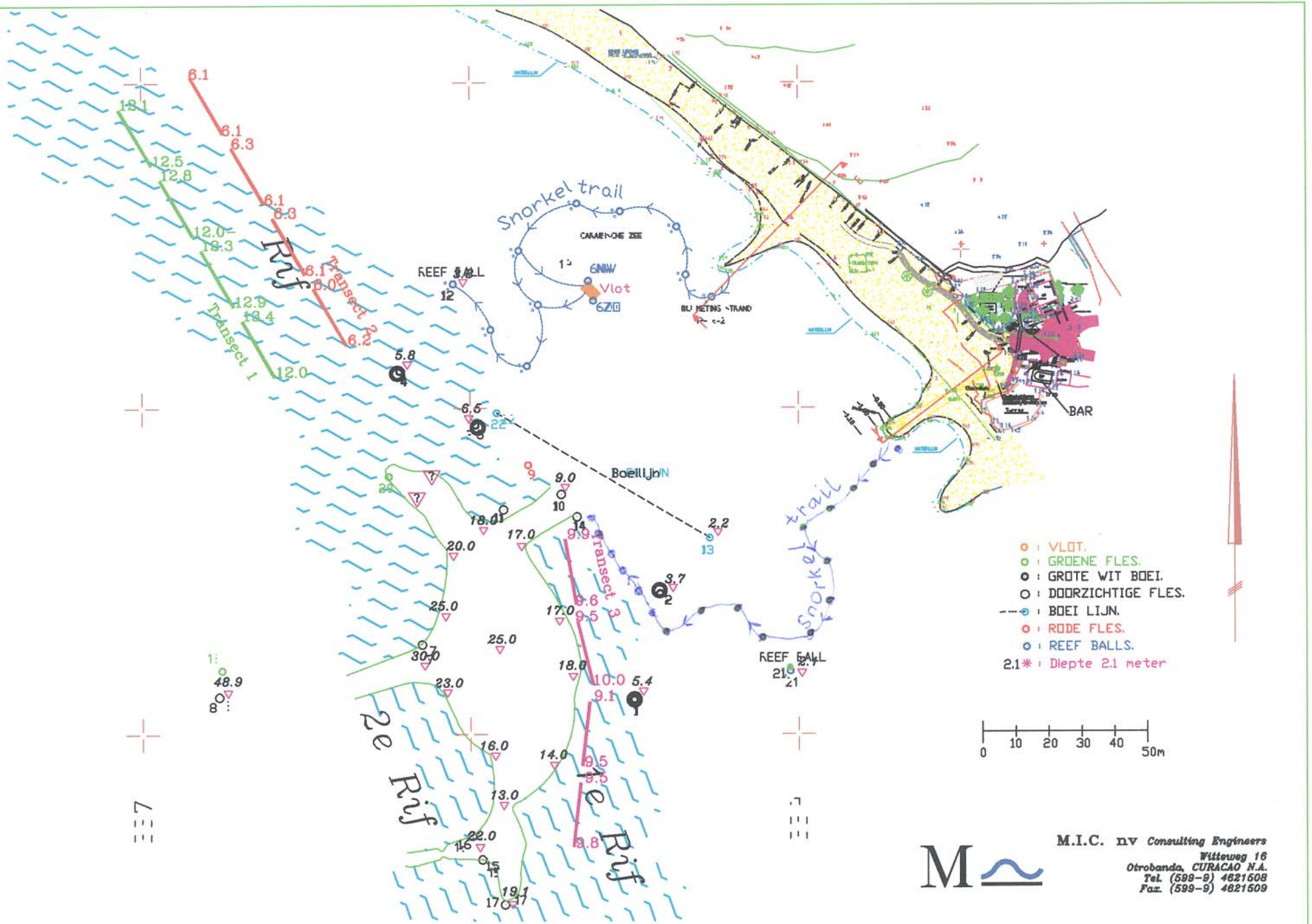
PORTOMAREA MARINE MONITORING

CORAL AND FISH/INVERTEBRATE SURVEY

by

Marjo van den Bulck

October 2002



M.I.C. nv Consulting Engineers
Wittoweg 16
Otrobanda, CURACAO 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: Sept.30- Oct.11, 2002
Data observed and recorded by: Marjo van den Bulck

WATER TEMPERATURE & VISIBILITY

One rainy day during this period. Cloud cover was moderate on most days.

Water temperature was 28C during the monitoring period, which is two degrees higher then the July and April monitoring period.

Visibility varied from 15m to over 30m. Average visibility 20m.

This period there was hardly any current.

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.

Again, rebars we used to set out our Transects were gone. We had to renew two rebars on Transect # 1 and two rebars on Transect # 3.

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 2 is basically a shallow patch reef, and the high percentage of sand cover reflects between coral patches.

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 and fishermen anchoring.

FISH/INVERTEBRATE SURVEY

Fish population on Transect # 1 (12m depth) and Transect # 3 (10 m depth) seems to increase compared to the July, April and January survey periods.

Fish population on Transect # 2 is the lowest compared to the July, April and January survey periods.

Invertebrate population on Transect # 1 and Transect # 2 has increased compared to the July survey period. Transect # 2 has the highest Invertebrate count compared to the July, April and January survey periods.

Invertebrate population on Transect # 3 has decreased compared to the July survey period. It is in fact the lowest Invertebrate count compared to the July, April and January survey periods.

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 depth of 4.3m. This brings the total number of clusters to 18.

Most of the Reef Balls show new coral growth. Especially on the west side of the bay new coral growth is clearly visible.

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.

Compared to the observations in the July survey period a number of plugs then considered dead where in fact still alive: 10R-23LP Finger coral, 10R-9P Finger coral, 10R-17P Leaf (lettuce), 10R-18LP Mustard Hill, 12L-2P Pencil.

One pencil coral plug, 12L-2P, overlooked in the number of original plugs has been added to the data.

Cluster 10, right side, six coral plugs (1 brain, 2 flower, 1 pencil, 1 staghorn, 1 sea rod black) are gone/dead. Cluster 12, left side, two staghorn plugs are gone/dead.

Staghorn pieces broken off coral plugs were found at Cluster 10R.

FISH/INVERTEBRATE SURVEY - OBSERVATIONS

Compared to the July survey period more Invertebrates were found on the Reef Ball Cluster on both sides of the Bay.

The Fish population on the Reef Ball Clusters, both sides of the Bay, decreased compared to the July survey period.

PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT SUMMARY

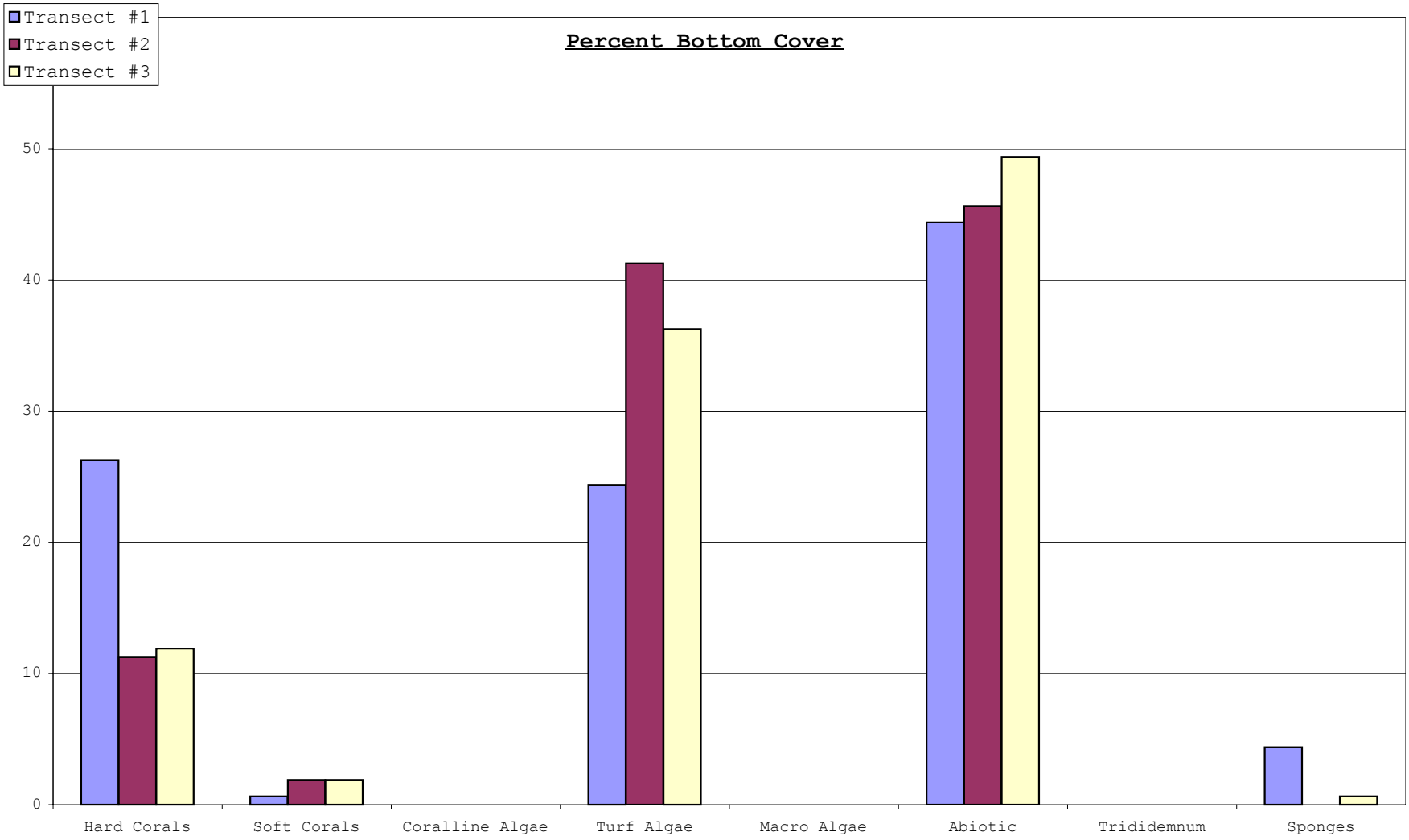
Date : October 3, 2002
Observer: Marjo van den Bulck

Transect No.	Depth	Hard Corals						Soft	Coralline	Turf	Macro-	Abiotic	Tridiдem-	Sponges	**Total**
1	**12m**	Total	Healthy	(Prt)Dead	Sick	Broken	Bleached	Corals	Algae	Algae	Algae	(Sand)	num		
0-20m		11	11	0	0	0	0	0	0	6	0	21	0	2	40
25-45m		11	9	0	2	0	0	1	0	14	0	11	0	3	40
50-70m		8	7	0	1	0	0	0	0	14	0	18	0	0	40
75-95m		12	11	1	0	0	0	0	0	5	0	21	0	2	40
Mean		11	10	0	1	0	0	0	0	10	0	18	0	2	40
% cover		26	90	2	7	0	0	1	0	24	0	44	0	4	100
standard deviation		1.73	1.91	0.50	0.96	0.00	0.00	0.50	0.00	4.92	0.00	4.72	0.00	1.26	0.00

Transect No.	Depth	Hard Corals						Soft	Coralline	Turf	Macro-	Abiotic	Tridiдem-	Sponges	**Total**
2	**6m**	Total	Healthy	(Prt)Dead	Sick	Broken	Bleached	Corals	Algae	Algae	Algae	(Sand)	num		
0-20m		4	4	0	0	0	0	0	0	14	0	22	0	0	40
25-45m		1	1	0	0	0	0	0	0	23	0	16	0	0	40
50-70m		10	8	2	0	0	0	0	0	10	0	20	0	0	40
75-95m		3	3	0	0	0	0	3	0	19	0	15	0	0	40
Mean		5	4	1	0	0	0	1	0	17	0	18	0	0	40
% cover		11	89	11	0	0	0	2	0	41	0	46	0	0	100
standard deviation		3.87	2.94	1.00	0.00	0.00	0.00	1.50	0.00	5.69	0.00	3.30	0.00	0.00	0.00

Transect No.	Depth	Hard Corals						Soft	Coralline	Turf	Macro-	Abiotic	Tridiдem-	Sponges	**Total**
3	**10m**	Total	Healthy	(Prt)Dead	Sick	Broken	Bleached	Corals	Algae	Algae	Algae	(Sand)	num		
0-20m		10	10	0	0	0	0	3	0	10	0	17	0	0	40
25-45m		1	1	0	0	0	0	0	0	14	0	24	0	1	40
50-70m		2	2	0	0	0	0	0	0	18	0	20	0	0	40
75-95m		6	6	0	0	0	0	0	0	16	0	18	0	0	40
Mean		5	5	0	0	0	0	1	0	15	0	20	0	0	40
% cover		12	100	0	0	0	0	2	0	36	0	49	0	1	100
standard deviation		4.11	4.11	0.00	0.00	0.00	0.00	1.50	0.00	3.42	0.00	3.10	0.00	0.50	0.00

PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT SUMMARY

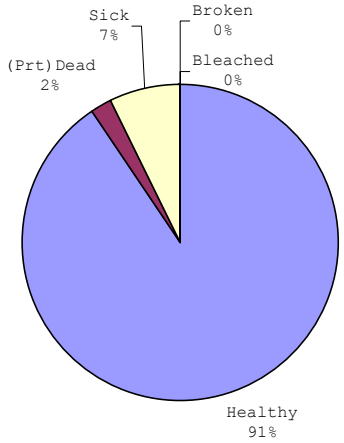


Survey Date: October 2002

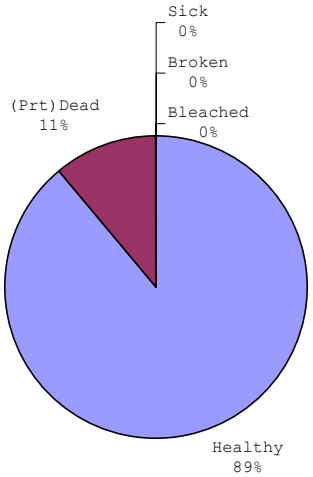
PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECTS - CORAL HEALTH CHART

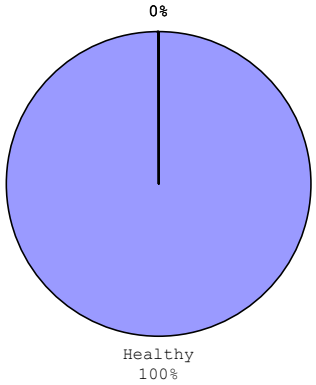
Transect 1, Depth 12m



Transect 2, Depth 6m



Transect 3, Depth 10m



PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 1, Depth 12m, Section 0-20m Visibility: 30 m Observer: Marjo van den Bulck
Date: Sept. 30, 2002 Temperature: 29C

	HARD CORALS												SOFT CORALS							
M	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral	CONDITION/REMARKS	PD	H	S	BL	Gorgonians	Sponges	Tridiemnum	Coralline A	Macro Algae	Algae	Abiotics
0.5																				SD
1																				SD
1.5			Boulder						Healthy											
2																				RC
2.5																			BA	
3									TA											RC
3.5																			TA	
4			Boulder						Healthy											
4.5			Boulder						Healthy											
5			Boulder						Healthy											
5.5																				RC
6																				SD
6.5																				SD
7																				RB
7.5																				RB
8						Lettuce			Healthy											
8.5						Lettuce			Healthy											
9																				SD
9.5																				RC
10																				RC
10.5																				RC
11																				SD
11.5																				SD
12																				RC
12.5																				RC
13								Flower	Healthy											
13.5																				RC
14									YA											RC
14.5																			TA	
15									Branching tube						YE					
15.5									Branching tube						YE					
16						Lettuce			Healthy											
16.5																			BA	
17					Finger				Healthy											
17.5																			YA	
18			Great						Healthy											
18.5																				SD
19			Boulder						Healthy											
19.5																				RC
20																			TA	
Total	0	0	6	0	1	3	0	1		0	11	0	0	0	2	0	0	0	6	21	
	0	**3**	**19**	**5**	**3**	**9**	**1**	**2**		**1**	**38**	**3**	**0**	**1**	**7**	**0**	**0**	**0**	**39**	**71**	**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	Tridiemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 1, Depth: 12m, Section 25-45m Visibility: 20 m Observer: Marjo van den Bulck
Date: Sept. 30, 2002 Temperature: 29C

	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
M	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Trididdemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5									BA							RC	
1																SD	
1.5																SD	
2																SD	
2.5						Lettuce			Healthy								
3				Brain					Healthy								
3.5				Brain					Healthy								
4															TA		
4.5															BA		
5															TA		
5.5															TA		
6															TA		
6.5															YA		
7															BA		
7.5															YA		
8									Encrusting	Encr.							
8.5			Boulder						Sick,Yellow blotch?Damselfish?								
9																RB	
9.5															BA		
10																RB	
10.5																SD	
11						Lettuce			Healthy								
11.5															YA		
12		Mustard							Healthy								
12.5									Black Ball Sponge		BL						
13																RB	
13.5																RB	
14						Lettuce			Healthy								
14.5															TA/BA		
15			Boulder						Sick, Yellow blotch? Damselfish								
15.5															TA		
16															BA		
16.5																SD	
17		Mustard							Healthy								
17.5			Boulder						Healthy								
18									Black Ball Sponge		BL						
18.5				Brain					Healthy								
19															TA		
19.5									Brown Encrusting Octopus Sponge		BRO						
20																RC	
									PD H S BL								
Total	0	2	3	3	0	3	0	0	0 9 2 0	1	3	0	0	0	14	11	

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	Trididdemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 1, Depth 12m, Section 50-70m Visibility: 20 m Observer: Marjo van den Bulck

Date: Oct.1, 2002 Temperature: 29C

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

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	Tridiemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 1, Depth 12m, Section 75-95m Visibility: 30 m Observer: Marjo van den Bulck
Date: Oct. 1, 2002 Temperature: 29C

	HARD CORALS									SOFT CORALS/OTHER							
M	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral	CONDITION/REMARKS	Gorgonians	Sponges	Trididdemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5																SD	
1																RC	
1.5									Brown Encusting Octopus Sponge		BRO						
2															BA		
2.5				Brain					Healthy								
3																RC	
3.5																RC	
4																SD	
4.5																SD	
5																SD	
5.5			Boulder						Dead, partially								
6								Flower	Healthy								
6.5						Lettuce			Healthy								
7																RC	
7.5			Smooth						Healthy								
8			Boulder						Healthy								
8.5																SD	
9																RB	
9.5																SD	
10															BA		
10.5			Boulder						Healthy								
11																SD	
11.5															YA		
12			Boulder						Healthy								
12.5			Boulder						Healthy								
13																RB	
13.5															YA		
14																RB	
14.5			Boulder						Healthy								
15						Lettuce			Healthy								
15.5																SD	
16									Purple Tube Sponge		PU						
16.5																RB	
17																RB	
17.5																SD	
18																SD	
18.5															BA		
19					Finger				Healthy								
19.5																SD	
20																SD	
									PD H S BL								
Total	0	0	7	1	1	2	0	1	1 11 0 0	0	2	0	0	0	5	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	Trididdemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 2, Depth 6m, Section 0-20m Visibility: 30 m Observer: Marjo van den Bulck

Date: Oct. 3, 2002 Temperature: 29C

	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
M	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Tridiidemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5									YA						MA		
1															TA		
1.5																RB	
2																RB	
2.5				Brain					Healthy								
3									TA						MA		
3.5									TA						MA		
4															TA		
4.5															TA		
5																RB	
5.5																RB	
6															TA		
6.5																RB	
7																SD	
7.5															BA		
8															BA		
8.5						Lettuce			Healthy								
9																RB	
9.5																RB	
10																SD	
10.5																RB	
11																RC	
11.5																SD	
12																RB	
12.5																RB	
13						Lettuce			Healthy								
13.5																SD	
14			Greater						Healthy								
14.5															BA		
15																RB	
15.5																RB	
16																RB	
16.5																SD	
17															TA		
17.5																SD	
18																SD	
18.5															TA		
19															TA		
19.5															TA		
20																RB	
									PD H S BL								
Total	0	0	1	1	0	2	0	0	0 4 0 0	0	0	0	0	0	14	22	
	0	**1**	**8**	**4**	**0**	**3**	**2**	**0**	**2 16 0 0**	**3**	**0**	**0**	**0**	**0**	**66**	**73**	**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	Tridiidemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 2, Depth 6m, Section 25-45m Visibility: 30 m Observer: Marjo van den Bulck
Date: Oct. 3, 2002 Temperature: 29C

	HARD CORALS													SOFT CORALS/OTHER						
M	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral	CONDITION/REMARKS	PD	H	S	BL	Gorgonians	Sponges	Tridiemnum	Coralline A	Macro Algae	Algae	Abiotics
0.5																			BA	
1																				RB
1.5									TA										MA	
2																			TA	
2.5																			TA	
3		Mustard							Healthy											
3.5																			TA	
4																			TA	
4.5																			TA	
5																			TA	
5.5																			BA	
6									YA										MA	
6.5																			YA	
7																				RB
7.5																				RB
8																			TA	
8.5																			BA	
9																				RB
9.5																				RB
10																				RB
10.5																				RB
11																			TA	
11.5																			TA	
12																				RB
12.5																				RB
13																			TA	
13.5																				SD
14																			TA	
14.5																				RB
15																			TA	
15.5																			TA	
16																			BA	
16.5																			TA	
17																				RB
17.5																			TA	
18																				RB
18.5																				RB
19																			YA	
19.5																				RB
20																				RB
Total	0	1	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	23	16

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	Tridiidemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 2, Depth 6m, Section 50-70m Visibility: 30 m Observer: Marjo van den Bulck

Date: Oct. 3, 2002 Temperature: 29C

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

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 2, Depth 6m, Section 75-95m Visibility: 30 m Observer: Marjo van den Bulck

Date: Oct. 3, 2002 Temperature: 29C

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

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	Trididdemnum		

PORTOMAREA MARINE MONITORING
CORAL LINE TRANSECT

Transect No: 3, Depth 10m, Section 0-20m Visibility: 30 m Observer: Marjo van den Bulck
Date: Oct. 2 , 2002 Temperature: 29C

	HARD CORALS								CONDITION/REMARKS	SOFT CORALS/OTHER							
M	Branching	Mound	Star	Brain	Finger	Leaf	Fire Coral	Other Coral		Gorgonians	Sponges	Tridiidemnum	Coralline A	Macro Algae	Algae	Abiotics	
0.5															BA		
1																RB	
1.5															BA		
2																RC	
2.5								Pencil	Healthy								
3															BA		
3.5																RC	
4															TA		
4.5																SD	
5															TA		
5.5															TA		
6															TA		
6.5																RC	
7																RC	
7.5															TA		
8																SD	
8.5																SD	
9						Lettuce			Healthy								
9.5						Lettuce			Healthy								
10									Encrusting	Encr.							
10.5		Mustard							Healthy								
11						Lettuce			Healthy								
11.5						Lettuce			Healthy								
12																RC	
12.5				Brain					Healthy								
13				Brain					Healthy								
13.5																SD	
14																SD	
14.5																RB	
15									Poreus Sea Rod	PSR							
15.5									Poreus Sea Rod	PSR							
16															TA		
16.5																RB	
17															BA		
17.5			Boulder						Healthy								
18			Boulder						Healthy								
18.5																SD	
19																SD	
19.5																SD	
20																SD	
									PD H S BL								
Total	0	1	2	2	0	4	0	1	0 10 0 0	3	0	0	0	0	10	17	
	0	**2**	**8**	**2**	**0**	**5**	**1**	**1**	**0 19 0 0**	**3**	**1**	**0**	**0**	**0**	**58**	**79**	**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	Tridiidemnum		

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 3, Depth 10m, Section 25-45m Visibility: 30 m Observer: Marjo van den Bulck
Date: Oct. 2, 2002 Temperature: 29C

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

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 3, Depth 10m, Section 50-70m Visibility: 30 m Observer: Marjo van den Bulck

Date: Oct. 2, 2002 Temperature: 29C

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

PORTOMAREA MARINE MONITORING

CORAL LINE TRANSECT

Transect No: 3, Depth 10m, Section 75-95m Visibility: 30 m Observer: Marjo van den Bulck

Date: Oct. 2, 2002 Temperature: 29C

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

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	Tridídemnum		

PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT SUMMARY: FISH and INVERTEBRATES

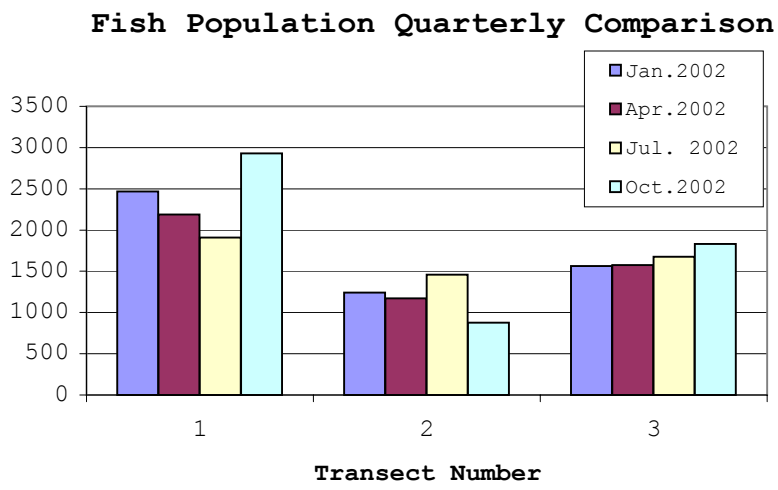
October 2002
Data collected by: Marjo van den Bulck

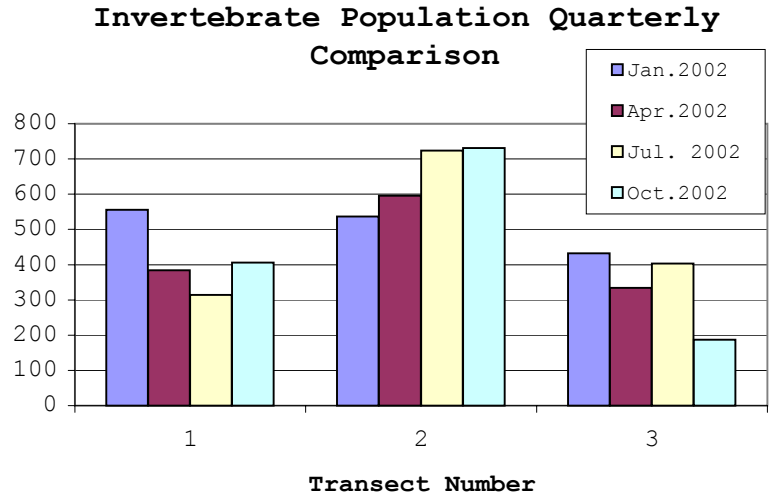
PORTOMARI Atlantic Belt Transects		West side of Bay		East side	Total	Mean	St.Dev.
Fish		Transect 1 Depth:12m	Transect 2 Depth: 6m	Transect 3 Depth:10m			
ANGELFISH	Cherubfish	11	20	3	34	11.33	8.50
	French Angelfish						
	Queen Angelfish						
	Rock Beauty	1		3	4	2.00	1.41
BASSLET	Fairy Basslet	23		7	30	15.00	11.31
BOXFISH	Honeycomb Cowfish	1			1	1.00	
	Smooth Trunkfish	2	1		3	1.50	0.71
	Spotted Trunkfish		2		2	2.00	
BUTTERFLYFISH	Foureye Butterflyfish	2	4	5	11	3.67	1.53
	Longsnout Butterflyfish	2			2	2.00	
CHROMIS	Blue Chromis	251	4	14	269	89.67	139.81
	Brown Chromis	1900	225	1120	3245	1081.67	838.16
	Sunshinefish						
DAMSELFISH	Bicolor Damselfish	264	277	256	797	265.67	10.60
	Cocoa Damselfish		3		3	3.00	
	Dusky Damselfish		27	7	34	17.00	14.14
	Sergeant Major	1		8	9	4.50	4.95
	Threespot Damselfish	68	26	26	120	40.00	24.25
	Yellowtail Damselfish						
DRUM	Spotted Drum						
EEL	Goldentail Moray	3	2		5	2.50	0.71
	Spotted Moray						
FILEFISH	Orangespotted Filefish	1			1	1.00	
FLOUNDER	Peacock Flounder	1			1	1.00	
GOATFISH	Spotted Goatfish			7	7	7.00	
	Yellow Goatfish	45	8	14	67	22.33	19.86
GOBY	Bridled Goby	74	54	110	238	79.33	28.38
	Neon Goby	2	4	2	8	2.67	1.15
	Peppermint Goby	16	17	5	38	12.67	6.66
GROUPER	Coney		3		3	3.00	
	Graysby	13	7	7	27	9.00	3.46
	Rock Hind			5	5	5.00	
	Tiger Grouper						
GRUNT	Bluestriped Grunt	1			1	1.00	
	French Grunt	3	6	7	16	5.33	2.08
	Striped Grunt	54	1	4	59	19.67	29.77
HAMLET	Barred Hamlet	3	2		5	2.50	0.71
	Black Hamlet						
	Butter Hamlet	2	1		3	1.50	0.71
	Yellowtail Hamlet	4	1	4	9	3.00	1.73
HOGFISH	Spanish Hogfish	5			5	5.00	
JACK	Bar Jack	1			1	1.00	
PARROTFISH	Blue Parrotfish	1		1	2	1.00	
	Princess Parrotfish	31	28	40	99	33.00	6.24
	Queen Parrotfish	5	3	5	13	4.33	1.15
	Redband Parrotfish	8	10	8	26	8.67	1.15
	Stoplight Parrotfish	14	9	18	41	13.67	4.51
	Striped Parrotfish	4	4	7	15	5.00	1.73
PUFFER	Balloonfish						
	Sharpnose Puffer	10	8	3	21	7.00	3.61
SCORPIONFISH	Spotted Scorpionfish						
SEABASS	Creolefish	1		5	6	3.00	2.83
	Harlequin Bass	9	11	11	31	10.33	1.15
SNAPPER	Mahogany Snapper						
	Schoolmaster	3		1	4	2.00	1.41
	Yellowtail Snapper						
SQUIRRELFISH	Blackbar Soldierfish	7	4	12	23	7.67	4.04
	Squirrelfish	13	2	15	30	10.00	7.00
SURGEONFISH	Blue Tang	4	2	4	10	3.33	1.15
	Doctorfish						
	Ocean Surgeon		2		2	2.00	
WRASSE	Bluehead Wrasse	40	80	40	160	53.33	23.09
	Clown Wrasse	3	6	4	13	4.33	1.53
	Creole Wrasse						
	Puddingwife		1		1	1.00	
	Slippery Dick						
	Yellowhead Wrasse	29	29	34	92	30.67	2.89
OTHERS	Cornetfish						
	Hawkfish, Redspotted						
	Lizardfish						
	Sand Diver						
	Soapfish, Greater	1	1	1	3	1.00	
	Trumpetfish	3	2	7	12	4.00	2.65
TOTAL		2929	877	1830	5636	1878.67	
	Invertebrates	Transect 1 Depth:12m	Transect 2 Depth: 6m	Transect 3 Depth:10m	Total	Mean	St.Dev.
ANEMONE	Carpet Anemone						
	Corkscrew Anemone	1	4	5	10	3.33	2.08
	Giant Anemone	2	40	15	57	19.00	19.31
	Knobby Anemone	38	38	17	93	31.00	12.12
TUBE WORMS	Christmas tree Worms	300	571	119	990	330.00	227.49
	Ghost Feather Duster	10	11		21	10.50	0.71
	Magnificent Feather Duster	4	2	2	8	2.67	1.15
	Split Crown Feather Duster	14	32	4	50	16.67	14.19
	Star Horseshoe Worm	2		2	4	2.00	
	Variegated Feather Duster	11	26	12	49	16.33	8.39
CRUSTACEANS	Banded Coral Shrimp						
	Pederson Cleaner Shrimp	20	7	8	35	11.67	7.23
	Red Snapping Shrimp						
	Yellowline Arrow Crab	4			4	4.00	
MOLLUSKS	Amber Pen Shell			2	2	2.00	
	Rough File Clam						
	Sea Slug, Lettuce						
	Spiny File Clam						
	Queen Conch						
ECHINODERMS	Pencil Urchin						
	Tigertail Sea Cucumber			1	1	1.00	
TOTAL		406	731	187	1324.00	441.33	

PORTOMAREA MARINE MONITORING

FISH AND INVERTEBRATE QUARTERLY COMPARISON

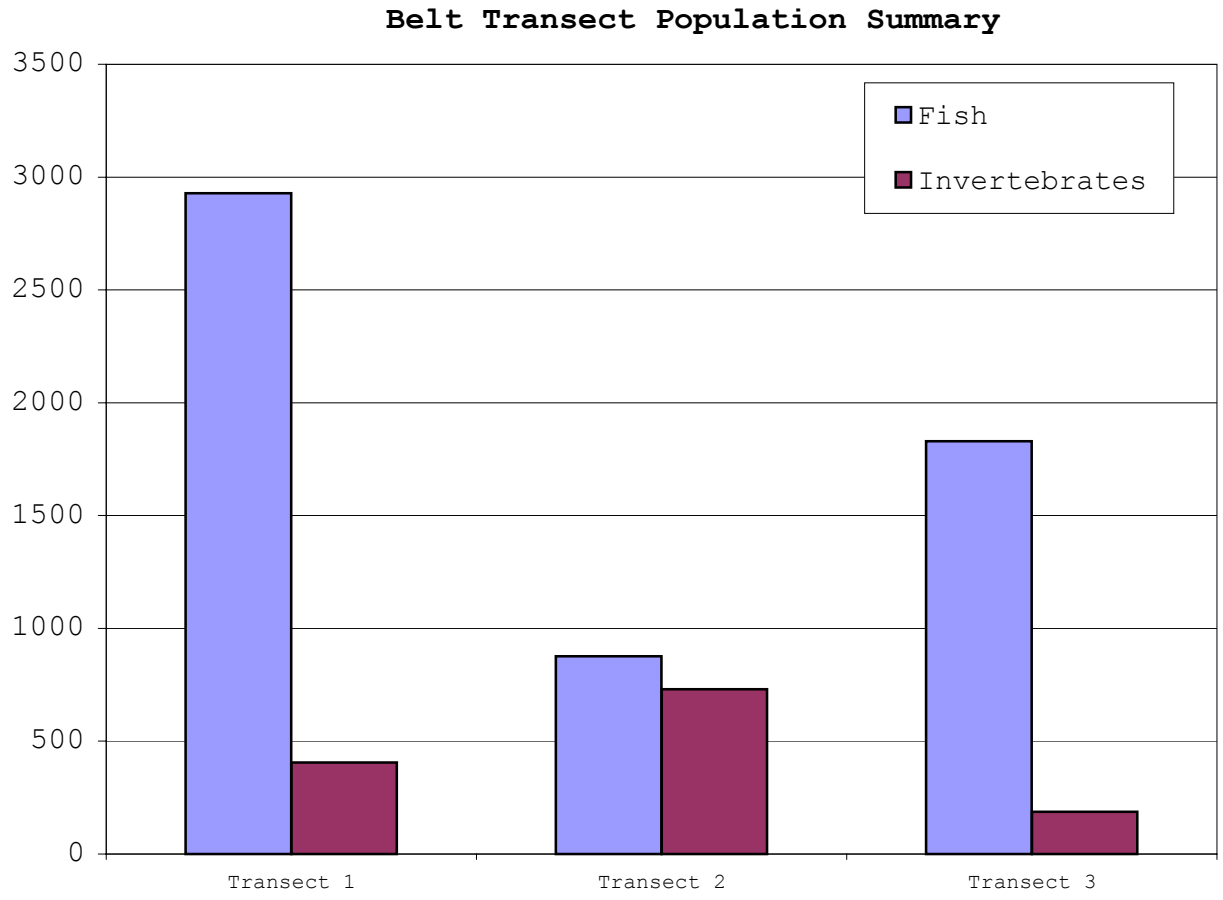
	Transect 1 - Depth 12m				Transect 2 - Depth 6m				Transect 3 - Depth 10m			
	Jan.2002	Apr. 2002	July 2002	Oct. 2002	Jan.2002	Apr. 2002	July 2002	Oct. 2002	Jan. 2002	Apr. 2002	July 2002	Oct. 2002
Fish	2466	2187	1908	2929	1241	1173	1459	877	1562	1576	1677	1830
Invertebrates	556	384	314	406	537	596	724	731	432	334	403	187





PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT FISH AND INVERTEBRATE SUMMARY



PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT: FISH and INVERTEBRATES

Transect #1, Depth: 12m

Date:Sept 30 , 2002Time: 9:08 a.m.

Data collected by: Marjo van den Bulck

Atlantic Belt Transect: Fish		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANGELFISH	Cherubfish		7	1	3	11	3.666667	3.06
	Queen Angelfish							
	Rock Beauty	1				1	1.00	
BASSLET	Fairy Basslet	6	7	6	4	23	5.75	1.26
BLENNY								
BOXFISH	Smooth Trunkfish			1	1	2	1.00	
	Honeycomb Cowfish				1	1	1.00	
BUTTERFLYFISH	Banded Butterflyfish							
	Foureye Butterflyfish				2	2	2	
	Longsnout Butterflyfish	1	1			2	1.00	
CHROMIS	Blue Chromis	200	26	16	9	251	62.75	91.77
	Brown Chromis	500	100	800	500	1900	475.00	287.23
DAMSELFISH	Bicolor	52	75	81	56	264	66.00	14.17
	Sergeant Major		1			1	1	
	Threespot	25	17	14	12	68	17.00	5.72
	Yellowtail							
DRUM	Spotted Drum							
EEL	Green Moray							
	Goldentail Moray	1	1		1	3	1	
FILEFISH	Orangespotted Filefish				1	1	1.00	
FLOUNDER	Peacock Flounder		1			1	1	
GOATFISH	Yellow Goatfish	2	19	14	10	45	11.25	7.18
	Spotted Goatfish							
GOBY	Bridled Goby	16	12	46		74	24.67	18.58
	Neon Goby		2			2	2.00	
	Peppermint Goby			16		16	16	
GROUPER	Graysby	3	4	2	4	13	3.25	0.96
	Rock Hind							
GRUNT	Bluestriped Grunt				1	1	1	
	French Grunt		1	2		3	1.5	0.71
	Striped Grunt	13	1	40		54	18.00	19.97
HAMLET	Barred Hamlet		1	1	1	3	1	
	Butter Hamlet		2			2	2	
	Yellowtail Hamlet	1	2	1		4	1.333333	0.58
HOGFISH	Spanish Hogfish	2	2		1	5	1.67	0.58
JACK	Bar Jack				1	1	1	
PARROTFISH	Blue Parrotfish				1	1	1	
	Princess Parrotfish	4	3	15	9	31	7.75	5.50
	Queen Parrotfish	2	1	2		5	1.666667	0.58
	Redband Parrotfish	3	2	1	2	8	2.00	0.82
	Stoplight Parrotfish	2	3	2	7	14	3.5	2.38
	Striped Parrotfish	2	2			4	2.00	
PUFFER	Balloonfish							
	Sharpnose Puffer		5	2	3	10	3.333333	1.53
SCORPIONFISH	Spotted Scorpionfish							
SEABASS	Creole Fish				1	1	1	
	Harlequin Bass	3	1	3	2	9	2.25	0.96
SNAPPER	Schoolmaster	1		2		3	1.50	0.71
	Yellowtail Snapper							
SQUIRRELFISH	Blackbar Soldierfish	2	3		2	7	2.33	0.58
	Squirrelfish	4	3	4	2	13	3.25	0.96
SURGEONFISH	Blue Tang		3	1		4	2	1.41
	Doctorfish							
	Ocean Surgeon							
WRASSE	Bluehead Wrasse	14	9	13	4	40	10	4.55
	Clown Wrasse	1	1		1	3	1	
	Creole Wrasse							
	Slippery Dick							
	Yellowhead Wrasse	4	2	13	10	29	7.25	5.12
OTHERS	Sand Diver							
	Soapfish,greater	1				1	1.00	
	Trumpetfish		1	2		3	1.5	0.71
TOTAL		**866**	**314**	**1100**	**649**	**2929**	**732.25**	
Atlantic Belt Transect: Invertebrates		**0-20m**	**25-45m**	**50-70m**	**75-100m**	**Total**	**Mean**	**St.Dev.**
ANEMONE	Corkscrew Anemone			1		1	1.00	
	Giant Anemone	1		1		2	1.00	
	Knobby Anemone	14	13	9	2	38	9.5	5.45
TUBE WORMS	Christmas tree Worms	94	76	45	85	300	75.00	21.31
	Ghost Feather Duster	8	1		1	10	3.333333	4.04
	Magnificent Feather Duster	1		3		4	2.00	1.41
	Split Crown Feather Duster		2	3	9	14	4.666667	3.79
	Star Horseshoe Worm			2		2	2	
	Variegated Feather Duster	4	2	5		11	3.67	1.53
CRUSTACEANS	Pederson Cleaner Shrimp	5	9	5	1	20	5	3.27
	Spotted Cleaner Shrimp							
	Yellowline Arrow Crab	1	1	2		4	1.333333	0.58
MOLLUSKS	Rough File Clam							
	Queen Conch							
ECHINODERMS	Reef Urchin							
TOTAL		**128**	**104**	**76**	**98**	**406**	**101.5**	

Note: Previous observations (jan and april 2002) of Beaded Anemone are in fact Knobby Anemone.

PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT: FISH and INVERTEBRATES

Transect #2, Depth: 6m

Date: Oct. 3, 2002 Time: 8:37 a.m.

Data collected by: Marjo van den Bulck

Atlantic Belt Transect: Fish		0-20m	25-45m	50-70m	75-100m	Total	Mean	St.Dev.
ANGELFISH	Cherubfish	2	10	3	5	20	5.00	3.56
	French Angelfish							
BARRACUDA								
BASSLET								
BIGEYE								
BLENNY								
BOXFISH	Smooth Trunkfish			1		1	1.00	
	Spotted Trunkfish	1		1		2	1.00	
BUTTERFLYFISH	Banded Butterflyfish							
	Foureye Butterflyfish		2	1	1	4	1.33	0.58
	Longsnout Butterflyfish							
CARDINALFISH								
CHROMIS	Blue Chromis			4		4	4.00	
	Brown Chromis	80		75	70	225	75.00	5.00
DAMSELFISH	Bicolor Damselfish	27	113	54	83	277	69.25	37.06
	Cocoa Damselfish			1	2	3	1.50	0.71
	Dusky Damselfish	5	3	15	4	27	6.75	5.56
	Sergeant Major							
	Threespot Damselfish	1	3	12	10	26	6.50	5.32
	Yellowtail Damselfish							
DRUM								
EEL	Goldentail Moray	1		1		2	1.00	
	Spotted Moray							
FILEFISH	Orangespotted Filefish							
FLOUNDER	Peacock Flounder							
GOATFISH	Spotted Goatfish							
	Yellow Goatfish	2	1		5	8	2.67	2.08
GOBY	Bridled Goby	14	5	20	15	54	13.50	6.24
	Neon Goby	1	2		1	4	1.33	0.58
	Peppermint Goby	8			9	17	8.50	0.71
GROUPER	Graysby	4		3		7	3.50	0.71
	Coney	1	2			3	1.50	0.71
GRUNT	Bluestriped Grunt							
	French Grunt	2	2	1	1	6	1.50	0.58
	Striped Grunt			1		1	1.00	
HAMLET	Barred Hamlet				2	2	2.00	
	Butter Hamlet				1	1	1.00	
	Yellowtail Hamlet				1	1	1.00	
HOGFISH	Spanish Hogfish							
JACK								
PARROTFISH	Princess Parrotfish	9	2	5	12	28	7.00	4.40
	Queen Parrotfish		2	1		3	1.50	0.71
	Redband Parrotfish	1	3	2	4	10	2.50	1.29
	Stoplight Parrotfish	1		2	6	9	3.00	2.65
	Striped Parrotfish				4	4	4.00	
PUFFER	Sharpnose Puffer	2		2	4	8	2.67	1.15
RAY								
SCORPIONFISH								
SEABASS	Harlequin Bass	4	4		3	11	3.67	0.58
SNAPPER	Schoolmaster							
SQUIRRELFISH	Blackbar Soldier	1			3	4	2.00	1.41
	Squirrelfish		1		1	2	1.00	
SURGEONFISH	Blue Tang	1		1		2	1.00	
	Ocean Surgeon	2				2	2.00	
WRASSE	Bluehead Wrasse	35	13	3	29	80	20.00	14.65
	Clown Wrasse	1	3	1	1	6	1.50	1.00
	Puddingwife		1			1	1.00	
	Slippery Dick							
	Yellowhead Wrasse	7	7	4	11	29	7.25	2.87
OTHERS	Redspotted Hawkfish							
	Lizardfish							
	Sand Diver							
	Soapfish, Greater			1		1	1.00	
	Trumpetfish		1		1	2	1.00	
TOTAL		**211**	**170**	**212**	**284**	**877**	**219.25**	
Atlantic Belt Transect: Invertebrates		**0-20m**	**25-45m**	**50-70m**	**75-100m**	**Total**	**Mean**	**St.Dev.**
ANEMONE	Carpet Anemone							
	Corkscrew Anemone			1	3	4	2.00	1.41
	Giant Anemone	10	13	6	11	40	10.00	2.94
	Knobby Anemone	3	6	16	13	38	9.50	6.03
TUBE WORMS	Christmas tree Worms	144	14	237	176	571	142.75	94.10
	Ghost Feather Duster	9	1	1		11	3.67	4.62
	Magnificent Feather Duster	1		1		2	1.00	
	Split Crown Feather Duster			30	2	32	16.00	19.80
	Variegated Feather Duster	20	3	1	2	26	6.50	9.04
CRUSTACEANS	Banded Coral Shrimp							
	Pederson Cleaner Shrimp		1	5	1	7	2.33	2.31
	Spotted Cleaner Shrimp							
	Yellowline Arrow Crab							
MOLLUSKS	Lettuce Sea Slug							
	Queen Conch							
	Rough Fileclam							
ECHINODERMS	Reef Urchin							
	Tigertail Sea Cucumber							
TOTAL		**187**	**38**	**298**	**208**	**731**	**182.75**	

Note: Previous observations (jan and april 2002) of Beaded Anemone are in fact Knobby Anemone.

PORTOMAREA MARINE MONITORING

ATLANTIC BELT TRANSECT: FISH and INVERTEBRATES

Transect #3, Depth: 10m

Date: Oct 2, 2002 Time: 8:29 a.m.

Data collected and recorded by: Marjo van den Bulck

Atlantic Belt Transect: Fish		0-20m	25-45m	50-70m	75-95m	Total	Mean	St.Dev.
ANGELFISH	Cherubfish	1	2			3	1.50	0.71
	French Angelfish							
	Rock Beauty	3				3	3.00	
BARRACUDA								
BASSLET	Fairy Basslet	3	1	3		7	2.33	1.15
BIGEYE								
BLENNY								
BOXFISH	Smooth Trunkfish							
	Spotted Trunkfish							
BUTTERFLYFISH	Foureye Butterflyfish		3	2		5	2.50	0.71
	Banded Butterflyfish							
CHROMIS	Blue Chromis	3	7	3	1	14	3.50	2.52
	Brown Chromis	600	300	20	200	1120	280.00	242.76
	Sunshinefish							
DAMSELFISH	Bicolor Damselfish	59	108	59	30	256	64.00	32.36
	Cocoa Damselfish							
	Dusky Damselfish	2			5	7	3.50	2.12
	Sergeant Major	5	3			8	4.00	1.41
	Threespot Damselfish	16	2	7	1	26	6.50	6.86
	Yellowtail Damselfish							
DRUM								
EEL	Goldentail Moray							
	Spotted Moray							
FILEFISH	Orangespotted Filefish							
FLOUNDER	Peacock Flounder							
GOATFISH	Spotted Goatfish			7		7	7.00	
	Yellow Goatfish	4	10			14	7.00	4.24
GOBY	Bridled Goby	37	35	22	16	110	27.50	10.15
	Neon Goby		2			2	2.00	
	Peppermint Goby	4	1			5	2.50	2.12
GROUPER	Coney							
	Graysby	2	2		3	7	2.33	0.58
	Rock Hind			3	2	5	2.50	0.71
	Tiger Grouper							
GRUNT	Bluestriped Grunt							
	French Grunt	1	1	1	4	7	1.75	1.50
	Striped Grunt	4				4	4.00	
HAMLET	Barred Hamlet							
	Butter Hamlet							
	Yellowtail Hamlet	1	2	1		4	1.33	0.58
HOGFISH	Spanish Hogfish							
JACK	Bar Jack							
PARROTFISH	Blue Parrotfish	1				1	1.00	
	Princess Parrotfish	11	13	7	9	40	10.00	2.58
	Queen Parrotfish	3	1		1	5	1.67	1.15
	Redband Parrotfish	3	2	3		8	2.67	0.58
	Stoplight Parrotfish	5	5	5	3	18	4.50	1.00
	Striped Parrotfish	2	5			7	3.50	2.12
PUFFER	Sharpnose Puffer	2		1		3	1.50	0.71
RAY								
SCORPIONFISH								
SEABASS	Creolefish	2		3		5	2.50	0.71
	Harlequin Bass	2	2	4	3	11	2.75	0.96
SNAPPER	Mahogany Snapper							
	Schoolmaster		1			1	1.00	
SQUIRRELFISH	Blackbar Soldierfish	12				12	12.00	
	Squirrelfish	5	2	3	5	15	3.75	1.50
SURGEONFISH	Blue Tang		1	2	1	4	1.33	0.58
	Doctorfish							
	Ocean Surgeon							
WRASSE	Bluehead Wrasse	3	14	13	10	40	10.00	4.97
	Clown Wrasse		2	2		4	2.00	
	Creole Wrasse							
	Puddingwife							
	Slippery Dick							
	Yellowhead Wrasse	11	9	12	2	34	8.50	4.51
OTHERS	Soapfish, Greater			1		1	1.00	
	Trumpetfish	5	1		1	7	2.33	2.31
TOTAL		**812**	**537**	**184**	**297**	**1830**	**457.5**	
Atlantic Belt Transect: Invertebrates		**0-20m**	**25-45m**	**50-70m**	**75-100m**	**Total**	**Mean**	**St.Dev.**
ANEMONE	Carpet Anemone							
	Corkscrew Anemone	3		2		5	2.50	0.71
	Giant Anemone	3	4	6	2	15	3.75	1.71
	Knobby Anemone	11	1	4	1	17	4.25	4.72
TUBE WORMS	Christmas tree Worm	69	8	13	29	119	29.75	27.66
	Magnificent Feather Duster			1	1	2	1.00	
	Split Crown Feather Duster			1	3	4	2.00	1.41
	Star Horseshoe Worm	1	1			2	1.00	
	Variegated Feather Duster	5	3		4	12	4.00	1.00
CRUSTACEANS	Banded Coral Shrimp							
	Pederson Cleaner Shrimp	7	1			8	4.00	4.24
	Red Snapping Shrimp							
	Yellowline Arrow Crab							
MOLLUSKS	Amber Pen Shell	2				2	2.00	
ECHINODERMS	Tigertail seacucumber				1	1	1.00	
TOTAL		**101**	**18**	**27**	**41**	**187**	**46.75**	

Note: Previous observations (jan and april 2002) of Beaded Anemone are in fact Knobby Anemone.

PORTOMAREA MARINE MONITORING

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

Date : October 9 , 2002
Observer: Marjo van den Bulck

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	1	3	4.5	Y	Y	N	New coral growth on this ball
			Leaf coral (lettuce)	NW	M	1	2.5	3	Y	Y	N	Lots of Turf Algae
			Leaf coral (lettuce)	N	M	GONE						
			Sea Rod, black	W	M	4	4.5	12	N	Y	Y	Dying ?
			Sea Rod, purple	SE	H	8	8.5	8.5	Y	Y	N	
			Staghorn coral	W	T	50	20	28	Y	Y	N	
10 R	2 LP	2	Sea Rod, black	S	M	6	22	20	Y	Y	Y	New coral growth on this ball
			Star Coral, smooth	SW	H		2.5	4	Y	N	N	
10R	3 P	3	Maze coral	NW	L	DEAD						New coral growth on this ball
			Sea Rod, purple	W	T	6	13	9	Y	N	N	
			Staghorn coral	NE	T	13	13	16	Y	N	N	Part has broken off
			Star coral	NE	H		5	6	Y	N	N	
10 R	4 O	1	Finger coral	W	L	5	4	7	N	Y	Y	Covered in Sand and Algae
												New coral growth on this ball
10R	5 O	1	Sea Rod, purple	NE	H	DEAD	Covered in Algae					No new coral growth on this ball
			Sea Rod, white	NW	M	DEAD	Covered in Algae					Lots of Turf Algae
			Sea Rod, white	SW	H	DEAD	Covered in Algae					
			Staghorn coral	S	M	36	18	25	Y	Y	N	
10R	6 LP	0	Sea Rod, purple	NE	M	GONE	Covered in Algae					Lots of Algae on this ball
			Sea Rod, purple	SE	M	GONE	Covered in Algae					New coral growth
			Sea Rod, white	W	H	DEAD	Covered in Algae					
			Sea Rod, white	NW	M	GONE	Covered in Algae					
10R	7 O	0	No Plugs on this ball									
10R	8 P	7	Leaf coral (lettuce)	NE	H		1	2	Y	Y	N	New coral growth on this ball
			Sea Rod, black	SE	H	4	18	14	Y	Y	N	
			Sea Rod, black	SE	M	7	18	16	Y	Y	N	
			Sea Rod, black	S	M	3	22	6	Y	Y	N	
			Sea Rod, white	E	H	48	15	18	Y	Y	N	Flamingo Tongue on one of the branches
			Staghorn coral	S	T	GONE						
			Staghorn coral	SW	T	19	9	21	N	N	N	Hanging in the plug hole, not steady.
			Staghorn coral	W	T	31	15	21	Y	N	N	
Subtotal		**19**	**Number of live coral plugs**									

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	N	1-on oyste	5	3	5.5	Y	N	N	New coral growth on this ball
			Finger coral	NW	1-on oyste	1	0.5	2	Y	Y	Y	Overgrown by Algae
			Finger coral	NW	M	2	5.5	4	N	Y	Y	Dying? Overgrown by Algae
			Flower coral	NE	T	GONE						One Finger coral WNH grows on plug base
			Leaf coral (Lettuce)	NE	M	2	4	6	Y	Y	Y	
			Sea Rod, Black	NE	M	GONE						
10 R	10 O	1	Finger coral	NE	M	11	7	11	Y	Y	N	New coral growth on this ball
10 R	11 LP	1	Staghorn	N	H	40	22	31	Y	N	N	New coral growth on this ball
10 R	12 LP	2	Brain coral	NW	T	1	6	8.5	N	Y	N	New coral gowth on this ball
			Flower coral	NE	H	DEAD						
			Flower coral	SE	L	DEAD	Overgrown by Algae					
			Mustard hill coral	S	T	1	4	2.5	N	Y	N	Algae from base growing direction top
10 R	13 B	4	Leaf coral (Lettuce)	N	M	1	2.5	3.5	Y	N	N	New coral gowth on this ball
			Sea Rod, Black	NW	H	6	19	12.5	N	Y	N	
			Sea Rod, Black	NW	M	9	17	10	Y	Y	N	
			Staghorn	SW	H	32	28	30	Y	N	N	
10 R	14 U	13	Brain coral	N	L		5	3.5	N	N	Y	New coral gowth on this ball
			Finger coral	N	M	24	4	8.5	Y	Y	N	
			Leaf coral (Lettuce)	E	M	1	3	5	Y	N	N	Two Lettuce corals and one Pencil coral
			Leaf coral (Lettuce)	NW	L	1	4	4	Y	N	N	
			Leaf coral (Lettuce)	NE	M	1	3	3.5	Y	N	N	
			Leaf coral (Lettuce)	SE	M	1	2	3	N	Y	N	12o'clock
			Leaf coral (Lettuce)	SSE	ML	1	1.5	1.5	N	N	N	Dying?
			Leaf coral (Lettuce)	SSE	ML	1	2.5	4.5	Y	N	N	8 o'clock
			Leaf coral (Lettuce)	SSE	L	1	2	4	Y	Y	N	5o'clock
			Leaf coral (Lettuce)	SE	M	1	4.5	5	Y	N	N	
			Leaf coral (Lettuce)	SW	ML	1	1.5	2	N	Y	Y	Overgrown by Algae
			Leaf coral (Lettuce)	SW	M	1	2	3	Y	N	N	
			Pencil coral	NE	M	GONE						
			Staghorn	S	H	24	14	20	Y	N	N	
			Staghorn	N	H	GONE						
10R	15 LP	2	Brain coral	SW	T		4.5	6	Y	N	N	New coral gowth on this ball
			Brain coral	SE	H		2.5	4	Y	N	N	
10R	16 B	2	Brain coral	NW	H		2.5	5	Y	N	N	New coral gowth on this ball
			Flower coral	NE	M	1	1.5	1.5	N	Y	N	Algae all over
10R	17 P	2	Leaf coral (lettuce)	E	M	ALIVE	1.5	1.5	N	Y	Y	New coral gowth on this ball
			Mustard Hill coral	NW	H		1.5	2.5	N	Y	Y	Algae. Dying?
			Pencil coral	NW	T	DEAD						Cristmas Tree Worm on this ball
10R	18 LP	1	Mustard hill coral	NE	H	ALIVE	1.5	1.5	N	Y	N	New coral growth on this ball
			Sea Rod, black	W	T	GONE						Covered in Algae
.			Sea Rod, purple	NW	M	GONE						
Subtotal		**32**	**Number of live coral plugs**									

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										
10R	20 O	0										
10R	21 O	0										
10R	22 LP	0										
10R	23 LP	5	Leaf coral (lettuce)	SE	H		2.5	4	Y	Y	N	New coral growth on this ball
			Mustard hill	N	H		1	4	Y	Y	N	Or is this a Star coral?
			Sea rod, white	NW	H	8	8	6	N	Y	N	
			Sea rod, white	NW	M	10	9	8	N	Y	N	
			Finger coral	SW	H	4	3	4	Y	Y	Y	Not found in July
10R	24 P	3	Brain coral	NW	T	GONE						New coral growth on this ball
			Maze coral	SE	M	1	2	5	Y	N	N	
			Mustard hill	NE	M	1	1	4	N	Y	Y	Dying?
			Sea rod, black	NW	T	GONE						
			Sea rod, black	SW	T	3	14	4.5	Y	N	N	Position is T iso H
			Staghorn coral	N	T	GONE						
10R	25 B	1	Mustard hill	NW	M		0.5	4	Y	Y	N	Algae.
												New coral growth on this ball
10R	26 LP	1	Maze coral	W	T		5.5	8	Y	N	N	No new coral growth on this ball
10R	27 B	1	Sea Rod, black	SW	T	GONE						New coral growth on this ball
			Sea Rod, white	W	T	16	12	8.5	Y	Y	N	
10R	28 P	5	Finger coral	SW	H	GONE						New coral growth on this ball
			Finger coral	NE	M	4	5	6	N	Y	N	Maze Coral and Flower coral previously
			Flower coral	SE	H	DEAD	Overgrown by Algae					as Brain coral
			Leaf coral (lettuce)	SW	M		4	3.5	Y	Y	N	
			Maze coral	W	M		2	3	N	Y	N	
			Sea Rod, black	SE	T	6	17	7	Y	Y	N	
			Staghorn coral	W	H	15	15	18	Y	Y	N	New Finger coral position NM
10R	29 O	0	Mustard hill	W	M	DEAD						
10R	30 LP	0										
10R	31 O	0										
Subtotal		**16**										
Total		**67**	**Number of live coral plugs**									

PORTOMAREA MARINE MONITORING

REEF BALL CORAL PLUG SUMMARY - 2

EAST SIDE OF BAY

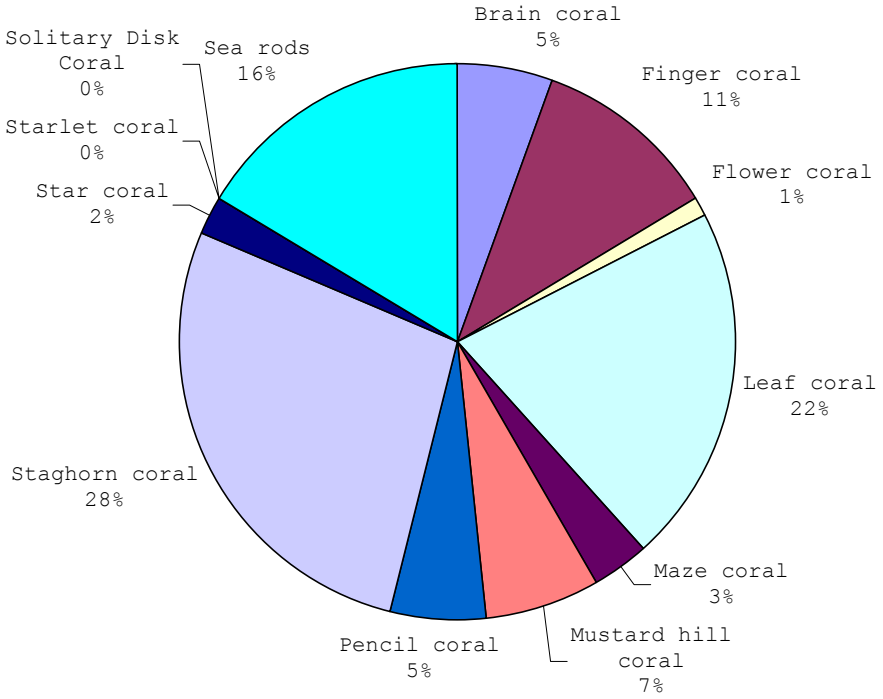
Date : October 11, 2002
Observer: Marjo van den Bulck

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	7	Leaf coral (lettuce)	NW	T	1	6	7.5	N	Y	N	New coral growth on this ball.
			Pencil coral	NE	T	5	4	8	Y	Y	Y	All the new growth tips are counted as h
			Pencil coral	N	H	8	5	5	Y	N	N	
			Solitary Disk coral	N	L	DEAD						
			Staghorn coral	N	T	7	8.5	8	Y	N	N	
			Staghorn coral	S	T	21	14.5	25.5	Y	N	N	
			Staghorn coral	SW	T	11	12	19	Y	N	N	
			Staghorn coral	NW	H	GONE						Plug rest
			Staghorn coral	SE	H	7	9.5	12	Y	N	N	
12L	2P	6	Pencil coral	NE	T	3	4	4.5	N	N	Y	New coral growth on this ball.
			Pencil coral	SW	T	ALIVE	0.5	1.5	Y	N	N	
			Pencil coral	SE	H	2	2	3	Y	N	N	
			Staghorn coral	NE	T	DEAD						
			Staghorn coral	W	T	8	9.5	9	Y	N	N	Position WT iso SET
			Staghorn coral	NW	T	19	16	17	Y	N	N	
			Staghorn coral	NE	H	1	1	1.5	Y	N	N	Broken off, one point left
			Staghorn coral	SE	H	DEAD						
12L	3B	2	Finger coral	NW	T	GONE						New coral growth on this ball.
			Staghorn coral	SW	T	9	10	13	Y	N	N	
			Staghorn coral	NE	H	16	19	18.5	Y	N	N	
12L	4B	2	Staghorn coral	NE	H	DEAD	Overgrown by Algae					New coral growth on this ball.
			Staghorn coral	SW	T	10	13	16	Y	N	N	
			Staghorn coral	NW	H	16	19	20	Y	N	N	
12L	5P	7	Finger coral	NE	T	11	4.5	10	N	N	Y	New coral growth on this ball.
			Finger coral	NW	L	7	5.5	5.5	N	Y	N	
			Staghorn coral	SE	T	DEAD	Algae					
			Staghorn coral	SW	T	5	10	9.5	Y	N	N	
			Staghorn coral	NW	T	13	13	15	Y	N	M	
			Staghorn coral	N	H	GONE						
			Staghorn coral	SE	H	DEAD						
			Staghorn coral	NE	H	10	13	14	N	N	N	
			Staghorn coral	SW	H	10	14	16	Y	N	N	
			Staghorn coral	WSW	H	GONE						
			Staghorn coral	NE	T	11	11	17	Y	N	N	
Total		**24**	**Number of live coral plugs**									

PORTOMAREA MARINE MONITORING
REEF BALL CORAL PLUG SPECIES SUMMARY

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

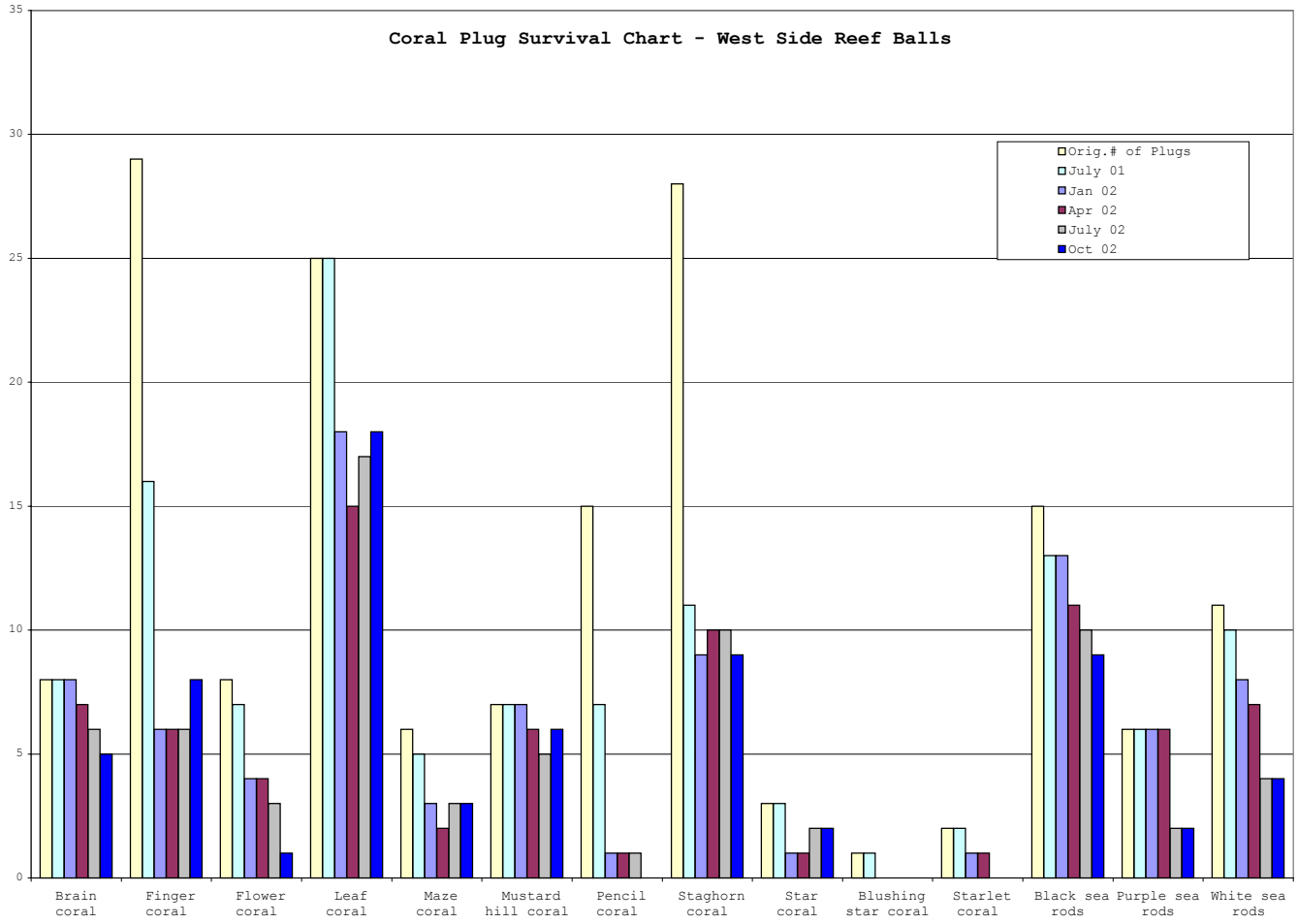
Coral Species October	**Number of Live Plugs**		**% of Total**
Brain coral		5	5.49
Finger coral		10	10.99
Flower coral		1	1.10
Leaf coral		19	20.88
Maze coral		3	3.30
Mustard hill coral		6	6.59
Pencil coral		5	5.49
Staghorn coral		25	27.47
Star coral		2	2.20
Starlet coral		0	0.00
Solitary Disk Coral		0	0.00
Sea rods		15	16.48
black	9		
purple	2		
white	4		
TOTAL		**91**	**100**



Coral Plug Survival Summary
West Side Reef Balls

July 2001 Monitoring (per M.Kuenen)				January 2002 Monitoring		April 2002 Monitoring		July 2002 Monitoring		October 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**	**Number of Live Plugs**	**Mortality 15 months**	**Number of Live Plugs**	**Mortality 18 months**
Brain coral*	8	8	0%	8	0%	7	13%	6	25%	5	38%
Finger coral	29	16	45%	6	79%	6	79%	6	79%	8	72%
Flower coral	8	7	13%	4	50%	4	50%	3	63%	1	88%
Leaf coral	25	25	0%	18	28%	15	40%	17	32%	18	28%
Maze coral	6	5	17%	3	50%	2	67%	3	50%	3	50%
Mustard hill coral*	7	7	0%	7	0%	6	14%	5	29%	6	14%
Pencil coral	15	7	53%	1	93%	1	93%	1	93%	0	100%
Staghorn coral	28	11	61%	9	68%	10	64%	10	64%	9	68%
Star coral	3	3	0%	1	67%	1	67%	2	33%	2	33%
Blushing star coral	1	1	0%	0	100%	0	100%	0	100%	0	100%
Starlet coral	2	2	0%	1	50%	1	50%	0	100%	0	100%
Sea rods black	15	13	13%	13	13%	11	27%	10	33%	9	40%
Sea rods purple	6	6	0%	6	0%	6	0%	2	67%	2	67%
Sea rods white	11	10	9%	8	27%	7	36%	4	64%	4	64%
			Mean		Mean		Mean		Mean		Mean
TOTALS	**164**	**121**	**26%**	**85**	**48%**	**77**	**53%**	**69**	**58%**	**67**	**59%**

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



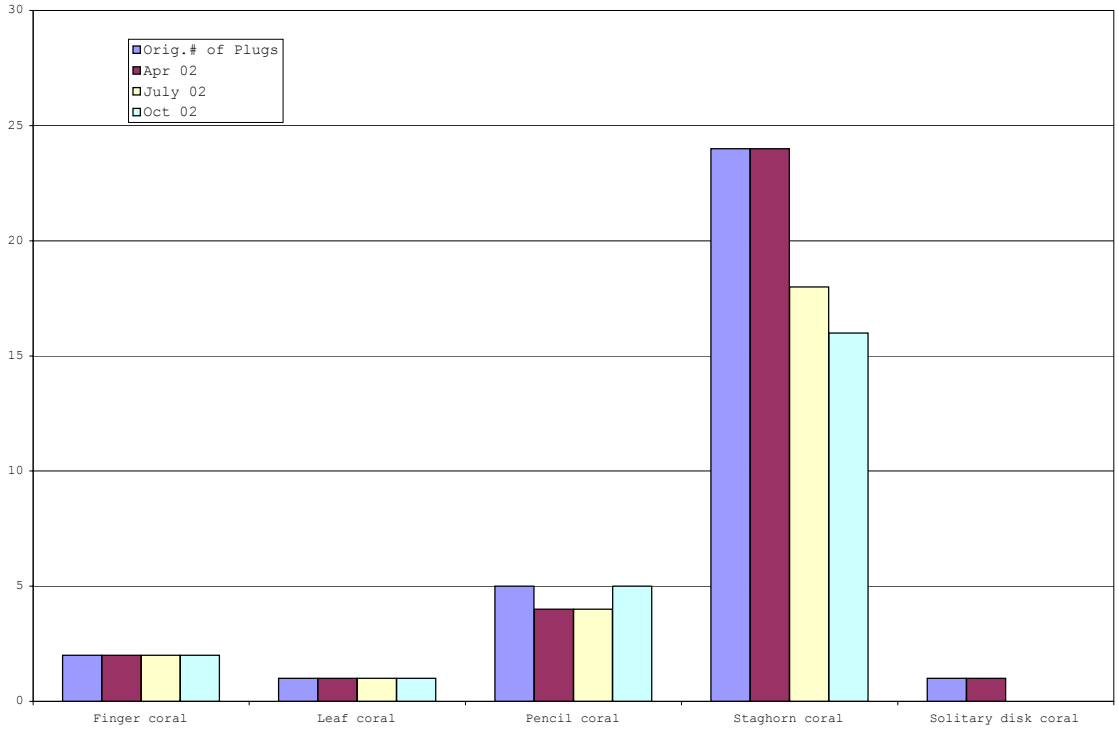
Coral plug mortality chart 1

PORTOMAREA MARINE MONITORING

Coral Plug Survival Summary
East Side Reef Balls

		April 2002 Monitoring		July 2002 Monitoring		October 2002 Monitoring	
Coral Species	Orig.# of Plugs	Number of Live Plugs	Mortality 15 days	Number of Live Plugs	Mortality 3.5 months	Number of Live Plugs	Mortality
Finger coral	2	2	0%	2	0%	2	0%
Leaf coral	1	1	0%	1	0%	1	0%
Pencil coral	5	4	20%	4	20%	5	0%
Staghorn coral	24	24	0%	18	25%	16	33%
Solitary disk coral	1	1	0%	0	100%	0	100%
			Mean		Mean		Mean
TOTALS	**33**	**32**	**3%**	**25**	**24%**	**24**	**27%**

Coral Plug Survival Chart East Side Reef Balls



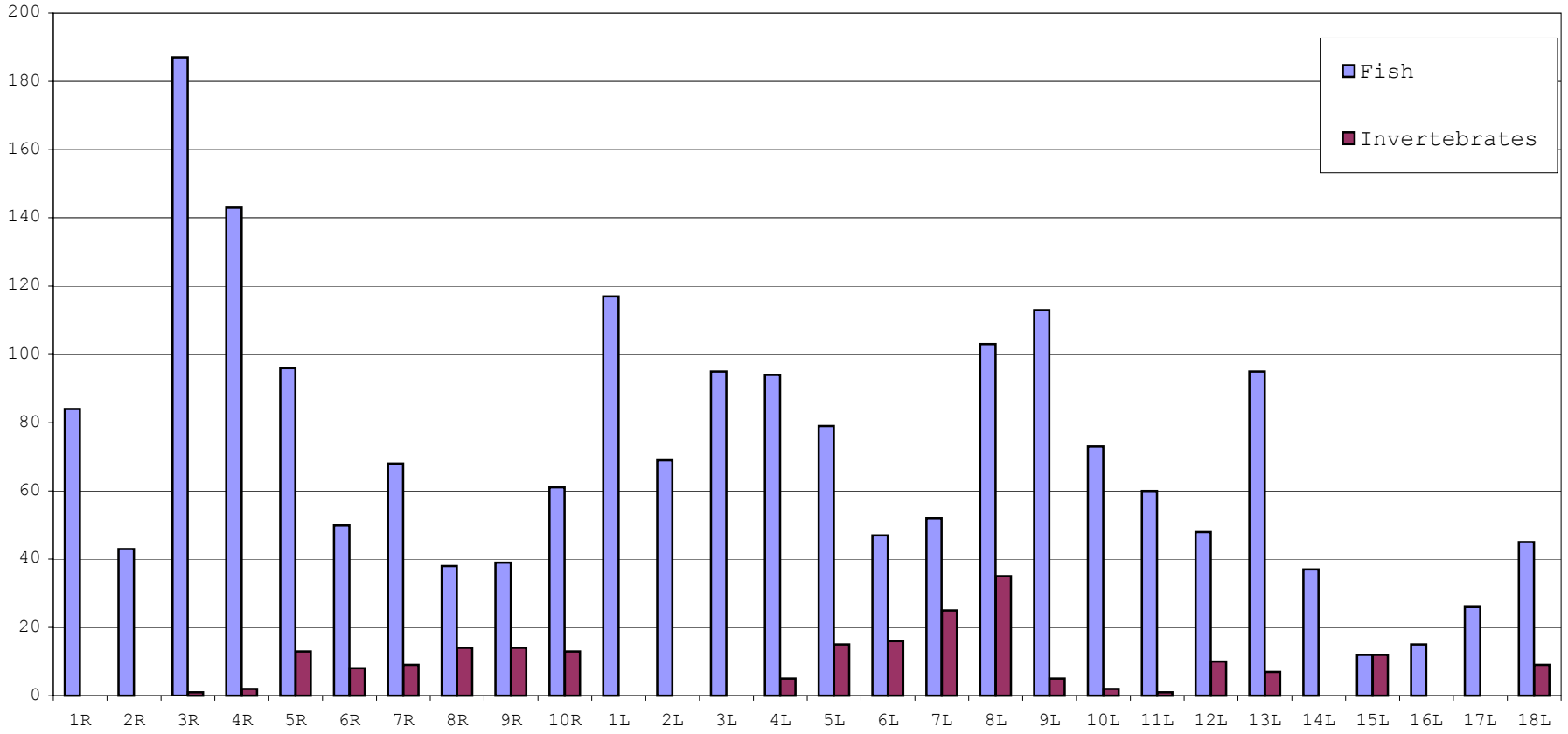
PORTOMAREA MARINE MONITORING

REEF BALL CLUSTERS

FISH AND INVERTEBRATE POPULATION SUMMARY

Cluster No.	No.of Fish	% of Total	No.of Invertebrates	% of Total
1R	84	4.22	0	0.00
2R	43	2.16	0	0.00
3R	187	9.40	1	0.46
4R	143	7.19	2	0.93
5R	96	4.83	13	6.02
6R	50	2.51	8	3.70
7R	68	3.42	9	4.17
8R	38	1.91	14	6.48
9R	39	1.96	14	6.48
10R	61	3.07	13	6.02
1L	117	5.88	0	0.00
2L	69	3.47	0	0.00
3L	95	4.78	0	0.00
4L	94	4.73	5	2.31
5L	79	3.97	15	6.94
6L	47	2.36	16	7.41
7L	52	2.61	25	11.57
8L	103	5.18	35	16.20
9L	113	5.68	5	2.31
10L	73	3.67	2	0.93
11L	60	3.02	1	0.46
12L	48	2.41	10	4.63
13L	95	4.78	7	3.24
14L	37	1.86	0	0.00
15L	12	0.60	12	5.56
16L	15	0.75	0	0.00
17L	26	1.31	0	0.00
18L	45	2.26	9	4.17
TOTAL	**1989**	**100**	**216**	**100.00**

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



PORTOMAREA MARINE MONITORING

FISH and INVERTEBRATE SURVEY - REEF BALL CLUSTERS WEST

DATE: October 4, 2002 TIME: 9.04 a.m.

Data collected and recorded by: 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								**2**	1.00	
BASSLET	Fairy Basslet													
BLENNY	Redlip Blenny			2		1						**3**	1.50	0.71
BOXFISH	Smooth Trunkfish					1						**1**	1.00	
	Spotted Trunkfish													
BUTTERFLYFISH	Banded Butterflyfish		1		2							**3**	1.50	0.71
	Foureye Butterflyfish							3				**3**	3.00	
CHROMIS	Blue Chromis													
	Brown Chromis	6		55	7		7					**75**	18.75	24.17
DAMSELFISH	Beaugregory													
	Bicolor Damselfish		2	18	35	14	10	8	8	10	3	**108**	12.00	9.94
	Cocoa Damselfish	1		5		6	2	3		3	4	**24**	3.43	1.72
	Dusky Damselfish	2	1	4		5	2	2		3	11	**30**	3.75	3.20
	Sergeant Major	14	7		2		1		1	2	5	**32**	4.57	4.72
	Threespot Damselfish	4										**4**	4.00	
	Yellowtail Damselfish		1	1	1		1	1				**5**	1.00	
DRUM	Spotted Drum										1	**1**	1.00	
EEL	Goldentail Moray										1	**1**	1.00	
FILEFISH	Orangespotted Filefish													
GOATFISH	Spotted Goatfish													
	Yellow Goatfish	4			5			1		1		**11**	2.75	2.06
GOBY	Bridled Goby	1	4	3	3	7	9	15	4	9		**55**	6.11	4.34
	Cleaning Goby													
GROUPER	Coney	1				1		1			2	**5**	1.25	0.50
	Graysby						1					**1**	1.00	
GRUNT	Bluestriped Grunt										2	**2**	2.00	
	French Grunt	2	1	52		1	2	2	1		2	**63**	7.88	17.84
	Striped Grunt						2	2				**4**	2.00	
HAMLET	Butter Hamlet										1	**1**	1.00	
HOGFISH	Spanish Hogfish													
JACK	Bar Jack													
PARROTFISH	Princess Parrotfish			1		2		2			1	**6**	1.50	0.58
	Queen Parrotfish	2	1								2	**5**	1.67	0.58
	Redband Parrotfish									1		**1**	1.00	
	Stoplight Parrotfish				2				1	1		**4**	1.33	0.58
	Striped Parrotfish					1						**1**	1.00	
PUFFER	Balloonfish						1				1	**2**	1.00	
	Sharpnose Puffer						2	1	1		1	**5**	1.25	0.50
SCORPIONFISH	Spotted Scorpionfish				1							**1**	1.00	
SEABASS	Harlequin Bass						1						1.00	
SNAPPER	Mahogany Snapper													
	Schoolmaster										1	**1**	1.00	
SQUIRRELFISH	Blackbar Soldierfish			3			3	1		2	4	**13**	2.60	1.14
	Squirrelfish	1		2							1	**4**	1.33	0.58
SURGEONFISH	Blue Tang			1		4		1		1	2	**9**	1.80	1.30
	Ocean Surgeonfish			5	2							**7**	3.50	2.12
WRASSE	Bluehead Wrasse	36	15	26	60	45	5	16	22	3	10	**238**	23.80	18.35
	Clown Wrasse	1	3	5	4	3		4		1		**21**	3.00	1.53
	Puddingwife			2	2	3		1				**8**	2.00	0.82
	Rainbow Wrasse													
	Slippery Dick	9	6	1	17	1		1				**35**	5.83	6.40
	Yellowhead Wrasse						1	2		1	4	**8**	2.00	1.41
OTHERS	Lizardfish, Bluestriped													
	Sand Tilefish										1	**1**	1.00	
	Soapfish, Greater					1				1		**2**	1.00	
	Trumpetfish							1			1	**2**	1.00	
TOTAL		**84**	**43**	**187**	**143**	**96**	**50**	**68**	**38**	**39**	**61**	**809**	**80.9**	

	INVERTEBRATES											**Total**	**Mean**	**St.Dev.**
ANEMONE	Corkscrew Anemone					2	2	3	3			10	2.50	0.58
	Knobby Anemone						1		3	3	3	10	2.50	1.00
	Giant Anemone				2	10	2	1			1	16	3.20	3.83
CRUSTACEANS	Banded Coral Shrimp													
	Pedersen Cleaner Shrimp								1			1	1.00	
	Red Snapping Shrimp							1				1	1.00	
	Yellowline Arrow Crab					1	1	1				3	1.00	
TUBE WORMS	Christmas Tree Worm								4	4		8	4.00	
	Star Horseshoe Worm									3	4	7	3.50	0.71
	Variegated Feather Duster						1	3	3	4	4	15	3.00	1.22
MOLLUSKS	Atlantic Pearl Oyster													
	Lettuce Sea Slug			1								1	1.00	
	Amber Pen Shell													
TUNICATES	Black Tunicate						1					1	1.00	
ECHINODERMS	Longspined Sea Urchin													
	Sea Cucumber Three-Rowed										1	1	1.00	
TOTAL				**1**	**2**	**13**	**8**	**9**	**14**	**14**	**13**	**74**	**7.4**	

Note: Previous observations (jan and april 2002) of Beaded Anemone are in fact Knobby Anemone.

PORTOMAREA MARINE MONITORING

FISH and INVERTEBRATE SURVEY - REEF BALL CLUSTERS EAST

DATE: October 8, 2002 TIME: 18.15 a.m.

Data collected and recorded by: Marjo van den Bulck

CLUSTER NUMBER		1L	2L	3L	4L	5L	6L	7L	8L	9L	10L	11L	12L	13L	14L	15L	16L	17L	18L			
DEPTH		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			St.
	FISH																			Total	Mean	Dev.
ANGELFISH	French Angelfish									1		1								2	1.00	
BLENNY	Redlip Blenny			3	1							2								6	2.00	1.00
BOXFISH	Smooth Trunkfish					1				1										2	1.00	
	Spotted Trunkfish																					
BUTTERFLYFISH	Banded Butterflyfish							1	2	2										5	1.67	0.58
	Foureye Butterflyfish										2		2							4	2.00	
CHROMIS	Brown Chromis	4	2	12	48	2	18	22	21	31		6		23						189	17.18	14.14
DAMSELFISH	Bicolor Damselfish	2	12	6	15	14	9	2		13	26	4	5	34	4			2	2	150	10.00	9.47
	Cocoa Damselfish	1	4	2	1	2	3	5	1					1						20	2.22	1.48
	Dusky Damselfish	7	1		2	4	4	3	5	3	2			1						32	3.20	1.87
	Sergeant Major					5			1	1	3	1	5		3	4	4	11	5	43	3.91	2.84
	Threespot Damselfish																					
	Yellowtail Damselfish					1			1	1					1					4	1.00	
EEL	Chain Moray																					
FILEFISH	Slender Filefish	1																		1	1.00	
	Orange Spotted Filefish			1											1							
FLOUNDER	Peacock Flounder																					
GOATFISH	Spotted Goatfish																					
	Yellow Goatfish		2						1			1								4	1.33	0.58
GOBY	Bridled Goby					21		3	3	8	14	14	20	26	21	5	10	3	27	175	13.46	8.85
GROUPER	Coney					4	1	1			3		1	1	1					12	1.71	1.25
	Graysby																					
	Red Hind	3	1	2		1														7	1.75	0.96
GRUNT	Bluestriped Grunt																					
	French Grunt	46	1		2	3		1	36	4			3		1	1			1	99	9.00	16.01
	Juvenile Grunt U.I.	1																		1	1.00	
HAMLET	Butter Hamlet																	1		1	1.00	
HOGFISH	Spanish Hogfish								1													
JACK	Bar Jack																					
PARROTFISH	Princess Parrotfish								5				3	1		1			2	12	2.40	1.67
	Queen Parrotfish				1				2				1					1	1	6	1.20	0.45
	Redband Parrotfish								4											4	4.00	
	Redtail Parrotfish																					
	Stoplight Parrotfish	1		2					1									1		5	1.25	0.50
	Striped Parrotfish					5														5	5.00	
PUFFER	Sharpnose Puffer			1							1		1			1	1	1		6	1.00	
SCORPIONFISH	Spotted Scorpionfish				1															1	1.00	
SEABASS	Harlequin Bass				1		2	1											1	5	1.25	0.50
SNAPPER	Mutton Snapper																					
SQUIRRELFISH	Squirrelfish	2			2	2	1	4	1											12	2.00	1.10
SURGEONFISH	Blue Tang	2	4	4	7	2		1	8	3	1	3	2	1					1	39	3.00	2.27
	Doctorfish																					
	Ocean Surgeonfish																					
WRASSE	Bluehead Wrasse	40	25	46	2	11	5	4	6	27	15	15	1	1	3			1		202	13.47	14.67
	Clown Wrasse	2	3	3	5		1	1	1	3		1								20	2.22	1.39
	Puddingwife	2	1	4	1	1	3	1					1	1						15	1.67	1.12
	Slippery Dick	3	13	8	3			2		13	5	11	3					3	3	67	6.09	4.35
	Yellowhead Wrasse													3	2			1	2	8	2.00	0.82
OTHERS	Mojarra, Yellowfin													1						1	1.00	
	Sand Diver																					
	Soapfish, Greater			1	1					2	1	1		1				1		8	1.14	0.38
	Trumpetfish				1				3											4	2.00	1.41
TOTAL		117	69	95	94	79	47	52	103	113	73	60	48	95	37	12	15	26	45	1180	65.56	

	INVERTEBRATES																			Total	Mean	St. Dev.
ANEMONE	Corkscrew Anemone				1	1	1					1	1	2					2	9	1.3	0.49
	Giant Anemone					1		1			1		1	4		2				10	1.7	1.21
	Knobby Anemone															1			1	2	1.0	
CRUSTACEANS	Nimble Spray Crab					8	2	3	3	3										19	3.8	2.39
	Pederson Cleaner Shrimp												5	1					1	7	2.3	2.31
	Yellowline Arrow Crab																		4	4	4.0	
TUBE WORMS	Christmas Tree Worm								10							8				18	9.0	1.41
	Split Crown Fthr.Dstr.							1											1	2	1.0	
	Magnificent Fthr.Dstr.																					
	Variegated Fth.Dstr.							1	3		1		3							8	2.0	1.15
ECHINODERMS	Longspined Sea Urchin				4	5	13	19	19	2						1				63	9.0	7.85
TOTAL					5	15	16	25	35	5	2	1	10	7		12			9	142	7.89	

Note: Previous observations (jan and april 2002) of Beaded Anemone are in fact Knobby Anemone.