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**NEARSHORE EPIBENTHIC VEGETATIVE COVER IN SOUTHERN
BISCAYNE BAY**

By

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ABSTRACT

In anticipation of a large-scale wetland restoration project for the Biscayne Bay area, surveys were performed within Biscayne Bay, Manatee Bay, and Barnes Sound to determine the benthic community structure within the areas that would be affected by the restoration. The Braun-Blanquet method was used to survey benthic vegetation and sessile organisms at 497 sites throughout the three water bodies. In general, seagrass dominated communities were found to shift to green algae dominated communities moving from inshore to offshore, as water deepened and sediment depth decreased. The introduction of increased freshwater flow to the Biscayne Bay area could affect distributions of the benthic community, and increase the abundance of more freshwater tolerant species, such as *Ruppia*.

1.0 INTRODUCTION

A task identified for the Comprehensive Everglades Restoration Plan Biscayne Bay Coastal Wetlands Project was to map seagrasses and other sessile benthic organism coverage adjacent to the project boundary in Biscayne Bay. The restoration project may significantly alter the patterns and distribution of freshwater inputs along the coastline and thus affect salinity patterns. Benthic seagrass and hard bottom communities are sensitive to salinity patterns. The changes could affect the existing benthic communities, however little existing information has been documented about the make up of the epibenthic communities close to shore.

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2.0 OBJECTIVES

The objective of this project was to provide project managers and the project delivery team of the Biscayne Bay Coastal Wetlands Project basic information about the species and extent of coverage that exists in the shallow waters along the southwestern shoreline of Biscayne Bay. The data will be used to 1) assist the project team in designing evaluation criteria for the project, and 2) provide a baseline of conditions suitable for detecting post-project changes.

3.0 METHODS

Task 1. Sites

A total of 497 random points were selected in Biscayne Bay between Shoal Point and Black Point (179 points), Manatee Bay (134 points), and Barnes Sound (184 points). These points were selected randomly from the shoreline to one kilometer offshore. The random points were generated using the computer program E-MAP. In the case of E-MAP points occurring on land, the site was moved directly to the shoreline.

Similar data collected in a separate study between Black Point and Turkey Point will be provided.

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Task 2. Benthic Surveys

At each station, three 0.5 m square areas of bottom were analyzed using the Braun-Blanquet method for benthic vegetation and other sessile organisms (Fourqurean *et al.* 2001). In addition, substrate type, sediment depths, and water depth were recorded for each site at each station. A hydrolab was used to collect physical data (temperature, pH, dissolved oxygen and salinity) from each site. Data was interpreted using the program ArcMap®. To create the maps, ArcMap® uses Kriging to determine averages of the data to form the contours, thus the maps should be interpreted with caution, as the boundaries between densities may not be as strongly defined as shown in the maps. Furthermore, ArcMap® shows some bias against densities that may have only been observed at a few sites (i.e. along the shoreline), and may not fully represent these densities on the maps.

Task3. Developing Transects and Monitoring Sites.

In the survey areas, transects were established to determine more precisely the plant community boundaries, the nature of those boundaries, and provide areas for future long-term monitoring. Suggested transect locations were selected based upon several factors: 1) a visible gradient of physical parameters, such as sediment type, sediment depth and salinity, 2) a zonation of benthic vegetation which ranges from estuarine to marine tolerant species, 3) distance from freshwater source is neither too close nor too far away. The distance from the freshwater source is perhaps the most important factor in determining transect locations. Too close to a present major freshwater source will likely create very fast changes in benthic plant communities when freshwater is diverted, and

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therefore the transect will not be useful for monitoring long-term changes brought about by management. On the other hand too far from major freshwater sources may result in very little change over a long period of time. Our goal was to select sites that will receive new sources of freshwater as sheet or natural creek flow. This should result in rapid initial change, depending upon how much freshwater is added, and then a slower rate of change until a new equilibrium is obtained.

Several transect locations were potentially selected (Fig. 3A-C). After application of the above factors, a single transect location was selected where initial salinity changes would hopefully occur fast enough to observe at the onset of the study, but not reach the new equilibrium for several years.

All transects were established starting at the shoreline then running perpendicular to the shoreline. Within the study area of Biscayne Bay, three 1000 m transects were established for long-term monitoring (Fig.3A). One long-term monitoring 1000 m transect was established in Manatee Bay (Fig.3B), and one 1000 m transect established in Barnes Sound (Fig.3C). GPS coordinates were taken, and stakes placed at 0 m, 25 m, 50 m, 75 m, 100 m, 150 m, 200 m, 300 m, 400 m, 500 m, 750 m, and 1000 m along each transect. At each distance along the transect, three 0.5 m square areas of bottom were analyzed using the Braun-Blanquet method for benthic vegetation and other sessile organisms (Fourqurean *et al.* 2001). At each distance, one 0.0625 m sq quadrat was used to count the number of individuals of each species observed within the quadrat.

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4.0 Results

4.1 Biscayne Bay

Physical Data

Water depth within the study area ranged from less than 2 ft along the shoreline to approximately 10 ft at the points furthest from shore; the majority of the area was between 4 to 6 ft deep (Fig.4.1A). Salinity within Biscayne Bay ranged from 10 to 30 ppt (Fig.4.1B), but for most of the area surveyed, salinity was between 22-26 ppt. Salinity increased with distance from the shoreline (Fig.4.1B). Dissolved Oxygen concentrations (range 2-7) increased from the northern Shoal Point sites moving southward to Black Point (Fig.4.1C). The majority of the study area consisted of a sandy-mud substrate (Fig.4.1D). In general, sediment depth decreased moving southward from Shoal Point to Black Point (Fig.4.1E).

Seagrasses (Angiosperms)

Throughout the study area of Biscayne Bay, seagrass coverage ranged from 5% to 100% (Fig.4.1F). Out of 179 sites, only 8 sites (mainly inshore) had <5% cover. *Thalassia* was the dominate seagrass species observed throughout Biscayne Bay, coverage ranged from 5% to 100% (Fig.4.1G). *Halodule* was observed in lower quantities than *Thalassia* (0 to 25% cover) throughout the bay (Fig.4.1H). *Halodule* density decreased from Shoal Point southward to Black Point (Fig.4.1H). Both *Syringodium* and *Ruppia* were found in small quantities, however *Syringodium* (Fig.4.1I) was limited to the upper region of the Shoal Point study area, where as *Ruppia* (Fig.4.1J) was limited to inshore areas (primarily around sources of freshwater outflow).

Chlorophyta (Calcareous Green Algae)

Calcareous green alga made a minor contribution (0 to 25%) to the total benthic composition of Biscayne Bay (Fig.4.1K). Of the calcareous green alga counted, *Penicillus*, *Acetabularia*, and *Udotea* were the most abundant species. *Penicillus* showed higher densities (up to 50%) in the southern portion of the study area (Fig.4.1L), whereas *Acetabularia* had higher densities (up to 25%) in the northern portion (Fig.4.1M). Higher densities of *Udotea* were found inshore and in the southern portion, with one anomalous site having 75% *Udotea* (Fig.4.1N).

Chlorophyta (Green Algae)

Green algal abundances ranged from solitary shoots up to 50% cover; abundance increased from inshore to offshore (Fig.4.1O). *Batophora* and *Chaetomorpha* were the two dominate species of green algae observed. *Batophora* ranged from solitary shoots to 75% cover (Fig. 4.1P). *Chaetomorpha* abundance increased from north (up to 50%) to south (solitary clumps) (Fig.4.1Q).

Rhodophyta (Red Algae)

Red algal abundances ranged from not present up to 50-75% (Fig. 4.1R). *Laurencia* was the dominant species and reflected the range found for total red algae (Fig. 4.1S)

Phaeophyta (Brown Algae)

Brown algae were relatively low within the surveys (Fig. 4.1T).

Sargassum was observed in high concentrations throughout the study area, however the stalks were to the height of the water, and could not be surrounded by the quadrat.

Therefore, the contribution of brown algae to the benthic composition of Biscayne Bay may be grossly underestimated.

4.2 Manatee Bay

Physical Data

Water depth within Manatee Bay was shallow along the western shoreline (2-4 ft), and then deepened into a bullseye pattern (6-8 ft) in the middle of the bay (Fig. 4.2A). Salinity increased from the northern portion (10-12 ppt) of the bay to the southern portion (24-26 ppt) (Fig.4.2B). Dissolved Oxygen ranged from 5-8 throughout the bay (Fig.4.2C). The substrate within Manatee Bay had a mud to muddy-sand composition (Fig.4.2D). As with the water depth, the sediment depth exhibited a bullseye pattern; sediment depth decreased from the shoreline to the center of the bay (Fig.4.2E).

Seagrasses (Angiosperms)

Seagrass abundance ranged from 5-75%, and showed an increase moving offshore (Fig.4.2F). *Thalassia* was the dominant seagrass observed (5-75%) and showed a general increase offshore (Fig.4.2G). *Halodule* was found within the bay, generally along the shoreline, with abundances less than 25% (Fig. 4.2H).

Chlorophyta (Calcareous Green Algae)

Calcareous green algae were found in low concentrations (less than 5%) throughout the bay (Fig.4.2I). *Penicillus* was the dominant species of calcareous green algae; however concentrations were less than 5% cover (Fig. 4.2J).

Chlorophyta (Green Algae)

Green algae concentrations, throughout the bay were less than 25%, but increased moving offshore (Fig.4.2K). *Batophora* was the dominant algal species, and reflected the total green algae distribution patterns (Fig.4.2L).

Rhodophyta (Red Algae)

Red algae concentrations were less than 5% cover within the bay (Fig.4.2M). *Laurencia* was the dominant red species, and exhibited minor decreases in abundance from the shoreline to offshore (Fig.4.2N).

Phaeophyta (Brown Algae)

Brown algae were a minor fraction of the benthic cover within Manatee Bay (less than 5 stalks) (Fig.4.2 O).

4.3 Barnes Sound

Physical Data

Water depth in Barnes Sound increased from inshore (2-4 ft along shoreline) to offshore (up to 10 ft); the majority of the study area was between 6-8 ft (Fig. 4.3A). The salinity ranged from 22 to 30 ppt, with the most of the area between 26-28 ppt (Fig. 4.3B). Dissolved Oxygen ranged from 5-8; with the majority of the area between 6 and 7 (Fig. 4.3C). As in Manatee Bay, the substrate in Barnes Sound was mainly mud or muddy-sand, however offshore the substrate became hard bottom (Fig. 4.3D). A wide range of sediment depths was seen within the sound, ranging from 80-90 cm in the northern areas down to 0-10 cm in the southern portion; decreasing depths were also seen from inshore to offshore (Fig. 4.3E).

Seagrass (Angiosperms)

Seagrass coverage decreased from inshore (50-75%) to offshore (solitary shoots) (Fig. 4.3F). *Thalassia* was the dominant species, reflecting the exact patterns seen with the total seagrass coverage, decreasing from inshore to offshore (Fig. 4.3G). *Halodule* was present in small concentrations in the upper portion of the sound (less than 5 shoots), but not observed in the lower portion (Fig. 4.3H). *Halophila* was also observed within Barnes Sound in concentrations up to 5 shoots (Fig. 4.3I).

Chlorophyta (Calcareous Green Algae)

Calcareous green algae were recorded in low concentrations (less than 5 stalks) throughout the sound (Fig. 4.3J). *Penicillus* was the dominant species recorded,

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and demonstrated a slight decrease from inshore (less than 5 stalks) to offshore (not present) (Fig.4.3K).

Chlorophyta (Green Algae)

Green algae showed an increase in abundance from inshore (solitary shoots) to offshore (50-75%) (Fig.4.3L). *Batophora* was the dominant species, and was seen to increase from inshore (0 to less than 5 shoots) to offshore (75-100%) (Fig.4.3M).

Rhodophyta (Red Algae)

Red algae concentrations ranged from not present in some areas up to 50-75% (Fig.4.3N). The majority of the study area had red algal abundances between less than 5% and 25% cover (Fig.4.3N). *Laurencia* was the dominant red algae observed, with the majority of the study area showing concentrations of less than 5 shoots to 50% cover, and one anomalous site having a concentration of 75% (Fig.4.3O).

Phaeophyta (Brown Algae)

No brown algae were observed in the surveys within Barnes Sound.

4.4 Transects

Thalassia was the dominant species observed along the Shoal Point transect (Fig. 4.4A). Higher concentrations of *Udotea* were measured between 0-100m along the Black Point transect, than along any other transects; *Sargassum* was also a species unique to this transect (Fig.4.4B). The seagrass species, *Ruppia* was only documented along the Fender

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Point transect (Fig. 4.4C). *Thalassia* concentrations were distributed evenly along the Manatee Bay transect; *Laurencia* was only documented at 25m (Fig 4.4D). *Halophila* was only documented along the Barnes Sound Transect (Fig 4.4E). In general, for all five transects, species distributions reflected those observed in the site surveys within the same respective areas.

5.0 Discussion

5.1 Biscayne Bay

Within the Biscayne Bay study area, differences in benthic communities were observed between the northern most portion of the study area around Shoal Point, the southern most portion around Black Point, and the area around Chicken Key. The sites located westward of Chicken Key to the coastline exhibited the lowest Dissolved Oxygen and the deepest sediment (predominately mud) observed throughout the study area. Coinciding with these trends around Chicken Key, the highest seagrass densities were recorded at these sites. While seagrasses (mainly *Thalassia*) dominated in the sites around Chicken Key, all other types of vegetation were found in their lowest concentrations in this area. In the portions of Biscayne Bay both north and south of Chicken Key, sediment depths progressively decreased. As the sediment lessened, seagrass densities were shown to decrease, coinciding with an increase in calcareous green algae, green algae, and red algae. Green algae dominated the sites where sediment was recorded to be the shallowest or hard bottom. This same shift in benthic composition was observed when moving from inshore to offshore, as the water depth got progressively deeper. Though brown algae were not observed in great quantities within

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the surveys (stalks were too big to capture in quadrat), the above mentioned trends for algae were observed for brown algae (JC personal observation). Benthic composition was also found to be influenced by salinity. Both *Ruppia* (found only in Biscayne Bay) and *Udotea* were observed in higher concentrations along the shoreline near point sources of freshwater input. Densities of green algae were found to be higher at the sites where higher salinities were recorded.

5.2 Manatee Bay

Within Manatee Bay, both water and sediment depth formed a bull's eye pattern moving from the shoreline towards the center of the bay, with water depth increasing and sediment depth decreasing. Calcareous green algae mimicked these bulls' eye patterns, with a slight increase in densities moving from the shoreline to the center of the bay. Though also following the bull's eye pattern, red algae was found to decrease in abundance from the shoreline to the center of the bay. Brown algae, though found in low concentrations within Manatee Bay, showed higher densities in areas where the sediment depth was 40 to 60 cm deep. As in Biscayne Bay, calcareous green algae, green algae, and red algae were found in higher concentrations at sites where the water depth was 4 to 6 ft. The upper portion of Manatee was found to be influenced by freshwater input, whereas the lower bay was more influenced by saltwater entering the bay from Barnes Sound. These salinity patterns influenced the distributions of both seagrasses and green algae, with higher abundances of both groups in areas of higher salinity.

5.3 Barnes Sound

As seen in both Biscayne Bay and Manatee Bay, water depth increased and sediment depth decreased from inshore to offshore in Barnes Sound. Sediment depth also decreased in the sound moving from north to south. Seagrasses followed the trends of sediment depth, being more dominant in the northern portion of the sound and along the mangrove shoreline, where sediment was the deepest. The seagrass species *Halophila* was only observed in Barnes Sound, but was present in both deep and shallow sediment areas. As water depth increased and sediment depth decreased, the benthic composition shifted from seagrass dominated communities inshore to green and red alga dominated communities offshore. Unlike both Biscayne Bay and Manatee Bay, no brown algae were recorded in the surveys of Barnes Sound. Within the Barnes Sound study area, a reverse relationship was found between salinity and Dissolved Oxygen. Salinity was measured to be lower in the southern portion of the sound; however in this same area Dissolved Oxygen was measured to be highest. These two physical parameters do not appear to greatly influence the distributions of the benthic communities within Barnes Sound, when compared to the influences of water and sediment depth.

Along with the vegetation that was recorded in the surveys, sponges were also recorded in all three bodies of water. However as with large brown algae, this survey method underestimated sponge abundance, since large sponges may not fit within the quadrat (JC personal observation). Both hard and soft corals were also observed within Biscayne Bay and Barnes Sound, but again most were too large to be encircled in the quadrat, and were therefore underestimated (JC personal observation). Though sponges

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and corals were not found to be dominant factors in the benthic composition of the surveys, consideration should be given to their role in the overall community structure of the benthos in these water bodies.

5.4 Transects

Stations along the Shoal Point transect are dominated by *Thalassia* with the exception of the most inshore station (0m). The 0m station is dominated by *Halodule*. The inshore stations (25 and 50m) are expected to change rapidly with the addition of freshwater and associated nutrient load from *Thalassia* to *Halodule*. Changes in the benthos, after the initial rapid change, are expected to be slow because of water depth. Therefore, the transect should be adequate for determining the estuarine zone, and impacts from freshwater redirection (addition) in addition to long-term monitoring for the life of the project. We doubt that the entire transect will be altered, and therefore the transect will be useful to monitor the distance to which offshore impacts will occur. Although transect location is in a large cove and therefore should permit the development of a healthy estuarine zone with freshwater addition, the embayment is larger than most areas, therefore the estuarine zone should remain within a few hundred meters of the shore, unless very large volumes of freshwater are added.

Though similar to the Shoal Point transect, the Black Point transect is located along a straight coastline, and therefore the estuarine zone should dominate the local embayments, but should not extend very far offshore because of longshore, tidal and wave mixing processes. Therefore, we expect little change in the mid and offshore stations of this transect.

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Along the Fender Point transect, shoreward stations are dominated by *Ruppia*, whereas offshore stations are dominated by *Thalassia*. This indicates that inshore waters are already brackish in nature, and that the addition of more freshwater should further expand the estuarine zone because of the transect location in the cove formed by Fender Point. We believe that the transect is long enough that the most offshore station should see little effect of freshwater addition, and the transect should be able to monitor the distance offshore that estuarine development will occur throughout the duration of the project.

Patterns along the Manatee Bay transect were similar to the ones observed for the Shoal Point Transect. *Thalassia* was the dominate species along the transect, but with *Halodule* being more prominent inshore. With the cove type nature of the shoreline around the transect, the addition of freshwater should create a healthy estuarine zone which should extend along a large portion of the transect.

Along the Barnes Sound transect, *Thalassia* was the dominate seagrass species. The addition of freshwater to this area, could contribute to a species shift from *Thalassia* to *Halodule* at least nearshore, which can be monitored along the transect. As with the Black Point transect, the Barnes Sound transect occurs along a straight coastline, therefore the created estuarine zone would not extend too far offshore due to longshore, tidal and wave mixing processes.

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Appendix 1: List of Abbreviations

Thalassia	T
Halodule	H
Syringodium	S
Halophila	Halop
Ruppia	R
Total Seagrass	TSG
Halimeda	Hali
Penicillus	Pen
Rhipocephalus	Rhipo
Udotea	Udo
Acetabularia	Acet
Total Calcareous Green Algae	TCG
Batophora	Bato
Dasycladus	Dasy
Anadyomene	Anad
Avrainvillea	Avrain
Caulerpa	Caul
Chaetomorpha	Chaet
Cladophora	Clado
Derbesia	Derb
Total Green Algae	TG
Dictyota	Dict
Sargassum	Sarg
Total Brown Algae	TB
Laurencia	Laur
Gracilaria	Gracil
Dasya	Dsya
Polysiphonia	Poly
Spyridia	Spy
Digenia	Dige
Total Red Algae	TR
Sponge	SpSp
Mud	M
Sandy-Mud	SM
Muddy-Sand	MS
Rock	Rk
Sediment Type	ST
Sediment Depth	SD (cm)
Water Depth	WD (ft)
Salinity	Sal
Temperature	Temp
Braun-Blanquet Score	BBS
Quadrat	Quad

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Appendix 1: Biscayne Bay Surveys

Site	Date	Time	Latitude	Longitude	ST	Quad	SD (cm)	Species	BBS	Quad	SD (cm)	Species	BBS	Quad	SD (cm)	Species	BBS
1	9/16/03	9:45	25.64798	80.26283	M	1	8	T Acet Chaet SpSp R	3 0.5 2 0.1 0.5	2	8	T Pen Acet Chaet H Bato T	3 0.1 0.5 3 2 2 2	3	10	T Chaet	4 2
2	9/16/03	10:05	25.64779	80.26999	M	1	14			2	14			3	12	H	2
3	9/16/03	11:24	25.64660	80.26990	M	1	10	T Pen Acet Bato Chaet	3 0.1 1 1 2	2	13	Hali Pen Acet Bato Anad Chaet Laur Poly	1 0.1 1 1 2 3 1 2	3	20	Bato T Hali Acet Bato Chaet	1 4 0.1 0.1 0.5 2
4	9/17/03	10:16	25.64659	80.26571	M	1	10	S Acet Bato Laur	2 2 2 2	2	5	T S Hali Acet Bato Laur	1 1 1 1 1 2	3	13	T S Acet Bato Anad Chaet H	3 2 1 2 1 2 4
5	9/16/03	10:22	25.64588	80.27017	SM	1	20	Acet Bato Laur	0.1 2 5	2	18	H Acet Bato Chaet Laur Acet Bato Anad Laur	2 1 2 1 2 1 1 3	3	20	Sarg Laur	2 3
6	9/17/03	10:35	25.64477	80.26740	M	1	3	T S Acet Bato Anad Laur	1 2 2 1 2 3	2	20	H Bato Chaet	5 1 2	3	10	T S Acet Bato Anad Laur	1 2 2 2 1 3
7	9/16/03	10:43	25.64414	80.27049	M	1	30	H Bato Chaet SpSp	5 1 2 1	2	30	H Bato Chaet	5 1 2	3	30	Laur T H Bato Chaet	3 0.5 5 1 2
8	9/17/03	11:18	25.64173	80.26699	M	1	3	T Hali Acet Bato Anad Chaet Laur	0.1 0.1 2 2 1 2 2	2	3	T Acet Bato Chaet Laur	2 2 3 2 2	3	3	T Acet Bato Anad Chaet Laur	2 2 1 2 2 2

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9	9/17/03	11:38	25.64106	80.26631	M	1	20	T	1	2	10	T	3	3	10	T	2
								Acet	2			Acet	1			Acet	2
								Bato	2			Bato	0.5			Bato	1
								Anad	0.1			Anad	1			Anad	2
								Laur	2			Chaet	2			Chaet	3
																Laur	2
10	9/16/03	11:00	25.63952	80.27178	M	1	13	Bato	1	2	10	Bato	1	3	16	R	1
																Bato	0.1
																Chaet	0.5
11	9/30/03	10:33	25.63820	80.26999	M	1	48	T	2	2	80	T	3	3	80	T	2
								S	2			S	1			S	1
								Hali	0.5			Acet	3			Acet	3
								Acet	2			Bato	3			Bato	3
								Bato	3			Anad	1			Anad	2
								Anad	1			Chaet	4			Chaet	4
								Chaet	3			Laur	1			SpSp	1
								Laur	2								
12	9/30/03	11:40	25.63777	80.26595	M	1	1	T	2	2	10	T	2	3	1	T	2
								Acet	1			Acet	1			S	2
								Bato	2			Bato	1			Acet	1
								Anad	2			Anad	1			Anad	1
								Chaet	4			Chaet	4			Chaet	2
								Laur	2			Laur	4				
13	9/30/03	12:18	25.63747	80.26740	M	1	20	T	1	2	30	T	1	3	25	T	1
								S	2			S	2			S	2
								Chaet	4			Chaet	5			Chaet	4
								Laur	3							Laur	3
								SpSp	0.1								
14	9/30/03	12:38	25.63727	80.27061	M	1	80	T	4	2	87	T	3	3	80	T	3
								Anad	2			Acet	0.1			Acet	1
								Chaet	3			Bato	0.5			Bato	0.5
								Laur	2			Anad	1			Anad	1
												Laur	4			Laur	5
15	9/30/03	12:02	25.63725	80.26546	M	1	24	T	2	2	30	Acet	1	3	10	T	1
								Udo	0.1			Bato	1			Acet	1
								Anad	2			Anad	1			Bato	0.5
								Chaet	5			Chaet	5			Anad	1
																Chaet	4
16	9/30/03	12:53	25.63685	80.27170	M	1	30	T	2	2	22	T	3	3	34	T	4
								H	4			H	2			H	3
								Bato	2			Bato	2			Bato	2
								SpSp	0.1			Chaet	2				
17	10/2/03	9:04	25.63678	80.27132	M	1	90	T	1	2	93	T	2	3	100	T	2
								H	3			H	3			H	5
								Acet	0.5			Acet	0.5			Acet	0.5

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18	9/30/03	13:10	25.63525	80.27289	M	1	85	T	5	2	90	Bato	0.1			Bato	1
								Acet	0.5			Chaet	1			Chaet	1
								Bato	0.5			Dsya	1				
								Anad	2			T	5	3	100	T	5
								Laur	3			Hali	1			Hali	0.5
19	10/2/03	9:29	25.63231	80.27334	M	1	33	T	4	2	20	Acet	1			Acet	0.5
								H	1			Anad	1			Chaet	2
								Hali	1			Laur	4	3	8	Laur	3
								SpSp	0.1			T	4			T	4
												H	1			H	1
												Hali	1			Hali	1
												SpSp	0.1			Anad	1
20	10/2/03	9:53	25.63218	80.26897	M	1	1	T	1	2	1	T	1	3	2	Caul	0.1
								Hali	0.1			Acet	1			T	1
								Acet	0.5			Bato	2			Anad	1
								Bato	0.5			Chaet	3			Chaet	5
								Anad	0.5			Laur	4			Laur	4
								Chaet	2								
								Laur	5								
21	10/2/03	10:13	25.63076	80.27103	M	1	1	Acet	1	2	1	T	0.5	3	1	T	1
								Bato	2			Acet	1			Acet	0.5
								Chaet	3			Bato	1			Bato	0.5
								Laur	4			Anad	0.5			Chaet	4
												Chaet	1			Laur	4
												Laur	4				
22	10/2/03	10:38	25.63031	80.27367	SM	1	20	T	4	2	18	T	3	3	10	T	4
								H	1			H	2			H	2
								Hali	0.1			Hali	0.1			Rhipo	0.1
								Caul	0.1			Acet	0.5			Acet	0.5
								SpSp	0.1			Anad	1			Anad	1
												Caul	1			Laur	3
												SpSp	0.5			SpSp	0.5
23	10/2/03	12:08	25.62930	80.27609	SM	1	10	T	2	2	9	T	3	3	11	T	4
								H	3			H	1			Hali	0.1
								Hali	0.5			Hali	0.1			Bato	0.5
								Acet	1			Pen	0.5			Dsya	1
								Bato	2			Acet	1			SpSp	0.5
								Anad	0.5			Laur	2				
								Laur	3			SpSp	0.1				
								Dsya	1								
								SpSp	1								
24	10/2/03	10:58	25.62874	80.27182	M	1	20	T	2	2	20	T	3	3	1	T	2
								Acet	1			Anad	1			Acet	0.5
								Bato	1			Laur	2			Anad	0.1

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								Anad	3				SpSp	0.1			SpSp	0.1
								Dictyota	2									
								Laur	2									
								SpSp	1									
25	10/2/03	11:39	25.62649	80.27512	M	1	13	T	1	2	1	Acet	1	3	14	T	2	
								Acet	1			Bato	2			Hali	1	
								Bato	2			Avrain	0.5			Acet	1	
								Anad	1			Laur	2			Bato	1	
								Avrain	0.5			SpSp	0.5			Dictyota	2	
								SpSp	0.1							Laur	2	
26	10/2/03	11:21	25.62647	80.27326	M	1	14	T	5	2	40	T	3	3	12	SpSp	1	
								Hali	1			Hali	0.1			T	3	
								Laur	3			Acet	0.5			Anad	1	
								SpSp	0.1			Anad	1			Laur	4	
												Laur	2					
27	10/3/03	9:37	25.63414	80.28757	M	1	25	T	0.5	2	21	None		3	10	None		
28	10/2/03	12:27	25.63225	80.27608	M	1	96	T	4	2	96	T	4	3	42	T	3	
								Hali	1			Anad	2			Hali	0.1	
								Anad	1			Dsya	1			Pen	1	
29	10/3/03	9:57	25.63102	80.28695	M	1	100	H	2	2	100	H	1	3	100	H	1	
								Bato	0.5			Bato	1			Bato	1	
30	10/3/03	9:10	25.63052	80.28519	M	1	60	T	3	2	34	T	3	3	46	T	3	
								Bato	0.5							Acet	0.1	
31	10/2/03	13:19	25.63031	80.27927	M	1	20	None		2	23	None		3	17	None		
32	10/2/03	12:45	25.62938	80.27996	M	1	35	None		2	32	None		3	32	None		
33	10/2/03	8:55	25.62919	80.29014	M	1	60	H	4	2	66	T	3	3	52	Bato	0.5	
												H	3					
												SpSp	0.1					
34	9/25/03	12:09	25.62876	80.29040	M	1	75	T	5	2	74	T	5	3	77	T	4	
								Bato	0.5			Bato	1			Acet	0.5	
																Bato	1	
35	10/3/03	11:30	25.62841	80.29394	M	1	73	None		2	66	None		3	69	None		
36	10/3/03	10:28	25.62826	80.28258	M	1	100	T	5	2	100	T	5	3	100	T	5	
37	10/3/03	10:12	25.62811	80.28416	M	1	100	T	5	2	100	T	5	3	100	T	5	
								Acet	0.5			Bato	3			Bato	3	
								Bato	2									
38	9/25/03	11:58	25.62552	80.27818	SM	1	18	T	3	2	17	T	3	3	32	T	4	
								H	2			H	2			H	3	
								S	1			Acet	0.1			S	2	
								Laur	1			Bato	0.5			Acet	0.1	
								Dsya	3			Laur	1			Anad	0.5	
								SpSp	0.5			Dsya	2			Dsya	3	
												SpSp	0.1					
39	10/3/03	11:06	25.62539	80.28472	M	1	95	T	5	2	83	T	5	3	86	T	5	

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40	9/25/03	10:08	25.62487	80.29121	M	1	40	T	5	2	78	T	5	3	50	T	5
41	9/25/03	11:16	25.62468	80.28738	M	1	78	T	5	2	66	T	5	3	67	Chaet	2
42	9/25/03	11:05	25.62466	80.28999	M	1	47	T	5	2	76	T	5	3	89	T	5
43	9/25/03	9:57	25.62424	80.29327	M	1	14	SpSp H	0.1 5	2	13	Bato H	0.1 4	3	27	H	4
44	9/25/03	9:46	25.62358	80.29491	M	1	40	T H	3 3	2	50	T H	4 3	3	50	Bato T	0.1 3
45	9/25/03	10:35	25.62297	80.29031	M	1	50	T	5	2	59	T	5	3	82	H	3
46	9/25/03	10:22	25.62460	80.28976	M	1	29	T	5	2	79	T	5	3	77	T	5
47	9/25/03	10:44	25.62276	80.28754	M	1	100	T	5	2	100	Chaet T	1 5	3	100	H	2
48	9/25/03	10:54	25.62127	80.28848	M	1	88	T	5	2	100	T	5	3	90	T	5
49	10/3/03	11:50	25.61896	80.30021	SM	1	40	Chaet Bato	1 0.5	2	40	None		3	40	Chaet None	1
50	10/10/03	9:10	25.61938	80.28956	M	1	100	T Pen Chaet	5 0.5 1	2	100	T H	4 0.5	3	100	T H Pen Chaet Laur	5 1 0.5 1 2
51	10/10/03	10:22	25.61955	80.29435	M	1	30	T Laur	5 0.5	2	34	T	5	3	27	T	5
52	10/10/03	10:10	25.61885	80.29670	M	1	40	T	5	2	39	T	5	3	38	T	5
53	10/10/03	9:35	25.61840	80.29073	M	1	100	T	5	2	100	T	5	3	100	Laur	1
54	10/3/03	12:00	25.61789	80.30161	M	1	70	None		2	33	Bato	1	3	27	T	5
55	10/10/03	10:35	25.61788	80.29939	M	1	72	T	5	2	51	Gelidium T	0.5 5	3	69	Chaet	1
56	10/3/03	12:33	25.61666	80.30460	M	1	50	Bato	1	2	56	T	5	3	60	T	5
57	10/10/03	9:57	25.61643	80.29324	M	1	100	T Hali Anad	5 0.5 1	2	100	Bato T Hali Laur	1 5 1 1	3	100	Bato T Hali	1 5 1
58	10/10/03	11:17	25.61618	80.29723	M	1	27	T	5	2	50	T	5	3	46	T	5
59	10/10/03	10:49	25.61624	80.30074	M	1	85	T	5	2	47	T	5	3	57	T	5
60	10/10/03	11:32	25.61325	80.30168	M	1	25	T Chaet Laur Dsya	4 1 2 0.5	2	20	T Laur	5 2	3	10	T Pen Acet Bato Laur Dsya	3 0.1 1 1 4 0.1
61	10/3/03	12:51	25.61298	80.30641	SM	1	25	None		2	23	R	1	3	18	R	2
62	10/10/03	11:46	25.61263	80.30248	M	1	22	T Bato Laur	5 1 2	2	20	T Bato Laur	5 1 2	3	23	T Bato Laur	4 1 4

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63	10/10/03	11:59	25.61194	80.30344	M	1	38	T	5	2	42	Dsya	0.5			Dsya	1
												T	5	3	19	T	5
64	10/3/03	13:10	25.60923	80.30735	M	1	38	None		2	45	S	1			None	
65	10/10/03	12:13	25.60990	80.29966	SM	1	23	T	4	2	15	None	2	3	40	T	3
								Hali	0.5			T	0.1		10	Pen	0.5
								Udo	0.1			Acet	0.5			Acet	0.5
								Bato	3			Bato	2			Bato	3
66	10/14/03	9:20	25.60922	80.29808	SM	1	14	T	5	2	7	T	3	3	18	T	3
								Hali	1			Hali	1			Bato	5
								Bato	2			Pen	0.1				
												Rhipocep	0.1				
												halis					
												Bato	4				
67	10/14/03	9:56	25.60852	80.30260	M	1	20	T	5	2	30	T	5	3	30	T	4
								H	3							H	3
68	10/14/03	9:38	25.60798	80.29739	SM	1	15	T	3	2	21	T	3	3	20	T	4
								Hali	0.5			Hali	0.5			Bato	4
								Pen	0.1			Bato	3				
								Bato	3								
69	10/14/03	10:07	25.60729	80.30269	SM	1	1	Acet	1	2	6	Acet	3	3	1	Acet	1
								Bato	2			Acet	1			Bato	3
								Clado	3			Bato	1			Anad	2
								Laur	3			Anad	0.1			Clado	2
												Dsya	2			Laur	2
																Dsya	1
70	10/14/03	10:21	25.60659	80.30769	M	1	30	T	5	2	35	T	2	3	23	T	5
								H	2			H	3			H	1
								Bato	0.5			Bato	0.5			Bato	1
								Chaet	1							Chaet	1
71	10/14/03	10:41	25.60605	80.30712	M	1	18	T	5	2	22	T	5	3	12	T	5
								H	0.5			Bato	0.5			H	0.5
								Bato	0.5			Laur	1			Bato	1
																Laur	1
72	10/15/03	9:03	25.60475	80.29644	SM	1	6	T	1	2	5	T	3	3	6	T	2
								Pen	0.1			Pen	0.1			Pen	0.5
								Bato	2			Bato	3			Bato	3
								SpSp	2			SpSp	0.1			SpSp	0.1
73	10/15/03	9:55	25.60357	80.30251	SM	1	2	Bato	0.5	2	1	Hali	0.5	3	12	T	2
								SpSp	0.1			Acet	0.5			Hali	0.5
												Bato	0.1			Acet	1
												Anad	0.5			Bato	2
												Clado	0.5			SpSp	0.5
74	10/15/03	9:42	25.60328	80.30022	SM	1	8	T	3	2	5	T	2	3	9	T	2
								Bato	5			Bato	4			Bato	5

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75	10/15/03	9:24	25.60323	80.29697	SM	1	8	T Bato Laur	4 3 2	2	10	T Pen Bato	5 0.5 3	3	11	Laur T Pen Bato Laur T	2 5 0.1 4 2
76	10/15/03	10:08	25.60282	80.30395	SM	1	31	T Pen Bato	3 1 0.5	2	16	T Pen Bato	4 2 0.5	3	10	Hali Pen Bato Anad T	4 0.5 0.1 2 2
77	10/14/03	10:54	25.60247	80.30759	M	1	51	T H Bato	5 1 0.5	2	55	T H R Bato	5 1 1 0.5	3	38	T H Bato	5 1 1
78	10/22/03	8:43	25.59989	80.29567	SM	1	12	T Bato Laur	5 3 4	2	10	T Pen Bato Laur	2 0.1 4 3	3	1	Pen Bato Laur SpSp T	0.1 3 3 0.1 2
79	10/15/03	10:22	25.59980	80.30164	SM	1	29	T Hali Bato Laur SpSp	3 0.1 4 1 0.1	2	6	T Pen Bato SpSp	2 1 3 0.1	3	4	Bato SpSp	1 0.5
80	10/15/03	10:36	25.59918	80.30295	SM	1	4	Acet Bato	1 4	2	3	T Bato Sarg	1 3 2	3	7	T Hali Pen Acet Bato T	3 0.1 0.5 0.1 2
81	10/22/03	9:06	25.59838	80.29599	SM	1	4	T Pencilis Bato	3 0.5 5	2	9	T Pencilis Bato	2 0.5 3	3	13	Hali Pen Acet Bato T Hali Pen Acet Bato T	0.1 0.1 0.1 4 1 0.5 0.5 3 2
82	10/15/03	10:47	25.59838	80.30183	SM	1	1	Acet Bato Laur SpSp	0.1 4 3 0.5	2	7	T Bato Laur	3 4 0.5	3	6	Pen Udo Bato Laur SpSp T	0.5 0.5 3 2 0.1 1
83	10/15/03	11:07	25.59794	80.30330	SM	1	5	T Bato	2 5	2	2	T Pen Bato Laur T	1 0.5 2 1 3	3	2	Pen Bato Laur T	0.5 5 1 0.1
84	10/22/03	9:21	25.59743	80.29871	SM	1	4	T Hali	3 0.1	2	6	T Hali	3 0.1	3	3	Bato	0.1 4

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								Pen Bato SpSp T Chaet	0.1 3 0.1 4 0.5				Pen Bato T Bato Laur T Hali Pen Bato T Bato	0.1 4 0.5 0.1 3 0.5 0.5 3 2 5			Anad Clado SpSp T Chaet	0.5 1 2 5 0.1	
85	10/14/03	11:21	25.59701	80.30788	M	1	53			2	40			3	43				
86	10/22/03	9:36	25.59663	80.29956	SM	1	9	T Bato	3 5	2	14			3	6			T Bato Laur	2 3 1
87	10/15/03	11:29	25.59532	80.30247	SM	1	10	T Pen Bato	2 1 5	2	5			3	4			Pen Bato SpSp	0.5 2 1
88	10/15/03	11:44	25.59527	80.30354	SM	1	6	T Pen Acet Bato	3 1 0.1 0.5	2	36			3	8			T Pen Bato	3 1 0.5
89	10/22/03	10:02	25.59506	80.29557	SM	1	3	T Pen Acet Bato Laur	3 0.1 0.5 2 3	2	7			3	8			T Acet Bato	2 0.5 2
90	10/22/03	9:49	25.59510	80.29800	SM	1	14	T Bato	4 4	2	12			3	9			T Bato	2 3
91	10/22/03	10:16	25.59359	80.29587	SM	1	2	Pen Acet Bato Anad Caul SpSp	0.5 0.5 2 0.1 0.5 1	2	6			3	1			Acet Bato Anad	5 1 0.1
92	10/14/03	11:39	25.59352	80.30523	SM	1	10	T Pen Acet Bato Anad	3 0.5 0.5 1 1	2	7			3	7			T Pen Acet Bato	0.5 0.5 1 2
93	10/22/03	10:35	25.59247	80.30201	SM	1	2	Anad Bato Anad	1 2 0.1	2	1			3	6			Pen Acet Bato Anad Clado SpSp	0.5 0.1 2 0.1 1 2
94	10/14/03	11:58	25.59212	80.30653	M	1	36	T Laur	5 1	2	55			3	33			T Anad Laur	5 0.5 3

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95	10/15/03	12:15	25.59193	80.30340	SM	1	3	T	1	2	27	T	5	3	8	T	0.5
								Pen	0.5							Pen	0.1
								Acet	1							Acet	0.5
								Bato	4							Bato	5
								Anad	0.1							SpSp	0.5
96	10/22/03	10:53	25.59063	80.29572	SM	1	17	T	3	2	17	T	3	3	21	T	4
								Pen	1			Bato	3			Pen	0.5
								Bato	2			Laur	1			Bato	3
97	10/22/03	11:05	25.59018	80.29884	SM	1	5	T	2	2	10	T	3	3	1	Acet	0.1
								Pen	0.5			Pen	0.5			Bato	3
								Bato	2			Bato	3			Anad	2
								Anad	0.1			Anad	2			SpSp	1
								SpSp	0.1			Dsya	1				
												SpSp	0.5				
98	10/15/03	12:32	25.58947	80.30363	SM	1	12	T	3	2	15	T	4	3	9	T	3
								Bato	0.5			Pen	1			Hali	0.1
								Laur	2			Bato	1			Pen	1
99	10/22/03	11:20	25.58825	80.30056	SM	1	6	T	0.5	2	7	T	3	3	1	Bato	0.5
								Hali	0.1			Pen	0.5			Acet	0.1
								Bato	2			Acet	0.5			Bato	1
								Anad	0.1			Bato	1			Anad	2
								Clado	1			Anad	0.1			Clado	1
								SpSp	1			SpSp	1				
100	10/15/03	12:48	25.58739	80.30231	SM	1	7	T	2	2	3	T	1	3	6	T	2
								Pen	0.5			Bato	5			Pen	0.5
								Acet	0.5			Laur	2			Bato	4
								Bato	3							Laur	2
								Laur	3								
101	10/22/03	11:39	25.58706	80.29548	SM	1	1	T	0.5	2	6	T	2	3	1	T	0.5
								Bato	0.5			Pencilis	0.5			Bato	0.1
												Bato	2			Anad	0.5
												Laur	2				
102	10/22/03	12:05	25.58595	80.29490	SM	1	2	T	0.5	2	1	T	2	3	1	Bato	1
								Bato	2			Bato	2			Anad	0.1
								SpSp	2			SpSp	1				
103	10/14/03	12:11	25.58552	80.30746	M	1	5	Bato	1	2	7	Bato	1	3	10	Bato	1
104	9/25/03	9:25	25.58463	80.30373	MS	1	7	T	3	2	6	T	2	3	8	T	1
								Pen	1			Pen	2			Pen	2
								Acet	0.5			Bato	1			Laur	2
								Bato	1			Laur	2				
								Laur	1								
105	10/22/03	12:19	25.58341	80.29892	SM	1	36	T	5	2	41	T	4	3	24	T	4
								Pen	0.5			Pen	1			Hali	0.5
								Bato	2			Bato	0.5			Pen	1

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								Laur	2			Laur	2			Bato	0.5
																Laur	2
106	10/22/03	12:34	25.58236	80.29931	SM	1	8	T	1	2	8	T	3	3	4	Acet	0.5
								Bato	0.5			Bato	2			Bato	2
								Anad	0.5			Laur	2			Anad	2
																Clado	2
																Laur	1
																SpSp	1
																T	2
107	11/7/03	9:10	25.58220	80.29821	SM	1	8	T	3	2	6	T	3	3	13	Hali	0.5
								Pen	1			Hali	1			Pen	1
								Bato	0.1			Bato	1			Bato	1
								Anad	0.1				2			T	3
108	11/7/03	9:34	25.58188	80.29455	SM	1	6	T	3	2	8	T	4	3	8	Hali	0.5
								Pen	0.5			Bato	3			Pen	0.5
								Bato	3							Bato	2
																T	2
109	9/25/03	9:05	25.58180	80.30485	MS	1	5	T	3	2	12	T	3	3	10	Hali	1
								Hali	0.1			Hali	1			Pen	3
								Pen	2			Bato	1			Acet	0.5
								Bato	0.5			Anad	1			Laur	3
												Laur	3			T	2
110	9/25/03	8:49	25.58118	80.30341	Rk	1	0	Acet	1	2	6	T	2	3	2	Pen	1
								Bato	3			Pen	0.5			Bato	1
												Acet	0.1				
												Bato	0.1			T	3
111	10/14/03	12:19	25.57974	80.30435	SM	1	18	T	4	2	14	T	4	3	10	Hali	0.1
								Hali	0.1			Pen	2			Pen	2
								Pen	0.5			Bato	1			Bato	1
								Acet	0.1			Anad	1			Anad	1
								Bato	2			Laur	2			Laur	2
								Anad	2			Dsya	2				
								Laur	2								
								Dsya	1							T	2
112	10/14/03	12:41	25.57940	80.30234	SM	1	4	T	1	2	19	T	2	3	6	Pen	1
								Pen	0.5			Hali	0.5			Acet	0.5
								Bato	0.1			Pen	1			Bato	1
												Acet	0.5			Laur	3
												Bato	0.5				
												Laur	2			T	4
113	11/7/03	9:48	25.57868	80.29373	SM	1	12	T	3	2	13	T	4	3	13	Bato	2
								Pen	0.5			Hali	0.1				
								Bato	1			Bato	1				
								T	1	2	5	T	1	3	3	T	2
114	10/14/03	12:54	25.57701	80.30178	SM	1	5	Pen	0.1			Pen	0.1			Pen	0.5
								Bato	1			Bato	0.5			Acet	0.5

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115	10/14/03	13:05	25.57678	80.30247	SM	1	10	T Pen Acet Bato Laur	1 2 0.5 0.5 2	2	1	Pen Acet Bato Laur	1 2 3 2	3	1	Bato T Hali Pen Acet Bato Laur	1 1 0.5 1 0.5 0.5 3
116	11/7/03	10:03	25.57644	80.29671	SM	1	8	T Pen Anad	3 1 2	2	3	T Pen Bato	2 0.5 1	3	7	T Hali Pen Bato	2 1 0.1 0.5
117	11/7/03	10:34	25.57439	80.29158	SM	1	41	T Bato Laur Dsya	4 0.5 3 2	2	6	T Pen Bato	3 0.5 0.5	3	37	T Bato Anad Laur	4 2 2 3
118	10/17/03	8:58	25.57425	80.29739	SM	1	6	T Pen Bato	2 0.5 0.5	2	6	T H Pen	2 1 0.1	3	7	T Pen Anad	3 0.5 0.1
119	11/7/03	10:18	25.57414	80.29576	SM	1	3	T Acet Bato Anad Laur	3 0.5 1 0.1 3	2	3	T Pen	2 0.5	3	8	T Bato Laur	3 2 3
120	11/7/03	10:51	25.57339	80.28970	SM	1	6	T Bato Laur	4 3 2	2	9	T H Pen Acet Bato	3 0.1 2 1 2	3	10	T Pen Bato Laur	3 1 2 2
121	10/17/03	9:17	25.57313	80.30139	SM	1	58	T Laur	5 3	2	18	T R Pen Bato Laur	3 1 0.5 0.5 3	3	4	T Pen Bato Laur	3 0.1 1 4
122	10/21/03	8:41	25.57825	80.29229	SM	1	7	T Pen Bato	2 0.5 0.5	2	11	T Pen Bato Anad	2 0.5 0.5 0.1	3	5	T Hali Pen Bato	3 0.5 0.5 0.5
123	10/17/03	9:30	25.57264	80.29940	SM	1	9	T Pen Bato	2 0.5 0.5	2	10	T Pen Acet Bato	2 0.5 0.1 1	3	35	T Pen Bato	3 1 0.5
124	10/21/03	8:54	25.57102	80.29411	SM	1	8	T	5	2	18	T Pen Bato	4 0.1 0.5	3	19	T Pen Bato	3 0.5 0.5

DRAFT

125	10/17/03	9:43	25.57070	80.29993	SM	1	20	T Bato Laur	3 1 4	2	11	T Hali Pen Bato Laur	2 0.1 0.5 1 3	3	34	T Bato Laur	4 0.5 4
126	10/21/03	9:15	25.57027	80.28951	SM	1	5	T Pen Bato	2 1 2	2	10	T Hali Pen Bato	3 0.1 0.5 1	3	17	T Pen Bato	3 0.5 1
127	10/21/03	9:05	25.57015	80.29477	SM	1	8	T	2	2	3	T Hali Pen Bato	2 0.1 0.5 0.5	3	4	T Pen Bato	2 1 0.1
128	10/21/03	10:02	25.56966	80.29707	SM	1	3	T Pen Bato Anad Laur	3 1 0.5 0.1 2	2	11	T Pen Bato	2 1 0.5	3	5	T Bato Sarg Laur	0.5 2 2 4
129	10/21/03	10:15	25.56852	80.29743	SM	1	20	T Hali Pen Anad	3 0.1 0.5 0.1	2	4	T Pen Pen Bato Clado	3 0.1 1 0.1 0.1	3	10	T Pen	4 1
130	10/21/03	9:27	25.56841	80.29116	SM	1	8	T Pen Bato Laur	3 0.5 2 2	2	6	T Hali Bato Laur Dsya SpSp	3 0.1 0.5 0.1 1 0.1	3	20	T Hali Pen Bato	2 0.5 0.1 0.5
131	10/17/03	9:57	25.56796	80.30139	SM	1	9	T Pen Acet Bato Laur	2 1 0.5 1 2	2	1	T Hali Pen Acet Bato Laur	2 0.1 2 0.5 1 1	3	13	T Hali Pen Bato Laur	5 0.1 0.5 0.5 3
132	10/21/03	9:47	25.56684	80.29257	SM	1	9	T Pen Bato	3 1 0.1	2	5	T Pen Bato Laur	4 0.1 2 3	3	8	T Pen Bato Laur	3 0.5 0.5 2
133	10/17/03	10:09	25.56650	80.30374	M	1	24	Udo Bato Laur Dige	5 1 4 2	2	33	T Udo Bato Laur	2 4 1 4	3	27	T Udo Bato Laur	1 4 0.5 4
134	10/21/03	10:27	25.56535	80.29825	SM	1	37	T Pen	4 1	2	54	T Pen	3 1	3	20	T Pen	2 1

DRAFT

135	10/17/03	10:29	25.56404	80.30705	M	1	35	Laur	1								
136	10/17/03	10:43	25.56393	80.30423	M	1	25	H	4	2	30	H	5	3	37	H	2
								T	4	2	17	T	3	3	20	T	5
								Udo	0.5			Hali	0.5			Bato	0.5
								Bato	1			Pen	0.5			Laur	3
								Laur	3			Bato	1				
137	10/21/03	10:40	25.56330	80.29945	SM	1	6	T	2	2	10	T	2	3	6	T	2
								Pen	1			Pen	1			Pen	0.5
								Bato	1							Bato	1
								Anad	0.1							Anad	0.1
								Laur	3								
138	10/21/03	10:50	25.56201	80.30054	SM	1	5	T	1	2	7	T	2	3	4	T	2
								Pen	1			Pen	2			Pen	2
								Bato	0.5			Bato	0.5			Bato	0.5
								Laur	0.1			Laur	3				
139	10/17/03	11:01	25.56210	80.30388	SM	1	5	T	3	2	40	T	5	3	12	T	5
								Pen	0.5							Laur	2
								Bato	1							Dsya	1
								Clado	1								
								Laur	3								
140	10/21/03	11:05	25.56125	80.29704	SM	1	10	T	2	2	6	T	2	3	6	T	2
								Pen	2			Pen	2			Pen	2
								Bato	1			Bato	0.5			Bato	2
												Laur	2			Sarg	0.5
141	10/17/03	11:15	25.56035	80.30623	SM	1	3	T	2	2	7	T	2	3	2	Laur	3
								Pen	1			Udo	0.1			T	3
								Udo	0.5			Acet	0.5			Pen	0.5
								Bato	2			Bato	1			Acet	0.5
								phor				phor				Bato	2
								a				a					
142	10/21/03	11:18	25.56030	80.29989	SM	1	9	Clado	0.1			Laur	2			Laur	3
								T	3	2	9	T	2	3	5	T	2
								Hali	0.5			Pen	1			Hali	0.5
								Pen	0.5			Acet	0.1			Pen	1
								Bato	2							Pen	0.5
								Laur	5							Laur	0.5
143	10/17/03	12:02	25.55933	80.30277	SM	1	2	T	2	2	22	T	5	3	4	T	2
								Pen	1			Hali	0.5			Pen	1
								Bato	1			Pen	2			Acet	0.1
								Laur	3			Bato	0.5			Bato	0.5
												Laur	3				
144	10/21/03	11:33	25.55919	80.29774	SM	1	10	T	4	2	22	T	4	3	5	T	3
								Pen	0.5			Bato	2			Pen	1
								Bato	0.5			Anad	0.1			Bato	2

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145	10/17/03	11:29	25.55918	80.30773	M	1	11	Laur	5			Laur	5			Laur	3
								H	2	2	10	H	2	3	19	H	2
146	10/17/03	11:38	25.55802	80.30614	SM	1	16	Bato	0.1			Bato	1			Bato	0.5
								T	3	2	11	T	3	3	13	T	2
								Udo	0.1			Pen	0.5			Hali	0.5
								Bato	1			Bato	1			Pen	1
								Laur	4			Laur	3			Bato	1
147	10/17/03	11:51	25.55761	80.30473	SM	1	22									Laur	2
								T	4	2	13	T	4	3	13	T	2
								Bato	0.5			Bato	0.1			Pen	1
								Clado	0.1			Laur	3			Bato	1
								Laur	2							Laur	1
148	10/17/03	12:16	25.55637	80.30298	SM	1	6	T	2	2	9	T	3	3	8	T	3
								Hali	0.1			Hali	0.1			Pen	1
								Pen	2			Pen	2			Bato	0.5
								Bato	2			Bato	2			Laur	3
149	10/10/03	12:41	25.55396	80.30652	SM	1	86										
								T	3	2	30	T	4	3	28	T	5
								Pen	1			Pen	2			H	2
								Bato	0.5			Udo	0.1			Pen	2
								Laur	2			Laur	2			Bato	0.5
150	10/21/03	11:46	25.55354	80.30397	SM	1	4					Dsya	1				
								T	2	2	11	Hali	0.5	3	5	T	3
								Pen	2			Pen	3			Pen	3
								Bato	2			Acet	0.5			Bato	3
								Laur	4			Bato	2			Laur	2
151	11/3/03	9:08	25.55110	80.30235	SM	1	25	T	5	2	8	T	4	3	15	T	3
								Laur	3			Pen	2			Hali	1
												Laur	3			Pen	2
152	11/3/03	9:49	25.55066	80.30360	SM	1	10									Bato	0.5
								T	4	2	33	T	5	3	27	T	5
								Pen	2			Laur	4			Laur	2
								Bato	1								
								Sarg	1								
								Laur	4								
153	11/3/03	9:36	25.54930	80.30658	SM	1	20	T	5	2	26	T	5	3	20	T	4
								Pen	1			Pen	2			Pen	1
								Bato	0.5			Laur	4			Bato	0.5
								Laur	3							Laur	3
154	10/10/03	12:57	25.54917	80.30854	M	1	38	T	4	2	37	T	4	3	49	T	5
								Udo	0.5			H	1			Laur	3
								Bato	0.5			Pen	0.1				
								Chaet	1			Bato	0.5				
								Laur	1			Laur	4				
								Dsya	0.5								

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155	11/3/03	10:05	25.54924	80.31026	SM	1	12	T	4	2	15	T	4	3	14	T	5
								Pen	0.5			Udo	2			Udo	2
								Udo	0.1			Bato	0.5			Bato	0.5
								Bato	1			Laur	3			Laur	2
								Laur	2			Dsya	2			Dsya	3
156	9/17/03	13:10	25.54890	80.31457	M	1	50	H	2	2	51	T	2	3	61	T	2
								R	5			H	3			H	4
								Bato	0.5			R	3			R	4
												Bato	1			Bato	1
157	9/17/03	12:20	25.54872	80.31168	M	1	13	H	2	2	13	H	5	3	16	H	5
								Bato	2			Bato	2			Udo	0.1
																Bato	1
158	10/10/03	13:14	25.54833	80.30704	M	1	10	T	4	2	6	T	2	3	7	T	2
								Pen	1			Bato	2			H	1
								Bato	1			Laur	5			Pen	0.5
								Laur	3							Bato	1
																Laur	5
159	9/17/03	12:55	25.54731	80.31417	M	1	20	T	3	2	35	T	0.1	3	38	T	2
								H	2			H	2			H	4
												R	2			R	3
												Bato	0.5			Bato	1
160	9/17/03	12:38	25.54659	80.31178	M	1	3	T	3	2	8	T	2	3	6	T	3
								Pen	1			Pen	0.5			Udo	0.5
								Udo	0.5			Udo	0.5			Bato	0.1
								Bato	1			Laur	1			Laur	1
																SpSp	1
161	11/3/03	10:19	25.54459	80.30859	SM	1	12	T	0.5	2	9	T	4	3	9	T	3
								Bato	0.5			Pen	1			Pen	1
								Sarg	2			Bato	1			Bato	1
								Laur	5			Laur	5			Laur	4
								Dsya	2			Dsya	2				
162	11/3/03	10:32	25.54438	80.30804	SM	1	11	T	4	2	7	T	3	3	11	T	5
								Pen	2			Pen	1			Pen	2
								Laur	4			Bato	2			Bato	1
												Laur	4			Laur	4
163	11/3/03	10:46	25.54285	80.30477	SM	1	6	T	3	2	1	Pen	2	3	3	T	3
								Pen	1			Bato	1			Pen	2
								Bato	0.5			Laur	2			Acet	0.1
								Laur	4							Bato	2
								Dsya	2							Laur	5
164	11/3/03	10:57	25.54264	80.30263	SM	1	40	T	5	2	70	T	4	3	82	T	4
								H	4			H	2			Laur	2
								Pen	1			Pen	2				
								Laur	2			Laur	5				
												Dsya	2				

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165	10/24/03	8:37	25.54216	80.30946	SM	1	5	Pen Bato	2 2	2	1	T H Pen Bato Sarg Laur	0.5 0.1 2 2 0.1 2	3	4	T Pen Bato Laur	4 2 3 3
166	10/24/03	8:58	25.54096	80.31282	M	1	10	None		2	9	None		3	8	None	
167	10/24/03	9:35	25.54039	80.30882	M	1	18	T Laur	5 4	2	22	T Laur	4 4	3	9	T Bato Laur	5 2 5
168	10/24/03	9:44	25.54028	80.30639	SM	1	35	T Pen Laur	5 1 2	2	15	T Laur	5 5	3	9	T H Pen Bato Laur	4 3 0.5 0.5 4
169	10/24/03	9:10	25.54011	80.31232	M	1	2	Hali Pen	0.5 2	2	10	T H Pen	3 2 2	3	3	T H Hali Pen	0.1 3 0.5 2
170	10/24/03	9:24	25.53977	80.31071	M	1	14	T	5	2	18	T	5	3	15	T Laur	5 2
171	11/7/03	11:18	25.53844	80.30361	SM	1	12	T Pen Laur Dsya	5 3 2 2	2	5	T Pen Bato Laur	3 2 0.5 2	3	5	T Pen Bato Laur	4 2 0.5 2
172	11/3/03	11:29	25.53719	80.31213	SM	1	13	T Laur	5 0.1	2	35	T	5	3	63	T	5
173	11/3/03	11:49	25.53702	80.30849	SM	1	8	T Pen Anad Laur Dsya	3 1 0.5 4 2	2	9	T Pen Laur	4 2 3	3	10	T Pen Bato Laur	4 3 0.5 3
174	11/7/03	11:32	25.53663	80.30312	SM	1	10	T Pen Laur	4 2 2	2	15	T H Hali Pen Laur	5 4 0.1 0.1 3	3	18	T H Pen Laur	4 1 3 3
175	11/7/03	11:49	25.53614	80.30547	SM	1	4	T Pen Bato Laur	3 0.5 0.5 4	2	3	T H Pen Acet Bato Laur	1 2 2 0.5 2 2	3	3	T Pen Acet Bato Laur	3 2 0.5 1 3
176	11/3/03	12:05	25.53541	80.30779	SM	1	33	T Bato	4 0.5	2	10	T Pen	4 2	3	10	T Pen	3 3

DRAFT

177	11/7/03	11:59	25.53440	80.30534	SM	1	20	Laur	4	2	8	Bato	0.5	3	30	Bato	0.5
								T	3			Laur	3			Laur	4
								Pen	0.1			T	2			T	4
								Bato	1			Hali	0.5			Pen	0.5
								Laur	4			Pen	2			Laur	4
178	11/7/03	12:09	25.53399	80.30730	SM	1	6			2	35	Bato	1	3	6	Dsya	1
												Sarg	2				
								T	4			Laur	3			T	2
								Pen	0.5			Dsya	1			H	1
								Bato	0.1			T	5			Pen	0.5
179	11/7/03	12:20	25.53368	80.30886	SM	1	6	Laur	3	2	100	Acet	0.5	3	3	Bato	0.5
												Bato	0.5			Laur	2
								T	3			Laur	4			Hali	3
								H	1			T	5			Pen	4
								Pen	3			H	1			Bato	2
								Bato	1			Pen	0.5			Laur	2
								Laur	4			Laur	3				

DRAFT

Appendix 2: Biscayne Bay Physical Parameters

Site	WD (ft)	pH	Temp	DO	DO%	Sal (ppt)
1	10	7.54	29.67	5.12	80.4	29.35
2	3.1	7.35	30.32	4.38	68.8	28.23
3	10	7.56	29.74	5.14	80.7	29.63
4	8	7.56	29.81	5.17	80.1	29.44
5	3.2	7.49	30.44	4.44	71.6	28.3
6	8	7.57	29.9	5.09	79.6	29.14
7	2	7.51	30.83	8.14	127.3	25.65
8	10	7.55	29.92	5.42	85.3	29.39
9	10	7.61	29.88	5.99	92.8	29.55
10	1	7.48	27.2	5.31	65.3	17.7
11	5.2	7.45	27.8	3.07	43.5	20.61
12	10	7.55	28.51	3.68	54.2	22.43
13	10	7.51	28.87	4.08	59.6	22.65
14	3.7	7.43	28.47	3.89	56.4	21.98
15	10	7.6	28.93	4.1	60.5	22.95
16	3	7.42	28.67	4.37	64.4	19.17
17	0.9	7.59	27.22	3.79	53.8	22.06
18	3.9	7.51	28.38	4.93	72	21.73
19	7	7.62	28.4	3.86	57	22.84
20	7.5	7.6	28.58	4.03	59.7	22.6
21	8	7.56	28.65	3.97	57.5	22.78
22	6.8	7.52	28.81	3.97	57.4	23.68
23	5.3	7.35	29.38	4.29	71.4	24.77
24	9.5	7.49	28.76	4.23	63.1	23.36
25	6.5	7.53	29.05	4.74	72.3	24.21
26	7.7	7.55	28.78	4.82	68.8	23.59
27	4	7.6	28.9	3.91	56.2	21.92
28	5.5	7.34	29.61	5.12	77.7	24.95
29	3.2	7.3	28.14	3	42.8	21.79
30	3.1	7.47	28.28	3.38	48.3	21.17
31	1.7	7.64	31.72	8.6	136.4	23.76
32	0.7	7.59	32.48	7.17	113.3	23.16
33	3	7.61	28.73	1.6	29.9	24.63
34	3	7.87	29.88	4.02	63.8	24.83
35	1.2	7.29	30.08	3.12	46.4	21.08
36	2.1	7.54	28.71	3.38	46.7	22.28
37	1.9	7.66	28.78	3.79	52.9	23.64
38	4.2	7.53	29.06	3.83	59.1	23.75
39	1.8	7.8	29.5	6.4	96.5	22.61
40	5.5	7.8	30.37	2.63	40	24.91
41	3.5	7.98	28.73	3.3	49.3	25.78

DRAFT

42	5.4	7.85	30.06	2.26	35.6	24.88
43	5.5	7.73	30.71	2.56	37.6	24.75
44	5.3	7.76	30.82	2.42	36.4	24.56
45	5.5	7.89	27.95	2.82	41.1	24.95
46	5.5	7.83	29.24	2.79	40.6	25.16
47	4.3	8.09	28.84	4.56	68.9	26.45
48	4.2	7.94	28.33	3.77	56.5	25.47
49	1.7	7.61	30.61	5.45	83.7	21.92
50	2.8	8.18	28.58	5.03	71.9	23.25
51	6	8.25	28.95	4.93	73.7	23.21
52	5.2	8.24	28.89	5.1	76.6	23.05
53	3.4	8.2	28.77	4.91	71.7	23.22
54	4.9	7.27	28.11	4.05	61.1	19.89
55	4.7	8.26	28.77	5.52	82.5	23.09
56	2.2	7.78	31.76	8.85	136.3	21.77
57	4	8.24	28.79	5.41	79.8	23.38
58	7.4	8.24	29.05	5.03	76.2	23.12
59	4.6	8.28	28.72	5.63	82.6	23.08
60	6	8.27	28.74	5.53	83.1	23.19
61	2.2	7.56	30.47	9.41	135	11.5
62	5.3	8.29	28.92	5.77	86.5	23.16
63	4.5	8.34	28.93	6.74	100.7	23.07
64	2.1	7.29	30.41	5.16	75.2	10.49
65	7.3	8.3	28.69	6.08	90.6	23.3
66	5.8	8.39	28.93	5.22	78.8	24.77
67	4.3	8.35	29.85	4.38	67.4	25.45
68	6	8.4	29.04	4.88	74.4	24.86
69	2.9	8.34	29.83	4.33	65.9	25.43
70	2.5	8.23	29.74	3.4	50.5	22.98
71	3.3	8.34	29.51	5.3	78.5	23.81
72	6.4	8.42	28.75	5.37	81.4	26.07
73	3.9	8.42	28.83	4.73	71.7	25.68
74	5.5	8.41	28.81	4.84	73.3	25.85
75	5.8	8.43	28.79	5.03	76.3	26.09
76	4.6	8.4	28.98	4.6	69.8	25.7
77	2.8	8.37	29.92	4.83	73.6	24.14
78	7.2	8.33	27.22	5.86	87.7	28.41
79	5.5	8.41	29.04	4.87	74.1	25.91
80	5	8.41	29.09	4.99	75.9	25.82
81	7.4	8.37	27.21	6.17	92.3	28.5
82	5.7	8.41	29.11	5.13	78.27	25.99
83	5.3	8.42	29.2	4.97	75.8	25.87
84	6.6	8.4	27.18	6.35	94.9	28.35
85	2.7	8.27	29.46	4.59	69.4	23.53
86	6.1	8.41	27.16	6.22	92.5	27.84

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87	5.4	8.42	29.25	5.14	78.5	25.93
88	4.7	8.43	29.41	5.13	78.7	26.01
89	7.1	8.41	27.18	6.13	91.8	28.83
90	6.1	8.41	27.13	6.46	96.3	28.02
91	6.3	8.43	27.11	6.29	94	28.58
92	4.8	8.36	29.72	4.55	70	24.9
93	5.3	8.44	27.3	6.14	91.4	27.2
94	3.9	8.34	29.76	4.26	65.6	24.17
95	5.3	8.43	29.39	5.11	78.2	25.9
96	5.9	8.44	27.19	6.43	96	28.39
97	5	8.46	27.28	6.41	95.3	28.07
98	5.5	8.42	29.44	5.19	79.5	25.71
99	4.4	8.47	27.44	6.64	99.4	27.84
100	5.4	8.46	29.41	5.65	86.4	25.77
101	5.4	8.46	27.49	6.27	94.4	28.88
102	5.3	8.48	27.6	6.6	99.5	28.7
103	2	7.78	28.89	4.27	64.9	22.71
104	5.3	8.2	28.17	5.11	75.9	26.66
105	3.9	8.48	27.74	6.64	99.8	27.77
106	4.2	8.35	27.9	6.35	95.6	27.41
107	6.2	8.04	25.07	5.02	70.2	23.39
108	6.5	8.07	25.51	4.78	68.2	25.71
109	4.5	8	27.91	3.99	57	26.03
110	6	8.13	28.14	4.42	65.8	25.87
111	4.1	8.35	30.07	5.08	76.9	22.99
112	5.2	8.45	29.81	6.03	91.8	23.29
113	5.9	8.06	25.37	4.95	70	24.52
114	4.7	8.45	29.9	5.92	89.8	23.12
115	4.2	8.42	30.08	5.74	87.9	22.92
116	5.7	8.07	25.16	5.21	72.8	22.55
117	5.1	8.09	25.41	6.02	84.5	23.16
118	3.7	8.41	25.57	5.66	81.1	26.37
119	5.5	8.07	25.25	5.25	73.3	22.58
120	5	8.12	25.29	5.98	83.5	22.5
121	3	8.28	25.21	4.45	62.8	25.61
122	5	8.71	26.71	5.85	86.4	28.72
123	3	8.42	25.4	5.48	77.3	26.04
124	4.5	8.73	26.81	5.19	78.6	29.06
125	3	8.38	25.34	5.13	72	25.67
126	5.3	8.73	26.77	5.77	84.7	28.85
127	4.5	8.72	26.78	5.56	81.1	27.24
128	4	8.69	27.05	5.03	74.4	26.52
129	4.2	8.69	27.1	4.85	71.1	26.46
130	5.7	8.75	26.78	5.41	80.5	28.33
131	3.5	8.31	25.24	4.74	66.1	25.35

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132	4.7	8.77	26.93	5.62	82	27.76
133	2.5	8.24	25.07	4.82	68	25.13
134	3.5	8.75	27.18	5.3	78	26.56
135	1.1	7.85	24.95	3.78	52.9	23.81
136	3.1	8.29	25.29	5.11	72.3	24.91
137	4.1	8.76	27.3	5.17	76.6	26.54
138	4.1	8.78	27.45	5.3	70.6	26.5
139	3.4	8.41	25.5	5.71	81.1	24.8
140	4.3	8.79	27.42	5.4	80.8	27.1
141	2.9	8.17	25.34	5.14	72.6	24.32
142	4.3	8.76	27.63	5.38	79.5	26.73
143	4.2	8.46	25.79	6.1	87.1	24.95
144	4.1	8.77	27.76	5.33	81.3	26.52
145	1	7.68	25.04	3.55	49	21.39
146	3.4	8.26	25.49	5.46	77.3	24.17
147	3.5	8.41	25.68	5.94	84.5	24.48
148	4.5	8.46	25.84	6.17	88	24.61
149	4.1	8.26	28.46	5.81	85.6	22.06
150	3.7	8.71	27.87	5.33	78.4	24.75
151	5.3	7.91	24.93	5.88	82.2	25.12
152	5	8.03	25.18	5.7	80.1	24.06
153	4.7	7.99	25.2	5.54	78.9	26.1
154	3.9	8.27	28.57	6.1	89.7	21.55
155	3.7	8.01	25.47	5.47	78.3	25.92
156	2.5	7.45	30.53	5.99	88.9	20.9
157	1.7	7.37	30.68	7.63	117.6	20.97
158	4.5	8.25	28.75	5.97	87.8	21.06
159	2.7	7.27	30.12	5.56	83.6	20.26
160	2	7.33	30.01	5.67	87.6	21.11
161	3.7	7.94	25.5	5.29	75	24.42
162	4.5	7.91	25.57	5.24	74.2	23.89
163	4.8	7.97	25.38	5.95	84.2	24.38
164	4.8	7.96	25.41	5.91	84.5	26.03
165	6	8.46	26.89	5.34	78	25.17
166	1.8	7.92	26.24	2.24	32.1	24.12
167	5.9	8.5	26.89	5.54	81.1	25.79
168	4.5	7.99	25.46	5.53	78.1	23.9
169	6	8.21	26.68	3.71	53.8	24.57
170	6.3	8.44	26.86	4.9	71.5	25.11
171	6.4	8.02	25.49	5.06	70	20.5
172	4.1	7.96	26.19	6.49	93.3	24.11
173	4.4	7.94	25.77	5.74	80.9	22.63
174	6.6	8.02	25.58	5.24	72.9	21.07
175	5.5	8.03	25.74	5.13	71.5	20.83
176	4.7	8.04	25.64	6.15	87.3	27.87

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177	5.7	8.04	25.9	5.25	73.7	21.44
178	5.4	8.03	25.92	5.15	72.1	21.12
179	5.2	8.01	26.07	4.94	68.9	19.82

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Appendix 3: Barnes Sound Surveys

Site	Date	Time	Latitude	Longitude	ST	Quad	SD (cm)	Species	BBS	Quad	SD (cm)	Species	BBS	Quad	SD (cm)	Species	BBS
1	1/9/04	10:06	25.29077	80.39934	M	1	59	T	3	2	61	T	2	3	59	T	3
								Pen	0.5			Pen	0.5				
2	1/9/04	10:34	25.28985	80.40105	M	1	69	T	3	2	94	T	3	3	92	T	3
												Laur	1			Pen	0.5
3	1/9/04	10:41	25.2886	80.40014	M	1	86	T	2	2	90	T	2	3	84	T	2
								Pen	0.5			Bato	0.5			Bato	0.1
								Bato	0.5			SpSp	1				
4	1/9/04	10:59	25.28802	80.39832	M	1	63	T	2	2	65	T	2	3	80	T	2
								Pen	0.5			Pen	0.5			Pen	0.5
								Bato	0.5							Bato	0.5
5	1/9/04	10:50	25.28739	80.40046	M	1	73	T	2	2	78	T	2	3	90	T	2
								Pen	0.5			Pen	0.5			Pen	0.5
																Bato	0.1
6	1/9/04	11:26	25.28558	80.40276	M	1	81	T	3	2	85	T	3	3	90	T	3
7	1/9/04	11:12	25.28493	80.39836	M	1	62	T	2	2	64	T	2	3	61	T	3
								Pen	0.5			Pen	0.5			Pen	0.5
								Bato	0.5								
8	1/9/04	11:36	25.28391	80.40192	M	1	83	T	2	2	81	T	3	3	90	T	3
9	1/9/04	11:44	25.28152	80.40009	M	1	71	T	4	2	73	T	4	3	80	T	5
								Laur	2								
10	1/9/04	12:09	25.28041	80.40182	M	1	77	T	4	2	80	T	5	3	72	T	4
11	1/9/04	12:17	25.27934	80.40552	M	1	100	T	2	2	100	T	2	3	93	T	2
												Bato	1				
12	1/9/04	12:28	25.27882	80.40485	M	1	89	T	2	2	95	T	3	3	89	T	3
13	1/9/04	12:45	25.27838	80.39886	M	1	100	T	2	2	88	T	2	3	98	T	2
14	1/9/04	12:35	25.27795	80.4013	M	1	83	T	2	2	86	T	2	3	81	T	2
16	2/3/04	10:25	25.27662	80.39771	SM	1	90	Bato	4	2	78	Bato	3	3	82	Pen	0.1
								Laur	1			Laur	2			Bato	3
																Laur	1
																Spy	2
17	2/3/04	10:10	25.27544	80.39886	SM	1	100	T	2	2	100	T	2	3	100	T	2
								Bato	3			Bato	4			Bato	4
								Laur	2			Spy	1			Laur	1
20	2/3/04	10:35	25.27388	80.39901	SM	1	48	T	1	2	51	T	1	3	39	T	1
								Pen	0.5			Bato	3			Hali	0.1
								Bato	4			Laur	2			Pen	0.1
								Laur	2			Spy	3			Bato	4
								Spy	2							Laur	2
24	2/3/04	10:55	25.27147	80.3999	SM	1	78	T	1	2	73	T	1	3	90	T	1
								Hali	0.1			Pen	0.5			Bato	4
								Pen	0.5			Bato	4			Laur	1

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30	2/20/04	11:54	25.26835	80.39792	MS	1	8	Bato	3									Spy	2
								T	0.1	2	6	T	0.5	3	7			T	0.5
								Bato	0.5			Bato	0.5					Laur	5
32	2/3/04	11:10	25.26789	80.39935	MS	1	25	Laur	5			Laur	5						
								T	2	2	23	T	2	3	21			T	3
								Bato	2			Pen	0.5					Pen	0.1
41	2/20/04	12:11	25.26477	80.39809	MS	1	3					Bato	2					Bato	2
								Bato	0.5	2	1	Hali	0.1	3	1			Halop	0.5
								Laur	5			Laur	4					Laur	5
46	2/3/04	11:25	25.26203	80.40018	SM	1	37	T	2	2	37	T	2	3	47			T	2
								Pen	0.1			Bato	4					Bato	4
								Bato	4			Laur	1						
51	2/3/04	11:15	25.26153	80.3982	M	1	5	Coral	1										
								Halop	2	2	4	Bato	2	3	5			T	0.5
								Bato	1			Spy	4					Halop	0.1
								Spy	4									Bato	1
								SpSp	1									Spy	4
67	2/3/04	12:05	25.25612	80.39726	SM	1	66	H	4	2	89	H	3	3	90			H	3
								Spy	1			Pen	0.1					Spy	2
												Spy	3						
82	2/3/04	12:18	25.25056	80.39729	SM	1	46	T	2	2	32	T	2	3	35			T	1
								Bato	2			Pen	0.1					Bato	2
								Laur	2			Bato	2						
102	2/3/04	12:37	25.24587	80.39749	SM	1	100	T	3	2	64	T	3	3	60			T	3
								Pen	0.5			Pen	0.5					Acet	0.1
								Bato	2			Bato	2					Bato	2
								Spy	0.5										
116	2/24/04	10:58	25.24121	80.39845	MS	1	10	T	2	2	15	T	2	3	11			T	1
												Hali	0.5					Hali	0.5
												Pen	0.5					Pen	0.5
								Bato	1			Bato	1						
127	2/24/04	11:12	25.23856	80.39906	MS	1	15	T	4	2	20	T	3	3	22			T	3
																		Bato	0.5
128	2/24/04	11:42	25.23827	80.39768	MS	1	1	Bato	4	2	14	T	1	3	16			T	2
												Bato	2					Bato	3
												Laur	2					Laur	3
												SpSp	2						
129	1/14/04	9:22	25.23701	80.40575	M	1	100	T	5	2	100	T	5	3	100			T	5
131	2/24/04	11:29	25.23762	80.39858	MS	1	21	T	4	2	20	T	3	3	22			T	3
								Bato	1			Bato	2					Bato	2
136	1/14/04	9:05	25.23705	80.40439	M	1	100	T	5	2	100	T	5	3	100			T	5
139	1/14/04	9:33	25.23605	80.40685	MS	1	6	T	4	2	9	T	5	3	7			T	4
																		Pen	0.5
147	2/17/04	10:37	25.23409	80.4047	MS	1	19	T	2	2	20	T	3	3	32			T	3
								Bato	4			Udo	0.1					Pen	0.1

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148	2/17/04	10:23	25.2335	80.40092	MS	1	17	T	2	2	20	Bato	3			Bato	0.5
								Acet	0.1			T	2	3	16	T	2
								Bato	4			Bato	3			Acet	0.5
149	2/17/04	11:03	25.2333	80.40627	MS	1	1	Bato	4	2	2	Halop	2	3	1	Bato	3
								Laur	0.5			Pen	0.1			Bato	5
												Bato	2			Laur	0.5
152	2/17/04	10:49	25.23284	80.40411	MS	1	21	T	3	2	23	T	2	3	15	T	2
								Bato	3			Bato	3			Bato	3
153	2/17/04	11:18	25.2321	80.40633	MS	1	2	T	1	2	6	T	1	3	2	T	1
								Bato	3			Bato	3			Acet	0.1
								Laur	0.5			Laur	1			Bato	2
155	1/14/04	9:45	25.23186	80.41121	M	1	4	Pen	0.1	2	6	T	1	3	10	Laur	2
								Bato	4			Bato	4			T	2
								Laur	1			Laur	2			Pen	0.1
156	2/17/04	12:21	25.23143	80.39724	MS	1	5	T	2	2	10	T	2	3	4	Bato	4
								Bato	3			Bato	3			Laur	2
								Laur	0.5			Laur	1			T	1
157	1/14/04	9:56	25.23097	80.41068	M	1	9	Bato	4	2	8	T	1	3	4	Bato	3
								Laur	5			Bato	2			Laur	1
												Laur	4			T	1
158	2/17/04	11:32	25.23055	80.40305	MS	1	6	Bato	4	2	1	T	2	3	7	Pen	0.1
								Laur	1			Bato	3			Bato	2
												Laur	2			Laur	3
163	2/17/04	11:49	25.22939	80.4063	MS	1	5	T	1	2	4	T	0.5	3	4	T	2
								Bato	5			Bato	4			Bato	4
165	1/14/04	10:11	25.22908	80.41411	M	1	28	T	2	2	8	T	2	3	9	Laur	1
								Bato	2			Hali	0.1			T	2
												Bato	3			Bato	3
170	2/17/04	12:06	25.22751	80.40569	MS	1	4	T	1	2	10	T	2	3	6	T	2
								Bato	3			Bato	2			Pen	0.5
																Bato	4
173	2/17/04	10:00	25.2263	80.40672	MS	1	4	Bato	3	2	5	Bato	4	3	10	T	0.5
								Laur	3			Laur	2			Bato	3
176	2/13/04	11:29	25.22557	80.40611	MS	1	9	T	2	2	12	T	3	3	50	Laur	3
								Pen	0.5			Pen	0.5			T	4
								Bato	3			Bato	3			Bato	4
178	1/14/04	10:27	25.22551	80.41698	M	1	63	T	5	2	68	T	5	3	62	T	5
179	2/13/04	11:17	25.22485	80.40474	MS	1	3	T	2	2	5	T	0.1	3	3	T	1
								Bato	3			Bato	5			Bato	5

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183	2/13/04	10:46	25.22394	80.40939	MS	1	6	T	0.5	2	4	Laur	2			Laur	0.5
								Bato	3			T	0.5	3	3	Bato	4
								Laur	4			Laur	3			Laur	3
184	2/13/04	10:30	25.22367	80.41203	MS	1	6	T	1	2	2	T	2	3	1	T	2
								Halop	0.5			Halop	2			Halop	1
								Pen	0.5			Udo	0.1			Hali	0.5
								Bato	2			Bato	2			Bato	2
								Laur	2								
185	2/13/04	11:02	25.22352	80.40497	MS	1	4	Bato	3	2	5	T	0.5	3	7	T	0.4
								Laur	3			Bato	4			Bato	3
												Laur	4			Laur	3
186	1/14/04	10:42	25.22297	80.41475	M	1	35	T	3	2	38	T	3	3	32	T	3
								Pen	1			Pen	0.5			Pen	0.5
								Bato	1			Bato	2				
188	2/13/04	10:17	25.22144	80.41048	MS	1	4	Halop	2	2	7	Bato	4	3	3	Bato	3
								Bato	2			Laur	4			Laur	3
								Laur	2							Coral	2
								Coral	2								
189	1/13/04	10:40	25.22132	80.41685	MS	1	8	T	2	2	5	T	2	3	4	T	1
								Bato	1			Pen	0.5			Laur	3
								SpSp	2			Bato	2			SpSp	1
												SpSp	2				
190	2/13/04	10:03	25.22116	80.40815	MS	1	5	Bato	1	2	5	Pen	0.1	3	1	T	1
								Laur	4			Bato	4			Bato	3
												Laur	3			Laur	2
191	1/13/04	10:57	25.22096	80.41889	MS	1	10	T	1	2	20	T	1	3	23	T	2
								Bato	1			Bato	0.5			Pen	0.5
								Laur	2							Bato	0.5
192	1/14/04	10:54	25.2194	80.41454	MS	1	3	T	3	2	3	T	2	3	3	T	2
								Bato	0.5			Bato	2			Bato	1
193	2/13/04	9:51	25.21894	80.40637	MS	1	11	T	0.5	2	10	T	1	3	6	T	2
								Bato	2			Bato	4			Bato	5
								Laur	3			Laur	2			Laur	2
194	2/13/04	9:37	25.21842	80.40949	MS	1	5	Bato	3	2	10	Bato	3	3	8	T	0.1
								Laur	3			Laur	2			Bato	2
																Laur	2
195	1/14/04	11:04	25.21796	80.41422	MS	1	2	T	2	2	3	T	1	3	4	T	2
								Hali	0.5			Halop	1			Laur	2
								Bato	2			Pen	0.1			SpSp	0.1
196	1/13/04	10:27	25.21728	80.41819	MS	1	90	T	3	2	92	T	3	3	91	T	3
197	2/13/04	9:17	25.21653	80.40926	MS	1	1	Bato	3	2	4	Bato	3	3	3	T	0.1
								Laur	4			Laur	3			Bato	3
																Laur	3
198	1/13/04	10:15	25.21566	80.41864	MS	1	3	T	2	2	2	T	2	3	2	T	2

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								Bato	2				Bato	2			Pen	0.1
													Laur	2			Bato	2
																	Spy	1
199	1/29/04	10:36	25.21559	80.41184	MS	1	3	Laur	4	2	2		Laur	3	3	1	Laur	4
200	1/29/04	10:50	25.21511	80.40693	MS	1	5	Laur	5	2	8		Bato	1	3	6	Laur	5
								SpSp	2				Laur	5			SpSp	2
201	1/29/04	11:15	25.21445	80.40898	MS	1	3	Bato	2	2	2		T	0.5	3	4	T	0.5
								Laur	4				Bato	2			Bato	3
													Laur	1			Laur	4
													SpSp	2				
202	1/13/04	10:05	25.21404	80.41881	MS	1	3	T	2	2	5		T	2	3	10	T	2
								Bato	1				Hali	0.5				
													Pen	0.1				
													Bato	0.5				
203	1/29/04	11:02	25.21346	80.40759	MS	1	2	Laur	5	2	3		Laur	4	3	1	Laur	5
								SpSp	2									
204	1/29/04	10:24	25.2133	80.4129	MS	1	10	T	3	2	15		T	2	3	12	T	2
								Bato	0.5				Pen	0.5			Halop	0.5
													Bato	0.5			Bato	1
205	1/13/04	9:54	25.21209	80.4201	MS	1	77	T	1	2	87		T	1	3	88	T	0.5
								Pen	1				Laur	3			Pen	0.5
								Bato	0.5								Bato	1
								Laur	2								Laur	2
206	1/29/04	10:11	25.21229	80.4124	MS	1	2	T	0.5	2	3		T	0.5	3	2	T	0.5
								Spy	2				Bato	2			Laur	1
													Spy	1				
207	1/20/04	12:00	25.21066	80.40971	M	1	4	Spy	4	2	6		Spy	4	3	7	Spy	3
208	1/13/04	9:43	25.21021	80.41943	MS	1	7	T	2	2	4		T	2	3	10	T	2
								Bato	0.5				Hali	0.1			Pen	0.5
																	SpSp	0.1
209	1/29/04	10:01	25.21016	80.41224	MS	1	2	Spy	5	2	2		Spy	4	3	1	Halop	0.1
																	Spy	4
210	1/13/04	9:29	25.2094	80.41882	MS	1	30	T	2	2	24		T	1	3	33	T	2
								Halop	2				Halop	2			Halop	3
								Pen	0.5				Hali	1				
													Pen	1				
211	1/29/04	9:46	25.20917	80.41422	MS	1	8	T	2	2	7		T	1	3	9	T	1
								Bato	2				Bato	2			Bato	0.5
																	SpSp	4
212	1/20/04	11:44	25.20925	80.40747	M	1	2	T	0.5	2	3		T	1	3	4	T	0.5
								Acet	0.5				Bato	1			Bato	2
								Bato	2									
213	1/29/04	9:38	25.20803	80.41157	MS	1	1	Bato	1	2	2		Bato	0.5	3	1	Bato	1
214	1/29/04	9:11	25.20819	80.41467	MS	1	3	Bato	1	2	2		Bato	2	3	4	T	1
								Spy	2				Spy	3			Bato	1

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215	1/20/04	11:31	25.20754	80.40775	M	1	10	T	3	2	6	T	3	3	7	Spy	1
												Pen	0.5			T	3
216	1/13/04	9:17	25.20655	80.41882	MS	1	7	T	2	2	6	T	1	3	5	T	1
								Pen	0.1			Hali	0.1			Bato	1
								Bato	0.5								
217	1/30/04	11:19	25.20601	80.41241	M	1	16	T	1	2	2	Acet	0.5	3	4	Halop	1
								Bato	2			Bato	2			Pen	0.1
218	1/20/04	11:15	25.20592	80.40151	M	1	5	T	2	2	4	T	2	3	8	Bato	2
								Acet	0.5			Bato	2			T	2
								Bato	0.5							Acet	0.1
219	1/20/04	11:05	25.20557	80.40588	M	1	10	T	4	2	18	T	5	3	22	Bato	2
220	1/30/04	11:06	25.20484	80.40872	M	1	38	T	3	2	40	T	3	3	48	T	5
												Halop	2			T	4
221	1/30/04	10:57	25.20456	80.41127	M	1	13	T	1	2	16	Bato	1	3	11	Halop	2
								Bato	1			Spy	1			T	2
222	1/20/04	10:35	25.20426	80.40672	M	1	11	T	2	2	10	T	3	3	14	Bato	1
								Pen	0.5			Halop	2			T	3
												Pen	0.5				
223	1/30/04	10:48	25.20312	80.41295	M	1	4	T	2	2	12	T	2	3	13	T	2
								Bato	1			Bato	1			Bato	1
224	1/20/04	10:21	25.20287	80.40376	M	1	23	T	3	2	20	T	2	3	12	T	1
								Pen	0.1								
225	1/13/04	8:53	25.20283	80.41865	MS	1	4	T	2	2	8	T	2	3	9	T	2
								Pen	0.5			Pen	1			Pen	0.5
								Bato	1			Bato	0.5			Bato	1
226	1/20/04	10:08	25.20251	80.40891	M	1	30	T	3	2	31	T	2	3	24	T	3
																Pen	0.5
																Bato	0.1
227	1/20/04	9:54	25.20228	80.40483	M	1	20	T	2	2	15	T	2	3	12	T	2
								Pen	0.5			Pen	0.5			Pen	0.5
228	1/30/04	10:10	25.20128	80.40939	M	1	12	T	3	2	12	T	2	3	12	T	1
								Halop	0.5								
229	1/30/04	10:24	25.20126	80.41253	M	1	23	T	2	2	25	T	2	3	15	T	3
												Halop	0.1			Halop	0.5
230	1/30/04	10:03	25.19963	80.40888	M	1	17	T	2	2	11	T	2	3	14	T	2
231	1/30/04	9:49	25.19904	80.41226	M	1	30	T	2	2	18	T	3	3	21	T	2
								Pen	0.5			Pen	0.1				
232	1/20/04	9:30	25.19873	80.40199	M	1	20	T	3	2	45	T	3	3	32	T	3
								Pen	0.1			Pen	0.5				
233	1/30/04	9:35	25.19646	80.40858	M	1	58	T	2	2	58	T	3	3	40	T	3
																Pen	0.5
234	1/30/04	9:23	25.19611	80.4085	M	1	38	T	3	2	40	T	2	3	34	T	2
								Hali	0.1								

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235	1/23/04	10:36	25.29117	80.39233	M	1	100	Pen Bato Spy	0.1 2 2	2	95	H Bato Spy	1 2 2	3	100	Bato Spy	1 4
236	1/23/04	11:39	25.29266	80.38828	M	1	100	T Spy	2 2	2	100	T Spy	3 1	3	80	T Spy	3 2
237	1/23/04	11:02	25.29145	80.39333	M	1	100	T H	1 1	2	100	H	1	3	100	T H	2 1
238	1/23/04	11:55	25.29143	80.38638	M	1	65	T H Bato	0.5 3 0.1	2	68	H	3	3	80	T	3
239	1/23/04	12:56	25.29073	80.38002	M	1	100	T Bato	4 1	2	100	T	3	3	100	T	4
240	1/23/04	12:19	25.2909	80.38246	M	1	80	T Bato	4 1	2	67	T Spy	5 2	3	100	T	5
241	1/23/04	11:26	25.29079	80.39003	M	1	100	H Spy	2 1	2	100	T H Spy	1 1 2	3	100	T H	0.5 2
242	1/23/04	12:45	25.29036	80.38029	M	1	100	T Pen	5 0.5	2	100	T	4	3	100	T Hali	4 0.5
243	2/27/04	11:15	25.28969	80.38357	M	1	57	T Pen	3 0.5	2	64	T Pen	3 1	3	90	T Pen Bato	4 0.5 1
244	2/27/04	11:03	25.28943	80.38549	M	1	32	T Udo Bato	2 0.1 0.5	2	30	T	4	3	30	T Pen Bato	3 0.5 1
245	2/27/04	10:18	25.28923	80.39233	M	1	40	T Pen	3 0.5	2	38	T Pen	3 0.5	3	60	T Pen	2 0.5
246	1/23/04	13:12	25.28907	80.37737	M	1	100	T	5	2	100	T	5	3	100	T	5
247	2/27/04	10:34	25.28864	80.39007	M	1	42	T Pen Udo	1 0.5 0.1	2	44	T Pen Udo	1 0.5 0.5	3	37	T Acet	1 0.1
248	1/23/04	13:22	25.28837	80.37792	M	1	87	T Halop	5 3	2	67	T Halop	4 3	3	96	T Halop	4 3
249	2/27/04	9:54	25.28762	80.39398	M	1	100	T	4	2	100	T	4	3	100	T	4
250	2/27/04	10:51	25.28786	80.38699	M	1	10	T Pen Bato	3 0.1 0.5	2	7	T Pen	4 0.1	3	6	T	4
251	2/27/04	9:42	25.28753	80.39455	M	1	100	T Pen	3 0.5	2	100	T Bato	3 1	3	100	T	3
252	2/27/04	10:07	25.28706	80.39025	M	1	37	T Pen	4 0.5	2	25	T Halop	5 2	3	24	T Pen	4 0.5
253	2/4/04	10:15	25.2847	80.37866	M	1	60	T	5	2	54	T	5	3	55	T	5
254	2/4/04	11:08	25.28463	80.38663	M	1	30	T	5	2	35	T	5	3	20	T	5
255	2/4/04	10:55	25.28404	80.38615	M	1	40	T	5	2	50	T	5	3	37	T	5

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256	2/4/04	10:26	25.28361	80.37984	M	1	44	Bato	0.5										
257	2/4/04	10:44	25.28271	80.38138	MS	1	1	T	5	2	34	T	5	3	37	T	5		
								T	2	2	1	T	0.5	3	1	T	0.5		
								Bato	2			Bato	4			Bato	3		
258	2/4/04	11:17	25.28265	80.39227	M	1	15	T	2	2	20	T	1	3	22	T	2		
								Pen	0.1			Pen	0.5			H	0.1		
								Bato	1			Bato	0.5			Pen	0.5		
259	2/4/04	11:28	25.28235	80.3955	M	1	40	T	3	2	50	T	3	3	55	T	3		
260	2/4/04	11:42	25.28116	80.38991	MS	1	5	Bato	4	2	4	Bato	2			Pen	0.1		
								Laur	4			Bato	4	3	3	Pen	0.1		
												Laur	4			Bato	4		
261	2/20/04	9:40	25.28096	80.38222	MS	1	21	T	5	2	23	T	5	3	26	T	5		
262	2/20/04	10:12	25.28074	80.38574	MS	1	1	Acet	0.1	2	2	Bato	2			Bato	4		
								Bato	3			Acet	0.1	3	1	Laur	2		
								Laur	1			Bato	4						
263	2/20/04	10:27	25.28043	80.38718	MS	1	2	Acet	0.5	2	1	Anad	2						
								Bato	4			Laur	1			Bato	4		
												T	0.5	3	1	Laur	1		
												Udo	0.1						
												Bato	5						
264	2/4/04	11:51	25.28025	80.39133	MS	1	2	T	2	2	3	Laur	1			Bato	4		
								Hali	0.1			T	0.1	3	1	Laur	3		
								Bato	3			Hali	0.1						
								Laur	4			Bato	2						
265	2/20/04	9:56	25.28013	80.38528	MS	1	29	T	2	2	15	SpSp	2						
								Bato	2			T	2	3	6	T	0.5		
								Laur	2			Bato	2			Bato	4		
266	2/4/04	12:07	25.27983	80.39133	MS	1	1	T	0.5	2	1	Laur	2			Laur	2		
								Pen	0.5			Bato	3	3	2	T	0.1		
								Bato	2			Laur	4			Bato	2		
								Laur	4							Laur	3		
267	2/20/04	10:41	25.27942	80.39457	M	1	23	T	0.5	2	30	T	1	3	30	T	1		
								Halop	0.1			Halop	2			Pen	0.5		
								Hali	0.5			Pen	0.1			Bato	2		
								Pen	0.1			Bato	2						
								Bato	3			Laur	2						
								Laur	2										
268	2/20/04	10:54	25.27812	80.39259	MS	1	4	T	1	2	7	Pen	0.1	3	5	T	0.5		
								Pen	0.5			Bato	3			Bato	3		
								Acet	0.1			Laur	2			Laur	3		
								Bato	3										

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269	2/20/04	11:39	25.27583	80.38442	MS	1	18	Laur T Pen Acet Bato	3 4 0.5 0.5 3	2	23	T Acet Bato	5 0.5 3	3	26	T Bato	5 3
270	2/20/04	11:11	25.27532	80.39311	MS	1	5	T Bato Laur	0.5 4 3	2	2	Halop Bato Laur	0.5 4 3	3	1	Halop Bato Laur	0.5 4 2
271	2/20/04	11:25	25.27527	80.38861	MS	1	3	Halop Bato Laur	1 4 1	2	2	T Bato Laur	0.5 4 1	3	4	T Halop Bato Laur	0.1 0.5 4 0.5
272	2/11/04	10:27	25.27372	80.39091	Rk	1	0	Bato Laur	1 2	2	2	T Bato Laur	0.1 0.1 0.1	3	1	Bato Laur	2 2
273	2/11/04	10:13	25.27322	80.39323	Rk	1	0	Hali Bato Laur	0.1 4 1	2	1	T Pen Bato Laur	2 0.5 2 2	3	0	Bato Laur	4 2
274	2/11/04	10:49	25.27314	80.38537	Rk	1	0	Bato Laur	3 2	2	0	Acet Bato Laur	0.1 5 2	3	0	Bato Laur	5 2
275	2/11/04	10:38	25.27289	80.3883	MS	1	1	T Pen Acet Bato	2 0.1 0.1 4	2	1	T Bato	1 3	3	1	T Hali Bato	0.5 0.1 5
276	2/11/04	11:01	25.2721	80.38699	MS	1	2	Acet Bato Laur	0.1 5 2	2	3	Bato Laur	4 2	3	4	Bato Laur	5 3
277	2/11/04	11:16	25.27274	80.3914	MS	1	2	Bato Laur	3 3	2	1	Bato	4	3	1	T Bato Laur	0.1 3 1
278	2/11/04	11:31	25.26963	80.39475	MS	1	1	Bato Laur	3 4	2	1	Bato Laur	4 3	3	2	Bato Laur	4 4
279	2/11/04	11:44	25.2696	80.39308	M	1	2	Halop Bato	2 4	2	2	Halop Bato	2 3	3	3	Halop Bato	1 3
280	2/11/04	12:14	25.26804	80.38641	Rk	1	1	T Acet Bato Laur	0.5 0.1 4 2	2	0	T Bato	0.1 4	3	0	T Bato Laur	0.1 5 2
281	2/11/04	11:59	25.26734	80.38902	Rk	1	0	Halop Bato Laur	1 2 0.5	2	0	Bato Laur	1 1	3	0	Pen Bato Laur	0.1 0.5 0.5
282	2/20/04	13:05	25.26617	80.38566	Rk	1	0	Halop Bato	0.5 2	2	0	Bato	3	3	0	Bato	3

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283	2/20/04	12:39	25.26559	80.39115	MS	1	10	T	1	2	6	T	2	3	10	T	1
								Pen	0.1			Pen	0.1			Pen	0.5
								Bato	4			Bato	5			Bato	4
284	2/20/04	12:24	25.26539	80.39512	MS	1	10	Bato	3	2	5	T	0.1	3	8	Hali	0.1
								Laur	2			Bato	4			Bato	2
								SpSp	1			Laur	1			Laur	3
285	2/20/04	12:51	25.26531	80.38805	MS	1	1	Bato	4	2	3	T	0.5	3	1	Bato	4
												Bato	5				
												Laur	2				
286	2/26/04	9:30	25.2641	80.38613	MS	1	1	T	1	2	1	T	0.5	3	1	T	1
								Bato	2			Bato	1			Bato	3
287	2/26/04	9:54	25.26247	80.39116	Rk	1	0	Bato	2	2	0	Bato	3	3	0	T	0.1
																Bato	4
288	2/26/04	10:07	25.26072	80.39516	MS	1	2	T	0.5	2	2	T	0.5	3	1	Bato	2
								Bato	2			Bato	3				
289	2/26/04	10:47	25.26011	80.38982	MS	1	1	Bato	3	2	1	Bato	4	3	1	Bato	4
								Laur	2			Laur	2			Laur	1
290	2/26/04	11:02	25.25959	80.38524	MS	1	1	Bato	2	2	2	Bato	3	3	1	Bato	2
291	2/26/04	10:33	25.25913	80.39121	MS	1	2	Bato	3	2	1	T	0.5	3	2	T	0.5
												Bato	4			Bato	4
292	2/26/04	10:19	25.25837	80.39411	MS	1	1	T	2	2	4	T	2	3	5	T	1
								Bato	3			Bato	3			Bato	2
								SpSp	2			SpSp	2				
293	2/26/04	11:18	25.25816	80.38457	Rk	1	0	Bato	4	2	0	Bato	3	3	0	Bato	4
294	2/26/04	11:46	25.2572	80.39108	MS	1	1	T	0.5	2	4	Bato	2	3	1	Bato	3
								Bato	3								
295	2/26/04	12:19	25.25652	80.39379	MS	1	2	T	0.5	2	2	T	0.5	3	2	T	0.5
								Bato	3			Bato	2			Bato	3
296	2/26/04	12:03	25.25636	80.39188	MS	1	1	Bato	2	2	1	Bato	2	3	1	Bato	2
297	2/26/04	11:34	25.25603	80.38431	MS	1	1	Acet	0.1	2	1	Bato	3	3	2	Bato	2
								Bato	4								
298	2/26/04	12:33	25.25517	80.39437	MS	1	1	T	0.5	2	2	Bato	3	3	2	T	1
								Bato	2							Bato	3
299	2/10/04	10:40	25.25304	80.38857	Rk	1	0	Bato	4	2	0	Bato	4	3	0	T	0.5
								SpSp	3			Laur	3			Bato	4
																Laur	2
300	2/10/04	10:12	25.25297	80.39541	MS	1	2	T	2	2	8	T	2	3	10	T	2
								Bato	2			Bato	1			Laur	5
								Laur	4			Laur	3				
301	2/10/04	10:55	25.25245	80.39273	MS	1	1	Bato	3	2	5	Bato	3	3	4	Bato	3
																Laur	2
302	2/10/04	11:06	25.25139	80.39273	MS	1	8	T	2	2	9	T	3	3	10	T	3
								Bato	3			Bato	3			Bato	4
								Laur	3			Laur	2				
303	2/11/04	12:32	25.24971	80.38563	MS	1	5	Bato	4	2	4	T	2	3	2	Bato	3

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								Laur	2					Bato	4			Laur	2
304	2/10/04	11:19	25.24938	80.39385	MS	1	6	T	3	2	10			Laur	2	3	15	T	3
								Bato	2					Bato	2			Bato	1
305	2/10/04	11:56	25.24941	80.38866	Rk	1	0	Laur	4					Laur	4			Laur	4
306	2/10/04	11:43	25.2485	80.39035	MS	1	5	Bato	4	2	0			Bato	4	3	0	Bato	4
								T	1	2	7			T	0.5	3	6	T	0.5
								Bato	3					Bato	2			Bato	2
								Laur	2					Laur	4			Laur	3
307	2/10/04	12:11	25.24826	80.38743	MS	1	1	Bato	4	2	2			Bato	4	3	1	Bato	4
														Laur	2			Laur	2
																		SpSp	3
308	2/10/04	11:31	25.24794	80.39503	MS	1	13	Bato	1	2	20			T	1	3	25	T	2
								Laur	4					Laur	3			Laur	3
309	2/24/04	10:30	25.2445	80.39558	MS	1	7	T	1	2	3			T	1	3	4	T	1
								Bato	2					Halop	2			Bato	2
								Laur	2					Bato	2			Laur	3
310	2/24/04	10:16	25.24319	80.39211	MS	1	6	Bato	4	2	3			Bato	3	3	2	T	0.5
								Laur	1					Laur	1			Bato	3
																		Laur	1
311	2/24/04	10:43	25.2423	80.39539	MS	1	4	Acet	0.1	2	5			T	3	3	4	T	2
								Bato	3					Acet	0.1			Bato	3
								Laur	2					Bato	3			Laur	2
312	2/24/04	10:02	25.24202	80.39017	MS	1	2	T	2	2	3			T	1	3	5	T	2
								Bato	3					Bato	3			Bato	4
														Laur	2				
313	2/24/04	9:40	25.24168	80.38725	MS	1	10	T	3	2	15			T	2	3	19	T	2
								Bato	3					Bato	2			Bato	3
314	2/24/04	12:32	25.23842	80.38937	MS	1	10	T	3	2	10			T	2	3	7	T	0.5
								Bato	3					Bato	3			Halop	1
														Laur	2			Bato	4
315	2/24/04	11:59	25.23672	80.3924	MS	1	10	T	1	2	8			Bato	3	3	1	Bato	4
								Bato	4					Laur	3			Bato	4
								Laur	2									Laur	2
316	2/24/04	12:16	25.23622	80.39127	MS	1	1	T	2	2	1			T	0.5	3	1	T	0.5
								Bato	3					Bato	4			Bato	5
																		Laur	2
317	2/24/04	12:47	25.23573	80.38932	MS	1	10	T	3	2	10			T	3	3	11	T	1
								Acet	0.1					Bato	3			Acet	0.5
								Bato	3					Laur	1			Bato	4
																		Laur	2
318	2/24/04	13:04	25.23493	80.39053	MS	1	10	T	3	2	11			T	3	3	12	T	2
								Bato	4					Bato	4			Bato	3

Appendix 4: Barnes Sound Physical Parameters

Site	WD (ft)	pH	Temp	DO	DO%	Sal (ppt)
1	1.2	7.92	19.73	5.25	66.9	23.19
2	2	7.96	19.8	6.74	85.4	26.54
3	2.5	8.01	20.26	7.15	92.5	27
4	3.2	8.02	20.54	6.54	85.3	27.11
5	2.4	8	20.05	6.81	88.3	27.21
6	3.2	7.9	19.19	5.92	74.8	24.91
7	3.5	7.99	20.33	6.4	83.7	26.06
8	3.8	7.99	20.59	6.91	88.8	25.26
9	2.9	8.03	20.15	6.83	88.1	26.09
10	2.8	7.98	20.64	6.45	83.6	24.77
11	1.4	7.89	20.87	5.26	66.2	22.29
12	2.8	7.97	20.36	6.58	84.5	24.28
13	1.4	7.97	20.82	6.48	84.9	26.76
14	3.2	8	20.18	6.67	86.8	26.27
16	1.5	8.06	22.81	6.25	86	27.2
17	1.2	8.19	23.38	6.6	91.8	26.99
20	2.8	8.08	22.65	6.57	87.7	26.58
24	1.9	8.11	22.91	6.99	97.2	26.88
30	6.7	7.47	18.98	6.8	86.7	27.26
32	5.7	8.11	22.37	6.19	85.9	27.28
41	6.8	7.48	19.17	6.72	86	27.28
46	2.8	8.15	22.68	6.76	92.8	27.31
51	6.6	8.11	22.18	6.22	84.5	27.34
67	3	8.17	22.49	7.32	98.5	27.28
82	4.3	8.15	22.45	6.96	95	26.92
102	1.2	8.17	24.26	7.51	103	27.13
116	6.7	7.45	23.43	6.67	93.3	27.79
127	7.5	7.46	23.47	6.7	93.3	27.72
128	8	7.46	23.46	6.92	96.2	27.75
129	2.9	9.02	18.47	4.35	54.9	27.25
131	7.8	7.46	23.46	6.75	94.3	27.75
136	2.9	9.02	18.08	3.97	49.4	27.3
139	5.2	9.39	18.31	7.48	94.5	27.15
147	7.7	8.15	21.96	6.46	86.2	27.16
148	8.4	8.16	22.04	6.37	85.6	27.23
149	7.5	8.22	22.02	6.36	86.1	27.29
152	7.8	8.21	22.01	8.21	86.3	27.27
153	8.1	8.23	22.01	6.19	83.8	27.46
155	7.8	9.36	18.19	7.88	98.3	26.2
156	8.4	8.15	22.18	6.77	91.4	27.71
157	7.9	9.34	18.08	7.74	96.2	25.99

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158	8	8.22	22.14	6.43	86.9	27.4
163	8	8.24	22.12	6.59	89.9	27.52
165	5.8	9.39	17.96	7.63	94.5	25.7
170	8	8.25	22.1	6.52	87.9	27.59
173	8.2	8.13	21.75	6.87	91.9	27.24
176	7.7	8.09	24.28	6.86	96.3	26.58
178	4.8	9.37	17.92	7.42	91.8	25.73
179	7.8	8.08	24.11	6.25	87.8	27.09
183	7	8.04	24.2	5.35	75	26.84
184	6.9	8.1	23.94	6.65	92.8	26.7
185	7.7	8.08	23.97	5.86	82.2	27.33
186	7.3	9.38	18.42	7.56	94.6	26.05
188	7.4	8.15	24.02	6.75	94.4	26.67
189	> 6	9.32	18.07	7.57	93.7	25.58
190	7.3	8.12	23.96	6.65	92.9	26.82
191	> 6	9.35	18.04	7.63	94.5	24.96
192	8.3	9.38	18.3	7.41	92.4	25.94
193	7.5	8.14	23.67	7.11	98.6	26.68
194	7.5	8.16	23.72	6.88	95.7	26.73
195	8.4	9.38	18.22	7.71	95.8	25.56
196	2.1	9.34	17.95	7.92	96.9	25.2
197	7.2	8.18	23.54	6.51	90.4	26.93
198	4.2	9.3	17.62	7.59	93.1	25.14
199	7.2	8.27	18.51	7.44	93.5	26.37
200	7.8	8.3	18.72	7.39	93.2	26.25
201	7.7	8.29	18.7	7.38	93.2	26.45
202	> 6	9.33	17.85	7.43	91.3	25.3
203	8.1	8.29	18.67	7.46	93.6	26.31
204	7.7	8.25	18.52	7.44	93.5	26.46
205	2.4	9.32	17.61	7.35	90	25.16
206	7.9	8.26	18.61	7.52	94.7	26.48
207	8.6	7.36	20.26	7.08	91.9	26.05
208	> 6	9.34	17.92	7.78	95.9	25.39
209	7.5	8.26	18.54	7.54	94.9	26.48
210	> 6	9.31	17.71	7.69	94.2	25.42
211	7.2	8.26	18.43	7.5	94.1	26.39
212	8.8	7.36	20.2	7.14	92.6	26.11
213	7.8	8.26	18.45	7.72	96.7	26.47
214	7.3	8.27	18.47	7.52	94.4	26.51
215	8.7	7.35	20.22	7.04	90.7	26.14
216	> 6	9.3	17.65	7.68	94.5	25.47
217	7.5	8.3	19.16	6.96	88.5	26.55
218	8.9	7.34	20.24	6.99	90.8	26.19
219	8.5	7.34	20.23	7.01	91	26.1
220	7.7	8.31	19	7.16	90.9	26.52

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221	7.4	8.3	19.06	7.11	90.4	26.52
222	8.4	7.35	20.16	7	90.8	26
223	7.1	8.3	18.98	7.23	91.7	26.49
224	8.4	7.33	20.14	6.81	88.2	26.04
225	4.9	9.34	17.85	7.57	93.2	25.44
226	8	7.35	20.07	7.07	91.3	25.85
227	8.3	7.34	20.12	6.9	89.3	26
228	7.4	8.3	18.95	6.92	87.7	26.56
229	7.3	8.3	18.98	7.07	89.7	26.52
230	7.4	8.3	18.93	7.08	89.7	26.55
231	7	8.31	18.72	7.39	93.3	26.45
232	7.9	7.3	20.12	6.64	85.9	25.79
233	6.6	8.3	18.51	7.38	92.8	26.51
234	6.4	8.31	18.59	7.24	91.1	26.48
235	1.3	7.97	16.43	6.69	80.2	25.64
236	2.4	8.18	18.89	7.62	96.7	26.51
237	1.5	8	16.67	6.66	80.3	25.93
238	2.7	8.13	19.3	6.59	84.6	27.31
239	2.3	8.1	18.55	7.29	93	28.01
240	3.3	8.11	18.7	6.64	84.6	27.92
241	1.5	8.12	18.21	7.41	92.1	25.56
242	2.1	8.11	18.9	7.27	93	28.01
243	5.1	9.11	23.44	4.97	69	27.16
244	5.1	9.12	23.46	5.09	71.1	28.34
245	3.6	9.05	23.06	5.17	71.6	28.09
246	1.9	8.13	18.96	6.15	78.2	28.01
247	4.4	9.05	23.06	5.39	74.7	28.12
248	5.2	8.2	19.07	8.45	108.1	27.55
249	1.1	8.87	21.85	5.73	77	26.97
250	5.5	9.11	23.32	5.21	72.5	28.25
251	2.7	9.1	21.97	5.82	78.6	27.34
252	5	8.99	23.09	5.76	79.8	28.14
253	6.2	8.29	22.9	6.87	94.3	27.09
254	6.8	8.34	23.07	7.17	98.8	27.3
255	6.8	8.34	22.9	7.02	96.5	27.28
256	6.9	8.32	22.85	6.97	95.7	27.21
257	6.9	8.34	22.78	6.94	95.1	27.22
258	5.9	8.33	23.34	6.84	94.4	26.92
259	4.3	8.31	23.83	6.53	90.7	26.05
260	6.4	8.37	23.06	7.16	98.6	27.22
261	7.4	7.39	18.49	6.99	89.4	29.3
262	7	7.43	18.53	7.1	89.8	27.58
263	6.9	7.42	18.63	7.12	90.7	27.88
264	6.1	8.37	23.15	7.24	99.9	27.21
265	7	7.43	18.58	7.12	90.3	27.74

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266	6.6	8.36	23.28	7.1	98.1	27.12
267	4.3	7.38	18.7	6.62	83.8	26.82
268	6.8	7.41	18.65	6.78	85.9	27.12
269	7.4	7.42	18.83	6.62	85.5	29.78
270	6.8	7.41	18.71	6.78	85.9	27.15
271	7	7.46	18.78	7.12	90.7	27.93
272	6	8.43	22.31	6.92	94.1	27.18
273	6.1	8.44	22.22	6.98	94.8	26.94
274	6.9	8.43	22.18	6.9	93.7	27.4
275	6.5	8.44	22.24	6.93	93.5	26.39
276	6.5	8.39	22.28	6.76	92.6	26.92
277	6	8.37	22.45	6.99	95.5	27.67
278	5.9	8.4	22.46	6.92	94	26.72
279	6.3	8.47	22.51	6.85	93	26.7
280	6.9	8.42	22.54	6.76	92.5	27.26
281	6.6	8.43	22.54	6.83	93.1	27.04
282	7.8	7.45	19	6.91	89.1	28.97
283	7.9	7.46	18.99	6.9	88.3	27.81
284	7.5	7.47	19.1	6.82	87.1	27.22
285	7.6	7.46	18.94	6.98	89.5	28.39
286	7.5	8.58	23.65	5.9	82.8	28.55
287	7.5	8.56	23.7	5.79	81.3	28.29
288	7.5	8.57	23.77	5.63	79.2	28.32
289	7.6	8.59	23.83	5.83	82	28.28
290	8	8.63	23.87	6.09	85.7	28.28
291	7.6	8.59	23.79	5.79	81.3	28.29
292	6.9	8.59	23.79	5.74	80.7	28.31
293	8.1	8.63	23.89	6.11	86	28.39
294	7.5	8.6	24	5.82	82.1	28.26
295	7	8.58	24.17	5.67	80.3	28.46
296	7.5	8.61	24.04	5.78	81.6	28.38
297	8.1	8.64	23.85	6.05	85.2	28.43
298	7.2	8.64	24.29	5.79	82.2	28.47
299	7.6	8.8	21.22	5.15	68.9	26.75
300	6.8	8.73	21.45	7.64	101.6	26.78
301	7.7	8.8	21.32	7.46	100.4	26.76
302	7.7	8.81	21.48	6.13	81.8	26.74
303	8.4	8.48	22.3	6.91	93.8	27.12
304	7.5	8.82	21.5	6.92	91.5	26.74
305	8.2	8.82	21.49	5.02	67	26.9
306	8.1	8.83	21.44	7.14	100.9	26.83
307	8.4	8.83	21.52	5.16	71.3	26.8
308	7.5	8.79	21.59	6.41	95.4	26.81
309	8	7.45	23.2	6.93	96.3	28.32
310	8	7.43	23	6.83	94.7	28.26

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311	8	7.44	23.23	6.74	95.1	28.9
312	8.7	7.41	27.94	7.04	97.3	28.53
313	9.1	7.36	23.01	6.88	95.2	29.15
314	9.4	7.47	23.23	7	96.8	28.85
315	8.3	7.48	23.19	7.14	98.7	28.32
316	8.6	7.47	23.22	7.02	97	28.5
317	9	7.48	23.18	7.27	101.8	28.76
318	8.5	7.48	23.25	7.24	100.3	28.59

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Appendix 5: Manatee Bay Surveys

Site	Date	Time	Latitude	Longitude	ST	Quad	SD (cm)	Species	BBS	Quad	SD (cm)	Species	BBS	Quad	SD (cm)	Species	BBS
15	11/20/03	10:25	25.27639	80.41344	M	1	90	T	2	2	65	T	2	3	71	T	2
18	11/20/03	10:33	25.27533	80.41209	M	1	100	T	2	2	100	T	2	3	90	T	2
19	11/20/03	10:13	25.27527	80.41358	M	1	85	T	2	2	100	T	2	3	100	T	2
21	11/20/03	10:54	25.27358	80.40768	M	1	100	T	2	2	90	T	2	3	90	T	2
								Bato	1							Dasy	1
22	11/20/03	10:43	25.27229	80.41152	M	1	90	T	2	2	80	T	2	3	95	T	2
23	11/20/03	12:04	25.27222	80.41676	M	1	88	T	3	2	100	T	2	3	100	T	3
25	11/20/03	11:08	25.27229	80.40556	M	1	76	T	2	2	74	T	2	3	65	T	2
26	11/20/03	11:51	25.27138	80.41474	M	1	60	T	1	2	78	None		3	77	None	
								H	1								
27	11/20/03	12:16	25.2712	80.41743	M	1	80	T	3	2	87	T	2	3	85	T	2
28	11/20/03	12:31	25.2702	80.41457	M	1	100	None		2	100	T	2	3	100	T	2
								H					1				
29	11/21/03	9:58	25.26872	80.41039	M	1	100	T	3	2	100	T	4	3	100	T	4
								Sarg	1				1				
31	11/21/03	10:12	25.26787	80.41089	M	1	90	T	3	2	92	T	3	3	94	T	2
								H	2							H	2
33	11/21/03	9:20	25.26737	80.40701	M	1	83	T	4	2	85	T	4	3	80	T	4
34	12/5/03	8:53	25.26662	80.40478	M	1	80	T	3	2	84	T	2	3	90	T	3
								Pen	0.1							Laur	2
								Laur	1								
35	11/20/03	12:43	25.26637	80.41672	M	1	94	T	3	2	90	T	2	3	88	T	3
36	12/5/03	9:56	25.26561	80.41301	M	1	34	T	3	2	41	T	3	3	50	T	3
								H	2								
								Bato	0.5								
37	12/5/03	9:26	25.26532	80.40717	M	1	49	T	3	2	49	T	3	3	40	T	2
																Bato	0.1
38	12/5/03	9:41	25.26515	80.41126	M	1	70	T	2	2	70	T	3	3	85	T	2
								Gracil	2							Gracil	3
												Bato	0.5				
39	12/5/03	9:15	25.2651	80.40499	M	1	58	T	3	2	60	Gracil	2				
												T	3	3	55	T	2
												Bato	0.5			Bato	0.5
40	11/21/03	10:38	25.26412	80.41674	M	1	74	Gracil	3	2	98	Pen	2	3	90	Sarg	2
												Gracil	4			Pen	2
42	11/21/03	10:53	25.26322	80.41913	MS	1	75	Gracil	3	2	76	Gracil	0.5	3	78	Gracil	4
								Spy	2							Gracil	2
43	12/5/03	10:21	25.26337	80.40865	MS	1	26	T	3	2	22	T	2	3	32	Spy	2
								Hali	3			Hali	2			T	4
								Bato	2			Bato	1			Hali	2
44	11/21/03	11:03	25.26314	80.42052	SM	1	90	T	3	2	90	T	4	3	93	Bato	0.5
																T	3

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								H	2					Spy	2				H	3
																			Spy	2
45	12/5/03	10:09	25.26303	80.41161	M	1	20	T	3	2	18	T	2	3	17	T	3		T	3
								Pen	0.1			Pen	0.1			Pen	0.5		Pen	0.5
47	11/21/03	11:52	25.26141	80.42361	M	1	64	T	2	2	50	T	2	3	43	T	2		T	2
48	11/21/03	12:06	25.26193	80.4239	M	1	100	T	3	2	100	H	1			T	3		T	3
49	12/5/03	12:09	25.26147	80.41656	M	1	22	T	3	2	20	T	3	3	23	T	3		T	3
								Pen	1			Pen	0.5			Pen	1		Pen	1
50	12/5/03	12:17	25.26154	80.41895	M	1	20	Dasy	1			T	2	3	31	T	3		T	3
								T	2	2	35	Pen	0.1			Pen	0.1		Pen	0.1
52	12/5/03	10:44	25.26132	80.4065	M	1	33	Pen	0.5			T	2	3	24	T	3		T	3
								T	2	2	34	Pen	3			Pen	0.5		Pen	0.5
								Bato	0.1			Pen	1			Bato	0.5		Bato	0.5
53	12/5/03	10:31	25.26117	80.40729	M	1	31	T	4	2	27	T	3	3	19	T	4		T	4
								Pen	0.1			Pen	0.1			Pen	0.1		Pen	0.1
								Bato	0.5			Bato	0.5			Bato	0.5		Bato	0.5
54	12/5/03	11:59	25.25997	80.41683	M	1	19	T	2	2	22	T	2	3	28	T	2		T	2
								Pen	0.5			Pen	2			Pen	0.5		Pen	0.5
								Bato	0.5			Bato	0.5			Bato	0.1		Bato	0.1
55	11/21/03	12:20	25.25878	80.42609	M	1	100	H	1	2	100	None		3	100	None			None	
56	12/4/03	11:02	25.25923	80.40233	MS	1	47	T	3	2	50	T	4	3	41	T	4		T	4
								H	2			Pen	1			Pen	1		Pen	1
								Pen	0.5			Acet	0.1			Acet	0.1		Bato	0.5
								Bato	1			Bato	1			Bato	1		Bato	1
57	12/5/03	11:45	25.25901	80.41222	M	1	25	T	2	2	24	T	4	3	24	T	2		T	2
								Pen	1			Pen	0.1			Pen	0.1		Pen	0.1
								Bato	2			Bato	2			Bato	2		Bato	2
58	11/21/03	11:22	25.25848	80.42345	M	1	100	None		2	100	T	2	3	100	H	2		H	2
59	12/5/03	10:55	25.25867	80.40924	M	1	40	T	2	2	17	T	4	3	15	T	3		T	3
								Pen	0.5			Bato	1			Pen	1		Pen	1
								Bato	1			Bato	1			Bato	1		Bato	1
60	12/5/03	11:35	25.25854	80.41287	M	1	20	T	3	2	25	T	2	3	53	T	4		T	4
								Pen	0.1			Pen	0.5			Pen	0.5		Bato	0.5
								Bato	0.5			Bato	0.5			Bato	0.5		Bato	0.5
61	11/21/03	12:33	25.25838	80.42761	M	1	100	T	4	2	100	T	4	3	100	T	4		T	4
								Bato	0.1			Bato	0.1			Bato	0.1		Bato	0.1
62	11/21/03	11:36	25.25843	80.4242	Rk	1	0	None		2	0	None		3	0	Spy	2		Spy	2
63	12/8/03	10:21	25.25698	80.41665	MS	1	33	T	3	2	47	T	3	3	30	T	3		T	3
64	12/8/03	9:02	25.25688	80.40639	M	1	9	T	2	2	12	T	2	3	10	T	3		T	3
								Hali	0.1			Bato	0.1			Bato	1		Bato	1
								Pen	0.5			Pen	0.5			Pen	0.5		Pen	0.5
								Bato	1			Bato	1			Bato	1		Bato	1

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65	12/8/03	10:34	25.25655	80.41981	MS	1	30	T	5	2	28	T	5	3	17	T	5
66	12/8/03	9:45	25.25629	80.41046	M	1	63	T	3	2	45	T	4	3	40	Hali	0.1
								Pen	0.1			Bato	2			T	4
								Bato	0.5							Bato	0.5
68	12/8/03	10:03	25.25587	80.41401	MS	1	39	T	3	2	32	T	3	3	30	T	3
												SpSp	2				
69	12/8/03	11:10	25.25601	80.42465	MS	1	40	T	5	2	41	T	5	3	45	T	5
70	12/8/03	10:45	25.25465	80.42152	MS	1	25	T	2	2	23	T	2	3	15	T	2
								H	4			H	4			H	5
71	12/8/03	10:55	25.2539	80.42327	M	1	30	T	5	2	29	T	5	3	26	T	5
72	12/11/03	11:48	25.25356	80.4164	MS	1	20	T	5	2	19	T	5	3	20	T	5
								Bato	1							Bato	1
73	12/11/03	11:09	25.25279	80.41013	MS	1	22	T	2	2	37	T	2	3	28	T	2
								Hali	0.1			Bato	2			Hali	0.1
								Bato	0.5							Bato	1
74	12/11/03	11:22	25.25266	80.41264	MS	1	40	T	2	2	40	T	3	3	39	T	2
								Bato	1							Pen	0.1
																Bato	0.5
75	12/11/03	11:37	25.25242	80.41576	MS	1	20	T	3	2	5	T	3	3	10	T	2
												Bato	2			Hali	0.1
																Acet	0.5
																Bato	0.5
76	12/8/03	11:29	25.25227	80.42831	MS	1	56	T	1	2	58	T	1	3	60	T	1
								Pen	0.5							Acet	0.5
								Acet	0.1							Bato	0.5
77	12/11/03	9:48	25.25174	80.40565	MS	1	78	T	5	2	97	T	5	3	78	T	5
78	12/8/03	12:09	25.25092	80.42448	MS	1	38	T	4	2	22	T	5	3	25	T	4
79	12/8/03	11:46	25.24961	80.43044	MS	1	100	T	2	2	100	T	2	3	100	T	2
								H	1			H	1				
80	12/11/03	10:46	25.25083	80.41203	MS	1	17	T	3	2	13	T	3	3	18	T	2
												Bato	2			Bato	1
81	12/11/03	9:28	25.25047	80.40396	MS	1	30	T	3	2	36	T	3	3	39	T	4
								Bato	4			Bato	2			Bato	2
83	12/4/03	11:26	25.25064	80.40031	M	1	100	T	5	2	100	T	5	3	100	T	5
												Spy	1			Acet	0.1
																Bato	1
																Dasy	0.5
																Spy	2
84	12/11/03	10:14	25.25007	80.40926	MS	1	29	T	3	2	35	T	2	3	32	T	3
								Bato	0.5			Pen	0.5			Pen	0.1
85	12/8/03	11:57	25.24982	80.42924	MS	1	45	T	2	2	52	T	2	3	47	T	2
86	12/11/03	12:12	25.24975	80.41981	MS	1	10	T	3	2	9	T	3	3	10	T	3
87	12/11/03	10:01	25.24956	80.40662	MS	1	35	T	3	2	39	T	3	3	44	T	2
								Pen	2			Pen	0.5			Pen	2

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								Bato	1			Bato	2			Bato	2
88	12/11/03	10:26	25.24932	80.40966	MS	1	20	T	3	2	17	T	4	3	16	SpSp	2
89	12/15/03	10:50	25.24871	80.42013	MS	1	20	Bato	2			Bato	2			T	2
								T	4	2	19	T	3	3	12	Bato	2
								Bato	2			Hali	0.5			T	3
												Pen	0.5			Pen	0.5
												Bato	1			Bato	2
90	12/15/03	10:35	25.24868	80.41904	MS	1	12	T	2	2	9	T	3	3	17	T	3
								Pen	0.5			Pen	0.5			Bato	0.5
												Bato	0.5				
91	12/11/03	12:24	25.24821	80.41558	MS	1	56	T	3	2	30	T	2	3	40	T	2
								Acet	0.5			Bato	2			Bato	2
								Bato	0.5			Dasy	0.1				
92	12/8/03	12:21	25.24813	80.42556	MS	1	35	T	3	2	25	T	2	3	23	T	3
								Pen	1			Pen	2				
								Bato	0.5								
93	12/15/03	9:19	25.24802	80.40237	MS	1	43	T	3	2	67	T	3	3	51	T	3
								Bato	2			Bato	2			Pen	0.1
																Bato	2
94	12/4/03	11:38	25.24791	80.40115	M	1	82	T	3	2	48	T	3	3	51	T	4
								Pen	1			Pen	1			Pen	2
								Acet	0.1			Bato	2			Bato	1
								Bato	0.1							Dasy	0.5
								Spy	2								
								SpSp	1								
95	12/8/03	12:42	25.24781	80.4315	M	1	36	T	1	2	43	T	2	3	44	T	2
								Spy	2			Spy	2			Spy	2
96	12/15/03	11:00	25.2477	80.42421	MS	1	15	T	3	2	19	T	2	3	22	T	2
								Pen	0.5			Pen	0.5			Pen	0.5
97	12/8/03	12:32	25.24739	80.42789	MS	1	28	T	4	2	50	T	4	3	30	T	4
												Pen	1			H	1
												Bato	1				
98	12/15/03	9:50	25.24735	80.40676	MS	1	43	T	3	2	49	T	2	3	35	T	2
								Bato	1			Bato	1			Pen	0.1
																Acet	0.1
																Bato	1
99	12/15/03	9:40	25.24735	80.40478	MS	1	57	T	3	2	48	T	2	3	45	T	3
								Pen	1							Pen	0.5
								Bato	2							Bato	1
100	12/4/03	11:53	25.24653	80.40195	M	1	49	T	3	2	50	T	2	3	60	T	3
								Pen	1			Pen	0.5			Pen	0.5
								Bato	0.5			Bato	1			Bato	0.5
101	12/15/03	11:09	25.24625	80.42532	MS	1	11	T	3	2	21	T	3	3	24	T	4
								Pen	0.1			Pen	1				

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103	12/18/03	11:35	25.24584	80.42331	MS	1	43	H	3	2	30	H	3	3	50	H	3
104	12/15/03	10:00	25.24509	80.40851	MS	1	75	T	5	2	78	T	4	3	80	T	4
																Pen	2
																Bato	0.5
105	12/15/03	10:25	25.245	80.41462	MS	1	21	T	3	2	33	T	2	3	30	T	3
								Bato	0.5			Pen	0.1			Acet	0.5
												Bato	1			Bato	0.5
106	12/15/03	10:11	25.2447	80.41203	MS	1	11	T	2	2	5	T	1	3	12	T	2
								Pen	0.1			Pen	0.5			Bato	1
								Bato	2			Bato	1				
107	12/18/03	11:20	25.24357	80.42269	MS	1	6	T	3	2	5	T	2	3	1	T	1
								Pen	0.1			Hali	0.5			Hali	0.1
								Bato	0.5			Bato	0.5			Bato	1
108	12/30/03	11:18	25.24329	80.40787	MS	1	43	T	4	2	42	T	4	3	59	T	4
								Pen	0.1			Pen	0.1			Bato	0.5
								Bato	1			Bato	1				
109	12/4/03	12:09	25.24329	80.40454	M	1	65	T	3	2	57	T	3	3	69	T	3
								Bato	1			Pen	1			Pen	0.1
												Bato	0.5			Bato	1
110	12/18/03	11:07	25.24321	80.42324	MS	1	5	T	3	2	4	T	1	3	10	T	3
								Pen	1			Bato	0.5				
111	12/30/03	10:51	25.24298	80.41155	MS	1	44	T	5	2	34	T	5	3	37	T	5
112	12/30/03	10:16	25.24295	80.41757	MS	1	6	T	1	2	5	T	1	3	4	T	2
								Acet	0.5			Acet	0.5			Acet	0.5
								Bato	2			Bato	2			Bato	2
113	12/30/03	11:03	25.24241	80.41103	MS	1	23	T	5	2	21	T	5	3	16	T	5
114	12/18/03	11:50	25.24205	80.4305	MS	1	43	H	3	2	30	H	3	3	50	T	3
115	12/30/03	11:32	25.2414	80.40845	MS	1	81	T	3	2	95	T	3	3	100	T	3
								Pen	0.5			Pen	0.5			Pen	0.5
117	12/30/03	12:19	25.24076	80.41237	MS	1	5	T	1	2	4	T	2	3	7	T	2
								Pen	0.1			Bato	1			Pen	0.5
								Bato	0.5							Bato	1
118	12/18/03	12:15	25.24059	80.42636	MS	1	50	T	2	2	80	T	2	3	60	H	2
								H	1			H	2				
119	12/18/03	10:41	25.24069	80.41825	MS	1	47	T	2	2	12	T	1	3	13	T	2
								Pen	1			Hali	0.1				
												Acet	0.1				
												Bato	1				
120	12/18/03	12:03	25.24048	80.42926	MS	1	96	H	3	2	94	H	3	3	98	H	3
121	12/30/03	12:35	25.2405	80.41673	MS	1	11	T	3	2	10	T	3	3	13	T	2
								Bato	0			Pen	0.5			Bato	2
												Bato	2				
122	12/30/03	12:10	25.23991	80.41053	MS	1	83	T	5	2	75	T	5	3	77	T	5
																Halop	0.5
																Pen	0.1

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123	12/18/03	10:55	25.23944	80.42232	MS	1	62	T	1	2	64	T	0.5	3	64	T	0.5
124	12/30/03	11:54	25.23944	80.40957	MS	1	100	T	5	2	100	H	0.5	3	100	T	5
125	12/30/03	12:25	25.23912	80.41336	MS	1	17	Pen	1	2	7	Pen	0.1	3	5	Pen	0.5
								T	3			T	2			T	3
								Hali	0.1			Hali	0.1			Hali	0.5
								Bato	1			Bato	3			Bato	3
								Anad	1							SpSp	1
								Spy	2								
126	12/18/03	10:20	25.23903	80.4204	MS	1	18	T	2	2	22	T	2	3	15	T	2
130	12/31/03	12:53	25.23763	80.43327	M	1	50	H	0.5	2	55	None		3	61	H	0.5
132	1/6/04	11:54	25.23747	80.42567	M	1	78	None		2	89	None		3	77	None	
133	12/4/03	12:32	25.23742	80.41502	MS	1	20	T	3	2	30	T	3	3	27	T	2
								Pen	2			Pen	2			Pen	2
								Bato	2			Bato	3			Bato	2
134	1/6/04	12:05	25.2373	80.42746	M	1	49	H	2	2	69	H	2	3	79	H	2
135	12/18/03	10:00	25.23719	80.42087	MS	1	50	T	3	2	69	T	2	3	48	T	2
								Bato	2			Bato	2			Bato	1
137	12/30/03	13:08	25.23664	80.41044	MS	1	57	T	5	2	60	T	5	3	50	T	5
138	12/30/03	12:46	25.2365	80.41569	MS	1	17	T	2	2	15	T	2	3	33	T	2
								Pen	0.1			Pen	0.5			Hali	0.1
								Bato	2			Bato	2			Bato	2
140	12/31/03	12:36	25.23571	80.42952	Rk	1	0	Spy	5	2	0	Spy	5	3	0	Spy	5
141	12/4/03	12:56	25.23608	80.41782	MS	1	95	T	3	2	99	T	3	3	100	T	4
								Bato	1			Pen	0.5			Bato	1
												Bato	1			Dasy	1
142	1/6/04	11:40	25.23574	80.42637	M	1	70	T	3	2	52	T	4	3	48	T	4
								H	1			H	2			H	1
143	12/4/03	13:12	25.23501	80.41846	MS	1	88	T	3	2	90	T	3	3	90	T	3
								Hali	1			Hali	0.5			Pen	2
								Pen	0.5			Pen	2			Bato	0.5
								Sarg	2			Bato	1				
144	12/30/03	13:18	25.23475	80.41194	MS	1	9	T	4	2	5	T	4	3	10	T	3
								Bato	3			Bato	2			Halop	1
																Pen	0.5
																Bato	2
145	12/31/03	12:12	25.23461	80.43289	M	1	30	None		2	28	None		3	32	None	
146	1/6/04	11:24	25.23433	80.42224	M	1	100	T	5	2	100	T	5	3	100	T	5
								Spy	2			Spy	2				
150	12/30/03	13:27	25.23329	80.41355	MS	1	25	T	1	2	6	T	2	3	10	T	2
								Pen	0.5			Bato	3			Pen	0.1
								Bato	3							Bato	3
151	1/6/04	11:12	25.23302	80.42466	M	1	75	T	4	2	100	T	5	3	92	T	4
								H	1			H	2				
154	1/6/04	10:58	25.23192	80.41916	M	1	24	T	4	2	21	T	4	3	31	T	1

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								H	2					H	1			H	3
								Pen	0.1									Pen	0.5
159	12/31/03	11:26	25.23038	80.42805	M	1	20	T	5	2	30			T	4	3	22	T	5
160	12/31/03	11:13	25.23031	80.42509	MS	1	30	T	2	2	33			T	2	3	19	T	3
								Bato	1					Hali	0.1			Hali	0.1
161	1/6/04	10:29	25.22978	80.42023	M	1	53							Bato	0.5			Bato	0.5
								T	2	2	54			T	4	3	46	T	4
								H	4					H	2			H	3
162	12/31/03	11:54	25.22949	80.43146	MS	1	40							Pen	1			Pen	1
								T	5	2	40			T	5	3	43	T	4
164	12/31/03	11:36	25.22897	80.43007	M	1	16							Laur	1				
								T	3	2	12			T	3	3	7	T	1
																		Acet	0.5
166	1/6/04	9:10	25.22852	80.41539	M	1	100											Bato	2
								T	3	2	100			T	4	3	100	T	5
167	1/6/04	10:16	25.22845	80.42145	M	1	19	Bato	1					Bato	0.5				
								T	3	2	19			T	2	3	20	T	2
168	12/31/03	10:57	25.22836	80.4246	MS	1	12	Bato	4					Bato	3			Bato	2
								T	3	2	9			T	2	3	3	T	3
								Pen	0.1					Bato	2			Pen	0.1
169	1/6/04	9:34	25.2277	80.41787	M	1	23	Bato	1										
								H	1	2	37			H	3	3	22	H	2
								Pen	1					Pen	2			Pen	2
								Acet	1					Bato	3			Bato	2
								Bato	4										
171	12/31/03	10:27	25.2268	80.42706	MS	1	24							T	4	3	67	T	4
								T	4	2	11			Bato	2			Bato	1
172	1/6/04	10:03	25.22672	80.42076	M	1	31	Bato	2					T	3	3	26	T	3
								T	3	2	19			Acet	0.1			Bato	2
								Pen	0.5					Bato	2				
174	12/31/03	10:45	25.22576	80.42378	MS	1	16	Bato	2					Acet	2				
								T	2	2	5			T	3	3	4	T	3
								Bato	1					Acet	0.1			Bato	1
														Bato	2				
175	1/6/04	9:50	25.22569	80.41857	M	1	32							T	5	3	47	T	5
177	12/31/03	10:16	25.22563	80.4287	MS	1	31	T	5	2	30			T	5	3	24	T	5
180	12/31/03	10:05	25.22483	80.42952	M	1	28	T	4	2	18			T	4	3	25	T	4
181	12/31/03	9:54	25.22435	80.4271	M	1	8	T	2	2	12			T	3	3	20	T	2
														Acet	0.1			Bato	2
														Bato	0.5				
182	12/31/03	9:44	25.22392	80.42561	MS	1	24							T	2	3	18	T	2
								Bato	1									Bato	0.5
187	12/31/03	9:12	25.22282	80.42383	MS	1	10							T	4	3	20	T	4
								T	3	2	26								
								Bato	0.5					Hali	0.1				
														Bato	1				

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Appendix 6: Manatee Bay Physical Parameters

Site	H2O Depth (ft)	pH	Temp	DO	DO%	Sal (ppt)
15	1.25	7.59	25	4.61	62.5	17.52
18	3.2	7.6	24.78	4.77	64.8	17.13
19	3.3	7.55	24.56	5.46	71.6	16.83
21	2	7.62	23.84	5.56	72.6	14.75
22	3.9	7.66	24.57	5.72	78.3	21.01
23	2.5	7.69	23.64	6.01	77.2	13.35
25	2	7.64	22.26	6.17	74.6	8.47
26	1.9	7.67	23.49	6.1	77.7	12.87
27	3.3	7.66	23.38	6.17	79	13.13
28	1.8	7.64	23.4	5.88	75.2	11.92
29	3.3	8.04	23.2	6.44	85.7	21
31	3.4	8.17	24.38	5.94	81.1	21.59
33	3.8	8.04	23.77	4.85	65.6	21.6
34	4.1	8.14	21.7	6	79	22.6
35	3.2	7.62	23.29	5.98	76.8	13.42
36	5.2	8.22	21.77	6.01	79	22.61
37	5.1	8.17	21.72	6.48	83.1	22.55
38	4.8	8.23	22.08	6.25	85.6	22.54
39	5	8.13	21.79	6.14	78.1	22.65
40	1.9	8.16	23.73	6.42	86.4	20.85
42	1.9	8.19	24.19	6.22	84.4	21.08
43	6	8.26	21.71	6.75	87.3	22.95
44	3.5	8.2	23.62	6.41	85.9	20.69
45	6	8.25	21.86	6.47	84	22.81
47	2	8.1	24.32	5.95	80.4	19.98
48	2.8	8.15	24.11	6.56	88	19.55
49	6	8.26	22.27	5.73	76.6	22.19
50	5.5	8.29	22.36	5.75	75.1	21.94
52	6	8.3	21.62	6.75	89.1	23.13
53	6.2	8.27	21.63	6.61	85.3	23.2
54	6.2	8.26	22.58	6.16	82	21.99
55	2.1	8.04	24.07	5.37	72	19.33
56	5.6	8.34	20.72	6.99	89.8	22.81
57	6.5	8.3	21.97	6.18	82.5	22.64
58	2.8	8.12	24.3	5.56	75.2	20.14
59	6.5	8.32	21.85	6.71	87	22.92
60	6.5	8.3	22.13	6.76	89.4	22.81
61	3.4	8.25	24.43	7.44	101.1	20.16
62	3	8.11	23.78	5.45	73	20.05
63	5.8	8.42	17.59	7.31	88.1	22.57

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64	5.8	8.42	17.43	7.16	86.7	23.5
65	5.5	8.34	17.46	6.86	81.7	21.12
66	6	8.4	17.57	7.36	88.8	22.8
68	5.9	8.42	17.81	7.1	86.2	23.04
69	4.3	8.34	18.7	6.85	83.5	20.08
70	5.6	8.3	17.67	7	83.3	20.17
71	5.5	8.29	18.31	6.48	78.5	20.34
72	5.9	8.55	20.26	6.88	87.6	22.9
73	6.2	8.59	20.01	7.28	92.6	23.65
74	5.8	8.58	20.1	7.13	90.8	23.51
75	5.9	8.53	20.3	6.87	87.7	23.1
76	2.3	8.28	18.62	6.61	81.1	21.84
77	5.5	8.66	19.75	7.28	92.3	23.88
78	5.7	8.3	18.73	6.61	80.6	20.52
79	1.4	8.34	19.22	7.43	92.2	21.95
80	6	8.62	19.96	7.11	90.4	23.67
81	5.8	8.68	19.71	7.45	93.5	23.95
83	3.5	8.43	20.96	6.81	88.4	23.8
84	6	8.67	19.78	6.99	88.6	23.78
85	4	8.33	18.36	7.07	86.1	21.83
86	5.8	8.49	20.69	6.65	84.9	21.98
87	6	8.68	19.75	7.3	92.9	24.32
88	6	8.65	19.82	7.26	92.1	23.76
89	5.3	8.64	20.74	4.39	55.7	21.71
90	6.2	8.67	20.68	4.5	57.2	21.32
91	6.1	8.65	20.43	7.17	92	23.59
92	5.8	8.35	18.44	6.88	83.5	21.11
93	5.2	8.75	20.31	5	64.1	23.49
94	6	8.33	21.04	6.56	84.5	23.67
95	1.6	8.38	19.41	7.46	93.3	21.91
96	5.1	8.67	20.54	4.9	61	21.21
97	5.5	8.36	18.43	7.66	93.2	21.45
98	7.5	8.73	20.4	4.71	60.4	23.33
99	6	8.74	20.4	4.83	61.9	23.41
100	6.3	8.38	20.84	7.08	91.5	23.61
101	5.3	8.66	20.52	4.67	59.2	20.92
103	6	8.16	18	5.8	70.2	21.01
104	6	8.73	20.47	4.78	61.2	23.24
105	7.5	8.6	20.52	4.92	61.6	21.87
106	8	8.7	20.38	4.73	60.4	22.11
107	5	8.21	17.9	5.86	71.7	21.98
108	5.4	8.21	20.13	7.18	92	24.49
109	6	8.38	20.92	7.15	92.7	23.72
110	5.5	8.27	17.88	5.92	71.9	22.29
111	5.6	8.2	19.94	7.3	93.1	24.31

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112	5.4	8.2	19.92	7.13	90.5	23.49
113	6	8.21	20	7.42	94.8	24.63
114	3.1	8.12	16.93	5.81	68.3	21.46
115	4	8.22	20.3	6.98	89.7	24.29
117	6.4	8.23	20.28	7.7	99.2	24.98
118	3.2	8.19	18.17	5.82	70.6	20.94
119	7	8.26	18.21	5.83	71	23.72
120	3.2	8.15	18.15	5.68	69.2	21.27
121	5.6	8.16	20.56	7.08	91.4	24.23
122	4.8	8.22	20.45	7.12	91.2	24.3
123	2.3	8.21	16.92	6.32	73.3	19.61
124	2.5	8.24	20.87	7.55	98.1	24.19
125	6.5	8.22	20.3	7.48	96.6	25.03
126	6.4	8.21	17.35	6.74	78.6	21.43
130	2.9	7.99	22.03	6.31	82.3	21.49
132	3.5	7.86	24.64	3.96	55.3	24.74
133	6.7	8.34	21.05	6.93	90.2	24.14
134	3.3	7.93	24.88	4.83	67.9	25.33
135	6	8.22	17.34	6.25	74.4	21.8
137	5.3	8.22	20.64	7.63	98.5	24.69
138	4.5	8.2	20.67	7.16	92.8	24.55
140	1.8	8.04	21.96	6.17	80.5	21.62
141	5.1	8.37	21.11	6.57	85.5	23.87
142	3.5	8.11	24.6	5.61	78.7	25.42
143	4.3	8.37	21.22	6.97	91	24
144	6.2	8.21	20.43	7.61	98.3	24.84
145	4.6	7.65	22.09	3.55	47	23.5
146	2.2	8.17	23.96	5.78	80.3	24.78
150	5.6	8.2	20.85	7.3	95.1	24.81
151	3.8	8.15	24.1	5.09	70.8	25.33
154	5.2	8.2	23.44	6.04	82.9	25.32
159	4.5	8.15	21.4	6.61	86.9	24.55
160	5	8.18	21.14	7.02	92.1	25.38
161	4.8	8.2	23.53	5.16	70.6	25.38
162	1.7	8.13	22.45	7.29	97.3	23.76
164	3.8	8.11	21.44	7.15	94.1	24.26
166	2.2	8.15	23.01	3.86	52.3	24.64
167	5.1	8.21	23.15	6.38	87.1	25.45
168	4.9	8.18	21.23	6.52	85.8	25.08
169	5	8.26	23.14	6.46	87.9	25.1
171	4.9	8.18	20.98	6.63	86.7	25
172	5	8.22	23.32	6.34	86.3	25.16
174	4.9	8.21	21.14	6.53	85.8	25.61
175	4.6	8.22	23.32	6.09	83.2	25.11
177	3.8	8.12	21.25	5.95	77.9	24.83

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180	4.5	8.07	21.24	5.6	73.1	24.03
181	4.6	8.15	21.29	5.72	74.8	25.25
182	4.7	8.2	21.11	6.26	82.3	25.61
187	4.9	8.25	20.82	6.47	84.6	25.47

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Appendix 7: Transects

Shoal Point: Surface

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	1.1	7.75	23.5	4.42	60.7	30.78
25	2.2	7.81	24.17	4.88	67.2	30.86
50	2.8	7.84	24.08	5.74	86.3	30.81
75	3	7.85	24.05	6.44	90	30.69
100	3	7.87	24.26	6.44	91.7	30.69
150	3	7.86	24.24	7.21	104.1	30.75
200	3.5	7.8	24.42	7.21	104.5	30.88
300	3.5	7.72	24.2	7.05	101.5	30.89
400	3.8	7.69	24.83	5.99	87	30.83
500	3.5	7.75	25.01	6.66	97.6	30.8
750	4	7.89	25.13	8.45	126.4	31.06
1000	2.4	7.9	25.26	8.31	121.8	31.31

Shoal Point: Bottom

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	1.1	7.72	23.46	3.91	53.8	30.78
25	2.2	7.85	23.97	6.03	84	30.84
50	2.8	7.83	23.94	5.24	75.1	30.91
75	3	7.76	23.95	5.46	75.9	30.88
100	3	7.89	24.16	7.4	95.4	30.8
150	3	6.04	24.01	6.04	83.8	30.78
200	3.5	7.82	24.36	6.19	84.2	30.91
300	3.5	7.8	24.24	6.1	87.8	30.92
400	3.8	7.77	24.8	6.85	102.6	31
500	3.5	7.7	24.62	7.46	106.2	30.99
750	4	7.9	24.61	6.06	88	31.3
1000	2.4	7.9	24.78	7.6	111.4	32.15

Black Point: Surface

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	1.6	7.72	20.68	4.21	58	35.12
25	3.9	7.8	20.92	5.43	75.3	35.24
50	4.7	7.84	20.95	5.32	73.9	35.29
75	4.8	7.86	21	5.62	77.8	35.32
100	4.9	7.87	21.04	5.79	80.7	35.32
150	4.9	7.89	21.06	6.03	83.8	35.28
200	5.3	7.93	21.1	6.28	85.5	35.09
300	5.1	7.94	21.13	6.49	90.2	34.76
400	5.2	7.99	21.14	6.45	88.5	34.22
500	5.1	7.98	21.32	6.72	93.2	34.01
750	5.5	7.97	21.3	6.75	93.4	33.96

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1000	5	7.99	21.37	6.98	97.4	33.73
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Black Point: Bottom

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	1.6	7.74	20.72	4.22	58.1	35.13
25	3.9	7.57	20.96	3.99	52.8	34.95
50	4.7	7.86	20.97	4.51	61.4	35.29
75	4.8	7.87	21.03	4.7	64.9	35.3
100	4.9	7.77	21.09	3.92	53.5	35.32
150	4.9	7.92	21.08	5.08	71.4	35.33
200	5.3	7.95	21.13	5.57	74.6	35.23
300	5.1	7.96	21.2	5.45	76.4	35.15
400	5.2	8	21.46	5.33	74.9	35.27
500	5.1	8.01	21.36	6.01	83.6	34.16
750	5.5	8	21.29	5.92	93.9	33.98
1000	5	8.03	21.41	6.42	89.7	33.71

Fender Point: Surface

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	2.1	8.17	21.95	4	55.8	32.63
25	2.4	8.33	22.72	5.75	81.7	32.93
50	2.6	8.31	22.74	5.15	73	33.04
75	2.5	8.3	22.81	4.93	70.4	33.01
100	2.8	8.33	22.94	5.17	73.5	33.18
150	3.5	8.38	22.94	5.79	82.3	33.39
200	4	8.49	23.17	6.46	92.6	33.52
300	4.2	8.57	23.21	6.36	92.5	33.59
400	4.5	8.57	23.2	6.61	94.8	33.66
500	4.4	8.58	23.24	6.86	98.4	33.71
750	4.4	8.64	23.42	7.24	104.2	33.95
1000	4.7	8.65	23.38	6.84	90	34.43

Fender Point: Bottom

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	2.1	8.35	22.47	4.92	67.4	32.79
25	2.4	8.37	22.79	5.75	81.4	32.92
50	2.6	8.33	22.78	4.26	41.2	33.04
75	2.5	8.31	22.82	4.46	63.4	33.01
100	2.8	8.35	22.93	4.13	59.6	33.11
150	3.5	8.42	23	4.65	66.3	33.34
200	4	8.5	23.2	4.99	71.7	33.47
300	4.2	8.57	23.21	5.35	76.9	33.58
400	4.5	8.59	23.22	6.01	86.3	33.66
500	4.4	8.6	23.26	5.52	79.4	33.7
750	4.4	8.65	23.42	5.55	80.2	33.95

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1000 4.7 8.67 23.42 5.95 86.2 34.41

Manatee Bay: Surface						
Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	3	8.11	23.1	6.6	90.4	29.63
25	3	8.25	23.19	7.43	99.7	29.76
50	3.3	8.25	23.4	8.22	99.8	29.73
75	3.7	8.25	23.62	7.16	92.8	29.53
100	3.9	8.25	23.87	6.81	92.8	29.35
150	4.1	8.25	24.01	6.4	90.2	29.34
200	4.3	8.27	24.1	6.72	95.1	29.42
300	4.7	8.3	23.85	6.44	91.5	29.86
400	5.2	8.31	24.01	6.5	91.3	29.93
500	5.5	8.33	23.95	8.36	93	30.14
750	5.2	8.35	23.75	7.03	96.9	30.17
1000	5.4	8.37	23.79	6.29	88.7	30.24

Manatee Bay: Bottom						
Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	3	8.16	23.08	5.97	83.2	29.66
25	3	8.27	23.18	6	84.3	29.77
50	3.3	8.3	23.47	6.99	97.5	29.29
75	3.7	8.31	23.74	7.02	102.9	30.19
100	3.9	8.31	23.91	6.49	91.8	30.39
150	4.1	8.3	23.86	6.32	87.5	30.27
200	4.3	8.33	23.67	6.83	97	30.19
300	4.7	8.34	23.47	6.79	95.5	30.26
400	5.2	8.35	23.27	6.93	97.3	30.21
500	5.5	8.36	23.38	6.77	95.6	30.32
750	5.2	8.4	23.34	7.05	100.2	30.33
1000	5.4	8.42	23.87	6.71	96.1	30.84

Barnes Sound: Surface						
Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	1	7.77	21.54	6.84	93	31.06
25	3.3	7.79	22.17	6.45	89.3	31.13
50	4.3	7.76	22.41	6.27	87.7	31.15
75	5	7.74	22.35	6.06	83.7	31.05
100	5.9	7.72	22.47	5.83	81.3	31.03
150	6.7	7.74	22.79	5.92	84.1	31.02
200	7.2	7.73	22.91	6.18	87.2	30.98
300	7.4	7.74	22.98	5.88	81.7	30.93
400	7.4	7.75	23.93	6.38	91	30.98
500	7.6	7.75	23.06	6.31	88.4	30.99
750	7.6	7.75	23.35	6.13	87	30.95

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1000	7.8	7.73	23.4	5.99	83.4	30.9
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Barnes Sound: Bottom

Site (m)	H2O Dep (ft)	pH	Temp	DO	DO%	Sal (ppt)
0	1	7.77	21.56	6.59	90.5	31.07
25	3.3	7.81	22.19	6.38	89.4	31.12
50	4.3	7.77	22.34	5.9	81	31.12
75	5	7.76	22.36	5.23	72.1	31.09
100	5.9	7.74	22.28	5.71	77	31.04
150	6.7	7.76	22.26	6.06	83.1	31.05
200	7.2	7.77	22.45	5.87	82.2	31.15
300	7.4	7.78	22.62	5.98	85	31.32
400	7.4	7.79	22.61	6.5	91.9	31.29
500	7.6	7.78	22.61	6.42	93.8	31.42
750	7.6	7.78	22.66	6.92	97.7	31.84
1000	7.8	7.76	22.72	7.15	100.6	31.94

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Appendix 8: Transect Surveys

Shoal Point Transect																
Site(m)	Date	Latitude	Longitude	ST	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS
0	3/31/04	25.62205	80.29769	M	1	40	H	3	2	35	H	3	3	42	H	5
25	3/31/04	25.62203	80.29747	M	1	79	T	5	2	100	T	5	3	65	T	5
															Laur	1
50	3/31/04	25.62202	80.29723	M	1	60	T	5	2	45	T	5	3	65	T	5
															Bato	0.1
75	3/31/04	25.62201	80.29697	M	1	49	T	5	2	53	T	5	3	43	T	5
							Bato	0.5			Bato	0.5			Bato	0.1
							Laur	3			Laur	3			Laur	2
100	3/31/04	25.62202	80.29668	M	1	50	T	5	2	69	T	5	3	51	T	5
							Laur	2								
150	3/31/04	25.62199	80.29617	M	1	51	T	5	2	63	T	5	3	45	T	5
							Acet	0.1								
200	3/31/04	25.62208	80.29568	M	1	45	T	5	2	42	T	5	3	60	T	5
							Laur	2							Acet	0.5
															Laur	2
300	3/31/04	25.62213	80.29469	M	1	100	T	5	2	100	T	5	3	80	T	5
											H	1				
400	3/31/04	25.62252	80.29372	M	1	30	T	5	2	35	Bato	0.1	3	32	T	5
							H	2			T	5				
500	3/31/04	25.62252	80.29274	M	1	69	T	5	2	57	T	5	3	64	T	5
750	3/31/04	25.62265	80.29025	M	1	100	T	5	2	60	T	5	3	56	T	5
1000	3/31/04	25.62266	80.28777	M	1	100	T	5	2	100	T	5	3	100	T	5

Black Point Transect																
Site(m)	Date	Latitude	Longitude	ST	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS
0	4/5/04	25.5447	80.31223	SM	1	10	Bato	1	2	6	Bato	1	3	12	Bato	1
							Laur	1			Laur	1				
25	4/5/04	25.54473	80.31198	MS	1	25	T	5	2	14	T	7	3	1	T	4
							Udo	2			Udo	3			Udo	3
							Laur	2			Laur	2			Bato	2
50	4/5/04	25.54474	80.31172	MS	1	30	T	3	2	19	T	3	3	24	Laur	3
							Pen	0.1			Pen	0.1			T	2
							Udo	4			Udo	3			Pen	1
							Laur	4			Laur	4			Udo	2
75	4/5/04	25.54467	80.3115	MS	1	5	Pen	3	2	7	T	2	3	4	Laur	5
							Udo	2			Udo	2			T	2
							Bato	1			Bato	2			Pen	1
							Laur	2			Laur	2			Bato	2
100	4/5/04	25.54471	80.31123	MS	1	4	T	2	2	6	T	3	3	3	Laur	4
															Sarg	0.1
															T	2

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							Pen	4				Pen	3			Pen	2
							Bato	1				Acet	0.1			Udo	2
							Laur	3				Udo	2			Bato	2
150	4/5/04	25.54483	80.31075	MS	1	3	T	4	2	2		Laur	2			Laur	4
							Laur	5				T	5	3	4	T	5
							Sarg	1				Laur	3			Laur	3
200	4/5/04	25.54492	80.31026	MS	1	18	T	1	2	14		T	2	3	15	T	1
							Acet	2				Bato	1			Pen	3
							Laur	3				Laur	4			Laur	4
300	4/5/04	25.54506	80.30927	MS	1	17	T	5	2	16		T	0.5	3	17	T	3
							Pen	0.5				Pen	0.5			Pen	2
							Laur	4				Laur	5			Laur	4
400	4/5/04	25.54529	80.30831	MS	1	12	T	5	2	14		T	4	3	18	T	5
							Pen	0.5				Pen	0.5			Pen	0.5
							Laur	1				Laur	4			Laur	2
500	4/5/04	25.54561	80.30736	MS	1	10	T	4	2	11		T	4	3	12	T	5
							Pen	2				Pen	1			Laur	4
							Laur	3				Laur	3				
750	4/5/04	25.54645	80.30504	MS	1	5	Pen	3	2	4		T	2	3	3	T	0.5
							Bato	2				Pen	3			Pen	2
							Laur	3				Bato	2			Laur	2
1000	4/5/04	25.54707	80.30264	MS	1	2	T	4	2	3		Laur	3			T	2
							Pen	0.5				Pen	0.5	3	3	Laur	4
							Laur	4				Laur	4				

Fender Point Transect																
Site(m)	Date	Latitude	Longitude	ST	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS
0	4/7/04	25.49969	80.33955	M	1	48	R	4	2	58	R	3	3	50	R	5
25	4/7/04	25.49947	80.33936	M	1	57	R	4	2	55	Laur	2	3	62	R	4
50	4/7/04	25.49947	80.33909	M	1	38	Laur	4	2	35	R	4	3	36	Laur	2
75	4/7/04	25.49946	80.33883	M	1	40	R	2	2	37	Laur	2	3	38	Laur	3
100	4/7/04	25.49942	80.33856	M	1	50	Laur	3	2	52	R	2	3	48	R	2
150	4/7/04	25.49938	80.33805	MS	1	35	R	3	2	39	T	4	3	36	R	4
							R	4			R	4			T	3
							Laur	2							R	4
200	4/7/04	25.49943	80.33754	MS	1	43	T	2	2	47	R	3	3	41	T	0.5
							R	3							R	2
							Laur	3								
300	4/7/04	25.49951	80.33653	MS	1	39	T	1	2	36	T	0.5	3	41	Laur	1
							R	2			R	1				
400	4/7/04	25.49957	80.33553	MS	1	11	T	0.1	2	13	R	1	3	10	R	0.5
							R	1			Laur	1			Laur	1
							Laur	2								
500	4/7/04	25.4996	80.33453	MS	1	34	T	4	2	41	T	3	3	40	T	2

DRAFT

750	4/7/04	25.49973	80.33203	MS	1	50	R	3			R	4			R	4
1000	4/7/04	25.49993	80.32954	MS	1	50	T	5	2	55	T	5	3	53	T	5
							T	5	2	51	T	5	3	52	T	5
							Laur	2			Laur	1			Laur	0.5

Manatee Bay Transect

Site(m)	Date	Latitude	Longitude	ST	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS
0	3/29/04	25.26729	80.41035	M	1	88	T	3	2	86	T	1	3	91	T	2
							H	1			H	2			H	2
25	3/29/04	25.26705	80.41048	M	1	85	T	3	2	74	T	3	3	90	T	2
							H	1			Laur	3			H	1
							Laur	3							Laur	2
50	3/29/04	25.26686	80.41059	M	1	84	T	3	2	53	T	4	3	100	T	4
											H	0.5			H	0.5
75	3/29/04	25.26665	80.41071	MS	1	86	T	3	2	74	T	3	3	70	T	3
															H	1
100	3/29/04	25.26644	80.41085	MS	1	82	T	3	2	55	T	2	3	63	T	3
							Pen	2			Pen	0.5			Pen	1
											Bato	0.5				
150	3/29/04	25.26603	80.41103	MS	1	69	T	3	2	70	T	3	3	80	T	2
							Pen	0.1			Pen	0.1				
											Bato	0.5				
200	3/29/04	25.26562	80.41119	MS	1	66	T	3	2	67	T	3	3	70	T	2
							Pen	0.5			Acet	0.5			Acet	0.5
							Acet	0.1			Bato	0.5			Bato	0.5
300	3/29/04	25.2648	80.41159	MS	1	50	T	2	2	56	T	2	3	49	T	2
							Pen	0.5			Pen	0.5			Pen	1
							Bato	0.5			Acet	0.1				
											Bato	0.5				
400	3/29/04	25.26417	80.14232	MS	1	27	T	3	2	28	T	2	3	64	T	2
							H	0.5			Pen	0.1			Pen	0.1
500	3/29/04	25.26352	80.41303	MS	1	18	T	3	2	20	T	3	3	17	T	2
							Pen	0.5			Pen	2			Pen	2
															Bato	1
750	3/29/04	25.26186	80.41474	MS	1	19	T	3	2	48	T	3	3	30	T	2
							Pen	0.1			Pen	1			Pen	2
											Acet	0.1			Bato	1
											Bato	1				
1000	3/29/04	25.26005	80.41624	MS	1	44	T	3	2	29	T	4	3	21	T	3
							Pen	0.5			Pen	0.1				

Barnes Sound Transect

Site(m)	Date	Latitude	Longitude	ST	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS	Quad	SD(cm)	Species	BBS
0	3/30/04	25.21926	80.4187	S	1	43	Laur	2	2	63	Laur	2	3	72	Laur	3
25		25.21926	80.41846	MS	1	53	T	1	2	70	T	2	3	63	T	2
							Pen	1			Pen	1			Pen	1
							Bato	2			Bato	1			Bato	2

DRAFT

50	3/30/04	25.21922	80.41822	MS	1	85	Laur	2				Laur	2			Laur	2
							T	2	2			T	2	3		T	2
							Pen	0.1		2		Bato	2			Acet	0.1
75	3/30/04	25.21915	80.41801	MS	1	78	Bato	2								Bato	2
							T	2	2			T	2	3		T	2
							Pen	1				Pen	0.5			Pen	0.5
100	3/30/04	25.21922	80.41773	MS	1	54	Bato	1				Bato	0.5			Bato	1
							T	3	2			T	3	3		T	2
							Pen	0.1				Pen	0.5			Pen	0.1
150	3/30/04	25.21905	80.41726	MS	1	56	Bato	1				Bato	1			Bato	1
							T	3	2			T	3	3		T	3
							Pen	1				Hali	0.5			Pen	1
							Udo	0.5				Pen	1			Bato	0.5
							Bato	1				Udo	0.1				
200	3/30/04	25.21902	80.41675	MS	1	42	T	2	2			Bato	1	3		T	2
							Pen	0.5				Hali	0.5			Pen	0.5
300	3/30/04	25.21884	80.41575	MS	1	7	Bato	1				Pen	0.1			Bato	1
							T	2	2			T	3	3		T	2
							Halop	3				Halop	2			Halop	0.1
							Hali	1				Pen	0.5			Pen	0.5
							Pen	0.5				Bato	1			Bato	3
400	3/30/04	25.2186	80.41479	MS	1	5	Bato	2									
							T	1	2			Bato	0.5	3		T	0.5
							Bato	2				Laur	2			Halop	1
							Laur	2								Bato	2
500	3/30/04	25.2185	80.41379	MS	1	10	T	3	2			T	4	3		Laur	2
							Pen	1				Pen	0.5			T	3
							Acet	0.1				Bato	2			Hali	0.1
							Udo	0.5								Udo	0.1
							Bato	1								Bato	1
750	3/30/04	25.21797	80.41137	Rk	1	0	Laur	5	2			Bato	3	3		Laur	5
1000	3/30/04	25.21761	80.40891	MS	1	5	T	2	2			T	2	3		T	1
							Hali	0.1				Hali	0.1			Bato	2
							Pen	0.5				Pen	2			Laur	2
							Bato	2				Bato	2				
							Laur	2				SpSp	1				

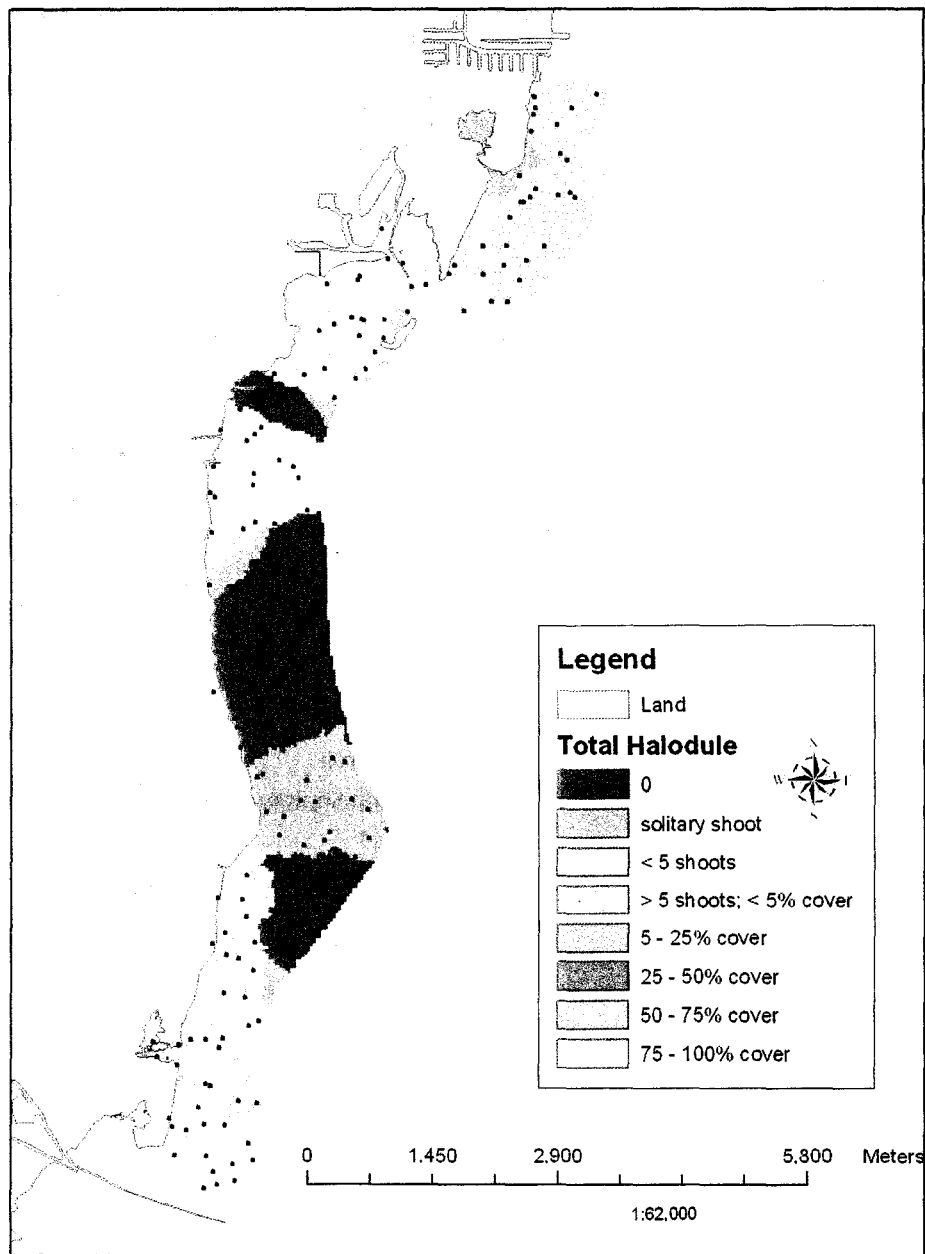


Figure 4.1H. Total Halodule coverage documented between Black Point and Shoal Point in Biscayne Bay.

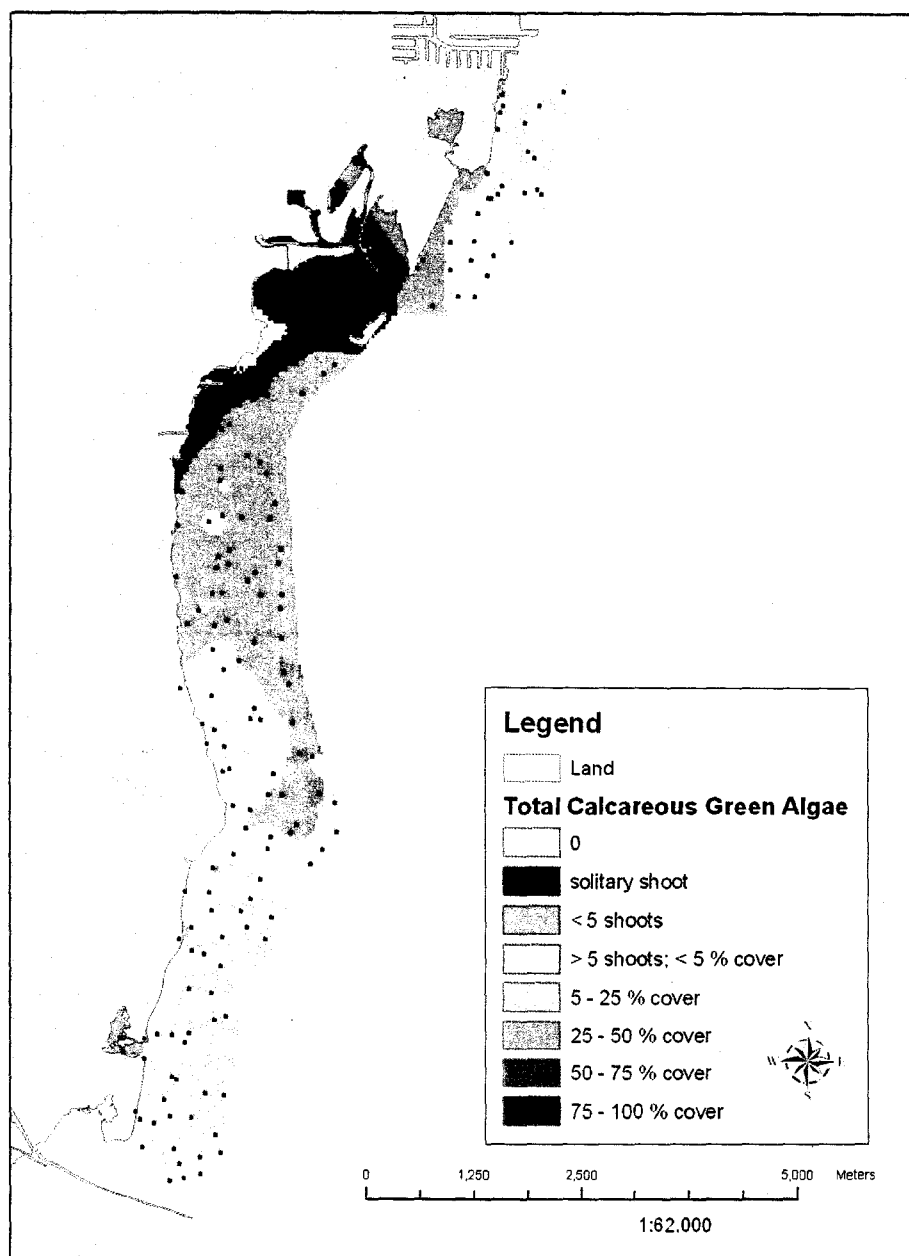


Figure 4.1K. Total calcareous green algae coverage documented between Shoal Point and Black Point in Biscayne Bay.

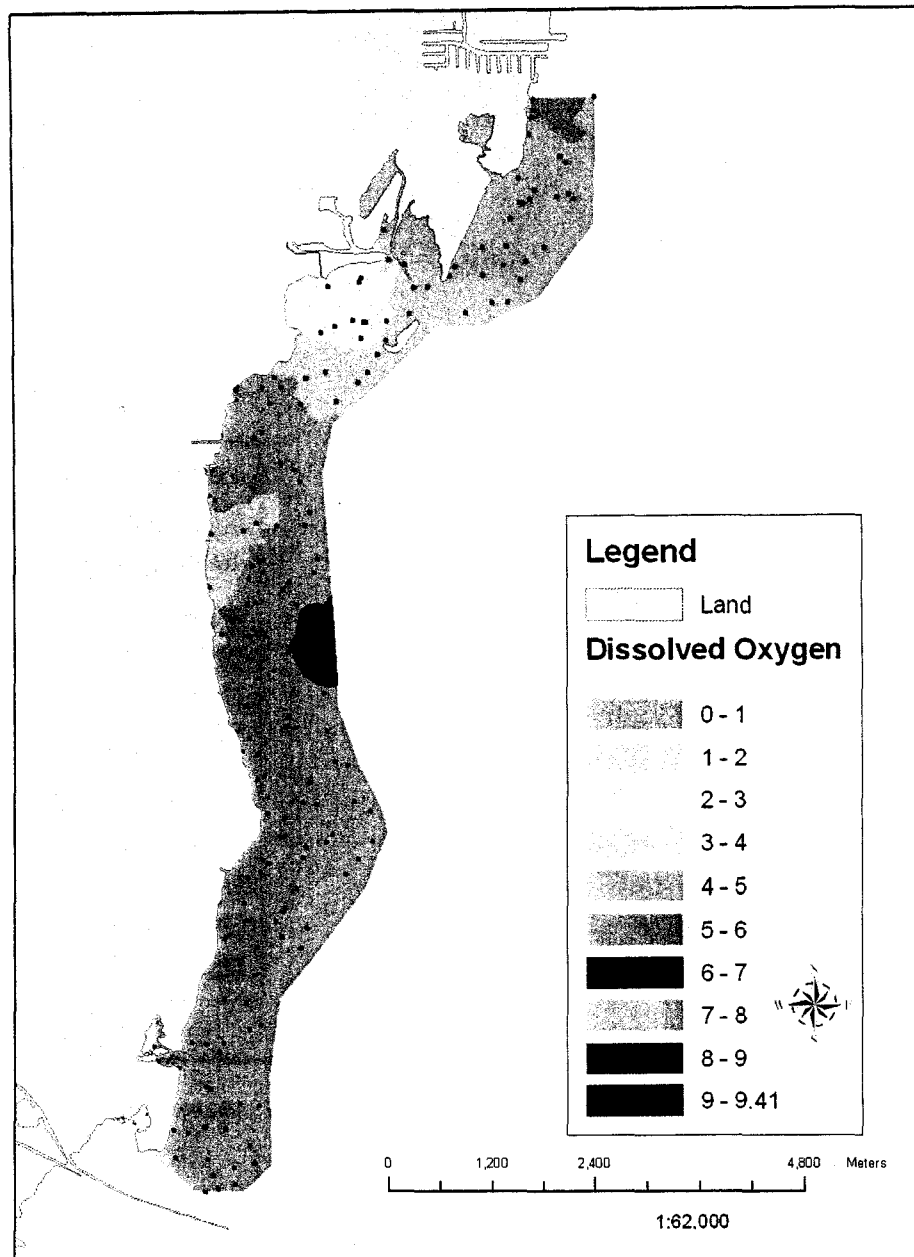


Figure 4.1C. Dissolved Oxygen concentrations recorded between Shoal Point and Black Point in Biscayne Bay.

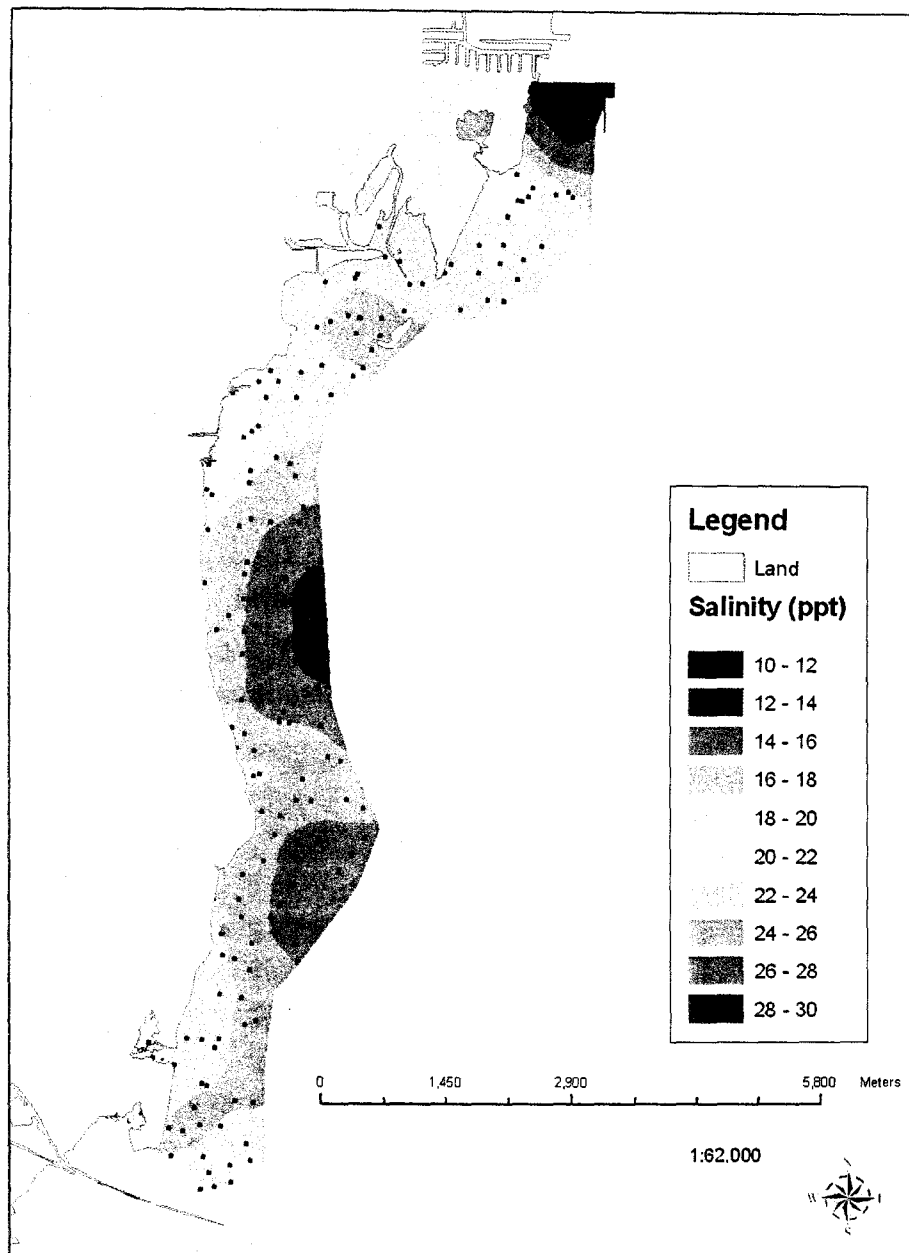


Figure 4.1B. Salinity (ppt) recorded between Shoal Point and Black Point in Biscayne Bay.

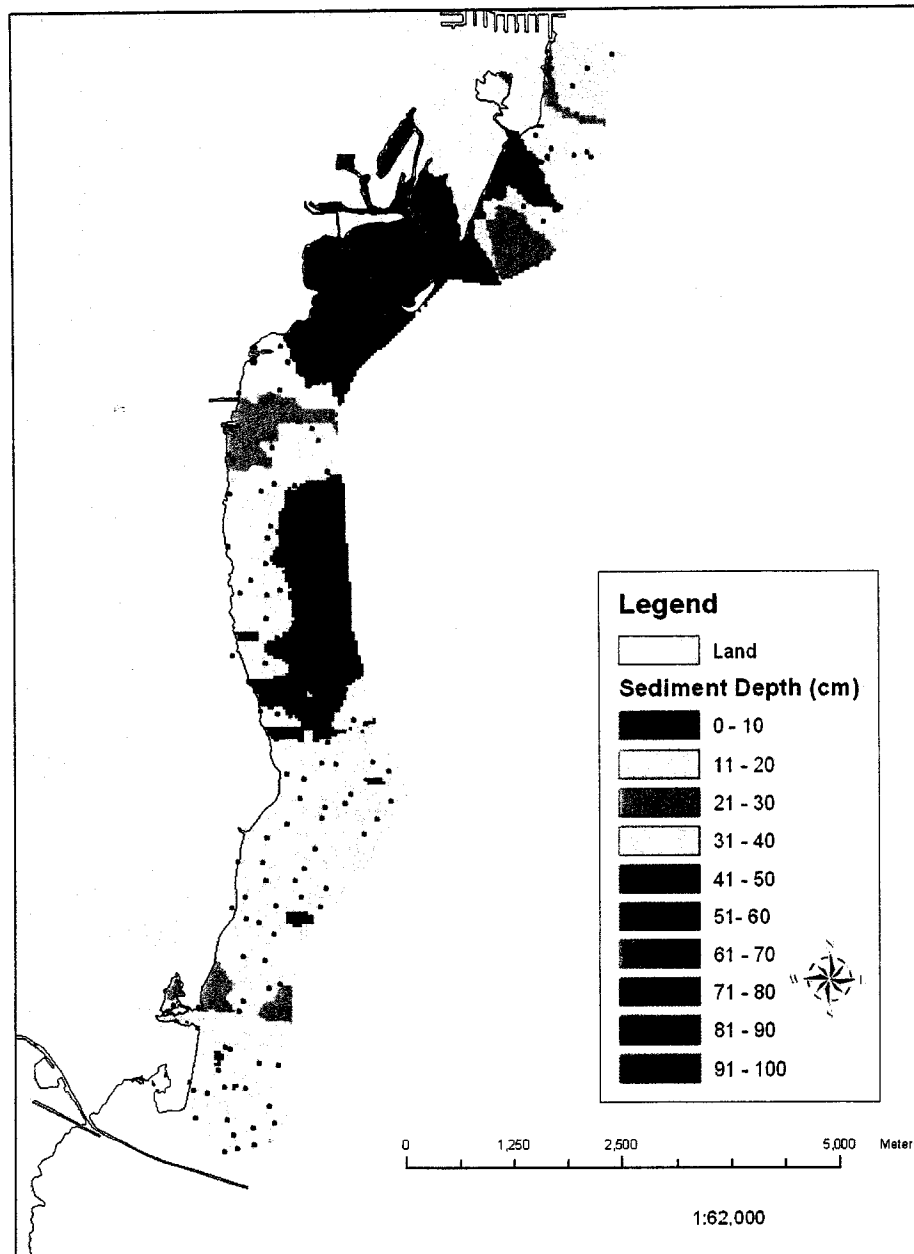


Figure 4.1E. Sediment Depths (cm) measured between Shoal Point and Black Point in Biscayne Bay.

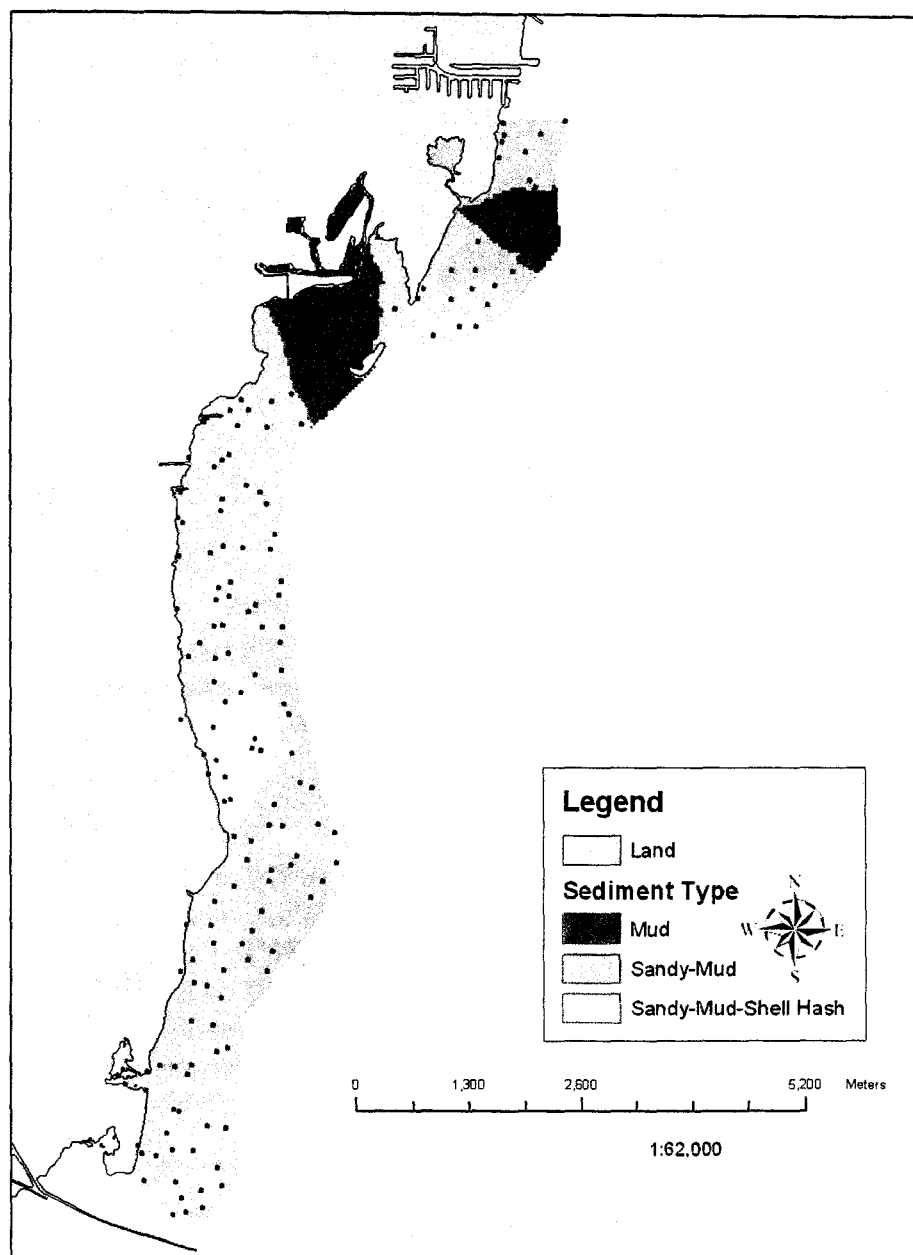


Figure 4.1D. Types of substrate observed between Shoal Point and Black Point in Biscayne Bay.

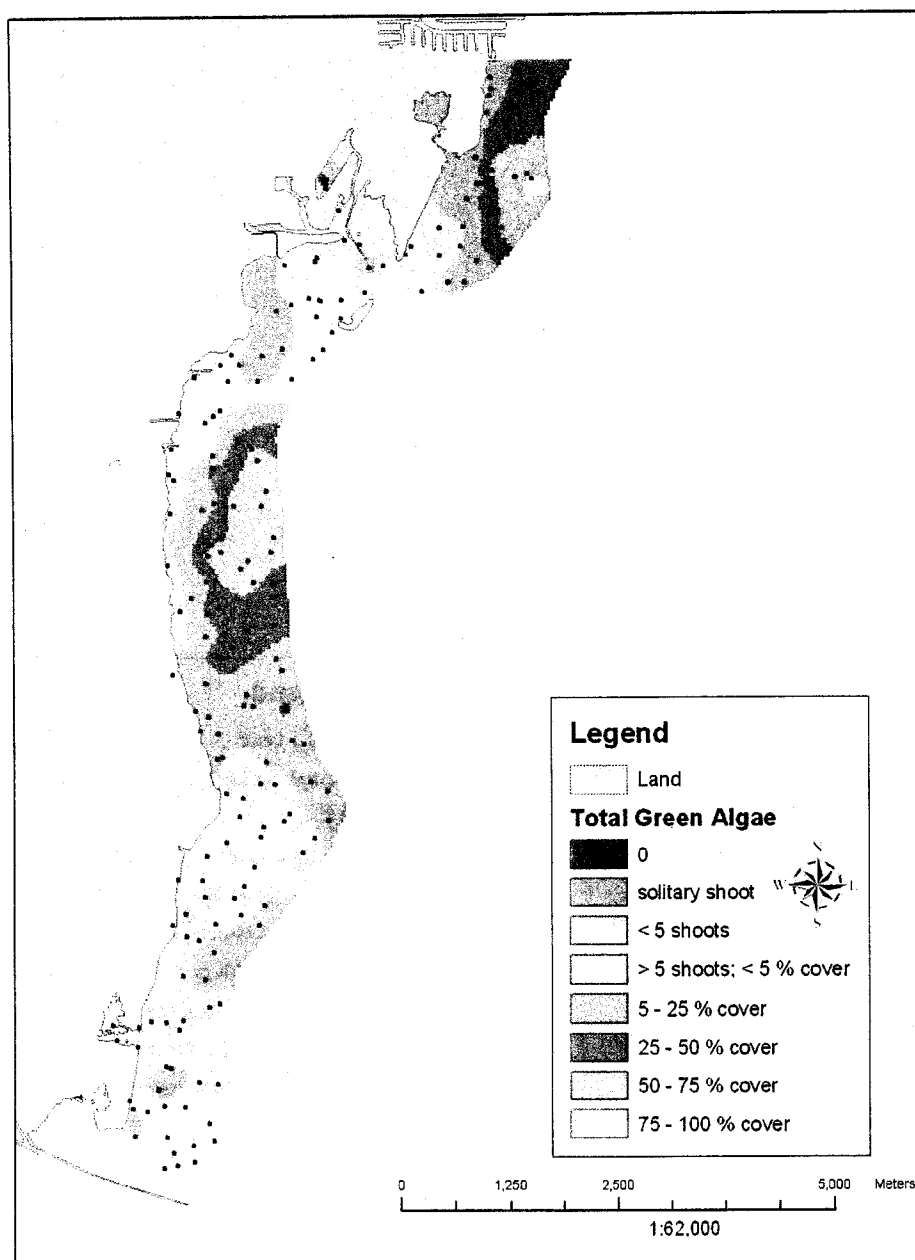


Figure 4.10. Total green algae coverage documented between Shoal Point and Black Point in Biscayne Bay.

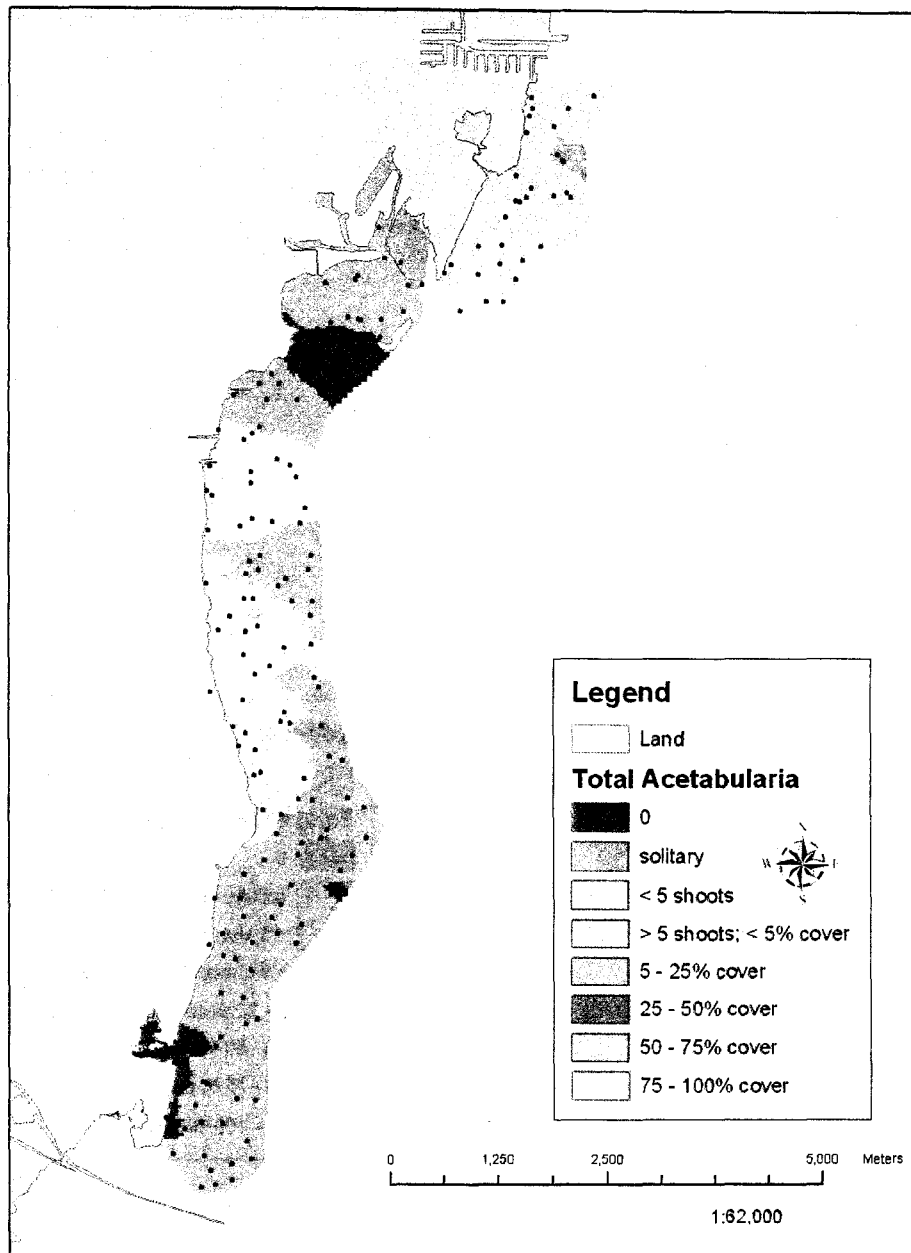


Figure 4.1M. Total Acetabularia coverage documented between Shoal Point and Black Point in Biscayne Bay.

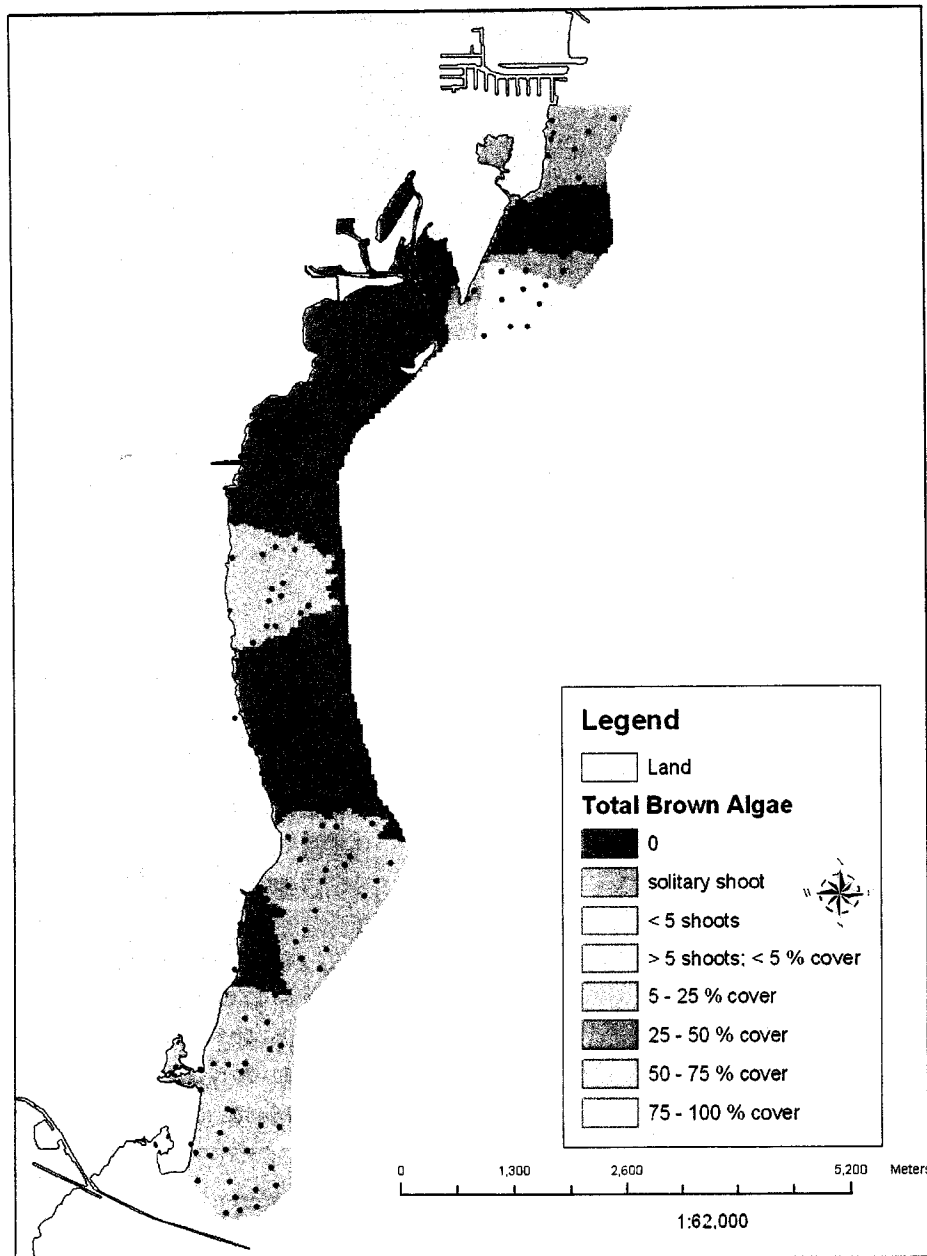


Figure 4.1T. Total brown algae coverage documented between Shoal Point and Black Point in Biscayne Bay.

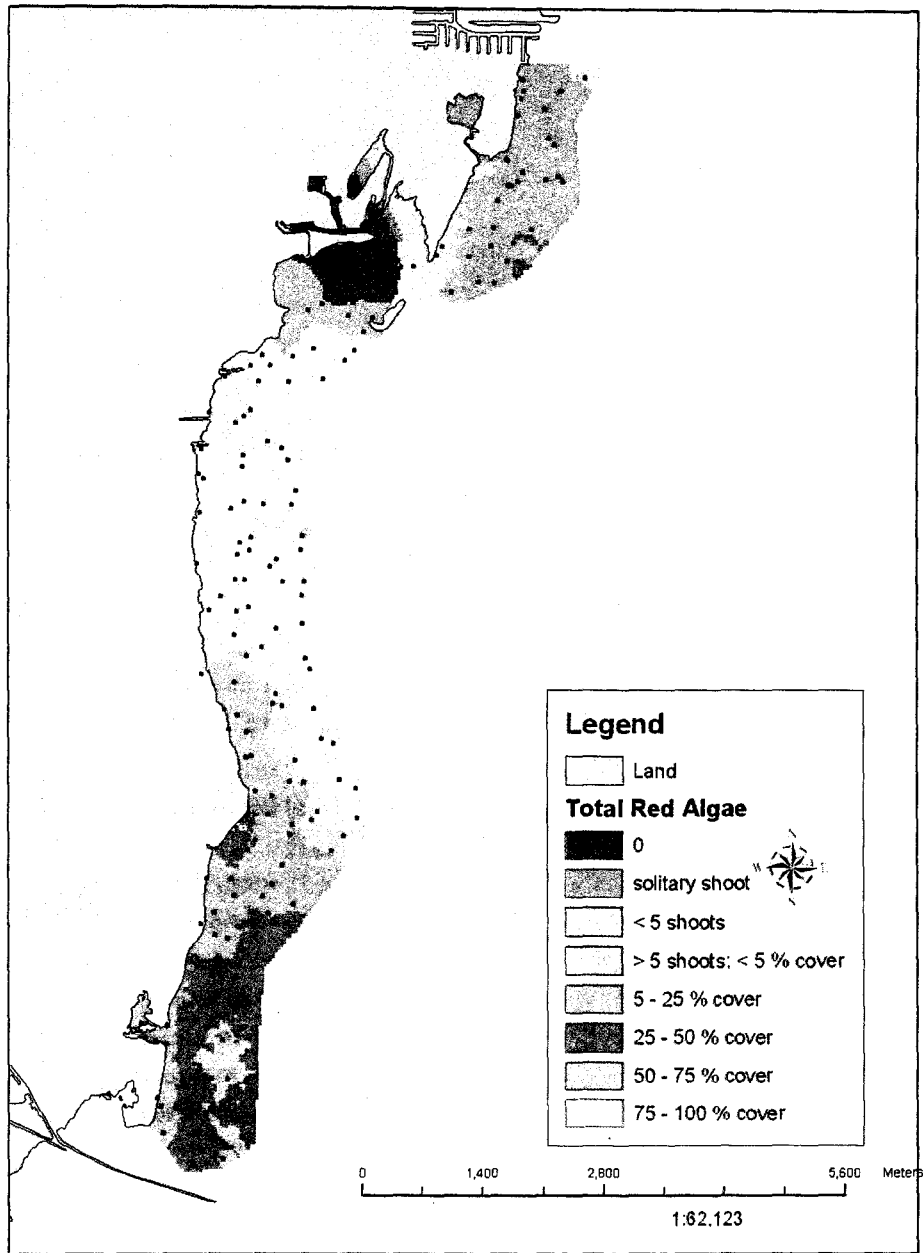


Figure 4.1R. Total red algae coverage documented between Shoal Point and Black Point in Biscayne Bay.

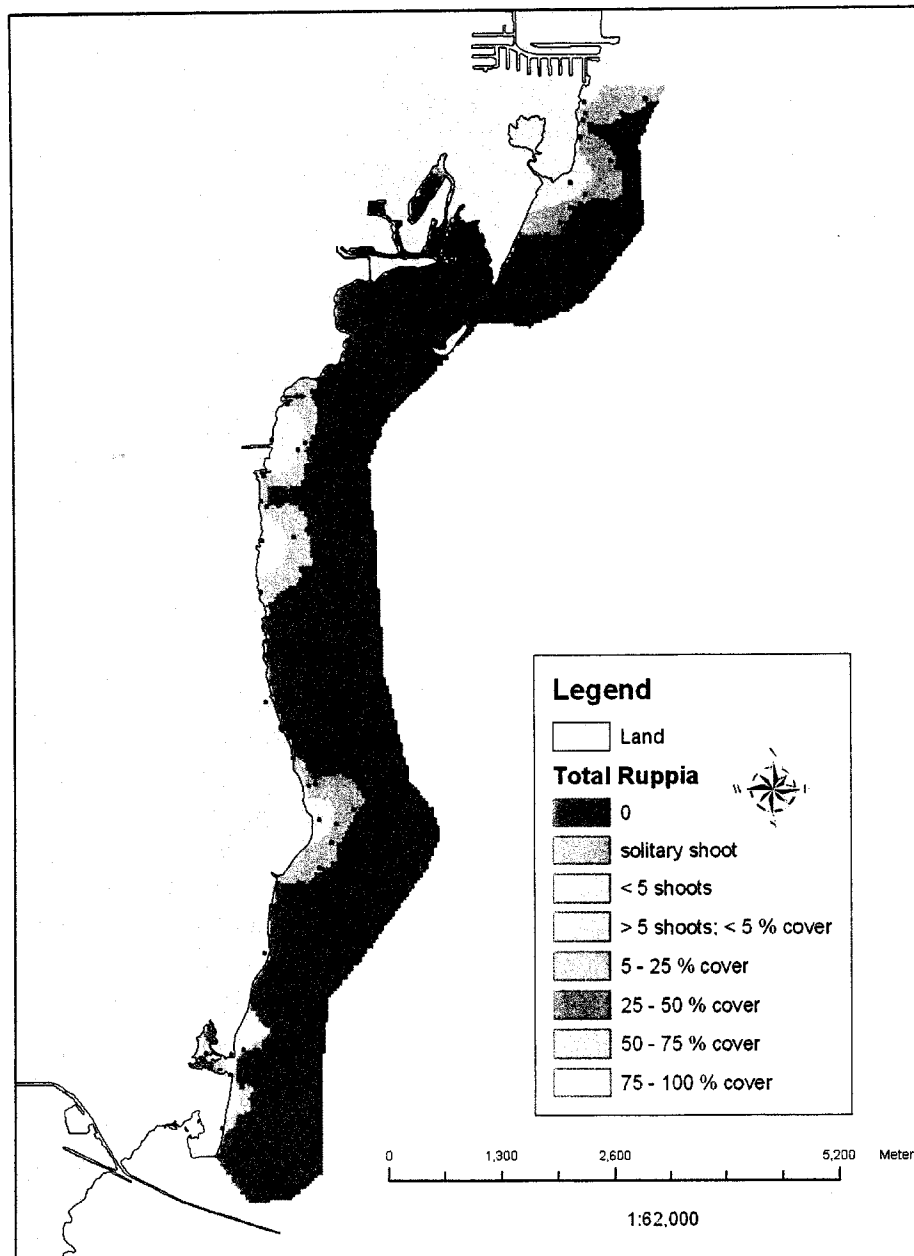


Figure 4.1J. Total Ruppia coverage documented between Black Point and Shoal Point in Biscayne Bay.

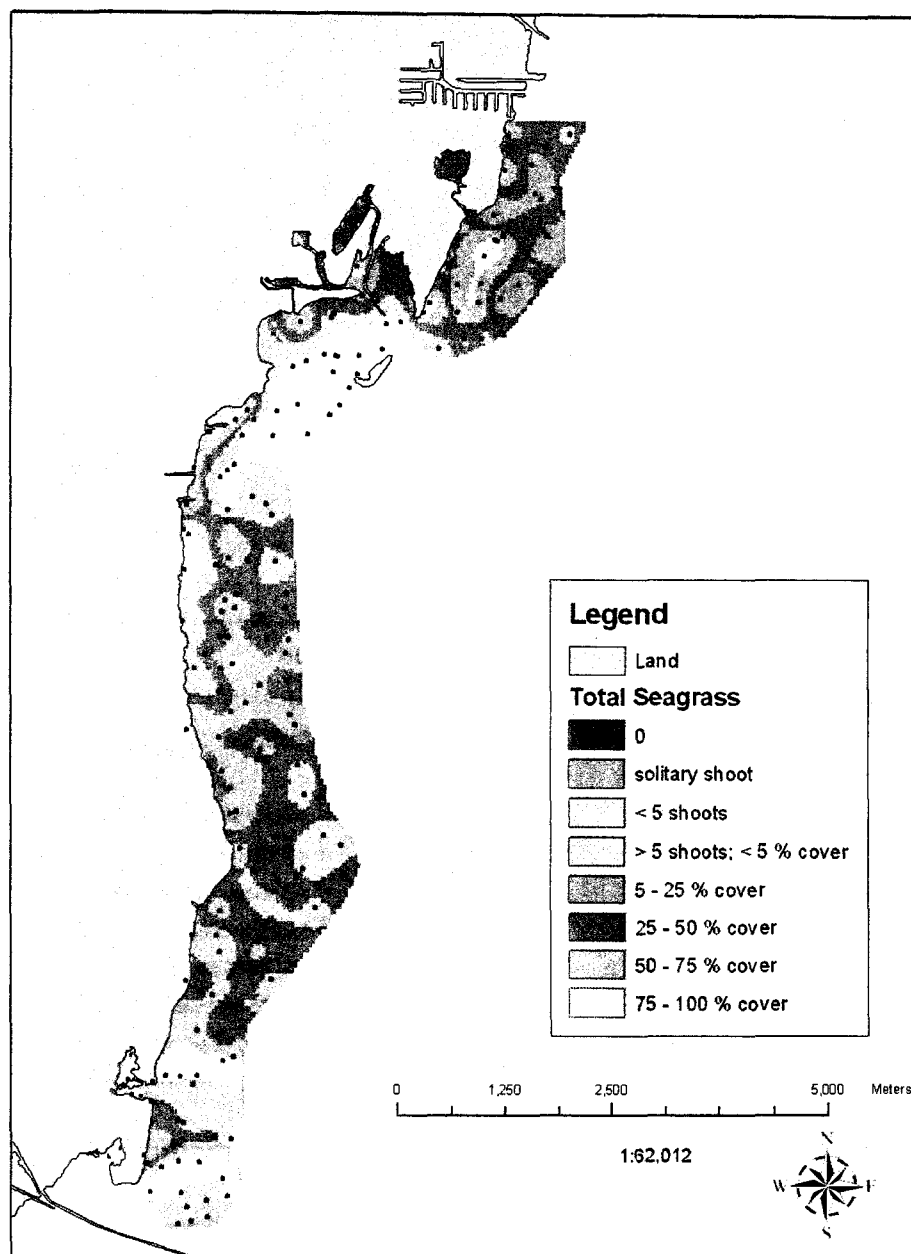


Figure 4.1F. Total Seagrass coverage documented between Black Point to Shoal Point in Biscayne Bay.

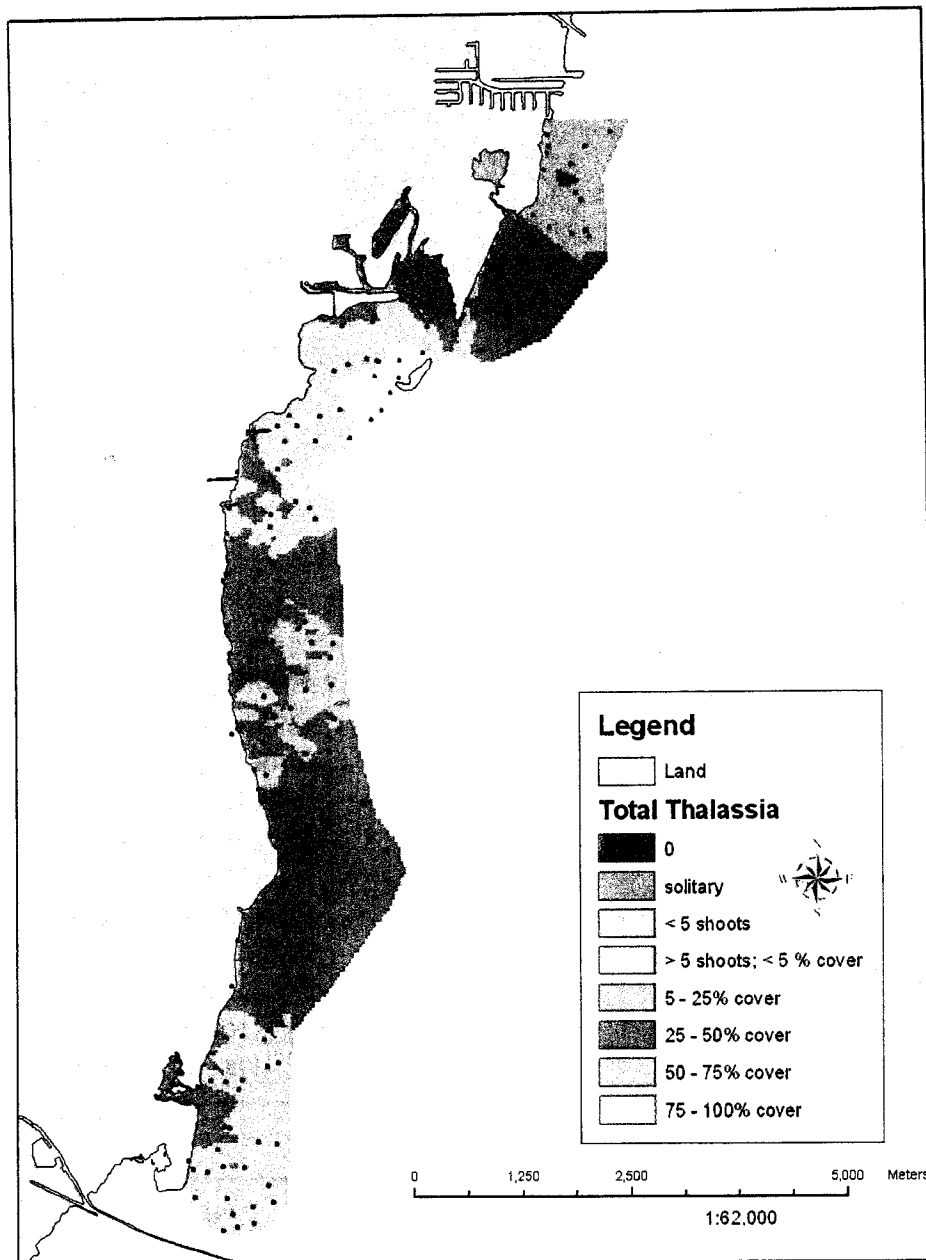


Figure 4.1G. Total *Thalassia* coverage documented between Shoal Point and Black Point in Biscayne Bay.

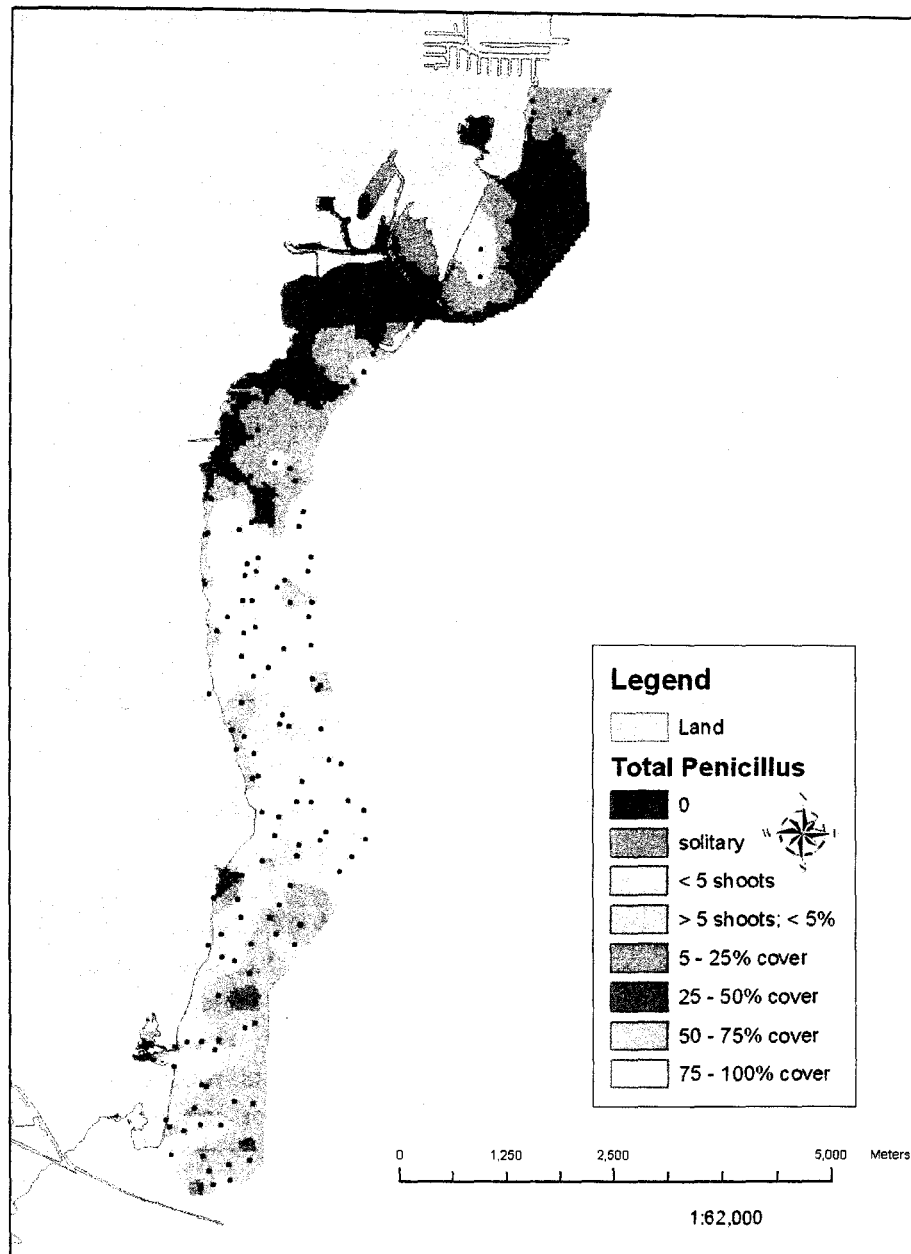


Figure 4.1L. Total Penicillus coverage documented between Shoal Point and Black Point in Biscayne Bay.

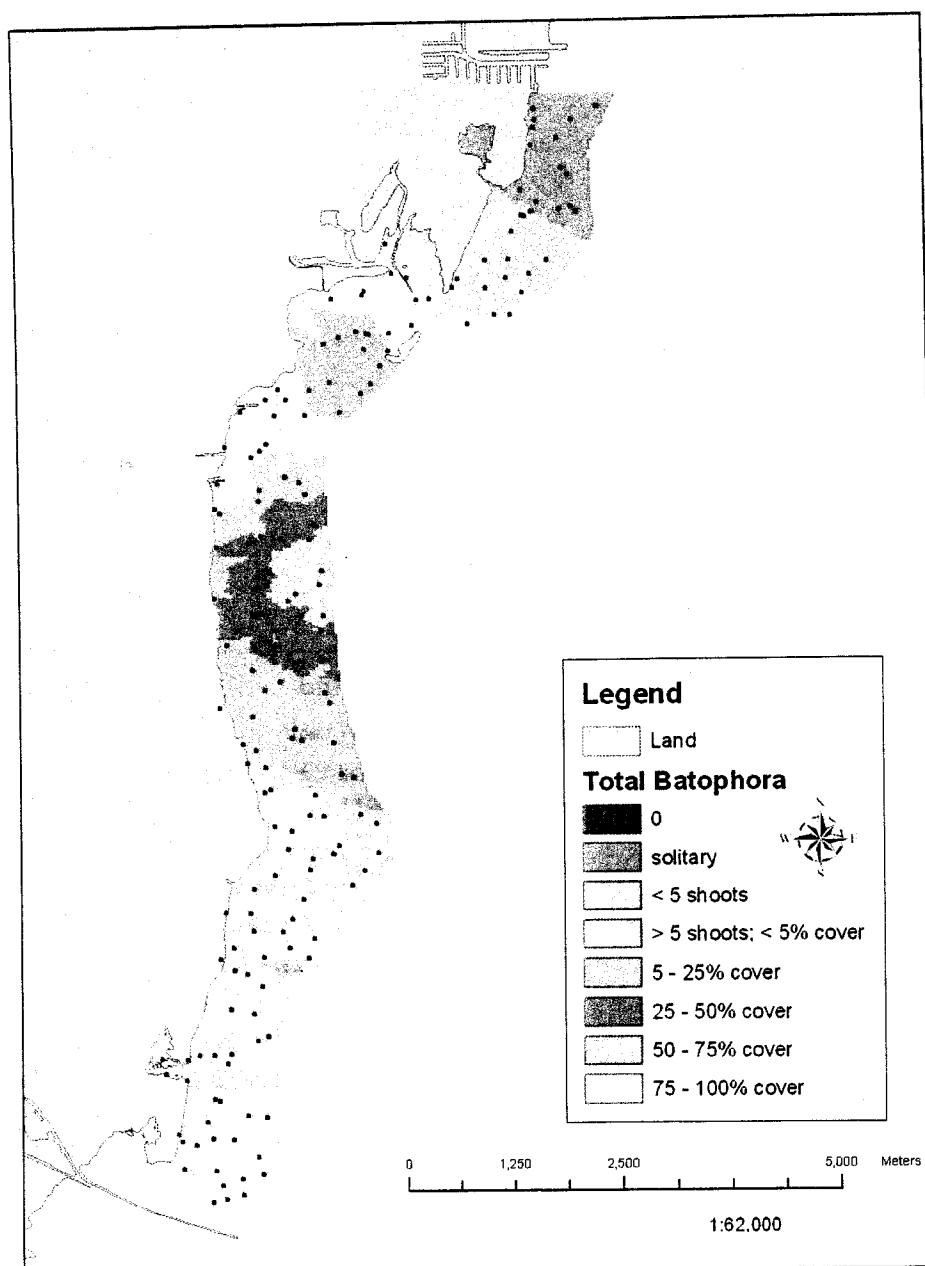


Figure 4.1P. Total Batophora coverage documented between Shoal Point and Black Point in Biscayne Bay.

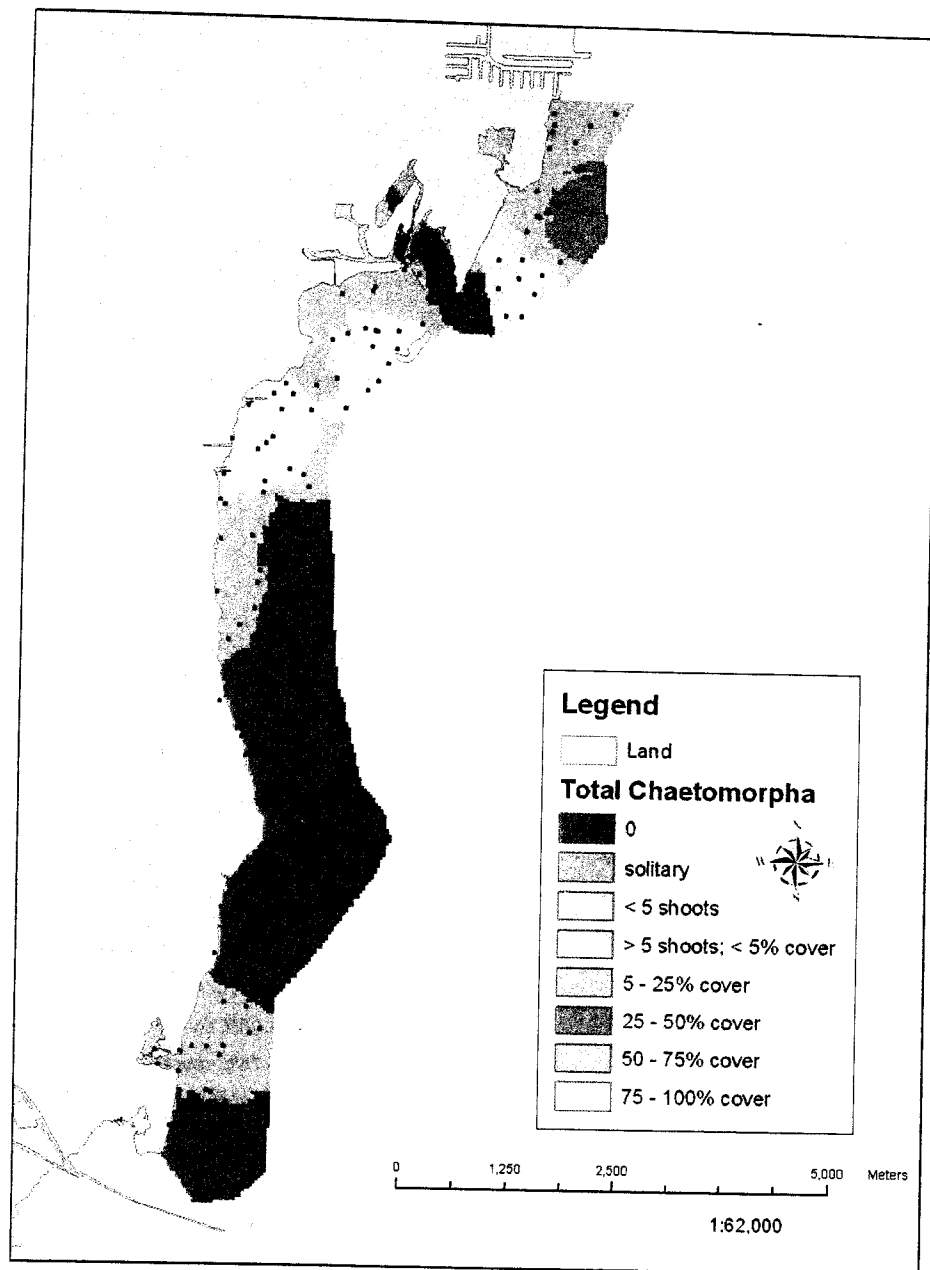


Figure 4.1Q. Total Chaetomorpha coverage documented between Shoal Point and Black Point in Biscayne Bay.

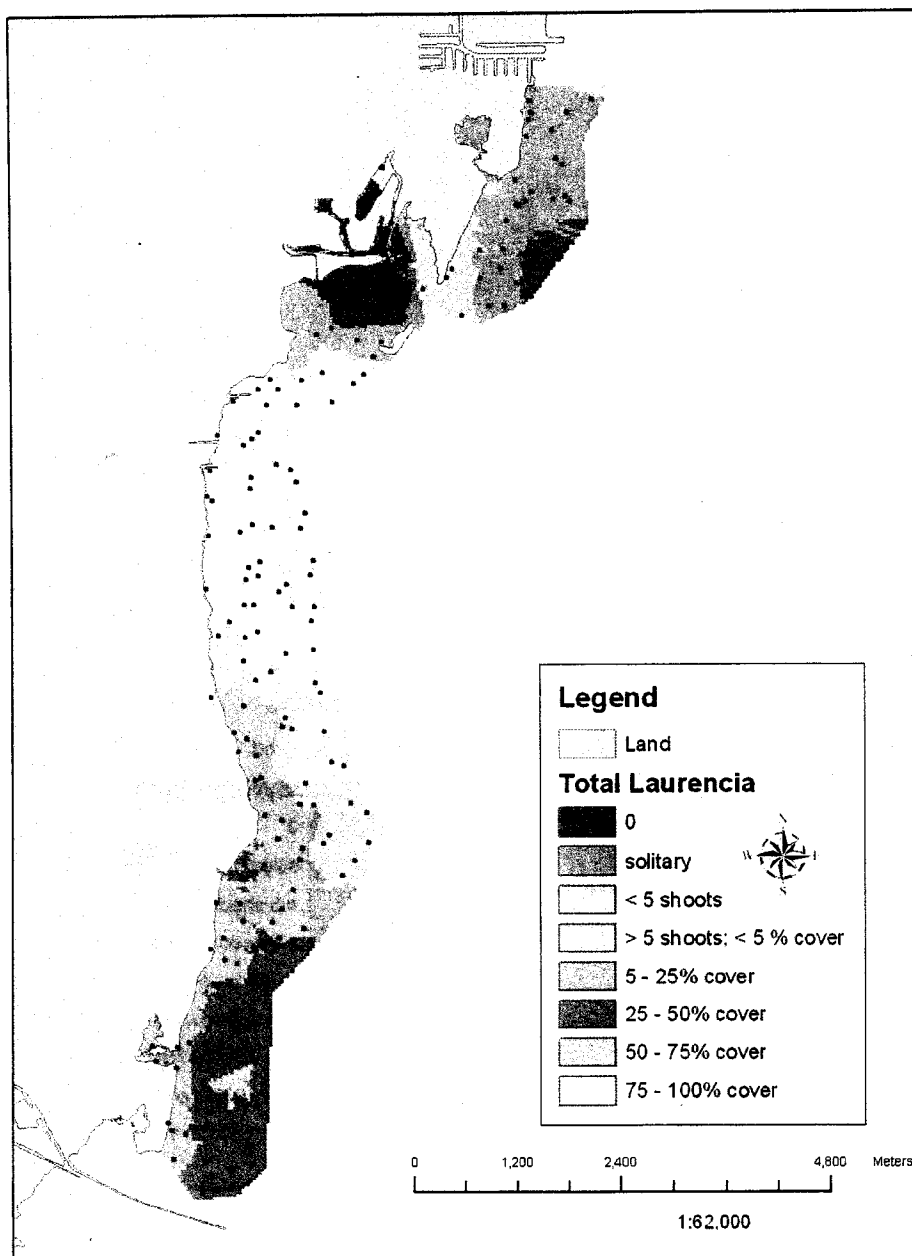


Figure 4.1S.Total Laurencia coverage documented between Shoal Point and Black Point in Biscayne Bay.

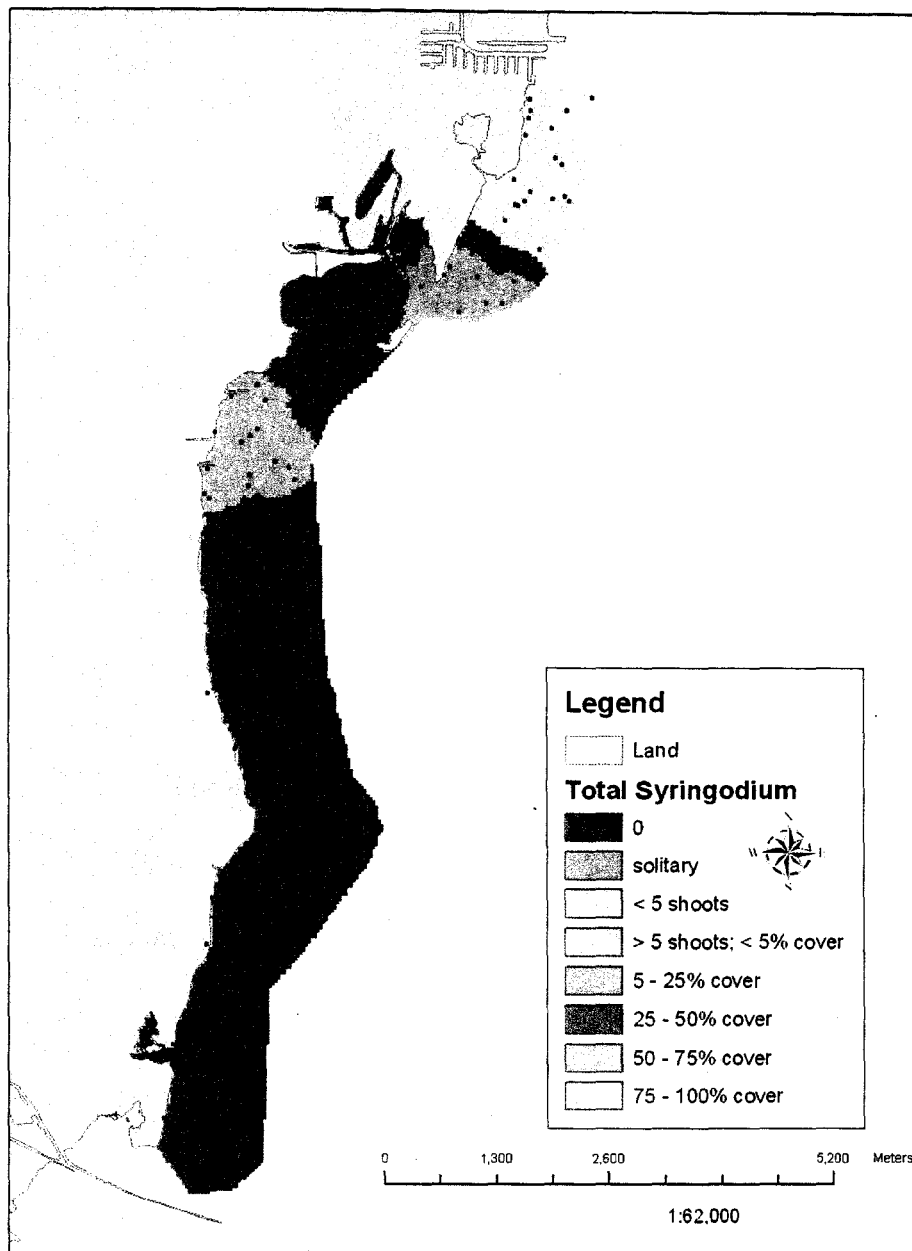


Figure 4.11. Total Syringodium coverage documented between Shoal Point and Black Point in Biscayne Bay.

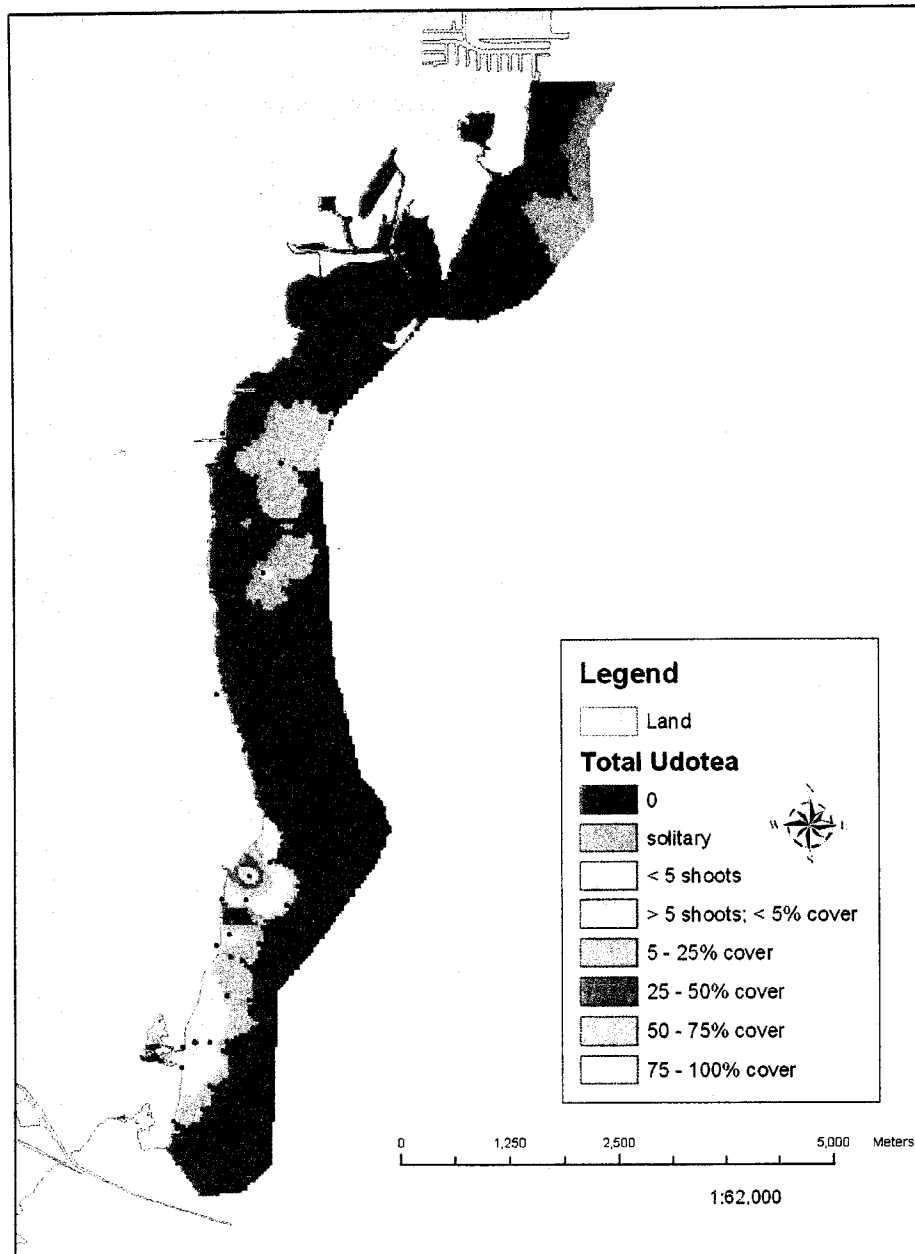


Figure 4.1N. Total Udotea coverage documented between Shoal Point and Black Point in Biscayne Bay.

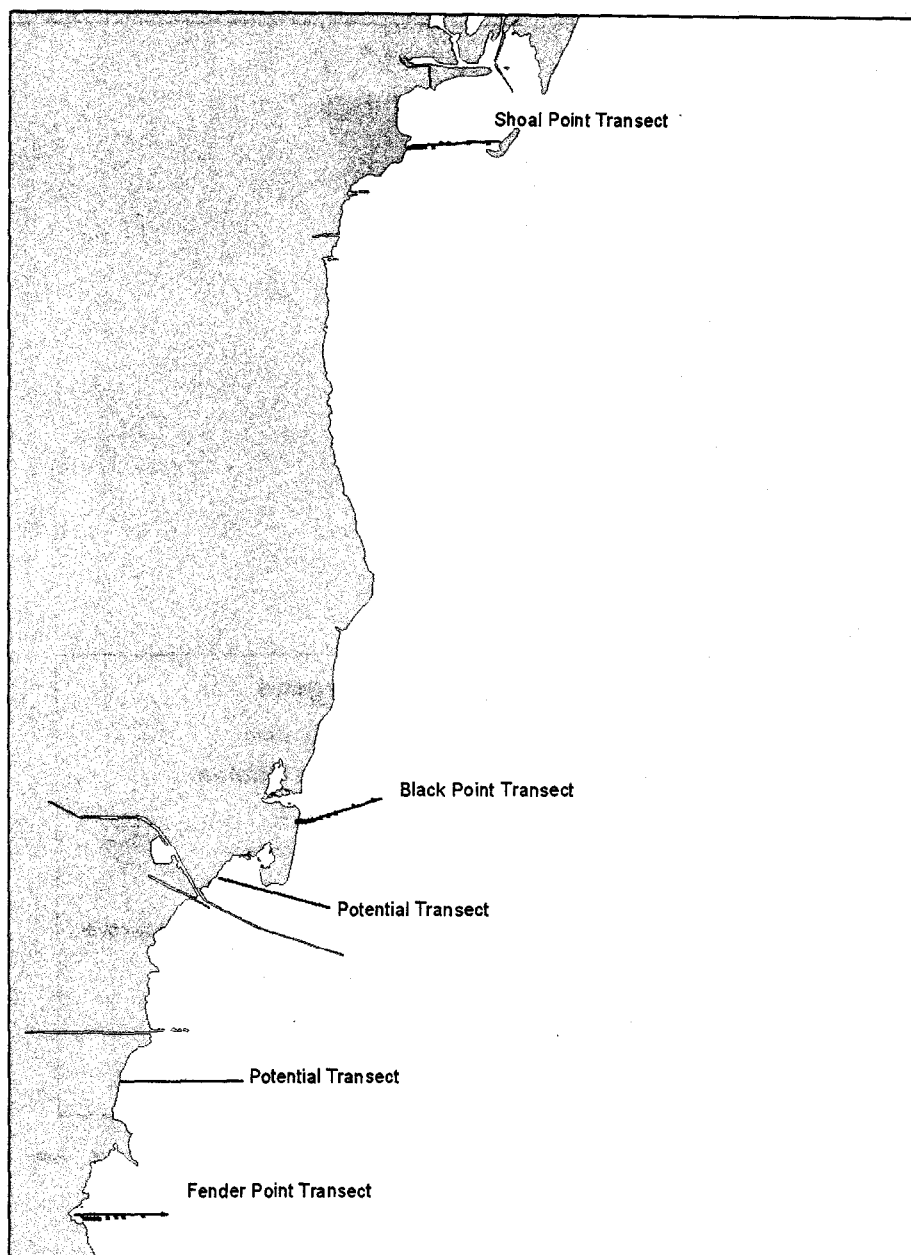


Figure 3A. Potential long-term monitoring transect locations within Biscayne Bay.

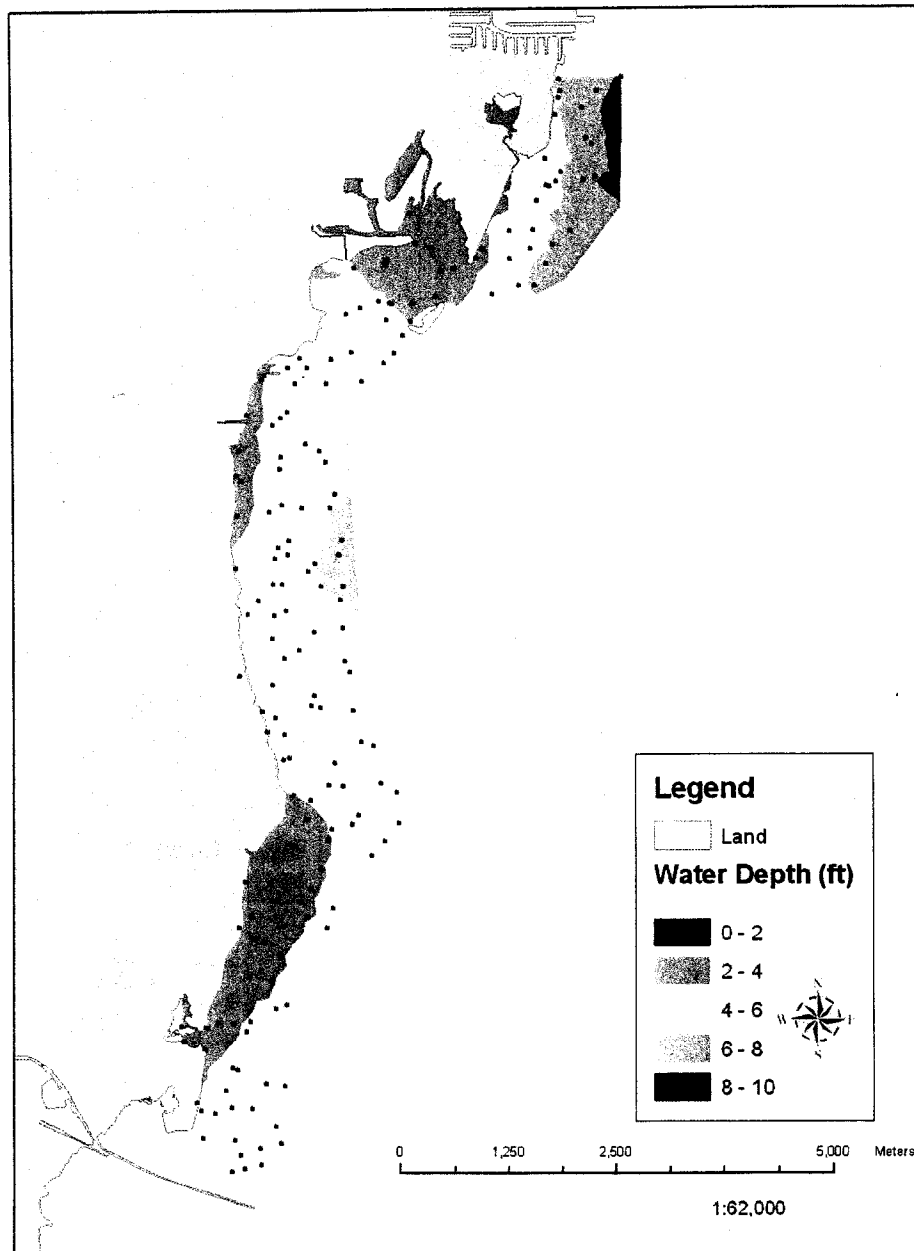


Figure 4.1A. Water depths documented between Black Point and Shoal Point in Biscayne Bay.

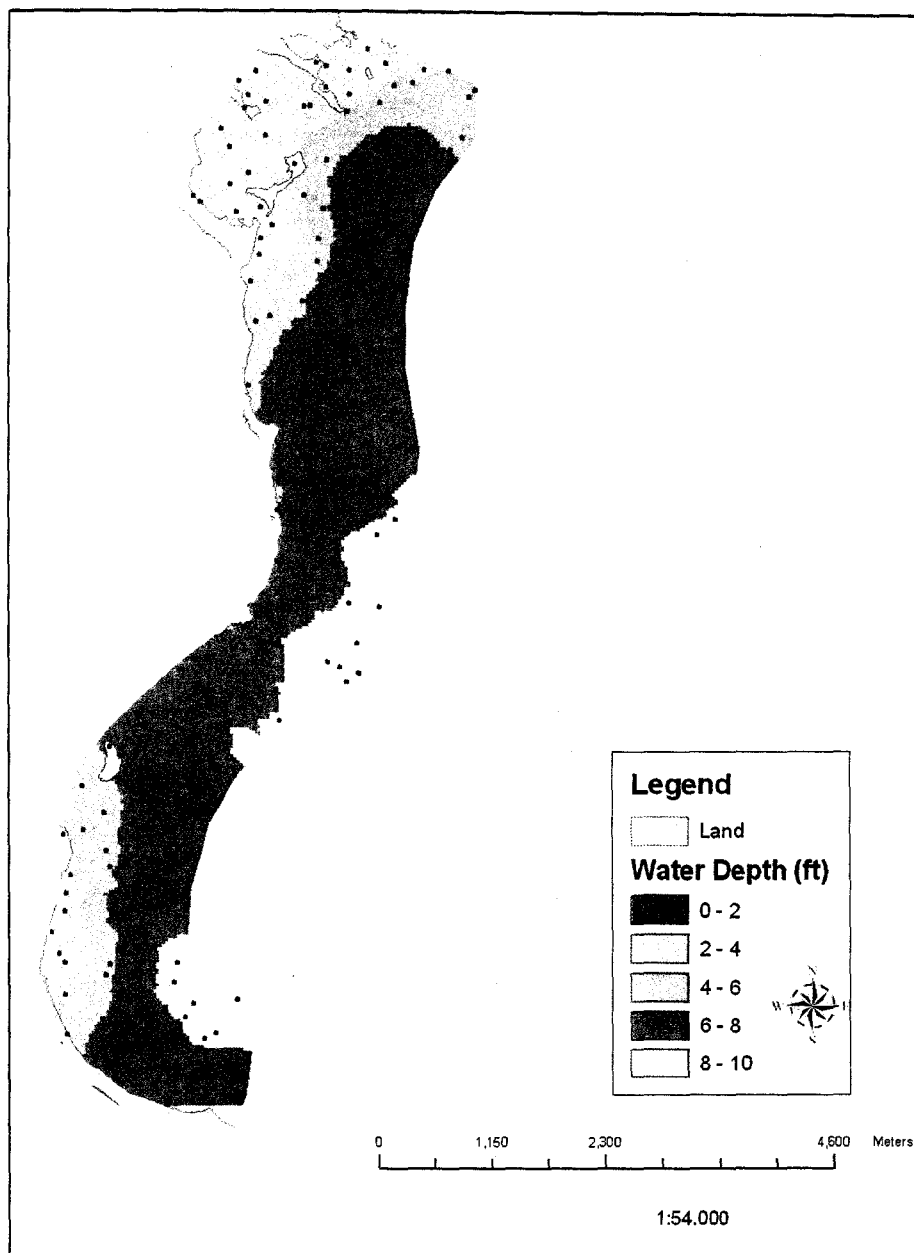


Figure 4.3A. Water depths recorded in Barnes Sound.

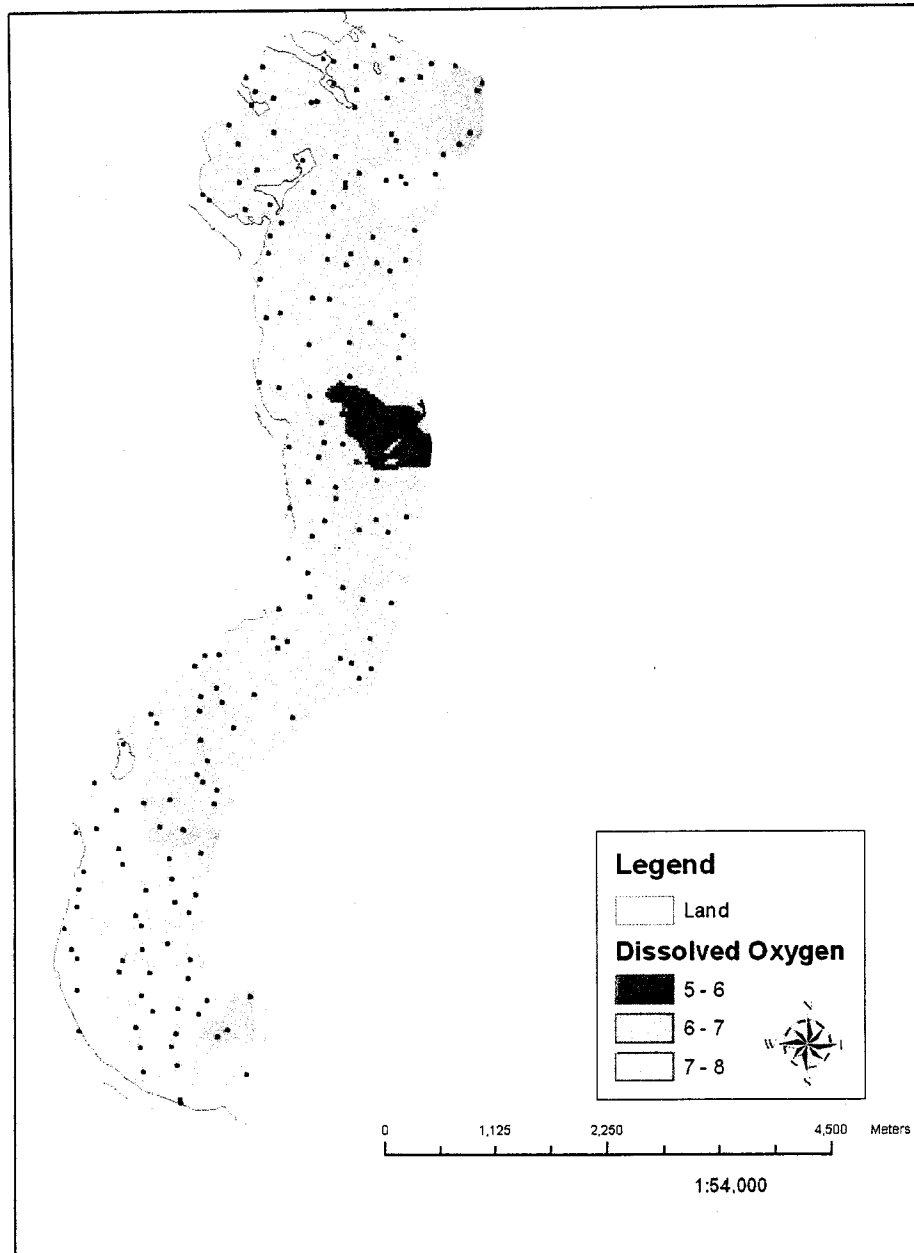


Figure 4.3C. Dissolved Oxygen concentrations recorded in Barnes Sound.

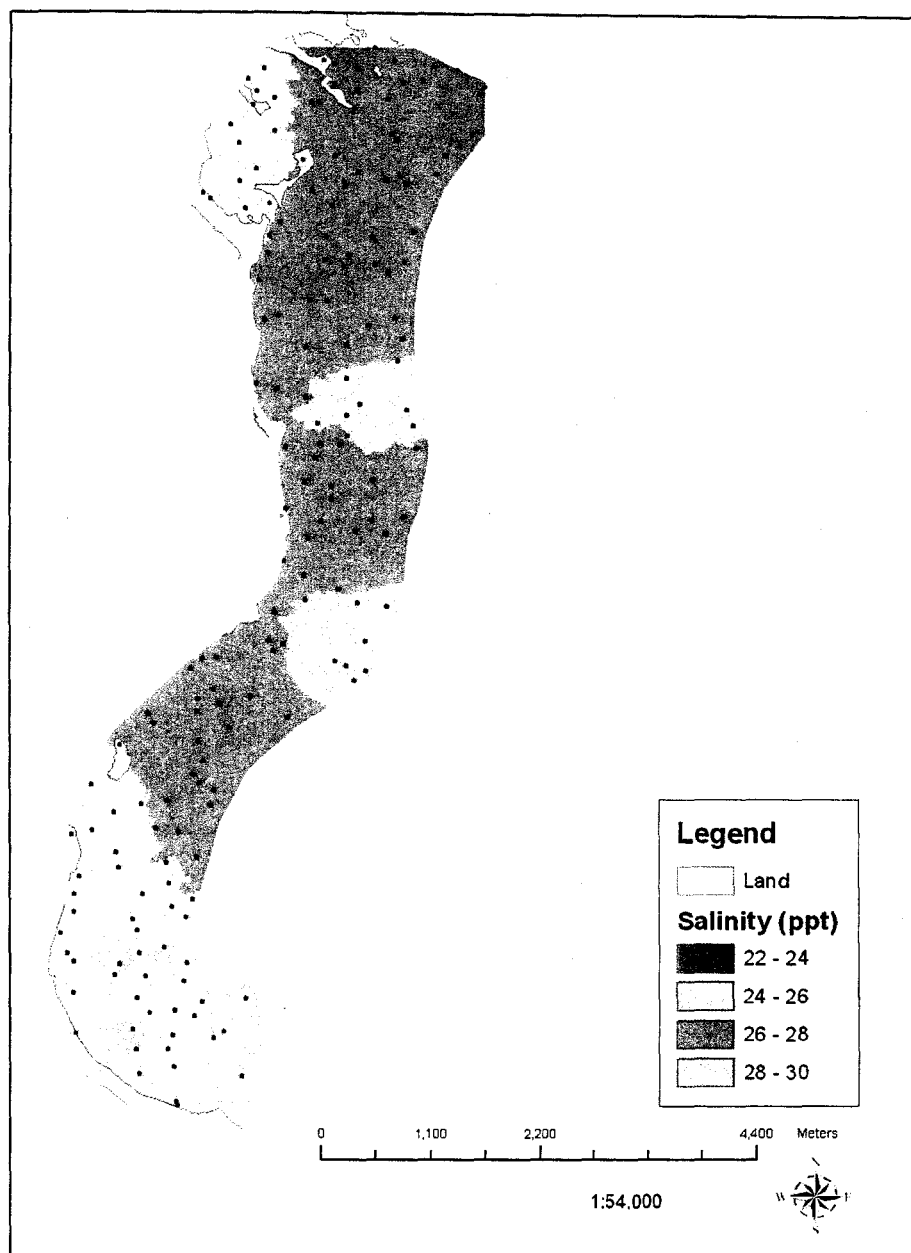


Figure 4.3B. Salinity recorded in Barnes Sound.

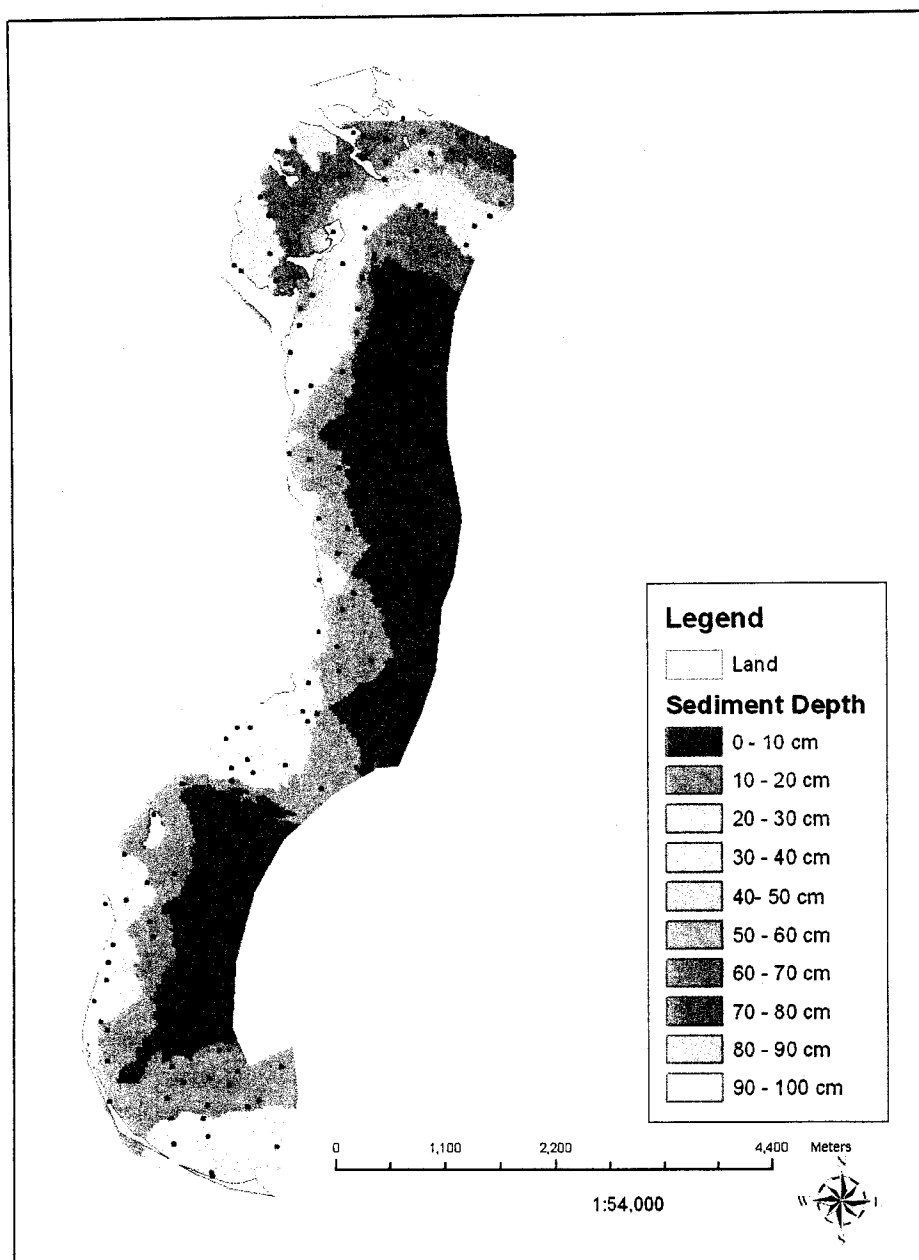


Figure 4.3E. Sediment depths measured in Barnes Sound.

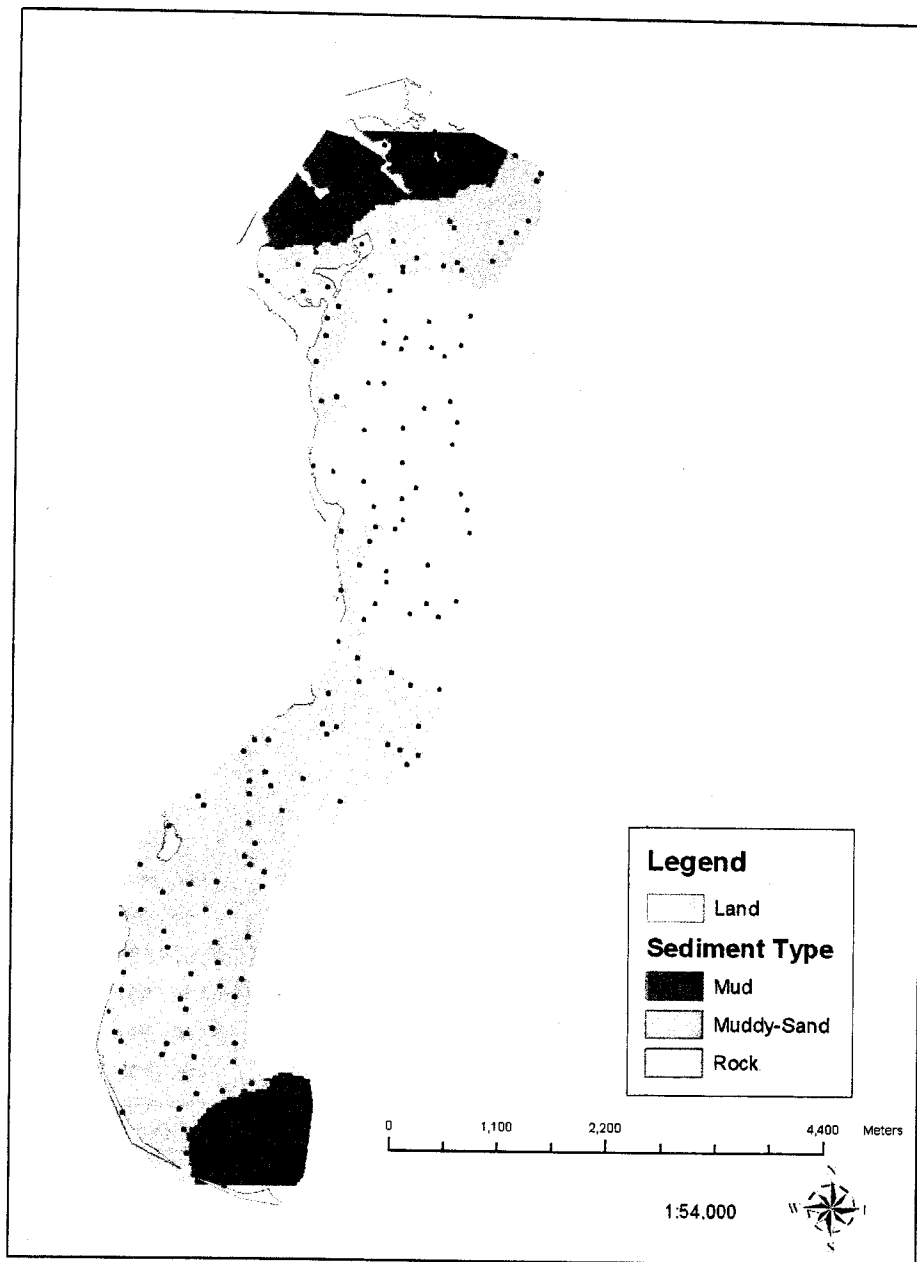


Figure 4.3D. Types of substrate observed in Barnes Sound.

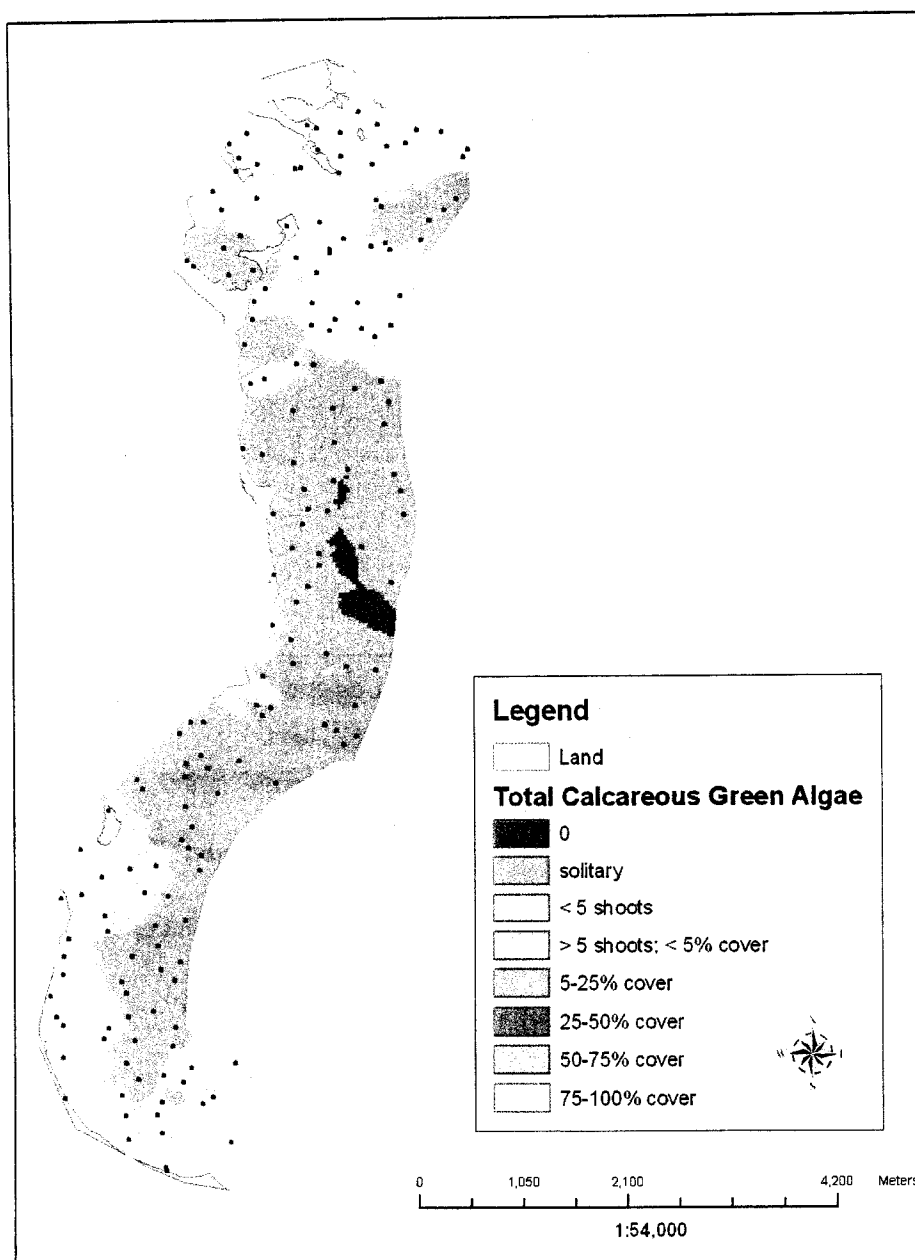


Figure 4.3J. Total calcareous green algae coverage documented in Barnes Sound.

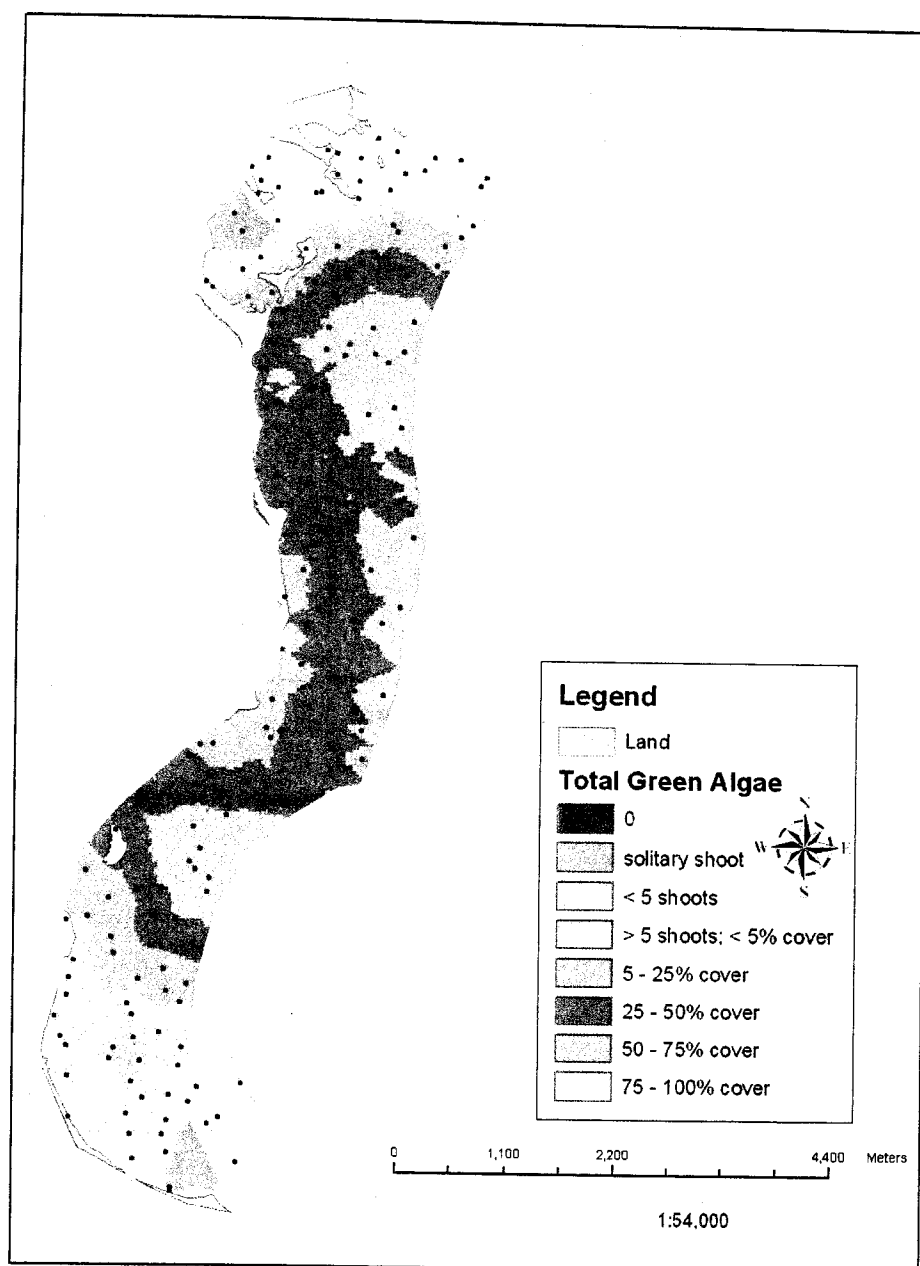


Figure 4.3L. Total green algae coverage documented in Barnes Sound.

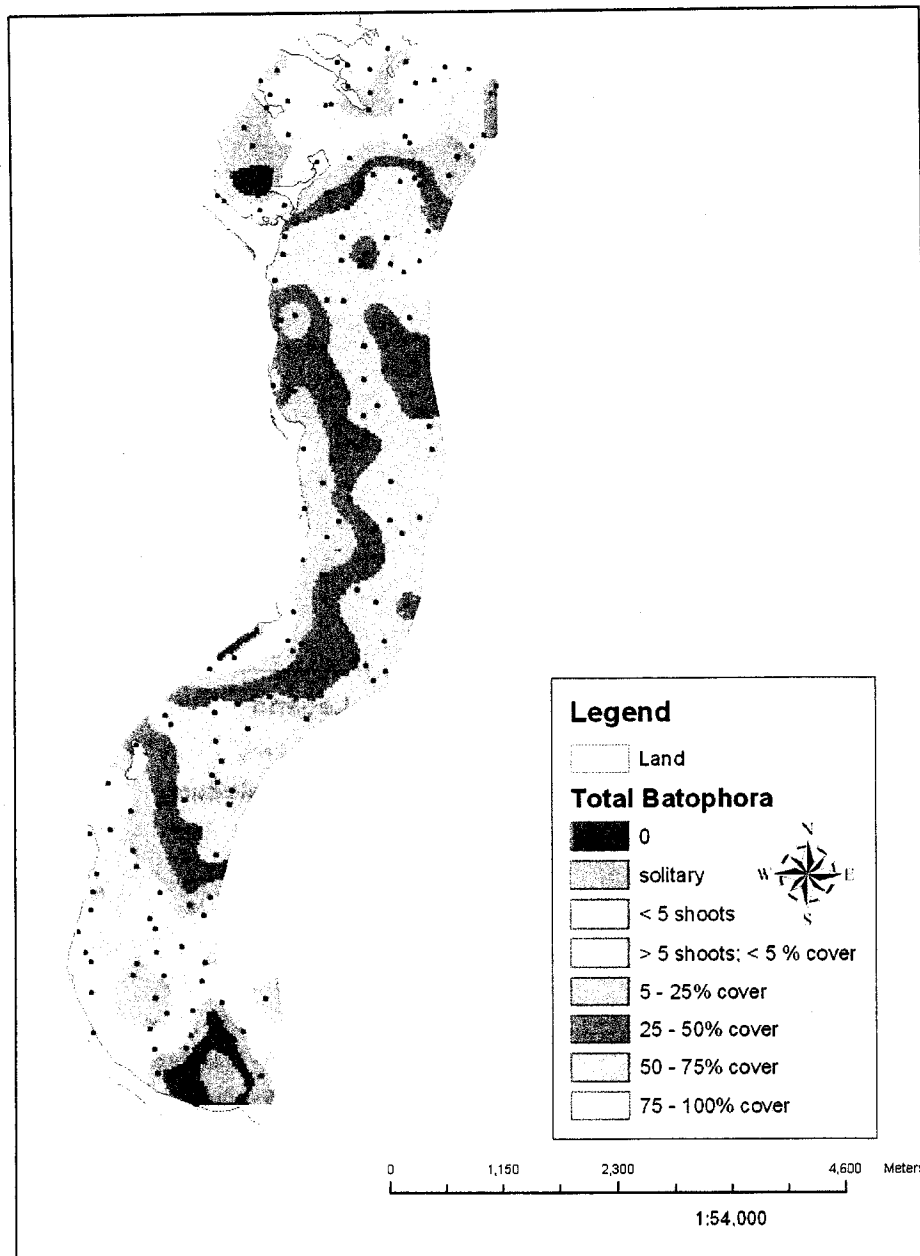


Figure 4.3M. Total Batophora coverage documented in Barnes Sound.

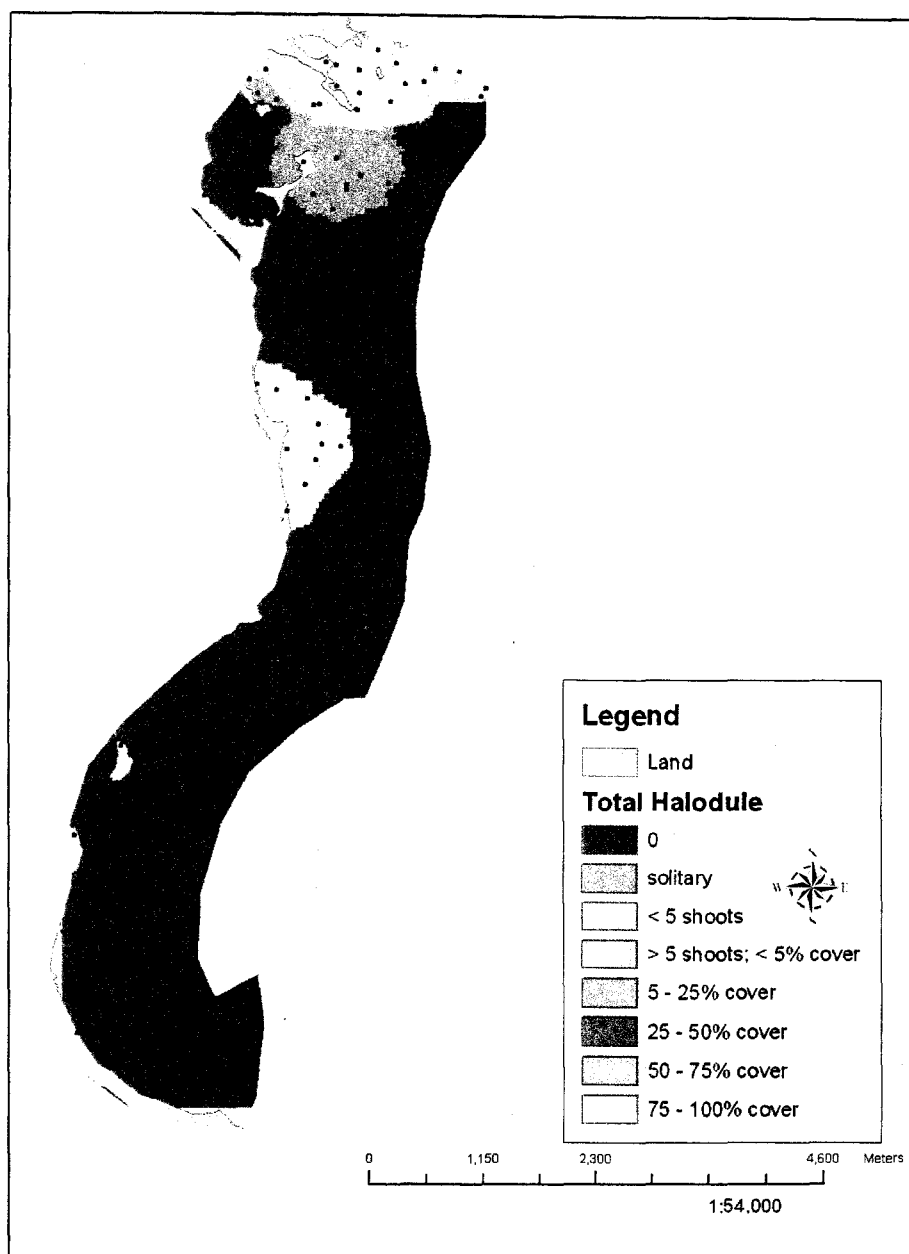


Figure 4.3H. Total Halodule coverage documented in Barnes Sound.

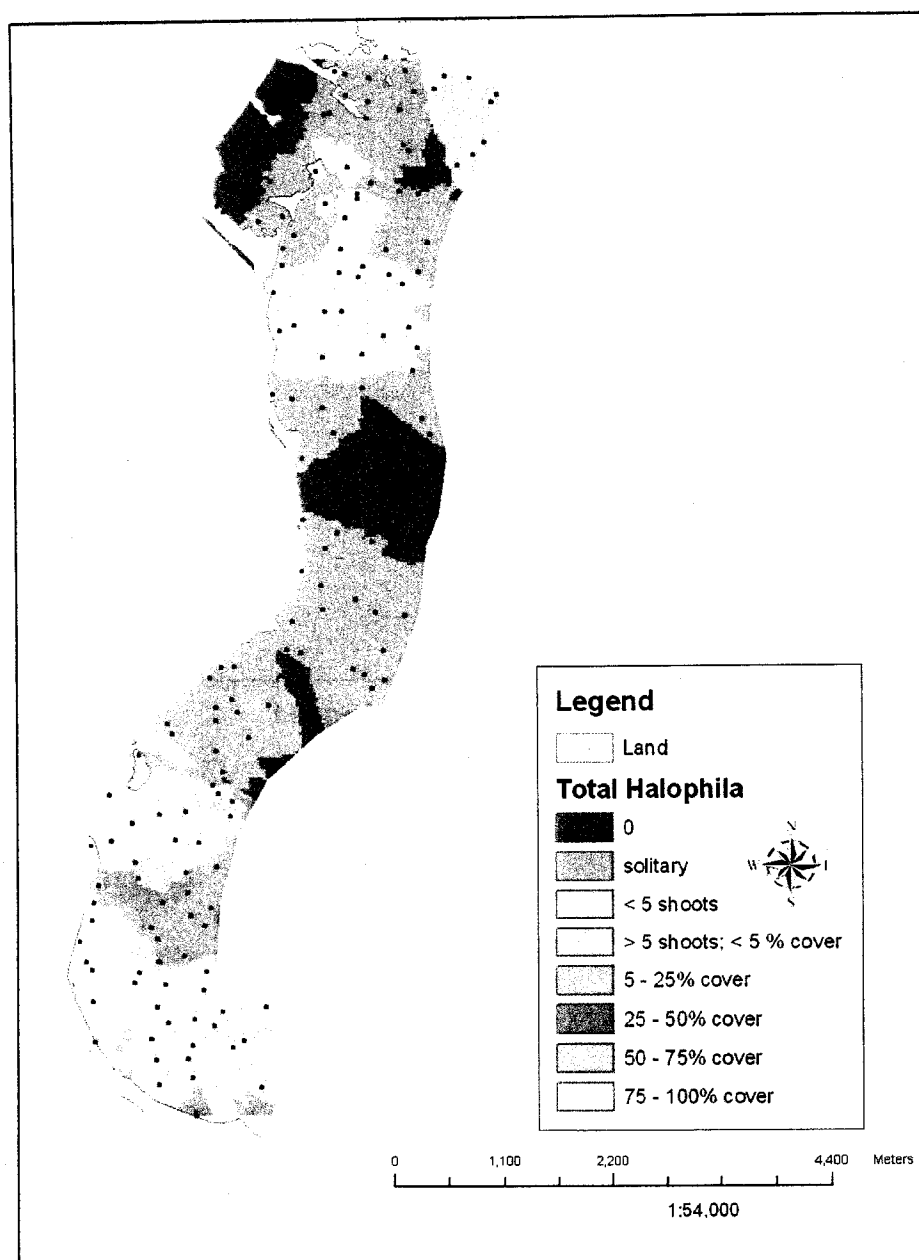


Figure 4.31. Total Halophila coverage documented in Barnes Sound.

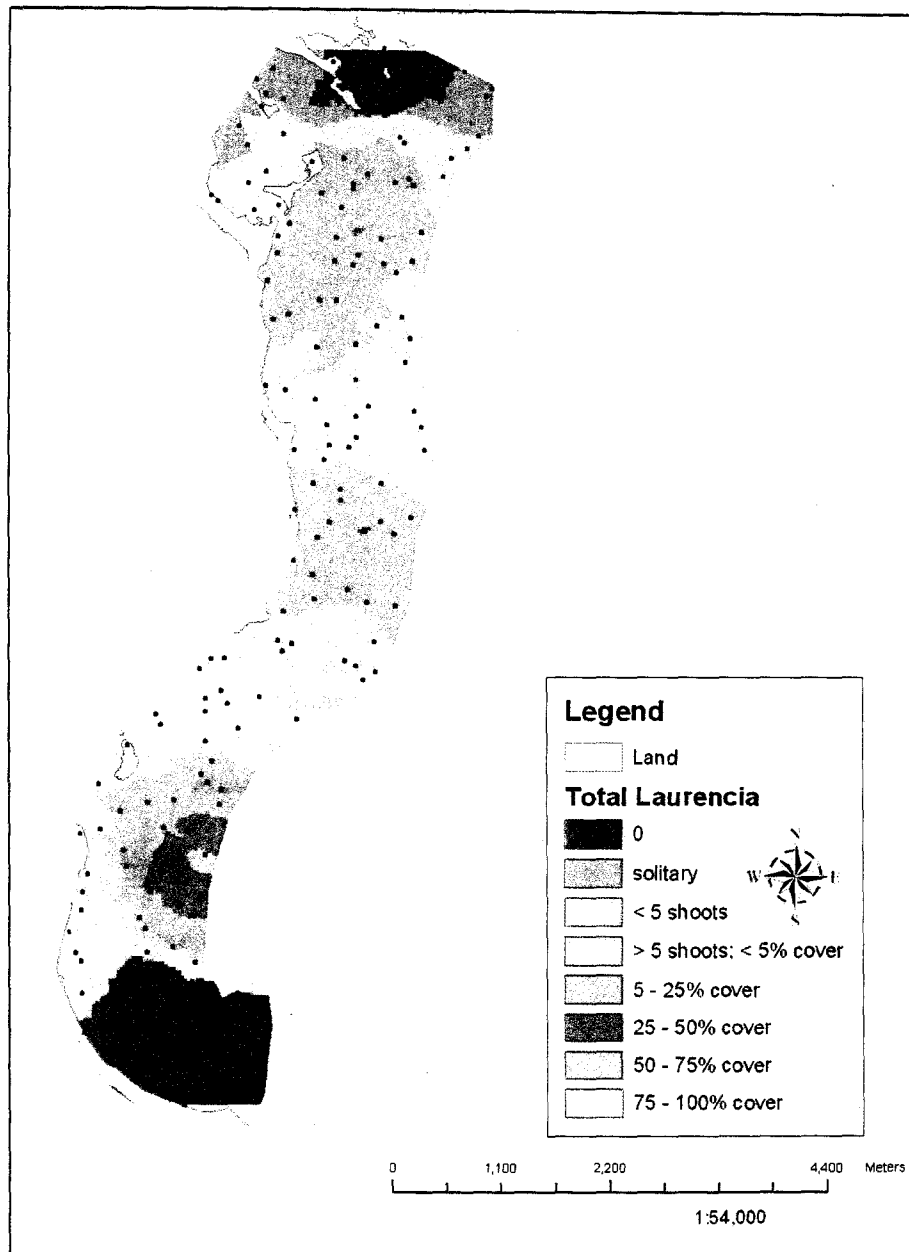


Figure 4.30. Total Laurencia coverage documented in Barnes Sound.

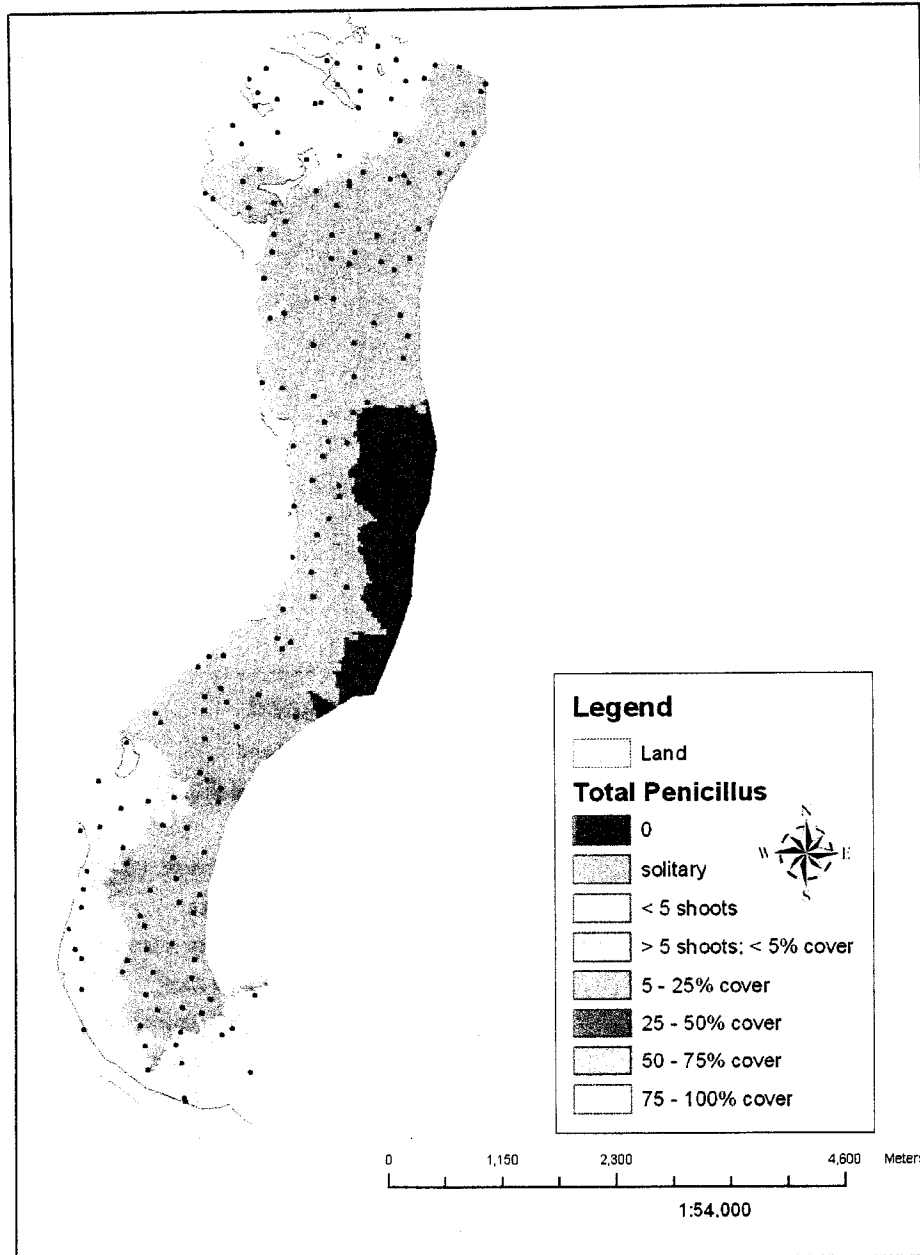


Figure 4.3K. Total Penicillus coverage documented in Barnes Sound.

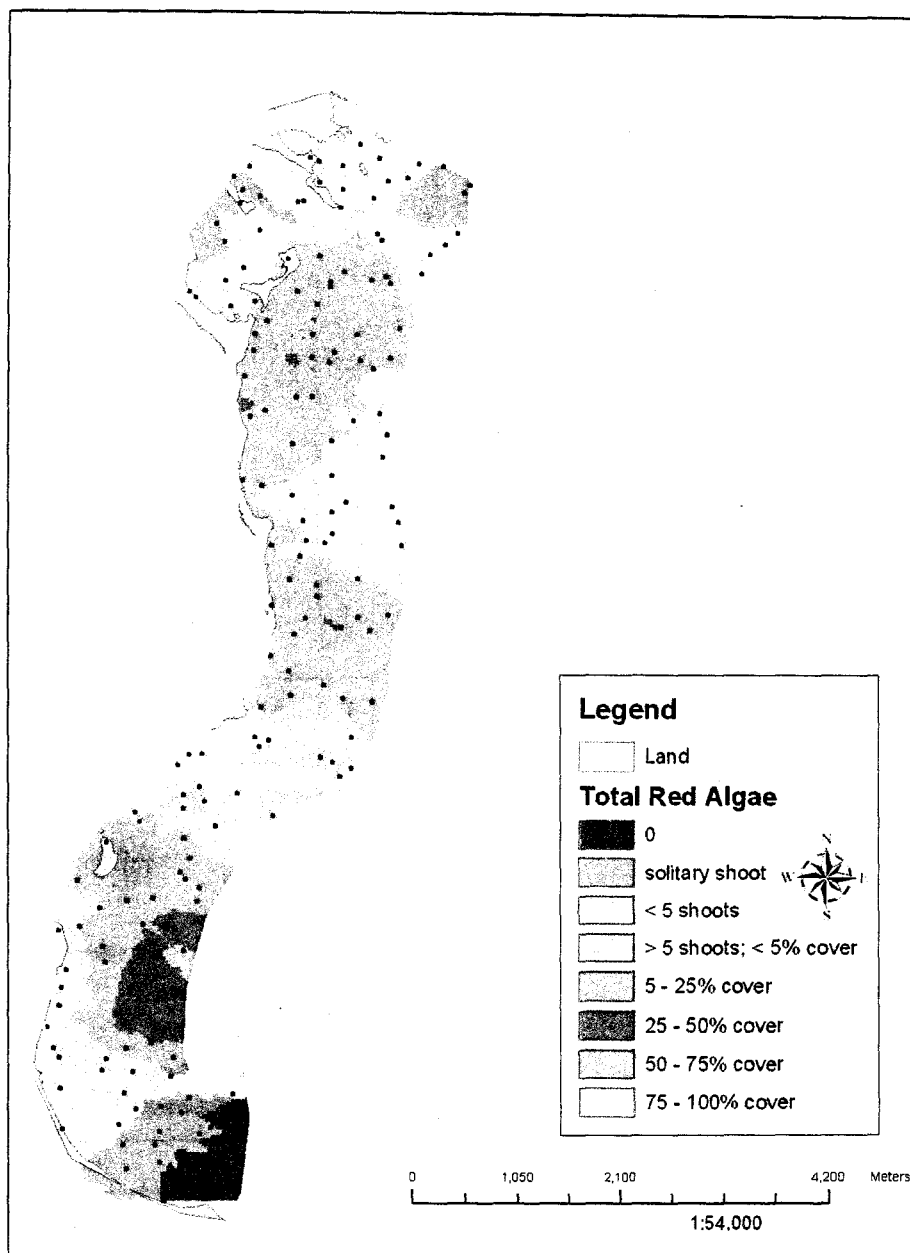


Figure 4.3N. Total red algae coverage documented in Barnes Sound.

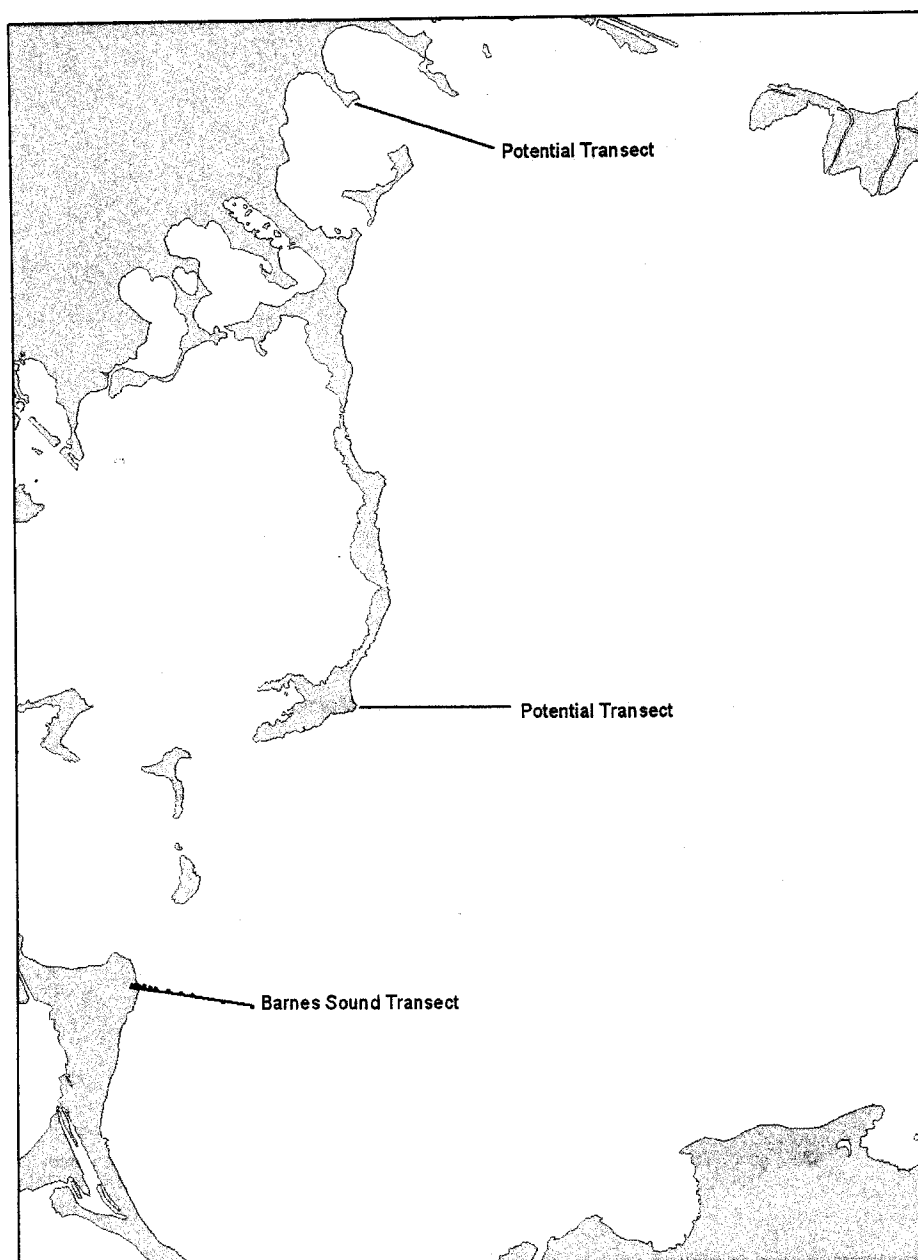


Figure 3C. Potential long-term monitoring transect within Barnes Sound.

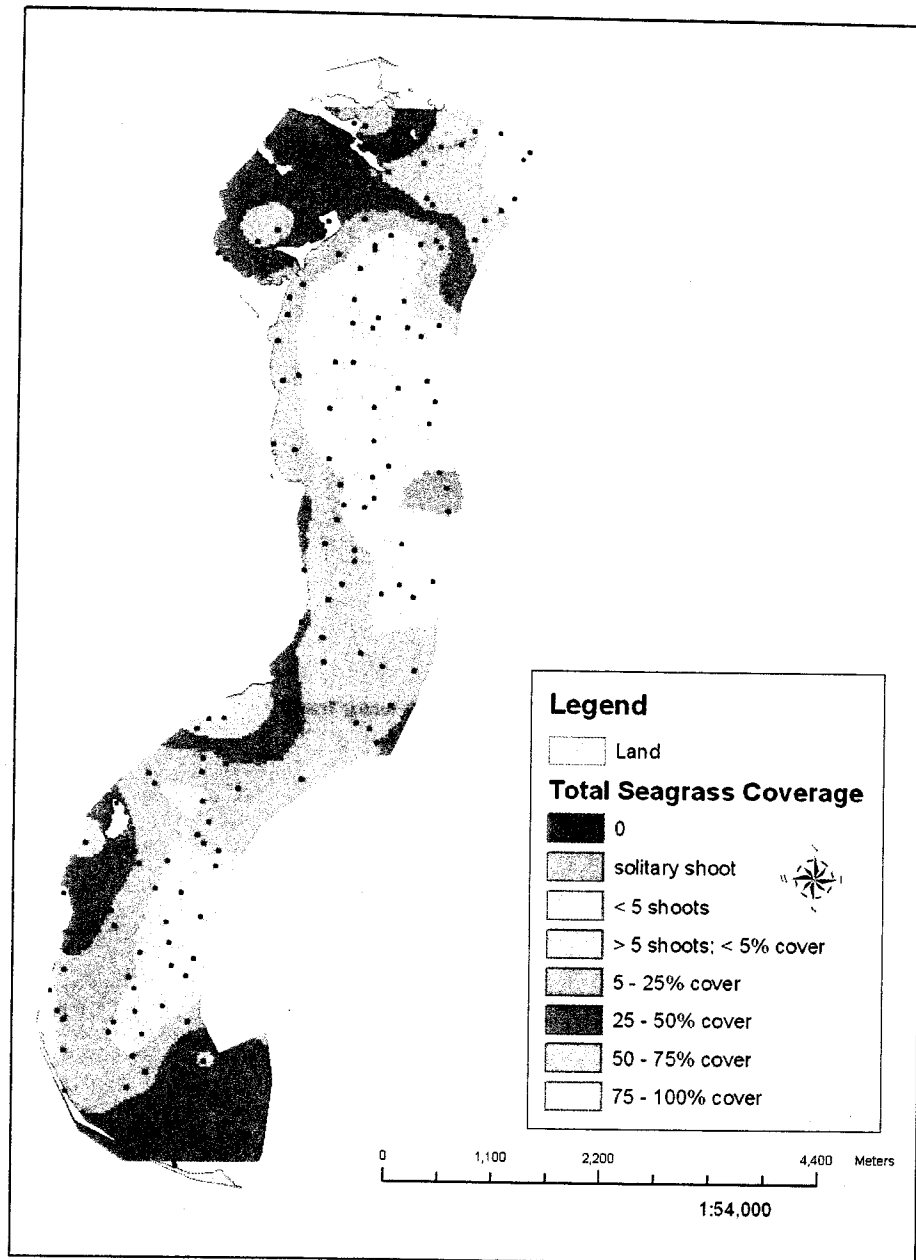


Figure 4.3F. Total seagrass coverage documented in Barnes Sound.

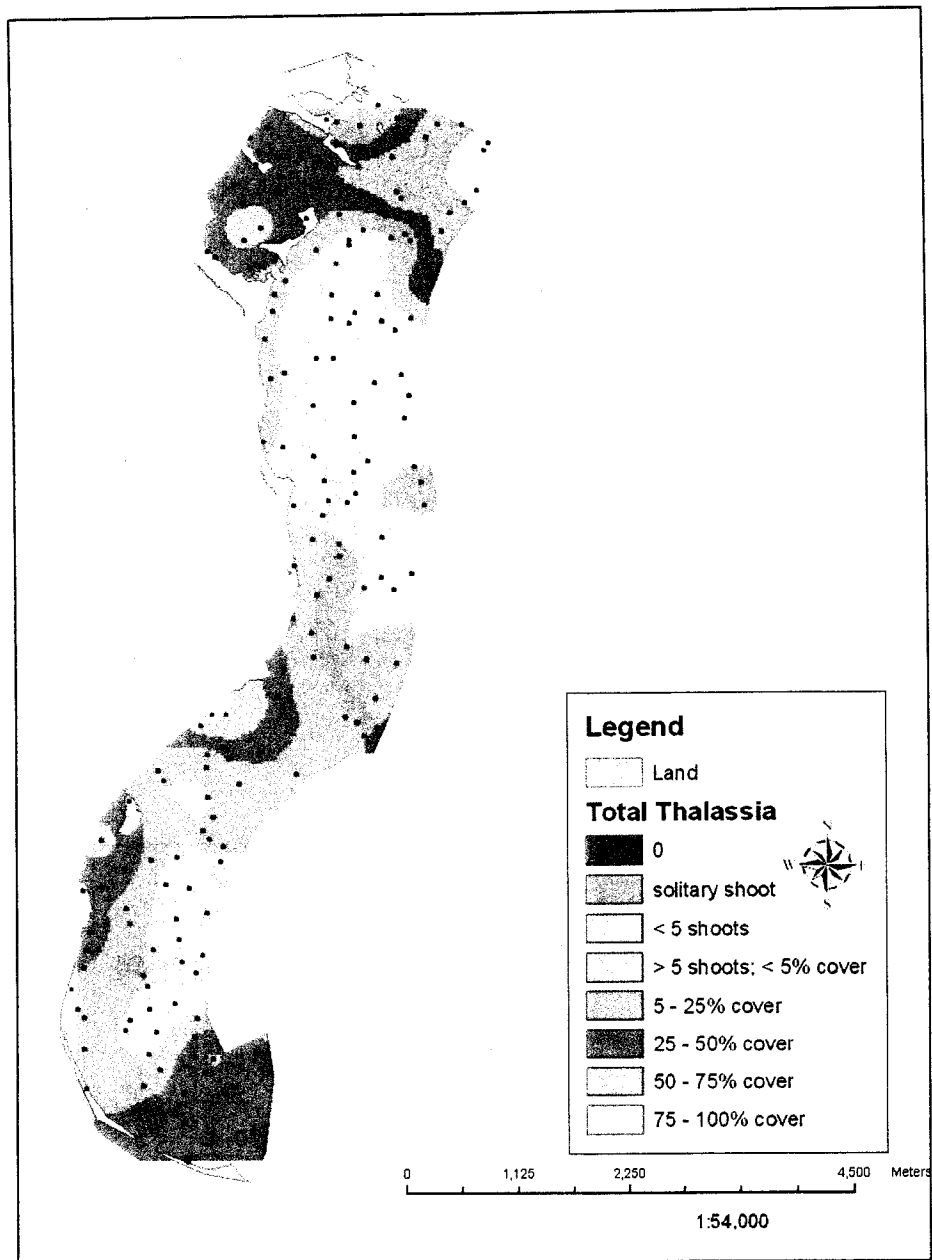


Figure 4.3G.Total Thalassia coverage documented in Barnes Sound.

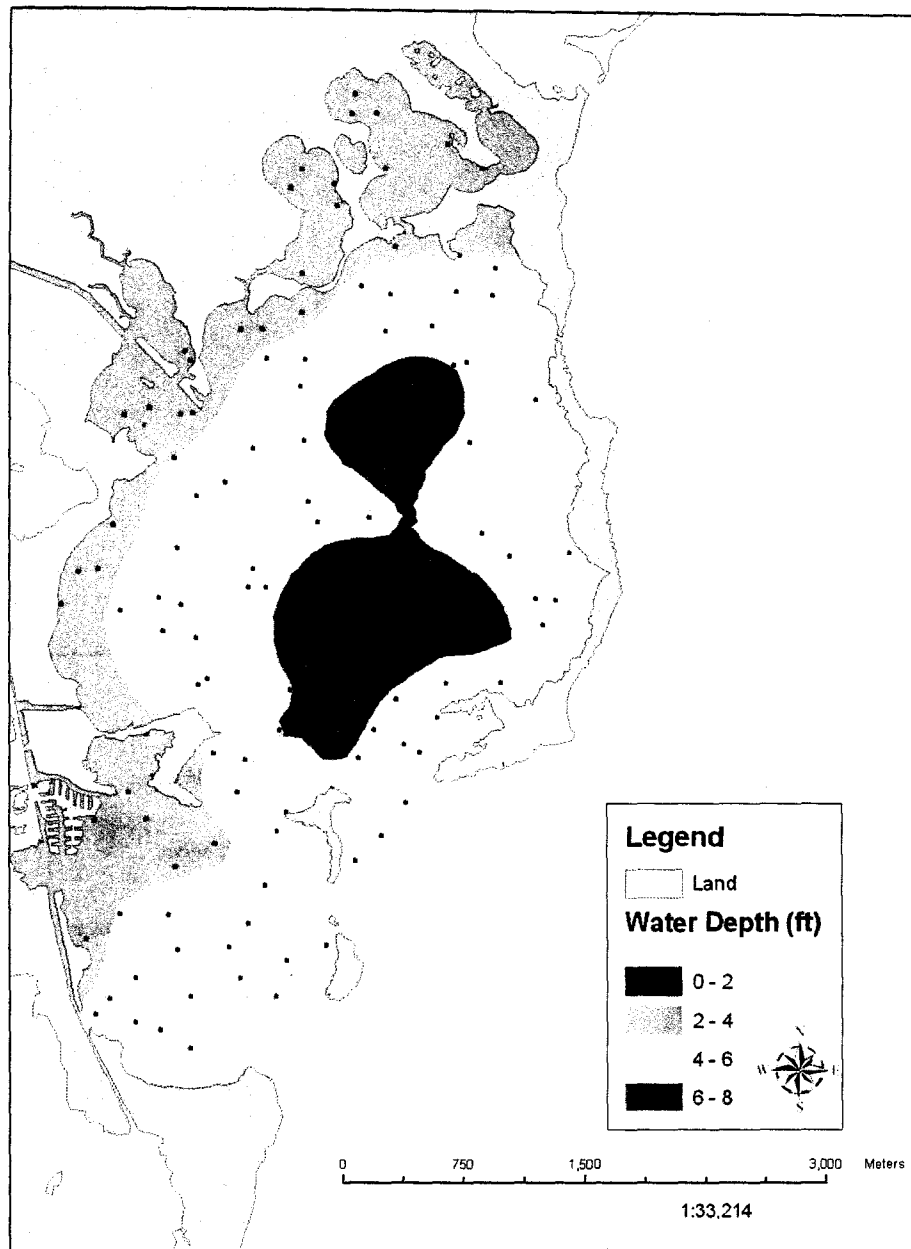


Figure 4.2A. Water depths recorded in Manatee Bay.

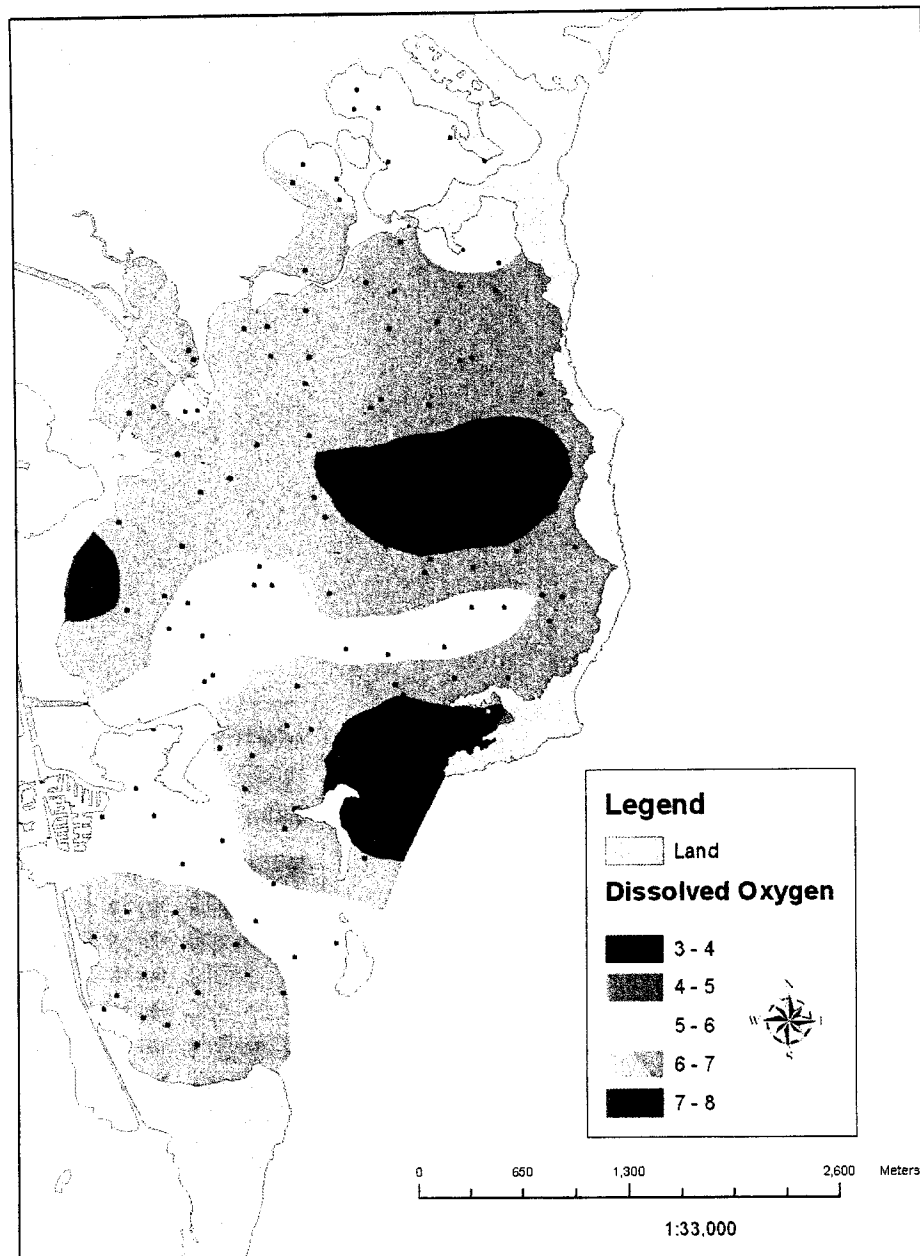


Figure 4.2C. Dissolved Oxygen concentrations recorded in Manatee Bay.

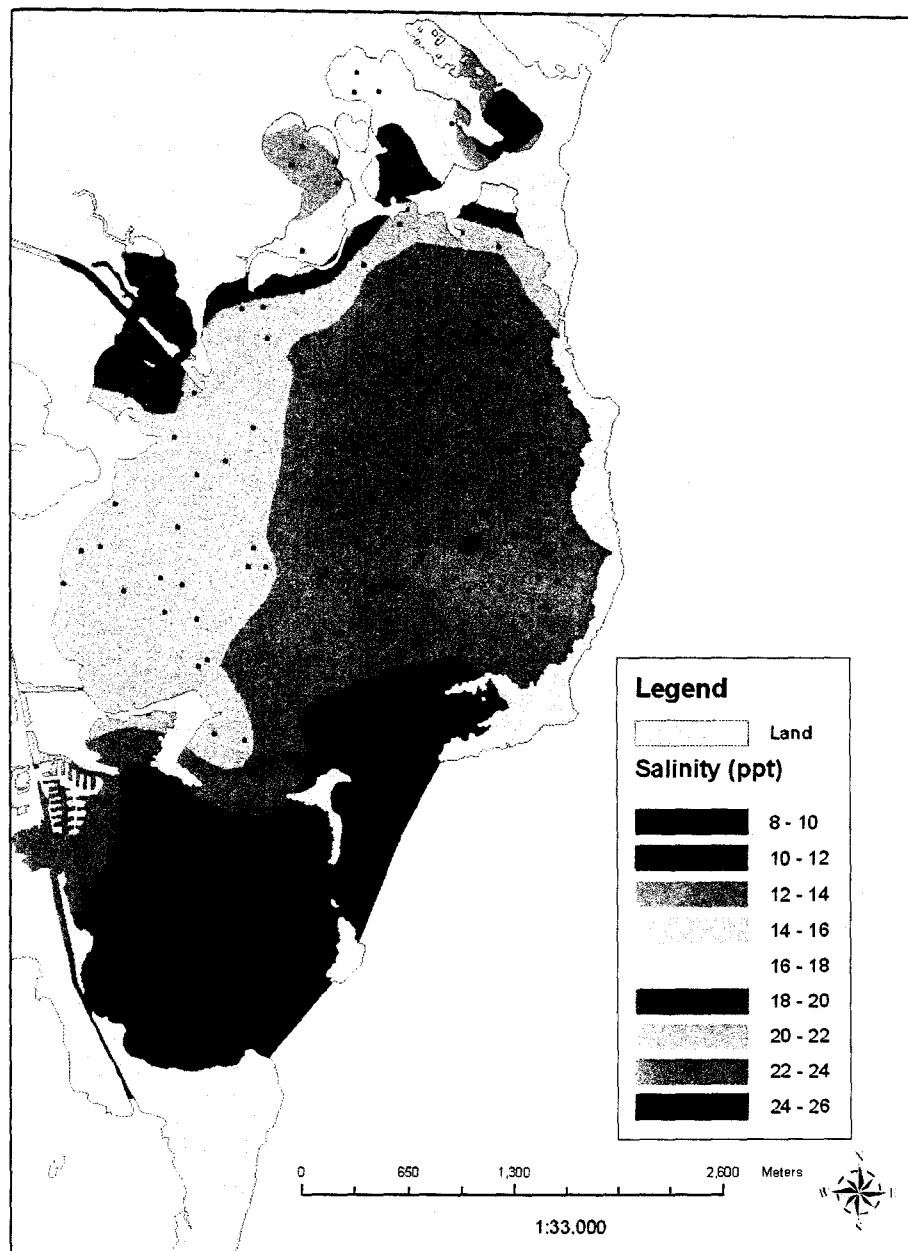


Figure 4.2B. Salinity recorded in Manatee Bay.

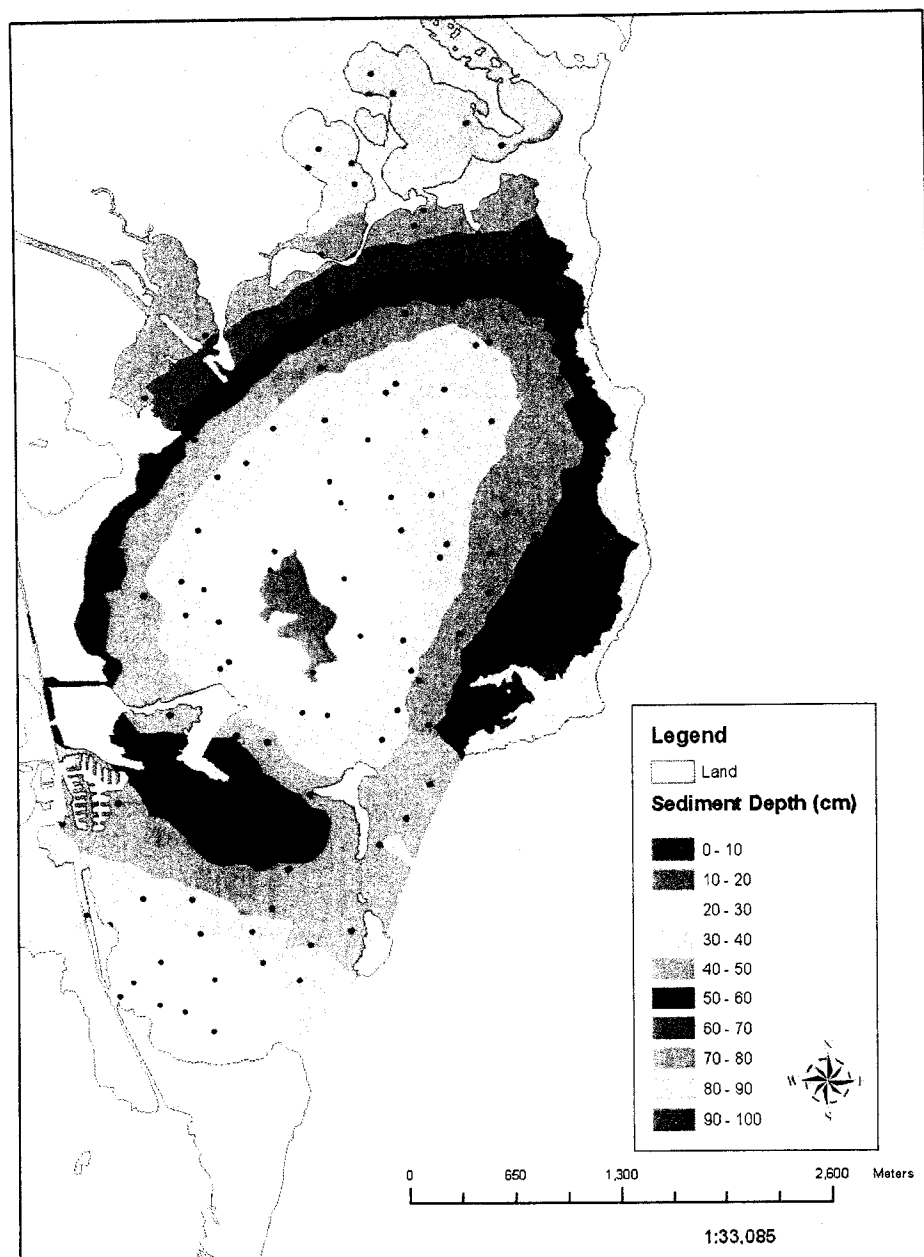


Figure 4.2E. Sediment depths measured in Manatee Bay.

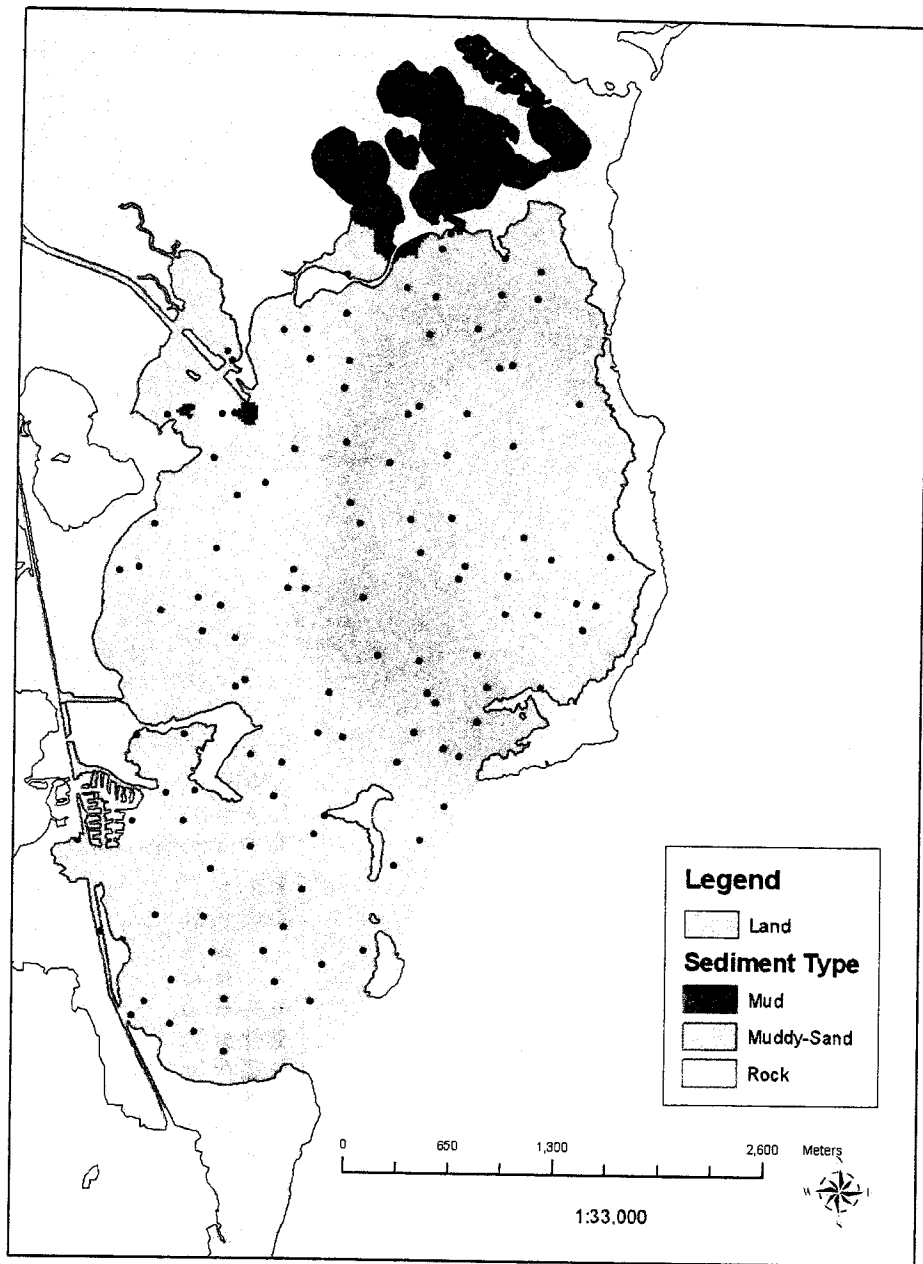


Figure 4.2D. Types of substrate observed in Manatee Bay.

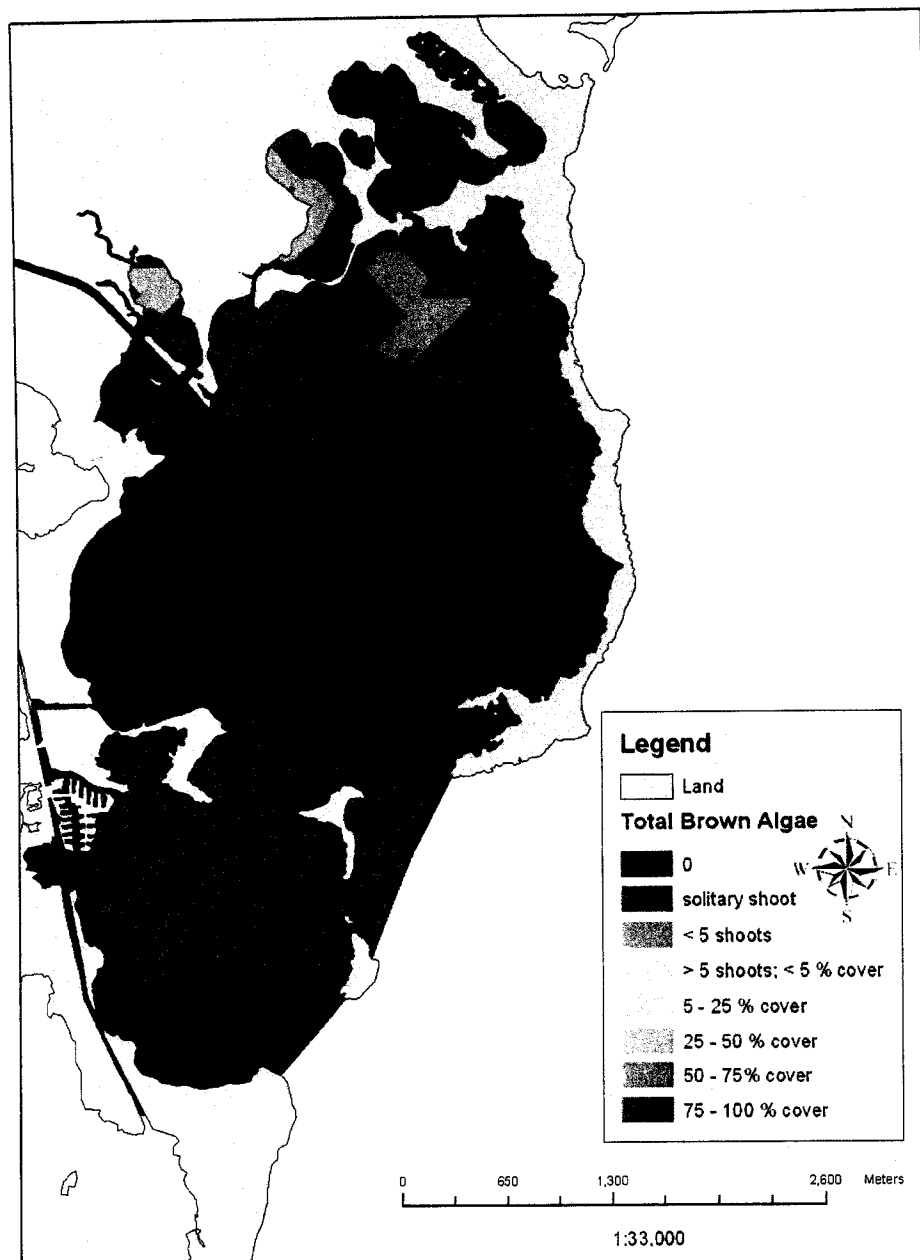


Figure 4.20. Total brown algae coverage documented in Manatee Bay.

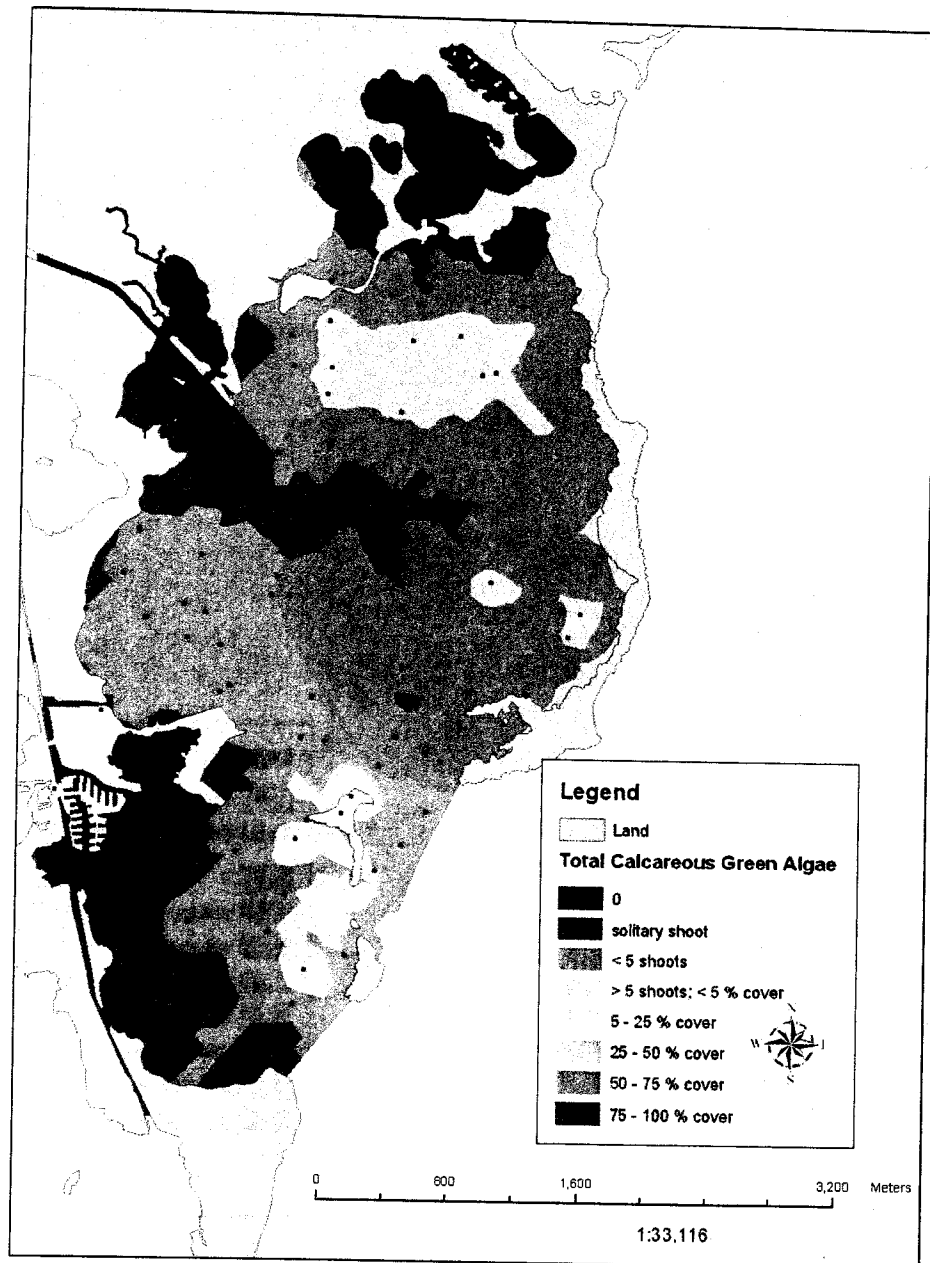


Figure 4.2I. Total calcareous green algae coverage documented in Manatee Bay.

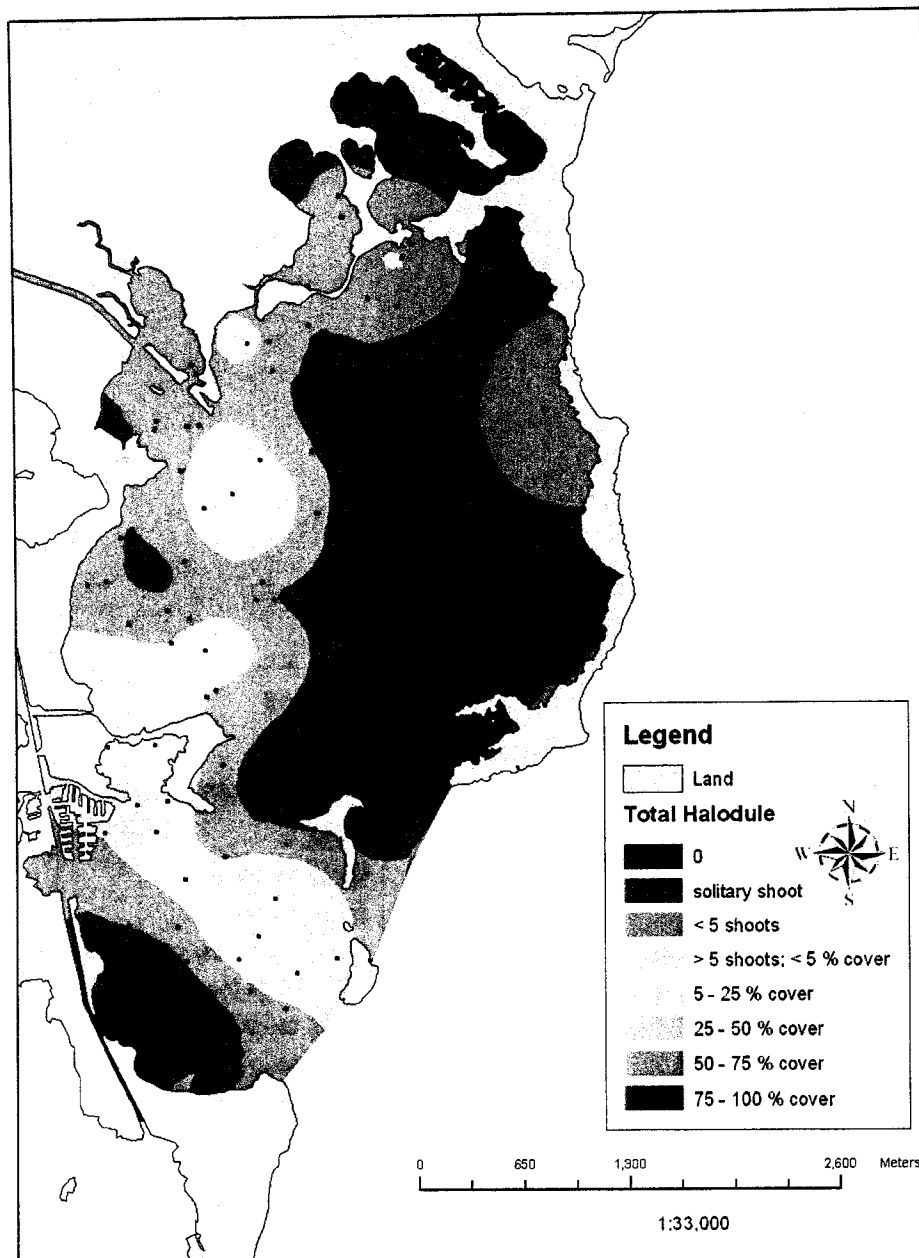


Figure 4.2H. Total Halodule coverage documented in Manatee Bay.

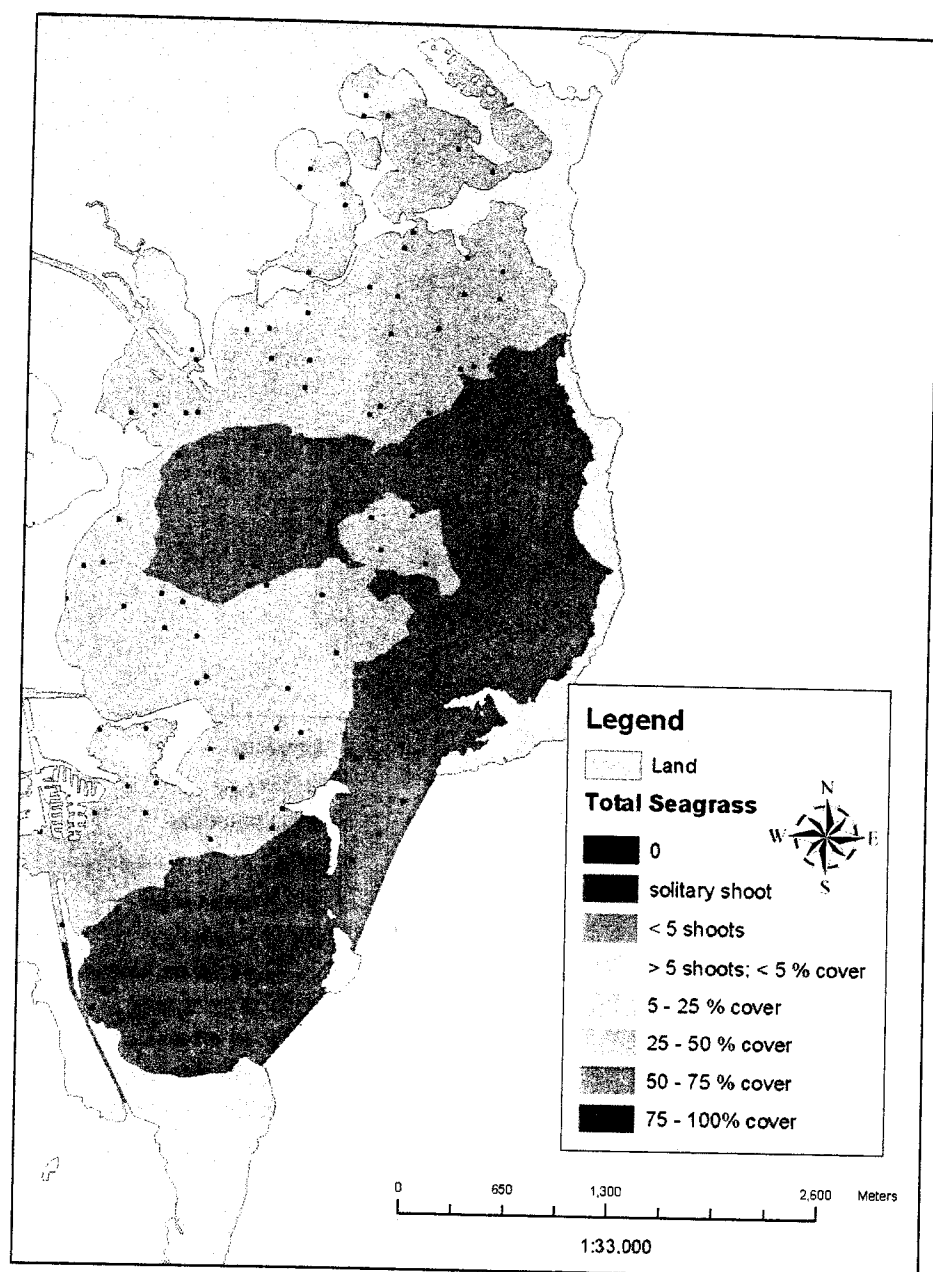


Figure 4.2F. Total seagrass coverage documented in Manatee Bay.

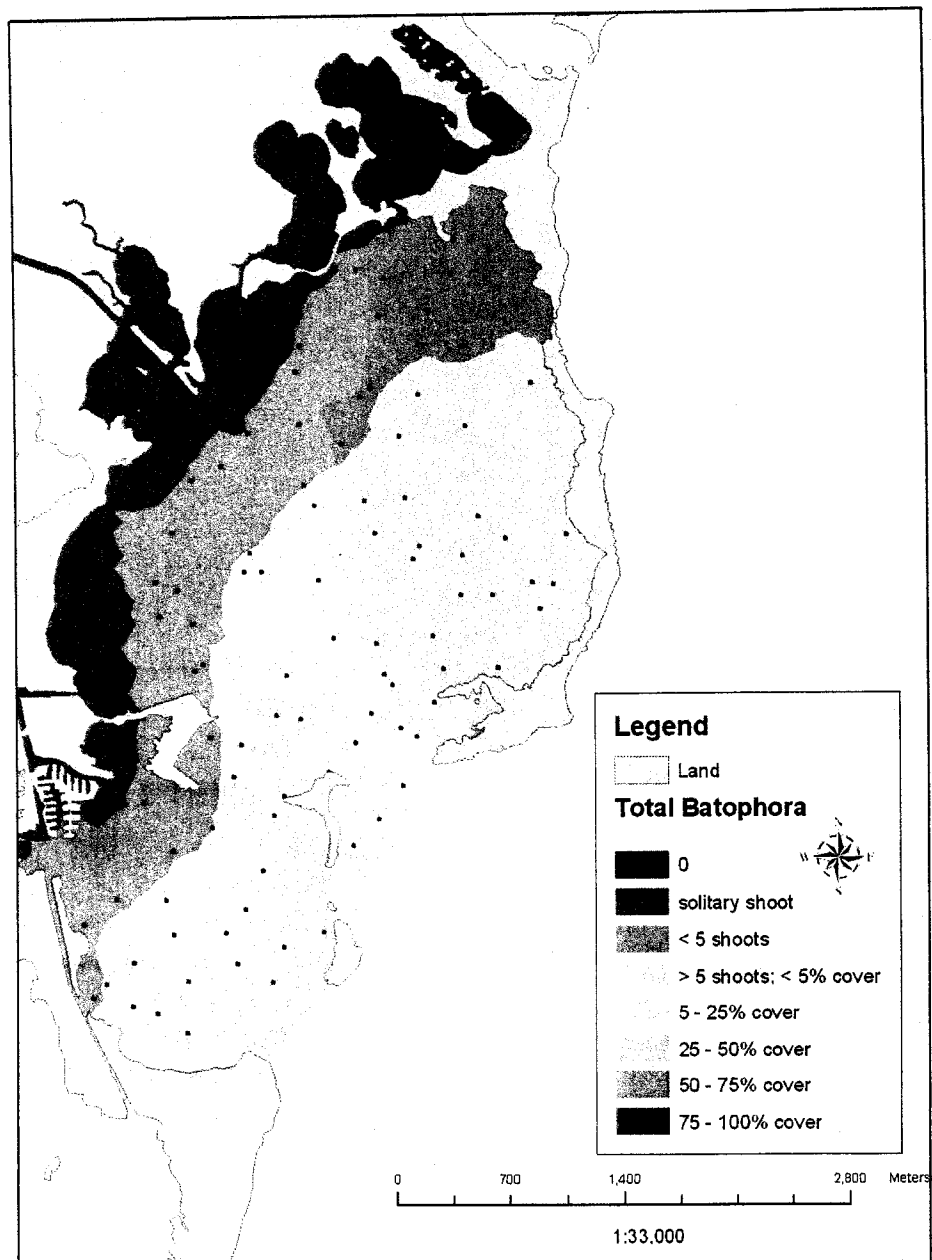


Figure 4.2L. Total Batophora coverage documented in Manatee Bay.

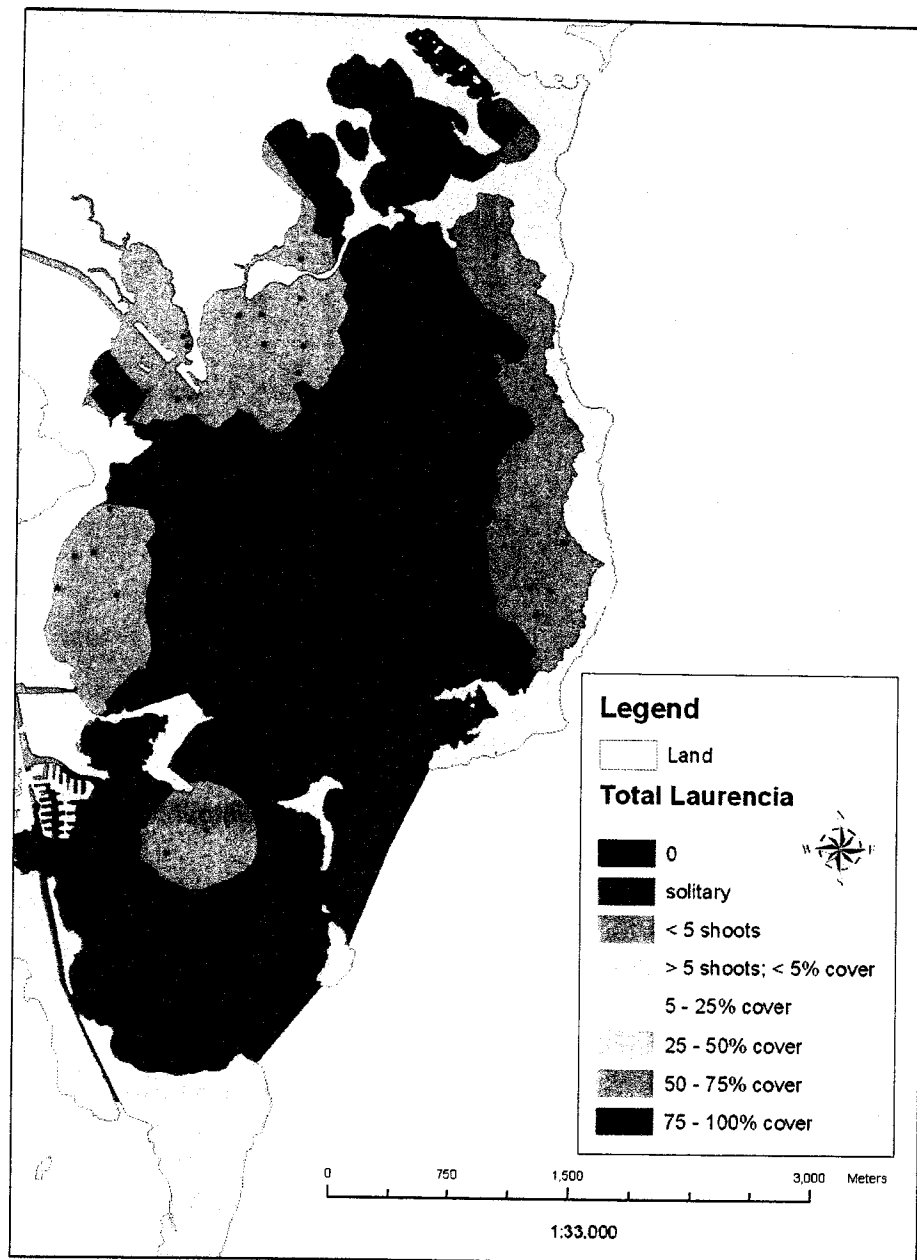


Figure 4.2N. Total Laurencia coverage documented in Manatee Bay.

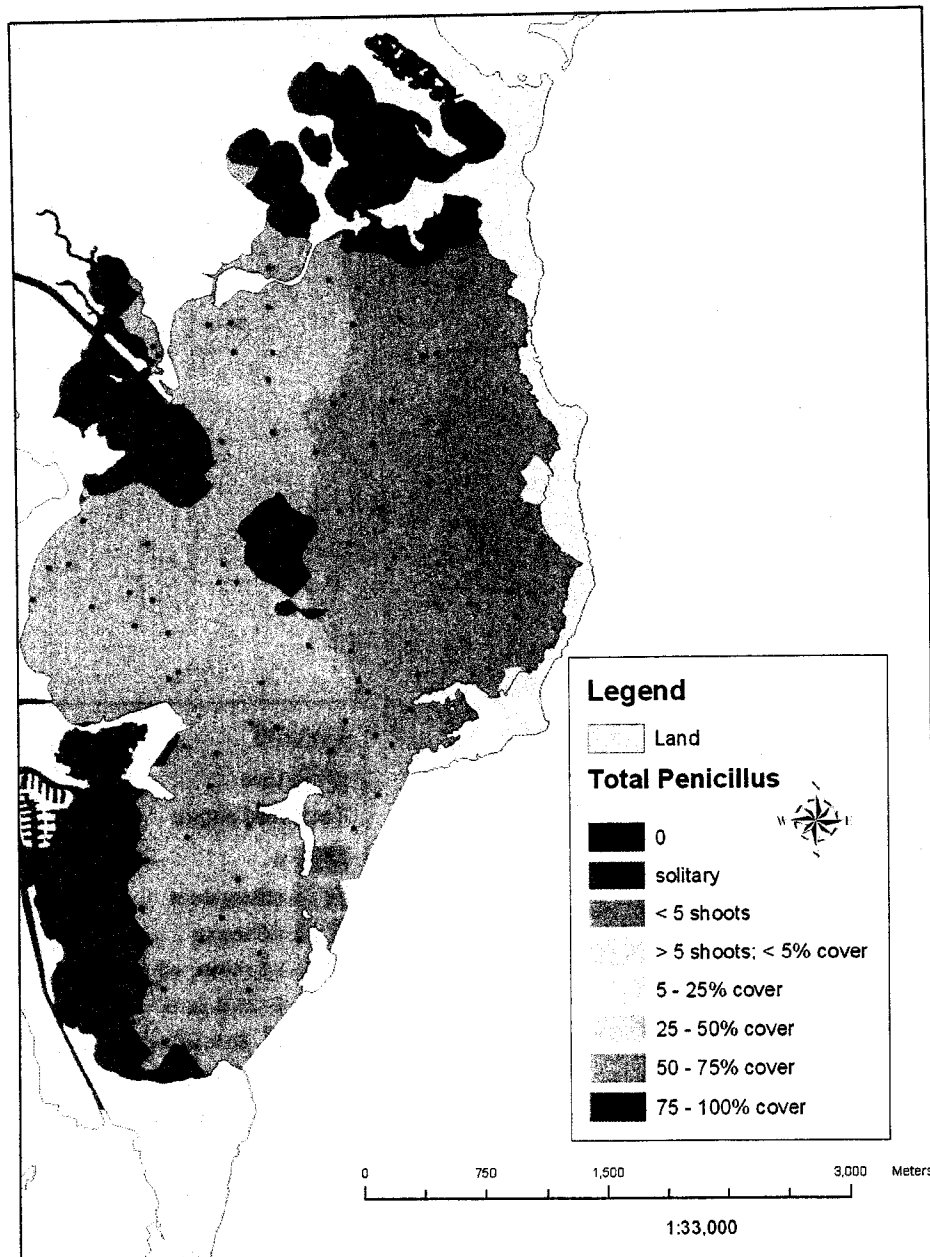


Figure 4.2J. Total Penicillus coverage documented in Manatee Bay.

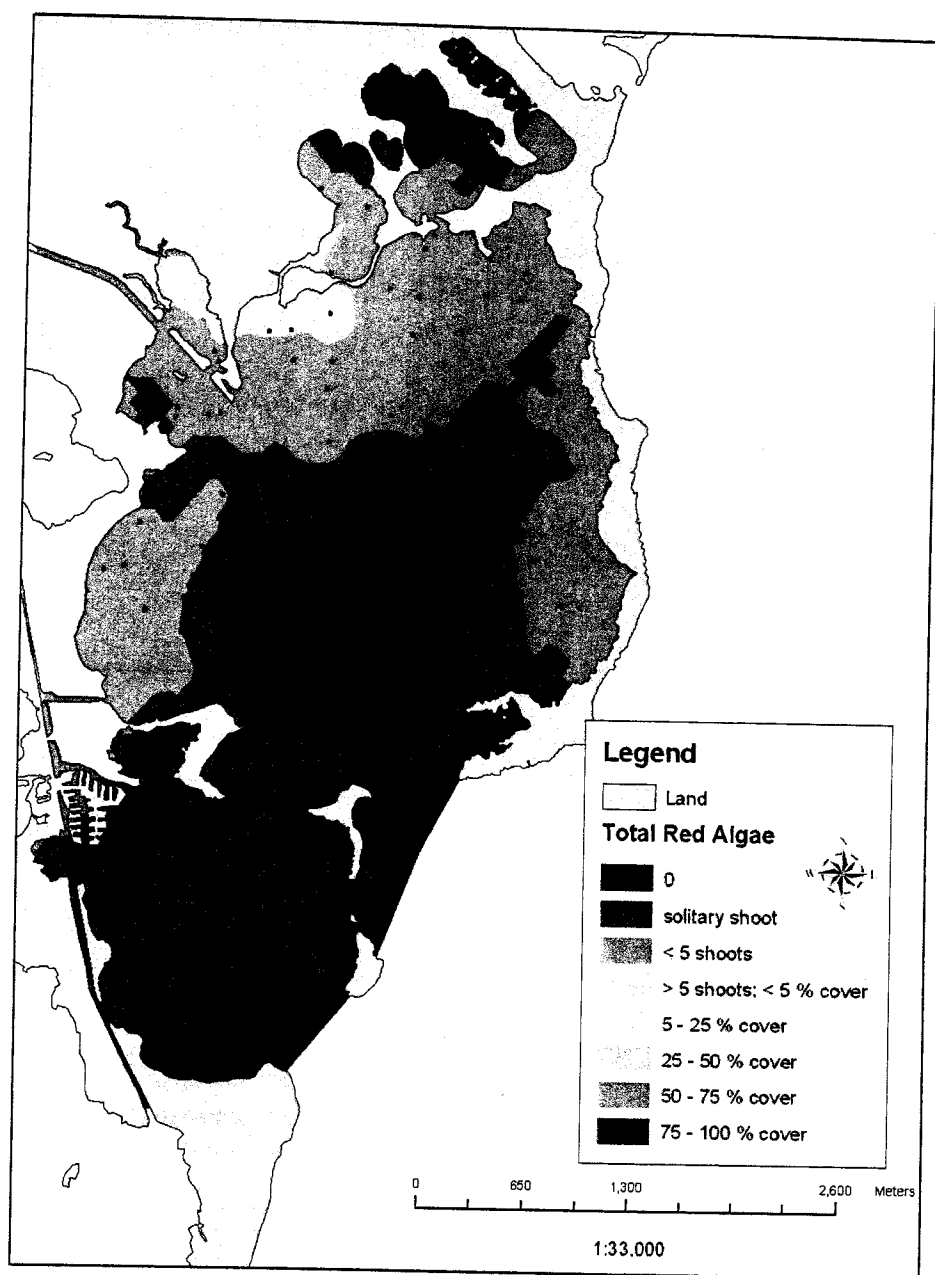


Figure 4.2M. Total red algae coverage documented in Manatee Bay.

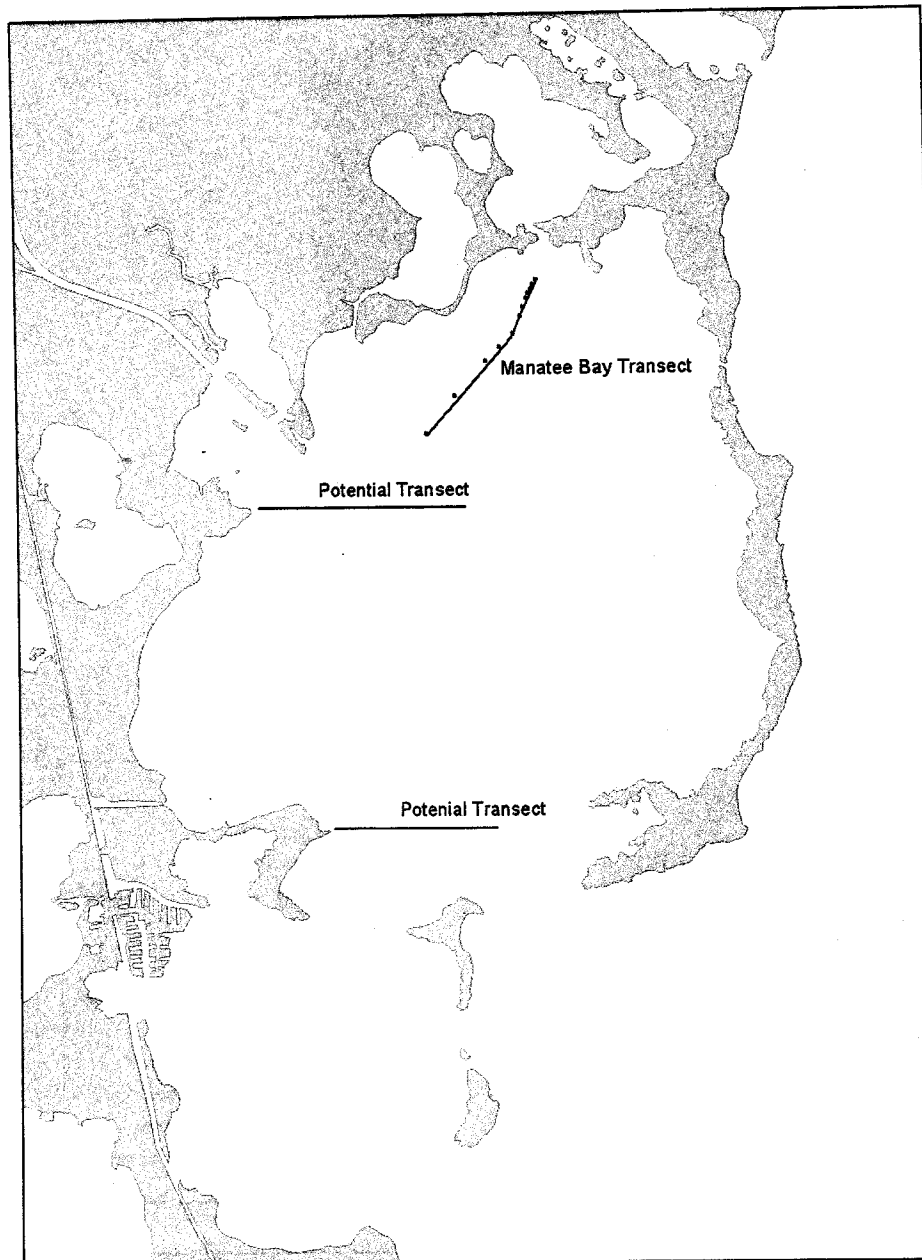


Figure 3B. Potential long-term monitoring transects within Manatee Bay.

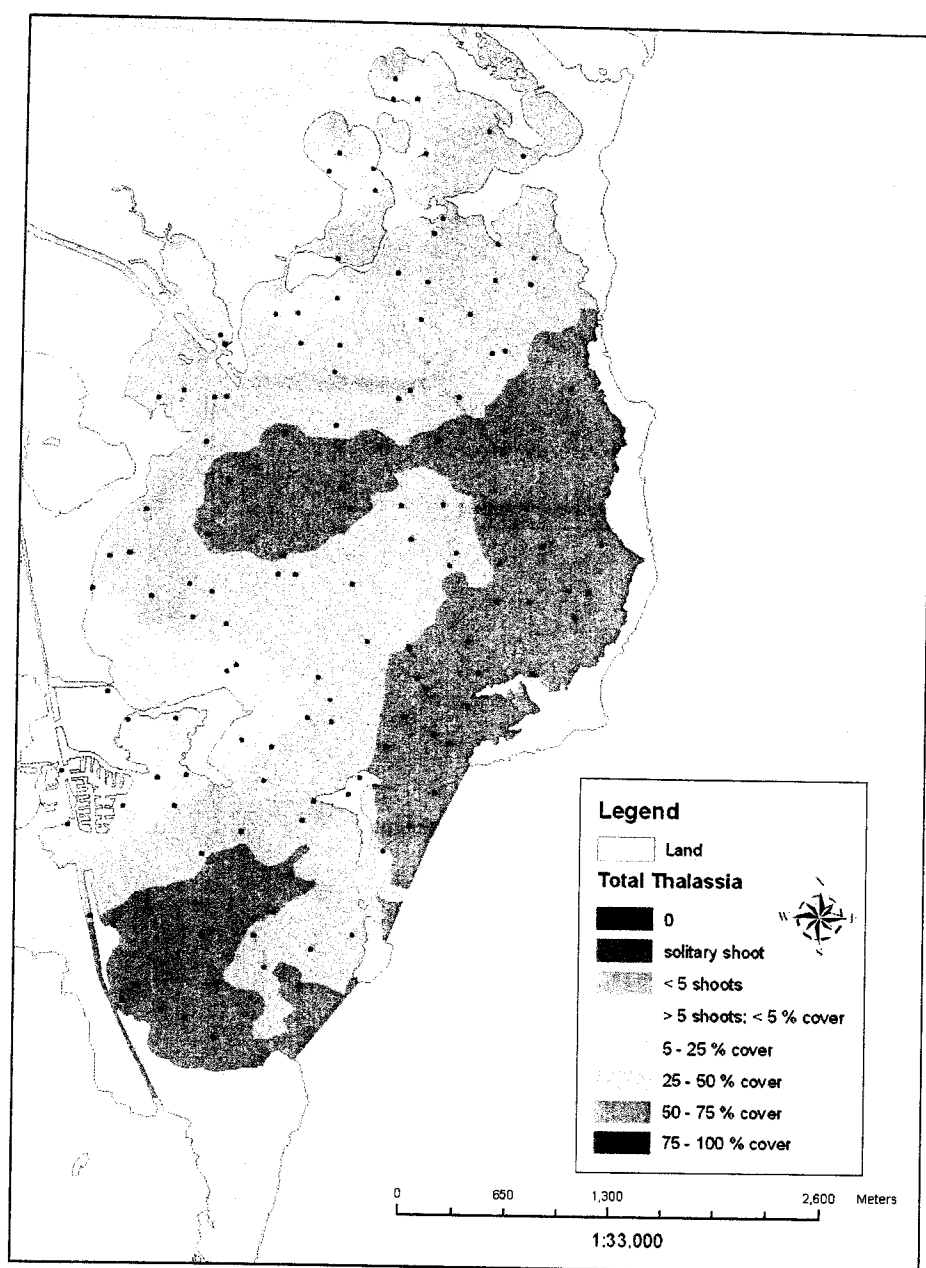


Figure 4.2G. Total Thalassia coverage documented in Manatee Bay.

DRAFT

A. Shoal Point Transect

0m	25m	50m	75m	100m	150m	200m	300m	400m	500m	750m	1000m
H	T	T	T	T	T	T	H	H	T	T	T
					Acet	Acet					
	Laur	Bato	Bato	Laur		Laur	Bato				
			Laur								

B. Black Point Transect

0m	25m	50m	75m	100m	150m	200m	300m	400m	500m	750m	1000m
	T	T	T	T	T	T	T	T	T	T	T
		Pen	Pen	Pen		Pen	Pen	Pen	Pen	Pen	Pen
				Acet		Acet					
	Udo	Udo	Udo	Udo							
Bato	Bato		Bato	Bato		Bato				Bato	
Laur	Laur	Laur	Laur	Laur	Laur	Laur	Laur	Laur	Laur	Laur	Laur
			Sarg		Sarg						

C. Fender Point Transect

0m	25m	50m	75m	100m	150m	200m	300m	400m	500m	750m	1000m
R	R		R	R	R	R	R	R	R		
					T	T	T	T	T	T	T
Laur	Laur	Laur	Laur		Laur	Laur	Laur	Laur			Laur

DRAFT

D. Manatee Bay Transect

0m	25m	50m	75m	100m	150m	200m	300m	400m	500m	750m	1000m
H	H	H	H					H			
T	T	T	T	T	T	T	T	T	T	T	T
				Pen	Pen	Pen	Pen	Pen	Pen	Pen	Pen
						Acet	Acet			Acet	
				Bato	Bato	Bato	Bato		Bato	Bato	
Laur											

E. Barnes Sound Transect

0m	25m	50m	75m	100m	150m	200m	300m	400m	500m	750m	1000m
	T	T	T	T	T	T	T	T	T		T
							Halop	Halop			
							Hali		Hali		Hali
	Pen	Pen	Pen	Pen	Pen	Pen	Pen		Pen		Pen
		Acet							Acet		
					Udo				Udo		
	Bato	Bato	Bato	Bato	Bato	Bato	Bato	Bato	Bato	Bato	Bato
Laur	Laur							Laur		Laur	SpSp

Figure 4.4A-E. Species distributions along the established long-term monitoring transects. Abbreviations are listed in Appendix 1.

DRAFT

From: Danielle Mir, SERC @ FIU

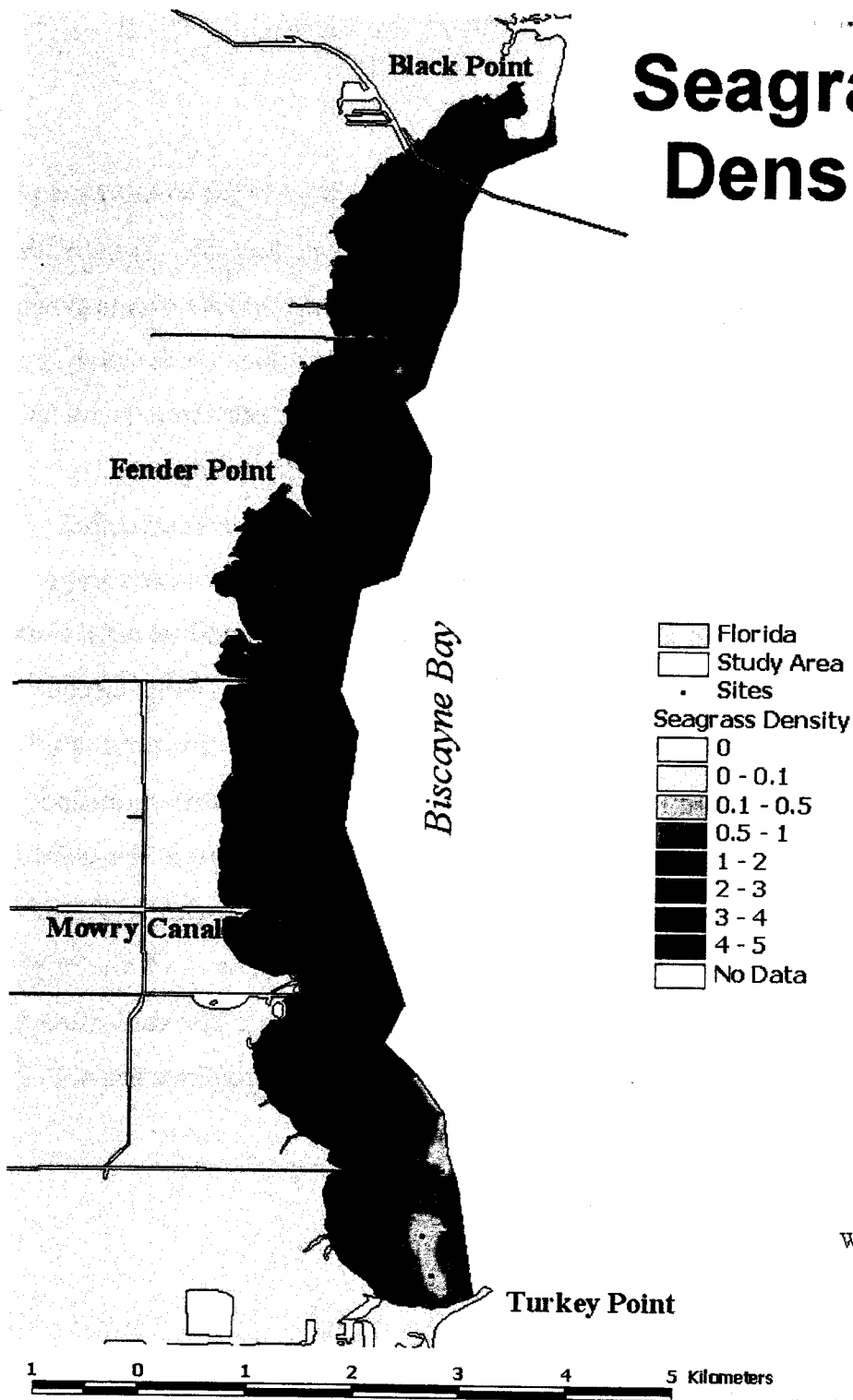
To: Rick Alleman, SFWMD

Attached are interpolated distributions of nearshore benthic survey taxa groups between Black Point and Turkey Point in Biscayne Bay, FL. You will find interpolated maps of seagrasses (*Thalassia*, *Halodule* & *Ruppia*) calcareous green algae (primarily *Penicillus* sp.), green algae (primarily *Batophora* sp. & *Chara* sp.) red algae, brown algae, sponges, stony corals, and physical parameters (water depth, sediment type, and sediment depth) within the entire study area.

Site locations were determined using a random tessellation stratified (RTS) design to ensure independence of sample locations and even coverage within the chosen sampling area. Two grids of hexagon cells with at least 1 site per 0.1 km², were overlain in order to get at least 2 sites per 0.1 km² projected over the study area. This method is similar to that used in the Environmental Monitoring and Assessment Program (EMAP) giving us pre-selected random global positioning system (GPS) coordinates that were later located in the field. At each site, Braun Blanquet scores (unit less) were recorded from ten 0.25 m² quadrats haphazardly located within 10 m of the GPS coordinate. Of the original 249 sites projected over the study area, data were collected for 207 sites during the months of March, April and May 2002. The remaining 42 sites were not surveyed due to location and/ or time constrictions.

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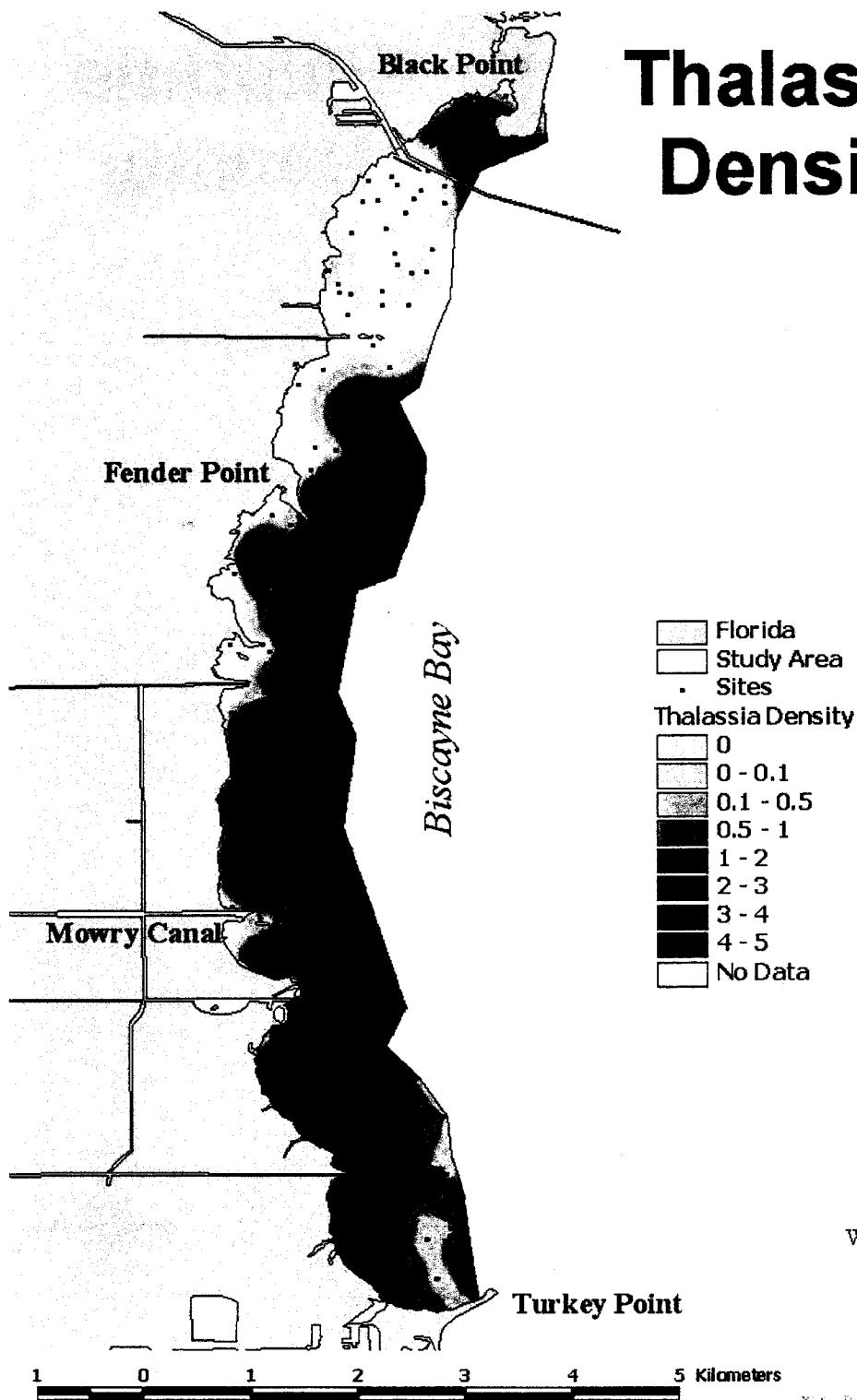
Seagrass Density



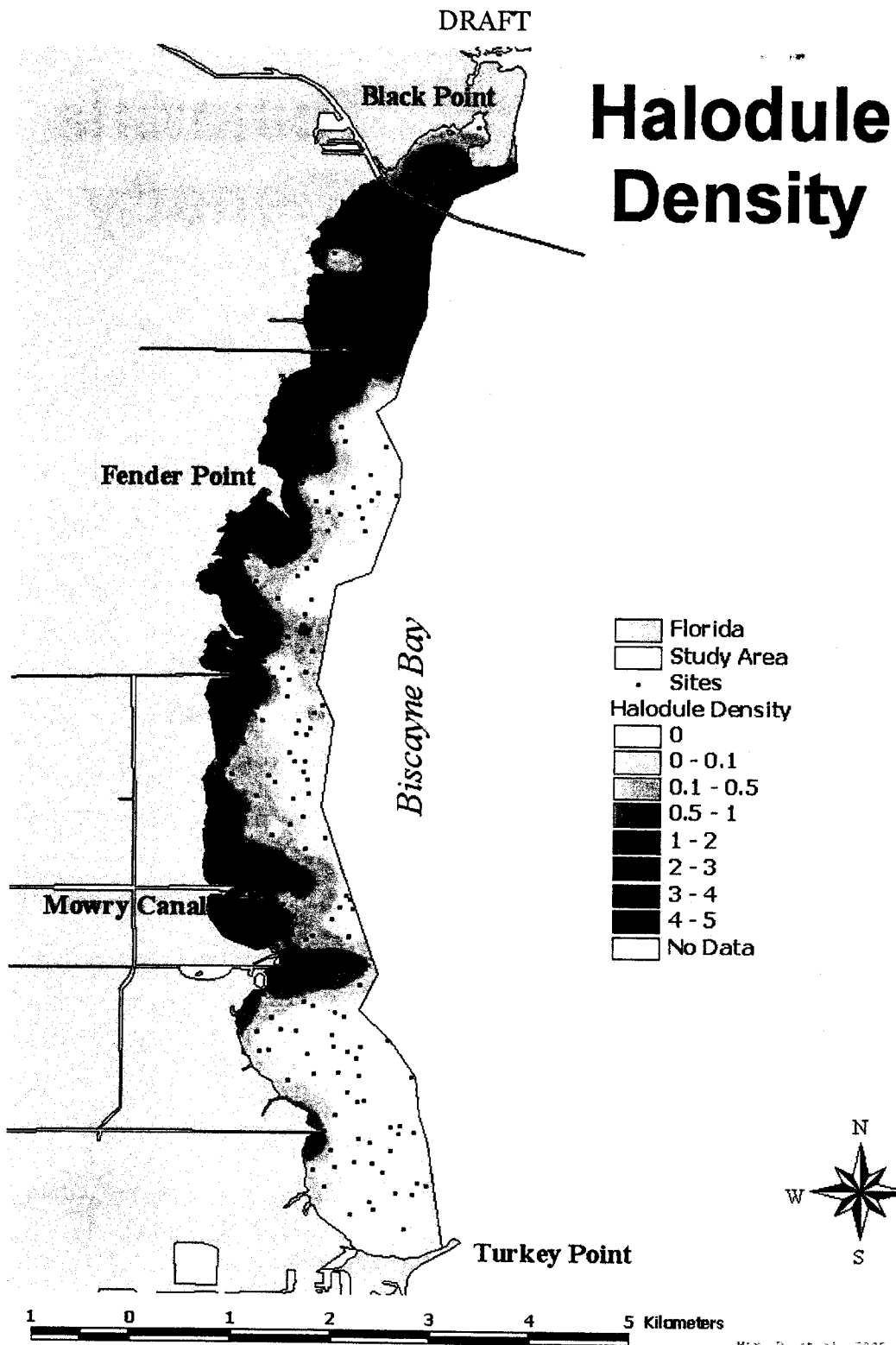
FILE: D:\P\B\ 2005

DRAFT

Thalassia Density

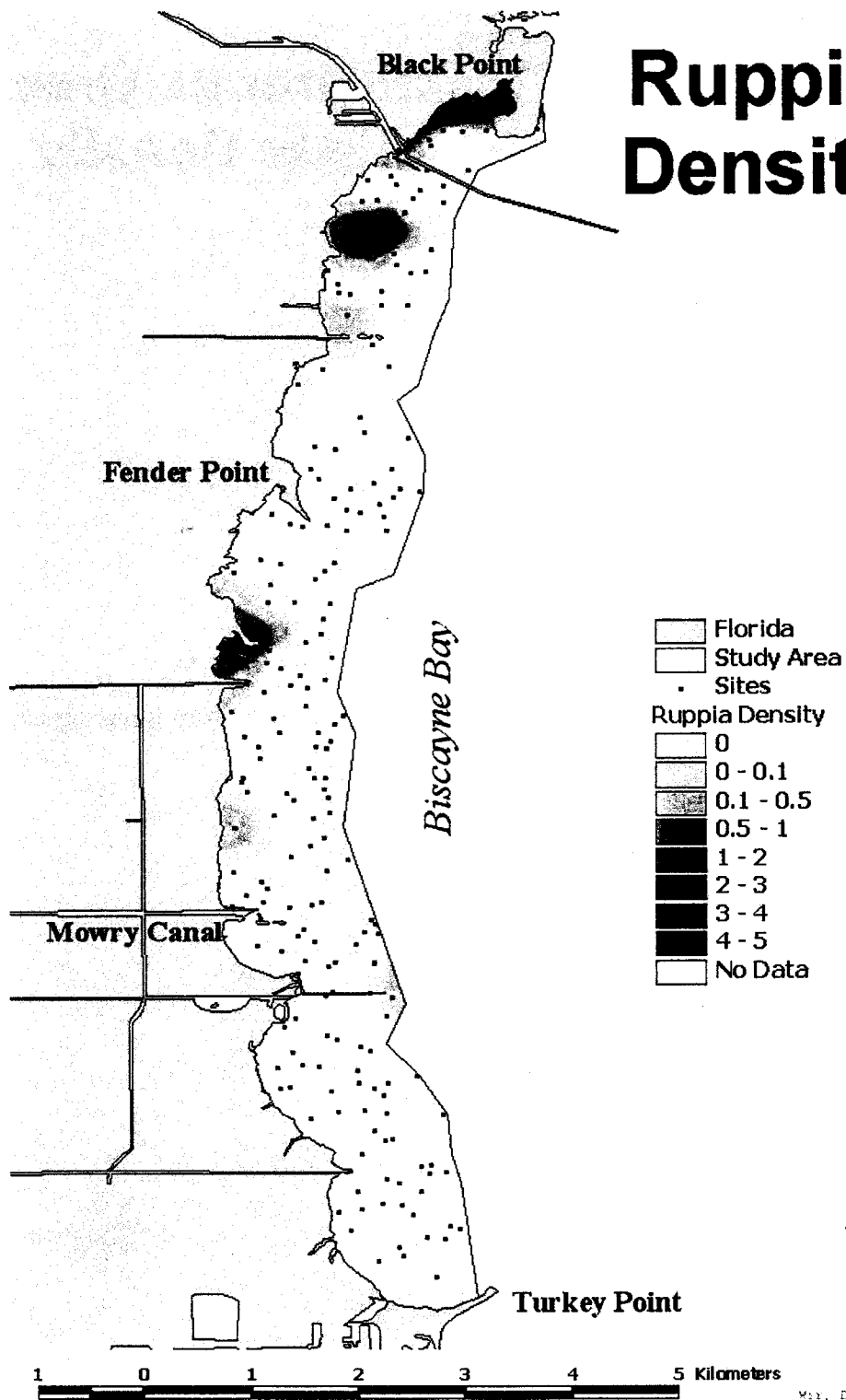


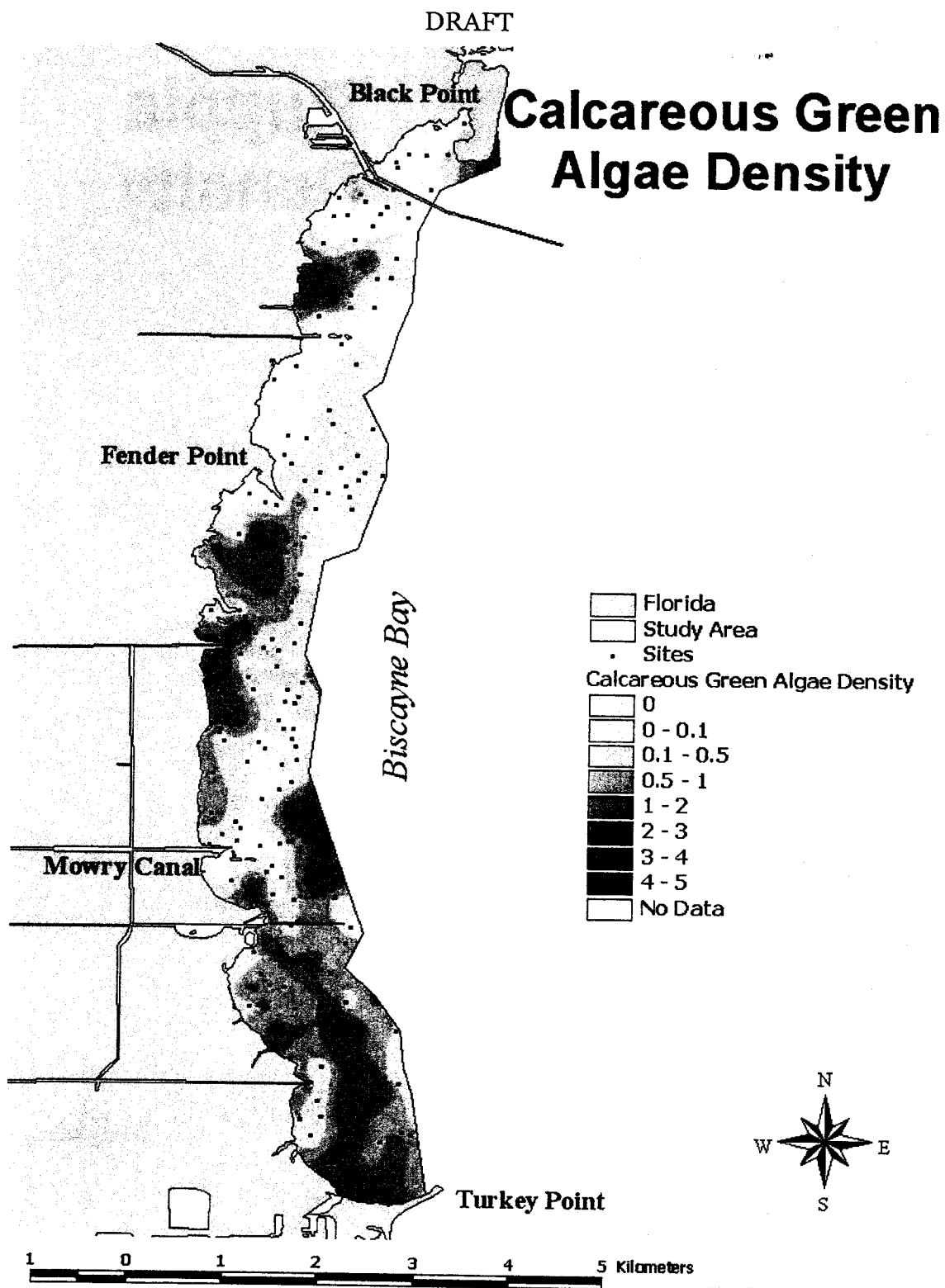
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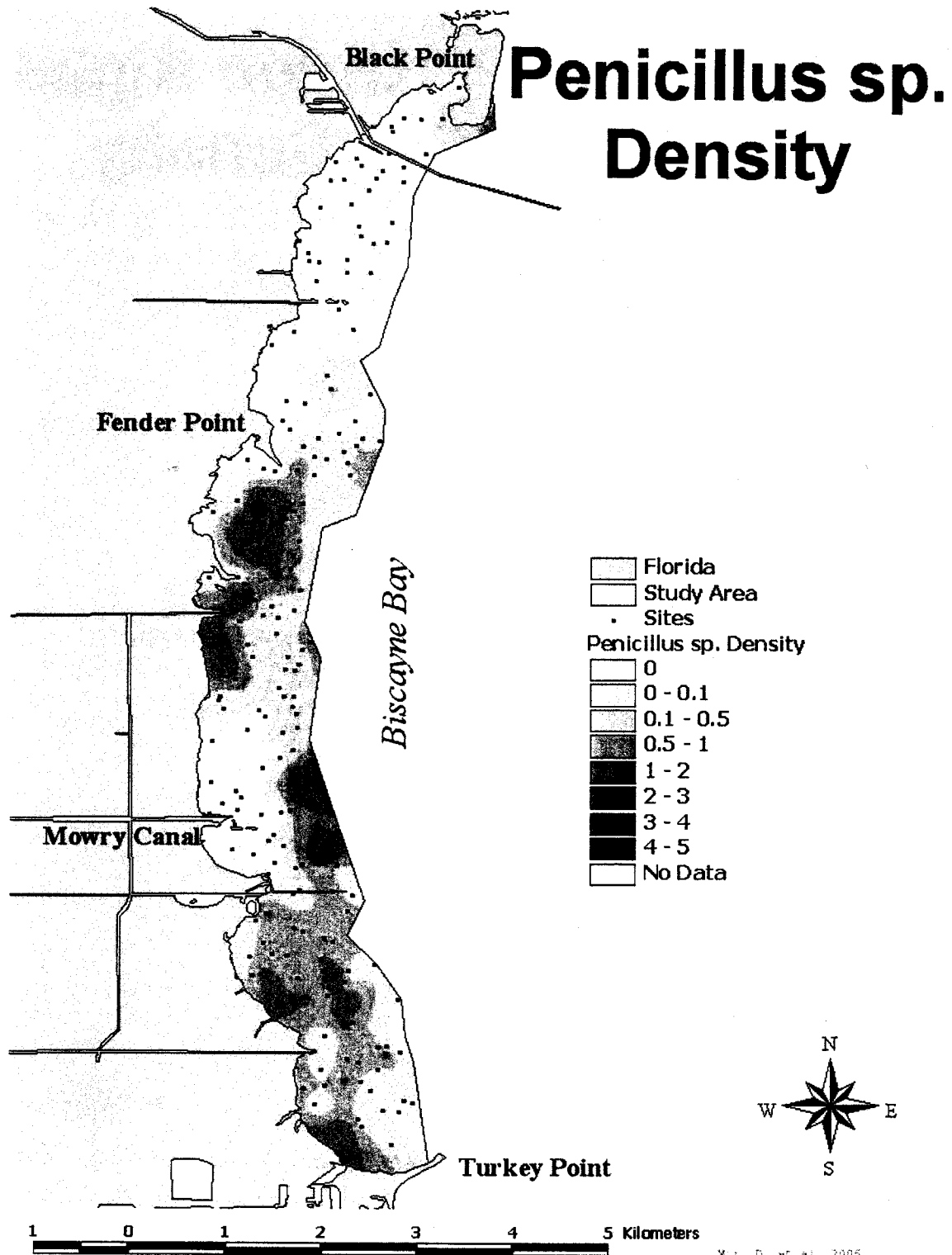
DRAFT

Ruppia Density



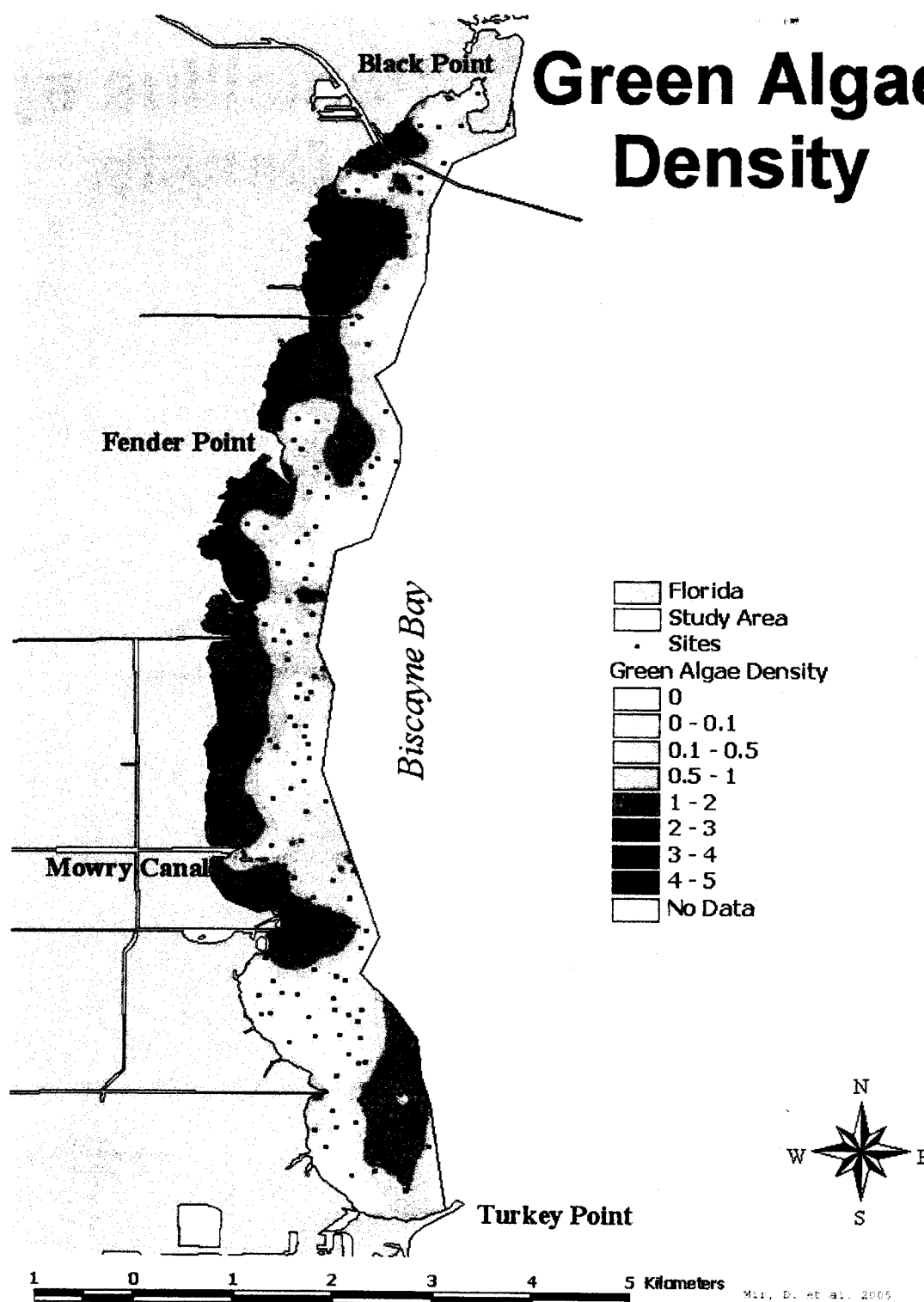


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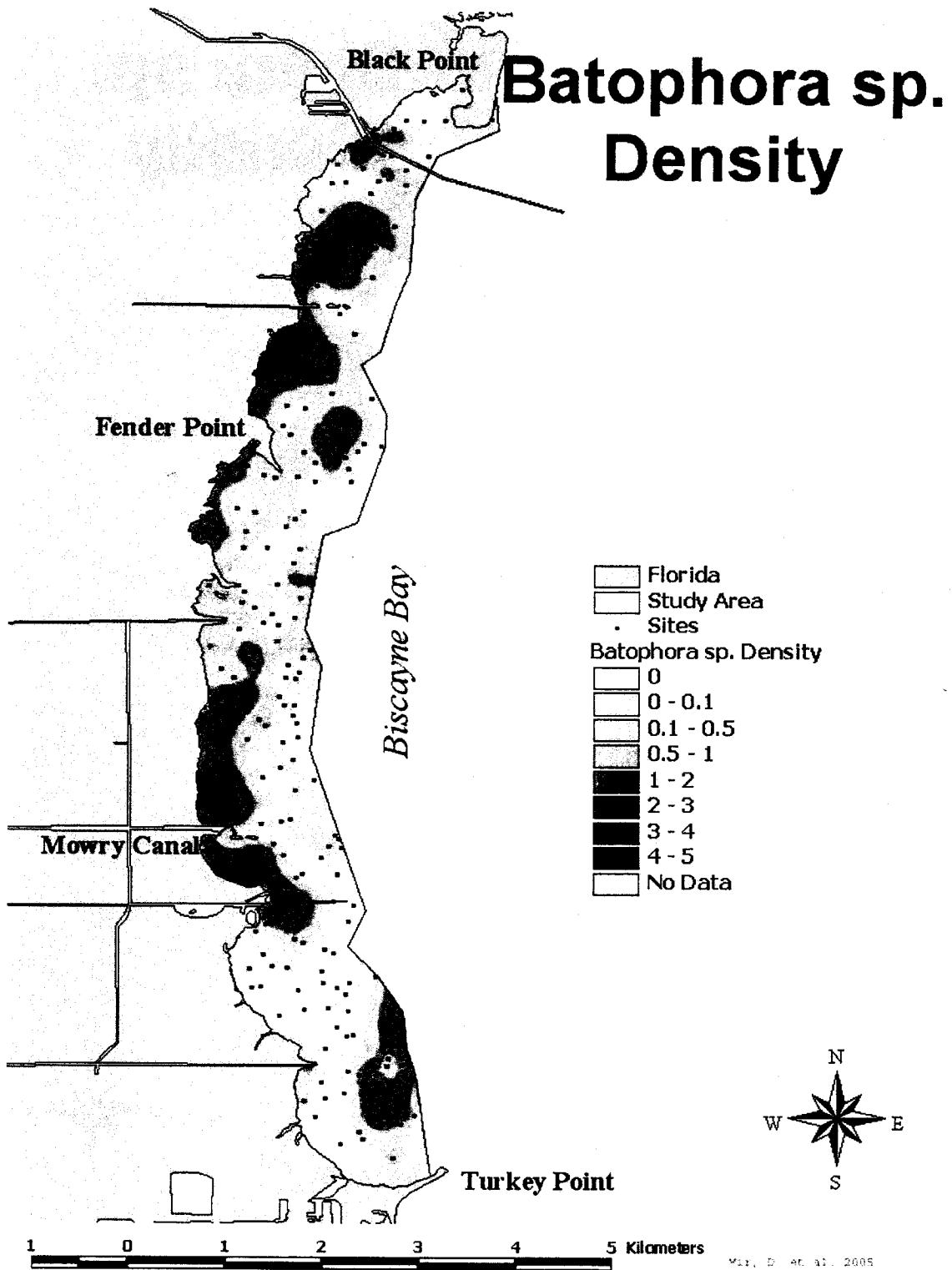


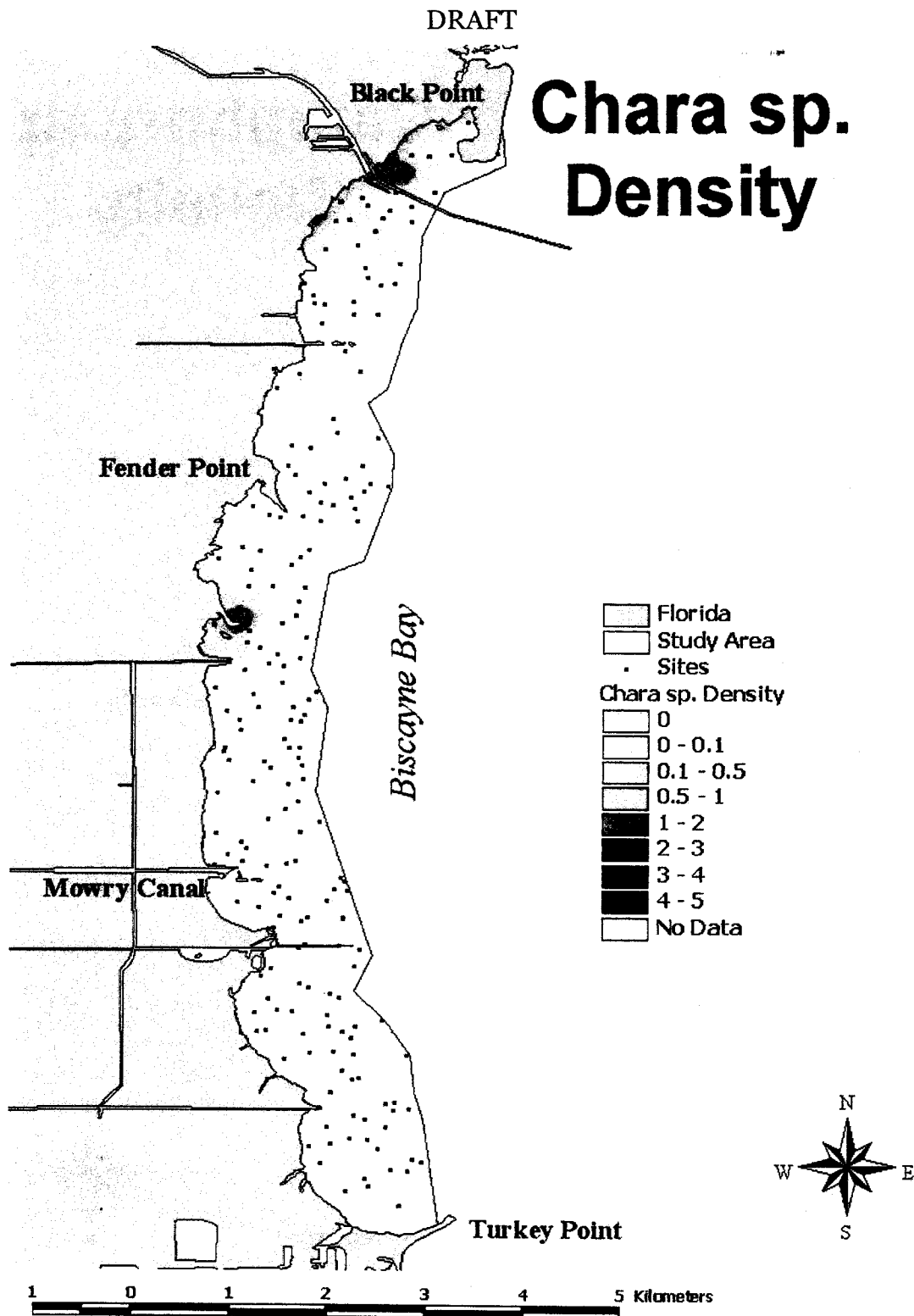
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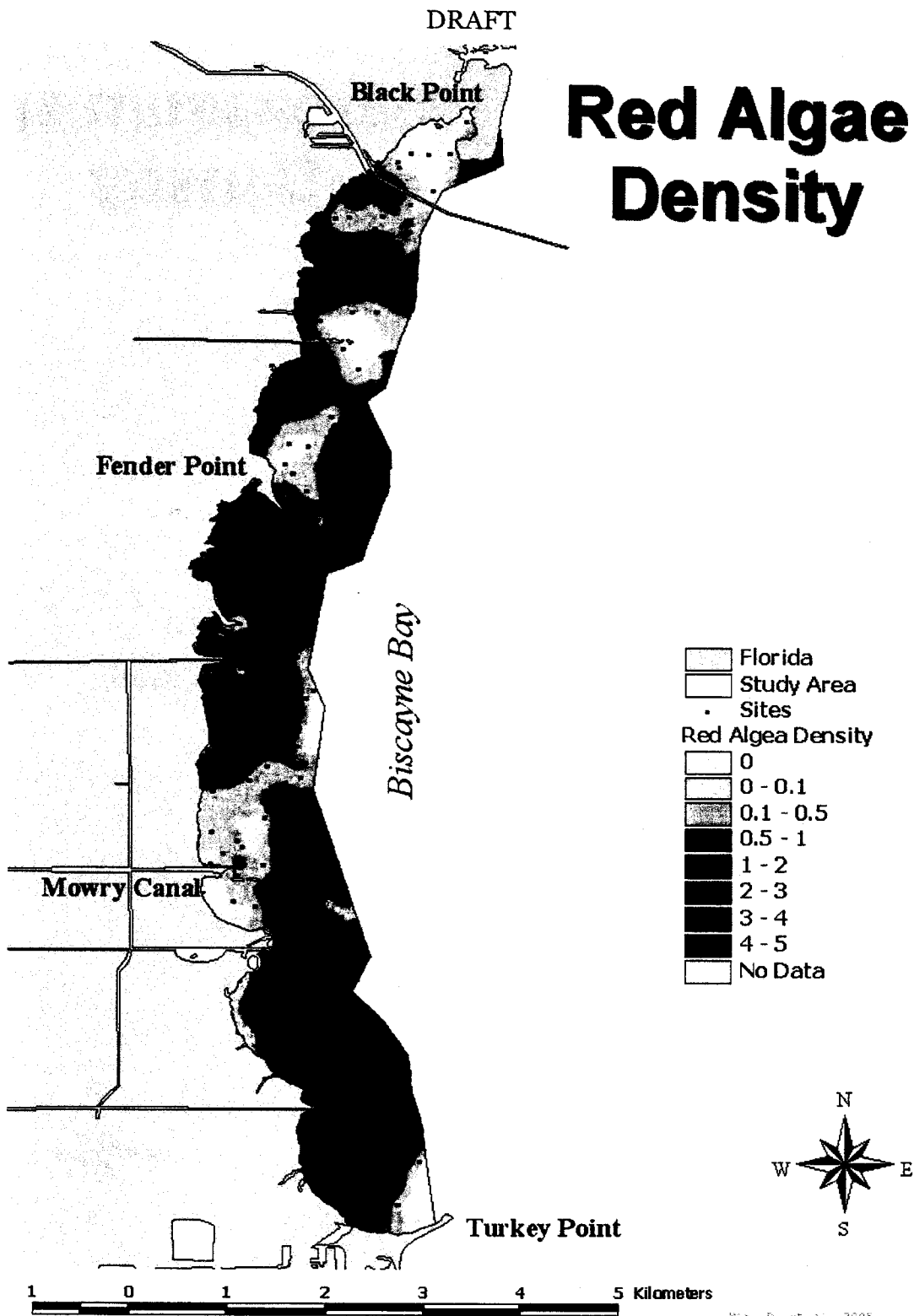
Green Algae Density



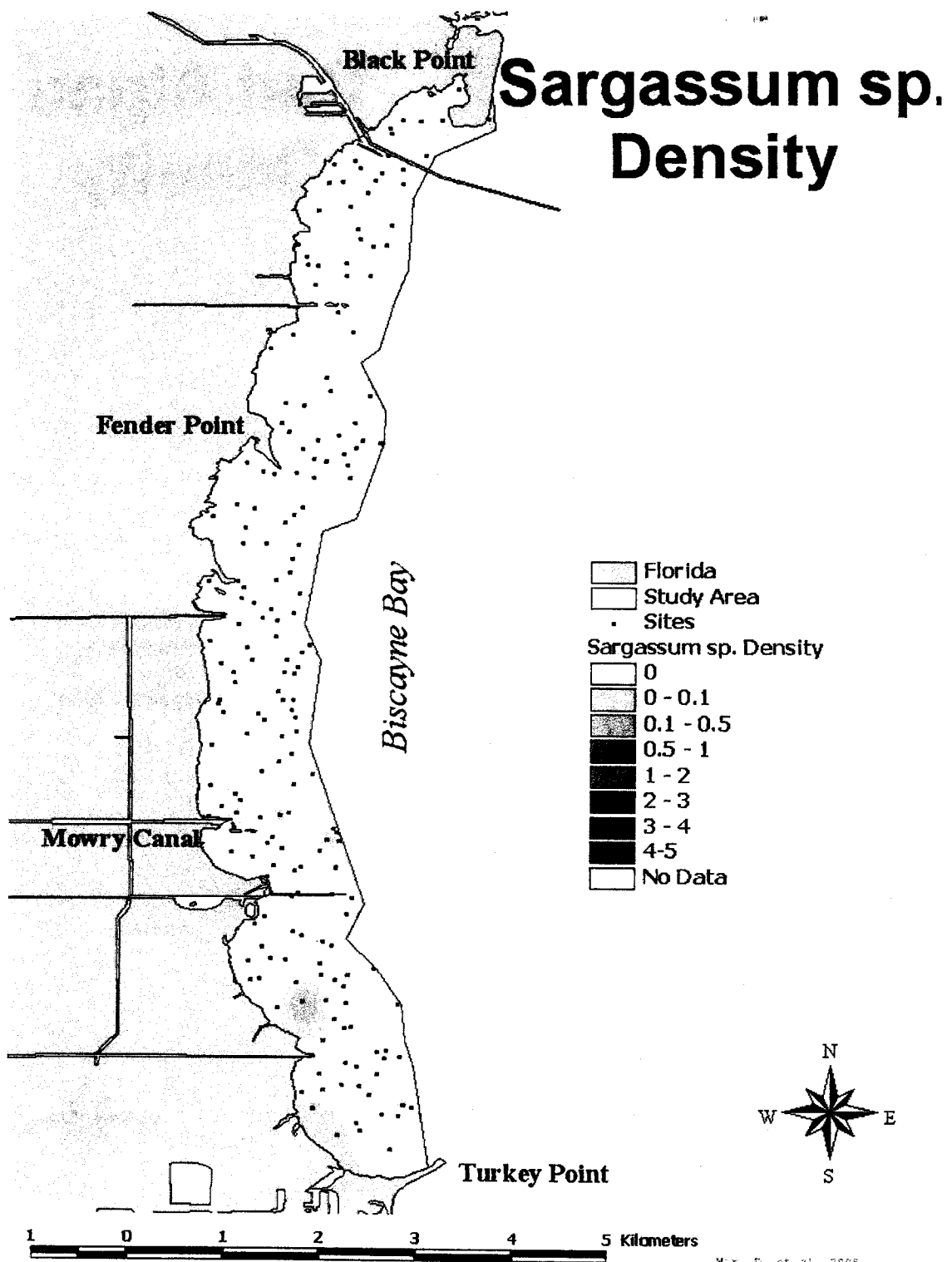
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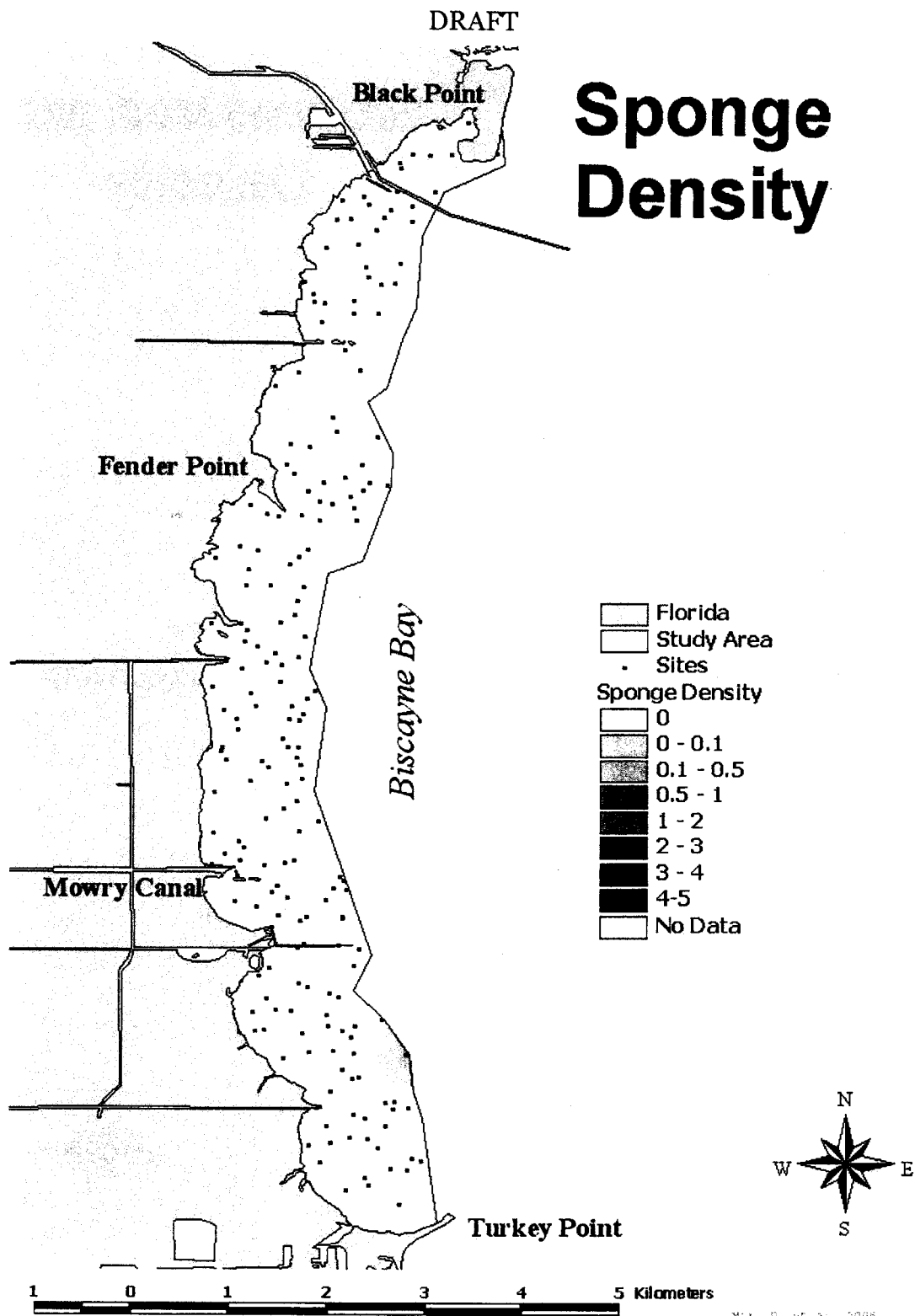




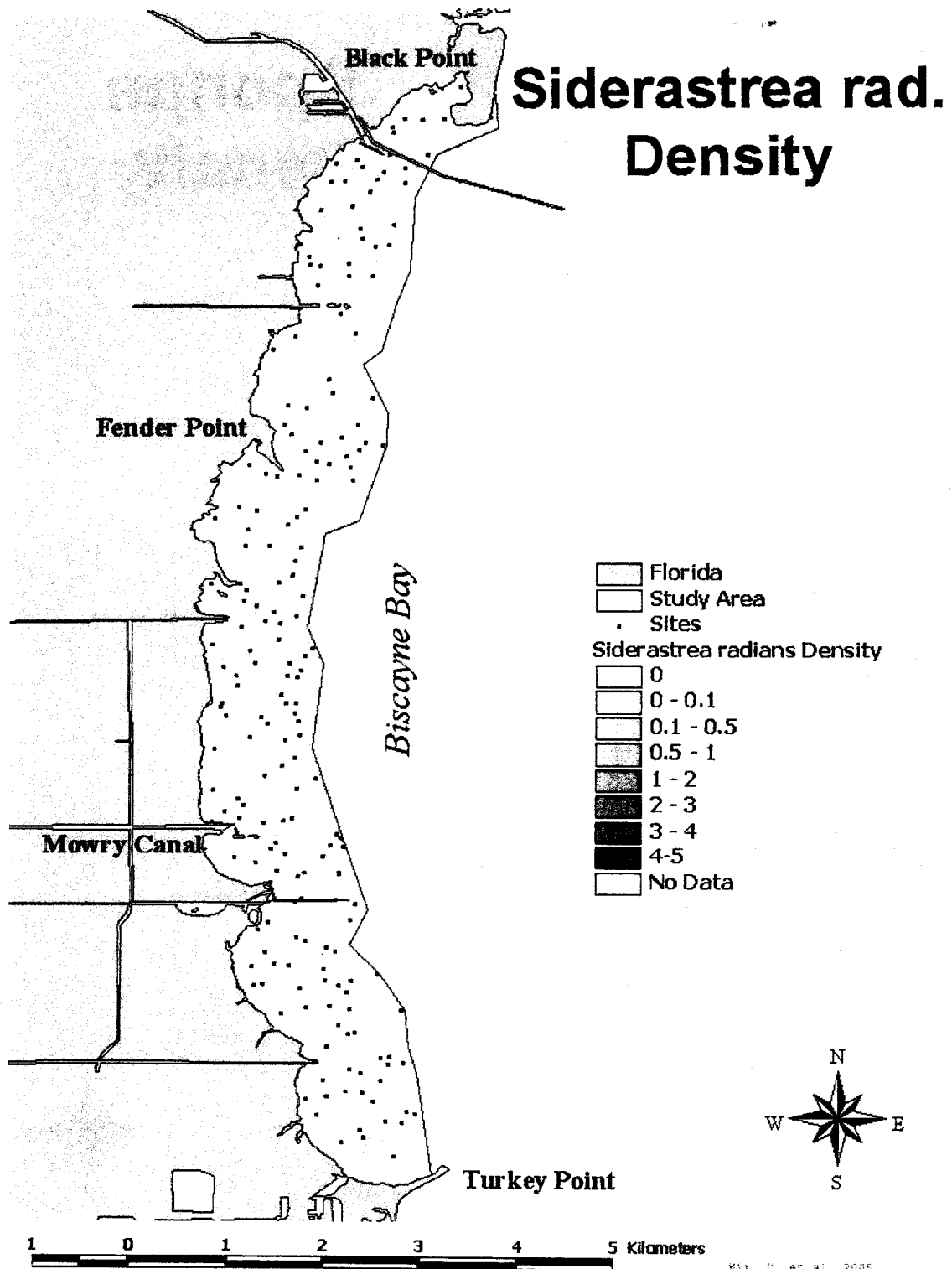


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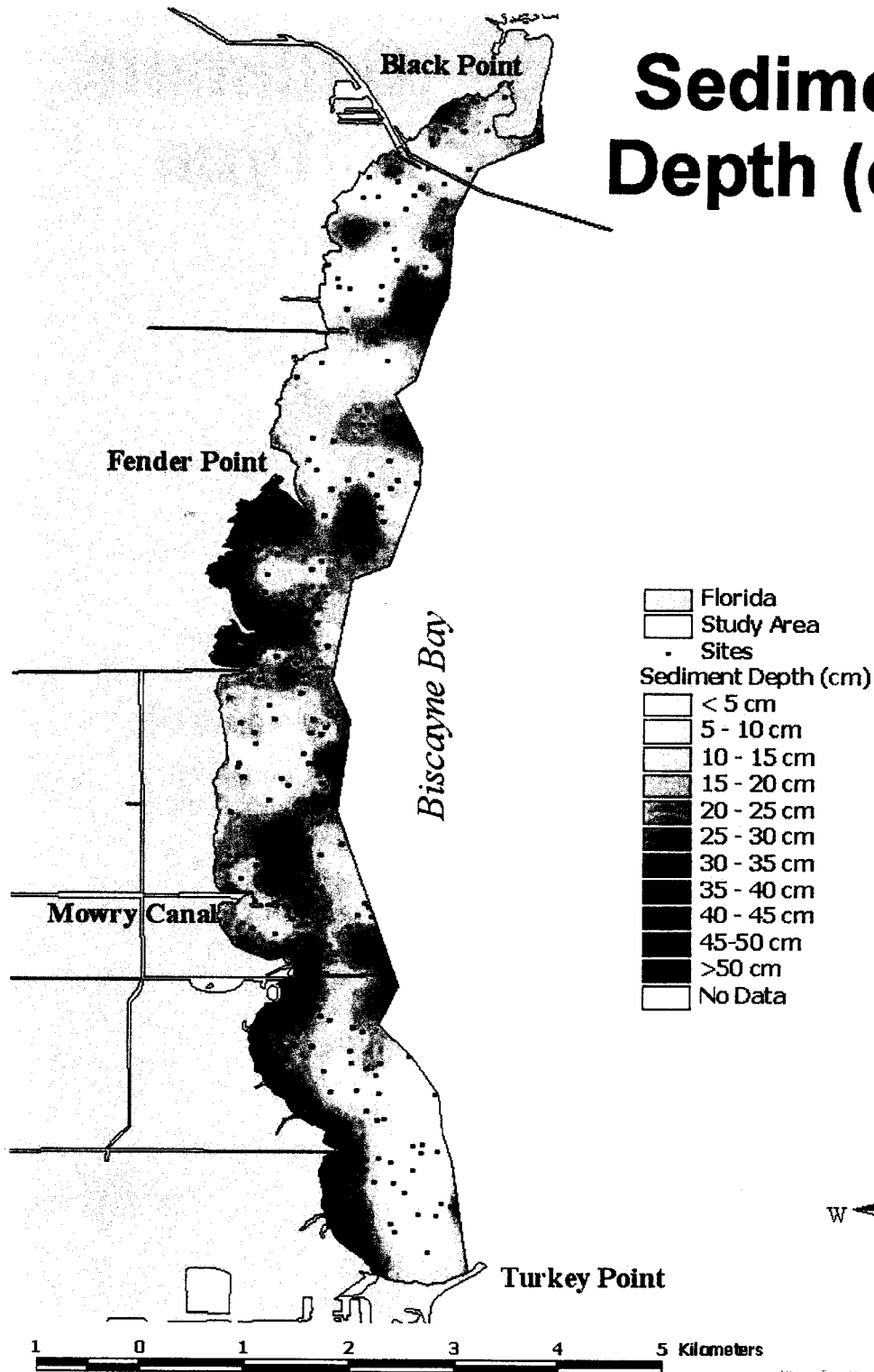


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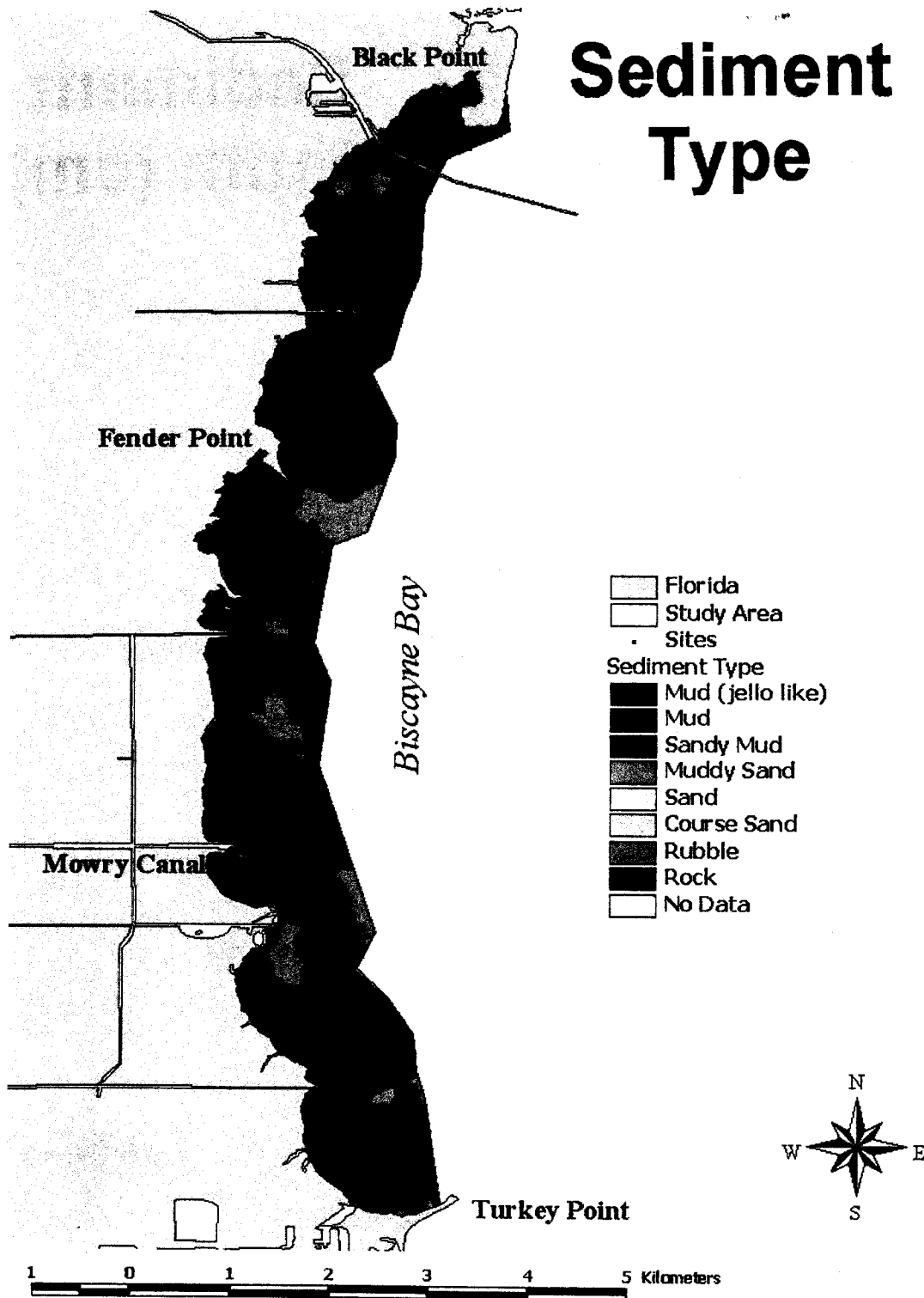
DRAFT

Sediment Depth (cm)

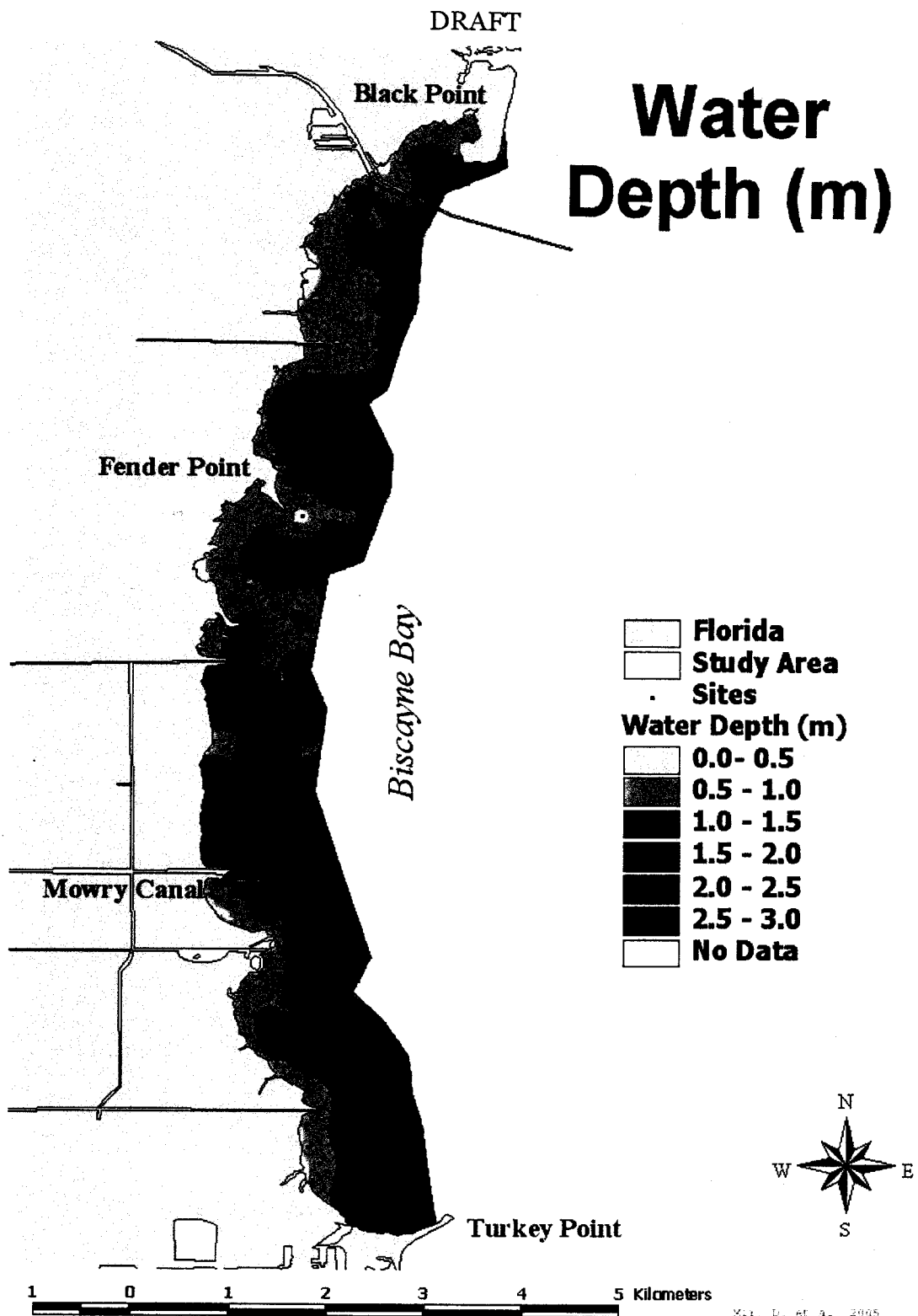


DRAFT

Sediment Type

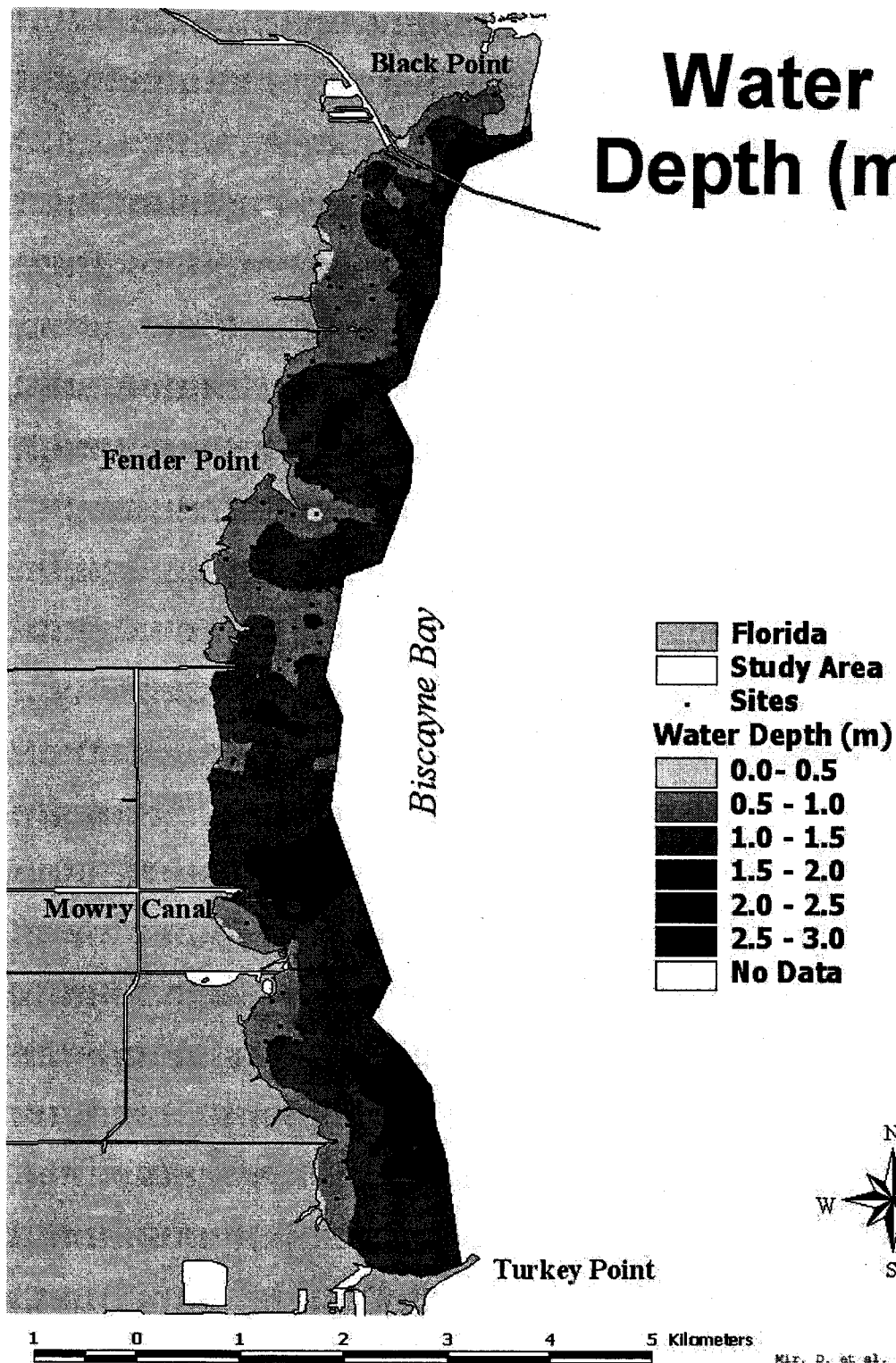


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Water Depth (m)



DRAFT

SITE_ID	SGT_d	CGT_d	GRT_d	RDT_d	BRT_d	SPT_d	SCT_d	T_d	H_d	R_d	Hail_d	Peni_d	Ripo_d	Udot_d	Acot_d	Balo_d	Anad_d	Avra_d	Char_d	Chae_d	Clad_d	Laur_d	Acan_d	Chon_d	Poly_d	Sarg_d	SpSo_d	Ssid_d
BBS-003	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-004	0.86	1.67	0.50	2.40	0.06	0.00	0.00	0.40	0.46	0.00	0.06	0.61	0.00	0.67	0.40	0.35	0.00	0.00	0.15	0.00	0.00	0.00	2.40	0.00	0.00	0.06	0.00	0.00
BBS-005	4.30	0.00	0.26	0.10	0.00	0.05	0.00	3.35	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00
BBS-006	3.90	0.00	0.10	0.00	0.00	0.00	0.00	2.90	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-008	2.90	0.00	1.70	0.00	0.00	0.00	0.00	2.10	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-010	2.60	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-011	0.85	0.00	2.20	0.40	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-013	3.10	0.18	0.25	0.00	0.00	0.00	0.00	2.55	0.70	0.00	0.00	0.36	0.00	0.00	0.00	0.20	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-014	0.71	0.00	3.42	0.00	0.00	0.00	0.00	0.15	0.45	0.11	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-015	2.10	0.27	0.00	1.20	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00
BBS-016	1.20	0.54	2.25	3.05	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.60	1.75	0.00	0.00	0.50	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00
BBS-017	3.60	0.00	0.75	0.61	0.00	0.00	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-018	2.30	0.01	1.65	1.35	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.05	0.15	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-019	3.30	0.00	0.60	0.35	0.00	0.00	0.00	0.00	3.30	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-020	4.50	0.00	0.85	0.60	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.01	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-021	2.80	0.00	3.50	0.90	0.00	0.00	0.00	0.00	0.85	2.10	0.00	0.00	0.00	0.00	0.01	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-022	2.70	0.13	0.95	0.55	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.25	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.30	0.00	0.00
BBS-023	0.80	1.35	2.90	0.90	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	1.35	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.80	0.00	0.00	0.00
BBS-024	1.60	1.80	1.70	2.40	0.00	0.00	0.00	0.20	1.40	0.00	0.00	0.00	0.00	0.00	1.80	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00
BBS-025	2.80	0.00	0.85	0.80	0.00	0.00	0.00	0.20	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00
BBS-026	1.35	1.71	2.20	1.80	0.00	0.00	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	0.00	1.90	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.00
BBS-027	1.40	2.10	3.50	1.10	0.00	0.00	0.00	0.10	1.30	0.00	0.00	0.00	0.00	0.00	0.00	2.10	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00
BBS-028	2.30	0.00	0.70	0.30	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-029	0.90	0.37	1.50	0.05	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.46	1.50	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
BBS-034	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.90	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-037	3.00	0.01	0.30	0.00	0.00	0.00	0.00	2.55	0.75	0.00	0.00	0.06	0.00	0.00	0.00	0.20	0.75	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-038	3.40	0.01	0.15	0.30	0.00	0.00	0.00	0.00	3.40	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-039	1.05	0.00	0.45	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.01	0.30	0.00	0.00	0.05	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-040	2.10	0.28	1.80	0.70	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	0.00	0.00	0.40	1.80	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
BBS-041	2.75	0.01	0.32	0.15	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	0.05	0.12	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
BBS-042	2.80	0.00	0.22	0.25	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-043	2.60	0.00	0.80	0.55	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.01	0.20	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00
BBS-044	1.25	0.00	4.10	1.20	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00
BBS-046	1.05	0.77	2.30	1.05	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.85	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00
BBS-047	0.70	0.42	1.15	1.45	0.00	0.00	0.00	0.05	0.65	0.00	0.00	0.05	0.00	0.00	0.55	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	1.35	0.00	0.00	0.00
BBS-048	1.80	0.44	1.20	0.75	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	0.00
BBS-049	1.28	1.75	3.10	1.45	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.75	2.90	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
BBS-050	2.30	0.02	3.05	0.10	0.00	0.00	0.00	0.00	2.30	0.45	0.00	0.00	0.00	0.00	0.10	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-058	0.30	0.50	0.80	0.05	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.05	0.00	0.00	0.50	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
BBS-059	2.20	0.08	2.30	3.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.20	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00
BBS-061	2.60	0.18	1.15	0.20	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.25	0.00	0.00	0.05	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00
BBS-063	0.75	0.01	0.41	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.05	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-064	1.31	0.02	0.46	0.05	0.00	0.00	0.00	0.10	1.31	0.00	0.00	0.05	0.00	0.00	0.05	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-065	2.40	0.23	1.20	0.85	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.25	0.00	0.00	0.15	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.00
BBS-066	2.60	0.25	0.00	3.10	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-067	2.40	0.33	0.10	3.50	0.00	0.00	0.00	2.40	0.15																			

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BBS-125	3.50	1.50	0.00	1.80	0.00	0.00	0.00	0.00	3.50	0.10	0.00	0.00	1.40	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.00	1.10	0.00	0.00	0.00
BBS-126	2.50	0.42	0.55	1.80	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.85	0.00	1.10	0.00	0.00	0.00	
BBS-127	3.80	0.96	0.80	1.25	0.00	0.00	0.00	0.00	3.80	0.15	0.00	0.00	1.20	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.95	0.00	0.30	0.00	0.00	0.00	
BBS-128	2.90	0.05	1.10	0.60	0.00	0.00	0.00	0.00	0.00	2.40	1.15	0.00	0.05	0.00	0.00	0.00	0.65	0.00	0.00	0.60	0.00	0.00	0.00	0.60	0.00	0.00	0.00	
BBS-129	2.70	0.39	0.75	0.95	0.00	0.00	0.00	0.00	2.50	0.21	0.00	0.00	0.55	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.70	0.00	0.30	0.00	0.00	0.00	
BBS-130	2.10	2.05	1.50	1.55	0.00	0.00	0.00	0.00	0.95	1.50	0.00	0.00	1.95	0.00	0.00	0.15	0.70	0.00	0.00	0.00	0.00	0.80	0.00	1.10	0.00	0.00	0.00	
BBS-131	3.20	0.46	0.30	0.40	0.00	0.00	0.00	0.00	3.20	0.65	0.00	0.00	0.65	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	
BBS-132	3.70	0.08	0.30	1.55	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.05	0.00	1.60	0.10	0.00	0.00	
BBS-133	4.50	0.13	0.20	1.80	0.00	0.00	0.00	0.00	4.50	0.05	0.00	0.00	0.25	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	1.55	0.00	0.05	0.00	0.00	0.00	
BBS-134	2.00	0.18	0.65	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.00	1.40	0.00	0.90	0.00	0.00	0.00	
BBS-135	2.80	0.90	1.05	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	
BBS-136	2.45	0.25	1.60	1.02	0.00	0.00	0.00	0.00	2.40	0.06	0.00	0.00	0.35	0.00	0.00	0.06	1.40	0.00	0.00	0.00	0.00	0.70	0.00	0.35	0.00	0.00	0.00	
BBS-137	2.00	0.23	1.25	0.90	0.00	0.00	0.00	0.00	2.00	0.05	0.00	0.00	0.32	0.00	0.00	0.01	1.25	0.00	0.00	0.00	0.00	0.55	0.00	0.55	0.00	0.00	0.00	
BBS-138	2.70	1.53	2.50	1.50	0.00	0.00	0.00	0.00	1.75	1.35	0.00	0.05	1.55	0.00	0.00	0.60	0.65	0.00	0.00	0.00	0.00	2.40	0.40	0.75	0.00	0.40	0.00	
BBS-139	1.70	1.22	1.80	0.90	0.00	0.00	0.00	0.00	1.50	0.56	0.00	0.10	1.15	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.00	1.40	0.00	0.20	0.00	0.00	0.00	
BBS-140	1.90	0.25	0.40	0.60	0.00	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00	
BBS-141	0.85	1.90	1.70	1.00	0.00	0.00	0.00	0.00	0.45	0.40	0.00	0.00	0.95	0.00	0.00	1.10	1.70	0.00	0.00	0.00	0.00	0.80	0.00	0.30	0.00	0.00	0.00	
BBS-143	4.90	0.00	0.00	0.20	0.00	0.00	0.00	0.00	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-144	2.40	0.23	0.40	1.50	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.10	0.00	0.70	0.00	0.00	0.00	
BBS-145	2.70	0.22	2.15	0.75	0.00	0.00	0.00	0.00	2.70	0.40	0.00	0.00	0.00	0.00	0.00	0.36	1.40	0.00	0.00	0.00	0.80	0.00	0.55	0.00	0.20	0.00	0.00	
BBS-146	2.30	0.00	0.85	0.05	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	
BBS-148	5.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	
BBS-149	1.25	0.02	0.50	0.45	0.00	0.00	0.00	0.00	1.00	0.35	0.00	0.00	0.00	0.00	0.00	0.10	0.50	0.00	0.00	0.00	0.00	0.25	0.00	0.20	0.00	0.00	0.00	
BBS-150	5.00	0.18	0.00	0.50	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	
BBS-151	2.25	0.68	1.65	0.45	0.00	0.00	0.00	0.00	1.10	1.20	0.30	0.00	0.05	0.00	0.00	0.70	1.55	0.00	0.00	0.00	0.10	0.35	0.00	0.10	0.00	0.00	0.00	
BBS-152	3.10	0.10	0.25	2.30	0.00	0.05	0.00	0.00	3.10	0.20	0.00	0.00	0.15	0.00	0.00	0.11	0.25	0.00	0.00	0.00	0.00	1.85	0.00	0.40	0.00	0.10	0.00	
BBS-153	3.70	1.55	0.00	1.95	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	1.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	1.00	0.00	0.00	0.00	
BBS-154	2.40	2.05	0.55	2.30	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	1.70	0.00	0.00	0.35	0.55	0.00	0.00	0.00	0.00	0.70	0.00	2.00	0.00	0.00	0.00	
BBS-155	2.30	0.94	2.20	0.20	0.00	0.00	0.00	0.00	2.00	1.05	0.00	0.00	0.00	0.00	0.00	1.05	2.20	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.00	0.00	
BBS-156	3.10	0.01	1.90	0.00	0.00	0.00	0.00	0.00	0.80	2.90	0.00	0.00	0.00	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-157	3.50	0.02	1.50	0.10	0.00	0.00	0.00	0.00	0.50	0.75	0.00	0.30	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.40	0.00	0.10	0.00	0.00	0.00	
BBS-158	3.00	0.00	1.00	0.10	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-159	0.20	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-160	3.65	0.90	0.65	1.20	0.00	0.00	0.00	0.00	3.65	0.00	0.00	0.00	0.75	0.00	0.00	0.25	0.05	0.50	0.00	0.00	0.10	0.00	1.10	0.00	0.30	0.00	0.00	
BBS-161	2.40	1.80	0.70	1.70	0.15	0.00	0.00	0.00	2.40	0.00	0.00	0.00	1.35	0.00	0.00	0.40	0.30	0.40	0.00	0.00	0.00	1.70	0.00	0.00	0.15	0.00	0.00	
BBS-162	2.85	1.31	0.75	1.25	0.05	0.00	0.00	0.00	2.85	0.00	0.00	0.05	1.25	0.00	0.00	0.07	0.10	0.65	0.00	0.00	0.00	1.25	0.00	0.00	0.05	0.00	0.00	
BBS-163	3.25	0.01	1.80	1.85	0.00	0.00	0.00	0.00	2.90	0.85	0.00	0.00	0.10	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.50	0.00	1.65	0.00	0.40	0.00	0.00	
BBS-164	3.30	0.06	0.45	2.35	0.00	0.00	0.00	0.00	3.30	0.50	0.00	0.00	0.30	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	2.35	0.00	0.00	0.00	0.00	0.00	
BBS-165	2.50	0.02	0.50	0.90	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.90	0.00	0.20	0.00	0.00	0.00	
BBS-166	1.70	0.84	2.50	1.00	0.00	0.00	0.00	0.00	1.45	0.45	0.00	0.00	0.20	0.00	0.00	0.95	1.30	0.00	0.00	0.00	0.00	1.30	0.00	0.50	0.00	0.40	0.00	
BBS-167	4.50	0.05	0.00	0.35	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.15	0.00	0.00	0.00	
BBS-168	2.95	0.44	3.65	1.30	0.00	0.00	0.00	0.00	2.90	0.20	0.00	0.00	0.20	0.00	0.00	0.35	1.35	0.00	0.00	0.00	2.50	0.00	1.15	0.00	0.00	0.00	0.00	
BBS-169	3.00	0.01	0.65	0.70	0.00	0.00	0.00	0.00	3.00	0.25	0.00	0.00	0.00	0.00	0.00	0.05	0.65	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.20	0.00	0.00	
BBS-170	4.00	0.18	0.00	0.95	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-171	4.80	0.06	1.40	0.00	0.00	0.00	0.00	0.00	4.80	0.05	0.00	0.00	0.25	0.00	0.00	0.60	1.80	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.00	0.00	
BBS-172	5.00	0.00	1.00	0.10	0.00	0.00	0.00	0.00	5.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-173	3.40	0.12	1.85	0.25	0.00	0.00	0.00	0.00	3.30	0.65	0.00	0.00	0.00	0.00	0.00	0.30	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-174	2.70	0.27	2.60	0.20	0.00	0.00	0.00	0.00	1.90	1.40	0.00	0.00	0.00	0.00	0.00	0.45	2.60	0.00	0.00	0.00								

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BBS-220	2.40	0.68	0.05	2.40	0.05	0.00	0.00	2.40	0.00	0.00	0.00	0.70	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.20	0.00	2.40	0.05	0.00	0.00
BBS-221	2.70	1.01	0.15	1.70	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.90	0.00	0.00	0.06	0.15	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	1.00	0.00	0.00	0.00
BBS-222	2.30	1.65	0.00	2.05	0.00	0.00	0.00	2.30	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	
BBS-223	2.06	1.01	0.65	1.90	0.00	0.00	0.00	2.06	0.00	0.00	0.17	0.65	0.00	0.00	0.05	0.20	0.35	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.50	0.00	0.00	
BBS-224	2.20	1.85	0.40	1.70	0.00	0.00	0.00	2.20	0.00	0.00	0.40	1.30	0.00	0.05	0.15	0.05	0.35	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.00	0.00	0.00	
BBS-225	3.00	0.08	0.20	2.80	0.05	0.00	0.00	3.00	0.00	0.00	0.00	0.05	0.21	0.05	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.05	0.00	
BBS-226	0.61	0.46	1.70	1.95	0.00	0.00	0.01	0.61	0.00	0.00	0.00	0.75	0.00	0.00	0.25	0.80	0.30	0.05	0.00	0.10	0.25	0.40	1.35	0.00	0.20	0.00	0.01	
BBS-227	0.85	1.90	1.70	0.85	0.00	0.00	0.00	0.85	0.00	0.00	0.15	0.75	0.00	0.00	0.95	1.21	0.60	0.00	0.00	0.00	0.00	0.75	0.75	1.10	0.00	0.00	0.00	
BBS-228	2.20	0.11	0.40	3.20	0.00	0.00	0.00	2.10	0.15	0.00	0.05	0.25	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	2.40	0.00	1.10	0.00	0.00	0.00	
BBS-229	1.55	1.50	1.15	1.65	0.00	0.00	0.00	1.55	0.00	0.00	0.10	0.90	0.00	0.01	0.51	0.50	0.70	0.00	0.00	0.00	0.10	0.00	1.65	0.00	0.00	0.00	0.00	
BBS-230	4.20	0.13	0.10	1.15	0.00	0.00	0.00	4.20	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	1.15	0.00	0.00	0.00	0.00	
BBS-231	2.95	1.45	0.20	0.75	0.00	0.00	0.00	2.95	0.00	0.00	0.20	1.20	0.00	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	
BBS-232	0.95	1.22	1.70	2.50	0.00	0.00	0.00	0.95	0.00	0.00	0.40	0.35	0.00	0.11	0.32	1.25	0.50	0.00	0.00	0.00	0.05	0.00	2.30	0.00	0.20	0.00	0.20	
BBS-233	2.70	0.60	0.15	0.10	0.00	0.05	0.00	2.50	0.31	0.00	0.30	0.30	0.00	0.01	0.10	0.30	0.05	0.00	0.00	0.00	0.00	0.00	0.31	0.10	0.00	0.10	0.00	
BBS-234	0.42	0.91	1.75	2.35	0.00	0.00	0.00	0.42	0.00	0.00	0.06	0.26	0.00	0.05	0.50	1.20	0.55	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.05	0.00	0.00	
BBS-235	0.90	0.86	0.70	1.60	0.00	0.00	0.20	0.90	0.00	0.00	0.06	0.40	0.00	0.00	0.40	0.55	0.15	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.20	
BBS-236	2.70	1.75	0.10	2.60	0.10	0.00	0.00	2.70	0.00	0.00	0.00	1.75	0.00	0.05	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.10	0.10	0.00	
BBS-237	2.15	1.95	0.50	2.00	0.00	0.00	0.00	2.15	0.05	0.00	0.36	1.35	0.00	0.05	0.31	0.45	0.05	0.00	0.00	0.00	0.00	0.10	1.90	0.00	0.00	0.00	0.00	
BBS-238	2.15	1.22	1.30	2.30	0.00	0.00	0.00	0.75	1.50	0.00	0.00	0.55	0.00	0.00	0.75	1.21	0.00	0.00	0.00	0.00	0.00	0.10	0.00	1.90	0.00	0.80	0.00	
BBS-239	0.40	0.33	1.70	2.25	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.02	0.15	0.00	0.00	0.35	1.50	0.25	0.00	0.00	0.00	0.05	0.00	2.25	0.00	0.00	0.00	
BBS-240	1.60	1.70	1.65	1.60	0.00	0.00	0.00	1.60	0.00	0.00	0.15	0.90	0.00	0.05	0.55	1.40	0.35	0.00	0.00	0.00	0.00	0.00	1.55	0.00	0.05	0.00	0.00	
BBS-241	0.95	1.21	1.50	1.55	0.00	0.00	0.00	0.95	0.00	0.00	0.21	0.40	0.00	0.00	0.50	1.30	0.10	0.00	0.00	0.00	0.30	0.00	1.55	0.00	0.00	0.00	0.00	
BBS-242	2.25	0.42	0.00	3.00	0.00	0.00	0.00	2.15	0.10	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	
BBS-243	3.05	0.57	0.75	1.50	0.00	0.00	0.00	3.05	0.15	0.00	0.15	0.90	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.10	0.00	0.00	1.50	0.00	0.00	0.00	0.00	
BBS-244	0.56	0.99	1.95	1.70	0.00	0.00	0.00	0.56	0.00	0.00	0.15	0.25	0.00	0.05	0.70	1.55	0.45	0.00	0.00	0.00	0.05	0.00	1.70	0.00	0.00	0.00	0.00	
BBS-245	0.47	0.90	1.70	0.85	0.01	0.00	0.01	0.42	0.05	0.00	0.06	0.17	0.00	0.05	0.45	1.45	0.25	0.00	0.00	0.00	0.10	0.00	0.85	0.00	0.00	0.10	0.01	
BBS-246	3.20	0.00	0.05	2.60	0.10	0.00	0.00	3.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	
BBS-247	0.62	1.35	1.20	0.60	0.00	0.00	0.00	0.62	0.00	0.00	0.51	0.11	0.00	0.11	0.51	0.90	0.15	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	
BBS-248	0.76	1.27	1.35	2.00	0.00	0.00	0.10	0.76	0.00	0.00	0.10	0.32	0.00	0.00	0.65	0.85	0.50	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.10	
BBS-249	0.31	1.17	1.05	0.25	0.00	0.00	0.00	0.31	0.00	0.00	0.27	0.31	0.00	0.15	0.70	0.65	0.40	0.00	0.00	0.00	0.00	0.00	0.15	0.10	0.00	0.00	0.00	

DRAFT

SITE_ID	SGT_a	CGT_a	GRT_a	RDT_a	BRT_a	SPT_a	SCt_a	T_a	H_a	R_a	Halt_a	Peni_a	Ripo_a	Udot_a	Acet_a	Bato_a	Anad_a	Avra_a	Char_a	Chae_a	Clad_a	Laur_a	Acan_a	Chon_a	Poly_a	Sarg_a	SpSp_a	Ssid_a
BBS-003	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45	0.00	0.00	0.00	0.00	0.00	0.53	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-004	1.23	1.67	1.00	2.67	0.30	0.00	0.00	2.00	0.92	0.00	0.30	0.76	0.00	0.67	0.80	0.70	0.00	0.00	0.00	0.75	0.00	0.00	2.67	0.00	0.00	0.30	0.00	
BBS-005	4.30	0.00	0.87	1.00	0.00	0.50	0.00	3.35	1.44	0.00	0.00	0.00	0.00	0.30	0.00	0.30	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	
BBS-006	3.90	0.00	1.00	0.00	0.00	0.00	0.00	2.90	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-008	2.90	0.00	2.13	0.00	0.00	0.00	0.00	2.10	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-010	2.60	0.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-011	0.94	0.00	2.00	4.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-013	3.10	0.36	1.25	0.00	0.00	0.00	0.00	2.55	1.40	0.00	0.00	0.72	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-014	0.71	0.00	3.88	0.00	0.00	0.00	0.00	0.75	0.56	0.55	0.00	0.00	0.00	0.00	0.00	1.94	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-015	2.10	0.45	0.00	2.00	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	
BBS-016	1.33	0.50	2.25	3.05	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.67	1.75	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-017	3.60	0.00	1.07	1.22	0.00	0.00	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	1.08	0.00	0.00	0.00	0.00	0.00	1.22	0.00	0.00	
BBS-018	2.30	0.05	1.65	1.50	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	1.88	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	
BBS-019	3.30	0.00	1.20	1.17	0.00	0.00	0.00	0.00	3.30	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-020	4.50	0.01	0.94	1.20	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.10	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	
BBS-021	2.80	0.01	3.50	1.50	0.00	0.00	0.00	0.00	2.13	2.63	0.00	0.00	0.00	0.00	0.10	1.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	
BBS-022	2.70	0.25	1.06	1.10	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.75	0.00	0.00	
BBS-023	1.33	1.35	2.90	1.00	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	1.35	2.90	0.00	0.00	0.80	0.00	0.00	0.00	1.00	0.00	0.88	0.00	0.00	
BBS-024	2.00	1.80	1.70	2.40	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	1.80	1.20	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.40	0.00	0.00	
BBS-025	2.75	0.00	0.94	1.50	0.00	0.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.50	0.00	0.00	
BBS-026	1.35	1.90	2.20	1.78	0.00	0.00	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	2.11	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78	0.00	0.00	
BBS-027	1.40	2.10	3.50	1.57	0.00	0.00	0.00	1.00	1.44	0.00	0.00	0.00	0.00	0.00	2.10	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	0.00	0.00	
BBS-028	2.30	0.00	0.70	0.75	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	
BBS-029	1.13	0.46	1.50	0.50	0.00	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.58	1.50	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	
BBS-034	4.80	0.01	0.00	0.00	0.00	0.00	0.00	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-037	3.00	0.60	0.00	0.00	0.00	0.00	0.00	2.55	1.50	0.00	0.00	0.00	0.00	0.00	0.67	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	
BBS-038	3.40	0.05	0.75	0.60	0.00	0.00	0.00	0.00	3.40	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-039	1.05	0.01	0.75	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.10	0.50	0.00	0.00	0.50	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-040	2.10	0.40	2.00	1.40	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	0.00	0.00	0.57	1.78	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	
BBS-041	2.75	0.05	0.64	0.75	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	0.50	0.30	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	
BBS-042	2.80	0.00	0.73	0.83	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	
BBS-043	2.60	0.01	1.33	1.83	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.10	0.67	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	1.83	0.00	0.00	
BBS-044	1.25	4.10	0.00	1.71	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	1.71	0.00	0.00	
BBS-046	0.80	0.00	2.30	1.31	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.94	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31	0.00	0.00	
BBS-047	1.17	0.60	1.15	2.07	0.00	0.00	0.00	0.50	1.08	0.00	0.00	0.50	0.00	0.00	0.79	1.15	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.93	0.00	0.00	
BBS-048	1.80	0.55	1.33	1.07	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.00	0.00	0.50	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07	0.00	0.00	
BBS-049	1.26	1.75	3.10	1.61	0.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	1.75	2.90	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00	1.61	0.00	0.00	
BBS-050	2.30	0.10	3.05	1.00	0.00	0.00	0.00	0.00	2.00	0.90	0.00	0.00	0.00	0.00	0.50	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	
BBS-058	0.50	0.55	0.80	0.50	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.50	0.00	0.00	0.56	0.80	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	
BBS-059	2.20	0.20	2.30	3.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.50	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	
BBS-061	2.50	0.30	1.15	2.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	1.15	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	
BBS-063	0.83	0.46	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-064	1.31	0.10	0.46	0.50	0.00	0.00	0.00	1.00	1.31	0.00	0.00	0.50	0.00	0.00	0.50	0.46	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	
BBS-065	2.40	0.45	1.20	1.70	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.63	0.00	0.00	0.50	1.20	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.10	0.00	0.00	0.00	
BBS-066	2.60	0.50	0.00	3.10	0.00	0.00	0.00	2.60	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.00	2.13	0.00	0.00	0.00	
BBS-067	2.40	0.55	0.50	3.60	0.00	0.00	0.00	2.40	0.75	0.00	0.00	0.92	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	2.70	0.00	2.00	0.00	0.00	
BBS-069	2.70	0.61	1.00	0.75	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.75	0.00	0.00	0.43	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.50	0.00			

DRAFT

BBS-125	3.50	1.50	0.00	1.80	0.00	0.00	0.00	3.50	1.00	0.00	0.00	1.40	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.94	0.00	1.38	0.00	0.00	0.00
BBS-126	2.50	0.60	0.79	2.25	0.00	0.00	0.00	2.50	0.00	0.00	0.86	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.00	1.42	0.00	1.83	0.00	0.00	0.00	
BBS-127	3.80	1.20	1.50	1.56	0.00	0.00	0.00	3.80	0.75	0.00	0.00	1.50	0.00	0.00	0.67	0.00	0.00	0.00	2.00	0.00	1.36	0.00	1.50	0.00	0.00	
BBS-128	2.90	0.50	1.38	1.20	0.00	0.00	0.00	0.00	2.67	1.28	0.00	0.50	0.00	0.00	0.81	0.00	0.00	3.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	
BBS-129	2.70	0.55	0.94	1.58	0.00	0.00	0.00	0.00	2.50	1.05	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00	1.40	0.00	1.50	0.00	0.00	
BBS-130	2.10	2.05	1.67	2.21	0.00	0.00	0.00	2.38	1.50	0.00	0.00	1.95	0.00	0.00	0.50	0.88	0.00	0.00	0.00	1.60	0.00	2.00	0.00	0.00	0.00	
BBS-131	3.20	0.65	1.00	2.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.93	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.50	0.00	1.50	0.00	0.00	0.00	
BBS-132	3.70	0.25	0.70	0.70	0.00	0.00	0.00	0.00	1.83	0.70	0.00	0.83	0.70	0.00	0.00	0.83	0.00	0.00	0.00	0.50	0.00	2.00	0.00	0.50	0.00	
BBS-133	4.50	0.25	1.00	1.80	0.00	0.00	0.00	4.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	1.00	0.00	0.00	0.00	0.50	0.00	2.00	0.00	0.50	0.00	
BBS-134	2.22	0.35	0.81	2.50	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.70	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	1.75	0.00	1.50	0.00	0.00	
BBS-135	2.80	1.00	1.05	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	1.11	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-136	2.45	0.36	1.78	1.28	0.00	0.00	0.00	0.00	2.40	0.30	0.00	0.58	0.00	0.00	0.30	1.75	0.00	0.00	0.00	2.00	0.00	1.75	0.00	0.88	0.00	
BBS-137	2.00	0.33	1.25	1.29	0.00	0.00	0.00	2.00	0.50	0.00	0.00	0.53	0.00	0.00	0.10	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-138	2.70	1.70	3.13	1.50	0.00	0.00	0.00	2.19	1.35	0.00	0.50	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-139	1.89	1.35	1.29	1.87	0.00	0.00	0.00	1.87	0.00	0.00	0.00	1.44	0.00	0.00	0.50	0.63	0.00	0.00	0.00	2.33	0.00	1.00	0.00	1.00	0.00	
BBS-140	1.90	0.50	0.50	2.00	0.00	0.00	0.00	1.90	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	
BBS-141	0.94	1.90	1.70	1.11	0.00	0.00	0.00	0.90	0.67	0.00	0.00	1.06	0.00	0.00	1.10	1.70	0.00	0.00	0.00	0.89	0.00	1.00	0.00	0.00	0.00	
BBS-143	4.90	0.00	0.00	0.00	0.00	0.00	0.00	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-144	2.40	0.45	1.00	2.50	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.90	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.50	0.00	1.17	0.00	0.00	
BBS-145	2.70	0.36	2.39	1.07	0.00	0.00	0.00	2.70	0.67	0.00	0.00	0.00	0.00	0.00	0.60	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-146	2.30	0.72	0.50	2.30	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.60	0.00	0.00	0.72	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-148	5.00	0.15	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-149	1.25	0.10	0.56	0.90	0.00	0.00	0.00	1.00	0.58	0.00	0.00	0.00	0.00	0.00	0.50	0.56	0.00	0.00	0.00	0.00	0.83	0.00	1.00	0.00	0.00	
BBS-150	5.00	0.45	0.00	1.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
BBS-151	2.25	0.75	1.65	1.13	0.00	0.00	0.00	1.38	1.20	3.00	0.00	0.50	0.00	0.00	0.78	1.55	0.00	0.00	0.00	1.00	0.00	1.17	0.00	1.00	0.00	
BBS-152	3.10	0.26	0.83	2.56	0.00	0.50	0.00	3.10	0.50	0.00	0.00	0.75	0.00	0.00	0.37	0.83	0.00	0.00	0.00	0.00	2.31	0.00	2.00	0.00	0.00	
BBS-153	3.70	1.55	0.00	1.95	0.00	0.00	0.00	3.70	0.00	0.00	0.00	1.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	2.50	0.00	0.00	
BBS-154	2.40	2.05	1.10	2.56	0.00	0.00	0.00	2.40	0.00	0.00	0.00	1.70	0.00	0.00	0.58	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	
BBS-155	2.30	0.65	1.00	2.55	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.55	0.00	0.00	0.17	2.20	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	
BBS-156	3.10	0.06	1.90	0.00	0.00	0.00	0.00	1.00	2.90	0.00	0.00	0.00	0.00	0.00	0.30	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-157	3.50	0.30	1.33	2.25	0.50	0.00	0.00	3.20	0.93	0.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.33	0.00	1.75	0.00	1.50	0.00	
BBS-158	3.00	0.00	1.25	1.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
BBS-159	0.67	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-160	3.65	1.00	0.81	2.00	0.00	0.00	0.00	3.65	0.00	0.00	0.00	0.83	0.00	0.00	1.25	0.50	0.83	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
BBS-161	2.67	1.80	1.75	1.89	0.75	0.00	0.00	2.67	0.00	0.00	0.00	1.50	0.00	0.00	1.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-162	3.85	0.00	1.50	1.62	0.50	0.00	0.00	1.25	0.85	0.00	0.00	1.25	0.85	0.00	0.00	1.25	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-163	3.25	0.10	2.25	2.31	0.00	0.00	0.00	2.90	1.06	0.00	0.00	1.00	1.00	0.00	0.00	2.08	0.00	0.00	0.00	1.25	0.00	2.56	0.00	0.50	0.00	
BBS-164	3.30	0.20	1.13	2.35	0.00	0.00	0.00	3.30	0.83	0.00	0.00	0.67	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.83	0.00	2.35	0.00	1.00	0.00	
BBS-165	2.50	0.10	0.71	1.80	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.71	0.00	0.00	0.00	0.00	1.80	0.00	1.00	0.00	0.00	
BBS-166	1.89	1.05	2.78	1.67	0.00	0.00	0.00	1.61	1.13	0.00	0.00	0.67	0.00	0.00	1.19	1.44	0.00	0.00	0.00	2.60	0.00	1.67	0.00	2.00	0.00	
BBS-167	5.00	0.15	0.00	0.70	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.75	0.00	0.00	
BBS-168	2.95	0.55	4.08	1.30	0.00	0.00	0.00	2.90	0.50	0.00	0.00	0.50	0.50	0.00	0.50	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-169	3.00	0.00	1.17	0.93	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.50	0.00	0.00	0.93	0.00	0.00	0.00	0.00	0.00	1.15	0.00	1.00	0.00	0.00	
BBS-170	4.00	0.35	0.00	1.36	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.21	0.00	1.00	0.00	0.00	
BBS-171	4.80	0.20	0.00	1.40	0.00	0.00	0.00	4.80	0.50	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	
BBS-172	5.00	0.00	0.00	1.00	0.00	0.00	0.00	5.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
BBS-173	3.40	0.30	1.85	1.25	0.00	0.00	0.00	3.30	0.72	0.00	0.00	0.00	0.00	0.00	0.75	1.85	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	
BBS-174	2.70	0.45	2.89	1.00	0.00	0.00	0.00	1.90	1.40	0.00	0.00	0.00	0.00	0.00	0.75	2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-175	3.35	0.00	2.50	1.90	0.00	0.00	0.00	1.45	2.89	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-176	3.40	0.75	0.60	1.76	0.00	0.00	0.00	2.60	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	
BBS-177	1.80	0.20	0.00	0.00	0.00	0.00	0.00	1.32	1.17	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BBS-179	3.80	1.25	1.33	1.14	0.00	0.00	0.00	3.80	0.00	0.00	0.00	1.25	0.00	0.00	0.00	1.00	0.00	0.00	0.00							

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BBS-220	2.40	0.75	0.50	2.40	0.50	0.00	0.00	2.40	0.00	0.00	0.00	0.78	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	1.00	0.00	2.40	0.50	0.00	0.00
BBS-221	3.00	1.01	0.50	1.70	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.50	0.90	0.00	0.30	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	1.43	0.00	0.00	0.00
BBS-222	2.30	1.65	0.00	2.05	0.00	0.00	0.00	2.30	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.00
BBS-223	2.06	1.01	1.63	2.11	0.00	0.00	0.00	2.06	0.00	0.00	0.00	0.34	0.72	0.00	0.00	0.50	1.00	1.17	0.00	0.00	0.00	0.00	2.00	0.00	2.50	0.00	0.00	0.00
BBS-224	2.20	1.85	1.00	1.89	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.67	1.30	0.00	0.50	0.50	0.88	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00
BBS-225	3.00	0.26	1.00	2.80	0.50	0.00	0.00	3.00	0.00	0.00	0.00	0.50	0.53	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.50	0.00	0.10
BBS-226	0.61	0.51	1.89	2.17	0.00	0.00	0.10	0.61	0.00	0.00	0.00	0.42	0.50	0.00	0.50	1.00	0.75	0.50	0.00	1.00	1.25	4.00	1.93	0.00	2.00	0.00	0.00	0.00
BBS-227	0.94	1.90	1.70	0.94	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.50	0.83	0.00	0.00	0.95	1.21	0.86	0.00	0.00	0.00	0.00	0.94	0.00	1.00	0.00	0.00	0.00
BBS-228	2.20	0.35	0.80	3.20	0.00	0.00	0.00	2.33	0.75	0.00	0.00	0.50	0.83	0.00	0.00	0.00	0.67	0.00	0.00	0.00	1.00	0.00	2.40	0.00	2.20	0.00	0.00	0.00
BBS-229	1.55	1.50	1.92	1.65	0.00	0.00	0.00	1.55	0.00	0.00	0.00	0.50	0.90	0.00	0.10	0.73	0.83	1.75	0.00	0.00	0.00	1.00	0.00	1.65	0.00	0.00	0.00	0.00
BBS-230	4.20	0.26	0.50	1.64	0.00	0.00	0.00	4.20	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00
BBS-231	2.95	1.45	0.67	1.07	0.00	0.00	0.00	2.95	0.00	0.00	0.00	2.00	1.33	0.00	0.00	1.00	0.50	1.00	0.00	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.00	0.00
BBS-232	1.36	1.35	1.89	2.50	0.00	0.00	1.00	1.36	0.00	0.00	0.00	0.58	0.00	0.55	0.46	1.39	1.25	0.00	0.00	0.00	0.50	0.00	2.30	0.00	2.00	0.00	0.00	1.00
BBS-233	2.70	0.85	0.75	1.00	0.00	0.50	0.00	2.50	0.67	0.00	0.44	0.60	0.00	0.10	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBS-234	0.47	1.01	1.94	2.61	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.30	0.43	0.00	0.50	0.71	1.50	1.10	0.00	0.00	0.00	0.00	0.00	2.44	0.00	0.50	0.00	0.00
BBS-235	1.13	0.95	1.17	2.05	0.00	0.00	2.00	1.13	0.00	0.00	0.30	0.67	0.00	0.00	0.67	1.10	0.75	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	2.00
BBS-236	2.70	1.75	0.50	2.60	0.50	0.00	0.00	2.70	0.00	0.00	0.00	1.75	0.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.50	0.50	0.00	0.00
BBS-237	2.39	1.95	0.83	2.22	0.00	0.00	0.00	2.39	0.50	0.00	0.72	1.35	0.00	0.50	0.52	0.90	0.50	0.00	0.00	0.00	0.00	1.00	2.38	0.00	0.00	0.00	0.00	0.00
BBS-238	2.15	1.35	1.44	2.30	0.00	0.00	0.00	0.83	1.67	0.00	0.00	0.92	0.00	0.00	0.83	1.34	0.00	0.00	0.00	0.00	1.00	0.00	1.90	0.00	1.14	0.00	0.00	0.00
BBS-239	0.57	0.55	1.89	3.21	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.10	0.50	0.00	0.00	0.58	1.67	0.83	0.00	0.00	0.00	0.50	0.00	3.21	0.00	0.00	0.00	0.00
BBS-240	1.60	1.70	1.83	1.60	0.00	0.00	0.00	1.60	0.00	0.00	0.75	0.90	0.00	0.50	0.69	1.56	1.17	0.00	0.00	0.00	1.00	0.00	1.55	0.00	0.50	0.00	0.00	0.00
BBS-241	0.95	1.21	1.50	1.72	0.00	0.00	0.00	0.95	0.00	0.00	0.53	0.57	0.00	0.00	0.56	1.30	1.00	0.00	0.00	0.00	1.00	0.00	1.72	0.00	0.00	0.00	0.00	0.00
BBS-242	2.25	0.60	0.00	3.00	0.00	0.00	0.00	2.15	1.00	0.00	0.00	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
BBS-243	3.05	0.95	1.07	1.67	0.00	0.00	0.00	3.05	0.75	0.00	0.50	1.80	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.50	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00
BBS-244	0.70	1.10	1.95	2.13	0.00	0.00	0.00	0.70	0.00	0.00	0.50	0.50	0.00	0.50	0.78	1.55	1.13	0.00	0.00	0.00	0.50	0.00	2.13	0.00	0.00	0.00	0.00	0.00
BBS-245	0.52	0.90	1.70	1.21	1.00	0.00	0.10	0.47	0.50	0.00	0.30	0.34	0.00	0.50	0.64	1.45	0.63	0.00	0.00	0.00	1.00	0.00	1.21	0.00	0.00	1.00	0.00	0.10
BBS-246	3.20	0.00	0.50	2.60	1.00	0.00	0.00	3.10	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.00	0.00	0.00	0.00
BBS-247	0.62	1.35	1.33	1.00	0.00	0.00	0.00	0.62	0.00	0.00	0.85	0.37	0.00	0.37	0.51	1.00	0.75	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
BBS-248	0.76	1.27	1.35	2.00	0.00	0.00	1.00	0.76	0.00	0.00	1.00	0.40	0.00	0.00	0.89	1.06	1.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.00	1.00
BBS-249	0.52	1.30	1.75	0.63	0.00	0.00	0.00	0.52	0.00	0.00	0.45	0.52	0.00	0.75	0.86	1.30	1.33	0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.00	0.00	0.00	0.00

SITE_ID	SGT_f	CGI_f	GRT_f	RDT_f	BRT_f	SPT_f	SGT_f	T_f	H_f	R_f	Hail_f	PenL_f	Ripo_f	Udtd_f	Acad_f	Bato_f	Anad_f	Avra_f	Char_f	Chae_f	Clad_f	Laur_f	Acan_f	Chon_f	Conv_f	Sarg_f	SPSP_f	Ssid_f
BES-003	0.7	1.0	0.0	0.5	0.9	0.2	0.0	0.2	0.5	1.0	0.0	0.8	0.0	1.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-004	0.7	1.0	0.0	0.5	0.9	0.2	0.0	0.2	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
BES-005	1.0	0.0	0.3	0.1	0.0	0.0	0.0	1.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-006	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-007	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-010	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	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-011	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-013	1.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-014	1.0	0.0	0.9	0.0	0.0	0.0	0.0	0.2	0.8	0.2	0.0	0.0	0.0	0.0	0.0	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
BES-015	1.0	0.6	0.0	0.6	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-016	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-017	0.9	0.8	0.7	0.5	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	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
BES-018	1.0	0.1	1.0	0.9	0.3	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-019	1.0	0.0	0.5	0.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	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
BES-020	1.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	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
BES-021	1.0	0.1	1.0	0.6	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-022	1.0	0.5	0.9	0.5	0.0	0.0	0.0	0.0	0.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-023	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	0.5	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
BES-024	0.8	1.0	1.0	1.0	0.0	0.0	0.0	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
BES-025	1.0	0.0	0.9	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-026	1.0	0.9	1.0	0.9	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	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
BES-027	1.0	1.0	1.0	0.7	0.0	0.0	0.0	0.1	0.9	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-028	1.0	0.0	1.0	0.4	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-029	0.8	0.0	1.0	0.1	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8	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
BES-030	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-031	1.0	0.2	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	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
BES-032	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-033	1.0	0.1	0.6	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	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
BES-039	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-040	1.0	0.7	0.9	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.7	0.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-041	1.0	0.1	0.5	0.2	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1	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
BES-042	1.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-043	1.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0
BES-044	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-046	0.7	0.9	1.0	0.8	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-047	0.6	0.7	1.0	0.7	0.0	0.0	0.0	0.1	0.6	0.0	0.0	0.1	0.0	0.0	0.0	0.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-048	1.0	0.8	0.9	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.8	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
BES-049	1.0	1.0	1.0	0.9	0.0	0.0	0.0	0.0	1.0	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	0.0	0.0	0.0
BES-050	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-051	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-059	1.0	0.4	1.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	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
BES-061	1.0	0.6	1.0	0.1	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.1	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
BES-063	0.9	0.1	0.9	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.1	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
BES-064	1.0	0.2	1.0	0.1	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.1	0.0	0.0	0.1	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
BES-065	1.0	0.5	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0
BES-067	1.0	0.8	0.2	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.0	0.6	0.0	0.0	0.0	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
BES-069	1.0	0.8	0.9	0.2	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0
BES-070	1.0	0.1	0.0	0.9	0.8	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	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
BES-071	1.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-072	1.0	0.1	1.0	0.7	0.0	0.0	0.0	0.8	1.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BES-074	1.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	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	0.0
BES-075	1.0	0.0																										

[illegible]

DRAFT

BBS-220	1.0	0.9	0.1	1.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	1.0	0.1	0.0	0.0	0.0
BBS-221	0.9	1.0	0.3	1.0	0.0	0.0	0.0	0.9	0.0	0.0	0.1	1.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.7	0.0	0.0	0.0	0.0
BBS-222	1.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
BBS-223	1.0	1.0	0.4	0.9	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.9	0.0	0.0	0.1	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.2	0.0	0.0	0.0	0.0
BBS-224	1.0	1.0	0.4	0.9	0.0	0.0	0.0	1.0	0.0	0.0	0.6	1.0	0.0	0.1	0.3	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0
BBS-225	1.0	0.3	0.2	1.0	0.1	0.0	0.0	1.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.1	0.0
BBS-226	1.0	0.9	0.9	0.9	0.0	0.0	0.1	1.0	0.0	0.0	0.0	0.5	0.1	0.0	0.5	0.8	0.4	0.1	0.0	0.1	0.2	0.1	0.7	0.0	0.1	0.0	0.0	0.0	0.0
BBS-227	0.9	1.0	1.0	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.3	0.9	0.0	0.0	1.0	1.0	0.7	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.5	0.0	0.0	0.0	0.0
BBS-228	1.0	0.3	0.5	1.0	0.0	0.0	0.0	0.9	0.2	0.0	0.1	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
BBS-229	1.0	1.0	0.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.0	0.1	0.7	0.8	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
BBS-230	1.0	0.5	0.2	0.7	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
BBS-231	1.0	1.0	0.3	0.7	0.0	0.0	0.0	1.0	0.0	0.0	0.1	0.9	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
BBS-232	0.7	0.9	0.9	1.0	0.0	0.0	0.2	0.7	0.0	0.0	0.4	0.6	0.0	0.2	0.7	0.9	0.4	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.0	0.0	0.1	0.0
BBS-233	1.0	0.7	0.2	0.1	0.0	0.1	0.0	1.0	0.3	0.0	0.7	0.5	0.0	0.1	0.2	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
BBS-234	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.2	0.6	0.0	0.1	0.7	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.1	0.0	0.0	0.0	0.1
BBS-235	0.8	0.9	0.6	1.0	0.0	0.0	0.1	0.8	0.0	0.0	0.2	0.6	0.0	0.0	0.7	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
BBS-236	1.0	1.0	0.2	0.8	0.2	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.1	0.0	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
BBS-237	0.9	1.0	0.6	0.9	0.0	0.0	0.0	0.9	0.1	0.0	0.5	1.0	0.0	0.1	0.6	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
BBS-238	1.0	0.9	0.9	1.0	0.0	0.0	0.0	0.9	0.9	0.0	0.0	0.6	0.0	0.0	0.9	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	0.0
BBS-239	0.7	0.6	0.9	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.2	0.3	0.0	0.0	0.6	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	0.0	0.0	0.0	0.0
BBS-240	1.0	1.0	0.9	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.2	1.0	0.0	0.1	0.8	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.0	0.0	0.0	0.0	0.0
BBS-241	1.0	1.0	1.0	0.9	0.0	0.0	0.0	1.0	0.0	0.0	0.4	0.7	0.0	0.0	0.9	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.9	0.0	0.0	0.0	0.0
BBS-242	1.0	0.7	0.0	1.0	0.0	0.0	0.0	1.0	0.1	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BBS-243	1.0	0.6	0.7	0.9	0.0	0.0	0.0	1.0	0.2	0.0	0.3	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BBS-244	0.8	0.9	1.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.5	0.0	0.1	0.9	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	0.0	0.0	0.1	0.0
BBS-245	0.9	1.0	1.0	0.7	0.1	0.0	0.1	0.9	0.1	0.0	0.2	0.5	0.0	0.1	0.7	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
BBS-246	1.0	0.0	0.1	1.0	0.0	0.0	0.0	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	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
BBS-247	1.0	1.0	0.9	0.6	0.0	0.0	0.0	1.0	0.0	0.0	0.6	0.3	0.0	0.3	1.0	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
BBS-248	1.0	1.0	1.0	1.0	0.0	0.0	0.1	1.0	0.0	0.0	0.1	0.8	0.0	0.0	0.9	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
BBS-249	0.6	1.0	0.6	0.4	0.0	0.0	0.0	0.7	0.0	0.0	0.6	0.7	0.0	0.2	0.8	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0

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SITE_ID	SGT_p	CGT_p	GRT_p	RDT_p	BRT_p	SPT_p	SCF_p	T_p	H_p	R_p	Hall_p	PenL_p	UddL_p	Accl_p	Balo_p	Ankl_p	AvrL_p	ChnL_p	Chae_p	Clad_p	LauL_p	Acan_p	Chon_p	Poly_p	Sang_p	SpSp_p	Sold_p
BBS-003	1	0	1	1	0	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0	0
BBS-004	1	1	1	1	0	1	0	0	1	1	0	1	0	1	0	1	0	0	1	0	0	1	0	0	0	0	0
BBS-005	1	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
BBS-006	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
BBS-008	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
BBS-010	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
BBS-011	1	0	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
BBS-013	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
BBS-014	1	0	1	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
BBS-015	1	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
BBS-016	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0
BBS-017	1	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
BBS-018	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-019	1	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
BBS-020	1	1	1	1	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
BBS-021	1	1	1	1	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-022	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0
BBS-023	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0
BBS-024	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-025	1	0	1	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0
BBS-026	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-027	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-028	1	0	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
BBS-029	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0
BBS-034	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
BBS-037	1	1	1	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
BBS-038	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-039	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0
BBS-040	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0
BBS-041	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-042	1	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
BBS-043	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-044	1	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
BBS-046	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-047	1	1	1	1	0	0	0	0	1	1	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0
BBS-048	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-049	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	1	0	0	1	0	0	0	0
BBS-050	1	1	1	1	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-058	1	1	1	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
BBS-059	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
BBS-061	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0
BBS-063	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
BBS-064	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	0
BBS-065	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0
BBS-066	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0
BBS-067	1	1	1	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0
BBS-069	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	1	0	1	0	0	0
BBS-070	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	0	0	1	1	0	0	1	0	1	0	0
BBS-071	1	0	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-072	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0
BBS-074	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	1	0	1	0	0
BBS-075	1	0	1	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
BBS-076	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0
BBS-077	1	0	1	1	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
BBS-086	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0
BBS-087	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
BBS-088	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0
BBS-089	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0
BBS-090	1	1	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
BBS-091	1	1	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0
BBS-092	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0
BBS-094	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	1	1	0	1	0	0
BBS-095	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	1	0	1	1	0	0	0
BBS-096	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0
BBS-098	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0
BBS-099	1	0	1	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0
BBS-100	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0
BBS-101	1	1	1	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0
BBS-102	1	1	1	1	0	0	0	0	1	1																	

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BBS-197	1	1	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0
BBS-198	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	0	0	1	1	1	0	0	1	0	0	0
BBS-199	1	1	1	1	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0
BBS-200	1	1	1	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
BBS-201	1	1	1	1	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	0	0	0	0	1	0	0	0	0
BBS-202	1	1	1	1	1	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
BBS-203	1	1	1	1	1	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0
BBS-204	1	1	1	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
BBS-205	1	1	1	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
BBS-206	1	1	1	1	1	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0
BBS-207	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0
BBS-208	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
BBS-209	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0
BBS-210	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0
BBS-211	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0	1	0	1	0	0	0
BBS-212	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
BBS-213	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	0	1	0	0	0	0
BBS-214	1	1	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0
BBS-215	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	1	0	1	0	0	0	0
BBS-216	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	1	0	0
BBS-217	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0
BBS-218	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0
BBS-219	1	1	1	1	1	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0
BBS-220	1	1	1	1	1	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0
BBS-221	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	0	0
BBS-222	1	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
BBS-223	1	1	1	1	1	0	0	0	0	1	0	0	1	0	0	1	1	1	0	0	0	0	0	1	0	0	0	0
BBS-224	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	1	0	0	0	0
BBS-225	1	1	1	1	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0
BBS-226	1	1	1	1	1	0	0	1	1	0	0	0	1	1	0	1	1	1	1	0	1	1	1	0	0	1	0	0
BBS-227	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0
BBS-228	1	1	1	1	1	0	0	0	0	1	1	0	1	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0
BBS-229	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	0	0	0	1	0	1	0	0	0	0
BBS-230	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0
BBS-231	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0
BBS-232	1	1	1	1	1	0	0	1	1	0	0	0	1	1	0	1	1	1	1	0	0	0	1	0	1	0	0	0
BBS-233	1	1	1	1	1	0	1	0	1	1	0	0	1	1	0	1	1	1	1	0	0	0	0	0	1	0	0	0
BBS-234	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	1	0	0	0	0	1	0	1	0	0
BBS-235	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	1
BBS-236	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0
BBS-237	1	1	1	1	1	0	0	0	1	1	0	1	1	0	1	1	1	1	1	0	0	0	0	1	0	0	0	0
BBS-238	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0	1	0	1	0	0	0
BBS-239	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0
BBS-240	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	1	0	0	0	1	0	1	0	0	0
BBS-241	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0
BBS-242	1	1	1	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
BBS-243	1	1	1	1	1	0	0	0	0	1	1	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0
BBS-244	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	1	0	0	0	1	0	0	0	0	0
BBS-245	1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	0	0	1	0	0
BBS-246	1	0	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
BBS-247	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	1	0	0	0	1	0	0	0	0	0
BBS-248	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	0	1	1	1	1	0	0	1	0	0	0	0	1
BBS-249	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	1	1	0	0	1	1	0	0	0	0

LETTERS

Retraction

THE REPORT "DEFECTIVE TRANSCRIPTION-coupled repair of oxidative base damage in Cockayne syndrome patients from XP group G" (1) is retracted. An ad hoc investigatory committee at the University of North Carolina at Chapel Hill has found that the last author (S.A.L.) of the paper "fabricated and falsified research findings" from an immunological assay for transcription-coupled repair. Three papers that were the subject of the investigation have been retracted. Although this paper was not implicated by the investigation, examination of the original data for Figs. 1 and 3 by P.K.C. indicates that the results of these experiments are not valid as reported in *Science*. Although some findings in the paper, notably those of Fig. 2, have been verified, the overall integrity of the paper cannot be supported by the presented results. We are therefore retracting the paper. The first three authors of the paper were not cognizant of any irregularities and were not involved in any wrongdoing. The fourth author (S.A.L.) declined to sign this retraction.

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Reassessing U.S. Coral Reefs

ALTHOUGH WE AGREE WITH J. M. PANDOLFI *et al.*'s ("Are U.S. coral reefs on the slippery slope to slime?", Policy Forum, 18 Mar., p. 1725) vision of reversing coral reef declines where they exist (1), they have stretched the facts beyond reason in making their case. Certainly not all U.S. coral reefs are on a slippery slope to decline (2).

The claim that Hawaiian reefs are seriously degraded is misleading. Actually, a large majority of Hawaiian reefs are surprisingly healthy. Results have shown that over the last 30 years, open coastal reefs in Hawaii show essentially no effect of pollution (3). In addition, the \$9-million "Mamala Bay Study" completed several years ago showed no impacts to reefs on the southern shore of Oahu, Hawaii's most

populated island (4). Even though most of the Main Hawaiian Island reefs are overfished (5), the vast majority of these have not been replaced by algal communities (algal phase shifts) as purported by these authors (6).

In addition, many of the authors' comments on the Northwestern Hawaiian Islands (NWHI) are simply wrong. Green turtles have increased about 500% in recent decades, and monk seals are starting to invade the high Hawaiian Islands (7). Also, marine debris, although abundant and unsightly, has little overall impact on the corals themselves. Lead and PCB contaminants may exist in a few locales [at Midway Atoll (the Harbor and some debris left over from World War II)], but their impact on the reefs is negligible. With the exception of some selected fisheries, the reefs in the NWHI remain relatively pristine (8).

Yes, we can do a far better job of protecting our reefs, but let's focus our energy where it is needed most, on those reefs that are actually in trouble (9).

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LIKE J. M. PANDOLFI ET AL., WE BELIEVE THAT coral reefs in the United States and elsewhere are facing serious threats and that it is in

society's interest to protect them ("Are U.S. coral reefs on the slippery slope to slime?", by J. M. Pandolfi *et al.*, Policy Forum, 18 Mar., p. 1725). However, we were struck by the admonition that "scientists should stop arguing about the relative importance of different causes of coral reef decline." Although



A brown spotted eel hides in the coral reef of Kealakekua Bay on the Kona coast of the island of Hawaii.

we agree that arguing is unproductive, it is surely the case that effective conservation requires an understanding of the relative importance of different causes of decline. A reef threatened by fishing requires different protective measures than a reef threatened by eutrophication, and there is clear value in understanding the nature of the threat. "Don't just stand there, do something" is not a prescription for conservation success.

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THE POLICY FORUM "ARE U.S. CORAL REEFS on the slippery slope to slime?" by J. M. Pandolfi *et al.* inaccurately characterizes the management approach of Florida Keys National Marine Sanctuary (FKNMS) and contains factual errors.

The Policy Forum states that managers must address multiple threats and employ an ecosystem management approach if we are to halt coral reef decline. For over 10 years, the FKNMS has employed just such an approach through a management plan that addresses local and regional threats ranging from poor water quality to direct damage from vessel groundings and anchors.

Part of the plan involves marine zoning that sets aside 6% of the FKNMS as no-take and is showing successes for spiny lobster,

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snapper, and grouper. Contrary to the authors' assertions, these zones are strategically located. The 18 Sanctuary Preservation Areas protect more than 65% of the shallow spur and groove formations or bank reef formations. The two Ecological Reserves protect a variety of habitats, chosen to include spawning sites, current patterns, and other desirable ecological characteristics.

Water quality protection is an essential component of FKNMS management, and improvements to wastewater and stormwater treatment are progressing steadily. The authors ignore these advancements, which include deep well injection of highly treated wastewater in Key West, a Keys-wide no-discharge zone, and continuing replacement of substandard on-site systems.

We agree that we must review the full suite of issues in developing research and management plans. In fact, lessons learned within the Florida Keys National Marine Sanctuary are now serving as a larger model for ecosystem-based approaches within the National Oceanic and Atmospheric Administration.

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THE POLICY FORUM "ARE U.S. CORAL REEFS on the slippery slope to slime?" by J. M. Pandolfi *et al.* (18 Mar., p. 1725) stresses that the decline of coral reefs worldwide is due to multiple stresses that must be simultaneously reduced and that poor water quality is a contributing factor. There are mistakes and serious omissions that may lead readers to believe that very little is being done to correct water quality problems in the Florida Keys.

As required by the Florida Keys National Marine Sanctuary and Protection Act, a Water Quality Protection Program was developed that includes a comprehensive action plan. Since 1997, 26 of 49 high-priority activities have been fully implemented, including establishment of a long-term monitoring program on water quality, seagrass, and corals. Sanitary Wastewater and Storm Water Master Plans have been completed for Monroe County, and wastewater facility plans have been completed for Marathon and other municipalities.

State Law 99-395 requires all wastewater facilities in the Keys, including on-site systems, to upgrade treatment by 2010. Much progress has been made to achieve that

requirement. The City of Key West has upgraded its sewage treatment plant to advanced wastewater treatment (AWT) standards and has replaced old, leaky collection pipes. A new neighborhood AWT plant is operating in the City of Marathon and treats wastes from approximately 500 homes previously "served" by cesspools or septic tanks. (Approximately 4000 cesspools have been identified in the Keys, not 16,000, as stated by Pandolfi *et al.*) Four other municipalities have such facilities planned or under construction. Also, in 2002, all state waters in the Florida Keys were declared a no-discharge zone for boat-generated sewage.

The Florida Keys Water Quality Improvement Act authorized Congress to appropriate \$100 million for the wastewater and storm water improvements in Monroe County, and last year the state provided approximately \$12 million. Obviously, much more needs to be done, but stressing the real progress made thus far is critical to keeping the money flowing.

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IN THEIR POLICY FORUM "ARE U.S. CORAL reefs on the slippery slope to slime?" (18 Mar., p. 1725), J. M. Pandolfi *et al.* conclude that all threats to coral reefs must be addressed simultaneously to reverse coral decline. This is not a new recommendation (1), nor is it particularly useful to managers who need more from scientists than a call to address everything, everywhere. The authors offer a remedy (2–5) by suggesting that corals become resilient when food webs are restored and eutrophication controlled. In fact, studies of marine protected areas offer conflicting results as to how corals respond to protection (6).

Florida's reefs are incorrectly characterized by the authors as so polluted and overfished that they cannot recover under current levels of protection. In reality, there is no compelling evidence that coral decline or recovery was caused or hindered by pollution and overfishing (7). The ongoing, catastrophic decline of corals in Florida has been the product of pandemic coral diseases, winter cold fronts, hurricanes, and coral bleaching (7).

The idea that we can somehow manage for resilience holds false promise against the ongoing threat of regional and global-scale stressors (8). There are sufficient ecologic and economic reasons to manage fisheries better (9), and likewise there are significant public-health and economic reasons to reduce pollution. Unfortunately, global-scale coral stressors, such as disease and global warming, still threaten our reefs (10).

Today's ecology matters just as much as history does, and Pandolfi *et al.*'s recommendation "that scientists should stop arguing about the relative importance of different causes of coral reef decline" is misguided. Debate over the mechanisms of coral decline and recovery is both healthy and critical to the success of management. We strongly agree with the authors that "slowing or reversing global warming trends is essential for the long-term health of all tropical coral reefs." Disagreement among coral reef scientists, however, is not what is holding governments back from taking steps to address global environmental problems.

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Response

THE DECLINE OF U.S. CORAL REEFS IS A GROWING crisis that scientists have failed to communicate effectively to the public. For over 40 years, research has implicated four major human causes of coral reef decline—fishing, land-based pollution, coastal development, and global climate change—and has identified their debilitating effects, such as coral disease and coral bleaching (1–4). The relative importance of these different factors naturally varies from place to place, and we agree that this is sometimes not obvious and may be important to resolve. The precautionary principle clearly dictates that we should not wait for conclusive evidence as to which of the four human disturbances has the biggest impact before action is taken. We will not obtain that evi-

eastern Panamá are represented by the purple dot partly showing above the red dot for the Main Hawaiian islands and Florida Keys. The lettering for the Outer Great Barrier Reef (Outer GBR) should be black.

Reports: "BZR1 is a transcriptional repressor with dual roles in brassinosteroid homeostasis and growth responses" by J.-X. He *et al.* (11 Mar., p. 1634). There was an error in the Fig. 3C legend. The sentence that reads, "Dots indicate BR-induced genes and crosses indicate BR-repressed genes" is incorrect. It should read, "Crosses indicate BR-induced genes, and dots indicate BR-repressed genes."

Reports: "The geometric distance and proper motion of the Triangulum Galaxy (M33)" by A. Brunthaler *et al.* (4 Mar., p. 1440). The credit in the legend for Fig. 1 should read "[Image courtesy of T. A. Rector (National Radio Astronomy Observatory (NRAO)/Associated Universities, Inc. (AUI)/NSF and National Optical Astronomy Observatory/Association of Universities for Research in Astronomy/NSF), D. Thilker (NRAO/AUI/NSF), and R. Braun (ASTRON).]" In addition, the second-last sentence of the first paragraph of the paper (p. 1440) ("This pushed...") should have been deleted.

Brevia: "Membrane insertion of a potassium-channel voltage sensor" by T. Hessa *et al.* (4 Mar., p. 1427). The correct URL for the supporting online material is www.sciencemag.org/cgi/content/full/1109176/DC1.

TECHNICAL COMMENT ABSTRACTS COMMENT ON "The Oceanic Sink for Anthropogenic CO₂"

Ralph F. Keeling

The inventory of anthropogenic CO₂ in the ocean, estimated by Sabine *et al.* (Research Articles, 16 July 2004, p. 367), is an imperfect measure of the change in ocean carbon because it neglects the impact of recent warming on ocean chemistry and circulation. Allowing for warming, the change in ocean carbon is likely ~6% smaller than estimated, although uncertainties in the correction are large.

Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743a

RESPONSE TO COMMENT ON "The Oceanic Sink for Anthropogenic CO₂"

Christopher Sabine, Nicolas Gruber

We argue that our estimate of anthropogenic CO₂ inventory is insensitive to changes in ocean circulation and heat content and warrants no adjustments. Carbon-climate feedbacks may have also altered ocean carbon content, but the proposed correction is too tentative and within the published uncertainty of the current estimate. Nevertheless, this discussion highlights the need for continuing oceanic observations.

Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743b

COMMENT ON "Inflammatory Exposure and Historical Changes in Human Life-Spans"

Elisabetta Barbi and James W. Vaupel

Finch and Crimmins (Reviews, 17 Sep. 2004, p. 1736) claim that analysis of Swedish data "reveals strong associations between early-age mortality and subsequent mortality in the same cohorts." However, these associations are modest and period effects have generally been more important than cohort effects. Future trends in life expectancy are unlikely to be slow merely because early-life mortality is now low.

Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743c

RESPONSE TO COMMENT ON "Inflammatory Exposure and Historical Changes in Human Life- Spans"

Caleb E. Finch and Eileen M. Crimmins

In environments with high levels of infection, we hypothesize that inflammatory pathophysiology is a strong mechanistic link between early and later cohort mortality and morbidity. Using historical Swedish data, we show that cohort effects are stronger than period effects in associations of early and old age mortality. We argue that Barbi and Vaupel did not choose appropriate tests of our hypothesis.

Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743d

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dence for many years or even decades. Nevertheless, we can immediately reduce fishing, land-based pollution, and coastal development; coping with climate change will require global action at the highest levels of government (5, 6).

Historical analysis provides a compelling picture of the problem of shifting baselines (7, 8) that lulls us into a false sense of security. Shifting baselines are especially problematic for places like the Northwest Hawaiian Islands and the Great Barrier Reef, where many reefs are in comparatively good shape but significant threats remain [(9); figure in our Policy Forum]. History also provides a clear roadmap for setting objective goals and criteria to assess the success of management options. The Florida Keys National Marine Sanctuary management plan contains comprehensive strategies for addressing fishing, land-based pollution, and coastal development (10). However, we need to remember that the goal is not the drafting of a plan, but rather the reversal of coral reef decline. Nearly 8 years after initiation of the plan, only 6% of the Florida Keys Sanctuary is fully protected from fishing and other extractive activities in marine reserves. This meager level of protection compares poorly with the 33% protection afforded to the entire Great Barrier Reef, which is in vastly better ecological condition [(11); our figure]. Moreover, with the notable exception of the Tortugas Ecological Reserve, reserves in the Keys are far too small to be effective.

Water quality controls are contentious, politically sensitive, and expensive, and the science concerning potential impacts of sewage-based nutrients on coral reefs is often equivocal. In the Keys, nutrient issues have been confounded by potential offshore nutrient sources due to upwelling (12). But upwelling, like hurricanes and cold fronts that are invoked as causes of degradation, are natural processes that reefs have survived for millions of years. What is different today is the ever-increasing and universal impact of people (13), as exemplified most recently by global climate change. A significant percentage of the more than 20,000 on-site wastewater systems in the Keys were permitted in the 1980s or earlier when there was little concern for water quality (14). Adequate funding to deal with this issue has not been appropriated, and the retrofit of these systems to alternative methods is proceeding inexcusably slowly.

No one likes to hear bad news, but it is a fact that the condition of most U.S. coral reefs is rapidly deteriorating and that nowhere remains pristine. We need to wake up fast to the true magnitude of the challenges we are facing to save our reefs by quickly following the Australian example of vastly increased protection and by implementing more comprehensive manage-

ment. At the imminent risk of losing our reefs forever, how can we do otherwise?

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Written in Our Genes?

IN 1983, LANGSTON AND COLLEAGUES reported that accidental exposure of humans to 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) induces a Parkinsonian state (1, 2). The authors hypothesized that damage to the substantia nigra might reflect a selective toxicity of MPTP for dopaminergic neurons. In the two decades since that initial report, a large body of evidence has accumulated to support this hypothesis. The mechanism of cell death appears to involve the selective uptake by dopaminergic neurons of the toxic MPTP metabolite 1-methyl-4-phenylpyridinium

Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted through the Web (www.submit2science.org) or by regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

(MPP+). Dopaminergic neurons, such as the ones that populate the substantia nigra, are generally identified by the presence of tyrosine hydroxylase, the enzyme that catalyzes the first and rate-limiting step in the conversion of tyrosine to dopamine. Remarkably, the intimate connection between MPTP and dopaminergic neurons is immediately evident from a cursory perusal of the primary sequences of human, mouse, or rat tyrosine hydroxylase, each of which begins with the NH₂-terminal sequence methionine-proline-threonine-proline... (MPTP... in the single letter amino acid code) (3). Once again, an answer appears to be written in our genes—in this case, with unusual clarity.

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CORRECTIONS AND CLARIFICATIONS

Random Samples: "Skyward" (6 May, p. 789). Due to a reporting error, Faith Vilas was incorrectly described as having been a high school science teacher earlier in her career. Also, Vilas has had extensive experience with telescopes in recent years.

Editors' Choice: "Food preservative" (1 Apr., p. 19). The *Streptomyces* bacteria supplied by the female beewolf protects its larva, and not the immobilized honeybee, from infection by fungi.

Essays: "When science is not enough: fighting genetic disease in Brazil" by M. Zatz (1 Apr., p. 55). The first sentence of the Essay is incorrect. It should read, "In my country, Brazil, one among five babies who die in the first year of life have a gene-related disorder."

Policy Forum: "Are U.S. coral reefs on the slippery slope to slime?" by J. M. Pandolfi *et al.* (18 Mar., p. 1725). In the bottom figure on p. 1725, Caribbean sites are purple (not green, as described in the legend), and some data points are not seen because of superimposed dots. Otherwise, the labels point to the dots in order. For example, the Bahamas and