Trends In Relative Abundance Of Selected Shellfishes And Finfishes Along The Texas Coast: January 1977-December 1987

by Karen L. Meador, Lawrence W. McEachron and Terry J. Cody

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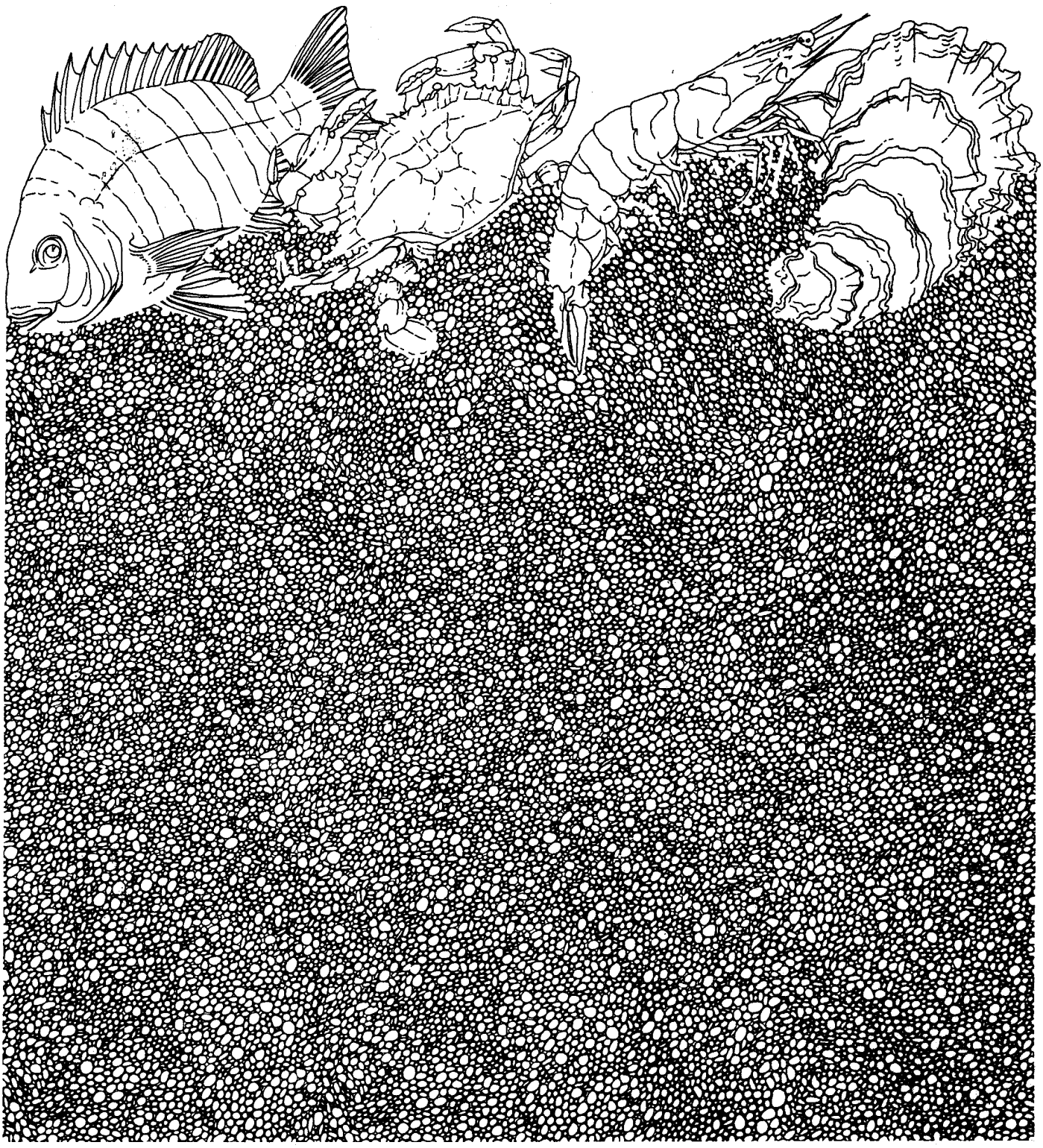

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ABSTRACT

Trends in relative abundance and size of brown shrimp (Penaeus aztecus), white shrimp (P. setiferus), pink shrimp (P. duorarum), blue crab (Callinectes sapidus), and Eastern oyster (Crassostrea virginica) in Texas marine waters were monitored using a standardized fishery independent sampling program. Bag seines were used along bay shorelines, trawls in bay water $\geq$ 1.0 m deep and in the Texas Territorial Sea (gulf water $\geq$ 1.8 m deep). Oyster dredges were used to sample in bay "reef" and "non-reef" areas. Coastwide brown shrimp catch rates increased in bag seines and bay trawls in 1987, but decreased in gulf trawls. White shrimp catch rates declined in both bag seines and bay trawls, and decreased by 50% in gulf trawls. Pink shrimp catch rates increased in bag seines during 1986-1987, but remained stable for bay and gulf trawls. Catch rates of blue crabs decreased from 1986 in bay and gulf trawls, but increased in bag seines. Catch rates of associated finfishes in trawls varied among years. Highest catches of market oysters occurred during December.

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INTRODUCTION

The Texas commercial fishery is composed of many components but reported landings (weight) are dominated by shrimp (Penaeus sp.) followed by blue crab (Callinectes sapidus), Eastern oyster (Crassostrea virginica), and finfishes (Osburn et al. 1987). During 1977-1986 shrimp coastwide annual reported landings averaged over 37 million kg worth $164 million to the fishermen; they consisted of 73.9% brown (P. aztecus) and pink (P. duorarum) shrimps, 25.0% white shrimp (P. setiferus), and < 1.1% other species. Eastern oyster and blue crab coastwide annual reported landings averaged 1.6 million kg ($5.5 million) and 3.8 million kg ($2.5 million), respectively, during 1977-1986.

The shrimp fishery is regulated primarily by the Texas Legislature through the Shrimp Conservation Act. The Texas Parks and Wildlife Commission (TPWC) has the responsibility for adjusting the Gulf of Mexico (gulf) shrimping season dates and has regulatory authority in four of the 18 coastal counties. The TPWC has regulatory authority for the harvest of blue crab in all Texas waters and for the harvest of oysters in 10 of the 18 coastal counties. In 1985, the Texas Legislature provided the TPWC regulatory authority for the harvest of shrimp and oysters in all Texas waters after shrimp and oyster fishery management plans are developed by the Texas Parks and Wildlife Department (TPWD) and approved by the TPWC.

The Texas Legislature mandated that sound management of the shellfish resources be based on statistically reliable data. Penaeid shrimp populations have been monitored in at least some bays since 1958 (Benefield and Baker 1980). Oyster populations have been monitored in Galveston Bay since 1951 (Hofstetter 1977). Blue crab populations have been monitored in Texas bay systems since 1977 (Hammerschmidt 1982). The TPWD initiated a standardized fishery-independent monitoring program in 1975 using gill nets, in 1977 using bag seines, in 1982 using trawls in bays, in 1984 using oyster dredges, and in 1985 using trawls in the gulf to monitor trends and assess the relative abundance and size of shellfishes and finfishes in Texas marine waters.

The TPWD collects information on all species captured in all gears. Finfishes caught in bag seines and gill nets are reported in Rice et al. (1988).

The objectives of this study were to:

1. monitor trends in brown shrimp, white shrimp, pink shrimp, blue crab, and Eastern oyster relative abundance and size in Texas bay systems and in the gulf off Texas, and

2. publish the results in a report which will assist resource managers to effectively manage selected shellfishes.

Differences in the statistics in this report compared to previous versions are due to updating the data base. This report should be considered the most accurate to date.

MATERIALS AND METHODS

Monofilament gill nets and multifilament bag seines were used along shorelines in nine bay systems during April 1983-November 1987 and during October 1977-December 1987, respectively (Fig. 1-9). Detailed descriptions of the gears, sample stations, and sample procedures are reported by Rice et al. (1988).

Trawls (6.1 m wide at mouth with 3.8-cm stretched mesh throughout, and doors 1.2 m long and 0.6 m tall) were used in nine bay systems during January 1982-December 1987. East Matagorda Bay was sampled beginning April 1987 (Fig. 1-9). Bays were stratified into two zones: Zone 1 (upper bay nearest mouths of rivers) and zone 2 (lower bay farthest from rivers). Trawl sites in each zone were randomly selected from bay grids (1-minute longitude by 1-minute latitude) that contained water $\geq$ 1 m deep in at least 1/3 of the grid and which were known to be free of obstructions. Five stations were sampled in each of zone 1 and zone 2 in each bay system during the 1st-15th and during the 16th-31st of each month except in the upper and lower Laguna Madre systems. In both the upper and lower Laguna Madre systems all water was designated as zone 2. No station was duplicated in a month. Trawls were pulled in a circular motion near the center of each grid. All tows were 10 minutes long.

Trawls, identical to those used in the bays, were used in the Texas Territorial Sea ($\leq$ 16.7 km from shore) during January 1986-December 1987 (Fig. 10). Five gulf areas were selected for sampling: 24.1 km either side of each of the Sabine Pass jetties (Sabine), Galveston jetties (Galveston), Matagorda jetties (Port O'Connor), and Aransas Pass jetties (Port Aransas), and 48.2 km north from the Texas-Mexico border (Port Isabel). Trawl sites in each area were randomly selected from gulf grids that contained water $\geq$ 1.8 m deep in at least 1/3 of the grid and which also were in the Texas Territorial Sea and free from known obstructions. Eight stations were sampled in each area during the 1st-15th and during the 16th-31st of each month. No station was duplicated in a month. Trawls were pulled linearly and direction of tow (north or south) was randomly chosen for the initial tow and alternated on subsequent tows. All tows were 10 minutes long.

Trawls (6.1 m wide at mouth) were used during the day in the gulf off Sabine, Galveston, Port O'Connor, Port Aransas, and Port Mansfield-Port Isabel during June and November 1987 in conjunction with the Southeast Area Monitoring and Assessment Program (SEAMAP). Detailed descriptions of the gear, sample stations, and sample procedures are reported by Stuntz et al. (1984).

Oyster dredges [8-tooth Louisiana style: 46 cm wide, 25 cm tall with a 36-cm deep bag (6 bottom rows of linked metal rings 5 cm in diameter; four top rows of 7.6-cm mesh webbing made of 0.8-cm nylon rope)] were used in nine Texas bay systems during January 1986-December 1987 (Fig. 1-9). Each bay was stratified into "reef" (mapped area in which Eastern oysters form reefs and are $\geq$ 0.2 m higher than adjacent bottom for a continuous distance of $\geq$ 91.4 m long and 0.4 m wide) and "non-reef" (remaining bay bottom $\geq$ 1 m deep) areas. Oyster dredge sites in each "reef" and "non-reef" area were randomly selected from bay grids. Each selected grid was divided into 144 5-sec "gridlets". All "gridlets" that contained the respective "reef" or "non-reef" area were used to randomly choose sample sites. During the 1st-15th and 16th-31st of each month, 38 stations (28 "reef"; 10 "non-reef") were sampled in each of Galveston and Aransas Bays; 23 stations (13 "reef"; 10 "non-reef") were sampled in each of East Matagorda, Matagorda, San Antonio, and Corpus Christi Bays; 15 stations (5 "reef"; 10 "non-reef") were sampled in each of Sabine Lake and lower Laguna Madre; and 10 stations (10 "non-reef") in upper Laguna Madre. Stations ("reef" and "non-reef") were duplicated no more than twice each month except in Sabine Lake and lower Laguna Madre where 5 replicate "reef" tows were made in each bay. Dredges were pulled linearly for 30 seconds.

Each sampling week for trawls and oyster dredges extended from sunrise Monday through sunset the following Sunday. Collections were made during day only.

Blue crab gill net catch rates were calculated by dividing the total number caught by the total h fished from all samples in a season. Trawl and bag seine catch rates of blue crab, brown shrimp, pink shrimp, and white shrimp were calculated by dividing the total number of each species by the total h fished (trawl) or ha sampled (bag seine) from all samples in a month. Catch rates of associated finfishes caught in trawls were calculated identically to those for shellfishes. Live Eastern oysters were grouped into spat (5-25 mm), small oysters (26-75 mm), and market oysters (> 76 mm); catch rates were calculated by dividing the total number captured by the total h fished from all samples in a month. Coastwide catch rates were weighted by the length of each bay system's shoreline (gill net, bag seine), by the amount of surface area over water $\geq$ 1 m deep (Matlock and Ferguson 1982) in each bay system (bay trawl), or by the total number of trawlable grids (gulf trawl). Both bag seine and trawl annual catch rates were calculated from monthly means (unweighted by sample size).

Total length (carapace width measured from spine to spine) of blue crabs caught in gill nets were obtained for the first 19 individuals caught in each mesh size each week in each bay system; mean lengths were calculated for each of the four mesh sizes in each sample. Mean lengths for the combined gill net meshes were calculated by weighting the mean lengths in each mesh by the proportion of blue crabs caught in each mesh. Total lengths (shrimp:

tip of rostrum to tip of telson) for brown shrimp, pink shrimp, white shrimp, and blue crab caught in bag seines were obtained from a random selection of no more than 19 individuals of each species in each sample. Total lengths of selected shrimps and blue crab caught in trawls were obtained from a random selection of no more than 50 shrimp of each species and 35 blue crabs in each sample. Total lengths of associated finfishes (tip of anterior-most part to tip of compressed caudal fin) caught in trawls were obtained from a random selection of no more than 19 individuals of each species in each sample. Total lengths (hinge to bill) of Eastern oysters caught in oyster dredges were obtained from a random selection of no more than 19 live oysters in each sample. Coastwide lengths (nearest 1 mm) of all organisms were weighted according to the catch rate in each bay system.

Bottom salinity, water temperature, and turbidity were measured prior to each trawl and oyster dredge sample; means were calculated for each month. Surface salinity, water temperature, and turbidity were measured at the set and pickup for each gill net and prior to each bag seine sample. Beginning January 1987, turbidity values were recorded in Nephelometric units. Hydrologic characteristic means for gill nets (season) and bag seines (month) are reported by Rice et al. (1988).

RESULTS

Gill Net

Spring and fall coastwide blue crab catch rates were $\leq$ 0.2/h in all years (Tables 1 and 2). Catch rates among bay systems during spring ranged from < 0.1/h in upper Laguna Madre during 1986 and 1987 to 0.6/h in East Matagorda during 1986. Catch rates during fall ranged from < 0.1/h in all bay systems, except Sabine Lake, San Antonio, Corpus Christi, and lower Laguna Madre, during 1986 and in Matagorda during 1985 to 0.3/h in East Matagorda, upper, and lower Laguna Madre during 1983, and in San Antonio and upper Laguna Madre during 1987.

Bag Seine

Coastwide annual blue crab bag seine catch rates fluctuated from 49/ha in 1978 to 113/ha in 1985 (Table 3). Catch rates among bay systems ranged from 9/ha in lower Laguna Madre during 1977 to 193/ha in Aransas Bay during 1982.

Coastwide annual brown shrimp catch rates gradually increased from 1977 to 1982 (137-510/ha), then fluctuated during 1983-1986. The highest coastwide catch rate (611/ha) occurred in 1987 (Table 3). Catch rates among bay systems ranged from 9/ha in upper Laguna Madre during 1977 to 1,162/ha in Galveston Bay during 1987.

The highest coastwide annual pink shrimp catch rates occurred during 1981 (24/ha) and 1982 (26/ha); they ranged from 3-12/ha in all other years (Table 3). Highest catch rates generally occurred in Aransas Bay (0-124/ha), Corpus Christi Bay (0-67/ha), and upper Laguna Madre (6-48/ha).

The highest coastwide annual white shrimp catch rate occurred during 1982 (1,277/ha); fluctuations between 242-755/ha occurred in all other years (Table 3). Catch rates among bay systems ranged from 2/ha in upper Laguna Madre during 1986 to 3,560/ha in Galveston Bay during 1982.

Coastwide monthly bag seine catch rates during January-December 1987 indicated seasonal peaks in abundance varied among species (Appendix A). Blue crab catch rates were highest during March-May. Brown shrimp catch rates were highest during April-July. Highest pink shrimp catch rates occurred during March and September-November; none were caught in Galveston, East Matagorda, San Antonio and lower Laguna Madre. White shrimp catch rates were highest during July-November.

Bay Trawl

Coastwide annual blue crab bay trawl catch rates ranged from 12/h in 1987 to 21/h in 1985 (Table 4). Catch rates among bay systems ranged from 2/h in Corpus Christi Bay during 1983 to 50/h in lower Laguna Madre during 1984.

Coastwide annual brown shrimp catch rates were lower in 1982 (27/h), 1983 (21/h), and 1986 (24/h) than in 1984 and 1985 (30/h each year) and 1987 (32/h) (Table 4). Catch rates among bay systems ranged from < 1/h in Sabine Lake during 1986 to 106/h in Aransas Bay during 1984.

Coastwide annual pink shrimp catch rates were $\leq$ 2/h in all years (Table 4). Catch rates among bay systems ranged from 0/h in Sabine Lake during 1986 and 1987, Galveston Bay during 1984, and lower Laguna Madre during 1982 to 9/h in Aransas Bay during 1983.

Coastwide annual white shrimp catch rates decreased from 47/h in 1982 to 17/h in 1987 (Table 4). Catch rates among bay systems ranged from 1/h in lower Laguna Madre during 1985 to 88/h in Galveston Bay during 1982.

Coastwide monthly bay trawl shellfish catch rates during January-December 1987 indicated seasonal peaks in abundance varied among species (Appendix A). Blue crab catch rates were highest during May-June. Brown shrimp catch rates were highest during May-July. The highest catch rates of pink shrimp occurred during February-May and November-December. White shrimp catch rates were highest during August-October.

Individual finfish coastwide and monthly catch rates and mean lengths varied among species, among bays, among years, and among months (Table 4; Appendix A).

Hydrologic characteristics at bay trawl stations varied among months and among bay systems (Appendix B). Bay system salinities were generally higher (21.3-40.4 o/oo) in upper and lower Laguna Madre than in any other bay system (1.6-34.3 o/oo). Water temperatures followed seasonal trends increasing from lowest values during January (10.2-14.2 C) to highest values during August (28.8-30.3 C) then declining through December (12.7-17.0 C). Turbidities ranged from 3-55 Nephelometric Turbidity Units (NTU) among bay systems.

Gulf Trawls

Coastwide annual blue crab gulf trawl catch rates have been $\leq$2/h in all years (Table 5). Catch rates among gulf areas ranged from < 1/h off Galveston during 1985, Port Aransas during 1987, and Port Isabel during 1985-1987 to 4/h off Galveston during 1986. Coastwide monthly catch rates were highest (3/h) during August (Appendix A).

Coastwide annual brown shrimp catch rates decreased from 20/h in 1985 to 8/h in 1987. Catch rates among gulf areas ranged from 1/h off Port Isabel in 1987 to 47/h off Port Aransas in 1985 (Table 5). Coastwide monthly catch rates were highest (37/h) during June (Appendix A).

Coastwide annual pink shrimp catch rates were 1/h in all years (Table 5). Catch rates among gulf areas ranged from 0/h off Sabine in 1986 and 1987, and off Galveston in 1987 to 3/h off Port Aransas in 1986 and 1987. Coastwide monthly catch rates were highest (3/h) during November (Appendix A).

Coastwide annual white shrimp catch rates decreased from 23/h in 1985 to 9/h in 1987. Catch rates among gulf areas ranged from 1/h off Port Isabel for all years to 53/h off Galveston in 1985 (Table 5). Coastwide monthly catch rates were highest (38/h) during November (Appendix A).

Individual finfish coastwide and monthly catch rates and mean lengths varied among species, among gulf areas, and among months (Appendix A).

Hydrologic characteristics at gulf trawl stations varied among months and among gulf areas (Appendix B). Gulf area salinities were generally higher (25.1-38.6 o/oo) off Port Isabel and Port Aransas than the other gulf areas (22.9-35.6 o/oo). Water temperatures followed seasonal trends increasing from lowest values in January (12.2-15.3 C) to highest values in August (25.6-29.8 C). Turbidities ranged from 1-31 NTU among gulf areas.

SEAMAP

Summer

Catch rates of brown shrimp by depth zone ranged from 606/h in 19-37 m to 16/h in 74-91 m during 1987 (Appendix C). Catch rates in all depth zones during 1987 were less than those recorded during 1982-1986.

White shrimp were caught primarily in waters from 0-18 m deep during all years (Appendix C). Catch rates increased each year from 15/h in 1982 to 41/h in 1985 then declined to 33/h in 1986 and 15/h in 1987 in the 0-18 m depth zone.

Pink shrimp were captured in waters from 0-55 m deep (0-195/h) during all years (Appendix C). They were caught predominately in waters 0-37 m deep.

Blue crabs were caught primarily in the 0-18 m zone (Appendix C). Catch rates ranged from 0-20/h in all years.

Fall

During fall 1987, brown shrimp were caught in all depth zones except 74-91 m, with highest catch rates (50/h) in 19-37 m (Appendix C). White shrimp and pink shrimp were caught in waters 0-37 m deep with greatest catch rates (89/h and 18/h, respectively) in 0-18 m. Blue crabs were only caught in 19-37 m at a rate of < 1/h.

Oyster Dredge

Reef areas

Coastwide annual catch rates of Eastern oyster spat increased from 806/h in 1986 to 1,356/h in 1987. Catch rates among bay systems ranged from 26/h in Sabine Lake in 1986 to 4,269/h in Aransas Bay during 1987 (Table 6). Annual spat catch rates increased in all bays in 1987 except East Matagorda, Matagorda, San Antonio and lower Laguna Madre. Coastwide monthly catch rates were highest (1,763-4,625/h) during September-December (Appendix A).

Coastwide annual catch rates of small Eastern oysters increased from 932/h in 1986 to 1,120/h in 1987. Catch rates among bay systems ranged from 22/h in lower Laguna Madre to 2,499/h in Aransas Bay during 1987 (Table 6). Annual catch rates of small oysters increased in all bays in 1987 except Galveston, San Antonio and lower Laguna Madre. Coastwide monthly catch rates in 1987 were highest (1,492-1,872/h) during September-December (Appendix A).

Coastwide annual catch rates of market Eastern oysters decreased from 398/h in 1986 to 295/h in 1987. Catch rates among bay systems ranged from 3/h in lower Laguna Madre in 1987 to 674/h in Galveston

Bay during 1985 (Table 6). Annual market catch rates in 1987 decreased in all bays except Sabine Lake and Aransas. Coastwide monthly catch rates in 1987 were highest (398/h) during December (Appendix A).

Hydrologic characteristics at oyster reef stations varied among months and among bay systems (Appendix B). Bay system salinities were generally higher (25.2-41.5 o/oo) in lower Laguna Madre than in any other bay system (2.3-33.5 o/oo). Water temperatures followed seasonal trends increasing from lowest values during January (9.4-14.4 C) to highest values during August (28.9-30.6 C) then declining through December (13.3-17.2 C). Turbidities ranged from 3-75 NTU among bay systems.

Non-reef Areas

Coastwide annual catch rates of Eastern oyster spat increased from 106/h in 1986 to 116/h in 1987. Catch rates among bay systems ranged from 0/h in upper Laguna Madre in 1986 and 1987 to 403/h in East Matagorda Bay during 1986 (Table 7). Coastwide monthly catch rates in 1987 were highest (715/h) during September (Appendix A).

Coastwide annual catch rates of small Eastern oysters decreased from 103/h in 1986 and 63/h in 1987. Catch rates among bay systems ranged from 0/h in upper and lower Laguna Madre in 1986 and 1987 to 454/h in Aransas Bay during 1986 (Table 7). Coastwide monthly catch rates in 1987 were highest (203/h) during September (Appendix A).

Coastwide annual catch rates of market Eastern oysters decreased from 36/h in 1986 to 30/h in 1987. Catch rates among bay systems ranged from 0/h in upper and lower Laguna Madre in 1986 and 1987 to 120/h in East Matagorda Bay during 1986 (Table 7). Coastwide monthly catch rates in 1987 were highest (79/h) during September (Appendix A).

Hydrologic characteristics of oyster non-reef stations varied among months and among bay systems (Appendix B). Bay system salinities were generally higher (18.4-40.4 o/oo) in Corpus Christi Bay and upper and lower Laguna Madre than in other bay systems (2.6-26.2 o/oo). Water temperatures followed seasonal trends increasing from lowest values during January (9.4-14.5 C) to highest values during August (28.1-30.3 C) then declining through December (12.5-16.5 C). Turbidities ranged from 4-63 NTU among bay systems.

DISCUSSION

The TPWD is mandated by the Texas Legislature and the TPWC to investigate the supply, economic value, environment, breeding habits, sex ratios, effects of fishing, and other factors or conditions causing increases or decreases in the supply of shellfishes and

finfishes in Texas waters. Long-term trend data based on independent standardized monitoring programs are necessary to assess changes in relative abundance of these populations. Data in this report can be used to determine long-term trends in abundance and stability of shellfish and finfish populations in Texas coastal waters.

Data obtained during this study have been used to implement management regulations. Shrimp data were used to recommend the dates for the closure of Texas gulf waters to shrimping (Bryan 1985, 1986, In preparation). Oyster data were used to implement oyster season closures in Galveston Bay from 9 December 1986-19 February 1987 and in all other bays (except San Antonio) from 13 January-19 February 1987 (TPWD unpublished data). Oyster data were used to establish the oyster transplant season in Galveston Bay (TPWD unpublished data). All of these data are also being used to develop management plans for shrimp and oysters as mandated by the Texas Legislature, and for blue crabs and selected finfishes as part of the TPWD's 6-year plan.

Relative abundance of shellfishes is not uniform throughout the year. The monthly bag seine, trawl, and oyster dredge catches in this report indicate specific periods of high abundance for brown shrimp, white shrimp, pink shrimp, blue crab, and Eastern oyster. A more efficient method of estimating abundance from year to year (estimate having the highest precision for effort expended) might be to identify and pool data for months which do not have significantly different catch rates. It is recommended that periods of high abundance in bag seines, trawls, and oyster dredges be statistically determined for each of the species for the appropriate gear and that these "seasonal" catch rates be considered for presentation in future reports.

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Table 1. Annual mean catch rates (No./h) and mean total lengths (mm), of blue crab caught with 183-m gill nets in Texas bay systems during spring 1983-1987. Blank indicates no measurement taken; ND = no data.

Bay system	Year	Mesh Size 7.6-cm No./h	7.6-cm Length	10.2-cm No./h	10.2-cm Length	12.7-cm No./h	12.7-cm Length	15.2-cm No./h	15.2-cm Length	Total No./h	Total Length
Sabine Lake	1983	ND		ND		ND		ND		ND	
	1984	ND		ND		ND		ND		ND	
	1985	ND		ND		ND		ND		ND	
	1986	0.1	138	0.1	147	<.1	159	<.1	179	0.2	146
	1987	0.1	145	0.1	153	<.1	158	<.1	150	0.3	152
Galveston	1983	<.1	137	0.1	153	<.1	155	<.1	155	0.2	151
	1984	<.1	129	0.1	155	<.1	147	<.1	177	0.2	150
	1985	0.1	136	0.1	153	<.1	150	<.1	164	0.3	149
	1986	0.1	142	0.2	151	<.1	157	<.1	157	0.3	151
	1987	0.1	130	0.1	143	<.1	145	<.1	129	0.3	139
East Matagorda	1983	0.1	132	0.2	159	<.1	161	<.1	172	0.3	154
	1984	0.1	120	0.2	135	<.1	151	0.0		0.4	135
	1985	0.1	132	0.2	150	0.1	159	<.1	171	0.5	151
	1986	0.2	116	0.2	137	0.1	147	<.1	134	0.6	133
	1987	<.1	135	0.2	135	<.1	141	<.1	150	0.3	138
Matagorda	1983	<.1	151	<.1	150	<.1	155	<.1	140	0.1	151
	1984	<.1	127	0.1	150	<.1	155	<.1	137	0.1	143
	1985	0.1	140	<.1	144	<.1	156	<.1	144	0.2	144
	1986	<.1	133	0.1	137	<.1	144	<.1	151	0.2	140
	1987	<.1	131	0.1	133	<.1	148	<.1	151	0.1	138
San Antonio	1983	0.1	123	0.1	144	<.1	151	<.1	153	0.2	142
	1984	<.1	119	0.1	143	<.1	151	<.1	142	0.2	137
	1985	<.1	136	0.1	131	<.1	143	<.1	130	0.3	136
	1986	<.1	131	<.1	137	<.1	148	<.1	128	0.1	135
	1987	<.1	127	0.1	144	<.1	142	<.1	156	0.2	140
Aransas	1983	0.1	131	0.1	147	<.1	146	<.1	139	0.3	142
	1984	0.1	133	0.1	143	<.1	165	<.1	156	0.2	142
	1985	0.1	130	0.1	144	<.1	151	<.1	151	0.2	141
	1986	<.1	131	0.1	143	<.1	157	<.1	142	0.1	144
	1987	<.1	112	<.1	170	<.1	154	<.1	157	0.1	155

Table 1. (Cont'd.)

Bay system	Year	Mesh Size: 7.6-cm No./h	7.6-cm Length	10.2-cm No./h	10.2-cm Length	12.7-cm No./h	12.7-cm Length	15.2-cm No./h	15.2-cm Length	Total No./h	Total Length
Corpus Christi	1983	<.1	149	0.1	146	<.1	159	<.1	176	0.2	151
	1984	0.1	136	0.1	147	<.1	153	<.1	156	0.3	147
	1985	0.1	140	0.1	150	<.1	156	<.1	155	0.2	149
	1986	<.1	123	<.1	153	<.1	156	<.1	171	0.1	154
	1987	<.1	148	0.1	149	<.1	158	<.1	150	0.1	151
Upper Laguna Madre	1983	<.1	138	<.1	164	<.1	164	<.1	168	0.1	156
	1984	0.1	134	0.1	145	<.1	148	<.1	164	0.3	145
	1985	0.1	145	<.1	141	<.1	134	<.1	132	0.1	141
	1986	<.1	138	<.1	146	<.1	154	0.0		<.1	147
	1987	<.1	122	<.1	144	<.1	147	0.0		<.1	137
Lower Laguna Madre	1983	<.1	133	0.1	147	<.1	154	<.1	158	0.2	145
	1984	0.1	127	0.1	145	<.1	157	<.1	132	0.2	142
	1985	<.1	155	0.1	157	<.1	161	<.1	153	0.2	158
	1986	<.1	140	<.1	150	<.1	156	<.1	126	0.1	148
	1987	<.1	141	<.1	145	<.1	157	<.1	126	0.1	142
Coastwide	1983	<.1	134	0.1	149	<.1	153	<.1	152	0.2	147
	1984	0.1	129	0.1	146	<.1	152	<.1	158	0.2	144
	1985	0.1	137	0.1	147	<.1	152	<.1	153	0.2	147
	1986	<.1	134	0.1	145	<.1	154	<.1	151	0.2	145
	1987	<.1	132	0.1	143	<.1	148	<.1	139	0.1	141

Table 2. Annual mean catch rates (No./h) and mean total lengths (mm), of blue crab caught with 183-m gill nets in Texas bay systems during fall 1983-1987. Blank indicates no measurement taken; ND = no data.

Bay system	Year	Mesh Size: 7.6-cm No./h	7.6-cm Length	10.2-cm No./h	10.2-cm Length	12.7-cm No./h	12.7-cm Length	15.2-cm No./h	15.2-cm Length	Total No./h	Total Length
Sabine Lake	1983	ND		ND		ND		ND		ND	
	1984	ND		ND		ND		ND		ND	
	1985	ND		ND		ND		ND		ND	
	1986	0.1	141	0.1	158	<.1	155	<.1	149	0.2	150
	1987	0.1	149	0.1	158	0.1	151	<.1	142	0.2	154
Galveston	1983	0.1	134	0.1	140	<.1	135	<.1	130	0.1	136
	1984	<.1	141	<.1	158	<.1	169	<.1	156	0.1	151
	1985	<.1	150	<.1	154	<.1	131	<.1	152	0.1	149
	1986	<.1	143	<.1	144	<.1	147	<.1	198	<.1	146
	1987	<.1	153	<.1	150	<.1	123	<.1	128	0.1	140
East Matagorda	1983	<.1	132	0.1	150	0.1	163	<.1	158	0.3	153
	1984	<.1	137	<.1	136	<.1	138	<.1	180	0.1	140
	1985	<.1	154	<.1	149	<.1	156	<.1	156	0.1	154
	1986	<.1	130	<.1	167	<.1	149	<.1	135	<.1	144
	1987	<.1	178	<.1	167	<.1	144	<.1	152	0.1	158
Matagorda	1983	<.1	149	0.1	152	<.1	154	<.1	141	0.1	151
	1984	0.1	145	<.1	152	0.1	146	<.1	139	0.1	147
	1985	<.1	148	<.1	137	<.1	123	<.1	169	<.1	142
	1986	<.1	135	<.1	134	<.1	147	<.1	252	<.1	161
	1987	0.1	152	0.1	158	<.1	148	0.0		0.2	154
San Antonio	1983	<.1	134	<.1	140	<.1	137	<.1	160	0.1	138
	1984	<.1	143	0.1	149	<.1	152	<.1	142	0.1	147
	1985	<.1	133	<.1	143	<.1	149	<.1	154	0.1	139
	1986	<.1	146	<.1	144	<.1	147	<.1	162	0.1	146
	1987	0.1	142	0.1	154	<.1	162	<.1	171	0.3	153
Aransas	1983	0.1	137	0.1	149	<.1	155	<.1	153	0.2	146
	1984	<.1	140	0.1	143	0.1	151	<.1	156	0.2	145
	1985	<.1	134	<.1	138	<.1	147	<.1	148	0.1	141
	1986	<.1	156	<.1	133	<.1	137	<.1	112	<.1	138
	1987	<.1	143	<.1	159	<.1	158	<.1	174	0.1	158

Table 2. (Cont'd.)

Bay system	Year	Mesh Size: 7.6-cm No./h	7.6-cm Length	10.2-cm No./h	10.2-cm Length	12.7-cm No./h	12.7-cm Length	15.2-cm No./h	15.2-cm Length	Total No./h	Total Length
Corpus Christi	1983	0.1	139	0.1	150	0.1	147	<.1	142	0.2	146
	1984	0.1	137	0.1	140	<.1	148	<.1	150	0.2	141
	1985	<.1	139	<.1	145	<.1	156	<.1	145	0.1	143
	1986	<.1	144	<.1	148	<.1	135	<.1	129	0.1	144
	1987	0.1	151	<.1	160	<.1	162	<.1	175	0.1	157
Upper Laguna Madre	1983	0.1	140	0.1	146	<.1	153	<.1	162	0.3	146
	1984	0.1	135	0.1	139	<.1	135	<.1	143	0.2	138
	1985	0.1	147	0.1	145	<.1	150	<.1	151	0.2	147
	1986	<.1	146	<.1	148	<.1	143	<.1	152	<.1	147
	1987	0.1	154	0.2	156	0.1	165	<.1	154	0.3	157
Lower Laguna Madre	1983	0.1	143	0.1	145	0.1	151	<.1	150	0.3	146
	1984	<.1	143	0.1	148	0.1	149	<.1	161	0.2	148
	1985	<.1	137	<.1	155	<.1	167	<.1	157	0.1	148
	1986	<.1	148	<.1	145	<.1	153	<.1	156	0.1	149
	1987	<.1	152	0.1	152	<.1	153	<.1	148	0.1	152
Coastwide	1983	0.1	138	0.1	146	<.1	149	<.1	147	0.2	144
	1984	<.1	140	0.1	146	<.1	149	<.1	151	0.1	145
	1985	<.1	142	<.1	146	<.1	148	<.1	152	0.1	145
	1986	<.1	144	<.1	146	<.1	147	<.1	169	0.1	147
	1987	<.1	150	0.1	155	<.1	153	<.1	151	0.2	153

Table 3. Annual mean catch rates (No./ha) and mean total lengths (mm) of select shellfishes caught with 18.3-m bag seines in Texas bay systems during 1977-1987. Blank indicates no measurement taken; ND = no data.

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Blue crab	1977[a]	ND		103	43	ND		31	46	52	46	95	56	56	38	16	58	9	63	56	47
	1978	ND		66	52	ND		10	38	52	51	57	62	33	43	98	61	19	60	49	55
	1979	ND		106	52	ND		27	51	76	49	84	62	152	43	90	48	61	54	83	51
	1980	ND		122	54	ND		24	56	119	45	65	52	80	38	65	40	176	46	95	48
	1981	ND		58	53	ND		44	44	51	54	85	45	86	40	42	58	167	35	75	44
	1982	ND		101	48	ND		31	51	108	42	193	48	52	49	35	54	175	42	102	46
	1983	ND		148	43	15	77	35	34	105	40	145	43	48	40	36	59	112	33	94	41
	1984	ND		88	58	58	60	58	42	42	46	61	50	62	42	37	61	80	46	64	51
	1985	ND		144	49	107	54	56	46	41	42	141	38	184	37	73	52	152	34	113	42
	1986	37	79	90	55	86	55	58	53	62	46	30	48	77	40	23	45	91	41	63	49
	1987	23	68	163	41	87	38	36	51	64	55	35	35	80	47	50	59	72	44	77	45
Brown shrimp	1977[a]	ND		139	46	ND		64	52	200	49	229	54	99	58	9	63	200	53	137	51
	1978	ND		540	50	ND		167	63	102	63	152	60	258	56	188	68	120	53	245	56
	1979	ND		482	58	ND		194	66	69	63	438	63	499	61	53	59	155	59	285	61
	1980	ND		495	52	ND		143	68	553	60	386	60	183	62	64	64	234	56	314	58
	1981	ND		719	57	ND		157	74	310	64	355	60	679	53	102	76	1008	58	490	59
	1982	ND		915	64	ND		207	64	606	51	505	54	428	57	62	63	565	61	510	60
	1983	ND		484	60	100	76	248	66	310	57	530	60	295	56	58	65	532	50	360	58
	1984	ND		623	64	294	65	198	56	244	66	730	66	291	58	82	61	389	63	393	64
	1985	ND		522	60	413	59	364	63	306	56	755	61	370	55	288	70	1007	56	525	59
	1986	605	74	166	58	558	63	524	67	137	65	231	63	204	58	193	66	627	54	318	62
	1987	401	70	1162	58	388	56	445	64	158	60	464	62	293	60	417	56	963	58	611	59
Pink shrimp	1977[a]	ND		0		ND		0		12	41	0		0		48	77	0		7	69
	1978	ND		0		ND		0		<1	100	<1	63	0		26	77	0		3	77
	1979	ND		0		ND		0		0		0		58	51	12	78	<1	106	7	57
	1980	ND		0		ND		0		6	42	13	50	58	55	10	60	2	75	10	55
	1981	ND		0		ND		0		28	54	87	44	67	54	8	62	6	49	24	49
	1982	ND		0		ND		0		0		124	47	67	46	7	61	3	52	26	48
	1983	ND		0		0		0		9	51	50	56	31	47	12	54	0		12	53
	1984	ND		0		0		<1	25	1	73	15	48	26	48	14	65	<1	79	6	53
	1985	ND		0		0		0		0		18	59	8	49	8	76	0		4	61
	1986	0		0		<1	73	0		<1	68	15	39	25	49	6	43	3	65	5	46
	1987	0		0		0		<1	32	0		11	52	60	52	14	50	0		8	52

Table 3. (Cont'd.).

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
White shrimp	1977[a]	ND		1586	55	ND		1054	102	115	47	26	63	84	57	36	85	23	57	554	69
	1978	ND		858	66	ND		554	70	130	61	92	49	62	52	21	55	130	53	335	65
	1979	ND		1720	61	ND		543	70	212	56	99	64	817	52	5	53	143	47	608	61
	1980	ND		571	64	ND		522	68	291	57	133	61	141	69	62	71	18	45	288	64
	1981	ND		1393	62	ND		805	59	66	64	183	50	173	51	19	56	264	61	527	60
	1982	ND		3560	58	ND		1750	64	661	51	297	43	369	54	14	51	326	50	1277	58
	1983	ND		1524	50	348	70	394	65	135	64	129	53	135	42	7	71	218	52	478	53
	1984	ND		1543	59	409	65	1438	71	166	56	408	53	311	63	17	58	625	58	755	62
	1985	ND		307	61	552	61	584	63	37	44	239	44	33	53	6	73	204	54	242	58
	1986	308	73	1389	62	173	65	675	66	140	66	287	44	101	58	2	48	175	49	491	61
	1987	682	68	972	53	577	61	579	67	90	54	111	65	152	61	8	37	121	51	386	58

[a]Values include Oct-Dec only.

Table 4. Annual mean catch rates (No./h) and mean total lengths (mm) of select organisms caught with 6.1-m trawls in Texas bay systems during 1982-1987. Blank indicates no measurement taken; ND = no data.

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
SHELLFISHES																					
Blue crab	1982[a]	ND		28	91	ND		5	99	17	81	29	66	7	97	9	148	10	100	17	89
	1983	ND		24	88	ND		10	86	21	80	40	81	2	96	7	113	12	97	18	86
	1984	ND		19	92	ND		4	88	8	82	31	81	8	88	24	106	50	86	15	90
	1985	ND		30	79	ND		10	85	19	76	23	72	5	115	21	103	36	86	21	81
	1986	4	132	19	79	ND		9	85	13	85	17	78	10	88	12	100	10	85	13	83
	1987	3	135	13	78	19[c]	87	7	77	27	93	12	84	4	95	11	108	13	88	12	86
Brown shrimp	1982[a]	ND		23	90	ND		25	94	17	101	54	80	40	90	40	101	6	61	27	91
	1983	ND		12	99	ND		26	100	31	99	57	91	8	99	8	102	9	66	21	97
	1984	ND		13	102	ND		7	102	58	96	106	80	50	103	25	108	6	74	30	94
	1985	ND		33	75	ND		24	89	27	90	67	81	24	96	16	108	11	63	30	83
	1986	<1	99	10	94	ND		19	99	47	98	75	96	28	95	10	108	10	64	24	96
	1987	3	92	17	88	5[c]	76	32	91	63	85	69	88	45	94	11	100	3	70	32	89
Pink shrimp	1982[a]	ND		<1	94	ND		<1	113	<1	96	7	89	2	100	1	96	0		1	93
	1983	ND		<1	95	ND		1	112	5	95	9	94	2	103	1	113	1	88	2	99
	1984	ND		0		ND		<1	76	<1	72	3	86	3	109	<1	94	<1	71	1	97
	1985	ND		<1	88	ND		<1	104	3	98	4	100	5	96	4	107	1	98	2	100
	1986	0		<1	118	ND		2	114	3	103	8	101	8	103	2	109	<1	70	2	104
	1987	0		<1	111	2[c]	102	3	95	2	92	4	84	8	101	1	107	1	72	2	95
White shrimp	1982[a]	ND		88	93	ND		39	86	14	99	16	95	26	101	17	110	4	61	47	92
	1983	ND		78	93	ND		20	102	13	96	19	100	14	111	6	112	2	86	37	95
	1984	ND		60	98	ND		15	99	8	99	39	106	24	106	11	126	10	109	32	100
	1985	ND		62	99	ND		21	110	23	91	17	106	22	104	6	120	1	105	33	101
	1986	10	105	30	95	ND		41	98	11	96	9	101	13	98	5	108	4	57	23	97
	1987	15	102	25	97	15[c]	92	11	97	28	87	6	94	10	99	3	105	2	76	17	95
FINFISHES																					
Atlantic croaker	1982[a]	ND		43		ND		102		10		87	75	110		37		28		62	75
	1983	ND		30	131	ND		31	117	18	110	44	106	43	149	15	157	32	154	30	127
	1984	ND		15	126	ND		30	104	22	87	52	83	120	121	15	137	44	138	35	112
	1985	ND		20	124	ND		41	110	17	105	33	101	42	138	13	151	24	148	27	119
	1986	7	157	21	123	ND		36	114	30	105	39	96	56	125	20	139	19	153	30	117
	1987	17	139	18	117	11[c]	133	86	103	99	96	59	100	33	129	10	152	30	122	48	106
Black drum	1982[a]	ND		<1	259	ND		0		<1	221	<1	166	2	235	<1	264	0		<1	238
	1983	ND		<1	274	ND		<1	199	<1	192	<1	201	1	347	1	266	<1	440	<1	280
	1984	ND		<1	168	ND		0		0		<1	251	<1	341	1	202	<1	544	<1	253
	1985	ND		<1	242	ND		0		0		<1	403	<1	315	1	280	0		<1	267
	1986	<1	226	<1	233	ND		0		0		0		<1	334	<1	236	<1	335	<1	248
	1987	<1	278	<1	246	0[c]		0		<1	200	0		<1	186	1	247	<1	16	<1	234

Table 4. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Gafftopsail catfish	1982[a]	ND		<1		ND		4		3		3		1	138	1	193	0		2	141
	1983	ND		<1	137	ND		1	132	2	123	2	135	<1	175	0		0		1	133
	1984	ND		<1	139	ND		1	144	5	121	2	109	<1	218	<1	131	<1	196	1	126
	1985	ND		<1	154	ND		2	137	2	128	3	128	1	150	0		<1	210	1	134
	1986	0		<1	126	ND		1	134	3	128	1	121	<1	92	<1	158	0		1	128
	1987	<1	174	<1	144	1[c]	143	1	138	6	122	1	124	<1	132	<1	183	<1	175	1	127
Gulf menhaden	1982[a]	ND		12		ND		10		11		24		2		<1		<1		10	
	1983	ND		7	103	ND		10	109	17	76	3	89	3	104	1	87	0		8	96
	1984	ND		3	98	ND		3	93	23	58	45	44	4	82	6	76	<1	59	9	61
	1985	ND		18	112	ND		10	109	27	79	12	92	2	119	4	106	0		14	101
	1986	<1	121	12	95	ND		2	79	12	64	6	55	<1	156	<1	49	0		6	84
	1987	2	102	14	95	10[c]	84	8	101	23	77	15	62	1	128	<1	92	0		11	88
Hardhead catfish	1982[a]	ND		1		ND		3		2		8		29		25		6		7	
	1983	ND		1	177	ND		2	183	2	206	8	125	26	191	12	205	5	196	5	184
	1984	ND		1	186	ND		2	169	1	199	5	128	21	186	7	215	5	193	4	182
	1985	ND		2	159	ND		4	149	1	165	4	144	14	171	5	207	5	176	4	165
	1986	3	178	5	167	ND		2	147	1	187	6	149	12	172	3	233	7	207	5	170
	1987	3	186	3	176	3[c]	168	5	154	4	171	3	186	13	173	4	207	1	205	4	173
Pinfish	1982[a]	ND		1		ND		7		5		22		85		44		39		17	
	1983	ND		1	121	ND		6	110	14	106	38	106	119	124	20	133	45	109	22	119
	1984	ND		1	121	ND		6	107	7	96	39	96	25	113	67	108	73	111	15	107
	1985	ND		1	120	ND		9	111	23	104	53	110	48	118	18	133	48	110	18	113
	1986	2	117	2	118	ND		7	101	12	98	37	103	68	116	45	109	65	108	19	109
	1987	<1	126	<1	122	4[c]	113	9	103	22	91	57	106	88	121	17	131	38	113	21	112
Red drum	1982[a]	ND		0		ND		<1		<1	230	<1	102	<1	649	<1	619	0		<1	394
	1983	ND		0		ND		0		<1	319	<1	224	0		0		<1	280	<1	242
	1984	ND		<1	583	ND		<1	305	<1	344	<1	142	<1	81	<1	241	<1	401	<1	306
	1985	ND		0		ND		<1	56	0		<1	54	<1	276	<1	475	<1	90	<1	293
	1986	<1	212	0		ND		0		<1	35	<1	78	0		<1	630	<1	340	<1	339
	1987	<1	405	<1	34	0[c]		0		0		0		<1	399	0		0		<1	145
Sand seatrout	1982[a]	ND		4		ND		5	185	<1	141	3	126	14	147	1	201	5	164	5	161
	1983	ND		3	134	ND		4	132	<1	108	3	111	9	158	<1	196	1	164	3	140
	1984	ND		2	147	ND		1	121	<1	115	1	107	4	141	0		1	161	1	138
	1985	ND		4	127	ND		3	126	<1	136	1	119	7	144	1	160	1	117	3	131
	1986	<1	152	2	141	ND		1	117	<1	112	<1	133	3	148	0		<1	154	1	137
	1987	1	121	2	110	1[c]	112	4	114	1	99	1	94	6	134	<1	156	<1	160	2	118
Sheepshead	1982[a]	ND		<1	295	ND		0		<1	119	<1	85	<1	345	1	366	1	241	<1	288
	1983	ND		<1	344	ND		0		<1	113	<1	138	<1	365	1	358	<1	248	<1	322
	1984	ND		<1	339	ND		<1	147	0		<1	157	<1	342	<1	402	<1	300	<1	313
	1985	ND		<1	341	ND		<1	102	<1	112	<1	143	<1	259	<1	412	<1	80	<1	242
	1986	1	215	<1	451	ND		0		0		<1	122	<1	288	<1	356	1	160	<1	231
	1987	<1	279	<1	356	0[c]		<1	111	<1	124	<1	115	<1	299	<1	377	<1	156	<1	271

Table 4. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Southern flounder	1982[a]	ND		<1	158	ND		<1	169	1	155	1	186	1	181	2	203	<1	279	1	176
	1983	ND		<1	175	ND		<1	196	<1	120	1	180	<1	242	<1	203	<1	161	<1	179
	1984	ND		<1	193	ND		<1	194	<1	153	2	148	<1	175	1	145	<1	168	<1	160
	1985	ND		<1	234	ND		<1	202	1	147	1	152	1	221	1	197	<1	261	<1	191
	1986	<1	141	1	161	ND		<1	165	<1	141	1	144	1	184	1	262	<1	212	1	169
	1987	1	168	<1	231	<1[c]	154	<1	191	1	160	1	167	<1	171	0		<1	183	<1	181
Spanish mackerel	1982[a]	ND		0		ND		<1	326	0		0		0		0		0		<1	326
	1983	ND		0		ND		0		0		0		0		0		0		0	
	1984	ND		0		ND		1	202	0		0		0		0		0		<1	202
	1985	ND		0		ND		<1	171	0		0		<1	233	0		0		<1	183
	1986	0		0		ND		0		0		0		0		0		0		0	
	1987	0		0		0[c]		0		0		0		<1	138	0		0		<1	138
Spot	1982[a]	ND		9		ND		26		5		68		33		10		4		19	
	1983	ND		6	120	ND		17	122	5	112	18	118	36	140	2	163	6	135	12	127
	1984	ND		8	115	ND		34	107	35	84	131	91	74	112	82	118	10	108	39	103
	1985	ND		13	121	ND		20	118	13	110	60	116	215	132	24	137	19	129	41	126
	1986	4	120	10	120	ND		20	121	14	99	63	106	78	129	9	118	4	135	23	119
	1987	6	134	8	127	8[c]	119	26	115	23	97	58	117	78	126	5	158	9	112	25	119
Spotted seatrout	1982[a]	ND		<1	173	ND		0		<1	232	<1	163	<1	187	1	166	<1	142	<1	171
	1983	ND		<1	288	ND		<1	155	<1	168	2	207	<1	327	2	188	<1	200	<1	210
	1984	ND		<1	418	ND		<1	174	<1	252	<1	237	<1	385	<1	351	<1	236	<1	327
	1985	ND		<1	286	ND		<1	171	<1	156	1	156	<1	171	1	146	<1	218	<1	188
	1986	<1	187	<1	259	ND		<1	193	<1	170	<1	162	<1	176	<1	151	1	196	<1	200
	1987	<1	147	<1	134	<1[c]	162	<1	143	<1	166	1	164	<1	163	2	206	<1	198	<1	174
Striped mullet	1982[a]	ND		<1		ND		<1		1		2		2	212	1	311	<1		1	235
	1983	ND		1	204	ND		<1	131	2	137	3	209	1	211	2	323	1	331	1	210
	1984	ND		1	244	ND		<1	204	<1	174	1	192	1	209	6	287	1	307	1	251
	1985	ND		2	195	ND		<1	163	<1	136	7	158	<1	168	1	243	<1	254	2	181
	1986	<1	187	2	255	ND		<1	116	<1	157	<1	158	1	226	<1	278	<1	266	1	250
	1987	1	168	1	292	<1[c]	158	<1	200	3	145	1	171	1	192	0		0		1	210
Other finfishes	1982[a]	ND		17	197	ND		35	104	9	23	51	69	93	113	192	204	70	219	43	146
	1983	ND		13	103	ND		90	80	46	73	52	86	69	121	114	82	52	137	52	90
	1984	ND		15	112	ND		34	95	11	73	33	77	44	92	13	65	35	138	24	96
	1985	ND		22	98	ND		25	103	11	84	62	60	51	116	27	67	50	131	29	96
	1986	1	171	10	94	ND		17	101	7	83	24	85	36	125	42	77	32	130	17	101
	1987	5	87	11	108	6[c]	116	26	94	23	93	44	69	26	117	50	85	28	136	22	96

Table 4. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Total finfishes	1982[a]	ND		88	199	ND		193	139	48	176	270	119	371	166	313	232	153	180	167	167
	1983	ND		63	126	ND		162	99	107	93	175	108	308	139	171	115	143	139	136	116
	1984	ND		46	123	ND		111	104	104	82	311	86	294	124	197	123	169	130	131	108
	1985	ND		82	117	ND		115	114	96	101	236	99	380	129	96	127	149	128	139	117
	1986	19	151	65	122	ND		86	112	81	97	178	104	257	132	122	109	128	132	104	117
	1987	36	136	56	121	44[c]	117	164	107	205	100	241	101	246	131	90	117	107	126	136	112

[a]Values include May-Dec only.

[b]1986 values include Sabine Lake; 1987 values include East Matagorda.

[c]Values include Apr-Dec only.

Table 5. Annual mean catch rates (No./h) and mean total lengths (mm) of select shellfishes and finfishes caught with 6.1-m trawls in the Texas Territorial Sea during 1985[a]-1987. Blank indicates no measurement taken; ND = no data.

Species	Year	Sabine		Galveston		Port O'Connor		Port Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
SHELLFISHES													
Blue crab	1985	ND		<1	105	1	134	1	127	<1	144	1	127
	1986	3[b]	96	4	105	1	141	1	145	<1	123	2	110
	1987	2	96	1	112	1	105	<1	142	<1	140	1	106
Brown shrimp	1985	ND		7	103	7	125	47	109	18	106	20	109
	1986	7[b]	107	9	99	4	114	7	105	4	110	6	105
	1987	5	104	16	104	6	108	10	106	1	118	8	106
Pink shrimp	1985	ND		<1	120	<1	130	1	119	1	108	1	116
	1986	0[b]		<1	124	1	110	3	105	2	118	1	111
	1987	0		0		1	114	3	102	1	124	1	108
White shrimp	1985	ND		53	110	26	124	11	126	1	105	23	115
	1986	28[b]	101	36	101	10	120	5	124	1	137	16	105
	1987	18	105	9	109	11	112	6	119	1	121	9	110
FINFISHES													
Atlantic croaker	1985	ND		22	145	42	139	17	145	9	149	23	142
	1986	30[b]	134	31	126	67	136	30	130	6	132	33	132
	1987	6	114	75	119	44	131	19	134	<1	157	30	124
Black drum	1985	ND		0		0		<1	825	0		<1	825
	1986	0[b]		0		<1	900	0		0		<1	900
	1987	<1	851	<1	760	<1	680	<1	680	0		<1	741
Gafftopsail catfish	1985	ND		<1	165	<1	156	<1	136	0		<1	160
	1986	9[b]	121	<1	118	<1	115	<1	176	0		2	121
	1987	2	116	0		<1	158	<1	134	0		<1	118
Gulf menhaden	1985	ND		2	150	1	159	1	151	0		1	152
	1986	2[b]	125	1	147	<1	180	<1	197	0		1	135
	1987	2	132	3	135	1	146	<1	159	0		1	136

Table 5. (Cont'd.)

Species	Year	Sabine		Galveston		Port O'Connor		Port Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Hardhead catfish	1985	ND		2	157	3	143	9	157	<1	256	4	154
	1986	3[b]	164	4	163	2	156	5	156	<1	211	3	160
	1987	2	132	4	148	3	145	3	161	<1	180	2	148
King mackerel	1985	ND		<1	173	0		<1	124	0		<1	142
	1986	0[b]		<1	159	0		0		0		<1	159
	1987	0		0		<1	120	<1	200	0		<1	131
Pinfish	1985	ND		<1	124	3	109	4	110	1	135	2	112
	1986	<1[b]	98	2	104	1	105	2	107	2	103	1	105
	1987	0		<1	100	2	111	2	115	<1	112	1	113
Red drum	1985	ND		0		0		<1	84	0		<1	84
	1986	0[b]		0		0		0		0		0	
	1987	0		0		<1	948	0		<1	42	<1	520
Red snapper	1985	ND		0		0		2	85	7	89	2	88
	1986	0[b]		0		<1	152	1	95	<1	103	<1	100
	1987	0		<1	68	<1	88	1	122	<1	83	<1	107
Sand seatrout	1985	ND		10	141	6	168	3	140	<1	221	5	150
	1986	3[b]	164	3	141	2	151	1	174	0		2	154
	1987	5	131	4	133	3	134	1	162	<1	108	3	135
Sheepshead	1985	ND		0		0		0		0		0	
	1986	0[b]		0		0		0		0		0	
	1987	0		0		0		0		0		0	
Southern flounder	1985	ND		0		<1	280	<1	137	0		<1	199
	1986	<1[b]	162	<1	255	<1	184	<1	311	0		<1	173
	1987	<1	226	<1	197	0		<1	179	<1	168	<1	191
Spanish mackerel	1985	ND		0		0		0		0		0	
	1986	<1[b]	200	0		0		0		0		<1	200
	1987	<1	93	<1	183	0		<1	258	0		<1	203
Spot	1985	ND		3	132	20	130	21	141	1	142	12	136
	1986	2[b]	124	6	128	5	124	17	123	1	125	6	124
	1987	4	140	6	126	3	125	15	129	<1	170	6	129

Table 5. (Cont'd.)

Species	Year	Sabine		Galveston		Port O'Connor		Port Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spotted seatrout	1985	ND		0		0		<1	140	0		<1	140
	1986	<1[b]	163	<1	172	<1	165	0		0		<1	165
	1987	<1	178	0		0		0		0		<1	178
Striped mullet	1985	ND		0		0		0		0		0	
	1986	0[b]		0		0		0		0		0	
	1987	0		0		0		0		0		0	
Other finfishes	1985	ND		108	109	111	106	170	106	113	97	126	105
	1986	58[b]	112	95	111	69	114	143	115	39	106	81	113
	1987	87	89	103	98	99	111	111	106	54	95	92	101
Total finfishes	1985	ND		148	119	188	118	227	114	130	101	174	114
	1986	108[b]	122	141	118	146	123	199	119	49	110	130	120
	1987	108	98	196	111	156	118	153	114	54	96	135	110

[a]Values include Feb-Dec only off Port Aransas and Aug-Dec only off all other areas.
[b]Values include Jun-Dec only.

Table 6. Annual mean catch rates (No./h) and mean total length (mm) by size class[a] of Eastern oyster caught with 46.0-cm wide dredges on reef stations, in Texas bay systems during 1984-1987. Blank indicates no measurement taken; ND = no data.

Size		Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Class	Year	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spat	1984	ND		491		ND		ND		ND		ND		ND		ND		ND		491	
	1985	ND		892		ND		ND		ND		ND		ND		ND		ND		892	
	1986	26		1010		2186		764		499		551		107		ND		1135		806	
	1987	232		1054		1609		656		66		4269		167		ND		873		1356	
Small	1984	ND		1705	47	ND		ND		ND		ND		ND		ND		ND		1705	47
	1985	ND		2097	54	ND		ND		ND		ND		ND		ND		ND		2097	54
	1986	120	61	1316	54	944	53	382	51	565	58	1273	51	323	48	ND		148	49	932	53
	1987	334	56	1070	51	1928	46	556	51	240	55	2499	50	503	51	ND		22	38	1120	50
Market	1984	ND		447	91	ND		ND		ND		ND		ND		ND		ND		447	91
	1985	ND		674	88	ND		ND		ND		ND		ND		ND		ND		674	88
	1986	190	97	617	88	485	93	212	92	444	92	191	86	116	98	ND		27	86	398	90
	1987	282	95	370	91	228	90	167	91	258	93	411	86	117	94	ND		3	85	295	90

[a]Spat (5-25 mm), small (26-75 mm), market (≥76 mm).

Table 7. Annual mean catch rates (No./h) and mean total length (mm) by size class[a] of Eastern oyster caught with 46.0-cm wide dredges on non-reef stations, in Texas bay systems during 1984-1987. Blank indicates no measurement taken; ND = no data.

Size		Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Class	Year	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spat	1984	ND		56		ND		ND		ND		ND		ND		ND		ND		56	
	1985	ND		20		ND		ND		ND		ND		ND		ND		ND		20	
	1986	11		50		403		324		9		95		18		0		3		106	
	1987	31		94		188		244		13		300		3		0		19		116	
Small	1984	ND		62	53	ND		ND		ND		ND		ND		ND		ND		62	53
	1985	ND		141	47	ND		ND		ND		ND		ND		ND		ND		141	47
	1986	51	50	73	48	220	53	79	46	43	57	454	52	43	43	0		0		103	50
	1987	46	55	32	50	181	52	94	42	9	59	211	54	20	60	0		0		63	50
Market	1984	ND		15	97	ND		ND		ND		ND		ND		ND		ND		15	97
	1985	ND		35	91	ND		ND		ND		ND		ND		ND		ND		35	91
	1986	30	97	25	96	120	96	41	93	23	89	110	90	5	98	0		0		36	93
	1987	26	90	29	101	68	93	34	95	13	93	89	87	2	87	0		0		30	94

[a]Spat (5-25 mm), small (26-75 mm), market (≥76 mm).

Figure 1. Sabine Lake System.

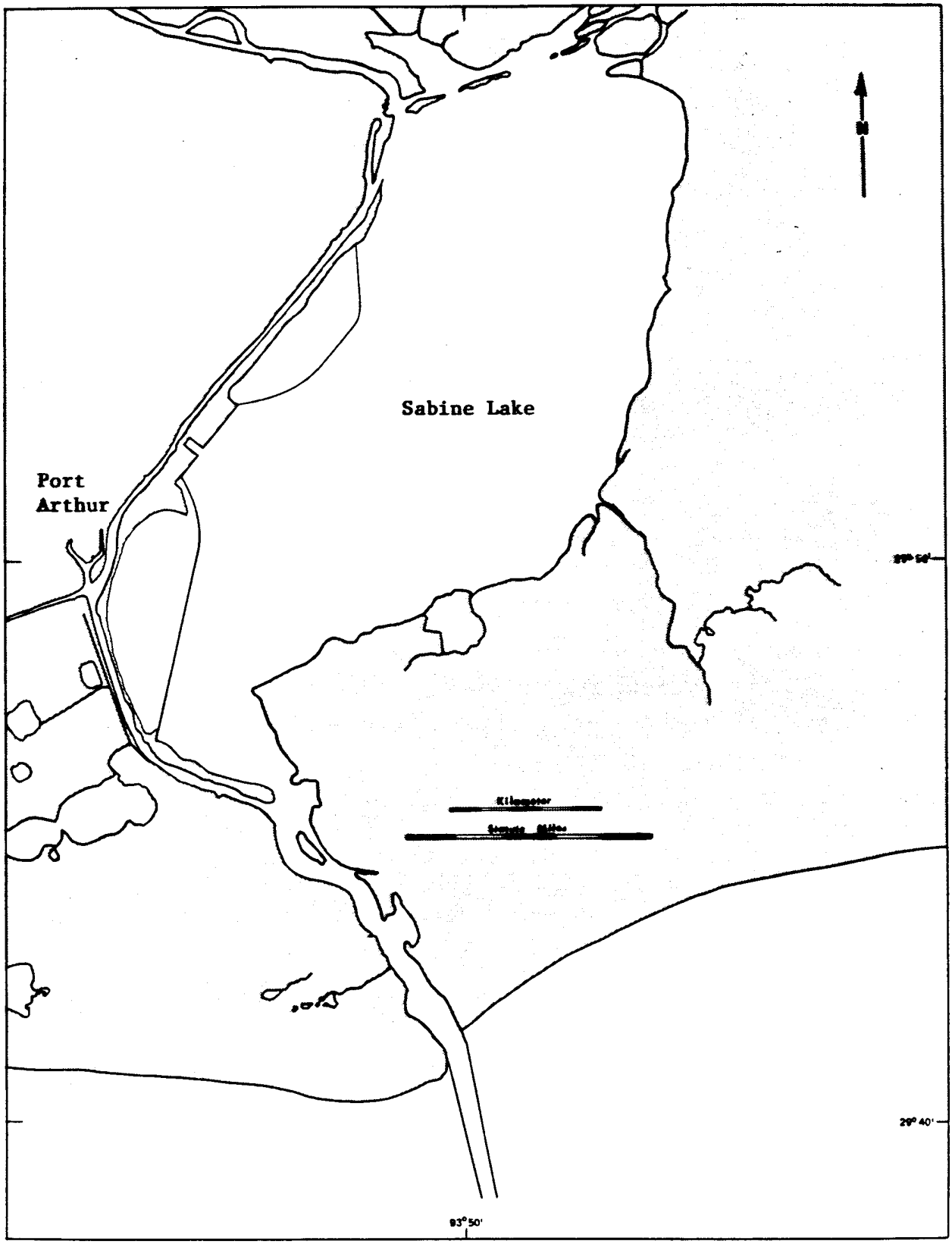
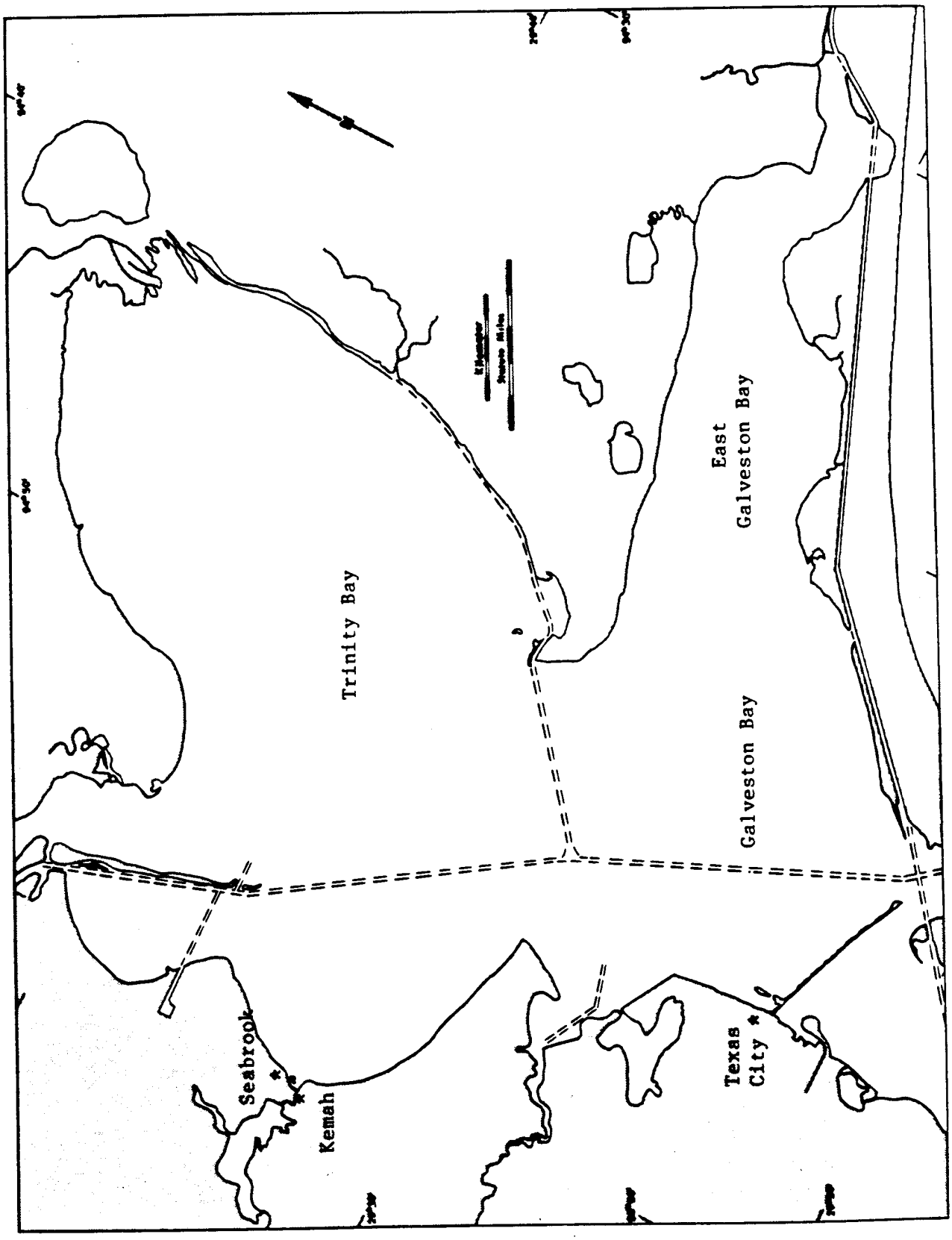

Sabine Lake
Port
Arthur
29° 40'
93°50'

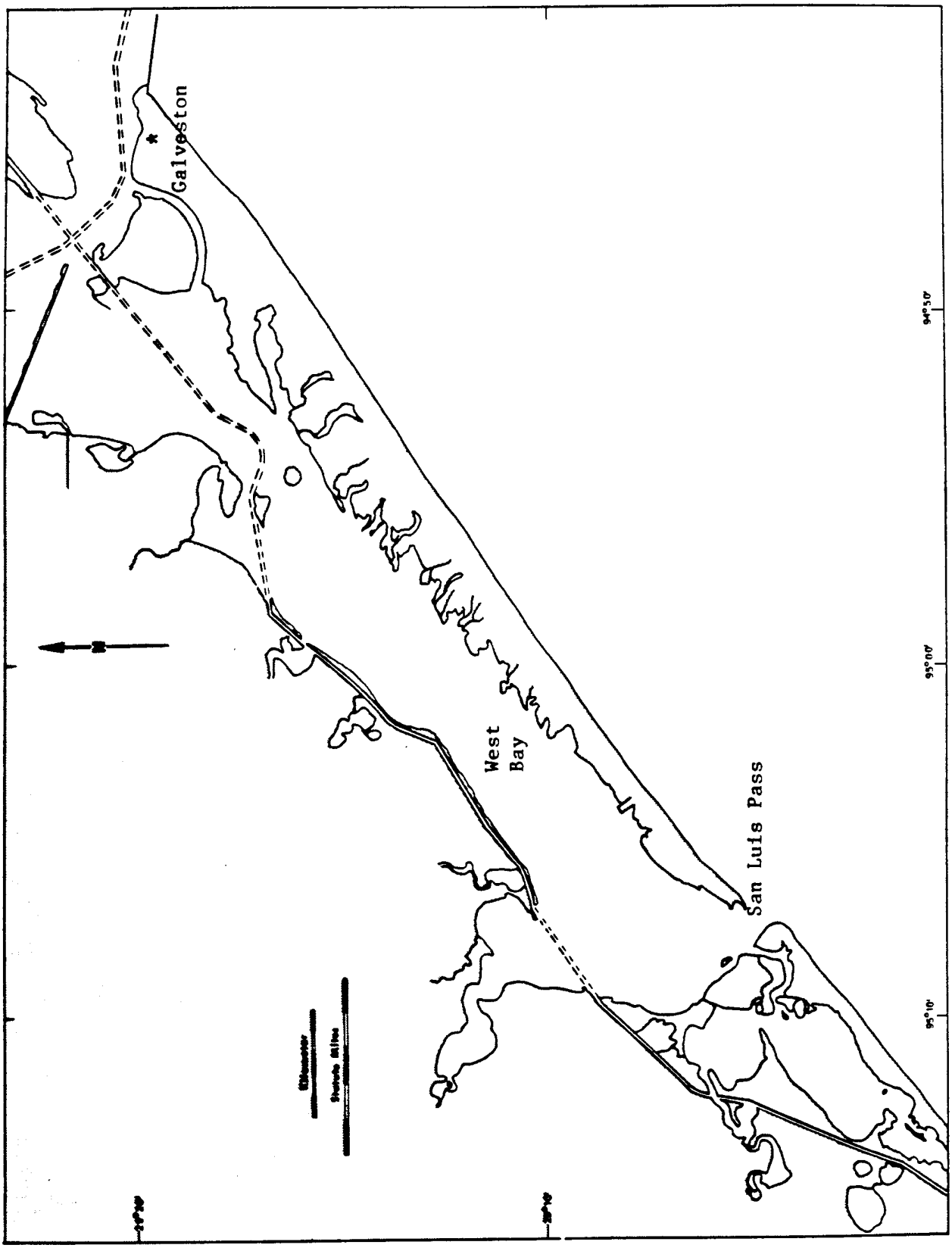
Figure 2. Galveston Bay System.

(A) Trinity, upper Galveston and East Bays

(B) West Bay


Trinity Bay
East
Galveston Bay
Galveston Bay
Seabrook
Kemah
Texas
City

(A)

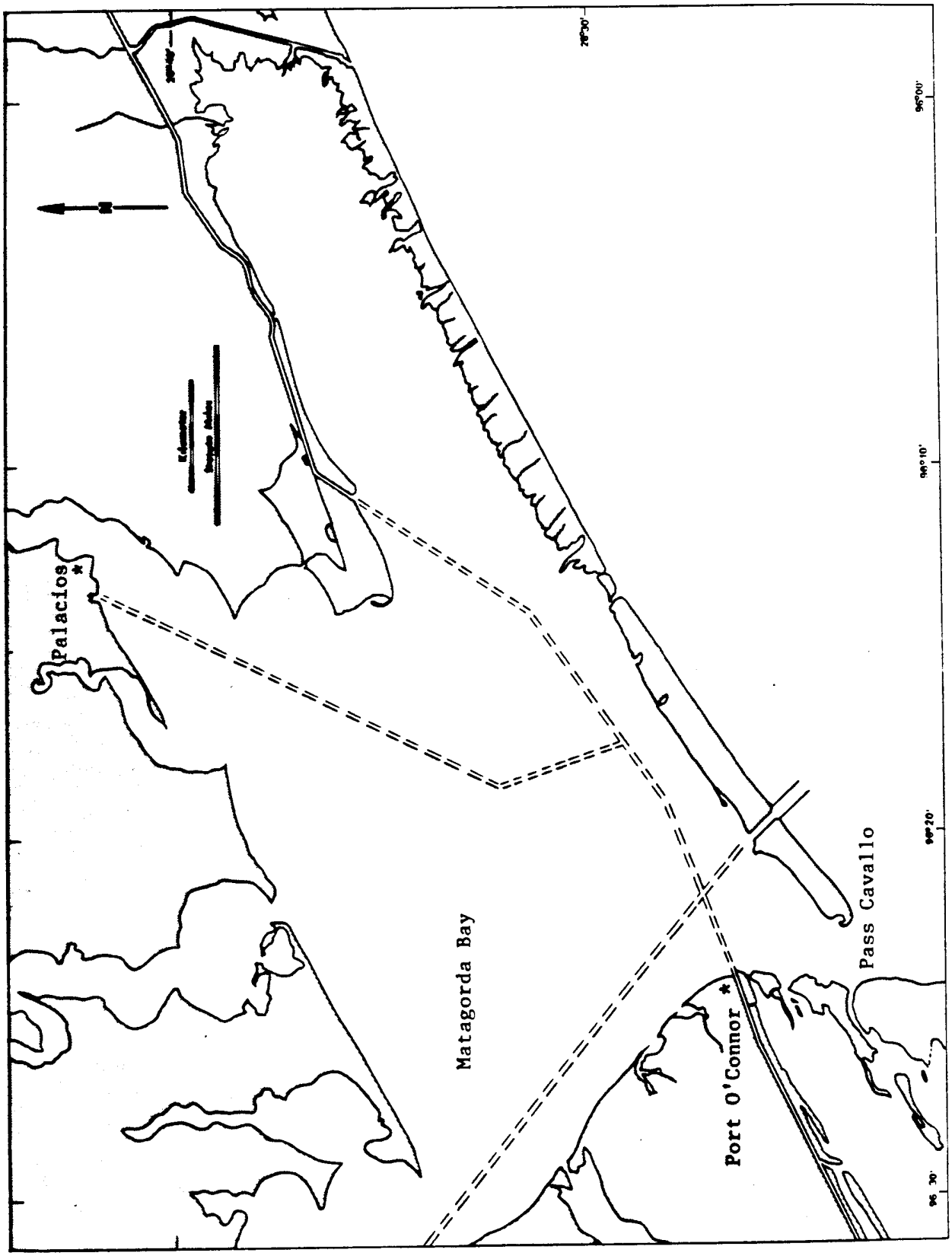


(B)

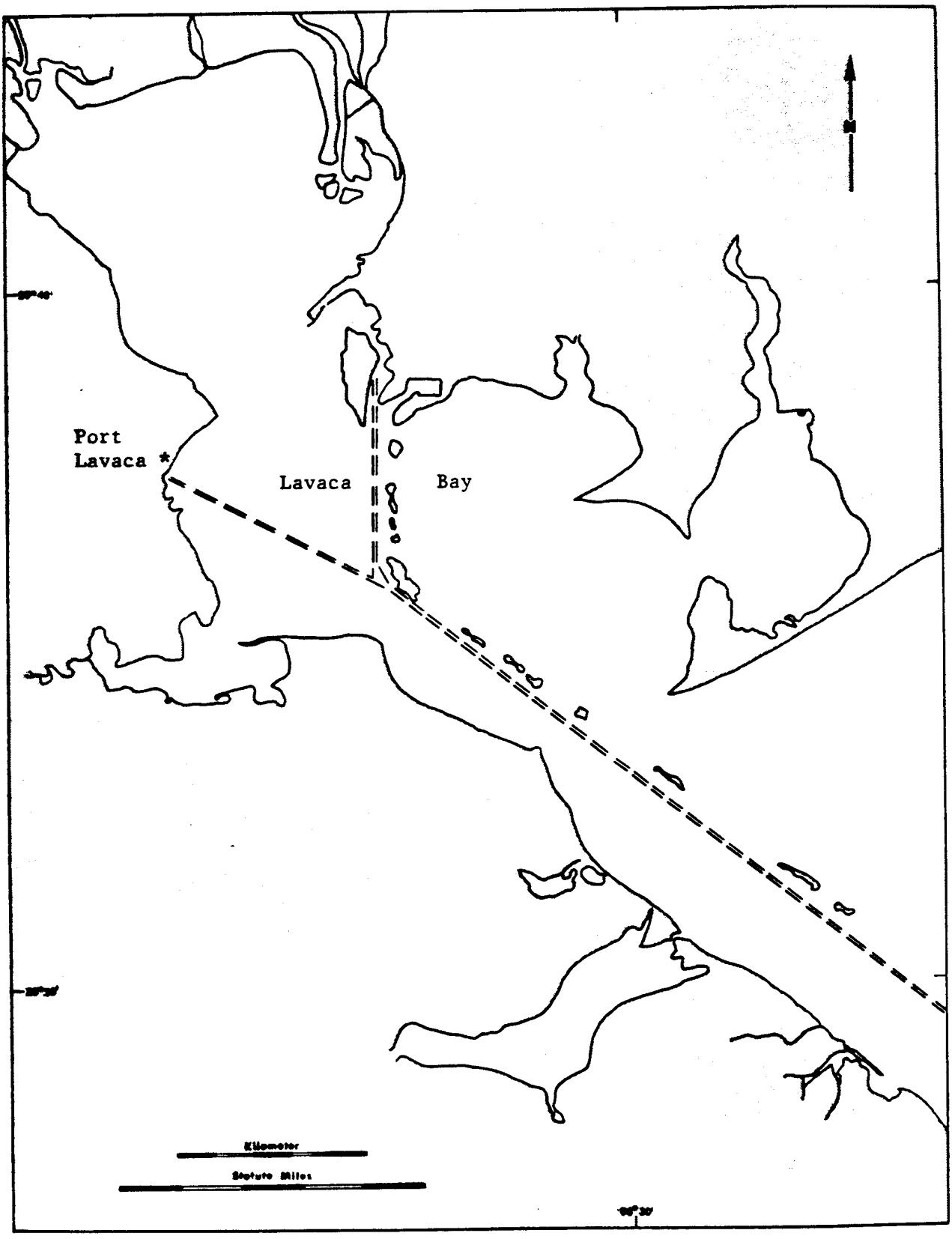
Figure 3. Matagorda Bay System.

(A) Matagorda Bay

(B) Lavaca Bay


Palacios
Matagorda Bay
Port O'Connor
Pass Cavallo
96°30'
96°20'
96°10'
96°00'

(A)



(B)

Figure 4. San Antonio Bay System.

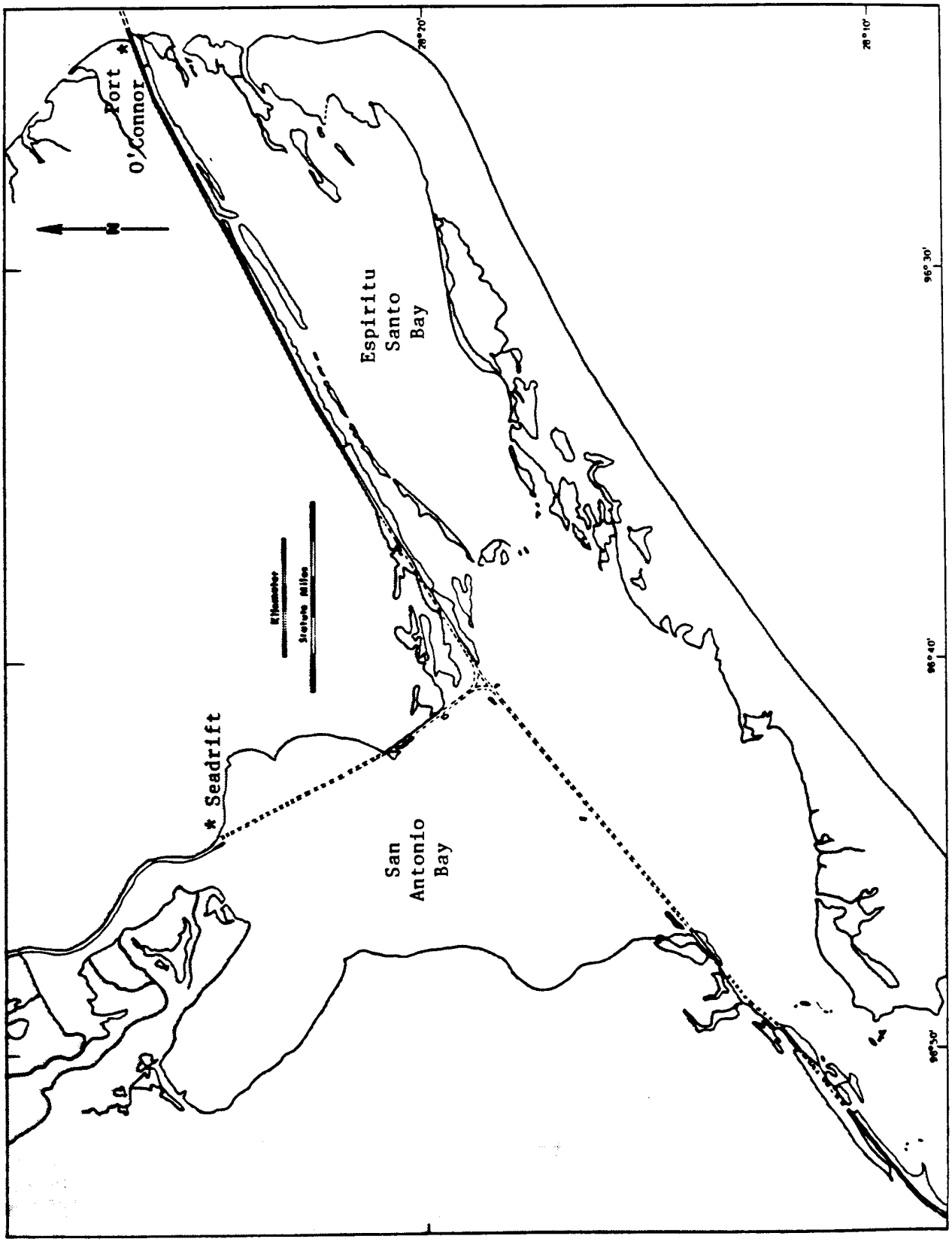

Port O'Connor
Espiritu Santo Bay
San Antonio Bay
* Seadrift
28°20'
28°10'
96°30'
96°40'
96°50'

Figure 5. Aransas Bay System.

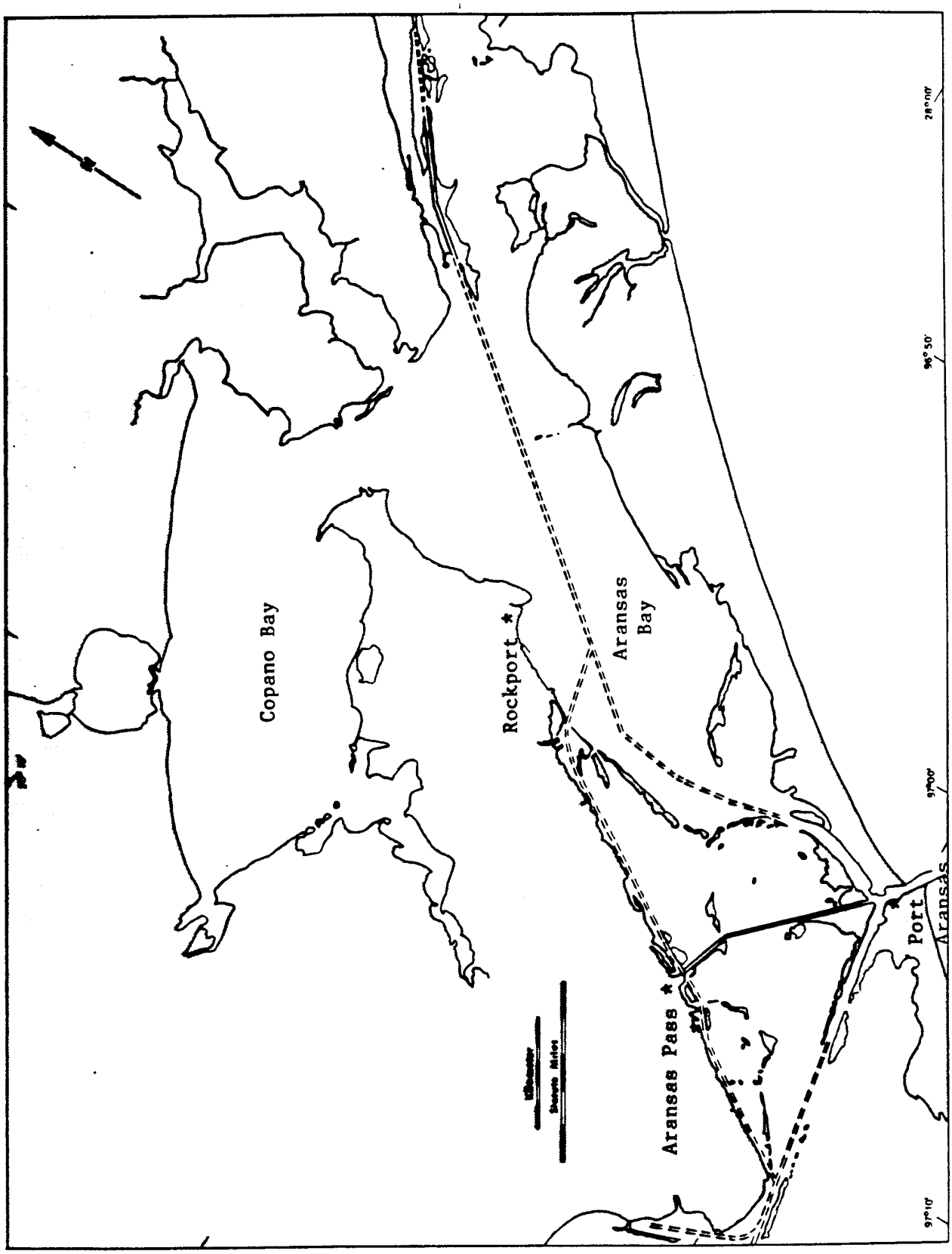
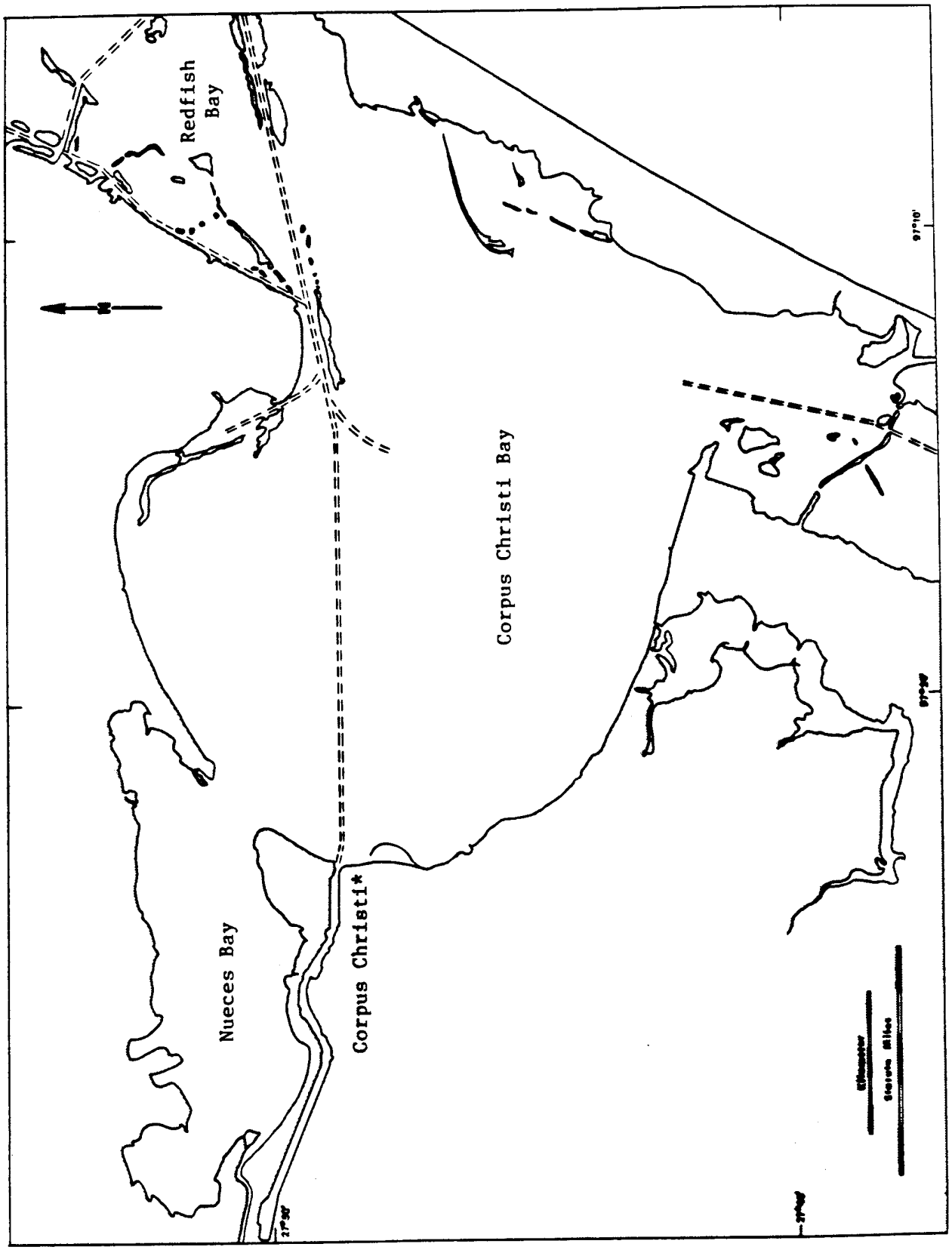

Copano Bay
Rockport
Aransas Bay
Aransas Pass
Port Aransas
28°00'
97°10'

Figure 6. Corpus Christi Bay System.


Redfish Bay
Corpus Christi Bay
Nueces Bay
Corpus Christi*

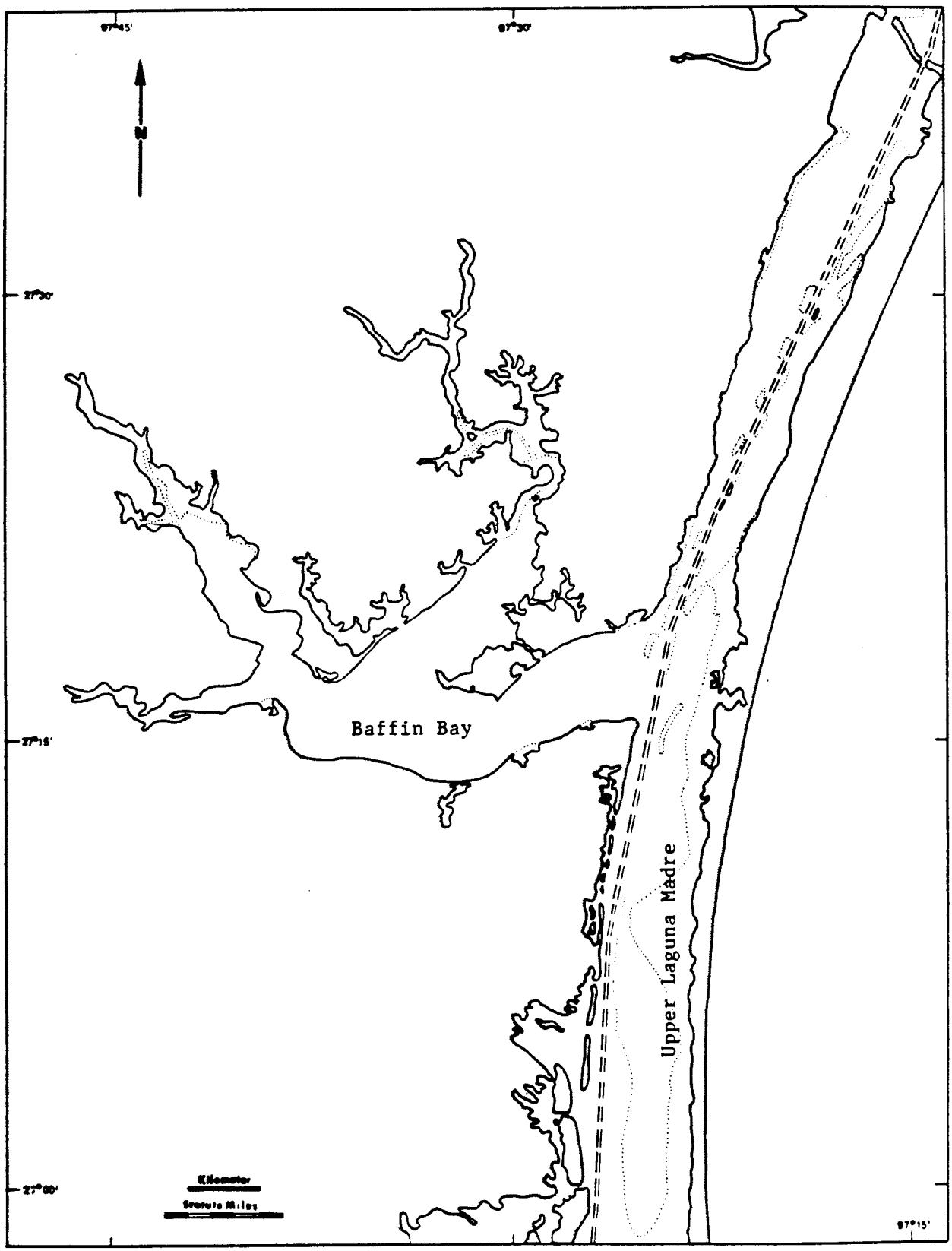
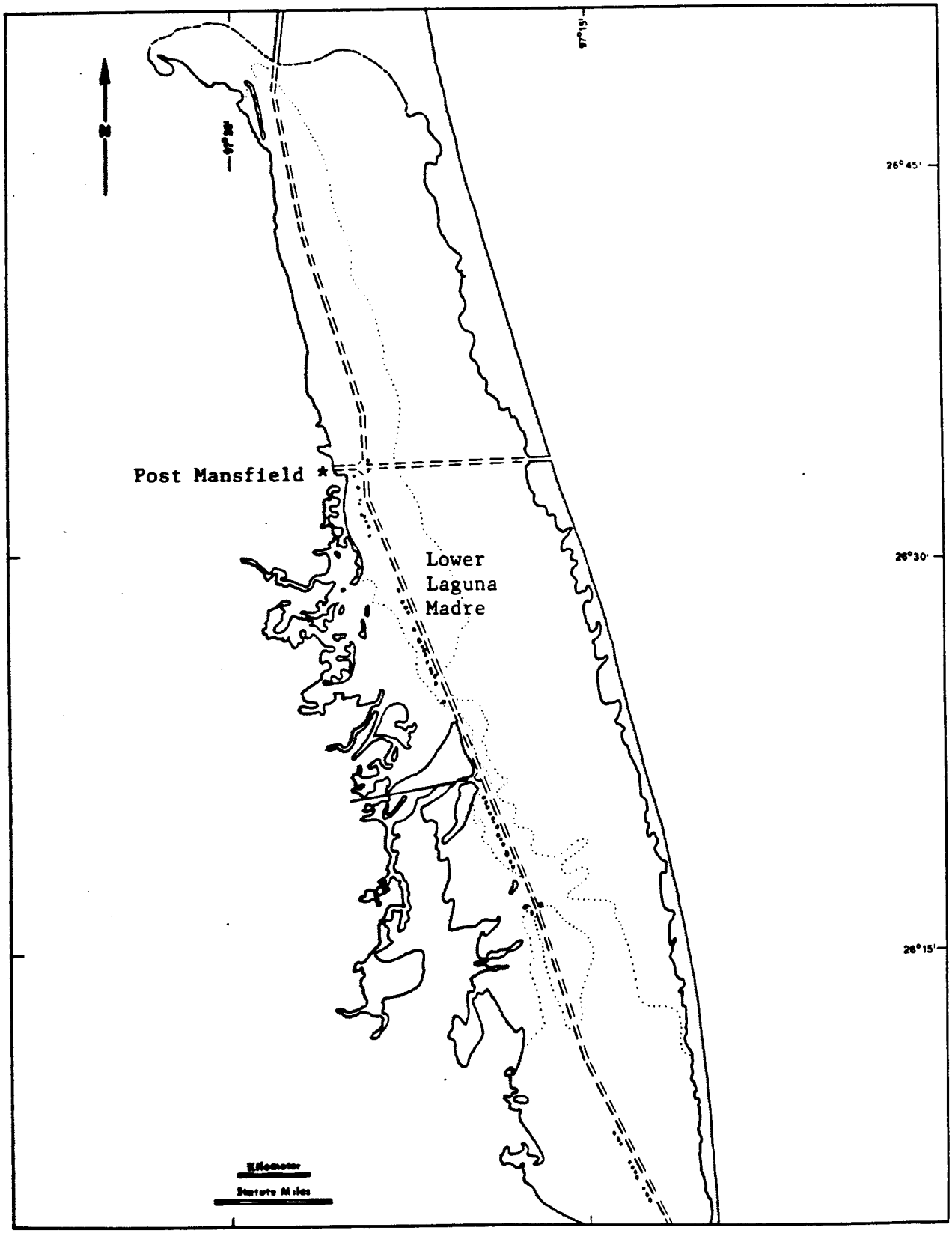

97°45'
97°30'
N
27°30'
27°15'
27°00'
Baffin Bay
Upper Laguna Madre
Kilometer
Statute Miles
97°15'

Figure 7. Upper Laguna Madre System.

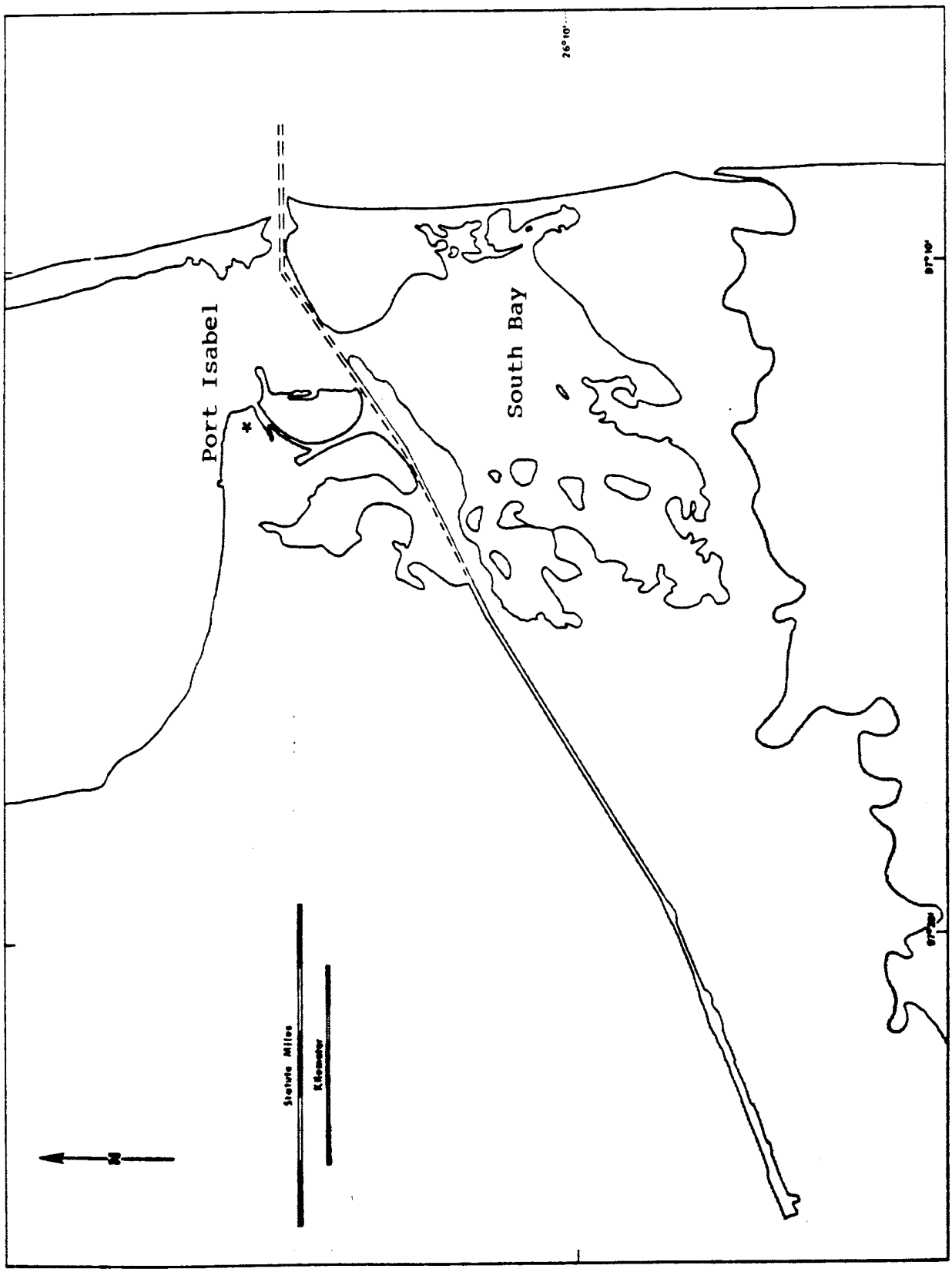
Figure 8. Lower Laguna Madre System.

(A) Lower Laguna Madre

(B) South Bay


N
97°30'
97°15'
26°45'
26°30'
26°15'
Post Mansfield
Lower
Laguna
Madre
Kilometer
Statute Miles

(A)



(B)

Figure 9. East Matagorda Bay System.

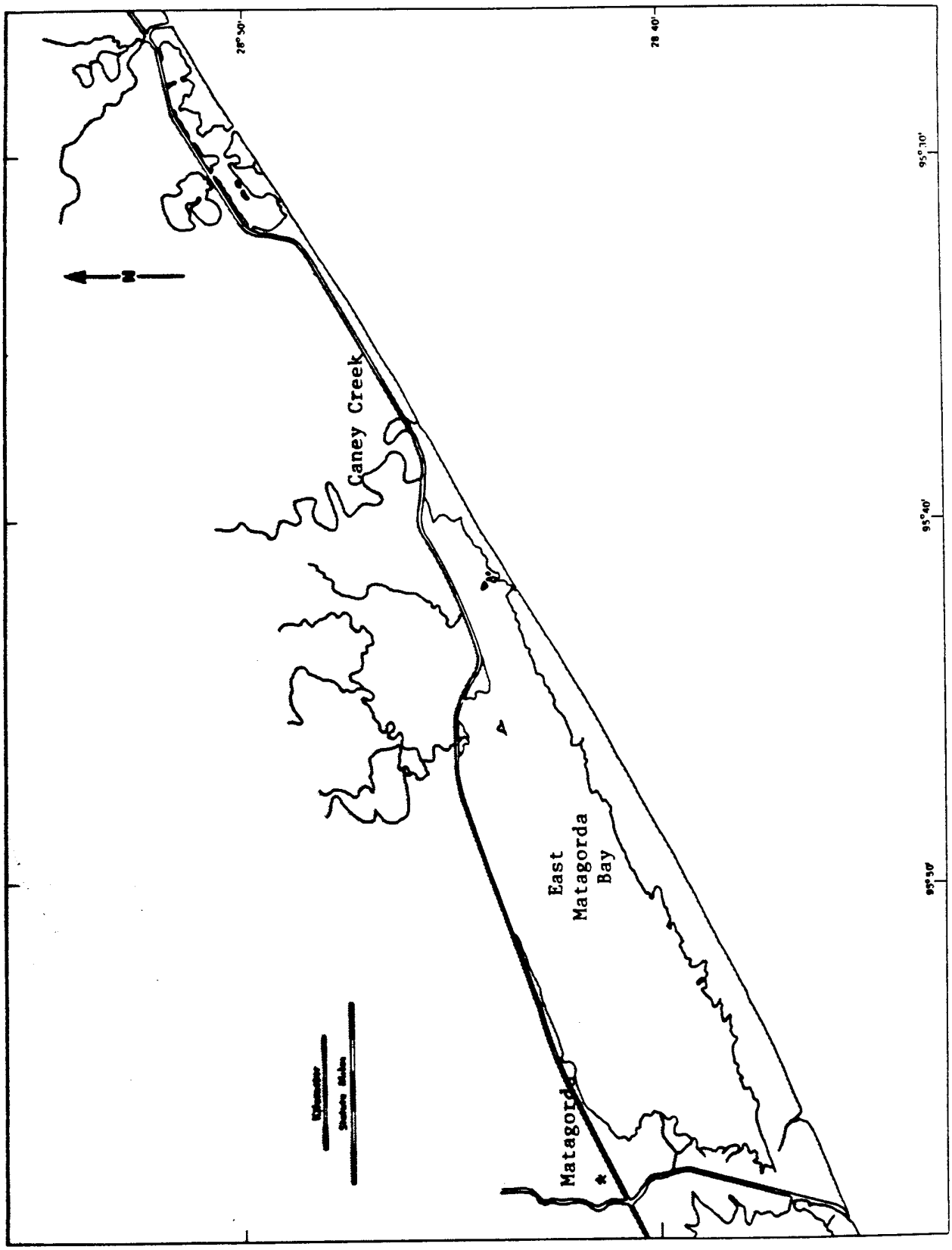
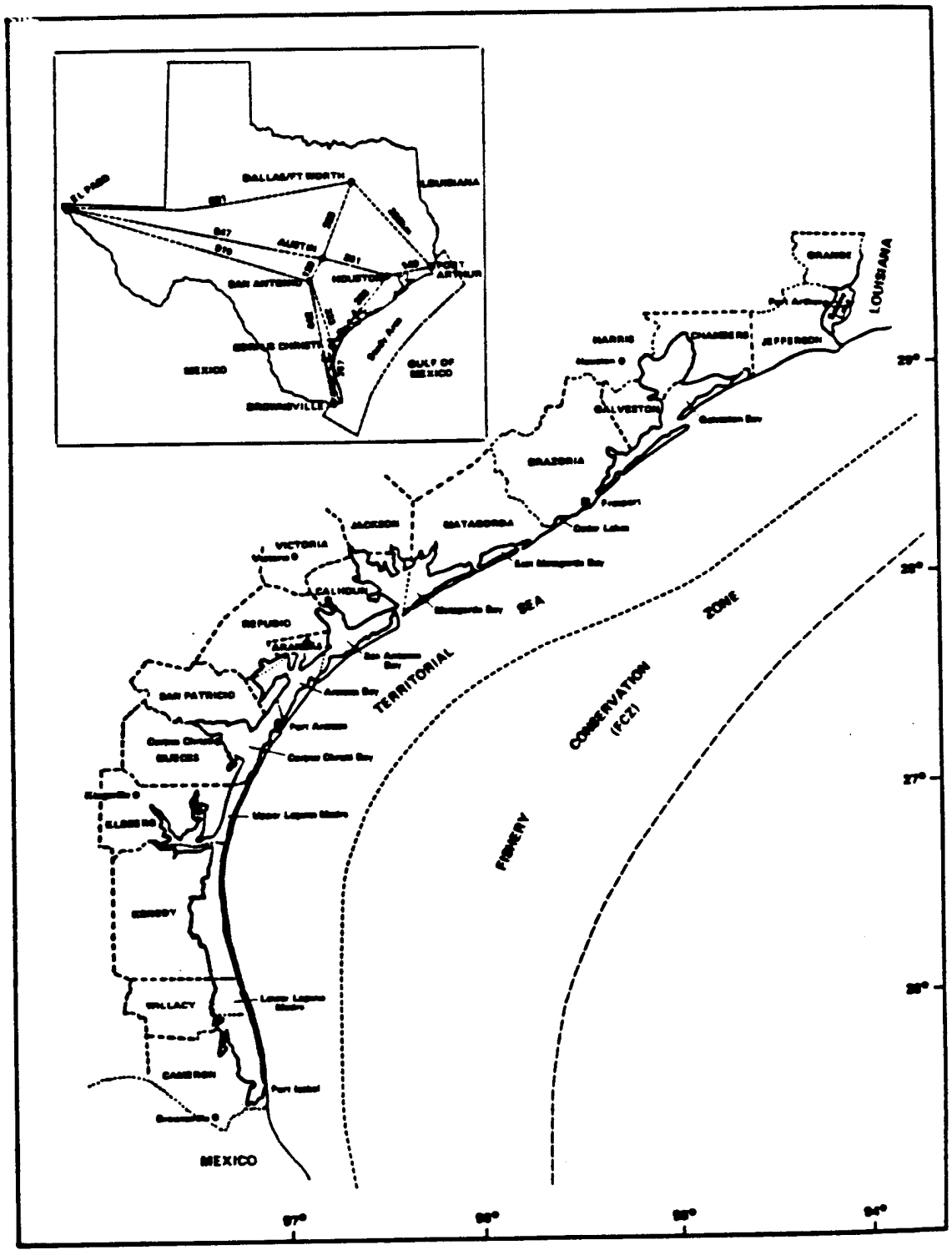

28°30'
28 40'
95°10'
95°40'
95°50'
Caney Creek
East
Matagorda
Bay
Matagorda

Figure 10. Texas Territorial Sea.


EL PASO
DALLAS/FT WORTH
LOUISIANA
AUSTIN
SAN ANTONIO
HOUSTON
PORT ARTHUR
CORPUS CHRISTI
BROWNSVILLE
MEXICO
GULF OF MEXICO
GRANDE
HARRIS
CHAMBERS
JEFFERSON
GALVESTON
BRAZORIA
MATAGORDA
JACKSON
VICTORIA
CALHOUN
REFUGIO
SAN PATRICIO
NUECES
KLEBERG
KENEDY
WILLACY
CAMERON
TERRITORIAL SEA
CONSERVATION ZONE (FCZ)
FISHERY
MEXICO
97°
96°
95°
94°
29°
28°
27°
26°

Appendix A. Monthly mean catch rates of selected shellfishes and finfishes caught in bag seines, bay trawls and gulf trawls in Texas bay systems.

Table A.1. Monthly mean catch rates (No./ha) and mean total lengths (mm) of select shellfishes caught with 18.3-m bag seines in Texas bay systems during January-December 1987. Blank indicates no measurement taken.

		Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Species	Month	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Blue crab	Jan	10	49	110	36	3	23	23	26	20	81	17	36	10	21	0		10	16	33	37
	Feb	20	51	43	17	33	39	20	21	57	40	23	20	87	48	3	22	30	26	35	31
	Mar	20	54	283	35	177	29	40	24	100	22	20	48	23	22	57	46	187	35	118	34
	Apr	40	43	433	30	317	50	83	36	57	50	23	35	307	50	223	63	163	41	197	40
	May	30	88	207	55	77	55	147	46	153	53	10	23	167	55	257	57	203	52	156	53
	Jun	20	68	110	43	40	41	23	86	140	62	17	56	7	54	7	86	13	50	50	54
	Jul	30	84	93	51	77	53	17	145	57	103	23	64	37	68	17	80	10	155	41	72
	Aug	40	92	143	58	37	31	17	80	57	68	110	43	30	57	7	70	20	85	62	58
	Sep	20	45	300	45	17	48	7	116	47	57	13	61	57	52	10	45	103	57	91	49
	Oct	20	103	93	50	133	21	7	84	60	55	47	35	120	32	10	72	37	44	55	45
	Nov	3	116	80	23	100	23	30	75	23	60	73	19	30	28	7	30	63	27	48	30
	Dec	27	50	63	47	37	23	17	42	3	19	47	20	90	36	0		20	20	35	37
Brown shrimp	Jan	0		7	48	0		0		0		0		0		0		0		1	48
	Feb	0		0		0		0		0		0		0		0		27	58	3	58
	Mar	0		7	65	0		0		0		0		0		27	36	83	57	15	54
	Apr	0		1610	42	223	39	20	41	37	47	63	37	30	40	723	52	2137	51	716	47
	May	1540	66	10090	60	1750	56	2420	64	220	53	3230	57	1767	66	3857	57	6103	62	4398	60
	Jun	2760	73	433	63	877	60	2203	65	433	68	763	66	667	53	187	60	143	62	792	65
	Jul	367	71	390	70	683	61	503	66	460	59	773	81	633	59	93	60	953	50	534	64
	Aug	27	64	183	47	137	58	50	64	297	70	80	64	13	40	33	58	117	65	115	60
	Sep	100	51	553	51	330	59	23	47	73	56	287	66	243	57	0		653	50	284	54
	Oct	0		377	56	137	45	40	59	380	50	310	61	130	52	7	54	403	47	237	53
	Nov	7	58	257	51	473	54	80	46	0		57	58	23	56	73	43	860	60	209	56
	Dec	7	42	33	49	40	43	0		0		0		7	31	7	54	73	56	19	52
Pink shrimp	Jan	0		0		0		0		0		0		3	68	0		0		<1	68
	Feb	0		0		0		0		0		0		7	76	0		0		1	76
	Mar	0		0		0		3	32	0		3	95	107	45	3	77	0		11	48
	Apr	0		0		0		0		0		0		20	38	23	80	0		4	63
	May	0		0		0		0		0		0		0		0		0		0	
	Jun	0		0		0		0		0		0		3	65	0		0		<1	65
	Jul	0		0		0		0		0		0		3		0		0		<1	
	Aug	0		0		0		0		0		0		3	43	0		0		<1	43
	Sep	0		0		0		0		0		90	54	193	59	0		0		29	57
	Oct	0		0		0		0		0		7	50	237	54	87	47	0		31	52
	Nov	0		0		0		0		0		30	44	70	50	50	42	0		16	45
	Dec	0		0		0		0		0		0		73	36	3	41	0		7	36

Table A.1. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
White shrimp	Jan	0		3	68	0		0		0		0		0		0		0		1	68
	Feb	0		0		3	113	0		17	23	0		0		0		0		2	28
	Mar	0		3	60	0		0		0		0		0		0		0		1	60
	Apr	0		23	42	0		0		0		0		0		0		0		5	42
	May	0		3	132	0		0		0		0		0		0		0		1	132
	Jun	0		180	33	323	40	10	47	7	40	0		0		0		0		50	35
	Jul	510	61	4540	48	513	56	617	54	67	44	33	61	20	73	63	38	57	38	1101	49
	Aug	433	64	1283	50	1483	75	487	74	273	59	93	63	250	52	23	35	103	53	485	57
	Sep	420	70	1917	60	980	47	2550	64	93	60	233	52	77	71	0		277	36	901	60
	Oct	2933	70	1960	64	1157	74	2733	70	580	53	937	69	1430	62	3	32	640	56	1353	66
	Nov	3723	68	1540	52	2457	56	420	89	43	51	23	43	27	56	0		213	51	643	59
	Dec	170	60	210	54	3	56	137	51	0		13	57	20	54	0		167	61	95	55

Table A.2. Monthly mean catch rates (No./h) and mean total lengths (mm) of select shellfishes and finfishes caught with 6.1-m trawls in Texas bay systems during January-December 1987[a]. Blank indicates no measurement taken; ND = no data.

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
SHELLFISHES																					
Blue crab	Jan	<1	108	2	82	ND		1	69	9	64	4	81	2	20	0		17	28	3	60
	Feb	2	143	2	60	ND		4	69	8	70	5	59	2	60	2	92	2	34	4	67
	Mar	3	134	6	68	ND		17	55	34	67	5	93	10	78	21	73	7	84	13	67
	Apr	2	152	17	64	13	71	14	58	40	69	7	87	4	67	7	95	25	75	16	67
	May	4	136	47	70	53	81	17	87	64	95	10	101	11	113	28	98	38	86	33	83
	Jun	4	137	27	92	39	82	11	95	51	100	27	119	4	110	28	102	11	105	23	99
	Jul	7	126	16	95	28	108	5	85	48	99	14	107	4	120	17	111	15	109	16	99
	Aug	3	138	17	100	14	109	3	98	24	118	11	103	6	110	6	137	26	114	12	108
	Sep	6	145	5	60	2	74	11	90	16	135	10	99	3	132	11	153	11	109	8	105
	Oct	1	130	6	59	11	91	<1	78	12	108	6	59	2	132	9	148	2	130	5	89
	Nov	1	132	5	81	2	85	1	149	9	120	5	102	2	103	7	154	3	81	4	104
	Dec	6	128	5	60	10	69	<1	160	12	88	40	41	4	67	2	30	2	118	7	61
Brown shrimp	Jan	0		<1	90	ND		1	90	1	72	0		0		2	83	1	51	<1	79
	Feb	0		0		ND		<1	95	<1	60	<1	95	3	104	3	99	0		<1	100
	Mar	0		0		ND		2	93	<1	88	2	93	1	110	2	102	3	84	1	95
	Apr	0		1	89	2	62	4	94	6	96	5	83	4	105	11	111	5	81	4	96
	May	5	82	104	86	30	75	89	90	584	87	287	80	367	95	28	102	5	68	192	88
	Jun	17	101	74	88	10	81	198	94	57	76	349	90	37	83	14	108	1	104	108	90
	Jul	<1	107	10	96	2	79	47	85	38	78	120	98	30	93	8	98	4	63	31	90
	Aug	4	88	1	97	0		15	88	43	85	18	99	36	97	10	104	6	71	15	91
	Sep	5	84	3	83	0		17	82	3	88	11	93	12	99	20	105	<1	56	8	89
	Oct	0		2	83	0		13	95	5	86	5	92	5	97	0		<1	33	5	92
	Nov	1	82	2	85	0		<1	89	15	82	5	74	23	92	5	60	10	62	6	84
	Dec	3	69	1	79	0		<1	84	8	77	24	80	21	91	24	94	2	75	7	85
Pink shrimp	Jan	0		0		ND		0		<1	91	1	90	2	94	0		4	64	<1	83
	Feb	0		0		ND		17	100	2	80	7	90	14	94	0		0		6	96
	Mar	0		0		ND		5	82	7	83	6	87	14	106	2	94	0		4	91
	Apr	0		0		16	102	9	92	5	103	4	93	18	103	9	111	8	72	6	98
	May	0		0		0		4	101	5	99	6	78	17	111	1	116	0		4	103
	Jun	0		0		0		0		0		0		<1	115	2	100	0		<1	103
	Jul	0		0		0		0		0		<1	46	0		0		0		<1	46
	Aug	0		0		0		0		0		0		0		0		0		0	
	Sep	0		0		0		1	83	0		<1	90	1	106	0		<1	82	<1	90
	Oct	0		0		0		2	98	0		1	86	<1	96	0		0		<1	96
	Nov	0		2	111	0		<1	87	<1	94	3	83	20	99	0		0		3	99
	Dec	0		0		0		0		0		21	82	9	84	0		1	105	3	83

Table A.2. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
White shrimp	Jan	0		<1	68	ND		1	79	<1	42	0		2	89	2	110	0		1	82
	Feb	0		10	83	ND		12	97	1	84	2	85	4	100	0		0		6	90
	Mar	<1	87	30	95	ND		18	89	1	87	1	106	<1	124	1	69	0		14	93
	Apr	<1	80	20	97	4	110	3	106	2	81	2	86	1	111	2	104	0		8	97
	May	2	109	12	117	1	102	4	141	3	110	2	129	<1	150	1	133	0		5	121
	Jun	0		9	120	0		1	150	0		0		<1	118	1	152	0		3	122
	Jul	3	74	14	88	34	85	4	84	39	75	6	78	4	70	1	64	0		12	81
	Aug	59	105	129	99	53	96	46	96	164	91	21	101	41	98	3	98	15	74	84	96
	Sep	25	108	20	91	12	94	25	97	38	97	13	98	20	103	4	115	0		21	96
	Oct	65	102	22	95	13	94	14	108	39	92	12	102	15	101	5	98	<1	43	21	98
	Nov	26	91	28	92	9	95	1	92	22	83	8	97	25	102	13	105	3	92	17	93
	Dec	4	71	9	85	12	83	4	89	28	67	11	71	10	90	2	110	0		10	77
FINFISHES																					
Atlantic croaker	Jan	2	131	4	123	ND		4	48	5	46	1	61	1	135	3	180	0		3	91
	Feb	8	138	19	130	ND		14	66	16	60	21	58	3	140	9	185	1	64	14	100
	Mar	13	150	22	104	ND		106	66	157	82	19	69	9	102	12	128	6	74	55	79
	Apr	11	111	21	123	12	105	146	97	495	90	164	89	15	102	9	192	209	107	127	95
	May	8	116	49	113	22	125	410	107	298	104	181	99	60	106	24	132	11	129	166	106
	Jun	13	108	51	102	14	122	202	110	76	95	178	101	38	125	36	151	37	132	92	107
	Jul	8	151	15	123	8	161	42	116	70	112	87	122	102	127	18	122	17	142	42	121
	Aug	34	127	18	141	13	138	81	127	70	125	29	128	94	139	4	207	37	148	48	132
	Sep	26	133	6	142	19	142	9	139	4	126	16	137	53	149	6	202	26	163	14	145
	Oct	6	143	3	154	9	145	12	107	1	139	3	140	11	164	3	154	9	176	6	135
	Nov	17	152	2	159	2	162	2	141	<1	167	3	112	4	142	0		2	180	3	148
	Dec	55	156	1	139	3	142	<1	146	1	59	6	65	6	99	0		<1	170	4	131
Black drum	Jan	0		<1	246	ND		0		0		0		0		0		0		<1	246
	Feb	0		0		ND		0		0		0		0		1	307	0		<1	307
	Mar	1	256	0		ND		0		0		0		0		0		0		<1	256
	Apr	0		0		0		0		0		0		0		1	517	0		<1	517
	May	0		0		0		0		0		0		0		0		0		0	
	Jun	0		0		0		0		0		0		0		0		0		0	
	Jul	0		0		0		0		0		0		0		0		0		0	
	Aug	0		0		0		0		0		0		<1	169	0		0		<1	169
	Sep	0		0		0		0		0		0		0		0		0		0	
	Oct	0		0		0		0		<1	189	0		1	190	2	206	<1	16	<1	184
	Nov	<1	462	0		0		0		<1	211	0		<1	151	0		0		<1	228
	Dec	1	261	0		0		0		0		0		<1	209	12	230	0		1	230

Table A.2. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Gafftopsail catfish	Jan	0		0		ND		0		0		0		0		0		0		0	
	Feb	0		0		ND		0		0		0		0		0		0		0	
	Mar	0		<1	189	ND		0		0		0		0		0		0		<1	189
	Apr	0		0		0		0		0		0		0		0		0		0	
	May	0		0		0		0		0		0		0		0		0		0	
	Jun	0		0		0		<1	240	0		0		0		0		0		<1	240
	Jul	0		<1	96	1	102	2	107	19	107	5	110	<1	110	0		0		3	107
	Aug	1	174	3	145	2	134	9	133	53	127	7	125	2	126	0		<1	175	11	130
	Sep	0		0		2	167	2	160	<1	172	2	159	<1	176	1	183	0		1	164
	Oct	0		0		1	156	1	186	0		<1	166	0		0		0		<1	183
	Nov	0		0		0		0		0		0		0		0		0		0	
	Dec	0		0		0		0		0		0		0		0		0		0	
Gulf menhaden	Jan	0		4	97	ND		2	43	3	63	3	66	1	127	0		0		3	80
	Feb	1	44	18	93	ND		1	92	11	48	4	36	0		0		0		8	82
	Mar	<1	56	38	98	ND		13	69	9	60	2	65	<1	58	0		0		17	90
	Apr	<1	75	5	108	22	58	25	102	84	60	135	48	0		2	92	0		29	66
	May	2	123	8	122	26	77	26	110	36	81	6	105	1	180	0		0		14	103
	Jun	1	135	8	108	8	86	2	121	6	98	4	119	2	123	0		0		5	109
	Jul	4	86	5	122	7	95	10	92	28	77	3	119	<1	108	0		0		8	93
	Aug	3	117	2	110	3	84	4	106	40	92	4	136	2	136	0		0		7	99
	Sep	4	105	4	96	9	110	4	113	29	101	4	103	4	122	0		0		7	103
	Oct	1	134	6	100	7	107	6	111	6	89	1	119	<1	138	0		0		4	102
	Nov	2	110	61	86	2	99	1	102	2	99	<1	110	<1	62	0		0		21	86
	Dec	3	86	5	85	6	123	3	143	22	94	18	114	0		0		0		7	102
Hardhead catfish	Jan	0		0		ND		0		0		0		0		0		0		0	
	Feb	0		0		ND		1	223	1	277	1	244	4	231	0		0		1	234
	Mar	1	212	<1	136	ND		4	150	2	131	<1	241	5	206	2	240	1	233	2	177
	Apr	<1	173	2	180	1	219	2	202	7	237	4	186	8	172	6	222	1	160	3	200
	May	2	176	1	130	2	153	3	189	3	157	2	199	11	139	4	248	2	175	3	164
	Jun	5	194	11	183	1	158	4	194	4	214	2	177	14	186	5	196	1	163	7	188
	Jul	9	193	5	159	6	171	3	222	9	169	12	180	37	179	9	205	2	219	9	180
	Aug	11	181	9	191	4	162	13	173	4	184	10	187	33	168	2	204	0		11	178
	Sep	12	180	2	168	6	172	7	95	7	116	5	162	24	170	8	198	2	242	7	149
	Oct	1	205	1	137	4	159	10	147	6	122	4	220	15	163	7	195	2	231	6	156
	Nov	<1	308	<1	176	<1	173	8	102	<1	220	1	157	1	229	2	134	1	107	2	119
	Dec	<1	121	0		0		<1	93	0		0		0		0		0		<1	98

Table A.2. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Pinfish	Jan	0		<1	126	ND		1	88	1	101	1	109	130	118	4	108	2	107	14	117
	Feb	0		<1	126	ND		2	97	1	94	1	105	173	121	2	117	2	110	18	120
	Mar	<1	109	0		ND		<1	98	13	95	10	105	45	120	0		26	112	8	112
	Apr	0		0		0		7	105	2	103	8	105	85	125	2	136	45	104	13	118
	May	0		0		0		2	114	19	63	44	106	25	129	5	154	80	111	12	105
	Jun	0		<1	101	0		2	91	23	78	11	106	49	132	27	134	42	115	12	114
	Jul	1	105	1	102	<1	98	11	97	18	94	67	100	47	122	38	128	61	107	20	108
	Aug	<1	125	1	142	2	99	13	102	38	92	86	106	55	113	24	118	13	135	22	106
	Sep	1	137	<1	114	8	117	18	102	9	87	53	112	89	123	44	129	34	125	22	116
	Oct	1	125	0		20	112	25	106	62	98	112	112	101	126	32	161	58	116	37	115
	Nov	<1	154	1	139	2	114	26	103	63	95	208	104	70	121	21	114	77	115	42	106
	Dec	0		1	123	<1	118	2	102	16	95	81	103	184	117	5	111	18	107	29	112
Red drum	Jan	0		0		ND		0		0		0		0		0		0		0	
	Feb	0		0		ND		0		0		0		0		0		0		0	
	Mar	<1	405	0		ND		0		0		0		0		0		0		<1	405
	Apr	0		0		0		0		0		0		0		0		0		0	
	May	0		0		0		0		0		0		0		0		0		0	
	Jun	0		0		0		0		0		0		0		0		0		0	
	Jul	0		0		0		0		0		0		<1	399	0		0		<1	399
	Aug	0		0		0		0		0		0		0		0		0		0	
	Sep	0		0		0		0		0		0		0		0		0		0	
	Oct	0		0		0		0		0		0		0		0		0		0	
	Nov	0		0		0		0		0		0		0		0		0		0	
	Dec	0		<1	34	0		0		0		0		0		0		0		<1	34
Sand seatrout	Jan	0		0		ND		1	66	0		0		0		0		0		<1	66
	Feb	0		<1	91	ND		8	75	0		0		<1	152	0		0		2	77
	Mar	0		1	143	ND		2	93	0		0		<1	160	0		0		1	115
	Apr	0		1	135	0		1	144	<1	162	<1	132	0		0		0		1	139
	May	<1	70	4	123	0		5	146	2	104	4	79	10	73	0		0		4	112
	Jun	1	76	4	86	2	63	8	130	1	105	2	111	3	90	0		1	156	4	109
	Jul	0		3	108	4	125	1	105	1	99	<1	116	16	138	4	156	0		3	126
	Aug	7	123	2	114	3	134	7	108	1	84	<1	68	16	139	0		0		4	120
	Sep	3	140	1	76	<1	135	2	118	2	101	<1	112	17	150	0		2	173	3	131
	Oct	0		1	130	1	78	4	143	<1	85	0		3	153	0		1	140	2	140
	Nov	1	126	2	122	<1	111	1	99	1	104	<1	81	4	165	0		0		1	129
	Dec	1	71	<1	78	<1	140	2	115	<1	95	2	104	4	159	0		0		1	124

Table A.2. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Sheepshead	Jan	<1	170	0		ND		0		0		0		0		1	514	0		<1	459
	Feb	<1	267	<1	356	ND		0		0		0		0		0		1	116	<1	306
	Mar	<1	298	0		ND		0		0		0		<1	419	0		0		<1	383
	Apr	<1	161	0		0		0		0		0		0		0		0		<1	161
	May	1	303	0		0		0		0		0		0		0		0		<1	303
	Jun	<1	229	0		0		0		0		<1	150	0		0		<1	92	<1	144
	Jul	<1	246	0		0		0		0		0		1	308	0		0		<1	294
	Aug	<1	294	0		0		0		0		0		0		0		0		<1	294
	Sep	0		0		0		0		0		0		0		1	315	0		<1	315
	Oct	<1	345	0		0		0		0		0		0		1	369	0		<1	362
	Nov	<1	349	0		0		<1	111	<1	110	<1	97	<1	154	1	400	0		<1	188
	Dec	0		0		0		0		<1	138	0		0		1	287	1	228	<1	212
Southern flounder	Jan	<1	215	0		ND		0		2	190	1	164	0		0		1	352	<1	202
	Feb	1	199	<1	262	ND		<1	261	<1	160	<1	167	0		0		0		<1	234
	Mar	<1	210	0		ND		0		2	166	<1	174	0		0		0		<1	168
	Apr	1	173	<1	249	0		0		1	210	<1	47	0		0		0		<1	207
	May	<1	110	<1	336	0		<1	115	2	122	1	152	0		0		1	92	<1	157
	Jun	<1	156	1	134	<1	140	0		1	113	1	186	0		0		0		<1	143
	Jul	1	178	0		<1	110	<1	158	2	157	1	199	<1	210	0		0		1	166
	Aug	1	119	0		1	106	0		<1	110	1	153	<1	133	0		<1	96	<1	134
	Sep	<1	186	0		1	92	<1	322	0		0		<1	120	0		<1	100	<1	197
	Oct	0	108	<1	280	<1	308	<1	66	<1	100	<1	198	0		0		2	187	<1	205
	Nov	<1	64	<1	334	0		0		0		0		0		0		0		<1	303
	Dec	1	191	0		<1	280	0		0		<1	176	<1	234	0		0		<1	196
Spanish mackerel	Jan	0		0		ND		0		0		0		0		0		0		0	
	Feb	0		0		ND		0		0		0		0		0		0		0	
	Mar	0		0		ND		0		0		0		0		0		0		0	
	Apr	0		0		0		0		0		0		0		0		0		0	
	May	0		0		0		0		0		0		0		0		0		0	
	Jun	0		0		0		0		0		0		0		0		0		0	
	Jul	0		0		0		0		0		0		0		0		0		0	
	Aug	0		0		0		0		0		0		<1	130	0		0		<1	130
	Sep	0		0		0		0		0		0		0		0		0		0	
	Oct	0		0		0		0		0		0		<1	155	0		0		<1	155
	Nov	0		0		0		0		0		0		0		0		0		0	
	Dec	0		0		0		0		0		0		0		0		0		0	

Table A.2. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spot	Jan	4	118	20	123	ND		3	132	1	127	37	133	20	150	1	225	0		13	130
	Feb	2	130	19	129	ND		30	137	6	86	13	136	46	146	6	214	0		20	136
	Mar	7	133	13	141	ND		19	135	2	150	8	143	21	156	2	212	<1	180	12	142
	Apr	1	125	6	142	<1	104	19	135	24	85	25	99	14	164	3	165	6	102	13	121
	May	<1	159	2	121	6	79	62	99	74	91	27	97	43	113	12	105	32	102	32	99
	Jun	3	109	7	112	7	97	42	108	52	84	117	94	119	109	7	112	30	106	41	101
	Jul	1	103	6	110	<1	100	23	104	26	93	56	112	170	114	4	166	10	127	33	110
	Aug	7	112	10	118	4	103	78	112	78	111	105	114	175	124	4	170	5	127	57	116
	Sep	7	117	<1	220	5	118	22	119	1	111	20	119	147	127	2	145	4	121	22	125
	Oct	3	130	<1	126	14	127	12	129	4	122	67	128	139	134	3	148	9	121	23	132
	Nov	5	142	4	140	10	127	0		4	117	50	128	11	150	13	182	6	140	8	138
	Dec	34	147	4	140	26	129	5	136	4	133	174	130	34	138	4	172	0		22	134
Spotted seatrout	Jan	0		0		ND		<1	138	<1	119	<1	155	0		5	245	0		<1	203
	Feb	0		1	97	ND		0		1	162	1	151	<1	150	2	194	0		<1	139
	Mar	0		<1	162	ND		<1	142	0		<1	168	0		1	173	<1	162	<1	162
	Apr	0		0		0		0		1	198	<1	209	0		0		0		<1	200
	May	0		0		1	56	0		1	172	<1	140	0		2	162	0		<1	165
	Jun	0		0		0		0		<1	55	1	123	0		1	179	0		<1	129
	Jul	0		0		0		0		0		1	183	0		1	174	0		<1	178
	Aug	0		<1	187	0		<1	154	1	171	1	152	0		0		1	216	<1	173
	Sep	0		0		0		0		0		1	189	0		2	198	0		<1	195
	Oct	0		0		<1	190	0		0		<1	184	0		2	162	0		<1	168
	Nov	0		0		0		0		0		<1	110	<1	233	1	164	0		<1	183
	Dec	1	147	0		1	254	0		<1	100	2	172	1	145	4	231	0		1	184
Striped mullet	Jan	3	175	1	241	ND		0		18	149	0		1	190	0		0		3	158
	Feb	2	160	5	293	ND		0		0		0		0		0		0		2	286
	Mar	0		4	308	ND		<1	198	1	147	4	191	<1	138	0		0		2	274
	Apr	0		<1	238	0		0		0		<1	258	1	233	0		0		<1	239
	May	0		0		0		<1	201	<1	105	0		0		0		0		<1	165
	Jun	0		0		0		0		0		0		0		0		0		0	
	Jul	0		<1	303	0		0		<1	181	1	169	0		0		0		<1	213
	Aug	0		<1	364	0		0		<1	131	2	142	0		0		0		<1	244
	Sep	0		0		0		0		<1	136	<1	166	0		0		0		<1	143
	Oct	0		0		1	140	0		0		<1	90	0		0		0		<1	95
	Nov	0		1	268	0		0		1	140	1	137	5	188	0		0		1	216
	Dec	2	164	1	265	2	166	0		14	139	<1	110	0		0		0		2	158

Table A.2. (Cont'd.)

Species	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Other finfishes	Jan	<1	120	2	246	ND		8	66	8	43	7	59	8	85	18	62	8	61	6	79
	Feb	3	79	5	122	ND		20	90	11	66	31	69	19	60	15	96	11	115	13	84
	Mar	0		8	90	ND		18	79	35	95	29	57	24	103	29	107	20	125	18	89
	Apr	1	57	15	184	5	166	32	99	17	116	51	74	22	101	11	101	17	163	22	118
	May	2	151	9	120	4	64	38	102	26	95	35	70	22	141	36	60	12	148	22	101
	Jun	3	272	6	165	3	253	14	108	14	87	57	58	22	119	31	84	58	140	18	104
	Jul	4	107	9	101	3	180	28	152	35	90	72	71	37	138	52	68	42	121	28	107
	Aug	10	80	12	131	3	188	38	100	54	106	63	64	29	130	87	49	43	143	34	97
	Sep	3	109	17	84	8	98	23	84	9	94	23	90	39	137	128	116	34	153	26	105
	Oct	10	66	10	108	11	103	31	69	22	102	47	71	23	124	57	113	27	130	23	93
	Nov	15	66	15	94	6	67	20	81	22	92	45	59	29	113	93	77	50	135	26	88
	Dec	8	60	28	61	6	71	38	76	25	75	66	83	37	101	47	78	19	134	34	77
Total finfishes	Jan	9	140	32	130	ND		18	72	37	105	50	103	161	123	32	124	11	94	42	116
	Feb	15	131	67	135	ND		77	104	46	68	73	81	245	130	35	150	14	111	79	118
	Mar	24	154	87	125	ND		163	80	222	90	73	88	106	128	46	125	53	117	115	101
	Apr	14	113	51	144	42	90	232	109	632	98	388	80	145	127	34	165	278	121	208	106
	May	16	138	73	117	60	96	547	106	461	100	300	96	172	118	82	106	138	119	254	106
	Jun	26	145	88	121	36	117	274	114	176	94	373	92	247	126	106	127	169	125	180	112
	Jul	28	149	45	120	30	141	120	127	209	103	306	109	411	134	128	111	132	122	147	120
	Aug	75	128	57	144	35	132	243	119	339	112	308	110	406	137	121	76	100	144	195	122
	Sep	56	138	30	102	58	128	87	106	63	103	124	118	373	139	192	128	103	147	101	124
	Oct	23	115	22	119	67	122	102	102	101	103	234	115	294	136	106	139	108	130	102	119
	Nov	42	120	87	105	22	110	58	95	93	94	310	107	125	130	131	99	136	126	105	107
	Dec	106	143	40	86	45	126	52	92	84	97	349	110	267	123	72	122	38	124	100	109

[a]Sampling began in East Matagorda in April 1987.

Table A.3. Monthly mean catch rates (No./h) and mean total lengths (mm) of select shellfishes and finfishes caught with 6.1-m trawls in the Texas Territorial Sea during January-December 1987. Blank indicates no measurement taken; ND = no data.

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
SHELLFISHES													
Blue crab	Jan	4	91	1	76	0		0		<1	65	1	87
	Feb	6	94	<1	35	0		0		0		1	91
	Mar	4	87	2	104	0		0		0		1	92
	Apr	5	89	0		<1		0		1	160	1	100
	May	2	58	2	93	<1	160	<1	138	0		1	81
	Jun	1	105	2	153	1	174	1	149	<1	130	1	148
	Jul	3	114	<1	168	1	117	2	152	0		1	139
	Aug	2	125	<1	148	10	92	1	137	<1	142	3	101
	Sep	0		<1	85	<1	170	0		<1	155	<1	136
	Oct	1	134	0		0		<1	161	0		<1	143
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		<1	28	0		<1	28
Brown shrimp	Jan	0		<1	69	0		0		0		<1	69
	Feb	0		0		0		<1	116	2	118	<1	118
	Mar	<1	97	0		1	114	<1	119	0		<1	111
	Apr	0		0		2	124	0		0		<1	124
	May	2	102	48	92	2	106	3	109	0		11	94
	Jun	18	95	91	104	32	106	40	105	1	108	37	104
	Jul	34	109	52	114	12	114	16	123	6	121	24	114
	Aug	4	114	2	110	2	103	2	107	1	115	2	110
	Sep	0		<1	101	11	105	5	125	0		3	111
	Oct	0		0		9	111	9	110	<1	86	4	110
	Nov	1	82	0		<1	90	39	98	<1	136	8	98
	Dec	<1	78	0		1	109	2	88	0		1	92
Pink shrimp	Jan	0		0		0		1	103	4	124	1	120
	Feb	0		0		0		2	104	5	127	1	119
	Mar	0		0		0		4	113	0		1	113
	Apr	0		0		4	110	1	106	0		1	109
	May	0		0		3	117	1	100	1	107	1	112
	Jun	0		0		0		6	114	0		1	114
	Jul	0		0		0		2	120	0		<1	120
	Aug	0		0		<1	147	<1	150	0		<1	148
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		1	112	0		<1	112
	Nov	0		0		0		16	95	<1	123	3	96
	Dec	0		0		0		4	91	0		1	91

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
White shrimp	Jan	4	106	4	86	62	103	18	109	<1	131	18	104
	Feb	31	102	2	133	9	115	8	113	6	121	11	109
	Mar	10	128	2	116	11	111	9	111	<1	169	7	117
	Apr	1	102	<1	160	1	139	1	150	0		1	129
	May	1	141	4	146	1	167	2	154	0		2	151
	Jun	1	156	12	153	6	162	<1	158	0		4	156
	Jul	3	140	6	159	<1	172	3	164	0		3	157
	Aug	12	118	<1	170	<1	180	0		0	148	2	121
	Sep	1	106	<1	109	2	142	1	117	0		1	126
	Oct	11	120	<1	106	16	108	4	135	<1	81	7	115
	Nov	131	100	26	106	20	120	15	119	0		38	105
	Dec	15	96	54	93	2	95	4	118	<1	127	15	95
FINFISHES													
Atlantic croaker	Jan	1	133	0		0		0		0		<1	133
	Feb	2	83	<1	66	0		0		0		<1	79
	Mar	12	75	4	65	4	67	<1	79	0		4	72
	Apr	2	80	2	75	<1	91	0		0		1	79
	May	5	96	369	117	2	106	12	109	0		80	116
	Jun	19	117	358	119	208	120	80	126	0		138	120
	Jul	21	121	161	123	116	132	82	134	0		78	128
	Aug	5	162	0		112	140	16	143	1	159	28	141
	Sep	1	142	2	165	80	151	20	152	<1	146	21	152
	Oct	4	149	<1	22	4	145	18	160	0		5	157
	Nov	1	136	0		1	144	1	162	0		1	150
	Dec	<1	171	1	52	<1	98	<1	204	0		<1	103
Black drum	Jan	0		0		0		<1	680	0		<1	680
	Feb	0		0		0		0		0		0	
	Mar	0		<1	760	0		0		0		<1	760
	Apr	<1	851	0		<1	680	0		0		<1	762
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	0		0		0		0		0		0	
	Aug	0		0		0		0		0		0	
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Gafftopsail catfish	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	2	104	0		0		0		0		<1	104
	Aug	20	118	0		0		<1	134	0		4	118
	Sep	0		0		1	158	0		0		<1	158
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	
Gulf menhaden	Jan	<1	148	0		6	154	<1	145	0		1	153
	Feb	4	115	3	116	0		<1	188	0		1	118
	Mar	0		<1	194	0		0		0		<1	194
	Apr	<1	128	0		0		0		0		<1	128
	May	3	126	17	139	0		0		0		4	137
	Jun	1	118	6	145	<1	195	0		0		1	145
	Jul	6	145	1	141	1	121	0		0		1	142
	Aug	0		0		1	136	0		0		<1	136
	Sep	<1	108	<1	118	2	141	0		0		1	135
	Oct	7	150	3	126	1	104	0		0		2	139
	Nov	6	118	8	129	<1	175	0		0		3	125
	Dec	<1	94	<1	129	0		0		0		<1	118
Hardhead catfish	Jan	0		1	98	1	112	5	125	1	154	2	123
	Feb	0		1	118	<1	212	1	210	1	215	1	175
	Mar	<1	130	8	136	1	164	3	118	0		2	134
	Apr	0		2	229	0		0		0		<1	229
	May	2	183	7	156	0		0		0		2	160
	Jun	0		6	180	<1	205	<1	165	0		1	182
	Jul	5	132	12	127	<1	154	0		0		4	129
	Aug	6	161	<1	262	1	259	1	213	0		2	188
	Sep	1	208	12	155	12	163	8	188	0		7	167
	Oct	1	112	<1	146	4	108	9	182	0		3	153
	Nov	8	94	1	147	5	115	6	146	0		4	118
	Dec	<1	133	2	112	6	132	2	110	0		2	125

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
King mackerel	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	0		0		0		0		0		0	
	Aug	0		0		3	120	0		0		1	120
	Sep	0		0		0		<1	200	0		<1	200
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	
Pinfish	Jan	0		0		0		2	97	<1	109	<1	98
	Feb	0		0		1	107	<1	115	0		<1	109
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		<1	95	2	113	0		<1	111
	Jun	0		<1	142	2	134	4	117	0		1	122
	Jul	0		2	92	3	102	4	125	1	121	2	112
	Aug	0		0		7	106	2	112	0		2	107
	Sep	0		0		2	119	5	121	1	105	2	119
	Oct	0		0		1	123	0		0		<1	123
	Nov	0		0		6	113	2	98	0		2	109
	Dec	0		0		0		3	116	0		1	116
Red drum	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	0		0		0		0		0		0	
	Aug	0		0		0		0		0		0	
	Sep	0		0		<1	948	0		0		<1	948
	Oct	0		0		0		0		<1	42	<1	42
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Red snapper	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		<1	95	<1	119	<1	102	<1	105
	Jun	0		0		0		1	118	0		<1	118
	Jul	0		0		0		<1	140	0		<1	140
	Aug	0		0		<1	160	1	209	0		<1	197
	Sep	0		<1	68	1	71	5	109	<1	75	1	99
	Oct	0		0		1	79	0		0		<1	79
	Nov	0		0		<1	106	0		1	80	<1	85
	Dec	0		0		0		0		0		0	
Sand seatrout	Jan	2	130	4	125	1	131	3	156	0		2	135
	Feb	2	180	1	138	1	156	0		1	96	1	148
	Mar	16	111	4	149	<1	128	0		0		4	119
	Apr	2	95	1	127	1	183	<1	206	0		1	135
	May	6	116	3	143	2	221	<1	198	0		2	141
	Jun	<1	172	12	154	3	150	0		0		3	154
	Jul	6	157	10	130	12	133	3	145	<1	179	6	138
	Aug	4	152	0		<1	114	0		0		1	148
	Sep	0		1	165	5	179	1	190	0		1	178
	Oct	2	158	0		1	62	2	177	0		1	144
	Nov	8	126	3	158	7	142	<1	194	0		4	140
	Dec	10	141	12	103	8	81	5	156	<1	85	7	115
Sheepshead	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	0		0		0		0		0		0	
	Aug	0		0		0		0		0		0	
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Southern flounder	Jan	0		<1	200	0		0		0		<1	200
	Feb	<1	315	0		0		0		0		<1	315
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		<1	84	0		<1	84
	Jun	<1	136	<1	196	0		0		0		<1	177
	Jul	0		0		0		<1	200	0		<1	200
	Aug	0		0		0		<1	325	<1	168	<1	249
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	
Spanish mackerel	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		<1	155	0		<1	155
	Jul	0		<1	215	0		<1	485	0		<1	303
	Aug	<1	93	0		0		<1	135	0		<1	114
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		0		0		0	
	Nov	0		<1	119	0		0		0		<1	119
	Dec	0		0		0		0		0		0	
Spot	Jan	10	143	20	138	0		12	136	0		8	138
	Feb	16	144	1	130	<1	151	1	137	<1	170	3	143
	Mar	13	138	7	131	0		1	133	0		4	135
	Apr	0		0		<1	149	0		0		<1	149
	May	<1	143	2	114	10	102	22	118	0		7	113
	Jun	<1	114	21	125	5	136	20	128	0		10	127
	Jul	2	120	18	110	4	113	83	121	0		22	119
	Aug	0		0		8	126	9	130	0		4	128
	Sep	0		0		6	154	17	151	0		5	152
	Oct	0		0		0		10	162	0		2	162
	Nov	0		0		0		<1	170	0		<1	170
	Dec	1	137	2	146	2	142	3	139	0		2	141

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spotted seatrout	Jan	<1	178	0		0		0		0		<1	178
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	0		0		0		0		0		0	
	Aug	0		0		0		0		0		0	
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	
Striped mullet	Jan	0		0		0		0		0		0	
	Feb	0		0		0		0		0		0	
	Mar	0		0		0		0		0		0	
	Apr	0		0		0		0		0		0	
	May	0		0		0		0		0		0	
	Jun	0		0		0		0		0		0	
	Jul	0		0		0		0		0		0	
	Aug	0		0		0		0		0		0	
	Sep	0		0		0		0		0		0	
	Oct	0		0		0		0		0		0	
	Nov	0		0		0		0		0		0	
	Dec	0		0		0		0		0		0	
Other finfishes	Jan	10	86	33	113	28	100	39	98	22	90	26	100
	Feb	22	101	28	112	36	111	33	98	47	106	33	106
	Mar	60	106	96	89	105	101	99	98	20	104	77	98
	Apr	40	99	26	92	105	103	111	97	16	98	60	99
	May	77	107	193	111	208	122	201	110	34	85	145	112
	Jun	29	126	204	123	64	119	63	111	69	89	87	116
	Jul	72	82	189	103	134	141	294	113	313	93	199	107
	Aug	86	91	72	90	152	97	50	103	38	102	81	96
	Sep	536	82	120	92	150	118	101	129	28	108	185	96
	Oct	14	112	56	80	44	100	81	120	22	108	44	103
	Nov	59	86	102	73	80	95	160	86	22	100	86	85
	Dec	34	87	118	67	88	92	104	96	14	95	73	84

Table A.3. (Cont'd.)

Species	Month	Sabine		Galveston		Port O'Connor		Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Total finfishes	Jan	23	118	58	123	36	110	61	114	23	93	40	114
	Feb	46	119	34	113	38	113	35	103	49	108	40	111
	Mar	101	107	119	98	110	100	103	100	20	104	92	101
	Apr	44	102	32	98	107	106	111	98	16	98	63	101
	May	93	108	591	115	222	123	238	110	34	85	242	115
	Jun	50	123	610	130	283	121	170	120	69	89	243	124
	Jul	115	103	394	114	270	137	466	119	314	94	314	115
	Aug	122	104	72	91	285	112	81	116	39	105	122	108
	Sep	538	85	136	99	259	132	157	137	30	108	223	106
	Oct	28	130	60	83	56	103	119	137	23	108	58	116
	Nov	82	94	115	81	101	102	171	90	23	99	100	92
	Dec	46	100	135	73	103	95	117	101	14	95	85	90

Table A.4. Monthly mean catch rates (No./h) and mean total lengths (mm)[a] by size class (mm)[b] of Eastern oyster caught with 46.0-cm wide dredges on reef stations in Texas bay systems during January-December 1987.

Size		Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Lower Laguna Madre		Coastwide	
Class	Month	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spat	Jan	38		271		2233		140		38		772		70		202		426	
	Feb	90		687		914		742		177		130		361		412		495	
	Mar	570		423		1955		502		134		681		155		712		519	
	Apr	135		405		2130		180		45		1166		366		88		572	
	May	448		130		1254		387		61		37		0		188		204	
	Jun	25		12		1327		1220		38		358		8		738		325	
	Jul	208		2757		1109		949		0		41		5		195		1196	
	Aug	75		239		1133		2358		0		1708		115		0		770	
	Sep	68		2529		3712		293		0		19514		39		56		4625	
	Oct	698		2271		1334		558		213		11139		311		7808		3042	
	Nov	275		1310		472		208		0		6871		306		0		1763	
	Dec	162		1619		1738		347		82		8815		268		0		2331	
Small	Jan	50	64	891	50	932	50	333	55	469	61	1439	52	460	53	38	41	800	52
	Feb	75	63	617	49	743	50	466	51	803	56	1104	54	864	55	12	26	740	52
	Mar	75	66	1030	52	1389	47	818	48	396	56	1886	53	805	50	0		1046	51
	Apr	75	61	758	51	1697	49	623	53	279	53	1841	49	1182	49	12	58	961	50
	May	212	52	854	54	632	48	472	50	401	53	669	48	393	59	0		631	52
	Jun	281	53	989	52	2028	46	707	44	304	54	2328	49	197	53	138	42	1065	50
	Jul	1013	53	823	54	5096	45	451	54	10	48	80	52	180	58	62	28	760	50
	Aug	225	65	1158	51	1401	46	775	53	5	73	1494	56	82	55	0		884	52
	Sep	100	60	1882	49	2769	41	274	53	19	58	3202	51	197	43	0		1492	48
	Oct	828	56	1413	51	2117	46	598	51	70	49	4836	48	591	40	0		1656	49
	Nov	638	53	1265	51	2663	44	319	53	46	58	4740	48	62	58	0		1531	49
	Dec	438	57	1159	53	1666	53	838	50	72	36	6365	49	1020	55	0		1872	50
Market	Jan	225	92	399	88	376	88	239	94	724	93	217	87	199	99	12	80	371	90
	Feb	112	86	282	93	195	93	188	92	769	92	253	87	194	96	0		322	92
	Mar	475	100	521	90	328	89	172	89	344	92	226	83	257	94	0		354	90
	Apr	125	97	409	90	365	88	175	94	385	93	394	88	294	96	0		354	91
	May	288	97	257	92	258	99	239	89	229	91	54	83	198	94	0		208	92
	Jun	382	97	264	94	261	89	82	91	437	92	332	83	53	79	25	87	257	90
	Jul	399	93	253	91	168	100	194	92	5	95	33	90	46	90	0		141	92
	Aug	350	96	347	92	263	89	239	88	5	108	137	86	0		0		200	90
	Sep	100	93	502	93	24	81	38	82	38	100	394	86	20	84	0		264	91
	Oct	397	95	313	94	104	84	195	90	50	95	1061	86	0		0		339	89
	Nov	338	96	434	88	169	89	61	88	112	93	796	86	19	82	0		336	88
	Dec	188	93	460	91	223	89	177	95	0		1035	86	129	86	0		398	89

[a]All oysters except spat were measured.
[b]Spat (5-25 mm), small (26-75 mm), market (>76 mm).

Table A.5. Monthly mean catch rates (No./h) and mean total lengths (mm)[a] by size class (mm)[b] of Eastern oyster caught with 46.0-cm wide dredges on non-reef stations in Texas bay systems during January-December 1987.

Size Class	Month	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spat	Jan	0		0		444		0		135		6		0		0		25		32	
	Feb	0		195		15		21		12		0		0		0		12		58	
	Mar	0		0		0		14		6		0		0		0		0		3	
	Apr	0		0		716		12		0		330		0		0		0		66	
	May	119		0		140		40		6		12		0		0		25		28	
	Jun	0		0		384		0		0		0		0		0		75		20	
	Jul	0		0		0		0		0		35		0		0		0		4	
	Aug	0		0		464		6		0		0		0		0		0		21	
	Sep	78		0		0		2803		0		1596		0		0		38		715	
	Oct	0		832		6		0		0		101		0		0		0		231	
	Nov	164		98		26		42		0		515		31		0		0		108	
	Dec	6		6		64		6		0		1002		0		0		81		112	
Small	Jan	0		25	66	316	54	0		12	54	31	47	12	57	0		0		25	57
	Feb	12	66	53	60	81	44	56	48	12	54	0		0		0		0		31	54
	Mar	0		31	52	12	47	144	45	68	64	125	47	0		0		0		55	49
	Apr	6	67	12	56	159	46	154	55	0		160	55	0		0		0		57	54
	May	144	48	25	42	175	53	25	38	12	50	342	47	212	61	0		0		89	50
	Jun	0		19	53	363	55	6	52	6	38	0		19	50	0		0		24	54
	Jul	81	51	0		0		0		0		62	51	0		0		0		15	51
	Aug	50	62	0		543	53	0		0		62	52	0		0		0		34	55
	Sep	12	54	0		0		603	35	0		834	59	0		0		0		203	45
	Oct	6	73	168	41	106	45	0		0		385	48	0		0		0		89	45
	Nov	170	56	32	68	166	55	100	50	0		421	57	0		0		0		95	56
	Dec	69	60	19	43	244	53	44	59	0		106	52	0		0		0		41	54
Market	Jan	0		25	85	184	95	0		6	95	12	89	0		0		0		16	91
	Feb	12	88	115	105	18	90	12	107	31	96	0		0		0		0		38	104
	Mar	0		19	94	0		19	90	107	92	19	121	0		0		0		20	95
	Apr	31	96	0		110	89	77	92	0		234	90	0		0		0		47	91
	May	6	89	12	106	131	104	0		12	94	89	84	13	80	0		0		21	93
	Jun	0		12	100	87	86	0		0		0		6	76	0		0		8	91
	Jul	25	87	0		0		0		0		19	90	6	112	0		0		5	91
	Aug	0		0		182	89	0		0		12	84	0		0		0		9	88
	Sep	19	92	0		12	114	278	96	0		222	85	0		0		0		79	93
	Oct	6	101	32	99	0		0		0		40	86	0		0		0		13	95
	Nov	174	87	118	100	46	90	0		0		241	85	0		0		0		76	92
	Dec	38	98	19	117	44	86	25	89	0		182	88	0		0		0		34	94

[a]All oysters except spat were measured.
[b]Spat (5-25 mm), small (26-75 mm), market (≥76 mm).

Appendix B. Hydrological summary for bay trawl, oyster dredge and gulf trawl samples.

Table B.1. Monthly mean bottom salinity (o/oo) at sampled bay trawl sites in Texas bay systems during January - December 1987; ND = no data.

Month	Sabine Lake	Galveston	East Matagorda[a]	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jan	2.9	9.0	ND	15.6	15.6	14.8	27.0	37.1	30.3	15.7
Feb	5.9	11.1	ND	20.8	11.2	16.6	26.4	33.2	31.1	17.0
Mar	4.6	10.6	ND	14.8	6.0	11.7	21.0	27.8	28.8	13.5
Apr	3.5	13.2	12.1	21.4	7.5	17.0	23.0	29.4	30.1	16.7
May	8.3	15.9	17.2	22.6	9.7	27.5	34.1	30.6	30.6	20.4
Jun	9.1	12.6	15.8	14.5	9.3	14.0	22.7	21.3	34.9	15.0
Jul	1.6	8.2	9.0	16.1	8.0	18.8	21.7	24.6	36.6	13.8
Aug	7.9	13.4	12.1	15.7	2.4	19.8	26.0	28.3	37.9	15.8
Sep	14.9	22.6	17.7	26.1	6.4	23.8	31.9	33.2	35.9	23.0
Oct	15.8	21.6	19.9	26.6	13.0	22.3	33.4	37.6	35.8	24.0
Nov	13.3	24.4	22.5	26.8	14.2	16.6	34.3	40.4	34.9	24.8
Dec	3.9	21.4	21.0	23.0	14.8	15.2	32.3	40.3	29.3	22.1

[a]Sampling began in April 1987.

Table B.2. Monthly mean bottom temperature (C) at sampled bay trawl sites in Texas bay systems during January - December 1987; ND = no data.

Month	Sabine Lake	Galveston	East Matagorda[a]	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jan	10.2	13.2	ND	10.2	12.6	11.7	10.9	12.2	14.2	12.0
Feb	12.4	14.6	ND	15.0	14.7	15.1	13.8	18.5	18.5	14.9
Mar	17.2	16.7	ND	17.5	16.8	17.6	15.2	19.8	19.3	17.1
Apr	18.1	20.0	21.6	19.3	17.5	18.1	17.9	18.2	20.6	19.0
May	25.3	25.7	25.9	26.0	25.5	24.3	23.5	26.7	23.7	25.4
Jun	27.8	25.1	28.5	27.5	27.9	24.9	26.6	27.6	23.1	26.3
Jul	28.7	28.3	29.7	29.4	29.5	29.4	29.2	30.1	29.3	29.0
Aug	29.6	30.1	30.5	30.3	29.4	29.1	28.8	29.4	29.1	29.7
Sep	28.2	28.3	26.0	28.3	27.5	27.2	27.8	27.0	27.1	27.9
Oct	21.8	22.7	23.4	22.8	23.9	24.5	24.0	23.7	25.0	23.2
Nov	18.1	19.0	21.6	21.4	20.4	21.0	17.9	21.7	20.2	19.9
Dec	12.9	14.9	12.8	14.7	12.7	13.8	17.0	15.4	16.1	14.7

[a]Sampling began in April 1987.

Table B.3. Monthly mean bottom turbidity (NTU) at sampled bay trawl sites in Texas bay systems during January - December 1987; ND = no data.

Month	Sabine Lake	Galveston	East Matagorda[a]	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jan	17	17	ND	34	12	8	6	14	10	18
Feb	21	17	ND	9	11	9	9	21	5	13
Mar	20	24	ND	34	36	5	10	30	8	24
Apr	26	14	19	23	28	6	17	14	11	18
May	20	10	27	24	55	8	21	11	14	21
Jun	10	12	34	21	36	3	13	20	12	17
Jul	13	21	19	22	34	7	17	9	8	20
Aug	12	27	16	27	29	5	10	15	14	22
Sep	10	17	11	37	48	7	9	6	29	23
Oct	8	14	11	13	18	7	19	10	12	14
Nov	5	16	11	7	30	3	9	3	13	13
Dec	12	12	29	17	10	21	18	14	8	14

[a]Sampling began in April 1987.

Table B.4. Monthly mean bottom salinity (o/oo) at sampled gulf trawl sites in the Texas Territorial Sea during January-December 1987. ND = no data.

Month	Sabine	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
Jan	24.4	27.2	32.7	28.8	30.2	28.8
Feb	27.6	28.9	31.8	33.8	34.1	31.2
Mar	25.9	24.5	31.0	25.1	33.1	27.9
Apr	27.6	28.7	34.5	33.3	32.9	31.4
May	28.6	ND	35.6	37.6	33.8	30.5
Jun	22.9	29.6	32.4	35.7	35.1	31.2
Jul	26.5	26.9	33.0	37.4	36.5	32.0
Aug	30.0	34.2	34.9	36.8	36.3	34.5
Sep	29.1	32.6	36.4	38.6	36.3	34.6
Oct	29.5	29.1	34.2	36.6	35.7	33.0
Nov	27.2	32.5	32.7	34.9	34.4	32.4
Dec	30.5	34.7	33.0	34.1	34.6	33.4

Table B.5. Monthly mean bottom temperature (C) at sampled gulf trawl sites in the Texas Territorial Sea during January-December 1987.

Month	Sabine	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
Jan	12.2	13.9	14.8	15.3	14.6	14.2
Feb	12.8	14.3	14.4	17.2	18.0	15.3
Mar	14.7	15.9	15.6	16.4	19.1	16.3
Apr	17.3	18.0	17.1	19.6	18.0	18.0
May	24.1	25.8	22.1	25.6	21.9	23.9
Jun	27.9	27.0	26.9	27.2	26.2	27.0
Jul	28.9	29.1	28.7	27.2	23.2	27.5
Aug	29.8	29.7	28.5	26.2	25.6	28.0
Sep	27.9	28.3	28.3	27.2	27.5	27.8
Oct	22.1	23.6	24.1	25.2	26.1	24.2
Nov	19.4	19.7	21.8	22.1	22.5	21.1
Dec	15.9	16.5	16.5	17.3	20.3	17.2

Table B.6. Monthly mean bottom turbidity (NTU) at sampled gulf trawl sites in the Texas Territorial Sea during January-December 1987.

Month	Sabine	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
Jan	6	5	15	9	14	10
Feb	16	21	8	12	7	13
Mar	5	10	31	4	4	11
Apr	6	7	12	4	3	7
May	30	7	8	1	7	10
Jun	8	15	12	2	3	8
Jul	10	11	7	6	2	7
Aug	15	4	7	1	10	8
Sep	12	8	16	2	3	8
Oct	6	6	5	1	9	5
Nov	12	9	8	4	6	8
Dec	2	12	6	7	4	6

Table B.7. Monthly mean bottom salinity (o/oo) at sampled oyster dredge reef sites in Texas bay systems during January-December 1987. No samples were collected in upper Laguna Madre.

Month	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Lower Laguna Madre	Coastwide
Jan	2.3	10.2	12.4	13.3	14.2	13.8	25.4	25.2	13.6
Feb	3.7	11.8	11.6	15.8	10.2	16.0	23.2	30.4	14.0
Mar	3.9	12.2	11.7	14.7	9.9	10.5	19.0	30.8	12.6
Apr	5.1	14.1	13.0	19.2	10.2	10.5	24.8	33.1	14.6
May	15.0	17.6	18.2	17.8	10.5	21.0	32.1	29.0	18.8
Jun	9.5	13.9	13.3	8.1	6.7	14.2	25.5	34.0	13.4
Jul	5.5	9.0	8.4	8.3	7.0	13.2	20.7	41.5	10.7
Aug	16.5	15.7	12.2	14.8	2.3	10.1	22.1	39.5	13.1
Sep	12.5	21.3	16.6	18.2	7.9	18.7	31.2	39.5	19.2
Oct	17.6	21.8	17.8	23.8	15.0	15.0	33.5	34.0	20.8
Nov	18.4	25.4	21.5	24.9	20.7	14.5	32.8	27.0	23.2
Dec	6.8	20.6	20.9	19.0	17.2	12.2	26.6	28.0	19.0

Table B.8. Monthly mean bottom temperature (C) at sampled oyster dredge reef sites in Texas bay systems during January-December 1987. No samples were collected in upper Laguna Madre.

Month	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Lower Laguna Madre	Coastwide
Jan	9.4	12.6	14.4	11.0	12.3	11.5	12.5	11.8	12.3
Feb	14.2	14.8	13.7	16.0	14.0	14.7	14.3	17.8	14.7
Mar	16.4	17.0	18.6	18.8	16.7	16.3	18.5	19.4	17.4
Apr	19.5	20.1	21.3	21.8	19.7	16.2	19.8	20.9	19.6
May	23.3	26.2	25.3	26.6	25.6	23.6	25.5	27.4	25.5
Jun	28.4	25.4	28.4	27.0	28.0	23.2	27.8	24.9	26.1
Jul	28.5	28.1	29.9	29.2	29.5	29.2	29.3	30.5	28.9
Aug	30.0	29.9	30.4	30.6	29.5	28.9	30.0	29.8	29.8
Sep	27.3	28.2	28.1	27.9	27.8	28.2	26.6	28.8	27.9
Oct	21.8	22.1	22.7	22.3	24.0	24.0	24.4	25.2	23.1
Nov	19.4	19.6	20.2	22.2	21.1	20.2	17.8	22.2	20.1
Dec	13.3	14.1	13.3	14.4	13.3	13.5	17.2	16.3	14.2

Table B.9. Monthly mean bottom turbidity (NTU) at sampled oyster dredge reef sites in Texas bay systems during January-December 1987. No samples were collected in upper Laguna Madre.

Month	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Lower Laguna Madre	Coastwide
Jan	24	12	54	26	12	5	15	10	16
Feb	24	17	19	21	14	11	18	15	16
Mar	16	16	36	21	28	14	22	29	20
Apr	16	14	15	28	28	8	18	11	17
May	8	12	41	31	75	5	20	10	26
Jun	7	13	33	39	33	6	8	6	19
Jul	11	16	36	30	40	4	15	36	20
Aug	13	19	20	26	48	3	15	7	21
Sep	16	17	22	15	49	10	7	12	20
Oct	6	14	20	16	18	8	8	6	13
Nov	6	11	12	6	9	9	11	7	10
Dec	10	9	21	8	7	17	9	6	11

Table B.10. Monthly mean bottom salinity (o/oo) at sampled oyster dredge non-reef sites in Texas bay systems during January-December 1987.

Month	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jan	2.6	5.9	11.9	14.2	13.0	15.2	29.5	37.4	29.8	14.5
Feb	5.2	10.8	12.3	19.4	10.8	16.7	25.4	29.9	31.5	16.2
Mar	4.2	11.2	10.7	14.0	5.8	12.0	20.7	27.7	30.7	13.6
Apr	3.8	14.3	14.0	18.8	7.8	10.7	24.6	30.0	30.9	16.0
May	7.8	16.4	20.7	18.8	9.7	18.8	32.3	30.4	30.1	18.9
Jun	7.2	11.1	9.9	11.8	6.4	15.2	25.3	19.7	32.1	13.8
Jul	2.7	11.1	9.5	9.8	3.5	17.9	18.4	23.5	38.5	12.8
Aug	6.2	15.9	14.8	15.7	3.6	20.3	20.4	28.8	37.6	16.6
Sep	12.9	21.7	18.7	25.3	11.2	21.1	32.5	34.0	35.8	23.0
Oct	16.3	21.8	16.4	25.8	13.5	16.7	32.6	39.7	34.6	23.4
Nov	15.0	25.5	21.5	26.2	17.9	17.1	33.9	39.3	32.7	25.0
Dec	4.4	17.4	20.4	23.6	21.2	13.6	30.3	40.4	33.1	20.9

Table B.11. Monthly mean bottom temperature (C) at sampled oyster dredge non-reef sites in Texas bay systems during January-December 1987.

Month	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jan	9.9	13.1	14.5	10.5	12.3	11.8	9.4	12.3	14.5	11.8
Feb	11.6	14.4	13.8	15.3	14.1	15.1	14.6	18.5	18.2	14.8
Mar	16.9	17.1	18.5	17.1	16.9	16.3	17.6	19.6	19.7	17.4
Apr	19.3	20.8	20.7	21.7	19.2	17.5	18.0	18.0	20.7	19.8
May	24.7	26.3	26.3	26.2	25.9	24.3	24.9	26.4	24.1	25.7
Jun	29.3	25.1	29.2	27.7	28.3	26.4	27.8	28.7	25.0	27.1
Jul	29.1	27.6	29.6	29.6	29.7	29.2	29.5	30.1	29.6	29.0
Aug	30.2	29.9	30.3	30.1	29.6	29.3	29.2	29.0	28.1	29.7
Sep	27.6	27.8	28.5	28.0	28.0	28.6	27.9	27.3	26.1	27.9
Oct	22.3	22.3	23.0	23.0	23.7	24.0	24.3	23.8	24.6	23.2
Nov	18.1	20.0	20.7	21.5	19.5	20.3	18.1	22.5	22.0	20.2
Dec	13.6	13.6	12.5	14.5	13.6	13.8	16.0	16.5	12.6	14.1

Table B.12. Monthly mean bottom turbidity (NTU) at sampled oyster dredge non-reef sites in Texas bay systems during January-December 1987.

Month	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jan	22	16	63	20	9	5	9	19	10	17
Feb	31	18	24	10	19	11	8	25	5	16
Mar	23	17	29	31	29	11	12	16	6	20
Apr	21	16	18	30	24	9	29	26	14	21
May	12	9	29	28	62	8	11	20	12	19
Jun	13	11	31	33	32	7	13	29	9	19
Jul	17	17	30	23	37	5	10	52	12	21
Aug	14	20	20	24	32	5	15	16	10	18
Sep	11	10	40	50	42	11	10	11	17	22
Oct	9	8	16	11	18	11	22	8	11	12
Nov	7	10	14	6	25	4	9	4	11	9
Dec	15	9	40	9	10	24	22	9	9	14

Appendix C. Summary of SEAMAP samples by year and depth zone for brown shrimp, white shrimp, pink shrimp and blue crab off Texas during 1982-1987.

Table C.1. Mean catch rates (No./h) and mean size (mm) of select shellfishes caught during SEAMAP[a] sampling off Texas during June-July 1982-1987. Blanks indicate no measurement taken.

Year	Depth (m)	Samples (No.)	Brown Shrimp		White Shrimp		Pink Shrimp		Blue Crab	
			No./h	Length	No./h	Length	No./h	Length	No./h	Length
1982	0-18	22	1222	108	15	173	161	136	8	
	19-37	50	1427	115	0		20	138	1	
	38-55	29	138	145	0		<1	126	0	
	56-73	5	117	179	0		0		0	
	74-91	3	79	182	0		0		0	
1983	0-18	28	254	99	20	153	195	127	8	
	19-37	47	1445	119	1	167	87	121	4	
	38-55	24	304	132	0		1	118	1	
	56-73	8	66	156	0		0		0	
	74-91	2	71	168	0		0		0	
1984	0-18	16	733	116	30	174	4	151	6	
	19-37	40	1594	116	1	168	3	150	0	
	38-55	16	544	131	0		0		0	
	56-73	12	194	138	0		0		0	
	74-91	5	86	151	0		0		0	
1985	0-18	30	450	98	41	168	15	135	20	
	19-37	40	1362	112	2	167	10	131	4	
	38-55	14	150	127	0		<1	127	0	
	56-73	5	154	144	0		0		0	
	74-91	1	36	179	0		0		0	
1986	0-18	35	250	98	33	165	18	116	11	
	19-37	43	809	108	0		42	130	10	
	38-55	10	311	124	0		0		0	
	56-73	5	176	136	0		0		0	
	74-91	3	49	147	0		111		0	
1987	0-18	74	189	103	15	159	24	115	3	
	19-37	56	606	107	3	162	19	108	7	
	38-55	17	26	142	0		<1	180	2	
	56-73	8	16	177	0		0		1	
	74-91	7	11	177	0		0		0	

[a] Data presented here were collected by R/V OREGON II (NMFS) in conjunction with TPWD research vessels. The data were made available by the Southeast Area Monitoring and Assessment Program (SEAMAP). Samples collected with 12.2-m trawl, except 6.1-m trawl by TPWD vessels during 1987. Data normalized to 12.2-m trawl by NMFS.

Table C.2. Mean catch rates (No./h) and mean size (mm) of select shellfishes caught during SEAMAP[a] sampling off Texas during November 1986-1987. Blanks indicate no measurement taken.

Year	Depth (m)	Samples (No.)	Brown Shrimp		White Shrimp		Pink Shrimp		Blue Crab	
			No./h	Length	No./h	Length	No./h	Length	No./h	Length
1986	0-18	12	71		77		26		0	
	19-37	34	93		15		2		1	
	38-55	26	68		0		0		0	
	56-73	12	41		0		0		0	
	74-91	4	22		0		0		0	
1987	0-18	65	20		89		18		0	
	19-37	40	50		7		2		<1	
	38-55	12	21		0		0		0	
	56-73	2	6		0		0		0	
	74-91	1	0		0		0		0	

[a] Data presented here were collected with 12.2-m trawl by R/V OREGON II (NMFS) and with 6.1-m trawl by TPWD research vessels. The data were made available by the Southeast Area Monitoring and Assessment Program (SEAMAP).

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