER TIGR	ML	2.9%	2		ML
AMB PINO	ML	2.9%	2		ML
HYP NIGR *	ML	1.5%	1		ml
RYP SAPO	Ma,F	1.5%	1	0.26	
ODO DENT	ML	1.5%	50	0.03	
HOL RUFU	Ma	1.5%	1	0.04	ml
DIO HYST	Ma	1.5%	1	1.20	ml
HAL MACU	Mi,Ma	1.5%	1		ML
ANI SURI	Ma	1.5%	3	1.81	P,R
URO JAMA	Ma	1.5%	1	2.19	ml
MON HISP	Mi,Ma	1.5%	1	0.10	ml
HOL ASCE	Ma,Mi	1.5%	1	0.06	ml
DAS AMER	Ma	1.5%	1	0.17	
DIO HOLD	Ma	1.5%	1	0.09	ml
Subtotal			6884	494.24	
PLANKTIVORES					
POM PART	P,H	98.5%	1566	2.28	ML
CHR CYAN	P	89.7%	226	0.66	ML
THA BIFA	P,Mi	79.4%	453	0.88	ML
CHR INSO	P	77.9%	460	0.54	ML
CHR SCOT	P	70.6%	1396	0.66	ML
CUR PERS	?	57.4%	874	0.17	ml
CHR ENCH	P	33.8%	89	0.05	ML
POM FUSC	P,H	19.1%	16	0.12	ml
CLE PARR	P	16.2%	64	0.03	ML
HAE SPE.	P	11.8%	2591	0.39	S

Table 41. Summary of species by trophic level at the deep natural reef from September 1988 to May 1990 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 68)	Total No.	Biomass (kg)	Value [◊]
CHR MULT	p	7.4%	20	0.01	ml
CAR RUBE	P,F	5.9%	9	1.90	
IOG SPE.	P	2.9%	11		ml
ECH NAUC	P	2.9%	2	0.09	ml
DEC PUNC	P	2.9%	2500	155.60	
FIS SPE.	?	1.5%	1	0.02	
APO SPE.	P	1.5%	80	0.09	
DPI AURI	P	1.5%	2	0.01	ML
EMS PAND	?	1.5%	1		ml
PAR MARM	?	1.5%	1		ML
Subtotal			10362	163.50	
Total			18457	893.09	

[Δ] Trophic level: B, browser; F, piscivore; H, herbivore; ML, microinvertivore; Ma, macroinvertivore; P, planktivore.

[◊] Value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life.
* Color variants of *H. unicolor.*

Table 42. Summary of species by trophic level at Bahia Honda rubble reefs from June to August 1989.

Species	Trophic Level [Δ]	% Freq. (N = 26)	Total No.	Biomass (kg)	Value [◊]
BROWSERS					
POM ARCU	B	80.8%	34	22.37	ML
HOL CILI	B	76.9%	35	2.38	ML
HOL BERM	B	65.4%	31	2.91	ML
CAN ROST	B,H	57.7%	35	0.28	ML
POM PARU	B	26.9%	8	2.18	ML
LAC QUAD	B	3.8%	1	0.39	ml
HOL TRIC	B	3.8%	1	0.02	ML
SPH PEN	B,Mi	3.8%	1	0.01	
Subtotal			146	30.54	
FISHES					
MYC MICR	F,Ma	80.8%	71	5.87	P,R
LUT GRIS	F,Ma	76.9%	164	39.11	P,R
MYC BONA	F	53.8%	30	46.97	P,R
CEN UNDE	F,Ma	30.8%	76	452.51	R
SPH BARR	F	19.2%	5	18.96	R
SCO REGA	F	11.5%	6	1.39	P,R
OCY CHRY	F,Ma	11.5%	10	0.92	P,R
MYC SPE.	F,Ma	11.5%	13	1.81	P,R
EPI STRI	F,Ma	7.7%	3	3.75	P,R
EPI ADSC	F,Ma	7.7%	2	0.14	S,ml
GYM MORI	F,Ma	3.8%	1	0.11	ML
SCO PLUM	F	3.8%	1	0.07	ml
CAR SPE.	F	3.8%	2	1.02	
CAR SARI	F	3.8%	1	2.26	R
CAR CRYS	F	3.8%	3	0.01	R
Subtotal			388	574.9	
HERBIVORES					
POM VARI	H	100.0%	250	0.51	ML
ACA COER	H	92.3%	79	4.61	ML
SCA CROI	H	92.3%	156	0.95	ml
ACA CHIR	H	88.5%	75	5.82	ML
COR GLAU	H	57.7%	174	0.19	ml
SPA AURO	H	46.2%	29	0.41	ml
SCA GUAC	H	30.8%	25	51.97	ml
ACA BAHI	H	19.2%	14	1.03	ml
SPA VIRI	H	15.4%	5	0.07	ml
SCA COEL	H	11.5%	4	1.65	ml
SPA CHRY	H	11.5%	7	0.71	ml

Table 42. Summary of species by trophic level at Bahia Honda rubble reefs from June to August 1989 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 26)	Total No.	Biomass (kg)	Value [◊]
SCA COER	H	7.7%	3	1.02	ml
SPA SPE.	H	7.7%	6	0.04	
SCA VETU	H	3.8%	1	0.01	ml
POM LEUC	H	3.8%	1		ML
POM PLAN	H	3.8%	1		ML
Subtotal				830	68.99
MICRO & MACROINVERTIVORES					
ANI VIRG	Ma	100.0%	130	9.11	S,R,ml
HAE AURO	Mi,P	100.0%	19955	163.61	S
HAE PLUM	Mi,Ma,P	84.6%	154	11.24	S
HAL BIVI	Mi,Ma	80.8%	139	0.72	ml
LAC MAXI	Ma	65.4%	46	6.25	P,R
ODO DENT	Mi,P	61.5%	3276	5.91	
HAE SCIU	Mi,Ma,P	50.0%	157	18.35	S
CHA OCEL	ML	46.2%	23	1.07	ML
EPI CRUE	Ma	46.2%	14	0.41	ml
LUT SYNA	Ma	46.2%	89	7.00	P,R
HYP UNIC	ML	42.3%	14	0.04	ml
CHA SEDE	ML	15.4%	4	0.02	ML
HAE FLAV	Mi,Ma,P	15.4%	10	0.31	S
EQU ACUM	ML	11.5%	5	0.06	ML
HYP PUEL*	ML	11.5%	6	0.06	ml
HAE ALBU	Ma	11.5%	4	0.79	S,R
HAL RADI	Mi,Ma	11.5%	5	0.03	ML
ARC PROB	Ma	11.5%	3	2.46	S,R
EPI FULV	Ma,F	7.7%	2	0.02	ml
EQU UMBR	ML	7.7%	2	0.03	ml
CHA CAPI	ML	7.7%	3	0.02	ML
SER BALD	ML	7.7%	4	0.01	ML
SER TIGR	ML	7.7%	3	0.01	ML
SER SUBL	ML	7.7%	3	0.02	ml
HAE SPE.	ML	7.7%	325	1.46	
PRI AREN	Ma	7.7%	3	1.65	S
AMB PINO	ML	3.8%	1		ML
LUT ANAL	Ma,F	3.8%	1	0.72	P,R
MYR JACO	ML	3.8%	3	0.05	ml
HAL SPE.	Mi,Ma	3.8%	1	0.01	
MUL MART	ML	3.8%	1	0.07	S
MYC PHEN	Ma,F	3.8%	1	0.05	P,R
HYP GEMM*	ML	3.8%	1	0.01	ml

Table 42. Summary of species by trophic level at Bahia Honda rubble reefs from June to August 1989 (cont.).

Species	Trophic Level [Δ]	% Freq. (N = 26)	Total No.	Biomass (kg)	Value [◊]
IRA FALC	Ma	3.8%	1	1.96	R
EPI GUTT	Ma,F	3.8%	1	0.03	S,ml
CAL BAJO	Ma	3.8%	1	0.38	P,R
GOB OCEA	ML	3.8%	1		ML
RAE STRI	ML	3.8%	4	0.38	
EPI MORI	Ma,F	3.8%	1	1.76	P,R
CHA FABE	Ma	3.8%	1	0.07	S
CAL CALA	Ma	3.8%	3	0.74	P,R
Subtotal			24401	236.89	
PLANKTIVORES					
POM FUSC	P,H	57.7%	42	0.20	ml
THA BIFA	P,Mi	42.3%	20	0.05	ML
ABU SAXA	P	23.1%	14	0.02	ml
POM PART	P,H	15.4%	5	0.01	ML
MAR SPE.	P	11.5%	670	2.74	
CAR RUBE	P,F	11.5%	13	0.11	R
DEC SPE.	P	11.5%	300	0.57	
PAR MARM	?	11.5%	7	0.01	ML
APO PSEU	P	11.5%	11	0.01	ML
APO MACU	P	3.8%	1		ML
CLU SPE.	P	3.8%	300	0.27	
lOG CALL	P	3.8%	3	0.01	
Subtotal			1386	4.00	
Total			27151	915.32	

[Δ] Trophic level: B, browser; F, piscivore; H, herbivore; ML, microinvertivore; Ma, macroinvertivore; P, planktivore.

[◊] Value: P, primary commercial; S, secondary commercial; R, recreational; ML, primary marine life; ml, secondary marine life.

* Color variants of *H. unicolor.*

Table 43. Summary of close-up fouling community photography at fabricated units.

DATE	SAR UNITS Δ	TOTAL IMAGES	MAR UNITS	TOTAL IMAGES ◊	DAR UNITS	TOTAL IMAGES ◊
9/18/88	1,2.3	24	1E,1W,2E,2W	23	1E,1W	12
12/31/88	1,2,3	23	1E,1W,2E,2W	24	1E,1W,2E,2W	24
5/6/89	1.2,3	22	1E,1W,2E,2W	24	1E,1W,2E,2W	24
9/2/89	1,2,3	24	1E,1W,2E,2W	23	1E,1W,2E,2W	24
1/11/90			1E,1W,2E,2W	24	1E,1W,2E,2W	24
6/30/90			2E,2W	11	1E	6
8/90	1,2	9	1E,1W,2E,2W	24	1E,1W,2E,2W	24
Total		102		153		138
Grand total						393

E = East
W = West
Δ 6 frames/unit with additional frames at SAR1.
◊ 6 frames/side/unit

Table 44. Comparison of artificial reefs in Hawaii and Florida (from Bohnsack *et al.*, 1989). Stone *et al.* (1979) included a 12 m dia x 2 m high natural reef and a 20 m dia x 1 m high tire reef.

Source	Brock (1987)		Stone *et al.* (1979)		Bohnsack *et al.* (1989)			
Reef Type	Natural	Artificial	Natural	Artificial	Natural Small	Natural Large	Artificial Block (1)	Artificial Block (8)
Location	Hawaii		Florida		Florida			
Number/m^2	1.6	8.9	6.8	2.1	1.02	1.45	71	24
Number/m^3		6.8	3.4	2.1			56	19
Biomass (g/m^2)	46	1267			72	47	390	701
Biomass (g/m^3)		975					309	555
Mean size (g)	29	137			71	133	6	29
Sample biomass (kg)	2.76	76.02			2.02	7.09	0.71	10.21
Total Species	81	125	85	98	36	85	74	96
Reef area (m^2) $^{\Delta}$	60	60	113	113-315	28	>175	1.75	14
Reef volume (m^3)		78	226	314			2.3	18.4
Composition	coral	concrete	coral	tires	coral	coral	concrete	concrete
No. Modules/Patches		38		500			1	8
Depth (m)	19-20	Same	14	Same	10-12	Same	Same	Same
Location	Mauna Loa Bay, Oahu		Biscayne Nat'l Park		Key Biscayne			
Latitude	21° 15'		25° 23'		25° 42'			
Longitude	157° 46'		80° 06'		80° 06'			
Study Duration	13 mo		30 mo		21 mo			
Total Samples	47	47	8	8	11	72	119	62

Table 44. Comparison of artificial reefs in Hawaii and Florida (from Bohnsack *et al.*, 1989). Stone *et al.* (1979) included a 12 m dia x 2 m high natural reef and a 20 m dia x 1 m high tire reef (cont.).

Source	This Study							
	Artificial					Natural		
Reef Type	Small Units	Large Units		Bahia	American			
	SAR*	MAR	DAR	Honda	Shoal	Shallow	Mid	Deep
Number/m^2	1.6	5.1	3.8	5.9	3.8	0.9	1.2	1.5
Number/m^3	2.3	3.4	2.6					
Biomass (g/m^2)	212	387	483	199	340			72
Biomass (g/m^3)	290	260	324					
Mean size (g)	127	76	126	33	90			48
Sample biomass (kg)	6.05	10.46	13.03	35.20	60.22			12.7
Total Species	67	73	69	90	72	104	114	109
Reef area (m^2) $^{\Delta}$	29	27	27	>177	>177	>177	>177	>177
Reef volume (m^3)	20.4	40.2	40.2					
Composition	concrete	concrete	conc	conc/stl	concrete	coral	coral	coral
No. Modules/Patches	3	2	2	19	4			
Depth (m)	7	14	24	9-10	11-12	6-8	10-12	26-31
Location				Big Pine Key, Florida Keys				
Latitude		24° 34'		24° 37'	24° 33'		24° 34'	
Longitude		81° 20'		81° 17	81° 28'		81° 20'	
Study Duration		24 mo		3 mo			24 mo	
Total Samples	42	32	30	26	24	111	78	68

* SAR biomass includes 3 large nurse sharks (69%)

$^{\Delta}$ Stationary census area 177 m^2