

**Trends in Relative Abundance and
Size of Selected Finfishes and
Shellfishes Along the Texas Coast:
November 1975–December 1996**

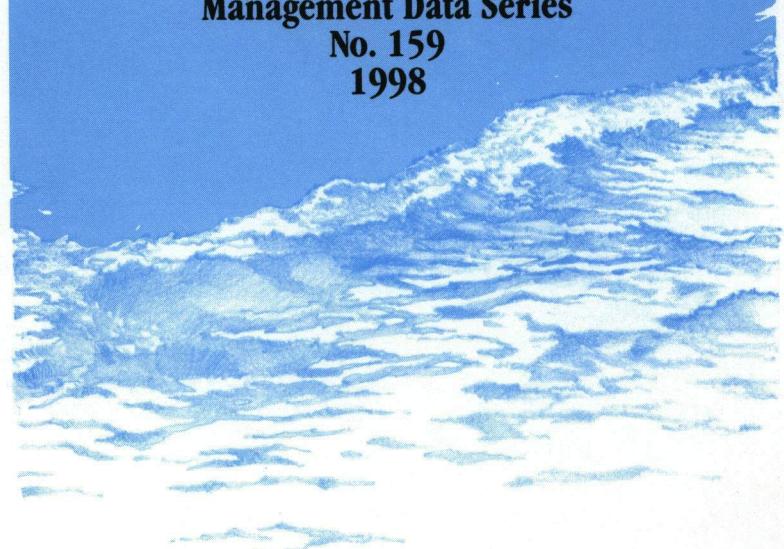
by
Rebecca A. Hensley
and
Billy E. Fuls

Management Data Series
No. 159
1998



COASTAL FISHERIES DIVISION

4200 Smith School Road
Austin, Texas 78744



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ABSTRACT

The objective of coastal monitoring projects is to determine the status of marine resources for management and harvest purposes. Trends in relative abundance and size of finfishes and shellfishes have been monitored since 1975 using a standardized fishery-independent sampling program in Texas bay systems. Data were collected with bag seines along bay shorelines, gill nets along bay shorelines, and trawls in coastal bay and Texas Territorial Sea waters. Oyster dredges were used to sample bay oyster reefs.

Data comparisons were made between 1995 and 1996 for coastwide catch rates for all gears. Coastwide spring and fall gill net catch rates for red drum increased with a record high catch rate during the spring of 1996. Spotted seatrout and black drum gill net catch rates increased slightly for both the spring and fall. Coastwide seasonal bay bag seine catch rates increased for Atlantic croaker and blue crab and decreased for red drum, spotted seatrout, black drum, brown shrimp and white shrimp; all were above average. Coastwide annual bay trawl catch rates increased for blue crab and decreased for Atlantic croaker, brown shrimp, pink shrimp and white shrimp. Coastwide annual Gulf trawl catch rates increased for Atlantic croaker and white shrimp and decreased for brown shrimp and blue crab. Coastwide annual catch rates for Eastern oyster spat, small oysters and market oysters increased to record highs in 1996. Data collected during 1996 were used to make resource and harvest management decisions.

INTRODUCTION

Fishery independent monitoring data are used to determine relative abundance and size of finfishes and shellfishes in Texas coastal waters to regulate and allocate harvest in Texas jurisdictional waters. To collect these data, Texas Parks and Wildlife (TPW) has used various gears systematically in Texas estuaries and the Gulf of Mexico since 1975 (Appendix A, Tables A.1-5). TPW 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 on bay oyster reefs and in 1985 using trawls in the Gulf to monitor and assess relative trends in abundance and size of finfishes and shellfishes. Monitoring of blue crab populations in Texas Bays was initiated in 1977 (Hammerschmidt 1982). Gill nets set during spring (April-June) and fall (September-November), and monthly bag seine, trawl and oyster dredge samples provide a statistically consistent and cost efficient method for obtaining population trend information on juvenile, sub-adult, and adult finfish and shellfish.

The objectives of the present study were to:

1. monitor and determine trends in species composition, size and relative abundance of selected finfishes and shellfishes in Texas coastal bay systems and in the gulf off Texas.
2. publish the results in a report which will assist resource managers to effectively manage finfishes and shellfishes.

Differences in the information in this report compared to previous reports are due to updating the data base. The present report should be considered the most accurate to date.

MATERIALS AND METHODS

Bag seines, trawls and monofilament gill nets (Appendix A) were used in each of the 9 Texas bay systems: Sabine Lake, Galveston, East Matagorda, Matagorda, San Antonio, Aransas, Corpus Christi, upper Laguna Madre and lower Laguna Madre. Trawls, identical to those used in the bays, were used in five gulf areas of the Texas Territorial Sea (TTS) ≤ 16.7 km from shore: 24.1 km either side of each of the Sabine Pass jetties (Sabine), Galveston jetties (Galveston), Matagorda jetties (Port O'Connor), Aransas Pass jetties (Port Aransas), and 48.2 km north from the Texas-Mexico border (Port Isabel) (Figure 1). Oyster dredges (Appendix A) were used in the Galveston, Matagorda, San Antonio and Aransas bay systems.

Gill net and bag seines sites were randomly selected from grids (1 minute latitude by 1 minute longitude) that contained ≥ 15.2 m of shoreline.

Each selected grid was subdivided into 144 5-second "gridlets". All "gridlets" that contained ≥ 15.2 m of shoreline were used to randomly choose sample sites.

Gill net sets were conducted overnight during each spring and fall season (Appendix A). The spring season began with the 2nd full week in April and extended for 10 full weeks. The fall season began with the 2nd full week in September and extended for 10 full weeks. Between three and five nets were set each week in each bay, except in East Matagorda Bay where only two overnight sets were made during each week. On no more than six nights during each season could three nets be set in a bay system. Each sampling week extended from 1 h before sunset on Sunday through 4 h after sunrise the following Sunday. Gill nets were set perpendicular to shore with the smallest mesh shoreward. Nets were set within 1 h before sunset and were retrieved within 4 h after the following sunrise. Total fishing time was recorded (nearest 0.1 h).

One half of the monthly bay bag seine samples were collected during each of two periods (1-15 and 16-31) of the month (Appendix A). Bay bag seines were pulled parallel to the shoreline for 15.2 m. The surface area sampled (nearest 0.01 ha) was estimated using distance pulled and length of extension of the bag seine. No grid was sampled more than once in a month.

Trawls were used in bays which were stratified into two zones: Zone 1 (upper bay nearest mouths of rivers) and Zone 2 (lower bay farthest from rivers). Trawl sites in Zones 1 and 2 were randomly selected from bay grids (1 minute latitude by 1 minute longitude) that contained water ≥ 1 m deep in at least 1/3 of the grid and which were known to be free of obstructions. One half of the monthly trawl samples in each zone in each bay system were collected during each of two periods (1-15 and 16-31) of the month (Appendix A). In East Matagorda Bay all water was designated as Zone 1; in each of Sabine Lake, upper and lower Laguna Madre all water was designated as Zone 2. In Zones 1 and 2, trawls were towed in a circular motion near the center of each grid. All trawl tows within bays were 10 minutes in duration. No grid was duplicated in a month.

Gulf trawl sites in each area were randomly selected from Gulf grids (1 minute latitude by 1 minute longitude) in the TTS (Figure 1) that contained water ≥ 1.8 m deep in at least 1/3 of the grid and which was known to be free of obstructions. One half of the samples in each area were collected during each of two periods (1-15 and 16-31) of the month (Appendix A). Trawls were towed linearly, parallel to the fathom curve; direction of tow (north or south) was randomly chosen for the initial tow and alternated on subsequent tows. All tows were 10 minutes in duration. No grid was duplicated in a month.

Trawls were used during daylight in the gulf off Sabine Pass, Galveston, Port O'Connor, Port Aransas, and Port Isabel during June and November 1996 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. (1985).

In each major oyster producing bay (Galveston Bay, Matagorda Bay, San Antonio Bay and Aransas Bay) oyster reef areas were mapped; areas in which Eastern oysters form reefs which are ≥ 0.2 m higher than adjacent bottom for a

continuous distance of >91.4 m long and 0.4 m wide. Oyster dredge sites were randomly selected from bay grids containing defined oyster reefs. Each selected grid was divided into 144 5-second "gridlets". All gridlets that contained defined oyster reefs were used to randomly choose sample sites. One half of the oyster samples were collected during each of the 1st-15th and 16th-31st of the month (Appendix A). Dredges were pulled linearly for 30 seconds. Stations were not duplicated within a month.

Sample catch rates for each species, or category of species, were calculated by dividing total number captured by either total hours fished (gill net, trawl, and oyster dredge) or ha sampled (bag seine). Catch rates for each bay system were then calculated by month, year or season. Bay specific catch rates were weighted for coastwide estimates (Appendix A). Fish greater than 204 mm long were eliminated from bag seine catch rate calculations based on the findings of McEachron and Green (1986). Live Eastern oysters were grouped into spat (5-25 mm), small oysters (26-75 mm), and market oysters (>76 mm).

Lengths (total or standard) of animals caught were recorded. In gill nets, up to 19 individuals of each species, within each mesh size, were measured on each sampling day. In trawls, 50 shrimp (length from tip of rostrum to tip of telson) of each species (brown, white, pink), 35 blue crabs (carapace width between spine tips) and up to 19 individuals of all other species were measured in each sample. For all other gears, up to 19 specimens were measured for each species in each sample collected.

Mean total lengths of individual species in gill nets were calculated for each of the four mesh sizes. Mean lengths for the combined meshes were calculated by weighting individual species mean lengths in each mesh by the number of each species caught in each mesh. For all other gears, mean lengths of individual species were calculated from individuals measured in each sample. Coastwide total mean lengths for each species in all gears were weighted according to the catch rate in each bay system, and by bay specific and gear specific weighting factors used for coastwide catch rates.

Surface salinity (ppt), water temperature ($^{\circ}\text{C}$) and turbidity [Nephelometric Units (NTU)] were measured at the set and pickup for each gill net and prior to each bag seine and beach seine sample (Appendix B). Bottom salinity, water temperature, and turbidity were measured prior to each trawl and oyster dredge sample (Appendix B).

RESULTS

Gill Net

Coastwide spring red drum (*Sciaenops ocellatus*) catch rate increased in 1996 (1.4/h) (Table 1; Figure 2). This was the highest catch rate on record. The lowest catch rates were during 1977-79 (0.3/h). Average size increased to 500 mm TL in 1996 (Table 1; Figure 4).

Coastwide fall red drum catch rate increased slightly in 1996 (0.8/h). The highest fall coastwide catch rate for red drum (1.0/h) occurred in 1979 and 1993, with lowest catch rates (0.5/h) in 1982 and 1983 (Table 2; Figure 3). Average size increased slightly to 468 mm TL in 1996 (Table 2; Figure 5).

Coastwide spring spotted seatrout (Cynoscion nebulosus) catch rate increased in 1996 (0.8/h). The highest spring coastwide spotted seatrout catch rate (1.1/h) occurred in 1976, with lowest catch rates in 1979 and 1984 (0.3/h) (Table 1; Figure 2). Average size decreased to 446 mm TL in 1996 (Table 1; Figure 4).

Coastwide fall spotted seatrout catch rate increased slightly in 1996 (0.5/h). The highest fall coastwide spotted seatrout catch rate (0.7/h) occurred in 1976, with lowest catch rate in 1979 (0.2/h) (Table 2; Figure 3). Average size decreased to 432 mm TL in 1996 (Table 2; Figure 5).

Coastwide spring black drum (Pogonias cromis) catch rate increased in 1996 (1.4/h). The highest spring coastwide black drum catch rate (1.5/h) occurred in 1994 with the lowest in 1978 (0.3/h) (Table 1; Figure 2). Average size increased to 444 mm TL in 1996 (Table 1; Figure 4).

Coastwide fall black drum catch rate increased in 1996 (1.5/h). The highest fall coastwide black drum catch rate occurred in 1993 (1.6/h), with lowest in 1979 and 1984 (0.3/h) (Table 2; Figure 3). Average size remained the same at 438 mm TL in 1996 (Table 2; Figure 5).

Spring and fall coastwide southern flounder (Paralichthys lethostigma) and sheepshead (Archosargus probatocephalus) catch rates varied little over the past 10 years (<0.1-0.1/h), but are generally down from pre-1983 years (0.1-0.3/h) (Tables 1 and 2).

Coastwide spring Atlantic croaker (Micropogonias undulatus) catch rates have remained low at <0.1/h since 1978 (Table 1, Figure 2). The fall catch in 1996 equaled that in 1995 (0.3/h). The highest fall catch rate on record (0.5/h) was in 1993; lowest catch rate occurred in 1975 (0.1/h) (Table 2; Figure 3).

Coastwide 1996 catch rates for total finfish increased in the spring (7.9/h) and fall (6.5/h) (Tables 1 and 2).

Spring and fall coastwide catch rates of blue crab (Callinectes sapidus) have remained at <0.1/h over the past 7-8 years, but are generally down from pre-1987 years (0.1-0.2/h) (Table 1 and 2). Average size decreased in 1996 to 145 mm in spring and increased to 159 mm in fall.

Bay Bag Seine

Annual (calendar year) bag seine catches varied by species and bay (Table 3). Seasonal trends in catch rates and mean lengths are presented for the following select species:

Coastwide seasonal red drum catch rates decreased in 1996; they were highest during November 1990–March 1991 and lowest during November 1989–March 1990 (Figure 6). Mean coastwide lengths fluctuated between 46 and 58 mm TL (Figure 7).

Coastwide seasonal spotted seatrout catch rates decreased in 1996; they were highest during July through November 1991 and lowest during 1984–86 (Figure 6). Mean coastwide lengths fluctuated between 44 and 56 mm TL (Figure 7).

Coastwide seasonal black drum catch rates decreased in 1996; they were highest in 1979 and 1990 (Figure 6). Mean coastwide lengths fluctuated between 54 and 93 mm TL (Figure 7).

Coastwide seasonal Atlantic croaker catch rates increased in 1996; they were highest in 1982 and lowest in 1989 (Figure 6). Mean coastwide lengths fluctuated between 49 and 57 mm TL (Figure 7).

Coastwide seasonal brown shrimp (Penaeus aztecus) catch rates decreased in 1996; they were highest in 1987 and lowest in 1979 (Figure 8). Mean coastwide lengths fluctuated between 54 and 64 mm TL (Figure 9).

Coastwide seasonal white shrimp (P. setiferus) catch rates decreased in 1996; they were highest in 1982 and lowest in 1985 (Figure 8). Coastwide mean lengths fluctuated between 52 and 59 mm TL (Figure 9).

Coastwide seasonal blue crab catch rates increased in 1996; they were highest in 1985 and lowest in 1989 (Figure 8). Coastwide mean lengths fluctuated between 23 and 28 mm TL (Figure 9).

Bay Trawl

Annual coastwide bay trawl catch rates for total finfish decreased in 1996 (201/h); ranging from 134/h in 1984 to 318/h in 1991 (Table 4).

Coastwide brown shrimp catch rates decreased in 1996 (23/h) to the second lowest on record. Catch rates ranged from 21/h in 1983 to 49/h in 1989 (Table 4; Figure 10). Coastwide mean length increased in 1996 to 91 mm TL, and in previous years ranged from 83–97 mm (Table 4; Figure 11).

Coastwide white shrimp catch rates decreased to a record low in 1996 (14/h); They have ranged up to 46/h in 1982 (Table 4; Figure 10). Mean coastwide length increased in 1996 to 100 mm TL, and in previous years ranged from 84–101 mm (Table 4; Figure 11).

Coastwide annual blue crab bay trawl catch rates increased slightly in 1996 (12/h) from the 1995 record low. Catch rates range from 10/h in 1995 to 24/h in 1992 and 1994 (Table 4; Figure 10). Coastwide mean length increased to 73 mm TL in 1996 (Table 4; Figure 11).

Coastwide Atlantic croaker catch rates decreased in 1996 (52/h). They ranged from 27/h in 1985 to 112/h in 1992 (Table 4; Figure 10). Coastwide

mean length increased in 1996 to 114 mm TL (Table 4; Figure 11).

Coastwide pink shrimp (P. duorarum) catch rates decreased in 1996 (3/h). They were highest in 1991 and 1995 (5/h) and lowest in 1982, 1984 and 1993 (1/h) (Table 4).

Annual catch rates of other major species caught in bay trawls varied by species and bay (Table 4).

Gulf Trawl

Annual coastwide Gulf trawl catch rates for total finfish increased in 1996 (397/h), and have ranged from 174/h in 1985 to 406/h in 1992 (Table 5).

Coastwide brown shrimp catch rates decreased to a record low in 1996 (4/h). They ranged up to 59/h in 1989 (Table 5; Figure 12). Coastwide mean length decreased slightly in 1996 (99 mm TL) and has ranged from 97 (1992) to 109 (1985) mm TL (Table 5; Figure 13).

Coastwide annual white shrimp catch rates increased in 1996 (21/h). They ranged from 10/h in 1990 and 1994 to 24/h in 1985 and 1986 (Table 5; Figure 12). Mean coastwide length decreased in 1996 (105 mm TL) equaling previous record lows of 1986 and 1992. They ranged up to 115 mm TL during 1985 and 1990 (Table 5; Figure 13).

Coastwide blue crab catch rates decreased in 1996 (1/h) to lows seen in 1987-89. They ranged up to 6/h in 1991 (Table 5; Figure 12). Coastwide mean length continued to decrease from 127 mm (carapace width) in 1985, to a record low in 1996 of 67 mm (Table 5; Figure 13).

Coastwide Atlantic croaker catch rates increased in 1996 to 77/h. They ranged from 23/h in 1985 to 162/h in 1993 (Table 5; Figure 12). Mean coastwide length increased in 1996 to 121 mm TL, but in previous years had decreased from 142 mm in 1985 to 113 mm in 1993 (Table 5; Figure 13).

Coastwide annual pink shrimp catch rates decreased to 1/h in 1996; they ranged from 1-4/h in past years (Table 5). Mean coastwide length was variable and ranged from 104 to 116 mm TL.

Annual catch rates of other major species caught in Gulf trawls varied by species and Gulf area (Table 5).

Oyster Dredge

Coastwide catch rates of Eastern oyster (Crassostrea virginica) spat increased to a record high in 1996 (4,740/h). They previously ranged from 491/h in 1984 to 1,880/h in 1989 (Table 6; Figure 14).

Coastwide catch rates of small Eastern oysters increased to a record high in 1996 (2,714/h). The previous low occurred in 1986 at 1,001/h (Table

6; Figure 14). Mean coastwide length decreased in 1996 and previously ranged from 46-54 mm TL (Table 6; Figure 15).

Coastwide catch rates of market Eastern oysters increased to a record high in 1996 (811/h). The record low occurred in 1990 at 215/h (Table 6; Figure 14). Coastwide mean length decreased in 1996 (88 mm TL) (Table 6; Figure 15).

Hydrologic Data

Hydrologic data varied among years, among bay systems and among gulf areas (Appendix B). Coastwide annual salinity increased during 1996 in coastal bays and in Gulf waters (Appendix B; Tables B.1, B.4, B.7, B.10, B.13 and B.16). Bay salinities were generally higher in upper Laguna Madre than in any other bay. Gulf salinities were highest off Port Isabel and Port Aransas. Water temperatures followed seasonal trends. Coastwide annual bay and gulf bottom water temperatures were similar to 1995 values (Appendix B; Tables B.2, B.5, B.8, B.11, B.4 and B.17).

SEAMAP

Summer (June)

Catch rates of brown shrimp by depth zone ranged from 332/h in 19-37 m to 10/h in 38-95 m during 1996 (Appendix C, Table C.1). Historically, brown shrimp are predominately caught in water 19-37 m deep.

White shrimp were caught primarily in water \leq 18 m deep during all years (Appendix C, Table C.1). At these depths, catch rates have ranged from 4/h-41/h in all years.

Pink shrimp were captured in waters \leq 55 m deep (0-195/h) during all years (Appendix C, Table C.1). They were caught predominately in waters \leq 37 m deep.

Blue crab are caught primarily in the 0-18 m zone (Appendix C, Table C.1). Catch rates at these depths ranged from 3-20/h in all years.

Fall (November)

Brown shrimp were caught in all depth zones, with highest catch rates at water depths generally $>$ 18 m (Appendix C, Table C.2). White shrimp, pink shrimp and blue crab were predominately caught in waters \leq 37 m deep.

OVERVIEW

TPW is mandated by the Texas Legislature and the TPW Commission to annually investigate population trends, habitat variability, socio-economics, commercial and recreational fishing impacts and any other factors or conditions which may result in increases or decreases of finfishes and shellfishes in Texas waters. Long-term trend data based on independent standardized monitoring programs are necessary to assess changes in relative abundance of these populations. Shrimp data were used to recommend dates for the annual closure of Texas gulf waters to shrimping. Oyster data were used to establish the oyster transplant season in Galveston Bay. Finfish data were used to recommend changes in fishing regulations. These data were used to develop management plans for shrimp, oysters, and blue crabs as mandated by the Texas Legislature. Additionally, these data are used routinely by "outside" scientists in the private and public sector, especially the Gulf of Mexico Fisheries Management Council and the Gulf States Marine Fisheries Commission. TPW data base was used extensively by both the Galveston Bay, and Corpus Christi Bay National Estuary Programs to determine status and trends of populations. Data in the present report are used to determine long-term trends in abundance and stability of finfishes and shellfish populations in Texas coastal waters and to implement management regulations.

Effective management of marine species populations requires knowledge of the relationship between spawning and subsequent adult abundance (Cushing 1970, Gulland 1977). Since it has been possible to detect changes in annual abundances with bag seines and gill nets, it may be possible to determine stock-recruitment relationships utilizing these gears. To determine these relationships, it is imperative that the standardized monitoring program used by TPW be maintained.

To determine effects of natural or man induced events in Texas coastal ecosystems, standardized monitoring programs used by TPW should be maintained. The following "meta events" affecting coastal waters were documented in 1996. Other unreported events may have occurred.

- 1) The Texas Closure (1 June-15 July; 45 days) for shrimping in state offshore Gulf waters (<9 nautical miles) was coordinated with NMFS for a combined closure out to 200 nautical miles offshore (Exclusive Economic Zone) to increase yield and value for the shrimping industry.
- 2) There were 511 sea turtle strandings (202 loggerheads, 123 Kemp's Ridleys, 120 greens, 11 leatherbacks, 41 hawksbills, 14 unknown) during 1996. The number of strandings were highest from July through November and occurred in conjunction with Gulf nearshore shrimp trawling effort.
- 3) Fish production for bay stockings were predominately from Perry R. Bass Marine Fisheries Research Station and the G.C.C.A./C.P.L Marine Development Center. Sea Center was not on-line for production. Total red drum stocked were 25,516,148 fingerlings and 146,364,414 fry. Total spotted seatrout stocked were 2,289,279 fingerlings and 61,570,096 fry. Atlantic croaker fry were stocked in small numbers (N=1,242,928). Distribution was greatly enhanced by the use of boats for some of the stockings in Texas bay ecosystems.

- 4) During 1996, two 4-pile jackets in High Island A-341 and one 8-pile jacket in High Island A-355, were donated to two Artificial Reef Program's deep water reef sites. These two donations resulted in an increase of \$591,850 to the Artificial Reef fund. The 8-pile jacket in High Island A-355 was severed to 90 ft by abrasive cutters, rather than using explosives, to obtain the maximum biological profile in the water column within current safe navigation allowances. Basco's Reef, a nearshore artificial reef site, was enhanced on 28 May 1996 by the U.S. Coast Guard, Group Galveston on the Cutter Papaw, when eight more concrete anchor sinkers were placed at the site.
- 5) Airplane flights on the opening day of the spring (15 May-15 July) and fall (15 August-15 December) bay shrimp seasons revealed the Texas bay commercial shrimp fleet was active from Galveston to Corpus Christi Bay. Only 471 shrimp vessels, compared to 833 in 1995, were counted on 15 May: 207 shrimp vessels were in Galveston Bay, 57 in Matagorda Bay, 26 in East Matagorda, 63 in San Antonio Bay, 55 in Aransas Bay, and 58 in Corpus Christi Bay. On 15 August, 844 vessels were counted: 324 in Galveston Bay, 344 in Matagorda Bay, 64 in San Antonio Bay, 63 in Aransas Bay, and 49 in Corpus Christi Bay.
- 6) A red tide bloom (Gymnodinium breve) occurred in Texas waters from 11 September to 1 November 1996. The event was first noticed off of Mustang Island in the Gulf of Mexico and eventually occurred in both bay and gulf waters south of Matagorda Bay and Pass Cavallo. A total of 3 million fish were killed, with 2% of recreational or commercial importance. The bay fish kill was 93,000 fish, while 2.9 million were killed in the Gulf. The top three species killed were: 23% Atlantic thread herring, Opisthonema oglinum, 23% Gulf menhaden, Brevoortia patronus, and 19% striped mullet, Mugil cephalus. Primary management concerns were from 12,000 brooder red drum that died in the Gulf off of Saint Joseph and Matagorda Islands during their spawning period. In Aransas and Corpus Christi Bays, bag seine catch rates for recruiting juveniles were ~65% below the long term mean. In addition, oyster harvest was closed in some mid-coast bays for up to 120 days, by the Texas Department of Health Seafood Safety Division, due to unsafe levels of red tide (Gymnodinium breve) and brevetoxin. These bays included: San Antonio and Aransas (except Copano) Systems closed into 1997; West Matagorda (Tres Palacios, Lavaca and Carancahua Bays) closed until 2 December; Matagorda Bay and Powderhorn Lake closed until 9 December; and Copano Bay closed until 19 December.
- 7) Aquaculture facilities continue to flourish along the coast. However, an outbreak of *Taura* virus in August (near Port Bay) and September (in 2 ponds in Man Tai shrimp farms) caused die-offs in private shrimp aquaculture ponds containing Penaeus vannamei. Mortality and financial loss in 1996 was lower than 1995.
- 8) A 100 square mile area of reddish discolored water was observed during June, 10-12 miles offshore from Sabine Pass, in the Gulf of Mexico. Dissolved oxygen ranged from 11.0 (at surface) to 6.0 ppm (at the bottom).
- 9) A state record spotted seatrout was caught in February and may have triggered a tremendous increase in fishing pressure directed toward trophy spotted seatrout in the upper Laguna Madre-Baffin Bay complex as well as

in other Coastal Bend areas. Large numbers of >28 inch spotted seatrout were landed during the spring and summer in the upper Laguna Madre. Increased sales and use of live croaker for bait was seen in part due to the effectiveness of this bait on large spotted seatrout.

- 10) The Limited Entry Program for the Texas Bay Shrimp Fishery initiated the first buyback program in 1996. There were 30 licenses (17 Bay, 13 Bait) purchased from 202 applicants. Shrimp vessel buybacks averaged \$3,394/vessel with a total of \$101,820 spent during 1996.
- 11) A seine survey of several bayous in the Houston area resulted in >136 kg of grass carp collected. Of 18 fish checked, all were diploid and sizes indicate spawning in the area. These fish would have ample opportunity to spawn in Bray's Bayou. Other species seen in Bray's bayou were Rio Grande cichlids and Plecostomus spp., striped bass hybrid, koi and goldfish.
- 12) Low water temperatures (February, March and December) and drought showed lower and delayed catches of shrimp and finfish, coastwide. Brown shrimp bag seine catches were both delayed and decreased while white shrimp showed the lowest bag seine catch rates since 1990. Even though a 25% reduction of finfish was observed in 1996 from the lower Laguna Madre, this was a record high year for juvenile snook in the Rio Grande River.
- 13) A ten-month drought affected the state of Texas and will go down as the worst this century for central Texas. Crop production fell in 1996 (as much as 82%) compared to 1995. Late rains did not fall in enough quantity to recharge aquifers (i.e., Edwards), reservoirs, or deep soil moisture. In the Coastal Bend area, Condition II water rationing was initiated and threats to increase to Condition III were curbed when rain fell in August and September. Rainfall of 8.6 inches in August for Corpus Christi, made August 1996 the third wettest month on record (behind 1980 and 1953). Drought persisted in the upper Laguna Madre area with salinities rising over 60 ppt in parts of the Baffin Bay complex and over 45 ppt in upper Laguna Madre. Due to the higher salinities caused by the drought, oyster drills and the oyster parasite (Perkinsus marinus) were very prevalent in the Galveston area. Oyster drills were found on reefs that had not been prone to this infection, historically. Even during this period of drought, oyster dredge samples indicated that 1996 was an all time high for production of spat, small and market size oysters.
- 14) Two tropical storms, Dolly and Josephine, may have affected Texas marine resources. The close passage (up to 100 miles from Brownsville) of Josephine caused high tides (>3-4 ft above normal), flood waters and heavy rains for parts of the Texas coast, especially the southern portions. Heavy rains received by Tropical Storm Dolly prompted flooding in southeast Texas (Sabine) during August.
- 15) An unusual amount of seismic activity for oil/gas exploration occurred in several bay systems. Most of the Baffin Bay complex, upper Laguna Madre (north of Pure Oil Channel), east end of West Matagorda Bay, and Nueces Bay had activity reported. Fish kills were observed in Nueces Bay and prompted monitoring by both Coastal Fisheries and Resource Protection Divisions. Concerns over impacts to oyster reefs with air gun use in seismic surveys were also investigated. No short term mortality was

observed in oysters under the immediate shot point.

16) Brown tide persisted in the Laguna Madre (upper and lower) for the seventh consecutive year. No open bay mortalities were observed with these blooms, but fingerling production at the TPW fish hatchery at Flour Bluff was adversely affected; low dissolved oxygen was recorded in ponds. It was reported that clearer water was seen in some areas of Baffin Bay and upper Laguna Madre during short periods.

17) Commercial black drum landings increased to record highs along the Texas Coast. About 4.3 million pounds were reported landed by trotline fishermen. Most (92%) landings came from the lower coast (upper Laguna Madre = 2.0 million; lower Laguna Madre and Corpus Christi Bay = 1.9 million lbs).

18) Kill Investigations:

Copano Bay: Gaping oysters were picked up in December at a rate of 10-20%. The area was free from red tide influence. Long dead oysters were also found at Long Reef with Perkinsus marinus believed to be the culprit.

San Antonio Bay experienced higher than normal fall oyster mortality. Fresh dead gapers with meat and without meat were analyzed. Causes were not confirmed but may be related to red tide, high salinities and low river flow.

Cold:

Due to record low temperatures during February, Sabine Lake noted a minor fish kill (20 striped mullet), while the lower Laguna Madre noted about 1,000 fish killed (600 snook, 150 gray snapper, and 125 burrfish). Additional fish were killed in a canal at DOW, in Freeport: 8 tarpon (37-48 inches), 12 skipjacks, 3 Atlantic spadefish and 12 gafftopsail catfish.

The cold snap in February accounted for a high number of green sea turtle strandings (N=62).

Red Tide (Gymnodinium breve bloom in individual ecosystems):

West Matagorda Bay saw red tide blooms through October with little to no impact on fish populations.

In San Antonio Bay, fish mortality was observed in all areas of the bay from September through the end of the year.

By mid September the bloom was present in Aransas Bay and Rockport (cells >20,000/ml) and numbers of animals in resource samples declined. Mortality estimates in Aransas Bay were 1.5 million fish.

The red tide bloom entered Corpus Christi Bay and the northern portion of the upper Laguna Madre system by the end of September and October, respectively. Mortality was light with mostly pinfish and striped mullet affected.

Red Tide was present in the lower Laguna Madre from October through the first of November. A moderate kill of striped mullet, Atlantic needlefish and hardhead catfish occurred near Green Island. Cell counts were as high as 48,000/ml.

19) Low DO's/ drought-related episodes

Low Dissolved Oxygen levels during May and June:

Upper Laguna Madre-Developed channel kill: Tropic Isles (Padre Island), no estimates.

Rockport: Two canals experienced minor kills of menhaden. Menhaden kills continued through June with estimates of 1 million fish by the second week of June.

West Matagorda Bay: An estimated 1.5 million menhaden reported in Lynn Bayou.

Galveston Bay: Primarily menhaden kills reported in marinas and dead end canals.

July: Vincent's Slough experienced a drought related fish kill of thousands of adult red drum, black drum and mullet. Reports of "blind drum" were also made.

October: Two fish kills were reported in the back marshes of Texas Bayou (50 flounder, some over 500 mm TL) and in the ten-mile cut area of Keith Lake marsh (unknown number of red drum). Low DO's (<2.0 ppm) are probably responsible for both fish kills.

20) Strandings

Three neonate dolphins were stranded the first week of April in Aransas Bay.

21) OIL CHEMICAL/ SPILLS

Sabine Lake

26 June: A broken pipeline spilled 200 barrels of oil into the Neches River and Lake Bayou.

November: A natural gas well spilled as much as 80 barrels of brine per day into Bessie Heights marsh. No associated fish kill observed.

Galveston Bay

March: A barge ruptured near the Bolivar Ferry landing and spilled about 5,000 barrels of heavy fuel oil. Strong outgoing tides carried the majority offshore (as far as 50 miles), but the infauna associated with the jetties was impacted, as well as several cases of oiled wildlife. Oil from this spill eventually washed ashore on beaches of Matagorda, Mustang and San Jose Islands, and Padre Island National Seashore.

May: A barge spilled 1,000 barrels of heavy fuel oil near Kemah. Most of the oil was blown onto shell and sand beaches on Atkinson Island and La Porte, minimizing impacts to oysters and nearby marsh habitat.

Corpus Christi Bay

Small crude oil/condensate spills investigated by Resource Protection Division:

January: fish kill-CC Inner Harbor

February: Petroleum at CC Inner Harbor
 May: Condensate at La Quinta Channel
 June: (2) Crude; Corpus Christi at Inner Harbor, Crude/condensate at Port Aransas Ferry Landing
 October: Crude/condensate; south of Dagger Island

Upper Laguna Madre
 April: Buffalo 292 oil spill, Gulf Beaches
 December: (2) crude/condensate at Pure Oil Channel, oil/condensate at Marker 89 & 90

Lower Laguna Madre
 A freighter in the Brownsville Ship Channel leaked ~8,400 gallons of diesel fuel. Most of the fuel was recovered. A small area was contained and then evaporated. One brown pelican was killed and the responsible party was fined by USFWS.

22) Regulations and Legislation

Adopted 11 June:
 State-wide hunting and fishing regulations- (TPW Commission adopted the repeal of 31 TAC 65.71-65.91 and a new 31 TAC 65.71-65.91 regarding Subchapter A. Fishing Provisions): which provides the Commission with the authority to establish wildlife resource regulations for the state.

Regulation 57.801 concerning EEZ:
 This rule will allow better and more timely management of species which migrate between state and federal waters off Texas and improve law enforcement while reducing confusion for Gulf anglers. Per implementation of S.B. 733 by the 74th Legislature, the item allows the Commission to authorize the executive director to modify state coastal fisheries regulations when necessary to make them consistent with federal regulations (> 9 nautical miles off the Texas coast).

Senate Bill 733:
 Texas Parks and Wildlife implemented Proclamation 57.801 which removed cobia, king mackerel, Spanish mackerel and wahoo from the list of commercially protected finfish.

Senate Bill 814:
 This bill redefines "commercial fisherman" to include a person who unloads, in Texas, aquatic products taken from waters outside this state for commercial purposes; creates a commercial shrimp boat captain's license; requires a captain who operates a licensed shrimp boat to hold a shrimp boat captain's license; establishes a resident and a non-resident fee for a shrimp boat license; exempts a person holding a licensed commercial shrimp boat, oyster boat or bait dealer from holding a general commercial fisherman's license; exempts a person holding a shrimp boat captain's license and each paid crew member from the commercial finfish fisherman's or bait dealer's licenses requirements when catching or unloading finfish taken incidental to lawful shrimping operations; allows only the holder of a commercial shrimp boat license to sell shrimp and other aquatic products taken in legal shrimping operations, allows a wholesale or retail fish dealer or restaurant to purchase aquatic products from the holder of a commercial shrimp boat

captain's license and requires the appropriate commercial license number to be included on an aquatic cash sale ticket.

House Bill 1785:

This bill allows the Commission to waive the fee or license requirement or establish a lower fee for a resident who is older than 65 years (born after August 31, 1930) or under 17 years of age.

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Table 1. Mean catch rates (No./h) and mean total lengths (mm) of selected fishes and blue crab caught with gill nets (all meshes combined) by bay system during Spring 1976-96. Blank indicates no measurement taken. ND = no data.

Species Year	Sabine Lake No./h Length	Galveston No./h Length	East Matagorda No./h Length	Matagorda No./h Length	Natacorda No./h Length	San Antonio No./h Length	Aransas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length
Red drum	ND	0.1	310	ND	1.0	429	1.0	410	0.6	412	0.1
1976	ND	0.3	450	0.2	418	0.1	467	0.3	380	0.4	401
1977	ND	0.3	394	0.4	429	0.5	444	0.2	421	0.4	461
1978	ND	0.1	480	0.1	466	0.2	414	0.4	423	0.3	479
1979	ND	0.2	480	0.1	449	0.4	451	1.1	387	0.7	404
1980	ND	0.9	449	0.4	431	0.2	465	0.5	408	0.6	430
1981	ND	0.3	474	0.4	436	0.5	425	0.4	408	0.4	430
1982	ND	0.9	474	1.0	478	0.6	411	0.7	402	0.5	385
1983	ND	0.9	474	1.0	482	0.7	446	0.2	513	0.3	419
1984	ND	0.9	538	0.5	514	0.1	466	0.2	465	0.4	463
1985	ND	0.6	538	0.5	514	0.1	457	0.2	465	0.4	457
1986	0.4	520	1.4	497	0.8	456	0.8	463	0.6	395	0.7
1987	0.2	516	0.6	497	0.6	465	0.7	451	0.6	459	0.4
1988	0.3	498	0.7	492	0.9	473	0.7	434	1.1	470	0.5
1989	0.5	480	0.7	478	1.7	492	0.6	452	0.7	438	0.7
1990	0.5	509	0.5	529	0.8	568	0.3	483	0.3	474	0.5
1991	0.5	581	0.3	548	0.5	532	0.3	495	0.3	447	0.4
1992	0.7	470	1.2	465	2.1	456	1.3	397	1.3	429	1.6
1993	0.4	529	1.2	529	2.6	514	0.9	426	1.6	439	1.2
1994	0.4	507	0.5	536	1.6	528	0.6	470	1.3	458	1.2
1995	0.5	456	0.7	486	2.4	517	0.9	459	1.4	447	0.8
1996	1.2	542	1.4	523	4.4	526	1.1	483	2.2	477	2.2
Spotted seatrout	ND	<1	530	ND	0.3	422	0.5	382	3.3	465	0.4
1976	ND	0.2	516	2.0	434	0.2	381	0.9	408	1.0	422
1977	ND	0.2	523	0.4	441	0.6	409	1.4	436	0.5	435
1978	ND	0.2	515	0.4	426	0.3	490	1.9	436	0.4	507
1979	ND	0.2	419	0.8	402	0.6	426	0.9	402	0.2	465
1980	ND	0.1	483	1.8	416	0.4	406	0.7	453	0.8	468
1981	ND	0.4	491	0.9	454	0.5	456	0.8	440	0.7	445
1982	ND	0.4	510	1.7	441	0.7	452	0.6	444	0.6	447
1983	ND	0.3	498	0.7	468	0.3	439	0.3	483	0.2	435
1984	ND	0.5	506	0.6	467	0.3	424	0.3	457	0.4	430
1985	ND	0.5	449	1.0	432	0.5	441	0.4	426	0.4	430
1986	0.3	460	0.5	449	0.7	436	0.4	447	0.5	456	0.5
1987	0.2	339	0.6	449	0.7	459	0.4	434	0.4	447	0.4
1988	0.2	386	0.7	459	0.8	456	0.5	430	0.5	435	0.5
1989	0.2	441	0.6	481	0.5	494	0.5	428	0.6	459	0.6
1990	0.1	441	0.5	457	0.6	449	0.3	432	0.6	480	0.5
1991	0.1	467	0.5	449	0.3	498	0.4	431	0.8	440	1.0
1992	0.2	406	0.7	446	0.4	511	0.4	440	0.4	449	0.7
1993	0.3	415	0.5	460	0.5	501	0.6	428	0.7	477	0.6
1994	0.3	408	0.7	460	0.7	496	0.7	418	0.8	438	0.9
1995	0.1	462	0.7	455	0.5	490	0.4	431	0.9	446	0.6
1996	0.2	411	0.7	438	0.6	514	0.6	414	1.3	429	1.0
Black drum	ND	0.2	290	ND	0.8	418	1.0	306	0.9	389	0.6
1976	ND	0.4	388	0.3	262	0.5	519	1.0	314	1.2	316
1977	ND	0.2	439	0.4	345	0.2	300	0.1	306	0.4	358
1978	ND	0.3	292	0.7	328	0.5	415	1.1	370	0.3	323
1979	ND	0.4	314	1.0	272	0.9	355	0.5	263	1.0	320
1980	ND	0.8	418	0.8	312	0.3	301	0.4	352	0.8	362
1981	ND	0.6	343	0.8	294	0.5	363	0.7	317	1.1	300
1982	ND	0.9	337	2.7	327	0.6	355	0.6	323	1.2	340
1983	ND	0.6	373	1.0	391	0.2	368	0.2	476	0.1	359
1984	ND	0.5	346	0.4	313	0.2	402	0.1	313	0.4	396
1985	ND	0.3	383	0.6	345	0.3	402	0.1	302	0.3	396
1986	0.3	397	0.5	368	0.6	320	0.4	366	0.2	392	0.5
1987	0.1	399	0.5	343	0.8	376	0.4	339	0.4	375	0.8
1988	0.1	410	0.4	380	0.7	376	0.4	390	0.4	371	0.7
1989	0.2	326	0.6	350	1.8	378	0.4	412	0.3	363	0.6
1990	0.2	378	0.5	372	1.5	393	0.8	341	0.3	330	0.6
1991	0.3	318	0.6	356	1.4	347	0.8	354	0.5	329	0.7
1992	0.2	366	0.5	370	1.3	391	0.4	339	0.7	374	1.6
1993	0.3	377	0.4	345	0.4	345	0.4	449	1.8	449	1.6

Table 1. (Cont.)

Species Year	Sabine Lake No./h Length	Galveston No./h Length	East Matagorda No./h Length	Matagorda No./h Length	San Antonio No./h Length	Aransas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length
Black drum (cont.)										
1994	0.4	415	0.1	363	0.6	418	1.2	489	1.0	469
1995	0.2	381	0.3	332	0.9	418	0.7	395	1.1	444
1996	0.5	378	0.3	375	0.7	391	1.2	395	1.1	383
Sheepshead										
1976	ND	0.0	<.1	338	0.1	234	0.1	420	0.3	341
1977	ND	0.0	<.1	338	0.1	280	0.2	308	<.1	232
1978	ND	0.0	<.1	296	0.1	278	0.1	313	0.2	354
1979	ND	0.0	<.1	305	0.1	297	0.1	402	0.2	356
1980	ND	<.1	353	0.3	347	0.1	334	0.1	320	0.5
1981	ND	<.1	393	0.2	326	<.1	453	0.6	352	0.2
1982	ND	0.1	332	0.0	330	0.2	354	<.1	326	0.2
1983	ND	0.1	313	0.4	311	0.1	373	0.2	372	0.1
1984	ND	0.1	351	0.3	354	0.1	387	0.2	398	<.1
1985	ND	<.1	352	0.2	372	<.1	337	<.1	409	<.1
1986	<.1	372	<.1	372	0.2	356	<.1	369	0.1	347
1987	<.1	364	<.1	361	0.2	314	<.1	417	<.1	305
1988	0.0	<.1	405	0.1	350	<.1	357	0.1	342	<.1
1989	<0.0	529	0.1	384	0.3	324	<.1	371	<.1	350
1990	<.1	364	<.1	378	0.3	364	0.1	400	<.1	372
1991	<.1	354	<.1	381	0.2	343	<.1	359	<.1	391
1992	<.1	278	<.1	346	0.1	356	0.1	367	0.1	315
1993	<.1	343	<.1	376	0.2	360	0.1	408	0.1	355
1994	<.1	353	<.1	374	0.2	413	<.1	372	<.1	344
1995	<.1	309	<.1	389	0.1	428	0.1	407	0.3	359
1996	<.1	362	<.1	383	0.5	438	0.2	403	0.7	401
Southern flounder										
1976	ND	0.0	ND	0.1	351	0.1	328	<.1	328	0.1
1977	ND	<.1	249	0.1	352	<.1	330	0.1	279	<.1
1978	ND	<.1	451	0.1	346	0.1	290	0.1	388	<.1
1979	ND	0.1	344	0.1	325	0.1	307	<.1	292	0.1
1980	ND	<.1	244	0.1	340	<.1	270	0.1	270	0.1
1981	ND	0.1	343	<.1	319	0.1	301	0.1	305	0.1
1982	ND	0.1	366	0.1	318	<.1	327	<.1	333	<.1
1983	ND	0.1	338	0.1	349	0.1	317	<.1	317	<.1
1984	ND	0.1	349	0.1	348	<.1	346	0.1	347	0.1
1985	ND	0.1	345	0.2	329	<.1	358	0.1	316	0.1
1986	<.1	364	0.1	338	0.1	330	0.1	354	<.1	335
1987	<.1	292	0.1	367	0.1	367	0.1	345	<.1	332
1988	<.1	288	0.1	347	0.1	361	<.1	350	0.1	332
1989	<.1	309	<.1	351	0.1	362	<.1	318	<.1	329
1990	<.1	329	0.1	322	0.1	365	<.1	354	<.1	311
1991	<.1	319	0.1	371	0.1	366	<.1	373	<.1	326
1992	<.1	364	<.1	360	0.1	395	<.1	357	<.1	335
1993	<.1	334	<.1	343	0.1	378	<.1	327	<.1	326
1994	<.1	315	<.1	331	0.1	400	<.1	369	<.1	369
1995	<.1	369	<.1	373	0.1	380	<.1	360	<.1	381
1996	<.1	369	<.1	373	0.1	380	<.1	377	<.1	392
Atlantic croaker										
1976	ND	0.2	298	ND	0.1	255	0.0	0.2	332	0.0
1977	ND	0.3	268	0.1	247	<.1	293	<.1	227	<.1
1978	ND	0.1	260	<.1	257	<.1	263	0.0	250	<.1
1979	ND	0.2	268	0.1	250	0.0	254	<.1	240	0.1
1980	ND	0.1	264	0.1	250	<.1	276	0.0	289	0.1
1981	ND	0.1	262	0.1	258	<.1	270	<.1	265	0.3
1982	ND	0.2	268	0.1	278	<.1	273	<.1	286	0.2
1983	ND	0.1	265	<.1	322	<.1	225	<.1	298	<.1
1984	ND	0.2	273	<.1	318	<.1	184	<.1	260	<.1
1985	ND	0.1	271	0.4	250	<.1	245	<.1	250	0.3
1986	0.1	259	0.4	271	0.1	247	<.1	242	<.1	268
1987	0.1	263	0.2	260	<.1	246	<.1	246	<.1	263
1988	0.1	259	0.1	265	<.1	260	<.1	268	<.1	261

Table 1. (Cont.)

Species Year	Sabine Lake No./h Length	Galveston No./h Length	Matagorda No./h Length	Matagorda No./h Length	San Antonio No./h Length	Araansas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length
	East									
<i>Atlantic croaker</i> (cont.)										
1989	0.1	268	0.1	264	0.1	280	<.1	250	0.0	<.1
1990	<.1	278	0.1	269	0.1	268	<.1	237	0.1	<.1
1991	0.1	297	0.1	262	<.1	256	<.1	257	0.0	263
1992	0.1	263	0.2	253	0.2	270	<.1	237	0.1	261
1993	0.1	286	0.2	256	0.1	259	<.1	237	0.1	264
1994	0.1	297	0.1	267	0.1	272	<.1	263	0.1	279
1995	<.1	278	0.2	262	0.1	281	<.1	289	0.1	275
1996	0.1	268	0.3	277	0.1	255	<.1	249	0.1	277
<i>Gafftopsail catfish</i>										
1976	ND	6.4	504	ND	0.5	494	2.3	456	0.0	0.0
1977	ND	0.2	480	0.4	506	0.9	556	3.3	538	0.0
1978	ND	0.3	539	0.1	546	1.1	546	1.8	496	0.1
1979	ND	0.3	520	0.5	534	0.4	553	0.4	534	0.5
1980	ND	0.2	511	0.2	566	0.5	554	1.2	547	0.4
1981	ND	0.2	514	0.3	480	0.8	541	0.5	537	1.4
1982	ND	0.4	513	0.2	496	0.4	544	1.4	540	0.9
1983	ND	0.2	514	<.1	475	0.3	537	2.0	530	0.9
1984	ND	0.2	527	<.1	580	1.0	529	1.1	530	0.6
1985	ND	0.3	532	<.1	467	0.4	517	0.8	537	0.1
1986	0.2	490	0.4	515	0.3	468	0.3	533	0.5	554
1987	<.1	509	0.4	552	0.1	507	0.2	539	0.1	567
1988	0.1	538	0.2	511	0.1	530	0.5	531	0.3	563
1989	<.1	494	0.3	526	0.1	525	0.6	520	0.4	557
1990	<.1	518	0.8	528	0.2	460	0.9	534	0.6	554
1991	<.1	520	0.2	504	0.2	528	0.5	531	0.7	565
1992	<.1	519	0.1	521	0.2	556	0.3	530	0.6	550
1993	<.1	477	0.5	494	0.2	581	0.5	543	0.8	576
1994	<.1	518	0.1	495	0.2	569	0.8	545	1.2	571
1995	<.1	508	0.4	498	0.3	543	0.3	517	0.7	557
1996	<.1	377	0.3	496	0.1	569	0.5	537	0.6	554
<i>Gulf menhaden</i>										
1976	ND	0.2	261	ND	0.7	299	0.1	250	0.0	0.0
1977	ND	2.5	251	<.1	245	0.1	245	0.2	233	0.3
1978	ND	0.3	242	<.1	194	0.2	242	1.2	258	0.0
1979	ND	1.2	251	0.0	251	<.1	251	1.3	241	0.1
1980	ND	<.1	193	0.0	<.1	252	0.1	287	<.1	257
1981	ND	0.4	260	0.0	254	0.2	254	0.1	252	0.6
1982	ND	0.4	254	0.0	<.1	248	0.3	252	0.1	243
1983	ND	0.8	254	0.0	<.1	251	0.2	243	<.1	249
1984	ND	0.5	254	0.0	0.1	251	0.2	243	0.1	249
1985	ND	0.8	253	<.1	281	0.5	242	0.3	244	0.1
1986	0.8	279	1.3	251	<.1	226	0.1	244	0.4	253
1987	<.1	348	1.2	245	<.1	227	<.1	241	0.0	240
1988	<.1	278	0.1	244	0.0	0.2	244	<.1	226	0.2
1989	<.1	269	1.4	249	0.0	0.2	232	<.1	226	0.1
1990	<.1	270	1.6	242	<.1	237	0.1	216	<.1	235
1991	<.1	253	0.3	252	<.1	216	0.1	239	<.1	237
1992	<.1	266	0.7	257	<.1	207	0.1	245	0.1	252
1993	<.1	256	1.5	247	0.0	0.1	217	0.0	242	0.2
1994	0.1	267	0.5	260	0.0	0.1	235	<.1	254	0.1
1995	0.1	275	0.2	257	<.1	252	0.3	255	0.1	262
1996	<.1	256	0.4	252	<.1	241	0.1	241	<.1	257
<i>Striped mullet</i>										
1976	ND	0.1	385	ND	0.2	322	0.2	338	0.6	366
1977	ND	0.2	322	0.0	327	0.2	314	0.9	317	0.2
1978	ND	0.2	320	0.1	336	0.1	341	0.7	334	0.1
1979	ND	0.2	343	<.1	335	0.4	328	0.2	337	0.1
1980	ND	0.1	318	0.1	345	<.1	341	0.1	336	0.2
1981	ND	<.1	318	0.2	344	0.2	320	0.2	344	0.1
1982	ND	0.2	350	0.1	346	0.1	341	0.2	341	0.3
1983	ND	0.2	350	0.1	346	0.2	341	0.1	367	0.2

Table 1. (Cont.)

Species Year	Sabine Lake No./h Length	Galveston No./h Length	Matagorda No./h Length	East No./h Length	Matagorda No./h Length	San Antonio No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length
Striped mullet (cont.)										
1984 ND	0.2	344	0.2	340	0.3	328	0.2	337	0.4	337
1985 ND	0.2	340	0.3	339	0.3	332	0.3	340	0.1	338
1986 0.1	326	0.2	350	0.2	321	0.1	328	0.2	336	0.1
1987 <.1	312	0.2	366	0.1	319	0.2	343	0.2	354	0.2
1988 <.1	327	0.1	344	0.2	333	0.1	323	0.2	348	0.1
1989 <.1	323	0.2	348	0.4	339	0.2	337	0.1	356	0.1
1990 <.1	325	0.2	341	0.3	342	0.4	342	0.2	357	0.2
1991 <.1	325	0.1	352	0.2	341	0.2	347	0.2	343	0.1
1992 <.1	310	0.1	352	0.3	340	0.3	341	0.2	352	0.2
1993 <.1	331	0.1	358	0.3	371	0.2	333	0.3	347	0.2
1994 0.1	343	0.1	347	0.1	381	0.3	343	0.3	359	0.2
1995 0.1	341	0.3	356	0.2	366	0.5	347	0.3	364	0.2
1996 0.1	336	0.3	348	0.2	349	0.2	352	0.2	355	0.2
Total finfishes										
1976 ND	11.1	429	ND	ND	5.2	394	7.6	391	9.5	415
1977 ND	8.8	316	4.3	395	5.9	442	8.2	428	8.1	428
1978 ND	5.0	357	2.4	359	4.8	437	7.7	409	2.0	406
1979 ND	6.8	345	2.5	396	3.4	409	3.2	453	3.2	343
1980 ND	5.0	380	4.2	347	5.4	428	5.2	422	2.8	387
1981 ND	4.6	369	5.5	363	5.3	408	6.1	417	3.1	405
1982 ND	8.1	378	4.7	368	5.3	435	6.8	411	6.0	432
1983 ND	9.0	369	7.6	384	4.5	417	7.2	422	5.8	417
1984 ND	6.2	389	3.7	397	4.3	449	5.6	431	3.9	432
1985 ND	7.6	381	3.8	408	5.2	446	4.1	479	3.6	452
1986 4.9	432	9.3	5.4	381	5.0	425	3.5	425	5.0	425
1987 2.0	517	8.7	373	4.3	384	4.0	430	2.9	420	3.0
1988 2.5	472	6.7	385	4.6	401	4.5	411	4.7	444	4.2
1989 2.6	474	9.0	365	7.4	396	5.1	428	6.4	436	4.4
1990 2.5	485	10.5	367	8.2	403	6.1	437	4.2	403	4.4
1991 3.1	474	6.9	367	11.7	358	6.4	415	6.1	437	5.1
1992 2.6	445	8.4	395	8.8	423	6.3	407	5.9	448	5.7
1993 2.4	480	9.8	387	8.7	459	7.0	424	8.6	467	7.9
1994 2.7	451	6.6	394	6.8	467	7.2	419	9.0	444	7.4
1995 2.3	463	8.4	390	7.4	460	7.8	409	9.9	422	7.2
1996 5.1	493	7.9	397	9.1	460	8.2	393	10.9	417	8.4
Blue crab										
1983 ND	0.2	151	0.3	154	0.1	151	0.2	142	0.3	151
1984 ND	0.2	150	0.4	135	0.1	143	0.2	137	0.2	142
1985 ND	0.3	149	0.5	151	0.2	144	0.3	136	0.2	141
1986 0.2	146	0.3	151	0.6	133	0.2	140	0.1	154	0.1
1987 0.3	152	0.3	139	0.3	138	0.1	138	0.2	155	<.1
1988 0.3	154	0.1	148	0.1	159	<.1	135	0.1	141	0.3
1989 0.2	157	0.1	137	0.4	128	<.1	136	<.1	149	<.1
1990 0.2	154	0.2	141	0.2	129	<.1	138	0.2	140	<.1
1991 0.1	141	0.2	132	0.4	135	0.2	144	0.1	144	0.1
1992 0.1	151	0.2	153	0.1	135	<.1	144	0.1	142	0.3
1993 0.2	161	0.1	144	0.2	162	0.1	147	0.1	148	0.2
1994 0.1	155	<.1	144	0.1	160	<.1	143	0.1	149	<.1
1995 0.1	164	0.1	147	0.3	165	<.1	151	<.1	167	<.1
1996 0.2	150	0.1	136	0.2	152	0.1	138	<.1	151	<.1

Table 2. Mean catch rates (No./h) and mean total lengths (mm) of selected fishes and blue crab caught with gill nets (all meshes combined) by bay system during fall 1975-96. Blank indicates no measurement taken; ND = no data.

Species Year	Sabine Lake No./h Length	Galveston No./h Length	East Matagorda No./h Length	Natacogorda No./h Length	San Antonio No./h Length	Aransas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna No./h Length	Coastwide No./h Length	
Red drum											
1975	0.8	382	1.1	403	ND	1.2	337	0.9	339	0.3	
1976	ND	1.0	509	1.1	487	0.5	406	0.5	395	0.4	
1977	ND	0.6	445	0.9	390	0.8	386	0.6	401	0.4	
1978	ND	0.3	429	0.7	376	1.1	395	0.6	429	0.3	
1979	ND	0.8	386	0.7	403	1.4	353	1.9	376	0.8	
1980	ND	0.5	436	0.8	473	0.6	434	0.9	411	1.1	
1981	ND	0.5	429	0.7	405	0.6	390	0.7	373	0.8	
1982	ND	0.6	440	0.9	401	0.6	390	0.5	360	0.4	
1983	ND	0.6	436	0.8	394	0.5	418	0.6	407	0.4	
1984	ND	0.9	451	1.1	551	0.4	408	1.0	410	0.3	
1985	ND	0.9	421	1.3	420	0.8	394	1.3	383	0.5	
1986	0.4	481	0.7	468	0.9	453	0.8	403	1.2	385	0.9
1987	0.4	449	0.5	459	0.9	446	0.8	372	1.0	473	0.6
1988	0.5	399	0.8	437	1.5	486	0.9	418	1.1	457	0.9
1989	0.4	461	0.6	479	1.1	511	0.5	402	1.1	468	0.7
1990	0.4	500	0.3	488	0.8	497	0.5	408	1.0	458	1.0
1991	1.1	412	0.5	393	0.9	380	0.6	402	1.3	375	1.0
1992	0.5	531	0.7	482	2.0	494	0.8	419	0.7	453	1.4
1993	0.3	484	0.4	482	1.9	526	0.9	439	1.6	480	1.7
1994	0.6	426	0.6	437	1.9	478	0.6	447	1.0	470	1.0
1995	0.6	454	0.5	474	2.1	470	0.5	413	0.7	421	0.9
1996	0.8	431	0.5	453	2.2	479	0.7	452	1.0	456	1.1
Spotted seatrout	0.1	413	0.2	447	ND	0.6	419	1.0	389	0.6	
1975	ND	0.3	463	0.9	451	0.4	437	0.7	427	0.2	
1976	ND	0.3	501	0.3	461	0.4	455	0.5	387	0.1	
1977	ND	0.3	544	0.3	400	0.8	406	0.5	387	0.1	
1978	ND	0.2	449	0.1	385	0.6	418	0.2	439	0.1	
1979	ND	0.4	476	0.2	418	0.3	406	0.3	435	0.2	
1980	ND	0.4	473	0.2	419	0.3	437	0.3	428	0.2	
1981	ND	0.3	483	0.8	419	0.4	437	0.3	428	0.2	
1982	ND	0.3	456	0.4	468	0.3	430	0.4	428	0.2	
1983	ND	0.3	464	0.5	420	0.3	438	0.2	425	0.2	
1984	ND	0.4	465	0.3	459	0.2	430	0.2	420	0.1	
1985	ND	0.3	470	0.3	418	0.4	439	0.2	430	0.2	
1986	0.2	395	0.4	438	0.4	444	0.5	406	0.3	432	0.2
1987	0.1	410	0.2	459	0.5	425	0.6	425	0.3	442	0.3
1988	0.1	420	0.5	444	0.7	432	0.3	439	0.4	446	0.4
1989	0.1	430	0.3	441	0.4	447	0.2	435	0.3	457	0.3
1990	<1	399	0.2	460	0.5	461	0.2	427	0.2	479	0.3
1991	0.1	378	0.2	442	0.3	473	0.5	406	0.4	415	0.3
1992	0.1	392	0.3	418	0.5	452	0.4	417	0.2	436	0.4
1993	0.1	450	0.3	446	0.9	472	0.3	430	0.3	442	0.5
1994	0.1	398	0.4	434	0.8	465	0.3	417	0.5	435	0.6
1995	0.1	397	0.4	439	1.0	474	0.3	438	0.4	431	0.4
1996	0.2	405	0.6	430	0.7	490	0.3	416	0.7	426	0.7
Black drum	0.5	294	0.4	366	ND	0.9	326	0.5	315	0.8	
1975	ND	0.3	337	0.7	305	0.9	344	1.2	325	0.6	
1976	ND	0.4	384	0.5	371	0.5	383	0.5	336	0.4	
1977	ND	0.4	383	1.0	346	0.5	303	0.3	311	0.1	
1978	ND	0.2	398	0.1	410	0.2	404	0.4	361	0.3	
1979	ND	0.8	391	0.9	341	0.7	306	1.2	298	0.9	
1980	ND	0.8	408	0.4	343	0.7	383	0.5	315	0.5	
1981	ND	0.3	355	2.4	346	0.6	352	1.0	296	1.1	
1982	ND	0.6	381	1.0	361	0.6	375	0.6	328	0.6	
1983	ND	0.2	405	0.7	348	0.2	386	0.4	329	0.2	
1984	ND	0.8	379	0.6	363	0.4	357	0.3	295	0.4	
1985	ND	0.4	360	0.7	380	0.6	351	0.4	342	0.5	
1986	0.4	360	0.7	376	1.5	336	0.4	383	0.5	357	0.5
1987	0.3	378	0.4	376	1.5	336	0.4	370	0.2	410	0.2
1988	0.2	355	0.5	387	1.2	339	0.7	334	0.7	377	0.5
1989	0.5	324	0.4	384	1.4	358	0.8	351	1.0	418	0.6
1990	0.3	342	0.4	375	0.8	368	0.6	362	1.0	431	0.8

Table 2. (Cont.)

Species Year:	Sabine Lake No./h Length	Galveston No./h Length	East Matagorda No./h Length	Matagorda No./h Length	San Antonio No./h Length	Aransas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length
Black drum (cont.)										
1991	0.3	347	0.5	382	1.0	364	0.6	375	1.3	369
1992	0.4	373	0.5	402	1.1	422	0.7	394	0.3	352
1993	0.3	372	0.6	400	1.0	456	0.8	430	1.0	449
1994	0.5	370	0.5	415	0.3	442	0.7	438	0.9	453
1995	1.0	347	0.5	358	0.6	461	0.5	354	0.7	398
1996	0.6	410	0.4	381	0.5	401	1.0	394	1.4	404
Sheepshead										
1975	0.0	<.1	362	ND	0.1	316	0.3	291	1.1	296
1976	ND	<.1	331	0.2	308	0.2	329	0.4	355	0.2
1977	ND	0.1	342	0.3	316	0.2	321	0.5	267	0.2
1978	ND	<.1	308	0.2	307	0.1	342	0.5	306	0.2
1979	ND	<.1	335	0.2	352	0.1	312	0.5	362	0.6
1980	ND	0.1	283	0.1	309	<.1	353	0.7	296	0.6
1981	ND	<.1	321	0.1	277	0.2	292	0.3	335	0.2
1982	ND	<.1	330	0.3	332	0.1	313	0.1	302	0.2
1983	ND	<.1	342	0.5	345	0.1	338	0.2	302	0.1
1984	ND	0.1	369	0.3	383	<.1	369	0.1	427	<.1
1985	ND	<.1	380	0.2	379	<.1	374	0.1	362	<.1
1986	<.1	340	0.1	359	0.1	297	0.1	336	0.1	329
1987	<.1	402	<.1	381	0.1	366	0.1	352	0.1	371
1988	0.0	<.1	368	0.1	340	0.1	340	0.1	346	0.1
1989	<.1	299	0.1	371	0.2	343	<.1	324	0.2	341
1990	<.1	303	<.1	418	0.3	354	<.1	332	0.1	417
1991	<.1	336	<.1	425	0.1	392	<.1	359	0.1	365
1992	<.1	367	<.1	362	0.1	368	<.1	363	0.1	360
1993	<.1	329	<.1	372	0.2	389	0.1	363	0.1	371
1994	<.1	310	0.1	426	0.2	390	0.1	367	0.2	370
1995	0.1	341	<.1	356	0.2	412	0.1	354	0.2	377
1996	<.1	371	0.1	347	0.2	398	0.1	386	0.1	373
Southern flounder										
1975	0.1	337	<.1	317	ND	0.1	323	0.1	250	0.1
1976	ND	<.1	365	0.5	321	0.1	296	0.2	363	0.1
1977	ND	0.2	331	0.3	342	<.1	322	0.2	312	0.2
1978	ND	0.1	359	<.1	354	0.1	331	0.1	310	0.1
1979	ND	<.1	348	0.1	348	0.3	369	0.2	338	0.2
1980	ND	0.2	345	0.3	369	0.2	330	0.1	325	0.1
1981	ND	0.1	326	0.2	351	0.1	355	0.1	311	0.1
1982	ND	0.2	345	0.3	354	0.1	350	0.2	328	0.1
1983	ND	0.1	348	0.2	350	0.1	350	0.2	342	0.1
1984	ND	0.1	341	0.3	364	0.1	328	0.1	322	0.1
1985	ND	0.1	340	0.2	370	0.1	333	0.1	330	0.1
1986	0.1	299	0.1	363	0.1	376	0.1	346	0.1	377
1987	0.1	336	0.1	356	0.1	350	0.1	345	0.1	350
1988	0.1	346	0.1	350	0.2	353	0.1	342	0.1	353
1989	0.1	324	0.1	349	0.2	362	0.1	328	0.1	335
1990	<.1	326	0.1	340	0.2	340	0.1	326	0.1	323
1991	0.1	354	0.1	371	0.1	370	0.1	352	0.1	377
1992	<.1	330	0.1	356	0.3	375	0.1	352	0.1	385
1993	<.1	350	0.1	379	0.2	426	0.1	364	0.1	377
1994	<.1	373	0.1	361	0.2	401	0.1	357	0.1	386
1995	0.1	349	<.1	360	0.1	407	0.1	351	0.1	390
1996	<.1	393	0.1	381	0.1	371	<.1	353	0.1	377
Atlantic croaker										
1975	0.0	<.1	245	ND	0.0	0.3	263	0.1	312	0.2
1976	ND	0.2	262	0.1	248	0.2	274	0.2	296	0.4
1977	ND	0.1	291	0.1	275	0.2	255	0.2	307	0.8
1978	ND	0.1	274	0.1	248	0.2	248	0.1	242	0.5
1979	ND	<.1	271	0.2	248	0.1	287	0.2	303	0.5
1980	ND	0.2	284	0.1	262	0.2	270	0.2	302	0.3
1981	ND	<.1	279	0.2	254	0.1	273	0.2	323	0.4

Table 2. (Cont.)

Species Year	Sabine Lake No./h Length	Galveston No./h Length	East Matagorda No./h Length	Mata Gorda No./h Length	San Antonio No./h Length	Aransas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length	
<i>Atlantic croaker (cont.)</i>											
1982 ND	0.4	282	0.4	256	0.1	277	0.2	278	0.4	327	
1983 ND	0.3	275	0.4	261	0.2	263	0.5	286	0.3	309	
1984 ND	0.2	274	0.2	259	0.2	259	0.2	252	0.1	261	
1985 ND	0.6	272	0.5	258	0.1	254	0.2	261	0.1	268	
1986 0.2	296	0.4	281	0.1	261	0.2	253	0.2	280	0.3	
1987 0.1	287	0.8	288	0.1	252	0.3	253	0.2	283	0.4	
1988 0.2	276	0.6	291	0.1	255	0.2	255	0.3	301	0.4	
1989 0.1	284	0.6	271	0.2	257	0.2	250	0.2	266	0.5	
1990 0.2	283	0.4	286	0.2	270	0.1	261	0.1	290	0.2	
1991 0.1	271	0.2	274	0.1	290	0.2	260	0.2	283	0.3	
1992 0.2	293	0.4	269	0.1	278	0.1	258	0.1	278	0.4	
1993 0.1	286	1.4	273	0.2	276	0.1	265	0.2	267	0.1	
1994 0.1	277	0.3	283	0.1	295	0.1	270	0.2	265	0.3	
1995 0.1	272	0.4	284	0.3	301	0.1	271	0.3	285	0.4	
1996 0.1	278	0.5	268	0.1	286	0.3	260	0.5	279	0.3	
Gafftopsail catfish 1975 <1	530	0.0	ND	0.1	482	0.0	526	<1	498	<1	
1976 ND	0.1	516	0.0	<1	499	0.2	526	<1	385	<1	
1977 ND	<1	516	0.0	<1	514	<1	543	0.0	600	0.1	
1978 ND	0.0	ND	0.0	0.2	542	0.0	478	0.3	551	0.0	
1979 ND	0.0	ND	0.1	550	0.0	<1	505	0.1	522	0.1	
1980 ND	0.1	ND	0.1	492	0.0	0.1	520	0.1	542	0.1	
1981 ND	0.1	ND	<1	423	0.1	616	0.1	521	0.1	523	0.1
1982 ND	<1	ND	<1	492	0.1	473	<1	520	0.3	545	<1
1983 ND	<1	ND	<1	517	0.1	474	0.1	510	0.3	532	0.1
1984 ND	<1	ND	<1	525	0.1	482	0.1	507	0.1	533	0.1
1985 ND	0.1	ND	<1	525	0.1	521	0.1	499	<1	521	0.1
1986 0.1	462	<1	462	0.1	473	<1	474	0.2	485	0.1	
1987 <1	423	0.1	491	0.1	527	0.1	512	<1	519	0.1	
1988 <1	370	<1	491	0.1	521	0.1	521	0.1	542	<1	
1989 <1	320	<1	480	<1	534	0.2	521	0.1	544	0.1	
1990 <1	465	<1	504	0.1	485	0.2	509	0.1	547	0.1	
1991 <1	469	<1	502	0.1	499	0.2	499	0.2	583	0.1	
1992 <1	464	0.1	444	0.1	518	0.1	476	<1	569	<1	
1993 0.0	0.0	ND	0.1	513	0.1	566	0.1	565	<1	514	
1994 <1	409	0.1	441	0.1	501	0.2	516	0.2	538	<1	
1995 <1	380	0.1	408	0.2	511	0.2	503	0.3	522	0.1	
1996 <1	490	0.1	422	<1	504	0.1	483	0.2	517	<1	
Gulf menhaden 1975	0.0	ND	0.5	272	<1	270	0.3	246	0.4	302	
1976 ND	2.7	240	<1	246	0.2	248	0.1	244	0.1	275	
1977 ND	3.0	246	<1	249	0.5	249	0.1	241	0.1	237	
1978 ND	0.6	249	0.1	231	0.4	255	0.4	239	0.6	242	
1979 ND	0.1	249	0.1	253	0.0	<1	250	0.1	251	0.3	
1980 ND	0.3	253	0.0	<1	260	0.1	255	0.1	245	<1	
1981 ND	0.7	259	<1	260	0.1	246	0.1	244	0.2	243	
1982 ND	0.6	251	<1	310	<1	246	0.1	242	0.1	238	
1983 ND	1.7	257	0.1	248	0.1	249	0.2	239	0.2	255	
1984 ND	1.0	256	0.1	249	0.1	254	0.4	241	0.4	254	
1985 ND	1.5	249	<1	233	0.1	254	0.1	235	0.5	253	
1986 0.2	246	1.5	244	0.1	233	0.3	239	0.1	249	0.8	
1987 0.1	244	1.8	250	0.0	241	0.1	244	<1	250	0.2	
1988 0.2	268	0.9	244	<1	206	0.3	233	0.1	252	0.1	
1989 0.2	253	0.8	245	<1	236	0.2	231	<1	246	0.2	
1990 0.1	256	1.3	253	<1	247	0.6	224	<1	251	0.2	
1991 0.3	255	1.4	249	0.0	217	0.1	239	<1	249	0.1	
1992 <1	299	1.3	257	<1	232	0.1	239	<1	257	0.1	
1993 0.4	283	1.0	250	<1	255	0.2	269	<1	250	0.1	
1994 0.2	240	0.5	254	<1	210	0.1	249	<1	266	0.2	
1995 0.2	250	2.5	254	<1	237	0.1	245	0.3	268	0.1	
1996 0.1	260	2.3	254	<1	125	0.1	246	<1	254	0.1	

Table 2. (Cont.)

Species Year	Sabine Lake No./h Length	Galveston No./h Length	East Matagorda No./h Length	Matagorda No./h Length	San Antonio No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide No./h Length										
Striped mullet	<.1	390	0.3	331	0.4	347	0.6	322	2.5	328	1.0	382	0.3	358	0.5	345			
1975	ND	0.3	346	0.2	320	0.4	319	1.7	331	0.5	360	0.3	342	0.6	402	2.0			
1976	ND	0.2	345	0.2	380	0.3	330	0.9	343	0.3	321	0.4	371	0.3	396	0.6			
1977	ND	0.2	423	0.6	330	0.7	342	0.5	322	1.1	336	0.1	336	0.3	387	0.4			
1978	ND	0.1	351	0.1	338	0.3	340	0.7	344	0.7	344	0.3	353	0.6	410	0.3			
1979	ND	0.2	363	<.1	319	0.2	343	0.6	357	0.6	357	0.3	340	0.5	365	0.4			
1980	ND	0.1	395	0.1	349	0.1	332	0.6	341	0.5	334	0.3	353	0.3	360	0.5			
1981	ND	0.2	376	0.4	329	0.3	330	0.4	341	0.8	331	0.2	345	0.1	348	0.4			
1982	ND	0.2	370	0.2	335	0.2	339	0.3	334	0.5	350	0.3	347	0.3	375	0.6			
1983	ND	0.4	362	0.7	328	0.3	331	0.5	350	0.6	342	0.4	342	0.5	356	0.5			
1984	ND	0.2	338	0.2	326	0.2	323	0.5	355	0.3	343	0.2	342	0.3	375	0.3			
1985	ND	0.1	377	0.3	328	0.1	337	0.4	369	0.2	356	0.2	358	0.1	359	0.2			
1986	<.1	328	0.1	375	0.2	333	0.7	319	1.1	360	0.6	348	0.3	338	0.2	363	0.4		
1987	<.1	325	0.2	362	0.4	344	0.4	326	0.4	347	0.4	365	0.3	370	0.4	409	0.4		
1988	<.1	331	0.2	349	0.2	334	0.2	328	0.3	350	0.4	348	0.2	359	0.3	366	0.3		
1989	<.1	329	0.1	341	0.3	368	0.2	344	0.8	369	0.7	358	0.2	353	0.4	383	0.4		
1990	0.1	334	0.4	341	0.3	333	0.6	366	0.1	343	0.8	364	0.5	351	0.3	383	0.4		
1991	0.1	331	0.2	376	0.3	330	0.2	330	0.4	350	0.7	364	0.4	360	0.2	389	0.3		
1992	<.1	328	0.3	364	0.7	352	0.5	374	0.7	358	0.9	365	0.4	376	0.6	422	0.4		
1993	0.6	328	0.9	372	0.4	384	0.6	347	0.3	374	0.2	379	0.1	398	0.2	400	0.2		
1994	0.1	353	0.6	371	0.3	397	0.4	356	0.2	347	0.5	370	0.3	421	0.2	375	0.3		
1995	0.2	353	0.4	371	0.3	401	0.4	355	0.4	368	0.4	360	0.3	432	0.3	403	0.4		
1996	0.1	358	0.3	358	0.2	401	0.4	355	0.4	368	0.4	393	0.8	403	0.4	385	0.4		
Total finfishes	3.0	383	5.1	396	ND	6.6	355	4.9	339	7.9	345	5.7	343	4.3	374	4.8			
1975	ND	7.2	334	4.0	385	4.9	388	9.1	365	5.0	363	5.0	349	5.1	383	11.1			
1976	ND	6.2	334	3.2	362	5.4	389	6.2	348	3.6	344	5.8	326	5.2	343	6.5			
1977	ND	4.0	342	4.0	325	5.0	359	5.1	359	5.2	341	3.8	322	3.6	358	4.3			
1978	ND	3.5	367	2.0	372	4.3	350	5.6	368	3.8	372	3.5	327	2.6	367	3.5			
1979	ND	4.0	371	2.9	375	3.3	346	6.1	342	4.8	350	5.0	336	4.2	354	4.3			
1980	ND	4.2	357	3.3	355	3.0	384	4.8	358	4.4	375	4.9	364	3.1	357	5.5			
1981	ND	6.2	346	6.2	354	3.7	372	5.1	360	4.5	366	5.1	338	3.5	363	5.9			
1982	ND	6.0	350	6.2	341	4.0	378	5.3	352	3.9	396	5.9	356	3.0	362	5.5			
1983	ND	6.5	364	5.7	379	4.4	369	3.9	362	3.8	372	3.5	347	3.1	373	4.2			
1984	ND	7.1	335	4.5	366	3.7	380	4.2	376	3.3	396	4.0	358	3.4	362	4.6			
1985	ND	2.6	349	4.4	390	4.6	379	4.7	408	4.0	378	5.3	347	2.2	381	4.6			
1986	ND	5.8	334	4.7	390	5.0	323	5.2	428	5.3	391	4.9	353	1.6	406	4.6			
1987	2.2	371	6.2	366	6.5	398	5.5	361	5.8	393	4.3	382	5.0	374	5.7	410	5.2		
1988	2.2	394	6.8	363	5.2	387	4.3	361	5.6	402	4.7	374	5.4	388	2.9	408	5.2		
1989	2.4	401	5.2	343	4.9	387	4.2	345	5.5	399	4.5	400	4.5	398	2.7	433	4.5		
1990	3.1	389	5.4	341	5.4	376	4.9	362	6.5	389	4.9	373	6.3	371	4.0	396	4.6		
1991	2.7	439	6.1	356	6.1	439	5.6	366	6.0	408	6.2	419	5.8	347	2.2	425	7.3		
1992	2.7	379	6.9	347	7.1	457	5.8	380	7.5	430	6.4	455	7.3	394	6.3	443	7.9		
1993	3.1	374	6.4	372	6.7	428	5.2	381	6.4	404	5.4	402	5.5	386	7.0	444	6.1		
1994	3.9	391	7.1	333	7.2	417	6.0	361	5.9	374	6.4	383	5.8	403	6.5	443	5.7		
1995	3.8	398	7.3	355	5.7	431	5.8	376	8.0	408	6.7	393	5.2	403	6.9	433	5.8		
1996	ND	0.1	126	0.3	153	0.1	151	0.1	147	0.1	139	0.1	143	0.1	147	0.2	148	0.1	
Blue crab	1983	ND	0.1	151	0.1	140	0.1	154	<.1	161	0.1	146	<1	138	0.1	147	0.1	145	0.1
1984	ND	0.1	149	0.1	152	<.1	146	<.1	161	0.1	146	<1	138	0.1	147	0.1	147	0.1	
1985	0.2	150	<.1	146	<.1	144	<.1	158	0.2	153	0.1	158	0.1	157	0.3	157	0.1	153	0.2
1986	0.2	154	0.1	140	0.1	158	0.2	150	0.1	137	0.1	138	0.1	145	0.1	129	0.1	152	0.1
1987	0.2	155	0.1	144	0.2	150	0.1	144	<.1	139	<.1	148	<.1	159	0.0	152	0.1	147	0.1
1988	0.2	157	<.1	136	<.1	144	<.1	144	0.2	144	0.1	144	0.1	149	0.1	129	0.2	142	0.1
1989	0.1	149	0.1	146	0.1	144	0.2	144	0.2	144	0.1	144	0.1	149	0.1	148	0.1	145	0.1
1990	0.2	146	0.1	152	<.1	151	0.1	152	0.1	151	0.1	150	<.1	136	0.1	147	0.1	146	0.1
1991	0.1	161	<.1	143	0.1	156	0.1	153	0.1	136	0.1	140	<.1	148	0.2	138	0.1	152	0.1
1992	0.1	169	<.1	145	0.1	150	<.1	156	<.1	146	<.1	160	0.1	155	<.1	157	0.1	153	0.1
1993	0.1	163	<.1	152	0.1	151	<.1	155	<.1	150	<.1	154	<.1	147	<.1	140	<.1	151	<.1
1994	0.1	158	<.1	146	0.1	151	<.1	127	0.1	154	<.1	150	<.1	150	<.1	124	0.1	142	<.1
1995	0.1	155	<.1	152	0.1	151	<.1	154	<.1	154	<.1	154	<.1	147	<.1	139	<.1	148	<.1
1996	<.1	155	<.1	185	<.1	154	<.1	147	<.1	159	<.1	147	<.1	144	<.1	139	<.1	148	<.1

Table 3. Annual mean catch rate (No./ha) and mean total lengths (mm) of selected fishes and shellfishes caught with 18.3-m bag seines by bay system during 1977-96.
 Blank indicates no measurement taken; ND = no data.

Species Year	Sabine Lake		Galveston		East		Matagorda		San Antonio		Corpus Christi		Upper Laguna		Lower Laguna		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		
FINFISHES																				
Red drum	ND	35	ND	4	51	14	44	41	1	41	11	58	1	39	18	46	17	58		
1977*	ND	3	67	ND	6	92	11	67	5	92	18	85	27	66	15	64	14	70		
1978	ND	17	62	ND	8	68	28	50	5	88	16	75	4	82	15	72	23	70		
1979	ND	59	74	ND	9	86	29	53	30	38	40	46	5	46	45	56	26	52		
1980	ND	26	52	ND	9	76	19	102	26	103	21	62	1	55	16	89	24	76		
1981	ND	53	62	ND	4	70	7	99	12	98	7	88	2	59	41	92	20 ^b	78		
1982	ND	47	61	ND	66	4	70	7	99	12	98	7	88	2	52	4	73	6	69	
1983	ND	13	67	ND	6	70	2	105	12	56	4	100	4	80	2	52	4	73		
1984	ND	3	131	10	106	7	96	7	114	19	82	9	67	1	61	17	69	9	86	
1985	ND	6	66	7	87	8	86	2	78	6	105	1	117	4	98	3	84	22	94	
1986	ND	6	99	45	58	47	61	16	88	15	89	9	59	7	71	2	117	32	63	
1987	ND	13	78	8	78	27	79	3	114	6	89	10	78	9	49	4	66	21	66	
1988	ND	61	44	3	59	24	47	4	92	10	82	8	65	4	83	1	54	18	63	
1989	ND	5	62	17	53	27	50	14	91	19	50	43	40	20	57	4	32	25	39	
1990	ND	6	97	14	73	30	53	30	81	36	79	25	61	28	72	5	88	43	61	
1991	ND	5	71	9	85	23	56	15	77	22	84	23	83	7	74	14	51	13	70	
1992	ND	11	73	28	58	40	48	11	66	17	58	13	60	12	73	9	53	23	62	
1993	ND	7	72	22	59	31	55	6	58	13	69	29	58	5	55	11	61	26	60	
1994	ND	20	69	12	48	18	54	7	69	15	76	15	62	26	62	7	86	29	62	
1995	ND	9	76	16	48	21	56	16	49	27	63	5	65	8	76	11	60	14	66	
1996	ND	3	128	92	22	73	14	68	3	82	19	70	13	69	10	76	1	104	3	63
Spotted seatrout	ND	34	87	ND	39	84	50	73	1	99	7	84	16	83	5	85	23	82		
1977*	ND	35	52	ND	6	86	11	69	8	50	4	59	14	93	2	52	14	61		
1978	ND	37	79	ND	3	83	12	70	7	68	12	53	13	80	2	86	14	75		
1979	ND	17	72	ND	3	84	21	71	11	74	11	79	3	56	<1	60	10	73		
1980	ND	16	85	ND	7	110	9	68	13	70	12	65	4	73	6	84	10	80		
1981	ND	37	82	ND	7	99	19	62	14	76	4	75	5	78	3	76	15	79		
1982	ND	26	84	4 ^b	101	7	73	8	72	14	81	4	79	5	101	4	80	11 ^b	82	
1983	ND	7	71	2	85	3	77	1	83	10	74	1	54	1	88	5	98	4	77	
1984	ND	5	80	24	73	11	87	4	64	24	61	3	70	9	70	2	78	9	70	
1985	ND	2	85	17	66	5	78	5	78	12	60	4	68	1	72	2	58	5	68	
1986	ND	67	22	73	14	68	3	82	19	70	13	69	10	76	1	104	3	63		
1987	ND	2	92	68	14	75	5	96	7	67	28	68	7	65	5	65	3	87		
1988	ND	5	63	6	79	14	80	6	69	20	61	16	71	6	50	2	56	8	68	
1989	ND	3	69	5	56	10	74	8	66	8	61	14	61	13	65	2	54	<1	63	
1990	ND	1	67	16	63	13	71	15	70	34	59	20	65	8	72	6	63	2	59	
1991	ND	2	73	6	73	4	82	10	59	42	52	12	64	8	69	18	50	2	54	
1992	ND	5	84	6	61	19	71	6	62	15	54	12	68	7	69	14	59	7	61	
1993	ND	3	73	5	64	13	78	13	68	12	66	28	76	7	69	5	51	10	71	
1994	ND	17	70	5	77	23	76	17	63	16	77	33	68	5	89	19	73	3	75	
1995	ND	3	92	6	52	17	93	11	69	16	67	12	79	3	76	9	74	2	74	
1996	ND	3	128	92	6	61	19	71	6	62	15	54	12	68	7	69	14	71		
Black drum	ND	0	ND	11	147	6	179	1	142	1	150	0	0	0	0	3	156	3	156	
1977*	ND	36	95	ND	9	112	22	110	2	165	1	122	4	106	0	98	18	140		
1978	ND	40	83	ND	12	106	5	97	1	85	8	89	6	140	2	86	6	142		
1979	ND	4	93	ND	4	102	0	100	2	100	2	75	3	95	1	144	6	130		
1980	ND	12	122	ND	11	110	2	141	5	141	2	113	11	144	6	144	6	108		
1981	ND	4	124	ND	5	138	9	90	7	94	1	109	<1	155	2	117	4	110		
1982	ND	23	91	3	123	3	118	1	132	2	145	2	108	2	107	<1	141	7	98	
1983	ND	8	108	1	103	3	156	0	122	1	140	0	1	1	82	<1	91	2	115	
1984	ND	4	141	3	83	3	113	1	122	<1	124	1	68	6	66	6	66	2	112	
1985	ND	2	141	2	107	5	85	0	149	0	149	0	144	2	68	6	68	1	145	
1986	ND	0	141	1	106	4	130	1	118	0	118	6	74	4	63	1	89	6	72	
1987	ND	2	146	5	107	5	94	6	126	2	132	2	128	2	112	8	90	2	158	
1988	ND	0	141	4	124	8	87	3	109	1	125	3	116	1	110	11	77	4	150	
1989	ND	0	141	4	117	14	75	14	117	14	117	2	123	2	127	15	64	7	126	
1990	ND	3	128	92	4	99	41	75	14	117	14	117	14	117	14	117	3	156	49	102

Table 3. (Cont.)

Species Year	Sabine Lake No./ha Length	Galveston No./ha Length	East Matagorda No./ha Length	Matagorda No./ha Length	San Antonio No./ha Length	Aransas No./ha Length	Corpus Christi No./ha Length	Upper Laguna Madre No./ha Length	Lower Laguna Madre No./ha Length	Coastwide No./ha Length
Black drum (cont.)										
1991 1	124	3	111	10	99	7	155	2	113	<1
1992 <1	123	<1	112	3	114	1	146	3	23	0
1993 2	109	3	109	99	<1	122	<1	99	1	67
1994 2	119	5	118	31	84	13	71	8	96	6
1995 1	160	1	119	4	76	3	100	3	115	4
1996 1	148	5	77	2	104	1	95	1	86	1
Sheepshead	ND	0	ND	1	128	0	0	0	1	<1
1978	ND	15	66	<1	66	<1	68	1	54	59
1979	ND	114	ND	1	94	6	63	3	56	41
1980	ND	1	158	ND	0	2	68	1	51	0
1981	ND	1	174	<1	93	<1	50	1	95	1
1982	ND	1	23	<1	50	1	102	<1	62	50
1983	ND	0	20	<1	178	<1	90	1	30	36
1984	ND	2	20	1	58	<1	157	3	39	1
1985	ND	<1	114	32	<1	203	1	48	1	50
1986	0	0	1	91	<1	94	<1	53	0	0
1987	0	<1	60	2	69	<1	124	2	58	1
1988	0	<1	59	1	35	<1	116	25	40	0
1989	1	91	<1	126	0	<1	79	<1	85	0
1990	<1	153	1	55	0	<1	104	1	81	0
1991	<1	146	0	1	33	1	36	5	39	<1
1992	<1	97	0	<1	47	0	54	2	81	66
1993	<1	50	<1	147	<1	131	5	2	150	1
1994	<1	106	<1	76	<1	86	0	2	42	54
1995	<1	74	<1	86	0	<1	167	3	42	1
1996	<1	55	<1	37	3	38	<1	167	3	54
Southern flounder	ND	0	ND	1	171	0	0	0	1	<1
1977 ^a	ND	9	40	<1	143	3	37	<1	98	1
1978	ND	1	85	<1	135	2	85	0	1	122
1979	ND	10	54	ND	1	38	2	55	0	64
1980	ND	5	57	ND	7	79	2	53	2	90
1981	ND	9	67	ND	3	82	6	56	18	37
1982	ND	9	46	1	75	2	54	3	58	6
1983	ND	2	83	2	69	1	78	1	67	3
1984	ND	4	58	5	78	2	112	1	43	7
1985	ND	83	4	83	6	70	19	66	2	78
1986	2	47	21	51	9	54	1	62	3	44
1987	2	66	14	61	3	76	3	85	3	44
1988	15	74	10	74	3	62	10	60	1	103
1989	10	74	3	62	10	60	3	67	10	65
1990	12	68	22	59	55	15	48	11	50	24
1991	7	58	5	34	7	56	3	53	2	55
1992	7	66	3	41	3	67	2	34	1	41
1993	4	56	6	55	5	45	6	46	2	47
1994	4	62	3	31	3	58	3	46	5	54
1995	2	94	4	65	5	63	3	55	4	42
1996	4	65	4	59	5	63	5	55	6	53
1997 ^a	ND	20	96	ND	0	100	10	49	37	11
1978	ND	320	61	239	59	52	109	74	76	11
1979	ND	463	52	ND	82	69	17	89	16	3
1980	ND	1,085	55	ND	24	94	26	73	26	112
1981	ND	528	57	ND	165	74	67	142	42	40
1982	ND	1,812	61	ND	236	66	67	80	63	53
1983	ND	888	55	56	79	210	64	483	25	49
1984	ND	815	60	ND	121	63	299	72	1,160	4
1985	ND	242	64	ND	1,138	60	121	63	78	102
1986	74	126	74	148	65	198	66	2,138	52	133

Table 3. (Cont.)

Species Year	Sabine Lake		Galveston		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna		Lower Laguna		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	
<i>Atlantic croaker (cont.)</i>																			
1987	79	70	335	54	110	56	207	78	33	47	9	81	4	40	<1	60	10	62	
1988	154	68	485	53	160	51	60	80	3	50	8	50	0	0	15	63	113	61	
1989	111	56	36	77	190	45	22	56	13	49	18	62	10	61	9	59	125	56	
1990	97	67	316	51	117	46	82	68	24	32	58	65	14	59	2	78	46	62	
1991	208	57	635	52	343	47	1,035	58	156	57	63	35	66	11	36	169	46	103	
1992	225	56	505	47	450	47	626	48	430	47	215	44	95	50	13	54	157	44	
1993	232	64	358	50	421	44	216	47	48	47	25	66	25	53	2	67	195	40	
1994	255	52	229	49	186	58	302	43	59	46	74	39	25	37	6	44	123	46	
1995	357	57	112	48	247	50	110	57	37	59	36	69	24	35	2	58	179	41	
1996	765	59	453	47	290	50	147	63	37	54	35	60	6	44	3	65	112	44	
Sand seatrout																			
1977*	ND	0	ND	13	58	ND	14	70	2	75	<1	33	1	77	0	0	0	0	
1978	ND	35	58	ND	7	ND	7	82	<1	64	<1	89	0	0	<1	78	10	61	
1980	ND	8	61	ND	21	60	12	67	<1	35	<1	76	1	73	0	0	3	69	
1981	ND	47	57	ND	10 ^b	59	30	64	<1	47	1	70	2	53	0	0	<1	65	
1982	ND	47	53	ND	49	55	7	66	22	54	0	0	0	0	0	0	0	15 ^b	
1983	ND	11	60	8	59	11	60	9	64	0	0	<1	67	1	82	0	0	8	41
1984	ND	71	59	50	4	60	11	61	14	65	1	61	0	0	<1	60	10	54	
1985	ND	6	63	16	58	11	61	14	66	<1	69	0	0	0	0	0	0	61	
1986	ND	54	55	ND	38	40	6	66	<1	69	0	0	0	0	0	0	0	56	
1987	ND	4	63	16	53	11	61	14	66	<1	70	1	70	2	53	0	0	3	57
1988	ND	5	63	16	53	11	61	14	66	<1	70	1	70	2	53	0	0	6	61
1989	ND	9	54	43	55	7	66	4	68	<1	31	0	0	<1	106	0	0	0	10
1990	ND	24	52	75	46	10	59	13	56	<1	36	0	0	0	0	0	0	19	47
1991	ND	7	48	76	55	25	59	39	56	<1	76	3	50	2	42	0	0	<1	65
1992	ND	7	54	30	53	10	52	36	54	0	0	<1	81	1	61	0	0	0	23
1993	ND	7	58	53	48	19	53	88	53	4	64	0	0	<1	96	1	57	0	53
1994	ND	4	61	34	48	16	70	29	56	<1	70	<1	64	0	0	<1	53	12	
1995	ND	14	50	59	44	53	38	37	59	<1	56	0	0	0	0	0	0	20	
1996	ND	16	63	18	50	18	51	6	57	0	0	0	1	62	0	0	0	6	
Gulf menhaden																			
1977*	ND	21	76	ND	3,963	47	169	64	0	0	3,310	44	1	58	0	0	0	76	
1978	ND	533	31	ND	867	43	0	817	38	335	38	33	1	41	44	42	71	29	
1979	ND	122	53	ND	115	51	24	52	48	355	48	37	6	40	44	42	31	1,219	
1980	ND	14	717	46	ND	348	51	52	41	37	1,008	37	137	8	41	44	37	312	44
1981	ND	196	45	ND	820	48	1,067	67	42	16	809	44	619	9	31	40	31	312	41
1982	ND	4,788	50	ND	1,324 ^b	44	1,260	45	42	1,084	42	866	34	553	52	30	37	130	46
1983	ND	4,971	66	ND	470	48	243	43	50	886	45	868	48	39	37	30	37	1,466	45
1984	ND	1,839	44	ND	486	42	1,076	53	612	27	3,819	50	868	45	37	62	44	1,312 ^b	62
1985	ND	3,049	48	ND	3,024	38	1,502	37	35	40	3,019	36	3,019	34	111	46	44	56	928
1986	ND	633	47	ND	755	49	3,550	60	35	40	636	36	636	34	32	44	36	2,333	48
1987	ND	600	40	ND	625	45	438	51	363	60	438	80	438	30	<1	44	32	637	57
1988	ND	526	48	ND	781	42	386	51	187	53	37	43	37	11	43	2	45	660	45
1989	ND	724	49	ND	106	43	640	44	527	56	797	71	943	35	869	32	21	71	39
1990	ND	270	41	ND	4,298	40	1,258	42	3,044	42	296	42	569	41	459	38	123	36	1,487
1991	ND	593	45	ND	6,025	37	2,91	36	1,919	38	1,810	35	2,91	34	43	46	36	2,1	44
1992	ND	1,878	48	ND	7,341	40	509	36	492	46	191	38	634	66	158	38	13	39	1,827
1993	ND	1,72	51	ND	5,203	48	222	41	418	57	138	39	263	33	15	45	32	1,827	42
1994	ND	399	46	ND	6,155	39	2,382	50	718	36	140	48	373	37	83	40	133	49	1,212
1995	ND	1,489	44	ND	7,928	39	2,554	36	1,484	40	202	33	179	41	459	31	68	30	48
Pinfish																			
1977*	ND	0	ND	32	114	24	105	22	105	24	105	22	105	22	105	22	105	13	101
1978	ND	116	55	ND	24	61	77	54	75	47	85	61	133	69	41	84	7	64	65
1979	ND	173	75	ND	43	79	60	79	60	57	167	66	250	61	132	122	1	107	47
1980	ND	151	38	ND	16	50	363	57	131	70	107	85	267	67	448	67	153	152	55
1981	ND	270	55	ND	68	69	131	50	54	55	448	67	448	55	34	34	132	75	66
1982	ND	144	67	ND	34	66	55	66	55	55	448	67	448	67	32	32	349	57	61

Table 3. (Cont.)

Species Year	Sabine Lake		Galveston		East		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna		Lower Laguna		Madre No./ha Length		No./ha Length		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	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	No./ha Length	No./ha Length	No./ha Length	
Pinfish (cont.)	ND	138	65	61 ^b	79	115	80	510	49	642	68	533	66	25	82	211	68	219 ^b	64	214	64	214	64	
1983	ND	247	59	180	64	107	71	172	66	471	62	214	54	146	79	120	77	261	66	280	62	287	61	
1984	ND	362	55	401	65	209	71	396	55	274	67	133	68	234	67	329	63	339	64	206	63	357	60	
1985	ND	183	61	676	64	117	58	161	66	696	59	304	58	245	62	442	56	56	60	660	60	637	60	
1986	74	72	50	64	227	57	44	42	63	321	67	463	58	312	59	983	54	312	59	660	60	254	60	
1987	8	128	61	373	62	43	77	246	63	589	62	482	54	482	54	482	54	107	59	452	60	344	56	
1988	7	84	80	62	339	58	308	53	607	61	300	63	361	57	60	70	251	61	660	60	415	59		
1989	24	75	80	62	499	61	251	65	552	52	609	55	566	57	392	62	660	57	243	61	293	55		
1990	37	75	182	58	307	60	39	68	248	65	119	61	435	63	240	69	531	58	174	59	358	56		
1991	8	79	138	58	371	56	67	49	431	53	545	59	475	50	307	59	102	56	358	56	237	57		
1992	12	73	96	46	139	59	150	53	368	60	463	58	411	58	165	59	247	60	212	57	272	55		
1993	27	78	309	49	50	285	66	125	57	174	58	333	64	326	54	420	51	471	54	471	54	272	55	
1994	9	71	164	50	284	52	73	51	308	59	243	50	248	59	755	59	755	59	415	59	415	59		
1995	12	86	159	49	88	51	71	53	35	53	50	420	51	420	51	420	51	420	51	420	51	420	51	
1996	77	74	88	51	71	53	35	53	50	420	51	420	51	420	51	420	51	420	51	420	51	420	51	
Spot	1977*	ND	56	100	ND	ND	23	118	0	2	170	12	100	0	227	59	149	52	253	51	125	18		
1978	ND	407	52	ND	ND	182	49	361	48	80	55	310	47	103	70	103	70	165	49	156	49	156	49	
1979	ND	352	42	ND	ND	21	64	201	44	58	60	210	55	106	59	165	48	185	58	220	67	220	67	
1980	ND	269	57	ND	ND	76	56	256	51	101	61	95	58	115	63	115	63	185	58	340	58	350	58	
1981	ND	331	52	ND	ND	154	57	135	64	97	54	121	61	115	63	121	61	225	60	526	63	273 ^b	58	
1982	ND	404	62	ND	ND	143	58	467	52	623	54	350	56	135	57	60	57	60	57	60	526	63	60	57
1983	ND	459	57	50 ^b	64	95	58	169	47	350	56	659	56	564	58	493	66	948	67	433	60	433	60	
1984	ND	238	53	96	61	146	58	247	46	659	56	274	44	227	55	80	77	169	54	197	58	197	58	
1985	ND	179	62	158	59	216	59	274	44	254	64	160	60	160	60	114	55	614	54	314	54	314	54	
1986	65	135	68	825	51	102	59	259	51	102	59	259	51	102	59	117	55	307	47	339	55	309	62	
1987	19	264	60	383	60	83	58	203	49	476	58	359	49	359	49	170	50	212	54	270	59	209	62	
1988	44	82	229	69	210	66	116	64	132	54	361	59	158	65	271	50	151	56	183	58	183	58		
1989	96	52	87	63	256	58	173	59	264	62	253	53	158	62	158	62	161	57	184	55	184	55		
1990	16	70	222	62	525	54	330	57	691	51	566	52	831	49	684	57	854	55	525	54	525	54		
1991	22	65	270	56	304	59	131	49	198	69	295	53	279	52	174	53	950	51	314	54	314	54		
1992	27	70	211	55	89	61	63	53	194	59	164	53	387	45	219	58	347	54	204	54	204	54		
1993	35	80	164	56	288	55	123	53	149	50	185	59	281	58	221	62	341	53	197	56	197	56		
1994	55	78	369	49	161	61	99	61	127	56	310	59	303	53	66	59	369	54	218	55	231	55		
1995	15	104	171	50	199	56	254	49	177	57	65	55	303	53	145	54	218	55	184	55	184	55		
1996	185	69	827	43	394	56	340	48	321	50	245	55	245	55	245	55	272	56	417	48	417	48		
Striped mullet	1977*	ND	31	140	ND	ND	129	106	117	27	132	179	156	15	158	15	103	74	126	74	103	74		
1978	ND	56	120	ND	ND	26	124	126	66	68	103	121	76	53	94	102	383	53	174	81	106	77		
1979	ND	135	89	ND	ND	93	99	273	66	152	103	202	135	16	102	49	154	52	255	61	152	61		
1980	ND	90	117	ND	ND	15	107	41	121	61	102	49	88	57	70	57	161	98	152	98	152	98		
1981	ND	229	57	ND	ND	41	92	249	84	205	81	79	85	31	63	63	161	98	174	98	174	98		
1982	ND	128	66	ND	ND	553	118	179	77	177	85	29	110	37	61	37	154	98	154	98	154	98		
1983	ND	85	94	62 ^b	104	26	136	57	64	110	106	37	61	37	61	37	154	98	154	98	154	98		
1984	ND	33	110	52	95	110	99	34	53	69	73	102	57	142	52	142	52	226	59	114	99			
1985	ND	75	110	99	80	162	60	22	134	92	95	58	22	62	67	62	67	170	53	119	81			
1986	84	103	34	134	20	144	23	86	37	93	22	91	22	23	57	41	66	41	66	41	66	41		
1987	48	98	244	75	60	89	33	96	63	115	73	141	56	94	37	72	103	116	76	116	76			
1988	42	80	115	69	44	64	16	116	84	16	116	84	169	49	64	62	221	42	91	57	91	57		
1989	61	41	96	40	61	24	82	10	147	77	47	100	156	41	322	44	78	58	55	61	55	61		
1990	43	88	194	71	80	162	60	79	65	73	97	40	88	41	138	41	283	50	49	126	133	71		
1991	83	78	234	78	149	79	97	78	52	78	81	132	80	141	50	70	53	44	99	95	95	75		
1992	23	94	149	79	105	83	84	74	41	77	62	71	86	133	49	70	36	39	78	74	74	71		
1993	74	84	105	83	102	66	29	70	59	75	35	92	53	137	48	62	47	221	42	91	57	91		
1994	56	75	102	66	73	84	23	70	59	75	20	123	57	137	48	62	47	221	42	91	57	91		
1995	63	99	45	71	166	43	217	44	30	67	135	77	17	73	131	55	24	75	36	58	71	52		
1996	92	70	166	43	166	43	217	44	30	67	135	77	17	73	131	55	24	75	36	58	71	52		
Total finfishes	1977*	ND	959	59	ND	ND	4,055	67	ND	ND	4,055	67	ND	ND	1,383	64	2,788	60	830	59	1,464	61		
	1978	ND	4,103	53	ND	ND	4,055	67	ND	ND	4,055	67	ND	ND	5,038	64	1,282	62	908	54	3,030	61		

Table 3. (Cont.)

Species Year	Sabine Lake No./ha Length	Galveston No./ha Length	Matacgora No./ha Length	Matagorda No./ha Length	San Antonio No./ha Length	Aransas No./ha Length	Corpus Christi No./ha Length	Upper Laguna Madre No./ha Length	Lower Laguna Madre No./ha Length	Coastwide No./ha Length	
Total finfishes (cont.)											
1979	ND	3,149	60	ND	1,635	71	3,375	57	3,096	60	
1980	ND	18,543	86	ND	632	7	1,819	67	1,490	68	
1981	ND	3,334	63	ND	1,093	83	1,781	61	2,020	66	
1982	ND	9,007	68	ND	2,077	78	4,321	56	5,021	57	
1983	ND	8,725	71	2,078	63	1,857	80	2,147	55	2,625	62
1984	ND	4,644	59	1,617	66	59	2,625	62	2,687	58	
1985	ND	1,995	63	1,921	68	5,152	82	2,200	65	2,514	60
1986	3,776	69	3,916	71	3,329	63	14,493	73	1,819	57	
1987	1,153	67	2,231	64	2,484	63	4,312	79	1,344	65	
1988	1,153	62	4,347	71	2,024	63	9,913	83	1,391	58	
1989	1,243	62	2,157	67	2,097	59	1,362	69	1,987	62	
1990	1,319	67	7,186	58	2,951	59	2,106	68	3,470	57	
1991	719	62	7,525	62	3,452	63	4,982	69	3,090	63	
1992	1,143	56	7,886	54	1,924	57	4,687	53	4,414	57	
1993	2,526	62	9,393	64	2,536	54	1,700	60	2,284	54	
1994	617	62	6,845	54	1,538	63	1,985	63	1,183	60	
1995	1,350	65	7,390	59	1,029	64	1,949	58	1,555	64	
1996	3,242	61	10,257	54	2,586	52	2,693	62	1,606	55	
SEELFISHES											
Blue crab	ND	103	43	ND	52	46	51	46	56	56	
1977	ND	66	52	ND	10	38	52	51	62	63	
1978	ND	106	52	ND	27	51	76	49	152	33	
1979	ND	122	54	ND	43	44	51	54	84	98	
1980	ND	58	53	ND	31	51	107	42	86	135	
1981	ND	101	48	ND	15	77	34	40	45	48	
1982	ND	148	43	ND	88	58	42	46	193	48	
1983	ND	88	58	ND	107	54	42	46	52	49	
1984	ND	144	49	ND	56	46	41	42	145	43	
1985	ND	37	79	ND	86	55	57	62	63	65	
1986	23	68	163	41	87	38	36	51	80	80	
1987	44	64	160	46	138	31	29	42	42	40	
1988	50	50	185	48	121	30	45	25	56	54	
1989	67	47	141	44	94	46	75	31	72	35	
1990	46	56	165	47	92	44	58	37	83	150	
1991	36	55	190	56	90	56	54	45	107	158	
1992	36	55	192	56	90	56	54	45	140	158	
1993	36	59	116	35	89	27	51	23	89	35	
1994	28	51	89	38	176	26	96	22	34	65	
1995	43	46	59	32	194	27	32	30	56	34	
1996	84	41	106	36	136	25	39	27	38	33	
Brown shrimp	ND	139	46	ND	64	52	200	49	229	54	
1977	ND	540	50	ND	167	63	102	63	152	60	
1978	ND	482	58	ND	194	66	69	438	63	499	
1979	ND	495	52	ND	143	68	553	60	386	60	
1980	ND	522	60	ND	719	57	157	74	306	64	
1981	ND	915	64	ND	207	64	310	51	355	60	
1982	ND	484	60	ND	99	76	248	66	530	61	
1983	ND	628	64	294	65	197	56	244	66	755	
1984	ND	628	64	ND	413	59	364	63	306	61	
1985	ND	74	605	59	413	59	524	67	137	65	
1986	74	166	58	ND	558	63	558	63	231	63	
1987	401	70	1,662	58	387	56	445	64	158	60	
1988	248	61	516	62	570	57	208	61	206	53	
1989	110	70	519	59	889	56	369	54	739	55	
1990	127	69	356	61	723	61	477	61	482	56	
1991	114	68	601	57	453	61	57	51	511	60	
1992	245	71	708	57	455	52	270	52	455	52	
1993	102	63	541	58	560	54	232	54	568	54	
1994	302	61	515	56	403	56	1,606	51	165	51	

Table 3. (Cont.)

Species Year	Sabine Lake No./ha Length	Galveston No./ha Length	East Matagorda No./ha Length	Matagorda No./ha Length	San Antonio No./ha Length	Aransas No./ha Length	Corpus Christi No./ha Length	Upper Laguna Madie No./ha Length	Lower Laguna Madre No./ha Length	Coastwide No./ha Length
Brown shrimp (cont.)										
1995 83	68	331 54	392 50	344 57	290 57	359 57	498 60	477 59	728 59	406 57
1996 1,164	65	363 58	419 52	277 55	382 55	386 60	266 58	273 56	518 56	390 58
Pink shrimp	ND	0	ND	0	<1	12 41	0	0	48 77	0
1977*	ND	ND	ND	0	<1	100	0	0	26 77	7
1978	ND	0	ND	0	0	6 51	58 55	10 60	12 78	3 77
1979	ND	0	ND	0	0	13 50	58 55	12 60	10 66	7 57
1980	ND	0	ND	0	28 54	87 44	67 54	8 62	5 49	10 55
1981	ND	0	ND	0	0	124 47	67 46	7 61	3 52	24 49
1982	ND	0	ND	0	0	9 51	50 56	31 47	12 54	25 48
1983	ND	0	ND	0	<1	25 1	16 48	26 48	14 65	0 53
1984	ND	0	ND	0	0	0 0	17 59	7 49	19 65	6 53
1985	ND	0	ND	0	0	1 17	17 59	8 76	0 0	4 61
1986	0	0	0	0	<1	68 0	15 39	25 49	6 43	3 46
1987	0	0	0	0	<1	32 0	11 52	60 52	14 50	0 52
1988	0	0	0	0	<1	38 1	135 49	106 50	<1 55	6 54
1989	0	0	0	0	<1	52 1	45 42	64 46	20 42	0 50
1990	0	0	0	0	<1	72 2	1 36	99 49	106 48	4 47
1991	0	0	0	0	<1	142 0	<1 110	61 52	25 46	4 47
1992	0	0	0	0	<1	59 0	0 1	40 32	53 77	3 38
1993	0	<1	34 0	0 0	<1	44 1	58 47	53 50	32 55	34 53
1994	0	2 40	52 56	5 38	<1	35 1	103 49	150 53	9 39	23 59
1995	0	1 37	16 41	3 33	<1	46 3	88 50	53 50	7 45	42 53
1996	0	0 32	<1	35 17	<1	54 17	35 53	25 52	24 51	56 51
White shrimp	ND	1,586 55	ND	1,054 102	115 47	26 63	84 57	36 85	23 57	553 69
1977*	ND	858 66	ND	554 70	130 61	92 62	52 52	21 55	130 53	335 65
1978	ND	1,720 61	ND	543 61	212 56	99 64	817 53	143 47	143 47	608 61
1979	ND	571 64	ND	522 68	291 57	133 61	141 69	62 71	18 64	288 64
1980	ND	1,393 62	ND	805 64	66 64	183 51	173 56	264 61	18 64	1,276 60
1981	ND	3,560 58	ND	1,750 64	650 51	297 43	369 54	14 51	326 50	1,478 53
1982	ND	1,524 58	ND	348 70	1,394 65	135 64	129 53	135 42	67 67	218 52
1983	ND	1,557 59	ND	409 65	1,438 71	166 56	415 56	311 63	17 58	759 62
1984	ND	1,307 61	ND	552 61	584 63	37 44	239 44	33 63	6 73	204 54
1985	ND	73 1,389	ND	61 173	675 66	140 66	287 44	101 58	2 48	175 49
1986	ND	682 68	ND	577 61	679 60	54 111	152 65	152 61	7 37	121 61
1987	ND	972 53	ND	577 61	341 66	168 52	425 47	155 61	73 51	386 63
1988	ND	796 63	ND	429 66	429 66	341 68	425 47	155 61	73 51	386 63
1989	615 61	559 55	76 59	384 78	145 52	631 60	372 59	2 68	194 54	356 60
1990	425 65	1,698 54	690 57	451 63	335 58	821 50	537 67	35 40	368 49	70 55
1991	385 71	1,723 50	273 51	624 58	236 55	361 71	445 62	77 49	381 61	645 55
1992	463 68	924 54	264 62	643 60	115 68	211 71	167 66	32 58	85 52	383 58
1993	324 68	526 56	449 62	585 61	132 68	96 56	876 69	137 58	750 60	437 61
1994	510 73	985 53	618 55	512 62	327 63	447 64	395 71	55 51	200 59	483 59
1995	789 70	563 53	613 57	607 60	368 75	218 57	268 70	19 51	378 57	401 60
1996	824 61	746 55	439 63	455 62	248 54	60 94	216 71	13 51	356 55	374 58

*Data for October - December only. East Matagorda Bay data are only for February-September 1983. Coastwide values do not include East Matagorda Bay data.

Table 4. Annual mean catch rate (No./h) and mean total lengths (mm) of select fishes and shellfishes caught with 6.1-m trawls in Texas bay systems during 1982-96. Blank indicates no measurement taken; ND = no data.

Species	Year	East			Matagorda			San Antonio			Aransas			Corpus			Upper Laguna			Lower Laguna			Coastwide ^b			
		Sabine Lake No./h Length	Gulfveston No./h Length	Matagorda No./h Length	No./h Length	Matagorda No./h Length	No./h Length	San Antonio No./h Length	No./h Length	Aransas No./h Length	No./h Length	Corpus Christi No./h Length	No./h Length	Upper Laguna Madre No./h Length	No./h Length	Lower Laguna Madre No./h Length	No./h Length	Coastwide No./h Length	No./h Length	Coastwide No./h Length	No./h Length	Coastwide No./h Length	No./h Length			
FINFISHES																										
Atlantic croaker	1982*	ND	43	ND	102	ND	10	ND	87	75	110	ND	37	ND	28	ND	62	75	ND	154	32	157	32	127		
	1983	ND	30	131	31	117	18	110	44	106	43	149	15	157	15	154	32	158	44	137	15	138	44	112		
	1984	ND	15	126	ND	30	104	22	87	52	83	120	121	13	151	13	151	24	148	24	125	13	153	24	119	
	1985	ND	20	124	ND	41	110	17	105	33	101	42	138	13	139	14	139	28	153	28	143	14	153	28	117	
	1986	10	157	31	123	ND	52	114	44	105	57	96	83	125	14	139	14	139	44	122	44	152	44	122	44	106
	1987	25	139	26	117	17*	133	126	103	146	96	87	100	50	129	7	152	44	122	44	122	44	122	44	106	
	1988	45	135	56	98	13	131	43	121	90	109	100	102	38	125	5	137	21	138	55	109	55	109	55	109	
	1989	45	145	36	116	4	198	75	120	88	102	71	99	40	127	2	158	19	131	52	115	52	115	52	115	
	1990	40	113	36	109	12	113	79	118	50	97	45	92	55	125	12	129	66	123	50	112	66	123	50	112	
	1991	31	115	41	106	8	120	135	106	106	93	223	93	74	125	14	127	34	132	94	103	103	94	103	103	
	1992	40	139	54	107	4	120	211	100	155	84	87	54	114	17	140	37	140	112	140	112	140	112	140	112	
	1993	70	131	90	104	15	128	120	104	48	104	123	98	36	131	2	141	27	141	79	106	79	106	79	106	
	1994	34	144	73	111	17	148	99	116	146	78	55	106	18	135	2	137	21	147	72	106	72	106	72	106	
	1995	22	117	47	100	24	123	108	103	88	99	87	117	42	124	2	162	51	146	64	106	64	106	64	106	
	1996	51	120	68	103	16	111	54	118	26	113	60	108	45	142	7	140	59	150	52	114	52	114	52	114	
Black drum	1982*	ND	<1	259	ND	0	<1	199	<1	199	<1	192	<1	221	<1	166	2	235	<1	264	0	<1	238	<1	238	
	1983	ND	<1	274	ND	<1	168	0	0	0	<1	171	<1	201	1	347	1	266	<1	440	<1	440	<1	283		
	1984	ND	<1	242	ND	0	0	0	0	<1	403	<1	351	1	315	1	202	<1	544	<1	544	<1	258			
	1985	ND	<1	226	<1	233	0	0	0	<1	334	<1	334	<1	236	<1	280	0	0	<1	268	<1	268	<1	250	
	1986	<1	276	<1	246	0 ^c	0	<1	200	0	<1	186	<1	204	<1	197	0	0	<1	247	<1	247	<1	231		
	1987	<1	278	<1	271	<1	192	<1	170	<1	154	<1	204	<1	299	1	197	0	0	<1	216	<1	216	<1	256	
	1988	1	271	<1	274	<1	192	<1	170	<1	154	<1	267	<1	270	<1	356	2	212	<1	418	<1	418	<1	258	
	1989	2	260	<1	254	<1	146	<1	930	0	114	<1	173	<1	560	97	109	<1	169	5	115	<1	169	<1	215	
	1990	2	272	<1	313	1	218	0	<1	194	<1	194	<1	247	<1	170	71	152	<1	229	4	160	<1	229	<1	236
	1991	2	268	<1	210	<1	235	0	<1	212	<1	183	<1	223	<1	359	10	225	<1	233	1	233	<1	236	<1	236
	1992	2	320	<1	275	<1	309	0	<1	282	<1	223	<1	223	<1	379	3	291	<1	357	<1	357	<1	301		
	1993	3	283	<1	291	1	259	<1	280	<1	184	<1	259	<1	346	1	325	3	235	<1	360	<1	360	<1	256	
	1994	2	324	<1	291	1	229	1	257	0	221	<1	221	<1	365	<1	326	5	250	<1	397	<1	397	<1	283	
	1995	1	306	<1	359	1	314	0	0	2	271	<1	271	<1	365	<1	326	5	250	<1	397	<1	397	<1	283	
	1996	2	292	<1	359	1	314	0	0	2	271	<1	271	<1	365	<1	326	5	250	<1	397	<1	397	<1	283	
Gafftopsail catfish	1982*	ND	<1	ND	ND	4	ND	ND	3	ND	3	ND	3	ND	1	138	1	193	0	2	141	0	2	141	0	
	1983	ND	<1	137	ND	1	139	ND	1	144	5	121	2	123	2	135	<1	175	0	131	<1	196	<1	196	<1	133
	1984	ND	<1	154	ND	1	156	ND	2	137	5	128	3	128	3	128	<1	150	1	152	<1	210	<1	210	<1	134
	1985	ND	<1	126	ND	2	145	1	143	2	134	5	128	2	121	2	121	<1	152	0	158	<1	175	<1	175	
	1986	0	174	<1	145	1	149	1	135	3	138	9	122	2	124	<1	132	<1	183	<1	183	<1	183	<1	128	
	1987	<1	174	<1	145	1	149	1	135	1	139	4	131	3	131	3	131	<1	144	0	156	<1	156	<1	137	
	1988	0	174	<1	145	1	149	1	135	1	139	4	131	4	136	4	139	<1	156	0	156	<1	156	<1	137	
	1989	<1	299	<1	218	1	127	1	137	4	130	2	127	3	141	<1	173	0	173	<1	206	<1	206	<1	137	
	1990	0	174	<1	145	1	149	1	135	2	145	5	125	5	132	10	117	1	126	<1	126	<1	127	<1	127	
	1991	<1	144	<1	161	1	128	2	125	2	125	5	122	2	124	<1	118	<1	183	0	183	<1	185	<1	133	
	1992	1	144	<1	161	1	139	<1	118	2	145	4	123	4	123	4	123	<1	180	<1	181	<1	181	<1	131	
	1993	0	144	<1	161	1	139	<1	118	2	145	4	123	4	123	4	123	<1	180	<1	181	<1	181	<1	131	
	1994	0	144	<1	161	1	139	<1	118	2	145	4	123	4	123	4	123	<1	180	<1	181	<1	181	<1	131	
	1995	<1	275	2	139	<1	167	1	166	2	129	1	141	1	153	<1	153	<1	225	0	225	<1	225	<1	141	
	1996	<1	289	<1	167	1	167	1	166	2	129	1	141	1	153	<1	153	<1	225	0	225	<1	225	<1	141	
Gulf menhaden	1982*	ND	12	ND	103	3	98	112	87	52	83	109	27	79	12	92	2	119	4	82	6	76	<1	76		
	1983	ND	3	101	17	95	4	84	15 ^c	12	101	34	77	22	62	1	156	<1	49	0	106	4	106	<1	101	
	1984	ND	1	121	3	94	22	80	1	96	16	111	21	103	3	106	1	156	<1	92	0	156	<1	92		
	1985	ND	<1	121	101	3	94	22	80	1	97	13	111	21	103	3	106	1	156	<1	92	0	156	<1	92	
	1986	0	144	<1	161	1	128	<1	118	2	145	5	125	5	132	<1	117	<1	183	<1	183	<1	183			
	1987	3	144	<1	161	1	128	<1	118	2	145	5	125	5	132	<1	117	<1	183	<1	183	<1	183			
	1988	3																								

Table 4. (Cont.)

Species, Year	Sabine Lake No./h Length	Galveston No./h Length	Matagorda No./h Length	Matagorda No./h Length	San Antonio No./h Length	Aransas No./h Length	Corpus Christi No./h Length	Upper Laguna Madre No./h Length	Lower Laguna Madre No./h Length	Coastwide ^b No./h Length
Gulf menhaden (cont.)										
1993	2	79	39	84	5	44	10	104	12	68
1994	4	84	30	91	4	46	7	120	13	74
1995	2	68	23	103	2	48	3	105	19	45
1996	16	55	14	101	29	33	6	91	8	79
Pinfish										
1982*	ND	1	ND	ND	7	ND	5	ND	85	ND
1983	ND	1	121	ND	6	110	14	106	119	124
1984	ND	1	121	ND	6	107	7	96	25	113
1985	ND	1	120	ND	9	111	23	104	53	110
1986	4	117	2	118	ND	10	101	18	98	55
1987	<1	126	1	122	5 ^c	113	13	103	83	106
1988	4	126	2	114	5	107	18	111	92	104
1989	1	117	2	121	9	98	16	113	53	103
1990	3	109	5	107	5	103	34	109	101	101
1991	1	111	4	120	8	100	6	116	26	102
1992	1	98	2	127	1	112	5	112	10	103
1993	3	119	4	114	3	110	3	103	34	102
1994	1	128	9	109	2	125	9	101	27	103
1995	<1	122	2	137	2	119	6	106	38	118
1996	17	131	3	107	4	114	4	106	19	106
Red drum										
1982*	ND	0	ND	ND	<1	ND	<1	ND	<1	ND
1983	ND	0	ND	ND	<1	305	56	<1	319	<1
1984	ND	<1	583	ND	<1	344	0	<1	344	<1
1985	ND	0	ND	ND	<1	56	0	<1	35	<1
1986	<1	212	0	ND	0	0	0	<1	54	<1
1987	<1	405	<1	34	0 ^c	0	0	<1	54	<1
1988	<1	272	<1	53	0	0	0	<1	23	<1
1989	<1	254	<1	44	0	0	0	<1	25	<1
1990	0	ND	<1	320	0	0	0	<1	53	<1
1991	0	ND	<1	135	0	0	0	<1	75	<1
1992	0	ND	<1	197	0	0	<1	349	<1	369
1993	<1	575	0	<1	360	0	<1	250	<1	412
1994	0	<1	433	<1	72	0	<1	170	<1	70
1995	<1	246	0	<1	400	0	<1	281	0	188
1996	0	ND	<1	400	<1	400	<1	93	<1	436
Sand seatrout										
1982*	ND	4	ND	5	185	<1	141	3	126	14
1983	ND	3	134	4	132	<1	108	3	111	9
1984	ND	2	147	ND	1	121	<1	115	1	141
1985	ND	4	127	ND	3	126	<1	136	1	119
1986	1	152	3	141	2	112	<1	117	1	148
1987	2	121	2	110	2	114	1	99	1	94
1988	1	140	3	107	1	117	<1	123	2	107
1989	2	102	10	96	3	111	1	110	4	85
1990	1	110	5	109	1	96	3	119	1	113
1991	1	118	7	130	1	103	2	123	1	119
1992	2	113	6	113	<1	150	6	113	2	104
1993	6	108	6	110	3	107	4	119	1	109
1994	1	76	8	107	3	124	3	119	<1	123
1995	1	101	8	121	2	104	8	111	1	105
1996	7	151	2	116	3	94	3	119	<1	139
Sheephead										
1982*	ND	<1	295	ND	0	ND	<1	119	<1	85
1983	ND	<1	344	ND	0	ND	<1	113	<1	138
1984	ND	<1	339	ND	<1	147	0	ND	<1	157
1985	ND	<1	341	ND	<1	102	<1	112	<1	143
1986	1	215	<1	451	ND	0	<1	122	<1	122
1987	<1	279	<1	356	0 ^c	<1	111	<1	115	<1
1988	<1	332	<1	423	0	<1	112	<1	124	<1
1989	1	252	<1	253	<1	104	0	120	<1	120
1990	3	248	<1	343	<1	0	<1	89	<1	89

Table 4. (Cont.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		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	No./h Length	No./h Length	No./h Length						
Sheepshead (cont.)	1991	2	300	<1	339	<1	192	0	<1	145	<1	145	<1	229	0	<1	136	<1	295	
	1992	3	267	<1	354	0	286	0	<1	121	<1	149	<1	164	<1	465	<1	187	<1	
	1993	5	257	<1	311	1	309	0	<1	134	<1	101	<1	203	<1	473	1	156	<1	
	1994	2	281	<1	287	1	301	<1	123	<1	187	<1	133	<1	165	<1	509	1	256	
	1995	3	244	<1	322	<1	301	0	<1	177	<1	139	<1	158	<1	181	1	161	<1	
	1996	2	300	<1	403	1	328	0	<1	181	<1	116	<1	253	<1	464	1	115	<1	
Southern flounder	1982*	ND	ND	<1	158	ND	<1	196	<1	120	1	186	1	181	1	203	<1	296	1	
	1983	ND	ND	<1	175	ND	<1	194	<1	153	2	148	<1	242	2	203	<1	161	<1	
	1984	ND	ND	<1	193	ND	<1	202	1	147	1	152	1	221	1	145	<1	168	<1	
	1985	ND	<1	234	ND	<1	161	ND	<1	165	1	141	1	184	1	197	<1	261	<1	
	1986	<1	141	<1	231	<1	154	<1	191	<1	160	<1	167	<1	171	0	262	<1	191	
	1987	<1	168	<1	231	<1	154	<1	148	<1	118	<1	168	<1	214	<1	183	<1	166	
	1988	<1	144	<1	195	<1	132	<1	181	<1	130	<1	169	<1	193	<1	226	<1	205	
	1989	<1	173	<1	166	<1	181	<1	161	<1	166	<1	136	<1	167	1	190	<1	145	
	1990	<1	119	<1	174	<1	161	<1	147	<1	148	<1	190	<1	228	<1	266	<1	180	
	1991	<1	152	<1	160	<1	185	<1	184	<1	210	<1	191	<1	135	0	0	<1	229	
	1992	<1	185	<1	184	<1	186	<1	177	<1	142	<1	126	<1	140	<1	232	<1	205	
	1993	<1	198	<1	155	<1	177	<1	177	<1	142	<1	226	<1	189	<1	416	<1	391	
	1994	1	214	<1	160	<1	230	<1	162	<1	225	<1	170	<1	220	<1	336	<1	223	
	1995	1	138	<1	192	0	197	<1	162	<1	151	<1	156	<1	181	<1	111	<1	186	
	1996	1	214	<1	197	<1	197	<1	162	<1	162	<1	210	<1	210	<1	163	1	221	
Spot	1982*	ND	ND	9	ND	ND	ND	ND	17	122	5	ND	5	ND	10	ND	4	ND	19	
	1983	ND	ND	8	120	ND	ND	ND	34	107	35	ND	5	ND	33	ND	4	ND	127	
	1984	ND	ND	13	121	ND	ND	ND	20	118	13	ND	8	ND	36	ND	6	ND	103	
	1985	ND	ND	14	120	ND	ND	ND	29	121	21	ND	9	ND	36	ND	6	ND	126	
	1986	6	120	11	127	12	119	38	115	34	97	96	115	129	6	135	5	135	119	
	1987	9	134	11	117	5	107	42	127	116	108	151	116	125	4	158	13	112	119	
	1988	24	113	14	117	5	123	6	111	85	118	73	105	97	127	4	140	18	118	66
	1989	19	130	11	130	8	117	12	95	94	117	96	165	101	240	6	129	18	119	68
	1990	6	124	9	120	6	108	44	124	39	105	52	108	206	116	24	130	62	116	50
	1991	6	137	19	125	2	125	71	128	25	119	78	100	66	130	9	149	25	133	40
	1992	10	137	19	119	4	131	86	112	30	101	63	102	167	118	4	134	11	134	54
	1993	32	119	25	129	24	116	4	128	23	122	39	103	61	119	56	135	1	161	9
	1994	25	129	17	127	17	119	4	119	38	119	53	110	75	124	41	146	1	141	15
	1995	6	127	17	125	6	125	8	125	39	112	23	119	90	107	47	136	4	129	32
	1996	39	121	39	121	0	121	8	125	6	129	23	112	23	119	90	107	12	130	40
Spotted seatrout	1982*	ND	<1	173	ND	<1	155	<1	174	<1	174	<1	156	<1	163	<1	187	1	142	<1
	1983	ND	<1	288	ND	<1	286	ND	<1	193	<1	171	<1	237	<1	327	2	188	<1	
	1984	ND	<1	418	ND	<1	162	<1	134	<1	143	<1	166	<1	164	<1	385	<1	351	
	1985	ND	<1	259	ND	<1	167	<1	172	<1	166	<1	159	<1	175	<1	163	1	151	
	1986	<1	187	<1	147	<1	189	<1	189	<1	161	<1	170	<1	176	<1	164	<1	167	
	1987	<1	147	<1	162	<1	166	<1	166	<1	174	<1	174	<1	175	<1	166	<1	172	
	1988	<1	189	<1	172	<1	172	<1	172	<1	174	<1	190	<1	168	<1	175	<1	173	
	1989	<1	227	<1	142	<1	128	<1	128	<1	128	<1	127	<1	124	<1	114	0	150	
	1990	<1	334	<1	118	0	165	<1	184	<1	134	<1	136	<1	154	<1	124	1	177	
	1991	<1	251	<1	155	<1	155	<1	150	<1	155	<1	149	<1	182	<1	219	2	185	
	1992	<1	194	<1	161	<1	161	<1	130	<1	149	<1	149	<1	181	<1	239	2	216	
	1993	<1	196	<1	142	<1	145	<1	220	0	127	<1	127	<1	175	<1	235	1	247	
	1994	<1	194	<1	145	<1	145	<1	190	<1	182	<1	156	<1	193	<1	218	1	159	
	1995	<1	172	<1	145	<1	145	<1	152	<1	174	<1	167	<1	193	<1	167	<1	168	
	1996	<1	180	<1	152	<1	152	<1	140	<1	167	<1	167	<1	192	<1	184	<1	178	
Striped mullet	1982*	ND	<1	204	ND	<1	204	ND	<1	174	<1	174	<1	174	2	212	1	311	<1	
	1983	ND	<1	244	ND	<1	195	ND	<1	163	<1	136	<1	136	3	209	1	323	1	
	1984	ND	<1	255	ND	<1	255	ND	<1	163	<1	116	<1	157	7	287	6	243	<1	
	1985	ND	<1	187	ND	<1	187	ND	<1	161	<1	158	<1	158	1	226	<1	254	1	
	1986	<1	168	<1	168	<1	168	<1	292	2	294	<1	145	<1	171	1	192	0	243	
	1987	1	168	2	239	2	239	2	294	<1	138	<1	130	<1	156	3	185	<1	334	0

Table 4. (Cont.)

Species	Year	Sabine Lake	Galveston	Mata Gorda	Matagorda	San Antonio	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
Striped mullet (cont.)										
1989	5	183	5	249	1	164	<1	237	1	234
1990	<1	234	1	192	<1	133	<1	141	1	180
1991	4	174	3	213	<1	114	<1	178	7	181
1992	6	232	5	232	0	115	<1	129	3	206
1993	1	209	1	260	<1	172	<1	157	1	214
1994	4	261	1	189	<1	207	<1	141	1	204
1995	1	190	3	261	<1	333	0	<1	134	2
1996	2	209	13	274	1	181	<1	151	1	234
Total finfishes		88	199	ND	193	139	48	179	270	167
1982*	ND	63	126	ND	162	99	107	174	313	116
1983	ND	46	123	ND	111	104	82	312	139	108
1984	ND	82	117	ND	115	114	96	104	124	134
1985	ND	28	151	96	122	117	112	302	236	108
1986	ND	136	83	121	64 ^c	117	107	302	100	117
1987	53	131	138	101	49	122	186	118	308	139
1988	101	137	111	119	44	105	265	122	124	134
1989	98	122	94	116	41	108	282	118	304	123
1990	85	127	176	106	41	109	359	104	347	143
1991	72	157	166	121	23	102	455	105	106	143
1992	94	152	201	107	55	122	297	108	354	152
1993	156	142	152	194	111	54	150	229	110	232
1994	82	128	216	103	69	130	371	99	329	129
1995	59	128	166	123	85	104	177	106	320	136
1996	166	123	150	118					109	135
SHELLFISHES										
Blue crab	1982*	ND	28	91	ND	5	99	21	81	89
1983	ND	24	88	ND	10	86	21	80	40	100
1984	ND	19	92	ND	4	88	8	82	31	117
1985	ND	30	79	ND	10	85	19	76	23	106
1986	ND	132	28	79	ND	13	65	19	85	106
1987	5	135	19	78	28 ^c	87	10	77	40	95
1988	5	135	9	71	13	71	77	89	93	95
1989	9	135	25	66	51	63	6	80	75	84
1990	6	98	31	72	15	79	4	90	39	74
1991	7	117	10	64	26	76	6	75	58	72
1992	7	139	8	77	2	102	6	65	105	71
1993	5	131	16	70	6	93	14	82	50	65
1994	4	146	16	74	3	90	23	85	71	67
1995	2	133	8	58	3	111	8	74	25	64
1996	9	107	14	60	6	107	16	82	14	73
Brown shrimp	1982*	ND	23	90	ND	25	94	17	101	54
1983	ND	12	99	ND	26	102	58	32	107	56
1984	ND	13	102	ND	7	100	96	27	90	50
1985	ND	33	75	ND	24	89	27	90	67	108
1986	<1	99	15	94	29	99	69	98	111	96
1987	4	92	24	88	7 ^c	76	47	91	93	101
1988	3	85	24	84	10	91	32	100	124	98
1989	8	84	29	84	47	97	39	104	90	108
1990	1	113	11	98	40	100	26	96	104	92
1991	1	193	13	87	63	96	21	86	51	91
1992	3	83	38	82	9	90	23	82	65	84
1993	9	79	18	85	14	69	43	94	45	88
1994	9	83	29	99	3	69	51	95	101	88
1995	1	91	12	83	9	65	54	84	100	103
1996	8	89	14	95	25	63	23	101	36	94
Pink shrimp	1982*	ND	<1	94	ND	<1	113	<1	96	94
1983	ND	<1	95	ND	<1	112	5	95	9	94

Table 4. (Cont.)

Species	Year	Sabine Lake	Galveston	East Matagorda	Matagorda	Matagorda	San Antonio	Aansas	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	No./h Length
Pink shrimp (cont.)												
Pink shrimp	1985	ND	<1	88	ND	<1	104	3	98	4	100	5
	1986	0	<1	118	ND	2	114	4	103	11	101	1
	1987	0	<1	111	2 ^c	102	5	95	2	92	6	103
	1988	0	1	79	<1	110	2	89	6	86	20	82
	1989	0	<1	90	1	94	1	102	8	93	14	91
	1990	0	<1	84	0	<1	106	1	106	1	97	23
	1991	0	<1	101	1	115	2	102	8	84	27	88
	1992	0	<1	58	<1	101	<1	87	<1	70	7	77
	1993	0	<1	87	0	<1	100	1	86	5	76	4
	1994	0	<1	92	<1	89	3	104	5	78	6	85
	1995	0	<1	92	2	80	10	97	6	82	4	89
	1996	0	1	101	2	90	1	113	7	92	4	91
White shrimp												
White shrimp	1982 ^f	ND	88	93	ND	39	86	14	99	16	95	26
	1983	ND	78	93	ND	20	102	13	96	18	100	14
	1984	ND	60	98	ND	15	99	8	99	38	106	24
	1985	ND	62	99	ND	21	110	23	91	17	106	22
	1986	14	105	45	95	22 ^c	92	16	98	13	101	19
	1987	23	101	37	97	22 ^c	95	16	97	42	87	10
	1988	39	107	21	91	8	95	16	98	41	93	16
	1989	29	87	29	89	11	98	9	98	43	99	7
	1990	50	90	14	98	14	103	16	115	47	97	13
	1991	17	91	76	97	7	99	11	95	27	94	30
	1992	37	88	59	93	5	99	31	96	24	53	5
	1993	11	81	38	91	31	83	17	97	18	88	21
	1994	45	96	95	80	15	97	9	107	44	87	6
	1995	4	93	55	90	34	87	11	101	48	86	9
	1996	31	97	18	98	87	89	14	109	5	95	5

^aValues include May-Dec. only.^b1986 values include Sabine Lake; 1987 values include East Matagorda.^cValues include Apr.-Dec. only.

Table 5. Annual mean catch rates (No./h) and mean total lengths (mm) of select fishes and shellfishes caught with 6.1-m trawls in the Texas Territorial Sea during 1985-96. 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
FINFISHES													
Atlantic croaker	1985*	ND	134	22	145	42	139	17	145	9	149	23	142
	1986	44 ^b	45	126	98	136	43	130	9	132	49	132	132
	1987	9	114	110	119	65	131	28	134	<1	157	44	124
	1988	79	122	78	118	89	132	23	130	2	128	55	125
	1989	64	115	117	117	75	128	28	128	6	137	60	121
	1990	175	117	139	111	69	135	65	131	4	119	91	119
	1991	272	111	153	114	201	121	87	129	4	162	145	117
	1992	229	110	228	116	153	116	81	106	6	126	142	113
	1993	437	111	200	110	74	123	91	121	10	144	162	113
	1994	140	115	109	126	75	141	2	114	14	143	69	126
	1995	80	116	33	123	112	119	20	133	1	121	50	119
	1996	253	118	88	128	29	117	7	117	8	143	77	121
Black drum	1985*	ND	0 ^b	0	<1	760	<1	900	<1	825	0	<1	825
	1986	<1	851	<1	752	0	<1	680	<1	680	0	<1	900
	1988	0	698	<1	528	0	<1	506	0	0	0	<1	741
	1989	<1	990	<1	970	0	<1	889	0	0	0	<1	752
	1990	0	0	<1	825	0	<1	0	<1	780	<1	<1	631
	1991	0	146	<1	843	0	<1	0	<1	0	<1	0	538
	1992	0	0	<1	843	0	<1	0	<1	0	<1	0	970
	1993	<1	0	<1	843	0	<1	0	<1	0	<1	0	889
	1994	0	0	<1	871	0	<1	0	<1	0	<1	0	632
	1995	<1	0	<1	871	0	<1	0	<1	0	<1	0	843
	1996	0	0	<1	0	<1	0	<1	0	<1	0	0	496
Gafftopsail catfish	1985*	ND	13 ^b	121	118	<1	165	<1	156	<1	136	0	160
	1986	3	116	0	169	<1	115	<1	176	<1	176	0	121
	1987	3	118	<1	123	<1	158	<1	134	<1	115	3	118
	1988	2	144	1	123	<1	168	0	187	<1	180	0	126
	1989	2	119	<1	123	0	546	<1	187	<1	0	0	143
	1990	3	119	<1	170	<1	181	<1	178	<1	0	1	119
	1991	1	145	<1	148	<1	148	<1	209	<1	0	<1	150
	1992	12	125	1	129	<1	182	<1	145	<1	145	3	127
	1993	6	123	<1	152	<1	239	1	204	<1	204	1	143
	1994	6	131	2	141	0	1	155	0	1	155	1	135
	1995	5	131	1	137	<1	238	1	190	0	1	1	138
	1996	5	122	1	0	<1	0	<1	0	<1	0	0	0
Gulf menhaden	1985*	ND	4 ^b	125	2	150	1	159	1	151	0	1	152
	1986	3	132	2	147	<1	180	<1	197	<1	197	0	135
	1987	5	124	10	135	1	146	<1	159	<1	159	2	136
	1988	5	137	1	144	<1	107	<1	122	<1	122	0	87
	1989	1	137	4	136	1	131	<1	177	<1	177	1	138
	1990	2	133	1	144	1	122	<1	162	<1	162	0	134
	1991	7	134	1	144	1	130	<1	148	<1	148	0	135
	1992	4	141	14	116	1	139	1	145	<1	145	4	123
	1993	5	142	1	129	<1	159	0	116	<1	116	1	141
	1994	6	131	3	132	3	117	<1	163	<1	163	2	129
	1995	5	137	4	137	1	159	<1	157	<1	157	2	141
	1996	9	141	1	136	1	155	<1	146	<1	146	2	142
King mackerel	1985*	ND	<1	<1	173	0	159	<1	124	<1	124	0	142
	1986	0 ^b	0	0	0	0	0	0	0	0	0	<1	159
	1987	0	0	0	0	0	0	0	200	<1	200	0	131
	1988	0	0	0	0	0	0	0	0	0	0	0	162
	1989	0	0	0	0	0	0	0	161	<1	161	0	<1

Table 5. (Cont.)

Species	Year	Sabine No./h Length	Galveston No./h Length	Port O'Connor No./h Length	Port Aransas No./h Length	Port Isabel No./h Length	Coastwide No./h Length
King mackerel (cont.)							
1990	0	<1	201	<1	223	0	<1
1991	0	<1	172	<1	157	99	210
1992	0	<1	149	<1	152	0	<1
1993	0	0	0	<1	136	<1	132
1994	0	0	0	<1	169	0	144
1995	0	<1	173	<1	108	<1	169
1996	0	0	0	<1	195	0	<1
Pinfish	1985 ^a	ND	98	<1	124	3	112
1986	<1 ^b	98	<1	104	2	103	105
1987	0	<1	100	3	111	2	113
1988	<1	93	<1	112	8	112	1
1989	<1	100	1	108	3	105	107
1990	<1	86	1	111	4	110	6
1991	<1	121	1	132	2	105	109
1992	<1	115	2	121	3	113	98
1993	<1	72	<1	102	3	103	2
1994	<1	131	1	111	5	105	105
1995	0	1	117	3	101	4	114
1996	1	120	<1	126	1	121	3
Red drum	1985 ^a	ND	0	0	0	<1	84
1986	0 ^b	0	0	<1	948	0	0
1987	0	0	<1	1,110	0	42	520
1988	0	0	<1	61	0	0	0
1989	0	0	<1	0	0	<1	1,110
1990	0	0	<1	0	0	0	61
1991	0	0	<1	0	0	<1	95
1992	0	0	<1	1,013	0	0	1,013
1993	0	0	<1	0	0	<1	922
1994	0	0	<1	811	<1	124	467
1995	0	0	<1	964	0	<1	
1996	0	0	<1	95	2	90	1
Red snapper	1985 ^a	ND	0	0	2	85	2
1986	0 ^b	0	68	<1	152	1	88
1987	0	0	<1	88	1	95	100
1988	0	0	<1	74	2	122	<1
1989	0	0	<1	0	87	1	107
1990	0	0	<1	94	3	111	109
1991	0	0	<1	0	105	3	106
1992	0	0	<1	2	80	2	88
1993	0	0	<1	126	1	77	1
1994	0	0	<1	3	103	3	98
1995	0	0	<1	5	70	6	97
1996	0	0	<1	95	2	89	3
Sand seatrout	1985 ^a	ND	10	141	6	168	2
1986	5 ^b	164	4	141	3	140	150
1987	7	131	6	133	5	151	3
1988	3	148	5	114	11	134	154
1989	22	133	41	110	16	127	135
1990	50	136	8	126	7	155	14
1991	28	130	12	143	7	130	135
1992	41	132	11	138	6	129	12
1993	45	129	7	131	15	148	13
1994	82	132	3	149	5	148	124
1995	23	126	18	129	11	125	116
1996	11	138	5	141	2	130	112

Table 5. (Cont.)

Species	Year	No./h	Sabine Length	No./h	Galveston Length	No./h	Port O'Connor Length	No./h	Port Aransas Length	No./h	Port Isabel Length	No./h	Coastwide Length
Southern flounder	1985*	ND	0	255	<1	280	<1	137	0	0	<1	199	199
	1986	1	162	<1	197	<1	184	<1	311	0	<1	173	173
	1987	<1	256	<1	0	<1	214	<1	179	<1	168	<1	191
	1988	<1	204	0	<1	210	<1	225	0	<1	214	214	
	1989	0	187	0	<1	212	<1	298	0	<1	239	239	
	1990	<1	286	<1	260	<1	194	<1	164	<1	250	<1	197
	1991	<1	143	<1	240	0	<1	188	0	<1	250	<1	220
	1992	<1	124	<1	180	<1	215	0	<1	<1	418	<1	270
	1993	<1	171	<1	0	<1	262	0	<1	<1	286	<1	205
	1994	<1	196	0	<1	437	0	0	0	<1	0	<1	262
	1995	0	<1										280
Spanish mackerel	1985*	ND	200	0	183	0	182	<1	258	0	0	<1	200
	1986	<1	93	<1	178	<1	175	<1	110	<1	200	<1	203
	1987	<1	166	<1	206	<1	172	<1	175	0	0	<1	180
	1988	<1	174	<1	174	1	176	<1	225	<1	192	<1	182
	1989	<1	184	<1	158	<1	163	<1	144	<1	134	<1	168
	1990	<1	158	<1	167	<1	175	<1	181	<1	164	<1	168
	1991	<1	0	<1	0	<1	188	0	<1	<1	237	<1	190
	1992	<1	194	<1	194	<1	186	<1	170	<1	170	<1	170
	1993	<1	289	<1	460	0	0	<1	242	<1	242	<1	192
	1994	<1	0	<1	194	<1	135	<1	0	<1	348	<1	348
	1995	<1	289	<1	0	<1	0	0	0	<1	0	<1	0
	1996	<1											
Spot	1985*	ND	3 ^b	124	3	132	20	130	21	141	1	142	11
	1986	3 ^b	140	9	126	4	124	25	123	2	125	9	124
	1987	5	115	7	116	4	125	22	129	<1	170	8	129
	1988	4	120	27	108	18	128	23	122	<1	110	12	123
	1989	6	123	25	121	102	124	48	121	4	121	21	118
	1990	9	117	4	125	67	125	93	117	4	112	47	125
	1991	18	127	12	126	6	122	37	127	1	129	26	123
	1992	5	122	14	119	4	126	10	126	2	117	7	125
	1993	4	125	4	131	13	125	19	125	4	138	9	124
	1994	13	115	3	135	30	132	4	131	4	129	8	127
	1995	7	116	4	130	18	137	7	150	4	125	10	132
	1996	9	<1	139	0	<1	137	13	124	5	120	10	128
Spotted seatrout	1985*	ND	163	<1	172	<1	165	0	<1	140	0	<1	140
	1986	<1	178	0	65	<1	0	0	0	0	0	<1	178
	1987	<1	0	98	0	<1	110	0	0	0	0	<1	88
	1988	<1	110	<1	160	<1	122	<1	173	<1	144	<1	137
	1989	<1	110	0	0	<1	148	0	0	<1	144	<1	132
	1990	<1	112	0	0	<1	160	0	0	<1	112	<1	148
	1991	0	187	<1	54	0	0	0	0	<1	160	<1	160
	1992	<1	187	<1	54	0	0	0	0	<1	67	<1	67
	1993	0	276	0	0	<1	160	0	0	<1	276	<1	276
	1994	<1	139	0	0	<1	139	0	0	<1	139	<1	139
	1995	<1											
	1996	<1											
Total finfishes	1985*	ND	148	119	188	118	227	114	130	101	174	114	114
	1986	159 ^b	122	207	118	215	123	292	119	72	110	190	120
	1987	158	98	289	111	229	118	226	114	80	96	199	110
	1988	153	120	273	104	379	114	291	106	52	103	234	110
	1989	178	114	301	111	350	118	354	113	106	108	261	114
	1990	477	121	355	113	464	128	337	115	80	103	346	122
	1991	427	117	322	125	666	115	458	108	124	102	404	115

Table 5. (Cont.)

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
Total finfishes (cont.)													
Total finfishes	1992	524	115	499	116	523	111	332	103	128	96	406	111
1993	651	117	324	116	376	102	381	104	135	106	377	110	
1994	408	121	253	121	560	110	447	99	151	105	367	111	
1995	231	119	165	109	900	98	394	109	174	97	380	104	
1996	618	116	279	115	430	108	458	99	196	98	397	109	
SHRIMP													
Blue crab	1985*	ND	4 ^b	96	6	1	1	134	1	127	<1	144	127
1986	3	96	1	112	2	105	1	141	1	123	3	110	
1987	2	85	<1	104	1	113	<1	142	<1	140	1	106	
1988	4	61	2	72	1	130	<1	128	<1	160	1	105	
1989	15	80	4	63	1	118	<1	134	<1	146	1	78	
1990	19	72	6	58	1	102	2	126	<1	127	4	84	
1991	19	72	58	104	<1	85	1	114	<1	121	6	73	
1992	7	78	1	83	2	116	1	130	<1	123	2	69	
1993	5	78	1	83	2	115	2	130	1	102	2	95	
1994	9	77	2	123	1	115	2	66	1	128	3	87	
1995	8	65	1	61	<1	120	1	122	<1	122	2	70	
1996	5	58	<1	59	<1	115	<1	120	1	107	1	67	
Brown shrimp	1985*	ND	10 ^b	107	13	103	7	125	47	109	18	106	19
1986	7	104	24	104	9	108	10	114	10	105	6	110	
1987	15	102	5	109	24	103	14	106	1	106	1	104	
1988	33	103	50	96	56	105	140	28	106	<1	116	11	
1989	34	101	10	108	55	107	58	95	12	94	59	98	
1990	12	90	2	102	12	93	9	114	20	106	36	108	
1991	23	91	20	103	4	96	19	192	2	115	11	97	
1992	6	100	21	97	13	105	9	97	4	109	14	100	
1993	6	100	10	101	5	99	16	94	7	106	9	99	
1994	49	102	5	97	49	101	31	94	2	112	28	100	
1995	10	92	3	103	3	104	4	105	2	107	4	99	
Pink shrimp	1985*	ND	0 ^b	<1	120	<1	130	1	119	1	108	1	116
1986	0	<1	0	0	2	110	4	105	3	118	2	111	
1987	<1	87	0	87	1	114	5	102	1	124	1	108	
1988	0	<1	87	0	105	1	103	7	103	1	125	2	105
1989	0	<1	101	104	1	101	3	118	3	117	2	114	
1990	0	<1	88	99	1	109	6	112	2	118	2	112	
1991	<1	88	<1	79	<1	114	4	102	<1	122	1	104	
1992	0	<1	101	104	4	99	5	104	9	112	4	107	
1993	0	<1	90	116	1	109	10	98	8	116	3	106	
1994	<1	78	0	0	1	112	6	109	3	112	3	106	
1995	<1	78	94	0	1	112	1	109	5	116	1	114	
1996	<1	94	0	0	1	112	1	109	5	116	1	114	
White shrimp	1985*	ND	41 ^b	101	53	110	26	124	11	126	1	105	24
1986	26	105	14	109	16	112	8	119	1	124	2	111	
1987	14	105	17	100	19	110	9	116	1	133	12	110	
1988	21	102	25	106	22	108	14	113	<1	122	1	107	
1989	18	104	11	115	15	118	6	136	2	136	10	115	
1990	18	105	10	117	30	106	6	127	1	122	15	109	
1991	28	105	31	108	11	112	10	118	1	145	21	105	
1992	51	98	31	108	11	121	5	134	1	133	17	106	
1993	61	101	10	108	11	121	5	114	1	128	10	112	
1994	17	109	8	109	15	114	9	116	1	128	10	112	

Table 5. (Cont.)

Species	Year	No./h Length	Galveston No./h Length	Port O'Connor No./h Length	Port Aransas No./h Length	Port Isabel No./h Length	Coastwide No./h Length
White shrimp (cont.)	1995	10 49	110 96	20 22	113 105	14 18	117 118
	1996					12 9	125 125

^aValues include Feb-Dec only off Port Aransas and Aug-Dec only off all other areas.

^bValues include Jun-Dec only.

Table 6. Annual mean catch rates (No./h) and mean total lengths (mm) by size class^a of Eastern oyster caught with 46.0-cm wide dredges on "reef" stations in Texas bay systems during 1984-96. Blank indicates no measurement taken; ND = no data.

Size class	Year	Galveston		Matagorda		San Antonio		Aransas		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spat	1984	491	ND	ND	ND	ND	ND	ND	ND	491	ND
	1985	891	ND	ND	ND	ND	ND	ND	ND	891	ND
	1986	1,010	764	499	66	551	770	551	770	1,382	1,382
	1987	1,054	654	439	46	4,269	1,772	1,772	1,202	1,202	1,202
	1988	1,440	938	439	43	1,864	3,071	1,864	1,880	1,880	1,880
	1989	1,322	2,019	1,117	1,117	1,117	1,611	1,611	1,685	1,685	1,685
	1990	2,147	1,289	894	894	410	410	410	1,022	1,022	1,022
	1991	1,456	454	268	268	82	82	82	1,487	1,487	1,487
	1992	3,083	139	122	122	0	0	0	1,440	1,440	1,440
	1993	3,194	329	546	546	719	719	719	860	860	860
	1994	1,263	1,311	1,493	1,493	1,836	1,836	1,836	1,194	1,194	1,194
	1995	1,718	1,497	4,521	4,521	1,251	1,251	1,251	4,740	4,740	4,740
	1996	7,458	ND	ND	ND	ND	ND	ND	ND	ND	ND
Small	1984	1,705	47	ND	ND	ND	ND	ND	ND	1,705	47
	1985	2,096	54	ND	ND	ND	ND	ND	ND	2,095	54
	1986	1,316	54	382	51	565	51	1,273	51	1,001	54
	1987	1,070	51	555	51	240	55	2,499	50	1,077	51
	1988	1,500	53	580	52	235	42	2,187	52	1,208	52
	1989	1,086	47	706	48	1,985	50	2,278	49	1,463	48
	1990	2,996	45	417	48	1,401	53	1,495	45	1,971	46
	1991	4,927	48	1,040	51	538	54	1,016	48	2,615	49
	1992	4,601	51	622	52	92	48	263	54	2,168	51
	1993	3,895	54	396	54	500	51	296	59	1,926	54
	1994	3,002	52	805	48	573	47	1,010	46	1,749	50
	1995	2,656	53	1,193	49	987	52	4,192	52	2,354	52
	1996	3,023	47	1,748	50	1,740	47	3,912	52	2,714	49
Market	1984	447	91	ND	ND	ND	ND	ND	ND	447	91
	1985	674	88	ND	ND	ND	ND	ND	ND	674	88
	1986	617	88	212	92	444	92	191	86	438	89
	1987	370	91	167	91	258	93	411	86	323	90
	1988	397	89	201	91	23	89	402	87	284	88
	1989	239	90	177	90	414	90	282	85	275	89
	1990	179	88	114	89	445	88	99	83	215	88
	1991	502	87	216	89	377	91	65	84	349	88
	1992	796	87	164	88	24	93	40	83	384	87
	1993	1,346	88	204	92	74	87	161	87	664	87
	1994	1,214	90	313	95	287	93	355	93	708	91
	1995	760	89	433	92	415	93	1,056	92	690	91
	1996	683	89	698	90	604	94	1,442	91	811	88

^aSpat (5-25 mm), small (26-75 mm), market (≥ 76 mm). Mean total length not calculated for spat.

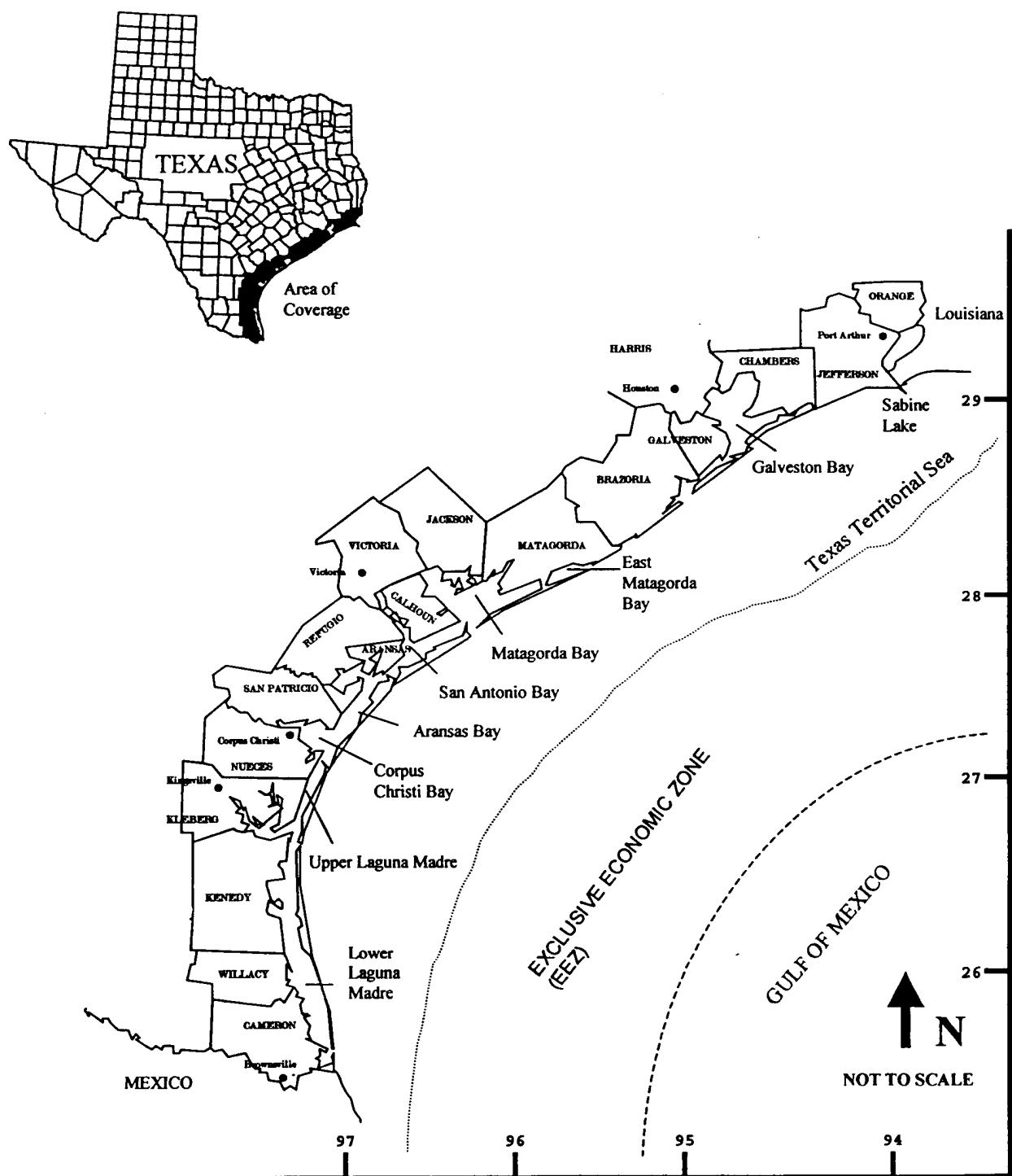


Figure 1. Texas gulf shoreline and Texas Territorial Sea (TTS).

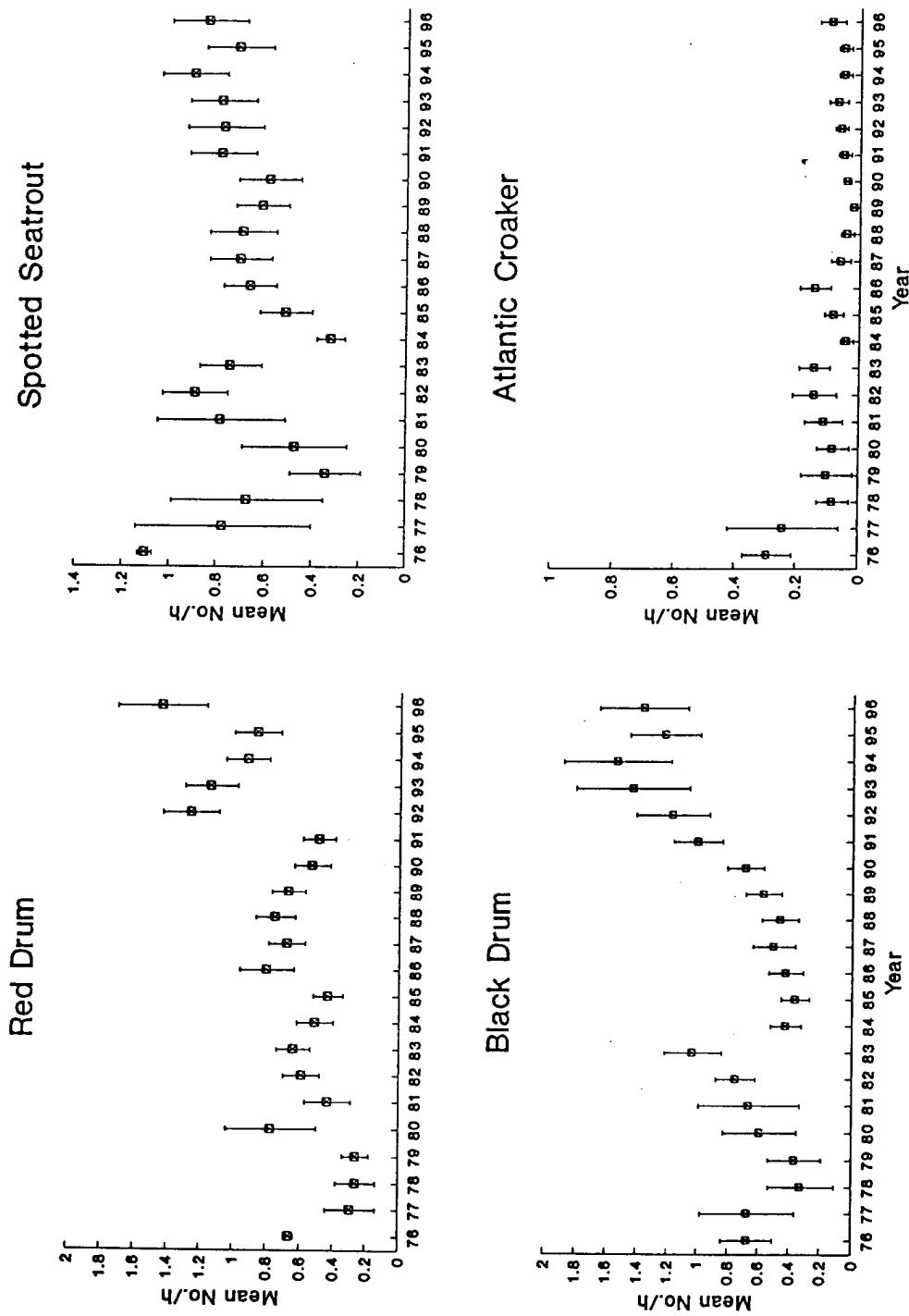


Figure 2. Spring gill net mean catch rates (No./h \pm 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1976-96.

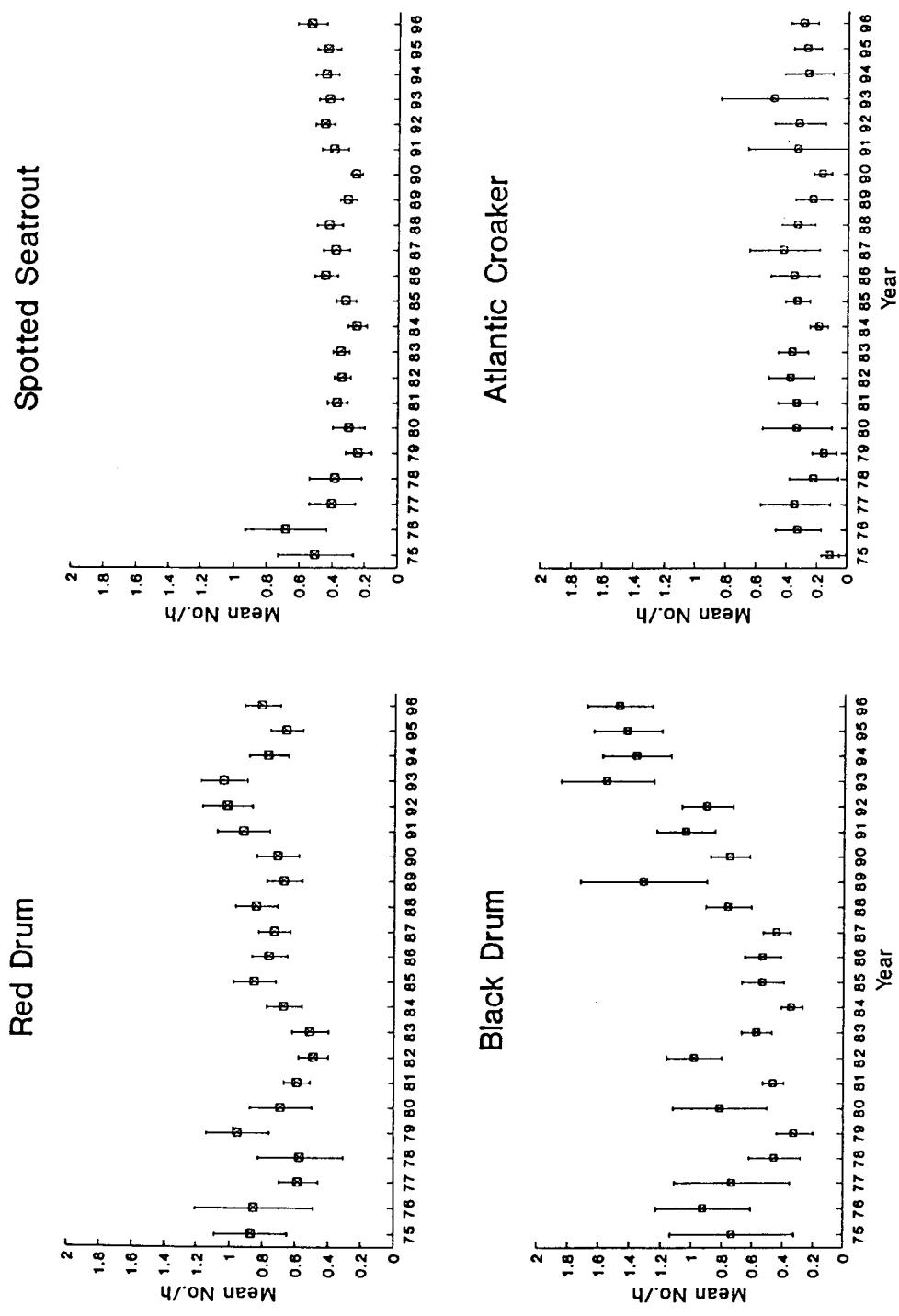


Figure 3. Fall gill net mean catch rates (No./h \pm 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1975-96.

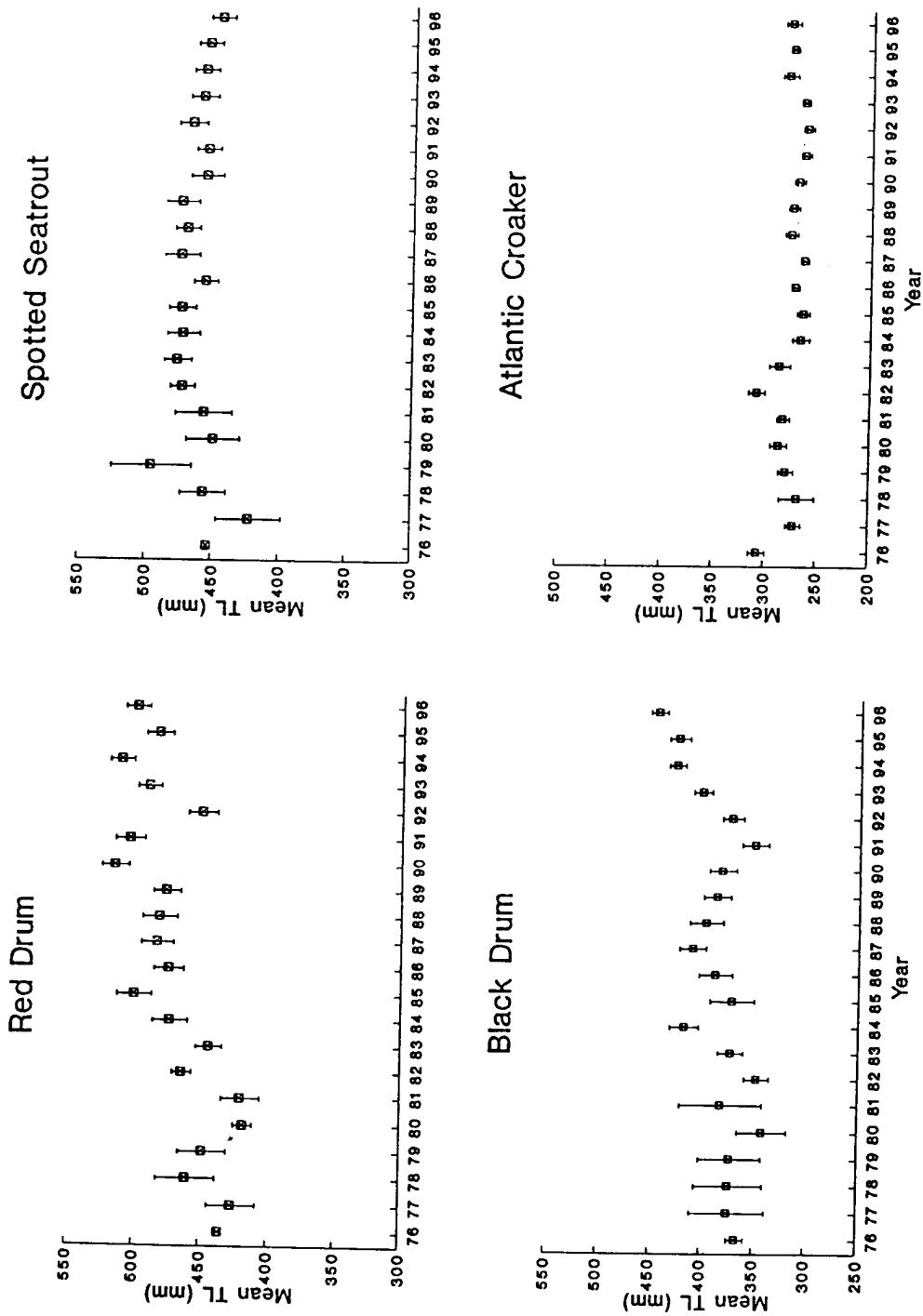


Figure 4. Spring gill net mean total lengths (mm \pm 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1976-96.

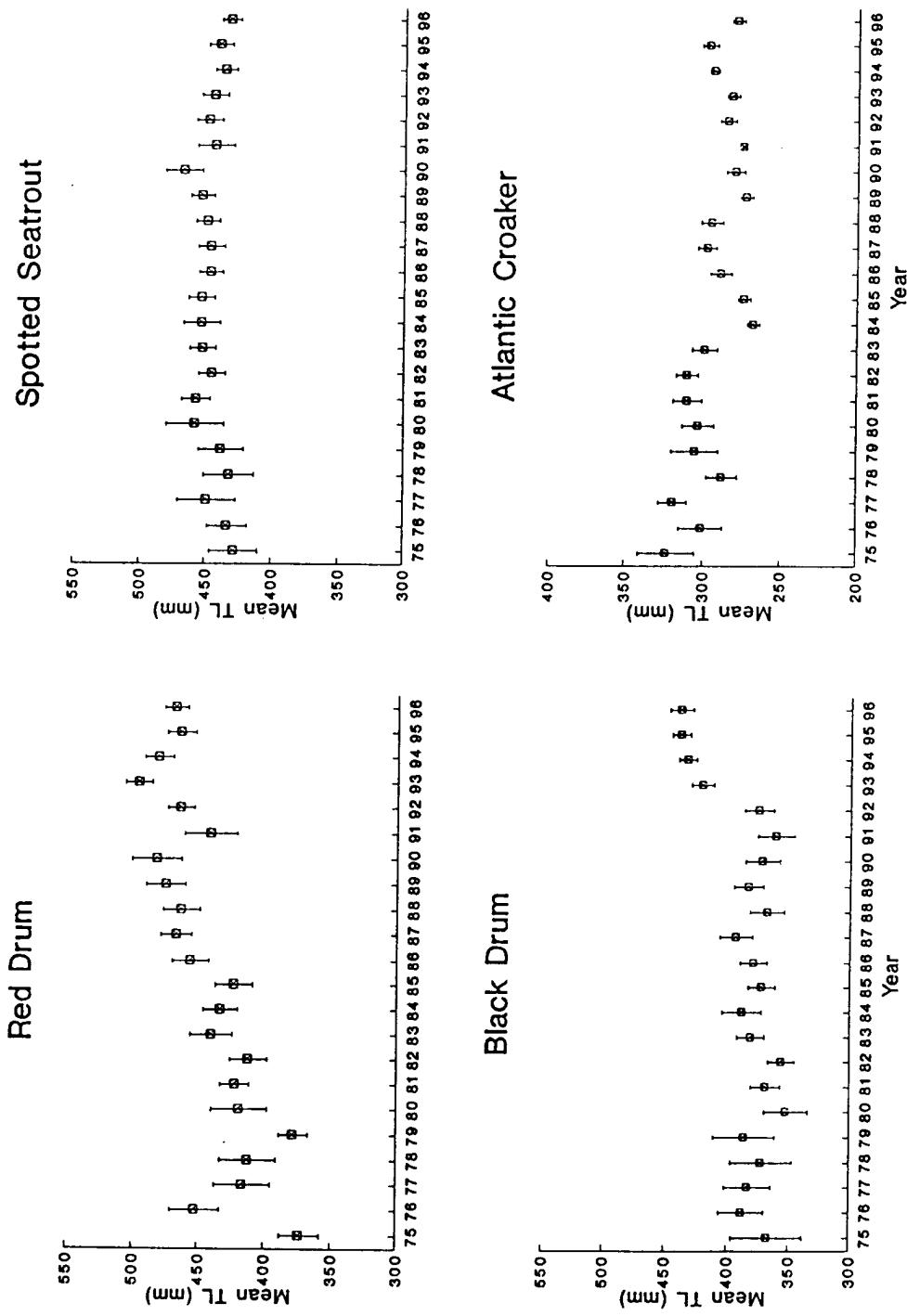
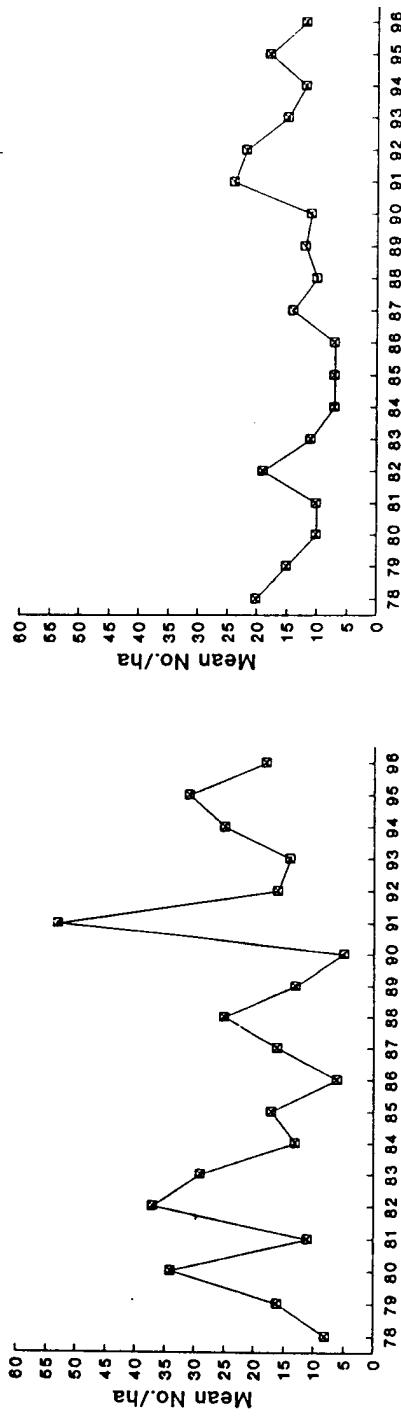


Figure 5. Fall gill net mean total lengths (mm \pm 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1975-96.

Spotted Seatrout



Atlantic Croaker

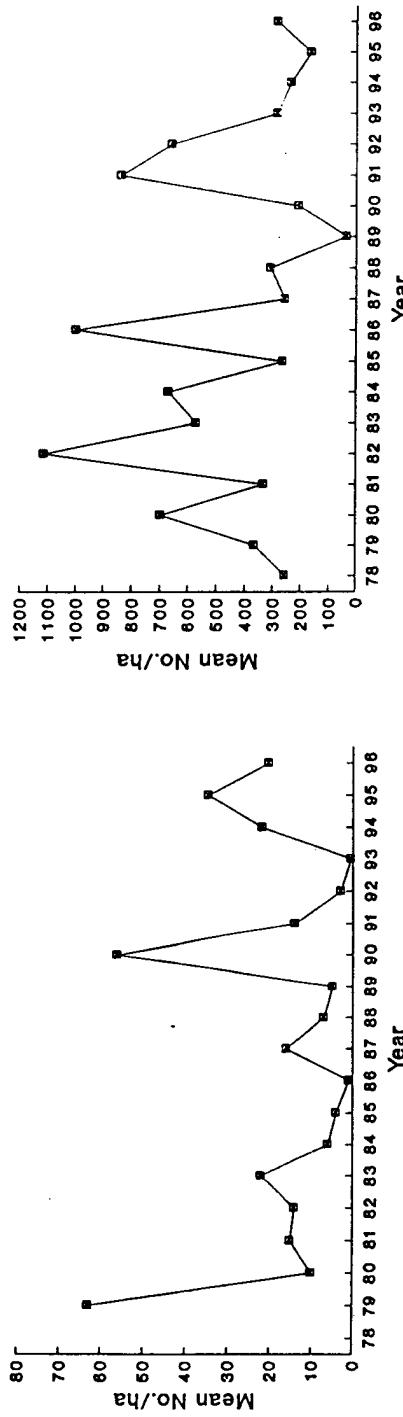


Figure 6. Seasonal bag seine mean catch rates (No./ha) for juvenile red drum (Nov-Mar), black drum (Jun-Jul), spotted seatrout (Jul-Nov) and Atlantic croaker (Feb-May) during 1978-96. Red drum 35-75 mm, spotted seatrout 20-75 mm, black drum 35-110 mm and Atlantic croaker 30-85 mm are considered to be young-of-the-year.

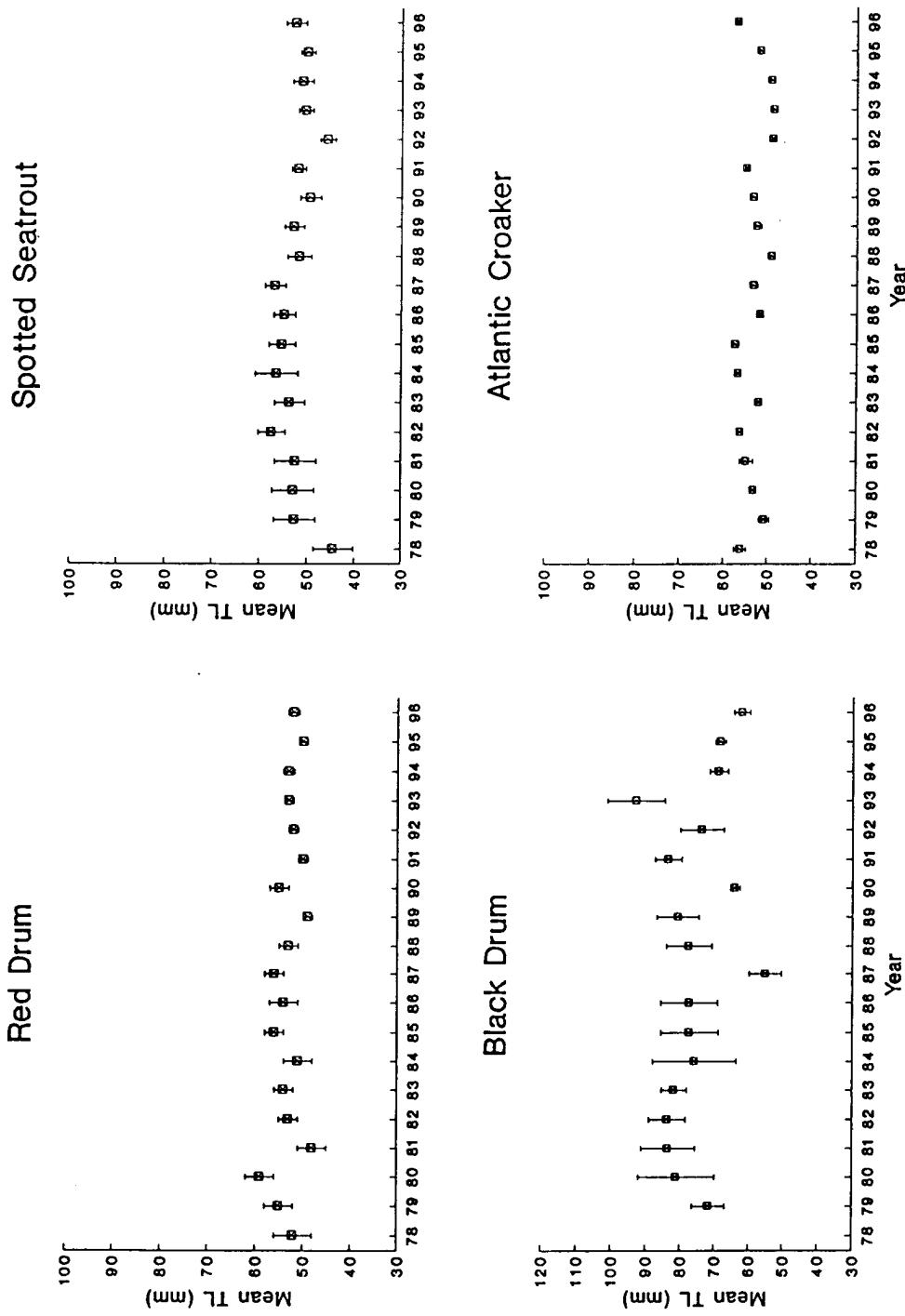


Figure 7. Seasonal bag seine mean total lengths (mm \pm 1SE) for juvenile red drum (Nov-Mar), black drum (Jun-Jul), spotted seatrout (Jul-Nov) and Atlantic croaker (Feb-May) during 1978-96. Red drum 35-75 mm, spotted seatrout 20-75 mm, black drum 35-110 mm and Atlantic croaker 30-85 mm are considered to be young-of-the-year.

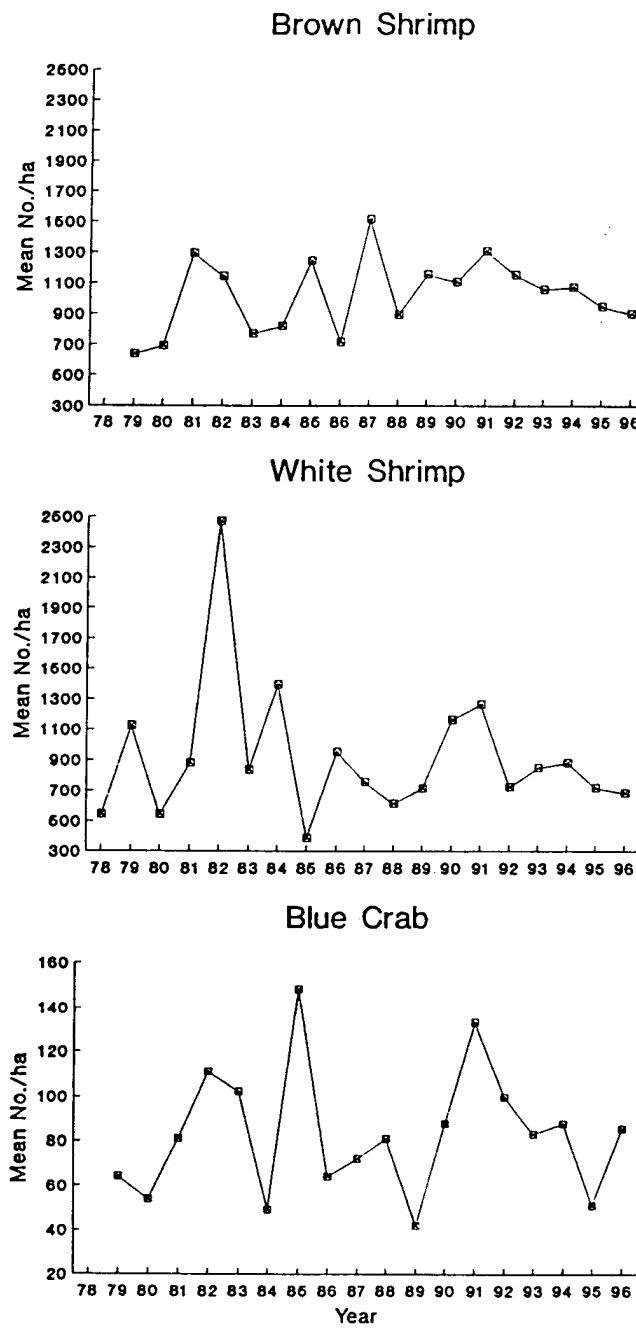


Figure 8. Seasonal bag seine mean catch rates (No./ha) for juvenile brown shrimp (Apr-Jul), white shrimp (Jul-Nov) and blue crab (Mar-Jun) during 1978-96. Brown and white shrimp 33-82 mm and blue crab 13-42 mm are considered to be young-of-the-year.

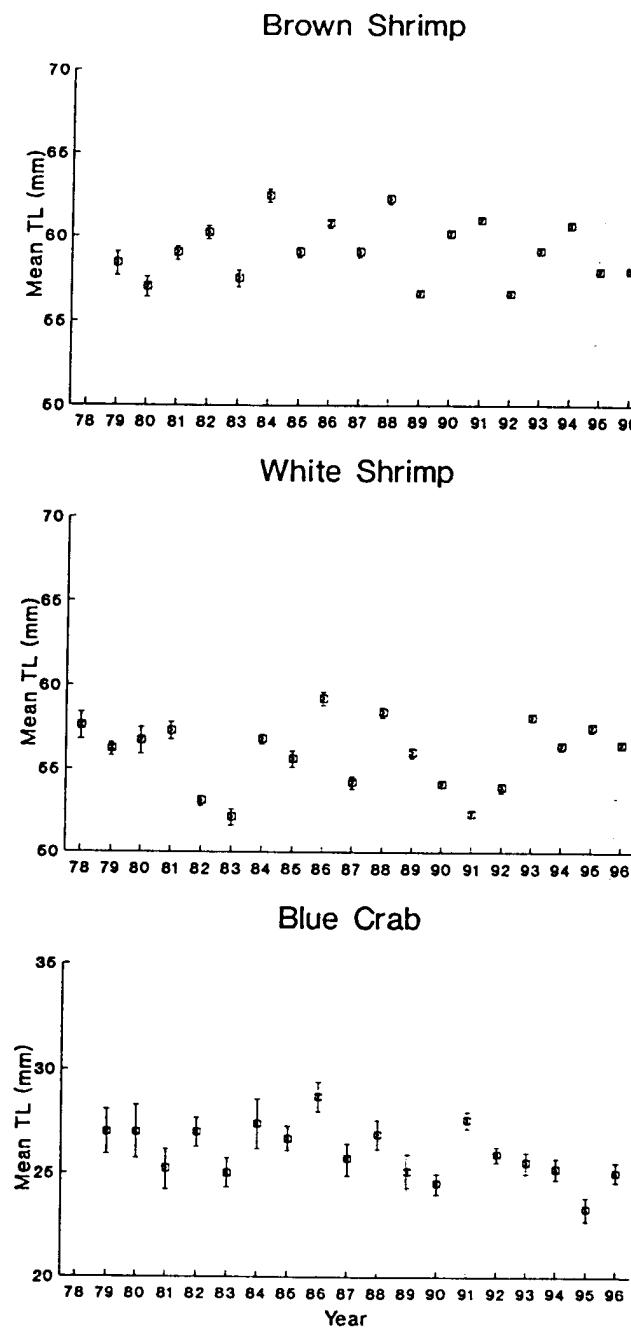


Figure 9. Seasonal bag seine mean total lengths (mm \pm 1SE) for brown shrimp (Apr-Jul), white shrimp (Jul-Nov) and blue crab (Mar-Jun) during 1978-96. Brown and white shrimp 33-82 mm and blue crab 13-42 mm are considered to be young-of-the-year.

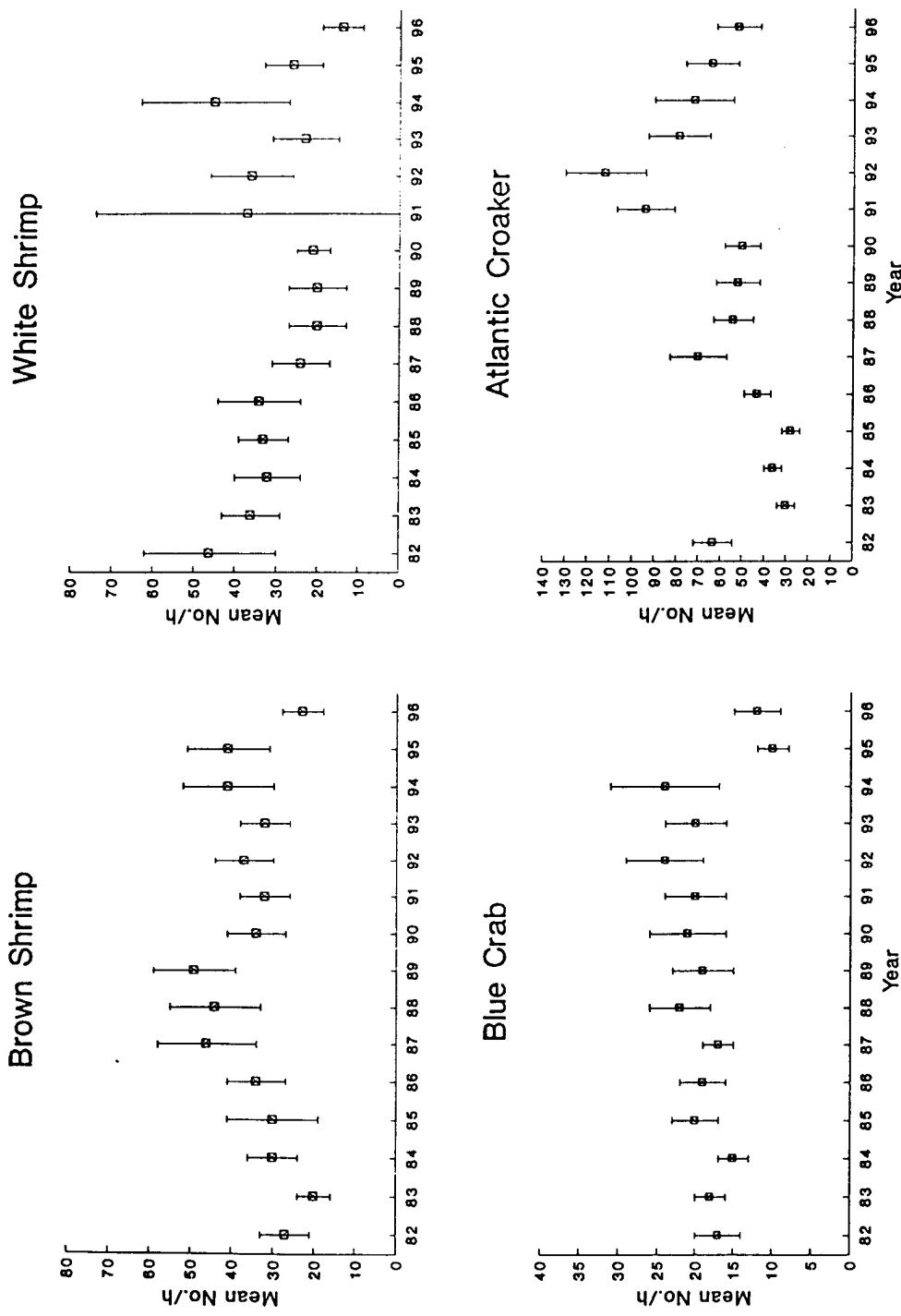


Figure 10. Annual bay trawl catch rates (No./h \pm 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-96.

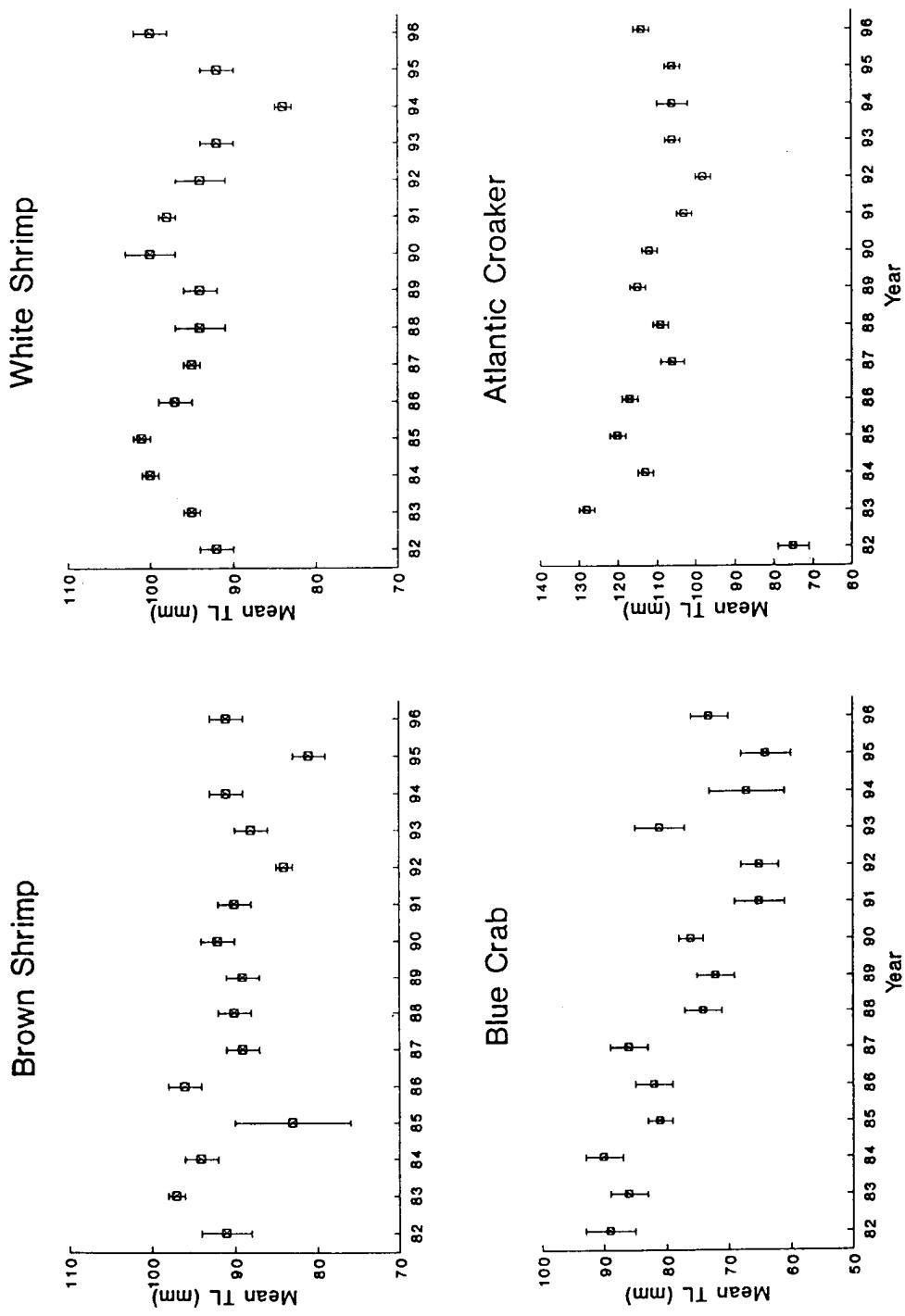


Figure 11. Annual bay trawl mean total lengths (mm ± 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-96.

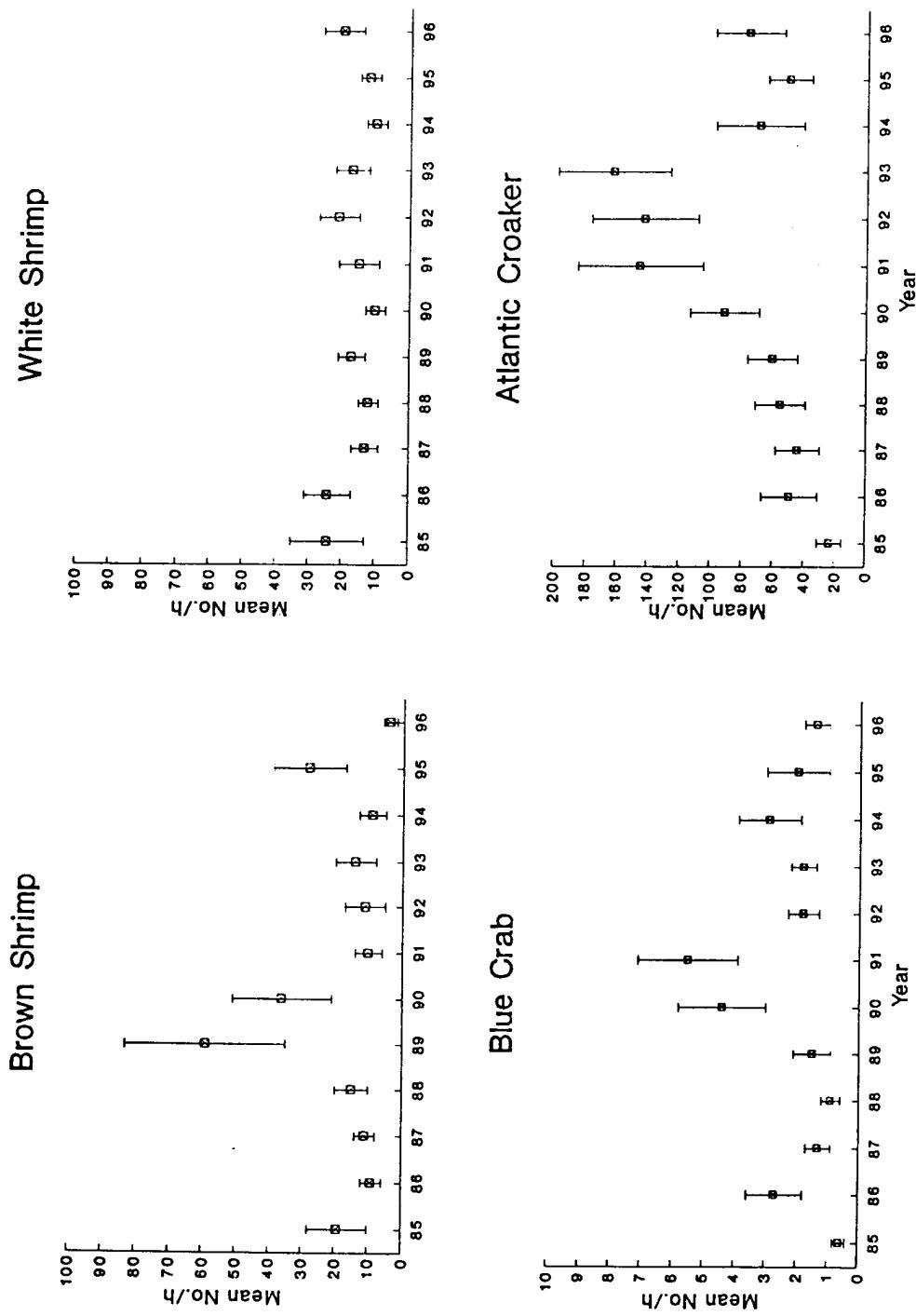


Figure 12. Annual gulf trawl mean catch rates (No./h \pm 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-96.

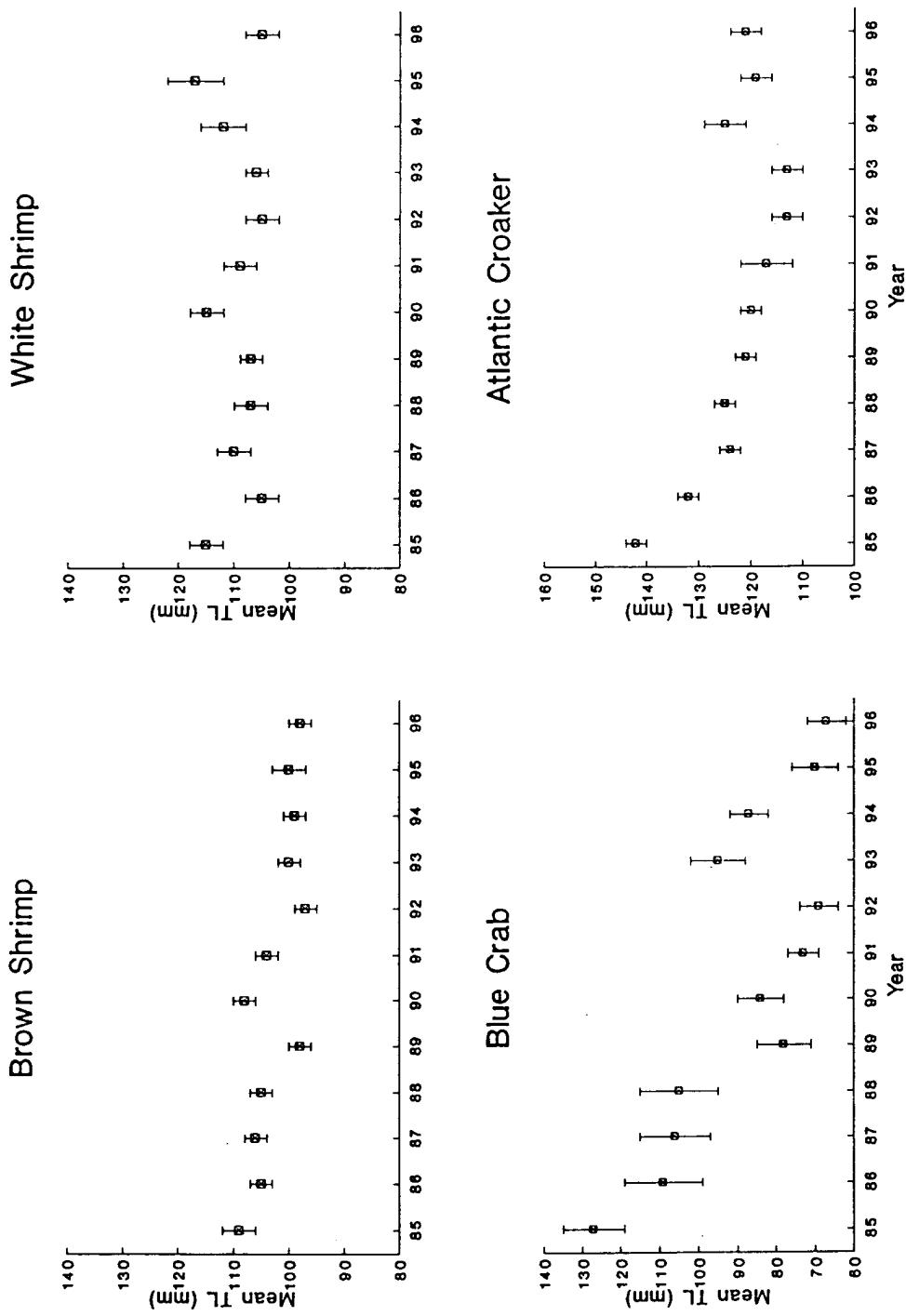


Figure 13. Annual gulf trawl mean total lengths (mm \pm 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-96.

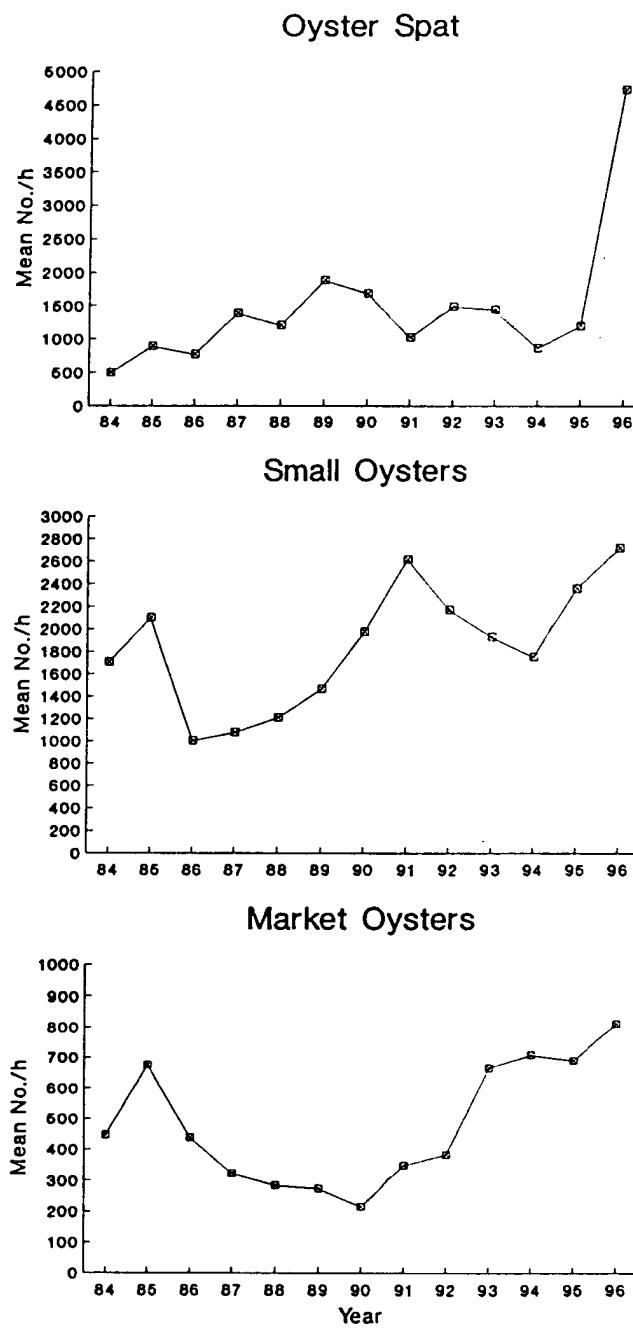


Figure 14. Annual mean oyster dredge catch rates (No./h) for Eastern oyster spat (≤ 25 mm), small oysters (26–75 mm) and market oysters (≥ 76 mm) during 1984–96.

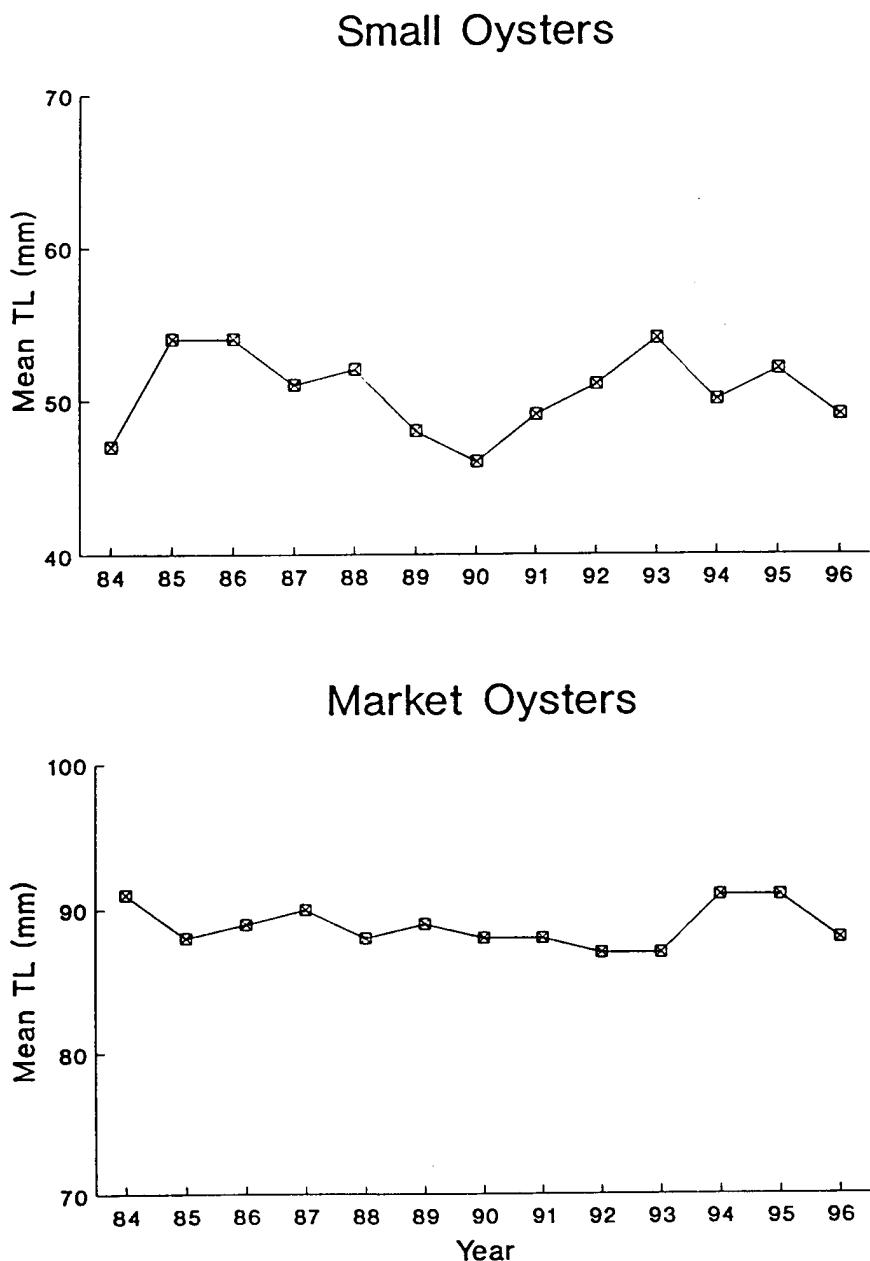


Figure 15. Annual mean oyster dredge total lengths (mm) for small and market Eastern oysters during 1984-96.

Appendix A. Summary of historical sampling dates, gear description, procedures, dates, number of samples collected, weighting factors, and list of species collected.

Table A.1. Historical sampling dates (month/year) by bay system and gear.

GEAR	SABINE	EAST MATA GORDA	MATA GORDA	SAN ANTONIO	ARANSAS	CORPUS CHRISTI	UPPER LAGUNA	LOWER LAGUNA
GILL NET 1986- Present	April 1975- Present	Nov. 1976- Present	Oct. 1975- Present	Nov. 1975- Present	Nov. 1975- Present	Nov. 1975- Present	Nov. 1975- Present	Nov. 1975- Present
GULF TRAWL	Jul. 1986- Present	Aug. 1985- Present	Not used.	Not used.	Aug 1985- Present	Not used. Feb. 1985- Present	Not used. Aug. 1985- Present	Aug. 1985- Present
BAY TRAWL	Jan. 1986- Present	Jan. 1982- Present	April 1987- Present	May 1982- Present	Jan. 1982- Present	Jan. 1982- Present	May 1982- Present	May 1982- Present
ICWW TRAWL	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995	Jan. Dec. 1992-1995
BEACH SEINE	Oct. Nov. 1987-1995	Oct. Nov. 1987-1995	Oct. Nov. 1987-1995	Not used.	Oct. Nov. 1987-1995	Not used. Oct. Nov. 1987-1991	Oct. Nov. 1987-1995	Oct. Nov. 1987-1995
BEACH BAG SEINE	Oct. Nov. 1987-1995	Oct. Nov. 1987-1995	Oct. Nov. 1987-1995	Not used.	Oct. Nov. 1987-1995	Not used. Oct. Nov. 1987-1991	Oct. Nov. 1987-1995	Oct. Nov. 1987-1995
BAY BAG SEINE	Jan. 1986- Present	Oct. 1977- Present	Feb. 1983- Present	Oct. 1977- Present	Oct. 1977- Present	Oct. 1977- Present	Oct. 1977- Present	Oct. 1977- Present
OYSTER REEF DREDGE	Jan. 1986-1991	Oct. 1984- Present	Jan. 1986- 1991	Jan. 1986- Present	Jan. 1986- Present	Jan. 1986- 1991	Not used.	Jan. 1986-1991
NON-REEF DREDGE	1986-1989	1985-1989	1986-1989	1986-1989	1986-1989	1986-1989	1986-1988	1986-1988

Table A.2. Gear descriptions.

GEAR	GEAR DESCRIPTION
Gill Net	Monofilament, 183 m long; 1.2 m deep with separate 45.7-m sections of 7.6-, 10.2-, (#12 monofilament), 12.7- and 15.2-cm (#18 monofilament) stretched mesh tied together in ascending mesh size.
Trawl	6.1 m wide at mouth with 3.8-cm stretched nylon multifilament mesh throughout and doors 1.2 m long and 0.5 m tall.
Beach Seine	60.9-m long; 1.8-m deep with 7.6-cm stretched #12 monofilament mesh.
Bag Seine	18.3 m long; 1.8 m deep with 1.3-cm stretched nylon multifilament mesh in the 1.8 m wide central bag with remaining webbing 1.9-cm stretched mesh.
Oyster Dredge	Louisiana style 9-tooth: 46 cm wide, 25 cm tall with a 36-cm deep bag. Four bottom rows and one top row of linked metal rings 5 cm in diameter; top and bottom rows of 7.6-cm mesh webbing made of 0.8-cm nylon rope.

Table A.3. Historical sampling procedures by gear.

GEAR	HISTORICAL SAMPLING PROCEDURES
GILL NET	Monofilament gill nets have been systematically used in 7 Texas bay systems since November 1975; East Matagorda Bay was added in fall 1976 and Sabine Lake in spring 1986 (Figure 1). Prior to September 1984, sites for setting gill nets during spring (Ten week period, generally, 15 April-15 June) and fall (Ten week period, generally, 15 September-15 November) were randomly selected from about 100 stations in each bay system (McEachron and Green 1985). Beginning September 1984 current site selection methods were adopted.
GULF TRAWLS	Prior to fall 1981, no less than one nor more than 18 overnight gill net sets occurred in each season in each bay system. Since fall 1981, 45 gill nets were set overnight during each season in each bay system except East Matagorda Bay. In East Matagorda Bay, from fall 1981 to spring 1984 not less than six nor more than 12 gill nets were set during each season; since fall 1984, 20 sets were set in each season.
BAY TRAWLS	Trawls have been systematically used in 3 Texas bays since January 1982 and in 7 bays since May 1982; Sabine Lake was added January 1986 and East Matagorda Bay April 1987. From January 1982 to present, 20 monthly samples were collected in the Galveston, San Antonio and Aransas systems. Beginning in May 1982, 20 monthly samples were collected in Matagorda and Corpus Christi Bay systems, and 10 in upper and lower Laguna Madre. Beginning in January 1986 in the Sabine system, and in April 1987 in the East Matagorda system, 10 monthly samples were collected.
ICWW TRAWLS	From January 1992 through December 1995, 6 monthly samples were collected in each of the 9 bay systems along the Texas coast.
BEACH SEINE	Beach seines have been systematically used on Texas Gulf beaches from October 1987 through November 1995. Six beach seine samples were collected each month (from October 1987-November 1989; from May-November 1990-1995) along Gulf beach shoreline areas. (Dailey et al. 1991)
BEACH BAG SEINE	Beach bag seine samples have been systematically used on Texas Gulf beaches from October 1987 through November 1995. Six beach bag seine samples were collected each month (from October 1987-November 1989; from May-November 1990-1995) along Gulf beach shoreline areas. (Dailey et al. 1991)
BAY BAG SEINE	Bay bag seine samples have been systematically collected in 7 Texas bay systems since October 1977; sample collection began in the East Matagorda system February 1983, and in the Sabine system in January 1986. Bay bag seine samples were collected by pulling the seine 15.2-30.5 m parallel to shore prior to September 1984; since then it has been pulled 15.2 m. Prior to September 1984, sites for sampling with bay seines (monthly) were randomly selected from about 100 stations in each bay system (McEachron and Green 1985). Prior to October 1981, six bag seine samples were collected each month in each bay system (except during June 1978 when no samples were collected). During October 1981 through August 1984 10 bag seine samples were collected each month in each bay system; half of the samples were collected during each of the first and last two fullest weeks of each month (McEachron and Green 1985). Beginning September 1984, half of the monthly samples were collected during the 1st-15th and half during the 16th-

Table A.3. (Cont.)

BAY BAG SEINE (cont.)	31st of each month. From April 1988 through December 1989 12 bag seine samples were collected each month in each bay system. Beginning January 1990, 16 bag seine samples were collected each month in each bay system. Beginning January 1992, 20 samples were collected in each bay system each month, except in East Matagorda where only 10 samples were collected per month.
OYSTER REEF DREDGE	Oyster dredges have been systematically used in Texas bays since January 1986. The number of monthly samples collected in the Galveston system were: 20 in 1984; 80 in 1985; and 56 in 1986-1991. Monthly samples collected in the Aransas system were: 56 in 1986-1989; and 26 in 1990-1991. From 1986 to 1991 10 samples per month were collected in Sabine Lake and the Lower Laguna Madre and 26 monthly samples were collected in the Matagorda, San Antonio, Corpus Christi and East Matagorda systems. Beginning January 1992 30 samples were collected each month in the Galveston system, and 20 samples in the Matagorda, San Antonio and Aransas systems. Sampling in other systems was discontinued beginning January 1992.
NON-REEF DREDGE	Non-reef dredge samples were systematically collected in Texas bays from 1985-1989. In 1985 10 monthly samples were collected in the Galveston system. From 1986-1989 10 monthly samples were collected in all bay systems.

Table A.4. Number of samples collected during routine monitoring by bay, gear, and year.

Gear	Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Bay Bag	1977	0	22	0	22	22	22	22	22	22	154
Seine	1978	0	66	0	68	68	68	68	68	68	462
	1979	0	72	0	72	72	72	72	72	72	504
	1980	0	72	0	72	72	72	72	72	72	504
	1981	0	84	0	84	84	84	84	84	84	588
	1982	0	120	0	120	120	120	120	120	120	840
	1983	0	120	110	120	120	120	120	120	120	950
	1984	0	120	120	120	120	120	120	120	120	960
	1985	0	120	120	120	120	120	120	120	120	960
	1986	120	120	120	120	120	120	120	120	120	1,080
	1987	120	120	120	120	120	120	120	120	120	1,080
	1988	138	138	138	138	138	138	138	138	138	1,242
	1989	144	144	144	144	144	144	144	144	144	1,296
	1990	192	192	192	192	192	192	192	192	192	1,728
	1991	192	192	192	192	192	192	192	192	192	1,728
	1992	240	240	240	240	240	240	240	240	240	2,040
	1993	240	240	240	240	240	240	240	240	240	2,040
	1994	240	240	240	240	240	240	240	240	240	2,040
	1995	240	240	240	240	240	240	240	240	240	2,040
	1996	240	240	120	240	240	240	240	240	240	2,040
Bay Trawl	1977	0	9	0	10	10	0	0	0	10	39
	1978	0	55	0	52	45	0	0	0	55	207
	1979	0	55	0	47	0	0	0	0	55	157
	1980	0	1	0	0	0	0	0	0	0	1
	1981	0	0	0	0	0	0	0	0	0	0
	1982	0	240	0	240	240	160	80	80	160	1,200
	1983	0	240	0	240	240	240	240	120	120	1,440
	1984	0	240	0	240	240	240	240	120	120	1,440
	1985	0	240	0	240	240	240	240	120	120	1,440
	1986	240	240	0	240	240	240	240	120	120	1,440
	1987	240	240	90	240	240	240	240	120	120	1,770
	1988	240	240	120	240	240	240	240	120	120	1,800
	1989	240	240	120	240	240	240	240	120	120	1,800
	1990	120	240	120	240	240	240	240	120	120	1,680
	1991	120	240	120	240	240	240	240	120	120	1,680
	1992	120	240	120	240	240	240	240	120	120	1,680
	1993	120	240	120	240	240	240	240	120	120	1,680
	1994	120	240	120	240	240	240	240	120	120	1,680
	1995	120	240	120	240	240	240	240	120	120	1,680
	1996	120	240	120	240	240	240	240	120	120	1,680
Gill Net (Spring)	1976	0	2	0	1	1	1	1	1	1	9
	1977	0	8	4	4	4	4	6	6	4	40
	1978	0	6	6	6	6	6	6	6	50	504
	1979	0	10	11	10	10	10	8	10	10	504
	1980	0	8	9	9	9	9	8	9	10	504
	1981	0	7	6	7	6	7	7	7	7	504
	1982	0	45	6	45	45	45	45	45	45	321
	1983	0	45	8	45	45	45	45	45	45	323
	1984	0	45	7	45	45	45	45	45	45	322
	1985	0	45	20	45	45	45	45	45	45	335
	1986	45	45	20	45	45	45	45	45	45	380
	1987	45	45	20	45	45	45	45	45	45	380

Table A.4. (Cont.)

Gear	Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Gill Net (Spring)	1988	45	45	20	45	45	45	45	45	380
(cont.)	1989	45	45	20	45	45	45	45	45	380
	1990	45	45	20	45	45	45	45	45	380
	1991	45	45	20	45	45	45	45	45	380
	1992	45	45	20	45	45	45	45	45	380
	1993	45	45	20	45	45	45	45	45	380
	1994	45	45	20	45	45	45	45	45	380
	1995	45	45	20	45	45	45	45	45	380
	1996	45	45	20	45	45	45	45	45	380
Gill Net (Fall)	1975	2	8	0	5	5	5	5	5	40
	1976	0	12	4	8	8	8	8	8	64
	1977	0	8	8	8	8	8	8	8	64
	1978	0	7	7	7	7	8	8	7	59
	1979	0	18	9	17	17	16	15	17	125
	1980	0	11	10	9	9	10	10	10	79
	1981	0	45	8	45	45	45	45	45	323
	1982	0	45	11	45	45	45	45	45	326
	1983	0	45	12	45	45	45	45	45	327
	1984	0	45	20	45	45	45	45	45	335
	1985	0	45	20	45	45	45	45	45	335
	1986	45	45	20	45	45	45	45	45	380
	1987	45	45	20	45	45	45	45	45	380
	1988	45	45	20	45	45	45	45	45	380
	1989	45	45	20	45	45	45	45	45	380
	1990	45	45	20	45	45	45	45	45	380
	1991	45	45	20	45	45	45	45	45	380
	1992	45	45	20	45	45	45	45	45	380
	1993	45	45	20	45	45	45	45	45	380
	1994	45	45	20	45	45	45	45	45	380
	1995	45	45	20	45	45	45	45	45	380
	1996	45	45	20	45	45	45	45	45	380

Table A.5. Number of samples collected by oyster reef dredge during routine monitoring, by bay and year.

Gear	Year	Galveston	Matagorda	San Antonio	Aransas	Coastwide
Oyster Dredge	1984	240	0	0	0	240
	1985	959	0	0	0	959
	1986	672	312	312	672	1,968
	1987	672	312	312	672	1,968
	1988	672	312	312	672	1,968
	1989	672	312	312	672	1,968
	1990	672	312	312	672	1,968
	1991	672	312	312	312	1,604
	1992	360	240	240	240	1,080
	1993	360	240	240	240	1,080
	1994	360	240	240	240	1,080
	1995	360	240	240	240	1,080
	1996	360	240	240	240	1,080

Table A.6. Number of Gulf trawl samples collected during routine monitoring in 5 Gulf zones, by Gulf area and year.

Gear	Year	Sabine Lake	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
Gulf Trawl	1985	0	80	176	80	80	416
	1986	112	192	192	192	192	880
	1987	192	192	192	192	192	960
	1988	192	192	192	192	184	952
	1989	192	192	192	184	169	949
	1990	192	192	192	192	192	960
	1991	192	192	192	184	192	952
	1992	192	192	192	184	192	952
	1993	192	192	192	192	192	960
	1994	192	192	187	192	192	955
	1995	192	192	192	184	192	952
	1996	192	192	192	192	192	960

Table A.7. Weighting factors used in calculating coastwide average catch rates.

Area	Gill net and ^a bay bag seine	Bay ^b trawl	ICWW ^c trawl	Oyster ^d dredge	Gulf ^e trawl
BAY SYSTEM					
Sabine	75.6	1,220	57.6		
Galveston	411.2	9,408	61.8	126	
East Matagorda	64.4	0,101	23.4		
Matagorda	284.8	6,288	27.4	42	
San Antonio	225.2	3,680	27.0	66	
Aransas	263.5	2,251	25.2	55	
Corpus Christi	171.3	3,357	13.8		
Upper Laguna Madre	222.3	1,534	55.1		
Lower Laguna Madre	252.1	1,153	46.6		
Total	1,970.4	28,992	337.9	289	
GULF AREA					
Sabine			266		
Galveston			273		
Port O'Connor			277		
Port Aransas			257		
Port Isabel			248		
Total			1,317		

^a Equals miles of shoreline (Matlock and Osborn 1982). Shallow-water surface areas and shoreline distances on the Texas coast).

^b Equals total bay surface area (divided by 10,000) minus 1977 estimate of shallow water area (<=1.2 m)(for the upper and lower Laguna Madre) or minus the mean of 1972 and 1977 estimates (for other bays)(Matlock and Osborn 1982).

^c Equals nautical miles of ICWW, trawls not done after 1995.

^d Equals total number of grids containing oyster reef.

^e Equals total number of Gulf trawlable grids.

^f No estimate was available for 1977 shallow water area, so 1977 area was estimated as proportion of sampling grid zones that are designated as trawls grids, times the total surface area of the bay.

Table A.8. Species caught (alphabetical by scientific name; Robins et al. 1991) in Texas marine waters by TPW sampling gear during 1975-1996. Common names are assigned by TPW for identification purposes.

Scientific Name	Common Name
Finfish	
<u>Abudefduf saxatilis</u>	Sergeant major
<u>Achirus lineatus</u>	Lined sole
<u>Adinia xenica</u>	Diamond killifish
<u>Aetobatis narinari</u>	Spotted eagle ray
<u>Agonostomus monticola</u>	Mountain mullet
<u>Albula vulpas</u>	Bonefish
<u>Alectis ciliaris</u>	African pompano
<u>Alosa chrysochloris</u>	Skipjack herring
<u>Aluterus heudelotii</u>	Dotterel filefish
<u>Aluterus schoepfi</u>	Orange filefish
<u>Aluterus scriptus</u>	Scrawled filefish
<u>Ambloplites rupestris</u>	Rock bass
<u>Ameiurus melas</u>	Black bullhead
<u>Ameiurus natalis</u>	Yellow bullhead
<u>Amia calva</u>	Bowfin
<u>Anchoa hepsetus</u>	Striped anchovy
<u>Anchoa lyolepis</u>	Dusky anchovy
<u>Anchoa mitchilli</u>	Bay anchovy
<u>Anchoa nasuta</u>	Longnose anchovy
<u>Ancylosetta dilecta</u>	Three-eye flounder
<u>Ancylosetta quadrocellata</u>	Ocellated flounder
<u>Anguilla rostrata</u>	American eel
<u>Antennarius radiosus</u>	Singlespot frogfish
<u>Antennarius striatus</u>	Striated frogfish
<u>Aplodinotus grunniens</u>	Freshwater drum
<u>Archosargus probatocephalus</u>	Sheepshead
<u>Arius felis</u>	Hardhead catfish
<u>Astroscopus y-graecum</u>	Southern stargazer
<u>Bagre marinus</u>	Gafftopsail catfish
<u>Bairdiella chrysoura</u>	Silver perch
<u>Balistes capriscus</u>	Gray triggerfish
<u>Bascanichthys bascanium</u>	Sooty eel
<u>Bascanichthys scuticaris</u>	Whip eel
<u>Bathygobius soporator</u>	Frillfin goby
<u>Bellator militaris</u>	Horned searobin
<u>Bodianus pulchellus</u>	Spotfin hogfish
<u>Bollmannia communis</u>	Ragged goby
<u>Bothus robinsi</u>	Twospot flounder
<u>Brevoortia patronus</u>	Gulf menhaden
<u>Brevoortia gunteri</u>	Finescale menhaden
<u>Brotula barbata</u>	Bearded brotula
<u>Calamus leucosteus</u>	Whitebone porgy
<u>Cantherhines pullus</u>	Orangespotted filefish
<u>Canthidermis maculata</u>	Rough triggerfish
<u>Caranx bartholomaei</u>	Yellow jack
<u>Caranx cryos</u>	Blue runner
<u>Caranx hippos</u>	Crevalle jack
<u>Caranx latus</u>	Horse-eye jack
<u>Caranx ruber</u>	Bar jack
<u>Carassius auratus</u>	Goldfish
<u>Carcharhinus acronotus</u>	Blacknose shark
<u>Carcharhinus brevipinna</u>	Spinner shark
<u>Carcharhinus falciformis</u>	Silky shark
<u>Carcharhinus isodon</u>	Finetooth shark
<u>Carcharhinus leucas</u>	Bull shark
<u>Carcharhinus limbatus</u>	Blacktip shark
<u>Carcharhinus obscurus</u>	Dusky shark
<u>Carcharhinus plumbeus</u>	Sandbar shark

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Carcharhinus porosus</u>	Smalltail shark
<u>Centropomus mexicanus</u>	Largescale fat snook
<u>Centropomus parallelus</u>	Fat snook
<u>Centropomus undecimalis</u>	Common snook
<u>Centropristes oxyurus</u>	Bank sea bass
<u>Centropristes philadelphica</u>	Rock sea bass
<u>Chaetodipterus faber</u>	Atlantic spadefish
<u>Chaetodon ocellatus</u>	Spotfin butterflyfish
<u>Chasmodes bosquianus</u>	Striped blenny
<u>Chilomycterus schoepfi</u>	Striped burrfish
<u>Chloroscombrus chrysurus</u>	Atlantic bumper
<u>Citharichthys macrops</u>	Spotted whiff
<u>Citharichthys spilopterus</u>	Bay whiff
<u>Conodon nobilis</u>	Barred grunt
<u>Ctenopharyngodon idella</u>	Grass carp
<u>Cyclopsetta chittendeni</u>	Mexican flounder
<u>Cyclopsetta fimbriata</u>	Spotfin flounder
<u>Cynoscion arenarius</u>	Sand seatrout
<u>Cynoscion nebulosus</u>	Spotted seatrout
<u>Cynoscion nothus</u>	Silver seatrout
<u>Cyprinodon variegatus</u>	Sheepshead minnow
<u>Cyprinus carpio</u>	Common carp
<u>Dasyatis americana</u>	Southern stingray
<u>Dasyatis sabina</u>	Atlantic stingray
<u>Dasyatis say</u>	Bluntnose stingray
<u>Decapterus punctatus</u>	Round scad
<u>Diapterus auratus</u>	Irish pompano
<u>Dibranchus atlanticus</u>	Atlantic batfish
<u>Diodon hystrix</u>	Porcupinefish
<u>Diplectrum bivittatum</u>	Dwarf sand perch
<u>Diplectrum formosum</u>	Sand perch
<u>Diplodus holbrooki</u>	Spottail pinfish
<u>Dormitator maculatus</u>	Fat sleeper
<u>Dorosoma cepedianum</u>	Gizzard shad
<u>Dorosoma petenense</u>	Threadfin shad
<u>Echeneis naucrates</u>	Sharksucker
<u>Echiophis intortus</u>	Spotted spoon-nose eel
<u>Elagatis bipinnulata</u>	Rainbow runner
<u>Elops saurus</u>	Ladyfish
<u>Epinephelus nigritus</u>	Warsaw grouper
<u>Epinephelus niveatus</u>	Snowy grouper
<u>Equetus umbrosus</u>	Cubbyu
<u>Erotelis smaragdus</u>	Emerald sleeper
<u>Etropus crossotus</u>	Fringed flounder
<u>Etrumeus teres</u>	Round herring
<u>Eucinostomus argenteus</u>	Spotfin mojarra
<u>Eucinostomus gula</u>	Silver jenny
<u>Eucinostomus lefroyi</u>	Mottled mojarra
<u>Eucinostomus melanopterus</u>	Flagfin mojarra
<u>Evorthodus lyricus</u>	Lyre goby
<u>Fundulus chrysotus</u>	Golden topminnow
<u>Fundulus grandis</u>	Gulf killifish
<u>Fundulus pulvereus</u>	Bayou killifish
<u>Fundulus similis</u>	Longnose killifish
<u>Gadella maraldi</u>	(Barbelless codlet)
<u>Gambusia affinis</u>	Western mosquitofish
<u>Gerres cinereus</u>	Yellowfin mojarra
<u>Gnathagnus egregius</u>	Freckled stargazer
<u>Gobiesox punctulatus</u>	Stippled clingfish
<u>Gobiesox strumosus</u>	Skilletfish
<u>Gobioides broussoneti</u>	Violet goby

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Gobiomorus dormitor</u>	Bigmouth sleeper
<u>Gobionellus boleosoma</u>	Darter goby
<u>Gobionellus hastatus</u>	Sharptail goby
<u>Gobionellus shufeldti</u>	Freshwater goby
<u>Gobiosoma bosc</u>	Naked goby
<u>Gobiosoma robustum</u>	Code goby
<u>Gonipectrus hispanus</u>	Spanish flag
<u>Gunterichthys longipenis</u>	Gold brotula
<u>Gymnachirus texae</u>	Fringed sole
<u>Gymnothorax nigromarginatus</u>	Blackedge moray
<u>Gymnura micrura</u>	Smooth butterfly ray
<u>Haemulon aurolineatum</u>	Tomtate
<u>Halieutichthys aculeatus</u>	Pancake batfish
<u>Harengula jaguana</u>	Scaled sardine
<u>Hemicaranx amblyrhynchus</u>	Bluntnose jack
<u>Hemipteronotus novacula</u>	Pearly razorfish
<u>Hemiramphus balao</u>	Balao
<u>Hemiramphus brasiliensis</u>	Ballyhoo
<u>Hildebrandia flava</u>	Yellow conger
<u>Hippocampus erectus</u>	Lined seahorse
<u>Hippocampus zosterae</u>	Dwarf seahorse
<u>Histrio histrio</u>	Sargassumfish
<u>Holacanthus bermudensis</u>	Blue angelfish
<u>Hoplostethus mediterraneus</u>	Armorhead
<u>Hypseurochilus geminatus</u>	Crested blenny
<u>Hyporhamphus unifasciatus</u>	Silverstripe halfbeak
<u>Hypsoblennius hentz</u>	Feather blenny
<u>Hypsoblennius ionthas</u>	Freckled blenny
<u>Ictalurus furcatus</u>	Blue catfish
<u>Ictalurus punctatus</u>	Channel catfish
<u>Ictiobus bubalus</u>	Smallmouth buffalo
<u>Ictiobus cyprinellus</u>	Bigmouth buffalo
<u>Isurus oxyrinchus</u>	Shortfin mako
<u>Jenkinsia lamprotaenia</u>	Dwarf herring
<u>Kyphosus incisor</u>	Yellow chub
<u>Kyphosus sectatrix</u>	Bermuda chub
<u>Labrisomus nuchipinnis</u>	Hairy blenny
<u>Lactophrys quadricornis</u>	Scrawled cowfish
<u>Lagocephalus laevigatus</u>	Smooth puffer
<u>Lagodon rhomboides</u>	Pinfish
<u>Larimus fasciatus</u>	Banded drum
<u>Leiostomus xanthurus</u>	Spot
<u>Lepisosteus oculatus</u>	Spotted gar
<u>Lepisosteus osseus</u>	Longnose gar
<u>Lepisosteus platostomus</u>	Shortnose gar
<u>Lepisosteus spatula</u>	Alligator gar
<u>Lepomis cyanellus</u>	Green sunfish
<u>Lepomis gulosus</u>	Warmouth
<u>Lepomis macrochirus</u>	Bluegill
<u>Lepomis megalotis</u>	Longear sunfish
<u>Lepomis microlophus</u>	Redear sunfish
<u>Lepophidium brevibarbe</u>	Blackedge cusk-eel
<u>Lobotes surinamensis</u>	Tripletail
<u>Lucania parva</u>	Rainwater killifish
<u>Lutjanus apodus</u>	Schoolmaster
<u>Lutjanus campechanus</u>	Red snapper
<u>Lutjanus griseus</u>	Gray snapper
<u>Lutjanus jocu</u>	Dog snapper
<u>Lutjanus synagris</u>	Lane snapper
<u>Lutjanus vivanus</u>	Silk snapper
<u>Megalops atlanticus</u>	Tarpon

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Membras martinica</u>	Rough silverside
<u>Menidia beryllina</u>	Inland silverside
<u>Menidia clarkhubbsi</u>	Texas silverside
<u>Menidia peninsulae</u>	Tidewater silverside
<u>Menticirrhus americanus</u>	Southern kingfish
<u>Menticirrhus littoralis</u>	Gulf kingfish
<u>Menticirrhus saxatilis</u>	Northern kingfish
<u>Microgobius gulosus</u>	Clown goby
<u>Microgobius thalassinus</u>	Green goby
<u>Micropogonias undulatus</u>	Atlantic croaker
<u>Monocanthus ciliatus</u>	Fringed tilefish
<u>Morone chrysops</u>	White bass
<u>Morone mississippiensis</u>	Yellow bass
<u>Morone saxatilis</u>	Striped bass
<u>Morone X</u>	Hybrid bass (striped x white)
<u>Mugil cephalus</u>	Striped mullet
<u>Mugil curema</u>	White mullet
<u>Mullus auratus</u>	Red goatfish
<u>Mustelus canis</u>	Smooth dogfish
<u>Mycteroperca bonaci</u>	Black grouper
<u>Mycteroperca microlepis</u>	Gag
<u>Mycteroperca phenax</u>	Scamp
<u>Mycteroperca rubra</u>	Comb grouper
<u>Myrophis punctatus</u>	Speckled worm eel
<u>Narcine brasiliensis</u>	Lesser electric ray
<u>Negaprion brevirostris</u>	Lemon shark
<u>Neomerinthe hemingwayi</u>	Spinycheek scorpionfish
<u>Ogcocephalus nasutus</u>	Shortnose batfish
<u>Ogcocephalus pantostictus</u>	Spotted batfish
<u>Ogcocephalus parvus</u>	Roughback batfish
<u>Ogcocephalus radiatus</u>	Polka-dot batfish
<u>Ogcocephalus sp.</u>	(Batfish-unidentified)
<u>Oligoplites saurus</u>	Leatherjacket
<u>Ophichthus gomesi</u>	Shrimp eel
<u>Ophichthus ophis</u>	Spotted snake eel
<u>Ophichthus puncticeps</u>	Palespotted eel
<u>Ophidion grayi</u>	Blotched cusk-eel
<u>Ophidion holbrookii</u>	Bank cusk-eel
<u>Ophidion marginatum</u>	Striped cusk-eel
<u>Ophidion welshi</u>	Crested cusk-eel
<u>Opisthonema oglinum</u>	Atlantic thread herring
<u>Opsanus beta</u>	Gulf toadfish
<u>Opsanus pardus</u>	Leopard toadfish
<u>Orthopristis chrysoptera</u>	Pigfish
<u>Parablennius marmoreus</u>	Seaweed blenny
<u>Paraconger caudilimbatus</u>	Margintail conger
<u>Paralichthys alboguttatus</u>	Gulf flounder
<u>Paralichthys lethostigma</u>	Southern flounder
<u>Paralichthys sp.</u>	(Flounder-unidentified)
<u>Paralichthys squamilentus</u>	Broad flounder
<u>Parasudis truculenta</u>	Longnose greeneye
<u>Peprilus alepidotus</u>	Harvestfish
<u>Peprilus burti</u>	Gulf butterfish
<u>Phaeoptyx conklini</u>	Freckled cardinalfish
<u>Physiculus fulvus</u>	Metallic codling
<u>Platybelone argalus</u>	Keeltail needlefish
<u>Poecilia formosa</u>	Amazon molly
<u>Poecilia latipinna</u>	Sailfin molly
<u>Pogonias cromis</u>	Black drum
<u>Polydactylus octonemus</u>	Atlantic threadfin
<u>Pomacentrus fuscus</u>	Dusky damselfish

Table A.8. (Cont.)

Scientific Name	Common Name
<i>Pomacentrus variabilis</i>	Cocoa damselfish
<i>Pomadasys crocro</i>	Burro grunt
<i>Pomatomus saltatrix</i>	Bluefish
<i>Pomoxis annularis</i>	White crappie
<i>Pomoxis nigromaculatus</i>	Black crappie
<i>Pontinus longispinis</i>	Longspine scorpionfish
<i>Porichthys pectorodon</i>	Atlantic midshipman
<i>Priacanthus arenatus</i>	Bigeye
<i>Prionotus longispinosus</i>	Bigeye searobin
<i>Prionotus martis</i>	Barred searobin
<i>Prionotus ophryas</i>	Bandtail searobin
<i>Prionotus paralatus</i>	Mexican searobin
<i>Prionotus roseus</i>	Bluespotted searobin
<i>Prionotus rubio</i>	Blackwing searobin
<i>Prionotus scitulus</i>	Leopard searobin
<i>Prionotus stearnsi</i>	Shortwing searobin
<i>Prionotus tribulus</i>	Bighead searobin
<i>Pristigenys alta</i>	Short bigeye
<i>Pristipomoides aquilonaris</i>	Wenchman
<i>Pristis pectinata</i>	Smalltooth sawfish
<i>Pylodictis olivaris</i>	Flathead catfish
<i>Rachycentron canadum</i>	Cobia
<i>Raja eglanteria</i>	Clearnose skate
<i>Raja texana</i>	Roundel skate
<i>Remora remora</i>	Remora
<i>Rhinobatos lentiginosus</i>	Atlantic guitarfish
<i>Rhinoptera bonasus</i>	Cownose ray
<i>Rhizoprionodon terraenovae</i>	Atlantic sharpnose shark
<i>Rhomboplites aurorubens</i>	Vermilion snapper
<i>Ruvettus pretiosus</i>	Oilfish
<i>Rypticus saponaceus</i>	Greater soapfish
<i>Sardinella aurita</i>	Spanish sardine
<i>Saurida brasiliensis</i>	Largescale lizardfish
<i>Saurida caribbaea</i>	Smallscale lizardfish
<i>Scartella cristata</i>	Molly miller
<i>Sciaenops ocellatus</i>	Red drum
<i>Scomber japonicus</i>	Chub mackerel
<i>Scomberomorus cavalla</i>	King mackerel
<i>Scomberomorus maculatus</i>	Spanish mackerel
<i>Scomberomorus</i> sp.	(Mackerel-unidentified)
<i>Scorpaena brasiliensis</i>	Barbfish
<i>Scorpaena calcarata</i>	Smoothhead scorpionfish
<i>Scorpaena plumieri</i>	Spotted scorpionfish
<i>Scyliorhinus retifer</i>	Chain dogfish
<i>Selar crumenophthalmus</i>	Bigeye scad
<i>Selene setapinnis</i>	Atlantic moonfish
<i>Selene vomer</i>	Lookdown
<i>Seriola dumerili</i>	Greater amberjack
<i>Seriola fasciata</i>	Lesser amberjack
<i>Seriola zonata</i>	Banded rudderfish
<i>Serraniculus pumilio</i>	Pygmy sea bass
<i>Serranus atrobranchus</i>	Blackear bass
<i>Serranus phoebe</i>	Tattler
<i>Serranus subligarius</i>	Belted sandfish
<i>Sparisoma radians</i>	Bucktooth parrotfish
<i>Sphoeroides parvus</i>	Least puffer
<i>Sphoeroides spengleri</i>	Bandtail puffer
<i>Sphyraena barracuda</i>	Great barracuda
<i>Sphyraena guachancho</i>	Guaguanche
<i>Sphyraena lewini</i>	Scalloped hammerhead
<i>Sphyraena mokarran</i>	Great hammerhead

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Sphyrna tiburo</u>	Bonnethead
<u>Sphyrna tudes</u>	Smalleye hammerhead
<u>Stellifer lanceolatus</u>	Star drum
<u>Stenotomus caprinus</u>	Longspine porgy
<u>Strongylura marina</u>	Atlantic needlefish
<u>Strongylura timucu</u>	Timucu
<u>Syacium gunteri</u>	Shoal flounder
<u>Syacium papillosum</u>	Dusky flounder
<u>Symphurus civitatus</u>	Offshore tonguefish
<u>Symphurus diomedianus</u>	Spottedfin tonguefish
<u>Symphurus parvus</u>	Pygmy tonguefish
<u>Symphurus plagiUSA</u>	Blackcheek tonguefish
<u>Symphurus urospilus</u>	Spottail tonguefish
<u>Syngnathus floridae</u>	Dusky pipefish
<u>Syngnathus louisianae</u>	Chain pipefish
<u>Syngnathus pelagicus</u>	Sargassum pipefish
<u>Syngnathus scovelli</u>	Gulf pipefish
<u>Synodus foetens</u>	Inshore lizardfish
<u>Synodus poeyi</u>	Offshore lizardfish
<u>Thunnus thynnus</u>	Bluefin tuna
<u>Tilapia aurea</u>	Blue tilapia
<u>Trachinocephalus myops</u>	Snakefish
<u>Trachinotus carolinus</u>	Florida pompano
<u>Trachinotus falcatus</u>	Permit
<u>Trachinotus goodei</u>	Palometa
<u>Trachurus lathami</u>	Rough scad
<u>Trichiurus lepturus</u>	Atlantic cutlassfish
<u>Trinectes maculatus</u>	Hogchoker
<u>Umbrina coroides</u>	Sand drum
<u>Upeneus parvus</u>	Dwarf goatfish
<u>Urophycis cirrata</u>	Gulf hake
<u>Urophycis floridana</u>	Southern hake
<u>Xanthichthys ringens</u>	Sargassum triggerfish

Invertebrates

<u>Acetes americanus</u>	(Sergestid shrimp)
<u>Agriopoma texasanum</u>	Texas venus
<u>Albunea gibbesii</u>	Surf mole crab
<u>Albunea paretii</u>	Beach mole crab
<u>Alpheua formosus</u>	Striped snapping shrimp
<u>Alpheus estuariensis</u>	Estuarine snapping shrimp
<u>Amaea mitchelli</u>	Mitchell's wentletrap
<u>Anachis avara</u>	Greedy dovesnail
<u>Anadara brasiliiana</u>	Incongruous ark
<u>Anadara floridana</u>	Cut-ribbed ark
<u>Anadara ovalis</u>	Blood ark
<u>Anadara transversa</u>	Transverse ark
<u>Anasimus latus</u>	Stilt spider crab
<u>Anomalocardia auberiana</u>	Pointed-venus
<u>Anomia simplex</u>	Common jingle
<u>Aplysia brasiliiana</u>	Sooty seahare
<u>Arbacia punctulata</u>	Red sea urchin
<u>Arca imbricata</u>	Mossy ark
<u>Architectonica nobilis</u>	Common sundial
<u>Arcinella cornuta</u>	Florida spiny jewelbox
<u>Arenaeus cribrarius</u>	Speckled swimming crab
<u>Argopecten gibbus</u>	Atlantic calico scallop
<u>Argopecten irradians</u>	Bay scallop
<u>Armina tigrina</u>	Tiger armina
<u>Astropecten duplicatus</u>	Two-spined starfish

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Atrina serrata</u>	Sawtooth pen shell
<u>Aurelia aurita</u>	Moon jellyfish
<u>Barbatia candida</u>	White-beard ark
<u>Beroe ovata</u>	Sea walnut
<u>Brachidontes exustus</u>	Scorched mussel
<u>Brissopsis alta</u>	Heart urchin
<u>Bulla striata</u>	Striate bubble
<u>Bursatella leachii pleii</u>	Ragged seahare
<u>Busycon sinistrum</u>	Lightning whelk
<u>Busycotypus spiratus</u>	Pearwhelk
<u>Calappa flammea</u>	Flame box crab
<u>Calappa ocellata</u>	Ocellate box crab
<u>Calappa sulcata</u>	Yellow box crab
<u>Callianassa louisianensis</u>	Gulf estuarine ghost shrimp (Sargassum crab)
<u>Callinectes marginatus</u>	Blue crab
<u>Callinectes sapidus</u>	Lesser blue crab
<u>Callinectes similis</u>	Common nutmeg
<u>Cancellaria reticulata</u>	Cancellate cantharus
<u>Cantharus cancellarius</u>	Plicate hornsail
<u>Cerithidea pliculosa</u>	Variable cerith
<u>Cerithium lutosum</u>	Roughwrist soft crab
<u>Chasmocarcinus mississippiensis</u>	Cross-barred venus
<u>Chione cancellata</u>	Clench venus
<u>Chione clenchii</u>	Lady-in-waiting venus
<u>Chione intapurpurea</u>	Sea wasp
<u>Chiropsalmus quadrumanus</u>	Sea nettle
<u>Chrysaora quinquecirrha</u>	Thinstripe hermit
<u>Clibanarius vittatus</u>	Yellow cone
<u>Conus stimpsoni</u>	Eastern oyster
<u>Crassostrea virginica</u>	Convex slippersnail
<u>Crepidula convexa</u>	Common Atlantic slippersnail
<u>Crepidula fornicate</u>	Eastern white slippersnail
<u>Crepidula plana</u>	Thin cyclinella
<u>Cyclinella tenuis</u>	Angelwing
<u>Cyrtopleura costata</u>	Bareye hermit
<u>Dardanus fucusus</u>	Atlantic giant-cockle
<u>Dinocardium robustum</u>	Atlantic distorsio
<u>Distorsio clathrata</u>	Variable coquina
<u>Donax variabilis</u>	Disk dosinia
<u>Dosinia discus</u>	Hairy sponge crab
<u>Dromidia antillensis</u>	Gulf grassflat crab
<u>Dyspanopeus texana</u>	Rock-boring urchin
<u>Echinometra lucunter</u>	Puerto Rican sand crab
<u>Emerita portoricensis</u>	Minor jackknife
<u>Ensis minor</u>	Olivepit porcelain crab
<u>Euceramus praelongus</u>	Lobate mud crab
<u>Eurypanopeus abbreviatus</u>	Flatback mud crab
<u>Eurypanopeus depressus</u>	Redleg humpback shrimp
<u>Exhippolysmata oplophoroides</u>	Banded tulip
<u>Fasciolaria lilium lilium</u>	Ghost shrimp
<u>Glypturus acanthochirius</u>	Antilles glassy-bubble
<u>Haminoea antillarum</u>	Amber glassy-bubble
<u>Haminoea succinea</u>	Calico box crab
<u>Hepatus epheliticus</u>	Flecked box crab
<u>Hepatus pudibundus</u>	Smooth elbow crab
<u>Heterocrypta granulata</u>	Smooth mud crab
<u>Hexapanopeus angustifrons</u>	Knobbed mud crab
<u>Hexapanopeus paulensis</u>	Granulate shellback shrimp
<u>Hypoconcha arcuata</u>	Shellback crab (Dromiid)
<u>Hypoconcha sabulosa</u>	Hooked mussel
<u>Ischadium recurvum</u>	

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Isocheles</u> <u>wurdemani</u>	Surf hermit
<u>Laevicardium</u> <u>mortoni</u>	Morton eggcockle
<u>Latreutes</u> <u>fucorum</u>	Slender sargassum shrimp
<u>Latreutes</u> <u>parvulus</u>	Sargassum shrimp
<u>Leander</u> <u>tenuicornis</u>	Brown grass shrimp
<u>Leiolambrus</u> <u>nitidus</u>	White elbow crab
<u>Lepidopa</u> <u>benedicti</u>	(Gulf mole crab)
<u>Libinia</u> <u>dubia</u>	Longnose spider crab
<u>Libinia</u> <u>emarginata</u>	Portly spider crab
<u>Littorina</u> <u>irrorata</u>	Marsh periwinkle
<u>Loligo</u> <u>pealeii</u>	Longfin squid
<u>Loligo</u> <u>pleii</u>	Arrow squid
<u>Lolliguncula</u> <u>brevis</u>	Atlantic brief squid
<u>Lucifer</u> <u>faxoni</u>	Sergestid shrimp
<u>Lucina</u> <u>pectinata</u>	Thick lucine
<u>Luidia</u> <u>alternata</u>	Banded sea star
<u>Luidia</u> <u>clathrata</u>	Large sea star
<u>Lysiosquilla</u> <u>scabicauda</u>	(Giant) mantis shrimp
<u>Lysmata</u> <u>wurdemani</u>	Peppermint shrimp
<u>Lytechinus</u> <u>variegatus</u>	Short spined sea urchin
<u>Macoma</u> <u>brevifrons</u>	Short macoma
<u>Macrobrachium</u> <u>acanthurus</u>	Cinnamon river shrimp
<u>Macrobrachium</u> <u>ohione</u>	Ohio shrimp
<u>Macrocallista</u> <u>maculata</u>	Calico clam
<u>Mactra</u> <u>fragilis</u>	Fragile Atlantic mactra
<u>Melampus</u> <u>bidentatus</u>	Eastern melampus
<u>Mellita</u> <u>quinquiesperforata</u>	Five-lunuled sand dollar
<u>Menippe</u> <u>adina</u>	Gulf stone crab
<u>Mercenaria</u> <u>campechiensis</u>	Southern quahog
<u>Mercenaria</u> <u>campechiensis</u> <u>texana</u>	Texas quahog
<u>Metoporhaphis</u> <u>calcarata</u>	False arrow crab
<u>Mnemiopsis</u> <u>mccradyi</u>	Phosphorus jelly
<u>Molgula</u> <u>manhattensis</u>	Sea squirt
<u>Mulinia</u> <u>lateralis</u>	Dwarf surf clam
<u>Muricanthus</u> <u>fluvescens</u>	Giant eastern murex
<u>Nassarius</u> <u>vibex</u>	Bruised nassa
<u>Nemopsis</u> <u>bachei</u>	(Hydromedusa)
<u>Neritina</u> <u>virginea</u>	Virgin nerite
<u>Neverita</u> <u>duplicata</u>	Shark eye
<u>Noetia</u> <u>ponderosa</u>	Ponderous ark
<u>Octopus</u> <u>vulgaris</u>	Common octopus
<u>Oculina</u> <u>diffusa</u>	Ivory coral
<u>Ocypode</u> <u>quadrata</u>	Atlantic ghost crab
<u>Oliva</u> <u>sayana</u>	Lettered olive
<u>Ophiolepis</u> <u>elegans</u>	Brittle star
<u>Orchestia</u> <u>grillus</u>	Beach flea (amphipod)
<u>Ostreola</u> <u>equestris</u>	Crested oyster
<u>Ovalipes</u> <u>floridanus</u>	Florida lady crab
<u>Paguristes</u> <u>hummi</u>	(Blue spot hermit crab)
<u>Pagurus</u> <u>annulipes</u>	(Brown-banded hermit crab)
<u>Pagurus</u> <u>brevidactylus</u>	Short-fingered hermit
<u>Pagurus</u> <u>impressus</u>	Dimpled hermit
<u>Pagurus</u> <u>longicarpus</u>	Longwrist hermit
<u>Pagurus</u> <u>pollicaris</u>	Flatclaw hermit
<u>Palaemonetes</u> <u>pugio</u>	Daggerblade grass shrimp
<u>Palaemonetes</u> <u>vulgaris</u>	Marsh grass shrimp
<u>Panopeus</u> <u>simpsoni</u>	Oystershell mud crab
<u>Paranthus</u> <u>rapiformis</u>	Onion anemone
<u>Parthenope</u> <u>serrata</u>	Sawtooth elbow crab
<u>Pelia</u> <u>mutica</u>	Cryptic teardrop crab
<u>Penaeus</u> <u>aztecus</u>	Brown shrimp

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Penaeus duorarum</u>	Pink shrimp
<u>Penaeus setiferus</u>	White shrimp
<u>Perna perna</u>	Edible brown mussel
<u>Persephona crinita</u>	Pink purse crab
<u>Persephona mediterranea</u>	Mottled purse crab
<u>Petrochirus diogenes</u>	Giant hermit
<u>Petrolisthes armatus</u>	Green porcelain crab
<u>Phalium granulatum</u>	Scotch bonnet
<u>Physalia physalis</u>	Portuguese man-of-war
<u>Pinnotheres maculatus</u>	Squatter pea crab
<u>Pisania tincta</u>	Tinted canthurus
<u>Pleurobranchaea tarda</u>	(Side-gilled slug)
<u>Pleuroploca gigantea</u>	Horse conch
<u>Podochela riisei</u>	Longfinger neck crab
<u>Podochela sidneyi</u>	Shortfinger neck crab
<u>Polycera hummi</u>	Hummer's polycera
<u>Polymesoda maritima</u>	Southern marshclam
<u>Porcellana sayana</u>	Spotted porcelain crab
<u>Porcellana sigsbeiana</u>	Striped porcelain crab
<u>Portunus aniceps</u>	Delicate swimming crab
<u>Portunus gibbesii</u>	Iridescent swimming crab
<u>Portunus sayi</u>	Sargassum swimming crab
<u>Portunus spinicarpus</u>	Longspine swimming crab
<u>Portunus spinimanus</u>	Blotched swimming crab
<u>Portunus ventralis</u>	(Portunid swimming crab)
<u>Procambarus clarkii</u>	Red swamp crawfish
<u>Pseudocyphoma intermedium</u>	Intermediate cyphoma
<u>Rangia cuneata</u>	Atlantic rangia
<u>Rangia flexuosa</u>	Brown rangia
<u>Raninoides louisianensis</u>	Gulf frog crab
<u>Renilla mulleri</u>	Sea pansy
<u>Rhithropanopeus harrisii</u>	Harris mud crab
<u>Scyllaea pelagica</u>	Sargassum nudibranch
<u>Sesarma reticulatum</u>	Heavy marsh crab
<u>Sicyonia brevirostris</u>	Brown rock shrimp
<u>Sicyonia dorsalis</u>	Lesser rock shrimp
<u>Sicyonia stimpsoni</u>	Eyespot rock shrimp
<u>Sicyonia typica</u>	Kinglet rock shrimp
<u>Simnialena marferula</u>	Sea-whip simnia
<u>Sinum perspectivum</u>	White baby-ear
<u>Solariorbis blakei</u>	(Vitrinella)
<u>Solenocera vioscai</u>	Humpback shrimp
<u>Speocarcinus lobatus</u>	Gulf squareback crab
<u>Spisula lidissima</u>	Atlantic surfclam
<u>Squilla chydaea</u>	(Offshore mantis shrimp)
<u>Squilla empusa</u>	Mantis shrimp
<u>Squilla neglecta</u>	Lesser mantis shrimp
<u>Stenorhynchus seticornis</u>	Yellowline arrow crab
<u>Stomolophus meleagris</u>	Cabbagehead
<u>Strombus alatus</u>	Florida fighting conch
<u>Suborder Zygoptera</u>	(Damselfly nymphs)
<u>Synalpheus fritzmuelleri</u>	Speckled snapping shrimp
<u>Tagelus plebeius</u>	Stout tagelus
<u>Tellina alternata</u>	Alternate tellin
<u>Tellina tampaensis</u>	Tampa tellin
<u>Terebra protexta</u>	Fine-ribbed auger
<u>Thais haemastoma floridana</u>	Florida rocksail
<u>Thyone mexicana</u>	Sea cucumber
<u>Tonna galea</u>	Giant tun
<u>Tozeuma carolinense</u>	Arrow shrimp
<u>Trachycardium muricatum</u>	Yellow pricklycockle

Table A.8. (Cont.)

Scientific Name	Common Name
<u>Trachypenaeus constrictus</u>	Roughneck shrimp
<u>Trachypenaeus similis</u>	Roughback shrimp
<u>Uca panacea</u>	Gulf sand fiddler
<u>Uca spinicarpa</u>	Spined fiddler
<u>Upogebia affinis</u>	Coastal mud shrimp
<u>Velella velella</u>	By-the-wind sailor
<u>Xiphopenaeus kroyeri</u>	Seabob

Appendix B. Summary of hydrological data collected for gill net, bay bag seine, oyster dredge, and bay and gulf trawl samples.

Table B.1. Mean surface salinity (‰) at sampled gill net sites by bay system during spring and fall, 1975-96. ND = no data.

Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide Spring Fall		
Year	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
1975	ND	ND	13.9	ND	22.3	ND	17.6	ND	18.5	ND	20.0	ND	33.3	ND	25.8	ND	20.5	
1976	ND	ND	19.6	ND	20.7	0.0	18.8	ND	17.9	ND	10.9	ND	35.5	ND	23.3	ND	18.9	
1977	ND	ND	15.4	23.0	14.2	18.6	19.3	ND	14.3	9.0	19.1	18.3	30.9	26.1	28.5	30.5	18.2	
1978	ND	ND	18.5	21.3	20.8	18.4	19.2	15.6	26.1	13.9	19.0	12.5	26.5	23.6	38.2	39.3	24.5	
1979	ND	ND	7.6	13.3	14.0	11.8	9.6	11.1	23.4	20.8	17.4	9.4	12.3	23.4	35.0	28.2	16.2	
1980	ND	ND	11.3	22.7	17.0	24.1	14.3	20.1	13.7	19.0	10.8	17.4	19.7	30.0	27.0	30.3	15.8	
1981	ND	ND	25.8	10.3	26.8	17.5	20.1	13.7	20.1	19.0	10.3	8.4	29.4	21.5	30.6	24.6	23.6	
1982	ND	ND	12.1	20.5	18.3	17.5	24.1	22.4	23.0	19.5	12.1	12.1	25.1	23.6	32.8	30.6	17.4	
1983	ND	ND	14.8	11.4	17.5	13.4	20.1	12.7	19.5	17.3	21.6	7.8	29.3	25.1	39.7	34.2	17.4	
1984	ND	ND	21.4	19.0	23.1	15.8	23.9	19.0	27.4	29.6	22.1	26.8	30.2	33.6	38.9	44.2	18.4	
1985	ND	ND	18.0	22.3	14.7	23.5	25.3	14.1	23.9	22.3	21.8	23.7	24.2	22.3	30.4	32.3	26.1	
1986	11.7	13.1	15.0	20.9	25.3	15.8	13.7	16.1	20.4	12.3	16.1	13.5	21.4	24.4	30.9	36.6	27.8	
1987	8.2	14.3	19.7	21.5	15.8	18.3	21.8	18.9	24.9	23.8	26.4	23.0	23.8	28.4	32.7	34.1	23.5	
1988	7.8	12.1	18.3	15.9	14.8	26.0	26.4	26.5	28.4	26.5	26.8	20.8	34.3	36.9	42.3	32.8	29.1	
1989	5.5	8.7	15.9	14.8	19.2	19.3	19.3	19.2	27.8	25.3	25.3	23.7	24.3	27.0	35.3	36.9	29.4	
1990	2.0	10.4	12.4	19.3	19.2	19.6	19.6	19.6	27.8	25.3	25.3	23.7	27.0	31.5	37.7	30.4	27.7	
1991	0.2	5.4	9.4	17.4	11.7	19.4	11.7	19.5	11.2	16.3	25.1	16.9	18.4	31.0	39.7	33.0	27.9	
1992	2.0	12.1	10.4	22.4	11.5	23.4	5.7	23.1	2.7	20.9	4.1	17.6	16.7	26.7	31.0	33.5	23.4	
1993	2.1	8.3	12.1	21.2	11.5	25.9	10.8	24.5	9.2	17.5	10.2	18.7	26.5	31.8	36.0	31.6	23.9	
1994	1.4	5.1	11.3	12.3	21.7	18.2	18.8	12.2	24.3	11.3	12.2	12.4	22.4	27.7	31.2	32.0	24.1	
1995	0.2	8.0	9.9	19.7	14.8	24.6	13.6	13.6	19.9	17.4	23.5	18.3	22.8	26.1	28.7	31.2	19.2	
1996	10.7	9.1	23.9	20.1	28.1	20.4	30.4	23.9	26.1	26.4	30.9	31.6	33.8	37.4	44.5	49.2	25.2	

Table B.2. Mean surface water temperature (°C) at sampled gill net sites by bay system during spring and fall, 1975-96. ND = no data.

Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide Spring Fall		
Year	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
1975	ND	ND	20.8	ND	14.5	ND	21.3	ND	22.4	ND	17.4	ND	23.9	ND	23.0	ND	24.4	ND
1976	ND	ND	30.0	18.2	20.6	21.3	25.0	21.3	25.8	23.1	24.0	24.0	24.2	27.0	19.6	ND	20.8	29.0
1977	ND	ND	24.9	21.5	25.6	24.2	25.8	24.1	25.1	24.2	26.3	25.6	22.7	25.5	23.3	21.3	24.1	22.4
1978	ND	ND	26.5	22.8	27.5	23.4	27.3	23.6	27.3	24.2	26.8	24.0	27.1	24.5	23.5	23.2	24.6	23.5
1979	ND	ND	25.9	24.5	25.9	23.6	26.0	25.0	26.0	24.6	26.8	24.1	27.0	25.2	25.0	27.4	25.6	24.1
1980	ND	ND	27.1	25.4	27.3	23.1	26.0	24.6	27.4	27.4	27.4	27.4	27.3	25.3	26.9	26.9	27.0	25.2
1981	ND	ND	26.1	24.6	26.9	23.1	27.2	24.6	25.7	25.6	26.2	24.1	26.3	24.1	27.8	24.9	25.0	25.2
1982	ND	ND	25.7	25.3	25.8	25.0	25.6	25.0	25.6	25.3	25.2	25.2	26.6	27.4	25.3	27.4	25.8	24.8
1983	ND	ND	26.7	25.0	27.2	25.1	25.3	26.0	25.0	25.8	26.3	26.3	25.0	25.2	27.3	25.9	26.0	25.5
1984	ND	ND	27.9	25.5	28.6	25.6	27.5	25.1	26.3	27.3	27.5	27.5	26.0	27.6	26.3	27.5	26.1	25.5
1985	ND	ND	26.3	26.4	25.1	27.0	23.9	25.4	27.2	25.4	26.8	24.1	27.0	25.2	26.6	27.4	25.7	26.1
1986	26.8	26.3	25.7	24.0	26.4	27.1	24.5	25.6	25.1	26.7	26.3	26.4	24.7	27.3	25.3	26.6	27.0	25.2
1987	25.7	24.0	26.4	24.0	24.0	27.1	24.5	25.6	25.1	27.4	26.7	26.3	24.7	27.3	25.3	26.3	27.0	25.2
1988	25.5	26.2	25.3	25.8	26.3	25.0	26.9	24.9	24.9	27.3	26.9	25.9	24.4	25.8	26.6	27.4	25.8	26.6
1989	25.0	24.9	25.7	24.0	28.2	25.6	26.4	24.3	26.6	25.2	25.0	25.2	24.1	26.6	25.3	26.8	27.4	25.5
1990	23.3	24.7	23.9	27.8	25.5	26.8	24.7	25.6	24.7	27.0	25.0	25.7	26.3	27.7	25.0	26.3	27.5	25.3
1991	27.0	24.9	24.3	23.8	27.8	24.1	26.5	23.6	26.7	25.4	27.0	23.2	28.1	25.0	28.3	25.7	26.8	24.5
1992	28.0	23.5	26.3	23.0	24.8	24.7	24.0	24.3	24.3	26.7	24.3	24.6	23.7	26.8	25.3	27.4	25.5	24.3
1993	25.9	22.9	25.8	22.4	26.9	24.1	26.6	23.6	26.1	24.0	26.3	24.0	25.8	23.7	25.5	26.7	25.3	23.8
1994	27.1	25.1	26.7	24.9	27.1	24.7	26.6	25.2	25.2	25.4	26.0	26.2	25.4	26.5	27.3	27.8	27.0	26.1
1995	26.0	24.8	26.2	24.7	25.5	26.6	25.1	26.6	25.1	26.6	25.2	26.0	25.9	26.8	27.2	26.7	26.6	25.5
1996	27.4	24.7	27.2	25.2	26.6	27.2	25.5	27.2	27.2	27.8	26.0	27.6	26.5	27.1	28.3	27.7	27.7	26.6

Table B.3. Annual mean surface turbidity at sampled gill net sites by bay system during spring and fall 1975-96. ND = no data.

Year	Sabine Lake		Galveston Spring Fall		East Matagorda Spring Fall		Matagorda Spring Fall		San Antonio Spring Fall		Aransas Spring Fall		Corpus Christi Spring Fall		Upper Spring Fall		Lower Laguna Madre Spring Fall		Laguna Madre Spring Fall		Coastwide Spring Fall	
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Jackson Turbidity Units																						
1975	ND	ND	53	ND	ND	ND	30	ND	43	ND	24	ND	27	ND	43	ND	28	ND	37	ND	37	ND
1976	ND	ND	109	52	157	ND	33	ND	64	ND	60	24	51	ND	38	ND	79	50	38	ND	79	50
1977	ND	ND	80	75	118	47	46	68	49	13	41	169	47	34	39	40	31	65	50	31	65	50
1978	ND	ND	47	44	36	16	68	74	55	20	55	61	47	66	68	37	39	54	48	37	39	54
1979	ND	ND	153	72	38	28	74	66	80	22	70	42	67	51	39	32	34	83	80	55	80	55
1980	ND	ND	99	69	67	49	74	33	17	19	53	40	51	36	57	55	64	71	64	49	71	64
1981	ND	ND	68	68	63	64	82	64	81	21	43	58	67	39	185	46	87	66	84	55	84	55
1982	ND	ND	66	56	82	55	75	47	35	27	91	33	49	38	63	32	113	79	72	72	79	72
1983	ND	ND	57	63	61	27	50	40	41	32	49	38	41	42	50	40	59	72	51	48	72	51
1984	ND	ND	43	34	27	25	35	45	47	40	40	39	47	38	69	56	113	90	54	47	90	54
1985	ND	ND	26	29	59	37	52	51	49	46	39	39	57	41	72	41	98	56	55	42	98	55
1986	43	28	32	35	64	37	60	31	46	32	38	41	57	26	61	85	53	60	48	53	60	48
Nephelometric Units																						
1987	30	18	18	17	42	19	28	19	26	15	11	7	22	7	14	11	23	13	21	14	21	14
1988	21	11	16	11	29	19	16	19	22	21	13	16	24	10	18	14	26	29	19	17	29	17
1989	25	9	12	9	22	16	36	15	30	12	22	8	18	12	9	45	13	24	11	24	11	24
1990	16	8	9	13	23	13	26	15	38	15	21	13	16	11	24	11	29	14	22	13	22	13
1991	15	6	20	8	50	21	29	15	19	15	23	13	12	25	18	13	10	21	12	21	12	21
1992	20	11	21	10	22	12	46	17	52	14	41	14	23	11	25	12	22	16	32	13	32	13
1993	24	11	24	16	35	14	46	16	29	11	24	15	17	14	18	15	23	14	27	14	27	14
1994	13	13	19	23	23	15	27	26	19	9	21	10	18	12	11	15	15	20	15	25	15	20
1995	26	8	38	11	47	20	39	20	21	8	22	13	27	13	15	9	36	12	30	13	30	13
1996	23	11	27	11	41	27	39	18	30	9	23	13	34	10	23	11	26	12	29	13	26	13

Table B.4. Annual mean surface salinity (o/oo) at sampled bag seine sites by bay system during 1977-96. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1977	ND	21.9	ND	17.6	17.7	20.9	33.8	39.8	33.0	25.4
1978	ND	21.8	ND	19.7	20.6	19.9	29.5	39.6	29.0	25.0
1979	ND	12.2	ND	11.4	11.8	11.1	23.9	31.9	27.3	17.4
1980	ND	20.9	ND	19.9	21.0	19.8	28.1	29.6	28.8	23.4
1981	ND	18.2	ND	19.2	15.6	12.1	25.0	26.0	28.3	20.1
1982	ND	15.9	ND	18.2	17.0	17.6	27.6	29.8	29.7	21.3
1983	ND	12.2	15.4	16.5	16.8	16.8	27.5	36.4	31.7	21.2
1984	ND	19.5	17.8	21.6	23.2	22.6	31.8	39.5	29.9	25.5
1985	ND	17.0	16.9	19.7	17.5	19.7	28.1	36.7	32.1	23.2
1986	10.1	16.1	20.1	19.8	17.0	23.5	32.6	39.7	34.7	24.2
1987	7.6	18.1	15.3	15.4	10.8	13.7	28.7	31.4	31.5	19.9
1988	7.7	20.2	26.5	27.4	22.6	24.3	35.2	44.9	31.9	27.4
1989	6.6	15.1	26.9	26.9	27.4	31.4	35.6	48.6	34.2	28.5
1990	6.4	16.9	23.6	24.8	23.6	26.7	32.4	47.7	35.8	27.2
1991	2.6	12.4	17.3	16.7	19.3	17.7	30.8	40.0	28.8	21.1
1992	5.3	15.2	15.4	13.5	9.4	10.7	22.4	25.3	28.7	16.8
1993	4.3	12.6	18.2	17.1	13.9	13.8	27.6	27.7	27.5	18.3
1994	4.3	13.5	22.7	18.8	15.4	21.5	30.3	34.7	30.3	21.5
1995	3.4	14.6	19.6	18.5	18.8	21.1	28.9	37.1	31.9	22.3
1996	10.4	20.2	26.2	25.8	26.0	30.9	36.4	44.5	31.4	28.5

Table B.5. Annual mean surface temperature (C) at sampled bag seine sites by bay system during 1977-95. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1977	ND	20.3	ND	20.9	21.7	20.8	20.4	20.6	20.5	20.7
1978	ND	21.4	ND	20.2	21.6	22.3	21.3	22.3	22.4	21.6
1979	ND	22.8	ND	22.8	23.3	23.2	23.6	21.8	23.1	22.9
1980	ND	23.9	ND	21.9	23.3	23.6	23.4	24.6	24.3	23.5
1981	ND	22.5	ND	21.5	22.4	23.7	22.6	24.1	24.6	23.0
1982	ND	23.9	ND	23.3	23.1	24.2	23.4	24.1	23.9	23.7
1983	ND	24.0	23.6	21.9	21.7	24.3	24.3	25.4	24.9	23.8
1984	ND	23.9	22.3	22.5	21.9	24.0	23.3	24.0	24.2	23.4
1985	ND	24.1	24.1	23.5	24.0	23.9	23.5	23.5	24.4	24.0
1986	23.7	24.2	23.4	23.3	23.5	25.2	23.6	24.5	25.0	24.2
1987	22.0	22.8	23.8	23.4	22.2	23.1	24.1	24.2	23.8	23.2
1988	21.7	23.4	23.9	23.4	21.1	24.3	23.3	23.9	25.1	23.5
1989	21.4	23.1	22.9	22.3	23.0	22.8	24.3	25.0	25.0	23.4
1990	21.7	22.6	24.7	23.6	23.0	24.4	24.9	24.9	25.5	23.9
1991	22.9	22.3	24.5	22.2	23.2	23.1	24.8	25.0	25.4	23.5
1992	22.2	21.7	22.2	21.4	21.4	23.3	22.6	23.4	24.3	23.0
1993	22.4	22.2	24.3	22.9	22.5	22.5	23.6	24.4	25.1	23.2
1994	23.1	23.1	24.5	23.3	22.8	25.0	25.0	24.6	25.7	24.1
1995	22.2	23.3	25.0	23.9	24.4	24.3	25.2	24.7	25.8	24.3
1996	22.8	23.4	24.4	24.0	23.6	23.6	24.7	25.0	25.5	24.3

Table B.6. Annual mean surface turbidity at sampled bag seine sites by bay system during 1977-96. ND = no data.

Year	Sabine	Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jackson Turbidity Units											
1977	ND	94	ND	60	27	50	40	50	30	34	55
1978	ND	78	ND	55	33	41	43	51	34	51	51
1979	ND	90	ND	70	31	53	44	47	59	60	60
1980	ND	90	ND	42	24	47	52	75	73	61	61
1981	ND	87	ND	54	25	65	44	107	95	71	71
1982	ND	105	ND	50	31	60	46	69	87	69	69
1983	ND	96	88	54	30	51	46	57	48	58	58
1984	ND	79	42	41	36	48	41	82	61	57	57
1985	ND	52	67	45	54	47	40	108	68	59	59
1986	46	84	59	46	51	46	44	60	80	61	61
Nephelometric Units											
1987	24	28	39	36	32	9	26	15	17	24	24
1988	26	26	28	29	29	28	20	22	22	22	26
1989	25	29	26	25	40	22	20	22	22	22	26
1990	21	29	26	30	31	23	21	20	23	23	26
1991	28	25	32	33	42	25	25	21	15	15	26
1992	24	23	34	41	43	31	21	17	17	21	29
1993	21	30	27	38	24	30	23	26	36	36	30
1994	21	24	31	26	24	17	17	10	40	40	24
1995	27	30	33	32	24	24	17	12	27	27	26
1996	34	25	44	33	24	21	16	17	25	25	25

Table B.7. Annual mean bottom salinity (‰) at sampled oyster dredge "reef" sites in Texas bay systems from 1984-96. ND = no data.

Year	Galveston	Matagorda	San Antonio	Aransas	Coastwide
1984	16.7	ND	ND	ND	16.7
1985	17.6	ND	ND	ND	17.6
1986	15.5	22.0	18.2	21.0	18.9
1987	16.3	16.6	10.9	14.2	14.5
1988	19.6	28.1	22.9	29.0	23.7
1989	16.0	29.2	27.9	29.7	25.1
1990	16.0	24.4	24.1	26.2	22.3
1991	12.3	17.4	19.5	18.6	16.7
1992	14.9	11.8	9.2	8.7	11.4
1993	13.5	15.9	13.2	14.5	14.2
1994	13.7	19.4	17.4	19.8	16.8
1995	14.7	17.8	18.7	20.2	17.1
1996	22.2	25.6	27.6	29.9	25.2

Table B.8. Annual mean bottom temperature (C) at sampled oyster dredge "reef" sites in Texas bay systems from 1984-96. ND = no data

Year	Galveston	Matagorda	San Antonio	Aransas	Coastwide
1984	21.0	ND	ND	ND	20.9
1985	22.0	ND	ND	ND	22.0
1986	22.8	22.4	22.3	22.1	22.4
1987	21.2	22.2	21.4	19.9	21.3
1988	21.6	21.8	21.6	22.0	21.7
1989	20.9	20.8	21.6	20.4	21.0
1990	21.7	22.6	22.6	23.0	22.4
1991	21.6	21.9	21.8	21.3	21.7
1992	21.8	20.8	22.6	21.4	21.7
1993	21.4	22.2	21.9	21.0	21.6
1994	22.0	22.5	23.3	21.4	22.2
1995	21.5	22.4	23.4	22.6	22.2
1996	21.7	22.6	22.5	21.8	22.0

Table B.9. Annual mean bottom turbidity at sampled oyster dredge "reef" sites" in Texas bay systems from 1984-96. ND = no data.

Year	Galveston	Matagorda	San Antonio	Aransas	Coastwide
Jackson Turbidity Units					
1984	25	ND	ND	ND	25
1985	47	ND	ND	ND	47
1986	40	51	48	37	45
Nephelometric Units					
1987	14	22	30	8	20
1988	15	21	16	16	17
1989	19	20	27	16	21
1990	14	22	26	16	20
1991	16	23	23	20	21
1992	15	32	37	31	26
1993	21	24	20	22	22
1994	17	18	16	16	17
1995	19	20	16	15	18
1996	15	29	21	14	20

Table B.10. Annual mean bottom salinity (‰) at sampled bay trawl sites in Texas bay systems from 1977-96. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1977	ND	20.5	ND	17.9	13.9	19.5	ND	ND	ND	18.5
1978	ND	20.1	ND	19.3	14.7	20.6	ND	ND	ND	19.0
1979	ND	9.0	ND	10.3	5.7	ND	ND	ND	ND	8.8
1980	ND	22.8	ND	ND	ND	ND	ND	ND	ND	22.8
1981	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1982	ND	16.0	ND	22.4	16.3	19.2	30.3	34.1	35.8	21.3
1983	ND	10.7	ND	20.4	16.9	19.6	29.8	36.9	33.0	19.1
1984	ND	18.5	ND	25.2	22.9	25.2	32.5	40.0	31.0	24.6
1985	ND	17.0	ND	21.0	16.2	21.2	29.8	37.3	33.1	21.5
1986	7.8	14.8	ND	24.5	17.3	22.7	31.1	39.6	36.1	21.6
1987	7.3	15.1	16.7	20.6	9.9	18.1	27.5	31.9	33.3	18.6
1988	7.8	19.2	28.7	20.6	21.7	34.9	45.0	34.7	34.8	25.6
1989	6.2	16.4	27.6	30.2	26.8	30.4	35.4	49.3	35.9	26.1
1990	5.7	15.1	25.8	26.1	21.6	27.0	32.0	48.6	36.3	23.4
1991	2.2	11.5	18.7	20.4	17.7	20.0	29.9	41.4	31.5	19.2
1992	5.5	13.6	16.6	15.0	7.9	10.7	22.9	24.6	30.7	15.0
1993	3.1	13.8	18.9	18.5	12.4	16.9	28.6	28.0	30.9	17.6
1994	3.4	13.2	25.2	21.4	15.7	21.0	30.8	35.4	32.9	19.5
1995	4.5	13.6	21.7	22.1	18.8	20.5	29.9	38.7	32.9	20.2
1996	11.0	21.8	27.2	25.7	25.9	30.7	36.7	45.7	34.5	27.4

Table B.11. Annual mean bottom temperature (C) at sampled bay trawl sites in Texas bay systems from 1977-96. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1977	ND	18.7	ND	17.9	21.1	17.8	ND	ND	18.8
1978	ND	21.6	ND	23.5	24.2	24.8	ND	ND	22.9
1979	ND	22.5	ND	21.6	25.5	ND	ND	ND	22.8
1980	ND	23.8	ND	ND	ND	ND	ND	ND	23.8
1981	ND	ND	ND	ND	ND	ND	ND	ND	ND
1982	ND	21.8	ND	24.8	23.3	23.1	25.0	26.1	23.5
1983	ND	21.5	ND	21.7	21.7	22.3	22.2	22.8	21.8
1984	ND	22.2	ND	22.8	21.6	23.4	21.8	22.0	22.3
1985	ND	21.9	ND	22.5	23.1	21.7	22.0	22.8	22.2
1986	ND	22.2	ND	23.3	22.1	21.9	23.3	22.5	22.6
1987	20.0	21.5	ND	21.9	21.8	21.3	21.1	22.3	21.6
1988	21.8	21.8	ND	20.2	21.1	21.3	22.2	22.6	21.6
1989	20.8	20.4	ND	21.0	20.5	21.1	22.1	24.5	21.6
1990	21.2	21.4	ND	22.6	21.9	20.5	21.8	23.6	21.0
1991	21.7	21.5	ND	22.0	21.5	22.6	21.7	22.8	21.9
1992	20.7	21.6	ND	20.6	21.1	22.6	21.4	22.9	23.5
1993	21.0	20.9	ND	22.2	22.1	22.5	21.8	22.1	23.7
1994	22.1	22.2	ND	22.6	22.7	22.7	20.9	23.0	22.5
1995	22.0	21.8	ND	23.6	23.3	23.3	23.5	23.6	22.7
1996	22.0	21.8	ND	23.2	23.0	22.7	23.0	22.7	22.3

Table B.12. Annual mean bottom turbidity at sampled bay trawl sites in Texas bay systems from 1983-96. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Jackson Turbidity Units										
1983	ND	101	ND	25	26	105	77	76	38	67
1984	ND	75	ND	30	30	71	62	70	38	55
1985	ND	41	ND	33	55	42	32	52	59	41
1986	35	37	ND	45	53	41	42	49	67	43
Nephelometric Units										
1987	15	17	19	22	29	7	13	15	12	18
1988	17	14	20	23	17	13	15	14	15	16
1989	16	18	27	19	22	19	15	12	14	18
1990	13	18	18	20	15	28	17	11	15	17
1991	18	16	22	19	22	19	10	10	8	17
1992	19	18	17	24	37	30	12	9	18	21
1993	16	24	17	19	19	22	13	13	47	21
1994	17	19	14	13	17	16	10	9	16	15
1995	17	20	24	18	19	17	14	12	19	18
1996	16	15	26	22	32	13	13	16	15	18

Table B.13. Annual mean bottom salinity (o/oo) at sampled gulf trawl sites in the Texas Territorial Sea 1985-96. ND = no data.

Year	Sabine Lake	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
1985	ND	30.6	32.3	30.9	31.7	31.4
1986	29.1	29.7	32.4	30.5	32.7	30.9
1987	27.4	28.8	33.5	34.4	34.4	31.7
1988	27.3	28.3	30.7	32.4	35.0	30.7
1989	25.4	29.9	32.9	30.9	33.7	30.6
1990	25.3	29.5	30.5	32.4	33.9	30.3
1991	23.7	28.5	31.0	31.9	31.2	29.3
1992	26.5	29.4	31.5	32.4	30.7	30.1
1993	23.1	27.3	28.9	34.5	30.8	28.9
1994	21.4	27.2	28.1	31.7	33.9	28.4
1995	26.1	28.0	31.5	31.2	33.4	30.0
1996	26.4	30.0	31.7	34.5	34.5	31.4

Table B.14. Annual mean bottom temperature (C) at sampled gulf trawl sites in the Texas Territorial Sea 1985-96. ND = no data.

Year	Sabine Lake	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
1985	ND	23.4	23.6	22.5	25.4	23.7
1986	25.6	22.0	22.8	22.3	22.7	23.1
1987	21.1	21.7	22.1	22.4	21.9	21.8
1988	21.1	21.6	21.2	22.2	21.6	21.6
1989	19.8	21.5	21.3	21.7	21.8	21.2
1990	21.3	21.9	21.8	22.2	21.8	21.8
1991	22.0	22.3	22.1	21.8	21.5	21.9
1992	19.9	21.5	20.9	22.5	20.9	21.1
1993	21.8	21.7	21.8	21.6	21.3	21.7
1994	22.1	22.2	21.9	22.2	22.0	22.1
1995	22.2	21.9	21.8	22.3	22.1	22.1
1996	21.6	21.8	21.9	21.9	21.7	21.7

Table B.15. Annual mean bottom turbidity at sampled gulf trawl sites in the Texas Territorial Sea 1985-96. ND = no data.

Year	Sabine Lake	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
Jackson Turbidity Units						
1985	ND	31	37	25	24	30
1986	30	24	29	24	24	26
Nephelometric Units						
1987	10	10	11	4	6	8
1988	6	9	10	4	4	7
1989	7	9	9	7	4	7
1990	9	11	7	8	3	8
1991	11	12	7	8	3	8
1992	13	10	10	10	4	9
1993	12	6	14	7	4	9
1994	10	8	5	5	4	6
1995	13	13	7	5	4	8
1996	14	10	9	6	3	8

Appendix C. Summary of SEAMAP samples by year and depth zone for brown shrimp, white shrimp, pink shrimp and blue crab collected off Texas during 1982-96.

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 1982-96. Blanks indicate no measurement taken.

Year	Depth (m)	Samples (No.)	Brown Shrimp Length No./h	White Shrimp Length No./h	Pink Shrimp Length No./h	Blue Crab Length No./h
1982	0-18	22	1,222	108	15	136
	19-37	50	1,427	115	20	20
	38-55	29	138	145	<1	138
	56-73	5	117	179	0	0
1983	56-73	74-91	79	182	0	0
	74-91	3			0	0
	0-18	28	254	99	20	127
	19-37	47	1,445	119	1	8
1984	38-55	24	1,304	132	0	1
	56-73	8	66	156	0	0
	74-91	2	194	0	0	0
	0-18	16	733	116	30	0
1985	19-37	40	1,594	116	1	121
	38-55	16	544	131	0	118
	56-73	12	194	138	0	0
	74-91	5	86	151	0	0
1986	0-18	30	450	98	41	151
	19-37	43	1,362	112	2	6
	38-55	14	150	127	0	0
	56-73	5	154	144	0	0
1987	74-91	1	36	179	0	0
	0-18	35	250	98	33	155
	19-37	43	809	108	0	20
	38-55	10	311	124	2	4
1988	56-73	5	176	136	0	0
	74-91	3	49	147	0	0
	0-18	74	189	103	15	135
	19-37	56	606	107	3	42
1989	38-55	17	26	142	0	10
	56-73	8	16	177	0	0
	74-91	7	11	177	0	0
	0-18	75	227	106	4	127
1990	19-37	50	309	113	0	11
	38-55	17	18	126	2	7
	56-73	7	4	180	0	2
	74-91	3	3	198	0	1
1991	0-18	85	556	101	16	0
	19-37	54	928	118	4	0
	38-55	12	212	129	0	0
	56-73	8	40	140	0	0
1992	74-91	7	11	159	0	0
	0-18	74	279	113	17	110
	19-37	48	850	123	1	5
	38-55	16	202	136	2	127
1993	56-73	8	76	140	1	81
	74-91	8	16	154	0	79
	0-18	92	202	106	31	143
	19-37	51	1,153	125	7	144
1994	38-55	20	186	143	173	135
	56-73	10	76	171	0	96
	74-91	9	41	176	0	0
	0-18	85	234	100	36	114
1995	19-37	58	217	127	<1	148
	38-55	17	22	158	0	248
	56-73	10	15	180	0	0
	74-91	8	10	186	0	0

Table C.1. (Cont.)

Year	Depth (m)	Samples (No.)	Brown Shrimp No./h	Brown Shrimp Length	No./h	White Shrimp Length	No./h	Pink Shrimp Length	No./h	Blue Crab Length	No./h
1993	0-18	89	121	104	16	171	23	122	10	120	
	19-37	55	236	111	2	169	63	121	6	119	
	38-55	22	69	139	0	176	19	122	<1	152	
	56-73	10	35	152	0		0		<1	161	
	74-91	2	34	169	0		0		<1	140	
	92-108	93	113	109	9	169	58	124	6	125	
1994	0-18	90	850	120	0		27	118	<1	102	
	19-37	50	46	151	0		0		0		
	38-55	19	36	181	0		0		0		
	56-73	11	12	181	0		0		0		
	74-91	3	-	-	-		-	-	-	-	
	92-108	88	343	105	19	165	34	117	6	112	
1995	0-18	54	829	114	8	165	10	109	1	142	
	19-37	54	829	114	8	165	<1	100	<1	143	
	38-55	20	101	125	0		0		0		
	56-73	11	106	148	0		0		0		
	74-91	7	43	177	0		0		0		
	92-108	85	66	108	9	164	10	124	4	102	
1996	0-18	60	332	108	<1	163	30	106	2	120	
	19-37	18	10	149	<1	105	0		0		
	38-55	13	28	176	0		0		0		

*Data presented here were collected by R/V OREGON II (NMFS) in conjunction with TPW 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 TPW vessels since 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 1986-96. 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	15	15	2	2	0	0
	19-37	34	93	68	0	0	0	0	1	1
	38-55	26	41	0	0	0	0	0	0	0
	56-73	12	22	0	0	0	0	0	0	0
1987	56-73	4	0	0	0	0	0	0	0	0
	74-91	4	20	89	18	18	2	2	<1	0
	0-18	65	50	7	0	0	0	0	0	0
	19-37	40	21	0	0	0	0	0	0	0
1988	38-55	12	6	0	0	0	0	0	0	0
	56-73	2	0	0	0	0	0	0	0	0
	74-91	1	0	0	0	0	0	0	0	0
	0-18	77	21	98	9	9	12	12	0	0
1989	19-37	49	48	15	1	1	0	0	0	0
	38-55	16	44	0	0	0	0	0	0	0
	56-73	10	15	0	0	0	0	0	0	0
	74-91	7	8	0	0	0	0	0	0	0
1990	0-18	78	21	100	102	16	124	2	45	2
	19-37	60	68	140	23	10	123	<1	83	1
	38-55	20	71	169	<1	1	124	<1	94	1
	56-73	7	43	173	0	0	0	<1	74	0
1991	74-91	9	5	185	0	0	0	0	0	0
	0-18	64	18	105	56	11	137	<1	70	70
	19-37	59	69	140	5	7	126	<1	87	87
	38-55	22	60	168	<1	1	129	1	75	1
1992	56-73	9	34	173	0	0	0	0	1	74
	74-91	6	7	190	0	0	0	0	0	0
	0-18	88	28	107	31	14	108	<1	52	52
	19-37	57	120	134	4	4	107	<1	133	133
1993	38-55	20	65	161	0	0	0	0	1	135
	56-73	12	31	172	0	0	0	0	0	0
	74-91	11	12	181	0	0	0	0	0	0
	0-18	89	11	115	135	3	131	<1	34	34
1994	19-37	55	80	135	8	1	122	<1	141	141
	38-55	18	42	164	0	0	0	<1	0	0
	56-73	8	49	172	0	0	0	0	0	0
	74-91	4	33	176	0	0	0	0	0	0
1995	0-18	88	11	126	160	119	31	95	3	160
	19-37	55	91	119	117	134	28	88	1	151
	38-55	17	60	93	<1	109	<1	76	<1	108
	56-73	9	12	106	<1	125	<1	76	0	0
1996	74-91	5	17	85	<1	119	<1	98	<1	144
	0-18	89	13	108	36	124	19	106	1	105
	19-37	54	106	132	5	152	6	110	<1	134
	38-55	17	53	162	0	0	0	0	0	0
1997	56-73	13	26	177	0	0	0	0	0	0
	74-91	11	8	192	0	0	0	0	0	0
	0-18	95	5	118	120	114	10	126	5	54
	19-37	51	131	129	15	162	19	117	<1	75
1998	38-55	19	49	162	0	0	0	0	0	0
	56-73	9	45	166	0	0	0	0	0	0
	74-91	9	54	177	0	0	0	0	0	0

Table C.2. (Cont.)

Year	Depth (m)	Samples (No.)	Brown shrimp No./h	Length	No. White shrimp No./h	Length	Pink shrimp No./h	Length	Blue crab No./h	Length
1996	0-18	93	9	104	135	117	14	113	1	55
	19-37	52	75	124	30	146	19	135	0	0
	38-55	19	40	154	0	<1	155	0		
	56-73	11	29	158	0	0	<1	133	0	
	74-91	11	47	173	0	0				

^aData presented here were collected with 12.2-m trawl by R/V OREGON II (NOFS) and with 6.1-m trawl by TPD research vessels. The data were made available by the Southeast Area Monitoring and Assessment Program (SEAMAP). Data normalized to 12.2-m trawl by NOFS.

