EFFECT OF FRESHWATER INFLOW ON MACROBENTHOS PRODUCTIVITY IN MINOR BAY AND RIVER-DOMINATED ESTUARIES - FY01

Paul A. Montagna, Principal Investigator
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FINAL REPORT

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by

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PREFACE

The current contract is the first of a planned five-year study with the goal to determine the importance of freshwater inflow in maintaining benthic productivity in minor bays and river dominated systems. Minor bays are defined as those small bays that do not have direct freshwater inflow via a major river, but do have inflow from runoff or other indirect sources. Only a few rivers in Texas flow directly into the Gulf of Mexico, and these are also part of the subject study. The current project follows successful completion of a long-term study of large, or major open bays in Texas.

The focus of this final report is on East Matagorda Bay. Biological data is added to a previous sediment study on nitrogen losses to compile a complete view of that system. Sampling was also begun for a long-term study of two river-dominated systems, the Rio Grande and Brazos River. The current report goes into lesser detail for this data as it will be subject to a fuller treatment in future.

ACKNOWLEDGMENTS

As with previous studies, the current work has been performed with support, or partial support, by the Texas Water Development Board, Water Research Planning Fund, authorized under the Texas Water Code sections 15.402 and 16.058(e). This support was administered by the Board under interagency cooperative contract number: 2001-483-362.

I must acknowledge the significant contributions of Mr. Rick Kalke, an outstanding field person and taxonomist. The work reported on in this study could not have been performed without him. Carrol Simanek also provided significant help in data management. We obviously are collecting and processing a large amount of data. Mr. Chris Kalke aided in field collections. Dr. Tracy Villareal and Ms. Lynn Tinnin performed nutrient analyses and chlorophyll measurements. Dr. Hudson DeYoe, University of Texas-Pan American, performed sampling in the Rio Grande and South Bay.

This work has also benefitted by discussions with colleagues at the Texas Water Development Board (TWDB), e.g., David Brock, and Gary Powell who have provided much help and guidance. The study also benefitted by partial support form the University of Texas at Austin, Marine Science Institute.

INTRODUCTION

From the early 1970's to 2000, Texas Water Development Board (TWDB) freshwater inflow studies focused on the major bay systems of the Texas coast. These bay systems, which are influenced primarily by river inflow, are now well understood. In particular, UTMSI researchers have completed several studies on the effect of freshwater inflow on macrobenthos productivity (Kalke and Montagna, 1991; Montagna, 1989; 1999; 2000; Montagna, and Kalke, 1992; 1995; Montagna, and Li, 1996; Montagna, and Yoon, 1991). These studies have demonstrated that regional scale processes and long-term hydrological cycles regulate benthic abundance, productivity, diversity and community structure. Thus, there are three major causes of changes in estuarine productivity in Texas related to freshwater inflow: 1) year-to-year climatic variability in rain, temperature, and wind, which affects precipitation and evaporation, 2) a latitudinal climatic gradient of decreasing precipitation superimposed on a soils gradient of increasing sand content, which results in reduced inflow from northeast to southwest, and 3) the salinity gradients within estuaries from rivers to the sea. The overall result of these studies is to demonstrate the need for minimum inflow requirements on an estuary-scale or a watershed-level basis.

Attention is now focused on minimum inflows required by minor bays and river-dominated estuaries. Freshwater inflow into minor bays is generally dominated by non-point source runoff or an indirect source via circulation from adjacent systems. The river-dominated estuaries drain directly into the Gulf of Mexico rather than into a bay. These drowned-river valley ecosystems are thus uniquely different from the typical bar-built estuaries of Texas that are characterized by large open bays. Because the minor bay and river-dominated estuaries are different from the typical Texas estuary, new studies are required to elucidate how inflow affects productivity in those systems. Currently, there is very little information available on the biotic response to inflow in these two types of ecosystems. The TWDB will be required to complete freshwater inflow assessments on minor bays and river estuaries between the years 2002 and 2006. The first assessment in 2002 will be for East Matagorda Bay, so this system is the focus of the current final report (Table 1).

Benthos are excellent indicators of environmental effects of a variety of stressors because they are abundant and diverse, and are sessile and long-lived relative to plankton or nekton. Therefore, benthos integrate changes in temporal dynamics of ecosystem factors over long time scales and large spatial scales. Benthos abundance, biomass, and diversity will be measured to assess inflow effects on ecosystem productivity. In addition, relevant water quality variables (i.e., salinity, temperature, dissolved oxygen, nutrients, and chlorophyll) will be measured during each sampling period to assess inflow effects on the overlying water, which affects benthos. The first year study was performed to initiate a long-term study of the two river estuaries (Brazos and Rio Grande) and complete a study of East Matagorda Bay, a minor bay.

Table 1. Long-term schedule for sampling minor bay and river-dominated systems. Table finds number of stations and total number of samples. Total number of samples is the product of the number of stations, three replicates per station, and four seasonal sampling trips per station.

Minor Bay / River Estuary	Fiscal Year (Study Year Number)				
	FY2001(1)	FY2002(2)	FY2003(3)	FY2004(4)	FY2005(5)
East Matagorda Bay	3 (36)				
South Bay Coastal Preserve	2 (24)	2 (24)			
Rio Grande River Estuary	3 (36)	3 (36)	3 (36)	3 (36)	3 (36)
Christmas Bay Coast. Pres.		3 (36)	2 (24)		
Cedar Lakes			2 (24)	2 (24)	2 (24)
San Bernard River Estuary			2 (24)	2 (24)	2 (24)
Brazos River Estuary	3 (36)	3 (36)	3 (36)	3 (36)	3 (36)
TOTAL Stations (samples)	11 (132)	11 (132)	12 (144)*	10 (120)*	10 (120)

*The July 2003 sample from the Rio Grande will be archived and completed in Year 4.

METHODS

Study Design and Area

This study has one objective (i.e., task): to determine temporal and spatial variability of benthic parameters, as the indicate productivity, related to differences of freshwater inflow in minor bays and river-dominated estuaries. Northern and southern systems were studied in the first year of this program (Table 1). The southern system was South Bay Coastal Preserve and the Rio Grande, and the northern system was East Matagorda Bay and the Brazos River. South Bay Coastal Preserve and the Rio Grande are close to one another, near the border with Mexico. East Matagorda Bay and the Brazos River are linked by the Intracoastal Waterway and in close proximity to one another. The Brazos River and Rio Grande represent the two river estuaries in Texas which have the highest and lowest inflow respectively, so comparison of these systems over the long-term is desirable. South Bay and East Matagorda Bay are minor bays.

Station location in all four areas was chosen based on experience, sediment type, depth found on NOAA navigation charts, and constraints of sampling logistics. The locations of stations was recorded from a Garmin 215 differential GPS receiver (Table 2).

Two of the Brazos River stations (B and C) were chosen on either side of the Intracoastal waterway (ICW), where station C was closest (0.73 miles) to the Gulf of Mexico, and B was 1 mile upstream within the River. Station A was furthest upstream within the River and about 3.7 miles from the Gulf of Mexico.

In East Matagorda Bay, there were six stations along the axis of the bay, which ran parallel to Matagorda Island and the Gulf of Mexico (Figure 1). The salinity gradient in East Matagorda Bay originated form the north, the most likely source of freshwater is the Intracoastal Waterway, which is connected to Caney Creek and the Brazos River. All six stations were used in the sediment study, and three of the stations were used in the benthic study.

The three stations on the lower Rio Grande were chosen between the confluence with the Gulf of Mexico and the Brownsville weir. Station A was furthest upstream (7.8 mi) from the Gulf of Mexico and station B was 0.8 mi downstream. Station C was closest (3.4 miles) to the Gulf of Mexico. The two stations in South Bay were chosen to describe variability within the bay, but because of the shallowness of the bay, the locations are near one another and limited to deeper water. A sand bar formed and closed the mouth of the Rio Grand to the Gulf about the first week of February 2001. The mouth was artificially opened on 18 July 2001, but closed again on about 1 November 2001.

Table 2. Locations are given in degrees and decimal seconds format. Readings were made with a GPS unit using differential signal reception.

Estuary	Station	Latitude (N)	Longitude (W)
East Matagorda Bay	A	28° 39.000′	95° 56.000′
	B	28° 41.250′	95° 52.000′
	C	28° 42.667′	95° 49.000′
	D	28° 43.667′	95° 47.500′
	E	28° 44.583′	95° 46.283′
	F	28° 44.000′	95° 43.500′
Brazos River	A	28° 55.670′	95° 23.051′
	B	28° 54.193′	95° 23.106′
	C	28° 53.103′	95° 22.924′
South Bay	A	26° 01.639′	97° 10.546′
	B	26° 02.351′	97° 10.992′
Rio Grande River	A	25° 57.584′	97° 13.662′
	B	25° 57.796′	97° 12.668′
	C	25° 57.720′	97° 11.105′

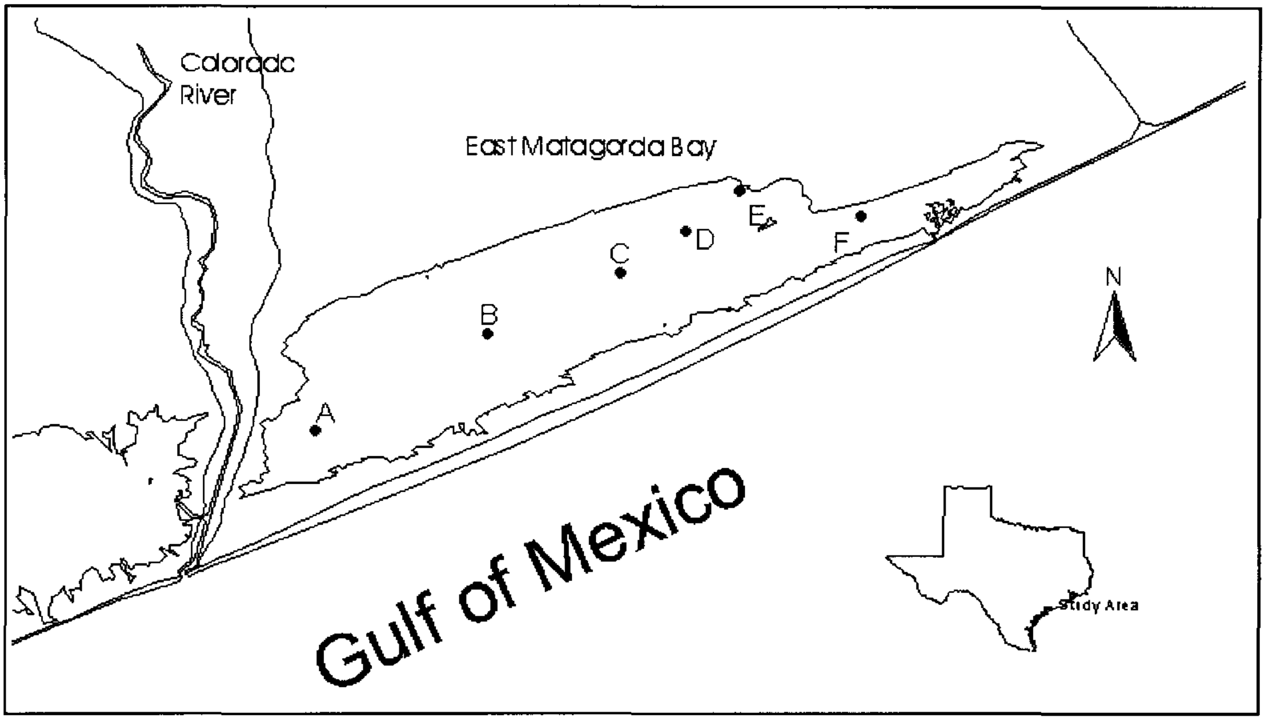

Figure 1. Sampling locations within East Matagorda Bay, Texas.

In previous benthic studies (Montagna, 2000), quarterly sampling has been demonstrated to be effective to capture the temporal benthic dynamics, while economizing on temporal replication. Thus, quarterly sampling took place in October 2000, and January, April, and July 2001. The timing of the sampling is based on experience, and captures the major seasonal inflow events and temperature change in Texas estuaries. Each quarter, three replicates are required for benthos per station. Thus, a typical station yields 12 benthic samples per year.

During each sampling period ancillary environmental data is also collected. Water quality and inflow characteristics are indicated by measuring salinity, nutrient concentrations, and chlorophyll concentrations in the water column overlying sediment. Once each year, sediment characteristics, e.g., grain size, porosity, and elemental content are also measured.

Hydrographic Measurements

Salinity, conductivity, temperature, pH, dissolved oxygen, and redox potential were measured at the surface and bottom at each station during each sampling trip using multiprobe water quality meters. The sonde unit is lowered to just beneath the surface (within 5 - 10 cm) and just above the bottom (within 10 - 20 cm).

Most measurements were made by lowering a YSI 6920 multiprobe sonde. The data are displayed on a YSI 610DM meter. The manufacturer states that the accuracy of each reading as follows: DO % saturation ± 2%, DO ± 0.2 mg/l, conductivity greater of ±0.5% if reading or ± 0.001 mS/cm, temperature ± 0.15 °C, ph ± 0.2 units, depth ± 0.02 m, and salinity greater of ± 1%

of reading or ± 0.1 ppt. Salinities levels are automatically corrected to 25°C. In addition, refractometer readings were made from water samples.

In South Bay and Rio Grande hydrographic measurements are made (by UT Pan Am staff) using a Hydrolab Surveyor 4. The following parameters are read from the digital display unit (accuracy and units): temperature (± 0.15 °C), pH (± 0.1 units), dissolved oxygen (mg/l ± 0.2), specific conductivity (± 0.015 - 1.5 mmhos/cm depending on range), and salinity (ppt). Salinity is automatically corrected to 25 C. Depth is measured with a calibrated PVC pole.

Chlorophyll and Nutrient Measurements

Water samples were collected using a vertically mounted Van Dorn bottle. Bottom water was collected approximately 20 cm from the sediment surface. Water for chlorophyll analysis was filtered onto glass fiber filters and placed on ice (<4.0 °C). Nutrient samples were filtered to remove biological activity (0.45 μm polycarbonate filters) and placed on ice (<0.4 °C). Chlorophyll will be extracted overnight and read fluorometrically on a Turner Model 10-AU using a non-acidification technique (Welschmeyer, 1994; EPA method 445.0). Nutrient analysis was conducted using a LaChat QC 8000 ion analyzer with computer controlled sample selection and peak processing. Chemistries are as specified by the manufacturer and have ranges as follows: nitrate+nitrate (0.03-5.0 μM; Quikchem method 31-107-04-1-A), silicate (0.03-5.0 μM; Quikchem method 31-114-27-1-B), ammonium (0.1-10 μM; Quikchem method 31-107-06-5-A) and phosphate (0.03-2.0 μM; Quikchem method 31-115-01-3-A).

Geological Measurements

Sediment grain size analysis was also performed. Sediment core samples were taken by diver and sectioned at depth intervals 0-3 cm and 3-10 cm. Analysis followed standard geologic procedures (Folk, 1964; E. W. Behrens, personal communication). Percent contribution by weight was measured for four components: rubble (e.g. shell hash), sand, silt, and clay. A 20 cm^3 sediment sample was mixed with 50 ml of hydrogen peroxide and 75 ml of deionized water to digest organic material in the sample. The sample was wet sieved through a 62 μm mesh stainless steel screen using a vacuum pump and a Millipore Hydrosol SST filter holder to separate rubble and sand from silt and clay. After drying, the rubble and sand were separated on a 125 μm screen. The silt and clay fractions were measured using pipette analysis.

Biological Measurements

Sediment was sampled with core tubes held by divers. The macrofauna were sampled with a tube 6.7 cm in diameter, and sectioned at depth intervals of 0-3 cm and 3-10 cm. Three replicates were taken within a 2 m radius. Samples were preserved with 5% buffered formalin, sieved on 0.5 mm mesh screens, sorted, identified to the lowest taxonomic level possible, and counted.

Each macrofauna sample was also used to measure biomass. Individuals were combined into higher taxa categories, i.e., Crustacea, Mollusca, Polychaeta, Ophiuroidea, and all other taxa were placed together in one remaining sample. Samples were dried for 24 h at 55 °C, and weighed. Before drying, mollusks were placed in 1 N HCl for 1 min to 8 h to dissolve the carbonate shells, and washed with fresh water.

Sediment Nitrogen Measurements

Sediments cores were taken to measure nitrogen changes with respect to sediment depth. Cores are taken to a depth of 1 m and 1-cm sections are taken at a range of depth intervals. The range for vertical sectioning follows a logarithmic pattern, because it is anticipated that nitrogen is buried at the surface and degrades slowly over time. Distance from the surface is indicative of time since burial. The sediment is dried, ground up, and homogenized prior to analysis.

Carbon and nitrogen content, as a percent dry weight of sediment, and carbon and nitrogen isotopic composition were measured. Samples were run using a Finnigan delta plus mass spectrometer linked to a CE instruments NC2500 elemental analyzer. This system uses a Dumas type combustion chemistry to convert nitrogen and carbon in solid samples to nitrogen and carbon dioxide gases. These gases are purified by chemical methods and separated by gas chromatography. The stable isotopic composition of the separated gases is then determined by a mass spectrometer designed for use with the NC2500 elemental analyzer. Standard material of known isotopic composition is run every tenth sample to monitor the system and ensure the quality of the analyses.

RESULTS

Brazos River, Rio Grande, and South Bay

Preliminary analysis indicates South Bay is a typical marine, seagrass habitat. The Brazos River and Rio Grande are quite different. The Rio Grande is under going severe changes because of reduced inflow to that system. In the first week of February 2001, a sand bar formed at the mouth of the Rio Grande blocking exchange with the Gulf of Mexico (Figure 2). The effect was to transform the Rio Grande into a lake rather than an estuary. This was evidenced by the succession of fauna to include more freshwater species. The mouth was artificially opened on 18 July 2001 the International Boundary and Water Commission, but closed again on about 1 November 2001.

The Brazos River salinity started high, averaging 28 ppt, then dropped to 2 ppt in January April 2001, and finally finishing higher, near 13 ppt in July (Figure 2). The Brazos had a larger range of salinity than the Rio Grande, alternating from nearly full strength sea water to fresh water.

Biomass is a good indicator of productivity. Biomass was nearly two to three times higher in the Rio Grande than in the Brazos River (Figure 3). Biomass also had opposite trends over time in the two systems, decreasing in summer in the Brazos River, but increasing in summer in the Rio Grande. It is too early in the study to make conclusions, but preliminary data indicates that the two systems work quite differently. However the differences with the connection with the sea is a confounding factor with differences in inflow, so it will take several years of data collection to get a better understanding of the average conditions in these two systems.

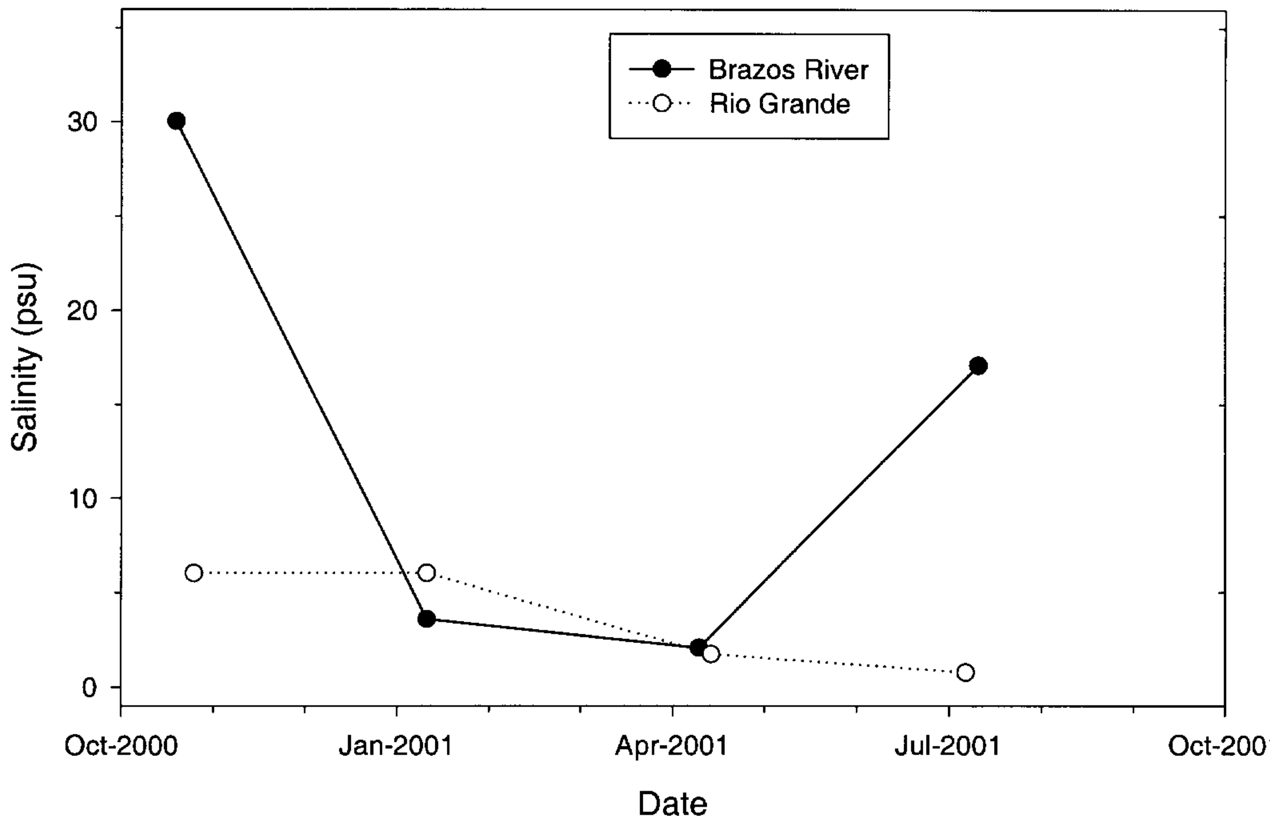

Figure 2. Salinity in the Brazos River and Rio Grande. Average over all stations at all sampling periods.

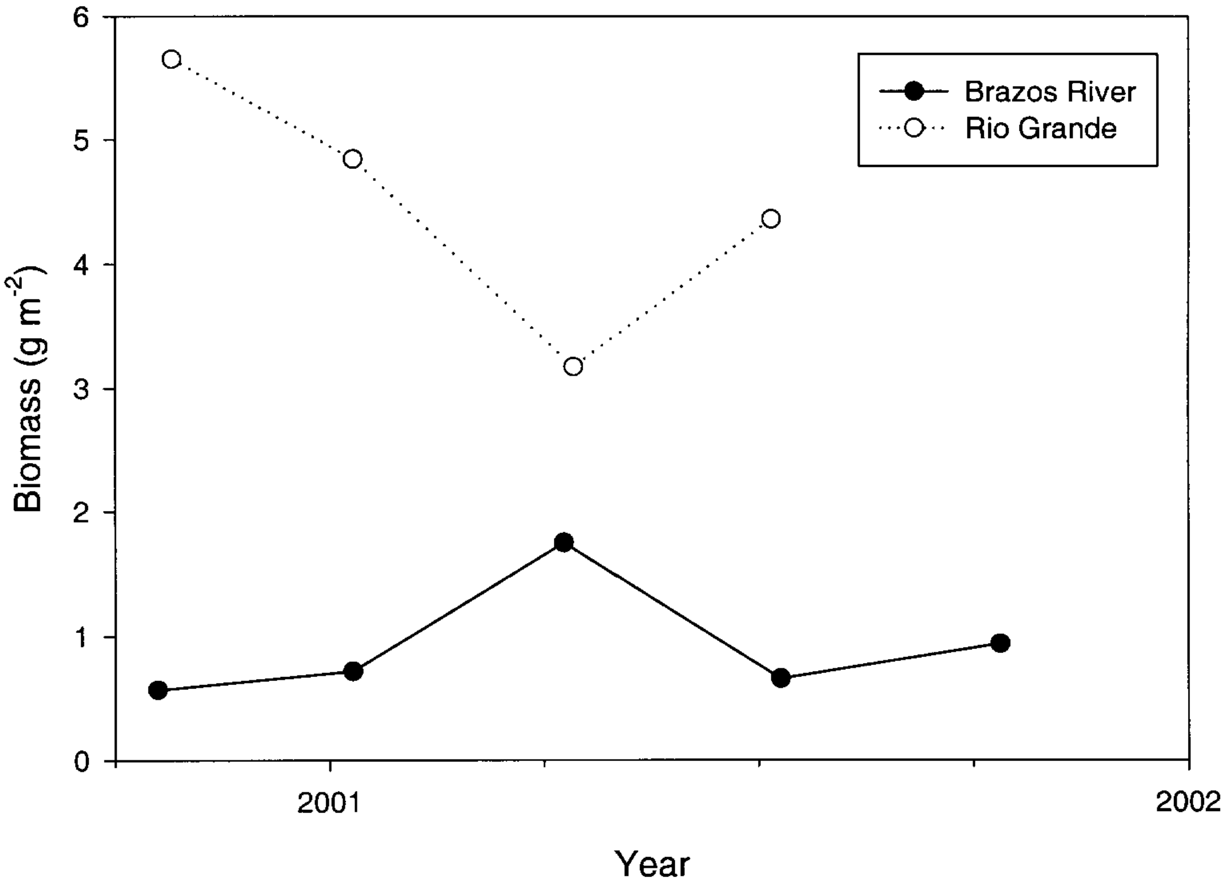

Figure 3. Macrofauna biomass in the Brazos River and Rio Grande. Average over all stations at all sampling periods.

Salinity was consistently lowest at station F, and highest at station B through out the entire sampling period (Figure 4). Stations B and C were slightly hypersaline in October 2000, indicating very little inflow from the Colorado River. The salinity pattern indicates that most freshwater inflow is coming from the northeastern part of the bay. Temperature was the same at all stations and followed a typical seasonal trend with lowest temperatures in winter.

Macrofauna biomass generally increased from the northeastern part of the bay to the southwestern part of the bay (Figure 5). The only exception was in April 2001, when biomass at stations B and C were the same. Abundance also generally increased from the northeastern part of the bay to the southwestern part of the bay . Station F always had the lowest biomass and abundance.

Biomass and abundance average over the whole bay followed the same temporal trend, with highest values in January 2001 (Figure 6). The highest organismal response correlated with the highest dissolved oxygen levels (near 8.5 mg l^{-1}), brackish salinities (near 20 ppt), and lowest temperatures (near 10 °C). Temperature and dissolved oxygen appeared to be more important than salinity when correlated to macrofauna biomass and abundance.

A total of 52 species was found in East Matagorda Bay (Table 3). Polychaetes dominated the species list (29 species in all), followed by one-third as many Crustacea (10 species) and Mollusca (9 species).

The dominant species was *Mediomastus ambiseta*, a deposit-feeding polychaete (Table 4). Except for the clam *Mulinia lateralis*, the 10 most dominant species were all polychaetes. The dominant species comprised 49% of the fauna overall. The eight most dominant species combined for a total of 82.93 of the individuals found. The remaining 44 species were relatively rare, comprising less than 2% of the individuals found.

A principal components (PC) analysis was performed on the eight most dominant species (Figure 7). Five species loaded very strongly on the first PC axis (PC1): *Lumbrineris parvapedata*, *Cirrophorus lyra*, *Mediomastus ambiseta*, *Aricidea catharinae*, and *Branchioasychis americana*. Two species loaded strongly negative on PC1: *Streblospio benedicti*, *Cossura delta*. The inverse loading on PC1 indicates that those two species groups tend to not co-occur. Only one species, *Mulinia lateralis*, loaded on the second PC axis (PC2), indicating this species does not tend to co-occur with any species on the PC1 axis.

The PC species loadings allow for interpretation of the PC scores for stations and sampling dates (Figure 8). Station F was the most distinct station, not sharing PC1 space with either of stations B and C, which had a great deal of overlap. This indicates that the community in station F, the most northeastern station was distinct from the stations in the middle (C) and southwestern (B) parts of the bay. Station F was dominated by *S. benedicti* and *C. delta* (Table 4, Figure 8). *Mulinia lateralis* occurred primarily in station B, and was most dominant in October 2000 and January 2001. Temporal succession appeared to have occurred. The communities in October 2000 and April 2001 were very similar, but distinct from the July 2001 community. The highest diversity occurred in January 2001, which encompassed the entire species loading space.

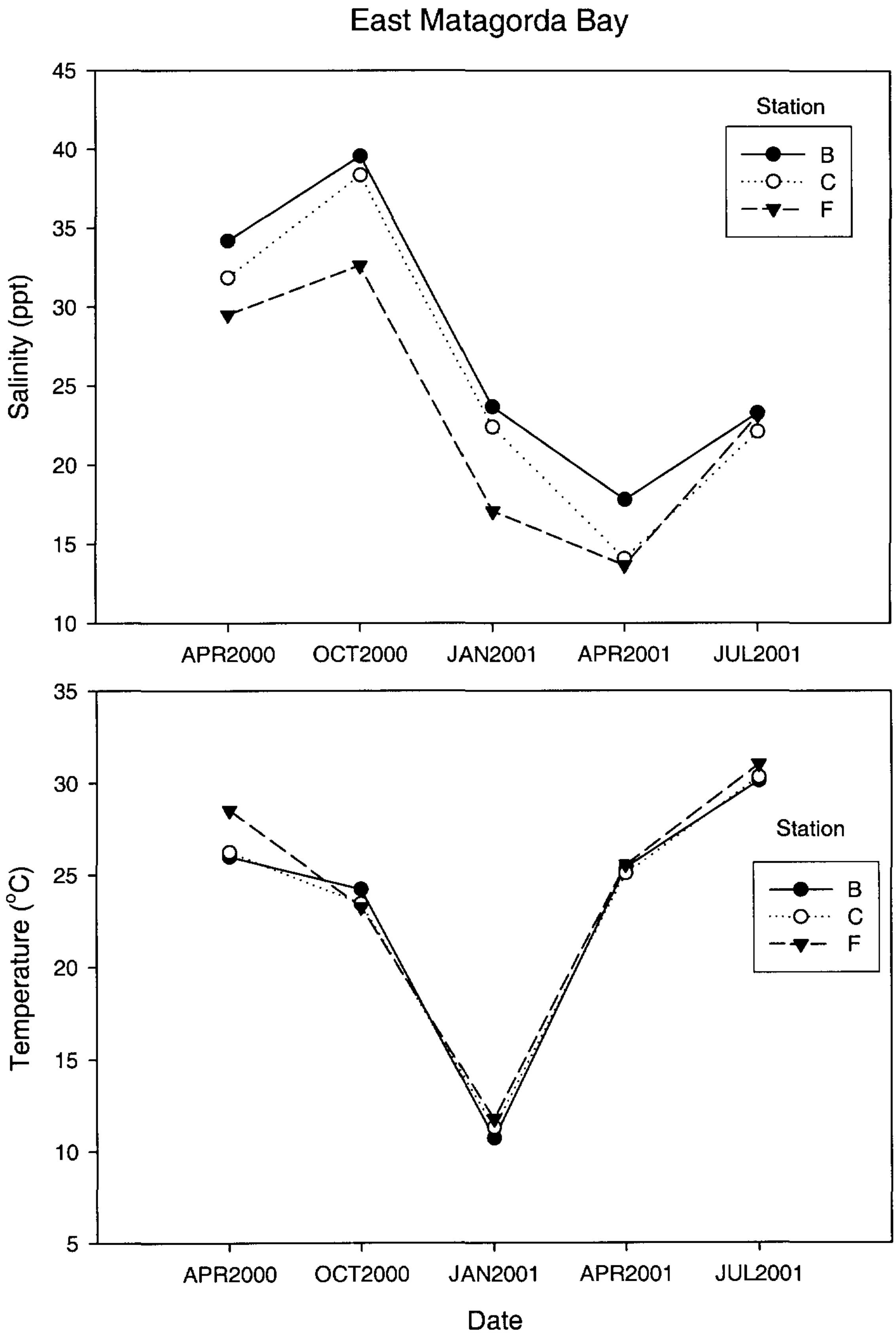

Figure 4. Salinity and temperature at stations in East Matagorda Bay.

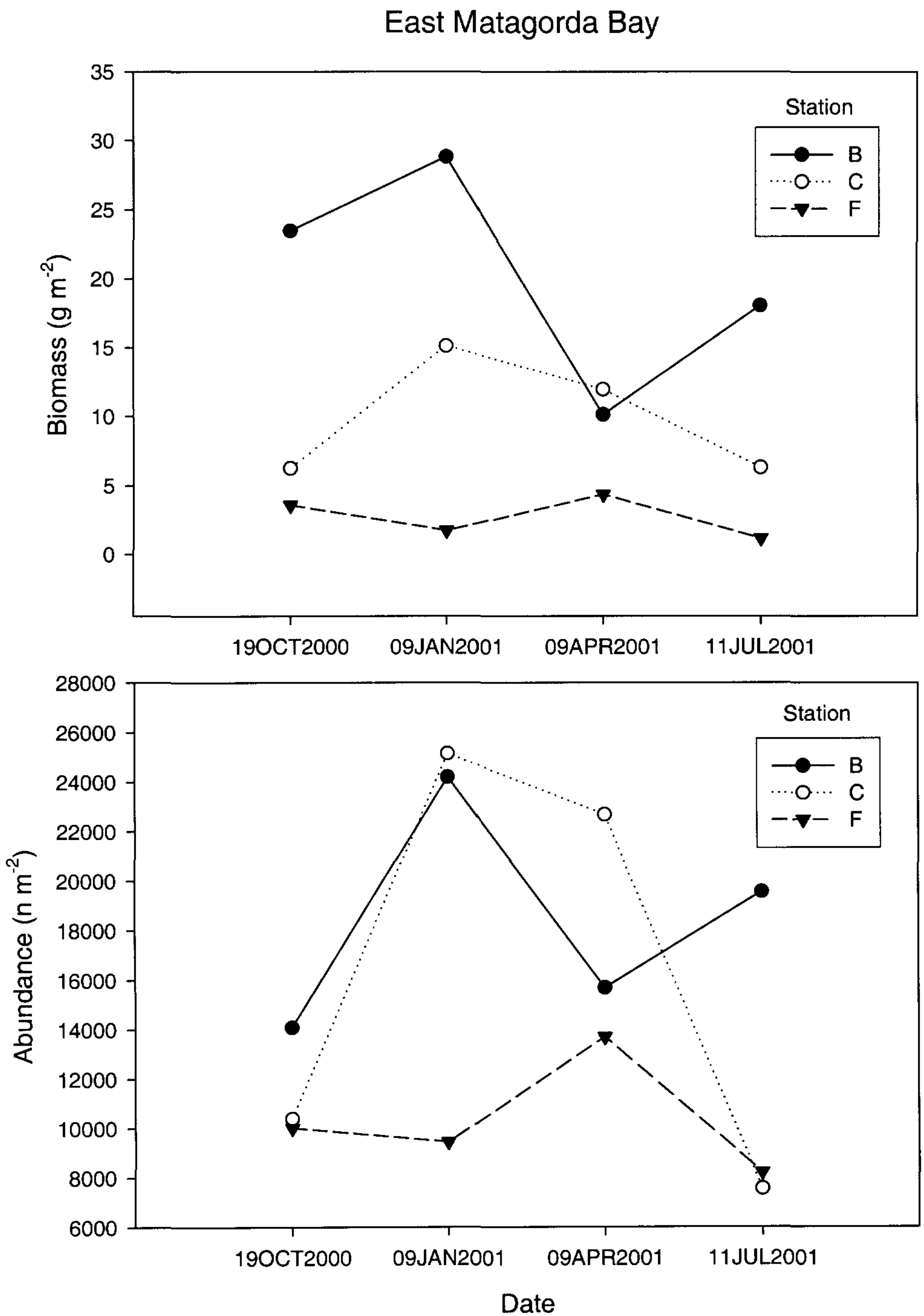

Figure 5. Biomass and abundance of macrofauna at stations in East Matagorda Bay.

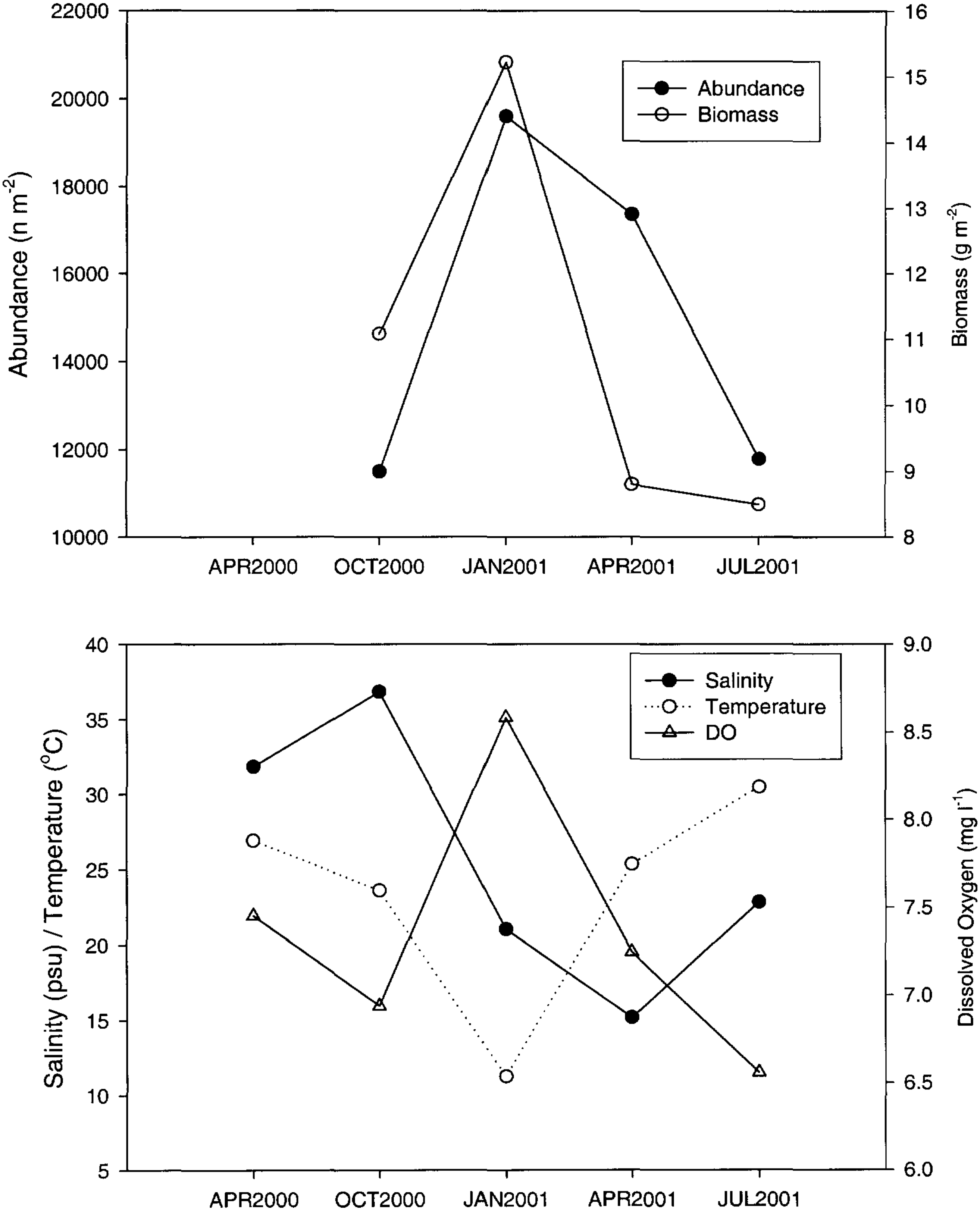

Figure 6. Biotic and abiotic characteristics average over all stations East Matagorda Bay.

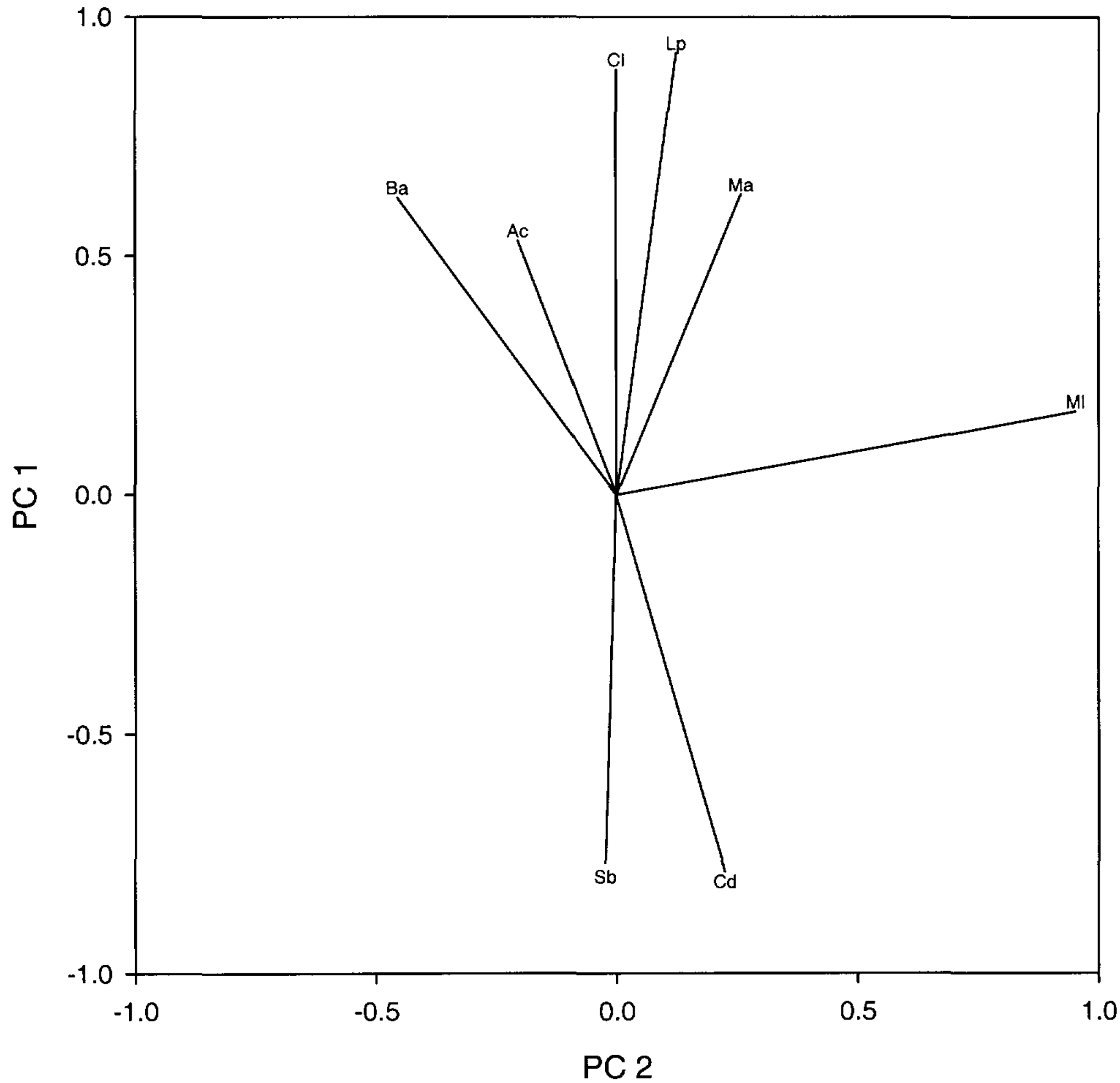

Figure 7. Plot of species loadings from a principal components analysis of macrofauna species in East Matagorda Bay. Abbreviations: Ma = *Mediomastus ambiseta*, Cl = *Cirrophorus lyra*, Ac = *Aricidea catharinae*, Ml = *Mulinia lateralis*, Lp = *Lumbrineris parvapedata*, Sb = *Streblospio benedicti*, Cd = *Cossura delta*, and Ba = *Branchioasychis americana*.

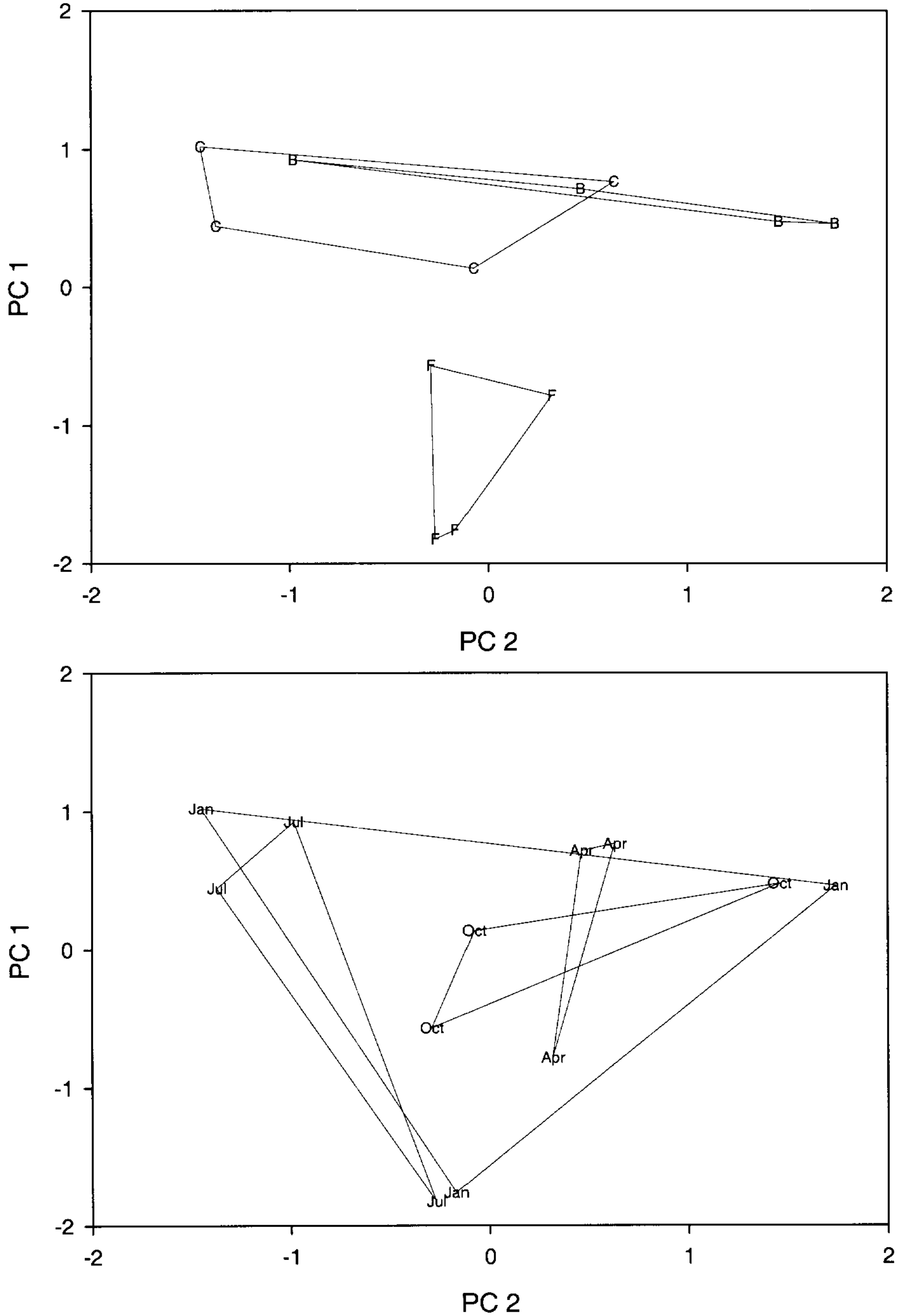

Figure 8. Plot of stations scores from a principal components analysis of macrofauna species in East Matagorda Bay.

Table 3. Systematic list of species found in East Matagorda Bay during the study period. Average abundance (n m^{-2}) over all samples and sampling dates (October 2000 through July 2001).

Taxonomic name	Abundance
Cnidaria	
Anthozoa	
Anthozoa (unidentified)	16
Platyhelminthes	
Turbellaria	
Turbellaria (unidentified)	55
Rynchocoela	
Rhynchocoela (unidentified)	173
Phoronida	
Phoronis architecta	95
Mollusca	
Gastropoda Cuvier,1797	
Acteocinidae	
Acteocina canaliculata	32
Ctenobranchia Schweigger, 1820	
Vitrinellidae	
Vitrinellidae (unidentified)	8
Caecidae Gray, 1850	
Caecum johnsoni	55
Nassariidae	
Nassarius acutus	16
Entomotaeniata Cossman,1896	
Pyramidellidae	
Pyrgiscus sp.	55
Pelecypoda	
Hippuritoidea Newell, 1965	
Kelliidae Forbes & Hanley,1848	
Aligena texasiana	126
Leptonidae	
Mysella planulata	87
Mactridae	
Mulinia lateralis	741
Pholadomyoidea Newell, 1965	
Pandoridae	
Pandora trilineata	8
Annelida	
Polychaeta	
Polynoidae	
Malmgreniella taylori	8
Phyllodocidae	
Paranaitis speciosa	8
Pilargiidae	

Pilargis berkelyae	8
Ancistrosyllis sp.	16
Hesionidae	
Gyptis vittata	228
Nereidae	
Ceratonereis irritabilis	8
Nereidae (unidentified)	8
Glyceridae	
Glycera americana	32
Goniadidae	
Glycinde solitaria	95
Lumbrineridae	
Lumbrineris parvapedata	559
Arabellidae	
Drilonereis magna	8
Spionidae	
Paraprionospio pinnata	236
Streblospio benedicti	496
Polydora caulleryi	158
Chaetopteridae	
Spiochaetopterus costarum	32
Cirratulidae	
Tharyx setigera	32
Cossuridae	
Cossura delta	410
Orbiniidae	
Haploscoloplos fragilis	16
Paraonidae	
Cirrophorus lyra	1536
Aricidea catharinae	827
Capitellidae	
Mediomastus ambiseta	7217
Maldanidae	
Branchioasychis americana	347
Clymenella torquata	126
Euclymene sp. B	24
Axiothells sp. A	134
Ampharetidae	
Melinna maculata	71
Sabellidae	
Megalomma bioculatum	16
Serpulidae	
Eupomatus protulicola	142
Oligochaeta	
Oligochaetes (unidentified)	16
Crustacea	

Copepoda	
Cyclopoida	
Cyclopidae	
Hemicyclops sp.	16
Lichomolgidae	
Cyclopoid copepod (commensal)	24
Malacostraca	
Reptantia	
Pinnotheridae	
Pinnixa sp.	8
Cumacea	
Oxyurostylis sp.	8
Leucon sp.	47
Amphipoda	
Ampeliscidae	
Ampelisca abdita	32
Corophiidae	
Corophium sp.	8
Microprotopus sp.	8
Liljeborgiidae	
Listriella barnardi	8
Echinodermata	
Ophiuroidea	
Ophiuroidea (unidentified)	189

Table 4. Species dominance in East Matagorda Bay. Mean abundance (n m^{-2}) and per cent composition of species over all samples.

Species	B	C	F	Mean	PCT
Mediomastus ambiseta	8,320	8,249	5,082	7,217	49.33
Cirrophorus lyra	2,695	1,844	71	1,536	10.50
Aricidea catharinae	473	1,300	709	827	5.66
Mulinia lateralis	1,371	591	260	741	5.06
Lumbrineris parvapedata	898	756	24	559	3.82
Streblospio benedicti	0	189	1,300	496	3.39
Cossura delta	284	95	851	410	2.80
Branchioasychis americana	165	804	71	347	2.37
Paraprionospio pinnata	95	378	236	236	1.62
Gyptis vittata	355	331	0	228	1.56
Ophiuroidea (unidentified)	331	189	47	189	1.29
Rhynchocoela (unidentified)	95	260	165	173	1.18
Polydora caulleryi	189	95	189	158	1.08
Eupomatus protulicola	0	0	425	142	0.97
Axiothells sp. A	95	213	95	134	0.92
Aligena texasiana	355	0	24	126	0.86
Clymenella torquata	236	0	142	126	0.86
Glycinde solitaria	118	71	95	95	0.65
Phoronis architecta	165	118	0	95	0.65
Mysella planulata	189	24	47	87	0.59
Melinna maculata	47	95	71	71	0.48
Caecum johnsoni	165	0	0	55	0.38
Turbellaria (unidentified)	118	0	47	55	0.38
Pyrgiscus sp.	71	95	0	55	0.38
Leucon sp.	47	95	0	47	0.32
Spiochaetopterus costarum	95	0	0	32	0.22
Tharyx setigera	47	0	47	32	0.22
Acteocina canaliculata	0	95	0	32	0.22
Glycera americana	0	95	0	32	0.22
Ampelisca abdita	0	95	0	32	0.22
Cyclopoid copepod (commensal)	24	47	0	24	0.16
Euclymene sp. B	0	71	0	24	0.16
Hemicyclops sp.	47	0	0	16	0.11
Nassarius acutus	0	24	24	16	0.11
Anthozoa (unidentified)	0	0	47	16	0.11
Ancistrosyllis sp.	0	0	47	16	0.11
Haploscoloplos fragilis	0	0	47	16	0.11
Megalomma bioculatum	0	0	47	16	0.11
Oligochaetes (unidentified)	0	0	47	16	0.11
Pandora trilineata	24	0	0	8	0.05
Malmgreniella taylori	24	0	0	8	0.05
Nereidae (unidentified)	24	0	0	8	0.05
Oxyurostylis sp.	24	0	0	8	0.05

Microprotopus sp.	24	0	0	8	0.05
Paranaitis speciosa	0	24	0	8	0.05
Pilargis berkelyae	0	24	0	8	0.05
Ceratonereis irritabilis	0	24	0	8	0.05
Pinnixa sp.	0	24	0	8	0.05
Vitrinellidae (unidentified)	0	0	24	8	0.05
Drilonereis magna	0	0	24	8	0.05
Corophium sp.	0	0	24	8	0.05
Listriella barnardi	0	0	24	8	0.05
Total	17,207	16,309	10,353	14,629	100.00

Sediment Nitrogen in East Matagorda Bay

The highest concentrations of nitrogen (Figure 9) and carbon (Figure 10) in sediment appear to be at station A, which is the station nearest the Colorado River. On average, there is a strong decrease in carbon and nitrogen values in the top 20 cm of sediment, and then values are relatively constant to 100 cm depth (Fig. 11). Nitrogen content in East Matagorda Bay sediment is about 0.07 % at the surface and declining to 0.05 to 0.04 % in the subsurface layer.

East Matagorda Bay had lowest nitrogen stable isotope ($\delta\ ^{15}N$) values in station A nearest the Colorado River (Fig. 12) and highest carbon stable istope ($\delta\ ^{13}C$) isotope values (Fig. 13) nearest the river in the top 20 cm of sediment. On average, the vertical profile of nitrogen values declined 2 parts per thousand (‰) indicating a change through the sediment profile (Fig. 14). On average, the vertical profile of carbon values varied 2 ‰, decreasing mostly in the top 3 cm of sediment then increasing gradually to surface values.

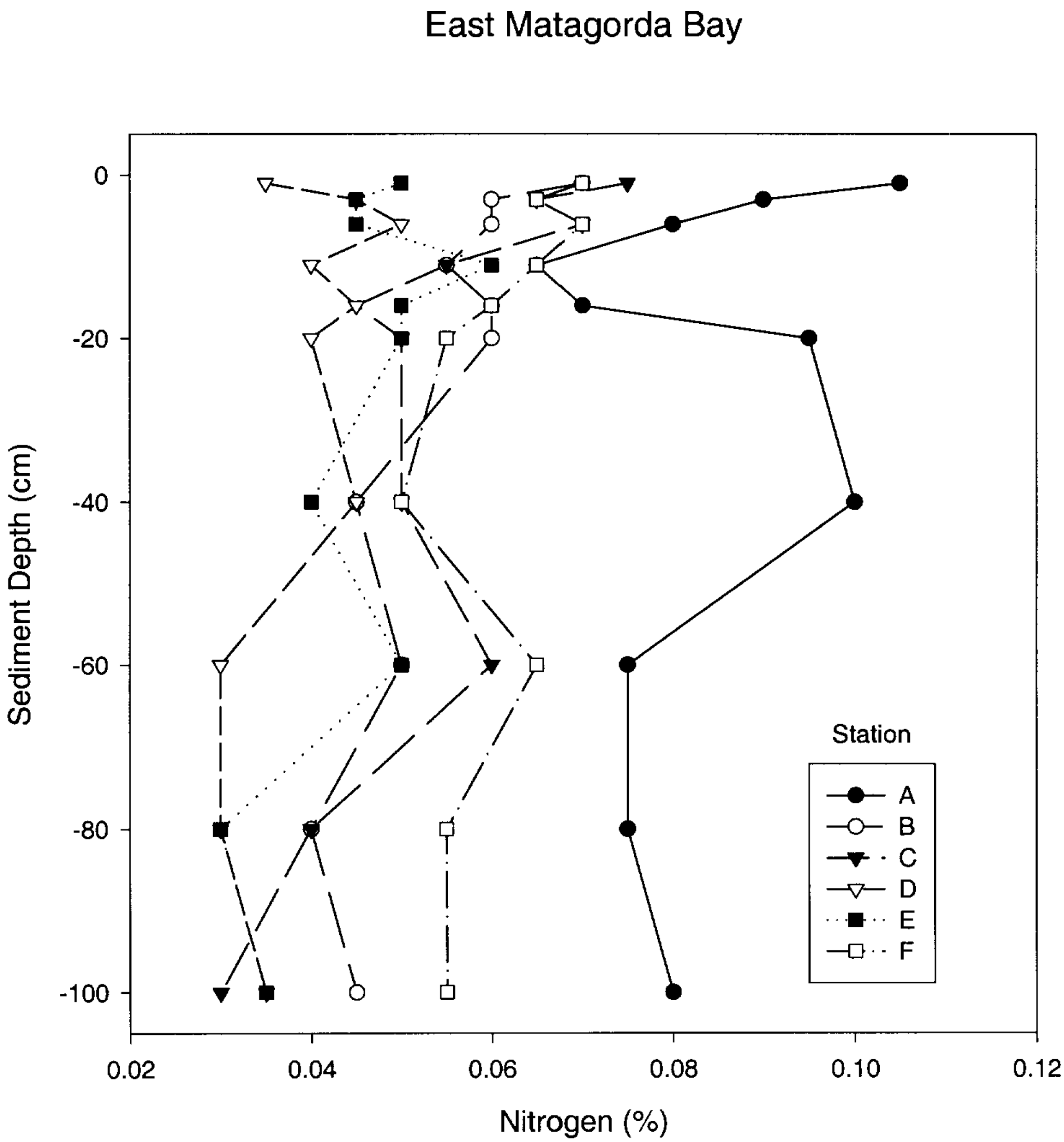

Figure 9. Nitrogen content of East Matagorda Bay sediments.

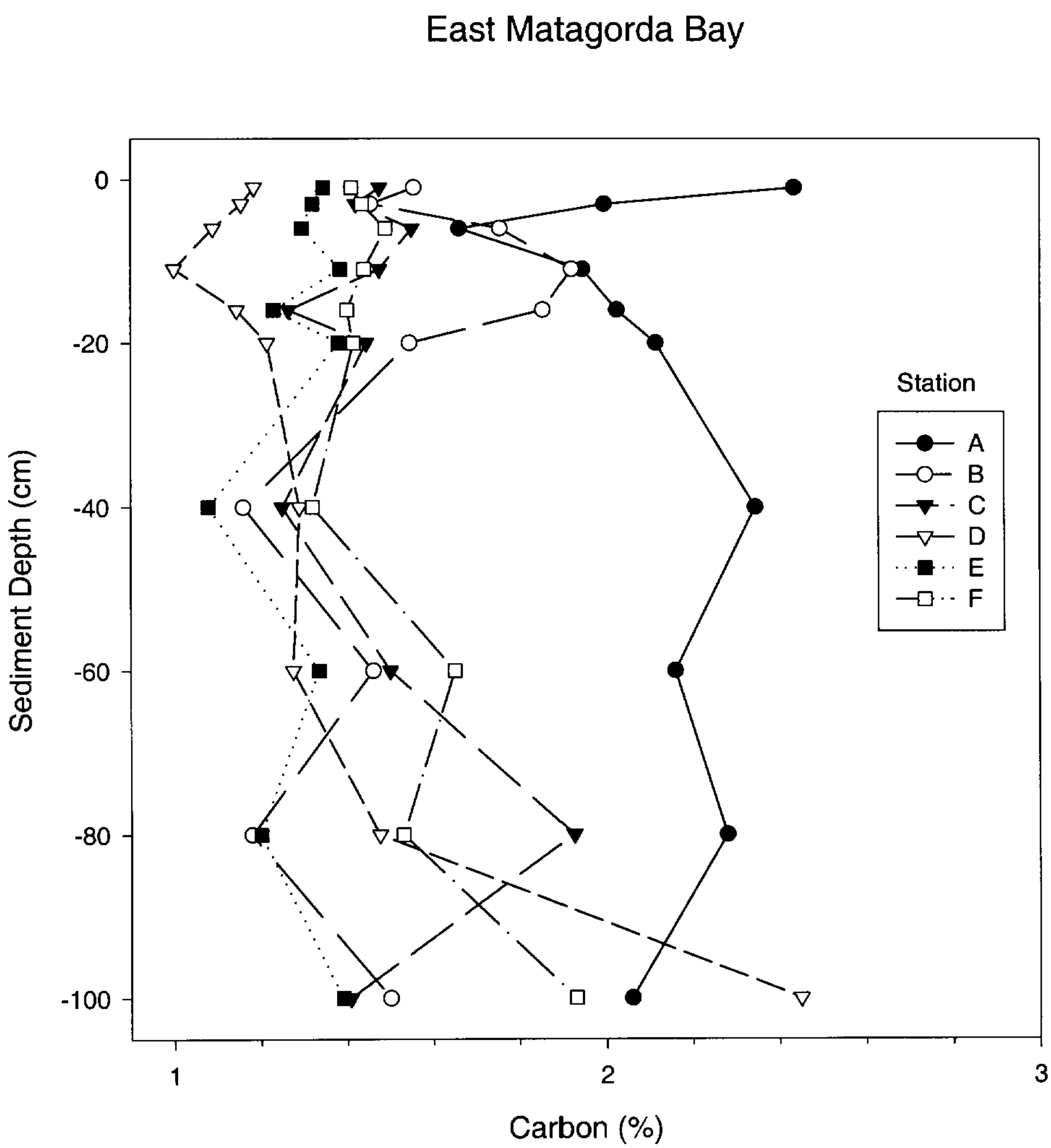

Figure 10. Carbon content of East Matagorda Bay sediments.

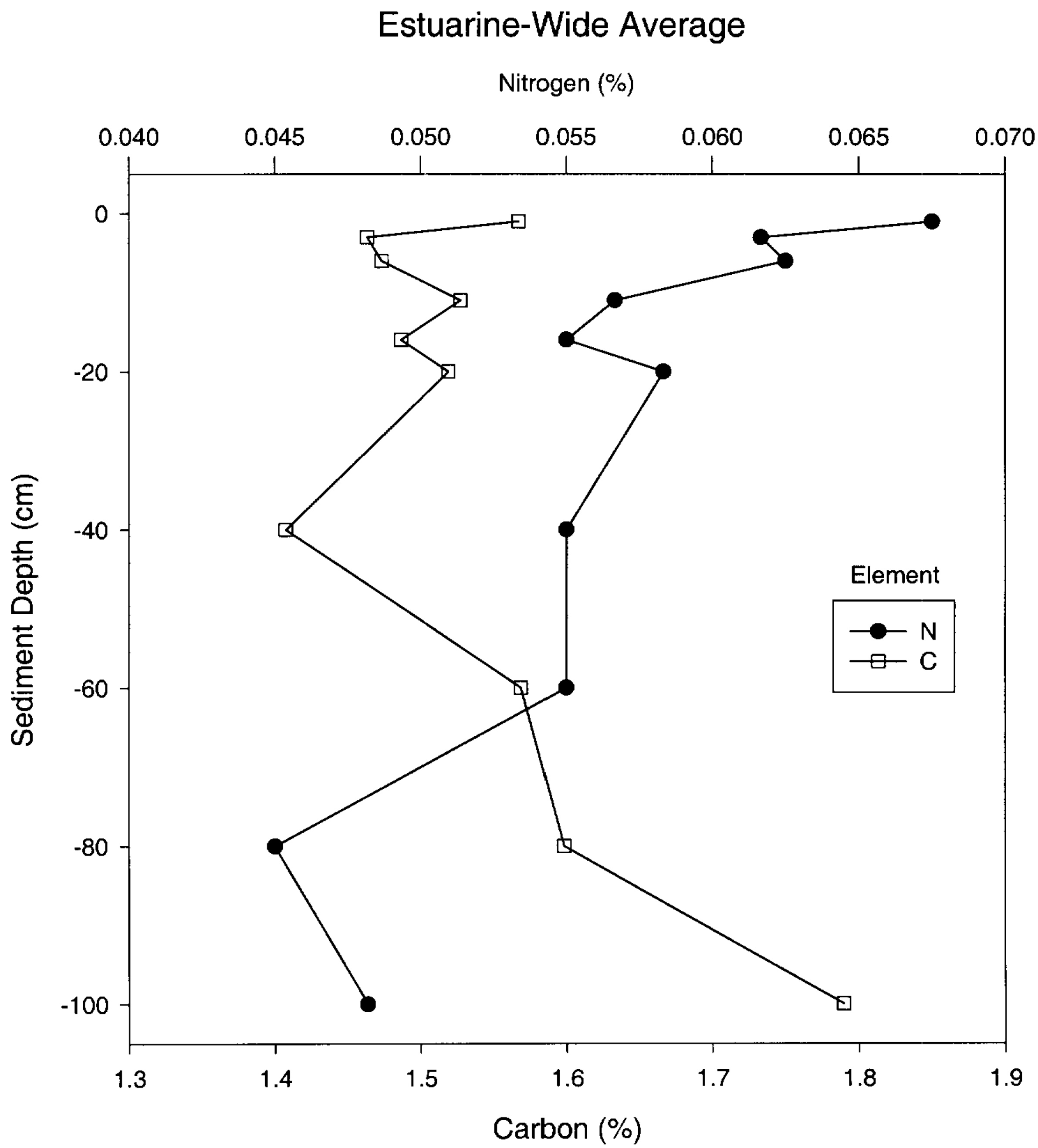

Figure 11. Average nitrogen and carbon content in East Matagorda Bay sediments.

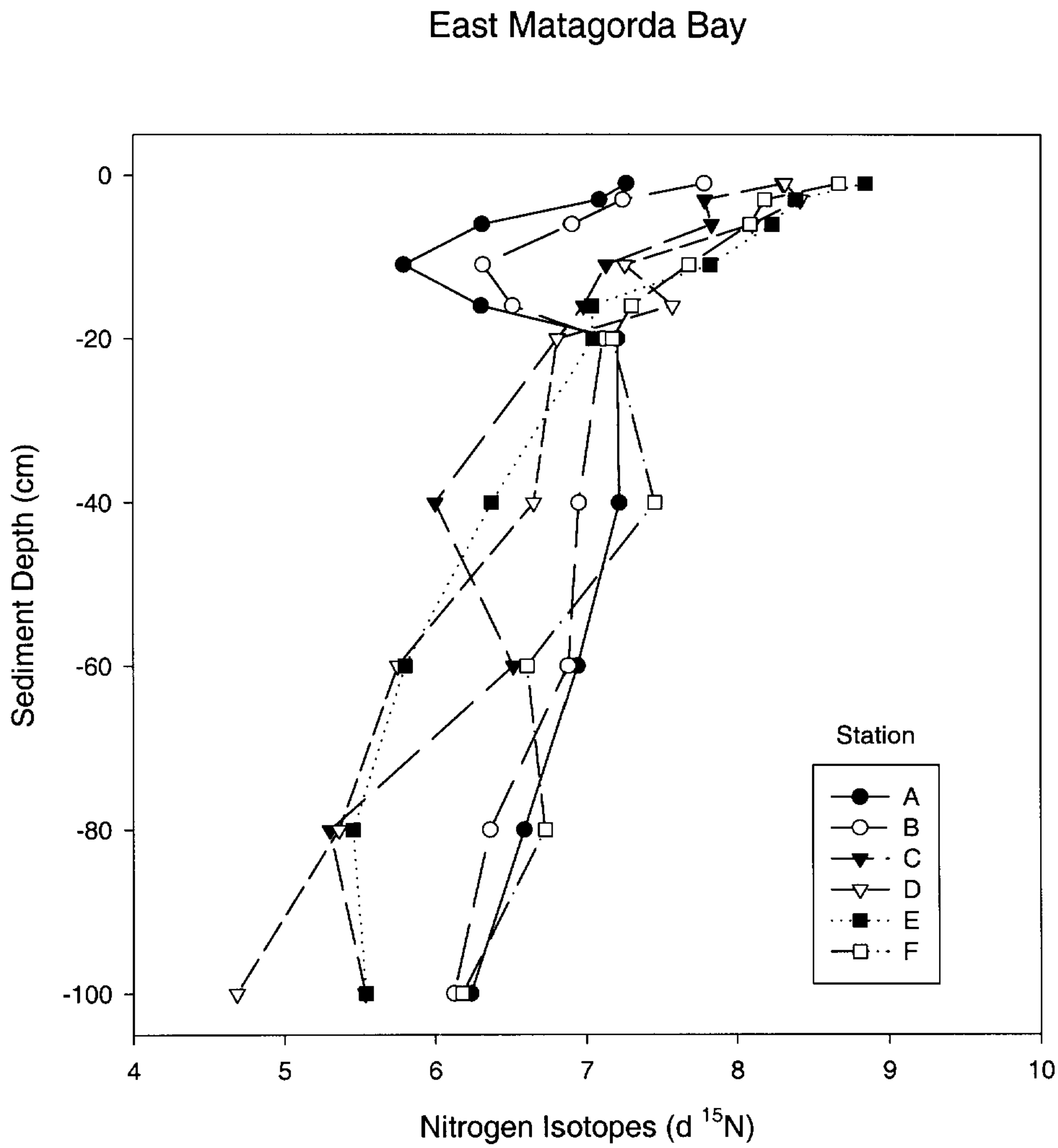

Figure 12. Profile of nitrogen (δ ^{15}N) isotope values in East Matagorda Bay sediments.

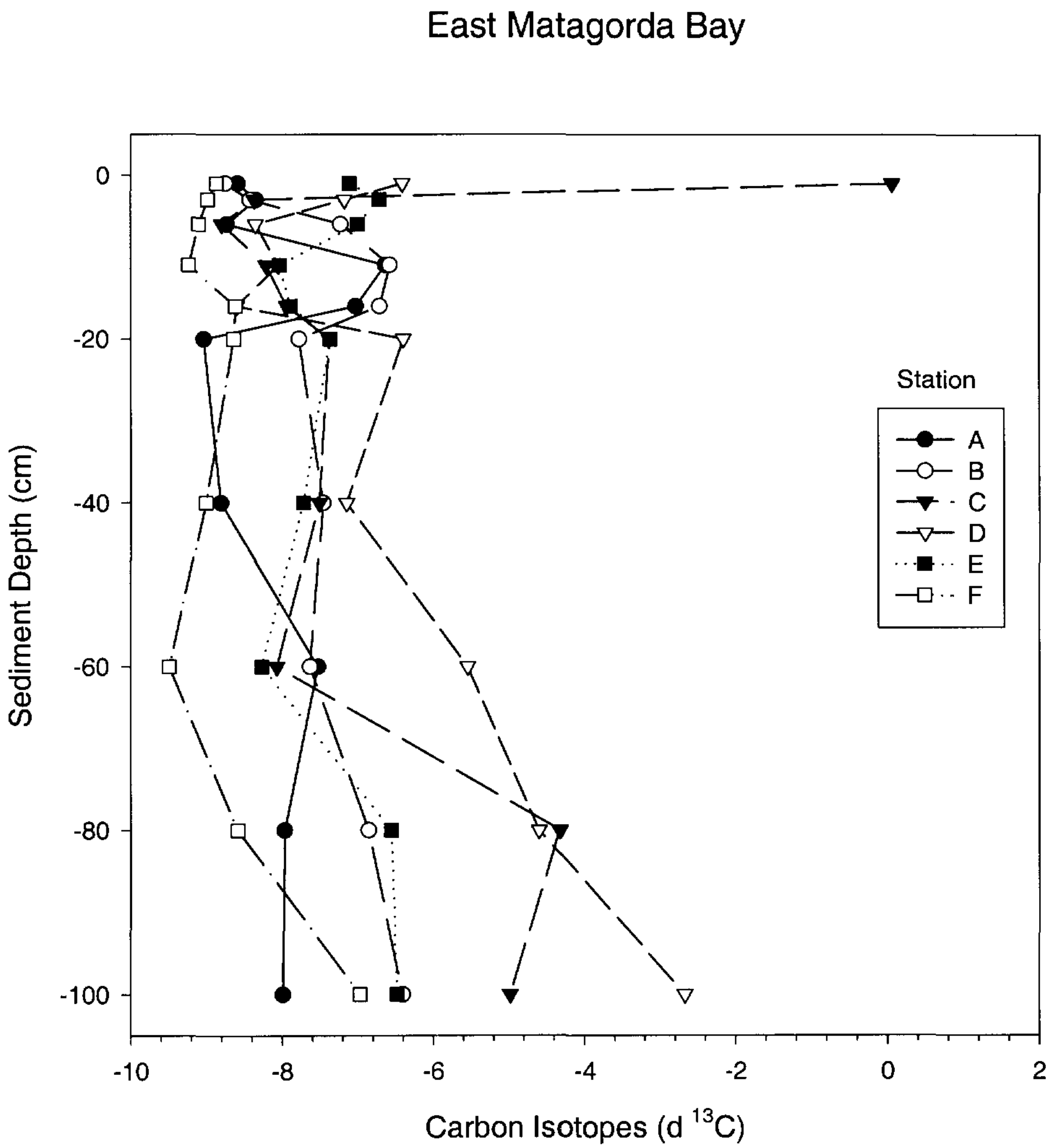

Figure 13. Profile of carbon (δ ^{13}C) isotope values in East Matagorda Bay sediments.

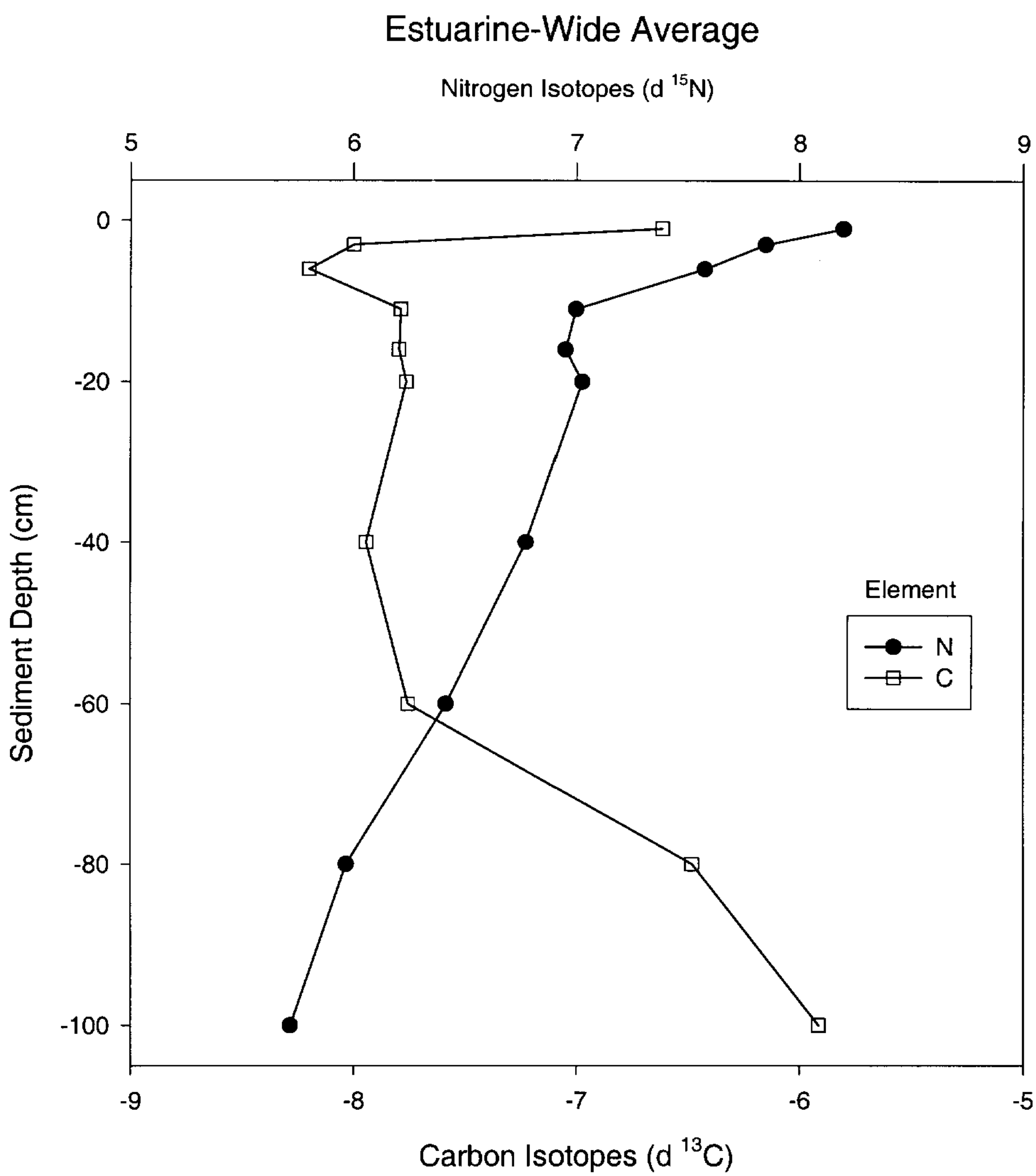

Figure 14. Average of nitrogen ($\delta\ ^{15}N$)and carbon ($\delta\ ^{13}C$)isotope values in East Matagorda Bay sediments.

DISCUSSION

This report is primarily a final report for all work performed in East Matagorda Bay, and secondarily a progress report on the work performed in the Brazos River, Rio Grande River, and South Bay. The East Matagorda Bay sampling is complete, and further sampling is not anticipated in the near future. Thus, the relationship between macrofauna and salinity within East Matagorda Bay will be discussed in detail. In contrast, work in South Bay will continue through 2002 and work in the Brazos River and Rio Grande will continue through 2005.

Benthos in East Matagorda Bay

It is surprising that there is no lower salinity signal near the Colorado River. Salinity was lowest at station F (Figure 4) in the northeastern part of the bay. Thus freshwater inflow is likely entering East Matagorda Bay primarily from creeks that drain into the Intracoastal Waterway. The largest creek that drains into the Intracoastal water way is Caney Creek, which is nearest to station F. The San Bernard River and Brazos River also intersect the Intracoastal Waterway to the north of East Matagorda Bay. Other potential inflow sources are Live Oak Creek (nearest station E) and Big Boggy Creek (nearest station D). A complete salinity survey was only performed once, in April 2000 (Figure 15). The survey supports the conclusion that inflow is primarily from Caney Creek and the rivers to the north because there is a continuously decreasing salinity gradient from stations A to F. Another interesting observation is that dissolved oxygen is inversely proportional to salinity, increasing from stations A to F.

In spite of the higher inflow, lower salinities, and higher DO concentrations in the northeastern part of East Matagorda Bay, macrofauna biomass and abundance is always lowest at station F (Figure 5) and did not appear to be related to salinity change over time (Figure 6). Over time, the highest organismal response correlated with the highest dissolved oxygen levels (near 8.5 mg l^{-1}), moderate, brackish salinities (near 20 ppt), and lowest temperatures (near 10 °C).

The species distributions did not indicate that macrofauna are strongly influenced by inflow in East Matagorda Bay (Table 4, Figures 7 - 8). The dominant species was *Mediomastus ambiseta*, a deposit-feeding polychaete. In contrast, mollusks, and the clam *Mulinia lateralis* in particular, are excellent indicator species of inflow (Montagna and Kalke, 1995; Montagna and Li, 1996). Yet, *M. lateralis* abundance increased in the opposite direction, from B to C to F, against the inflow gradient. Perhaps, long-term inflow gradients are different from those found in the current year-long study. If there is a longer term source of freshwater from the Colorado River via the Intracoastal Waterway, then that would explain the presence of *M. lateralis* in higher densities at station F.

In the present study, two polychaete species, *Streblospio benedicti*, *Cossura delta*, characterized station F, and are thus the best inflow indicator species in East Matagorda Bay. In contrast, *S. benedicti* was the best indicator of inflow in a 12-year study of Lavaca Bay, but *C. delta* had the opposite trend so was not an indicator of inflow (Montagna, 2000).

Compared to other Texas estuaries, East Matagorda Bay had an even species distribution, where the dominant species comprised 49% of the fauna overall. In contrast, I have typically found the dominant species comprising around 80% of the fauna in other bays. East Matagorda Bay, however, does closely resemble the entire Lavaca-Colorado Estuary, where *Mediomastus ambiseta* formed 40% of the community over 12 years (Montagna, 2000). Over that period, *M.*

ambiseta averaged about 4,500 individuals m^{-2} at all stations in Lavaca and Matagorda Bays. The average was nearly twice as high during the one-year study in East Matagorda Bay.

In the current study, the average density (14,629 individuals m^{-2}) and biomass (10.901 g m^{-2}) is higher than the 12-year average for the Lavaca-Colorado system as a whole (11,200 ±6,800 individuals·m^{-2} and 4.6 ±3.8 g·m^{-2}). Overall, East Matagorda Bay resembles Matagorda Bay with more marine influence than Lavaca Bay, which has more freshwater inflow influence.

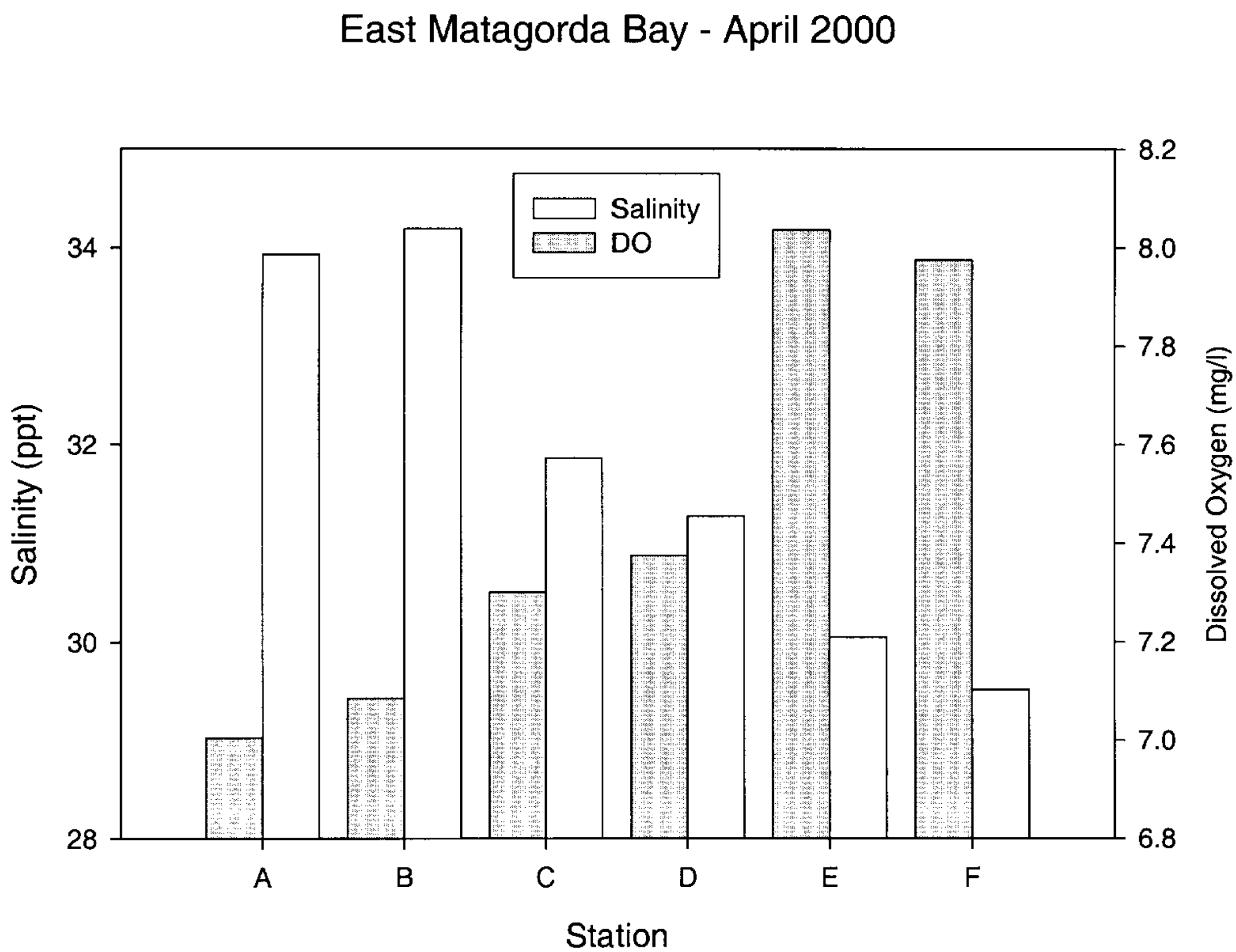

Figure 15. Salinity and dissolved oxygen (DO) in East Matagorda Bay in April 2000.

Nitrogen Losses in East Matagorda Bay

A great deal of nitrogen enters bays via river inflow. If this nitrogen is buried, then we would expect higher nitrogen values in sediments at the head of estuaries. This is because rivers empty into the secondary bay, and more nitrogen should be trapped in the upper reaches of the bay. The trends in all Texas estuaries confirm this hypothesis (Montagna 1997). East Matagorda Bay has little or no river influence. Although recent salinity data (2000 - 2001) indicates inflow is predominantly from Caney Creek, the elemental sediment composition indicates that historically, overflow from the Colorado River was more important because both nitrogen (Figure 9) and carbon (Figure 10) appear to have highest concentrations in sediments in at station A, nearest the Colorado River. It is likely that the sediments are influences by large floods, where overbanking of the Colorado could have an enormous influence.

If nitrogen is utilized, or transformed in the biologically active labile zone, then there should be higher values in upper layers of sediment and lower values at lower layers in the refractory zone. This hypothesis is confirmed by the trends seen in the estuary-wide average nitrogen content. On average, there is a strong decrease in carbon and nitrogen values in the top 20 cm of sediment, and then values are relatively constant to 100 cm depth (Fig. 11). Thus, the labile zone appears to be limited to between 0 and 20 cm in East Matagorda Bay as it is in most Texas estuaries (Montagna,1997). Nitrogen content in most Texas estuarine sediment is 0.08 to 0.15 percent (%) at the surface, and declines to 0.04 to 0.08 %. East Matagorda Bay sediment is similar with about 0.07 % at the surface and declining to 0.05 to 0.04 %.

Man can influence another key component that affects nitrogen loss. In general, it is thought that the sedimentation rate in Texas estuaries is about 1 cm per 100 years (Behrens, 1980). However, recent water projects, particularly dams, have probably decreased this rate. An average nitrogen background level, i.e., the average content at about 40 cm is about 0.05 %. The average surface nitrogen content is about 0.1 %, so the change between the labile and refractory zone is a factor of 2. This implies that half of the nitrogen arriving at the sediment surface is lost to the system via burial.

The change in stable isotope values at the surface verifies that the biogenic labile zone, which is dominated by fresh plant detritus, is limited to the top 20 cm. East Matagorda Bay had lowest nitrogen ($\delta\ ^{15}N$) values in station A nearest the Colorado River (Fig. 12) and highest carbon ($\delta\ ^{13}C$) isotope values (Fig. 13) nearest the river in the top 20 cm of sediment. The differences indicate the importance of primary production in producing depositional particulates in the bay. On average, the vertical profile of nitrogen values declined 2 parts per thousand (‰) indicating a change through the sediment (Fig. 14). On average, the vertical profile of carbon values varied 2 ‰, decreasing mostly in the top 3 cm of sediment then increasing gradually to surface values. These trends occur because the surface is biologically active.

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DATA APPENDICES

Hydrography

Table 5. Hydrographic data. Abbreviations: Bay (East Matagorda Bay = EM, Brazos River = BR, Rio Grande = RG, South Bay = SB), STA = station, z = depth (m), SAL(R) = salinity by refractometer (ppt), SAL(M) = salinity by meter (psu), COND = conductivity (uS/cm), TEMP = temperature (°C), DO = dissolved oxygen (mg/l).

Bay	Date	STA	z	SAL(R)	SAL(M)	COND	TEMP	pH	DO
EM	19APR2000	A	0.00	32	33.9	51.66	25.83	7.98	7.39
EM	19APR2000	A	1.20	.	33.9	51.63	25.84	7.98	6.62
EM	19APR2000	B	0.00	32	34.2	52.00	26.02	7.95	7.52
EM	19APR2000	B	1.20	.	34.2	52.00	25.96	7.94	6.65
EM	19APR2000	C	0.00	30	31.8	48.83	26.26	8.01	7.77
EM	19APR2000	C	1.30	.	31.9	48.85	26.22	8.00	6.83
EM	19APR2000	D	0.00	29	31.3	48.04	26.80	8.13	8.08
EM	19APR2000	D	1.10	.	31.3	48.08	26.71	8.14	6.67
EM	19APR2000	E	0.00	28	30.0	46.40	27.32	8.20	8.55
EM	19APR2000	E	0.70	.	30.0	46.38	27.35	8.21	7.52
EM	19APR2000	F	0.00	28	29.5	45.75	28.54	8.19	9.38
EM	19APR2000	F	0.70	.	29.5	45.69	28.51	8.19	6.57
EM	19OCT2000	B	0.00	36	39.6	59.14	24.23	7.95	6.67
EM	19OCT2000	B	1.20	.	39.6	59.14	24.19	7.93	6.43
EM	19OCT2000	C	0.00	35	37.4	56.26	23.85	8.09	7.35
EM	19OCT2000	C	1.40	.	39.3	58.73	23.02	8.00	6.56
EM	19OCT2000	F	0.00	30	32.6	49.75	23.24	8.14	8.10
EM	19OCT2000	F	0.80	.	32.7	49.85	23.25	8.17	6.53
EM	09JAN2001	B	0.00	22	23.3	36.97	10.60	8.30	8.16
EM	09JAN2001	B	1.00	.	24.0	37.75	10.84	8.31	8.54
EM	09JAN2001	C	0.00	20	21.9	34.89	11.24	8.37	8.31
EM	09JAN2001	C	1.00	.	22.9	36.25	11.37	8.34	7.63
EM	09JAN2001	F	0.00	15	17.0	27.71	11.78	8.54	9.76
EM	09JAN2001	F	0.47	.	17.1	27.81	11.77	8.53	9.10
EM	09APR2001	B	0.00	16	17.8	28.89	25.58	7.90	7.71
EM	09APR2001	B	1.39	.	17.8	28.89	25.27	7.87	7.08
EM	09APR2001	C	0.00	12	13.7	22.73	25.55	8.05	7.78
EM	09APR2001	C	1.49	.	14.4	23.86	24.61	7.95	6.26
EM	09APR2001	F	0.00	11	13.3	22.08	26.20	7.93	7.88
EM	09APR2001	F	0.83	.	14.1	23.32	24.91	7.87	6.76
EM	11JUL2001	B	0.00	20	23.3	37.00	30.21	8.06	6.52
EM	11JUL2001	B	1.00	.	23.3	37.00	30.04	8.03	6.24
EM	11JUL2001	C	0.00	20	22.1	35.30	30.44	8.15	6.62
EM	11JUL2001	C	1.00	.	22.1	36.31	30.21	8.12	6.34
EM	11JUL2001	F	0.00	20	23.1	36.82	31.05	8.10	6.87
EM	11JUL2001	F	0.50	.	23.1	36.82	31.01	8.09	6.76
BR	18OCT2000	A	0.00	.	24.8	39.04	26.50	8.09	10.00
BR	18OCT2000	A	3.30	.	31.7	48.71	26.71	7.59	5.61
BR	18OCT2000	B	0.00	22	26.0	40.79	26.68	8.04	9.43
BR	18OCT2000	B	2.80	.	29.1	45.10	26.29	7.86	7.86
BR	18OCT2000	C	0.00	25	28.4	43.97	25.42	8.04	7.64
BR	18OCT2000	C	3.00	.	29.2	45.20	25.04	7.99	6.57
BR	10JAN2001	A	0.00	0	3.1	5.69	8.74	8.01	10.28
BR	10JAN2001	A	2.60	.	3.2	5.82	8.75	7.95	9.32
BR	10JAN2001	B	0.00	0	3.7	6.76	8.85	8.00	9.70

BR	10JAN2001	B	2.80	.	3.7	6.77	8.84	7.98	9.13
BR	10JAN2001	C	0.00	0	3.9	7.04	8.85	8.01	9.73
BR	10JAN2001	C	2.40	.	3.9	7.13	8.84	7.99	8.97
BR	10APR2001	A	0.00	0	1.6	3.10	22.60	7.95	7.72
BR	10APR2001	A	2.50	.	1.7	3.26	22.60	7.92	7.69
BR	10APR2001	B	0.00	0	2.1	3.95	22.63	7.92	7.93
BR	10APR2001	B	1.60	.	2.1	3.96	22.57	7.91	7.90
BR	10APR2001	C	0.00	0	2.2	4.22	22.76	7.95	8.06
BR	10APR2001	C	2.60	.	2.4	4.60	22.75	7.91	7.94
BR	11JUL2001	A	0.00	1	3.1	5.86	32.47	7.72	5.78
BR	11JUL2001	A	3.10	.	24.2	38.37	32.34	7.30	2.81
BR	11JUL2001	B	0.00	2	4.6	8.37	32.96	7.88	6.66
BR	11JUL2001	B	1.90	.	7.4	14.41	32.43	7.74	5.60
BR	11JUL2001	C	0.00	5	6.7	11.82	32.87	7.88	6.53
BR	11JUL2001	C	1.60	.	19.6	32.70	31.30	7.80	5.76
RG	24OCT2000	A	0.00	3	4.8	8.59	26.43	8.94	11.87
RG	24OCT2000	A	0.38	.	4.8	8.58	26.46	8.93	11.34
RG	24OCT2000	B	0.00	.	5.5	9.80	26.84	8.90	10.56
RG	24OCT2000	B	0.28	.	5.5	9.89	26.74	8.90	9.79
RG	24OCT2000	C	0.00	6	7.7	13.50	27.48	8.40	9.54
RG	24OCT2000	C	0.32	.	7.8	13.50	27.48	8.38	8.77
RG	10JAN2001	A	0.20	.	4.5	.	15.48	8.45	10.23
RG	10JAN2001	A	0.80	.	4.5	.	15.46	8.57	9.65
RG	10JAN2001	B	0.20	.	5.0	.	15.19	8.20	9.65
RG	10JAN2001	B	0.75	.	5.0	.	15.14	8.38	9.55
RG	10JAN2001	C	0.50	.	8.6	.	18.13	8.75	9.70
RG	10JAN2001	C	0.64	.	8.6	.	18.13	8.80	8.40
RG	14APR2001	A	.	.	1.4	.	27.08	8.69	5.98
RG	14APR2001	A	0.60	.	1.4	.	27.08	8.65	6.62
RG	14APR2001	B	.	.	1.5	.	26.63	8.64	6.41
RG	14APR2001	B	0.60	.	1.5	.	26.66	8.60	6.55
RG	14APR2001	C	.	.	2.3	.	26.19	8.42	4.82
RG	14APR2001	C	0.60	.	2.3	.	26.18	8.36	5.68
RG	07JUL2001	A	0.65	.	0.7	12.96	30.18	8.44	6.99
RG	07JUL2001	A	0.65	.	0.7	12.96	30.17	8.44	6.71
RG	07JUL2001	B	0.61	.	0.7	13.08	29.62	8.45	7.12
RG	07JUL2001	B	0.61	.	0.7	13.07	29.61	8.46	6.74
RG	07JUL2001	C	0.60	.	0.9	1.76	28.46	8.44	5.62
RG	07JUL2001	C	0.60	.	0.9	1.76	28.42	8.41	5.02
SB	24OCT2000	A	0.00	35	37.4	56.36	25.98	8.13	6.90
SB	24OCT2000	A	0.98	.	40.0	59.61	26.45	8.14	3.24
SB	24OCT2000	B	0.00	32	35.2	53.33	24.94	8.04	6.85
SB	24OCT2000	B	0.80	.	35.2	53.33	24.95	8.04	4.99
SB	10JAN2001	A	0.00	.	38.9	.	17.14	8.14	8.72
SB	10JAN2001	A	0.85	.	39.0	.	17.12	8.20	8.59
SB	10JAN2001	B	0.00	.	35.7	.	14.22	8.05	7.30
SB	10JAN2001	B	0.60	.	35.7	.	14.19	8.06	7.27
SB	14APR2001	A	0.00	.	37.4	.	27.90	7.89	7.12
SB	14APR2001	A	1.00	.	38.6	.	28.26	7.94	8.26
SB	14APR2001	B	0.00	.	35.7	.	23.83	7.96	6.81
SB	14APR2001	B	0.80	.	35.8	.	23.82	7.97	6.79
SB	07JUL2001	A	0.00	.	37.2	.	30.78	8.24	8.12
SB	07JUL2001	A	0.50	.	37.3	.	31.12	8.29	7.82
SB	07JUL2001	B	0.00	.	37.2	.	29.50	8.16	7.52
SB	07JUL2001	B	0.70	.	37.2	.	29.52	8.18	7.50

Table 6. Nutrient and chlorophyll data. Abbreviations: Bay (East Matagorda Bay = EM, Brazos River = BR, Rio Grande = RG, South Bay = SB), STA = station, N+N = nitrate plus nitrite, Chl = chlorophyll *a*. Water depth is in m. Nutrient concentrations are in umol/l. Chlorophyll concentrations in ug/l.

Bay	Date	STA	Depth	PO_4	SIO_4	N+N	NH_4	Chl
EM	19OCT2000	B	0	1.668	49	0.000	.	1.937
EM	19OCT2000	B	.	1.598	49	0.000	.	1.818
EM	19OCT2000	C	.	1.746	42	0.000	.	1.914
EM	19OCT2000	C	0	1.633	31	0.000	.	1.652
EM	19OCT2000	F	.	1.046	16	0.000	.	0.994
EM	19OCT2000	F	0	1.132	15	0.160	.	1.129
EM	09JAN2001	B	.	0.680	73	5.490	2.25	1.730
EM	09JAN2001	B	0	0.370	82	5.020	2.56	2.680
EM	09JAN2001	C	.	0.470	130	10.31	14.78	2.730
EM	09JAN2001	C	0	0.390	133	10.91	9.75	2.240
EM	09JAN2001	F	.	0.600	147	11.62	16.19	0.210
EM	09JAN2001	F	0	0.760	147	12.51	15.60	0.610
EM	09APR2001	B	.	0.740	202	1.600	8.85	0.150
EM	09APR2001	B	0	0.520	183	0.810	7.93	1.570
EM	09APR2001	C	.	0.650	170	4.970	16.98	1.040
EM	09APR2001	C	0	0.600	172	6.120	15.03	0.850
EM	09APR2001	F	.	1.320	204	19.96	9.48	5.370
EM	09APR2001	F	0	1.110	178	17.77	5.55	4.520
EM	11JUL2001	B	.	1.940	262	1.880	11.43	0.260
EM	11JUL2001	B	0	1.810	276	2.470	8.88	0.000
EM	11JUL2001	C	.	2.060	153	1.310	11.13	0.250
EM	11JUL2001	C	0	1.860	157	1.730	8.70	1.180
EM	11JUL2001	F	.	1.720	199	1.720	18.23	0.000
EM	11JUL2001	F	0	1.480	198	1.560	16.18	0.000
BR	18OCT2000	A	.	1.917	45	36.56	.	15.744
BR	18OCT2000	A	0	1.646	62	37.66	.	5.396
BR	18OCT2000	B	.	2.164	45	35.90	.	15.063
BR	18OCT2000	B	0	0.688	32	30.79	.	3.668
BR	18OCT2000	C	.	1.207	31	22.42	.	16.031
BR	18OCT2000	C	0	1.310	42	26.15	.	15.880
BR	10JAN2001	A	.	2.030	284	29.57	10.26	7.390
BR	10JAN2001	A	0	1.740	237	32.58	3.24	6.760
BR	10JAN2001	B	.	.	.	.	2.81	.
BR	10JAN2001	B	0	1.660	287	25.49	5.71	6.990
BR	10JAN2001	C	.	1.740	286	37.24	6.90	6.960
BR	10JAN2001	C	0	1.490	307	21.53	3.53	6.560
BR	10APR2001	A	.	1.200	318	51.31	5.58	3.890
BR	10APR2001	A	0	11.18	233	57.40	5.14	4.050
BR	10APR2001	B	.	1.260	324	56.89	3.62	4.810
BR	10APR2001	B	0	0.000	362	54.36	6.03	4.820
BR	10APR2001	C	.	1.550	349	59.46	5.45	4.970
BR	10APR2001	C	0	1.330	250	59.46	4.52	4.510
BR	11JUL2001	A	.	4.340	156	11.15	23.90	25.550
BR	11JUL2001	A	0	3.310	349	9.380	5.84	4.630
BR	11JUL2001	B	.	3.150	330	4.180	7.20	2.090
BR	11JUL2001	B	0	3.480	335	4.230	6.46	5.170

BR	11JUL2001	C	.	3.930	214	46.83	21.67	8.310
BR	11JUL2001	C	0	3.490	350	66.65	7.94	5.100
BR	12OCT2001	A	.	.	.	.	.	.
BR	12OCT2001	A	0	.	.	.	.	.
BR	12OCT2001	B	.	.	.	.	.	.
BR	12OCT2001	B	0	.	.	.	.	.
BR	12OCT2001	C	.	.	.	.	.	.
BR	12OCT2001	C	0	.	.	.	.	.
RG	24OCT2000	A	.	4.504	145	0.000	58.88	0.802
RG	24OCT2000	A	0	4.432	149	0.000	66.64	0.826
RG	24OCT2000	B	.	6.558	156	0.000	33.19	0.817
RG	24OCT2000	B	0	6.486	169	0.000	33.45	0.841
RG	24OCT2000	C	.	6.651	181	0.000	17.17	0.960
RG	24OCT2000	C	0	6.630	178	0.000	17.96	0.778
RG	10JAN2001	A	.	9.240	198	37.48	55.96	0.480
RG	10JAN2001	A	0	8.820	188	37.24	50.11	0.700
RG	10JAN2001	B	.	6.860	178	22.37	38.15	1.060
RG	10JAN2001	B	0	6.480	183	23.58	37.65	1.030
RG	25JAN2001	C	.	.	.	.	21.11	.
RG	25JAN2001	C	0	.	.	.	20.35	.
RG	14APR2001	A	.	.	.	.	36.76	.
RG	14APR2001	A	0	.	.	.	40.57	.
RG	14APR2001	B	.	.	.	.	33.58	.
RG	14APR2001	B	0	.	.	.	37.26	.
RG	14APR2001	C	.	.	.	.	37.65	.
RG	14APR2001	C	0	.	.	.	37.01	.
RG	07JUL2001	A	.	.	.	.	14.73	.
RG	07JUL2001	A	0	.	.	.	13.56	.
RG	07JUL2001	B	.	.	.	.	17.32	.
RG	07JUL2001	B	0	.	.	.	17.25	.
RG	07JUL2001	C	.	.	.	.	27.12	.
RG	07JUL2001	C	0	.	.	.	25.84	.
SB	24OCT2000	A	.	0.555	13	0.000	2.93	1.453
SB	24OCT2000	A	0	0.433	6	0.000	1.08	0.668
SB	24OCT2000	B	.	0.760	9	0.000	2.59	1.152
SB	24OCT2000	B	0	0.631	7	0.000	2.63	1.033
SB	10JAN2001	A	.	0.140	6	1.940	2.35	0.190
SB	10JAN2001	A	0	0.140	8	2.260	1.59	0.460
SB	10JAN2001	B	.	0.280	26	1.860	4.20	0.650
SB	10JAN2001	B	0	0.240	31	1.910	3.12	0.670
SB	14APR2001	A	.	.	.	.	2.07	.
SB	14APR2001	A	0	.	.	.	1.40	.
SB	14APR2001	B	.	.	.	.	6.14	.
SB	14APR2001	B	0	.	.	.	8.62	.
SB	07JUL2001	A	.	.	.	.	4.90	.
SB	07JUL2001	A	0	.	.	.	1.69	.
SB	07JUL2001	B	.	.	.	.	3.57	.
SB	07JUL2001	B	0	.	.	.	3.42	.

Table 7. Taxa abundance and biomass data. Abbreviations: Bay (East Matagorda Bay = EM, Brazos River = BR, Rio Grande = RG, South Bay = SB), REP = replicate, *n* = number of individuals. Core area is 35.3 cm^2, multiply by 283 to obtain n or mg per m^2.

Bay	Date	Station	REP	Taxa	*n*/core	mg/core
EM	19OCT2000	B	1	Mollusca	6	19.51
EM	19OCT2000	B	1	Ophiuroidea	2	125.01
EM	19OCT2000	B	1	Polychaeta	34	3.91
EM	19OCT2000	B	2	Mollusca	13	51.23
EM	19OCT2000	B	2	Ophiuroidea	1	0.29
EM	19OCT2000	B	2	Polychaeta	44	7.10
EM	19OCT2000	B	3	Crustacea	2	0.02
EM	19OCT2000	B	3	Mollusca	10	20.27
EM	19OCT2000	B	3	Other	3	0.56
EM	19OCT2000	B	3	Ophiuroidea	1	10.01
EM	19OCT2000	B	3	Polychaeta	33	10.17
EM	19OCT2000	C	1	Mollusca	1	0.07
EM	19OCT2000	C	1	Ophiuroidea	1	7.48
EM	19OCT2000	C	1	Polychaeta	19	5.01
EM	19OCT2000	C	2	Mollusca	7	17.10
EM	19OCT2000	C	2	Rhynchocoela	2	0.85
EM	19OCT2000	C	2	Other	1	2.28
EM	19OCT2000	C	2	Polychaeta	48	11.89
EM	19OCT2000	C	3	Crustacea	2	0.63
EM	19OCT2000	C	3	Mollusca	2	13.04
EM	19OCT2000	C	3	Ophiuroidea	1	0.03
EM	19OCT2000	C	3	Polychaeta	26	7.59
EM	19OCT2000	F	1	Crustacea	1	0.03
EM	19OCT2000	F	1	Mollusca	3	0.05
EM	19OCT2000	F	1	Rhynchocoela	1	0.01
EM	19OCT2000	F	1	Polychaeta	35	18.84
EM	19OCT2000	F	2	Mollusca	1	0.06
EM	19OCT2000	F	2	Rhynchocoela	1	3.50
EM	19OCT2000	F	2	Other	1	0.04
EM	19OCT2000	F	2	Ophiuroidea	1	4.82
EM	19OCT2000	F	2	Polychaeta	30	3.11
EM	19OCT2000	F	3	Mollusca	1	0.47
EM	19OCT2000	F	3	Rhynchocoela	1	0.32
EM	19OCT2000	F	3	Ophiuroidea	1	0.08
EM	19OCT2000	F	3	Polychaeta	29	6.36
EM	09JAN2001	B	1	Mollusca	16	43.76
EM	09JAN2001	B	1	Other	1	0.02
EM	09JAN2001	B	1	Ophiuroidea	1	11.47
EM	09JAN2001	B	1	Polychaeta	50	9.69
EM	09JAN2001	B	2	Mollusca	7	26.29
EM	09JAN2001	B	2	Rhynchocoela	1	0.26
EM	09JAN2001	B	2	Other	1	0.35
EM	09JAN2001	B	2	Ophiuroidea	1	49.09
EM	09JAN2001	B	2	Polychaeta	48	6.27
EM	09JAN2001	B	3	Crustacea	2	0.04
EM	09JAN2001	B	3	Mollusca	10	38.85
EM	09JAN2001	B	3	Other	1	0.05

EM	09JAN2001	B	3	Ophiuroidea	1	108.94
EM	09JAN2001	B	3	Polychaeta	116	9.72
EM	09JAN2001	C	1	Crustacea	1	0.05
EM	09JAN2001	C	1	Ophiuroidea	1	9.86
EM	09JAN2001	C	1	Polychaeta	49	14.17
EM	09JAN2001	C	2	Mollusca	2	3.92
EM	09JAN2001	C	2	Rhynchocoela	2	4.61
EM	09JAN2001	C	2	Other	1	0.10
EM	09JAN2001	C	2	Ophiuroidea	1	14.70
EM	09JAN2001	C	2	Polychaeta	105	34.44
EM	09JAN2001	C	3	Rhynchocoela	1	0.10
EM	09JAN2001	C	3	Other	2	0.08
EM	09JAN2001	C	3	Ophiuroidea	2	67.09
EM	09JAN2001	C	3	Polychaeta	99	10.88
EM	09JAN2001	F	1	Mollusca	1	0.45
EM	09JAN2001	F	1	Polychaeta	20	6.05
EM	09JAN2001	F	2	Crustacea	1	0.07
EM	09JAN2001	F	2	Polychaeta	42	7.90
EM	09JAN2001	F	3	Polychaeta	36	3.63
EM	09APR2001	B	1	Crustacea	1	0.17
EM	09APR2001	B	1	Mollusca	1	0.03
EM	09APR2001	B	1	Other	2	0.38
EM	09APR2001	B	1	Ophiuroidea	1	64.03
EM	09APR2001	B	1	Polychaeta	47	8.87
EM	09APR2001	B	2	Mollusca	3	0.08
EM	09APR2001	B	2	Polychaeta	35	5.43
EM	09APR2001	B	3	Mollusca	4	0.19
EM	09APR2001	B	3	Rhynchocoela	1	1.08
EM	09APR2001	B	3	Other	3	0.45
EM	09APR2001	B	3	Ophiuroidea	1	12.00
EM	09APR2001	B	3	Polychaeta	67	14.32
EM	09APR2001	C	1	Crustacea	2	0.02
EM	09APR2001	C	1	Mollusca	5	0.93
EM	09APR2001	C	1	Ophiuroidea	1	18.95
EM	09APR2001	C	1	Polychaeta	55	22.07
EM	09APR2001	C	2	Crustacea	4	0.08
EM	09APR2001	C	2	Mollusca	6	1.41
EM	09APR2001	C	2	Rhynchocoela	3	1.07
EM	09APR2001	C	2	Ophiuroidea	1	5.64
EM	09APR2001	C	2	Polychaeta	89	37.78
EM	09APR2001	C	3	Crustacea	1	0.03
EM	09APR2001	C	3	Mollusca	13	4.22
EM	09APR2001	C	3	Other	1	0.12
EM	09APR2001	C	3	Polychaeta	59	34.09
EM	09APR2001	F	1	Other	1	0.03
EM	09APR2001	F	1	Polychaeta	35	7.35
EM	09APR2001	F	2	Mollusca	2	0.02
EM	09APR2001	F	2	Rhynchocoela	1	5.62
EM	09APR2001	F	2	Other	2	4.27
EM	09APR2001	F	2	Polychaeta	58	19.58
EM	09APR2001	F	3	Mollusca	5	4.29
EM	09APR2001	F	3	Rhynchocoela	2	0.20
EM	09APR2001	F	3	Polychaeta	39	4.62
EM	11JUL2001	B	1	Crustacea	1	0.01
EM	11JUL2001	B	1	Mollusca	17	2.84

EM	11JUL2001	B	1	Rhynchocoela	1	0.65
EM	11JUL2001	B	1	Other	1	0.41
EM	11JUL2001	B	1	Ophiuroidea	1	94.78
EM	11JUL2001	B	1	Polychaeta	74	16.41
EM	11JUL2001	B	2	Mollusca	4	0.65
EM	11JUL2001	B	2	Ophiuroidea	2	23.40
EM	11JUL2001	B	2	Polychaeta	53	14.32
EM	11JUL2001	B	3	Crustacea	1	0.01
EM	11JUL2001	B	3	Mollusca	1	0.26
EM	11JUL2001	B	3	Rhynchocoela	1	0.02
EM	11JUL2001	B	3	Ophiuroidea	2	27.86
EM	11JUL2001	B	3	Polychaeta	48	9.32
EM	11JUL2001	C	1	Crustacea	1	0.02
EM	11JUL2001	C	1	Rhynchocoela	1	0.39
EM	11JUL2001	C	1	Polychaeta	13	8.76
EM	11JUL2001	C	2	Polychaeta	21	6.46
EM	11JUL2001	C	3	Rhynchocoela	1	0.03
EM	11JUL2001	C	3	Ophiuroidea	1	24.00
EM	11JUL2001	C	3	Polychaeta	42	26.92
EM	11JUL2001	F	1	Mollusca	2	0.07
EM	11JUL2001	F	1	Rhynchocoela	1	0.37
EM	11JUL2001	F	1	Polychaeta	20	4.39
EM	11JUL2001	F	2	Polychaeta	36	4.20
EM	11JUL2001	F	3	Polychaeta	28	2.97
BR	18OCT2000	A	1	Polychaeta	41	2.17
BR	18OCT2000	A	2	Polychaeta	41	3.27
BR	18OCT2000	A	3	Polychaeta	11	1.44
BR	18OCT2000	B	1	Polychaeta	16	6.55
BR	18OCT2000	B	2	Mollusca	1	0.03
BR	18OCT2000	B	2	Polychaeta	16	0.39
BR	18OCT2000	B	3	Polychaeta	14	0.41
BR	18OCT2000	C	1	Polychaeta	6	0.55
BR	18OCT2000	C	2	Polychaeta	5	2.43
BR	18OCT2000	C	3	Polychaeta	4	1.00
BR	10JAN2001	A	1	Polychaeta	13	3.50
BR	10JAN2001	A	2	Other	1	0.10
BR	10JAN2001	A	2	Polychaeta	10	2.50
BR	10JAN2001	A	3	Polychaeta	12	1.10
BR	10JAN2001	B	1	Polychaeta	19	1.40
BR	10JAN2001	B	2	Polychaeta	22	1.73
BR	10JAN2001	B	3	Polychaeta	36	2.00
BR	10JAN2001	C	1	Rhynchocoela	1	0.07
BR	10JAN2001	C	1	Polychaeta	14	3.35
BR	10JAN2001	C	2	Polychaeta	12	4.97
BR	10JAN2001	C	3	Polychaeta	12	2.03
BR	10APR2001	A	1	Crustacea	1	0.03
BR	10APR2001	A	1	Chironomid larvae	1	0.29
BR	10APR2001	A	1	Polychaeta	14	6.49
BR	10APR2001	A	2	Chironomid larvae	1	0.01
BR	10APR2001	A	2	Polychaeta	10	0.52
BR	10APR2001	A	3	Rhynchocoela	2	2.83
BR	10APR2001	A	3	Polychaeta	11	1.71
BR	10APR2001	B	1	Chironomid larvae	2	0.02
BR	10APR2001	B	1	Polychaeta	28	6.39
BR	10APR2001	B	2	Chironomid larvae	1	0.07

BR	10APR2001	B	2	Polychaeta	33	5.50
BR	10APR2001	B	3	Polychaeta	34	4.31
BR	10APR2001	C	1	Polychaeta	12	13.89
BR	10APR2001	C	2	Polychaeta	7	2.73
BR	10APR2001	C	3	Polychaeta	33	10.81
BR	11JUL2001	A	1	Polychaeta	5	0.34
BR	11JUL2001	A	2	Polychaeta	3	0.35
BR	11JUL2001	A	3	Polychaeta	3	0.67
BR	11JUL2001	B	1	Crustacea	1	0.03
BR	11JUL2001	B	1	Rhynchocoela	4	0.18
BR	11JUL2001	B	1	Polychaeta	20	2.13
BR	11JUL2001	B	2	Polychaeta	18	2.85
BR	11JUL2001	B	3	Crustacea	1	0.26
BR	11JUL2001	B	3	Polychaeta	11	2.29
BR	11JUL2001	C	1	Polychaeta	30	1.74
BR	11JUL2001	C	2	Crustacea	1	0.27
BR	11JUL2001	C	2	Polychaeta	13	3.64
BR	11JUL2001	C	3	Polychaeta	24	6.20
RG	24OCT2000	A	1	Chironomid larvae	3	0.30
RG	24OCT2000	A	1	Mollusca	5	19.26
RG	24OCT2000	A	1	Rhynchocoela	6	0.64
RG	24OCT2000	A	1	Polychaeta	28	2.79
RG	24OCT2000	A	2	Chironomid larvae	3	0.27
RG	24OCT2000	A	2	Mollusca	5	0.67
RG	24OCT2000	A	2	Rhynchocoela	6	0.71
RG	24OCT2000	A	2	Polychaeta	50	4.02
RG	24OCT2000	A	3	Chironomid larvae	2	0.17
RG	24OCT2000	A	3	Mollusca	5	0.28
RG	24OCT2000	A	3	Rhynchocoela	7	0.43
RG	24OCT2000	A	3	Polychaeta	50	4.18
RG	24OCT2000	B	1	Mollusca	3	49.50
RG	24OCT2000	B	1	Rhynchocoela	1	0.04
RG	24OCT2000	B	1	Polychaeta	16	1.49
RG	24OCT2000	B	2	Chironomid larvae	4	0.18
RG	24OCT2000	B	2	Mollusca	1	13.46
RG	24OCT2000	B	2	Rhynchocoela	1	0.06
RG	24OCT2000	B	2	Polychaeta	27	3.10
RG	24OCT2000	B	3	Mollusca	5	70.37
RG	24OCT2000	B	3	Rhynchocoela	5	0.18
RG	24OCT2000	B	3	Polychaeta	12	1.72
RG	24OCT2000	C	1	Crustacea	1	0.62
RG	24OCT2000	C	1	Rhynchocoela	2	0.97
RG	24OCT2000	C	1	Polychaeta	18	0.28
RG	24OCT2000	C	2	Crustacea	1	0.15
RG	24OCT2000	C	2	Rhynchocoela	2	0.27
RG	24OCT2000	C	2	Polychaeta	114	2.21
RG	24OCT2000	C	3	Mollusca	1	0.64
RG	24OCT2000	C	3	Polychaeta	2	0.20
RG	10JAN2001	A	1	Chironomid larvae	7	0.32
RG	10JAN2001	A	1	Mollusca	6	1.27
RG	10JAN2001	A	1	Rhynchocoela	2	0.14
RG	10JAN2001	A	1	Polychaeta	48	2.44
RG	10JAN2001	A	2	Chironomid larvae	5	0.28
RG	10JAN2001	A	2	Mollusca	6	1.55
RG	10JAN2001	A	2	Rhynchocoela	3	0.81

RG	10JAN2001	A	2	Polychaeta	39	3.34
RG	10JAN2001	A	3	Chironomid larvae	11	0.51
RG	10JAN2001	A	3	Mollusca	5	2.37
RG	10JAN2001	A	3	Rhynchocoela	4	0.56
RG	10JAN2001	A	3	Polychaeta	53	2.61
RG	10JAN2001	B	1	Chironomid larvae	8	0.39
RG	10JAN2001	B	1	Mollusca	1	33.78
RG	10JAN2001	B	1	Rhynchocoela	5	0.52
RG	10JAN2001	B	1	Polychaeta	33	2.36
RG	10JAN2001	B	2	Chironomid larvae	2	0.11
RG	10JAN2001	B	2	Mollusca	4	65.69
RG	10JAN2001	B	2	Rhynchocoela	1	0.01
RG	10JAN2001	B	2	Polychaeta	26	3.18
RG	10JAN2001	B	3	Chironomid larvae	3	0.22
RG	10JAN2001	B	3	Mollusca	3	0.35
RG	10JAN2001	B	3	Rhynchocoela	2	0.38
RG	10JAN2001	B	3	Polychaeta	20	1.44
RG	10JAN2001	C	1	Chironomid larvae	4	0.35
RG	10JAN2001	C	1	Mollusca	7	1.56
RG	10JAN2001	C	1	Rhynchocoela	1	0.16
RG	10JAN2001	C	1	Polychaeta	60	8.04
RG	10JAN2001	C	2	Crustacea	3	0.22
RG	10JAN2001	C	2	Chironomid larvae	2	0.49
RG	10JAN2001	C	2	Mollusca	7	2.80
RG	10JAN2001	C	2	Rhynchocoela	4	0.96
RG	10JAN2001	C	2	Polychaeta	75	8.08
RG	10JAN2001	C	3	Crustacea	1	0.03
RG	10JAN2001	C	3	Chironomid larvae	3	0.40
RG	10JAN2001	C	3	Mollusca	8	1.04
RG	10JAN2001	C	3	Rhynchocoela	3	1.03
RG	10JAN2001	C	3	Polychaeta	56	3.67
RG	14APR2001	A	1	Chironomid larvae	23	1.19
RG	14APR2001	A	1	Mollusca	1	0.06
RG	14APR2001	A	1	Polychaeta	28	2.60
RG	14APR2001	A	2	Crustacea	1	0.06
RG	14APR2001	A	2	Chironomid larvae	34	1.34
RG	14APR2001	A	2	Polychaeta	27	3.02
RG	14APR2001	A	3	Chironomid larvae	31	1.47
RG	14APR2001	A	3	Rhynchocoela	4	1.19
RG	14APR2001	A	3	Polychaeta	44	4.61
RG	14APR2001	B	1	Chironomid larvae	17	4.25
RG	14APR2001	B	1	Mollusca	1	0.78
RG	14APR2001	B	1	Polychaeta	16	1.50
RG	14APR2001	B	2	Chironomid larvae	27	2.42
RG	14APR2001	B	2	Polychaeta	30	2.40
RG	14APR2001	B	3	Chironomid larvae	15	1.13
RG	14APR2001	B	3	Mollusca	1	0.13
RG	14APR2001	B	3	Rhynchocoela	2	0.43
RG	14APR2001	B	3	Polychaeta	20	2.16
RG	14APR2001	C	1	Chironomid larvae	20	4.57
RG	14APR2001	C	1	Mollusca	2	23.91
RG	14APR2001	C	1	Rhynchocoela	2	0.66
RG	14APR2001	C	1	Polychaeta	66	5.38
RG	14APR2001	C	2	Chironomid larvae	12	1.26
RG	14APR2001	C	2	Mollusca	3	2.62

RG	14APR2001	C	2	Rhynchocoela	1	0.31
RG	14APR2001	C	2	Polychaeta	36	1.77
RG	14APR2001	C	3	Chironomid larvae	19	1.47
RG	14APR2001	C	3	Mollusca	2	24.81
RG	14APR2001	C	3	Rhynchocoela	1	0.51
RG	14APR2001	C	3	Polychaeta	30	2.45
RG	07JUL2001	A	1	Chironomid larvae	12	0.23
RG	07JUL2001	A	1	Mollusca	1	0.23
RG	07JUL2001	A	1	Rhynchocoela	2	1.50
RG	07JUL2001	A	1	Polychaeta	37	1.57
RG	07JUL2001	A	2	Chironomid larvae	3	0.49
RG	07JUL2001	A	2	Mollusca	1	0.21
RG	07JUL2001	A	2	Polychaeta	24	1.79
RG	07JUL2001	A	3	Chironomid larvae	2	0.04
RG	07JUL2001	A	3	Mollusca	1	2.48
RG	07JUL2001	A	3	Polychaeta	8	1.60
RG	07JUL2001	B	1	Chironomid larvae	4	0.15
RG	07JUL2001	B	1	Polychaeta	19	1.42
RG	07JUL2001	B	2	Chironomid larvae	4	0.11
RG	07JUL2001	B	2	Mollusca	1	28.73
RG	07JUL2001	B	2	Polychaeta	16	1.20
RG	07JUL2001	B	3	Chironomid larvae	6	0.40
RG	07JUL2001	B	3	Mollusca	3	84.24
RG	07JUL2001	B	3	Polychaeta	14	1.15
RG	07JUL2001	C	1	Chironomid larvae	5	3.04
RG	07JUL2001	C	1	Polychaeta	7	0.34
RG	07JUL2001	C	2	Chironomid larvae	1	2.08
RG	07JUL2001	C	2	Rhynchocoela	1	0.20
RG	07JUL2001	C	2	Polychaeta	1	0.07
RG	07JUL2001	C	3	Chironomid larvae	4	0.36
RG	07JUL2001	C	3	Rhynchocoela	1	1.64
RG	07JUL2001	C	3	Other	1	0.01
RG	07JUL2001	C	3	Polychaeta	3	2.92
SB	24OCT2000	A	1	Crustacea	5	12.40
SB	24OCT2000	A	1	Mollusca	3	0.85
SB	24OCT2000	A	1	Rhynchocoela	1	0.02
SB	24OCT2000	A	1	Polychaeta	80	5.06
SB	24OCT2000	A	2	Rhynchocoela	1	2.26
SB	24OCT2000	A	2	Polychaeta	17	5.84
SB	24OCT2000	A	3	Crustacea	1	0.02
SB	24OCT2000	A	3	Polychaeta	51	12.90
SB	24OCT2000	B	1	Polychaeta	54	1.21
SB	24OCT2000	B	2	Crustacea	5	0.08
SB	24OCT2000	B	2	Rhynchocoela	1	0.12
SB	24OCT2000	B	2	Polychaeta	36	1.23
SB	24OCT2000	B	3	Crustacea	4	0.43
SB	24OCT2000	B	3	Polychaeta	53	2.56
SB	10JAN2001	A	1	Crustacea	13	0.48
SB	10JAN2001	A	1	Rhynchocoela	1	0.01
SB	10JAN2001	A	1	Polychaeta	221	55.05
SB	10JAN2001	A	2	Crustacea	20	1.53
SB	10JAN2001	A	2	Mollusca	3	1.92
SB	10JAN2001	A	2	Rhynchocoela	4	0.15
SB	10JAN2001	A	2	Other	1	0.27
SB	10JAN2001	A	2	Polychaeta	231	21.42

SB	10JAN2001	A	3	Crustacea	9	0.46
SB	10JAN2001	A	3	Mollusca	1	0.59
SB	10JAN2001	A	3	Rhynchocoela	2	0.03
SB	10JAN2001	A	3	Polychaeta	176	96.32
SB	10JAN2001	B	1	Crustacea	2	0.03
SB	10JAN2001	B	1	Mollusca	12	4.57
SB	10JAN2001	B	1	Polychaeta	60	3.28
SB	10JAN2001	B	2	Crustacea	2	0.46
SB	10JAN2001	B	2	Mollusca	13	0.55
SB	10JAN2001	B	2	Other	2	0.07
SB	10JAN2001	B	2	Polychaeta	95	7.71
SB	10JAN2001	B	3	Crustacea	7	0.44
SB	10JAN2001	B	3	Mollusca	16	2.03
SB	10JAN2001	B	3	Polychaeta	128	11.73

Macrofaunal Community Structure

Table 8. Species abundance data. Abbreviations: Bay (East Matagorda Bay = EM, Brazos River = BR, Rio Grande = RG, South Bay = SB), REP = replicate, *n* = number of individuals. Sample core area is 35.3 cm^2, multiply by 283 to obtain n m^2.

Bay	Date	STA	REP	Species	n/core
EM	19OCT2000	B	1	Amphiodia atra	2
EM	19OCT2000	B	1	Aricidea catharinae	4
EM	19OCT2000	B	1	Cirrophorus lyra	2
EM	19OCT2000	B	1	Lumbrineris parvapedata	1
EM	19OCT2000	B	1	Malmgreniella taylori	1
EM	19OCT2000	B	1	Mediomastus ambiseta	26
EM	19OCT2000	B	1	Mulinia lateralis	5
EM	19OCT2000	B	1	Pandora trilineata	1
EM	19OCT2000	B	2	Amphiodia atra	1
EM	19OCT2000	B	2	Cirrophorus lyra	6
EM	19OCT2000	B	2	Clymenella torquata	2
EM	19OCT2000	B	2	Cossura delta	1
EM	19OCT2000	B	2	Glycinde solitaria	1
EM	19OCT2000	B	2	Gyptis vittata	2
EM	19OCT2000	B	2	Lumbrineris parvapedata	2
EM	19OCT2000	B	2	Mediomastus ambiseta	29
EM	19OCT2000	B	2	Melinna maculata	1
EM	19OCT2000	B	2	Mulinia lateralis	13
EM	19OCT2000	B	3	Aligena texasiana	3
EM	19OCT2000	B	3	Amphiodia atra	1
EM	19OCT2000	B	3	Cirrophorus lyra	8
EM	19OCT2000	B	3	Clymenella torquata	2
EM	19OCT2000	B	3	Glycinde solitaria	1
EM	19OCT2000	B	3	Gyptis vittata	3
EM	19OCT2000	B	3	Hemicyclops sp.	2
EM	19OCT2000	B	3	Lumbrineris parvapedata	3
EM	19OCT2000	B	3	Mediomastus ambiseta	14
EM	19OCT2000	B	3	Mulinia lateralis	5
EM	19OCT2000	B	3	Mysella planulata	1
EM	19OCT2000	B	3	Phoronis architecta	3
EM	19OCT2000	B	3	Pyrgiscus sp.	1

EM	19OCT2000	B	3	Spiochaetopterus costarum	1
EM	19OCT2000	B	3	Tharyx setigera	1
EM	19OCT2000	C	1	Amphiodia atra	1
EM	19OCT2000	C	1	Aricidea catharinae	3
EM	19OCT2000	C	1	Branchioasychis americana	1
EM	19OCT2000	C	1	Cirrophorus lyra	1
EM	19OCT2000	C	1	Lumbrineris parvapedata	1
EM	19OCT2000	C	1	Mediomastus ambiseta	13
EM	19OCT2000	C	1	Pyrgiscus sp.	1
EM	19OCT2000	C	2	Acteocina canaliculata	1
EM	19OCT2000	C	2	Aricidea catharinae	10
EM	19OCT2000	C	2	Branchioasychis americana	3
EM	19OCT2000	C	2	Cossura delta	1
EM	19OCT2000	C	2	Euclymene sp. B	1
EM	19OCT2000	C	2	Glycinde solitaria	1
EM	19OCT2000	C	2	Gyptis vittata	1
EM	19OCT2000	C	2	Lumbrineris parvapedata	2
EM	19OCT2000	C	2	Mediomastus ambiseta	27
EM	19OCT2000	C	2	Melinna maculata	1
EM	19OCT2000	C	2	Mulinia lateralis	3
EM	19OCT2000	C	2	Mysella planulata	1
EM	19OCT2000	C	2	Paraprionospio pinnata	1
EM	19OCT2000	C	2	Phoronis architecta	1
EM	19OCT2000	C	2	Pyrgiscus sp.	2
EM	19OCT2000	C	2	Rhynchocoela (unidentified)	2
EM	19OCT2000	C	3	Amphiodia atra	1
EM	19OCT2000	C	3	Aricidea catharinae	1
EM	19OCT2000	C	3	Branchioasychis americana	1
EM	19OCT2000	C	3	Cyclopoid copepod (commensal)	1
EM	19OCT2000	C	3	Euclymene sp. B	2
EM	19OCT2000	C	3	Glycinde solitaria	1
EM	19OCT2000	C	3	Lumbrineris parvapedata	3
EM	19OCT2000	C	3	Mediomastus ambiseta	18
EM	19OCT2000	C	3	Mulinia lateralis	2
EM	19OCT2000	C	3	Pinnixa sp.	1
EM	19OCT2000	F	1	Aricidea catharinae	4
EM	19OCT2000	F	1	Branchioasychis americana	1
EM	19OCT2000	F	1	Cossura delta	2
EM	19OCT2000	F	1	Listriella barnardi	1
EM	19OCT2000	F	1	Lumbrineris parvapedata	1
EM	19OCT2000	F	1	Mediomastus ambiseta	22
EM	19OCT2000	F	1	Megalomma bioculatum	1
EM	19OCT2000	F	1	Mulinia lateralis	1
EM	19OCT2000	F	1	Mysella planulata	2
EM	19OCT2000	F	1	Polydora caulleryi	4
EM	19OCT2000	F	1	Rhynchocoela (unidentified)	1
EM	19OCT2000	F	2	Amphiodia atra	1
EM	19OCT2000	F	2	Aricidea catharinae	7
EM	19OCT2000	F	2	Cossura delta	1
EM	19OCT2000	F	2	Mediomastus ambiseta	20
EM	19OCT2000	F	2	Mulinia lateralis	1
EM	19OCT2000	F	2	Polydora caulleryi	2
EM	19OCT2000	F	2	Rhynchocoela (unidentified)	1
EM	19OCT2000	F	2	Turbellaria (unidentified)	1
EM	19OCT2000	F	3	Amphiodia atra	1

EM	19OCT2000	F	3	Aricidea catharinae	6
EM	19OCT2000	F	3	Cossura delta	1
EM	19OCT2000	F	3	Mediomastus ambiseta	17
EM	19OCT2000	F	3	Megalomma bioculatum	1
EM	19OCT2000	F	3	Nassarius acutus	1
EM	19OCT2000	F	3	Paraprionospio pinnata	2
EM	19OCT2000	F	3	Polydora caulleryi	2
EM	19OCT2000	F	3	Rhynchocoela (unidentified)	1
EM	09JAN2001	B	1	Aligena texasiana	1
EM	09JAN2001	B	1	Amphiodia atra	1
EM	09JAN2001	B	1	Axiothells sp. A	1
EM	09JAN2001	B	1	Cirrophorus lyra	14
EM	09JAN2001	B	1	Glycinde solitaria	1
EM	09JAN2001	B	1	Gyptis vittata	1
EM	09JAN2001	B	1	Lumbrineris parvapedata	2
EM	09JAN2001	B	1	Mediomastus ambiseta	30
EM	09JAN2001	B	1	Mulinia lateralis	11
EM	09JAN2001	B	1	Mysella planulata	4
EM	09JAN2001	B	1	Polydora caulleryi	1
EM	09JAN2001	B	1	Turbellaria (unidentified)	1
EM	09JAN2001	B	2	Amphiodia atra	1
EM	09JAN2001	B	2	Aricidea catharinae	3
EM	09JAN2001	B	2	Cirrophorus lyra	2
EM	09JAN2001	B	2	Cossura delta	4
EM	09JAN2001	B	2	Glycinde solitaria	1
EM	09JAN2001	B	2	Lumbrineris parvapedata	2
EM	09JAN2001	B	2	Mediomastus ambiseta	35
EM	09JAN2001	B	2	Mulinia lateralis	7
EM	09JAN2001	B	2	Paraprionospio pinnata	1
EM	09JAN2001	B	2	Phoronis architecta	1
EM	09JAN2001	B	2	Rhynchocoela (unidentified)	1
EM	09JAN2001	B	3	Amphiodia atra	1
EM	09JAN2001	B	3	Cirrophorus lyra	2
EM	09JAN2001	B	3	Cyclopoid copepod (commensal)	1
EM	09JAN2001	B	3	Leucon sp.	1
EM	09JAN2001	B	3	Lumbrineris parvapedata	4
EM	09JAN2001	B	3	Mediomastus ambiseta	59
EM	09JAN2001	B	3	Mulinia lateralis	9
EM	09JAN2001	B	3	Pyrgiscus sp.	1
EM	09JAN2001	B	3	Spiochaetopterus costarum	1
EM	09JAN2001	B	3	Turbellaria (unidentified)	1
EM	09JAN2001	C	1	Amphiodia atra	1
EM	09JAN2001	C	1	Aricidea catharinae	3
EM	09JAN2001	C	1	Branchioasychis americana	1
EM	09JAN2001	C	1	Ceratonereis irritabilis	1
EM	09JAN2001	C	1	Cirrophorus lyra	1
EM	09JAN2001	C	1	Cossura delta	2
EM	09JAN2001	C	1	Glycinde solitaria	1
EM	09JAN2001	C	1	Leucon sp.	1
EM	09JAN2001	C	1	Lumbrineris parvapedata	3
EM	09JAN2001	C	1	Mediomastus ambiseta	36
EM	09JAN2001	C	1	Paraprionospio pinnata	1
EM	09JAN2001	C	2	Acteocina canaliculata	1
EM	09JAN2001	C	2	Amphiodia atra	1
EM	09JAN2001	C	2	Aricidea catharinae	4

EM	09JAN2001	C	2	Branchioasychis americana	7
EM	09JAN2001	C	2	Ceratonereis irritabilis	1
EM	09JAN2001	C	2	Cirrophorus lyra	15
EM	09JAN2001	C	2	Glycera americana	1
EM	09JAN2001	C	2	Gyptis vittata	4
EM	09JAN2001	C	2	Mediomastus ambiseta	65
EM	09JAN2001	C	2	Nassarius acutus	1
EM	09JAN2001	C	2	Paraprionospio pinnata	6
EM	09JAN2001	C	2	Phoronis architecta	1
EM	09JAN2001	C	2	Polydora caulleryi	2
EM	09JAN2001	C	2	Rhynchocoela (unidentified)	2
EM	09JAN2001	C	3	Amphiodia atra	1
EM	09JAN2001	C	3	Aricidea catharinae	6
EM	09JAN2001	C	3	Axiothells sp. A	2
EM	09JAN2001	C	3	Branchioasychis americana	1
EM	09JAN2001	C	3	Cirrophorus lyra	20
EM	09JAN2001	C	3	Gyptis vittata	6
EM	09JAN2001	C	3	Lumbrineris parvapedata	2
EM	09JAN2001	C	3	Mediomastus ambiseta	59
EM	09JAN2001	C	3	Paraprionospio pinnata	1
EM	09JAN2001	C	3	Phoronis architecta	2
EM	09JAN2001	C	3	Polydora caulleryi	2
EM	09JAN2001	C	3	Rhynchocoela (unidentified)	1
EM	09JAN2001	F	1	Cossura delta	1
EM	09JAN2001	F	1	Mediomastus ambiseta	13
EM	09JAN2001	F	1	Mulinia lateralis	1
EM	09JAN2001	F	1	Paraprionospio pinnata	2
EM	09JAN2001	F	1	Streblospio benedicti	4
EM	09JAN2001	F	2	Corophium sp.	1
EM	09JAN2001	F	2	Cossura delta	4
EM	09JAN2001	F	2	Mediomastus ambiseta	32
EM	09JAN2001	F	2	Oligochaetes (unidentified)	1
EM	09JAN2001	F	2	Paraprionospio pinnata	2
EM	09JAN2001	F	2	Streblospio benedicti	3
EM	09JAN2001	F	3	Cossura delta	3
EM	09JAN2001	F	3	Mediomastus ambiseta	19
EM	09JAN2001	F	3	Oligochaetes (unidentified)	1
EM	09JAN2001	F	3	Paraprionospio pinnata	1
EM	09JAN2001	F	3	Streblospio benedicti	11
EM	09JAN2001	F	3	Tharyx setigera	1
EM	09APR2001	B	1	Amphiodia atra	1
EM	09APR2001	B	1	Aricidea catharinae	4
EM	09APR2001	B	1	Axiothells sp. A	2
EM	09APR2001	B	1	Cirrophorus lyra	7
EM	09APR2001	B	1	Gyptis vittata	1
EM	09APR2001	B	1	Lumbrineris parvapedata	2
EM	09APR2001	B	1	Mediomastus ambiseta	27
EM	09APR2001	B	1	Melinna maculata	1
EM	09APR2001	B	1	Mulinia lateralis	1
EM	09APR2001	B	1	Oxyurostylis sp.	1
EM	09APR2001	B	1	Paraprionospio pinnata	1
EM	09APR2001	B	1	Phoronis architecta	1
EM	09APR2001	B	1	Polydora caulleryi	1
EM	09APR2001	B	1	Spiochaetopterus costarum	1
EM	09APR2001	B	1	Turbellaria (unidentified)	1

EM	09APR2001	B	2	Branchioasychis americana	2
EM	09APR2001	B	2	Clymenella torquata	2
EM	09APR2001	B	2	Cossura delta	2
EM	09APR2001	B	2	Gyptis vittata	1
EM	09APR2001	B	2	Lumbrineris parvapedata	6
EM	09APR2001	B	2	Mediomastus ambiseta	18
EM	09APR2001	B	2	Mulinia lateralis	3
EM	09APR2001	B	2	Nereidae (unidentified)	1
EM	09APR2001	B	2	Paraprionospio pinnata	1
EM	09APR2001	B	2	Polydora caulleryi	2
EM	09APR2001	B	3	Amphiodia atra	1
EM	09APR2001	B	3	Aricidea catharinae	4
EM	09APR2001	B	3	Axiothells sp. A	1
EM	09APR2001	B	3	Branchioasychis americana	2
EM	09APR2001	B	3	Cirrophorus lyra	10
EM	09APR2001	B	3	Clymenella torquata	1
EM	09APR2001	B	3	Cossura delta	2
EM	09APR2001	B	3	Glycinde solitaria	1
EM	09APR2001	B	3	Gyptis vittata	1
EM	09APR2001	B	3	Lumbrineris parvapedata	4
EM	09APR2001	B	3	Mediomastus ambiseta	38
EM	09APR2001	B	3	Mulinia lateralis	4
EM	09APR2001	B	3	Phoronis architecta	1
EM	09APR2001	B	3	Polydora caulleryi	3
EM	09APR2001	B	3	Rhynchocoela (unidentified)	1
EM	09APR2001	B	3	Turbellaria (unidentified)	2
EM	09APR2001	C	1	Amphiodia atra	1
EM	09APR2001	C	1	Aricidea catharinae	5
EM	09APR2001	C	1	Axiothells sp. A	1
EM	09APR2001	C	1	Branchioasychis americana	3
EM	09APR2001	C	1	Cirrophorus lyra	13
EM	09APR2001	C	1	Cossura delta	2
EM	09APR2001	C	1	Cyclopoid copepod (commensal)	1
EM	09APR2001	C	1	Glycera americana	1
EM	09APR2001	C	1	Glycinde solitaria	1
EM	09APR2001	C	1	Leucon sp.	1
EM	09APR2001	C	1	Lumbrineris parvapedata	5
EM	09APR2001	C	1	Mediomastus ambiseta	19
EM	09APR2001	C	1	Mulinia lateralis	4
EM	09APR2001	C	1	Paraprionospio pinnata	1
EM	09APR2001	C	1	Rhynchocoela (unidentified)	1
EM	09APR2001	C	1	Streblospio benedicti	4
EM	09APR2001	C	2	Acteocina canaliculata	1
EM	09APR2001	C	2	Ampelisca abdita	3
EM	09APR2001	C	2	Amphiodia atra	1
EM	09APR2001	C	2	Aricidea catharinae	9
EM	09APR2001	C	2	Axiothells sp. A	4
EM	09APR2001	C	2	Branchioasychis americana	8
EM	09APR2001	C	2	Cirrophorus lyra	12
EM	09APR2001	C	2	Glycera americana	2
EM	09APR2001	C	2	Gyptis vittata	1
EM	09APR2001	C	2	Leucon sp.	1
EM	09APR2001	C	2	Lumbrineris parvapedata	6
EM	09APR2001	C	2	Mediomastus ambiseta	38
EM	09APR2001	C	2	Melinna maculata	3

EM	09APR2001	C	2	Mulinia lateralis	5
EM	09APR2001	C	2	Paranaitis speciosa	1
EM	09APR2001	C	2	Paraprionospio pinnata	2
EM	09APR2001	C	2	Rhynchocoela (unidentified)	3
EM	09APR2001	C	2	Streblospio benedicti	3
EM	09APR2001	C	3	Acteocina canaliculata	1
EM	09APR2001	C	3	Ampelisca abdita	1
EM	09APR2001	C	3	Amphiodia atra	1
EM	09APR2001	C	3	Aricidea catharinae	4
EM	09APR2001	C	3	Axiothells sp. A	2
EM	09APR2001	C	3	Branchioasychis americana	3
EM	09APR2001	C	3	Cirrophorus lyra	2
EM	09APR2001	C	3	Lumbrineris parvapedata	4
EM	09APR2001	C	3	Mediomastus ambiseta	41
EM	09APR2001	C	3	Mulinia lateralis	11
EM	09APR2001	C	3	Paraprionospio pinnata	3
EM	09APR2001	C	3	Phoronis architecta	1
EM	09APR2001	C	3	Pyrgiscus sp.	1
EM	09APR2001	F	1	Ancistrosyllis sp.	1
EM	09APR2001	F	1	Axiothells sp. A	1
EM	09APR2001	F	1	Cirrophorus lyra	2
EM	09APR2001	F	1	Clymenella torquata	1
EM	09APR2001	F	1	Cossura delta	2
EM	09APR2001	F	1	Drilonereis magna	1
EM	09APR2001	F	1	Glycinde solitaria	1
EM	09APR2001	F	1	Haploscoloplos fragilis	1
EM	09APR2001	F	1	Mediomastus ambiseta	24
EM	09APR2001	F	1	Streblospio benedicti	1
EM	09APR2001	F	1	Turbellaria (unidentified)	1
EM	09APR2001	F	2	Aligena texasiana	1
EM	09APR2001	F	2	Ancistrosyllis sp.	1
EM	09APR2001	F	2	Anthozoa (unidentified)	2
EM	09APR2001	F	2	Aricidea catharinae	6
EM	09APR2001	F	2	Axiothells sp. A	1
EM	09APR2001	F	2	Branchioasychis americana	2
EM	09APR2001	F	2	Cirrophorus lyra	1
EM	09APR2001	F	2	Clymenella torquata	4
EM	09APR2001	F	2	Cossura delta	1
EM	09APR2001	F	2	Glycinde solitaria	1
EM	09APR2001	F	2	Haploscoloplos fragilis	1
EM	09APR2001	F	2	Mediomastus ambiseta	30
EM	09APR2001	F	2	Melinna maculata	2
EM	09APR2001	F	2	Mulinia lateralis	2
EM	09APR2001	F	2	Paraprionospio pinnata	3
EM	09APR2001	F	2	Rhynchocoela (unidentified)	1
EM	09APR2001	F	2	Streblospio benedicti	3
EM	09APR2001	F	2	Tharyx setigera	1
EM	09APR2001	F	3	Aricidea catharinae	4
EM	09APR2001	F	3	Axiothells sp. A	2
EM	09APR2001	F	3	Clymenella torquata	1
EM	09APR2001	F	3	Cossura delta	5
EM	09APR2001	F	3	Mediomastus ambiseta	22
EM	09APR2001	F	3	Melinna maculata	1
EM	09APR2001	F	3	Mulinia lateralis	5
EM	09APR2001	F	3	Rhynchocoela (unidentified)	2

EM	09APR2001	F	3	Streblospio benedicti	4
EM	11JUL2001	B	1	Aligena texasiana	7
EM	11JUL2001	B	1	Amphiodia atra	1
EM	11JUL2001	B	1	Aricidea catharinae	1
EM	11JUL2001	B	1	Branchioasychis americana	1
EM	11JUL2001	B	1	Caecum johnsoni	7
EM	11JUL2001	B	1	Cirrophorus lyra	30
EM	11JUL2001	B	1	Gyptis vittata	4
EM	11JUL2001	B	1	Lumbrineris parvapedata	4
EM	11JUL2001	B	1	Mediomastus ambiseta	33
EM	11JUL2001	B	1	Microprotopus spp.	1
EM	11JUL2001	B	1	Mysella planulata	3
EM	11JUL2001	B	1	Phoronis architecta	1
EM	11JUL2001	B	1	Polydora caulleryi	1
EM	11JUL2001	B	1	Rhynchocoela (unidentified)	1
EM	11JUL2001	B	2	Aligena texasiana	4
EM	11JUL2001	B	2	Amphiodia atra	2
EM	11JUL2001	B	2	Aricidea catharinae	3
EM	11JUL2001	B	2	Branchioasychis americana	1
EM	11JUL2001	B	2	Cirrophorus lyra	17
EM	11JUL2001	B	2	Clymenella torquata	2
EM	11JUL2001	B	2	Gyptis vittata	1
EM	11JUL2001	B	2	Lumbrineris parvapedata	4
EM	11JUL2001	B	2	Mediomastus ambiseta	25
EM	11JUL2001	B	3	Amphiodia atra	2
EM	11JUL2001	B	3	Aricidea catharinae	1
EM	11JUL2001	B	3	Branchioasychis americana	1
EM	11JUL2001	B	3	Cirrophorus lyra	16
EM	11JUL2001	B	3	Clymenella torquata	1
EM	11JUL2001	B	3	Cossura delta	3
EM	11JUL2001	B	3	Gyptis vittata	1
EM	11JUL2001	B	3	Leucon sp.	1
EM	11JUL2001	B	3	Lumbrineris parvapedata	4
EM	11JUL2001	B	3	Mediomastus ambiseta	18
EM	11JUL2001	B	3	Paraprionospio pinnata	1
EM	11JUL2001	B	3	Pyrgiscus sp.	1
EM	11JUL2001	B	3	Rhynchocoela (unidentified)	1
EM	11JUL2001	B	3	Spiochaetopterus costarum	1
EM	11JUL2001	B	3	Tharyx setigera	1
EM	11JUL2001	C	1	Branchioasychis americana	1
EM	11JUL2001	C	1	Leucon sp.	1
EM	11JUL2001	C	1	Lumbrineris parvapedata	2
EM	11JUL2001	C	1	Mediomastus ambiseta	9
EM	11JUL2001	C	1	Paraprionospio pinnata	1
EM	11JUL2001	C	1	Rhynchocoela (unidentified)	1
EM	11JUL2001	C	2	Aricidea catharinae	7
EM	11JUL2001	C	2	Branchioasychis americana	1
EM	11JUL2001	C	2	Gyptis vittata	1
EM	11JUL2001	C	2	Lumbrineris parvapedata	1
EM	11JUL2001	C	2	Mediomastus ambiseta	9
EM	11JUL2001	C	2	Paraprionospio pinnata	1
EM	11JUL2001	C	2	Pilargis berkelyae	1
EM	11JUL2001	C	3	Amphiodia atra	1
EM	11JUL2001	C	3	Aricidea catharinae	3
EM	11JUL2001	C	3	Branchioasychis americana	4

EM	11JUL2001	C	3	Cirrophorus lyra	15
EM	11JUL2001	C	3	Cossura delta	1
EM	11JUL2001	C	3	Gyptis vittata	1
EM	11JUL2001	C	3	Lumbrineris parvapedata	3
EM	11JUL2001	C	3	Mediomastus ambiseta	15
EM	11JUL2001	C	3	Rhynchocoela (unidentified)	1
EM	11JUL2001	C	3	Streblospio benedicti	1
EM	11JUL2001	F	1	Aricidea catharinae	1
EM	11JUL2001	F	1	Cossura delta	3
EM	11JUL2001	F	1	Mediomastus ambiseta	11
EM	11JUL2001	F	1	Mulinia lateralis	1
EM	11JUL2001	F	1	Rhynchocoela (unidentified)	1
EM	11JUL2001	F	1	Streblospio benedicti	5
EM	11JUL2001	F	1	Vitrinellidae (unidentified)	1
EM	11JUL2001	F	2	Aricidea catharinae	2
EM	11JUL2001	F	2	Cossura delta	11
EM	11JUL2001	F	2	Glycinde solitaria	1
EM	11JUL2001	F	2	Mediomastus ambiseta	15
EM	11JUL2001	F	2	Streblospio benedicti	7
EM	11JUL2001	F	3	Cossura delta	2
EM	11JUL2001	F	3	Glycinde solitaria	1
EM	11JUL2001	F	3	Mediomastus ambiseta	8
EM	11JUL2001	F	3	Streblospio benedicti	17
BR	18OCT2000	A	1	Mediomastus ambiseta	4
BR	18OCT2000	A	1	Streblospio benedicti	37
BR	18OCT2000	A	2	Cossura delta	1
BR	18OCT2000	A	2	Mediomastus ambiseta	6
BR	18OCT2000	A	2	Streblospio benedicti	34
BR	18OCT2000	A	3	Cossura delta	1
BR	18OCT2000	A	3	Mediomastus ambiseta	6
BR	18OCT2000	A	3	Streblospio benedicti	4
BR	18OCT2000	B	1	Haploscoloplos fragilis	1
BR	18OCT2000	B	1	Mediomastus ambiseta	4
BR	18OCT2000	B	1	Polydora caulleryi	2
BR	18OCT2000	B	1	Streblospio benedicti	9
BR	18OCT2000	B	2	Mediomastus ambiseta	1
BR	18OCT2000	B	2	Mulinia lateralis	1
BR	18OCT2000	B	2	Streblospio benedicti	15
BR	18OCT2000	B	3	Mediomastus ambiseta	1
BR	18OCT2000	B	3	Polydora caulleryi	2
BR	18OCT2000	B	3	Polydora socialis	1
BR	18OCT2000	B	3	Streblospio benedicti	10
BR	18OCT2000	C	1	Mediomastus ambiseta	6
BR	18OCT2000	C	2	Cossura delta	2
BR	18OCT2000	C	2	Mediomastus ambiseta	2
BR	18OCT2000	C	2	Streblospio benedicti	1
BR	18OCT2000	C	3	Cossura delta	1
BR	18OCT2000	C	3	Mediomastus ambiseta	3
BR	10JAN2001	A	1	Mediomastus ambiseta	5
BR	10JAN2001	A	1	Streblospio benedicti	8
BR	10JAN2001	A	2	Mediomastus ambiseta	5
BR	10JAN2001	A	2	Streblospio benedicti	5
BR	10JAN2001	A	3	Mediomastus ambiseta	4
BR	10JAN2001	A	3	No species observed	0
BR	10JAN2001	A	3	Streblospio benedicti	8

BR	10JAN2001	B	1	Mediomastus ambiseta	3
BR	10JAN2001	B	1	Streblospio benedicti	16
BR	10JAN2001	B	2	Mediomastus ambiseta	2
BR	10JAN2001	B	2	Streblospio benedicti	20
BR	10JAN2001	B	3	Mediomastus ambiseta	6
BR	10JAN2001	B	3	Streblospio benedicti	30
BR	10JAN2001	C	1	Mediomastus ambiseta	5
BR	10JAN2001	C	1	Rhynchocoela (unidentified)	1
BR	10JAN2001	C	1	Streblospio benedicti	9
BR	10JAN2001	C	2	Mediomastus ambiseta	7
BR	10JAN2001	C	2	Streblospio benedicti	5
BR	10JAN2001	C	3	Mediomastus ambiseta	2
BR	10JAN2001	C	3	Streblospio benedicti	10
BR	10APR2001	A	1	Chironomid larvae	1
BR	10APR2001	A	1	Mediomastus ambiseta	2
BR	10APR2001	A	1	Ostracoda (unidentified)	1
BR	10APR2001	A	1	Parandalia ocularis	2
BR	10APR2001	A	1	Polydora ligni	7
BR	10APR2001	A	1	Streblospio benedicti	3
BR	10APR2001	A	2	Chironomid larvae	1
BR	10APR2001	A	2	Mediomastus ambiseta	10
BR	10APR2001	A	3	Mediomastus ambiseta	9
BR	10APR2001	A	3	Rhynchocoela (unidentified)	2
BR	10APR2001	A	3	Streblospio benedicti	2
BR	10APR2001	B	1	Chironomid larvae	2
BR	10APR2001	B	1	Mediomastus ambiseta	14
BR	10APR2001	B	1	Streblospio benedicti	14
BR	10APR2001	B	2	Chironomid larvae	1
BR	10APR2001	B	2	Hobsonia florida	1
BR	10APR2001	B	2	Mediomastus ambiseta	13
BR	10APR2001	B	2	Streblospio benedicti	19
BR	10APR2001	B	3	Capitella capitata	1
BR	10APR2001	B	3	Mediomastus ambiseta	12
BR	10APR2001	B	3	Streblospio benedicti	21
BR	10APR2001	C	1	Mediomastus ambiseta	10
BR	10APR2001	C	1	Streblospio benedicti	2
BR	10APR2001	C	2	Mediomastus ambiseta	4
BR	10APR2001	C	2	Streblospio benedicti	3
BR	10APR2001	C	3	Mediomastus ambiseta	6
BR	10APR2001	C	3	Streblospio benedicti	27
BR	11JUL2001	A	1	Mediomastus ambiseta	1
BR	11JUL2001	A	1	No species observed	0
BR	11JUL2001	A	1	Streblospio benedicti	4
BR	11JUL2001	A	2	Mediomastus ambiseta	1
BR	11JUL2001	A	2	No species observed	0
BR	11JUL2001	A	2	Streblospio benedicti	2
BR	11JUL2001	A	3	Mediomastus ambiseta	1
BR	11JUL2001	A	3	No species observed	0
BR	11JUL2001	A	3	Streblospio benedicti	2
BR	11JUL2001	B	1	Callianassa sp.	1
BR	11JUL2001	B	1	Gyptis vittata	1
BR	11JUL2001	B	1	Mediomastus ambiseta	17
BR	11JUL2001	B	1	Parandalia ocularis	1
BR	11JUL2001	B	1	Polydora ligni	1
BR	11JUL2001	B	1	Rhynchocoela (unidentified)	4

BR	11JUL2001	B	2	Mediomastus ambiseta	16
BR	11JUL2001	B	2	Oligochaetes (unidentified)	1
BR	11JUL2001	B	2	Streblospio benedicti	1
BR	11JUL2001	B	3	Callianassa sp.	1
BR	11JUL2001	B	3	Gyptis vittata	1
BR	11JUL2001	B	3	Mediomastus ambiseta	5
BR	11JUL2001	B	3	Parandalia ocularis	1
BR	11JUL2001	B	3	Streblospio benedicti	3
BR	11JUL2001	C	1	Mediomastus ambiseta	1
BR	11JUL2001	C	1	Streblospio benedicti	29
BR	11JUL2001	C	2	Callianassa sp.	1
BR	11JUL2001	C	2	Mediomastus ambiseta	9
BR	11JUL2001	C	2	Streblospio benedicti	4
BR	11JUL2001	C	3	Mediomastus ambiseta	10
BR	11JUL2001	C	3	Parandalia ocularis	1
BR	11JUL2001	C	3	Streblospio benedicti	13
RG	24OCT2000	A	1	Chironomid larvae	3
RG	24OCT2000	A	1	Macoma mitchelli	1
RG	24OCT2000	A	1	Mediomastus ambiseta	28
RG	24OCT2000	A	1	Neritina virginea	4
RG	24OCT2000	A	1	Rhynchocoela (unidentified)	6
RG	24OCT2000	A	2	Chironomid larvae	3
RG	24OCT2000	A	2	Macoma mitchelli	3
RG	24OCT2000	A	2	Mediomastus ambiseta	49
RG	24OCT2000	A	2	Mulinia lateralis	2
RG	24OCT2000	A	2	Rhynchocoela (unidentified)	6
RG	24OCT2000	A	2	Streblospio benedicti	1
RG	24OCT2000	A	3	Chironomid larvae	2
RG	24OCT2000	A	3	Macoma mitchelli	2
RG	24OCT2000	A	3	Mediomastus ambiseta	49
RG	24OCT2000	A	3	Mulinia lateralis	2
RG	24OCT2000	A	3	Rhynchocoela (unidentified)	7
RG	24OCT2000	A	3	Streblospio benedicti	1
RG	24OCT2000	A	3	Tellidora cristata	1
RG	24OCT2000	B	1	Laeonereis culveri	1
RG	24OCT2000	B	1	Macoma mitchelli	1
RG	24OCT2000	B	1	Mediomastus ambiseta	14
RG	24OCT2000	B	1	Neritina virginea	2
RG	24OCT2000	B	1	Rhynchocoela (unidentified)	1
RG	24OCT2000	B	1	Streblospio benedicti	1
RG	24OCT2000	B	2	Chironomid larvae	4
RG	24OCT2000	B	2	Laeonereis culveri	1
RG	24OCT2000	B	2	Mediomastus ambiseta	25
RG	24OCT2000	B	2	Neritina virginea	1
RG	24OCT2000	B	2	Rhynchocoela (unidentified)	1
RG	24OCT2000	B	2	Streblospio benedicti	1
RG	24OCT2000	B	3	Macoma mitchelli	1
RG	24OCT2000	B	3	Mediomastus ambiseta	10
RG	24OCT2000	B	3	Mulinia lateralis	2
RG	24OCT2000	B	3	Neritina virginea	2
RG	24OCT2000	B	3	Rhynchocoela (unidentified)	5
RG	24OCT2000	B	3	Streblospio benedicti	2
RG	24OCT2000	C	1	Capitella capitata	1
RG	24OCT2000	C	1	Gammarus mucronatus	1
RG	24OCT2000	C	1	Oligochaetes (unidentified)	1

RG	24OCT2000	C	1	Rhynchocoela (unidentified)	2
RG	24OCT2000	C	1	Streblospio benedicti	16
RG	24OCT2000	C	2	Mediomastus ambiseta	7
RG	24OCT2000	C	2	Oligochaetes (unidentified)	1
RG	24OCT2000	C	2	Pelagicus	1
RG	24OCT2000	C	2	Rhynchocoela (unidentified)	2
RG	24OCT2000	C	2	Streblospio benedicti	106
RG	24OCT2000	C	3	Neritina virginea	1
RG	24OCT2000	C	3	No species observed	0
RG	24OCT2000	C	3	Oligochaetes (unidentified)	1
RG	24OCT2000	C	3	Streblospio benedicti	1
RG	10JAN2001	A	1	Chironomid larvae	7
RG	10JAN2001	A	1	Macoma mitchelli	6
RG	10JAN2001	A	1	Mediomastus ambiseta	48
RG	10JAN2001	A	1	Rhynchocoela (unidentified)	2
RG	10JAN2001	A	2	Chironomid larvae	5
RG	10JAN2001	A	2	Macoma mitchelli	5
RG	10JAN2001	A	2	Macoma tenta	1
RG	10JAN2001	A	2	Mediomastus ambiseta	39
RG	10JAN2001	A	2	Rhynchocoela (unidentified)	3
RG	10JAN2001	A	3	Chironomid larvae	11
RG	10JAN2001	A	3	Macoma mitchelli	5
RG	10JAN2001	A	3	Mediomastus ambiseta	53
RG	10JAN2001	A	3	No species observed	0
RG	10JAN2001	A	3	Rhynchocoela (unidentified)	4
RG	10JAN2001	B	1	Chironomid larvae	8
RG	10JAN2001	B	1	Mediomastus ambiseta	32
RG	10JAN2001	B	1	Neritina virginea	1
RG	10JAN2001	B	1	Rhynchocoela (unidentified)	5
RG	10JAN2001	B	1	Streblospio benedicti	1
RG	10JAN2001	B	2	Chironomid larvae	2
RG	10JAN2001	B	2	Macoma mitchelli	2
RG	10JAN2001	B	2	Mediomastus ambiseta	24
RG	10JAN2001	B	2	Neritina virginea	2
RG	10JAN2001	B	2	Polydora ligni	1
RG	10JAN2001	B	2	Rhynchocoela (unidentified)	1
RG	10JAN2001	B	2	Streblospio benedicti	1
RG	10JAN2001	B	3	Chironomid larvae	3
RG	10JAN2001	B	3	Macoma mitchelli	1
RG	10JAN2001	B	3	Mediomastus ambiseta	17
RG	10JAN2001	B	3	Mulinia lateralis	2
RG	10JAN2001	B	3	No species observed	0
RG	10JAN2001	B	3	Rhynchocoela (unidentified)	2
RG	10JAN2001	B	3	Streblospio benedicti	3
RG	10JAN2001	C	1	Chironomid larvae	4
RG	10JAN2001	C	1	Macoma mitchelli	7
RG	10JAN2001	C	1	Mediomastus ambiseta	54
RG	10JAN2001	C	1	Rhynchocoela (unidentified)	1
RG	10JAN2001	C	1	Streblospio benedicti	7
RG	10JAN2001	C	2	Chironomid larvae	2
RG	10JAN2001	C	2	Gammarus mucronatus	2
RG	10JAN2001	C	2	Grandidierella bonnieroides	1
RG	10JAN2001	C	2	Macoma mitchelli	7
RG	10JAN2001	C	2	Mediomastus ambiseta	66
RG	10JAN2001	C	2	Rhynchocoela (unidentified)	4

RG	10JAN2001	C	2	Streblospio benedicti	9
RG	10JAN2001	C	3	Chironomid larvae	3
RG	10JAN2001	C	3	Corophium louisianum	1
RG	10JAN2001	C	3	Macoma mitchelli	6
RG	10JAN2001	C	3	Mediomastus ambiseta	51
RG	10JAN2001	C	3	Neritina virginea	2
RG	10JAN2001	C	3	Rhynchocoela (unidentified)	3
RG	10JAN2001	C	3	Streblospio benedicti	5
RG	14APR2001	A	1	Chironomid larvae	23
RG	14APR2001	A	1	Mediomastus ambiseta	25
RG	14APR2001	A	1	Mulinia lateralis	1
RG	14APR2001	A	1	Streblospio benedicti	3
RG	14APR2001	A	2	Chironomid larvae	34
RG	14APR2001	A	2	Mediomastus ambiseta	24
RG	14APR2001	A	2	Oligochaetes (unidentified)	3
RG	14APR2001	A	2	Ostracoda (unidentified)	1
RG	14APR2001	A	3	Chironomid larvae	31
RG	14APR2001	A	3	Mediomastus ambiseta	41
RG	14APR2001	A	3	Oligochaetes (unidentified)	1
RG	14APR2001	A	3	Rhynchocoela (unidentified)	4
RG	14APR2001	A	3	Streblospio benedicti	2
RG	14APR2001	B	1	Chironomid larvae	17
RG	14APR2001	B	1	Macoma mitchelli	1
RG	14APR2001	B	1	Mediomastus ambiseta	12
RG	14APR2001	B	1	Oligochaetes (unidentified)	1
RG	14APR2001	B	1	Streblospio benedicti	3
RG	14APR2001	B	2	Chironomid larvae	27
RG	14APR2001	B	2	Mediomastus ambiseta	24
RG	14APR2001	B	2	Oligochaetes (unidentified)	3
RG	14APR2001	B	2	Streblospio benedicti	3
RG	14APR2001	B	3	Chironomid larvae	15
RG	14APR2001	B	3	Mediomastus ambiseta	20
RG	14APR2001	B	3	Mulinia lateralis	1
RG	14APR2001	B	3	Rhynchocoela (unidentified)	2
RG	14APR2001	C	1	Chironomid larvae	20
RG	14APR2001	C	1	Macoma mitchelli	1
RG	14APR2001	C	1	Mediomastus ambiseta	45
RG	14APR2001	C	1	Neritina virginea	1
RG	14APR2001	C	1	Oligochaetes (unidentified)	4
RG	14APR2001	C	1	Rhynchocoela (unidentified)	2
RG	14APR2001	C	1	Streblospio benedicti	17
RG	14APR2001	C	2	Chironomid larvae	12
RG	14APR2001	C	2	Mediomastus ambiseta	24
RG	14APR2001	C	2	Neritina virginea	3
RG	14APR2001	C	2	Oligochaetes (unidentified)	3
RG	14APR2001	C	2	Rhynchocoela (unidentified)	1
RG	14APR2001	C	2	Streblospio benedicti	9
RG	14APR2001	C	3	Chironomid larvae	19
RG	14APR2001	C	3	Macoma mitchelli	1
RG	14APR2001	C	3	Mediomastus ambiseta	26
RG	14APR2001	C	3	Neritina virginea	1
RG	14APR2001	C	3	Rhynchocoela (unidentified)	1
RG	14APR2001	C	3	Streblospio benedicti	4
RG	07JUL2001	A	1	Chironomid larvae	12
RG	07JUL2001	A	1	Mediomastus ambiseta	35

RG	07JUL2001	A	1	Mulinia lateralis	1
RG	07JUL2001	A	1	Oligochaetes (unidentified)	2
RG	07JUL2001	A	1	Rhynchocoela (unidentified)	2
RG	07JUL2001	A	2	Chironomid larvae	3
RG	07JUL2001	A	2	Mediomastus ambiseta	8
RG	07JUL2001	A	2	Mulinia lateralis	1
RG	07JUL2001	A	2	Oligochaetes (unidentified)	12
RG	07JUL2001	A	2	Polydora sp.	4
RG	07JUL2001	A	3	Chironomid larvae	2
RG	07JUL2001	A	3	Mulinia lateralis	1
RG	07JUL2001	A	3	No species observed	0
RG	07JUL2001	A	3	Oligochaetes (unidentified)	1
RG	07JUL2001	A	3	Polydora sp.	7
RG	07JUL2001	B	1	Chironomid larvae	4
RG	07JUL2001	B	1	Mediomastus ambiseta	18
RG	07JUL2001	B	1	Oligochaetes (unidentified)	1
RG	07JUL2001	B	2	Chironomid larvae	4
RG	07JUL2001	B	2	Mediomastus ambiseta	14
RG	07JUL2001	B	2	Neritina virginea	1
RG	07JUL2001	B	2	Oligochaetes (unidentified)	2
RG	07JUL2001	B	3	Chironomid larvae	6
RG	07JUL2001	B	3	Mediomastus ambiseta	14
RG	07JUL2001	B	3	Neritina virginea	3
RG	07JUL2001	C	1	Chironomid larvae	5
RG	07JUL2001	C	1	Mediomastus ambiseta	5
RG	07JUL2001	C	1	Oligochaetes (unidentified)	2
RG	07JUL2001	C	2	Chironomid larvae	1
RG	07JUL2001	C	2	Mediomastus ambiseta	1
RG	07JUL2001	C	2	Rhynchocoela (unidentified)	1
RG	07JUL2001	C	3	Ceratopogonid larvae	1
RG	07JUL2001	C	3	Chironomid larvae	4
RG	07JUL2001	C	3	Laeonereis culveri	1
RG	07JUL2001	C	3	Mediomastus ambiseta	2
RG	07JUL2001	C	3	Rhynchocoela (unidentified)	1
SB	24OCT2000	A	1	Aricidea catharinae	2
SB	24OCT2000	A	1	Ceritheum lutosum	1
SB	24OCT2000	A	1	Cymadusa compta	1
SB	24OCT2000	A	1	Diastoma varium	1
SB	24OCT2000	A	1	Elasmopus sp.	1
SB	24OCT2000	A	1	Exogone sp.	27
SB	24OCT2000	A	1	Fabriciola trilobata	1
SB	24OCT2000	A	1	Leptochelia rapax	1
SB	24OCT2000	A	1	Micropanope scultites	1
SB	24OCT2000	A	1	Oligochaetes (unidentified)	4
SB	24OCT2000	A	1	Pinnixa sp.	1
SB	24OCT2000	A	1	Platynereis dumerilii	1
SB	24OCT2000	A	1	Polydora caulleryi	6
SB	24OCT2000	A	1	Prionospio heterobranchia	14
SB	24OCT2000	A	1	Pyrgiscus sp.	1
SB	24OCT2000	A	1	Rhynchocoela (unidentified)	1
SB	24OCT2000	A	1	Schistomeringos sp. A	2
SB	24OCT2000	A	1	Sphaerosyllis sp. A	4
SB	24OCT2000	A	1	Streblospio benedicti	3
SB	24OCT2000	A	1	Syllis cornuta	6
SB	24OCT2000	A	1	Tharyx setigera	7

SB	24OCT2000	A	2	Aricidea catharinae	1
SB	24OCT2000	A	2	Capitella capitata	1
SB	24OCT2000	A	2	Maldanidae (unidentified)	1
SB	24OCT2000	A	2	Mediomastus californiensis	2
SB	24OCT2000	A	2	Oligochaetes (unidentified)	1
SB	24OCT2000	A	2	Polydora caulleryi	2
SB	24OCT2000	A	2	Prionospio heterobranchia	2
SB	24OCT2000	A	2	Rhynchocoela (unidentified)	1
SB	24OCT2000	A	2	Sphaerosyllis sp. A	1
SB	24OCT2000	A	2	Tharyx setigera	6
SB	24OCT2000	A	3	Ceratonereis irritabilis	1
SB	24OCT2000	A	3	Cirrophorus lyra	1
SB	24OCT2000	A	3	Grandidierella bonnieroides	1
SB	24OCT2000	A	3	Mediomastus ambiseta	1
SB	24OCT2000	A	3	Mediomastus californiensis	9
SB	24OCT2000	A	3	Oligochaetes (unidentified)	3
SB	24OCT2000	A	3	Polydora caulleryi	10
SB	24OCT2000	A	3	Prionospio heterobranchia	3
SB	24OCT2000	A	3	Sphaerosyllis sp. A	4
SB	24OCT2000	A	3	Tharyx setigera	19
SB	24OCT2000	B	1	Capitella capitata	1
SB	24OCT2000	B	1	Cossura delta	26
SB	24OCT2000	B	1	Mediomastus ambiseta	6
SB	24OCT2000	B	1	Oligochaetes (unidentified)	15
SB	24OCT2000	B	1	Tharyx setigera	6
SB	24OCT2000	B	2	Aricidea catharinae	2
SB	24OCT2000	B	2	Brania furcelligera	1
SB	24OCT2000	B	2	Caprellidae sp.	2
SB	24OCT2000	B	2	Cymadusa compta	3
SB	24OCT2000	B	2	Hesionidae (unidentified)	1
SB	24OCT2000	B	2	Mediomastus ambiseta	9
SB	24OCT2000	B	2	Oligochaetes (unidentified)	18
SB	24OCT2000	B	2	Rhynchocoela (unidentified)	1
SB	24OCT2000	B	2	Sphaerosyllis sp. A	2
SB	24OCT2000	B	2	Spiorbis sp.	1
SB	24OCT2000	B	2	Terebellidae (unidentified)	1
SB	24OCT2000	B	2	Tharyx setigera	1
SB	24OCT2000	B	3	Amphipoda (unidentified)	1
SB	24OCT2000	B	3	Aricidea catharinae	1
SB	24OCT2000	B	3	Caprellidae sp.	2
SB	24OCT2000	B	3	Cossura delta	6
SB	24OCT2000	B	3	Cymadusa compta	1
SB	24OCT2000	B	3	Hesionidae (unidentified)	1
SB	24OCT2000	B	3	Mediomastus ambiseta	1
SB	24OCT2000	B	3	Oligochaetes (unidentified)	40
SB	24OCT2000	B	3	Prionospio heterobranchia	1
SB	24OCT2000	B	3	Spiorbis sp.	1
SB	24OCT2000	B	3	Syllis cornuta	2
SB	24OCT2000	B	3	Terebellidae (unidentified)	1
SB	10JAN2001	A	1	Axiothells sp. A	3
SB	10JAN2001	A	1	Brania furcelligera	1
SB	10JAN2001	A	1	Capitella capitata	7
SB	10JAN2001	A	1	Caprellidae sp.	2
SB	10JAN2001	A	1	Ceratonereis irritabilis	2
SB	10JAN2001	A	1	Chone sp.	1

SB	10JAN2001	A	1	Cirrophorus lyra	7
SB	10JAN2001	A	1	Edotea montosa	4
SB	10JAN2001	A	1	Elasmopus sp.	1
SB	10JAN2001	A	1	Exogone sp.	6
SB	10JAN2001	A	1	Grandidierella bonnieroides	2
SB	10JAN2001	A	1	Haploscoloplos fragilis	16
SB	10JAN2001	A	1	Leptochelia rapax	1
SB	10JAN2001	A	1	Maldanidae (unidentified)	1
SB	10JAN2001	A	1	Mediomastus ambiseta	5
SB	10JAN2001	A	1	Mediomastus californiensis	2
SB	10JAN2001	A	1	Oligochaetes (unidentified)	8
SB	10JAN2001	A	1	Oxyurostylis sp.	1
SB	10JAN2001	A	1	Polydora caulleryi	38
SB	10JAN2001	A	1	Polydora socialis	1
SB	10JAN2001	A	1	Pomatoceros americanus	4
SB	10JAN2001	A	1	Prionospio heterobranchia	49
SB	10JAN2001	A	1	Rhynchocoela (unidentified)	1
SB	10JAN2001	A	1	Schistomeringos sp. A	1
SB	10JAN2001	A	1	Sphaerosyllis sp. A	22
SB	10JAN2001	A	1	Streblospio benedicti	24
SB	10JAN2001	A	1	Syllis cornuta	4
SB	10JAN2001	A	1	Tharyx setigera	19
SB	10JAN2001	A	1	Xenanthura brevitelson	2
SB	10JAN2001	A	2	Armandia maculata	2
SB	10JAN2001	A	2	Brania furcelligera	3
SB	10JAN2001	A	2	Capitella capitata	12
SB	10JAN2001	A	2	Caprellidae sp.	13
SB	10JAN2001	A	2	Chione grus	1
SB	10JAN2001	A	2	Chone sp.	2
SB	10JAN2001	A	2	Cirrophorus lyra	2
SB	10JAN2001	A	2	Cymadusa compta	2
SB	10JAN2001	A	2	Diastoma varium	1
SB	10JAN2001	A	2	Drilonereis magna	1
SB	10JAN2001	A	2	Elasmopus sp.	1
SB	10JAN2001	A	2	Exogone sp.	11
SB	10JAN2001	A	2	Grandidierella bonnieroides	1
SB	10JAN2001	A	2	Haploscoloplos fragilis	5
SB	10JAN2001	A	2	Leptochelia rapax	2
SB	10JAN2001	A	2	Mediomastus ambiseta	11
SB	10JAN2001	A	2	Mediomastus californiensis	1
SB	10JAN2001	A	2	Oligochaetes (unidentified)	9
SB	10JAN2001	A	2	Oxyurostylis sp.	1
SB	10JAN2001	A	2	Parvi lucina multilineata	1
SB	10JAN2001	A	2	Phoronis architecta	1
SB	10JAN2001	A	2	Pista palmata	1
SB	10JAN2001	A	2	Polydora caulleryi	28
SB	10JAN2001	A	2	Pomatoceros americanus	11
SB	10JAN2001	A	2	Prionospio heterobranchia	63
SB	10JAN2001	A	2	Rhynchocoela (unidentified)	4
SB	10JAN2001	A	2	Schistomeringos sp. A	9
SB	10JAN2001	A	2	Sphaerosyllis sp. A	26
SB	10JAN2001	A	2	Streblospio benedicti	22
SB	10JAN2001	A	2	Syllis cornuta	2
SB	10JAN2001	A	2	Tharyx setigera	10
SB	10JAN2001	A	3	Branchioasychis americana	3

SB	10JAN2001	A	3	Brania furcelligera	4
SB	10JAN2001	A	3	Capitella capitata	3
SB	10JAN2001	A	3	Caprellidae sp.	5
SB	10JAN2001	A	3	Ceratonereis irritabilis	1
SB	10JAN2001	A	3	Chone sp.	2
SB	10JAN2001	A	3	Cymadusa compta	2
SB	10JAN2001	A	3	Diastoma varium	1
SB	10JAN2001	A	3	Exogone sp.	12
SB	10JAN2001	A	3	Glycinde solitaria	1
SB	10JAN2001	A	3	Haploscoloplos fragilis	5
SB	10JAN2001	A	3	Mediomastus ambiseta	19
SB	10JAN2001	A	3	Oligochaetes (unidentified)	1
SB	10JAN2001	A	3	Polydora caulleryi	20
SB	10JAN2001	A	3	Pomatoceros americanus	7
SB	10JAN2001	A	3	Prionospio heterobranchia	40
SB	10JAN2001	A	3	Rhynchocoela (unidentified)	2
SB	10JAN2001	A	3	Sarsiella spinosa	1
SB	10JAN2001	A	3	Schistomeringos sp. A	1
SB	10JAN2001	A	3	Sphaerosyllis sp. A	36
SB	10JAN2001	A	3	Streblospio benedicti	17
SB	10JAN2001	A	3	Syllis cornuta	1
SB	10JAN2001	A	3	Tharyx setigera	3
SB	10JAN2001	A	3	Xenanthura brevitelson	1
SB	10JAN2001	B	1	Abra aequalis	8
SB	10JAN2001	B	1	Branchioasychis americana	1
SB	10JAN2001	B	1	Brania furcelligera	1
SB	10JAN2001	B	1	Capitella capitata	2
SB	10JAN2001	B	1	Exogone sp.	10
SB	10JAN2001	B	1	Haploscoloplos fragilis	6
SB	10JAN2001	B	1	Leptochelia rapax	1
SB	10JAN2001	B	1	Macoma tenta	1
SB	10JAN2001	B	1	Mediomastus ambiseta	7
SB	10JAN2001	B	1	Mulinia lateralis	2
SB	10JAN2001	B	1	Oligochaetes (unidentified)	17
SB	10JAN2001	B	1	Pomatoceros americanus	1
SB	10JAN2001	B	1	Prionospio heterobranchia	4
SB	10JAN2001	B	1	Rhynchocoela (unidentified)	1
SB	10JAN2001	B	1	Sarsiella spinosa	1
SB	10JAN2001	B	1	Sphaerosyllis sp. A	5
SB	10JAN2001	B	1	Streblospio benedicti	6
SB	10JAN2001	B	2	Abra aequalis	13
SB	10JAN2001	B	2	Ampelisca abdita	1
SB	10JAN2001	B	2	Anthozoa (unidentified)	1
SB	10JAN2001	B	2	Aricidea catharinae	3
SB	10JAN2001	B	2	Armandia maculata	1
SB	10JAN2001	B	2	Brania furcelligera	1
SB	10JAN2001	B	2	Capitella capitata	9
SB	10JAN2001	B	2	Cirrophorus lyra	1
SB	10JAN2001	B	2	Cossura delta	13
SB	10JAN2001	B	2	Glycera americana	1
SB	10JAN2001	B	2	Mediomastus ambiseta	21
SB	10JAN2001	B	2	Megalops	1
SB	10JAN2001	B	2	Oligochaetes (unidentified)	22
SB	10JAN2001	B	2	Prionospio heterobranchia	6
SB	10JAN2001	B	2	Sigambra tentaculata	1

SB	10JAN2001	B	2	Sphaerosyllis sp. A	2
SB	10JAN2001	B	2	Spiophanes bombyx	1
SB	10JAN2001	B	2	Streblospio benedicti	12
SB	10JAN2001	B	2	Tharyx setigera	1
SB	10JAN2001	B	3	Abra aequalis	16
SB	10JAN2001	B	3	Ampelisca abdita	4
SB	10JAN2001	B	3	Apoprionospio pygmaea	1
SB	10JAN2001	B	3	Bowmaniella brasiliensis	1
SB	10JAN2001	B	3	Capitella capitata	22
SB	10JAN2001	B	3	Cossura delta	4
SB	10JAN2001	B	3	Elasmopus sp.	1
SB	10JAN2001	B	3	Erichthonias brasiliensis	1
SB	10JAN2001	B	3	Haploscoloplos fragilis	2
SB	10JAN2001	B	3	Mediomastus ambiseta	18
SB	10JAN2001	B	3	Oligochaetes (unidentified)	50
SB	10JAN2001	B	3	Prionospio heterobranchia	10
SB	10JAN2001	B	3	Sphaerosyllis sp. A	5
SB	10JAN2001	B	3	Streblospio benedicti	10
SB	10JAN2001	B	3	Syllis cornuta	1

TWDB REVIEW

Review of "Effect of freshwater inflow on macrobenthos productivity in minor bay and river-dominated estuaries-FY01", Paul Montagna

Under the contract, the study is to produce analysis of benthic macrofaunal populations, sediment characteristics, and hydrographic measurements from sites in East Matagorda Bay, South Bay, the lower Rio Grande, and Brazos River. Sediment nutrient profiles will also be collected in East Matagorda Bay. The focus of this report was primarily on East Matagorda Bay, which is appropriate since sampling of that bay was completed, and sampling of the other sites is expected to continue under other contracts. Data are reported from work at the other sites which are part of the contract. This report is a very satisfactory final report. The comments provided below mainly require minor clarifications and typographical changes.

First Reviewer's comments:
1. In the introduction, end of the first paragraph, the use of the term "small-scale", could be misinterpreted. Suggest rephrasing to "estuary-level".
2. Figure 2 needs an x-axis scale labeling that is more tuned to the time interval of the sampling.
3. On page 10, third paragraph, last sentence, change that to than. In the fifth paragraph, the clam Mulinia escaped italicizing.
4. Page 20, start of second paragraph-missing something by "lowest".
5. On page 27, in the beginning of the discussion on benthos, the statement is made that salinities at Station F were reduced by inflows from Caney Creek or other local creeks. Since the GIW is such a factor, potentially intercepting creek water or moving in water from the San Bernard, etc, you might consider tempering the conclusion about Caney Creek influence.
6. On page 27, in the fourth paragraph, the distribution of Mulinia could be an indication that the salinity gradient is not always as it appeared during the sampling. Also, the last sentence of the paragraph appears to be missing some words.
7. The last sentence on page 27 is missing a comma or something: "more marine influence much..."
8. On page 29, last sentence, replace "if bioactive" by "is bioactive".

Second reviewer's comments:
1. In the introduction, point #2 about the latitudinal and sediment gradients is not clear. A citation might be helpful.
2. On page 1, second from last sentence, need a comma "oxygen, nutrients...".
3. The reference to the Brazos River source, paragraph 1, page 3 is a little unclear (state inflow source), and contradicts a statement in the discussion about the influence of Caney Creek. The importance of the GIW in this regard might also be noted.
4. On page 4, first paragraph, "major seasonal events" could refer to drought, rain, or freeze. Is this what is meant?
5. On page 6, the first paragraph under "Sediment Nitrogen Measurements" states that the "Distance from the surface is equivalent..." Suggest "proportional" as a better term.
6. On page 27, third paragraph, the statement about benthic biomass and abundance appears to contradict the statements of page 10: reconciliation or additional explanation is needed.