

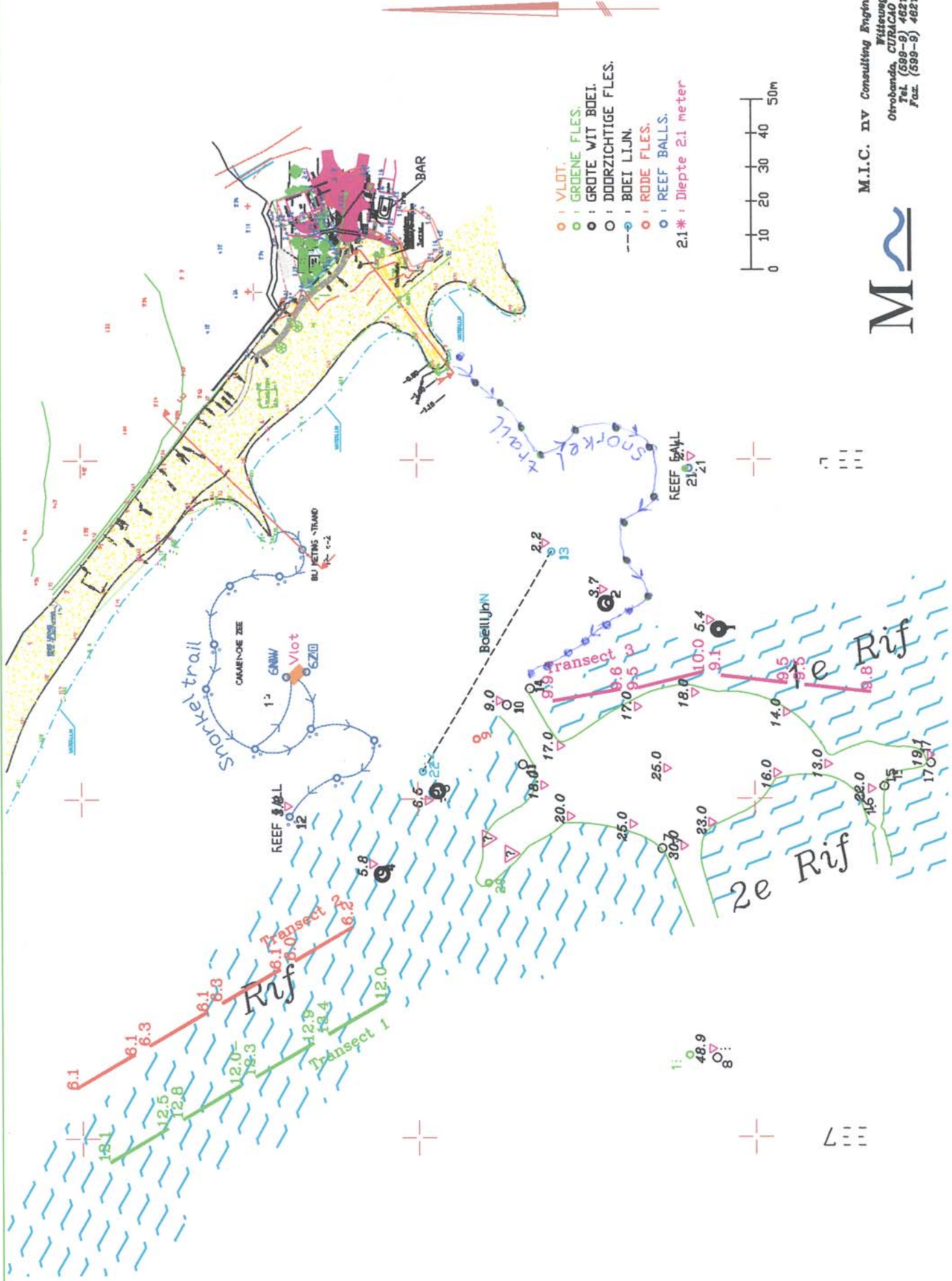
PORTOMAREA MARINE MONITORING

CORAL AND FISH/INVERTEBRATE SURVEY

by

Maryke Kolenousky & Marjo van den Bulck

April 2002



- : VLDT.
- : GROENE FLES.
- : GROTE WIT BOEI.
- : DOORZICHTIGE FLES.
- : BOEI LIJN.
- : RODE FLES.
- : REEF BALLS.
- 2.1* : Diepte 2.1 meter



M.I.C. nv Consulting Engineers
 Witteweg 16
 Orobanda, CURAÇAO N.A.
 Tel. (599-9) 4621508
 Fax. (599-9) 4621509



PORTOMAREA MARINE MONITORING

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PORTOMAREA MARINE MONITORING

FISH/INVERTEBRATE AND CORAL SURVEY OVERVIEW

Survey dates: April 8-19, 2002

Data observed and recorded by: Marjo van den Bulck and Maryke Kolenousky

WATER TEMPERATURE & VISIBILITY

There were several daily rain showers during the monitoring period, which is unusual for April. Cloud cover was moderate to heavy on most days.

Water temperature was 26C during the monitoring period, which is two (2) degrees cooler than the January monitoring period.

Visibility varied from less than 15m to over 30m.

As compared to the January monitoring period, when little to no current was recorded, there was a moderate to strong current running from west to east (the reverse direction the current normally runs) during the whole monitoring period. Shallow-water surge was also extraordinarily strong.

TRANSECTS

Three (3) transect lines 95m long were set up for the coral line and fish/invertebrate belt surveys. Each line was divided into four 20m sections with 5m intervals, in accordance with accepted monitoring practices. Transect numbers 1 and 2 are on the west side of the bay at depths of 12m and 6m respectively. Transect 3 is on the east side of the bay at 10m.

Coral monitoring was carried out over each 20m section with sampling points at .5m intervals.

Fish/invertebrate monitoring was done over a contiguous 5m-wide 'belt' along 20m sections of the above described transect lines.

Detailed transect setup information can be found in the PortoMarea Marine Monitoring Manual.

CORAL MONITORING

Health

The overall general condition of the reef reflects the damage sustained in 1999 from Hurricane Lenny. Large boulder corals were overturned, and the corals subsequently died off.

Transects 1 and 2, on the west side of the bay exhibit some regeneration, e.g. new maze and mustard hill corals have begun to grow on the old dead coral boulders. Transect 1 had a high Y Algae count, observed mainly on the old dead boulders. Macro Y algae was observed on Transects 2 and 3. Transect 2 is basically a shallow patch reef, and the high percentage of sand cover reflects the spaces between coral patches.

One case of 'Yellow Blotch disease' was observed on a star coral on Transect 1.

Damage

Signs of recent damage, e.g. broken hard corals, were recorded along Transect 1. It is assumed that this damage is attributable to divers.

FISH/INVERTEBRATE SURVEY

Approximately 35% less fish were recorded along Transect #3 (10m depth) on the east side of the bay as compared to Transect #1 (12m depth) on the west side.

Significantly fewer tube worms were observed along Transect 3.

Many more hamlets were observed during this monitoring period as compared to January.

Cherubfish were observed for the first time on the transects.

Large schools of juvenile striped grunts were observed for the first time on Transect 1.

Schoolmasters increased by 300%. Most of those observed were small ones in large aggregations.

Numbers of parrotfish have increased by 24%.

REEF BALL CLUSTERS

There are 2 snorkel trails laid out, consisting of 10 reef ball clusters on the west side of the bay at depths ranging from 1.2 to 3.8m, and 12 clusters on the east side of the bay at depths from 1.5 to 4.3m.

On April 6, 2002, 6 additional reef ball clusters (approximately 100 balls) were placed on the east side of the bay along the top edge of the inner reef, at an average of depth 4.3m. This brings the total number of clusters to 18.

With the exception of the new Clusters, all the Reef Balls have begun to show heavy algae growth. In the case of Cluster 10R, the algae is beginning to overgrow the coral plugs.

CORAL PLUGS

On February 8, 2002, six (6) varied coral plugs, incorporating a new transplant method, were planted on Cluster 12L. Twenty-four (24) Staghorn coral plugs were planted on Cluster 12L on March 23, 2002. These new plugs have been included in the report.

On the right side, Cluster 10R, the coral plugs are showing signs of stress. Several are covered in heavy algae growth. Conversely, the staghorn plugs are showing new growth at the plug bases and vertically with an increase in the number of branches.

FISH/INVERTEBRATE SURVEY - OBSERVATIONS

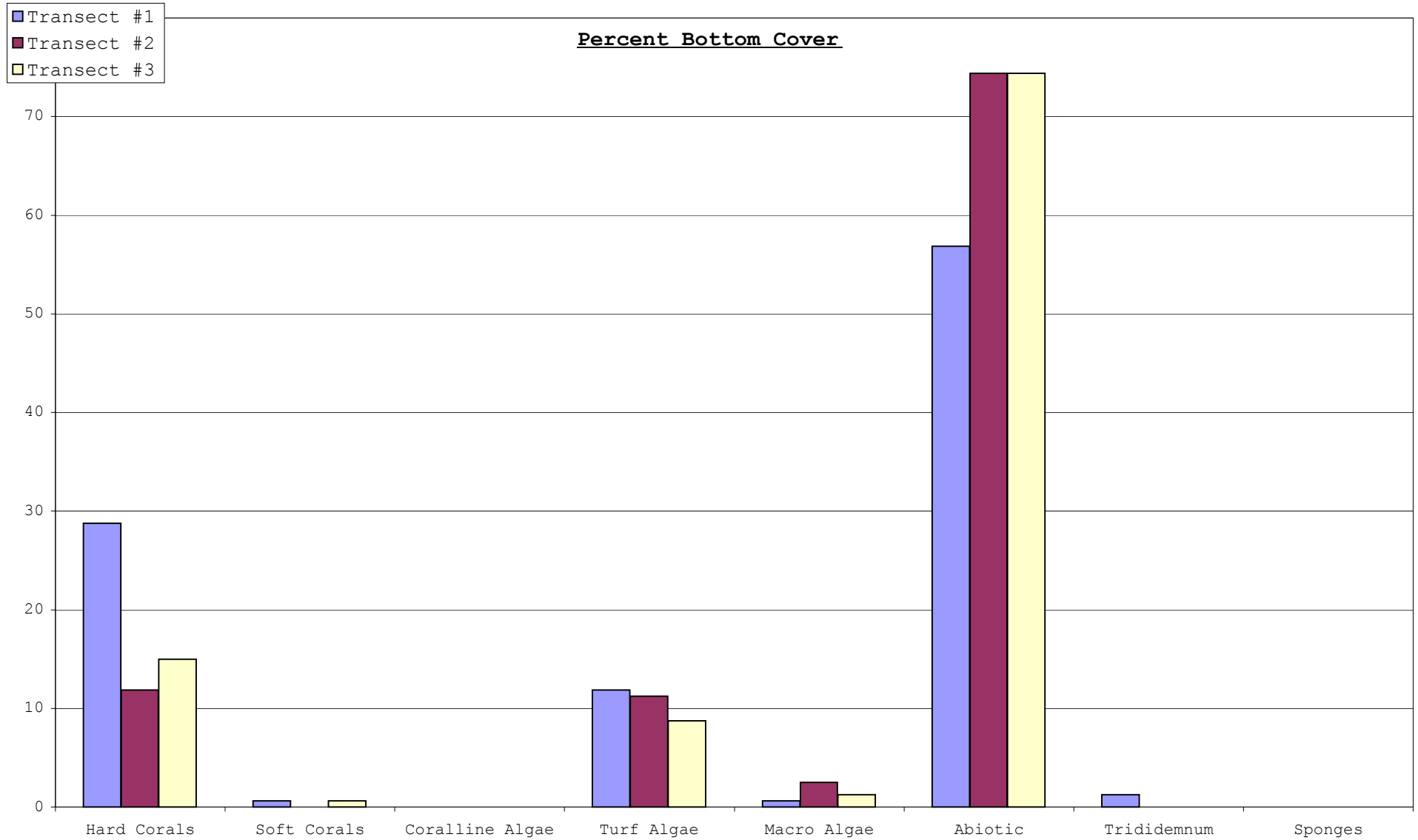
Many juvenile princess parrotfish were observed on the reef ball clusters, as well as large schools of juvenile brown chromis.

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT SUMMARY**

Date : April 19, 2002
Observers: Marjo van den Bulck & Maryke Kolenousky

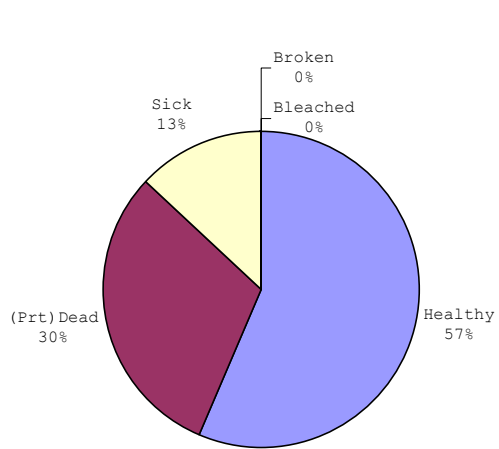
Transect No.	Depth	Hard Corals						Soft Corals	Coralline Algae	Turf Algae	Macro-Algae	Abiotic (Sand)	Trididem-num	Sponges	Total
		Total	Healthy	(Prt)Dead	Sick	Broken	Bleached								
1	12m														
	0-20m	18	12	3	3	0	0	0	0	2	0	19	1	0	40
	25-45m	12	7	4	1	0	0	0	0	6	1	20	1	0	40
	50-70m	11	4	5	2	0	0	1	0	5	0	23	0	0	40
	75-95m	5	3	2	0	0	0	0	0	6	0	29	0	0	40
Mean		12	7	4	2	0	0	0	0	5	0	23	1	0	40
% cover		29	57	30	13	0	0	1	0	12	1	57	1	0	100
standard deviation		5.32	4.04	1.29	1.29	0.00	0.00	0.50	0.00	1.89	0.50	4.50	0.58	0.00	0.00
Transect No.	Depth	Hard Corals						Soft Corals	Coralline Algae	Turf Algae	Macro-Algae	Abiotic (Sand)	Trididem-num	Sponges	Total
		Total	Healthy	(Prt)Dead	Sick	Broken	Bleached								
2	6m														
	0-20m	1	1	0	0	0	0	0	0	3	2	34	0	0	40
	25-45m	10	6	3	0	0	1	0	0	7	2	21	0	0	40
	50-70m	3	3	0	0	0	0	0	0	1	0	36	0	0	40
	75-95m	5	5	0	0	0	0	0	0	7	0	28	0	0	40
Mean		5	4	1	0	0	0	0	0	5	1	30	0	0	40
% cover		12	79	16	0	0	5	0	0	11	3	74	0	0	100
standard deviation		3.86	2.22	1.50	0.00	0.00	0.50	0.00	0.00	3.00	1.15	6.75	0.00	0.00	0.00
Transect No.	Depth	Hard Corals						Soft Corals	Coralline Algae	Turf Algae	Macro-Algae	Abiotic (Sand)	Trididem-num	Sponges	Total
		Total	Healthy	(Prt)Dead	Sick	Broken	Bleached								
3	10m														
	0-20m	11	9	2	0	0	0	1	0	2	0	26	0	0	40
	25-45m	4	1	1	2	0	0	0	0	2	0	34	0	0	40
	50-70m	1	1	0	0	0	0	0	0	2	2	35	0	0	40
	75-95m	8	5	3	0	0	0	0	0	8	0	24	0	0	40
Mean		6	4	2	1	0	0	0	0	4	1	30	0	0	40
% cover		15	67	25	8	0	0	1	0	9	1	74	0	0	100
standard deviation		4.40	3.83	1.29	1.00	0.00	0.00	0.50	0.00	3.00	1.00	5.56	0.00	0.00	0.00

PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT SUMMARY

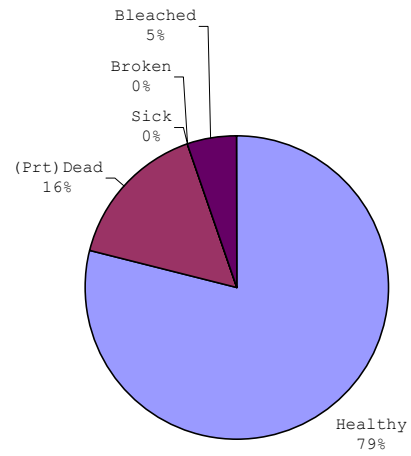


PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECTS - CORAL HEALTH CHART

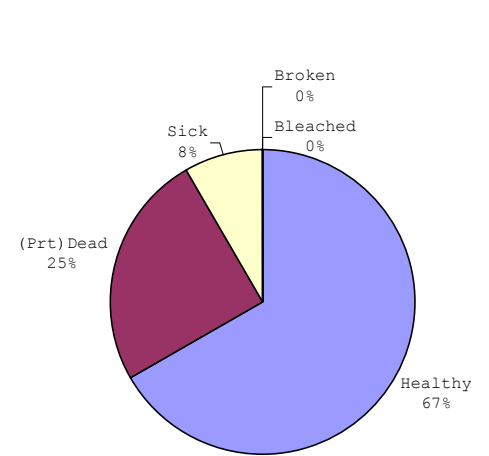
Transect 1, Depth 12m



Transect 2, Depth 6m



Transect 3, Depth 10m



PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 1, Depth 12m, Section 0-20m Visibility: 15m Observers: Maryke Kolenousky, Marjo van den Bulck
 Date: April 19, 2002 Temperature: 26C

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS							
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5																RB	
1																SD	
1.5			smooth						Healthy								
2															TA		
2.5									TA							RC	
3																RC	
3.5																RC	
4					finger				Healthy								
4.5																RC	
5				boulder					Healthy								
5.5			boulder						Sick, Yellow Blotch Disease							SD	
6.5			boulder						Sick, Yellow Blotch Disease								
7						lettuce			Healthy								
7.5						lettuce			Healthy								
8																RC	
8.5															TA		
9																RC	
9.5																RC	
10									Finger coral, dead							RC	
10.5									YA, TA							RB	
11									YA, TA							RC	
11.5									Trididemnum		TR						
12			boulder						Healthy								
12.5									YA, TA							RC	
13					finger				Healthy								
13.5			boulder						Healthy								
14			boulder						Sick, 50%								
14.5									YA, TA							RC	
15									TA							RC	
15.5			great						Healthy								
16					finger				Dead, 100%, TA								
16.5									YA							RC	
17					finger				Healthy								
17.5									TA							RC	
18			boulder						Dead, 100%								
18.5			boulder						Dead, 100%								
19			boulder						Healthy								
19.5		maze							Healthy								
20																SD	
Total	0	1	10	1	4	2	0	0	0	3	12	3	0	0	0	2	19
	0	3	23	3	8	9	0	0	14	26	6	0	0	1	0	19	91 GRAND TOTAL

Substrate Codes:

PD	(Partially) Dead	RC	Rock	YA	Y Algae	BRO	Brown
H	Healthy	RB	Rubble	TA	Turf Algae	YE	Yellow
S	Sick	SD	Sand	BA	Blue Green Algae	PU	Purple
BL	Bleached	MA	Macro Algae	CA	Coralline Algae		
				TR	Trididemnum		

PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT

Transect No: 1, Depth: 12m, Section 25-45m
 Date: April 18, 2002

Visibility: 15m
 Temperature: 26C

Observers: Maryke Kolenousky, Marjo van den Bulck

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER									
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics			
0.5																			
1															TA		SD		
1.5																	SD		
2																	SD		
2.5																	SD		
3			blushing						Healthy										
3.5						lettuce			Healthy, part of the mound is d										
4					finger				Sick										
4.5									Trididemnum		TR								
5																	RB		
5.5																	RC		
6															TA				
6.5																	RB		
7									TA								RB		
7.5																	TA		
8																	BA		
8.5									YA, near mustard								RC		
9																	BA		
9.5																	YA		
10																	SD		
10.5			boulder						Dead, 40%, damselfish damage										
11									Macro Algae				YA						
11.5																	SD		
12																	SD		
12.5						lettuce			Dead 100% with YA & TA										
13			boulder						Dead 100%										
13.5		mustard							Healthy										
14			boulder						Healthy										
14.5					finger				Healthy										
15						lettuce			Healthy (15&15.5m--one clump)										
15.5						lettuce			Dead, 100%										
16					finger				Healthy										
16.5									TA								RC		
17																	RB		
17.5									TA								RB		
18									YA								SD		
18.5																	SD		
19																	SD		
19.5									YA								RC		
20									YA								RC		
									PD	H	S	BL							
Total	0	1	4	0	3	4	0	0	4	7	1	0	0	0	1	0	1	6	20

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
		TR Trididemnum	

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 1, Depth 12m, Section 50-70m
Date: April 18, 2002

Visibility: 15m
Temperature: 26C

Observers: Marjo van den Bulck, Maryke Kolenousky

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER										
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics				
0.5																YA				
1			boulder						Sick											
1.5																YA				
2																	SD			
2.5																	SD			
3																BA				
3.5			blushing						Sick, partially covered by tri											
4																	RC			
4.5																	RC			
5																	RB			
5.5		mustard							Healthy , 10cm diameter											
6						lettuce			Healthy											
6.5															TA					
7																	SD			
7.5																	SD			
8																	SD			
8.5																	SD			
9																	SD			
9.5																	SD			
10																	SD			
10.5																	SD			
11																	SD			
11.5				brain					Healthy - 11.5 & 12m are one m											
12				brain					Healthy											
12.5															YA					
13			boulder						Dead 100%, TA											
13.5			boulder						Dead 100%, TA											
14					pencil				Dead 100%, damselfish damage											
14.5			boulder						Dead 100%											
15			boulder						Dead 100%, YA											
15.5									Sea rod, healthy	purple										
16																	SD			
16.5									TA								RB			
17									TA, YA								RC			
17.5																	SD			
18																	SD			
18.5																	SD			
19																	RB			
19.5																	SD			
20																	SD			
Total	0	1	6	2	1	1	0	0	0	5	4	2	0	1	0	0	0	0	5	23

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
		TR Trididemnum	

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 1, Depth 12m, Section 75-95m
Date: April 18, 2002

Visibility: 15m
Temperature: 26C

Observers: Marjo van den Bulck, Maryke Kolenousky

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5																RC	
1																SD	
1.5																RB	
2																RB	
2.5																RB	
3																	
3.5															TA		
4															BA		
4.5																SD	
5															YA		
5.5															TA		
6																SD	
6.5						encrusting boulder											
7																	
7.5															YA		
8																SD	
8.5																SD	
9																SD	
9.5																SD	
10																SD	
10.5															TA		
11																RC	
11.5																SD	
12																RC	
12.5																	
13																	
13.5																RC	
14																RC	
14.5																RC	
15																RC	
15.5																RC	
16																SD	
16.5																SD	
17																SD	
17.5																	
18																	
18.5																RC	
19																RC	
19.5																RB	
20																SD	
																SD	
Total	0	0	3	0	0	2	0	0	0	2	3	0	0	0	0	6	29

Substrate Codes:

PD	(Partially) Dead	RC	Rock	YA	Y Algae	BRO	Brown
H	Healthy	RB	Rubble	TA	Turf Algae	YE	Yellow
S	Sick	SD	Sand	BA	Blue Green Algae	PU	Purple
BL	Bleached	MA	Macro Algae	CA	Coralline Algae		
				TR	Trididemnum		

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 2, Depth 6m, Section 0-20m
Date: April 17, 2002

Visibility: over 30m
Temperature: 26C

Observers: Marjo van den Bulck, Maryke Kolenousky

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER						
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics
0.5																RB
1																RB
1.5				Grooved					Healthy							
2																YA
2.5																RB
3																RB
3.5																SD
4																SD
4.5																SD
5																SD
5.5									Y Algae							RB
6																YA
6.5																YA
7																SD
7.5									Y Algae							RB
8									Turf Algae							RB
8.5																RB
9																SD
9.5																RB
10																SD
10.5																SD
11																RC
11.5																RC
12																RC
12.5									Turf Algae							RC
13																RC
13.5																MA
14																MA
14.5																SD
15																SD
15.5																RB
16																RB
16.5																RB
17																RC
17.5																SD
18																RB
18.5																RB
19																RB
19.5																RB
20																RB
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3	34
	0	1	13	3	0	1	1	0	3	15	0	1	0	4	18	119

Substrate Codes:																
PD	(Partially) Dead	RC	Rock	YA	Y Algae	BRO	Brown									
H	Healthy	RB	Rubble	TA	Turf Algae	YE	Yellow									
S	Sick	SD	Sand	BA	Blue Green Algae	PU	Purple									
BL	Bleached	MA	Macro Algae	CA	Coralline Algae											
				TR	Trididemnum											

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 2, Depth 6m, Section 25-45m Visibility: over 30m Observers: Marjo van den Bulck, Maryke Kolenousky
Date: April 17, 2002 Temperature: 26C

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER										
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics				
0.5															YA					
1																RB				
1.5																RB				
2																RC				
2.5																RB				
3																TA				
3.5																YA				
4									Near a brain coral							YA				
4.5																RB				
5				brain					Healthy 10cm diameter											
5.5				brain					Healthy 20cm diameter											
6																TA				
6.5																SD				
7																RC				
7.5																TA				
8		mustard hill							Healthy											
8.5																RB				
9																YA				
9.5																RB				
10																RB				
10.5				boulder					Healthy											
11				boulder					Dead 100%											
11.5									Turf Algae							RC				
12									Turf Algae							RC				
12.5																SD				
13																SD				
13.5																SD				
14				boulder					Healthy											
14.5				boulder					bleached 100%											
15				boulder					Healthy											
15.5																RB				
16																RC				
16.5																RB				
17				boulder					Dead, partially											
17.5																MA				
18																RC				
18.5																MA				
19																SD				
19.5								Fire	Dead, partially											
20									Turf Algae							RB				
Total	0	1	6	2	0	0	0	1	0	3	6	0	1	0	0	0	0	2	7	21

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
		TR Trididemnum	

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 2, Depth 6m, Section 50-70m
Date: April 17, 2002

Visibility: over 30m
Temperature: 26C

Observers: Marjo van den Bulck, Maryke Kolenousky

M	HARD CORALS							CONDITION/REMARKS	SOFT CORALS/OTHER								
	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics		
0.5																SD	
1																RB	
1.5																RC	
2																SD	
2.5					lettuce			Healthy									
3																RC	
3.5								Y Algae								RC	
4																RC	
4.5		boulder						Healthy									
5								Y Algae								RC	
5.5								near a star coral								SD	
6																RB	
6.5																RC	
7		boulder						Healthy									
7.5													YA				
8																SD	
8.5																RC	
9																RB	
9.5																RB	
10																RC	
10.5								BA								SD	
11																RC	
11.5																RB	
12																RB	
12.5								TA								RC	
13																RB	
13.5																SD	
14								TA								RC	
14.5																RB	
15																RB	
15.5																RC	
16																RB	
16.5								TA								RB	
17																RB	
17.5																RB	
18								TA								RC	
18.5																SD	
19								TA								RC	
19.5																RB	
20								TA								RB	
									PD	H	S	BL					
Total	0	0	2	0	0	1	0	0	0	3	0	0				1	36

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
	TR Trididemnum		

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 2, Depth 6m, Section 75-95m
Date: April 17, 2002

Visibility: over 30m
Temperature: 26C

Observers: Marjo van den Bulck, Maryke Kolenousky

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5																RB	
1			boulder						Healthy								
1.5			boulder						Healthy								
2			boulder						Healthy								
2.5			boulder						Healthy								
3																TA	
3.5									near a smooth star coral							TA	
4																TA	
4.5																	RB
5																	SD
5.5																	RB
6																YA	
6.5																	SD
7																TA	
7.5																TA	
8																	SD
8.5																YA	
9									near a star coral								RC
9.5			boulder						Healthy								
10																	RC
10.5																	RC
11									TA								RC
11.5									TA								RB
12									TA								RC
12.5									TA								RC
13									TA								RC
13.5																	SD
14																	SD
14.5																	RB
15																	RB
15.5																	SD
16																	SD
16.5																	RB
17									TA								RC
17.5									TA								RB
18																	RB
18.5									TA								RC
19									TA								RB
19.5									TA								RC
20									TA								RC
Total	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	7	28

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
	TR Trididemnum		

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 3, Depth 10m, Section 0-20m
Date: April 17, 2002

Visibility: over 30m
Temperature: 26C

Observers: Maryke Kolenousky, Marjo van den Bulck

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5																RB	
1																RB	
1.5																SD	
2									YA & TA							RC	
2.5															YA		
3									Yellow, healthy	sea plume							
3.5																RC	
4																SD	
4.5																SD	
5															YA		
5.5									Rubble consists of dead gorgon							RB	
6									TA							RC	
6.5						lettuce			Healthy								
7																RB	
7.5																SD	
8																RB	
8.5									YA							RC	
9						lettuce			Healthy, near star coral								
9.5			smooth						Healthy, near star coral								
10																RC	
10.5			boulder						Healthy								
11						lettuce			Healthy								
11.5																RC	
12				symmetrical					Healthy								
12.5				symmetrical					Healthy								
13																SD	
13.5																SD	
14																SD	
14.5																RB	
15																SD	
15.5																RB	
16																SD	
16.5																RB	
17						lettuce			Dead, partially								
17.5			boulder						Healthy								
18																RB	
18.5																SD	
19				symmetrical					Healthy								
19.5			boulder						Dead, partially								
20																SD	
Total	0	0	4	3	0	4	0	0	0	2	9	0	0	0	0	2	26
	0	0	13	3	0	7	1	0	6	16	2	0	0	0	2	14	119

Substrate Codes:

PD (Partially) Dead	RC	Rock	YA	Y Algae	BRO	Brown
H Healthy	RB	Rubble	TA	Turf Algae	YE	Yellow
S Sick	SD	Sand	BA	Blue Green Algae	PU	Purple
BL Bleached	MA	Macro Algae	CA	Coralline Algae		
			TR	Trididemnum		

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 3, Depth 10m, Section 25-45m Visibility: over 30m Observers: Maryke Kolenousky, Marjo van den Bulck
Date: April 17, 2002 Temperature: 26C

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5																SD	
1																SD	
1.5																SD	
2																SD	
2.5									near lettuce							RC	
3									near fire							RB	
3.5																SD	
4																RB	
4.5																SD	
5									TA							SD	
5.5																SD	
6																SD	
6.5																SD	
7									TA, near star coral							RC	
7.5									TA, near maze coral							RC	
8																RB	
8.5																SD	
9																RC	
9.5																SD	
10																RC	
10.5									TA							RC	
11									TA							RC	
11.5																SD	
12									TA							RC	
12.5																SD	
13									TA							RC	
13.5									TA							RC	
14														YA			
14.5																SD	
15			boulder						Sick								
15.5			boulder						Sick								
16									TA							RC	
16.5						lettuce			Dead, partially								
17						lettuce			Healthy								
17.5																SD	
18																SD	
18.5														BA			
19																SD	
19.5									TA							RB	
20									TA							RC	
Total	0	0	2	0	0	2	0	0	0	1	1	2	0	0	0	2	34

Substrate Codes:

PD	(Partially) Dead	RC	Rock	YA	Y Algae	BRO	Brown
H	Healthy	RB	Rubble	TA	Turf Algae	YE	Yellow
S	Sick	SD	Sand	BA	Blue Green Algae	PU	Purple
BL	Bleached	MA	Macro Algae	CA	Coralline Algae		
				TR	Trididemnum		

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 3, Depth 10m, Section 50-70m
Date: April 17, 2002

Visibility: over 30m
Temperature: 26C

Observers: Maryke Kolenousky, Marjo van den Bulck

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5									BA							RB	
1			boulder						Healthy								
1.5									YA								RC
2									BA								RC
2.5									YA								SD
3									YA								RC
3.5																YA	
4																YA	
4.5																	SD
5																	RB
5.5									TA								RB
6									TA								RB
6.5																	RB
7																	SD
7.5									TA & YA								RB
8																	SD
8.5									YA								RB
9																	RB
9.5																	RB
10									TA								RC
10.5									TA								RC
11																	RB
11.5									TA								RC
12									TA								RC
12.5									YA								RC
13									YA								RC
13.5																	SD
14																	SD
14.5																	RC
15																	
15.5																MA	
16																	RB
16.5																	SD
17																	RC
17.5																	RC
18																	RC
18.5																	RC
19																	SD
19.5																	RB
20																	RC
Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2	35

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
	TR Trididemnum		

**PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT**

Transect No: 3, Depth 10m, Section 75-95m
Date: April 17, 2002

Visibility: over 30m
Temperature: 26C

Observers: Maryke Kolenousky, Marjo van den Bulck

M	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER						
	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididemnum	Coralline A	Macro Algae	Algae	Abiotics
0.5																SD
1																RB
1.5																RB
2															TA	
2.5																RB
3																RB
3.5						lettuce			Healthy							
4									BA							RC
4.5									BA							RC
5							fire coral		Healthy							
5.5															YA	
6															BA	
6.5			boulder						Healthy							
7															BA	
7.5																SD
8																RB
8.5									YA							RC
9																SD
9.5									YA							RC
10			blushing						Healthy							
10.5			boulder						Dead, partially							
11															TA	
11.5															TA	
12															TA	
12.5															TA	
13			boulder						Healthy							
13.5																RB
14																RB
14.5									TA							RC
15									TA							RC
15.5			boulder						Dead, 100%							
16																RC
16.5			boulder						Dead, 100%							
17									TA							RC
17.5									TA							RB
18									YA							SD
18.5									YA							RB
19																RB
19.5																SD
20																RC
Total	0	0	6	0	0	1	1	0	3	5	0	0	0	0	8	24

Substrate Codes:

PD (Partially) Dead	RC Rock	YA Y Algae	BRO Brown
H Healthy	RB Rubble	TA Turf Algae	YE Yellow
S Sick	SD Sand	BA Blue Green Algae	PU Purple
BL Bleached	MA Macro Algae	CA Coralline Algae	
		TR Trididemnum	

PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT SUMMARY: FISH and INVERTEBRATES

April 2002

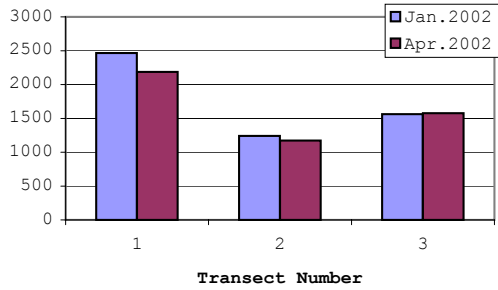
Data collected by: Marjo van den Bulck & Maryke Kolenousky

PORTOMARI Atlantic Belt Transects		West side of Bay		East side	Total	Mean	St.Dev.
		Transect 1 Depth:12m	Transect 2 Depth: 6m	Transect 3 Depth:10m			
ANGELFISH	Cherubfish	1	20	4	25	8.33	10.21
	French Angelfish			1	1	0.33	0.58
	Queen Angelfish						
	Rock Beauty			1	1	0.33	0.58
BASSLET	Fairy Basslet	12		9	21	7.00	6.24
BOXFISH	Honeycomb Cowfish						
	Smooth Trunkfish						
BUTTERFLYFISH	Spotted Trunkfish		1	1	2	0.67	0.58
	Banded Butterflyfish		4	2	6	2.00	2.00
	Foureye Butterflyfish			2	2	0.67	1.15
	Longsnout Butterflyfish	1	1		2	0.67	0.58
CHROMIS	Blue Chromis	105	5	26	136	45.33	52.73
	Brown Chromis	1121	163	488	1772	590.67	487.18
DAMSELFISH	Bicolor Damselfish	233	395	429	1057	352.33	104.73
	Cocoa Damselfish		7	5	12	4.00	3.61
	Dusky Damselfish	1	38	25	64	21.33	18.77
	Sergeant Major		1	18	19	6.33	10.12
	Threespot Damselfish	93	13	42	148	49.33	40.50
	Yellowtail Damselfish	4	2		6	2.00	2.00
DRUM	Spotted Drum	4			4	1.33	2.31
EEL	Goldentail Moray			1	1	0.33	0.58
	Spotted Moray	2	1		3	1.00	1.00
FILEFISH	Orangespotted Filefish		3	1	4	1.33	1.53
FLOUNDER	Peacock Flounder						
GOATFISH	Spotted Goatfish	1			1	0.33	0.58
GOBY	Yellow Goatfish	43	12	28	83	27.67	15.50
	Bridled Goby	181	167	122	470	156.67	30.83
GROUPE	Neon Goby		7	3	10	3.33	3.51
	Peppermint Goby	6	4	5	15	5.00	1.00
	Coney		4	2	6	2.00	2.00
	Graysby	17	4	11	32	10.67	6.51
	Red Hind						
GRUNT	Tiger Grouper						
	Bluestriped Grunt	1	3	2	6	2.00	1.00
	French Grunt	8	9	16	33	11.00	4.36
	Striped Grunt	45	3	3	51	17.00	24.25
HAMLET	Barred Hamlet	2	1	2	5	1.67	0.58
	Black Hamlet		1		1	0.33	0.58
	Butter Hamlet	1	2	2	5	1.67	0.58
	Yellowtail Hamlet	5		9	14	4.67	4.51
HOGFISH	Spanish Hogfish	1	1	5	7	2.33	2.31
JACK	Bar Jack	3		2	5	1.67	1.53
PARROTFISH	Blue Parrotfish						
	Princess Parrotfish	47	11	55	113	37.67	23.44
	Queen Parrotfish	46	30	29	105	35.00	9.54
	Redband Parrotfish	21	10	7	38	12.67	7.37
	Striped Parrotfish			1	1	0.33	0.58
	Stoptlight Parrotfish	21	12	11	44	14.67	5.51
PUFFER	Balloonfish	1			1	0.33	0.58
	Sharpnose Puffer	6	6	8	20	6.67	1.15
SCORPIONFISH	Spotted Scorpionfish	2			2	0.67	1.15
SEABASS	Harlequin Bass	4	16	8	28	9.33	6.11
	Creolefish			1	1	0.33	0.58
SNAPPER	Mahogany Snapper						
	Schoolmaster	19	2	3	24	8.00	9.54
	Yellowtail Snapper	1			1	0.33	0.58
SQUIRRELFISH	Blackbar Soldierfish	6	12	12	30	10.00	3.46
SURGEONFISH	Squirrelfish	3			3	1.00	1.73
	Blue Tang	9	6	6	21	7.00	1.73
	Doctorfish	1		7	8	2.67	3.79
	Ocean Surgeon			1	1	0.33	0.58
WRASSE	Bluehead Wrasse	28	152	83	263	87.67	62.13
	Clown Wrasse	1	2	2	5	1.67	0.58
	Creole Wrasse	33		1	34	11.33	18.77
	Puddingwife		3		4	1.33	1.53
	Slippery Dick	1	15	12	28	9.33	7.37
	Yellowhead Wrasse	41	35	52	128	42.67	8.62
OTHERS	Cornetfish						
	Redspotted Hawkfish						
	Lizardfish		2		2	0.67	1.15
	Sand Diver	1			1	0.33	0.58
	Greater Soapfish		1		1	0.33	0.58
	Trumpetfish	5	6	9	20	6.67	2.08
TOTAL		2187	1173	1576	4936	1645.33	
Invertebrates		Transect 1 Depth:12m	Transect 2 Depth: 6m	Transect 3 Depth:10m	Total	Mean	St.Dev.
ANEMONE	Beaded Anemone	28	22	8	58	19.33	10.26
	Carpet Anemone		2		2	0.67	1.15
	Corkscrew Anemone	9	3	2	14	4.67	3.79
	Giant Anemone	6	32	12	50	16.67	13.61
TUBE WORMS	Christmas tree Worms	296	487	276	1059	353.00	116.48
	Ghost Feather Duster		5	1	6	2.00	2.65
	Split Crown Feather Duster	8	11	22	41	13.67	7.37
	Magnificent Feather Duster	3	9	2	14	4.67	3.79
CRUSTACEANS	Variegated Feather Duster	3			3	1.00	1.73
	Banded Coral Shrimp	1	6		7	2.33	3.21
	Spotted Cleaner Shrimp	1	1		2	0.67	1.15
	Pederson Cleaner Shrimp	24	7	10	41	13.67	9.07
	Red Snapping Shrimp						
MOLLUSKS	Yellowline Arrow Crab						
	Amber Pen Shell			1	1	0.33	0.58
	Rough File Clam	2	3		5	1.67	1.53
	Spiny File Clam						
ECHINODERMS	Lettuce Sea Slug		1		1	0.33	0.58
	Queen Conch	1	2		3	1.00	1.00
	Reef Urchin	3	5		8	2.67	2.52
	Tigertail Sea Cucumber						
TOTAL		384	596	334	1314.00	438.00	

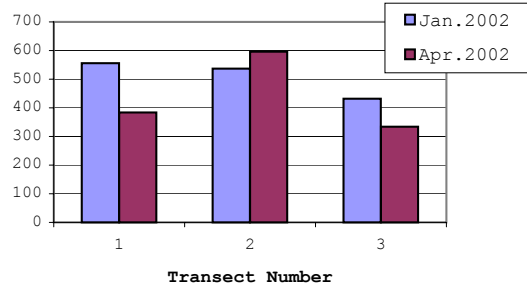
**PORTOMAREA MARINE MONITORING
FISH AND INVERTEBRATE QUARTERLY COMPARISON**

	Transect 1 - Depth 12m		Transect 2 - Depth 6m		Transect 3 - Depth 10m	
	Jan.2002	Apr. 2002	Jan.2002	Apr. 2002	Jan. 2002	Apr. 2002
Fish	2466	2187	1241	1173	1562	1576
Invertebrates	556	384	537	596	432	334

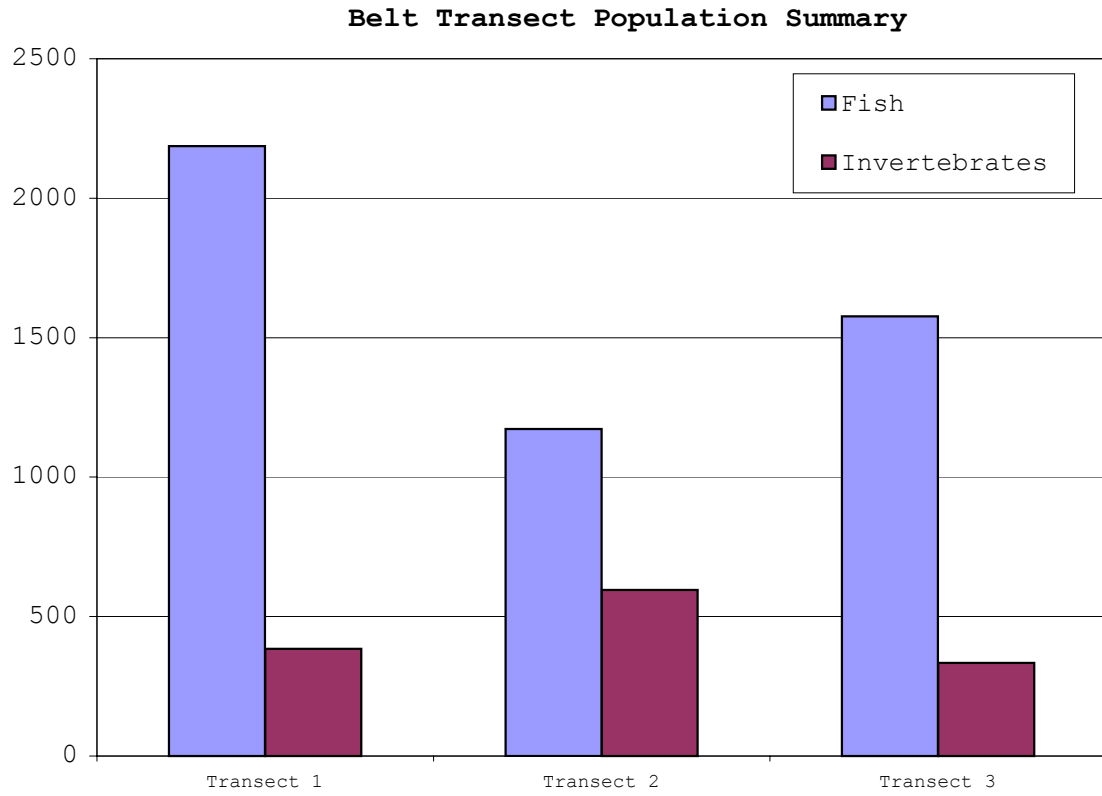
Fish Population Quarterly Comparison



Invertebrate Population Quarterly Comparison



PORTOMAREA MARINE MONITORING
ATLANTIC BELT TRANSECT FISH AND INVERTEBRATE SUMMARY



PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT: FISH and INVERTEBRATES

Transect #1, Depth: 12m

Date: April 15, 200 Time: 9:09 a.m.

Data collected by: Marjo van den Bulck & Maryke Kolenousky

Atlantic Belt Transect: Fish		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANGELFISH	Cherubfish	1				1	0.25	0.50
	Queen Angelfish							
	Rock Beauty							
BARRACUDA								
BASSLET	Fairy Basslet	4	5		3	12	3	2.16
BIGEYE								
BLENNY								
BOXFISH	Smooth Trunkfish							
	Spotted Trunkfish							
BUTTERFLYFISH	Banded Butterflyfish							
	Longsnout Butterflyfish			1		1	2	0.50
CARDINALFISH								
CHROMIS	Blue Chromis	35	6	33	31	105	26.25	13.60
	Brown Chromis	90	150	181	700	1121	280.25	282.37
DAMSELFISH	Bicolor	42	55	64	72	233	58.25	12.87
	Dusky Damselfish			1		1	0.25	0.50
	Threespot	22	21	25	25	93	23.25	2.06
	Yellowtail			4		4	1.00	2.00
DRUM	Spotted Drum		3	1		4	1	1.41
EEL	Spotted Moray	1	1			2	0.50	0.58
FILEFISH	Orangespotted Filefish							
FLOUNDER								
GOATFISH	Yellow Goatfish	5	21	6	11	43	10.75	7.32
	Spotted Goatfish		1			1		
GOBY	Bridled Goby	14	26	51	90	181	45.25	33.58
	Neon Goby							
	Peppermint Goby				6	6	1.50	3.00
GROUPEL	Graysby	4	5	2	6	17	4.25	1.71
	Red Hind							
GRUNT	Bluestriped Grunt			1		1	0.25	0.50
	French Grunt	3	1	1	3	8	2.00	1.15
	Striped Grunt	20	2	22	1	45	11.25	11.30
HAMLET	Barred Hamlet			1	1	2	0.5	0.58
	Butter Hamlet		1			1		
	Yellowtail Hamlet	3			2	5	1.25	1.50
HOGFISH	Spanish Hogfish	1				1	0.25	0.50
JACK	Bar Jack		2	1		3	0.75	0.96
PARROTFISH	Blue Parrotfish							
	Princess Parrotfish	11	11	14	11	47	11.75	1.50
	Queen Parrotfish	12	9	9	10	40	10.00	1.41
	Redband Parrotfish	4	10	2	5	21	5.25	3.40
	Stoplight Parrotfish	7	5	7	2	21	5.25	2.36
PUFFER	Balloonfish		1			1	0.25	0.50
	Sharpnose Puffer	3		1	2	6	1.5	1.29
RAY								
SCORPIONFISH	Spotted Scorpionfish			1	1	2	0.5	0.58
SEABASS	Harlequin Bass		2	1	1	4	1	0.82
SNAPPER	Schoolmaster	4	15			19	4.75	7.09
	Yellowtail Snapper				1	1	0.25	0.50
SQUIRRELFISH	Blackbar Soldierfish	4		2		6	1.50	1.91
	Squirrelfish		1	1	1	3	0.75	0.50
SURGEONFISH	Blue Tang	1	2	4	2	9	2.25	1.26
	Doctorfish			1		1	0.25	0.50
	Ocean Surgeon							
WRASSE	Bluehead Wrasse	10	6	9	3	28	7	3.16
	Clown Wrasse				1	1		
	Creole Wrasse	26	6	1		33	8.25	12.12
	Slippery Dick		1			1		
	Yellowhead Wrasse	11	7	9	14	41	10.25	2.99
OTHERS	Cornetfish							
	Sand Diver		1			1	0.25	0.50
	Trumpetfish	2	3			5	1.25	1.50
TOTAL		339	380	457	1005	2181	545.25	
Atlantic Belt Transect: Invertebrates		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANEMONE	Beaded Anemone	6	12	4	6	28	7.00	3.46
	Corkscrew Anemone	3		3	3	9	2.25	1.50
	Giant Anemone	1	2	1	2	6	1.5	0.58
TUBE WORMS	Christmas tree Worms	68	92	78	58	296	74.00	14.51
	Ghost Feather Duster	2	1					
	Split Crown Feather Duster	1		7		8	2.00	3.37
	Magnificent Feather Duster	1			2	3	0.75	0.96
	Variegated Feather Duster	1			2	3	0.75	0.96
CRUSTACEANS	Banded Coral Shrimp				1	1	0.25	0.50
	Pederson Cleaner Shrimp	4	7	3	10	24	6	3.16
	Spotted Cleaner Shrimp							
	Yellowline Arrow Crab							
MOLLUSKS	Rough File Clam			1	1	2	0.5	0.58
	Queen Conch			1		1	0.25	0.50
ECHINODERMS	Reef Urchin				3	3	0.75	1.50
TOTAL		87	114	98	88	384	96.75	

Abundance of Y algae. Heavy damselfish damage observed. Diver damage: several broken-off coral pieces.

Queen conch in 3rd section of transect: 3" long

Blue-green algae totally covered large mound of pencil coral and patch of flower coral.

Lots of corals covered in algae. Large mound of star coral had 90% bleaching.

PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT: FISH and INVERTEBRATES

Transect #2, Depth: 6m

Date: April 11, 2002

Time: 9:16 a.m.

Data collected by: Marjo van den Bulck & Maryke Kolenousky

Atlantic Belt Transect: Fish		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANGELFISH	Cherubfish		14	4	2	20	5.00	6.22
	French Angelfish							
BARRACUDA								
BASSLET								
BIGEYE								
BLENNY								
BOXFISH	Honeycomb Cowfish							
	Spotted Trunkfish				1	1	0.25	0.50
BUTTERFLYFISH	Banded Butterflyfish			2	2	4	1.00	1.15
	Foureye Butterflyfish							
	Longsnout Butterflyfish	1				1	0.25	0.50
CARDINALFISH								
	Blue Chromis			4	1	5	1.25	1.89
CHROMIS	Brown Chromis		55	50	58	163	40.75	27.37
DAMSELFISH	Bicolor Damselfish	84	174	72	65	395	98.75	50.78
	Cocoa Damselfish	1	1	3	2	7	1.75	0.96
	Dusky Damselfish	7	3	20	8	38	9.50	7.33
	Sergeant Major			1		1	0.25	0.50
	Threespot Damselfish			8	5	13	3.25	3.95
	Yellowtail Damselfish			2		2	0.50	1.00
DRUM								
EEL	Goldentail Moray							
	Spotted Moray			1		1	0.25	0.50
FILEFISH	Orangespotted Filefish	1			2	3	0.75	0.96
FLOUNDER	Peacock Flounder							
GOATFISH	Spotted Goatfish							
	Yellow Goatfish		3	6	3	12	3.00	2.45
GOBY	Bridled Goby	48	27	50	42	167	41.75	10.40
	Neon Goby		1	6		7	1.75	2.87
	Peppermint Goby		3		1	4	1.00	1.41
GROUPER	Coney	1	1		2	4	1.00	0.82
	Graysby			3	1	4	1.00	1.41
GRUNT	Bluestriped Grunt	1	1		1	3	0.75	0.50
	French Grunt	2		4	3	9	2.25	1.71
	Striped Grunt			2	1	3	0.75	0.96
HAMLET	Barred Hamlet				1	1	0.25	0.50
	Black Hamlet				1	1	0.25	0.50
	Butter Hamlet			2		2	0.50	1.00
HOGFISH	Spanish Hogfish				1	1	0.25	0.50
JACK								
PARROTFISH	Blue Parrotfish							
	Princess Parrotfish		9		2	11	2.75	4.27
	Queen Parrotfish	16	7	3	4	30	7.50	5.92
	Redband Parrotfish	2	3	4	1	10	2.50	1.29
	Stoplight Parrotfish	4	4	3	1	12	3.00	1.41
PUFFER	Sharpnose Puffer	1	1	2	2	6	1.50	0.58
RAY								
SCORPIONFISH								
SEABASS	Harlequin Bass	6	4	3	3	16	4.00	1.41
SNAPPER	Schoolmaster			1	1	2	0.50	0.58
SQUIRRELFISH	Blackbar Soldier		3	5	4	12	3.00	2.16
	Squirrelfish							
SURGEONFISH	Blue Tang	2	1		3	6	1.50	1.29
	Ocean Surgeon							
WRASSE	Bluehead Wrasse	58	52	9	33	152	38.00	22.08
	Clown Wrasse	2				2	0.50	1.00
	Puddingwife			3		3	0.75	1.50
	Slippery Dick	5	5	3	2	15	3.75	1.50
	Yellowhead Wrasse	8	13	5	9	35	8.75	3.30
OTHERS	Redspotted Hawkfish							
	Lizardfish				2	2	0.50	1.00
	Sand Diver							
	Trumpetfish	1	2	2	1	6	1.50	0.58
	Greater Soapfish				1	1	0.25	0.50
TOTAL		251	373	280	269	1173	293.25	
Atlantic Belt Transect: Invertebrates		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANEMONE	Beaded Anemone	3		6	13	22	5.5	5.57
	Carpet Anemone			2		2	0.50	1.00
	Corkscrew Anemone			3		3	0.75	1.50
	Giant Anemone	9	8	3	12	32	8.00	3.74
TUBE WORMS	Christmas tree Worms	138	26	191	132	487	121.75	69.12
	Ghost Feather Duster	3		2		5	1.25	1.50
	Split Crown Feather Duster		6	5		11	2.75	3.20
	Variagated Feather Duster							
CRUSTACEANS	Magnificent Feather Duster	4	2	2	1	9	2.25	1.26
	Banded Coral Shrimp	2		2	2	6	2.00	
	Pederson Cleaner Shrimp	4		2	1	7	1.75	1.71
	Spotted Cleaner Shrimp			1		1	0.25	0.50
MOLLUSKS	Yellowline Arrow Crab							
	Lettuce Sea Slug			1		1	0.25	0.50
	Queen Conch	1			1	2	0.50	0.58
ECHINODERMS	Rough Fileclam			2	1	3	0.75	0.96
	Reef Urchin			3	2	5	1.25	1.50
	Tigertail Sea Cucumber							
TOTAL		164	42	225	165	596	149.00	

Two 2.5ft. Ceros (Mackerel family) were hovering at the top of the reef slope.
Queen conch in section 4 was 4" long.

PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT: FISH and INVERTEBRATES

Transect #3, Depth: 10m

Date: April 12, 2002

Time: 9:05 a.m.

Data collected and recorded by: Marjo van den Bulck & Maryke Kolenousky

Atlantic Belt Transect: Fish		0-20m	25-45m	50-70m	75-95m	Total	Mean	St.Dev.
ANGELFISH	Cherubfish	3	1			4	1.00	1.41
	French Angelfish		1			1	0.25	0.50
	Rock Beauty		1			1	0.25	0.50
BARRACUDA								
BASSLET	Fairy Basslet	2		4	3	9	2.25	1.71
BIGEYE								
BLENNY								
BOXFISH	Smooth Trunkfish							
	Spotted Trunkfish		1			1	0.25	0.50
BUTTERFLYFISH	Foureye Butterflyfish	2				2	0.50	1.00
	Banded Butterflyfish		2			2	0.50	1.00
CARDINALFISH								
CHROMIS	Blue Chromis	6	17	1	2	26	6.50	7.33
	Brown Chromis	85	146	202	55	488	122.00	65.41
DAMSELFISH	Bicolor Damselfish	92	143	111	83	429	107.25	26.54
	Cocoa Damselfish				5	5	1.25	2.50
	Dusky Damselfish	5		7	13	25	6.25	5.38
	Sergeant Major	18				18	4.50	9.00
	Threespot Damselfish	28	5	7	2	42	10.50	11.85
Yellowtail Damselfish								
DRUM								
EEL	Goldentail Moray		1			1	0.25	0.50
	Spotted Moray							
FILEFISH	Orangespotted Filefish			1		1	0.25	0.50
FLOUNDER	Peacock Flounder							
GOATFISH	Spotted Goatfish							
	Yellow Goatfish	4	13	11		28	7.00	6.06
GOBY	Bridled Goby	50	32	22	18	122	30.50	14.27
	Neon Goby		1		2	3	0.75	0.96
	Peppermint Goby	1		1	3	5	1.25	1.26
GROUPEL	Coney			2		2	0.50	1.00
	Graysby	3	2	2	4	11	2.75	0.96
	Red Hind							
	Tiger Grouper							
GRUNT	Bluestriped Grunt		1	1		2	0.50	0.58
	French Grunt	2	5	3	6	16	4.00	1.83
	Striped Grunt	2			1	3	0.75	0.96
HAMLET	Barred Hamlet		1		1	2	0.50	0.58
	Butter Hamlet				2	2	0.50	1.00
	Yellowtail Hamlet	3	3	2	1	9	2.25	0.96
HOGFISH	Spanish Hogfish	3	1	1		5	1.25	1.26
JACK	Bar Jack	1			1	2	0.50	0.58
PARROTFISH	Blue Parrotfish							
	Princess Parrotfish	4	37	8	6	55	13.75	15.59
	Queen Parrotfish	9	12	6	2	29	7.25	4.27
	Redband Parrotfish	3	2	2		7	1.75	1.26
	Stoplight Parrotfish	4	3		4	11	2.75	1.89
	Striped Parrotfish	1				1	0.25	0.50
PUFFER	Sharpnose Puffer	4	2	2		8	2.00	1.63
RAY								
SCORPIONFISH								
SEABASS	Creolefish			1		1	0.25	0.50
	Harlequin Bass	1		2	5	8	2.00	2.16
SNAPPER	Mahogany Snapper							
	Schoolmaster	1		1	1	3	0.75	0.50
SQUIRRELFISH	Blackbar Soldierfish	10	1	1		12	3.00	4.69
	Squirrelfish							
SURGEONFISH	Blue Tang	1	4		1	6	1.50	1.73
	Doctorfish	2	1	4		7	1.75	1.71
	Ocean Surgeon		1			1	0.25	0.50
WRASSE	Bluehead Wrasse	13	37	8	25	83	20.75	12.97
	Clown Wrasse		1	1		2	0.50	0.58
	Creole Wrasse			1		1	0.25	0.50
	Puddingwife	1				1	0.25	0.50
	Slippery Dick	3		3	6	12	3.00	2.45
	Yellowhead Wrasse	12	17	13	10	52	13.00	2.94
OTHERS	Trumpetfish	1	4	1	3	9	2.25	1.50
TOTAL		380	499	432	265	1576	394	
Atlantic Belt Transect: Invertebrates		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANEMONE	Giant Anemone	1	1	8	2	12	3.00	3.37
	Corkscrew Anemone		1	1		2	0.50	0.58
	Beaded Anemone		1	7		8	2.00	3.37
	Carpet Anemone							
TUBE WORMS	Magnificent Feather Duster		1		1	2	0.50	0.58
	Split Crown Feather Duster	5	3	5	9	22	5.50	2.52
	Variegated Feather Duster							
	Christmas tree worm	120	25	63	68	276	69.00	39.05
CRUSTACEANS	Ghost Feather Duster			1		1	0.25	0.50
	Pederson Cleaner Shrimp	2	6	2		10	2.50	2.52
	Red Snapping Shrimp							
Banded Coral Shrimp								
ECHINODERMS	Tigertail Sea Cucumber							
MOLLUSKS	Amber Pen Shell		1			1	0.25	0.50
TOTAL		128	39	87	80	334	83.5	

PORTOMAREA MARINE MONITORING
REEF BALL CORAL PLUG SUMMARY-1a, WEST SIDE OF BAY

Date : April 11, 2002
 Observers: Marjo van den Bulck & Maryke Kolenousky

CN	B N/T	LP	Coral Species	Plug Orientation		Number of Branches/ Cups	Height cm	Width cm	Coral Growth on Plug Base Y/N	Algae at Base Y/N	Algae at Top Y/N	Remarks
				position	height							
10 R	1 P	5	Leaf coral (lettuce)	NE	T	2	2.5	3	Y	Y	N	New coral growth on ball Dead
			Leaf coral (lettuce)	WN	M	3	2	2.5	Y	N	N	
			Leaf coral (lettuce)	N	M							
			Sea Rod, black	W	M	3	15	9	Y	N	N	
			Sea Rod, purple	ES	H	3	4.5	3.5	N	Y	N	
			Staghorn coral	W	T	19	13	19	Y	N	N	
10 R	2 LP	2	Sea Rod, black	S	M	5	18.5	12	Y	Y	N	No new coral growth on ball
			Star Coral, smooth	SW	H		3	3	N	Y	N	
10R	3 P	3	Maze coral	WN	L							Dead New coral growth on ball
			Sea Rod, purple	W	T	6	10	8	Y	Y	N	
			Staghorn coral	NE	T	20	11	18	Y	N	N	
			Star coral	NE	H		4	6	Y	N	N	
10 R	4 O	1	Finger coral	W	L	4	5	6	Y	Y	N	New coral growth on ball
10R	5 O	3	Sea Rod, purple	NE	H	3	12	4	N	Y	N	No new coral growth on ball Dead
			Sea Rod, white	WN	M							
			Sea Rod, white	SW	H	10	8	7	N	Y	N	
			Staghorn coral	S	M	21	13	13	Y	N	N	
10R	6 LP	4	Sea Rod, purple	NE	M	3	5	2	N	Y	Y	covered in algae No new coral growth on ball algae on two of the branches
			Sea Rod, purple	ES	M	4	8	3	N	Y	Y	
			Sea Rod, white	W	H	7	5	8	N	Y	N	
			Sea Rod, white	WN	M	6	7	5	N	Y	Y	
10R	7 O	0										No live plugs, no new coral growth on ball
10R	8 P	7	Leaf coral (lettuce)	NE	H		1	3	N	Y	N	New coral growth on ball
			Sea Rod, black	ES	H	2	12	7	N	Y	N	
			Sea Rod, black	ES	M	4	14	4.5	Y	Y	N	
			Sea Rod, black	S	M	3	16	5	Y	Y	N	
			Sea Rod, white	E	H	22	13	15	Y	Y	N	
			Staghorn coral	S	T	17	11.5	16	Y	N	N	
			Staghorn coral	W	T	15	14	16	Y	N	N	
Subtotal		25										
Codes:												
CN	Cluster Number	U	Ultra Ball	T	Top of the ball							
B N/T	Ball number/type	P	Pallet Ball	H	Upper third of the ball							
LP	No. of live coral plugs	B	Bay Ball	M	Middle third of the ball							
		LP	LoPro Ball	L	Lower third of the ball							
		O	Oyster Ball									

PORTOMAREA MARINE MONITORING

REEF BALL CORAL PLUG SUMMARY-1b

CN	B N/T	LP	Coral Species	Plug Orientation		Number of Branches/ Cups	Height cm	Width cm	Coral Growth on Plug Base Y/N	Algae at Base Y/N	Algae at Top Y/N	Remarks
				position	height							
10R	9 P	4	Finger coral	NE	on oyster	4	2	5	Y	N	N	New coral growth on ball plug is loose Dead
			Finger coral	WN	M	3	6	4	Y	Y	N	
			Flower coral	NE	T	2	1.5	3.5	N	N	N	
			Leaf coral (Lettuce)	NE	M	2	4	6	Y	N	N	
			Sea Rod, Black	NE	M							
10 R	10 O	1	Finger coral	NE	M	5	4.5	7	N	Y	N	No new coral growth
10 R	11 LP	1	Staghorn	N	H	15	13	15	Y	Y	N	No new coral growth
10 R	12 LP	4	Brain coral	WE	T		6	8	N	Y	N	No new coral growth only 1/2 the cup is alive-not healthy
			Flower coral	NE	H	1	1	2	N	Y	Y	
			Flower coral	ES	L	2	1	3	N	Y	Y	
			Mustard hill coral	S	T		3.5	5	Y	Y	N	
10 R	13 B	4	Leaf coral (Lettuce)	N	M	1	2	3	Y	N	N	New coral growth on ball
			Sea Rod, Black	NW	H	3	15.5	9	Y	Y	N	
			Sea Rod, Black	NW	M	4	11	11	Y	Y	N	
			Staghorn	SW	H	23	17	17	Y	N	N	
10 R	14 U	11	Brain coral	N	L		3	4	N	Y	Y	New coral growth on ball This plug is gone
			Finger coral	NE	M	6	3	7	Y	N	N	
			Leaf coral (Lettuce)	W	M		2	2	Y	Y	N	
			Leaf coral (Lettuce)	W	L		3	2.5	Y	N	N	
			Leaf coral (Lettuce)	N	M		1	1	N	Y	Y	
			Leaf coral (Lettuce)	E	L		2.5	3	Y	Y	N	
			Leaf coral (Lettuce)	S	M		2.5	3	N	Y	Y	
			Leaf coral (Lettuce)	S	L		3	3	Y	N	N	
			Leaf coral (Lettuce)	SW	L		2	2	Y	N	N	
			Leaf coral (Lettuce)	SW	M		2	2	N	Y	Y	
			Staghorn	S	H	16	5.5	9	Y	N	N	
			Staghorn	N	H							
10R	15 LP	2	Brain coral	SW	T		5	7	Y	Y	N	No new coral growth
			Brain coral	ES	H		3	4	Y	Y	N	
10R	16 B	2	Brain coral	WN	H		2	5	Y	N	N	No new coral growth Macro algae on ball
			Flower coral	NE	M	1	1	1.5	N	Y	N	
10R	17 P	2	Leaf coral (lettuce)	E	M							Dead plug not healthy No new growth
			Mustard Hill coral	WN	H		1.5	1.5	N	Y	Y	
			Pencil coral	WN	T	2	2	2.5	N	Y	Y	
10R	18 LP	2	Mustard hill coral	NE	H		1.5	2	N	Y	Y	No new coral growth dead Covered in algae
			Sea Rod, black	W	T							
			Sea Rod, purple	NW	M	2	5	3	N	Y	Y	
Subtotal		33										

**PORTOMAREA MARINE MONITORING
REEF BALL CORAL PLUG SUMMARY-1c**

CN	B N/T	LP	Coral Species	Plug Orientation		Number of Branches/ Cups	Height cm	Width cm	Coral Growth on Plug Base Y/N	Algae at Base Y/N	Algae at Top Y/N	Remarks
				position	height							
10R	19 O	0										No live plugs,no new coral growth
10R	20 O	0										No live plugs,no new coral growth
10R	21 O	0										Dead brain,no new coral growth
10R	22 LP	0										Ball covered in macro algae, dead brain,
10R	23 LP	4	Leaf coral (lettuce)	SE	H		2.5	3.5	N	Y	Y	Not healthy algae has covered growth on base No new coral growth
			Mustard hill	N	H		2.5	3.5	N	Y	Y	
			Sea rod, white	NW	H	3	6	3	N	y	N	
			Sea rod, white	NW	M	4	5.5	3.5	N	Y	N	
10R	24 P	5	Brain coral	N	T							gone not healthy No new coral growth
			Maze coral	E	M		4	4	N	Y		
			Mustard hill	NE	M		1.5	3.5	N	Y	Y	
			Sea rod, black	NW	T	3	7.5	6	N	Y	N	
			Sea rod, black	NW	H	2	8.5	4.5	N	Y	Y	
			Staghorn coral	N	T	18	6	8	Y	N	N	
10R	25 B	1	Mustard hill	NW	M		3	2.5	N	Y	Y	not healthy Macro algae,no new coral growth on ball
10R	26 LP	1	Maze coral	W	T		5	7	Y	Y	Y	No new coral growth
10R	27 B	2	Sea Rod, black	SW	T	2	7.5	2.5	N	Y	N	Macro algae,no new coral growth on ball
			Sea Rod, white	W	T	6	7	5	N	Y	N	
10R	28 P	6	Brain coral	W	M		2	3	N	Y	Y	No new coral growth on ball Coralline algae gone new?
			Brain coral	E	H		1	2.5	N	Y	Y	
			Finger coral	SW	H							
			Finger coral	W	L	2	4	3.5	N	Y	Y	
			Leaf coral (lettuce)	W	M	1	3	3.5	N	Y	N	
			Sea Rod, black	SE	T	2	7.5	3	N	Y	N	
10R	29 O	0	Mustard hill	W	M							dead, no new coral growth
10R	30 LP	0										No new coral growth
10R	31 O	0										No new coral growth
	Subtotal	19										
77 - Total number of live coral plugs												

PORTOMAREA MARINE MONITORING

REEF BALL CORAL PLUG SUMMARY - 2

EAST SIDE OF BAY

Date : April 9, 2002

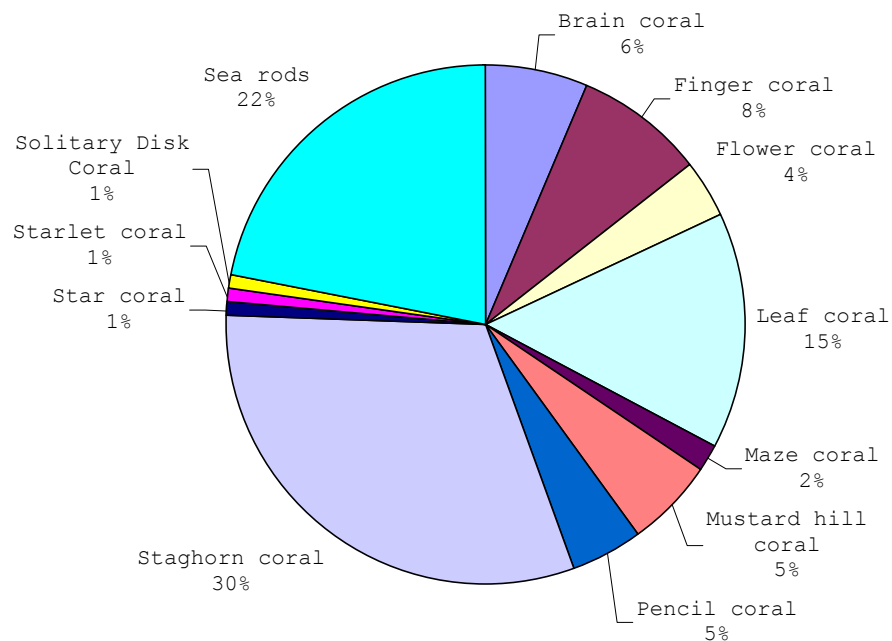
Observers: Marjo van den Bulck & Maryke Kolenousky

CN	B N/T	LP	Coral Species	Plug Orientation		Number of Branches/ Cups	Height cm	Width cm	Coral Growth on Plug Base Y/N	Algae at Base Y/N	Algae at Top Y/N	Remarks
				direction	height							
12L	1P	9	Leaf coral (lettuce)	WN	T	1	5	6	N	Y	N	No new corals on this ball.
			Pencil coral	NE	T	7	4	6	N	Y	Y	Ball is covered in heavy algae growth. Algae all over plug Coral plug not healthy
			Pencil coral	N	H	8	4	5	N	Y	Y	
			Solitary Disk coral	N	L	n/a	1	4	N	Y	Y	
			Staghorn coral	N	T	3	3	3	N	Y	N	
			Staghorn coral	S	T	5	8.5	12	N	N	N	
			Staghorn coral	SW	T	3	4.5	3	N	Y	N	
			Staghorn coral	WN	H	3	8	6	N	Y	N	
			Staghorn coral	EW	H	1	4	1	N	Y	N	
12L	2P	7	Pencil coral	NE	T	4	4	4	N	Y	Y	No new coral growth.
			Pencil coral	SW	T	4	4	4	N	Y	Y	Ball is algae covered
			Staghorn coral	NE	T	3	8	4.5	N	Y	N	
			Staghorn coral	ES	T	3	6	5	N	Y	N	
			Staghorn coral	WN	T	1	4	1	N	Y	N	
			Staghorn coral	NE	H	4	6	8	N	Y	N	
			Staghorn coral	SW	H	1	5	1	N	Y	N	
12L	3B	3	Finger coral	WN	T	1	2	2	N	Y	N	No new coral growth.
			Staghorn coral	W	T	1	3.5	1	N	N	N	Ball is algae covered
			Staghorn coral	E	H	1	9	1.2	N	N	N	
12L	4B	3	Staghorn coral	NE	H	2	4	1	N	N	N	No new coral growth.
			Staghorn coral	SW	T	1	6	1	N	N	N	Ball is algae covered.
			Staghorn coral	WN	H	1	8	1	N	N	N	
12L	5P	11	Finger coral	NE	T	4	4	7	N	Y	N	No new coral growth.
			Finger coral	WN	L	2	4	5	N	Y	N	Ball is algae covered.
			Staghorn coral	ES	T	1	2.3	1	N	N	N	
			Staghorn coral	SW	T	1	3.5	1	N	N	N	
			Staghorn coral	WN	T	1	6.2	1.5	N	N	N	
			Staghorn coral	N	H	1	8	1.5	N	N	N	
			Staghorn coral	ES	H	1	6.2	1	N	N	N	
			Staghorn coral	NE	H	1	6	1.5	N	N	N	
			Staghorn coral	SW	H	1	4	1	N	N	N	
			Staghorn coral	SWW	H	1	7.5	1	N	N	N	
			Staghorn coral	NE	T	2	5	3	N	N	N	
33 - Total number of live coral plugs												

PORTOMAREA MARINE MONITORING
REEF BALL CORAL PLUG SPECIES SUMMARY

SPECIES DISTRIBUTION OF CORAL PLUGS ON REEF BALLS AS OF APRIL 2002

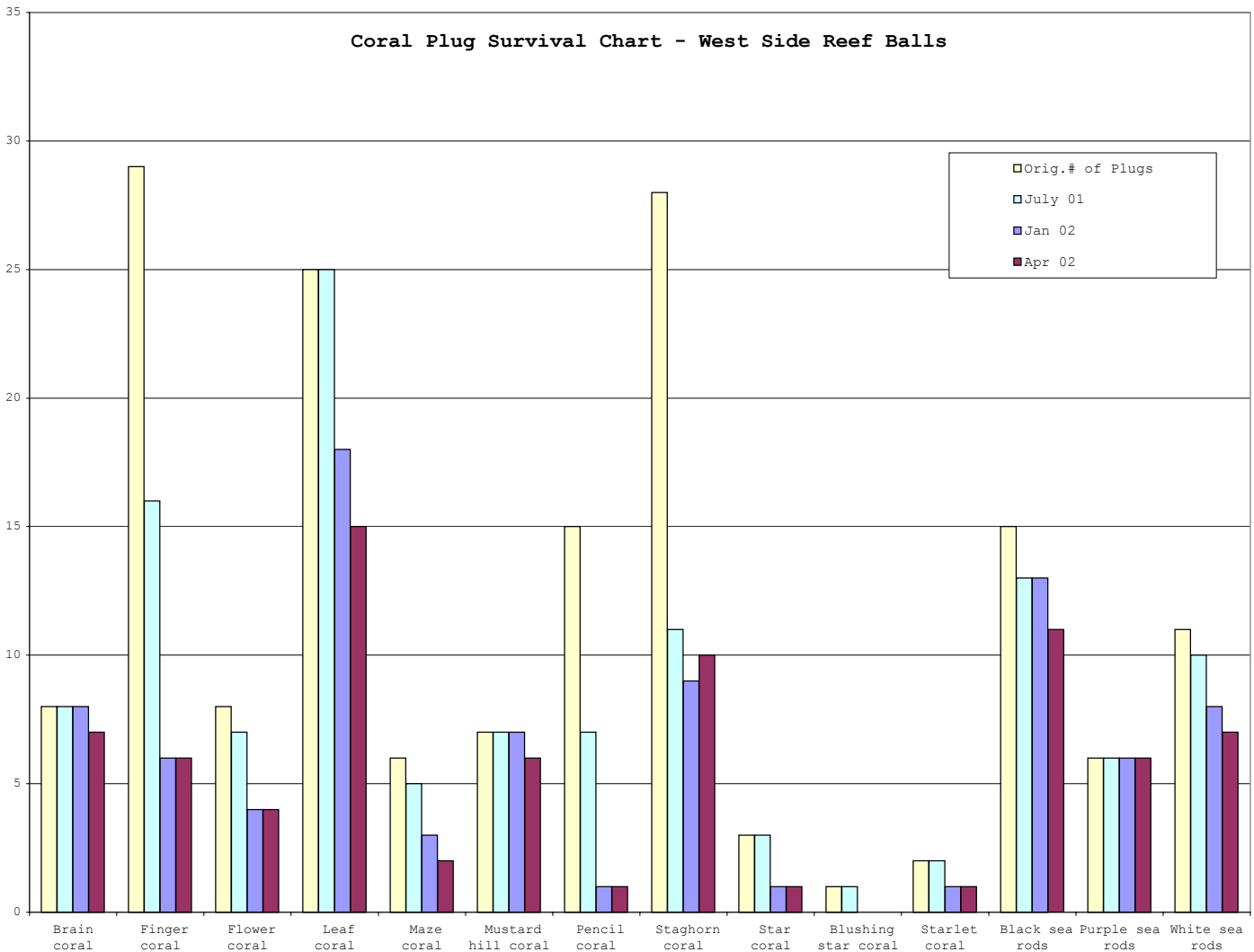
Coral Species		Number of Live Plugs	% of Total
Brain coral		7	6.36
Finger coral		9	8.18
Flower coral		4	3.64
Leaf coral		16	14.55
Maze coral		2	1.82
Mustard hill coral		6	5.45
Pencil coral		5	4.55
Staghorn coral		34	30.91
Star coral		1	0.91
Starlet coral		1	0.91
Solitary Disk Coral		1	0.91
Sea rods		24	21.82
black	11		
purple	6		
white	7		
TOTAL		110	100



Coral Plug Survival Summary
West Side Reef Balls

July 2001 Monitoring (per M.Kuenen)				January 2002 Monitoring		April 2002 Monitoring	
Coral Species	Orig. # of Plugs	Number of Live Plugs	Mortality 90 days	Number of Live Plugs	Mortality 9 months	Number of Live Plugs	Mortality 12 months
Brain coral*	8	8	0%	8	0%	7	13%
Finger coral	29	16	45%	6	79%	6	79%
Flower coral	8	7	13%	4	50%	4	50%
Leaf coral	25	25	0%	18	28%	15	40%
Maze coral	6	5	17%	3	50%	2	67%
Mustard hill coral*	7	7	0%	7	0%	6	14%
Pencil coral	15	7	53%	1	93%	1	93%
Staghorn coral	28	11	61%	9	68%	10	64%
Star coral	3	3	0%	1	67%	1	67%
Blushing star coral	1	1	0%	0	100%	0	100%
Starlet coral	2	2	0%	1	50%	1	50%
Sea rods black	15	13	13%	13	13%	11	27%
Sea rods purple	6	6	0%	6	0%	6	0%
Sea rods white	11	10	9%	8	27%	7	36%
TOTALS	164	121	Mean 26%	85	Mean 48%	77	Mean 53%

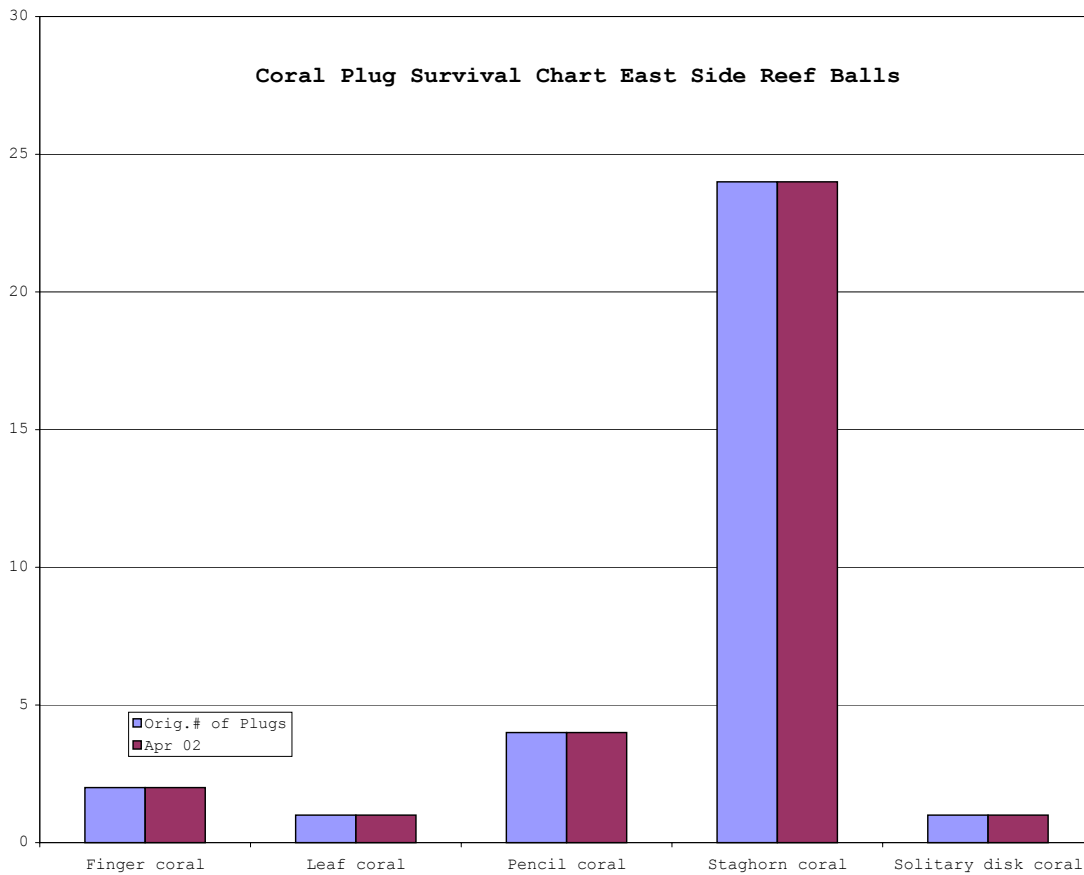
* Number of original plugs adjusted to correspond to Jan/02 survey



PORTOMAREA MARINE MONITORING

Coral Plug Survival Summary
East Side Reef Balls

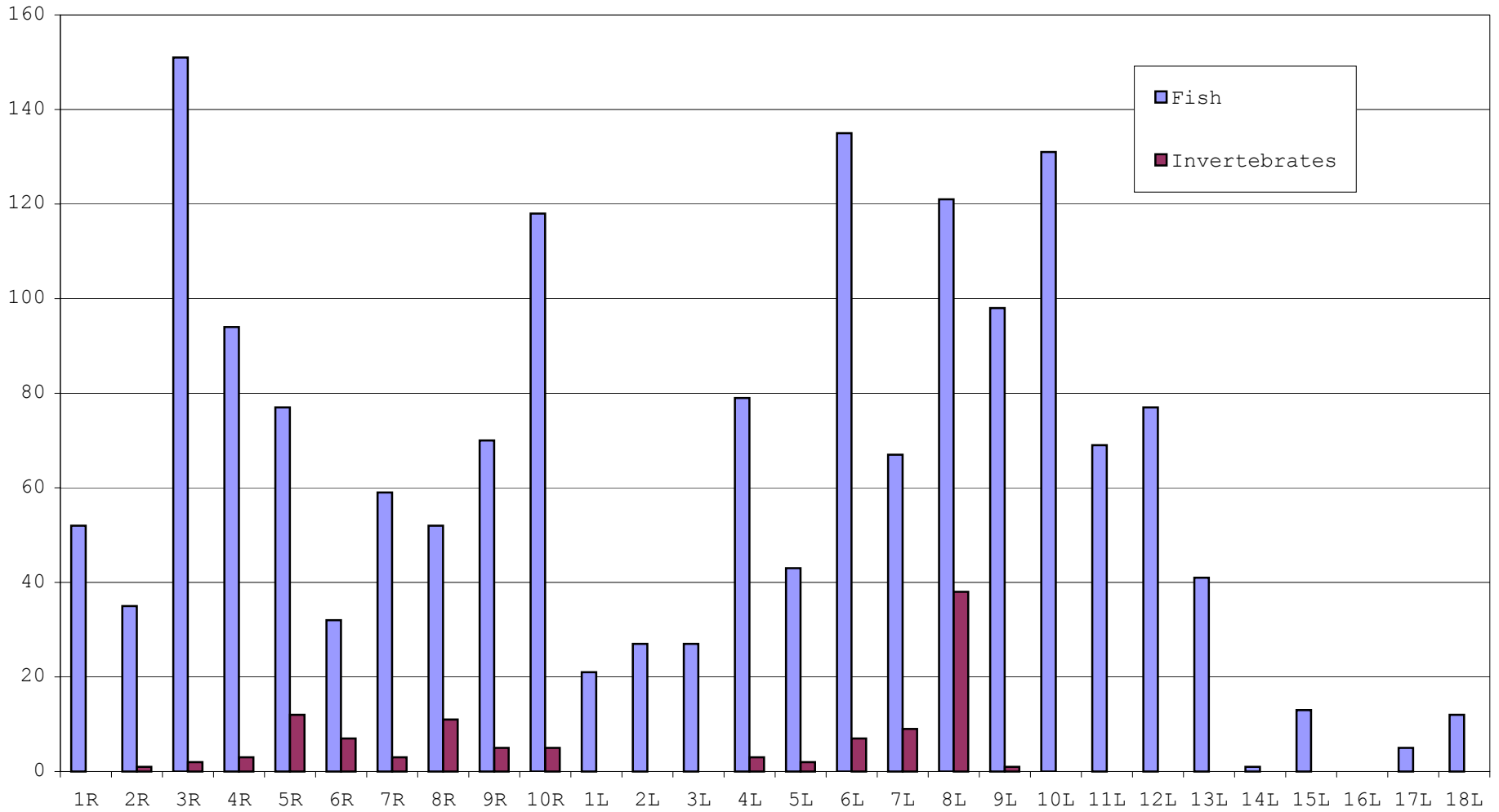
April 2002 Monitoring			
Coral Species	Orig.# of Plugs	Number of Live Plugs	Mortality 15 days
Finger coral	2	2	0%
Leaf coral	1	1	0%
Pencil coral	4	4	0%
Staghorn coral	24	24	0%
Solitary disk coral	1	1	0%
			Mean
TOTALS	32	32	0%



**PORTOMAREA MARINE MONITORING
REEF BALL CLUSTERS
FISH AND INVERTEBRATE POPULATION SUMMARY**

Cluster No.	No.of Fish	% of Total	No.of Invertebrates	% of Total
1R	52	3.05	0	0.92
2R	35	2.05	1	0.92
3R	151	8.85	2	1.83
4R	94	5.51	3	2.75
5R	77	4.51	12	11.01
6R	32	1.87	7	6.42
7R	59	3.46	3	2.75
8R	52	3.05	11	10.09
9R	70	4.10	5	4.59
10R	118	6.91	5	4.59
1L	21	1.23	0	0.00
2L	27	1.58	0	0.00
3L	27	1.58	0	0.00
4L	79	4.63	3	2.75
5L	43	2.52	2	1.83
6L	135	7.91	7	6.42
7L	67	3.93	9	8.26
8L	121	7.09	38	34.86
9L	98	5.74	1	0.92
10L	131	7.67	0	0.00
11L	69	4.04	0	0.00
12L	77	4.51	0	0.00
13L	41	2.40	0	0.00
14L	1	0.06	0	0.00
15L	13	0.76	0	0.00
16L	0	0.00	0	0.00
17L	5	0.29	0	0.00
18L	12	0.70	0	0.00
TOTAL	1707	100	109	100.92

**PORTOMAREA MARINE MONITORING
FISH AND INVERTEBRATE POPULATION SUMMARY CHART
REEF BALL CLUSTERS**



PORTOMAREA MARINE MONITORING

FISH and INVERTEBRATE SURVEY - REEF BALL CLUSTERS WEST

DATE: April 9, 2002

TIME: 10:30 a.m.

Data collected and recorded by: Maryke Kolenousky & Marjo van den Bulck

CLUSTER NUMBER		1R	2R	3R	4R	5R	6R	7R	8R	9R	10R			
DEPTH		1.2m	1.4m	1.2m	1.6m	1.8m	2.7m	2.9m	3.6m	3.8m	3.8m			
FISH												Total	Mean	St.Dev.
ANGELFISH	French Angelfish				1							1	0.10	0.32
BASSLET	Fairy Basslet													
BLENNY	Redlip Blenny			2								2	0.20	0.63
BOXFISH	Smooth Trunkfish													
	Spotted Trunkfish										1	1	0.10	0.32
BUTTERFLYFISH	Banded Butterflyfish										2	2	0.20	0.63
	Foureye Butterflyfish								2		4	6	0.60	1.35
CHROMIS	Blue Chromis													
	Brown Chromis	15	1	46		20		9	20	20	20	151	18.88	12.94
DAMSELFISH	Beaugregory													
	Bicolor Damselfish	2	3	10	20	1	3	2	2	9		52	5.20	6.16
	Cocoa Damselfish		1	2			1				1	5	0.50	0.71
	Dusky Damselfish	4	2	5	3	4	3			3	10	34	3.40	2.84
	Sergeant Major	9	10		3	14	5	1	3	2	8	55	6.11	4.37
	Threespot Damselfish	1		1			1				2	5	0.50	0.71
	Yellowtail Damselfish					1		1			5	7	0.70	1.57
DRUM	Spotted Drum										1	1	0.10	0.32
FILEFISH	Orangespotted Filefish							2				2	0.20	0.63
FLOUNDER														
GOATFISH	Spotted Goatfish	1		5	1						1	8	0.80	1.55
	Yellow Goatfish	1		1		4			3			9	0.90	1.45
GOBY	Bridled Goby				1	6	4	20	7	10	7	55	5.50	6.22
	Cleaning Goby													
GROUPE	Graysby													
	Red Hind													
GRUNT	Bluestriped Grunt						1	4		1	2	8	0.80	1.32
	Caesar Grunt									1	1	2	0.20	0.42
	French Grunt	1		40	2	3	2	4	1	1	4	58	5.80	12.09
HAMLET	Blue Hamlet													
	Butter Hamlet													
HOGFISH	Spanish Hogfish			1							2	3	0.30	0.67
JACK	Bar Jack										1	1	0.10	0.32
PARROTFISH	Princess Parrotfish					1	1				2	5	0.90	1.60
	Queen Parrotfish	1	3	3	1		2	2	2		2	16	1.60	1.07
	Redband Parrotfish										1	1	0.10	0.32
	Stoplight Parrotfish					1			1	1		3	0.30	0.48
PUFFER	Balloonfish													
	Sharpnose Puffer													
SCORPIONFISH	Reef Scorpionfish													
SEABASS														
SNAPPER	Mahogany Snapper							1				1	0.10	0.32
	Schoolmaster							3			6	9	0.90	2.02
SQUIRRELFISH	Blackbar Soldierfish					1	1			3	3	8	0.80	1.23
	Squirrelfish	1									2	3	0.30	0.67
SURGEONFISH	Blue Tang	4	2	3	1	2	2	4	4		7	29	2.90	1.97
	Doctorfish													
WRASSE	Bluehead Wrasse	4	3	12	30	10	2	2	2	10	6	81	8.10	8.57
	Clown Wrasse	1	3	7	6					2	3	22	2.20	2.57
	Puddingwife		2	2		4						8	0.80	1.40
	Rainbow Wrasse													
	Slippery Dick	6	4	11	25	3	1		2		2	54	6.75	8.03
	Yellowhead Wrasse						3	2	3	5	7	20	2.00	2.49
OTHERS	Lizardfish, Bluestriped													
	Mojarra, Yellowfin	1	1									2	1.00	
	Soapfish, Greater					1					1	2	0.40	0.42
	Trumpetfish					1		2			1	4	0.40	0.70
TOTAL		52	35	151	94	77	32	59	52	70	118	740	74	
INVERTEBRATES												Total	Mean	St.Dev.
ANEMONE	Beaded Anemone					4	2	1	4	2		13	1.30	1.64
	Corkscrew Anemone										2	2	0.20	0.63
	Giant Anemone					6	3	1		1		11	1.10	1.97
CRUSTACEANS	Pedersen Cleaner Shrimp								4	1		5	0.50	1.27
	Nimble Spray Crab		1	1	2							4	0.40	0.70
	Spiny Lobster								1			1	0.10	0.32
	Yellowline Arrow Crab													
TUBE WORMS	Split Crown Feather Dstr										1	1	0.20	0.42
	Magnificent Feather Dstr										2	2	0.20	0.63
	Christmas Tree Worm								1			1	0.10	0.32
MOLLUSKS	Atlantic Pearl Oyster													
	Lettuce Sea Slug						1	1				2	0.20	0.42
	Amber Pen Shell								1			1	0.10	0.32
	Queen Conch													
ECHINODERMS	Longspined Sea Urchin			1	1	2	1					5	0.50	0.71
	Sea Cucumber Three-Rowec							1				1	0.10	0.32
TOTAL		1	2	3	12	7	3	11	5	5	49	4.9		

Comments: Lobster on Cluster 8R was a 4" juvenile.

PORTOMAREA MARINE MONITORING

FISH and INVERTEBRATE SURVEY - REEF BALL CLUSTERS EAST

DATE: April 8, 2002

TIME: 9:30 a.m.

Data collected and recorded by: Maryke Kolenousky & Marjo van den Bulck

CLUSTER NUMBER		1L	2L	3L	4L	5L	6L	7L	8L	9L	10L	11L	12L	13L	14L	15L	16L	17L	18L	Total	Mean	St. Dev.
DEPTH	FISH	1.5m	1.5m	1.6m	1.6m	2.1m	2.1m	2.1m	2.4m	2.7m	3.2m	3.4m	4.3m	4.3m	4.3m	4.3m	4.3m	4.3m	4.3m			
ANGELFISH	French Angelfish					1														1	0.06	0.24
BLENNY	Redlip Blenny		1																	1	0.06	0.24
BOXFISH	Smooth Trunkfish																					
	Spotted Trunkfish					1						1	1	1	1				1	6	0.35	0.49
BUTTERFLYFISH	Banded Butterflyfish																					
	Foureye Butterflyfish										2									2	0.11	0.47
CHROMIS	Brown Chromis		11		30		50	35	50	35	75		20							306	17.00	23.38
DAMSELFISH	Beaugregory			2																2	0.11	0.47
	Bicolor Damselfish	1	1	3	10	4	4	5	1	7	9		9	7		3		1		65	3.61	3.47
	Cocoa Damselfish	1	3	2	4		2													12	0.67	1.24
	Dusky Damselfish	4	1		1	1	1	3	7											18	1.00	1.88
	Sergeant Major	3				15	3	5	3	6	12	4	4	2		1			5	63	3.50	4.19
	Threespot Damselfish				4		2	1													7	0.39
Yellowtail Damselfish				1			1													2	0.11	0.32
DRUM																						
FILEFISH	Orangespotted Filefish																					
FLOUNDER	Peacock Flounder												2		1					3	0.17	0.51
GOATFISH	Spotted Goatfish																		1	1	0.06	0.24
	Yellow Goatfish			1	1		1				3	20				2		2	1	31	1.82	4.77
GOBY	Bridled Goby	2	3	5	2	5	3			15	10	20	30	10		2		1	1	109	6.06	8.21
GROUPER	Coney					1		1	2											4	0.22	0.55
	Graysby						1													1	0.06	0.24
	Red Hind													1						1	0.06	0.24
	Rock Hind		1			1														2	0.11	0.32
GRUNT	Bluestriped Grunt								1											1	0.06	0.24
	French Grunt	1	1	1	1	2	1	4	50	1								1	3	66	3.67	11.62
HAMLET																						
JACK	Bar Jack									1										1	0.06	0.24
PARROTFISH	Princess Parrotfish	2				1	1				1	2	1							8	0.44	0.70
	Blue Parrotfish												1							1	0.06	0.24
	Queen Parrotfish			1		2	2	3	1			1	1							11	0.61	0.92
	Stoplight Parrotfish								1	1										2	0.11	0.32
	Redtail Parrotfish				1															1	0.06	0.24
	Redband Parrotfish						1		1											2	0.11	0.32
Striped Parrotfish						1						1			1				3	0.17	0.38	
PUFFER	Sharpnose Puffer										1									1	0.06	0.24
SCORPIONFISH	Reef Scorpionfish							2												2	0.11	0.47
SEABASS	Harlequin Bass				3			1												4	0.22	0.73
	Tobaccofish																					
SNAPPER																						
SQUIRRELFISH	Squirrelfish					1		1	1											3	0.17	0.38
SURGEONFISH	Blue Tang		1	6	4	4	4	3	2	7	2	5	3			3				44	2.44	2.25
	Doctorfish			1																1	0.06	0.24
	Ocean Surgeonfish																					
WRASSE	Bluehead Wrasse	2	2	1	4	2	50		1	12	10	6	2	3						95	5.28	11.69
	Clown Wrasse	2	1	2	4		4													13	0.76	1.39
	Puddingwife		1		3	1	2	1		4										12	0.67	1.19
	Rainbow Wrasse									4	3		2	6						15	0.83	1.76
	Slippery Dick	2		2	5		2	1		4	3	10	1	9						39	2.17	3.07
Yellowhead Wrasse																						
OTHERS	Mojarra, Yellowfin	1																		1	0.06	0.24
	Redspotted Hawkfish				1															1	0.06	0.24
	Greater Soapfish					1				1										2	0.11	0.32
	Trumpetfish												1							1	0.06	0.24
TOTAL		21	27	27	79	43	135	67	121	98	131	69	77	41	1	13		5	12	967	53.72	
INVERTEBRATES																				Total	Mean	St. Dev.
ANEMONE	Corkscrew Anemone																					
CRUSTACEANS	Nimble Spray Crab							1	5											6	0.4	1.22
	Eroded Mud Crab																			1	0.1	0.24
	Yellowline Arrow Crab					1														1	0.1	0.24
	Hermit Crab									1										1	0.1	0.24
TUBE WORMS	Spotted Cleaner Shrimp									1										1	0.1	0.24
	Split Crown Fthr.Dstr.																					
Magnificent Fthr.Dstr.				1																1	0.1	0.24
MOLLUSKS																						
ECHINODERMS	Longspined Sea Urchin				2	1	7	8	32											50	2.9	7.89
TOTAL					3	2	7	9	38	1										60	3.33	