# BENTHIC COMMUNITY MONITORING FOR THE LITTLE VENICE SEWAGE COLLECTION AND TREATMENT PROJECT IN MARATHON, FLORIDA PHASE II

FINAL REPORT October 23, 2007

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**Summary**

Benthic seagrass – macro-algal communities remain unchanged two years after implementation of the Little Venice Service area sewage treatment facility. Changes in nitrogen (N) and phosphorus (P) and N:P ratios in seagrass leaf tissues indicate that there has been some level of depletion in nutrient availability to seagrasses. Similarity in the pattern of change in the nutrient status of seagrasses from all surveyed sites suggest that the pattern is regional in nature, affecting nearshore, offshore, and reference sites equally

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## Background

Prior to implementation of a treatment facility in June 2004, the ocean side area of Vaca key from Vaca Cut (east) to 94th Street (west), Marathon, Florida known locally as "Little Venice" was serviced by antiquated septic systems or cesspit disposals. Little Venice was selected for implementation of Phase I of wastewater improvements for the Marathon Service Area because of the large number of homes in the area (~540 residences), small average size of lots, and known water quality problems in the canals. Water quality of the 89th – 91st Street canals was thoroughly studied from 1984 to1985 as part of the Florida Department of Environmental Regulation's Monitoring Study (FDER, 1987). The Phase I treatment facility, a low-pressure, vacuum wastewater collection system transmitting wastewater to a central treatment plant was brought online June 25, 2004.

Phase II, benthic community monitoring for the Little Venice Service area was designed to identify potential effects of nutrient abatement in the benthic seagrass dominated community of the Little Venice Service Area. For continuity with benthic monitoring data collected prior to implementation of the treatment facility all sites monitored in Phase II correspond to sites surveyed and monitored in Phase I (J.N. Boyer et al.2004). These include 12 sites in the Little

Venice Service Area (sites 1-12) and four reference sites located west of the service area (sites 13-16; Fig. 1).

This report summarizes annual trends in macrophyte cover recorded during Phase I prior to implementation of the treatment facility and data from surveys 1 – 6 (1.5 years) ending two years after implementation of the treatment facility. Seagrass tissue nutrient analyses from the 1st through 6th quarter surveys are presented as a proxy for nitrogen and phosphorus abatement at increasing distances offshore from canals in the Little Venice service area and a reference canal located outside of the Little Venice service area. Isotopic signatures ($\delta^{15}N$ and $\delta^{13}C$) were measured after the final survey for the purpose of identifying any change in sources of nutrients to the benthic community.

## Methods

Site selection and rationale are detailed in Boyer et al., 2004 (http://serc.fiu.edu/wqmnetwork/Report%20Archive/LVB2004FINALREPORT.pdf). All sites were surveyed quarterly with the first and final surveys conducted April 4, 2006 and June 29, 2007, respectively.

Macrophyte (seagrass and macroalgae) cover was recorded using Braun-Blanquet scores for cover defined as follows: 0 = absent; 0.1 = solitary shoot < 5%; 0.5 = < 5 shoots < 5%; 1 = > 5 shoots < 5%; 2 = 5 to 25%; 3 = 25 to 50%; 4 = 50 to 75%; 5 = 75 to 100%. Cover data was analyzed for seasonal trends in the Phase II quarterly reports. In this final report the data are examined for longer term annual trends contiguous with Phase I monitoring.

Foliar tissue nutrient content was sampled from all seagrass species present at each site (nitrogen, and phosphorus content). Foliar nutrient content corresponds with site fertility (Atkinson and Smith 1983, Fourqurean and Zieman 2002), or in this case the persistence of nutrient loads. To determine nutrient source, terrestrial or marine, isotopic signatures of foliar nitrogen and carbon ($\delta^{15}N$ and $\delta^{13}C$) were also collected from the first and final Phase II seagrass samples.

## Results

### Cover

Over the course of the six quarter surveys there has been no defined pattern of change in the seagrass – macro-algal community on an annual basis or relative to implementation of the treatment facility (Figure 2). Seasonal variations in cover occur within benthic macro-algal groups and have been summarized in quarterly reports, but these are inconsequential to the goal of this report.

The lack of change in the two years since implementation of the treatment facility is not surprising. Armitage et al. (2005) found responses in biomass and species composition after short-term nitrogen and phosphorus fertilizations in Florida Bay, and those changes persist two years after fertilizers were discontinued (D. Herbert personal observations, Armitage personal communication). Similarly, two years of fertilization by seabird feces caused changes in species composition at Cross Bank in Florida Bay (Powell et al., 1989). Affected sites showed the beginnings of a return to original species composition after six years (Fourqurean et al. 1995), but remain functionally distinct after 23 years (Herbert and Fourqurean, *In review*). Clearly there has not been enough time since implementation of the treatment facility to expect much change.

### Nutrient Status

Nitrogen and phosphorus concentrations in seagrass tissues vary seasonally, exhibiting higher concentrations during winter months when productivity is low and comparably low concentrations during periods of high productivity and biomass accumulation of summer months. This pattern is evident during the first four sampling periods (March to December 2006, Figure 3). In the last two sampling periods (March and June 2007) tissue nutrient concentrations were lower than in the previous year indicating some level of depletion in nutrient availability to the seagrasses.

An increase in the molar nitrogen to phosphorus ratio (N:P) in the last 3 to 4 sampling periods indicates that there is a limiting supply of P to seagrass growth. This limitation by P is typical for the area (Fourqurean and Zieman, 2002). Continued increases in N:P with time provide an early indication of nutrient abatement (Figure 3).

It is interesting to note that the patterns of nutrient depletion and P limitation to seagrass growth are regional in nature. Patterns of change near canal mouths are nearly identical to changes 200 m offshore from canals. Furthermore, sites on the reference canal transect (91 street canal) are indistinguishable in N and P content and N:P ratio. This is not so surprising considering circulation associated with tidal currents that run east to west along canal mouths.

### Isotopic Signatures

Isotopic signatures ($\delta^{15}N$ and $\delta^{13}C$) measured in April 2006 and June 2007 failed to show any clear trend that could be associated with a change in sources of nutrients to the benthic community. However, because of the short interval over which these data were collected confidence in the use of $\delta^{15}N$ and $\delta^{13}C$ as indicators of change in nutrient source is limited (See Appendix 2).

## References

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Powell GVN, Kenworthy WJ, Fourqurean JW. 1989. Experimental evidence for nutrient limitation of seagrass growth in a tropical estuary with restricted circulation. Bulletin of Marine Science 44: 324-340.

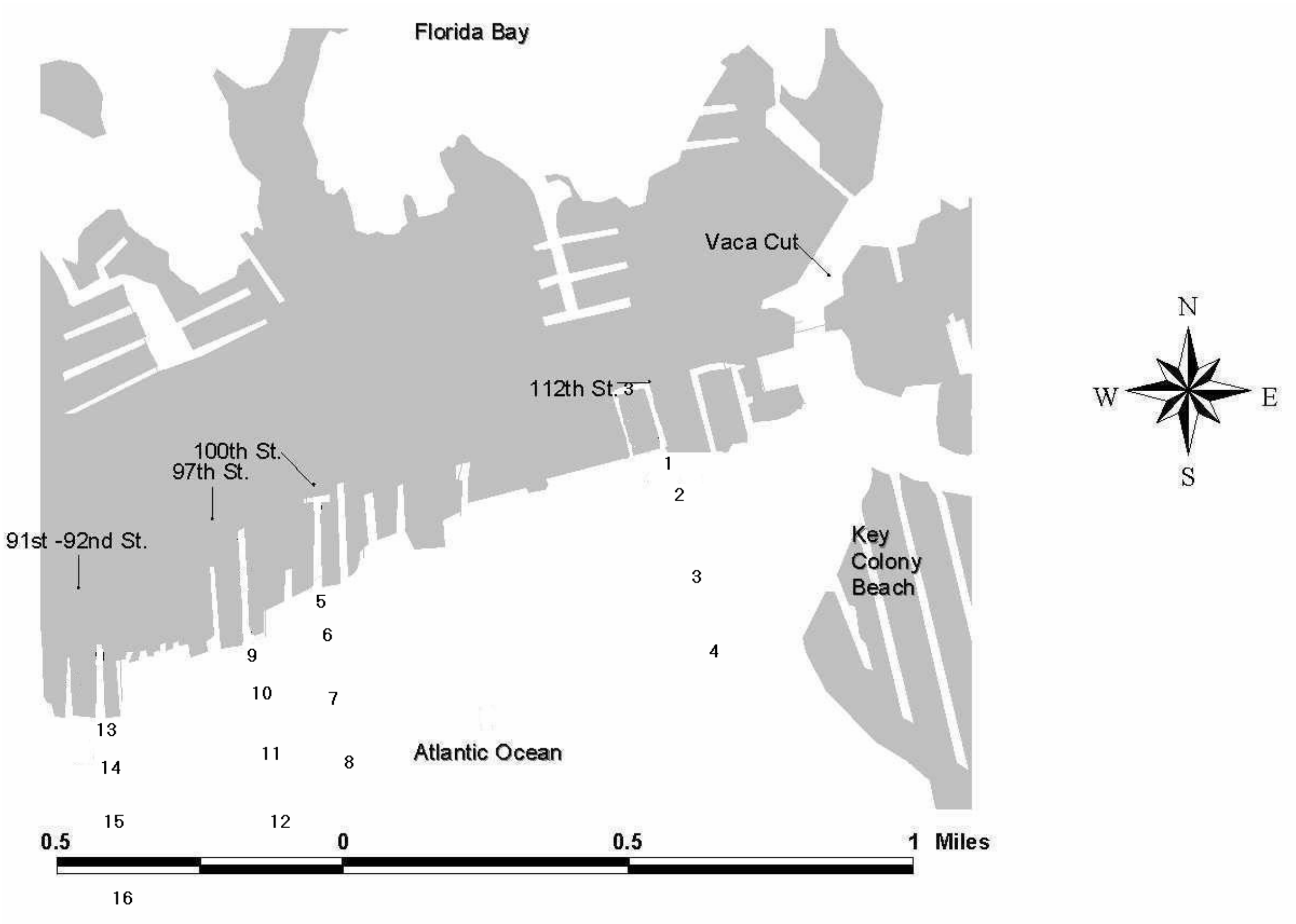


Figure 1: Little Venice Service Area sampling stations.

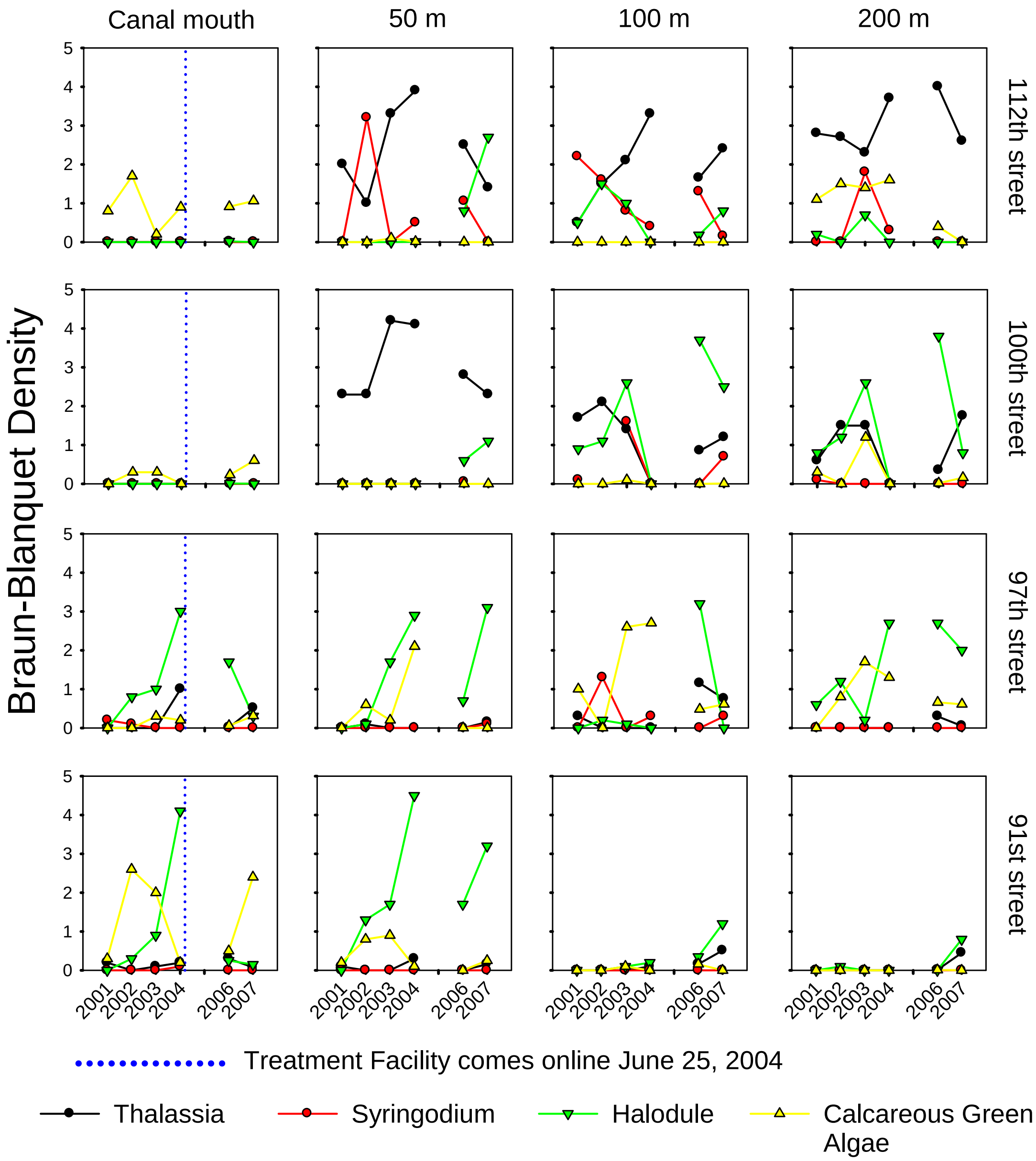


**Figure 2:** Seagrass and calcareous green algal cover at increasing distance from canal mouths from 2001 to present. Symbols represent mean cover by species. Values represent summer (June) sampling periods. Braun-Blanquet cover scores are as follows: 0 = absent; 0.1 = solitary shoot < 5%; 0.5 = < 5 shoots < 5%; 1 = > 5 shoots < 5%; 2 = 5 to 25%; 3 = 25 to 50%; 4 = 50 to 75%; 5 = 75 to 100%.

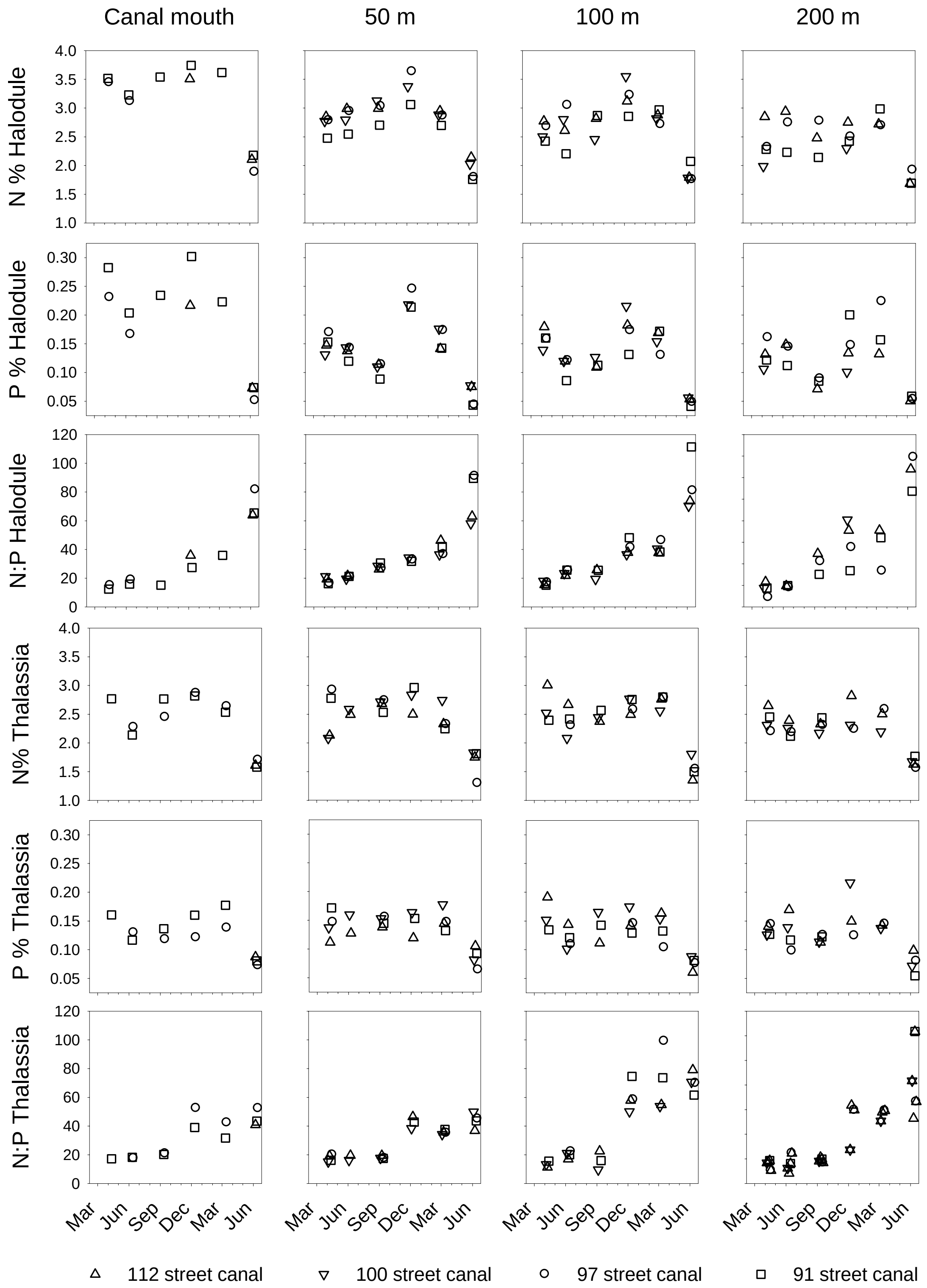


**Figure 3**: Seagrass leaf tissue nitrogen (N) and phosphorus (P) concentrations and molar N:P ratios. Panels indicate changes over time with increasing distance from canal mouths. Symbols denote transect. The 91 street canal is the reference transect located outside of the immediate Little Venice Service area.

Appendix 1. Little Venice seagrass nutrient data. Nutrient ratios are expressed as molar values.

| Sample Date | Transect origin canal | Distance from canal mouth (m) | Plot ID from figure 1 | Thalassia leaf P (%) | Halodule leaf P (%) | Thalassia leaf N (%) | Halodule leaf N (%) | Thalassia leaf C (%) | Halodule leaf C (%) | Thalassia molar C:N | Halodule molar C:N | Thalassia molar C:P | Halodule molar C:P | Thalassia molar N:P | Halodule molar N:P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apr-06 | 112 street | 0 | 1 | | | | | | | | | | | | |
| Apr-06 | 112 street | 50 | 2 | 0.137 | 0.131 | 2.08 | 2.77 | 38.1 | 42.6 | 21.4 | 17.9 | 717 | 840 | 15.2 | 21.2 |
| Apr-06 | 112 street | 100 | 3 | 0.152 | 0.139 | 2.52 | 2.50 | 37.7 | 43.0 | 17.5 | 20.1 | 643 | 798 | 16.6 | 18.0 |
| Apr-06 | 112 street | 200 | 4 | 0.126 | 0.106 | 2.31 | 1.99 | 39.2 | 42.6 | 19.8 | 25.0 | 805 | 1038 | 18.4 | 18.7 |
| Apr-06 | 100 street | 0 | 5 | | | | | | | | | | | | |
| Apr-06 | 100 street | 50 | 6 | 0.112 | 0.147 | 2.14 | 2.85 | 37.1 | 43.1 | 20.3 | 17.6 | 858 | 754 | 19.1 | 19.3 |
| Apr-06 | 100 street | 100 | 7 | 0.191 | 0.180 | 3.00 | 2.77 | 36.9 | 39.2 | 14.3 | 16.5 | 499 | 564 | 15.7 | 15.4 |
| Apr-06 | 100 street | 200 | 8 | 0.141 | 0.132 | 2.65 | 2.85 | 39.3 | 45.6 | 17.3 | 18.7 | 723 | 894 | 18.8 | 21.6 |
| Apr-06 | 97 street | 0 | 9 | 0.160 | 0.282 | 2.77 | 3.52 | 38.4 | 43.3 | 16.2 | 14.4 | 618 | 396 | 17.2 | 12.4 |
| Apr-06 | 97 street | 50 | 10 | 0.171 | 0.153 | 2.78 | 2.48 | 36.8 | 42.0 | 15.5 | 19.8 | 555 | 710 | 16.2 | 16.2 |
| Apr-06 | 97 street | 100 | 11 | 0.135 | 0.160 | 2.40 | 2.43 | 36.7 | 42.7 | 17.9 | 20.5 | 705 | 689 | 17.8 | 15.2 |
| Apr-06 | 97 street | 200 | 12 | 0.127 | 0.122 | 2.45 | 2.28 | 37.6 | 42.4 | 17.9 | 21.7 | 765 | 899 | 19.3 | 18.7 |
| Apr-06 | 91 street | 0 | 13 | | 0.231 | | 3.44 | | 42.6 | | 14.4 | | 476 | | 14.9 |
| Apr-06 | 91 street | 50 | 14 | 0.147 | 0.170 | 2.92 | 2.78 | 37.5 | 43.1 | 15.0 | 18.1 | 660 | 657 | 19.9 | 16.4 |
| Apr-06 | 91 street | 100 | 15 | | 0.158 | | 2.68 | | 42.9 | | 18.7 | | 700 | | 16.9 |
| Apr-06 | 91 street | 200 | 16 | 0.144 | 0.161 | 2.20 | 2.32 | 35.7 | 43.2 | 18.9 | 21.7 | 641 | 693 | 15.3 | 14.4 |
| Jun-06 | 112 street | 0 | 1 | | | | | | | | | | | | |
| Jun-06 | 112 street | 50 | 2 | 0.159 | 0.143 | 2.59 | 2.79 | 37.4 | 40.8 | 16.9 | 17.0 | 605 | 735 | 16.2 | 19.5 |
| Jun-06 | 112 street | 100 | 3 | 0.101 | 0.120 | 2.08 | 2.80 | 38.5 | 43.2 | 21.6 | 18.0 | 980 | 932 | 20.5 | 23.4 |
| Jun-06 | 112 street | 200 | 4 | 0.139 | | 2.26 | | 38.4 | | 19.8 | | 715 | | 16.3 | |
| Jun-06 | 100 street | 0 | 5 | | | | | | | | | | | | |
| Jun-06 | 100 street | 50 | 6 | 0.127 | 0.138 | 2.49 | 2.99 | 40.1 | 42.8 | 18.8 | 16.7 | 813 | 804 | 19.6 | 21.7 |
| Jun-06 | 100 street | 100 | 7 | 0.144 | 0.120 | 2.67 | 2.61 | 39.7 | 42.5 | 17.4 | 19.0 | 713 | 917 | 18.5 | 21.8 |
| Jun-06 | 100 street | 200 | 8 | 0.169 | 0.149 | 2.39 | 2.94 | 38.5 | 43.6 | 18.8 | 17.3 | 588 | 757 | 14.1 | 19.8 |
| Jun-06 | 97 street | 0 | 9 | 0.117 | 0.204 | 2.14 | 3.23 | 37.3 | 41.9 | 20.3 | 15.1 | 826 | 532 | 18.3 | 15.8 |
| Jun-06 | 97 street | 50 | 10 | | 0.120 | | 2.55 | | 41.4 | | 19.0 | | 894 | | 21.3 |
| Jun-06 | 97 street | 100 | 11 | 0.121 | 0.086 | 2.42 | 2.20 | 39.4 | 41.9 | 19.0 | 22.2 | 843 | 1255 | 20.0 | 25.6 |
| Jun-06 | 97 street | 200 | 12 | 0.117 | 0.112 | 2.12 | 2.23 | 34.8 | 41.2 | 19.2 | 21.6 | 770 | 948 | 18.1 | 19.9 |
| Jun-06 | 91 street | 0 | 13 | 0.130 | 0.166 | 2.27 | 3.12 | 41.2 | 43.7 | 21.1 | 16.4 | 821 | 678 | 17.5 | 18.7 |
| Jun-06 | 91 street | 50 | 14 | | 0.143 | | 2.94 | | 42.8 | | 17.0 | | 776 | | 20.6 |
| Jun-06 | 91 street | 100 | 15 | 0.109 | 0.121 | 2.30 | 3.05 | 40.3 | 43.8 | 20.4 | 16.8 | 954 | 936 | 21.1 | 25.2 |
| Jun-06 | 91 street | 200 | 16 | 0.098 | 0.144 | 2.18 | 2.74 | 39.6 | 44.0 | 21.1 | 18.7 | 1043 | 787 | 22.3 | 19.0 |
| Sep-06 | 112 street | 0 | 1 | | | | | | | | | | | | |
| Sep-06 | 112 street | 50 | 2 | 0.153 | 0.110 | 2.72 | 3.13 | 40.0 | 43.0 | 17.2 | 16.1 | 675 | 1011 | 17.8 | 28.4 |
| Sep-06 | 112 street | 100 | 3 | 0.165 | 0.127 | 2.44 | 2.46 | 36.1 | 41.7 | 17.3 | 19.8 | 565 | 849 | 14.8 | 19.4 |
| Sep-06 | 112 street | 200 | 4 | 0.114 | | 2.17 | | 37.0 | | 19.9 | | 840 | | 19.1 | |
| Sep-06 | 100 street | 0 | 5 | | | | | | | | | | | | |
| Sep-06 | 100 street | 50 | 6 | 0.138 | 0.114 | 2.68 | 2.99 | 35.9 | 42.9 | 15.6 | 16.7 | 671 | 972 | 19.4 | 26.3 |
| Sep-06 | 100 street | 100 | 7 | 0.111 | 0.109 | 2.37 | 2.82 | 36.0 | 42.1 | 17.7 | 17.4 | 834 | 996 | 21.3 | 25.8 |
| Sep-06 | 100 street | 200 | 8 | 0.113 | 0.071 | 2.33 | 2.48 | 39.1 | 42.1 | 19.6 | 19.8 | 895 | 1526 | 20.6 | 34.7 |
| Sep-06 | 97 street | 0 | 9 | 0.137 | 0.235 | 2.77 | 3.54 | 34.8 | 39.2 | 14.7 | 12.9 | 659 | 432 | 20.3 | 15.1 |
| Sep-06 | 97 street | 50 | 10 | 0.145 | 0.089 | 2.53 | 2.70 | 37.8 | 42.8 | 17.4 | 18.5 | 676 | 1249 | 17.5 | 30.5 |
| Sep-06 | 97 street | 100 | 11 | 0.143 | 0.113 | 2.57 | 2.87 | 35.4 | 44.1 | 16.1 | 17.9 | 641 | 1011 | 18.0 | 25.4 |
| Sep-06 | 97 street | 200 | 12 | 0.122 | 0.085 | 2.44 | 2.14 | 37.6 | 42.9 | 18.0 | 23.4 | 794 | 1301 | 19.9 | 25.1 |
| Sep-06 | 91 street | 0 | 13 | 0.118 | | 2.45 | | 35.5 | | 17.0 | | 780 | | 20.8 | |
| Sep-06 | 91 street | 50 | 14 | 0.156 | 0.114 | 2.74 | 3.03 | 36.1 | 42.0 | 15.4 | 16.2 | 599 | 954 | 17.6 | 26.6 |
| Sep-06 | 91 street | 100 | 15 | | | | | | | | | | | | |
| Sep-06 | 91 street | 200 | 16 | 0.125 | 0.089 | 2.31 | 2.77 | 40.1 | 43.7 | 20.3 | 18.4 | 828 | 1266 | 18.4 | 31.1 |

Appendix 1 (continued). Little Venice seagrass nutrient data.

| Sample Date | Transect origin canal | Distance from canal mouth (m) | Plot ID from figure 1 | Thalassia leaf P (%) | Halodule leaf P (%) | Thalassia leaf N (%) | Halodule leaf N (%) | Thalassia leaf C (%) | Halodule leaf C (%) | Thalassia molar C:N | Halodule molar C:N | Thalassia molar C:P | Halodule molar C:P | Thalassia molar N:P | Halodule molar N:P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec-06 | 112 street | 0 | 1 | | | | | | | | | | | | |
| Dec-06 | 112 street | 50 | 2 | 0.164 | 0.218 | 2.84 | 3.38 | 40.4 | 44.4 | 16.6 | 15.3 | 639 | 526 | 38.4 | 34.3 |
| Dec-06 | 112 street | 100 | 3 | 0.175 | 0.216 | 2.76 | 3.55 | 40.8 | 50.9 | 17.2 | 16.7 | 603 | 610 | 35.1 | 36.5 |
| Dec-06 | 112 street | 200 | 4 | 0.216 | 0.101 | 2.31 | 2.30 | 39.8 | 42.8 | 20.1 | 21.8 | 475 | 1098 | 23.7 | 50.4 |
| Dec-06 | 100 street | 0 | 5 | | 0.217 | | 3.51 | | 44.1 | | 14.7 | | 526 | | 35.9 |
| Dec-06 | 100 street | 50 | 6 | 0.119 | | 2.50 | | 39.8 | | 18.6 | | 864 | | 46.4 | |
| Dec-06 | 100 street | 100 | 7 | 0.142 | 0.182 | 2.49 | 3.12 | 40.4 | 44.2 | 18.9 | 16.5 | 735 | 626 | 38.9 | 37.9 |
| Dec-06 | 100 street | 200 | 8 | 0.149 | 0.134 | 2.82 | 2.75 | 39.9 | 43.8 | 16.5 | 18.6 | 690 | 845 | 41.8 | 45.5 |
| Dec-06 | 97 street | 0 | 9 | 0.160 | 0.302 | 2.82 | 3.74 | 41.1 | 44.2 | 17.0 | 13.8 | 663 | 379 | 39.0 | 27.4 |
| Dec-06 | 97 street | 50 | 10 | 0.153 | 0.214 | 2.96 | 3.06 | 40.6 | 44.5 | 16.0 | 17.0 | 683 | 537 | 42.8 | 31.7 |
| Dec-06 | 97 street | 100 | 11 | 0.129 | 0.131 | 2.76 | 2.86 | 40.1 | 43.6 | 17.0 | 17.8 | 802 | 858 | 47.3 | 48.2 |
| Dec-06 | 97 street | 200 | 12 | | 0.200 | | 2.42 | | 41.1 | | 19.8 | | 530 | | 26.8 |
| Dec-06 | 91 street | 0 | 13 | 0.121 | | 2.86 | | 39.2 | | 16.0 | | 835 | | 52.3 | |
| Dec-06 | 91 street | 50 | 14 | | 0.246 | | 3.63 | | 44.6 | | 14.3 | | 470 | | 32.8 |
| Dec-06 | 91 street | 100 | 15 | 0.146 | 0.173 | 2.58 | 3.22 | 33.6 | 42.7 | 15.2 | 15.4 | 596 | 637 | 39.2 | 41.2 |
| Dec-06 | 91 street | 200 | 16 | 0.124 | 0.147 | 2.24 | 2.50 | 38.5 | 41.8 | 20.1 | 19.5 | 799 | 733 | 39.8 | 37.6 |
| Mar-07 | 112 street | 0 | 1 | | | | | | | | | | | | |
| Mar-07 | 112 street | 50 | 2 | 0.177 | 0.176 | 2.74 | 2.88 | 41.5 | 43.1 | 17.6 | 17.4 | 604 | 633 | 34.3 | 36.3 |
| Mar-07 | 112 street | 100 | 3 | 0.154 | 0.154 | 2.56 | 2.82 | 40.4 | 43.8 | 18.4 | 18.1 | 679 | 734 | 36.9 | 40.5 |
| Mar-07 | 112 street | 200 | 4 | 0.137 | | 2.20 | | 40.9 | | 21.8 | | 770 | | 35.4 | |
| Mar-07 | 100 street | 0 | 5 | | | | | | | | | | | | |
| Mar-07 | 100 street | 50 | 6 | 0.144 | 0.141 | 2.33 | 2.95 | 41.0 | 43.8 | 20.5 | 17.3 | 733 | 802 | 35.7 | 46.3 |
| Mar-07 | 100 street | 100 | 7 | 0.163 | 0.169 | 2.76 | 2.88 | 40.7 | 43.2 | 17.2 | 17.5 | 644 | 661 | 37.4 | 37.7 |
| Mar-07 | 100 street | 200 | 8 | 0.142 | 0.132 | 2.50 | 2.72 | 40.4 | 43.0 | 18.8 | 18.4 | 734 | 840 | 39.0 | 45.6 |
| Mar-07 | 97 street | 0 | 9 | 0.177 | 0.223 | 2.54 | 3.62 | 40.9 | 45.0 | 18.8 | 14.5 | 595 | 521 | 31.7 | 35.9 |
| Mar-07 | 97 street | 50 | 10 | 0.132 | 0.142 | 2.25 | 2.70 | 39.6 | 43.5 | 20.6 | 18.8 | 775 | 791 | 37.7 | 42.0 |
| Mar-07 | 97 street | 100 | 11 | 0.132 | 0.172 | 2.80 | 2.97 | 41.9 | 45.2 | 17.4 | 17.8 | 817 | 680 | 46.8 | 38.3 |
| Mar-07 | 97 street | 200 | 12 | | 0.157 | | 2.99 | | 41.6 | | 16.3 | | 685 | | 42.1 |
| Mar-07 | 91 street | 0 | 13 | 0.138 | | 2.63 | | 41.3 | | 18.3 | | 774 | | 42.3 | |
| Mar-07 | 91 street | 50 | 14 | 0.147 | 0.174 | 2.32 | 2.86 | 41.5 | 45.1 | 20.8 | 18.4 | 731 | 672 | 35.1 | 36.6 |
| Mar-07 | 91 street | 100 | 15 | 0.104 | 0.130 | 2.79 | 2.72 | 41.6 | 45.3 | 17.4 | 19.5 | 1037 | 901 | 59.6 | 46.3 |
| Mar-07 | 91 street | 200 | 16 | 0.145 | 0.224 | 2.58 | 2.69 | 40.9 | 45.2 | 18.5 | 19.6 | 730 | 522 | 39.6 | 26.7 |
| Jun-07 | 112 street | 0 | 1 | | | | | | | | | | | | |
| Jun-07 | 112 street | 50 | 2 | 0.081 | 0.077 | 1.83 | 2.03 | 29.4 | 27.6 | 18.7 | 15.9 | 934 | 925 | 49.8 | 58.1 |
| Jun-07 | 112 street | 100 | 3 | 0.088 | 0.056 | 1.81 | 1.78 | 29.4 | 31.3 | 19.0 | 20.5 | 860 | 1442 | 45.3 | 70.2 |
| Jun-07 | 112 street | 200 | 4 | 0.072 | | 1.68 | | 28.5 | | 19.8 | | 1026 | | 51.7 | |
| Jun-07 | 100 street | 0 | 5 | 0.087 | 0.073 | 1.61 | 2.10 | 28.4 | 27.5 | 20.6 | 15.2 | 841 | 973 | 40.8 | 63.9 |
| Jun-07 | 100 street | 50 | 6 | 0.105 | 0.075 | 1.75 | 2.14 | 28.1 | 29.3 | 18.8 | 16.0 | 691 | 1006 | 36.8 | 63.0 |
| Jun-07 | 100 street | 100 | 7 | 0.060 | 0.054 | 1.35 | 1.79 | 28.1 | 26.7 | 24.2 | 17.4 | 1201 | 1278 | 49.5 | 73.7 |
| Jun-07 | 100 street | 200 | 8 | 0.099 | 0.051 | 1.63 | 1.69 | 31.1 | 29.8 | 22.3 | 20.7 | 813 | 1526 | 36.4 | 73.9 |
| Jun-07 | 97 street | 0 | 9 | 0.081 | 0.074 | 1.58 | 2.18 | 29.7 | 28.4 | 21.9 | 15.2 | 952 | 995 | 43.4 | 65.5 |
| Jun-07 | 97 street | 50 | 10 | 0.092 | 0.043 | 1.81 | 1.76 | 28.8 | 29.9 | 18.5 | 19.8 | 809 | 1775 | 43.6 | 89.6 |
| Jun-07 | 97 street | 100 | 11 | 0.081 | 0.041 | 1.50 | 2.07 | 28.3 | 31.7 | 22.0 | 17.8 | 899 | 1988 | 40.8 | 111.4 |
| Jun-07 | 97 street | 200 | 12 | 0.055 | 0.059 | 1.77 | 1.69 | 30.1 | 30.6 | 19.8 | 21.1 | 1424 | 1344 | 71.8 | 63.7 |
| Jun-07 | 91 street | 0 | 13 | 0.072 | 0.051 | 1.70 | 1.89 | 29.7 | 28.3 | 20.4 | 17.5 | 1065 | 1429 | 52.2 | 81.6 |
| Jun-07 | 91 street | 50 | 14 | 0.064 | 0.044 | 1.30 | 1.79 | 31.3 | 30.1 | 28.1 | 19.6 | 1267 | 1780 | 45.1 | 90.9 |
| Jun-07 | 91 street | 100 | 15 | 0.076 | 0.048 | 1.54 | 1.76 | 29.7 | 27.2 | 22.5 | 18.1 | 1008 | 1460 | 44.9 | 80.9 |
| Jun-07 | 91 street | 200 | 16 | 0.080 | 0.054 | 1.56 | 1.92 | 30.3 | 32.7 | 22.7 | 19.8 | 979 | 1577 | 43.2 | 79.5 |

Appendix 2. Little Venice seagrass carbon and nitrogen isotope data.

| Transect origin canal | Distance from canal mouth (m) | Plot ID from figure 1 | Species | April 2006 $\delta^{15}N$ | June 2007 $\delta^{15}N$ | April 2006 $\delta^{13}C$ | June 2007 $\delta^{13}C$ |
|---|---|---|---|---|---|---|---|
| 112 street | 0 | 1 | Thalassia | - | - | - | - |
| 112 street | 50 | 2 | Thalassia | 0.63413041 | 1.89648379 | -8.8642516 | -7.7703403 |
| 112 street | 100 | 3 | Thalassia | -3.194549 | 2.9150961 | -6.5149025 | -6.3259246 |
| 112 street | 200 | 4 | Thalassia | 1.44948596 | 2.27690567 | -7.7821857 | -5.7857894 |
| 100 street | 0 | 5 | Thalassia | | 1.17029546 | | -9.3719937 |
| 100 street | 50 | 6 | Thalassia | -2.634281 | 1.61715513 | -8.8214752 | -7.1358586 |
| 100 street | 100 | 7 | Thalassia | 1.17127444 | -0.2690606 | -7.763839 | -6.1763015 |
| 100 street | 200 | 8 | Thalassia | 1.48115538 | 2.341999 | -7.356708 | -5.9089908 |
| 97 street | 0 | 9 | Thalassia | -0.0360728 | 0.92608555 | -11.425576 | -9.9300646 |
| 97 street | 50 | 10 | Thalassia | 0.02161392 | -0.5070186 | -8.4613977 | -7.0963189 |
| 97 street | 100 | 11 | Thalassia | 1.04867243 | 2.34233315 | -8.8442364 | -6.6815468 |
| 97 street | 200 | 12 | Thalassia | 1.50365534 | 1.38543054 | -6.7313049 | -6.1806163 |
| 91 street | 0 | 13 | Thalassia | 1.59964373 | 1.34082755 | -10.542161 | -8.9686944 |
| 91 street | 50 | 14 | Thalassia | -3.0737407 | 2.76233936 | -9.1260146 | -6.6103565 |
| 91 street | 100 | 15 | Thalassia | -1.356186 | 2.56062084 | -6.9979877 | -6.8277126 |
| 91 street | 200 | 16 | Thalassia | 2.46435096 | 1.40686257 | -6.6754188 | -5.4215051 |
| 112 street | 0 | 1 | Halodule | - | - | - | - |
| 112 street | 50 | 2 | Halodule | 0.28341516 | -0.1106095 | -9.4650247 | -9.5111725 |
| 112 street | 100 | 3 | Halodule | -0.4442966 | 1.21109438 | -8.723862 | -7.7461465 |
| 112 street | 200 | 4 | Halodule | 0.92195604 | - | -8.6239749 | - |
| 100 street | 0 | 5 | Halodule | - | 0.99649584 | - | -10.336149 |
| 100 street | 50 | 6 | Halodule | -0.0117161 | 1.45605574 | -9.5251778 | -9.667297 |
| 100 street | 100 | 7 | Halodule | 0.82148679 | -1.3062448 | -8.5103951 | -8.9249738 |
| 100 street | 200 | 8 | Halodule | 0.59449394 | -2.8105828 | -8.4292326 | -7.1814431 |
| 97 street | 0 | 9 | Halodule | -3.573273 | -3.4626068 | -12.087657 | -11.103334 |
| 97 street | 50 | 10 | Halodule | 2.09416405 | 2.17287357 | -9.4923032 | -9.1219106 |
| 97 street | 100 | 11 | Halodule | 2.35877566 | 0.84640489 | -8.6230407 | -8.6336928 |
| 97 street | 200 | 12 | Halodule | 1.61773164 | 1.34804062 | -8.1816749 | -8.4419763 |
| 91 street | 0 | 13 | Halodule | -6.2811102 | 2.92902201 | -10.252398 | -9.1137736 |
| 91 street | 50 | 14 | Halodule | -0.6722323 | 2.55633504 | -8.9973554 | -9.1634877 |
| 91 street | 100 | 15 | Halodule | -1.4346107 | -0.3883138 | -8.5541241 | -9.0396794 |
| 91 street | 200 | 16 | Halodule | 0.50714859 | -1.7277384 | -8.4587033 | -8.1505967 |

## Appendix 3. Braun-Blanquet cover analysis summary for 112th street canal transect.

| Distance from canal mouth (m) | Plot ID from figure 1 | Species | April 4, 2006 | | | June 8, 2006 | | | September 12, 2006 | | | December 8, 2006 | | | March 6, 2007 | | | June 29, 2006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. |
| 0 | 1 | *Thalassia* | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halimeda* | 0.5 | 1.1 | 0.6 | 0.5 | 0.5 | 0.3 | 0.4 | 0.8 | 0.3 | 0.6 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.7 | 0.9 | 0.6 |
| | | *Udotea* | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.1 | 0.9 | 0.6 | 0.2 | 0.1 | 0.2 | 1.3 | 0.3 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.4 | 0.5 | 0.2 | 0.8 | 0.8 | 0.6 | 0.8 | 1.4 | 1.2 | 0.8 | 0.7 | 0.6 | 0.6 | 0.6 | 0.4 | 0.6 | 0.8 | 0.5 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.8 | 0.9 | 0.7 | 1.0 | 0.9 | 0.9 | 1.0 | 2.0 | 2.0 | 1.0 | 0.7 | 0.7 | 0.7 | 1.3 | 0.9 | 1.0 | 1.1 | 1.1 |
| | | *Caulerpa* | 0.3 | 0.7 | 0.2 | 1.0 | 2.7 | 2.7 | 0.3 | 1.3 | 0.4 | 0.3 | 0.8 | 0.3 | 0.5 | 1.0 | 0.5 | 0.7 | 1.1 | 0.8 |
| | | *Batophora* | 0.3 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.2 | 1.8 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 |
| | | *other red algae* | 0.9 | 0.8 | 0.8 | 0.4 | 2.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.4 | 0.1 |
| | | *Dictyota* | 0.6 | 1.3 | 0.8 | 0.7 | 1.1 | 0.8 | 0.8 | 0.7 | 0.6 | 0.8 | 0.8 | 0.6 | 0.1 | 2.0 | 0.2 | 1.0 | 1.1 | 1.1 |
| | | *other brown algae* | 0.7 | 1.2 | 0.9 | 0.2 | 0.8 | 0.2 | 0.9 | 1.7 | 1.6 | 0.8 | 0.8 | 0.6 | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 0.2 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 2 | *Thalassia* | 0.6 | 1.3 | 0.8 | 0.7 | 3.6 | 2.5 | 0.8 | 1.3 | 1.1 | 0.6 | 3.0 | 1.8 | 0.4 | 2.5 | 1.0 | 0.9 | 1.6 | 1.4 |
| | | *Syringodium* | 0.5 | 1.0 | 0.5 | 0.4 | 2.6 | 1.1 | 0.3 | 2.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.2 | 3.0 | 0.6 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 1.0 | 3.3 | 3.3 | 0.5 | 1.6 | 0.8 | 0.8 | 3.8 | 3.0 | 0.9 | 2.6 | 2.3 | 0.7 | 3.1 | 2.2 | 0.9 | 3.0 | 2.7 |
| | | *Halimeda* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.2 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | 3 | *Thalassia* | 1.0 | 2.7 | 2.7 | 1.0 | 1.7 | 1.7 | 0.7 | 1.5 | 1.1 | 1.0 | 2.6 | 2.6 | 1.0 | 1.4 | 1.4 | 1.0 | 2.4 | 2.4 |
| | | *Syringodium* | 0.4 | 0.6 | 0.3 | 1.0 | 1.3 | 1.3 | 0.6 | 2.5 | 1.5 | 0.0 | 0.0 | 0.0 | 1.0 | 2.7 | 2.7 | 0.2 | 0.8 | 0.2 |
| | | *Halodule* | 0.6 | 0.8 | 0.5 | 1.0 | 3.8 | 3.8 | 1.0 | 3.0 | 3.0 | 0.5 | 2.6 | 1.3 | 0.0 | 0.0 | 0.0 | 0.6 | 1.3 | 0.8 |
| | | *Halimeda* | 1.0 | 1.6 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.9 | 0.9 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.7 | 0.9 | 0.6 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.0 | 0.3 | 0.8 | 1.0 | 0.8 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 1.0 | 1.8 | 1.8 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.0 | 0.3 | 0.9 | 1.3 | 1.2 |
| | | *Caulerpa* | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.9 | 1.3 | 1.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 0.2 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 1.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | 4 | *Thalassia* | 0.9 | 3.2 | 2.9 | 1.0 | 4.0 | 4.0 | 1.0 | 3.1 | 3.1 | 1.0 | 3.8 | 3.8 | 1.0 | 1.9 | 1.9 | 1.0 | 2.6 | 2.6 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.3 | 2.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halimeda* | 0.2 | 0.8 | 0.2 | 0.0 | 0.0 | 0.0 | 0.4 | 1.3 | 0.5 | 0.1 | 0.5 | 0.1 | 0.4 | 0.4 | 0.2 | 0.8 | 0.7 | 0.6 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.8 | 1.6 | 1.3 | 0.0 | 0.0 | 0.0 | 1.0 | 1.5 | 1.5 | 0.3 | 0.5 | 0.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.8 | 1.6 | 1.3 | 0.4 | 1.0 | 0.4 | 1.0 | 1.5 | 1.5 | 0.3 | 0.7 | 0.2 | 1.0 | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.3 | 1.0 | 0.3 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.3 | 0.4 | 0.1 | 0.3 | 2.3 | 0.7 | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.9 | 0.7 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 2.3 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Appendix 4. Braun-Blanquet cover analysis summary for 100th street canal transect.

| Distance | Plot ID | | April 4, 2006 | | | June 8, 2006 | | | September 12, 2006 | | | December 8, 2006 | | | March 6, 2007 | | | June 29, 2006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| from canal | from | Species | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. |
| 0 | 5 | Thalassia | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Syringodium | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Halodule | 0.2 | 0.5 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Halimeda | 0.3 | 0.7 | 0.2 | 0.1 | 0.1 | 0.0 | 0.6 | 1.9 | 1.1 | 0.4 | 0.9 | 0.4 | 0.1 | 0.5 | 0.1 | 0.4 | 1.5 | 0.6 |
| | | Udotea | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Penicillus | 0.1 | 0.5 | 0.1 | 0.1 | 0.1 | 0.0 | 0.2 | 1.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.1 | 1.0 | 0.1 |
| | | Acetabularia | 0.2 | 0.3 | 0.1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Total Calcareous Green | 0.5 | 0.5 | 0.3 | 0.6 | 0.4 | 0.2 | 0.7 | 1.6 | 1.1 | 0.4 | 0.9 | 0.4 | 0.2 | 0.5 | 0.1 | 0.4 | 1.5 | 0.6 |
| | | Caulerpa | 0.4 | 0.8 | 0.3 | 0.7 | 1.6 | 1.2 | 0.9 | 1.8 | 1.6 | 0.5 | 1.0 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 1.6 | 0.8 |
| | | Batophora | 0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Drift red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 |
| | | Laurencia | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | other red algae | 0.6 | 0.6 | 0.4 | 0.2 | 1.5 | 0.3 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 |
| | | Dictyota | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 0.2 | 0.5 | 0.7 | 0.4 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 |
| | | other brown algae | 0.5 | 0.6 | 0.3 | 0.6 | 0.9 | 0.6 | 0.1 | 0.1 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Coraline red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Sponge | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Stony corals | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Octocorals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 6 | Thalassia | 1.0 | 2.6 | 2.6 | 1.0 | 2.8 | 2.8 | 1.0 | 1.5 | 1.5 | 1.0 | 2.8 | 2.8 | 1.0 | 2.0 | 2.0 | 1.0 | 2.3 | 2.3 |
| | | Syringodium | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Halodule | 0.7 | 3.4 | 2.4 | 0.3 | 2.0 | 0.6 | 0.4 | 4.5 | 1.8 | 0.5 | 2.2 | 1.1 | 0.1 | 1.0 | 0.1 | 0.4 | 2.8 | 1.1 |
| | | Halimeda | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Udotea | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Penicillus | 0.3 | 1.3 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Acetabularia | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Total Calcareous Green | 0.3 | 1.3 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Caulerpa | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Batophora | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Drift red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Laurencia | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | other red algae | 0.4 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Dictyota | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | other brown algae | 0.0 | 0.0 | 0.0 | 0.2 | 3.5 | 0.7 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Coraline red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Sponge | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Stony corals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Octocorals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | 7 | Thalassia | 0.9 | 0.9 | 0.8 | 0.7 | 1.2 | 0.9 | 0.8 | 1.6 | 1.3 | 0.8 | 1.0 | 0.8 | 0.7 | 1.4 | 1.0 | 1.0 | 1.2 | 1.2 |
| | | Syringodium | 0.9 | 1.6 | 1.5 | 0.0 | 0.0 | 0.0 | 0.3 | 1.3 | 0.4 | 0.2 | 1.0 | 0.2 | 0.7 | 2.3 | 1.6 | 0.4 | 1.8 | 0.7 |
| | | Halodule | 0.6 | 1.8 | 1.1 | 1.0 | 3.7 | 3.7 | 0.9 | 2.7 | 2.5 | 1.0 | 2.4 | 2.4 | 0.5 | 1.8 | 0.9 | 0.9 | 2.8 | 2.5 |
| | | Halimeda | 0.3 | 1.0 | 0.3 | 0.1 | 1.0 | 0.1 | 0.3 | 1.2 | 0.4 | 0.7 | 1.6 | 1.2 | 0.4 | 0.8 | 0.3 | 0.0 | 0.0 | 0.0 |
| | | Udotea | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Penicillus | 0.8 | 0.8 | 0.7 | 0.0 | 0.0 | 0.0 | 0.3 | 1.2 | 0.4 | 0.9 | 1.6 | 1.5 | 0.5 | 0.9 | 0.5 | 0.1 | 0.1 | 0.0 |
| | | Acetabularia | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Total Calcareous Green | 0.8 | 0.9 | 0.8 | 0.0 | 0.0 | 0.0 | 0.5 | 1.3 | 0.7 | 0.9 | 1.9 | 1.8 | 0.6 | 0.8 | 0.5 | 0.1 | 0.1 | 0.0 |
| | | Caulerpa | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Batophora | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Drift red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Laurencia | 0.4 | 0.6 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | other red algae | 0.8 | 0.9 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Dictyota | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | other brown algae | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Coraline red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Sponge | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Stony corals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Octocorals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | 8 | Thalassia | 0.9 | 1.8 | 1.6 | 0.9 | 0.4 | 0.4 | 0.9 | 1.2 | 1.1 | 1.0 | 2.8 | 2.8 | 0.6 | 1.4 | 0.9 | 1.0 | 1.8 | 1.8 |
| | | Syringodium | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.8 | 0.4 | 0.0 | 0.0 | 0.0 | 0.9 | 0.8 | 0.8 | 0.0 | 0.0 | 0.0 |
| | | Halodule | 1.0 | 2.4 | 2.4 | 1.0 | 3.8 | 3.8 | 0.8 | 1.5 | 1.2 | 1.0 | 2.5 | 2.5 | 0.9 | 0.9 | 0.8 | 0.7 | 1.1 | 0.8 |
| | | Halimeda | 0.2 | 1.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.5 | 0.8 | 0.4 | 0.0 | 0.0 | 0.0 | 0.5 | 1.0 | 0.5 | 0.1 | 1.0 | 0.1 |
| | | Udotea | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Penicillus | 0.7 | 0.7 | 0.5 | 0.0 | 0.0 | 0.0 | 0.9 | 0.6 | 0.6 | 0.5 | 0.4 | 0.2 | 1.0 | 1.0 | 1.0 | 0.3 | 0.5 | 0.2 |
| | | Acetabularia | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Total Calcareous Green | 0.7 | 1.0 | 0.7 | 0.2 | 0.1 | 0.0 | 0.9 | 0.8 | 0.7 | 0.5 | 0.4 | 0.2 | 1.0 | 1.4 | 1.4 | 0.3 | 0.5 | 0.2 |
| | | Caulerpa | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Batophora | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Drift red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Laurencia | 0.3 | 2.2 | 0.7 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | 1.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.2 |
| | | other red algae | 1.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.2 | 0.2 | 1.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Dictyota | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | other brown algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Coraline red algae | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Sponge | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 |
| | | Stony corals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | Octocorals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

## Appendix 5. Braun-Blanquet cover analysis summary for 97$^{th}$ street canal transect.

| Distance | Plot ID | | April 4, 2006 | | | June 8, 2006 | | | September 12, 2006 | | | December 8, 2006 | | | March 6, 2007 | | | June 29, 2006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| from canal | from | Species | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. | Freq. | Abun. | Dens. |
| 0 | 9 | *Thalassia* | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 2.0 | 0.2 | 0.1 | 1.0 | 0.1 | 0.2 | 0.3 | 0.1 | 0.5 | 1.0 | 0.5 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 0.5 | 1.1 | 0.6 | 0.8 | 2.1 | 1.7 | 0.5 | 2.4 | 1.2 | 0.6 | 1.5 | 0.9 | 0.5 | 1.4 | 0.7 | 0.2 | 1.5 | 0.3 |
| | | *Halimeda* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 1.5 | 0.3 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.1 | 0.1 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | 0.5 | 0.1 | 0.3 | 0.5 | 0.2 | 0.5 | 0.4 | 0.2 | 0.1 | 0.1 | 0.0 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.1 | 0.2 | 0.5 | 0.1 | 0.3 | 0.5 | 0.2 | 0.5 | 0.4 | 0.2 | 0.3 | 1.0 | 0.3 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.7 | 0.5 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.3 | 3.0 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.1 | 0.5 | 0.1 | 0.2 | 2.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.7 | 0.9 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 10 | *Thalassia* | 0.8 | 0.7 | 0.6 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.2 |
| | | *Syringodium* | 0.9 | 1.5 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 4.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 |
| | | *Halodule* | 1.0 | 4.0 | 4.0 | 0.2 | 3.5 | 0.7 | 0.9 | 3.8 | 3.4 | 0.6 | 3.8 | 2.3 | 0.6 | 2.7 | 1.6 | 1.0 | 3.1 | 3.1 |
| | | *Halimeda* | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *Acetabularia* | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 4.0 | 0.4 | 0.0 | 0.0 | 0.0 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.4 | 0.9 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.4 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.1 | 0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.1 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | 11 | *Thalassia* | 0.7 | 1.2 | 0.8 | 0.6 | 1.9 | 1.2 | 0.2 | 0.8 | 0.2 | 0.5 | 1.0 | 0.5 | 0.6 | 1.0 | 0.6 | 0.8 | 0.9 | 0.8 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.3 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 1.1 | 1.0 |
| | | *Halodule* | 0.5 | 2.1 | 1.1 | 1.0 | 3.2 | 3.2 | 0.9 | 3.9 | 3.5 | 0.6 | 2.8 | 1.7 | 0.5 | 2.0 | 1.0 | 1.0 | 2.0 | 2.0 |
| | | *Halimeda* | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.3 | 1.7 | 0.5 | 0.3 | 1.3 | 0.4 |
| | | *Udotea* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.8 | 1.5 | 1.2 | 0.1 | 0.1 | 0.0 | 0.2 | 2.5 | 0.5 | 0.7 | 1.7 | 1.2 | 0.8 | 2.1 | 1.7 | 0.5 | 0.8 | 0.4 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.8 | 1.5 | 1.2 | 0.7 | 0.7 | 0.5 | 0.2 | 2.5 | 0.5 | 0.8 | 1.7 | 1.4 | 0.9 | 2.1 | 1.9 | 0.5 | 1.2 | 0.6 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.2 | 1.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.4 | 1.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | 12 | *Thalassia* | 0.2 | 1.6 | 0.3 | 0.2 | 1.5 | 0.3 | 0.5 | 0.6 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 1.0 | 2.4 | 2.4 | 1.0 | 2.7 | 2.7 | 0.9 | 2.8 | 2.5 | 0.5 | 2.4 | 1.2 | 1.0 | 1.4 | 1.4 | 1.0 | 2.3 | 2.3 |
| | | *Halimeda* | 0.8 | 0.7 | 0.5 | 0.2 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.7 | 0.5 | 0.4 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.9 | 0.9 | 0.8 | 0.1 | 0.1 | 0.0 | 0.9 | 1.3 | 1.2 | 0.2 | 0.5 | 0.1 | 0.8 | 2.5 | 2.0 | 1.0 | 1.3 | 1.3 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.9 | 1.1 | 1.0 | 0.9 | 0.7 | 0.7 | 0.9 | 1.3 | 1.2 | 0.2 | 0.5 | 0.1 | 0.8 | 2.5 | 2.0 | 1.0 | 1.3 | 1.3 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.4 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

## Appendix 6. Braun-Blanquet cover analysis summary for 91st street canal transect.

| Distance from canal | Plot ID from | Species | April 4, 2006 Freq. | April 4, 2006 Abun. | April 4, 2006 Dens. | June 8, 2006 Freq. | June 8, 2006 Abun. | June 8, 2006 Dens. | September 12, 2006 Freq. | September 12, 2006 Abun. | September 12, 2006 Dens. | December 8, 2006 Freq. | December 8, 2006 Abun. | December 8, 2006 Dens. | March 6, 2007 Freq. | March 6, 2007 Abun. | March 6, 2007 Dens. | June 29, 2006 Freq. | June 29, 2006 Abun. | June 29, 2006 Dens. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 13 | *Thalassia* | 0.0 | 0.0 | 0.0 | 0.1 | 3.0 | 0.3 | 0.1 | 2.0 | 0.2 | 0.2 | 1.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.4 | 0.2 | 0.1 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 0.1 | 0.1 | 0.0 | 0.3 | 0.8 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.2 |
| | | *Halimeda* | 0.2 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.7 | 0.9 | 0.6 | 0.5 | 1.0 | 0.5 | 0.2 | 1.1 | 0.2 | 0.4 | 0.5 | 0.2 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.0 | 0.0 | 0.0 | 0.4 | 1.3 | 0.5 | 0.9 | 1.9 | 1.8 | 0.8 | 2.4 | 1.9 | 0.9 | 2.3 | 2.1 | 1.0 | 2.4 | 2.4 |
| | | *Acetabularia* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.5 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.3 | 0.5 | 0.2 | 0.4 | 1.3 | 0.5 | 1.0 | 1.9 | 1.9 | 0.9 | 2.4 | 2.2 | 1.0 | 2.3 | 2.3 | 1.0 | 2.4 | 2.4 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.4 | 0.9 | 0.4 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 14 | *Thalassia* | 0.1 | 2.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.2 | 0.9 | 1.2 | 1.1 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 0.6 | 2.7 | 1.6 | 0.7 | 2.4 | 1.7 | 0.5 | 1.7 | 0.9 | 1.0 | 3.3 | 3.3 | 0.9 | 3.6 | 3.2 | 1.0 | 3.9 | 3.9 |
| | | *Halimeda* | 0.2 | 1.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.8 | 0.3 | 0.5 | 0.7 | 0.4 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.1 | 0.5 | 0.1 |
| | | *Acetabularia* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.3 | 0.8 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.8 | 0.3 | 0.5 | 0.7 | 0.4 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.4 | 0.2 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.1 | 0.5 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | 15 | *Thalassia* | 0.2 | 1.5 | 0.3 | 0.4 | 0.4 | 0.2 | 0.1 | 0.5 | 0.1 | 0.1 | 0.5 | 0.1 | 0.4 | 1.3 | 0.5 | 0.6 | 1.8 | 1.1 |
| | | *Syringodium* | 0.2 | 3.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 2.0 | 0.8 |
| | | *Halodule* | 0.4 | 3.3 | 1.3 | 0.4 | 0.9 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.5 | 0.1 | 0.5 | 2.4 | 1.2 | 0.7 | 2.1 | 1.5 |
| | | *Halimeda* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.1 | 0.5 | 0.1 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | 16 | *Thalassia* | 0.2 | 1.3 | 0.3 | 0.1 | 0.1 | 0.0 | 0.6 | 0.5 | 0.3 | 0.7 | 2.4 | 1.7 | 0.4 | 1.1 | 0.5 | 0.5 | 1.5 | 0.8 |
| | | *Syringodium* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Halodule* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.4 | 0.2 | 0.5 | 3.0 | 1.5 | 0.3 | 2.7 | 0.8 | 0.5 | 3.4 | 1.7 |
| | | *Halimeda* | 0.3 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.5 | 1.4 | 0.7 | 0.2 | 0.5 | 0.1 | 0.1 | 1.0 | 0.1 |
| | | *Udotea* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Penicillus* | 0.2 | 0.8 | 0.2 | 0.1 | 0.1 | 0.0 | 0.4 | 1.2 | 0.5 | 1.0 | 1.3 | 1.3 | 0.4 | 1.3 | 0.5 | 0.8 | 1.4 | 1.1 |
| | | *Acetabularia* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Total Calcareous Green* | 0.3 | 0.7 | 0.2 | 0.1 | 0.1 | 0.0 | 0.4 | 1.2 | 0.5 | 1.0 | 1.4 | 1.4 | 0.4 | 1.3 | 0.5 | 0.8 | 1.4 | 1.1 |
| | | *Caulerpa* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Batophora* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Drift red algae* | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 |
| | | *Laurencia* | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other red algae* | 0.1 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Dictyota* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *other brown algae* | 0.0 | 0.0 | 0.0 | 0.2 | 1.3 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Coraline red algae* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Sponge* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Stony corals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Octocorals* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |