

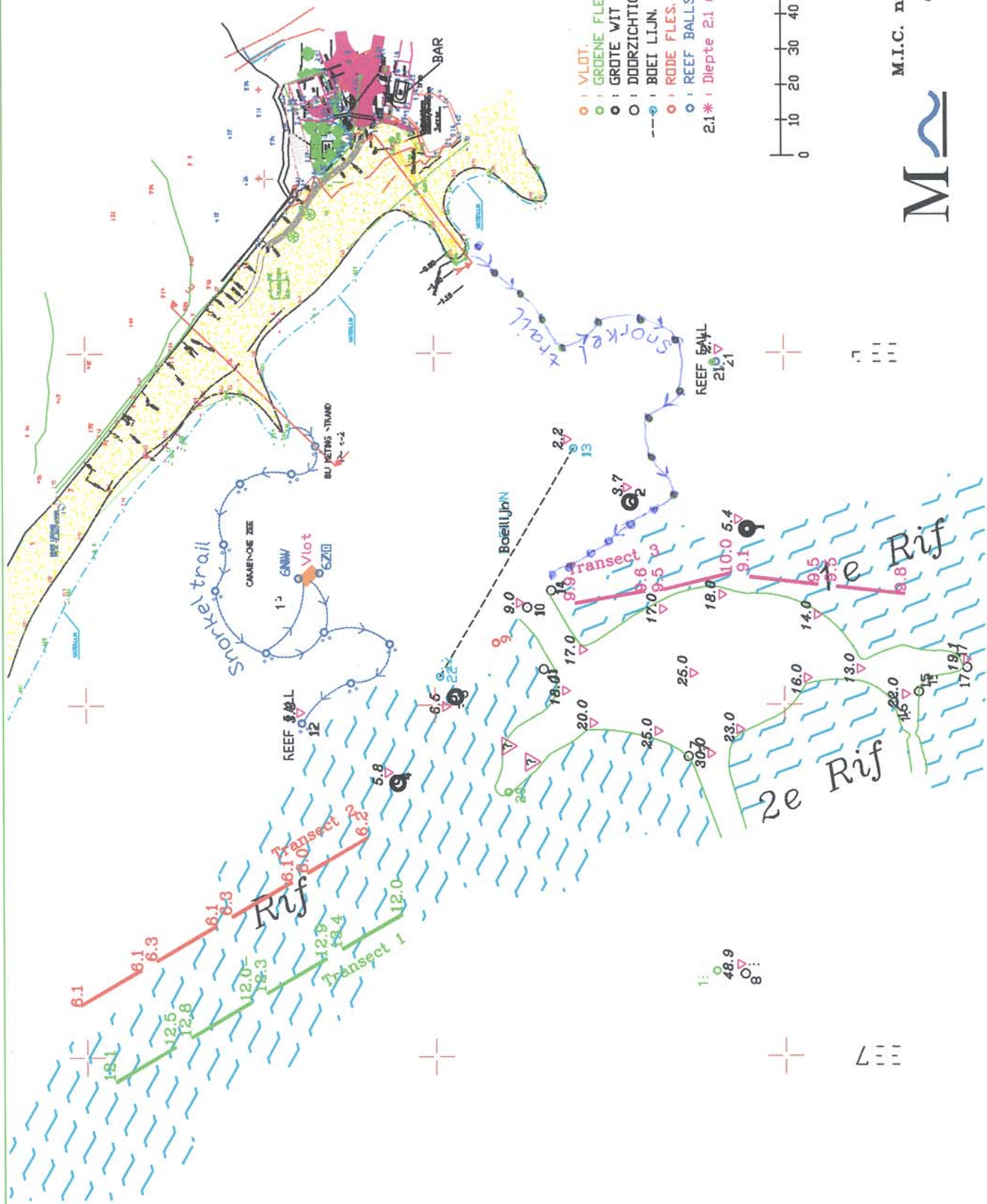
# **PORTOMAREA MARINE MONITORING**

## **CORAL AND FISH/INVERTEBRATE SURVEY**

by

Marjo van den Bulck

**July 2003**



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# PORTOMAREA MARINE MONITORING

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## **PORTOMAREA MARINE MONITORING**

### **FISH/INVERTEBRATE AND CORAL SURVEY OVERVIEW**

Survey dates: June 28 - July 21, 2003.

Data observed and recorded by: Marjo van den Bulck

During 2003 there will be two monitoring periods instead of the quarterly periods in 2002. These periods will be in January and in July.

This was advised by Mr. Paul Hoetjes after reviewing the data collected in 2002. Mr. Paul Hoetjes is the senior scientist of the Netherlands Antilles Coral Reef Initiative (NACRI) and the Ministry of Health and Social Development in the Department of Environment and Nature (MINA).

### **WATER TEMPERATURE & VISIBILITY**

Cloud cover was higher than moderate during this monitoring period, we even had two days of rain on which we did not collect data. And twice rain during collecting data.

Water temperature was 27C during this monitoring period.

Visibility varied from 15m to 30m. Average visibility 25m.

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.

All the rebar's we used to mark our Transects were still there.

## **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 not recorded during this monitoring period.

## **FISH/INVERTEBRATE SURVEY**

There are fluctuations in the Fish/Invertebrate population on the transects. For details check page 22 of this Survey report.

## **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 12E/L. Twenty-four (24) Staghorn coral plugs were planted on Cluster 12E/L on March 23, 2002. These new plugs have been included in the report.

Compared to the observations in the July 2002 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.

One black sea rod plug, overlooked in the October 2002 survey has been added to the data.

The broken off staghorn pieces that were found at Cluster 10W/R are still alive and placed in a Reef ball.

On May 1, 2003, 21 varied coral plugs were planted on Cluster 18E/L. These coral plugs were made and placed in the water at the beginning of the project. They were then placed for the time being on a tray near Cluster 10W/R. The data collected from these plugs on Cluster 18E/L is added to this rapport as from July 2003.

## **FISH/INVERTEBRATE SURVEY - OBSERVATIONS**

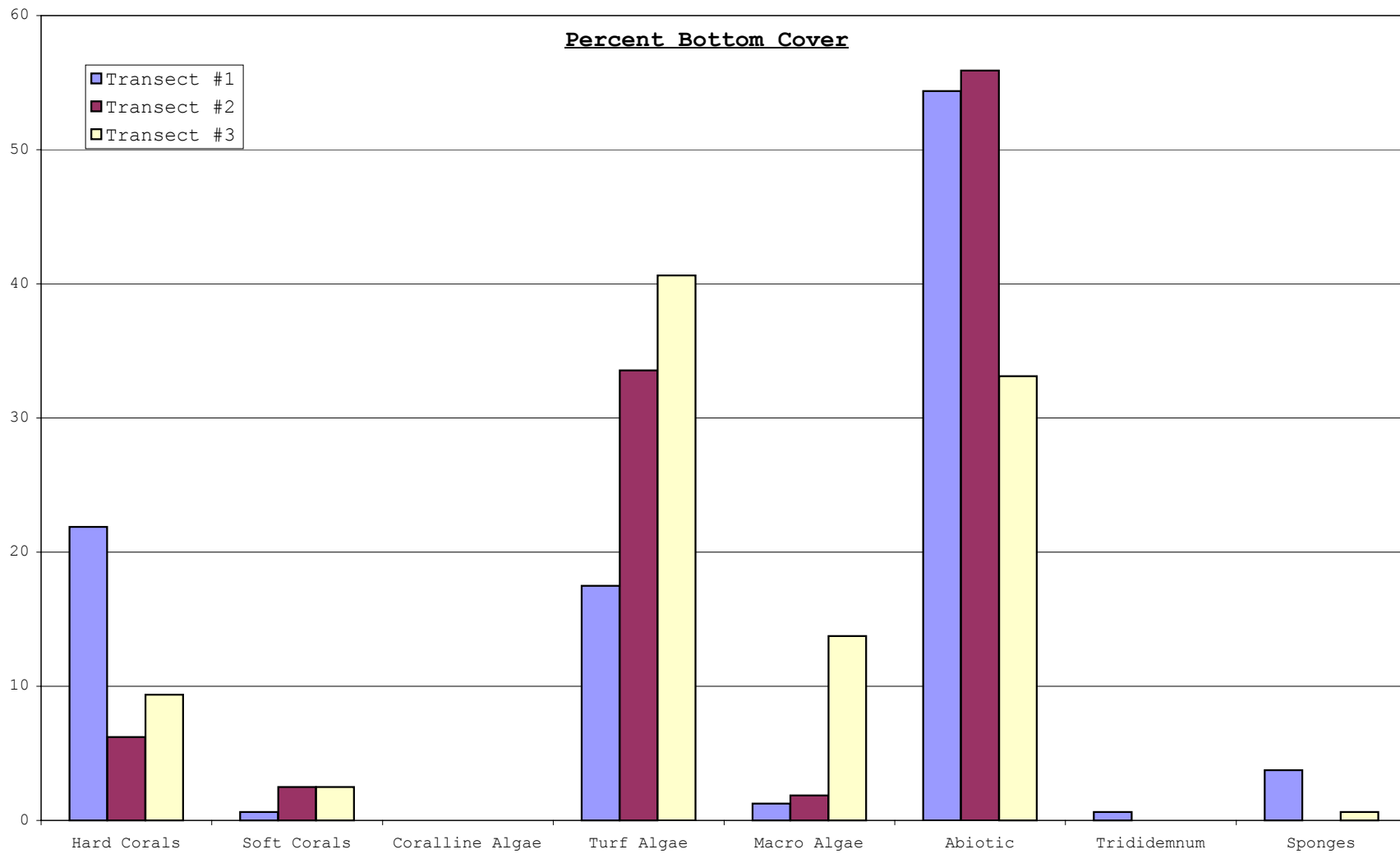
Compared to the January survey period more Invertebrates and less fish were found on the Reef Ball Clusters on the west side of the Bay. On the Reef Ball Clusters on the East side of the Bay more fish and less invertebrates were found compared to January. Overall there were less fish on the Reef Ball Clusters and more invertebrates. The difference is minor.

**PORTOMAREA MARINE MONITORING**  
**CORAL LINE TRANSECT SUMMARY**

Date : July 2003  
Observer: Marjo van den Bulck

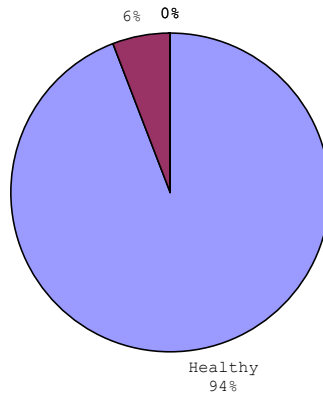
| Transect No. | Depth              | Hard Corals |         |           |      |        |          | Soft Corals | Coralline Algae | Turf Algae | Macro-Algae | Abiotic (Sand) | Trididem-num | Sponges | Total |
|--------------|--------------------|-------------|---------|-----------|------|--------|----------|-------------|-----------------|------------|-------------|----------------|--------------|---------|-------|
|              |                    | Total       | Healthy | (Prt)Dead | Sick | Broken | Bleached |             |                 |            |             |                |              |         |       |
| <b>1</b>     | <b>12m</b>         |             |         |           |      |        |          |             |                 |            |             |                |              |         |       |
|              | 0-20m              | 14          | 13      | 1         | 0    | 0      | 0        | 0           | 0               | 5          | 0           | 20             | 0            | 1       | 40    |
|              | 25-45m             | 9           | 8       | 1         | 0    | 0      | 0        | 0           | 0               | 8          | 1           | 17             | 1            | 4       | 40    |
|              | 50-70m             | 9           | 9       | 0         | 0    | 0      | 0        | 1           | 0               | 6          | 1           | 23             | 0            | 0       | 40    |
|              | 75-95m             | 3           | 3       | 0         | 0    | 0      | 0        | 0           | 0               | 9          | 0           | 27             | 0            | 1       | 40    |
|              | Mean               | 9           | 8       | 1         | 0    | 0      | 0        | 0           | 0               | 7          | 1           | 22             | 0            | 2       | 40    |
|              | % cover            | 22          | 94      | 6         | 0    | 0      | 0        | 1           | 0               | 18         | 1           | 54             | 1            | 4       | 100   |
|              | standard deviation | 4.50        | 4.11    | 0.58      | 0.00 | 0.00   | 0.00     | 0.50        | 0.00            | 1.83       | 0.58        | 4.27           | 0.50         | 1.73    | 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 |             |                 |            |             |                |              |         |       |
| <b>2</b>     | <b>6m</b>          |             |         |           |      |        |          |             |                 |            |             |                |              |         |       |
|              | 0-20m              | 1           | 1       | 0         | 0    | 0      | 0        | 0           | 0               | 12         | 1           | 26             | 0            | 0       | 40    |
|              | 25-45m             | 2           | 2       | 0         | 0    | 0      | 0        | 0           | 0               | 19         | 0           | 19             | 0            | 0       | 40    |
|              | 50-70m             | 5           | 5       | 0         | 0    | 0      | 0        | 0           | 0               | 9          | 1           | 26             | 0            | 0       | 41    |
|              | 75-95m             | 2           | 2       | 0         | 0    | 0      | 0        | 4           | 0               | 14         | 1           | 19             | 0            | 0       | 40    |
|              | Mean               | 3           | 3       | 0         | 0    | 0      | 0        | 1           | 0               | 14         | 1           | 23             | 0            | 0       | 40    |
|              | % cover            | 6           | 100     | 0         | 0    | 0      | 0        | 2           | 0               | 34         | 2           | 56             | 0            | 0       | 100   |
|              | standard deviation | 1.73        | 1.73    | 0.00      | 0.00 | 0.00   | 0.00     | 2.00        | 0.00            | 4.20       | 0.50        | 4.04           | 0.00         | 0.00    | 0.50  |
|              |                    |             |         |           |      |        |          |             |                 |            |             |                |              |         |       |
| 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 |             |                 |            |             |                |              |         |       |
| <b>3</b>     | <b>10m</b>         |             |         |           |      |        |          |             |                 |            |             |                |              |         |       |
|              | 0-20m              | 12          | 11      | 1         | 0    | 0      | 0        | 3           | 0               | 9          | 6           | 10             | 0            | 0       | 40    |
|              | 25-45m             | 0           | 0       | 0         | 0    | 0      | 0        | 1           | 0               | 14         | 4           | 20             | 0            | 1       | 40    |
|              | 50-70m             | 1           | 1       | 0         | 0    | 0      | 0        | 0           | 0               | 19         | 7           | 13             | 0            | 0       | 40    |
|              | 75-95m             | 2           | 2       | 0         | 0    | 0      | 0        | 0           | 0               | 23         | 5           | 10             | 0            | 0       | 40    |
|              | Mean               | 4           | 4       | 0         | 0    | 0      | 0        | 1           | 0               | 16         | 6           | 13             | 0            | 0       | 40    |
|              | % cover            | 9           | 93      | 7         | 0    | 0      | 0        | 3           | 0               | 41         | 14          | 33             | 0            | 1       | 100   |
|              | standard deviation | 5.56        | 5.07    | 0.50      | 0.00 | 0.00   | 0.00     | 1.41        | 0.00            | 6.08       | 1.29        | 4.72           | 0.00         | 0.50    | 0.00  |

PORTOMAREA MARINE MONITORING  
CORAL LINE TRANSECT SUMMARY

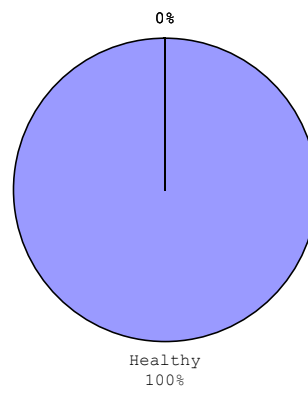


PORTOMAREA MARINE MONITORING  
CORAL LINE TRANSECTS - CORAL HEALTH CHART

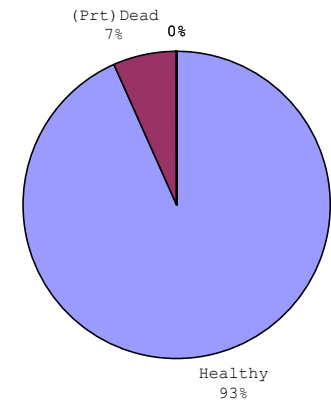
Transect 1, Depth 12m



Transect 2, Depth 6m



Transect 3, Depth 10m



**PORTOMAREA MARINE MONITORING**  
**CORAL LINE TRANSECT**

| Transect No: 1, Depth 12m, Section 0-20m |                  |         |         |       |             |         |            |             |                     | Visibility: 30 m  |   | Observer: Marjo van den Bulck |         |             |             |             |       |          |    |
|------------------------------------------|------------------|---------|---------|-------|-------------|---------|------------|-------------|---------------------|-------------------|---|-------------------------------|---------|-------------|-------------|-------------|-------|----------|----|
| Date: June 30, 2003                      |                  |         |         |       |             |         |            |             |                     | Temperature: 27C  |   |                               |         |             |             |             |       |          |    |
| HARD CORALS                              |                  |         |         |       |             |         |            |             |                     | CONDITION/REMARKS |   | SOFT CORALS                   |         |             |             |             |       |          |    |
| M                                        | 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                                      |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 2                                        |                  |         |         |       | Finger      |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 2.5                                      |                  |         | Boulder |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 3                                        |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             | YA          |       |          |    |
| 3.5                                      |                  |         | Boulder |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 4                                        |                  |         | Boulder |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 4.5                                      |                  |         | Boulder |       |             |         |            |             | Dead partially, 30% |                   |   |                               |         |             |             |             |       |          |    |
| 5                                        |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RC       |    |
| 5.5                                      |                  |         | Boulder |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 6                                        |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 6.5                                      |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 7                                        |                  |         | Boulder |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 7.5                                      |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 8                                        |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 8.5                                      |                  |         |         |       |             | Lettuce |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 9                                        |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RB       |    |
| 9.5                                      |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RB       |    |
| 10                                       |                  |         |         |       |             |         |            | Flower      | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 10.5                                     |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             | BA          |       |          |    |
| 11                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 11.5                                     |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 12                                       |                  |         |         |       |             |         |            |             | Brown Sponge        |                   |   | BRO                           |         |             |             |             |       |          |    |
| 12.5                                     |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RC       |    |
| 13                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             | TA          |       |          |    |
| 13.5                                     |                  |         |         |       |             | Lettuce |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 14                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RC       |    |
| 14.5                                     |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
| 15                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             | YA          |       |          |    |
| 15.5                                     |                  |         |         |       | Brain       |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 16                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RC       |    |
| 16.5                                     |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             | YA          |       |          |    |
| 17                                       |                  |         |         |       |             |         |            |             | TA                  |                   |   |                               |         |             |             |             |       | RC       |    |
| 17.5                                     |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RC       |    |
| 18                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | RC       |    |
| 18.5                                     |                  | Mustard |         |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 19                                       |                  |         | Boulder |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 19.5                                     |                  | Mustard |         |       |             |         |            |             | Healthy             |                   |   |                               |         |             |             |             |       |          |    |
| 20                                       |                  |         |         |       |             |         |            |             |                     |                   |   |                               |         |             |             |             |       | SD       |    |
|                                          |                  |         |         |       |             |         |            |             |                     | PD                | H | S                             | BL      |             |             |             |       |          |    |
| Total                                    | 0                | 2       | 7       | 0     | 2           | 2       | 0          | 1           | 1                   | 13                | 0 | 0                             | 0       | 1           | 0           | 0           | 5     | 20       |    |
|                                          | 0                | 3       | 17      | 1     | 3           | 8       | 0          | 3           | 2                   | 33                | 0 | 0                             | 1       | 6           | 1           | 0           | 2     | 28       | 87 |
| 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 |                  |       |         |       |             | Visibility:30 m  |                  |             | Observer: Marjo van den Bulck |            |                   |             |             |             |       |          |   |   |   |    |  |
|--------------------------------------------|------------------|-------|---------|-------|-------------|------------------|------------------|-------------|-------------------------------|------------|-------------------|-------------|-------------|-------------|-------|----------|---|---|---|----|--|
| Date: June 30, 2003                        |                  |       |         |       |             | Temperature: 27C |                  |             |                               |            |                   |             |             |             |       |          |   |   |   |    |  |
| HARD CORALS                                |                  |       |         |       |             |                  |                  |             | CONDITION/REMARKS             |            | SOFT CORALS/OTHER |             |             |             |       |          |   |   |   |    |  |
| M                                          | Branching        | Mound | Star    | Brain | Finger      | Leaf             | Fire Coral       | Other Coral |                               | Gorgonians | Sponges           | Trididemnum | Coralline A | Macro Algae | Algae | Abiotics |   |   |   |    |  |
| 0.5                                        |                  |       | Boulder |       |             |                  |                  |             | Dead, partially 30%           |            |                   |             |             |             |       |          |   |   |   |    |  |
| 1                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | SD       |   |   |   |    |  |
| 1.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 2                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 2.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | SD       |   |   |   |    |  |
| 3                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 3.5                                        |                  |       |         |       |             | Lettuce          |                  |             | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 4                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | TA    |          |   |   |   |    |  |
| 4.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             | MA          |             |       |          |   |   |   |    |  |
| 5                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   | 20 CM       |             |             |       |          |   |   |   |    |  |
| 5.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | TA    |          |   |   |   |    |  |
| 6                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | TA    |          |   |   |   |    |  |
| 6.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RC       |   |   |   |    |  |
| 7                                          |                  |       |         |       |             |                  |                  |             | Brown Sponge                  |            | BRO               |             |             |             |       |          |   |   |   |    |  |
| 7.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | YA    |          |   |   |   |    |  |
| 8                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RC       |   |   |   |    |  |
| 8.5                                        |                  |       | Boulder |       |             |                  |                  |             | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 9                                          |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 9.5                                        |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RC       |   |   |   |    |  |
| 10                                         |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | SD       |   |   |   |    |  |
| 10.5                                       |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | SD       |   |   |   |    |  |
| 11                                         |                  |       |         |       |             | Lettuce          |                  |             | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 11.5                                       |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RC       |   |   |   |    |  |
| 12                                         |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | YA    |          |   |   |   |    |  |
| 12.5                                       |                  |       |         |       |             |                  |                  |             | Black Sponge                  |            | BLA               |             |             |             |       |          |   |   |   |    |  |
| 13                                         |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 13.5                                       |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 14                                         |                  |       | Boulder |       |             |                  |                  |             | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 14.5                                       |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | YA    |          |   |   |   |    |  |
| 15                                         |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | TA    |          |   |   |   |    |  |
| 15.5                                       |                  |       |         |       |             |                  |                  |             | Brown Sponge                  |            | BRO               |             |             |             |       |          |   |   |   |    |  |
| 16                                         |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             | YA    |          |   |   |   |    |  |
| 16.5                                       |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 17                                         |                  |       |         |       |             |                  |                  | Flower      | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 17.5                                       |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RB       |   |   |   |    |  |
| 18                                         |                  |       | Boulder |       |             |                  |                  |             | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 18.5                                       |                  |       |         | Brain |             |                  |                  |             | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 19                                         |                  |       |         |       |             |                  |                  |             |                               |            |                   |             |             |             |       | RC       |   |   |   |    |  |
| 19.5                                       |                  |       |         |       |             |                  |                  | Flower      | Healthy                       |            |                   |             |             |             |       |          |   |   |   |    |  |
| 20                                         |                  |       |         |       |             |                  |                  |             | Brown Sponge                  |            | BRO               |             |             |             |       |          |   |   |   |    |  |
|                                            |                  |       |         |       |             |                  |                  |             | PD                            | H          | S                 | BL          |             |             |       |          |   |   |   |    |  |
| Total                                      | 0                | 0     | 4       | 1     | 0           | 2                | 0                | 2           | 1                             | 8          | 0                 | 0           |             | 0           | 4     | 1        | 0 | 1 | 8 | 17 |  |
| 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 |                  |              |         |       |             | Visibility: 25 m |                  |             |                   | Observer: Marjo van den Bulck |         |             |             |             |       |          |  |
|-------------------------------------------|------------------|--------------|---------|-------|-------------|------------------|------------------|-------------|-------------------|-------------------------------|---------|-------------|-------------|-------------|-------|----------|--|
| Date: July 1, 2003                        |                  |              |         |       |             | Temperature: 27C |                  |             |                   |                               |         |             |             |             |       |          |  |
| HARD CORALS                               |                  |              |         |       |             |                  |                  |             | CONDITION/REMARKS | SOFT CORALS/OTHER             |         |             |             |             |       |          |  |
| M                                         | Branching        | Mound        | Star    | Brain | Finger      | Leaf             | Fire Coral       | Other Coral |                   | Gorgonians                    | Sponges | Trididemnum | Coralline A | Macro Algae | Algae | Abiotics |  |
| 0.5                                       |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             | BA          |       |          |  |
| 1                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             | YA          |       |          |  |
| 1.5                                       |                  |              | Boulder |       |             |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 2                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 2.5                                       |                  |              | Boulder |       |             |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 3                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 3.5                                       |                  |              | Boulder |       |             |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 4                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             | TA          |       |          |  |
| 4.5                                       |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | RB    |          |  |
| 5                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | RC    |          |  |
| 5.5                                       |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | RC    |          |  |
| 6                                         |                  |              |         |       |             | Lettuce          |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 6.5                                       |                  | Mustard hill |         |       |             |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 7                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 7.5                                       |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 8                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 8.5                                       |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 9                                         |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 9.5                                       |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 10                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 10.5                                      |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 11                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 11.5                                      |                  |              | Boulder |       |             |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 12                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | RB    |          |  |
| 12.5                                      |                  |              |         |       | Finger      |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 13                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 13.5                                      |                  |              |         |       |             |                  |                  |             | BA                |                               |         |             | MA          |             |       |          |  |
| 14                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             | BA          |       |          |  |
| 14.5                                      |                  |              |         |       |             |                  |                  |             | Purple Sea Rod    | PU                            |         |             |             |             |       |          |  |
| 15                                        |                  |              |         |       |             | Lettuce          |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 15.5                                      |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             | BA          |       |          |  |
| 16                                        |                  |              | Boulder |       |             |                  |                  |             | Healthy           |                               |         |             |             |             |       |          |  |
| 16.5                                      |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             | BA          |       |          |  |
| 17                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 17.5                                      |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 18                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 18.5                                      |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 19                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 19.5                                      |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
| 20                                        |                  |              |         |       |             |                  |                  |             |                   |                               |         |             |             |             | SD    |          |  |
|                                           |                  |              |         |       |             |                  |                  |             | PD                | H                             | S       | BL          |             |             |       |          |  |
| Total                                     | 0                | 1            | 5       | 0     | 1           | 2                | 0                | 0           | 0                 | 9                             | 0       | 0           |             | 1           | 6     | 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 |           |       |         | Visibility: 25 m |        |         |            | Observer: Marjo van den Bulck |              |                   |         |             |             |             |       |          |  |
|-------------------------------------------|-----------|-------|---------|------------------|--------|---------|------------|-------------------------------|--------------|-------------------|---------|-------------|-------------|-------------|-------|----------|--|
| Date: July 1, 2003                        |           |       |         | Temperature: 26C |        |         |            |                               |              |                   |         |             |             |             |       |          |  |
| HARD CORALS                               |           |       |         |                  |        |         |            | CONDITION/REMARKS             |              | SOFT CORALS/OTHER |         |             |             |             |       |          |  |
| M                                         | 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                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 2.5                                       |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | BA    |          |  |
| 3                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RC       |  |
| 3.5                                       |           |       |         |                  |        | Lettuce |            |                               | Healthy      |                   |         |             |             |             |       |          |  |
| 4                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RC       |  |
| 4.5                                       |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | BA    |          |  |
| 5                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 5.5                                       |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 6                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RC       |  |
| 6.5                                       |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 7                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | TA    |          |  |
| 7.5                                       |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 8                                         |           |       |         |                  |        |         |            |                               | Brown Sponge |                   | BRO     |             |             |             |       |          |  |
| 8.5                                       |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 9                                         |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | TA    |          |  |
| 9.5                                       |           |       |         |                  |        | Lettuce |            |                               | Healthy      |                   |         |             |             |             |       |          |  |
| 10                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 10.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | TA    |          |  |
| 11                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 11.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 12                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 12.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | TA    |          |  |
| 13                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 13.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 14                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | TA    |          |  |
| 14.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | YA    |          |  |
| 15                                        |           |       |         |                  |        |         |            |                               | YA           |                   |         |             |             |             |       | SD       |  |
| 15.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 16                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 16.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 17                                        |           |       | Boulder |                  |        |         |            |                               | Healthy      |                   |         |             |             |             |       |          |  |
| 17.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             | TA    |          |  |
| 18                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RC       |  |
| 18.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | RB       |  |
| 19                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 19.5                                      |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| 20                                        |           |       |         |                  |        |         |            |                               |              |                   |         |             |             |             |       | SD       |  |
| Total                                     | 0         | 0     | 1       | 0                | 0      | 2       | 0          | 0                             |              | 0                 | 1       | 0           | 0           | 0           | 9     | 27       |  |

**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      |           |

## CORAL LINE TRANSECT

Date: July 1, 2003

Temperature: 27C

Observer: Mario van den Bulck

| HARD CORALS |           |       |      |       |        |         |            |             | CONDITION/REMARKS |            |         |             | SOFT CORALS/OTHER |             |       |          |             |  |  |  |
|-------------|-----------|-------|------|-------|--------|---------|------------|-------------|-------------------|------------|---------|-------------|-------------------|-------------|-------|----------|-------------|--|--|--|
| M           | Branching | Mound | Star | Brain | Finger | Leaf    | File Coral | Other Coral |                   | Gorgonians | Sponges | Trididemnum | Coralline A       | Macro Algae | Algae | Abiotics |             |  |  |  |
| 0.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 1           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 1.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | YA    |          |             |  |  |  |
| 2           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 2.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |  |
| 3           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | YA    |          |             |  |  |  |
| 3.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 4           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |  |
| 4.5         |           |       |      |       |        |         |            | TA          |                   |            |         |             |                   | MA          |       |          |             |  |  |  |
| 5           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 5.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 6           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 6.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 7           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 7.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 8           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 8.5         |           |       |      |       |        | Lettuce |            | Healthy     |                   |            |         |             |                   |             |       |          |             |  |  |  |
| 9           |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 9.5         |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 10          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 10.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 11          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | YA    |          |             |  |  |  |
| 11.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 12          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 12.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 13          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 13.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |  |
| 14          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |  |
| 14.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 15          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 15.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 16          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |  |
| 16.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 17          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 17.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 18          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | YA    |          |             |  |  |  |
| 18.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 19          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |  |
| 19.5        |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
| 20          |           |       |      |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |  |
|             |           |       |      |       |        |         |            |             | PD                | H          | S       | BL          |                   |             |       |          |             |  |  |  |
| Total       | 0         | 0     | 0    | 0     | 0      | 1       | 0          | 0           | 0                 | 0          | 1       | 0           | 0                 | 1           | 12    | 26       |             |  |  |  |
|             | 0         | 1     | 2    | 3     | 1      | 2       | 1          | 0           | 0                 | 10         | 0       | 0           | 0                 | 3           | 54    | 90       | 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

1

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

TR

Trididemnum

PORTOMAREA MARINE MONITORING  
CORAL LINE TRANSECT

| Transect No: 2, Depth 6m, Section 25-45m |           |              |      |       |        |      |            |             |         | Visibility: 25 m  |            |         |             | Observer: Marjo van den Bulck |             |       |          |    |  |                   |  |  |  |  |  |  |  |  |  |
|------------------------------------------|-----------|--------------|------|-------|--------|------|------------|-------------|---------|-------------------|------------|---------|-------------|-------------------------------|-------------|-------|----------|----|--|-------------------|--|--|--|--|--|--|--|--|--|
| Date: July 1, 2003                       |           |              |      |       |        |      |            |             |         | Temperature: 27C  |            |         |             |                               |             |       |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| HARD CORALS                              |           |              |      |       |        |      |            |             |         | CONDITION/REMARKS |            |         |             |                               |             |       |          |    |  | SOFT CORALS/OTHER |  |  |  |  |  |  |  |  |  |
| M                                        | Branching | Mound        | Star | Brain | Finger | Leaf | Fite Coral | Other Coral |         |                   | Gorgonians | Sponges | Trididemnum | Coralline A                   | Macro Algae | Algae | Abiotics |    |  |                   |  |  |  |  |  |  |  |  |  |
| 0.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | BA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 1                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 1.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 2                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 2.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 3                                        |           | Mustard hill |      |       |        |      |            |             | Healthy |                   |            |         |             |                               |             |       |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 3.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 4                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 4.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 5                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 5.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 6                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 6.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | BA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 7                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 7.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 8                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 8.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 9                                        |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 9.5                                      |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | SD       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 10                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | BA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 10.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 11                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 11.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 12                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 12.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 13                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | SD       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 13.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | SD       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 14                                       |           |              |      | Brain |        |      |            |             | Healthy |                   |            |         |             |                               |             |       |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 14.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 15                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | SD       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 15.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | SD       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 16                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 16.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 17                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 17.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | TA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 18                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 18.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 19                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
| 19.5                                     |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             | YA    |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| 20                                       |           |              |      |       |        |      |            |             |         |                   |            |         |             |                               |             |       | RB       |    |  |                   |  |  |  |  |  |  |  |  |  |
|                                          |           |              |      |       |        |      |            |             |         | PD                | H          | S       | BL          |                               |             |       |          |    |  |                   |  |  |  |  |  |  |  |  |  |
| Total                                    | 0         | 1            | 0    | 1     | 0      | 0    | 0          | 0           | 0       | 0                 | 0          | 2       | 0           | 0                             | 0           | 0     | 19       | 19 |  |                   |  |  |  |  |  |  |  |  |  |

## 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 |             |         |       | Visibility: 25 m |         |            |             | Observer: Marjo van den Bulck |                   |                   |             |             |             |       |          |    |  |
|------------------------------------------|-------------|---------|-------|------------------|---------|------------|-------------|-------------------------------|-------------------|-------------------|-------------|-------------|-------------|-------|----------|----|--|
| Date: July 1, 2003                       |             |         |       | Temperature: 27C |         |            |             |                               |                   |                   |             |             |             |       |          |    |  |
| 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                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 1.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 2                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 2.5                                      |             |         |       |                  | Lettuce |            |             | Healthy                       |                   |                   |             |             |             |       |          |    |  |
| 3                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 3.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 4                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 4.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 5                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             | YA          |       |          |    |  |
| 5.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 6                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 6.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 7                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 7.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 8                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 8.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 9                                        |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 9.5                                      |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 10                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 10.5                                     |             | Boulder |       |                  |         |            |             | Healthy                       |                   |                   |             |             |             | RB    |          |    |  |
| 11                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 11.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 12                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 12.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 13                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 13.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 14                                       |             | Boulder |       |                  |         |            |             | Healthy                       |                   |                   |             |             |             |       |          |    |  |
| 14.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RC    |          |    |  |
| 15                                       |             |         |       |                  |         | Fire       |             | Healthy                       |                   |                   |             |             |             |       |          |    |  |
| 15.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 16                                       |             |         | Brain |                  |         |            |             | Healthy                       |                   |                   |             |             |             |       |          |    |  |
| 16.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 17                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 17.5                                     |             |         |       |                  |         |            |             | TA                            |                   |                   |             | MA          |             |       |          |    |  |
| 18                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 18.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             | TA          |       |          |    |  |
| 19                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | SD    |          |    |  |
| 19.5                                     |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
| 20                                       |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | RB    |          |    |  |
|                                          |             |         |       |                  |         |            |             | PD                            | H                 | S                 | BL          |             |             |       |          |    |  |
| Total                                    | 0           | 0       | 2     | 0                | 1       | 1          | 1           | 0                             | 0                 | 5                 | 0           | 0           |             | 0     | 0        | 0  |  |
|                                          |             |         |       |                  |         |            |             |                               |                   |                   |             |             |             | 1     | 9        | 26 |  |

**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      Visibility: 25 m      Observer: Marjo van den Bulck  
Date: July 1, 2003      Temperature: 27C

| 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   |             |       |      | Brain |        |      |            |             | Healthy           |                   |         |             |             |             |       |          |   |
| 2     |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 2.5   |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 3     |             |       |      |       |        |      |            |             | Sea Plume         | SP                |         |             |             |             |       |          |   |
| 3.5   |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | YA    |          |   |
| 4     |             |       |      |       |        |      |            |             | Purple Sea Rod    | PU                |         |             |             |             |       |          |   |
| 4.5   |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 5     |             |       |      |       |        |      |            |             | Purple Sea Rod    | PU                |         |             |             |             |       |          |   |
| 5.5   |             |       |      |       |        |      |            |             | Purple Sea Rod    | PU                |         |             |             |             |       |          |   |
| 6     |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 6.5   |             |       |      |       |        |      |            |             | TA                |                   |         |             | MA          |             |       |          |   |
| 7     |             |       |      | Brain |        |      |            |             | Healthy           |                   |         |             |             |             |       |          |   |
| 7.5   |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 8     |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 8.5   |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 9     |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 9.5   |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 10    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 10.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 11    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 11.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 12    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 12.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 13    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 13.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 14    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | YA    |          |   |
| 14.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 15    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 15.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 16    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | TA    |          |   |
| 16.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 17    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | YA    |          |   |
| 17.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | YA    |          |   |
| 18    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | SD       |   |
| 18.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             | YA    |          |   |
| 19    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 19.5  |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
| 20    |             |       |      |       |        |      |            |             |                   |                   |         |             |             |             |       | RB       |   |
|       |             |       |      |       |        |      |            |             |                   | PD                | H       | S           | BL          |             |       |          |   |
| Total | 0           | 0     | 0    | 2     | 0      | 0    | 0          | 0           |                   | 0                 | 2       | 0           | 0           |             | 4     | 0        | 0 |
|       |             |       |      |       |        |      |            |             |                   |                   |         |             |             | 1           | 14    | 19       |   |

**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: July 3 , 2003

Visibility: 30 m  
Temperature: 27C

Observer: Marjo van den Bulck

| HARD CORALS |           |         |         |       |        |         |            |             | CONDITION/REMARKS |            |         |             | SOFT CORALS/OTHER |             |       |          |             |  |  |
|-------------|-----------|---------|---------|-------|--------|---------|------------|-------------|-------------------|------------|---------|-------------|-------------------|-------------|-------|----------|-------------|--|--|
| M           | Branching | Mound   | Star    | Brain | Finger | Leaf    | Fire Coral | Other Coral |                   | Gorgonians | Sponges | Trididemnum | Coralline A       | Macro Algae | Algae | Abiotics |             |  |  |
| 0.5         |           |         |         |       |        |         |            |             | TA                |            |         |             |                   | MA          |       |          |             |  |  |
| 1           |           |         |         |       |        |         |            |             | TA                |            |         |             |                   | MA          |       |          |             |  |  |
| 1.5         |           |         |         |       |        |         |            |             | TA                |            |         |             |                   | MA          |       |          |             |  |  |
| 2           |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| 2.5         |           |         |         |       |        |         |            | Pencil      | Dead, 20%         |            |         |             |                   |             |       |          |             |  |  |
| 3           |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |
| 3.5         |           |         |         |       |        |         |            |             | Sea Plume         | SP         |         |             |                   |             | TA    |          |             |  |  |
| 4           |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |
| 4.5         |           |         |         |       |        |         |            |             | TA                |            |         |             | MA                |             |       |          |             |  |  |
| 5           |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| 5.5         |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       |          |             |  |  |
| 6           |           |         |         |       |        | Lettuce |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 6.5         | Boulder   |         |         |       |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 7           |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| 7.5         |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | TA    |          |             |  |  |
| 8           |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| 8.5         |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |
| 9           |           |         |         |       |        | Lettuce |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 9.5         |           | Boulder |         |       |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 10          |           |         |         |       |        |         |            |             | Encrusting        | ENC        |         |             |                   |             |       |          |             |  |  |
| 10.5        |           |         | Boulder |       |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 11          |           |         | Boulder |       |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 11.5        |           |         |         |       |        | Lettuce |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 12          |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |
| 12.5        |           |         |         | Brain |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 13          |           |         |         | Brain |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 13.5        |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |
| 14          |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| 14.5        |           |         |         |       |        |         |            |             | TA                |            |         |             | MA                |             |       |          |             |  |  |
| 15          |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |
| 15.5        |           |         |         |       |        |         |            |             | Purple Sea Rod    | PU         |         |             |                   |             |       |          |             |  |  |
| 16          |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |
| 16.5        |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RB       |             |  |  |
| 17          |           |         | Boulder |       |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 17.5        |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | RC       |             |  |  |
| 18          |           |         | Boulder |       |        |         |            |             | Healthy           |            |         |             |                   |             |       |          |             |  |  |
| 18.5        |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| 19          |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       | SD       |             |  |  |
| 19.5        |           |         |         |       |        |         |            |             | TA                |            |         |             | MA                |             |       |          |             |  |  |
| 20          |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             | BA    |          |             |  |  |
| Total       | 0         | 1       | 5       | 2     | 0      | 3       | 0          | 1           | PD<br>1           | H<br>11    | S<br>0  | BL<br>0     |                   |             | 6     | 9        | 10          |  |  |
|             | 0         | 1       | 7       | 2     | 0      | 3       | 1          | 1           | 1                 | 14         | 0       | 0           |                   |             | 22    | 65       | 53          |  |  |
|             |           |         |         |       |        |         |            |             |                   |            |         |             |                   |             |       |          | 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: 3, Depth 10m, Section 25-45m |           |       |      | Visibility: 30 m |        |      |            | Observer: Marjo van den Bulck |                      |                   |         |             |             |             |       |          |    |
|-------------------------------------------|-----------|-------|------|------------------|--------|------|------------|-------------------------------|----------------------|-------------------|---------|-------------|-------------|-------------|-------|----------|----|
| Date: July 3, 2003                        |           |       |      | Temperature: 27C |        |      |            |                               |                      |                   |         |             |             |             |       |          |    |
| HARD CORALS                               |           |       |      |                  |        |      |            | CONDITION/REMARKS             |                      | SOFT CORALS/OTHER |         |             |             |             |       |          |    |
| M                                         | Branching | Mound | Star | Brain            | Finger | Leaf | Fire Coral | Other Coral                   |                      | Gorgonians        | Sponges | Trididemnum | Coralline A | Macro Algae | Algae | Abiotics |    |
| 0.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 1                                         |           |       |      |                  |        |      |            |                               | TA                   |                   |         |             |             | MA          |       |          |    |
| 1.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 2                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 2.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 3                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 3.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | TA    |          |    |
| 4                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 4.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 5                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | TA    |          |    |
| 5.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 6                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 6.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | TA    |          |    |
| 7                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 7.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | RB       |    |
| 8                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 8.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 9                                         |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 9.5                                       |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 10                                        |           |       |      |                  |        |      |            |                               | Yellow Sponge        |                   | YE      |             |             |             |       |          |    |
| 10.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 11                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 11.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 12                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | RC       |    |
| 12.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 13                                        |           |       |      |                  |        |      |            |                               | Encrusting Gorgonian | ENC               |         |             |             |             |       |          |    |
| 13.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 14                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | TA    |          |    |
| 14.5                                      |           |       |      |                  |        |      |            |                               | TA                   |                   |         |             |             | MA          |       |          |    |
| 15                                        |           |       |      |                  |        |      |            |                               | TA                   |                   |         |             |             | MA          |       |          |    |
| 15.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | TA    |          |    |
| 16                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | RB       |    |
| 16.5                                      |           |       |      |                  |        |      |            |                               | TA                   |                   |         |             |             | MA          |       |          |    |
| 17                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | BA    |          |    |
| 17.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | YA    |          |    |
| 18                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | RB       |    |
| 18.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             | TA    |          |    |
| 19                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
| 19.5                                      |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | RB       |    |
| 20                                        |           |       |      |                  |        |      |            |                               |                      |                   |         |             |             |             |       | SD       |    |
|                                           |           |       |      |                  |        |      |            |                               | PD                   | H                 | S       | BL          |             |             |       |          |    |
| Total                                     | 0         | 0     | 0    | 0                | 0      | 0    | 0          | 0                             | 0                    | 0                 | 0       | 0           | 0           | 0           | 4     | 14       | 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  | WH White  |
|                     |                | TR Trididemnum      |           |

**PORTOMAREA MARINE MONITORING**  
**CORAL LINE TRANSECT**

| Transect No: 3, Depth 10m, Section 50-70m |           |       |      |       |        |      | Visibility: 30 m |                   |         | Observer: Marjo van den Bulck |         |             |             |             |       |          |
|-------------------------------------------|-----------|-------|------|-------|--------|------|------------------|-------------------|---------|-------------------------------|---------|-------------|-------------|-------------|-------|----------|
| Date: July 3, 2003                        |           |       |      |       |        |      | Temperature: 27C |                   |         |                               |         |             |             |             |       |          |
| HARD CORALS                               |           |       |      |       |        |      |                  | CONDITION/REMARKS |         | SOFT CORALS/OTHER             |         |             |             |             |       |          |
| M                                         | Branching | Mound | Star | Brain | Finger | Leaf | Fire Coral       | Other Coral       |         | Gorgonians                    | Sponges | Trididemnum | Coralline A | Macro Algae | Algae | Abiotics |
| 0.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | BA    |          |
| 1                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | BA    |          |
| 1.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | BA    |          |
| 2                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | BA    |          |
| 2.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | SD    |          |
| 3                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | RB       |
| 3.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | BA    |          |
| 4                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | SD       |
| 4.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | SD       |
| 5                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | SD       |
| 5.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | TA    |          |
| 6                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | TA    |          |
| 6.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | RB       |
| 7                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | SD       |
| 7.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | TA    |          |
| 8                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | RB       |
| 8.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | SD       |
| 9                                         |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | RB       |
| 9.5                                       |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             |       | SD       |
| 10                                        |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
| 10.5                                      |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | TA          |       |          |
| 11                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | RB    |          |
| 11.5                                      |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | TA    |          |
| 12                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | TA    |          |
| 12.5                                      |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
| 13                                        |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
| 13.5                                      |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | BA          |       |          |
| 14                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | SD    |          |
| 14.5                                      |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
| 15                                        |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
| 15.5                                      |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
| 16                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | BA          |       |          |
| 16.5                                      |           |       |      |       |        |      | Fire             |                   | Healthy |                               |         |             |             |             |       |          |
| 17                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | TA          |       |          |
| 17.5                                      |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | BA          |       |          |
| 18                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             |             | SD    |          |
| 18.5                                      |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | TA          |       |          |
| 19                                        |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | TA          |       |          |
| 19.5                                      |           |       |      |       |        |      |                  |                   |         |                               |         |             |             | BA          |       |          |
| 20                                        |           |       |      |       |        |      |                  | TA                |         |                               |         |             | MA          |             |       |          |
|                                           |           |       |      |       |        |      |                  | PD                | H       | S                             | BL      |             |             |             |       |          |
| Total                                     | 0         | 0     | 0    | 0     | 0      | 0    | 1                | 0                 | 0       | 1                             | 0       | 0           |             | 0           | 0     | 0        |

**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 |             |       |         | Visibility: 30 m |        |      |            | Observer: Marjo van den Bulck |                   |                   |         |             |             |             |       |          |    |
|-------------------------------------------|-------------|-------|---------|------------------|--------|------|------------|-------------------------------|-------------------|-------------------|---------|-------------|-------------|-------------|-------|----------|----|
| Date: July 3, 2003                        |             |       |         | Temperature: 27C |        |      |            |                               |                   |                   |         |             |             |             |       |          |    |
| 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                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             | TA          |       |          |    |
| 1.5                                       |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             | TA          |       |          |    |
| 2                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             | TA          |       |          |    |
| 2.5                                       |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             | BA          |       |          |    |
| 3                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             | BA          |       |          |    |
| 3.5                                       |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | SD    |          |    |
| 4                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             | TA          |       |          |    |
| 4.5                                       |             |       |         |                  |        |      |            | TA                            |                   |                   |         | MA          |             |             |       |          |    |
| 5                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | SD    |          |    |
| 5.5                                       |             |       |         |                  |        |      |            | TA                            |                   |                   |         | MA          |             |             |       |          |    |
| 6                                         |             |       |         |                  |        |      |            | TA                            |                   |                   |         | MA          |             |             |       |          |    |
| 6.5                                       |             |       |         |                  |        |      |            | TA                            |                   |                   |         | MA          |             |             |       |          |    |
| 7                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 7.5                                       |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | SD    |          |    |
| 8                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 8.5                                       |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | RB    |          |    |
| 9                                         |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 9.5                                       |             |       |         |                  |        |      |            |                               |                   |                   |         |             | BA          |             |       |          |    |
| 10                                        |             |       |         |                  |        |      |            | TA                            |                   |                   |         | MA          |             |             |       |          |    |
| 10.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | BA          |             |       |          |    |
| 11                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 11.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | RB    |          |    |
| 12                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 12.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 13                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 13.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 14                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             | BA          |             |       |          |    |
| 14.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | YA          |             |       |          |    |
| 15                                        |             |       | Boulder |                  |        |      |            | Healthy                       |                   |                   |         |             |             |             |       |          |    |
| 15.5                                      |             |       | Boulder |                  |        |      |            | Healthy                       |                   |                   |         |             |             |             |       |          |    |
| 16                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 16.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | RC    |          |    |
| 17                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | RC    |          |    |
| 17.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | BA          |             |       |          |    |
| 18                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 18.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | TA          |             |       |          |    |
| 19                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | RB    |          |    |
| 19.5                                      |             |       |         |                  |        |      |            |                               |                   |                   |         |             | BA          |             |       |          |    |
| 20                                        |             |       |         |                  |        |      |            |                               |                   |                   |         |             |             |             | SD    |          |    |
| <b>Total</b>                              | 0           | 0     | 2       | 0                | 0      | 0    | 0          | 0                             | 0                 | 0                 | 2       | 0           | 0           | 0           | 5     | 23       | 10 |

**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

July 2003

Data collected by: Marjo van den Bulck

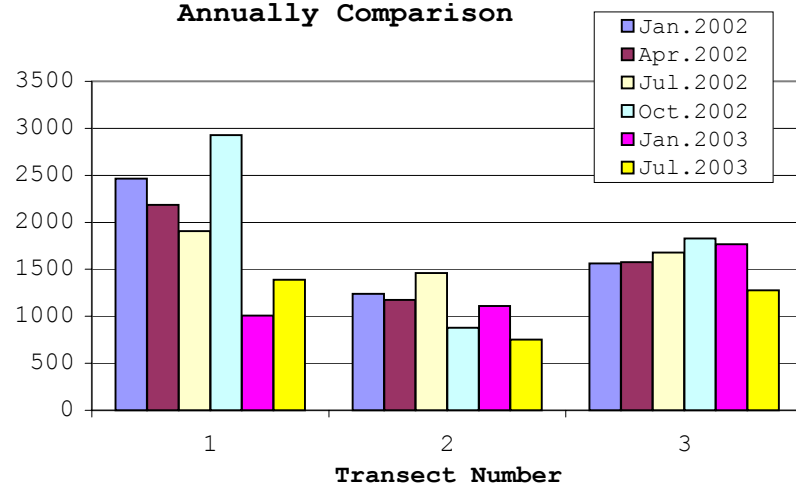
| PORTOMARI               |                            | West side of Bay        |                         | East side               | Total   | Mean    | St.Dev. |
|-------------------------|----------------------------|-------------------------|-------------------------|-------------------------|---------|---------|---------|
| Atlantic Belt Transects |                            | Transect 1<br>Depth:12m | Transect 2<br>Depth: 6m | Transect 3<br>Depth:10m |         |         |         |
| Fish                    |                            |                         |                         |                         |         |         |         |
| ANGELFISH               | Cherubfish                 | 2                       | 9                       | 5                       | 16      | 5.33    | 3.51    |
|                         | French Angelfish           |                         |                         | 4                       | 4       | 4.00    |         |
|                         | Queen Angelfish            |                         |                         |                         |         |         |         |
|                         | Rock Beauty                | 1                       | 1                       | 2                       | 4       | 1.33    | 0.58    |
| BASSLET                 | Fairy Basslet              | 13                      |                         |                         | 13      | 13.00   |         |
| BLENNY                  | Redlip Blenny              |                         |                         |                         |         |         |         |
| BOXFISH                 | Honeycomb Cowfish          |                         |                         | 1                       | 1       | 1.00    |         |
|                         | Smooth Trunkfish           | 2                       |                         | 1                       | 3       | 1.50    | 0.71    |
|                         | Spotted Trunkfish          |                         |                         |                         |         |         |         |
| BUTTERFLYFISH           | Banded Butterflyfish       | 2                       |                         |                         | 2       | 2.00    |         |
|                         | Foureye Butterflyfish      | 3                       | 4                       | 2                       | 9       | 3.00    | 1.00    |
|                         | Longsnout Butterflyfish    | 1                       |                         |                         | 1       | 1.00    |         |
| CHROMIS                 | Blue Chromis               | 188                     | 1                       | 25                      | 214     | 71.33   | 101.75  |
|                         | Brown Chromis              | 536                     | 88                      | 387                     | 1011    | 337.00  | 228.15  |
| DAMSELFISH              | Bicolor Damselfish         | 183                     | 197                     | 271                     | 651     | 217.00  | 47.29   |
|                         | Cocoa Damselfish           |                         | 6                       |                         | 6       | 6.00    |         |
|                         | Dusky Damselfish           |                         | 20                      | 10                      | 30      | 15.00   | 7.07    |
|                         | Sergeant Major             | 1                       |                         |                         | 1       | 1.00    |         |
|                         | Threespot Damselfish       | 56                      | 19                      | 28                      | 103     | 34.33   | 19.30   |
|                         | Yellowtail Damselfish      |                         |                         |                         |         |         |         |
| DRUM                    | Spotted Drum               | 1                       |                         | 1                       | 2       | 1.00    |         |
| EEL                     | Goldentail Moray           |                         |                         | 1                       | 1       | 1.00    |         |
|                         | Spotted Moray              | 1                       |                         | 1                       | 2       | 1.00    |         |
| FILEFISH                | Orangespotted Filefish     |                         | 1                       | 2                       | 3       | 1.50    | 0.71    |
| FLOUNDER                | Peacock Flounder           |                         |                         |                         |         |         |         |
| GOATFISH                | Spotted Goatfish           |                         | 2                       | 1                       | 3       | 1.50    | 0.71    |
|                         | Yellow Goatfish            | 22                      | 8                       | 6                       | 36      | 12.00   | 8.72    |
| GOBY                    | Bridled Goby               | 151                     | 112                     | 219                     | 482     | 160.67  | 54.15   |
|                         | Neon Goby                  | 3                       | 4                       | 8                       | 15      | 5.00    | 2.65    |
|                         | Peppermint Goby            | 15                      | 5                       | 33                      | 53      | 17.67   | 14.19   |
|                         | Coney                      |                         | 1                       | 4                       | 5       | 2.50    | 2.12    |
| GROUPE                  | Graysby                    | 5                       | 5                       | 5                       | 15      | 5.00    |         |
|                         | Rock Hind                  | 3                       |                         |                         | 3       | 3.00    |         |
|                         | Tiger Grouper              |                         |                         |                         |         |         |         |
| GRUNT                   | Bluestriped Grunt          |                         |                         |                         |         |         |         |
|                         | French Grunt               | 3                       | 5                       | 6                       | 14      | 4.67    | 1.53    |
|                         | Striped Grunt              | 1                       | 2                       | 16                      | 19      | 6.33    | 8.39    |
| HAMLET                  | Barred Hamlet              | 3                       |                         | 1                       | 4       | 2.00    | 1.41    |
|                         | Black Hamlet               |                         |                         |                         |         |         |         |
|                         | Butter Hamlet              |                         | 2                       | 1                       | 3       | 1.50    | 0.71    |
|                         | Yellowtail Hamlet          | 5                       | 3                       | 2                       | 10      | 3.33    | 1.53    |
| HOGFISH                 | Spanish Hogfish            | 1                       | 1                       |                         | 2       | 1.00    |         |
| JACK                    | Bar Jack                   |                         |                         |                         |         |         |         |
| PARROTFISH              | Blue Parrotfish            |                         |                         | 2                       | 2       | 2.00    |         |
|                         | Princess Parrotfish        | 34                      | 16                      | 30                      | 80      | 26.67   | 9.45    |
|                         | Queen Parrotfish           |                         | 2                       |                         | 2       | 2.00    |         |
|                         | Redband Parrotfish         | 13                      | 8                       | 6                       | 27      | 9.00    | 3.61    |
|                         | Stoplight Parrotfish       | 12                      | 6                       | 6                       | 24      | 8.00    | 3.46    |
|                         | Striped Parrotfish         | 7                       |                         | 6                       | 13      | 6.50    | 0.71    |
| PUFFER                  | Balloonfish                |                         |                         |                         |         |         |         |
|                         | Sharpnose Puffer           | 11                      | 3                       | 5                       | 19      | 6.33    | 4.16    |
| SCORPIONFISH            | Spotted Scorpionfish       |                         |                         |                         |         |         |         |
| SEABASS                 | Creolefish                 | 1                       | 1                       | 3                       | 5       | 1.67    | 1.15    |
|                         | Harlequin Bass             | 1                       | 3                       | 6                       | 10      | 3.33    | 2.52    |
| SNAPPER                 | Mahogany Snapper           |                         |                         |                         |         |         |         |
|                         | Schoolmaster               | 3                       |                         | 2                       | 5       | 2.50    | 0.71    |
|                         | Yellowtail Snapper         | 2                       |                         | 3                       | 5       | 2.50    | 0.71    |
| SQUIRRELFISH            | Blackbar Soldierfish       | 8                       | 1                       | 19                      | 28      | 9.33    | 9.07    |
|                         | Squirrelfish               | 22                      | 6                       | 15                      | 43      | 14.33   | 8.02    |
| SURGEONFISH             | Blue Tang                  | 2                       | 4                       | 4                       | 10      | 3.33    | 1.15    |
|                         | Doctorfish                 |                         |                         |                         |         |         |         |
|                         | Ocean Surgeon              | 1                       |                         |                         | 1       | 1.00    |         |
| WRASSE                  | Bluehead Wrasse            | 43                      | 169                     | 68                      | 280     | 93.33   | 66.71   |
|                         | Clown Wrasse               |                         | 13                      | 2                       | 15      | 7.50    | 7.78    |
|                         | Creole Wrasse              | 6                       | 10                      | 2                       | 18      | 6.00    | 4.00    |
|                         | Puddingwife                |                         |                         |                         |         |         |         |
|                         | Slippery Dick              |                         | 1                       |                         | 1       | 1.00    |         |
|                         | Yellowhead Wrasse          | 23                      | 21                      | 51                      | 95      | 31.67   | 16.77   |
| OTHERS                  | Cornetfish                 |                         |                         |                         |         |         |         |
|                         | Hawkfish, Redspotted       |                         |                         |                         |         |         |         |
|                         | Sand Diver                 |                         |                         | 1                       | 1       | 1.00    |         |
|                         | Sand Tilefish              |                         | 3                       |                         | 3       | 3.00    |         |
|                         | Soapfish, Greater          |                         |                         |                         |         |         |         |
|                         | Trumpetfish                | 1                       |                         | 2                       | 3       | 1.50    | 0.71    |
| TOTAL                   |                            | 1390                    | 754                     | 1276                    | 3420    | 1140.00 |         |
| Invertebrates           |                            | Transect 1<br>Depth:12m | Transect 2<br>Depth: 6m | Transect 3<br>Depth:10m | Total   | Mean    | St.Dev. |
| ANEMONE                 | Carpet Anemone             |                         |                         | 12                      | 16      | 8.00    | 5.66    |
|                         | Corkscrew Anemone          | 4                       |                         |                         | 4       | 4.00    |         |
|                         | Giant Anemone              | 1                       | 28                      | 14                      | 43      | 14.33   | 13.50   |
|                         | Knobby Anemone             | 50                      | 27                      | 34                      | 111     | 37.00   | 11.79   |
| TUBE WORMS              | Christmas tree Worms       | 168                     | 483                     | 229                     | 880     | 293.33  | 167.06  |
|                         | Ghost Feather Duster       | 24                      | 13                      | 12                      | 49      | 16.33   | 6.66    |
|                         | Magnificent Feather Duster | 2                       | 1                       | 1                       | 4       | 1.33    | 0.58    |
|                         | Social Feather Duster      | 1                       | 1                       | 1                       | 3       | 1.00    |         |
|                         | Split Crown Feather Duster | 22                      | 15                      | 20                      | 57      | 19.00   | 3.61    |
|                         | Star Horseshoe Worm        |                         | 1                       | 6                       | 7       | 3.50    | 3.54    |
|                         | Variegated Feather Duster  | 14                      | 16                      | 6                       | 36      | 12.00   | 5.29    |
|                         | Banded Coral Shrimp        |                         |                         | 1                       | 1       | 1.00    |         |
| CRUSTACEANS             | Heremite Crab              |                         |                         |                         |         |         |         |
|                         | Pederson Cleaner Shrimp    | 25                      | 1                       | 15                      | 41      | 13.67   | 12.06   |
|                         | Yellowline Arrow Crab      | 6                       |                         | 2                       | 8       | 4.00    | 2.83    |
| MOLLUSKS                | Amber Pen Shell            |                         |                         |                         |         |         |         |
|                         | Rough File Clam            | 1                       | 2                       |                         | 3       | 1.50    | 0.71    |
|                         | Sea Slug, Lettuce          |                         |                         |                         |         |         |         |
|                         | Spiny File Clam            |                         |                         |                         |         |         |         |
| ECHINODERMS             | Queen Conch                |                         |                         |                         |         |         |         |
|                         | Pencil Urchin              |                         |                         |                         |         |         |         |
| TOTAL                   |                            | 318                     | 588                     | 353                     | 1259.00 | 419.67  |         |

**PORTOMAREA MARINE MONITORING**  
**FISH AND INVERTEBRATE QUARTERLY/SEMI-ANNUALLY COMPARISON**

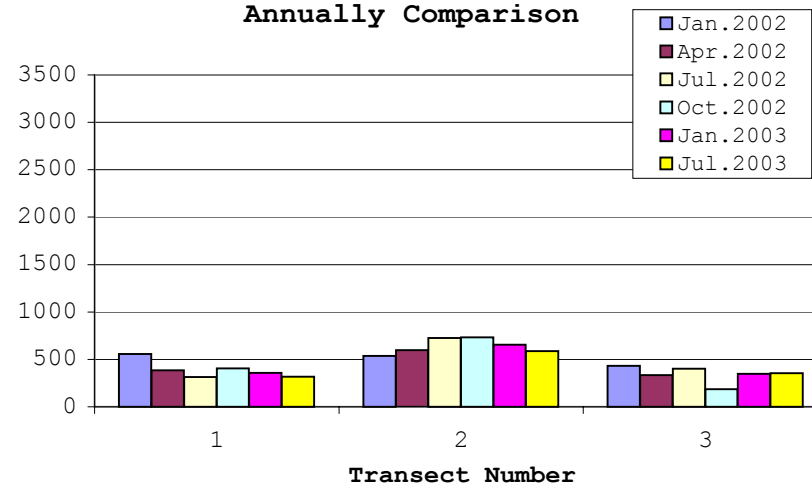
|                      | Transect 1 - Depth 12m |           |           |           | Transect 2 - Depth 6m |           |           |           | Transect 3 - Depth 10m |           |           |           |
|----------------------|------------------------|-----------|-----------|-----------|-----------------------|-----------|-----------|-----------|------------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

|                      | Transect 1 - Depth 12m |  |           |  | Transect 2 - Depth 6m |  |           |  | Transect 3 - Depth 10m |  |           |  |
|----------------------|------------------------|--|-----------|--|-----------------------|--|-----------|--|------------------------|--|-----------|--|
|                      | Jan.2003               |  | July 2003 |  | Jan.2003              |  | July 2003 |  | Jan. 2003              |  | July 2003 |  |
| <b>Fish</b>          | 1007                   |  | 1390      |  | 1109                  |  | 754       |  | 1767                   |  | 1276      |  |
| <b>Invertebrates</b> | 359                    |  | 318       |  | 656                   |  | 588       |  | 347                    |  | 353       |  |

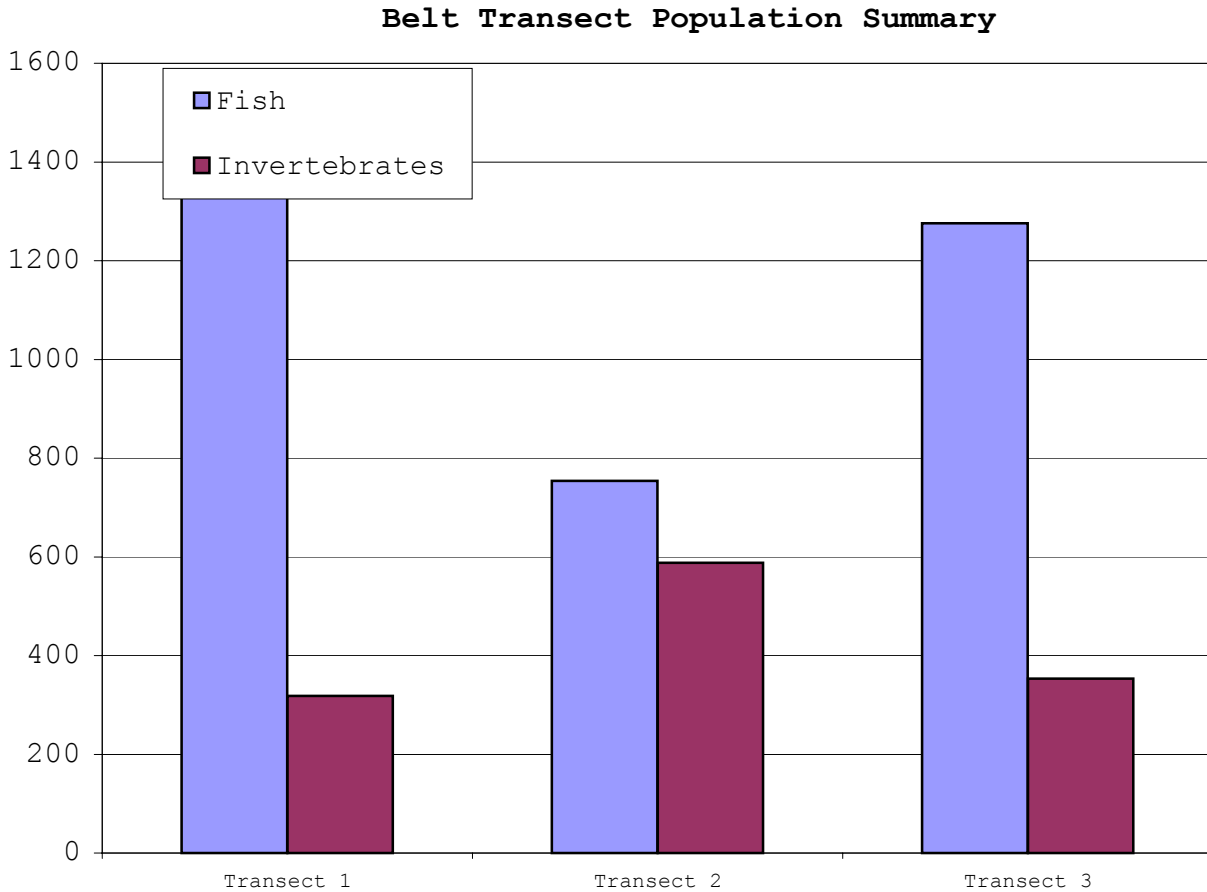
**Fish Population Quarterly/Semi-Annually Comparison**



**Invertebrate Population Quarterly/Semi-Annually 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: June 30, 2003 Time: 9:00 a.m.

Data collected by: Marjo van den Bulck

| Atlantic Belt Transect: Fish          |                            | 0-20m      | 25-45m     | 50-70m     | 75-95m     | Total       | Mean          | St.Dev. |
|---------------------------------------|----------------------------|------------|------------|------------|------------|-------------|---------------|---------|
| ANGELFISH                             | Cherubfish                 | 1          | 1          |            |            | 2           | 1             |         |
|                                       | Queen Angelfish            |            |            |            |            |             |               |         |
|                                       | Rock Beauty                | 1          |            |            |            | 1           | 1.00          |         |
| BASSLET                               | Fairy Basslet              | 3          | 5          | 2          | 3          | 13          | 3.25          | 1.26    |
| BLENNY                                |                            |            |            |            |            |             |               |         |
| BOXFISH                               | Smooth Trunkfish           | 1          |            | 1          |            | 2           | 1.00          |         |
|                                       | Honeycomb Cowfish          |            |            |            |            |             |               |         |
| BUTTERFLYFISH                         | Banded Butterflyfish       |            |            | 2          |            | 2           | 2             |         |
|                                       | Four-eye Butterflyfish     |            |            | 3          |            | 3           | 3             |         |
|                                       | Longsnout Butterflyfish    |            |            | 1          |            | 1           | 1.00          |         |
|                                       |                            |            |            |            |            |             |               |         |
| CHROMIS                               | Blue Chromis               | 105        | 25         | 42         | 16         | 188         | 47.00         | 40.14   |
|                                       | Brown Chromis              | 81         | 250        | 80         | 125        | 536         | 134.00        | 80.13   |
| DAMSELFISH                            | Bicolor                    | 69         | 55         | 29         | 30         | 183         | 45.75         | 19.62   |
|                                       | Sergeant Major             |            |            | 1          |            | 1           | 1             |         |
|                                       | Threespot                  | 12         | 7          | 20         | 17         | 56          | 14.00         | 5.72    |
|                                       | Yellowtail                 |            |            |            |            |             |               |         |
| DRUM                                  | Spotted Drum               |            |            | 1          |            | 1           | 1             |         |
| EEL                                   | Green Moray                |            |            |            |            |             |               |         |
|                                       | Spotted Moray              |            |            | 1          |            | 1           | 1             |         |
| FILEFISH                              | Orangespotted Filefish     |            |            |            |            |             |               |         |
| FLOUNDER                              | Peacock Flounder           |            |            |            |            |             |               |         |
| GOATFISH                              | Yellow Goatfish            | 11         | 2          |            | 9          | 22          | 7.333333      | 4.73    |
|                                       | Spotted Goatfish           |            |            |            |            |             |               |         |
| GOBY                                  | Bridled Goby               | 40         | 15         | 56         | 40         | 151         | 37.75         | 16.94   |
|                                       | Neon Goby                  |            | 2          | 1          |            | 3           | 1.50          | 0.71    |
|                                       | Peppermint Goby            | 1          | 9          | 5          |            | 15          | 5             | 4.00    |
|                                       |                            |            |            |            |            |             |               |         |
| GROUPER                               | Graysby                    |            |            | 3          | 2          | 5           | 2.50          | 0.71    |
|                                       | Rock Hind                  | 2          | 1          |            |            | 3           | 1.5           | 0.71    |
| GRUNT                                 | Bluestriped Grunt          |            |            |            |            |             |               |         |
|                                       | French Grunt               |            | 2          |            | 1          | 3           | 1.5           | 0.71    |
|                                       | Striped Grunt              |            | 1          |            |            | 1           | 1.00          |         |
| HAMLET                                | Barred Hamlet              |            | 1          | 1          | 1          | 3           | 1             |         |
|                                       | Butter Hamlet              |            |            |            |            |             |               |         |
|                                       | Yellowtail Hamlet          | 1          | 2          | 2          |            | 5           | 1.666667      | 0.58    |
| HOGFISH                               | Spanish Hogfish            |            |            |            | 1          | 1           | 1.00          |         |
| JACK                                  | Bar Jack                   |            |            |            |            |             |               |         |
| PARROTFISH                            | Blue Parrotfish            |            |            |            |            |             |               |         |
|                                       | Princess Parrotfish        | 9          | 4          | 3          | 18         | 34          | 8.5           | 6.86    |
|                                       | Queen Parrotfish           |            |            |            |            |             |               |         |
|                                       | Redband Parrotfish         | 7          | 3          | 1          | 2          | 13          | 3.25          | 2.63    |
|                                       | Stoplight Parrotfish       | 5          | 4          | 2          | 1          | 12          | 3             | 1.83    |
|                                       | Striped Parrotfish         | 2          |            | 2          | 3          | 7           | 2.33          | 0.58    |
| PUFFER                                | Balloonfish                |            |            |            |            |             |               |         |
|                                       | Sharpnose Puffer           | 4          | 2          |            | 5          | 11          | 3.666667      | 1.53    |
| SCORPIONFISH                          | Spotted Scorpionfish       |            |            |            |            |             |               |         |
| SEABASS                               | Creole Fish                |            |            |            | 1          | 1           | 1             |         |
|                                       | Harlequin Bass             | 1          |            |            |            | 1           | 1             |         |
| SNAPPER                               | Schoolmaster               | 1          | 1          |            | 1          | 3           | 1.00          |         |
|                                       | Yellowtail Snapper         |            |            | 1          | 1          | 2           | 1             |         |
| SQUIRRELFISH                          | Blackbar Soldierfish       | 6          |            | 2          |            | 8           | 4.00          | 2.83    |
|                                       | Squirrelfish               | 4          | 6          | 7          | 5          | 22          | 5.5           | 1.29    |
| SURGEONFISH                           | Blue Tang                  |            |            |            | 2          | 2           | 2             |         |
|                                       | Doctorfish                 |            |            |            |            |             |               |         |
|                                       | Ocean Surgeon              |            | 1          |            |            | 1           | 1             |         |
| WRASSE                                | Bluehead Wrasse            | 13         | 8          | 5          | 17         | 43          | 10.75         | 5.32    |
|                                       | Clown Wrasse               |            |            |            |            |             |               |         |
|                                       | Creole Wrasse              | 2          | 2          | 1          | 1          | 6           | 1.5           | 0.58    |
|                                       | Slippery Dick              |            |            |            |            |             |               |         |
|                                       | Yellowhead Wrasse          | 4          | 5          | 4          | 10         | 23          | 5.75          | 2.87    |
| OTHERS                                | Sand Diver                 |            |            |            |            |             |               |         |
|                                       | Soapfish, greater          |            |            |            |            |             |               |         |
|                                       | Trumpetfish                |            |            |            | 1          | 1           | 1             |         |
| <b>TOTAL</b>                          |                            | <b>385</b> | <b>413</b> | <b>279</b> | <b>313</b> | <b>1390</b> | <b>347.50</b> |         |
| Atlantic Belt Transect: Invertebrates |                            | 0-20m      | 25-45m     | 50-70m     | 75-100m    | Total       | Mean          | St.Dev. |
| ANEMONE                               | Corkscrew Anemone          | 2          | 1          | 1          |            | 4           | 1.33          | 0.58    |
|                                       | Giant Anemone              |            |            | 1          |            | 1           | 1.00          |         |
|                                       | Knobby Anemone             | 20         | 13         | 14         | 3          | 50          | 12.5          | 7.05    |
| TUBE WORMS                            | Christmas tree Worms       | 75         | 35         | 23         | 35         | 168         | 42.00         | 22.72   |
|                                       | Ghost Feather Duster       | 9          | 5          | 3          | 7          | 24          | 6             | 2.58    |
|                                       | Magnificent Feather Duster |            |            |            | 2          | 2           | 2.00          |         |
|                                       | Split Crown Feather Duster | 9          | 1          | 7          | 5          | 22          | 5.5           | 3.42    |
|                                       | Social Feather Duster      |            |            |            | 1          | 1           | 1             |         |
|                                       | Variegated Feather Duster  |            | 4          | 5          | 5          | 14          | 4.67          | 0.58    |
|                                       |                            |            |            |            |            |             |               |         |
| CRUSTACEANS                           | Pederson Cleaner Shrimp    | 6          | 7          | 6          | 6          | 25          | 6.25          | 0.50    |
|                                       | Spotted Cleaner Shrimp     |            |            |            |            |             |               |         |
|                                       | Yellowline Arrow Crab      |            | 4          | 1          | 1          | 6           | 2             | 1.73    |
| MOLLUSKS                              | Rough File Clam            |            |            | 1          |            | 1           | 1             |         |
|                                       | Queen Conch                |            |            |            |            |             |               |         |
| ECHINODERMS                           | Reef Urchin                |            |            |            |            |             |               |         |
| <b>TOTAL</b>                          |                            | <b>121</b> | <b>70</b>  | <b>62</b>  | <b>65</b>  | <b>318</b>  | <b>79.5</b>   |         |

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: July 1, 2003 Time: 11:00 a.m.

Data collected by: Marjo van den Bulck

| Atlantic Belt Transect: Fish          |                            | 0-20m      | 25-45m     | 50-70m     | 75-95m     | Total      | Mean          | St.Dev. |
|---------------------------------------|----------------------------|------------|------------|------------|------------|------------|---------------|---------|
| ANGELFISH                             | Cherubfish                 | 2          | 4          |            | 3          | 9          | 3.00          | 1.00    |
|                                       | French Angelfish           |            |            |            |            |            |               |         |
|                                       | Rock Beauty                |            | 1          |            |            | 1          | 1.00          |         |
| BASSLET                               |                            |            |            |            |            |            |               |         |
| BIGEYE                                |                            |            |            |            |            |            |               |         |
| BLENNY                                | Redlip Blenny              |            |            |            |            |            |               |         |
| BOXFISH                               | Smooth Trunkfish           |            |            |            |            |            |               |         |
|                                       | Spotted Trunkfish          |            |            |            |            |            |               |         |
| BUTTERFLYFISH                         | Banded Butterflyfish       |            |            |            |            |            |               |         |
|                                       | Foureye Butterflyfish      |            | 2          | 2          |            | 4          | 2.00          |         |
|                                       | Longsnout Butterflyfish    |            |            |            |            |            |               |         |
| CARDINALFISH                          |                            |            |            |            |            |            |               |         |
| CHROMIS                               | Blue Chromis               |            |            | 1          |            | 1          | 1.00          |         |
|                                       | Brown Chromis              |            |            | 50         | 38         | 88         | 44.00         | 8.49    |
| DAMSELFISH                            | Bicolor Damselfish         | 49         | 67         | 31         | 50         | 197        | 49.25         | 14.71   |
|                                       | Cocoa Damselfish           | 1          |            | 3          | 2          | 6          | 2.00          | 1.00    |
|                                       | Dusky Damselfish           |            | 3          | 14         | 3          | 20         | 6.67          | 6.35    |
|                                       | Sergeant Major             |            |            |            |            |            |               |         |
|                                       | Threespot Damselfish       | 5          |            | 9          | 5          | 19         | 6.33          | 2.31    |
|                                       | Yellowtail Damselfish      |            |            |            |            |            |               |         |
| DRUM                                  |                            |            |            |            |            |            |               |         |
| EEL                                   | Goldentail Moray           |            |            |            |            |            |               |         |
|                                       | Spotted Moray              |            |            |            |            |            |               |         |
| FILEFISH                              | Orangespotted Filefish     | 1          |            |            |            | 1          | 1.00          |         |
| FLOUNDER                              | Peacock Flounder           |            |            |            |            |            |               |         |
| GOATFISH                              | Spotted Goatfish           |            | 2          |            |            | 2          | 2.00          |         |
|                                       | Yellow Goatfish            | 4          | 1          | 1          | 2          | 8          | 2.00          | 1.41    |
| GOBY                                  | Bridled Goby               | 72         | 10         | 10         | 20         | 112        | 28.00         | 29.71   |
|                                       | Neon Goby                  | 3          | 1          |            |            | 4          | 2.00          | 1.41    |
|                                       | Peppermint Goby            | 5          |            |            |            | 5          | 5.00          |         |
| GROUPE                                | Coney                      |            |            | 1          |            | 1          | 1.00          |         |
|                                       | Grasby                     | 1          | 2          |            | 2          | 5          | 1.67          | 0.58    |
| GRUNT                                 | Bluestriped Grunt          |            |            |            |            |            |               |         |
|                                       | French Grunt               | 2          | 2          | 1          |            | 5          | 1.67          | 0.58    |
|                                       | Striped Grunt              |            |            | 2          |            | 2          | 2.00          |         |
| HAMLET                                | Barred Hamlet              |            |            |            |            |            |               |         |
|                                       | Butter Hamlet              | 1          |            |            | 1          | 2          | 1.00          |         |
|                                       | Yellowtail Hamlet          |            |            | 1          | 2          | 3          | 1.50          | 0.71    |
| HOGFISH                               | Spanish Hogfish            |            |            | 1          |            | 1          | 1.00          |         |
| JACK                                  | Bar Jack                   |            |            |            |            |            |               |         |
| PARROTFISH                            | Princess Parrotfish        | 2          | 6          | 3          | 5          | 16         | 4.00          | 1.83    |
|                                       | Queen Parrotfish           |            |            | 1          | 1          | 2          | 1.00          |         |
|                                       | Redband Parrotfish         | 3          | 1          | 1          | 3          | 8          | 2.00          | 1.15    |
|                                       | Stoplight Parrotfish       |            | 1          | 1          | 4          | 6          | 2.00          | 1.73    |
|                                       | Striped Parrotfish         |            |            |            |            |            |               |         |
| PUFFER                                | Sharpnose Puffer           | 2          |            | 1          |            | 3          | 1.50          | 0.71    |
| RAY                                   |                            |            |            |            |            |            |               |         |
| SCORPIONFISH                          | Spotted Scorpionfish       |            |            |            |            |            |               |         |
| SEABASS                               | Creole Fish                |            |            |            | 1          | 1          | 1.00          |         |
|                                       | Harlequin Bass             | 1          | 2          |            |            | 3          | 1.50          | 0.71    |
| SQUIRRELFISH                          | Blackbar Soldier           |            |            |            | 1          | 1          | 1.00          |         |
|                                       | Squirrelfish               | 3          |            | 2          | 1          | 6          | 2.00          | 1.00    |
| SURGEONFISH                           | Blue Tang                  |            | 2          | 1          | 1          | 4          | 1.33          | 0.58    |
|                                       | Ocean Surgeon              |            |            |            |            |            |               |         |
| WRASSE                                | Bluehead Wrasse            | 43         | 81         | 4          | 41         | 169        | 42.25         | 31.45   |
|                                       | Clown Wrasse               | 5          | 4          |            | 4          | 13         | 4.33          | 0.58    |
|                                       | Creole Wrasse              |            |            | 10         |            | 10         | 10.00         |         |
|                                       | Slippery Dick              |            | 1          |            |            | 1          | 1.00          |         |
|                                       | Yellowhead Wrasse          |            | 4          | 9          | 8          | 21         | 7.00          | 2.65    |
| OTHERS                                | Redspotted Hawkfish        |            |            |            |            |            |               |         |
|                                       | Lizardfish                 |            |            |            |            |            |               |         |
|                                       | Sand Diver                 |            |            |            |            |            |               |         |
|                                       | Sand Tilefish              |            | 2          | 1          |            | 3          | 1.50          | 0.71    |
|                                       | Trumpetfish                |            |            |            |            |            |               |         |
| <b>TOTAL</b>                          |                            | <b>203</b> | <b>195</b> | <b>161</b> | <b>195</b> | <b>754</b> | <b>188.50</b> |         |
| Atlantic Belt Transect: Invertebrates |                            | 0-20m      | 25-45m     | 50-70m     | 75-100m    | Total      | Mean          | St.Dev. |
| ANEMONE                               | Carpet Anemone             |            |            |            |            |            |               |         |
|                                       | Corkscrew Anemone          |            |            |            |            |            |               |         |
|                                       | Giant Anemone              | 8          | 8          | 3          | 9          | 28         | 7.00          | 2.71    |
|                                       | Knobby Anemone             | 4          | 3          | 13         | 7          | 27         | 6.75          | 4.50    |
| TUBE WORMS                            | Christmas tree Worms       | 108        | 27         | 250        | 98         | 483        | 120.75        | 93.41   |
|                                       | Ghost Feather Duster       | 4          | 1          | 7          | 1          | 13         | 3.25          | 2.87    |
|                                       | Magnificent Feather Duster | 1          |            |            |            | 1          | 1.00          |         |
|                                       | Social Feather Duster      |            |            |            | 1          | 1          | 1.00          |         |
|                                       | Split Crown Feather Duster | 6          | 6          | 3          |            | 15         | 5.00          | 1.73    |
|                                       | Star Horseshoe Worm        |            | 1          |            |            | 1          | 1.00          |         |
|                                       | Variegated Feather Duster  | 5          | 6          | 3          | 2          | 16         | 4.00          | 1.83    |
| CRUSTACEANS                           | Banded Coral Shrimp        |            |            |            |            |            |               |         |
|                                       | Pederson Cleaner Shrimp    |            |            | 1          |            | 1          | 1.00          |         |
|                                       | Yellowline Arrow Crab      |            |            |            |            |            |               |         |
| MOLLUSKS                              | Amber Penshell             |            |            |            |            |            |               |         |
|                                       | Queen Conch                |            |            |            |            |            |               |         |
|                                       | Rough Fileclam             | 1          |            | 1          |            | 2          | 1.00          |         |
| ECHINODERMS                           | Reef Urchin                |            |            |            |            |            |               |         |
| <b>TOTAL</b>                          |                            | <b>137</b> | <b>52</b>  | <b>281</b> | <b>118</b> | <b>588</b> | <b>147.00</b> |         |

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: July 3, 2003 Time: 8:30 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                 |            | 3          |            | 2          | 5           | 2.50         | 0.71    |
|                                       | French Angelfish           |            | 1          |            | 3          | 4           | 2.00         | 1.41    |
|                                       | Rock Beauty                |            |            |            | 2          | 2           | 2.00         |         |
| BARRACUDA                             |                            |            |            |            |            |             |              |         |
| BASSLET                               | Fairy Basslet              |            |            |            |            |             |              |         |
| BIGEYE                                |                            |            |            |            |            |             |              |         |
| BLENNY                                |                            |            |            |            |            |             |              |         |
| BOXFISH                               | Honeycomb Cowfish          |            |            |            | 1          | 1           | 1.00         |         |
|                                       | Smooth Trunkfish           | 1          |            |            |            | 1           | 1.00         |         |
| BUTTERFLYFISH                         | Four-eye Butterflyfish     |            | 1          | 1          |            | 2           | 1.00         |         |
|                                       | Banded Butterflyfish       |            |            |            |            |             |              |         |
| CHROMIS                               | Blue Chromis               | 9          | 5          | 7          | 4          | 25          | 6.25         | 2.22    |
|                                       | Brown Chromis              | 52         | 200        | 85         | 50         | 387         | 96.75        | 70.68   |
|                                       | Sunshinefish               |            |            |            |            |             |              |         |
| DAMSELFISH                            | Bicolor Damselfish         | 158        | 84         |            | 29         | 271         | 90.33        | 64.73   |
|                                       | Cocoa Damselfish           |            |            |            |            |             |              |         |
|                                       | Dusky Damselfish           | 1          |            | 2          | 7          | 10          | 3.33         | 3.21    |
|                                       | Sergeant Major             |            |            |            |            |             |              |         |
|                                       | Threespot Damselfish       | 18         | 4          | 6          |            | 28          | 9.33         | 7.57    |
|                                       | Yellowtail Damselfish      |            |            |            |            |             |              |         |
| DRUM                                  | Spotted Drum               | 1          |            |            |            | 1           | 1.00         |         |
| EEL                                   | Goldentail Moray           |            | 1          |            |            | 1           | 1.00         |         |
|                                       | Spotted Moray              |            | 1          |            |            | 1           | 1.00         |         |
| FILEFISH                              | Orangespotted Filefish     |            |            | 1          | 1          | 2           | 1.00         |         |
| FLOUNDER                              | Peacock Flounder           |            |            |            |            |             |              |         |
| GOATFISH                              | Spotted Goatfish           | 1          |            |            |            | 1           | 1.00         |         |
|                                       | Yellow Goatfish            |            | 5          |            | 1          | 6           | 3.00         | 2.83    |
| GOBY                                  | Bridled Goby               | 49         | 80         | 70         | 20         | 219         | 54.75        | 26.53   |
|                                       | Neon Goby                  | 2          | 4          | 2          |            | 8           | 2.67         | 1.15    |
|                                       | Peppermint Goby            | 9          | 7          | 11         | 6          | 33          | 8.25         | 2.22    |
| GROUPE                                | Coney                      |            |            | 4          |            | 4           | 4.00         |         |
|                                       | Graysby                    | 2          | 2          |            | 1          | 5           | 1.67         | 0.58    |
|                                       | Rock Hind                  |            |            |            |            |             |              |         |
|                                       | Tiger Grouper              |            |            |            |            |             |              |         |
| GRUNT                                 | Bluestriped Grunt          |            |            |            |            |             |              |         |
|                                       | French Grunt               | 2          | 1          | 2          | 1          | 6           | 1.50         | 0.58    |
|                                       | Striped Grunt              | 1          |            |            | 15         | 16          | 8.00         | 9.90    |
| HAMLET                                | Barred Hamlet              |            | 1          |            |            | 1           | 1.00         |         |
|                                       | Butter Hamlet              |            | 1          |            |            | 1           | 1.00         |         |
|                                       | Yellowtail Hamlet          | 1          |            | 1          |            | 2           | 1.00         |         |
| HOGFISH                               | Spanish Hogfish            |            |            |            |            |             |              |         |
| JACK                                  | Bar Jack                   |            |            |            |            |             |              |         |
| PARROTFISH                            | Blue Parrotfish            | 1          |            |            | 1          | 2           | 1.00         |         |
|                                       | Princess Parrotfish        | 7          | 11         | 5          | 7          | 30          | 7.50         | 2.52    |
|                                       | Queen Parrotfish           |            |            |            |            |             |              |         |
|                                       | Redband Parrotfish         | 2          | 2          | 1          | 1          | 6           | 1.50         | 0.58    |
|                                       | Stoplight Parrotfish       | 1          | 2          | 3          |            | 6           | 2.00         | 1.00    |
|                                       | Striped Parrotfish         |            | 6          |            |            | 6           | 6.00         |         |
| PUFFER                                | Sharpnose Puffer           |            | 3          | 1          | 1          | 5           | 1.67         | 1.15    |
| RAY                                   |                            |            |            |            |            |             |              |         |
| SCORPIONFISH                          | Spotted Scorpionfish       |            |            |            |            |             |              |         |
| SEABASS                               | Creolefish                 | 2          |            |            | 1          | 3           | 1.50         | 0.71    |
|                                       | Harlequin Bass             | 2          | 2          | 1          | 1          | 6           | 1.50         | 0.58    |
| SNAPPER                               | Schoolmaster               | 2          |            |            |            | 2           | 2.00         |         |
|                                       | Yellowtail Snapper         |            | 2          | 1          |            | 3           | 1.50         | 0.71    |
| SQUIRRELFISH                          | Blackbar Soldierfish       | 14         | 2          | 3          |            | 19          | 6.33         | 6.66    |
|                                       | Squirrelfish               | 6          | 3          | 3          | 3          | 15          | 3.75         | 1.50    |
| SURGEONFISH                           | Blue Tang                  |            |            | 3          | 1          | 4           | 2.00         | 1.41    |
|                                       | Doctorfish                 |            |            |            |            |             |              |         |
|                                       | Ocean Surgeon              |            |            |            |            |             |              |         |
| WRASSE                                | Bluehead Wrasse            | 31         | 13         | 14         | 10         | 68          | 17.00        | 9.49    |
|                                       | Clown Wrasse               |            | 2          |            |            | 2           | 2.00         |         |
|                                       | Creole Wrasse              |            |            | 2          |            | 2           | 2.00         |         |
|                                       | Puddingwife                |            |            |            |            |             |              |         |
|                                       | Slippery Dick              |            |            |            |            |             |              |         |
|                                       | Yellowhead Wrasse          | 7          | 9          | 28         | 7          | 51          | 12.75        | 10.21   |
| OTHERS                                | Sand Diver                 |            |            | 1          |            | 1           | 1.00         |         |
|                                       | Trumpetfish                | 1          | 1          |            |            | 2           | 1.00         |         |
| <b>TOTAL</b>                          |                            | <b>383</b> | <b>459</b> | <b>258</b> | <b>176</b> | <b>1276</b> | <b>319</b>   |         |
| Atlantic Belt Transect: Invertebrates |                            | 0-20m      | 25-45m     | 50-70m     | 75-100m    | Total       | Mean         | St.Dev. |
| ANEMONE                               | Carpet Anemone             |            |            |            |            |             |              |         |
|                                       | Corkscrew Anemone          | 5          | 3          | 4          |            | 12          | 4.00         | 1.00    |
|                                       | Giant Anemone              | 2          | 2          | 6          | 4          | 14          | 3.50         | 1.91    |
|                                       | Knobby Anemone             | 11         | 8          | 13         | 2          | 34          | 8.50         | 4.80    |
| TUBE WORMS                            | Christmas tree Worm        | 122        | 26         | 40         | 41         | 229         | 57.25        | 43.71   |
|                                       | Ghost Feather Duster       | 3          | 4          |            | 5          | 12          | 4.00         | 1.00    |
|                                       | Magnificent Feather Duster |            |            | 1          |            | 1           | 1.00         |         |
|                                       | Social Feather Duster      |            |            |            | 1          | 1           | 1.00         |         |
|                                       | Split Crown Feather Duster | 5          |            | 10         | 5          | 20          | 6.67         | 2.89    |
|                                       | Star Horseshoe Worm        | 3          | 3          |            |            | 6           | 3.00         |         |
|                                       | Variegated Feather Duster  | 3          |            |            | 3          | 6           | 3.00         |         |
|                                       | Banded Coral Shrimp        |            |            | 1          |            | 1           | 1.00         |         |
| CRUSTACEANS                           | Pederson Cleaner Shrimp    | 5          | 4          | 6          |            | 15          | 5.00         | 1.00    |
|                                       | Yellowline Arrow Crab      | 1          | 1          |            |            | 2           | 1.00         |         |
| MOLLUSKS                              | File Clam                  |            |            |            |            |             |              |         |
| <b>TOTAL</b>                          |                            | <b>160</b> | <b>51</b>  | <b>81</b>  | <b>61</b>  | <b>353</b>  | <b>88.25</b> |         |

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 : July 15 , 2003  
Observer: Marjo van den Bulck

| CN       | B N/T                   | LP | Coral Species                 | Plug Orientation |                          | Number of Branches/<br>Cups | Height<br>cm                                       | Width<br>cm | Coral Growth<br>on Plug<br>Base Y/N | Algae at<br>Base<br>Y/N | Algae at<br>Top<br>Y/N | Remarks                                        |
|----------|-------------------------|----|-------------------------------|------------------|--------------------------|-----------------------------|----------------------------------------------------|-------------|-------------------------------------|-------------------------|------------------------|------------------------------------------------|
|          |                         |    |                               | position         | height                   |                             |                                                    |             |                                     |                         |                        |                                                |
| 10 R     | 1 P                     | 3  | Leaf coral (lettuce)          | NE               | T                        | 4                           | 3,5                                                | 5,5         | N                                   | Y                       | Y                      | New coral growth on this ball                  |
|          |                         |    | Leaf coral (lettuce)          | NW               | M                        | GONE                        |                                                    |             |                                     |                         |                        | ALGAE ON THIS BALL. Macro Turf Algae.          |
|          |                         |    | Leaf coral (lettuce)          | N                | M                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
|          |                         |    | Sea Rod, black                | W                | M                        | 2                           | 18                                                 | 11          | N                                   | Y                       | Y                      | Fire coral on branches                         |
|          |                         |    | Sea Rod, purple               | SE               | H                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
|          |                         |    | Staghorn coral                | W                | T                        | 150                         | 36                                                 | 53          | N                                   | Y                       | N                      | Postion SWT. Growth on plugbase is gone        |
| 10 R     | 2 LP                    | 2  | Sea Rod, black                | S                | M                        | 4                           | 21                                                 | 9           | Y                                   | N                       | Y                      | One branch broken off.                         |
|          |                         |    | Star Coral, smooth            | SW               | H                        |                             | 3.5                                                | 5           | Y                                   | N                       | N                      | New coral growth on this ball                  |
|          |                         |    |                               |                  |                          |                             |                                                    |             |                                     |                         |                        |                                                |
| 10R      | 3 P                     | 3  | Maze coral                    | NW               | L                        | GONE                        |                                                    |             |                                     |                         |                        | New coral growth on this ball                  |
|          |                         |    | Sea Rod, purple               | W                | T                        | 11                          | 1`7                                                | 11          | Y                                   | N                       | N                      | ALGAE ON THIS BALL. Macro Turf Algae.          |
|          |                         |    | Staghorn coral                | NE               | T                        | 31                          | 19,5                                               | 23          | N                                   | N                       | N                      | Growth on plugbase is gone                     |
|          |                         |    | Star coral                    | NE               | H                        |                             | 6                                                  | 8           | Y                                   | N                       | N                      |                                                |
| 10 R     | 4 O                     | 2  | Finger coral                  | W                | L                        | 4                           | 1,5                                                | 2           | N                                   | Y                       | N                      | Covered by sand, disappearing in sand. Dying?  |
|          |                         |    | STAGHORN ON/IN OYSTER 4       |                  |                          |                             |                                                    |             |                                     |                         |                        | New coral growth on this ball. ALGAE ON THIS B |
| 10R      | 5 O                     | 0  | Sea Rod, purple               | NE               | H                        | GONE                        |                                                    |             |                                     |                         |                        | No new coral growth on this ball               |
|          |                         |    | Sea Rod, white                | NW               | M                        | GONE                        |                                                    |             |                                     |                         |                        | Brain coral on rubble lying against this ball  |
|          |                         |    | Sea Rod, white                | SW               | H                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
|          |                         |    | Staghorn coral                | S                | M                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
| 10R      | 6 LP                    | 1  | Sea Rod, purple               | NE               | M                        | GONE                        |                                                    |             |                                     |                         |                        | New growth on this ball. ALGAE ON THIS BALL    |
|          |                         |    | Sea Rod, purple               | SE               | M                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
|          |                         |    | Sea Rod, white                | W                | H                        | GONE                        | STAGHORN ON/IN THIS BALL. Branches 88, Width 50 cm |             |                                     |                         |                        |                                                |
|          |                         |    | Sea Rod, white                | NW               | M                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
| 10R      | 7 O                     | 0  | No Plugs on this ball         |                  |                          |                             |                                                    |             |                                     |                         |                        | New growth on this ball. ALGAE ON THIS BALL, M |
| 10R      | 8 P                     | 5  | Leaf coral (lettuce)          | NE               | H                        | GONE                        |                                                    |             |                                     |                         |                        | ALGAE ON THIS BALL. Macro Turf Algae.          |
|          |                         |    | Sea Rod, black                | SE               | H                        | 5                           | 24                                                 | 12          | N                                   | Y                       | N                      | New coral growth on this ball                  |
|          |                         |    | Sea Rod, black                | SE               | M                        | 10                          | 20                                                 | 13          | Y                                   | Y                       | N                      |                                                |
|          |                         |    | Sea Rod, black                | S                | M                        | 5                           | 26                                                 | 12          | Y                                   | Y                       | N                      |                                                |
|          |                         |    | Sea Rod, white                | E                | H                        | 80                          | 20                                                 | 30          | Y                                   | Y                       | N                      |                                                |
|          |                         |    | Staghorn coral                | S                | T                        | GONE                        |                                                    |             |                                     |                         |                        |                                                |
|          |                         |    | Staghorn coral                | SW               | T                        | 67                          | 30                                                 | 38          | N                                   | N                       | N                      | Hanging in the plug hole, not steady.          |
| Subtotal |                         |    | 16 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         | Height | Width | Coral Growth        | Algae at    | Algae at   | Remarks                                                                       |
|-----------------|-------|----|--------------------------------------|------------------|------------|-------------------|--------|-------|---------------------|-------------|------------|-------------------------------------------------------------------------------|
|                 |       |    |                                      | position         | height     | Branches/<br>Cups | cm     | cm    | on Plug<br>Base Y/N | Base<br>Y/N | Top<br>Y/N |                                                                               |
| 10R             | 9 P   | 1  | Finger coral                         | N                | 1-on oyste | 9                 | 4,5    | 9,5   | N                   | Y           | Y          | ALGAE ON THIS BALL, Macro Turf Algae.                                         |
|                 |       |    | Finger coral                         | NW               | 1-on oyste | GONE              |        |       |                     |             |            | New coral growth on this ball                                                 |
|                 |       |    | Finger coral                         | NW               | M          | GONE              |        |       |                     |             |            |                                                                               |
|                 |       |    | Flower coral                         | NE               | T          | GONE              |        |       |                     |             |            |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | NE               | M          | GONE              |        |       |                     |             |            |                                                                               |
|                 |       |    | Sea Rod, Black                       | NE               | M          | GONE              |        |       |                     |             |            |                                                                               |
| 10 R            | 10 O  | 1  | Finger coral                         | NE               | M          | 15                | 7      | 13    | N                   | Y           | Y          | New coral growth on this ball. ALGAE ON                                       |
| 10 R            | 11 LP | 1  | Staghorn                             | N                | H          | 130               | 37     | 61    | N                   | Y           | Y          | No new coral growth . ALGAE ON THIS BAL                                       |
| 10 R            | 12 LP | 1  | Brain coral                          | NW               | T          |                   | 8      | 9     | N                   | Y           | Y          | No new coral growth on this ball. ALGAE,                                      |
|                 |       |    | Flower coral                         | NE               | H          | GONE              |        |       |                     |             |            |                                                                               |
|                 |       |    | Flower coral                         | SE               | L          | GONE              |        |       |                     |             |            |                                                                               |
|                 |       |    | Mustard hill coral                   | S                | T          | GONE              |        |       |                     |             |            |                                                                               |
| 10 R            | 13 B  | 4  | Leaf coral ( Lettuce)                | N                | M          | 4                 | 2      | 5,5   | Y                   | Y           | N          | ALGAE ON THIS BALL, Macro Turf Algae.                                         |
|                 |       |    | Sea Rod, Black                       | NW               | H          | 6                 | 18     | 12    | N                   | Y           | N          | New coral growth on this ball                                                 |
|                 |       |    | Sea Rod, Black                       | NW               | M          | 9                 | 19     | 20    | N                   | Y           | N          |                                                                               |
|                 |       |    | Staghorn                             | SW               | H          | 99                | 36,5   | 48    | Y                   | N           | N          |                                                                               |
| 10 R            | 14 U  | 11 | Brain coral                          | N                | L          |                   | 4      | 5,5   | Y                   | Y           | N          | New coral growth on this ball                                                 |
|                 |       |    | Finger coral                         | N                | M          | 61                | 6,5    | 14    | N                   | Y           | Y          | On two branches algae.                                                        |
|                 |       |    | Leaf coral ( Lettuce)                | E                | M          | 5                 | 3      | 5     | Y                   | N           | N          | 12o'clock<br>Dying? Position SEML in stead of SSEML<br>8 o'clock<br>5 o'clock |
|                 |       |    | Leaf coral ( Lettuce)                | NW               | L          | 3                 | 4      | 5     | Y                   | Y           | N          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | NE               | M          | 3                 | 2,5    | 4,5   | Y                   | Y           | N          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SE               | M          | 5                 | 3      | 4     | N                   | Y           | N          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SE               | ML         | 1                 | 0,5    | 0,5   | N                   | Y           | N          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SSE              | ML         | 2                 | 3,5    | 6     | Y                   | N           | N          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SSE              | L          | 2                 | 2,5    | 4,5   | Y                   | N           | N          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SE               | M          | NOT FOUND         |        |       |                     |             |            |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SW               | ML         | 2                 | 0,5    | 2,5   | N                   | Y           | Y          |                                                                               |
|                 |       |    | Leaf coral ( Lettuce)                | SW               | M          | NOT FOUND         |        |       |                     |             |            |                                                                               |
|                 |       |    | Pencil coral                         | NE               | M          | 2                 | 0,5    | 2,5   | Y                   | N           | N          |                                                                               |
|                 |       |    | Staghorn                             | S                | H          | 73                | 25     | 33    | Y                   | N           | N          | ALGAE ON THIS BALL, Macro Turf Algae.                                         |
|                 |       |    | Staghorn                             | N                | H          | GONE              |        |       |                     |             |            |                                                                               |
| 10R             | 15 LP | 2  | Brain coral                          | SW               | T          |                   | 4,5    | 7     | Y                   | Y           | N          | New coral growth on this ball                                                 |
|                 |       |    | Brain coral                          | SE               | H          |                   | 3      | 4.5   | Y                   | Y           | Y          | ALGAE ON THIS BALL, Macro Turf Algae.                                         |
| 10R             | 16 B  | 2  | Brain coral                          | NW               | H          |                   | 2      | 6     | N                   | Y           | Y          | Halve covered in algae.                                                       |
|                 |       |    | Flower coral                         | NE               | M          | 1                 | 2      | 2     | N                   | Y           | Y          | New coral growth on this ball. ALGAE ON                                       |
| 10R             | 17 P  | 0  | Leaf coral (lettuce)                 | E                | M          | GONE              |        |       |                     |             |            | ALGAE ON THIS BALL, Macro Turf Algae.                                         |
|                 |       |    | Mustard Hill coral                   | NW               | H          | GONE              |        |       |                     |             |            | New coral growth on this ball                                                 |
|                 |       |    | Pencil coral                         | NW               | T          | GONE              |        |       |                     |             |            |                                                                               |
| 10R             | 18 LP | 0  | Mustard hill coral                   | NE               | H          | GONE              |        |       |                     |             |            | New coral growth on this ball                                                 |
|                 |       |    | Sea Rod, black                       | W                | T          | DEAD              |        |       |                     |             |            | ALGAE ON THIS BALL, Macro Turf Algae.                                         |
|                 |       |    | Sea Rod, purple                      | NW               | M          | DEAD              |        |       |                     |             |            |                                                                               |
| <b>Subtotal</b> |       |    | <b>23 Number of live coral plugs</b> |                  |            |                   |        |       |                     |             |            |                                                                               |

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

| CN       | B N/T | LP | Coral Species              | Plug Orientation |        | Number of Branches/<br>Cups | Height<br>cm | Width<br>cm | Coral Growth<br>on Plug<br>Base Y/N | Algae at<br>Base<br>Y/N | Algae at<br>Top<br>Y/N | Remarks                                                                                                         |
|----------|-------|----|----------------------------|------------------|--------|-----------------------------|--------------|-------------|-------------------------------------|-------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------|
|          |       |    |                            | position         | height |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 19 O  | 0  |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 20 O  | 0  |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 21 O  | 0  |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 22 LP | 0  |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 23 LP | 2  | Leaf coral (lettuce)       | SE               | H      | GONE                        |              |             |                                     |                         |                        | ALGAE ON THIS BALL, Macro Turf Algae.<br>New coral growth on this ball<br>4 branches cut off ?                  |
|          |       |    | Mustard hill               | N                | H      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    | Sea rod, white             | NW               | H      | 23                          | 13           | 9,5         | N                                   | Y                       | N                      |                                                                                                                 |
|          |       |    | Sea rod, white             | NW               | M      | 20                          | 15           | 9,5         | N                                   | Y                       | N                      |                                                                                                                 |
|          |       |    | Finger coral               | SW               | H      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 24 P  | 2  | Brain coral                | NW               | T      | GONE                        |              |             |                                     |                         |                        | ALGAE ON THIS BALL, Macro Turf Algae.<br>New coral growth on this ball<br>Dying?                                |
|          |       |    | Maze coral                 | SE               | M      |                             | 3            | 5,5         | N                                   | N                       | N                      |                                                                                                                 |
|          |       |    | Mustard hill               | NE               | M      | 2                           | 0,5          | 0,5         | N                                   | Y                       | Y                      |                                                                                                                 |
|          |       |    | Sea rod, black             | NW               | T      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    | Sea rod, black             | SW               | T      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    | Staghorn coral             | N                | T      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 25 B  | 1  | Pencil coral               | NW               | M      | 7                           | 0.5          | 4,5         | N                                   | Y                       | N                      | Previously identified as Mustard hill                                                                           |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        | New coral growth. ALGAE ON THIS BALL, Macro Turf Algae.                                                         |
| 10R      | 26 LP | 1  | Maze coral                 | W                | T      |                             | 7            | 9           | Y                                   | Y                       | Y                      | No new coral growth on this ball. ALGAE ON THIS BALL.                                                           |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 27 B  | 1  | Sea Rod, black             | SW               | T      | GONE                        |              |             |                                     |                         |                        | New coral growth on this ball                                                                                   |
|          |       |    | Sea Rod, white             | W                | T      | 30                          | 16           | 13          | Y                                   | Y                       | N                      | ALGAE ON THIS BALL.                                                                                             |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 28 P  | 2  | Finger coral               | SW               | H      | GONE                        |              |             |                                     |                         |                        | ALGAE ON THIS BALL<br>Maze Coral and Flower coral previously<br>as Brain coral<br>New coral growth on this ball |
|          |       |    | Finger coral               | NE               | M      | 2                           | 4            | 5           | N                                   | Y                       | Y                      |                                                                                                                 |
|          |       |    | Flower coral               | SE               | H      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    | Leaf coral (lettuce)       | SW               | M      | 5                           | 4,5          | 6,5         | Y                                   | N                       | N                      |                                                                                                                 |
|          |       |    | Maze coral                 | W                | M      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    | Sea Rod, black             | SE               | T      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    | Staghorn coral             | W                | H      | GONE                        |              |             |                                     |                         |                        |                                                                                                                 |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 29 O  | 0  | Mustard hill               | W                | M      | GONE                        |              |             |                                     |                         |                        | New coral growth on this ball                                                                                   |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 30 LP | 0  |                            |                  |        |                             |              |             |                                     |                         |                        | New coral growth on this ball                                                                                   |
|          |       |    |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| 10R      | 31 O  | 0  |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| Subtotal |       | 9  |                            |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |
| Total    |       | 48 | Number of live coral plugs |                  |        |                             |              |             |                                     |                         |                        |                                                                                                                 |

**PORTOMAREA MARINE MONITORING**

**REEF BALL CORAL PLUG SUMMARY - 2**

**EAST SIDE OF BAY**

Date : July 12, 2003  
Observer: Marjo van den Bulck

| CN           | B N/T | LP | Coral Species                        | Plug Orientation |        | Number of         | Height | Width | Coral Growth        | Algae at    | Algae at   | Remarks                        |
|--------------|-------|----|--------------------------------------|------------------|--------|-------------------|--------|-------|---------------------|-------------|------------|--------------------------------|
|              |       |    |                                      | direction        | height | Branches/<br>Cups | cm     | cm    | on Plug<br>Base Y/N | Base<br>Y/N | Top<br>Y/N |                                |
| 12L          | 1P    | 7  | Leaf coral (lettuce)                 | NW               | T      | 2                 | 7      | 9     | N                   | Y           | N          | New coral growth on this ball. |
|              |       |    | Pencil coral                         | NE               | T      | 5                 | 5      | 5,5   | Y                   | Y           | Y          | Damaged                        |
|              |       |    | Pencil coral                         | N                | H      | 3                 | 3      | 5     | Y                   | Y           | Y          | Broken off, small part left.   |
|              |       |    | Solitary Disk coral                  | N                | L      | DEAD              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | N                | T      | 14                | 14,5   | 23    | Y                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | S                | T      | 60                | 24     | 45    | Y                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | SW               | T      | 46                | 22     | 35    | Y                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | NW               | H      | GONE              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | SE               | H      | 26                | 23,5   | 27    | Y                   | Y           | N          |                                |
| 12L          | 2P    | 5  | Pencil coral                         | NE               | T      | 4                 | 4      | 5,5   | Y                   | N           | Y          | Algae                          |
|              |       |    | Pencil coral                         | SW               | T      | 1                 | 0.5    | 0,5   | N                   | Y           | Y          | Very small surviving piece.    |
|              |       |    | Pencil coral                         | SE               | H      | 4                 | 3,5    | 4     | Y                   | Y           | Y          | Algae                          |
|              |       |    | Staghorn coral                       | NE               | T      | GONE              |        |       |                     |             |            | New coral growth on this ball  |
|              |       |    | Staghorn coral                       | W                | T      | 22                | 15     | 21    | Y                   | N           | N          | Position WT iso SET            |
|              |       |    | Staghorn coral                       | NW               | T      | 45                | 24     | 27    | Y                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | NE               | H      | GONE              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | SE               | H      | GONE              |        |       |                     |             |            |                                |
| 12L          | 3B    | 2  | Finger coral                         | NW               | T      | GONE              |        |       |                     |             |            | New coral growth on this ball. |
|              |       |    | Staghorn coral                       | SW               | T      | 28                | 21     | 26    | Y                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | NE               | H      | 48                | 21     | 41    | Y                   | N           | N          |                                |
| 12L          | 4B    | 2  | Staghorn coral                       | NE               | H      | GONE              |        |       |                     |             |            | New coral growth on this ball. |
|              |       |    | Staghorn coral                       | SW               | T      | 42                | 27,5   | 37    | Y                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | NW               | H      | 56                | 32     | 45    | N                   | N           | N          |                                |
| 12L          | 5P    | 6  | Finger coral                         | NE               | T      | 9                 | 4,5    | 12    | N                   | Y           | Y          | Dying?                         |
|              |       |    | Finger coral                         | NW               | L      | 7                 | 5      | 6,5   | N                   | Y           | Y          | New coral growth on this ball. |
|              |       |    | Staghorn coral                       | SE               | T      | GONE              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | SW               | T      | 21                | 15     | 24    | N                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | NW               | T      | 43                | 23     | 36    | Y                   | N           | M          |                                |
|              |       |    | Staghorn coral                       | N                | H      | GONE              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | SE               | H      | GONE              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | NE               | H      | BROKEN            | OFF    | IN    | OYSTER              | NOW         |            |                                |
|              |       |    | Staghorn coral                       | SW               | H      | 28                | 24     | 26    | N                   | N           | N          |                                |
|              |       |    | Staghorn coral                       | WSW              | H      | GONE              |        |       |                     |             |            |                                |
|              |       |    | Staghorn coral                       | NE               | T      | 34                | 22     | 33    | N                   | N           | N          |                                |
| <b>Total</b> |       |    | <b>22 Number of live coral plugs</b> |                  |        |                   |        |       |                     |             |            |                                |

**PORTOMAREA MARINE MONITORING**

**REEF BALL CORAL PLUG SUMMARY - 2**

**EAST SIDE OF BAY**

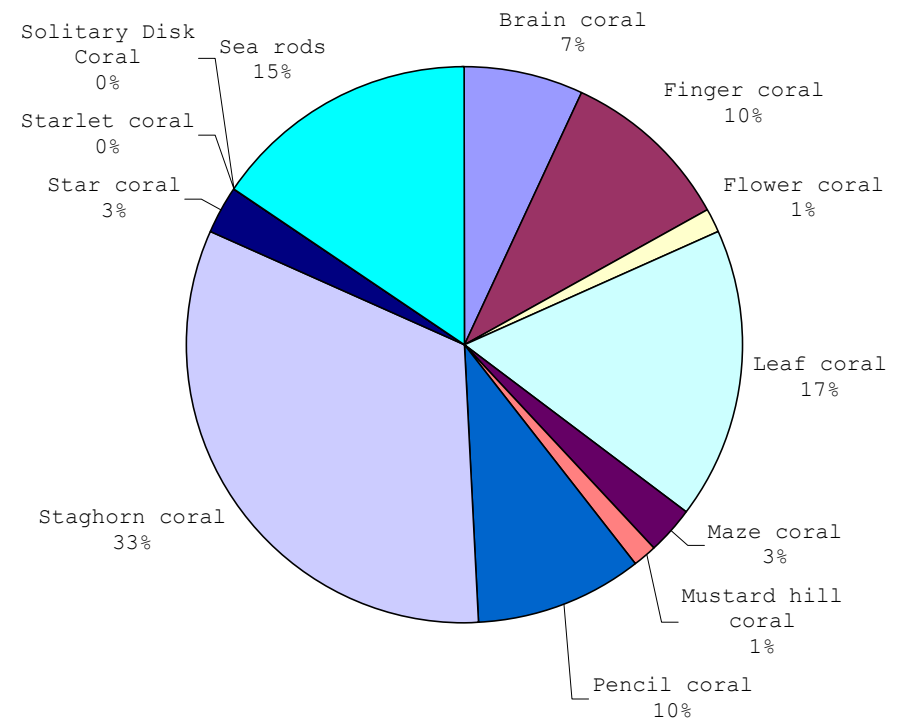
Date : July 9, 2003  
Observer: Marjo van den Bulck

| CN           | B N/T | LP | Coral Species                        | Plug Orientation |        | Number of         | Height | Width | Coral Growth        | Algae at    | Algae at   | Remarks                                  |
|--------------|-------|----|--------------------------------------|------------------|--------|-------------------|--------|-------|---------------------|-------------|------------|------------------------------------------|
|              |       |    |                                      | direction        | height | Branches/<br>Cups | cm     | cm    | on Plug<br>Base Y/N | Base<br>Y/N | Top<br>Y/N |                                          |
| 18L          | 1LP   | 2  | Black Sea Rod                        | N                | T      | 8                 | 14     | 18    | Y                   | N           | N          | New coral growth on this ball.           |
|              |       |    | Pencil coral                         | SE               | M      | 8                 | 4      | 4,5   | N                   | N           | N          |                                          |
| 18L          | 2B    | 2  | Flower coral                         | W                | T      | 14                | 4      | 6,5   | N                   | N           | N          | New coral growth on this ball.           |
|              |       |    | Finger coral                         | SE               | M      | 4                 | 3      | 4,5   | N                   | N           | Y          |                                          |
| 18L          | 3B    | 3  | Black Sea Rod                        | SW               | T      | 6                 | 11,5   | 7,5   | Y                   | N           | N          | New coral growth on this ball.           |
|              |       |    | Leaf coral ( Lettuce                 | W                | H      |                   | 1      | 3,5   | N                   | Y           | Y          |                                          |
|              |       |    | Pencil coral                         | NE               | H      | 3                 | 1,5    | 2,5   | N                   | Y           | Y          |                                          |
| 18L          | 4LP   | 2  | Blak Sea Rod                         | NE               | T      | 8                 | 15,5   | 8,5   | Y                   | N           | N          | New coral growth on this ball.           |
|              |       |    | Pencil coral                         | SE               | M      | 2                 | 2      | 2,5   | Y                   | N           | Y          |                                          |
| 18L          | 5B    | 3  | Star coral                           | SE               | T      |                   | 2,5    | 4     | N                   | N           | N          | New coral growth on this ball.           |
|              |       |    | White Sea Rod                        | SW               | H      | 81                | 27     | 21    | Y                   | N           | N          |                                          |
|              |       |    | Leat Coral ( Lettuce                 | NW               | H      |                   | 2      | 3     | N                   | Y           | Y          |                                          |
| 18L          | 6P    | 2  | Leaf coral ( Lettuce                 | E                | T      |                   | 2      | 4     | N                   | N           | Y          |                                          |
|              |       |    | Star coral                           | SW               | T      |                   | 4      | 3,5   | N                   | N           | N          |                                          |
| 18L          | 7P    | 3  | Maze coral                           | E                | T      |                   | 4,5    | 9     |                     |             |            | New coral growth on this ball.           |
|              |       |    | Star coral                           | W                | T      |                   | 3,5    | 4,5   | Y                   | N           | N          | Already growth over base! Placed in may. |
|              |       |    | Finger coral                         | NW               | T      | 4                 | 2      | 5     | N                   | Y           | Y          |                                          |
| 18L          | 8LP   | 0  |                                      |                  |        |                   |        |       |                     |             |            |                                          |
| 18L          | 9B    | 1  | Star coral                           | NE               | H      |                   | 1      | 4,5   | Y                   | N           | N          | 1 growth on this ball. Already growth ov |
| 18L          | 10B   | 3  | Finger coral                         | N                | T      | 11                | 10     | 11    | N                   | Y           | Y          | New coral growth on this ball.           |
|              |       |    | Pencil coral                         | E                | H      | 3                 | 1,5    | 3,5   | Y                   | Y           | Y          |                                          |
|              |       |    | Leaf coral ( Lettuce                 | SW               | H      |                   | 0,5    | 0,5   | N                   | Y           | Y          | Dying? Covered in Algae.                 |
| 18L          | 11LP  | 0  |                                      |                  |        |                   |        |       |                     |             |            |                                          |
| 18L          | 12O   | 0  |                                      |                  |        |                   |        |       |                     |             |            |                                          |
| <b>Total</b> |       |    | <b>21 Number of live coral plugs</b> |                  |        |                   |        |       |                     |             |            |                                          |

**PORTOMAREA MARINE MONITORING  
REEF BALL CORAL PLUG SPECIES SUMMARY**

**SPECIES DISTRIBUTION OF CORAL PLUGS ON REEF BALLS AS OF JULY 2003**  
CLUSTER 10 WEST/RIGHT, CLUSTER 12 EAST/LEFT

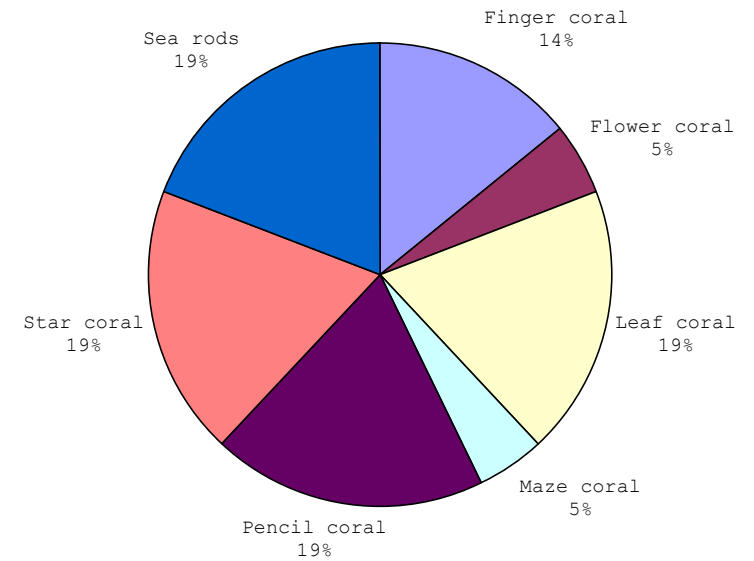
| Coral Species       | July   | Number of Live Plugs |  | % of Total |
|---------------------|--------|----------------------|--|------------|
| Brain coral         |        | 5                    |  | 7.04       |
| Finger coral        |        | 7                    |  | 9.86       |
| Flower coral        |        | 1                    |  | 1.41       |
| Leaf coral          |        | 12                   |  | 16.90      |
| Maze coral          |        | 2                    |  | 2.82       |
| Mustard hill coral  |        | 1                    |  | 1.41       |
| Pencil coral        |        | 7                    |  | 9.86       |
| Staghorn coral      |        | 23                   |  | 32.39      |
| Star coral          |        | 2                    |  | 2.82       |
| Starlet coral       |        | 0                    |  | 0.00       |
| Solitary Disk Coral |        | 0                    |  | 0.00       |
| Sea rods            |        | 11                   |  | 15.49      |
|                     | black  | 7                    |  |            |
|                     | purple | 1                    |  |            |
|                     | white  | 3                    |  |            |
| <b>TOTAL</b>        |        | <b>71</b>            |  | <b>100</b> |



PORTOMAREA MARINE MONITORING  
REEF BALL CORAL PLUG SPECIES SUMMARY

SPECIES DISTRIBUTION OF CORAL PLUGS ON REEF BALLS AS OF JULY 2003  
CLUSTER 18 EAST/LEFT

| Coral Species | May '03 | Number of Live Plugs |   | % of Total |
|---------------|---------|----------------------|---|------------|
| Finger coral  |         |                      | 3 | 14.29      |
| Flower coral  |         |                      | 1 | 4.76       |
| Leaf coral    |         |                      | 4 | 19.05      |
| Maze coral    |         |                      | 1 | 4.76       |
| Pencil coral  |         |                      | 4 | 19.05      |
| Star coral    |         |                      | 4 | 19.05      |
| Sea rods      |         |                      | 4 | 19.05      |
|               | black   | 3                    |   |            |
|               | white   | 1                    |   |            |
| <b>TOTAL</b>  |         | <b>21</b>            |   | <b>100</b> |

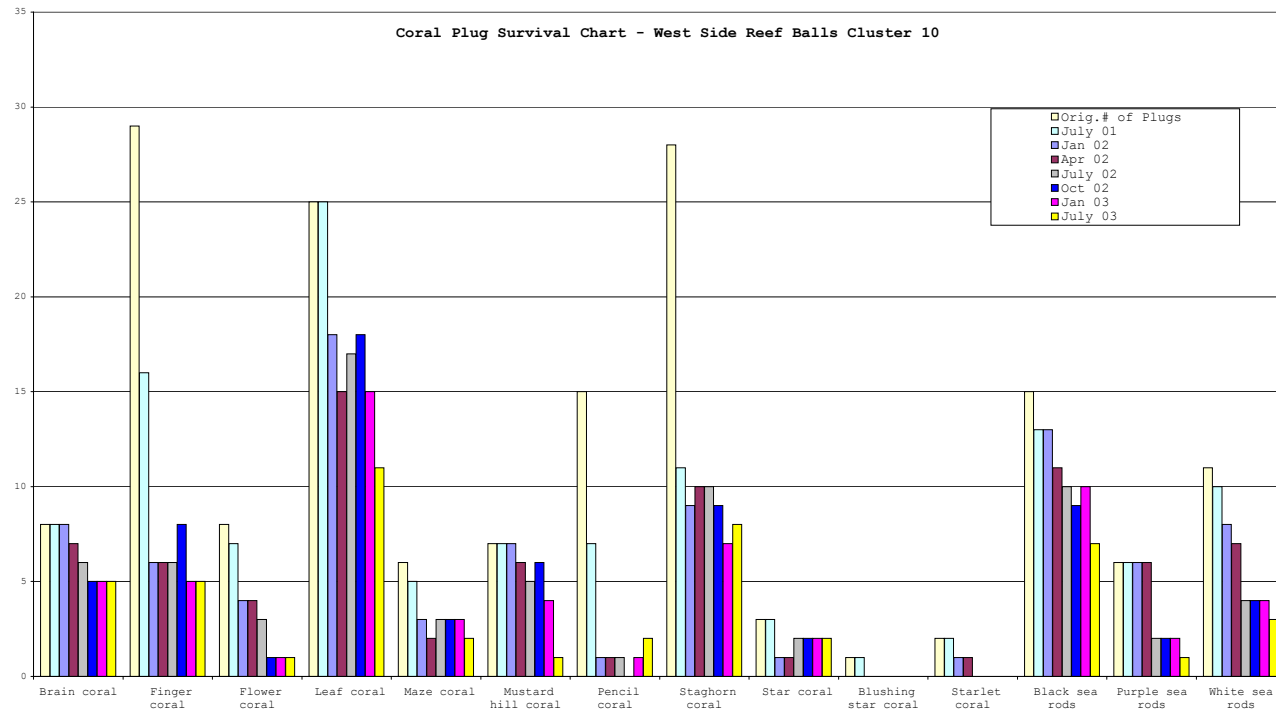


PORTOMAREA MARINE MONITORING

Coral Plug Survival Summary  
West Side Reef Balls, Cluster 10

| July 2001 Monitoring (per M.Kuenen) |                 |                      |                   | January 2002 Monitoring |                    | April 2002 Monitoring |                     | July 2002 Monitoring |                     | October 2002 Monitoring |                     | January 2003 Monitoring |                     | July 2003 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 | Number of Live Plugs    | Mortality 21 months | Number of Live Plugs | Mortality 27 months |
| Brain coral*                        | 8               | 8                    | 0%                | 8                       | 0%                 | 7                     | 13%                 | 6                    | 25%                 | 5                       | 38%                 | 5                       | 38%                 | 5                    | 38%                 |
| Finger coral                        | 29              | 16                   | 45%               | 6                       | 79%                | 6                     | 79%                 | 6                    | 79%                 | 8                       | 72%                 | 5                       | 83%                 | 5                    | 83%                 |
| Flower coral                        | 8               | 7                    | 13%               | 4                       | 50%                | 4                     | 50%                 | 3                    | 63%                 | 1                       | 88%                 | 1                       | 88%                 | 1                    | 88%                 |
| Leaf coral                          | 25              | 25                   | 0%                | 18                      | 28%                | 15                    | 40%                 | 17                   | 32%                 | 18                      | 28%                 | 15                      | 40%                 | 11                   | 56%                 |
| Maze coral                          | 6               | 5                    | 17%               | 3                       | 50%                | 2                     | 67%                 | 3                    | 50%                 | 3                       | 50%                 | 3                       | 50%                 | 2                    | 67%                 |
| Mustard hill coral*                 | 7               | 7                    | 0%                | 7                       | 0%                 | 6                     | 14%                 | 5                    | 29%                 | 6                       | 14%                 | 4                       | 43%                 | 1                    | 86%                 |
| Pencil coral                        | 15              | 7                    | 53%               | 1                       | 93%                | 1                     | 93%                 | 1                    | 93%                 | 0                       | 100%                | 1                       | 93%                 | 2                    | 87%                 |
| Staghorn coral                      | 28              | 11                   | 61%               | 9                       | 68%                | 10                    | 64%                 | 10                   | 64%                 | 9                       | 68%                 | 7                       | 75%                 | 8                    | 71%                 |
| Star coral                          | 3               | 3                    | 0%                | 1                       | 67%                | 1                     | 67%                 | 2                    | 33%                 | 2                       | 33%                 | 2                       | 33%                 | 2                    | 33%                 |
| Blushing star coral                 | 1               | 1                    | 0%                | 0                       | 100%               | 0                     | 100%                | 0                    | 100%                | 0                       | 100%                | 0                       | 100%                | 0                    | 100%                |
| Starlet coral                       | 2               | 2                    | 0%                | 1                       | 50%                | 1                     | 50%                 | 0                    | 100%                | 0                       | 100%                | 0                       | 100%                | 0                    | 100%                |
| Sea rods black                      | 15              | 13                   | 13%               | 13                      | 13%                | 11                    | 27%                 | 10                   | 33%                 | 9                       | 40%                 | 10                      | 33%                 | 7                    | 53%                 |
| Sea rods purple                     | 6               | 6                    | 0%                | 6                       | 0%                 | 6                     | 0%                  | 2                    | 67%                 | 2                       | 67%                 | 2                       | 67%                 | 1                    | 83%                 |
| Sea rods white                      | 11              | 10                   | 9%                | 8                       | 27%                | 7                     | 36%                 | 4                    | 64%                 | 4                       | 64%                 | 4                       | 64%                 | 3                    | 73%                 |
| <b>TOTALS</b>                       | <b>164</b>      | <b>121</b>           | <b>Mean 26%</b>   | <b>85</b>               | <b>Mean 48%</b>    | <b>77</b>             | <b>Mean 53%</b>     | <b>69</b>            | <b>Mean 58%</b>     | <b>67</b>               | <b>Mean 59%</b>     | <b>59</b>               | <b>Mean 64%</b>     | <b>48</b>            | <b>Mean 71%</b>     |

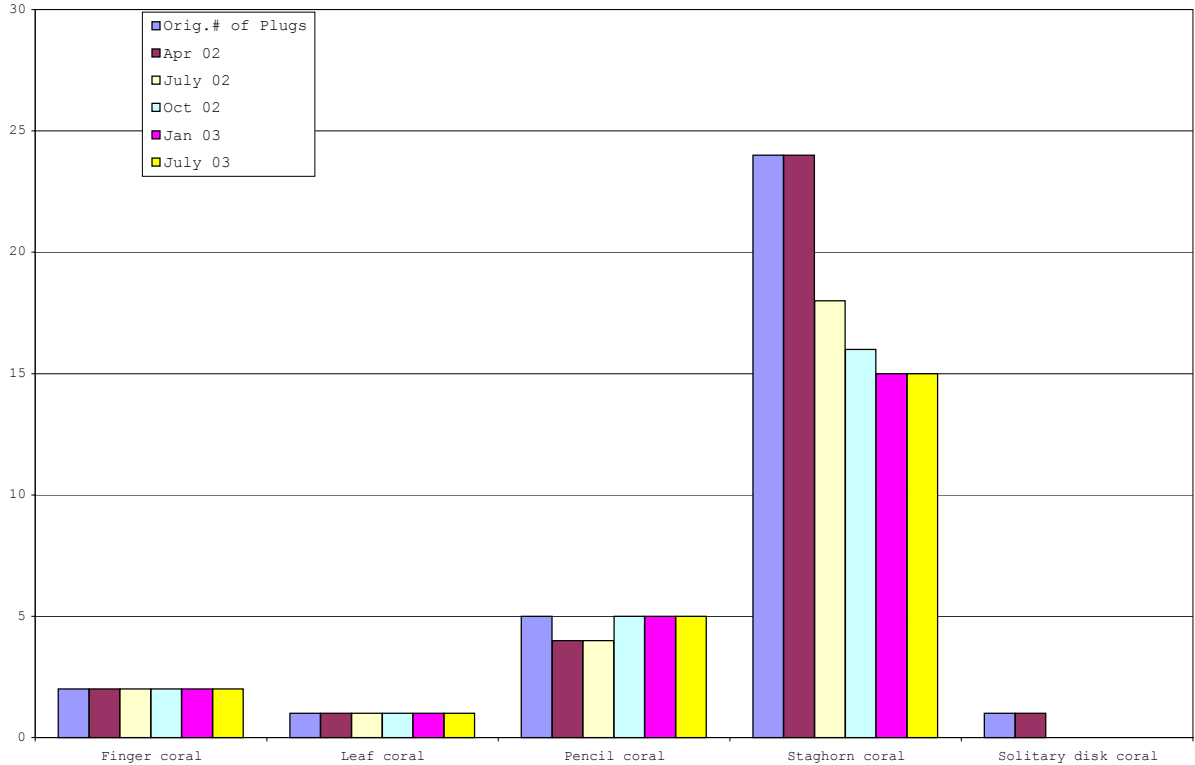
\* Number of original plugs adjusted to correspond to Jan/02 survey



PORTOMAREA MARINE MONITORING  
Coral Plug Survival Summary  
East Side Reef Balls, Cluster 12

|                     |                    | April 2002 Monitoring   |                      | July 2002 Monitoring    |                         | October 2002 Monitoring |                         | January 2003 Monitoring |                         | July 2003 Monitoring    |                          |
|---------------------|--------------------|-------------------------|----------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
| Coral Species       | Orig.#<br>of Plugs | Number of<br>Live Plugs | Mortality<br>15 days | Number of<br>Live Plugs | Mortality<br>3.5 months | Number of<br>Live Plugs | Mortality<br>6.5 months | Number of<br>Live Plugs | Mortality<br>9.5 months | Number of<br>Live Plugs | Mortality<br>15.5 months |
| Finger coral        | 2                  | 2                       | 0%                   | 2                       | 0%                      | 2                       | 0%                      | 2                       | 0%                      | 2                       | 0%                       |
| Leaf coral          | 1                  | 1                       | 0%                   | 1                       | 0%                      | 1                       | 0%                      | 1                       | 0%                      | 1                       | 0%                       |
| Pencil coral        | 5                  | 4                       | 20%                  | 4                       | 20%                     | 5                       | 0%                      | 5                       | 0%                      | 5                       | 0%                       |
| Staghorn coral      | 24                 | 24                      | 0%                   | 18                      | 25%                     | 16                      | 33%                     | 15                      | 38%                     | 15                      | 38%                      |
| Solitary disk coral | 1                  | 1                       | 0%                   | 0                       | 100%                    | 0                       | 100%                    | 0                       | 100%                    | 0                       | 100%                     |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
|                     |                    |                         |                      |                         |                         |                         |                         |                         |                         |                         |                          |
| TOTALS              | 33                 | 32                      | Mean<br>3%           | 25                      | Mean<br>24%             | 24                      | Mean<br>27%             | 23                      | Mean<br>30%             | 23                      | Mean<br>30%              |

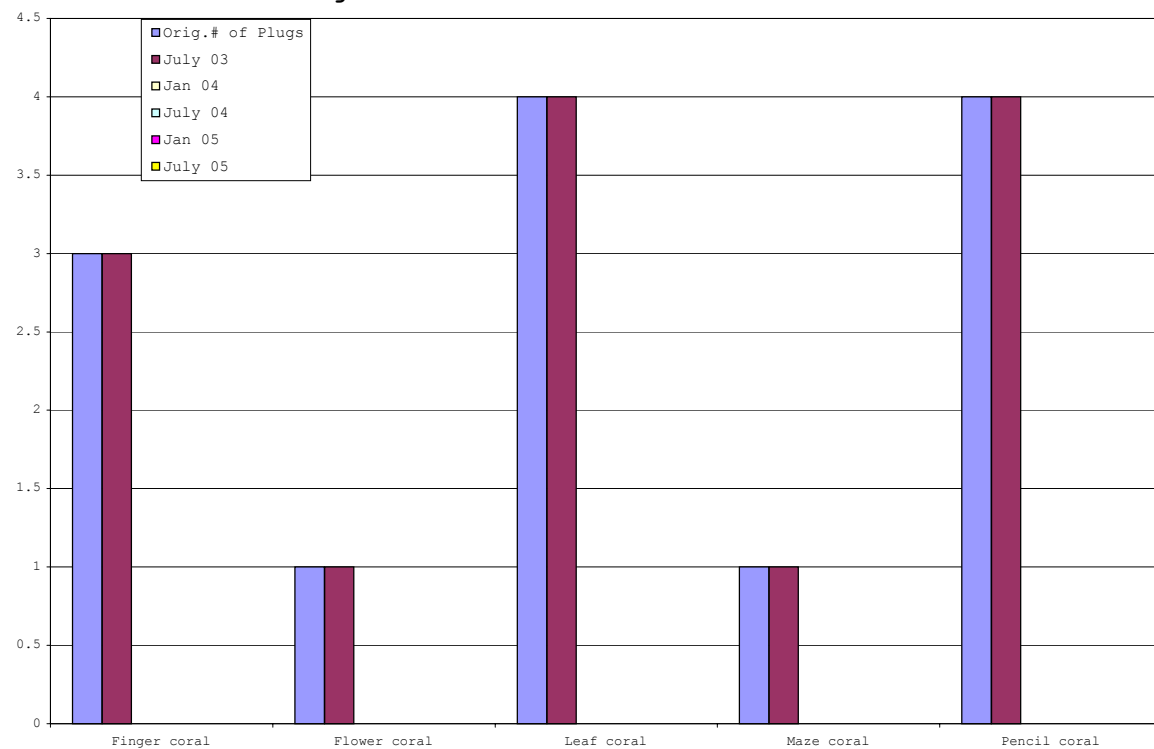
## Coral Plug Survival Chart East Side Reef Balls Cluster 12



PORTOMAREA MARINE MONITORING  
Coral Plug Survival Summary  
East Side Reef Balls, Cluster 18

|               |                 | July 2003 Monitoring |                    | January 2004 Monitoring |                    | July 2004 Monitoring |                     | January 2005 Monitoring |                     | July 2005 Monitoring |                     |
|---------------|-----------------|----------------------|--------------------|-------------------------|--------------------|----------------------|---------------------|-------------------------|---------------------|----------------------|---------------------|
| Coral Species | Orig.# of Plugs | Number of Live Plugs | Mortality 2 months | Number of Live Plugs    | Mortality 7 months | Number of Live Plugs | Mortality 14 months | Number of Live Plugs    | Mortality 19 months | Number of Live Plugs | Mortality 26 months |
| Finger coral  | 3               | 3                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Flower coral  | 1               | 1                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Leaf coral    | 4               | 4                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Maze coral    | 1               | 1                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Pencil coral  | 4               | 4                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Star coral    | 4               | 4                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Sea rod black | 3               | 3                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
| Sea rod white | 1               | 1                    | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |
|               |                 |                      |                    |                         |                    |                      |                     |                         |                     |                      |                     |
|               |                 |                      |                    |                         |                    |                      |                     |                         |                     |                      |                     |
|               |                 |                      | Mean               |                         | Mean               |                      | Mean                |                         | Mean                |                      | Mean                |
| TOTALS        | 21              | 21                   | 0%                 |                         |                    |                      |                     |                         |                     |                      |                     |

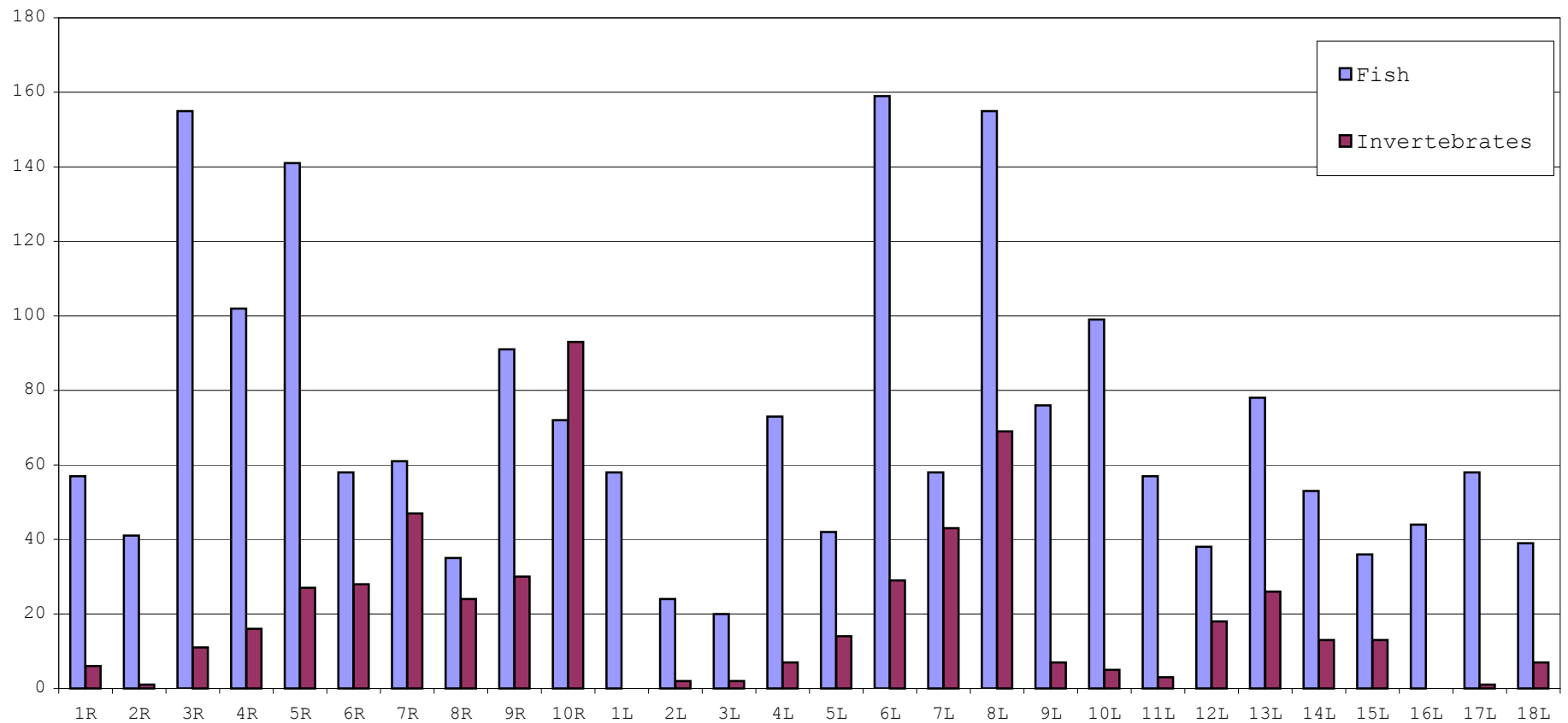
Coral Plug Survival Chart East Side Reef Balls Cluster 18



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

| Cluster No.  | No.of Fish  | % of Total | No.of Invertebrates | % of Total   |
|--------------|-------------|------------|---------------------|--------------|
| 1R           | 57          | 2.88       | 6                   | 0.18         |
| 2R           | 41          | 2.07       | 1                   | 0.18         |
| 3R           | 155         | 7.83       | 11                  | 2.03         |
| 4R           | 102         | 5.15       | 16                  | 2.95         |
| 5R           | 141         | 7.12       | 27                  | 4.98         |
| 6R           | 58          | 2.93       | 28                  | 5.17         |
| 7R           | 61          | 3.08       | 47                  | 8.67         |
| 8R           | 35          | 1.77       | 24                  | 4.43         |
| 9R           | 91          | 4.60       | 30                  | 5.54         |
| 10R          | 72          | 3.64       | 93                  | 17.16        |
| 1L           | 58          | 2.93       | 0                   | 0.00         |
| 2L           | 24          | 1.21       | 2                   | 0.37         |
| 3L           | 20          | 1.01       | 2                   | 0.37         |
| 4L           | 73          | 3.69       | 7                   | 1.29         |
| 5L           | 42          | 2.12       | 14                  | 2.58         |
| 6L           | 159         | 8.03       | 29                  | 5.35         |
| 7L           | 58          | 2.93       | 43                  | 7.93         |
| 8L           | 155         | 7.83       | 69                  | 12.73        |
| 9L           | 76          | 3.84       | 7                   | 1.29         |
| 10L          | 99          | 5.00       | 5                   | 0.92         |
| 11L          | 57          | 2.88       | 3                   | 0.55         |
| 12L          | 38          | 1.92       | 18                  | 3.32         |
| 13L          | 78          | 3.94       | 26                  | 4.80         |
| 14L          | 53          | 2.68       | 13                  | 2.40         |
| 15L          | 36          | 1.82       | 13                  | 2.40         |
| 16L          | 44          | 2.22       | 0                   | 0.00         |
| 17L          | 58          | 2.93       | 1                   | 0.18         |
| 18L          | 39          | 1.97       | 7                   | 1.29         |
| <b>TOTAL</b> | <b>1980</b> | <b>100</b> | <b>542</b>          | <b>99.08</b> |

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



# PORTOMAREA MARINE MONITORING

## FISH and INVERTEBRATE SURVEY - REEF BALL CLUSTERS WEST

DATE: July 8, 2003

TIME: 8.30 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          | 2    |      | 1    |      | 1    | 1    |      |      |      |      | 5     | 1.25  | 0.50    |
| BASSLET        | Fairy Basslet             |      |      |      |      |      |      |      |      |      |      |       |       |         |
| BLENNY         | Redlip Blenny             |      |      | 1    | 1    |      |      |      | 2    |      |      | 4     | 1.33  | 0.58    |
|                | Saddled Blenny            |      |      |      |      |      |      |      |      |      |      |       |       |         |
| BOXFISH        | Smooth Trunkfish          |      |      |      |      |      |      |      |      |      | 1    | 1     | 1.00  |         |
| BUTTERFLYFISH  | Banded Butterflyfish      |      |      |      |      |      |      |      |      |      | 2    | 2     | 2.00  |         |
|                | Foureye Butterflyfish     |      |      |      | 1    | 2    | 1    | 1    | 1    | 3    | 2    | 11    | 1.57  | 0.79    |
| CHROMIS        | Blue Chromis              |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Brown Chromis             | 20   | 12   | 40   | 3    | 24   | 2    | 14   |      | 50   |      | 165   | 20.63 | 17.01   |
| DAMSELFISH     | Beaugregory               |      | 1    |      |      |      |      |      |      |      |      | 1     | 1.00  |         |
|                | Bicolor Damsel            | 4    |      | 15   | 16   | 9    | 4    |      | 2    | 4    | 1    | 55    | 6.88  | 5.82    |
|                | Cocoa Damsel              |      |      |      |      | 1    | 1    |      |      |      | 1    | 3     | 1.00  |         |
|                | Dusky Damsel              | 2    | 2    |      |      | 5    | 4    | 1    |      | 2    | 12   | 28    | 4.00  | 3.79    |
|                | Sergeant Major            | 3    | 3    |      | 8    | 7    | 1    | 2    | 2    |      | 3    | 29    | 3.63  | 2.50    |
|                | Threespot Damsel          |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Yellowtail Damsel         |      |      |      | 1    |      | 2    | 1    |      | 1    | 1    | 6     | 1.20  | 0.45    |
| DRUM           | Spotted Drum              |      |      |      |      |      |      |      |      |      | 2    | 2     | 2.00  |         |
| EEL            | Goldentail Moray          |      |      |      |      |      |      |      |      |      | 1    | 1     | 1.00  |         |
| FILEFISH       | Orangespotted Filefish    |      |      | 2    |      |      |      |      |      |      |      | 2     | 2.00  |         |
| GOATFISH       | Spotted Goatfish          |      |      |      | 1    |      | 1    |      |      |      |      | 2     | 1.00  |         |
|                | Yellow Goatfish           |      |      |      |      |      | 1    |      |      |      | 1    | 2     | 1.00  |         |
| GOBY           | Bridled Goby              |      | 1    |      |      | 10   | 15   | 10   | 13   | 20   | 15   | 84    | 12.00 | 5.94    |
|                | Neon Goby                 |      |      |      |      |      | 1    |      |      |      |      | 1     | 1.00  |         |
| GROUPE         | Coney                     |      |      |      |      |      | 3    |      |      |      |      | 3     | 3.00  |         |
|                | Graysby                   |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Rock Hind                 |      |      |      |      |      |      |      |      |      |      |       |       |         |
| GRUNT          | Bluestriped Grunt         |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | French Grunt              | 2    | 1    | 75   | 1    |      | 1    | 1    | 1    |      | 1    | 83    | 10.38 | 26.11   |
|                | Striped Grunt             |      |      |      |      |      | 1    |      |      |      |      | 1     | 1.00  |         |
| HAMLET         | Butter Hamlet             |      |      |      |      |      |      |      |      | 1    |      | 1     | 1.00  |         |
| HOGFISH        | Spanish Hogfish           |      |      |      |      |      |      |      |      |      |      |       |       |         |
| JACK           | Bar Jack                  |      |      |      |      |      |      |      |      |      |      |       |       |         |
| PARROTFISH     | Blue Parrotfish           |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Princess Parrotfish       |      |      |      |      |      | 2    | 1    | 1    |      | 1    | 5     | 1.25  | 0.50    |
|                | Queen Parrotfish          |      |      |      |      | 2    | 3    |      |      |      | 2    | 7     | 2.33  | 0.58    |
|                | Redband Parrotfish        |      |      |      |      | 1    |      |      |      |      |      | 1     | 1.00  |         |
|                | Stoplight Parrotfish      |      |      |      |      |      |      | 2    |      |      |      | 2     | 2.00  |         |
|                | Striped Parrotfish        |      |      |      |      |      |      |      |      |      |      |       |       |         |
| PUFFER         | Sharpnose Puffer          |      |      |      |      |      |      | 2    |      | 1    |      | 3     | 1.50  | 0.71    |
| SCORPIONFISH   | Spotted Scorpionfish      |      |      | 1    |      |      |      |      | 1    |      |      | 2     | 1.00  |         |
| SEABASS        | Harlequin Bass            |      |      |      |      |      |      | 1    |      |      |      | 1     | 1.00  |         |
| SNAPPER        | Gray Snapper              |      |      |      | 1    |      |      |      |      |      |      | 1     | 1.00  |         |
|                | Schoolmaster              |      |      |      |      |      |      |      |      |      |      |       |       |         |
| SQUIRRELFISH   | Blackbar Soldierfish      |      |      | 2    |      |      | 3    | 1    |      | 2    | 9    | 17    | 3.40  | 3.21    |
|                | Squirrelfish              | 1    | 1    | 1    |      |      |      | 1    |      | 1    | 3    | 8     | 1.33  | 0.82    |
| SURGEONFISH    | Blue Tang                 |      | 1    |      | 4    | 3    | 2    | 1    | 1    |      | 2    | 14    | 2.00  | 1.15    |
|                | Doctorfish                |      |      |      |      |      |      |      |      |      |      |       |       |         |
| WRASSE         | Bluehead Wrasse           | 13   | 16   | 11   | 55   | 65   | 8    | 16   | 10   | 3    | 9    | 206   | 20.60 | 21.25   |
|                | Clown Wrasse              |      |      | 3    | 4    | 3    |      | 3    |      |      |      | 13    | 3.25  | 0.50    |
|                | Puddingwife               |      | 1    |      |      | 4    | 1    |      |      | 1    | 1    | 8     | 1.60  | 1.34    |
|                | Rainbow Wrasse            |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Slippery Dick             | 10   | 2    | 2    | 6    | 4    |      | 2    |      |      |      | 26    | 4.33  | 3.20    |
|                | Yellowhead Wrasse         |      |      |      |      |      |      | 1    | 1    | 2    |      | 4     | 1.33  | 0.58    |
| OTHERS         | Lizardfish, Bluestriped   |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Mojarra, Yellowfin        |      |      |      |      |      |      |      |      |      |      |       |       |         |
|                | Soapfish, Greater         |      |      |      |      |      |      |      |      |      | 1    | 1     | 1.00  |         |
|                | Trumpetfish               |      |      | 1    |      |      |      |      |      |      | 1    | 2     | 1.00  |         |
| TOTAL          |                           | 57   | 41   | 155  | 102  | 141  | 58   | 61   | 35   | 91   | 72   | 813   | 81.3  |         |
| INVERTEBRATES  |                           |      |      |      |      |      |      |      |      |      |      | Total | Mean  | St.Dev. |
| ANEMONE        | Corkscrew Anemone         | 4    |      | 1    |      | 1    | 5    | 9    | 11   | 2    | 14   | 47    | 5.88  | 4.91    |
|                | Knobby Anemone            |      |      |      |      | 1    | 5    |      | 1    | 2    | 6    | 15    | 3.00  | 2.35    |
|                | Giant Anemone             |      |      |      | 2    | 2    | 4    | 2    |      | 1    | 3    | 14    | 2.33  | 1.03    |
| CRUSTACEANS    | Channel Clinging Crab     |      |      |      |      |      |      | 2    |      |      |      | 2     | 2.00  |         |
|                | Pedersen Cleaner Shrimp   |      |      |      |      |      |      | 1    | 2    |      | 1    | 4     | 1.33  | 0.58    |
|                | Nimble Spray Crab         |      |      |      | 1    | 4    |      |      |      |      |      | 5     | 2.50  | 2.12    |
|                | Yellowline Arrow Crab     |      |      |      |      |      |      | 2    |      | 1    | 2    | 5     | 1.67  | 0.58    |
| TUBE WORMS     | Christmas Tree Worm       |      |      | 6    | 10   | 12   | 9    | 24   | 4    | 6    | 15   | 86    | 10.75 | 6.43    |
|                | Star Horseshoe Worm       |      |      |      |      | 2    | 3    | 2    | 2    | 3    | 19   | 31    | 5.17  | 6.79    |
|                | Social Feather Duster     |      |      |      |      | 1    |      |      |      |      |      | 1     | 1.00  |         |
|                | Split Crown Feather D.    |      |      |      |      |      |      |      |      | 3    |      | 3     | 3.00  |         |
|                | Variegated Feather Duster |      |      | 1    |      |      |      |      |      | 7    | 20   | 28    | 9.33  | 9.71    |
| MOLLUSKS       | Amber Penshell            |      |      |      | 1    |      |      |      |      |      | 1    | 2     | 1.00  |         |
|                | Atlantic Pearl Oyster     |      |      |      |      |      |      |      |      |      | 2    | 2     | 2.00  |         |
|                | File Clam                 |      |      |      |      |      | 1    | 1    |      | 1    |      | 3     | 1.00  |         |
| SPONGES        | Lumpy Overgrowing Sponge  | 2    | 1    | 3    | 2    | 4    | 1    | 4    | 4    | 4    | 10   | 35    | 3.50  | 2.59    |
| TOTAL          |                           | 6    | 1    | 11   | 16   | 27   | 28   | 47   | 24   | 30   | 93   | 283   | 28.3  |         |

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: July 4, 2003

Data collected and recorded by: Marjo van den Bulck

TIME: 08:15 a.m.

| 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                |                          | 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      |              |              |                 |
|                      | <b>FISH</b>              |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| ANGELFISH            | French Angelfish         |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| BLENNY               | Hairy Blenny             | 1         |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
|                      | Redlip Blenny            |           |           | 1         |           |           |            | 3         |            |           |           |           |           |           |           |           |           |           |           | 4            | 2.00         | 1.41            |
|                      | Saddled Blenny           |           |           |           |           | 2         |            |           |            |           |           |           |           |           |           |           |           |           |           | 2            | 2.00         |                 |
| BOXFISH              | Smooth Trunkfish         |           |           |           |           |           |            |           |            |           | 1         |           | 1         | 1         | 1         |           |           |           | 1         | 5            | 1.00         |                 |
|                      | Spotted Trunkfish        |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| BUTTERFLYFISH        | Banded Butterflyfish     |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
|                      | Four-eye Butterflyfish   |           |           |           |           |           |            |           |            |           | 2         | 4         | 1         |           |           |           |           | 1         |           | 8            | 2.00         | 1.41            |
| CARDINALFISH         | Belted Cardinalfish      | 3         |           |           |           |           |            |           |            | 4         |           |           |           |           |           |           |           |           |           | 7            | 3.50         | 0.71            |
| CHROMIS              | Brown Chromis            | 22        |           |           | 50        |           | 120        | 31        | 15         | 20        | 15        |           |           |           |           |           |           |           |           | 273          | 39.00        | 37.74           |
| DAMSELFISH           | Beaugregory Damselfish   |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
|                      | Bicolor Damselfish       |           | 1         | 3         | 10        | 6         | 8          | 5         |            | 10        | 32        | 12        | 3         | 13        | 1         |           |           |           |           | 104          | 8.67         | 8.42            |
|                      | Cocoa Damselfish         |           | 2         |           |           |           |            | 1         |            |           |           |           |           |           |           |           |           |           |           | 3            | 1.50         | 0.71            |
|                      | Dusky Damselfish         | 3         | 1         | 4         | 1         | 5         | 5          |           | 5          | 3         | 2         |           | 2         |           |           |           |           |           |           | 31           | 3.10         | 1.60            |
|                      | Sergeant Major           |           |           |           |           | 1         |            |           | 3          | 6         | 2         | 3         | 1         | 6         | 4         | 2         | 7         | 7         | 7         | 49           | 4.08         | 2.39            |
|                      | Threespot Damselfish     |           |           |           |           |           |            | 1         |            |           |           |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
|                      | Yellowtail Damselfish    |           |           |           |           |           |            |           |            | 1         |           |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
| EEL                  | Chain Moray              |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| FILEFISH             | Slender Filefish         |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
|                      | Orange Spotted Filefish  |           |           |           |           |           |            |           |            |           | 1         |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
| FLOUNDER             | Peacock Flounder         |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| GOATFISH             | Spotted Goatfish         |           |           |           |           |           |            | 1         |            |           |           |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
|                      | Yellow Goatfish          |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           | 4         | 2         | 6            | 3.00         | 1.41            |
| GOBY                 | Bridled Goby             |           | 5         | 5         |           | 5         | 10         | 5         | 10         | 10        | 20        | 20        | 10        | 40        | 40        | 30        | 27        | 34        | 22        | 293          | 18.31        | 12.66           |
|                      | Neon Goby                |           |           |           |           |           |            |           | 3          | 3         |           |           |           |           |           |           |           |           |           | 6            | 3.00         |                 |
| GROUPE               | Coney                    |           |           |           | 1         | 3         | 1          | 3         |            |           |           |           |           | 3         | 2         |           |           |           | 1         | 14           | 2.00         | 1.00            |
|                      | Graysby                  |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
|                      | Red Hind                 |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| GRUNT                | Bluestriped Grunt        |           |           |           |           |           |            |           | 1          |           |           |           |           |           | 1         |           |           |           |           | 2            | 1.00         |                 |
|                      | French Grunt             | 1         | 1         | 1         | 2         | 1         | 2          | 1         | 100        | 2         |           | 1         | 1         |           | 1         |           |           | 1         | 1         | 116          | 8.29         | 26.40           |
|                      | Juvenile Grunt U.I.      |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| HAMLET               | Butter Hamlet            |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| HOGFISH              | Spanish Hogfish          |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| JACK                 | Bar Jack                 |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| PARROTFISH           | Princess Parrotfish      |           |           |           |           |           |            | 1         | 2          |           |           |           | 2         | 1         |           |           | 3         | 3         |           | 12           | 2.00         | 0.89            |
|                      | Queen Parrotfish         |           |           | 1         |           |           | 1          |           |            |           |           |           | 1         |           |           |           | 1         | 1         |           | 5            | 1.00         |                 |
|                      | Redband Parrotfish       |           |           | 1         |           |           |            | 1         | 1          |           |           | 2         |           |           | 1         |           | 1         |           |           | 7            | 1.17         | 0.41            |
|                      | Redtail Parrotfish       |           |           |           |           |           |            |           |            |           | 1         |           |           |           |           |           | 3         |           |           | 4            | 2.00         | 1.41            |
|                      | Stoplight Parrotfish     |           |           |           | 1         |           |            |           |            |           |           |           | 1         |           |           |           |           |           |           | 2            | 1.00         |                 |
|                      | Striped Parrotfish       |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| PUFFER               | Sharpnose Puffer         |           |           |           |           |           |            |           |            |           |           |           | 2         | 1         |           | 1         |           |           | 1         | 5            | 1.25         | 0.50            |
| SCORPIONFISH         | Spotted Scorpionfish     |           |           |           |           |           |            |           |            | 1         |           |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
| SEABASS              | Harlequin Bass           |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| SNAPPER              | Mutton Snapper           | 1         |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           | 1            | 1.00         |                 |
| SQUIRRELFISH         | Squirrelfish             |           |           | 1         | 1         | 1         | 2          |           | 1          | 1         |           |           |           |           |           |           |           |           |           | 7            | 1.17         | 0.41            |
| SURGEONFISH          | Blue Tang                | 1         | 1         |           |           | 1         | 1          |           | 1          | 2         | 2         | 2         | 2         | 1         |           |           |           |           |           | 14           | 1.40         | 0.52            |
|                      | Doctorfish               |           |           |           |           |           |            |           | 1          |           |           |           | 1         |           |           |           |           |           |           | 2            | 1.00         |                 |
|                      | Ocean Surgeonfish        |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| WRASSE               | Bluehead Wrasse          | 23        | 6         | 1         | 5         | 15        | 2          | 3         | 9          | 4         | 12        | 2         | 5         | 6         | 1         | 3         |           |           |           | 97           | 6.47         | 6.08            |
|                      | Clown Wrasse             | 2         | 1         |           |           |           | 2          | 1         | 1          |           | 2         | 3         |           |           |           |           |           |           |           | 12           | 1.71         | 0.76            |
|                      | Puddingwife              | 1         |           | 1         | 1         |           | 2          | 2         |            |           |           |           |           |           |           |           |           |           | 1         | 8            | 1.33         | 0.52            |
|                      | Slippery Dick            |           | 6         | 1         |           | 2         |            | 3         |            | 7         | 5         | 7         | 3         |           |           |           | 1         | 3         |           | 38           | 3.80         | 2.30            |
|                      | Yellowhead Wrasse        |           |           |           |           |           |            |           |            |           |           |           | 2         | 1         | 1         |           | 1         | 3         | 2         | 10           | 1.67         | 0.82            |
| OTHERS               | Mojarra, Yellowfin       |           |           |           |           |           |            |           |            |           |           |           | 1         |           |           |           |           |           |           | 1            | 1.00         |                 |
|                      | Sand Diver               |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
|                      | Soapfish, Greater        |           |           |           |           |           |            |           | 3          |           | 1         | 1         |           |           |           |           |           | 1         |           | 6            | 1.50         | 1.00            |
|                      | Trumpetfish              |           |           |           | 1         |           |            |           |            |           | 1         |           | 2         | 2         |           |           |           |           | 1         | 7            | 1.40         | 0.55            |
| <b>TOTAL</b>         |                          | <b>58</b> | <b>24</b> | <b>20</b> | <b>73</b> | <b>42</b> | <b>159</b> | <b>58</b> | <b>155</b> | <b>76</b> | <b>99</b> | <b>57</b> | <b>38</b> | <b>78</b> | <b>53</b> | <b>36</b> | <b>44</b> | <b>58</b> | <b>39</b> | <b>1167</b>  | <b>64.83</b> |                 |
| <b>INVERTEBRATES</b> |                          |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           | <b>Total</b> | <b>Mean</b>  | <b>St. Dev.</b> |
| ANEMONE              | Corkscrew Anemone        |           | 2         |           | 3         | 5         |            | 1         | 1          | 2         | 1         | 1         | 6         | 6         | 4         |           |           | 1         | 4         | 37           | 2.8          | 1.95            |
|                      | Giant Anemone            |           |           |           |           | 2         |            | 2         | 1          | 2         | 2         |           | 1         | 3         | 1         | 2         |           |           |           | 16           | 1.8          | 0.67            |
|                      | Knobby Anemone           |           |           |           |           |           |            |           | 9          |           |           |           | 1         |           | 2         | 1         |           |           | 3         | 16           | 3.2          | 3.35            |
| CRUSTACEANS          | Nimble Spray Crab        |           |           | 2         |           | 2         | 9          | 16        | 5          | 1         |           | 1         |           |           |           |           |           |           |           | 36           | 5.1          | 5.58            |
|                      | Pederson Cleaner Shrimp  |           |           |           |           |           |            |           |            |           |           |           | 4         | 1         | 1         |           |           |           |           | 6            | 2.0          | 1.73            |
|                      | Yellowline Arrow Crab    |           |           |           |           |           |            |           | 2          |           |           | 1         | 2         | 2         |           |           |           |           |           | 7            | 1.8          | 0.50            |
| TUBE WORMS           | Christmas Tree Worm      |           |           |           |           |           |            |           | 27         | 1         |           |           | 4         | 6         |           | 10        |           |           |           | 48           | 9.6          | 10.26           |
|                      | Ghost Feather Duster     |           |           |           |           |           |            |           | 9          |           |           |           |           | 5         | 2         |           |           |           |           | 16           | 5.3          | 3.51            |
|                      | Star Horse Shoe Worm     |           |           |           |           |           |            |           |            |           | 2         |           |           | 1         | 3         |           |           |           |           | 6            | 2.0          | 1.00            |
|                      | Variegated Fth.Dstr.     |           |           |           |           |           |            |           |            |           |           |           |           | 2         |           |           |           |           |           | 2            | 2.0          |                 |
| MOLLUSKS             | Amber Penshell           |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
|                      | Spiny File Clam          |           |           |           |           |           |            | 1         |            |           |           |           |           |           |           |           |           |           |           | 1            | 1.0          |                 |
| SPONGES              | Lumpy Overgrowing Sponge |           |           |           |           |           |            |           |            |           |           |           |           |           |           |           |           |           |           |              |              |                 |
| ECHINODERMS          | Longspined Sea Urchin    |           |           |           | 4         | 5         | 20         | 24        | 14         | 1         |           |           |           |           |           |           |           |           |           | 68           | 11.3         | 9.42            |
| <b>TOTAL</b>         |                          |           | <b>2</b>  | <b>2</b>  | <b>7</b>  | <b>14</b> | <b>29</b>  | <b>43</b> | <b>69</b>  | <b>7</b>  | <b>5</b>  | <b>3</b>  | <b>18</b> | <b>26</b> | <b>13</b> | <b>13</b> |           | <b>1</b>  | <b>7</b>  | <b>259</b>   | <b>14.39</b> |                 |

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