Trends in Relative Abundance and Size of Selected Finfishes and Shellfishes Along the Texas Coast: November 1975–December 1994

by
Lawrence W. McEachron
and
Billy Fuls

Management Data Series
No. 124
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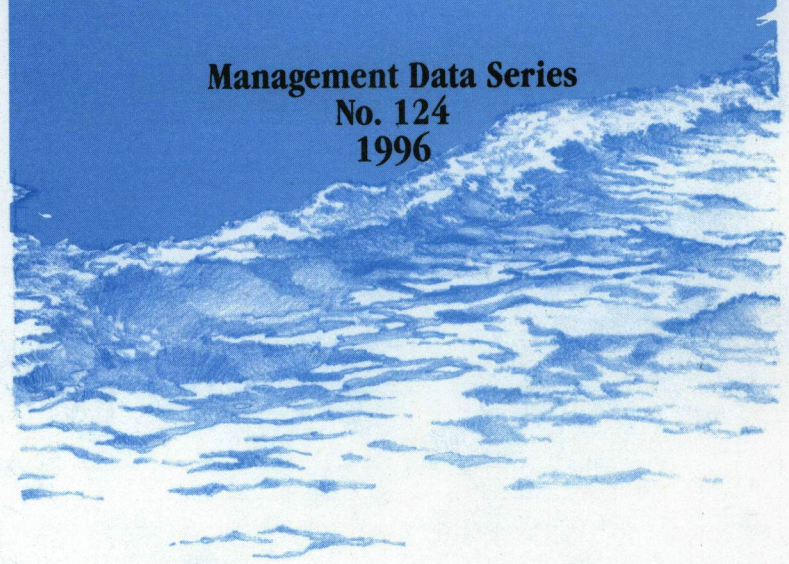

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ABSTRACT

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 and gulf shorelines, gill nets along bay shorelines, beach seines along gulf shorelines, and trawls in coastal bay waters and in the Texas Territorial Sea. Oyster dredges were used to sample bay oyster reefs.

Data comparisons were made between 1993 and 1994 for coastwide catch rates for all gears. Coastwide spring gill net catch rate for red drum declined for the second straight year but was the 3rd highest on record; the fall catch rate also decreased. Spotted seatrout spring catch rates increased to equal the 2nd highest recorded, but remained the same for the 4th straight year in fall. Spring black drum catch rate increased to the highest level on record, whereas, fall decreased to the 2nd highest recorded. Coastwide seasonal bay bag seine catch rates decreased for spotted seatrout and Atlantic croaker and increased for brown shrimp, white shrimp, blue crab, red drum, and black drum. Coastwide annual bay trawl catch rates increased for brown shrimp, and decreased for blue crab and white shrimp. Coastwide annual gulf trawl catch rates increased for blue crab and decreased for brown shrimp and white shrimp. Coastwide annual catch rate for "market" Eastern oysters increased in 1994 to the highest level recorded; all bay systems except Galveston Bay recorded increases in catch. Data collected during 1994 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, the Texas Parks and Wildlife Department (TPWD) has used various gears systematically in Texas estuaries and the Gulf of Mexico since 1975 (Appendix A, Tables A.1-5). Eastern oyster populations have been monitored in Galveston Bay since 1951 (Hofstetter 1977). Penaeid shrimp populations have been monitored in at least some bays since 1958 (Benefield and Baker 1980). Blue crab populations have been monitored in Texas bays since 1977 (Hammerschmidt 1982). The TPWD initiated a standardized fishery independent monitoring program in 1975 using gill nets, in 1977 using bag seines, in 1982 using trawls in bays, in 1984 using oyster dredges on bay oyster reefs, in 1985 using trawls in the gulf, and in 1987 using beach seines to monitor and assess relative trends in abundance and size of finfishes and shellfishes. Gill nets set during spring (11 April-20 June) and fall (12 September-21 November), and monthly bag seine, trawl, oyster dredge, and beach seine samples provide a statistically consistent and cost efficient method for obtaining information on juvenile, sub-adult, and adult finfish and shellfish populations.

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 the 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 Seal (TTS) $\leq$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. Bag seines, identical to those used in Texas bays, and beach seines (Appendix A) were used along gulf beach shorelines in five areas: Sabine Pass-Bolivar Peninsula, Galveston Island-Follets Island-Surfside Beach, Matagorda Peninsula, Matagorda Island and Mustang Island-South Padre Island (Figure 1).

Gill net, bag seine, and beach seine sites were randomly selected from grids (1 minute longitude by 1 minute latitude) that contained $\geq$15.2 m of shoreline. Each selected grid was subdivided into 144 5-second "gridlets". All "gridlets" that contained 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 gulf and bay bag seine samples were collected during each of the 1st-15th and the 16th-31st of the month (Appendix A). Bay and gulf bag seines were pulled parallel to the shoreline for 15.2 m; gulf bag seines were pulled in the same direction as the longshore current. 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.

One half of the monthly beach seine samples were collected during each of the 1st-15th and 16th-31st of the month (Appendix A). Beach seines were pulled parallel to gulf shorelines in the same direction as the longshore current for 30.5 m. The surface area sampled (nearest 0.01 ha) was estimated using distance pulled and length of extension of the beach seine. No grid was duplicated in a month.

Trawls were used in bays which were stratified into three zones: Zone 1 (upper bay nearest mouths of rivers), Zone 2 (lower bay farthest from rivers), and Zone 5 [Intracoastal Waterway (ICWW)]. Trawl sites in Zones 1 and 2 were randomly selected from bay grids (1-minute longitude by 1-minute latitude) that contained water $\geq$1 m deep in at least 1/3 of the grid and which were known to be free of obstructions. One half of the monthly trawl samples in each zone in each bay system were collected during each of the 1st-15th and 16th-31st 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. Trawl sites for Zone 5 were randomly selected from all grids containing the ICWW. Each randomly selected grid was divided into 144 5-second "gridlets"; the center-most gridlet which contained the center of the ICWW within that grid was used as a starting point for the sample. Trawls in Zone 5 were pulled linearly in the channel either toward the nearest gulf pass or away from it; this direction was alternated with each sample. 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 in the TTS (Figure 1) that contained water $\geq$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 the 1st-15th and 16th-31st 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 1993 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).

Each bay was stratified into oyster reef areas, 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 and beach 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, fork 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 of each species (brown, white, pink), 35 blue crabs 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 (°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 declined in 1994 (0.9/h) but was the third highest on record (Table 1; Figure 2). Highest spring coastwide red drum catch rate (1.3/h) occurred in 1992, with lowest catch rates during 1977-79 (0.3/h). Average size increased to 511 mm in 1994 (Table 1; Figure 4).

Coastwide fall red drum catch rate decreased in 1994 (0.8/h); 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 decreased to 481 mm in 1994(Table 2; Figure 5).

Coastwide spring spotted seatrout (Cynoscion nebulosus) catch rate increased in 1994 (0.9/h); 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 458 mm in 1994 (Table 1; Figure 4).

Coastwide fall spotted seatrout catch rate in 1994 equaled 1993 (0.4/h); 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 436 mm in 1994 Table 2; Figure 5).

Coastwide spring black drum (Pogonias cromis) catch rate in 1994 was the highest on record (1.5/h); lowest occurred in 1978 (0.3/h)(Table 1; Figure 2). Average size increased to 421 mm in 1994 (Table 1; Figure 4).

Coastwide fall black drum catch rate decreased in 1994, but was the second highest on record (1.4/h); highest catch rate occured in 1993 (1.6/h), with lowest in 1979 and 1984 (0.3/h)(Table 2; Figure 3). Average size increased to 433 mm (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 remaind at ≤0.1/h since 1978 (Table 1, Figure 2). The 1994 fall catch decreased in 1994 (0.2/h). Highest catch on record (0.5/h) was in 1993; lowest catch rate occurred in 1975 (0.1/h)(Table 2; Figure 3).

Spring and fall coastwide catch rates of blue crab (Callinectes sapidus) have remained at ≤0.1/h over the past 6 years, but are generally down from pre-1987 years (0.1-0.2/h)(Table 1 and 2). Average size decreased in 1994 to 140 mm in spring and 151 mm in fall.

Coastwide 1993 catch rates for all fish combined decreased to 7.5/h in spring and 5.9/h in fall (Tables 1 and 2).

Bay Bag Seine

Annual (calendar year) catch rates for select species are listed in Table 3. Seasonal trends in catch rates and mean lengths are presented for the following select species:

Coastwide red drum catch rates increased in 1994; they were highest during November 1990-March 1991 and lowest during November 1989-March 1990 (Figure 6). Mean lengths have fluctuated between 46 and 58 mm TL (Figure 7).

Coastwide spotted seatrout catch rates decreased in 1994; they were highest during July through November 1991 and lowest during 1984-86 (Figure 6). Mean lengths have fluctuated between 44 and 56 mm TL (Figure 7).

Coastwide black drum catch rates increased in 1994; they were highest in 1979 and 1990 (Figure 6). Mean lengths fluctuated between 54 and 84 mm TL (Figure 7).

Coastwide Atlantic croaker catch rates decreased in 1994; they were highest in 1982 and lowest in 1989 (Figure 6). Mean coastwide lengths fluctuated between 58 and 66 mm TL (Figure 7).

Coastwide brown shrimp(Penaeus aztecus) catch rates increased slightly in 1994; they were highest in 1987 and lowest in 1979 (Figure 8). Mean coastwide lengths fluctuated between 54 and 64 mm TL (Figure 9).

Coastwide white shrimp (P. setiferus) catch rates increased in 1994; they were highest in 1982 and lowest in 1985 (Figure 8). Coastwide mean length has fluctuated between 52 and 59 mm TL (Figure 9).

Coastwide blue crab catch rates increased in 1994; they were highest in 1985 and lowest in 1989 (Figure 8). Coastwide mean lengths fluctuated between 25 and 28 mm TL (Figure 9).

Annual catch rates of other species caught in bag seines varied by species and bay (Table 3).

Bay Trawl

Coastwide catch rates for all finfish combined decreased in 1994 (218/h); they ranged from 134/h in 1984 to 318/h in 1991 (Table 4).

Coastwide brown shrimp catch rates increased in 1994 (41/h); they ranged from 21/h in 1983 to 49/h in 1989 (Table 4; Figure 10). Coastwide mean length increased in 1994, and has ranged from 83-97 mm TL (Figure 11).

Coastwide white shrimp catch rates increased in 1994 (45/h); they ranged from 20/h in 1988 and 1989 to 46/h in 1982 (Table 4; Figure 10). Mean coastwide length decreased in 1994 (84 mm TL)(Figure 11).

Coastwide annual blue crab bay trawl catch rates increased in 1994 (24/h); they ranged from 15/h in 1984 to 24/h in 1992 and 1994 (Table 4; Figure 10). Coastwide mean length decreased in 1994 (Figure 11).

Coastwide Atlantic croaker catch rates decreased in 1994 (72/h); they ranged from 27/h in 1985 to 112/h in 1992 (Table 4; Figure 10). Coastwide mean length remained the same in 1994, but has generally declined since 1983 (Figure 11).

Coastwide pink shrimp (P. duorarum) catch rates increased in 1994 (3/h); they were highest in 1991 (5/h)(Table 4).

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

Gulf Trawl

Coastwide catch rates for all finfish combined decreased in 1994 (367/h), and have ranged from 174/h in 1985 to 406/h in 1992 (Table 5).

Coastwide brown shrimp catch rates decreased in 1994 (9/h); they ranged from 9/h in 1986 and 1994 to 59/h in 1989 (Table 5; Figure 12). Coastwide mean length decreased in 1994, and has ranged from 97 (1992) to 109 (1985) mm TL (Figure 13).

Coastwide annual white shrimp catch rates decreased in 1994 (10/h); they ranged from 10/h in 1990 and 1994 to 24/h in 1985 and 1986 (Table 5; Figure 12). Mean coastwide length increased in 1994, and has ranged from 105 (1986 and 1992) to 115 (1985) mm TL (Figure 13).

Coastwide blue crab gulf trawl catch rates increased in 1993 (3/h); they ranged from 1/h in 1987-89 to 6/h in 1991 (Table 5; Figure 12). Coastwide mean length decreased in 1994 to 87 mm, but in previous years had decreased from 127 mm (1985) to 69 mm (1992)(Table 5; Figure 13).

Coastwide Atlantic croaker catch rates increased from 23/h in 1985 to 162/h in 1993 then decreased to 69/h in 1994 (Table 5; Figure 12). Mean coastwide length decreased from 142 mm in 1985 to 113 mm in 1993 then increased to 126 mm in 1994 (Table 5; Figure 13).

Coastwide annual pink shrimp catch rates increased to a record high of 4/h in 1993 and 1994; they ranged from 1-2/h in past years (Table 5).

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

Oyster Dredge

Coastwide catch rates of Eastern oyster (Crassostrea virginica) spat decreased in 1994 (860/h); they ranged from 491/h in 1984 to 1,880/h in 1989 (Table 6; Figure 14).

Coastwide catch rates of small Eastern oysters decreased in 1994 (1,750/h); they ranged from 1,001/h in 1986 to 2,615/h in 1991 (Table 6; Figure 14). Mean coastwide length decreased in 1994 and has ranged from 46-54 mm TL (Figure 15).

Coastwide catch rates of market Eastern oysters increased in 1994 to the highest recorded (708/h); previously, they ranged from 215/h (1990) to 674/h (1985)(Table 6; Figure 14). Coastwide mean length increased to 91 mm TL, which equaled the highest on record (Figure 15).

Beach Seine

Coastwide and annual catch rates and mean lengths of select finfish and shellfish species varied among species, gulf areas and years (Table 7). Striped mullet (Mugil cephalus) generally had highest catch rates.

Beach Bag Seine

Coastwide and annual catch rates and mean lengths of select finfish and shellfish species varied among species, gulf areas and years (Table 8). Generally, striped mullet, blue crab and white shrimp had highest catch rates; however, sand seatrout (C. arenarius) was also among the most frequently caught species in 1994.

Intracoastal Waterway Trawl

Coastwide annual catch rates and mean length of individual select finfish and shellfish species varied among species and bays, but in general, catch rates in 1994 were lower than those in 1993 (Table 9). Atlantic croaker had the highest coastwide catch rate (241/h) in 1992; the San Antonio Bay system had the highest total finfish catch rate (1,670/h) in 1992.

Hydrologic Data

Hydrologic data varied among years, among bay systems and among gulf areas (Appendix B). Coastwide annual salinity increased during 1994 in coastal bays and decreased in gulf waters. Bay salinities were generally higher in upper Laguna Madre than in any other bay. Gulf salinities were generally higher off Port Isabel and Port Aransas. Water temperatures

followed seasonal trends. Coastwide annual bay and gulf bottom water temperature was higher than 1993.

SEAMAP

Summer (June)

Catch rates of brown shrimp by depth zone ranged from 850/h in 19-37 m to 12/h in 74-91 m during 1994 (Appendix C, Table C.1). Historically, brown shrimp are predominately caught in water 19-37 m deep.

White shrimp were caught primarily in water from 0-18 m deep during all years (Appendix C, Table C.1). At these depths catch rates ranged from 4/h-41/h in all years.

Pink shrimp were captured in waters from 0-55 m deep (0-195/h) during all years (Appendix C, Table C.1). They were caught predominately in waters 0-37 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 and pink shrimp were predominately caught in waters 0-37 m deep. Blue crab catch rates were $\leq$3/h in all years.

OVERVIEW

TPWD is mandated by the Texas Legislature and the TPWD 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. The TPWD data base was used extensively by 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 TPWD be maintained.

To determine effects of natural or man induced events in Texas coastal ecosystems, standardized monitoring programs used by TPWD should be maintained. The following "meta events" affecting coastal waters were documented in 1994. Other unreported events may have occurred.

1. The Texas Closure (15 May-7 July; 53 days) for Gulf shrimping in state waters was coordinated with NMFS for closure of the FCZ (out to 200 miles offshore) to increase yield and value for the shrimping industry.

2. The following were stocked into the bays: 206.3 million red drum fry, 30.1 million red drum fingerlings, 4.6 million spotted seatrout fry, 2.2 million spotted seatrout fingerlings and 1.5 million striped bass fry.

3. The Artificial Reef Program placed six structures in the Gulf on the Freeport reef site in the shape of a star, placed seven structures on the existing Port Mansfield site, and enhanced three existing sites elsewhere.

4. The TPWD Commission and bay shrimpers agreed to work on a limited entry program after data revealed that increased shrimping effort could place the bay shrimp industry in jeopardy. Concurrent with all-time high shrimping effort was a rise in landings of small shrimp (> 67 count, heads-off). The traditional balance in the shrimp fishery had shifted, and sustained high catches of small shrimp jeopardized the goal of long-term protection of the resource. Extensive workshops were conducted along the coast throughout the year to formulate a Limited Entry Plan for the bay shrimp industry that would meet Legislative approval. The goal is to present the Plan to the 1995 Texas Legislature for implementation.

5. Airplane flights during the opening days of the spring (15 May-15 July) and fall (15 August-15 December) bay shrimping seasons revealed the Texas bay fleet was concentrated in few bays. On 24-25 May, 257 shrimp vessels were in Matagorda Bay, 215 in Galveston Bay and 192 in San Antonio Bay. On 15 August, 363 boats were shrimping in Matagorda Bay and 313 in Galveston Bay. The "highly mobile" fleet moved from bay to bay in pursuit of shrimp as catches declined.

6. Sea turtle strandings along the Texas coast were the highest recorded (N=520) since the Sea Turtle Stranding and Salvage Network was established in 1980. Strandings closely coincided with nearshore shrimping effort and TED enforcement efforts. Peak strandings occurred from April to mid-May, during the last three weeks of July, and during late August.

7. Above normal rainfall was recorded in several areas along the upper and middle Texas coast. Annual rainfall was 13 inches above normal in the Sabine Lake area and 8 inches above normal in the Corpus Christi area. During October, heavy rainfall in the San Jacinto watershed of Galveston Bay resulted in record flooding; more than 18 inches was reported in the Seabrook area. Heavy rains (> 10 inches) also caused widespread flooding in the Sabine Lake and Matagorda Bay areas. Crude oil pipelines under the San Jacinto river bed (Galveston Bay System) were exposed due to scouring action of the water, ruptured and caught fire. Oil on the river surface burned for several days and caused widespread damage to private homes, businesses and surrounding natural areas.

8. In October, commercial oyster harvesting in Galveston Bay was closed because of the record runoff into the bay. Also during October, oyster industry leaders from Galveston Bay reported very low prices for their product because of health concerns from the public concerning eating raw oysters. Oysters were left on leases until the market turned around. Leaseholders self-imposed a 200 sack/boat limit because out-of-state

demand dropped to historic lows. Even with area oyster closures and low out-of-state demand, the annual oyster harvest of 4.3 million pounds was the second highest recorded in Galveston Bay since 1972.

9. During summer, the Gulf of Mexico "dead zone" off Louisiana and upper Texas was estimated at 7,000 square miles. This area was about equal in size to 1993, but about double the average during previous summers. Low dissolved oxygen readings (< 2 ppm) were observed in bottom Gulf water in June off Galveston in association with the "dead zone"; dissolved oxygen levels off Galveston returned to normal in July.

10. In Matagorda Bay, the mitigation phase of the "Colorado River Diversion Project" began in October with placement of oyster shell in three reef site areas creating 37 acres of new reef. This mitigation is to replace public oyster reefs destroyed when the diversion canal was dug into Matagorda Bay.

11. Brown tide persisted in the Laguna Madre (upper and lower) for the fifth consecutive year. No mortalities were associated with these blooms, but fingerling production at the TPWD fish hatchery at Flour Bluff was adversely affected; low dissolved oxygen was recorded in ponds. There was one report of dead black drum in Baffin Bay, but cause of death was not identified. TPWD sampling continued to reveal no adverse effects on fish and shellfish populations. Some localized areas in the Baffin Bay, Bird Island Basin and Port Mansfield vicinities "cleared up" for short periods.

12. In March, a break in a dredge containment area south of Port Mansfield (lower Laguna Madre) resulted in about 40 acres of bay bottom being covered with up to two feet of dredge spoil. This spoil was dispersed by wind and wave action. Long-term effects are unknown at this time.

13. Aquaculture facilities continue to flourish along the coast. One facility along the Arroyo Colorado (lower Laguna Madre) was issued a permit to discharge 50 million gallons/day. Other facilities continue to be constructed along the middle and lower coast. Exotic shrimp (P. vannamei) is the main species cultured, but American eels (A. rostrata) are being tested for future endeavors.

14. The Texas Department of Health, Seafood Safety Division published a Fish Advisories & Bans report that listed the following coastal areas:

> Upper Lavaca Bay; Calhoun County: Persons are prohibited from possessing any species of fish or crabs because of mercury contamination in "that area of Lavaca Bay inshore of a line drawn from the southwestern most point of land at Cox Point to Channel Marker No. 74, thence in a northwesterly direction to Channel Marker No. 12, and thence in a northerly direction to the last part of land at the northeastern approach of the Port Lavaca Causeway".
>
> Brazos River; Brazoria County: The Advisory Area includes the Brazos River and all contiguous waters south and east of the FM 521 bridge near Brazoria to the mouth of the river because of Dioxin contamination. The advisory includes all species of fish and recommends consumption of no more than one meal, not to exceed 8 ounces, each month. Women of childbearing age and children should not consume any fish from this area.
>
> Houston Ship Channel and Upper Galveston Bay; Harris County: The Advisory Area includes the Houston Ship Channel and all contiguous waters, and upper Galveston Bay north of a line drawn from Red Bluff Point to Five Mile Cut Marker to Houston Point because of Dioxin

contamination. All species of catfish and blue crabs are included and consumption of no more than one meal, not to exceed 8 ounces, each month is recommended.

Clear Creek; Harris, Brazoria and Galveston Counties: The Advisory Area includes Clear Creek upstream and west of Texas Highway 3 because of chlordane and volatile organic chemicals (including dichloroethane and trichloroethane) contamination. Persons are advised not to consume fish or blue crabs from these waters.

15. Fish kills:

During May and June, a dinoflagellate (Amphidinium sp.) toxic bloom occurred off Sabine Pass killing more than one million fish, mostly hardhead catfish and various species of "croaker".

A toxic dinoflagellate (Prorocentrum sp.) bloom along the upper Texas coast from Sea Rim State Park to Bolivar resulted in a kill of 250,000 fish.

More than 500,000 organisms (> 30 species) died in a kill that occurred in the Caney Creek area (Matagorda-East Matagorda Bay System). No cause for the kill was determined.

16. Oil/chemical spills

January: an accidental discharge (composed of salt, organic nitrogen, ethyleneamines and ammonia) from an ethyleneamine plant in Freeport killed 34 tarpon, 22 red drum and numerous other species.

May: a glycol spill occurred in Taylor Bayou in Port Arthur (Sabine Lake System). No information is available on size of spill or damage to the environment.

October: an oil spill resulting from a lightning strike on a pipeline occurred in the Gum Hollow area of Nueces Bay (Corpus Christi Bay System). Wetlands and rookery island habitat were impacted. Oil cleanup crews responded and oil was cleaned off beaches of Gum Hollow Bayou and off several islands in Nueces Bay during several weeks of work. Short and long-term impacts should be minimal. Several lawsuits filed by commercial fishermen/shrimpers/oystermen were in litigation.

17. Regulations:

The Texas Parks and Wildlife Commission provided authority to extend the Texas Closure from 60 to 75 days if biological conditions warrant.

Retention of one red drum over the maximum size limit (28 inches) was allowed beginning 1 September with a properly attached red drum tag (free with purchase of a sport fishing license). After returning the tag, a bonus oversize red drum tag was issued. In effect, a maximum of two oversize red drum were allowed in a fishing season (1 September of one year through 31 August the following year).

Allowed retention of one tarpon 80 inches in length or larger with a properly attached tag ($100) after 1 September.

Modified minimum length of red snapper to coincide with federal regulations.

Provided an exemption for requiring 50% shrimp in individual bait trawl catch, allowing retention of nongame fish in any amount for bait, excluding species that have bag or size limits.

Established a 2:00 P. M. closure for bay and bait shrimping from 1 April through 14 August.

Prohibited transfer of shrimp from one bay shrimping vessel to another vessel.

Prohibited transfer of shrimp from a bait shrimping vessel in quantities larger than two quarts/individual or one gallon/vessel.

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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 1976-94. Blank indicates no measurement taken; ND = no data.

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./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
Red drum	1976	ND		0.1	310	ND		1.0	429	1.0	410	1.0	451	0.6	412	0.1	509	1.2	458	0.7	435
	1977	ND		0.3	450	0.2	418	0.1	467	0.3	380	0.4	409	0.4	401	0.1	438	0.5	442	0.3	426
	1978	ND		0.1	394	0.4	429	0.5	485	0.2	400	0.2	444	0.3	461	0.2	495	0.5	462	0.3	460
	1979	ND		0.2	480	0.1	466	0.2	414	0.2	421	0.4	423	0.3	479	0.2	477	0.3	452	0.3	448
	1980	ND		0.9	449	0.4	451	1.1	387	0.7	400	0.4	373	1.0	430	0.8	415	0.6	438	0.8	418
	1981	ND		0.3	431	0.2	465	0.2	408	0.6	396	0.4	399	0.3	424	0.3	412	1.0	438	0.4	420
	1982	ND		0.9	474	0.4	436	0.5	425	0.4	408	0.4	430	0.5	469	0.3	496	1.0	497	0.6	464
	1983	ND		0.9	474	1.0	475	0.6	411	0.7	402	0.5	385	0.4	427	0.2	479	0.8	479	0.6	444
	1984	ND		0.9	482	0.7	446	0.1	430	0.2	513	0.3	419	0.8	457	0.3	436	0.7	514	0.5	473
	1985	ND		0.6	538	0.5	514	0.2	457	0.2	465	0.4	463	0.6	457	0.3	505	0.6	508	0.4	500
	1986	0.4	520	1.4	497	0.8	456	0.8	463	0.6	454	0.6	395	0.7	463	0.3	474	1.0	493	0.8	474
	1987	0.2	516	0.6	497	0.6	501	0.9	465	0.7	451	0.6	459	0.6	463	0.4	519	1.1	508	0.7	483
	1988	0.3	498	0.7	492	0.9	473	0.7	434	1.1	470	0.5	436	0.6	495	0.6	550	1.2	499	0.8	481
	1989	0.5	480	0.7	478	1.7	492	0.6	452	0.7	438	0.7	438	0.5	469	0.4	545	0.9	517	0.7	476
	1990	0.5	509	0.5	529	0.8	568	0.4	483	0.3	474	0.5	494	1.0	505	0.2	538	0.8	534	0.5	515
	1991	0.5	581	0.3	548	0.5	532	0.3	495	0.3	447	0.4	472	0.9	476	0.3	544	1.2	509	0.5	504
	1992	0.7	470	1.2	465	2.1	456	1.3	397	1.3	429	1.6	402	1.2	481	0.7	544	1.5	494	1.3	450
	1993	0.4	529	1.2	529	2.6	514	0.9	426	1.6	439	1.2	462	1.1	509	0.6	555	1.3	511	1.1	490
	1994	0.4	507	0.5	536	1.6	528	0.6	470	1.3	458	1.2	471	0.6	529	0.8	572	1.8	549	0.9	511
Spotted seatrout	1976	ND		<.1	530	ND		0.3	422	0.5	382	3.3	465	0.4	365	<.1	405	3.4	457	1.1	453
	1977	ND		0.2	516	2.0	434	0.2	381	0.9	392	1.0	422	0.4	372	1.2	442	1.5	422	0.8	422
	1978	ND		0.2	523	0.4	441	0.6	409	1.4	408	0.1	435	0.5	437	0.9	474	1.4	503	0.7	456
	1979	ND		0.2	515	0.4	426	0.3	490	0.1	436	0.4	507	0.3	524	0.4	442	0.6	525	0.3	495
	1980	ND		0.1	419	0.8	402	0.6	426	0.9	402	0.2	465	0.3	506	0.5	473	0.9	497	0.5	449
	1981	ND		0.4	483	1.8	416	0.4	406	0.7	453	0.8	468	0.5	445	0.4	423	2.2	471	0.8	456
	1982	ND		0.4	491	0.9	454	0.5	456	0.8	440	0.7	435	0.8	489	0.8	481	2.5	485	0.9	472
	1983	ND		0.4	510	1.7	441	0.7	452	0.8	444	0.6	447	0.7	478	0.7	509	1.3	500	0.7	476
	1984	ND		0.3	498	0.7	468	0.3	439	0.3	483	0.2	435	0.2	473	<.1	483	0.7	475	0.3	472
	1985	ND		0.5	506	0.6	467	0.3	424	0.3	457	0.4	430	0.4	471	0.1	427	1.4	485	0.5	473
	1986	0.3	460	0.5	449	1.0	432	0.5	441	0.4	426	0.4	430	1.0	447	0.4	449	1.5	488	0.7	456
	1987	0.2	339	0.6	449	0.7	436	0.4	434	0.4	447	0.5	456	0.9	478	0.4	490	1.9	508	0.7	474
	1988	0.2	386	0.7	459	0.8	456	0.5	430	0.5	435	0.5	458	0.8	478	0.4	507	1.6	498	0.7	470
	1989	0.2	441	0.6	481	0.5	494	0.5	428	0.6	459	0.6	463	0.7	487	0.4	514	1.1	485	0.6	474
	1990	0.1	441	0.5	457	0.6	510	0.3	432	0.6	480	0.5	442	1.1	447	0.2	468	1.3	455	0.6	456
	1991	0.1	467	0.5	449	0.3	498	0.4	431	0.8	440	1.0	467	1.0	460	0.6	447	1.9	461	0.8	455
	1992	0.2	406	0.7	446	0.4	511	0.4	440	0.4	449	0.7	443	1.3	463	0.6	529	1.9	483	0.8	467
	1993	0.3	415	0.5	460	0.5	501	0.6	428	0.7	477	0.6	456	1.1	440	0.5	507	1.9	459	0.8	459
	1994	0.3	408	0.7	460	0.8	496	0.7	418	0.8	438	0.9	447	1.0	454	0.9	465	1.8	483	0.9	458
Black drum	1976	ND		0.2	290	ND		0.8	418	1.0	306	0.9	389	0.6	360	0.5	352	0.9	387	0.7	366
	1977	ND		0.4	388	0.3	262	0.5	519	1.0	314	1.2	316	0.5	347	0.4	377	0.9	428	0.7	374
	1978	ND		0.2	439	0.4	345	0.2	300	0.1	306	0.4	358	0.4	325	0.1	398	0.8	395	0.3	373
	1979	ND		0.3	292	0.7	328	0.5	415	<.1	370	0.3	323	0.1	375	0.3	371	0.9	413	0.4	371
	1980	ND		0.4	314	1.0	272	0.9	355	0.5	263	1.0	320	0.3	352	0.7	384	0.4	452	0.6	341
	1981	ND		0.8	418	0.8	312	0.3	301	0.4	352	0.8	362	0.1	379	1.1	390	0.9	391	0.7	381
	1982	ND		0.6	343	0.8	294	0.5	363	0.7	317	1.1	300	0.4	339	0.7	374	1.2	400	0.8	347
	1983	ND		0.9	337	2.7	365	0.6	355	0.6	323	1.2	340	0.9	371	1.0	400	1.6	441	1.0	372
	1984	ND		0.6	373	1.0	391	0.2	368	0.2	460	0.1	559	0.5	414	0.6	442	0.6	459	0.4	417
	1985	ND		0.5	346	0.4	313	0.2	476	0.1	426	0.2	396	0.2	342	0.8	361	0.4	372	0.4	374
	1986	0.3		0.5	383	0.6	345	0.3	402	0.1	313	0.4	316	0.6	369	0.7	418	0.4	464	0.4	387
	1987	0.1	399	0.5	368	0.6	320	0.4	366	0.2	392	0.5	382	0.5	459	1.1	453	0.5	458	0.7	409
	1988	0.1	410	0.4	380	0.7	376	0.4	390	0.4	339	0.4	375	0.8	444	0.7	397	0.3	451	0.5	396
	1989	0.2	326	0.6	350	1.8	378	0.4	412	0.3	363	0.6	371	0.4	406	1.0	426	0.5	408	0.6	386
	1990	0.2	378	0.5	372	1.5	393	0.8	341	0.3	330	0.7	336	0.6	411	1.4	418	0.7	410	0.7	381

Table 1. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Black drum (Cont'd.)	1991	0.3	318	0.6	356	1.4	347	0.8	354	0.5	294	1.1	308	0.4	361	3.0	366	1.2	369	1.0	350
	1992	0.2	366	0.5	370	1.3	391	0.4	339	0.8	388	0.7	335	1.6	374	3.0	349	2.3	408	1.2	372
	1993	0.3	360	0.4	377	0.4	345	0.4	374	1.8	449	1.6	417	3.4	400	2.4	376	2.2	397	1.4	401
	1994	0.4	376	0.4	415	0.1	363	0.6	418	1.2	489	1.0	469	2.1	431	4.3	398	3.2	429	1.5	427
Sheeps-head	1976	ND		0.0		ND		0.1	420	0.3	341	0.6	342	0.0		0.3	367	0.3	318	0.2	345
	1977	ND		<.1	338	<.1	234	0.1	280	0.2	308	<.1	232	0.1	294	0.1	380	0.1	336	0.1	311
	1978	ND		0.0		0.4	296	<.1	278	0.1	313	0.2	354	0.2	356	0.2	394	0.2	358	0.1	350
	1979	ND		<.1	305	0.1	297	<.1	391	<.1	402	0.1	320	0.5	362	0.1	370	0.2	340	0.1	350
	1980	ND		<.1	353	0.3	347	0.1	334	0.1	320	0.2	352	0.2	322	0.2	369	0.3	343	0.2	345
	1981	ND		<.1	393	0.2	326	<.1	453	0.6	335	0.3	349	0.1	319	0.2	390	0.6	325	0.2	342
	1982	ND		0.1	332	0.0		0.1	330	0.2	354	<.1	326	0.2	343	0.2	361	0.6	326	0.2	336
	1983	ND		0.1	313	0.4	311	0.1	373	0.2	372	0.1	349	0.3	370	0.2	392	0.4	342	0.2	354
	1984	ND		0.1	351	0.3	354	<.1	387	0.2	398	<.1	401	0.2	379	0.1	385	0.2	348	0.1	370
	1985	ND		<.1	352	0.2	372	<.1	337	<.1	409	<.1	382	0.1	424	<.1	427	0.1	353	0.1	382
	1986	<.1	372	<.1	372	0.2	356	<.1	369	0.1	417	<.1	305	0.1	388	<.1	427	0.1	370	<.1	382
	1987	<.1	364	<.1	361	0.2	314	<.1	340	<.1	447	<.1	342	<.1	350	<.1	403	0.2	372	0.1	366
	1988	0.0		<.1	405	0.1	350	<.1	357	<.1	342	0.1	348	0.1	371	<.1	407	0.1	369	<.1	366
	1989	<.0	529	0.1	384	0.3	324	<.1	371	<.1	379	<.1	350	0.2	412	<.1	371	0.2	371	0.1	374
	1990	<.1	364	<.1	378	0.3	364	<.1	400	<.1	444	<.1	372	0.2	388	<.1	358	0.1	396	0.1	387
	1991	<.1	354	<.1	381	0.2	343	<.1	359	<.1	491	<.1	304	<.1	367	<.1	406	0.1	389	<.1	382
	1992	<.1	278	<.1	346	0.1	356	0.1	367	0.1	415	<.1	348	0.1	436	<.1	434	0.2	379	0.1	390
	1993	<.1	343	<.1	376	0.2	360	0.1	408	0.1	355	<.1	408	0.1	422	<.1	427	0.1	394	0.1	392
	1994	<.1	353	<.1	374	0.2	413	<.1	372	<.1	338	<.1	344	<.1	435	<.1	429	0.1	375	<.1	376
Southern flounder	1976	ND		0.0		ND		0.0		0.1	335	0.0		0.0		0.0		0.2	350	<.1	345
	1977	ND		<.1	351	0.1	358	<.1	328	<.1	208	0.1	358	<.1	430	0.0		<.1	345	<.1	347
	1978	ND		<.1	249	0.1	352	<.1	330	0.1	279	<.1	338	0.1	338	<.1	345	0.1	344	<.1	323
	1979	ND		<.1	451	0.1	348	<.1	290	0.1	388	<.1	291	0.1	373	<.1	320	0.2	366	0.1	354
	1980	ND		0.1	344	0.1	325	0.1	307	<.1	292	0.1	292	0.1	316	<.1	364	0.1	364	0.1	330
	1981	ND		<.1	244	<.1	340	<.1	270	<.1	291	<.1	368	0.1	332	0.1	348	0.1	338	<.1	322
	1982	ND		0.1	343	<.1	319	<.1	307	<.1	305	0.1	299	0.1	361	0.1	337	0.1	350	0.1	332
	1983	ND		0.1	366	0.1	318	0.1	327	<.1	333	<.1	329	0.1	385	0.1	359	0.1	371	0.1	357
	1984	ND		0.1	338	0.1	388	<.1	317	<.1	321	<.1	310	0.1	377	<.1	344	<.1	355	<.1	342
	1985	ND		0.1	349	0.1	348	<.1	346	0.1	329	<.1	347	0.1	353	0.1	346	0.1	336	0.1	344
	1986	<.1	294	<.1	345	0.2	329	<.1	358	<.1	316	<.1	357	<.1	395	0.1	354	0.1	370	0.1	354
	1987	<.1	364	<.1	338	0.1	330	<.1	304	0.1	345	<.1	336	<.1	333	0.1	407	<.1	401	<.1	353
	1988	<.1	292	0.1	367	0.1	349	<.1	354	<.1	350	<.1	334	<.1	353	<.1	400	<.1	360	<.1	359
	1989	<.1	288	<.1	347	0.1	362	<.1	318	<.1	317	<.1	340	<.1	381	<.1	402	<.1	392	<.1	349
	1990	<.1	309	<.1	351	0.1	360	<.1	354	<.1	350	<.1	311	<.1	347	<.1	333	0.1	410	<.1	358
	1991	<.1	329	0.1	322	0.1	365	<.1	322	<.1	348	<.1	326	0.1	343	0.1	363	0.1	358	0.1	346
	1992	<.1	319	0.1	371	0.1	366	<.1	346	<.1	373	<.1	355	<.1	377	<.1	438	0.1	394	<.1	374
	1993	<.1	364	<.1	360	0.1	395	<.1	369	<.1	357	<.1	417	0.1	398	<.1	453	<.1	349	<.1	374
	1994	<.1	334	<.1	343	0.1	378	<.1	327	<.1	362	<.1	332	<.1	362	<.1	332	<.1	380	<.1	352
Atlantic croaker	1976	ND		0.2	298	ND		0.1		0.2	332	0.0		1.0	277	0.0		0.8	333	0.3	306
	1977	ND		0.3	268	0.1	255	0.0		<.1	227	<.1	285	1.0	264	0.4	297	0.2	269	0.2	271
	1978	ND		0.1	247	<.1	270	<.1	293	<.1	250	<.1	248	0.1	281	0.2	281	0.1	276	0.1	268
	1979	ND		0.2	260	<.1	257	<.1	263	0.0		0.0		0.1	265	0.1	298	0.2	308	0.1	279
	1980	ND		0.1	268	0.1	250	0.0		<.1	254	<.1	240	0.1	272	0.2	312	0.1	286	0.1	286
	1981	ND		0.1	264	0.1	250	<.1	276	0.0		0.1	289	0.1	266	0.3	302	0.1	277	0.1	282
	1982	ND		0.2	268	0.1	258	<.1	270	<.1	265	<.1	261	0.1	285	0.2	313	0.4	347	0.1	308
	1983	ND		0.3	268	0.1	278	<.1	273	<.1	277	<.1	286	0.2	265	0.2	289	0.4	314	0.1	286
	1984	ND		0.1	265	<.1	322	<.1	225	<.1	298	<.1	260	<.1	262	<.1	304	<.1	285	<.1	266
	1985	ND		0.2	273	<.1	318	<.1	260	<.1	184	<.1	115	0.1	265	0.2	267	0.1	261	0.1	266
	1986	0.1	259	0.4	271	0.1	250	<.1	245	<.1	250	<.1	292	0.3	255	0.2	297	0.1	288	0.1	272

Table 1. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Atlantic croaker (Cont'd.)	1987	<.1	263	0.2	260	<.1	242	<.1	236	<.1	268	<.1	246	<.1	282	<.1	319	<.1	251	0.1	263
	1988	0.1	259	0.1	265	<.1	226	<.1	278	0.0		<.1	260	0.1	261	0.1	337	<.1	296	<.1	276
	1989	0.1	268	0.1	264	<.1	280	<.1	250	0.0		<.1	262	<.1	284	<.1	342	0.0	283	<.1	274
	1990	<.1	278	0.1	269	0.1	264	<.1	268	<.1	283	<.1	276	<.1	267	<.1	245	<.1	272	<.1	269
	1991	0.1	297	0.1	262	<.1	256	<.1	237	<.1	239	<.1	252	0.1	261	<.1	269	0.1	267	<.1	263
	1992	0.1	263	0.2	253	0.2	270	<.1	257	0.0		<.1	232	0.1	204	<.1	290	0.1	266	0.1	261
	1993	0.1	286	0.2	256	0.1	259	<.1	237	<.1	277	<.1	267	0.1	265	0.1	295	0.1	272	0.1	264
	1994	0.1	297	0.1	267	0.1	272	<.1	266	<.1	263	<.1	257	0.1	279	<.1	328	<.1	298	0.1	279
Gafftop-sail catfish	1976	ND		6.4	504	ND		0.5	494	2.3	456	0.0		0.0		0.0		0.0		1.8	496
	1977	ND		0.2	480	0.4	506	0.9	556	3.3	538	3.1	506	0.0		0.0		0.0		1.0	524
	1978	ND		0.3	539	0.1	546	1.1	546	1.8	496	0.1	545	<.1	436	0.0		0.0		0.5	521
	1979	ND		0.3	520	0.5	534	0.4	553	0.4	534	0.5	544	0.2	551	0.0		0.0		0.3	539
	1980	ND		0.2	511	0.2	566	0.5	554	1.2	547	0.4	552	0.1	598	0.0		0.0		0.3	546
	1981	ND		0.2	514	0.3	480	0.8	541	0.5	537	1.4	541	0.1	521	<.1	577	0.0		0.4	536
	1982	ND		0.4	513	0.2	496	0.4	544	1.4	540	0.9	542	0.3	530	<.1	534	<.1	372	0.5	535
	1983	ND		0.2	544	<.1	475	0.3	537	2.0	530	0.9	537	0.1	536	<.1	575	0.0		0.5	534
	1984	ND		0.2	527	<.1	580	1.0	529	1.1	530	0.6	550	0.2	532	<.1	472	<.1	211	0.4	533
	1985	ND		0.3	532	<.1	467	0.4	517	0.8	537	0.1	557	0.1	507	<.1	413	<.1	388	0.2	530
	1986	0.2	490	0.4	515	0.3	468	0.3	533	0.5	554	0.4	529	0.4	534	<.1	374	0.0		0.3	528
	1987	<.1	509	0.4	552	0.1	507	0.2	539	0.1	565	0.2	567	0.2	550	<.1	532	<.1	518	0.2	551
	1988	0.1	538	0.2	511	0.1	530	0.5	531	0.3	563	0.2	562	0.2	550	0.0		<.1	428	0.2	537
	1989	<.1	494	0.3	536	0.1	535	0.6	530	0.4	557	0.1	569	0.1	533	0.0		<.1	536	0.2	539
	1990	<.1	518	0.8	528	0.2	460	0.8	534	0.6	555	0.4	546	0.4	554	0.0		0.0		0.4	537
	1991	<.1	520	0.2	504	0.2	528	0.5	531	0.7	527	0.4	565	0.4	530	<.1	546	<.1	454	0.3	532
	1992	<.1	519	0.1	521	0.2	556	0.3	530	0.6	578	0.1	559	0.2	530	0.0		<.1	508	0.2	549
	1993	<.1	457	0.5	494	0.2	581	0.5	543	0.8	563	0.3	576	0.2	503	0.0		<.1	405	0.3	535
	1994	<.1	518	0.1	495	0.2	569	0.8	545	1.2	571	0.2	561	0.2	548	0.0		0.0		0.3	554
Gulf menhaden	1976	ND		0.2	261	ND		0.1	250	0.1	275	0.0		0.0		0.0		0.0		0.1	261
	1977	ND		2.5	251	0.7	299	0.1	245	0.1	233	0.3	247	2.6	255	<.1	282	<.1	229	0.9	253
	1978	ND		0.3	242	<.1	194	0.2	245	1.2	258	0.0		0.2	263	1.2	264	<.1	246	0.4	256
	1979	ND		1.2	251	0.0		0.1	251	<.1	132	<.1	241	0.1	255	0.2	260	0.0		0.3	251
	1980	ND		<.1	193	0.0		<.1	252	0.1	287	<.1	271	<.1	257	0.6	269	<.1	253	0.1	265
	1981	ND		0.4	260	0.0		0.2	254	0.1	252	0.2	254	0.1	243	0.1	246	0.1	244	0.2	255
	1982	ND		0.4	254	0.0		<.1	248	0.3	252	0.1	249	<.1	250	0.4	268	<.1	303	0.2	257
	1983	ND		0.8	252	0.0		0.2	251	0.2	243	0.1	244	0.1	248	0.1	304	0.1	252	0.3	252
	1984	ND		0.5	254	0.0		0.1	251	0.2	279	0.2	246	0.1	257	<.1	284	<.1	265	0.2	256
	1985	ND		0.8	253	<.1	281	0.5	242	0.3	243	0.4	250	0.6	250	<.1	244	0.8	260	0.5	252
	1986	0.1	279	1.3	251	<.1	226	0.1	242	0.1	244	0.2	245	0.4	258	<.1	252	<.1	253	0.4	251
	1987	<.1	348	1.2	245	<.1	227	<.1	241	0.0	226	0.0	226	0.2	242	<.1	240	0.1	253	0.3	245
	1988	<.1	278	0.1	244	0.0		0.2	244	<.1	278	<.1	236	0.1	253	<.1	257	<.1	290	0.1	249
	1989	<.1	269	1.4	249	0.0		<.1	232	<.1	226	0.0	187	0.1	235	0.0		0.0		0.3	248
	1990	<.1	270	1.6	242	<.1	237	0.1	216	<.1	263	<.1	255	<.1	237	<.1	308	<.1	239	0.4	242
	1991	<.1	253	0.3	252	<.1		0.1	216	0.1	239	<.1	281	0.1	255	0.0	251	0.0	241	0.1	247
	1992	<.1	266	0.7	257	0.0		<.1	207	0.1	245	0.1	251	0.1	275	<.1	252	<.1	279	0.2	257
	1993	<.1	256	1.5	247	0.0		0.1	257	<.1	217	0.0		<.1	242	<.1	312	<.1	282	0.3	247
	1994	0.1	267	0.5	260	0.0		0.1	235	<.1	254	<.1	262	0.1	253	<.1	238	<.1	295	0.1	258
Striped mullet	1976	ND		0.1	385	ND		0.2	322	0.2	338	0.6	366	0.0		<.1	375	0.0		0.2	358
	1977	ND		0.2	322	0.0		0.2	314	0.9	317	0.8	319	0.1	340	0.2	368	0.2	345	0.3	323
	1978	ND		0.0		0.1	327	0.4	336	0.2	334	0.2	327	0.2	366	<.1	327	0.1	354	0.2	338
	1979	ND		0.2	320	0.1	336	0.1	341	0.7	343	0.2	339	0.1	333	0.1	404	0.1	354	0.2	341
	1980	ND		0.1	343	<.1	338	0.4	335	0.2	328	0.1	337	0.1	320	0.2	379	0.2	356	0.2	343
	1981	ND		<.1	318	0.1	345	<.1	336	<.1	341	0.1	336	0.1	321	0.2	353	0.2	353	0.1	344

Table 1. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Striped mullet (Cont'd.)	1982	ND		0.2	344	0.2	295	0.2	326	0.2	330	0.2	333	0.2	344	0.2	359	0.3	361	0.2	341
	1983	ND		0.2	350	0.1	346	0.1	346	0.2	341	0.2	341	0.1	351	0.2	367	0.2	368	0.2	352
	1984	ND		0.2	344	0.2	340	0.3	328	0.2	337	0.4	337	0.1	336	0.6	352	0.5	347	0.3	342
	1985	ND		0.2	340	0.2	339	0.3	332	0.1	328	0.3	340	0.1	338	0.2	380	0.1	339	0.2	342
	1986	<.1	326	0.2	350	0.2	321	0.2	330	0.1	328	0.2	336	0.1	340	0.1	368	0.1	341	0.1	340
	1987	<.1	312	0.2	366	0.1	319	0.2	343	0.2	348	0.2	354	0.1	336	0.1	402	0.2	359	0.2	357
	1988	<.1	327	0.1	344	0.2	333	0.1	323	0.2	348	0.1	343	0.1	350	0.1	371	0.1	364	0.1	348
	1989	<.1	323	0.2	348	0.4	339	0.2	337	0.1	356	0.2	356	0.1	344	0.1	400	0.1	372	0.2	354
	1990	<.1	325	0.2	341	0.3	342	0.4	342	0.2	357	0.2	340	0.2	340	0.4	389	0.4	353	0.3	354
	1991	<.1	325	0.1	347	0.2	341	0.2	347	0.2	343	0.3	335	0.1	343	0.2	386	0.1	377	0.2	350
	1992	<.1	310	0.1	352	0.3	340	0.3	341	0.2	342	0.4	352	0.2	355	0.2	389	0.2	374	0.2	355
	1993	<.1	331	0.1	358	0.3	371	0.2	333	0.3	347	0.4	356	0.2	355	0.2	379	0.1	354	0.2	353
	1994	0.1	343	0.1	347	0.1	381	0.3	343	0.3	359	0.2	368	0.1	365	0.2	386	0.2	383	0.2	362
Total finfishes	1976	ND		11.1	429	ND		5.2	394	7.6	391	9.5	415	6.2	332	1.1	378	7.1	419	7.3	408
	1977	ND		8.8	316	4.3	395	5.9	442	8.2	428	8.1	428	7.6	297	3.8	366	4.3	395	6.7	377
	1978	ND		5.0	357	2.4	359	4.8	437	7.7	409	2.0	406	3.4	343	4.6	365	5.0	406	4.6	390
	1979	ND		6.8	345	2.5	396	3.4	409	3.2	453	3.2	433	2.7	393	2.2	360	3.2	411	3.8	387
	1980	ND		5.0	380	4.2	347	5.4	428	5.2	422	3.1	405	2.8	387	3.9	368	3.5	419	4.3	400
	1981	ND		4.6	369	5.5	363	5.3	408	6.1	417	6.0	432	2.8	634	4.2	353	6.5	406	5.2	396
	1982	ND		8.1	378	4.7	368	5.3	435	6.8	411	5.8	417	4.6	400	4.5	367	8.8	394	6.4	397
	1983	ND		9.0	369	7.6	384	4.5	417	7.2	422	5.5	404	5.5	397	5.0	373	7.5	409	6.6	394
	1984	ND		6.2	389	3.7	397	4.3	449	5.6	431	3.9	432	4.8	397	3.2	369	4.6	412	4.7	410
	1985	ND		7.6	381	3.8	408	5.2	446	4.1	479	3.6	452	5.0	368	3.6	350	5.2	384	5.1	404
	1986	4.9	432	9.3	377	5.4	381	5.0	425	3.5	422	3.2	418	5.7	371	2.9	387	5.2	425	5.3	398
	1987	2.0	517	8.7	373	4.3	384	4.0	430	2.9	420	3.4	431	3.8	420	3.0	432	5.9	434	4.8	408
	1988	2.5	472	6.7	385	4.6	401	4.5	411	4.7	444	3.0	436	6.4	390	3.2	407	5.4	436	4.8	411
	1989	2.6	474	9.0	365	7.4	396	5.1	428	6.4	437	4.2	403	4.4	402	2.8	432	4.7	425	5.5	403
	1990	2.5	485	10.5	367	8.2	403	6.6	432	6.1	448	5.1	410	6.8	410	3.5	405	5.2	424	6.5	405
	1991	3.1	474	6.9	367	11.7	358	6.4	415	6.1	437	6.0	400	5.8	405	5.3	381	7.2	409	6.4	398
	1992	2.6	445	8.4	395	8.8	423	6.3	407	5.9	448	7.1	412	7.0	410	5.7	409	8.4	431	7.0	414
	1993	2.4	480	9.8	387	8.7	459	7.0	424	8.6	467	6.9	453	9.7	419	4.8	427	8.3	428	7.8	425
	1994	2.7	451	6.6	394	6.8	467	7.2	419	9.0	444	7.2	438	7.4	425	7.7	428	9.7	454	7.5	429
Blue crab	1983	ND		0.2	151	0.3	154	0.1	151	0.2	142	0.3	142	0.2	151	0.1	156	0.2	145	0.2	147
	1984	ND		0.2	150	0.4	135	0.1	143	0.2	137	0.2	142	0.3	147	0.3	145	0.2	142	0.2	144
	1985	ND		0.3	149	0.5	151	0.2	144	0.3	136	0.2	141	0.2	149	0.3	141	0.2	158	0.2	147
	1986	0.2	146	0.3	151	0.6	133	0.2	140	0.1	135	0.1	144	0.1	154	<.1	147	0.1	148	0.2	145
	1987	0.3	152	0.3	139	0.3	138	0.1	138	0.2	140	0.1	155	0.1	151	<.1	137	0.1	142	0.1	141
	1988	0.3	154	0.1	148	0.1	159	<.1	135	<.1	141	<.1	150	0.1	145	<.1	115	0.1	152	0.1	147
	1989	0.2	157	0.1	137	0.4	128	<.1	136	<.1	128	<.1	131	<.1	149	<.1	72	<.1	147	0.1	136
	1990	0.2	154	0.2	141	0.2	129	<.1	138	0.2	135	0.1	135	0.2	140	<.1	114	0.1	139	0.1	138
	1991	0.1	141	0.2	132	0.4	135	0.2	144	0.1	136	0.1	144	0.1	140	<.1	105	0.1	152	0.1	138
	1992	0.1	151	0.2	153	0.1	135	<.1	144	0.1	133	0.1	142	0.3	150	0.4	146	0.1	146	0.1	147
	1993	0.2	161	0.1	144	0.2	162	0.1	147	0.1	148	0.1	152	0.2	148	0.1	147	<.1	136	0.1	149
	1994	0.1	155	<.1	144	0.1	160	<.1	143	0.1	139	<.1	149	0.1	158	<.1	102	<.1	129	<.1	140

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 1975-94. Blank indicates no measurment taken; ND = no data.

		Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Species	Year	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Red drum	1975	0.8	382	1.1	403	ND		1.2	337	0.9	326	1.1	339	0.4	330	0.3	424	0.7	474	0.9	373
	1976	ND		1.0	509	1.1	487	0.5	415	1.6	406	0.5	395	0.5	460	0.4	442	1.3	465	0.9	452
	1977	ND		0.6	445	0.9	390	0.8	435	1.0	386	0.6	392	0.5	427	0.2	364	0.4	448	0.6	416
	1978	ND		0.3	429	0.7	376	1.1	395	0.6	384	1.0	401	0.4	429	0.3	455	0.4	493	0.6	412
	1979	ND		0.8	386	0.7	403	1.4	353	1.9	376	0.9	378	0.8	352	0.5	387	0.5	449	1.0	378
	1980	ND		0.5	436	0.8	473	0.6	434	0.9	411	1.1	386	0.7	370	0.5	454	0.7	449	0.7	419
	1981	ND		0.5	429	0.7	405	0.6	390	0.7	373	0.8	403	0.6	396	0.3	515	0.8	488	0.6	422
	1982	ND		0.6	440	0.9	401	0.6	390	0.5	360	0.4	386	0.3	417	0.2	456	0.5	440	0.5	412
	1983	ND		0.6	436	0.8	394	0.5	418	0.6	407	0.4	410	0.3	448	0.2	486	0.7	509	0.5	440
	1984	ND		0.9	451	1.1	551	0.4	381	0.6	383	0.5	377	0.8	400	0.7	457	0.7	472	0.7	433
	1985	ND		0.9	421	1.3	420	0.8	394	1.3	385	0.9	427	0.7	436	0.3	460	0.9	478	0.9	423
	1986	0.4	481	0.7	468	0.9	453	0.8	403	1.2	441	0.9	454	0.5	450	0.4	486	0.9	495	0.8	456
	1987	0.4	449	0.5	459	0.9	446	0.8	372	1.0	473	0.6	459	0.4	424	0.3	527	1.5	532	0.7	467
	1988	0.5	399	0.8	437	1.5	486	0.9	418	1.1	457	0.9	454	0.5	458	0.3	520	1.3	522	0.8	463
	1989	0.4	461	0.6	479	1.1	511	0.4	402	1.1	468	0.7	423	0.6	476	0.3	533	1.1	521	0.7	475
	1990	0.4	500	0.3	488	0.8	497	0.5	408	1.1	458	1.0	477	0.8	432	0.7	553	1.0	534	0.7	482
	1991	1.1	412	0.5	393	0.9	380	0.6	402	1.3	375	1.0	442	1.5	451	0.6	517	1.5	514	0.9	441
	1992	0.5	531	0.7	482	2.0	494	0.8	419	0.7	453	1.4	435	1.0	477	0.7	502	1.3	479	0.9	465
	1993	0.3	484	0.4	482	1.9	526	0.9	439	1.6	480	1.7	490	1.0	500	0.7	555	1.4	531	1.0	496
	1994	0.6	426	0.6	437	1.9	478	0.6	447	1.0	470	1.0	468	0.6	471	0.4	568	1.1	539	0.8	481
Spotted seatrout	1975	0.1	413	0.2	447	ND		0.6	419	1.0	389	0.6	474	0.4	479	0.2	455	0.8	413	0.5	428
	1976	ND		0.3	463	0.9	451	0.4	437	0.7	427	0.2	448	0.6	387	0.2	455	2.4	431	0.7	433
	1977	ND		0.3	501	0.3	461	0.4	455	0.5	387	0.1	485	0.3	483	0.6	412	0.8	464	0.4	449
	1978	ND		0.3	544	0.3	400	0.8	406	0.5	387	0.1	383	0.2	417	0.4	431	0.5	437	0.4	432
	1979	ND		0.2	449	0.1	385	0.6	418	0.2	439	0.1	476	0.2	413	0.1	434	0.4	472	0.2	438
	1980	ND		0.4	476	0.2	418	0.3	406	0.3	435	0.2	446	0.3	465	0.2	434	0.5	490	0.3	458
	1981	ND		0.3	483	0.8	419	0.4	437	0.3	428	0.2	442	0.4	437	0.2	469	0.7	486	0.4	457
	1982	ND		0.3	456	0.4	468	0.3	430	0.4	428	0.2	446	0.2	458	0.4	435	0.5	453	0.3	445
	1983	ND		0.3	464	0.5	420	0.3	438	0.5	425	0.2	459	0.3	435	0.3	459	0.6	476	0.4	452
	1984	ND		0.4	465	0.3	459	0.2	430	0.2	420	0.1	453	0.2	467	0.1	400	0.4	458	0.3	453
	1985	ND		0.3	470	0.3	418	0.4	439	0.2	430	0.2	438	0.4	432	0.2	443	0.6	475	0.3	453
	1986	0.2	395	0.4	438	0.4	444	0.5	419	0.4	432	0.3	442	0.4	464	0.3	437	1.0	472	0.4	446
	1987	0.1	410	0.2	459	0.5	425	0.6	425	0.3	422	0.3	452	0.5	461	0.2	456	0.7	461	0.4	446
	1988	0.1	420	0.5	444	0.7	432	0.3	439	0.4	438	0.3	430	0.4	442	0.2	428	0.9	479	0.4	449
	1989	0.1	430	0.3	441	0.4	447	0.2	435	0.4	457	0.3	446	0.4	475	0.1	464	0.6	460	0.3	453
	1990	<.1	399	0.2	460	0.5	461	0.2	427	0.2	479	0.3	459	0.5	474	0.1	505	0.5	477	0.3	467
	1991	0.1	378	0.2	442	0.3	473	0.5	406	0.4	415	0.3	436	0.6	449	0.4	482	0.8	466	0.4	443
	1992	0.1	392	0.3	418	0.5	452	0.4	417	0.2	436	0.4	457	0.6	463	0.5	508	0.8	443	0.4	448
	1993	0.1	450	0.3	446	0.9	472	0.3	428	0.4	430	0.3	441	0.9	427	0.5	468	0.6	447	0.4	444
	1994	0.1	398	0.4	434	0.8	465	0.3	417	0.5	431	0.4	434	0.6	442	0.5	448	0.6	429	0.4	436
Black drum	1975	0.5	294	0.4	366	ND		0.9	326	0.5	315	0.8	290	0.4	358	1.2	422	1.0	454	0.7	367
	1976	ND		0.3	337	0.7	305	0.9	344	1.2	325	0.6	376	0.3	366	1.0	503	2.4	419	0.9	388
	1977	ND		0.4	384	0.5	371	0.5	338	0.7	336	0.4	341	0.3	365	0.8	406	2.2	410	0.7	383
	1978	ND		0.4	383	1.0	346	0.5	383	0.3	306	0.5	311	0.1	383	0.8	425	0.4	377	0.5	372
	1979	ND		0.2	398	0.1	410	0.2	404	0.4	361	0.3	380	0.4	308	0.4	391	0.5	423	0.3	387
	1980	ND		0.8	391	0.9	341	0.7	306	1.2	298	0.9	340	0.5	370	0.6	365	1.0	400	0.8	352
	1981	ND		0.3	408	0.4	343	0.4	383	0.5	315	0.5	341	0.4	357	0.5	390	0.8	384	0.5	369
	1982	ND		0.6	355	2.4	346	0.6	352	1.0	296	1.1	337	0.6	369	0.9	388	1.9	387	1.0	356
	1983	ND		0.2	381	1.0	361	0.6	375	0.6	328	0.6	345	0.7	406	0.5	422	0.9	418	0.6	381
	1984	ND		0.5	405	0.7	348	0.2	386	0.3	269	0.2	329	0.2	376	0.4	438	0.5	442	0.3	389
	1985	ND		0.8	379	0.6	363	0.4	357	0.3	295	0.4	325	0.2	363	0.9	389	0.5	435	0.5	372
	1986	0.4	360	0.7	380	0.6	303	0.6	351	0.4	342	0.5	357	0.3	388	0.5	417	0.5	441	0.5	379
	1987	0.3	378	0.4	376	1.5	376	0.4	383	0.3	364	0.5	370	0.2	384	0.4	403	0.6	465	0.4	393

Table 2. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Black drum (Cont'd.)	1988	0.2	355	0.5	387	1.2	339	0.7	346	1.0	334	0.7	330	0.7	337	1.5	405	0.6	422	0.8	368
	1989	0.5	324	2.0	384	1.4	358	0.8	351	1.0	337	1.4	373	1.3	416	1.5	421	1.2	401	1.3	383
	1990	0.3	342	0.4	375	0.8	368	0.6	362	1.0	298	1.0	334	0.6	398	1.0	431	1.0	423	0.8	372
	1991	0.3	347	0.5	382	1.0	364	0.6	375	1.3	369	0.7	321	0.9	340	2.2	359	1.8	367	1.0	361
	1992	0.4	373	0.5	402	1.1	422	0.7	394	0.3	352	0.9	372	0.8	372	1.4	363	2.2	366	0.9	375
	1993	0.3	372	0.6	400	1.0	456	0.8	430	1.0	449	1.6	439	1.7	424	3.8	422	2.7	401	1.6	421
	1994	0.5	370	0.5	415	0.3	442	0.7	438	0.9	453	0.9	429	0.9	432	4.9	430	2.2	445	1.4	433
Sheeps-head	1975	0.0	<.1	362	ND			0.1	316	0.2	291	1.1	296	0.2	376	0.3	409	0.1	352	0.3	323
	1976	ND		<.1	331	0.2	308	0.2	273	0.4	329	1.0	255	0.1	328	0.2	360	0.4	341	0.3	297
	1977	ND		<.1	342	0.3	316	0.1	314	0.2	321	0.5	267	0.2	335	0.2	406	0.3	356	0.2	323
	1978	ND		0.1	308	0.2	307	0.1	342	0.5	371	0.6	306	0.2	361	0.2	376	0.1	300	0.2	337
	1979	ND		<.1	335	0.2	352	0.1	312	0.4	362	0.8	318	0.2	339	0.1	395	0.2	349	0.2	338
	1980	ND		0.1	283	0.1	309	<.1	353	0.7	296	0.6	307	0.2	361	0.2	382	0.4	330	0.3	316
	1981	ND		<.1	321	0.1	277	0.2	292	0.3	335	0.2	322	0.1	343	0.1	382	0.3	332	0.2	327
	1982	ND		0.1	330	0.3	332	0.1	313	0.1	296	0.2	350	0.1	365	0.2	383	0.3	330	0.1	339
	1983	ND		<.1	342	0.5	345	0.1	338	0.2	302	0.1	355	0.1	361	0.2	395	0.3	340	0.2	346
	1984	ND		<.1	369	0.3	383	<.1	369	<.1	427	<.1	436	<.1	383	0.1	417	0.1	333	0.1	379
	1985	ND		<.1	380	0.2	379	<.1	374	<.1	362	<.1	326	<.1	352	<.1	435	0.1	369	<.1	369
	1986	<.1	340	<.1	359	0.1	297	0.1	336	0.1	329	0.1	304	0.1	359	<.1	407	0.1	351	0.1	336
	1987	<.1	402	<.1	381	0.1	366	0.1	352	0.1	371	0.2	360	0.1	340	<.1	386	0.2	342	0.1	355
	1988	0.0		<.1	368	0.1	340	<.1	358	0.1	346	0.1	304	<.1	354	<.1	398	0.2	382	0.1	359
	1989	<.1	299	0.1	371	0.2	343	<.1	324	0.2	341	0.1	329	0.1	361	<.1	422	0.2	371	0.1	357
	1990	<.1	303	<.1	418	0.3	354	<.1	332	<.1	417	<.1	360	<.1	367	<.1	422	0.1	403	<.1	385
	1991	<.1	336	<.1	435	0.1	392	<.1	359	<.1	365	<.1	353	<.1	413	<.1	446	0.1	384	<.1	387
	1992	<.1	367	<.1	362	0.1	392	0.2	368	<.1	320	0.1	307	<.1	379	<.1	445	0.1	398	0.1	363
	1993	<.1	329	<.1	372	0.2	389	0.1	363	0.1	328	0.1	315	<.1	407	<.1	486	0.1	412	0.1	369
	1994	<.1	310	0.1	426	0.2	390	0.1	366	0.2	371	0.1	365	<.1	406	<.1	453	0.1	377	0.1	383
Southern flounder	1975	0.1	337	<.1	317	ND		0.1	323	0.1	250	0.1	309	0.2	380	0.1	448	0.1	338	0.1	342
	1976	ND		<.1	365	0.5	321	<.1	296	0.2	363	0.1	304	0.2	351	0.1	347	0.1	389	0.1	348
	1977	ND		0.2	331	0.2	342	<.1	322	0.2	312	0.2	368	0.1	383	<.1	491	<.1	353	0.1	342
	1978	ND		0.1	359	0.1	354	<.1	310	0.1	310	0.1	377	0.2	372	<.1	354	<.1	335	0.1	352
	1979	ND		<.1	348	0.1	331	0.1	338	0.2	388	0.1	336	0.1	347	0.1	396	0.2	366	0.2	363
	1980	ND		0.2	345	0.3	369	0.2	330	0.1	325	0.1	359	0.2	367	<.1	363	0.2	400	0.1	354
	1981	ND		0.1	326	0.1	351	0.1	335	0.1	311	0.1	356	0.1	348	0.1	387	0.1	358	0.1	346
	1982	ND		0.2	345	0.3	354	0.1	350	0.2	311	0.1	360	0.1	353	0.1	349	0.2	354	0.2	346
	1983	ND		0.1	348	0.2	350	0.1	324	0.2	342	<.1	335	0.1	367	0.1	345	0.1	389	0.1	351
	1984	ND		0.1	341	0.2	364	<.1	328	0.1	322	0.1	323	0.1	328	0.1	326	0.1	293	0.1	326
	1985	ND		0.1	340	0.2	370	0.1	333	0.1	330	0.1	336	0.1	337	0.2	347	0.1	331	0.1	339
	1986	0.1	299	0.1	363	0.1	376	0.1	346	0.1	377	<.1	348	0.1	371	0.1	368	0.2	363	0.1	361
	1987	0.1	335	0.1	336	0.1	350	0.1	308	0.1	345	0.1	394	0.1	337	<.1	381	0.1	402	0.1	351
	1988	<.1	346	0.1	350	0.2	353	0.1	365	0.1	342	0.1	372	<.1	350	<.1	419	0.1	387	0.1	363
	1989	<.1	324	0.1	349	0.2	362	0.1	328	0.1	353	0.1	342	<.1	336	<.1	392	0.1	382	0.1	352
	1990	<.1	325	0.1	326	0.2	340	0.1	326	0.1	324	0.1	344	0.1	333	0.1	279	0.1	340	0.1	326
	1991	<.1	313	<.1	354	0.1	371	0.1	332	0.1	352	0.1	366	0.1	354	0.1	384	0.1	365	0.1	360
	1992	<.1	330	0.1	356	0.3	375	0.1	352	<.1	370	0.1	385	0.1	379	<.1	461	0.1	386	0.1	374
	1993	<.1	350	0.1	379	0.2	426	0.1	364	0.1	395	0.1	411	0.1	377	<.1	352	0.1	387	0.1	388
	1994	<.1	373	0.1	361	0.2	401	0.1	357	0.1	378	0.1	386	0.1	383	<.1	416	<.1	393	0.1	377
Atlantic croaker	1975	0.0		<.1	245	ND		0.0		0.1	312	0.2	338	0.4	321	0.1	314	0.1	343	0.1	323
	1976	ND		0.2	262	0.1	248	0.3	263	0.4	296	0.2	314	0.6	320	0.5	329	0.3	326	0.3	301
	1977	ND		0.1	291	0.1	275	0.2	274	0.2	290	0.8	307	0.6	350	0.7	345	0.2	340	0.3	319
	1978	ND		0.1	274	0.1	248	0.2	255	0.1	242	0.5	314	0.4	296	0.4	283	<.1	331	0.2	288
	1979	ND		<.1	271	0.2	248	0.1	287	0.2	270	0.2	303	0.5	326	0.1	316	0.2	331	0.2	305
	1980	ND		0.2	284	0.1	262	0.2	261	0.1	264	0.2	320	1.7	320	0.1	302	0.2	298	0.3	303

Table 2. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Atlantic croaker (Cont'd.)	1981	ND		0.2	279	0.2	254	0.1	273	0.2	268	0.7	328	0.8	320	0.2	323	0.4	320	0.3	310
	1982	ND		0.4	282	0.4	256	0.1	277	0.2	278	0.4	328	1.0	327	0.4	338	0.3	330	0.4	310
	1983	ND		0.3	275	0.4	261	0.2	263	0.5	286	0.3	309	1.0	320	0.1	312	0.5	314	0.4	299
	1984	ND		0.2	274	0.2	259	0.2	259	0.2	252	0.1	261	0.5	274	0.1	264	0.2	270	0.2	268
	1985	ND		0.6	272	0.4	258	0.1	254	0.1	261	0.3	268	0.6	279	0.2	307	0.3	281	0.3	274
	1986	0.2	296	0.4	281	0.1	261	0.2	253	0.2	256	0.3	280	1.4	305	0.1	322	0.3	299	0.4	289
	1987	0.1	287	0.8	288	0.1	252	0.3	253	<.1	253	0.2	283	1.5	323	0.1	321	0.3	322	0.4	298
	1988	0.2	276	0.6	291	0.1	267	0.3	255	0.2	255	0.3	301	0.8	317	0.1	357	0.3	318	0.3	295
	1989	0.1	284	0.6	271	0.2	257	0.2	250	0.2	262	0.2	266	0.3	317	<.1	324	<.1	308	0.2	273
	1990	0.2	283	0.4	286	0.2	270	0.1	261	<.1	260	0.1	261	0.3	290	<.1	298	0.1	264	0.2	280
	1991	0.1	271	0.2	274	0.1	290	0.2	260	0.2	251	0.2	262	0.4	283	<.1	269	1.4	279	0.3	275
	1992	0.2	293	0.4	269	0.1	278	0.1	258	0.1	268	0.3	278	1.0	299	0.1	328	0.7	291	0.3	286
	1993	0.1	286	1.4	273	0.2	276	0.1	265	0.2	267	0.1	281	1.0	313	<.1	306	0.3	300	0.5	282
	1994	0.1	277	0.3	283	0.1	295	0.1	270	0.2	265	0.1	293	1.0	310	0.1	336	0.1	324	0.2	294
Gafftop-sail catfish	1975	<.1	530	0.0		ND		0.1	571	<.1	493	<.1	552	0.1	575	0.0		0.0		<.1	567
	1976	ND		0.1	482	0.0		0.2	526	0.4	498	<.1	587	<.1	475	0.0		0.0		0.1	509
	1977	ND		<.1	516	0.0		<.1	499	0.2	526	<.1	385	<.1	600	0.1	529	0.0		<.1	516
	1978	ND		0.0		0.0		<.1	514	<.1	543	0.0		0.1	551	0.0		0.0		<.1	534
	1979	ND		0.0		0.2	542	0.0		0.1	499	<.1	533	0.0		0.0		<.1	282	<.1	511
	1980	ND		0.1	550	0.0		<.1	478	0.3	509	0.1	522	0.1	517	0.0		0.0		0.1	525
	1981	ND		0.1	492	0.0		<.1	505	<.1	542	0.1	511	0.1	523	0.0		<.1	379	<.1	507
	1982	ND		<.1	423	<.1	616	<.1	520	0.3	527	0.1	533	<.1	545	<.1	541	0.0		0.1	517
	1983	ND		<.1	492	0.1	473	<.1	498	0.3	514	0.1	544	0.1	532	0.0		<.1	408	0.1	514
	1984	ND		<.1	517	0.1	474	0.1	510	0.3	507	0.1	521	<.1	488	0.0		<.1	315	0.1	509
	1985	ND		0.1	525	0.1	482	<.1	498	0.1	546	0.1	556	0.1	519	<.1	556	<.1	511	0.1	528
	1986	0.1	462	<.1	521	<.1	473	<.1	474	0.2	485	0.1	532	<.1	514	0.0		<.1	356	<.1	495
	1987	<.1	423	<.1	491	0.1	527	<.1	512	<.1	519	0.1	542	<.1	528	0.0		<.1	390	<.1	514
	1988	<.1	370	<.1	515	<.1	534	0.2	521	0.1	544	0.1	538	0.1	521	<.1	495	<.1	325	0.1	525
	1989	<.1	321	<.1	480	<.1	485	0.2	509	0.1	549	<.1	547	0.1	384	0.0		<.1	358	0.1	524
	1990	<.1	465	0.1	504	0.1	499	0.2	499	0.2	509	<.1	583	0.1	549	<.1	598	<.1	429	0.1	513
	1991	<.1	469	<.1	502	0.1	518	<.1	476	<.1	562	<.1	569	<.1	472	0.0		<.1	299	<.1	513
	1992	<.1	464	0.1	444	0.1	556	0.1	519	0.1	565	<.1	541	<.1	496	<.1	495	<.1	406	0.1	508
	1993	0.0		0.1	513	0.1	566	0.1	501	0.3	538	<.1	585	0.1	473	0.0		<.1	414	0.1	524
	1994	<.1	409	0.1	441	0.1	501	0.2	516	0.2	541	0.1	561	0.1	511	0.0		<.1	419	0.1	509
Gulf menhaden	1975	0.0		0.5	272	ND		1.7	302	0.4	221	0.2	307	0.5	284	0.3	280	0.1	312	0.5	286
	1976	ND		2.7	240	<.1	270	0.3	246	0.3	275	0.1	267	0.5	275	0.2	304	0.1	275	0.8	255
	1977	ND		3.0	246	<.1	248	0.2	244	0.1	240	<.1	237	2.0	254	1.4	258	0.1	211	1.0	249
	1978	ND		0.6	249	0.5	249	<.1	241	0.1	239	0.6	242	1.4	250	0.2	254	0.0		0.4	248
	1979	ND		0.1	249	0.1	231	0.4	250	<.1	235	0.1	251	0.3	251	0.1	261	<.1	294	0.1	252
	1980	ND		0.3	253	0.0		<.1	260	0.1	255	0.1	245	<.1	243	0.6	249	0.1	325	0.2	254
	1981	ND		0.7	259	<.1	260	0.1	246	0.1	242	0.1	238	0.3	255	0.7	262	0.1	273	0.3	258
	1982	ND		0.6	251	<.1	310	<.1	246	0.1	243	<.1	238	0.8	255	0.1	264	<.1	239	0.2	252
	1983	ND		1.7	257	0.1	248	<.1	249	0.2	239	0.2	246	0.2	258	<.1	290	<.1	250	0.5	255
	1984	ND		1.0	256	0.2	255	0.4	248	0.4	246	0.6	251	0.5	284	0.2	273	0.2	295	0.5	259
	1985	ND		1.5	249	<.1	233	0.1	254	0.1	249	0.1	263	0.5	260	0.2	281	0.1	279	0.4	253
	1986	0.2	246	1.5	244	0.1	233	0.3	239	0.1	244	0.1	249	0.8	263	<.1	249	<.1	262	0.5	247
	1987	0.1	244	1.8	250	0.0		0.1	244	<.1	278	<.1	250	0.2	259	<.1	256	<.1	278	0.4	250
	1988	0.2	268	0.8	244	<.1	206	0.2	233	0.1	241	<.1	252	0.1	264	<.1	249	0.1	317	0.2	247
	1989	0.2	253	0.8	245	<.1	236	0.2	231	<.1	240	<.1	276	<.1	252	0.0		<.1	253	0.2	244
	1990	0.1	256	1.3	253	<.1	247	0.6	224	<.1	251	0.1	214	<.1	294	0.0		<.1	226	0.4	247
	1991	0.3	255	1.4	257	0.0		<.1	217	<.1	239	<.1	229	<.2	256	<.1	287	<.1	240	0.3	256
	1992	<.1	299	1.3	257	<.1	232	0.1	239	0.1	245	<.1	257	0.1	271	<.1	266	0.1	237	0.3	256
	1993	0.4	283	1.0	254	<.1	255	0.2	269	<.1	300	0.0		0.1	239	<.1	281	0.3	301	0.3	262
	1994	0.2	240	0.5	254	<.1	210	0.1	249	<.1	266	<.1	268	0.2	256	<.1	96	<.1	282	0.1	254

Table 2. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Striped mullet	1975	<.1	390	0.3	331	ND		0.4	347	0.6	322	2.5	328	1.0	382	0.3	358	0.5	345	0.7	339
	1976	ND		0.3	346	0.2	320	0.3	349	1.6	331	0.5	360	0.3	342	0.6	402	2.0	397	0.7	367
	1977	ND		0.2	345	0.2	380	0.4	330	0.9	343	0.3	321	0.4	371	0.3	396	0.6	354	0.4	348
	1978	ND		0.2	423	0.6	330	0.6	342	0.5	322	1.1	336	0.1	364	0.1	364	0.3	387	0.4	347
	1979	ND		0.1	351	0.1	338	0.3	340	0.7	344	0.7	344	0.3	353	0.6	410	0.3	365	0.4	357
	1980	ND		0.2	363	<.1	319	0.2	343	0.6	357	0.6	357	0.3	340	0.3	360	0.4	346	0.3	353
	1981	ND		0.1	395	0.1	349	0.1	332	0.6	341	0.5	334	0.3	353	0.3	364	0.9	363	0.4	352
	1982	ND		0.2	376	0.4	329	0.3	330	0.4	341	0.8	331	0.2	345	0.1	348	0.4	372	0.4	347
	1983	ND		0.2	370	0.2	335	0.2	339	0.3	334	0.5	350	0.2	347	0.3	383	0.6	375	0.3	358
	1984	ND		0.4	362	0.7	328	0.3	331	0.5	350	0.6	342	0.4	357	0.5	376	0.4	356	0.5	352
	1985	ND		0.2	338	0.2	326	0.2	323	0.5	355	0.3	343	0.2	342	0.3	397	0.3	375	0.3	354
	1986	<.1	328	0.1	377	0.3	328	0.1	337	0.4	369	0.2	356	0.2	358	<.1	370	0.6	359	0.2	359
	1987	<.1	325	0.2	375	0.4	333	0.7	319	1.1	360	0.6	348	0.3	338	0.2	391	0.4	382	0.5	351
	1988	<.1	331	0.2	362	0.4	344	0.4	326	0.4	347	0.4	365	0.3	370	0.4	409	0.4	396	0.3	366
	1989	<.1	329	0.2	349	0.2	334	0.2	328	0.3	350	0.4	348	0.2	359	0.3	394	0.4	366	0.3	357
	1990	0.1	334	0.4	341	0.3	368	0.2	344	0.8	369	0.7	358	0.2	353	0.2	387	0.4	383	0.4	361
	1991	0.1	331	0.2	333	0.6	366	0.1	343	0.8	364	0.5	351	0.3	368	0.1	383	0.4	401	0.3	363
	1992	<.1	328	0.3	376	0.3	387	0.4	330	0.2	350	0.7	364	0.4	360	0.2	389	0.3	383	0.4	362
	1993	0.6	328	0.9	364	0.7	377	0.5	352	0.7	374	0.9	365	0.4	376	0.6	422	0.4	402	0.7	373
	1994	0.1	353	0.6	372	0.4	384	0.6	347	0.3	358	0.7	365	0.2	379	0.1	398	0.2	400	0.4	367
Total finfishes	1975	3.0	383	5.1	396	ND		6.6	355	4.9	339	7.9	345	5.7	343	4.3	374	4.8	394	5.5	365
	1976	ND		7.2	334	4.0	385	4.9	388	9.1	365	5.0	363	5.0	349	5.1	383	11.1	400	6.8	369
	1977	ND		6.2	334	3.2	362	5.4	389	6.2	348	3.6	344	5.8	326	5.2	343	6.5	381	5.5	353
	1978	ND		4.0	342	4.0	325	5.0	359	5.1	383	5.2	341	3.8	322	3.6	358	3.1	395	4.3	355
	1979	ND		3.5	367	2.0	372	4.3	350	5.6	368	3.8	372	3.5	327	2.6	367	3.5	393	3.7	365
	1980	ND		4.0	371	2.9	375	3.3	346	6.1	342	4.8	350	5.0	336	2.5	354	4.2	390	4.3	357
	1981	ND		4.2	357	3.3	355	3.0	384	4.8	358	4.4	375	4.8	364	3.1	357	5.5	388	4.2	369
	1982	ND		6.2	346	6.2	354	3.7	372	5.1	360	4.5	366	5.1	338	3.5	363	5.9	381	5.0	360
	1983	ND		6.0	350	6.2	341	4.0	378	5.3	352	3.9	396	5.8	356	3.0	362	5.5	399	4.9	367
	1984	ND		6.5	364	5.7	379	4.4	369	3.9	362	3.8	399	4.2	347	3.1	373	4.2	406	4.6	373
	1985	ND		7.1	335	4.5	366	3.7	380	4.2	376	3.3	396	4.0	358	3.4	362	4.6	390	4.6	364
	1986	2.6	395	6.0	349	4.4	390	4.6	379	4.7	408	4.0	378	5.3	347	2.2	381	5.2	404	4.6	377
	1987	2.2	430	5.8	334	4.7	390	5.0	323	5.2	428	3.3	391	4.9	353	1.6	406	4.6	444	4.4	374
	1988	2.5	371	6.2	346	6.5	398	5.5	361	5.8	393	4.3	382	5.0	358	3.1	396	5.7	410	5.2	374
	1989	2.2	394	6.8	363	5.2	387	4.3	361	5.6	402	4.7	374	5.4	388	2.9	417	5.2	408	5.0	382
	1990	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	431	4.4	384
	1991	3.1	389	5.4	341	5.4	376	4.9	362	6.5	389	4.9	373	6.3	371	4.0	397	7.6	389	5.5	372
	1992	2.7	439	6.1	356	6.1	439	5.6	366	6.0	408	6.2	419	5.8	377	3.4	425	7.3	399	5.7	391
	1993	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	425	6.7	407
	1994	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	443	5.9	403
Blue crab	1983	ND		0.1	136	0.3	153	0.1	151	0.1	138	0.2	146	0.2	146	0.3	146	0.3	146	0.2	144
	1984	ND		0.1	151	0.1	140	0.1	147	0.1	147	0.2	145	0.2	141	0.2	138	0.2	148	0.1	145
	1985	ND		<.1	149	0.1	154	<.1	142	0.1	139	0.1	141	0.1	143	0.2	147	0.1	148	0.1	145
	1986	0.2	150	<.1	146	<.1	144	<.1	161	0.1	146	<.1	138	0.1	144	<.1	147	0.1	149	<.1	147
	1987	0.2	154	0.1	140	0.1	158	0.2	154	0.3	153	<.1	158	0.1	157	0.3	157	0.1	152	0.2	153
	1988	0.2	155	0.1	144	0.2	150	<.1	137	0.1	138	0.1	145	0.1	147	<.1	129	<.1	152	0.1	147
	1989	0.1	157	<.1	136	<.1	144	<.1	139	<.1	133	<.1	148	<.1	159	0.0		<.1	152	<.1	143
	1990	0.2	146	0.1	149	0.1	144	0.2	144	0.1	144	<.1	149	0.1	138	0.1	129	0.2	142	0.1	144
	1991	0.1	152	<.1	151	0.1	152	0.1	131	0.2	150	<.1	136	0.1	153	0.1	139	0.2	148	0.1	146
	1992	0.1	161	<.1	143	0.1	156	0.1	153	<.1	136	0.1	140	<.1	148	0.2	138	0.1	152	0.1	144
	1993	0.1	169	<.1	145	0.1	150	<.1	156	<.1	146	<.1	160	0.1	155	<.1	157	<.1	142	<.1	153
	1994	0.1	163	<.1	152	0.1	151	<.1	155	<.1	150	<.1	154	<.1	147	<.1	140	<.1	125	<.1	151

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 1977-94. Blank indicateds no measurement taken; ND = no data.

Species / Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
FINFISHES																				
Red drum																				
1977[a]	ND		20	35	ND		8	51	85	51	14	44	1	41	0		1	39	18	46
1978	ND		3	67	ND		4	43	13	51	4	94	3	67	11	58	17	52	7	58
1979	ND		17	62	ND		6	92	11	67	5	92	18	85	27	66	15	64	14	70
1980	ND		59	74	ND		8	68	28	50	5	88	16	75	4	82	15	72	23	70
1981	ND		26	52	ND		9	86	29	53	30	38	40	46	5	46	45	56	26	52
1982	ND		53	62	ND		9	76	19	102	26	103	21	62	1	55	16	89	24	76
1983	ND		47	67	11[b]	66	4	70	7	99	12	98	7	88	2	59	41	92	20[b]	78
1984	ND		13	66	6	70	2	105	12	56	4	100	4	80	2	52	4	73	6	69
1985	ND		3	131	10	106	7	96	7	114	19	82	9	67	1	61	17	69	9	86
1986	19	66	7	87	8	86	2	78	6	105	1	117	4	98	3	84	22	94	7	90
1987	6	99	45	58	47	61	16	88	15	89	9	59	7	71	2	117	32	63	21	66
1988	13	78	8	78	27	79	3	114	6	89	10	78	9	49	4	66	21	63	10	73
1989	61	44	3	59	24	47	4	92	10	82	8	65	4	83	1	54	18	69	9	63
1990	5	62	17	53	27	50	14	51	19	50	43	40	20	57	4	32	25	39	20	46
1991	6	97	14	73	30	53	30	81	36	79	25	61	28	72	5	88	43	61	24	71
1992	5	71	9	85	23	56	15	77	22	84	23	83	7	74	14	51	13	70	14	76
1993	11	73	28	58	40	48	11	66	17	58	13	60	12	73	9	53	23	62	18	60
1994	7	72	22	59	31	55	6	58	13	69	29	58	53	55	11	61	26	70	21	61
Spotted seatrout																				
1977[a]	ND		34	87	ND		39	84	50	73	1	99	7	84	16	83	5	85	23	82
1978	ND		35	52	ND		6	86	11	69	8	50	4	59	14	93	2	52	14	61
1979	ND		37	79	ND		3	83	12	70	7	68	12	53	13	80	2	86	14	75
1980	ND		17	72	ND		3	84	21	71	11	74	11	79	3	56	<1	60	10	73
1981	ND		16	85	ND		7	110	9	68	13	70	12	65	4	73	6	84	10	80
1982	ND		37	82	ND		7	99	19	62	15	76	4	75	5	78	3	76	15	79
1983	ND		26	84	4[b]	101	7	73	8	72	14	81	4	79	5	101	4	80	11[b]	82
1984	ND		7	71	2	85	3	77	1	83	10	74	1	54	1	88	5	98	4	77
1985	ND		5	80	24	73	11	87	4	64	24	61	3	50	9	70	2	78	9	70
1986	2	67	2	85	17	66	5	71	5	78	12	60	4	68	1	72	2	58	5	68
1987	2	92	22	73	14	68	3	82	19	70	13	69	10	76	1	104	3	63	11	72
1988	7	88	6	88	14	75	5	96	7	67	28	68	7	65	5	65	3	87	9	74
1989	5	63	6	79	14	80	6	69	20	61	16	71	6	71	4	50	2	56	8	68
1990	3	69	5	56	10	74	8	66	8	61	14	61	13	65	2	54	<1	86	7	63
1991	1	67	16	63	13	71	15	70	34	59	20	65	8	72	6	63	2	59	14	64
1992	2	73	6	73	4	82	10	59	42	52	12	64	8	69	18	50	2	54	12	58
1993	5	84	6	61	19	71	6	62	15	54	12	68	7	69	14	59	7	49	9	61
1994	3	73	5	64	13	78	13	68	12	66	28	76	7	69	5	79	1	51	10	71
Black drum																				
1977[a]	ND		0		ND		11	147	6	179	1	142	1	150	0		0		3	156
1978	ND		36	95	ND		9	112	22	110	2	165	1	122	4	106	0		13	102
1979	ND		40	83	ND		12	106	5	97	1	85	8	89	6	140	18	98	15	92
1980	ND		4	93	ND		4	102	0		2	100	2	75	3	95	1	142	2	97
1981	ND		12	122	ND		11	110	2	141	5	141	2	113	11	44	6	130	8	108
1982	ND		4	124	ND		5	138	9	90	7	94	1	109	<1	155	2	117	4	110
1983	ND		23	91	3[b]	123	3	118	1	132	2	145	2	108	2	107	<1	141	7[b]	
1984	ND		8	108	1	103	3	156	0		1	140	0		1	82	<1	91	2	115
1985	ND		4	141	3	83	3	113	1	122	<1	124	1	68	6	86	0		2	112
1986	2	141	2	107	5	85	0		1	149	0		<1	96	2	68	1	145	1	110
1987	0		1	106	0		4	130	1	118	0		6	74	44	63	1	89	6	72
1988	2	146	5	107	5	94	6	126	2	132	2	128	2	112	8	90	2	158	4	114

Table 3. (Cont'd.)

Species / Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Black drum (Cont'd.)																				
1989	0		4	124	8	87	3	109	1	125	3	116	1	110	11	77	4	150	4	108
1990	3	128	4	99	41	75	14	117	6	123	2	127	15	64	833	45	7	126	102	49
1991	1	124	3	111	10	99	7	155	2	113	<1	174	<1	112	61	77	1	171	9	92
1992	<1	123	<1	142	3	114	1	146	3	23	0		3	70	6	59	4	118	2	80
1993	2	129	1	109	3	99	<1	122	<1	158	<1	99	1	67	1	39	<1	203	1	94
1994	2	119	5	78	31	84	13	71	8	96	6	74	4	78	4	38	1	101	6	76
Sheepshead																				
1977[a]	ND		0		ND		1	128	0		0		0		0		0		<1	128
1978	ND		0		ND		<1	86	<1	68	1	54	1	59	1	122	1	61	1	70
1979	ND		15	66	ND		1	94	6	63	3	56	13	41	0		1	50	6	61
1980	ND		1	114	ND		1	163	1	41	1	51	0		0		1	60	1	86
1981	ND		1	158	ND		2	68	0		1	95	1	41	0		1	92	1	101
1982	ND		1	174	ND		0		3	67	<1	62	<1	50	0		0		1	90
1983	ND		1	23	<1[b]	93	<1	50	1	102	<1	67	<1	99	0		3	52	1[b]	52
1984	ND		0		<1	178	<1	90	1	30	<1	36	<1	30	0		0		<1	43
1985	ND		2	20	1	58	1	157	3	39	1	35	0		0		2	57	1	43
1986	0		<1	114	<1	32	<1	203	1	48	1	50	0		0		1	73	<1	80
1987	0		0		1	91	<1	94	<1	53	0		0		0		1	47	<1	64
1988	0		<1	60	2	69	<1	124	2	58	1	55	3	35	0		<1	40	1	56
1989	1	91	<1	59	1	35	1	116	25	40	0		0		0		<1	89	3	44
1990	<1	153	<1	126	<1	36	<1	79	<1	85	<1	115	0		0		1	48	<1	86
1991	<1	146	1	55	0		<1	101	1	81	<1	29	0		0		<1	70	<1	69
1992	<1	97	0		1	33	1	36	5	39	<1	66	<1	40	0		4	63	1	49
1993	<1	50	<1	147	<1	47	0		1	98	<1	36	<1	19	<1	45	<1	51	<1	77
1994	<1	106	<1	76	<1	131	5	54	2	81	1	33	1	34	<1	24	0		1	54
Southern Flounder																				
1977[a]	ND		0		ND		1	171	0		0		0		0		0		<1	171
1978	ND		9	40	ND		<1	43	3	37	<1	98	1	44	<1	128	1	46	3	42
1979	ND		1	85	ND		<1	135	2	85	0		1	122	2	46	1	38	1	71
1980	ND		10	54	ND		1	38	2	55	0		3	64	1	43	5	38	4	51
1981	ND		5	57	ND		7	79	2	53	2	90	1	67	1	66	11	55	4	64
1982	ND		9	67	ND		3	82	6	56	18	37	2	62	1	53	13	39	8	51
1983	ND		9	46	1[b]	75	2	54	3	58	6	39	1	34	0		2	45	4[b]	46
1984	ND		2	83	2	69	1	78	1	67	3	62	3	45	1	86	1	64	2	69
1985	ND		4	58	5	78	2	112	1	43	7	55	5	55	<1	71	2	67	3	64
1986	2	83	4	83	6	70	19	66	2	78	4	64	2	54	1	79	12	44	6	63
1987	2	47	21	51	9	54	1	62	3	44	1	103	1	37	<1	69	3	56	6	53
1988	15	66	14	61	3	76	3	85	3	69	5	48	1	65	<1	60	5	60	6	63
1989	10	74	3	62	10	60	3	67	10	51	24	38	8	53	<1	106	2	62	7	50
1990	12	68	22	59	12	55	15	48	11	50	3	55	12	47	4	67	9	51	12	54
1991	7	58	5	34	7	56	3	53	2	94	1	55	2	46	<1	27	2	60	3	49
1992	7	66	3	41	3	67	2	34	3	48	1	41	5	44	<1	22	<1	56	2	46
1993	4	95	6	56	5	45	6	46	3	47	2	57	3	69	<1	130	2	54	4	55
1994	2	94	4	62	3	31	3	58	3	46	5	54	6	42	<1	34	2	78	3	56
Atlantic croaker																				
1977[a]	ND		20	96	ND		0		0		1	36	11	50	1	181	4	83	6	88
1978	ND		320	61	ND		239	59	10	100	37	73	1	30	11	86	29	38	121	61
1979	ND		463	52	ND		109	74	52	49	7	76	25	65	3	92	221	44	162	53
1980	ND		1,085	55	ND		82	69	17	89	16	56	24	49	1	40	198	42	290	54
1981	ND		528	57	ND		24	94	26	73	26	42	20	55	1	112	32	46	136	58
1982	ND		1,812	61	ND		165	74	67	67	142	61	32	54	0		49	53	471	62
1983	ND		888	55	56[b]	79	236	66	67	80	63	62	6	61	2	86	49	51	254[b]	58

Table 3. (Cont'd.)

Species / Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Atlantic croaker (Cont'd.)																				
1984	ND		815	59	210	64	483	60	25	83	155	68	1,160	61	4	102	133	59	404	60
1985	ND		242	64	121	63	299	72	13	88	46	78	4	76	11	87	87	42	122	66
1986	126	74	148	77	198	68	2,138	52	17	99	12	72	12	78	<1	89	62	57	364	55
1987	79	70	335	54	110	56	207	78	33	47	9	81	4	40	<1	60	10	62	113	61
1988	154	68	485	53	160	51	60	80	13	66	3	50	8	50	0		15	63	125	56
1989	111	56	36	77	190	45	22	56	9	49	18	62	10	61	0		9	38	27	59
1990	97	67	316	51	117	46	82	68	24	32	58	65	14	59	2	78	46	62	103	55
1991	208	57	635	52	343	47	1,035	58	156	57	63	63	35	66	11	36	169	46	353	55
1992	225	56	501	47	450	47	626	48	430	47	215	44	95	50	13	54	157	44	326	47
1993	232	64	358	50	421	44	216	47	49	47	25	66	25	53	2	67	195	40	165	48
1994	255	52	229	49	186	58	302	43	59	46	74	39	25	37	6	44	123	46	143	46
Sand seatrout																				
1977[a]	ND		0		ND		11	61	0		0		0		0		0		2	61
1978	ND		13	58	ND		3	59	0		0		<1	54	0		0		4	58
1979	ND		35	58	ND		14	70	2	75	<1	33	1	77	0		0		10	61
1980	ND		8	61	ND		7	82	<1	64	<1	89	0		0		0		3	69
1981	ND		21	60	ND		2	72	0		0		1	76	0		<1	78	5	61
1982	ND		47	57	ND		12	67	<1	35	<1	76	<1	73	0		<1	65	13	58
1983	ND		47	53	10[b]	59	30	64	<1	47	1	70	2	53	0		0		15[b]	56
1984	ND		49	55	7	66	22	54	0		0		0		0		8	41	15	54
1985	ND		11	60	8	59	12	71	0		<1	67	1	82	0		<1	60	5	65
1986	6	71	9	50	4	60	9	64	0		0		<1	57	0		0		3	57
1987	4	63	16	58	11	61	14	65	1	61	0		0		0		0		6	61
1988	5	54	5	53	38	40	6	66	<1	69	0		0		0		0		3	52
1989	9	54	43	55	7	66	4	68	<1	31	0		<1	106	0		0		10	56
1990	24	52	75	46	10	59	13	56	1	36	0		0		0		0		19	47
1991	7	48	76	55	25	59	39	56	<1	76	3	50	2	42	0		<1	65	23	55
1992	7	54	30	53	10	52	36	54	0		<1	81	1	61	0		0		12	53
1993	7	58	53	48	19	53	88	53	4	64	<1	96	1	57	0		2	54	26	51
1994	4	61	34	48	16	70	29	56	<1	70	<1	64	0		0		<1	53	12	52
Gulf menhaden																				
1977[a]	ND		21	76	ND		0		0		0		1	58	0		0		5	76
1978	ND		533	31	ND		3,963	47	169	64	3,310	44	1	41	44	42	71	29	1,249	44
1979	ND		122	53	ND		867	43	0		817	38	335	38	6	37	1	31	312	41
1980	ND		14,717	46	ND		115	50	24	52	48	30	7	49	4	40	54	31	3,343	46
1981	ND		196	45	ND		348	51	52	41	355	48	8	41	721	42	11	38	246	45
1982	ND		4,788	50	ND		820	48	1,008	37	137	33	1,068	36	9	31	130	32	1,466	47
1983	ND		4,971	66	1,324[b]	44	809	44	67	42	16	34	619	33	2	30	5	47	1,312[b]	62
1984	ND		1,839	44	470	48	1,260	45	1,084	42	866	39	553	52	128	49	69	56	928	44
1985	ND		486	42	243	43	3,819	50	868	45	48	39	122	37	62	44	20	49	819	48
1986	3,049	48	3,024	38	1,502	37	10,076	53	612	36	27	34	11	46	36	44	12	36	2,333	48
1987	633	47	264	50	755	49	3,550	60	35	40	68	36	11	34	32	63	18	27	637	57
1988	600	40	2,625	45	438	41	363	60	<1	43	80	30	<1	44	14	31	81	35	660	45
1989	526	48	781	42	386	51	187	45	53	37	43	37	11	43	2	45	71	39	245	43
1990	774	49	5,106	43	640	44	527	56	797	71	943	35	869	32	21	38	<1	38	1,487	44
1991	270	41	4,298	40	1,258	42	3,044	42	296	42	569	41	244	38	123	36	0		1,533	41
1992	593	45	6,025	37	291	36	1,919	38	1,810	35	259	33	43	46	4	30	21	40	1,815	37
1993	1,878	48	7,341	40	509	36	492	46	191	38	634	66	158	38	13	39	108	35	1,827	42
1994	72	51	5,203	48	222	41	418	57	138	39	263	33	15	45	32	33	<1	49	1,212	48
Pinfish																				
1977[a]	ND		0		ND		32	114	24	105	22	105	66	93	167	102	13	101	39	103
1978	ND		116	55	ND		24	61	77	75	54	74	133	69	41	84	7	64	65	65

Table 3. (Cont'd.)

Species / Year	Sabine Lake No./ha	Sabine Lake Length	Galveston No./ha	Galveston Length	East Matagorda No./ha	East Matagorda Length	Matagorda No./ha	Matagorda Length	San Antonio No./ha	San Antonio Length	Aransas No./ha	Aransas Length	Corpus Christi No./ha	Corpus Christi Length	Upper Laguna Madre No./ha	Upper Laguna Madre Length	Lower Laguna Madre No./ha	Lower Laguna Madre Length	Coastwide No./ha	Coastwide Length
Pinfish (Cont'd.)																				
1979	ND		73	75	ND		43	79	60	79	47	85	81	61	13	122	1	107	47	77
1980	ND		151	38	ND		16	50	363	57	167	66	250	61	17	88	153	59	152	55
1981	ND		270	55	ND		68	69	131	70	107	85	267	67	40	84	132	75	151	66
1982	ND		144	67	ND		34	66	590	55	448	67	265	62	100	73	349	57	260	61
1983	ND		138	65	61[b]	79	115	80	510	49	642	68	533	66	25	82	211	68	279[b]	64
1984	ND		247	59	180	64	107	71	172	66	471	62	214	54	146	79	120	77	214	64
1985	ND		362	55	401	65	209	71	396	55	274	66	234	67	133	68	261	66	280	62
1986	64	74	183	61	676	64	117	58	161	66	696	59	304	58	245	62	329	63	287	61
1987	8	72	50	64	227	57	44	68	442	63	321	67	463	58	42	56	339	64	206	63
1988	7	84	128	61	373	62	43	77	246	63	589	62	983	54	312	59	660	60	357	60
1989	24	75	80	62	359	58	308	53	607	61	300	63	361	57	60	70	251	61	254	60
1990	37	75	182	58	499	61	251	65	552	52	609	55	566	57	392	62	660	60	415	58
1991	8	79	138	58	307	60	39	68	248	65	119	61	435	63	240	69	696	57	243	61
1992	12	73	96	46	371	56	67	49	431	53	545	59	475	50	174	59	531	58	293	55
1993	27	78	309	49	139	59	150	53	368	60	564	56	482	54	307	59	452	60	344	56
1994	9	71	164	50	285	66	125	57	174	58	463	58	411	58	102	56	358	56	237	57
Spot																				
1977[a]	ND		56	100	ND		23	118	0		2	170	12	100	0		1	125	18	105
1978	ND		407	52	ND		182	49	361	48	80	55	310	47	227	59	149	52	253	51
1979	ND		352	42	ND		21	64	201	44	58	60	210	55	103	70	57	59	156	49
1980	ND		269	57	ND		76	56	256	51	101	61	95	58	86	59	165	48	160	55
1981	ND		331	52	ND		154	57	135	64	97	54	121	61	115	63	220	67	185	58
1982	ND		404	62	ND		143	58	467	52	623	54	225	60	180	58	340	66	350	58
1983	ND		459	57	50[b]	64	95	58	169	47	350	56	135	55	57	60	526	63	273[b]	58
1984	ND		238	53	96	61	146	58	247	46	659	56	564	58	493	66	948	67	433	60
1985	ND		179	62	158	59	216	59	274	44	254	64	227	55	80	77	169	54	197	58
1986	118	65	135	68	319	56	825	51	102	58	258	51	160	60	114	55	614	54	314	54
1987	19	80	264	60	383	60	83	58	203	49	476	58	359	49	17	70	307	47	239	55
1988	44	82	229	69	210	66	116	64	132	54	361	59	158	65	212	54	270	59	209	62
1989	96	52	87	63	256	58	173	59	264	62	253	53	158	62	271	50	151	64	183	58
1990	16	70	222	62	525	54	330	57	691	51	566	52	831	49	684	57	854	55	525	54
1991	22	65	270	56	304	59	131	49	198	69	295	53	279	52	174	53	950	51	314	54
1992	27	70	211	55	89	61	63	53	194	59	164	53	387	45	219	58	347	54	204	54
1993	35	80	164	56	288	55	123	53	149	50	185	59	281	58	221	62	341	53	197	56
1994	55	78	369	49	161	61	99	61	127	56	310	62	250	59	66	60	369	54	231	55
Striped mullet																				
1977[a]	ND		31	140	ND		129	106	129	117	27	132	179	156	15	158	62	103	74	126
1978	ND		56	120	ND		26	124	126	66	68	103	121	76	53	94	105	81	74	90
1979	ND		135	89	ND		93	99	273	66	152	103	202	135	16	102	383	53	174	81
1980	ND		90	117	ND		15	107	41	121	61	102	49	88	57	70	95	85	61	100
1981	ND		229	57	ND		41	92	249	84	205	81	79	85	31	63	161	98	152	76
1982	ND		128	66	ND		553	118	179	77	177	85	29	110	23	86	43	94	174	98
1983	ND		85	94	62[b]	104	26	136	57	64	110	106	37	61	15	99	44	84	57[b]	94
1984	ND		52	95	33	110	34	53	69	73	102	57	142	52	154	68	255	96	106	77
1985	ND		75	110	199	89	49	92	22	134	95	58	22	62	70	53	119	81	72	84
1986	84	103	34	134	20	144	23	86	37	93	22	91	62	67	23	57	41	66	35	92
1987	48	98	244	75	60	89	33	96	63	115	127	73	141	56	94	37	72	103	116	76
1988	42	80	115	115	69	90	44	64	16	116	84	50	189	49	64	62	27	125	74	80
1989	61	68	41	96	40	61	24	82	10	147	77	47	131	49	61	33	78	58	55	61
1990	43	88	194	71	151	81	21	71	47	100	156	41	322	44	226	59	114	89	144	63
1991	83	78	234	80	162	60	79	65	73	97	40	88	138	41	283	50	49	126	133	71
1992	23	94	149	79	97	78	52	78	72	81	132	80	141	50	70	53	44	99	95	75
1993	74	84	105	83	84	74	41	77	62	71	67	86	133	49	70	36	39	78	74	71
1994	56	75	102	66	29	70	59	75	35	92	53	66	137	48	62	47	221	42	91	57

Table 3. (Cont'd.)

Species / Year	Sabine Lake No./ha	Sabine Lake Length	Galveston No./ha	Galveston Length	East Matagorda No./ha	East Matagorda Length	Matagorda No./ha	Matagorda Length	San Antonio No./ha	San Antonio Length	Aransas No./ha	Aransas Length	Corpus Christi No./ha	Corpus Christi Length	Upper Laguna Madre No./ha	Upper Laguna Madre Length	Lower Laguna Madre No./ha	Lower Laguna Madre Length	Coastwide No./ha	Coastwide Length
Total finfishes																				
1977[a]	ND		959	59	ND		489	88	3,106	52	1,383	64	2,788	60	1,780	67	830	59	1,464	61
1978	ND		4,103	53	ND		4,855	67	1,671	65	5,038	64	1,515	66	1,282	62	908	54	3,030	61
1979	ND		3,149	60	ND		1,635	71	3,375	57	3,096	60	2,191	70	1,354	69	2,368	72	2,518	64
1980	ND		18,543	86	ND		632	77	1,879	67	1,407	68	1,490	67	2,116	63	1,070	59	5,241	82
1981	ND		3,334	63	ND		1,093	83	1,781	61	2,020	66	2,213	64	1,792	54	1,267	70	2,028	65
1982	ND		9,007	68	ND		2,077	78	4,321	56	5,021	57	2,596	66	1,355	58	1,342	61	4,194	65
1983	ND		8,725	71	2,078[b]	63	1,857	80	2,147	55	4,059	63	2,160	59	734	61	1,378	68	3,528[b]	68
1984	ND		4,644	59	1,617	66	2,625	62	2,687	58	3,574	62	3,353	52	1,817	60	1,906	71	3,044	60
1985	ND		1,995	63	1,921	68	5,152	82	2,200	65	2,514	60	1,389	56	1,534	55	1,458	60	2,383	68
1986	3,776	69	3,916	71	3,329	63	14,493	73	1,849	60	2,294	57	841	62	1,554	51	1,672	61	4,146	69
1987	1,153	67	2,231	64	2,484	63	4,312	79	1,344	65	2,030	58	1,357	55	1,012	46	1,575	60	2,073	66
1988	1,153	62	4,347	71	2,024	63	913	83	1,391	58	3,150	54	2,344	56	2,271	50	2,144	65	2,464	63
1989	1,243	62	2,157	67	2,097	59	1,362	69	1,997	62	2,079	55	2,006	56	2,360	45	2,341	56	2,010	59
1990	1,319	67	7,186	58	2,951	59	2,106	68	3,470	57	3,968	55	3,913	52	5,385	48	2,993	59	4,209	57
1991	719	62	7,525	62	3,452	63	4,982	69	3,090	63	2,300	59	2,273	60	2,971	50	4,012	54	4,138	61
1992	1,143	56	7,886	54	1,924	57	3,414	57	4,687	53	2,622	57	2,373	52	4,251	47	2,893	55	4,188	54
1993	2,526	62	9,393	64	2,536	54	1,701	60	2,284	54	2,839	65	2,393	53	4,098	48	2,752	54	4,050	60
1994	617	62	6,845	54	1,538	63	1,985	63	1,183	60	2,496	57	1,972	58	2,941	44	2,846	50	3,126	54
SHELLFISHES																				
Blue crab																				
1977[a]	ND		103	43	ND		31	46	51	46	95	56	56	38	16	58	8	63	56	47
1978	ND		66	52	ND		10	38	52	51	57	62	33	43	98	61	19	60	48	55
1979	ND		106	52	ND		27	51	76	49	84	62	152	43	90	48	61	54	83	51
1980	ND		122	54	ND		24	56	119	45	65	52	80	38	65	40	176	46	95	48
1981	ND		58	53	ND		43	44	51	54	85	45	86	40	42	58	167	35	74	44
1982	ND		101	48	ND		31	51	107	42	193	48	52	49	35	54	175	42	102	46
1983	ND		148	43	15	77	35	34	105	40	145	43	48	40	36	59	112	33	94	41
1984	ND		88	58	58	60	58	42	42	46	63	50	62	42	37	61	80	46	64	51
1985	ND		144	49	107	54	56	46	41	42	141	38	184	37	73	52	152	34	113	42
1986	37	79	90	55	86	55	57	53	62	46	30	48	77	40	23	45	91	41	63	49
1987	23	68	163	41	87	38	36	51	64	55	35	35	80	47	50	59	72	44	77	45
1988	44	64	160	46	138	31	29	36	48	42	54	35	89	44	38	43	78	37	78	42
1989	50	45	85	48	121	30	45	25	74	31	56	34	72	43	22	41	31	35	59	38
1990	67	47	141	44	94	46	75	31	98	30	83	35	150	42	37	51	68	40	94	39
1991	46	56	165	47	92	44	58	37	198	38	107	35	158	40	49	45	107	43	117	42
1992	36	55	90	36	54	37	45	26	117	30	140	34	164	38	105	58	129	35	103	37
1993	36	59	116	35	89	27	51	23	89	35	102	41	176	42	67	55	78	36	93	38
1994	28	51	89	38	176	26	96	22	27	34	91	27	210	39	113	47	130	32	102	34
Brown shrimp																				
1977[a]	ND		139	46	ND		64	52	200	49	229	54	99	58	9	63	200	53	137	51
1978	ND		540	50	ND		167	63	102	63	152	60	258	56	188	68	120	53	245	56
1979	ND		482	58	ND		194	66	69	63	438	63	499	61	53	59	155	59	285	61
1980	ND		495	52	ND		143	68	553	60	386	60	183	62	64	64	234	56	314	58
1981	ND		719	57	ND		157	74	310	64	355	60	679	53	102	76	1,008	58	490	59
1982	ND		915	64	ND		207	64	599	51	505	54	428	57	62	63	565	61	510	60
1983	ND		484	60	99	76	248	66	310	57	530	60	295	56	57	65	532	50	360	58
1984	ND		628	64	294	65	197	56	244	66	740	66	291	58	82	61	389	63	396	64
1985	ND		522	60	413	59	364	63	306	56	755	61	370	55	288	70	1,007	56	525	59
1986	605	74	166	58	558	63	524	67	137	65	231	63	204	58	193	66	627	54	318	62
1987	401	70	1,162	58	387	56	445	64	158	60	464	62	293	60	417	56	961	58	610	59
1988	248	61	516	62	570	57	208	61	206	53	357	58	394	64	756	73	461	62	416	63
1989	110	70	519	59	889	56	369	54	739	55	726	51	522	54	167	58	411	59	493	56
1990	127	69	356	56	723	61	477	61	482	56	1,005	60	592	62	77	74	2,128	59	694	59
1991	14	68	601	57	790	61	453	60	624	56	511	67	660	70	248	56	1,064	63	591	61

Table 3. (Cont'd.)

Species / Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Brown shrimp (Cont'd.)																				
1992	245	71	708	57	455	55	270	52	726	52	455	62	629	58	328	62	926	55	565	57
1993	102	63	541	58	560	54	232	55	321	54	568	64	636	58	279	62	891	59	482	59
1994	302	62	515	60	480	56	403	61	165	57	513	62	713	63	239	58	841	59	477	60
Pink shrimp																				
1977[a]	ND		0		ND		0		12	41	0		0		48	77	0		7	69
1978	ND		0		ND		0		<1	100	<1	63	0		26	77	0		3	77
1979	ND		0		ND		0		0		0		58	51	12	78	<1	106	7	57
1980	ND		0		ND		0		6	51	13	50	58	55	10	60	2	75	10	55
1981	ND		0		ND		0		28	54	87	44	67	54	8	62	5	49	24	49
1982	ND		0		ND		0		0		124	47	67	46	7	61	3	52	25	48
1983	ND		0		0		0		9	51	50	56	31	47	12	54	0		12	53
1984	ND		0		0		<1	25	1	73	16	48	26	48	14	65	<1	79	6	53
1985	ND		0		0		0		0		17	59	7	49	8	76	0		4	61
1986	0		0		<1	73	0		<1	68	15	39	25	49	6	43	3	65	5	46
1987	0		0		0		<1	32	0		11	52	60	52	14	50	0		8	52
1988	0		0		0		0		<1	38	135	49	106	50	<1	55	6	54	28	50
1989	0		0		0		0		1	52	45	42	64	46	20	59	0		14	47
1990	0		0		<1	131	<1	72	<1	36	99	49	106	48	4	48	15	51	25	49
1991	0		0		<1	142	0		<1	110	61	52	25	46	31	42	1	52	14	49
1992	0		<1	59	0		0		1	40	32	53	77	54	38	55	176	59	38	57
1993	0		<1	34	0		0		<1	44	58	47	53	50	32	55	140	56	34	53
1994	0		2	40	52	56	5	38	<1	35	103	49	150	53	9	39	235	59	61	54
White shrimp																				
1977[a]	ND		1,586	55	ND		1,054	102	115	47	26	63	84	57	36	85	23	57	553	69
1978	ND		858	66	ND		554	70	130	61	92	49	62	52	21	55	130	53	335	65
1979	ND		1,720	61	ND		543	70	212	56	99	64	817	52	5	53	143	47	608	61
1980	ND		571	64	ND		522	68	291	57	133	61	141	69	62	71	18	45	288	64
1981	ND		1,393	62	ND		805	59	66	64	183	50	173	51	19	56	264	61	527	60
1982	ND		3,560	58	ND		1,750	64	650	51	297	43	369	54	14	51	326	50	1,276	58
1983	ND		1,524	50	348	70	394	65	135	64	129	53	135	42	7	67	218	52	478	53
1984	ND		1,557	59	409	65	1,438	71	166	56	415	53	311	63	17	58	625	58	759	628
1985	ND		307	61	552	61	584	63	37	44	239	44	33	53	6	73	204	54	241	58
1986	308	73	1,389	62	173	65	675	66	140	66	287	44	101	58	2	48	175	49	491	61
1987	682	68	972	53	577	61	579	67	90	54	111	65	152	61	7	37	121	61	386	58
1988	796	63	482	66	429	66	341	68	168	52	425	47	155	61	73	51	534	73	361	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	704	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	55	200	59	483	59

[a]Data for October - December only.
[b]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 1982-94. Blank indicates no measurement taken; ND = no data.

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
FINFISHES																					
Atlantic croaker	1982[a]	ND		43	ND	ND		102	ND	10	ND	87	75	110	ND	37	ND	28	ND	62	75
	1983	ND		30	131	ND		31	117	18	110	44	106	43	149	15	157	32	154	30	127
	1984	ND		15	126	ND		30	104	22	87	52	83	120	121	15	137	44	138	35	112
	1985	ND		20	124	ND		41	110	17	105	33	101	42	138	13	151	24	148	27	119
	1986	10	157	31	123	ND		52	114	44	105	57	96	83	125	14	139	28	153	43	117
	1987	25	139	26	117	17[c]	133	126	103	146	96	87	100	50	129	7	152	44	122	70	106
	1988	45	135	56	98	13	131	43	121	90	109	100	102	38	125	5	137	21	138	55	109
	1989	45	145	36	116	4	98	75	120	88	102	71	99	40	127	2	158	19	131	52	115
	1990	40	113	36	109	12	113	79	118	50	97	45	92	55	125	12	129	66	123	50	112
	1991	31	115	41	106	8	120	135	106	175	93	223	93	74	125	14	127	34	132	94	103
	1992	40	139	54	107	4	120	211	100	155	84	238	87	54	114	17	140	37	140	112	98
	1993	70	131	90	104	15	128	120	104	48	104	123	98	36	131	2	141	27	141	79	106
	1994	34	144	73	111	17	148	99	116	146	78	55	106	18	135	2	137	27	147	72	106
Black drum	1982[a]	ND		<1	259	ND		0		<1	221	<1	166	2	235	<1	264	0		<1	238
	1983	ND		<1	274	ND		<1	199	<1	192	<1	201	1	347	1	266	<1	440	<1	283
	1984	ND		<1	168	ND		0		0		<1	251	<1	341	1	202	<1	544	<1	258
	1985	ND		<1	242	ND		0		0		<1	403	<1	315	1	280	0		<1	268
	1986	<1	226	<1	233	ND		0		0		0		<1	334	<1	236	<1	335	<1	250
	1987	<1	278	<1	246	0[c]		0		<1	200	0		<1	186	1	247	<1	160	<1	231
	1988	1	271	<1	271	<1	192	<1	170	<1	154	<1	204	<1	299	1	197	0		<1	256
	1989	2	260	<1	274	<1	192	0		<1	267	<1	170	<1	356	2	212	<1	418	<1	258
	1990	1	272	<1	254	<1	146	<1	930	<1	114	<1	173	<1	560	97	109	<1	169	5	115
	1991	2	268	<1	313	1	218	0		<1	194	<1	247	<1	170	71	152	1	229	4	160
	1992	2	320	<1	210	<1	235	0		<1	212	<1	183	<1	359	10	225	1	233	1	236
	1993	3	283	<1	275	<1	309	0		<1	282	<1	223	<1	379	3	291	<1	357	<1	297
	1994	2	324	<1	291	1	259	<1	280	<1	184	<1	259	<1	401	1	360	<1	408	<1	301
Gafftop-sail catfish	1982[a]	ND		<1	ND	ND		4	ND	3	ND	3	ND	1	138	1	193	0		2	141
	1983	ND		<1	137	ND		1	132	2	123	2	135	<1	175	0		0		1	133
	1984	ND		<1	139	ND		1	144	5	121	2	109	<1	218	<1	131	<1	196	1	126
	1985	ND		<1	154	ND		2	137	2	128	3	128	1	150	0		<1	210	1	134
	1986	0		1	126	ND		2	134	5	128	2	121	<1	92	<1	158	0		1	128
	1987	<1	174	<1	145	1[c]	143	2	138	9	122	2	124	<1	132	<1	183	<1	175	2	127
	1988	0		<1	149	1	135	3	14	3	131	3	127	<1	14	0		0		1	124
	1989	<1	299	<1	126	<1	139	1	134	4	136	4	139	<1	156	0		0		1	137
	1990	0		1	218	1	127	1	137	4	130	2	143	<1	173	0		0		1	159
	1991	0		1	145	1	142	2	145	5	127	3	141	<1	206	0		0		2	137
	1992	<1	144	<1	161	<1	128	2	125	5	132	10	117	1	126	0		<1	203	2	127
	1993	0		1	139	<1	118	2	145	4	123	4	118	<1	183	0		<1	185	2	133
	1994	0		2	127	<1	197	2	129	3	119	2	145	1	180	<1	181	0		2	131
Gulf menhaden	1982[a]	ND		12	ND	ND		10	ND	11	ND	24	ND	2	ND	<1	ND	<1	ND	10	ND
	1983	ND		7	103	ND		10	109	17	76	3	89	3	104	1	87	0		8	96
	1984	ND		3	98	ND		3	93	23	58	45	44	4	82	6	76	<1	59	9	61
	1985	ND		18	112	ND		10	109	27	79	12	92	2	119	4	106	0		14	101
	1986	<1	121	17	95	ND		4	79	18	64	8	55	1	156	<1	49	0		9	84
	1987	3	101	20	95	15[c]	84	12	101	34	77	22	62	1	128	<1	92	0		16	88
	1988	3	94	22	80	1	96	16	96	11	99	4	106	1	124	1	58	<1	110	13	88
	1989	3	79	14	107	7	97	3	111	21	103	3	65	7	115	<1	60	<1	78	9	105
	1990	5	68	11	94	2	94	4	121	24	85	19	102	2	97	2	85	<1	111	10	95
	1991	6	83	21	87	4	82	17	98	34	92	16	88	2	128	1	73	<1	98	17	91
	1992	2	95	22	103	7	71	31	103	17	94	38	87	3	102	1	108	1	107	20	100
	1993	2	79	39	84	5	44	10	104	12	68	16	75	4	98	<1	119	<1	136	18	85
	1994	4	84	30	91	4	46	7	120	13	74	3	117	5	91	<1	187	<1	132	14	93

Table 4. (Cont'd.)

Species	Year	Sabine Lake No./h	Sabine Lake Length	Galveston No./h	Galveston Length	East Matagorda No./h	East Matagorda Length	Matagorda No./h	Matagorda Length	San Antonio No./h	San Antonio Length	Aransas No./h	Aransas Length	Corpus Christi No./h	Corpus Christi Length	Upper Laguna Madre No./h	Upper Laguna Madre Length	Lower Laguna Madre No./h	Lower Laguna Madre Length	Coastwide[b] No./h	Coastwide[b] Length
Pinfish	1982[a]	ND		1	ND	ND		7	ND	5	ND	2	ND	85	ND	44	ND	39	ND	19	ND
	1983	ND		1	121	ND		6	110	14	106	38	106	119	124	20	133	45	109	24	119
	1984	ND		1	121	ND		6	107	7	96	39	96	25	113	67	108	73	111	15	107
	1985	ND		1	120	ND		9	111	23	104	53	110	48	118	18	133	48	110	18	113
	1986	4	117	2	118	ND		10	101	18	98	55	103	100	116	32	109	95	108	27	109
	1987	<1	126	1	122	5[c]	113	13	103	32	91	83	106	130	121	12	131	56	113	32	112
	1988	4	126	2	114	5	107	18	111	92	104	139	100	272	115	20	112	65	100	59	109
	1989	1	117	2	121	9	98	16	113	53	103	82	103	463	117	16	110	81	104	75	114
	1990	3	109	5	107	5	103	34	109	64	101	109	101	164	107	104	77	282	101	61	102
	1991	1	111	4	120	8	100	6	116	26	102	32	109	247	111	81	105	278	107	52	109
	1992	1	98	2	127	1	112	5	112	10	103	23	101	159	110	48	117	130	109	31	110
	1993	3	119	4	114	3	110	5	103	34	102	91	106	136	117	46	105	139	103	37	110
	1994	1	128	9	109	2	125	9	101	27	103	39	118	77	127	42	114	97	106	26	115
Red drum	1982[a]	ND		0		ND		<1	ND	<1	230	<1	102	<1	649	<1	619	0		<1	402
	1983	ND		0		ND		0		<1	319	<1	224	0		0		<1	280	<1	242
	1984	ND		<1	583	ND		<1	305	<1	344	<1	142	<1	81	<1	241	<1	401	<1	304
	1985	ND		0		ND		<1	56	0		<1	54	<1	276	<1	475	<1	90	<1	292
	1986	<1	212	0		ND		0		<1	35	<1	78	0		<1	630	<1	340	<1	289
	1987	<1	405	<1	34	0[c]		0		0		0		<1	399	0		0		<1	154
	1988	<1	272	<1	53	0		0		0		<1	23	0		0		<1	308	<1	72
	1989	<1	254	<1	44	0		<1	42	0		0		<1	525	0		<1	68	<1	72
	1990	0		<1	320	0		0		<1	53	0		0		<1	40	<1	342	<1	268
	1991	0		<1	135	0		0		<1	75	0		<1	264	<1	383	<1	256	<1	211
	1992	0		<1	197	0		<1	63	<1	349	<1	369	<1	117	0		<1	303	<1	207
	1993	<1	575	0		<1	360	0		<1	250	<1	412	0		<1	415	<1	271	<1	306
	1994	0		<1	433	<1	72	0		<1	170	<1	70	0		<1	125	<1	329	<1	277
Sand seatrout	1982[a]	ND		4		ND		5	185	<1	141	3	126	14	147	1	201	6	164	5	161
	1983	ND		3	134	ND		4	132	<1	108	3	111	9	158	<1	196	1	164	3	140
	1984	ND		2	147	ND		1	121	<1	115	1	107	4	141	0		1	161	1	138
	1985	ND		4	127	ND		3	126	<1	136	1	119	7	144	1	160	1	117	3	131
	1986	1	152	3	141	ND		2	117	<1	112	<1	133	5	148	0		<1	154	2	137
	1987	2	121	2	110	2	112	5	114	1	99	1	94	9	134	<1	156	<1	160	3	118
	1988	1	140	3	107	1	117	2	126	<1	123	2	107	3	125	<1	109	<1	128	2	115
	1989	2	102	10	96	<1	81	3	111	1	110	4	85	12	143	0		2	152	6	109
	1990	1	110	5	109	1	96	3	119	<1	117	1	113	3	124	0		2	102	3	113
	1991	1	118	7	130	1	103	2	123	1	119	4	113	5	143	0		2	140	1	130
	1992	2	113	6	113	<1	150	6	113	2	104	4	128	2	142	<1	209	2	155	4	117
	1993	6	108	6	110	3	107	4	119	1	109	5	103	5	125	1	146	1	126	4	113
	1994	1	76	8	107	3	124	3	119	<1	123	2	130	3	143	<1	253	2	157	4	114
Sheeps-head	1982[a]	ND		<1	295	ND		0		<1	119	<1	85	<1	345	1	366	1	241	<1	290
	1983	ND		<1	344	ND		0		<1	113	<1	138	<1	365	1	358	<1	248	<1	323
	1984	ND		<1	339	ND		<1	147	0		<1	157	<1	342	<1	402	<1	300	<1	314
	1985	ND		<1	341	ND		<1	102	<1	112	<1	143	<1	259	<1	412	<1	80	<1	242
	1986	1	215	<1	451	ND		0		0		<1	122	<1	288	<1	356	1	160	<1	228
	1987	<1	279	<1	356	0[c]		<1	111	<1	124	<1	115	<1	299	<1	377	<1	156	<1	255
	1988	<1	332	<1	423	0		<1	112	<1	80	<1	95	<1	155	<1	247	<1	152	<1	238
	1989	1	252	<1	253	<1	104	<1	120	<1	120	<1	116	<1	251	<1	518	<1	366	<1	240
	1990	3	248	<1	343	0		0		<1	89	<1	99	0		0		<1	234	<1	274
	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		<1	65	1	121	<1	149	<1	164	<1	465	<1	187	<1	242
	1993	5	257	<1	311	1	286	0		1	134	<1	101	<1	203	<1	473	1	156	<1	227
	1994	2	281	<1	287	1	309	0		<1	187	<1	133	<1	165	<1	509	1	225	<1	256
Southern flounder	1982[a]	ND		<1	158	ND		<1	169	1	155	1	186	1	181	2	203	<1	296	1	176
	1983	ND		<1	175	ND		<1	196	<1	120	1	180	<1	242	<1	203	<1	161	<1	180
	1984	ND		<1	193	ND		<1	194	<1	153	2	148	<1	175	1	145	<1	168	<1	160
	1985	ND		<1	234	ND		<1	202	1	147	1	152	1	221	1	197	<1	261	<1	191

Table 4. (Cont'd.)

Species	Year	Sabine Lake No./h	Sabine Lake Length	Galveston No./h	Galveston Length	East Matagorda No./h	East Matagorda Length	Matagorda No./h	Matagorda Length	San Antonio No./h	San Antonio Length	Aransas No./h	Aransas Length	Corpus Christi No./h	Corpus Christi Length	Upper Laguna Madre No./h	Upper Laguna Madre Length	Lower Laguna Madre No./h	Lower Laguna Madre Length	Coastwide[b] No./h	Coastwide[b] Length
Southern flounder (Cont'd.)																					
	1986	<1	141	1	161	ND		<1	165	1	141	1	144	1	184	1	262	<1	212	1	166
	1987	<1	168	<1	231	<1[c]	154	<1	191	<1	160	<1	167	<1	171	0		<1	183	<1	181
	1988	<1	144	<1	195	<1	132	<1	148	<1	118	<1	168	<1	214	<1	226	<1	205	<1	157
	1989	<1	173	<1	166	<1	181	<1	194	<1	130	<1	169	<1	193	<1	348	<1	211	<1	168
	1990	<1	119	<1	174	<1	161	<1	166	<1	121	<1	136	<1	167	1	190	<1	170	<1	145
	1991	<1	152	<1	160	<1	147	<1	242	<1	148	<1	190	<1	228	<1	266	<1	229	<1	180
	1992	<1	185	<1	184	<1	186	<1	210	<1	191	<1	135	0		0		<1	205	<1	188
	1993	<1	198	<1	155	<1	177	<1	142	<1	126	<1	140	<1	232	<1	416	<1	391	<1	154
	1994	<1	214	<1	160	<1	230	<1	162	<1	226	<1	189	<1	323	<1	236	<1	223	<1	186
Spot	1982[a]	ND		9	ND	ND		26	ND	5	ND	68	ND	33	ND	10	ND	4	ND	19	ND
	1983	ND		6	120	ND		17	122	5	112	18	118	36	140	2	163	6	135	12	127
	1984	ND		8	115	ND		34	107	35	84	131	91	74	112	82	118	10	108	39	103
	1985	ND		13	121	ND		20	118	13	110	60	116	215	132	24	137	19	129	41	126
	1986	6	120	14	120	ND		29	121	21	99	92	106	115	129	6	118	5	135	35	119
	1987	9	134	11	127	12	119	38	115	34	97	86	117	122	125	4	158	13	112	37	119
	1988	24	113	14	117	5	107	42	127	116	108	151	116	235	127	4	140	18	118	66	120
	1989	19	130	11	123	6	111	85	118	73	105	97	127	240	136	6	129	18	119	68	125
	1990	6	130	8	117	12	95	94	119	117	96	165	101	164	113	71	110	104	104	78	109
	1991	6	124	9	120	6	108	44	124	39	105	52	108	206	116	24	130	82	117	50	116
	1992	10	137	19	125	2	125	71	128	25	119	78	100	66	130	9	149	25	133	40	123
	1993	32	119	16	135	4	131	86	112	30	101	63	102	167	118	4	134	11	134	54	115
	1994	25	129	24	116	4	128	23	122	39	103	61	119	56	135	1	101	9	137	30	120
Spotted seatrout	1982[a]	ND		<1	173	ND		0		<1	232	<1	163	<1	187	1	166	<1	142	<1	171
	1983	ND		<1	288	ND		<1	155	<1	168	2	207	<1	327	2	188	<1	200	<1	212
	1984	ND		<1	418	ND		<1	174	<1	252	<1	237	<1	385	<1	351	<1	236	<1	329
	1985	ND		<1	286	ND		<1	171	<1	156	1	156	<1	171	1	146	<1	218	<1	188
	1986	<1	187	<1	259	ND		<1	193	<1	170	<1	162	1	176	<1	151	1	196	<1	201
	1987	<1	147	<1	134	<1[c]	162	<1	143	1	166	1	164	<1	163	1	206	<1	198	<1	167
	1988	<1	189	<1	172	<1	166	<1	249	<1	159	2	166	<1	175	<1	176	<1	95	<1	172
	1989	<1	227	<1	142	<1	128	<1	174	<1	190	1	168	<1	214	1	186	1	139	<1	173
	1990	<1	334	<1	118	0		0		<1	119	<1	176	<1	123	<1	114	0		<1	150
	1991	<1	251	<1	165	<1	184	<1	134	<1	136	1	154	<1	161	1	124	1	177	<1	155
	1992	<1	194	<1	155	<1	150	<1	155	1	149	2	182	<1	219	2	175	1	185	1	167
	1993	<1	196	<1	161	<1	130	<1	133	<1	149	1	181	<1	239	2	174	<1	216	<1	170
	1994	<1	142	<1	145	<1	220	0		1	127	<1	199	<1	235	1	175	<1	247	<1	159
Striped mullet	1982[a]	ND		<1		ND		<1		1		2		2	212	1	311	<1		1	232
	1983	ND		1	204	ND		<1	131	2	137	3	209	1	211	2	323	1	331	1	210
	1984	ND		1	244	ND		<1	204	<1	174	1	192	1	209	6	287	1	307	1	250
	1985	ND		2	195	ND		<1	163	<1	136	7	158	<1	168	1	243	<1	254	2	181
	1986	<1	187	4	255	ND		<1	116	<1	157	<1	158	1	226	<1	278	<1	266	1	250
	1987	1	168	2	292	<1[c]	158	<1	200	4	145	1	171	1	192	0		0		1	210
	1988	2	239	2	294	<1	167	<1	138	1	130	<1	156	3	185	<1	334	0		1	243
	1989	5	183	5	249	1	164	<1	237	1	188	<1	187	2	206	0		<1	365	2	234
	1990	<1	234	1	192	<1	133	<1	141	<1	136	1	155	<1	239	<1	292	0		<1	180
	1991	4	174	3	213	<1	114	<1	178	7	141	2	141	<1	216	2	279	<1	276	2	181
	1992	6	232	5	232	0		<1	129	3	145	4	143	1	213	<1	215	<1	178	3	206
	1993	1	209	1	260	<1	172	<1	157	1	148	1	168	1	219	<1	334	<1	244	1	214
	1994	4	261	1	189	<1	207	<1	141	1	144	3	184	1	260	<1	354	<1	240	1	204
Total finfishes	1982[a]	ND		88	199	ND		193	139	48	179	270	119	371	166	313	232	152	183	171	167
	1983	ND		63	126	ND		162	99	107	93	174	108	308	139	170	115	143	139	139	116
	1984	ND		46	123	ND		111	104	104	82	312	86	294	124	197	123	169	130	134	108
	1985	ND		82	117	ND		115	114	96	101	236	99	380	129	96	127	149	128	143	117
	1986	28	151	96	122	ND		127	112	118	97	261	104	378	132	86	109	188	132	151	117
	1987	53	136	83	121	64[c]	117	242	107	302	100	354	101	370	131	64	117	157	126	200	112
	1988	101	131	138	101	49	122	186	118	363	107	512	108	630	127	76	104	167	119	259	113

Table 4. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Total finfishes (Cont'd.)	1989	98	137	111	119	44	105	265	122	295	106	347	109	857	133	53	103	197	121	272	122
	1990	85	122	94	116	41	108	282	118	304	102	381	106	464	123	368	88	564	119	259	113
	1991	72	127	176	106	41	109	359	104	347	97	423	102	614	122	208	125	524	123	318	109
	1992	94	152	166	121	23	102	455	105	268	98	443	97	335	121	106	130	305	129	281	111
	1993	156	142	201	107	55	132	297	108	166	103	365	110	433	131	87	113	269	128	252	114
	1994	82	152	194	111	54	150	229	110	295	92	266	104	268	123	85	106	203	130	218	110
SHELLFISHES																					
Blue crab	1982[a]	ND		28	91	ND		5	99	17	81	29	66	7	97	9	148	10	100	17	89
	1983	ND		24	88	ND		10	86	21	80	40	81	2	96	7	113	12	97	18	86
	1984	ND		19	92	ND		4	88	8	82	31	81	8	88	24	106	50	86	15	90
	1985	ND		30	79	ND		10	85	19	76	23	72	5	115	21	103	36	86	21	81
	1986	6	132	28	79	ND		13	85	19	85	25	78	14	88	8	100	15	85	19	83
	1987	5	135	19	78	28[c]	87	10	77	40	93	18	84	6	95	8	108	19	88	17	86
	1988	5	137	9	71	13	91	3	77	89	75	57	63	7	88	7	98	18	84	22	74
	1989	9	135	25	66	51	63	6	80	50	74	24	68	2	94	2	107	9	77	19	72
	1990	6	98	31	72	15	79	4	90	39	69	17	71	14	96	5	93	33	91	21	76
	1991	7	117	10	64	26	76	6	75	68	58	51	58	7	102	5	105	35	89	20	65
	1992	7	139	8	77	2	102	6	65	105	54	38	56	10	81	26	110	27	98	24	65
	1993	5	131	16	70	6	93	14	82	50	80	35	78	10	96	16	114	22	88	20	81
	1994	4	146	16	74	3	90	23	95	71	47	26	72	3	66	20	83	25	93	24	67
Brown shrimp	1982[a]	ND		23	90	ND		25	94	17	101	54	80	40	90	40	101	6	61	27	91
	1983	ND		12	99	ND		26	100	31	99	56	91	8	99	8	102	9	66	21	97
	1984	ND		13	102	ND		7	102	58	96	107	80	50	103	25	108	6	74	30	94
	1985	ND		33	75	ND		24	89	27	90	67	81	24	96	16	108	11	63	30	83
	1986	<1	99	15	94	ND		29	99	69	98	111	96	42	95	7	108	15	64	34	96
	1987	4	92	24	88	7[c]	76	47	91	93	85	101	88	66	94	8	100	5	70	46	89
	1988	3	85	24	84	10	91	32	100	124	91	139	86	17	89	6	93	3	73	44	90
	1989	8	84	29	84	47	97	39	91	156	90	105	90	17	88	5	92	9	63	49	89
	1990	1	113	11	98	40	100	26	96	104	92	78	90	28	88	12	91	27	79	34	92
	1991	1	93	13	87	63	96	21	86	51	89	158	91	29	91	19	97	8	80	32	90
	1992	3	83	38	82	9	90	23	82	65	82	64	81	30	92	40	110	7	73	37	84
	1993	9	79	18	85	14	69	43	94	45	82	95	88	22	87	13	103	5	67	32	88
	1994	9	83	29	99	3	69	51	95	101	88	37	85	10	88	18	103	54	58	41	91
Pink shrimp	1982[a]	ND		<1	94	ND		<1	113	<1	96	7	89	2	100	1	96	0		1	94
	1983	ND		<1	95	ND		1	112	5	95	9	94	2	103	1	113	1	88	2	99
	1984	ND		0		ND		<1	76	<1	72	3	86	3	109	<1	94	<1	71	1	98
	1985	ND		<1	88	ND		<1	104	3	98	4	100	5	96	4	107	1	98	2	99
	1986	0		<1	118	ND		2	114	4	103	11	101	12	103	1	109	<1	70	3	104
	1987	0		<1	111	2[c]	102	5	95	2	92	6	84	12	101	1	107	2	72	3	95
	1988	0		1	79	<1	110	2	89	6	86	20	82	8	93	<1	76	2	77	4	85
	1989	0		<1	90	<1	94	1	102	8	93	14	91	8	95	<1	85	1	80	3	93
	1990	0		<1	84	0		<1	106	1	97	23	88	4	97	3	71	3	85	3	90
	1991	0		<1	101	1	115	2	102	8	84	27	88	8	97	4	103	4	79	5	90
	1992	0		<1	58	<1	101	<1	87	<1	70	7	77	10	95	9	103	20	82	3	89
	1993	0		<1	87	0		<1	100	1	86	5	76	4	91	1	98	4	79	1	85
	1994	0		<1	92	<1	89	3	104	5	78	6	85	5	89	4	93	15	62	3	84
White shrimp	1982[a]	ND		88	93	ND		39	86	14	99	16	95	26	101	17	110	4	61	46	92
	1983	ND		78	93	ND		20	102	13	96	18	100	14	111	6	112	2	86	36	95
	1984	ND		60	98	ND		15	99	8	99	38	106	24	106	11	126	10	109	32	101
	1985	ND		62	99	ND		21	110	23	91	17	106	22	104	6	120	1	105	33	101
	1986	14	105	45	95	ND		60	98	15	96	13	101	19	98	3	108	5	57	34	97
	1987	23	101	37	97	22[c]	92	16	97	42	87	10	94	15	99	2	105	2	76	24	95
	1988	39	107	21	91	8	95	16	98	41	93	16	91	12	95	3	102	<1	79	20	94
	1989	29	87	29	89	11	98	9	98	43	99	7	98	9	100	3	97	<1	114	20	93

Table 4. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide[b]	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
White shrimp (Cont'd.)	1990	50	90	14	98	14	103	16	115	47	97	13	108	22	98	21	100	1	113	21	100
	1991	17	91	76	97	7	99	11	95	27	94	30	89	24	121	14	113	1	107	37	98
	1992	37	88	59	93	5	99	31	96	24	95	53	93	5	111	6	114	1	104	35	94
	1993	11	81	38	91	31	83	17	97	18	88	21	95	10	90	14	96	2	97	23	92
	1994	45	96	95	80	15	97	9	107	44	87	6	101	34	91	10	109	2	94	45	84

[a]Values incude May-Dec only.
[b]1986 values include Sabine Lake; 1987 values include East Matagorda.
[c]Values include Apr-Dec only.

Table 5. Annual mean catch rates (No./h) and mean total lengths (mm) of select fishes and shellfishes caught with 6.1-m trawls in the Texas Territorial Sea during 1985-94. 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[a]	ND[b]		22	145	42	139	17	145	9	149	23	142
	1986	44	134	45	126	98	136	43	130	9	132	49	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
Black drum	1985[a]	ND[b]		0		0		<1	825	0		<1	825
	1986	0		0		<1	900	0		0		<1	900
	1987	<1	851	<1	760	<1	680	<1	680	0		<1	741
	1988	0		<1	752	0		0		0		<1	752
	1989	<1	698	0		<1	506	0		0		<1	631
	1990	0		<1	528	0		0		0		<1	538
	1991	0		<1	970	0		0		0		<1	970
	1992	0		0		<1	889	0		0		<1	889
	1993	<1	146	<1	825	0		0		<1	780	<1	632
	1994	0		<1	843	0		0		0		<1	843
Gafftopsail catfish	1985[a]	ND[b]		<1	165	<1	156	<1	136	0		<1	160
	1986	13	121	<1	118	<1	115	<1	176	0		3	121
	1987	3	116	0		<1	158	<1	134	0		1	118
	1988	2	118	<1	169	<1	168	0		<1	180	<1	126
	1989	2	144	1	123	<1	546	<1	187	0		<1	143
	1990	3	119	<1	123	0		0		0		1	119
	1991	1	145	<1	170	<1	181	<1	178	0		<1	150
	1992	12	125	1	148	<1	148	<1	209	0		3	127
	1993	6	123	<1	129	<1	182	<1	145	0		1	127
	1994	6	131	2	152	<1	239	1	204	0		2	143
Gulf menhaden	1985[a]	ND[b]		2	150	1	159	1	151	0		1	152
	1986	4	125	2	147	<1	180	<1	197	0		1	135
	1987	3	132	5	135	1	146	<1	159	0		2	136
	1988	5	124	10	57	6	107	<1	122	0		4	87
	1989	1	137	1	144	<1	131	<1	177	<1	51	1	138
	1990	2	133	4	136	1	122	<1	162	0		1	134
	1991	7	134	1	144	1	130	<1	148	0		2	135
	1992	4	141	14	116	1	139	1	145	0		4	123
	1993	5	142	1	129	<1	159	0		0		1	141
	1994	6	131	3	132	3	117	<1	116	<1	157	2	129
King mackerel	1985[a]	ND[b]		<1	173	0		<1	124	0		<1	142
	1986	0		<1	159	0		0		0		<1	159
	1987	0		0		<1	120	<1	200	0		<1	131
	1988	0		0		0		0		0		0	
	1989	0		0		<1	161	<1	164	0		<1	162
	1990	0		<1	201	<1	223	0		0		<1	210
	1991	0		<1	172	<1	157	<1	99	0		<1	132
	1992	0		<1	149	<1	152	1	136	<1	192	<1	144
	1993	0		0		0		<1	169	0		<1	169
	1994	0		0		0		<1	167	0		<1	167

Table 5. (Cont'd.)

Species	Year	Sabine		Galveston		Port O'Connor		Port Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Pinfish	1985[a]	ND[b]		<1	124	3	109	4	110	1	135	2	112
	1986	<1	98	2	104	2	105	4	107	2	103	2	105
	1987	0		<1	100	3	111	3	115	<1	112	1	113
	1988	<1	93	<1	112	8	105	8	110	3	105	4	107
	1989	<1	100	1	108	3	116	7	110	6	105	3	109
	1990	<1	86	1	111	4	110	18	105	2	98	5	105
	1991	<1	121	1	132	2	116	18	113	2	118	4	114
	1992	<1	115	2	121	3	110	6	103	3	107	3	108
	1993	<1	72	<1	102	3	105	6	110	2	111	3	108
	1994	<1	131	1	111	5	107	4	107	6	107	3	107
Red drum	1985[a]	ND[b]		0		0		<1	84	0		<1	84
	1986	0		0		0		0		0		0	
	1987	0		0		<1	948	0		<1	42	<1	520
	1988	0		0		0		0		0		0	
	1989	0		<1	1,110	0		0		0		<1	1,110
	1990	0		<1	61	0		0		0		<1	61
	1991	0		0		0		0		0		0	
	1992	0		0		0		0		<1	95	<1	95
	1993	0		<1	1,013	0		0		0		<1	1,013
	1994	0		0		0		0		0		0	
Red snapper	1985[a]	ND[b]		0		0		2	85	7	89	2	88
	1986	0		0		<1	152	1	95	<1	103	<1	100
	1987	0		0	68	<1	88	1	122	<1	83	<1	107
	1988	0		0		0		1	111	1	106	<1	109
	1989	0		<1	74	2	87	4	87	3	90	2	88
	1990	0		0		<1	94	3	105	2	113	1	106
	1991	0		0		0		9	80	2	106	2	84
	1992	0		0		2	79	6	77	2	99	2	81
	1993	0		<1	126	1	76	2	77	3	98	1	88
	1994	0		0		3	89	3	103	5	97	2	96
Sand seatrout	1985[a]	ND[b]		10	141	6	168	3	140	<1	221	5	150
	1986	5	164	4	141	3	151	1	174	0		3	154
	1987	7	131	6	133	5	134	2	162	<1	108	4	135
	1988	3	148	5	114	11	129	1	184	<1	137	4	130
	1989	22	133	41	110	16	127	7	155	2	123	18	122
	1990	50	136	8	126	7	139	2	130	1	118	14	135
	1991	28	130	12	143	7	146	12	129	1	153	12	135
	1992	41	132	11	138	6	148	5	131	<1	161	13	135
	1993	45	129	7	131	15	116	10	112	2	121	16	124
	1994	82	132	3	149	5	148	2	125	1	130	18	134
Southern flounder	1985[a]	ND[b]		0		<1	280	<1	137	0		<1	199
	1986	1	162	<1	255	<1	184	<1	311	0		<1	173
	1987	<1	256	<1	197	0		<1	179	<1	168	<1	191
	1988	<1	204	0		<1	214	<1	225	0		<1	214
	1989	0		0		<1	210	<1	298	0		<1	239
	1990	<1	187	0		<1	212	<1	164	<1	250	<1	197
	1991	<1	286	<1	260	<1	194	<1	188	0		<1	220
	1992	<1	143	<1	240	0		<1	284	<1	418	<1	270
	1993	<1	124	0		0		<1	279	0		<1	201
	1994	<1	171	<1	180	<1	215	0		<1	286	<1	205

Table 5. (Cont'd.)

Species	Year	Sabine		Galveston		Port O'Connor		Port Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Spanish mackerel	1985[a]	ND[b]		0		0		0		0		0	
	1986	<1	200	0		0		0		0		<1	200
	1987	<1	93	<1	183	0		<1	258	0		<1	203
	1988	<1	166	<1	178	<1	182	<1	110	<1	200	<1	180
	1989	<1	206	<1	172	<1	175	<1	175	0		<1	182
	1990	<1	174	1	176	<1	225	<1	192	0		<1	180
	1991	1	184	1	163	<1	144	<1	134	0		<1	168
	1992	<1	158	<1	175	<1	181	<1	164	0		<1	168
	1993	1	167	<1	188	0		<1	237	0		<1	190
	1994	0		0		<1	170	<1	170	0		<1	170
Spot	1985[a]	ND[b]		3	132	20	130	21	141	1	142	11	136
	1986	3	124	8	128	7	124	25	123	2	125	9	124
	1987	5	140	9	126	4	125	22	129	<1	170	8	129
	1988	4	115	7	116	23	128	23	122	3	110	12	123
	1989	6	120	27	108	18	124	48	121	4	121	21	118
	1990	9	123	25	121	102	125	93	117	4	112	47	125
	1991	18	117	4	125	67	122	37	127	1	129	26	123
	1992	5	127	12	126	6	122	10	126	2	117	7	125
	1993	4	122	14	119	4	126	19	125	4	138	9	124
	1994	13	125	4	131	13	125	4	131	4	129	8	127
Spotted seatrout	1985[a]	ND[b]		0		0		<1	140	0		<1	140
	1986	<1	163	<1	172	<1	165	0		0		<1	165
	1987	<1	178	0		0		0		0		<1	178
	1988	0		<1	65	<1	110	0		0		<1	88
	1989	<1	98	0		<1	173	0		0		<1	137
	1990	<1	110	<1	160	<1	122	<1	144	0		<1	132
	1991	0		0		<1	148	0		0		<1	148
	1992	<1	112	0		0		0		0		<1	112
	1993	0		0		<1	160	0		0		<1	160
	1994	<1	187	<1	54	0		0		0		<1	67
Total finfishes	1985[a]	ND[b]		148	119	188	118	227	114	130	101	174	114
	1986	159	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	138	337	115	80	103	346	122
	1991	427	117	322	125	666	115	458	108	124	102	404	115
	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
SHELLFISHES													
Blue crab	1985[a]	ND[b]		<1	105	1	134	1	127	<1	144	<1	127
	1986	4	96	6	105	1	141	1	145	1	123	3	110
	1987	3	96	1	112	2	105	<1	142	<1	140	1	106
	1988	2	85	<1	104	1	113	1	128	<1	160	1	105
	1989	4	61	2	72	1	130	<1	134	<1	146	1	78
	1990	15	80	4	63	1	118	1	126	1	127	4	84
	1991	19	72	6	58	1	102	2	114	<1	121	6	73

Table 5. (Cont'd.)

Species	Year	Sabine		Galveston		Port O'Connor		Port Aransas		Port Isabel		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
Blue crab (Contid.)	1992	7	58	1	104	<1	85	1	95	<1	123	2	69
	1993	5	78	1	83	2	116	1	130	1	102	2	95
	1994	9	77	2	123	1	115	2	66	1	128	3	87
Brown shrimp	1985[a]	ND[b]		7	103	7	125	47	109	18	106	19	109
	1986	10	107	13	99	6	114	10	105	6	110	9	105
	1987	7	104	24	104	9	108	14	106	1	118	11	106
	1988	15	102	5	109	24	103	28	106	<1	116	15	104
	1989	33	103	50	96	56	105	140	95	12	94	59	98
	1990	34	101	10	108	55	107	58	114	20	106	36	108
	1991	12	90	2	102	12	93	9	101	17	123	10	104
	1992	9	91	20	103	4	96	19	92	2	115	11	97
	1993	23	100	21	97	13	105	9	97	4	109	14	100
	1994	6	100	10	101	5	99	16	94	7	106	9	99
Pink shrimp	1985[a]	ND[b]		<1	120	<1	130	1	119	1	108	1	116
	1986	0		<1	124	2	110	4	105	3	118	2	111
	1987	0		0		1	114	5	102	1	124	1	108
	1988	<1	87	0		1	108	7	103	1	125	2	106
	1989	0		<1	105	1	103	7	100	4	117	2	105
	1990	0		<1	104	1	101	3	118	3	117	1	114
	1991	<1	101	<1	99	1	109	6	112	2	118	2	112
	1992	<1	88	<1	79	<1	114	4	102	<1	122	1	104
	1993	0		<1	104	4	99	5	104	9	112	4	107
	1994	<1	90	<1	116	1	109	10	98	8	116	4	106
White shrimp	1985[a]	ND[b]		53	110	26	124	11	126	1	105	24	115
	1986	41	101	53	101	15	120	8	124	2	137	24	105
	1987	26	105	14	109	16	112	8	119	1	121	13	110
	1988	14	105	17	100	19	110	9	116	<1	133	12	107
	1989	21	102	25	106	22	108	14	113	1	122	17	107
	1990	18	104	11	115	15	118	6	136	2	136	10	115
	1991	28	105	10	117	30	106	6	127	1	122	15	109
	1992	51	98	31	108	11	112	10	118	1	145	21	105
	1993	61	101	10	108	11	121	5	134	1	133	17	106
	1994	17	109	8	109	15	114	9	116	1	128	10	112

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

Table 6. Annual mean catch rates (No./h) and mean total lengths (mm) by size class[a] of Eastern oyster caught with 46.0-cm wide dredges on "reef" stations in Texas bay systems during 1984-94. Blank indicates no measurment 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		491	
	1985	891		ND		ND		ND		891	
	1986	1,010		764		499		551		770	
	1987	1,054		654		66		4,269		1,382	
	1988	1,440		938		439		1,772		1,202	
	1989	1,322		2,019		1,864		3,071		1,880	
	1990	2,147		1,289		1,117		1,611		1,685	
	1991	1,458		718		894		410		1,022	
	1992	3,083		454		268		82		1,487	
	1993	3,194		139		122		0		1,440	
	1994	1,263		329		546		719		860	
Small	1984	1,705	47	ND		ND		ND		1,705	47
	1985	2,096	54	ND		ND		ND		2,095	54
	1986	1,316	54	382	51	565	58	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
Market	1984	447	91	ND	ND	ND		ND		447	91
	1985	674	88	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	232	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

[a]Spat (5-25 mm), small (26-75 mm), market (≥76 mm). Mean total length not calculated for spat.

Table 7. Seasonal (May-Nov) mean catch rates (No./ha) and mean total lengths (mm) of select fishes and shellfishes caught with 60.9-m beach seines in 5 Texas gulf shoreline areas during 1987-94. Blank indicates no measurment taken; ND = no data.

Species	Year	Gulf-17		Gulf-18		Gulf-19		Gulf-20		Gulf-21		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
FINFISHES													
Atlantic croaker	1987[a]	2	267	<1	306	<1	239	0		0		1	267
	1988	1	264	1	252	<1	260	0		<1	292	<1	262
	1989	2	257	<1	263	<1	205	0		0		<1	255
	1990	1	260	<1	250	0		0		<1	230	<1	259
	1991	2	257	<1	224	<1	251	<1	238	0		<1	256
	1992	<1	307	<1	233	<1	255	0		0		<1	264
	1993	1	255	0		<1	289	<1	286	1	290	<1	270
	1994	2	238	0		0		0		<1	229	<1	238
Black drum	1987[a]	1	344	<1	215	1	287	<1	249	<1	236	1	293
	1988	1	240	1	226	1	281	<1	272	0		1	253
	1989	1	286	4	262	2	249	1	236	<1	216	2	256
	1990	2	318	2	243	2	300	2	276	1	280	2	292
	1991	3	264	3	231	1	257	11	240	1	233	3	245
	1992	1	258	3	254	2	305	2	287	<1	340	2	286
	1993	1	334	2	303	1	354	1	340	1	394	1	339
	1994	2	257	1	240	1	463	1	416	0		1	333
Gulf menhaden	1987[a]	0		0		0		0		0		0	
	1988	7	158	1	166	<1	197	<1	197	<1	226	2	159
	1989	0		<1	158	<1	63	0		0		<1	69
	1990	0		<1	214	0		<1	237	<1	234	<1	232
	1991	0		<1	211	<1	187	<1	213	0		<1	206
	1992	0		2	197	0		0		0		<1	197
	1993	0		<1	209	<1	161	0		0		<1	198
	1994	<1	253	1	236	0		<1	42	0		<1	221
Red drum	1987[a]	0		0		1	337	<1	340	<1	345	<1	338
	1988	<1	460	<1	324	<1	528	<1	305	<1	702	<1	459
	1989	<1	552	<1		<1	370	<1	547	<1	352	<1	485
	1990	0		<1	501	<1	391	<1	344	<1	356	<1	384
	1991	4	321	1	320	1	317	2	318	<1	375	2	320
	1992	<1	436	<1	496	1	415	<1	395	<1	365	1	417
	1993	<1	438	<1	337	<1	498	1	330	<1	330	<1	397
	1994	<1	652	<1	281	1	431	<1	500	<1	267	<1	448
Sand seatrout	1987[a]	1	328	0		0		0		0		<1	328
	1988	<1	322	<1	276	<1	298	0		<1	286	<1	297
	1989	0		<1	353	0		0		0		<1	353
	1990	<1	291	<1	284	<1	287	0		0		<1	287
	1991	0		<1	251	<1	319	0		<1		<1	307
	1992	0		<1	301	0		0		0		<1	301
	1993	0		0		0		<1	360	0		<1	360
	1994	<1	332	<1	279	0		<1	215	<1	65	<1	262
Sheepshead	1987[a]	0		0		0		0		0		0	
	1988	<1	416	<1	445	<1	292	<1	288	0		<1	366
	1989	0		0		0		<1	370	0		<1	370
	1990	0		<1	375	<1	312	<1	322	<1	298	<1	344
	1991	0		<1	270	<1	328	0		<1	460	<1	314
	1992	0		<1	458	<1	327	0		<1	441	<1	382
	1993	0		<1	361	<1	413	0		0		<1	372
	1994	0		<1	365	0		0		<1	275	<1	341

Table 7. (Cont'd.)

Species	Year	Gulf-17		Gulf-18		Gulf-19		Gulf-20		Gulf-21		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Southern flounder	1987[a]	0		1	250	0		<1	313	0		<1	262
	1988	<1	279	1	261	<1	203	<1	207	<1	434	<1	265
	1989	<1	375	<1	276	0		<1	270	0		<1	319
	1990	<1	264	1	220	<1	226	<1	193	<1	217	<1	231
	1991	<1	308	1	267	<1	267	<1	265	0		<1	279
	1992	<1	465	<1	270	<1	307	<1	309	<1	192	<1	303
	1993	<1	381	1	338	<1	324	0		<1	177	<1	347
	1994	<1	274	<1	226	<1	371	<1	357	0		<1	302
Spanish mackerel	1987[a]	0		0		0		0		0		0	
	1988	0		0		0		0		<1	392	<1	392
	1989	0		<1	606	0		0		0		<1	606
	1990	0		0		<1	415	<1	477	<1	521	<1	486
	1991	0		<1	264	<1	353	0		0		<1	303
	1992	0		0		<1	54	0		<1	518	<1	135
	1993	0		<1	415	<1	143	0		0		<1	209
	1994	<1	502	<1	465	<1	452	0		0		<1	475
Spot	1987[a]	2	244	2	248	<1	248	2	214	0		1	235
	1988	3	245	1	235	<1	225	1	243	<1	237	1	242
	1989	<1	210	1	230	<1	277	<1	230	2	236	<1	237
	1990	<1	319	<1	224	<1	246	1	212	1	238	<1	227
	1991	<1	238	1	231	<1	210	1	217	<1	230	<1	220
	1992	<1	231	1	235	<1	227	1	241	<1	257	<1	236
	1993	1	229	<1	228	<1	231	2	229	2	267	1	240
	1994	1	230	1	239	<1	259	1	231	<1	244	1	236
Spotted seatrout	1987[a]	<1	408	<1	403	<1	397	<1	516	0		<1	417
	1988	3	410	2	431	1	397	<1	440	<1	469	2	414
	1989	1	419	3	431	1	419	1	428	<1	445	1	426
	1990	2	440	2	417	<1	431	<1	457	1	473	1	437
	1991	3	406	2	441	1	421	1	399	<1	424	1	415
	1992	<1	432	2	428	2	423	1	431	<1	489	1	426
	1993	1	430	1	432	1	447	1	420	<1	501	1	438
	1994	1	432	1	444	1	434	3	402	<1	510	2	424
Striped mullet	1987[a]	13	393	5	358	1	351	5	343	17	349	7	368
	1988	19	362	32	342	7	344	14	356	5	346	14	351
	1989	39	370	28	344	3	334	1	360	8	341	15	358
	1990	44	350	52	336	5	333	6	349	6	376	21	344
	1991	23	345	65	338	34	320	25	326	13	326	32	330
	1992	34	343	51	341	42	341	25	355	10	344	34	343
	1993	22	350	24	341	14	334	10	357	13	355	16	345
	1994	36	349	24	339	28	336	37	356	6	369	29	345
Total finfishes	1987[a]	23	327	9	305	6	266	10	295	18	332	12	312
	1988	54	322	44	326	43	141	40	189	11	343	41	237
	1989	52	341	48	288	20	218	39	100	15	298	34	254
	1990	59	337	63	314	16	309	18	269	13	323	32	319
	1991	50	322	80	309	45	293	46	284	20	324	48	304
	1992	37	338	65	316	55	322	35	316	13	334	44	323
	1993	30	338	32	324	21	326	22	283	23	314	25	321
	1994	70	328	36	294	35	337	155	154	14	245	62	247

Table 7. (Cont'd.)

Species	Year	Gulf-17		Gulf-18		Gulf-19		Gulf-20		Gulf-21		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
SHELLFISHES													
Blue crab	1987[a]	<1	118	<1	159	0		0		0		<1	129
	1988	2	117	<1	143	<1	137	<1	138	<1	126	1	125
	1989	2	137	2	135	<1	140	0		<1	153	1	137
	1990	5	139	7	136	<1	129	<1	132	<1	128	2	137
	1991	7	143	20	137	5	127	1	123	1	131	6	136
	1992	3	133	3	126	2	142	<1	88	1	132	2	133
	1993	1	133	3	132	1	136	<1	132	<1	127	1	133
	1994	3	145	15	148	3	144	1	137	<1	129	4	146

[a]Values include Oct-Nov only.

Table 8. Seasonal (May-Nov) mean catch rates (No./ha) and mean total lengths (mm) of select fishes and shellfishes caught with 18.3-m bag seines in 5 Texas gulf shoreline areas during 1987-94. Blank indicates no measurement taken.

		Gulf-17		Gulf-18		Gulf-19		Gulf-20		Gulf-21		Coastwide	
Species	Year	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
FINFISHES													
Atlantic croaker	1987[a]	0		0		0		0		0		0	
	1988	30	37	1	62	1	64	0		0		7	39
	1989	3	32	0		0		0		0		1	32
	1990	1	171	1	84	0		<1	22	2	157	1	127
	1991	50	31	0		1	150	5	31	0		13	33
	1992	0		1	91	1	61	0		0		1	70
	1993	1	193	4	113	0		0		2	25	1	119
	1994	1	28	0		0		0		0		<1	28
Black drum	1987[a]	0		0		0		0		0		0	
	1988	1	111	1	104	<1	168	0		1	182	<1	132
	1989	2	170	0		0		0		0		<1	170
	1990	4	154	6	142	1	114	0		0		2	143
	1991	3	151	2	151	1	193	0		0		1	162
	1992	4	159	1	179	0		0		0		1	160
	1993	2	122	0		0		0		0		1	122
	1994	1	125	8	63	<1	55	0		0		2	74
Gulf menhaden	1987[a]	0		0		4	48	0		0		1	48
	1988	2	93	22	87	5	87	28	37	0		10	63
	1989	2	86	6	76	9	100	0		2	74	5	92
	1990	3	59	0		5	57	1	83	17	81	5	68
	1991	0		3	46	2	71	0		0		1	62
	1992	1	91	9	72	4	50	0		0		3	63
	1993	13	39	9	87	7	70	0		0		7	59
	1994	0		2	56	6	32	1	33	6	82	3	45
King mackerel	1987[a]	0		0		0		0		0		0	
	1988	0		0		0		0		2	67	<1	67
	1989	0		0		0		0		0		0	
	1990	0		0		3	48	0		0		1	48
	1991	0		0		0		0		0		0	
	1992	0		0		0		0		0		0	
	1993	0		0		<1	45	0		0		<1	45
	1994	0		0		0		0		0		0	
Pinfish	1987[a]	0		0		1	85	0		0		<1	85
	1988	0		1	100	1	122	0		103	105	12	105
	1989	0		0		<1	69	0		0		<1	69
	1990	0		0		1	97	<1	52	2	133	1	101
	1991	0		2	98	26	71	1	55	27	67	12	70
	1992	1	68	1	125	0		0		1	62	<1	77
	1993	1	66	5	89	1	127	0		6	79	2	88
	1994	0		1	75	1	53	1	77	0		1	65
Sand seatrout	1987[a]	0		0		0		0		0		0	
	1988	0		12	48	1	61	0		0		2	50
	1989	11	44	0		0		0		0		3	44
	1990	0		0		<1	124	0		0		<1	124
	1991	5	31	2	40	6	86	0		0		3	64
	1992	2	34	<1	42	0		0		0		1	35
	1993	74	65	0		<1	96	0		0		17	65
	1994	7	33	0		50	33	15	41	1	71	22	34

Table 8. (Cont'd.)

Species	Year	Gulf-17		Gulf-18		Gulf-19		Gulf-20		Gulf-21		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Southern flounder	1987[a]	0		0		0		0		0		0	
	1988	0		5	107	1	126	0		0		1	112
	1989	1	114	10	91	0		0		0		2	95
	1990	0		2	107	1	183	0		0		1	151
	1991	0		0		0		2	102	0		<1	102
	1992	1	134	11	120	0		4	90	2	162	3	116
	1993	4	135	11	110	0		0		0		2	119
	1994	6	106	6	128	0		0		0		2	114
Spanish mackerel	1987[a]	41	50	0		0		0		0		9	50
	1988	0		1	59	2	53	0		2	110	1	64
	1989	0		6	37	0		8	60	0		2	51
	1990	0		1	25	2	35	0		0		1	34
	1991	0		<1	40	0		0		0		<1	40
	1992	0		0		0		1	55	0		<1	55
	1993	0		0		1	54	14	25	0		3	27
	1994	0		4	53	2	42	0		0		1	48
Spot	1987[a]	0		0		0		0		0		0	
	1988	0		1	80	0		0		52	92	6	91
	1989	0		0		1	78	0		2	104	<1	89
	1990	1	182	0		1	86	<1	66	0		1	119
	1991	0		<1	182	0		<1	64	0		<1	122
	1992	1	109	0		0		1	26	0		<1	81
	1993	0		0		9	87	0		4	81	3	87
	1994	1	78	17	74	1	68	0		0		3	74
Striped mullet	1987[a]	7	26	0		0		2	100	14	146	4	84
	1988	50	97	36	115	22	59	1	31	0		24	88
	1989	253	86	42	90	15	187	1	93	3	191	69	95
	1990	49	66	86	79	3	170	10	32	5	155	27	75
	1991	18	173	141	130	23	140	1	144	2	106	32	138
	1992	11	70	10	138	4	73	2	53	3	127	6	89
	1993	5	160	5	62	5	159	4	64	0		4	128
	1994	90	94	2	59	27	181	35	23	1	52	37	103
Total finfishes	1987[a]	344	66	449	60	475	73	668	45	2,142	83	659	69
	1988	1,046	65	6,271	96	2,351	58	1,702	48	3,164	84	2,572	74
	1989	2,413	95	2,794	75	3,590	68	9,527	59	1,159	80	4,009	69
	1990	1,168	76	1,125	71	1,292	55	3,075	46	1,081	105	1,538	61
	1991	1,140	84	1,625	83	4,006	64	7,512	54	2,140	73	3,439	63
	1992	1,312	84	1,029	65	1,090	59	2,514	47	923	58	1,371	61
	1993	1,545	82	4,223	51	2,267	92	4,671	46	1,158	69	2,685	66
	1994	1,881	69	3,633	56	1,458	62	7,244	52	2,260	56	2,990	57
SHELLFISHES													
Blue crab	1987[a]	0		0		0		0		3	22	<1	22
	1988	14	101	1	25	4	83	0		0		5	93
	1989	33	95	65	34	2	108	0		0		17	63
	1990	11	85	52	90	1	113	1	24	0		10	89
	1991	42	107	72	69	24	117	1	91	0		28	96

Table 8. (Cont'd.)

Species	Year	Gulf-17		Gulf-18		Gulf-19		Gulf-20		Gulf-21		Coastwide	
		No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length	No./ha	Length
Blue crab	1992	30	92	49	84	9	116	2	21	1	174	17	92
(Cont'd.)	1993	20	104	26	85	4	109	1	157	0		10	98
	1994	19	119	26	105	17	142	2	74	0		14	124
Brown shrimp	1987[a]	0		0		0		0		0		0	
	1988	7	52	0		3	76	0		1	46	3	60
	1989	7	56	0		0		0		0		2	56
	1990	0		47	76	0		0		0		7	76
	1991	9	44	1	54	<1	58	0		0		2	45
	1992	27	66	10	52	0		1	31	0		8	63
	1993	13	59	1	39	1	92	0		0		3	61
	1994	12	66	6	68	4	47	0		0		5	61
White shrimp	1987[a]	11	78	16	71	71	69	2	72	0		29	70
	1988	35	64	6	77	2	61	<1	45	1	69	10	65
	1989	38	58	4	70	20	65	2	52	0		16	61
	1990	8	75	9	57	0		<1	59	0		3	67
	1991	664	53	4	70	1	69	0		0		154	53
	1992	285	75	12	86	2	81	0		0		68	75
	1993	49	57	7	61	<1	60	0		1	38	12	57
	1994	43	68	2	67	2	71	0		0		11	68

[a]Values include Oct-Dec only.

Table 9. Annual mean catch rate (No./h) and mean total lengths (mm) of selected fishes and shellfishes caught with 6.1-m trawls within the Intracoastal Waterway in Texas bay systems during 1992-94.

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
FINFISHES																					
Atlantic croaker	1992	88	133	306	125	38	109	130	96	1,181	83	684	82	26	114	27	119	45	122	241	97
	1993	190	132	135	119	57	131	270	108	355	108	155	109	23	147	5	174	37	134	130	113
	1994	107	122	122	117	36	117	23	130	172	89	72	92	6	107	7	150	100	142	79	100
Black drum	1992	1	234	<1	250	1	180	0		0		0		0		1	240	<1	282	<1	245
	1993	6	197	<1	142	<1	173	<1	190	0		0		0		<1	264	0		1	196
	1994	2	180	1	193	<1	148	<1	179	<1	81	<1	140	0		<1	328	0		1	189
Gafftop-sail catfish	1992	32	110	11	153	2	151	8	129	81	135	44	130	<1	176	0		<1	186	18	135
	1993	13	121	18	145	2	135	31	123	80	146	36	118	<1	167	0		1	170	17	136
	1994	18	125	5	149	7	152	3	137	92	123	20	134	<1	134	0		2	166	14	127
Gulf menhaden	1992	1	120	5	93	5	89	13	113	19	90	25	102	1	138	<1	119	1	139	6	101
	1993	16	77	9	102	<1	75	2	124	6	105	8	85	7	62	0		1	126	6	94
	1994	1	114	1	97	1	116	<1	131	6	97	1	133	1	138	0		<1	115	1	104
Pinfish	1992	0		2	142	1	121	6	106	5	95	31	113	206	105	57	119	18	112	31	108
	1993	2	117	2	113	2	108	4	109	13	91	93	110	101	115	25	131	19	97	20	112
	1994	0		1	113	1	109	74	95	11	113	27	122	56	125	17	131	28	104	18	106
Red drum	1992	0		0		<1	81	0		0		0		0		0		<1	106	<1	104
	1993	0		0		<1	271	0		0		0		0		<1	277	<1	73	<1	193
	1994	<1	257	0		0		0		0		<1	42	0		0		0		<1	154
Sand seatrout	1992	9	113	17	127	4	134	4	110	32	114	12	133	4	149	1	138	11	157	11	123
	1993	36	115	22	129	15	129	7	121	43	120	9	112	6	120	1	221	3	152	17	123
	1994	6	127	31	104	7	117	3	118	7	137	3	98	3	145	<1	245	17	157	11	111
Sheeps-head	1992	<1	160	<1	155	<1	132	<1	137	<1	96	<1	96	<1	121	<1	405	<1	115	<1	143
	1993	<1	134	<1	190	<1	144	0		1	116	<1	100	0		0		<1	309	<1	147
	1994	0		<1	187	1	168	<1	139	<1	157	<1	108	0		<1	139	<1	157	<1	154
Southern flounder	1992	1	256	5	239	1	220	3	209	1	211	1	193	<1	198	<1	398	<1	248	2	230
	1993	2	252	2	256	3	183	3	167	3	149	1	190	<1	161	<1	217	1	204	2	200
	1994	1	199	3	229	3	195	2	222	3	161	1	169	<1	177	1	210	1	225	2	212
Spot	1992	3	134	149	124	10	122	44	110	150	102	55	103	38	111	12	148	32	127	57	116
	1993	17	119	33	121	9	124	117	115	97	112	80	94	231	120	6	150	15	151	45	116
	1994	5	134	17	126	10	115	18	112	77	110	15	126	222	136	2	163	99	118	37	126
Spotted seatrout	1992	<1	184	3	144	2	145	<1	165	3	115	5	120	<1	158	2	200	3	205	2	142
	1993	2	188	1	159	4	169	2	154	2	138	1	125	<1	100	1	202	2	279	2	158
	1994	2	172	2	145	2	175	1	162	4	153	2	115	<1	166	1	251	1	259	2	155
Striped mullet	1992	<1	136	3	183	1	147	0		2	125	3	188	<1	281	<1	291	<1	250	1	178
	1993	10	215	<1	202	<1	338	<1	216	0		<1	222	<1	136	<1	294	0		2	213
	1994	1	138	<1	254	0		<1	146	<1	161	0		<1	299	0		0		<1	204
Total finfish	1992	291	131	585	125	83	115	322	98	1,670	94	972	94	333	111	157	119	200	134	461	107
	1993	453	127	266	122	432	127	560	105	699	109	669	107	452	121	85	126	177	146	302	113
	1994	196	127	270	114	104	126	210	108	523	107	234	111	433	134	67	112	353	139	243	116

Table 9. (Cont'd.)

Species	Year	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
		No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length	No./h	Length
SHELLFISHES																					
Blue crab	1992	40	74	67	73	64	78	41	62	222	55	238	57	14	94	66	95	26	72	77	64
	1993	59	69	47	77	57	93	76	81	63	74	129	78	10	109	44	98	59	90	59	80
	1994	52	71	39	77	84	73	57	72	54	64	81	70	12	76	49	66	49	86	52	72
Brown	1992	44	79	209	79	21	84	19	84	269	81	340	82	34	83	92	99	33	84	117	81
shrimp	1993	135	81	74	84	48	78	39	89	323	78	301	86	27	90	33	94	48	82	104	83
	1994	13	94	107	92	12	79	19	98	180	89	103	86	20	94	74	106	80	85	70	87
Pink	1992	0		0		<1	91	<1	87	2	74	40	73	18	86	48	104	57	90	20	87
shrimp	1993	0		0		2	89	1	110	2	90	19	71	13	91	3	103	29	87	7	85
	1994	0		<1	98	8	98	6	105	12	83	24	88	18	87	6	96	29	88	9	90
White	1992	35	100	77	90	8	82	5	92	28	85	42	91	5	94	4	104	5	106	28	90
shrimp	1993	75	85	28	91	62	89	50	86	26	85	30	88	3	107	12	102	15	102	35	88
	1994	12	91	79	72	33	92	7	91	53	82	38	93	2	112	8	105	31	97	32	78

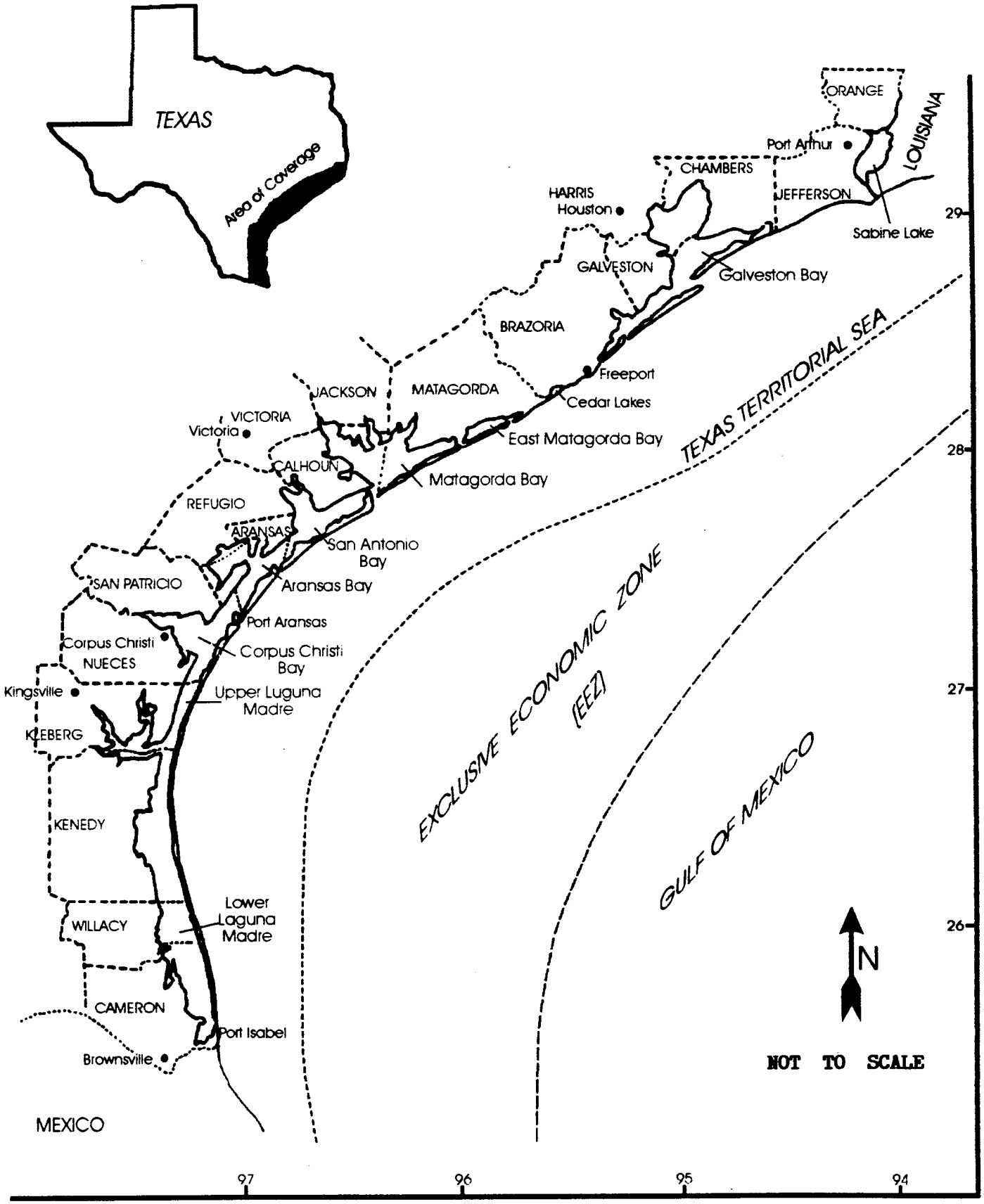

Figure 1. Texas gulf shoreline and Texas Territorial Sea (TTS).

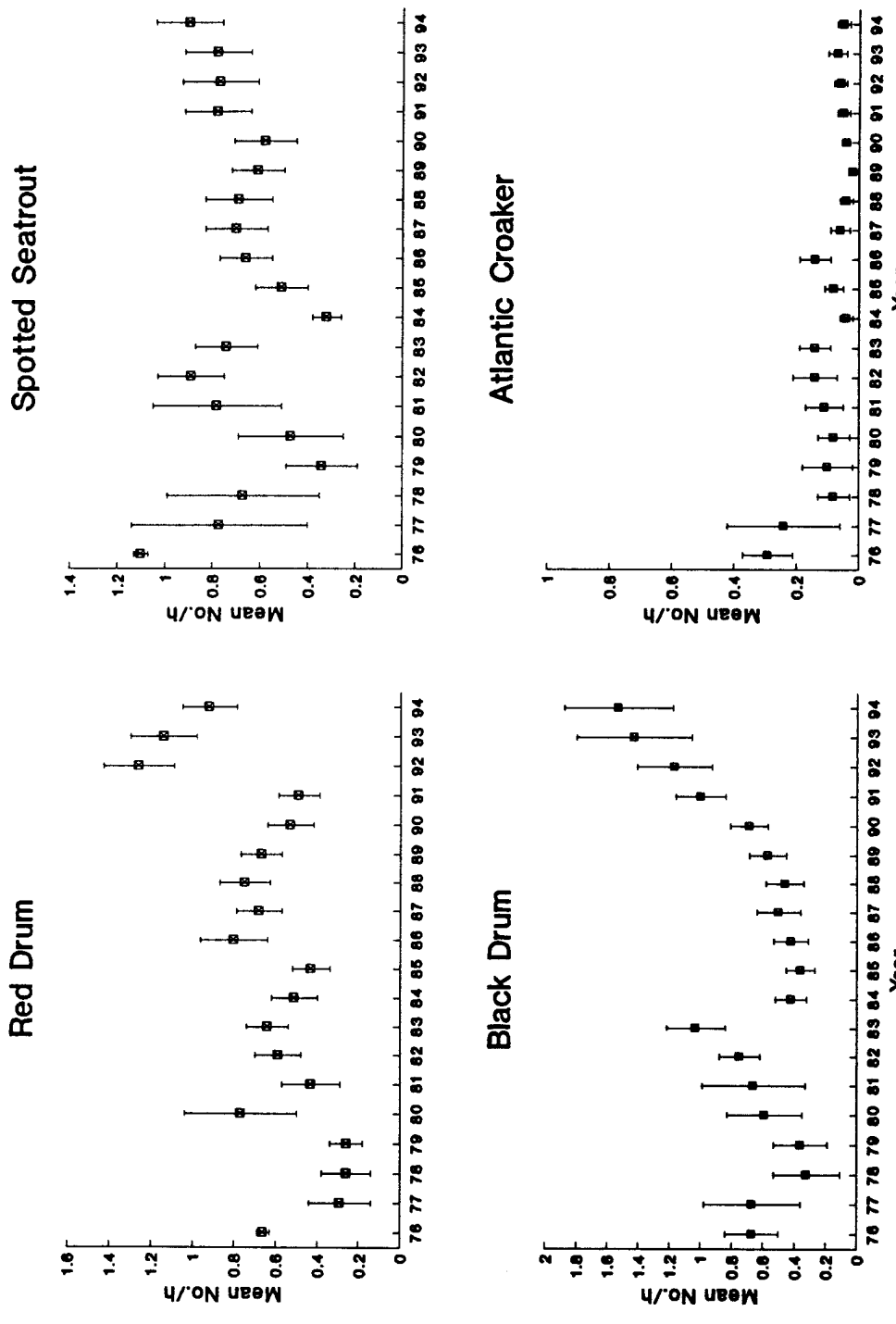

Figure 2. Spring gill net mean catch rates (No./h ± 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1976-94.

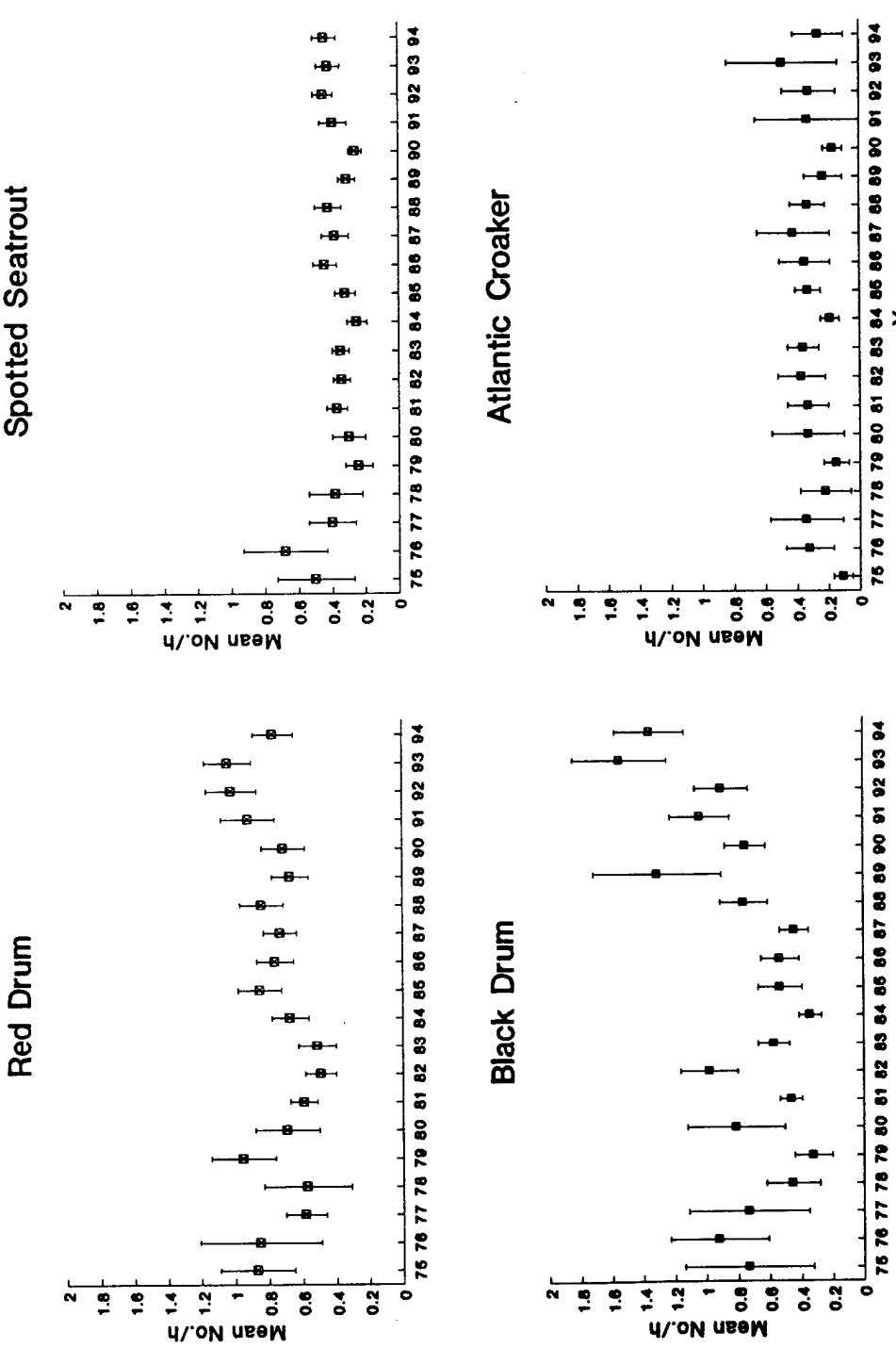

Figure 3. Fall gill net mean catch rates (No./h ± 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1975-94.

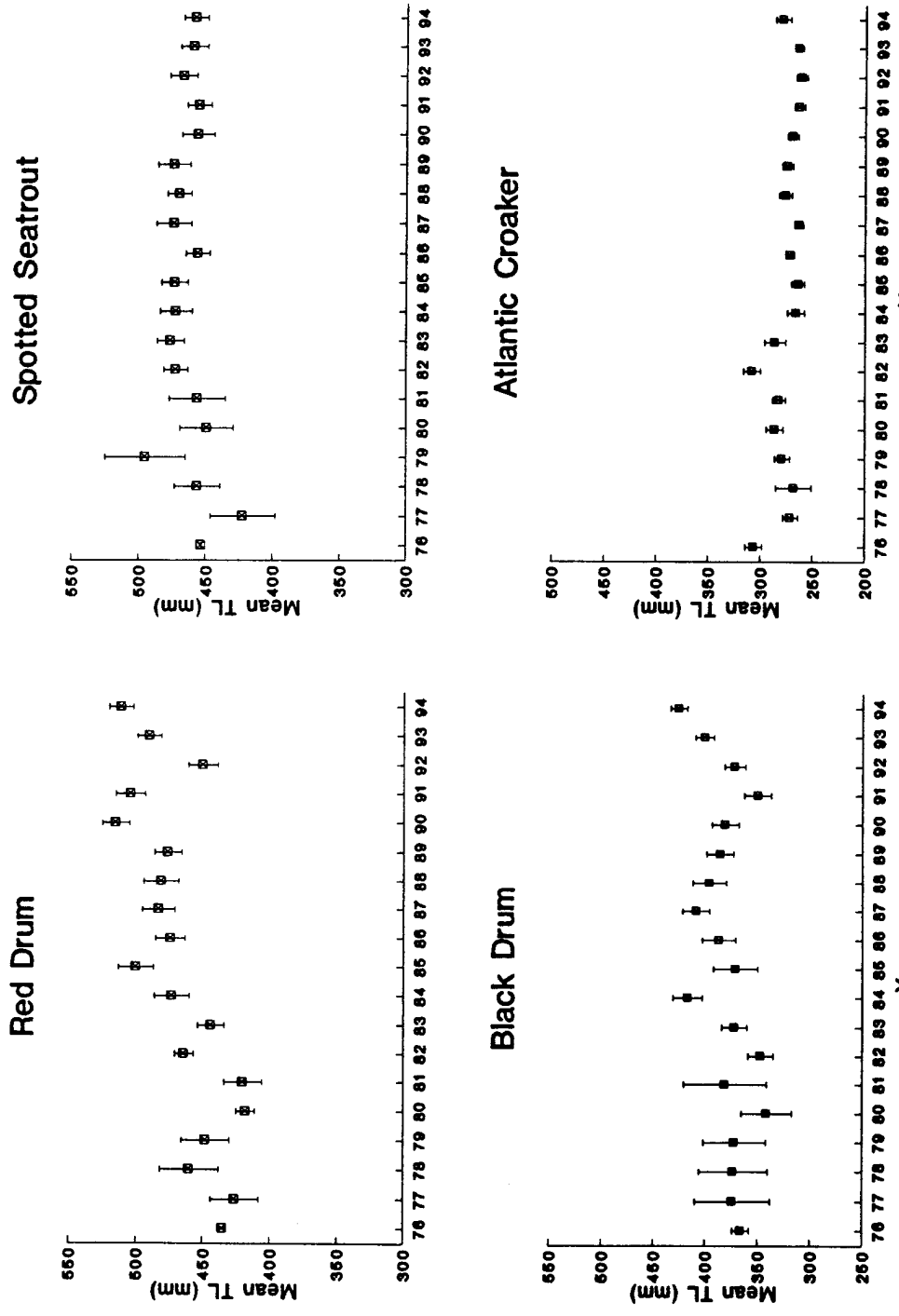

Figure 4. Spring gill net mean total lengths (mm ± 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1976–94.

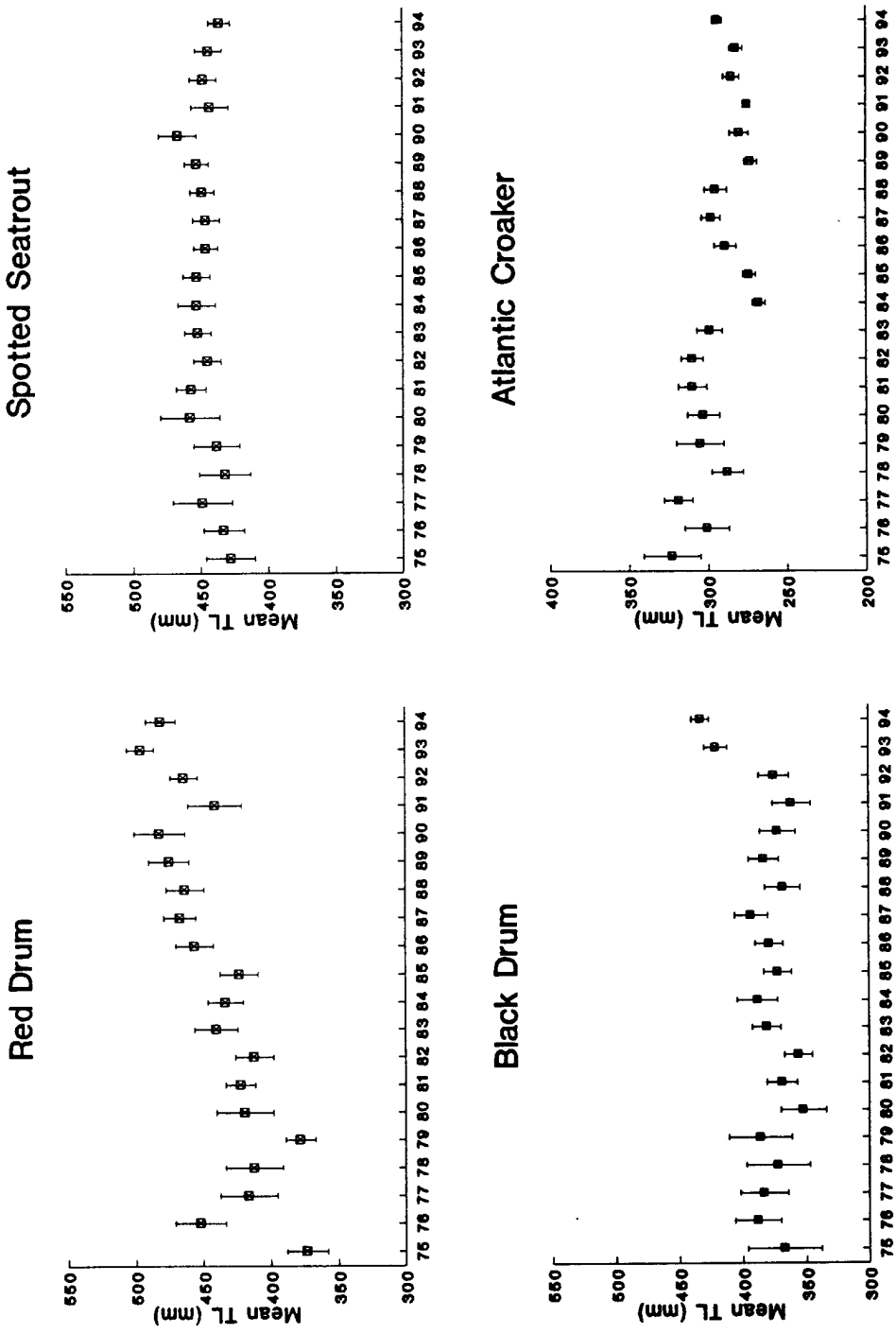

Figure 5. Fall gill net mean total lengths (mm ± 1SE) for red drum, black drum, spotted seatrout and Atlantic croaker during 1975–94.

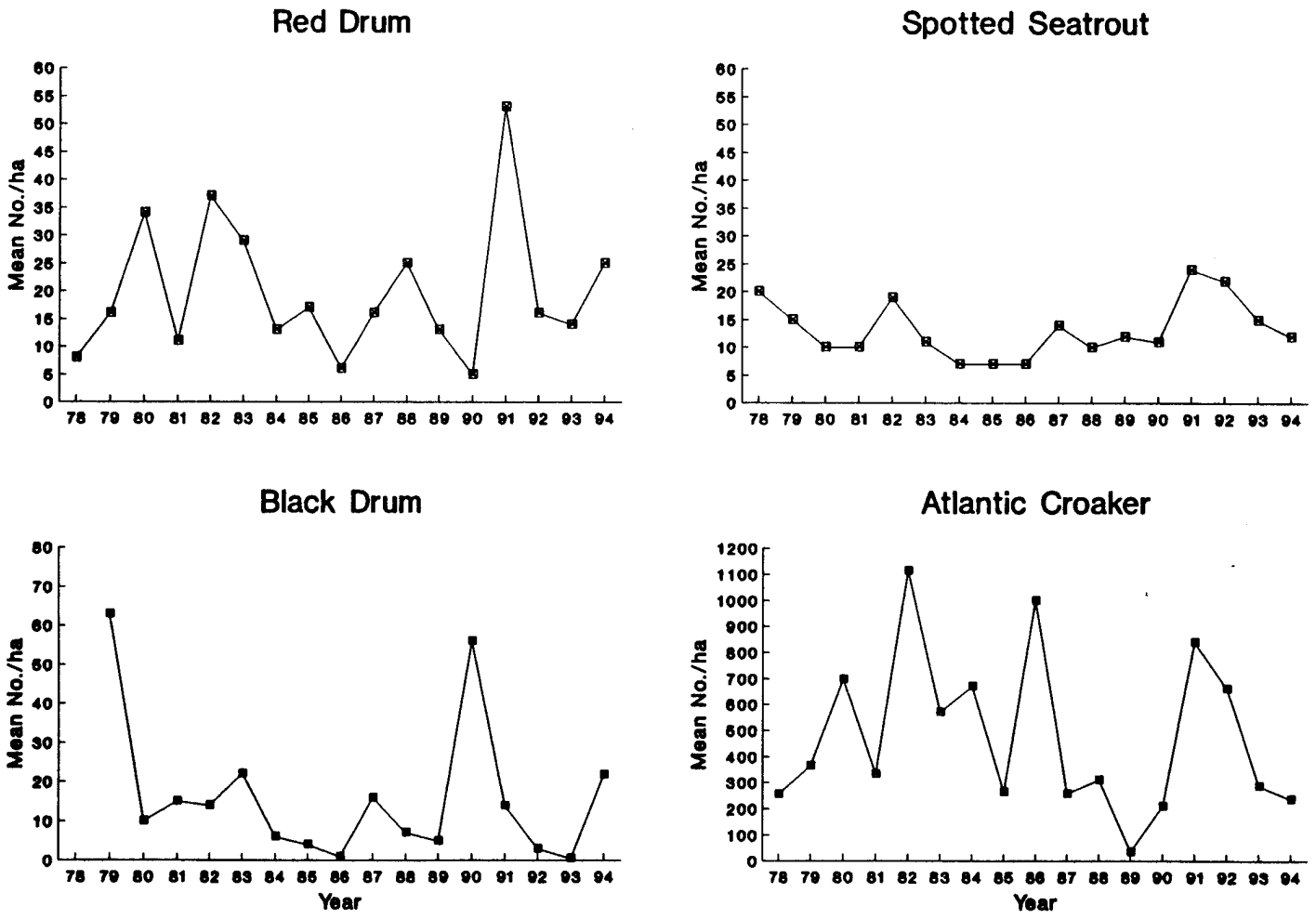

Figure 6. Seasonal bag seine mean catch rates (No./ha) for juvenile red drum (Nov-Mar), black drum (Jun-Jul), spotted seatrout (Jul-Nov) and Atlantic croaker (Feb-May) during 1978-94. Red drum 35-75 mm, spotted seatrout 20-75 mm, black drum 35-110 mm and Atlantic croaker 30-85 mm are considred to be young-of-the-year.

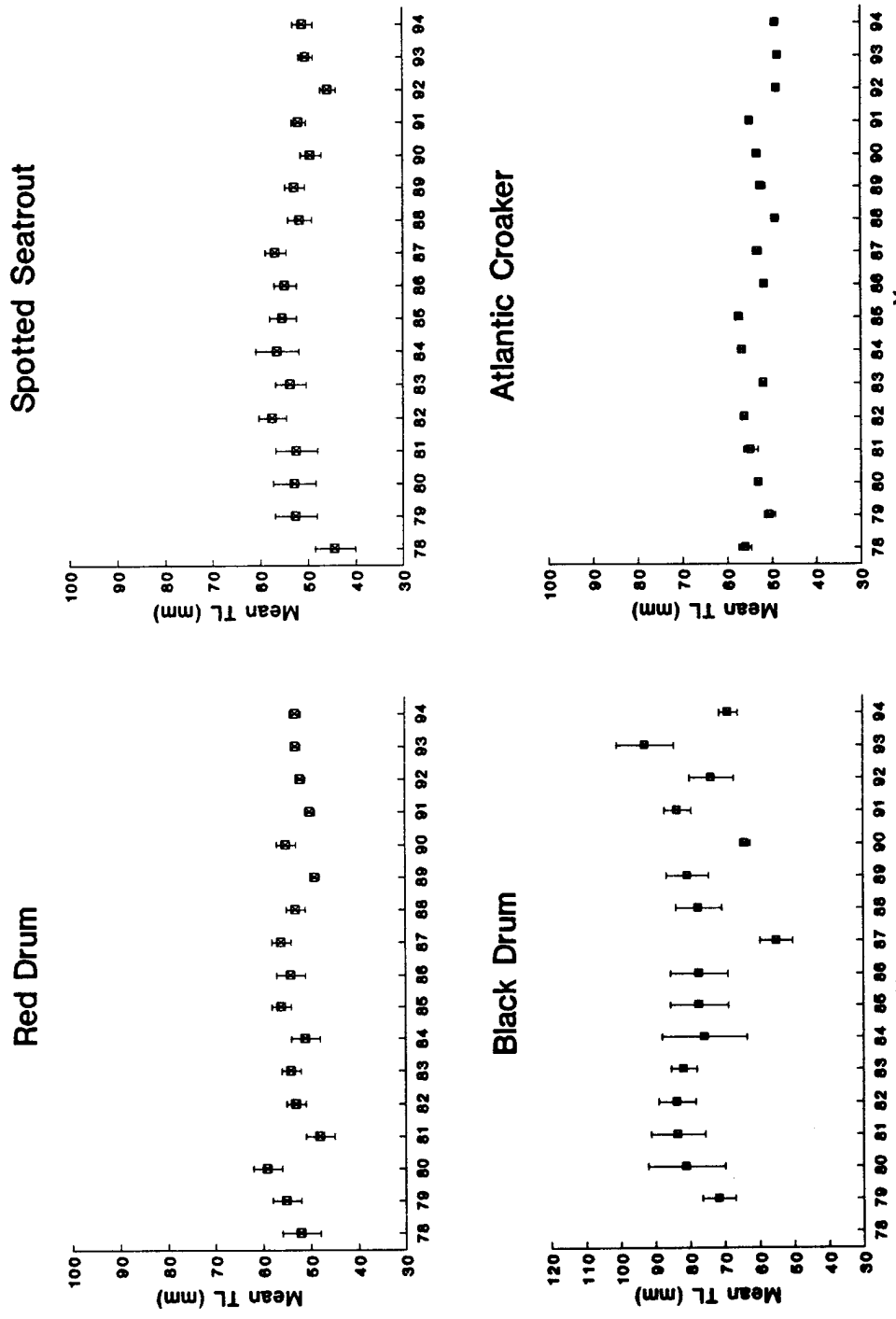

Figure 7. Seasonal bag seine mean total lengths (mm ± 1SE) for juvenile red drum (Nov-Mar), black drum (Jun-Jul), spotted seatrout (Jul-Nov) and Atlantic croaker (Feb-May) during 1978-94. Red drum 35-75 mm, spotted seatrout 20-75 mm, black drum 35-110 mm and Atlantic croaker 30-85 mm are considered to be young-of-the-year.

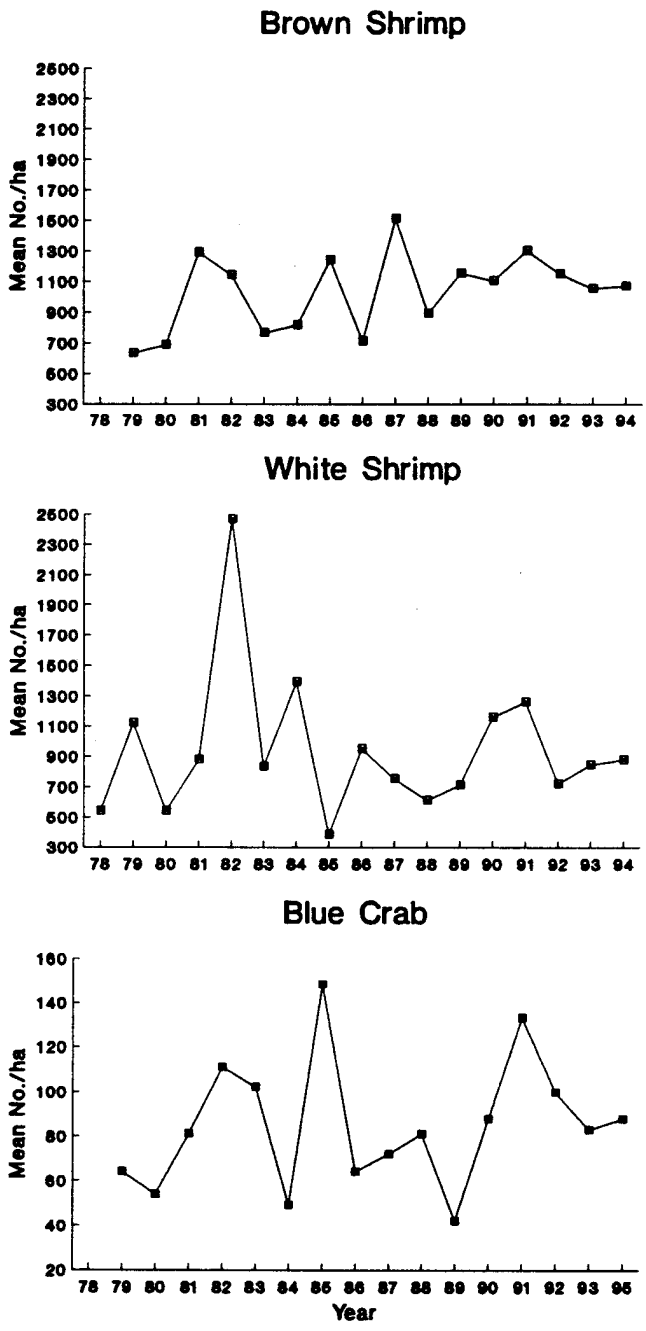

Figure 8. Seasonal bag seine mean catch rates (No./ha) for juvenile brown shrimp (Apr-Jul), white shrimp (Jul-Nov) and blue crab (Mar-Jun) during 1978-94. Brown and white shrimp 32-82 mm and blue crab 13-42 mm are considered to be young-of-the-year.

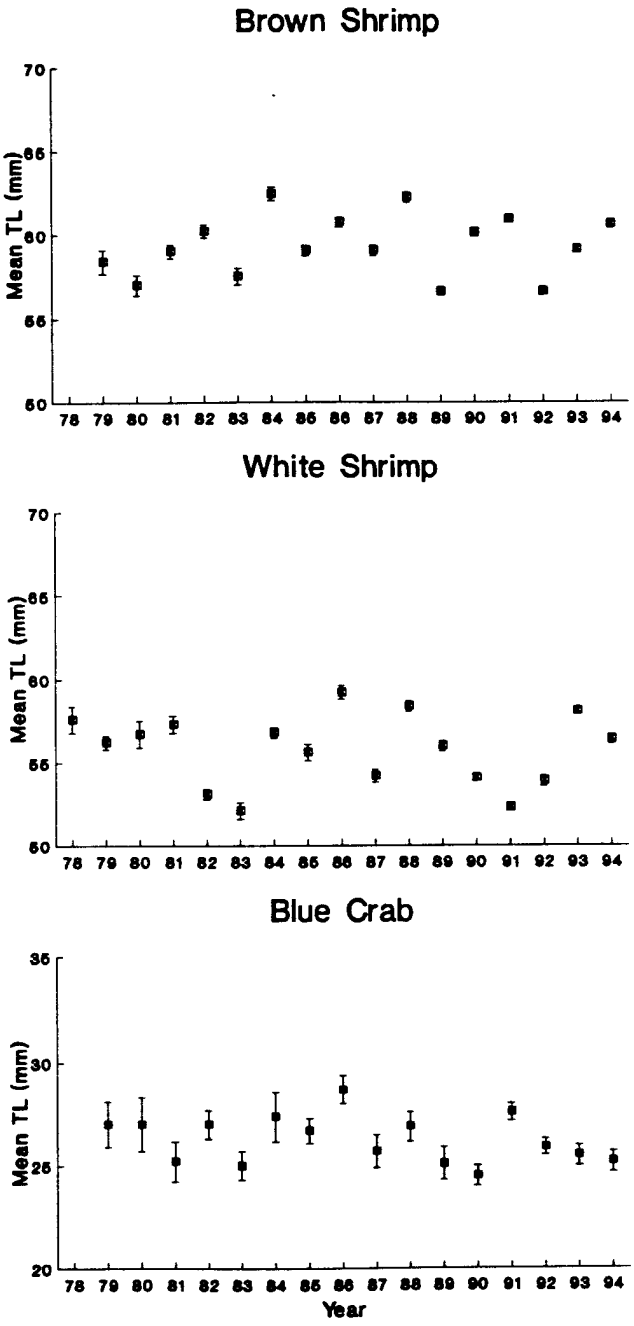

Figure 9. Seasonal bag seine mean total lengths (mm ± 1SE) for brown shrimp (Apr-Jul), white shrimp (Jul-Nov) and blue crab (Mar-Jun) during 1978-94. Brown and white shrimp 33-82 mm and blue crab 13-42 mm are considered to be young-of-the-year.

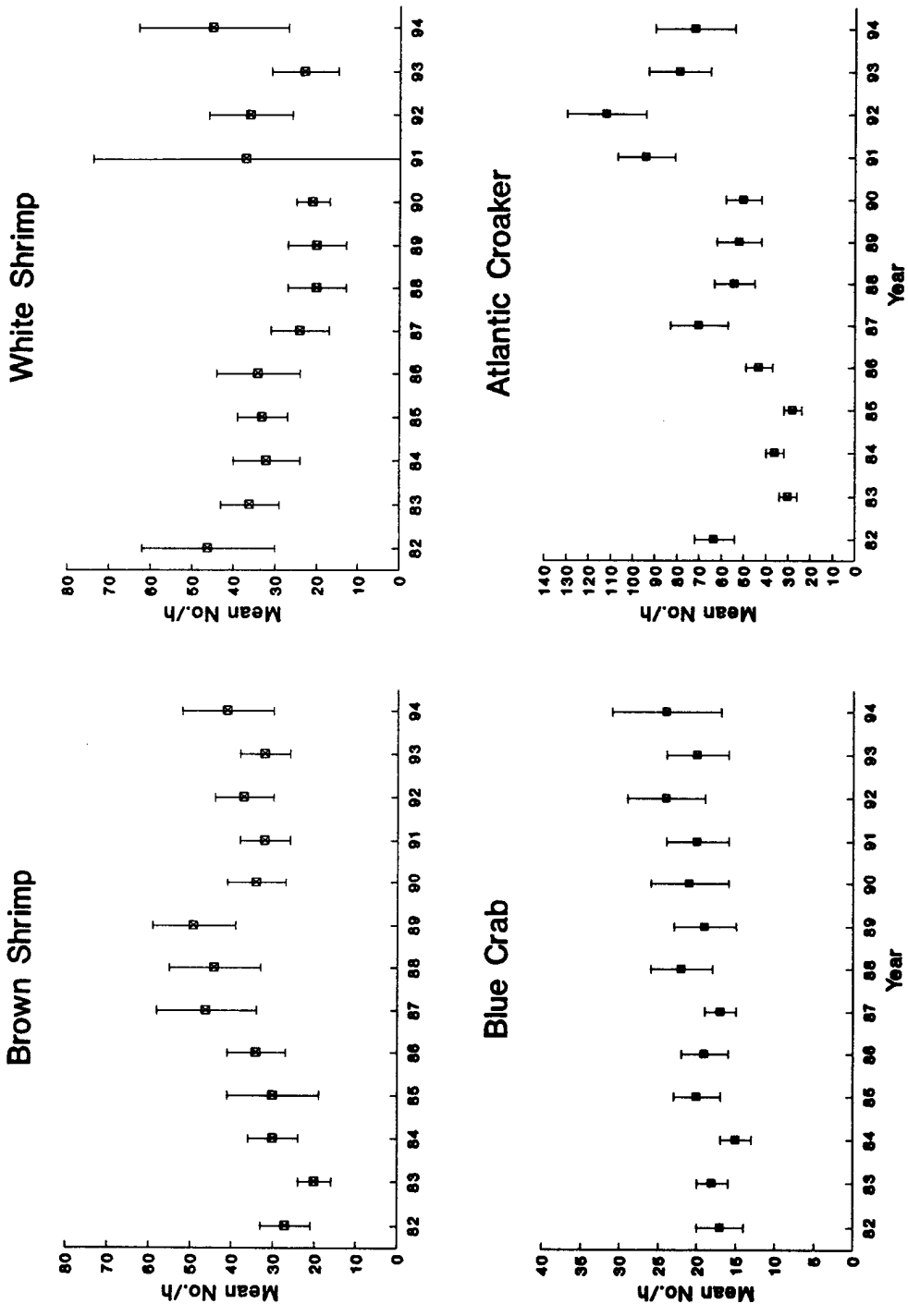

Figure 10. Annual bay trawl catch rates (No./h ± 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-94.

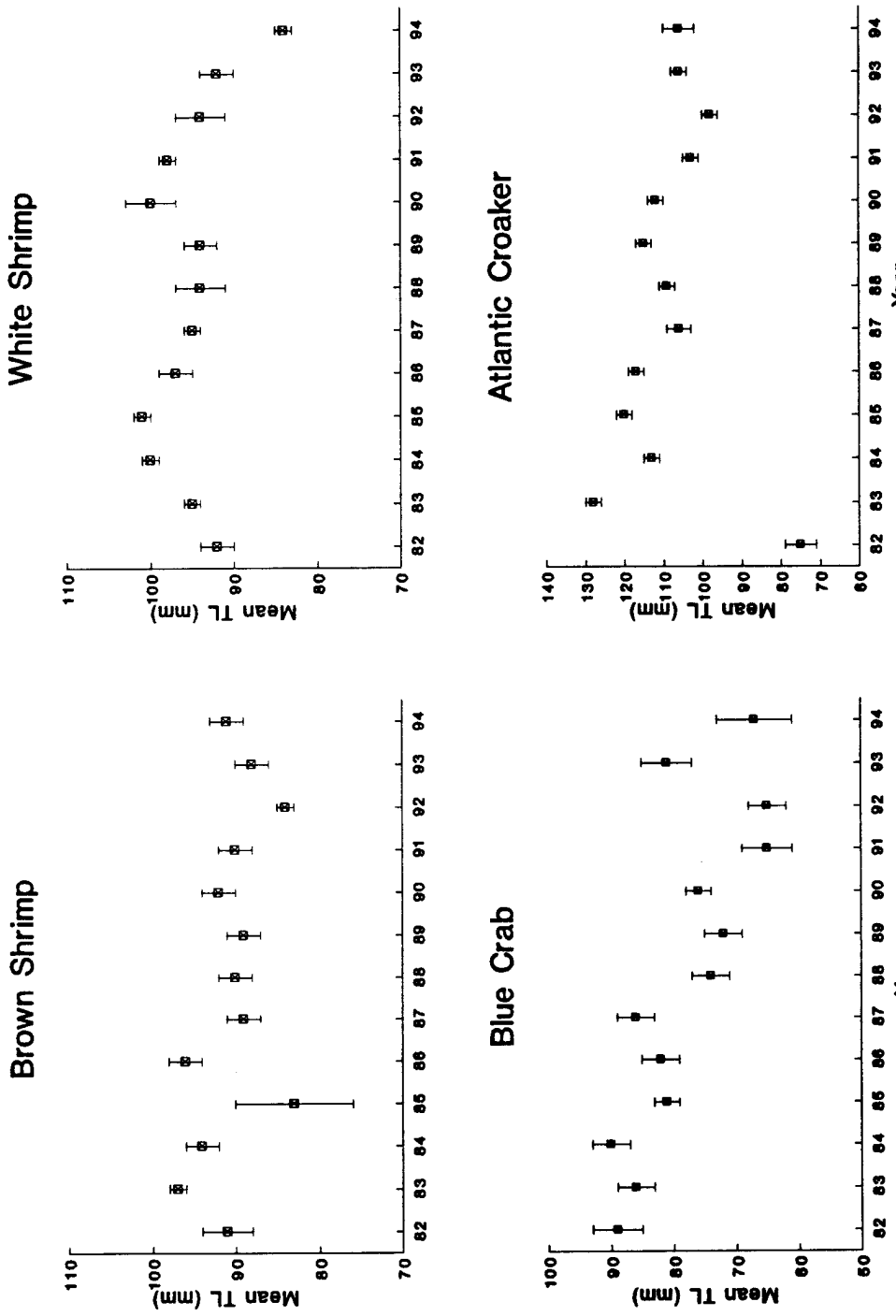

Figure 11. Annual bay trawl mean total lengths (mm ± 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-94.

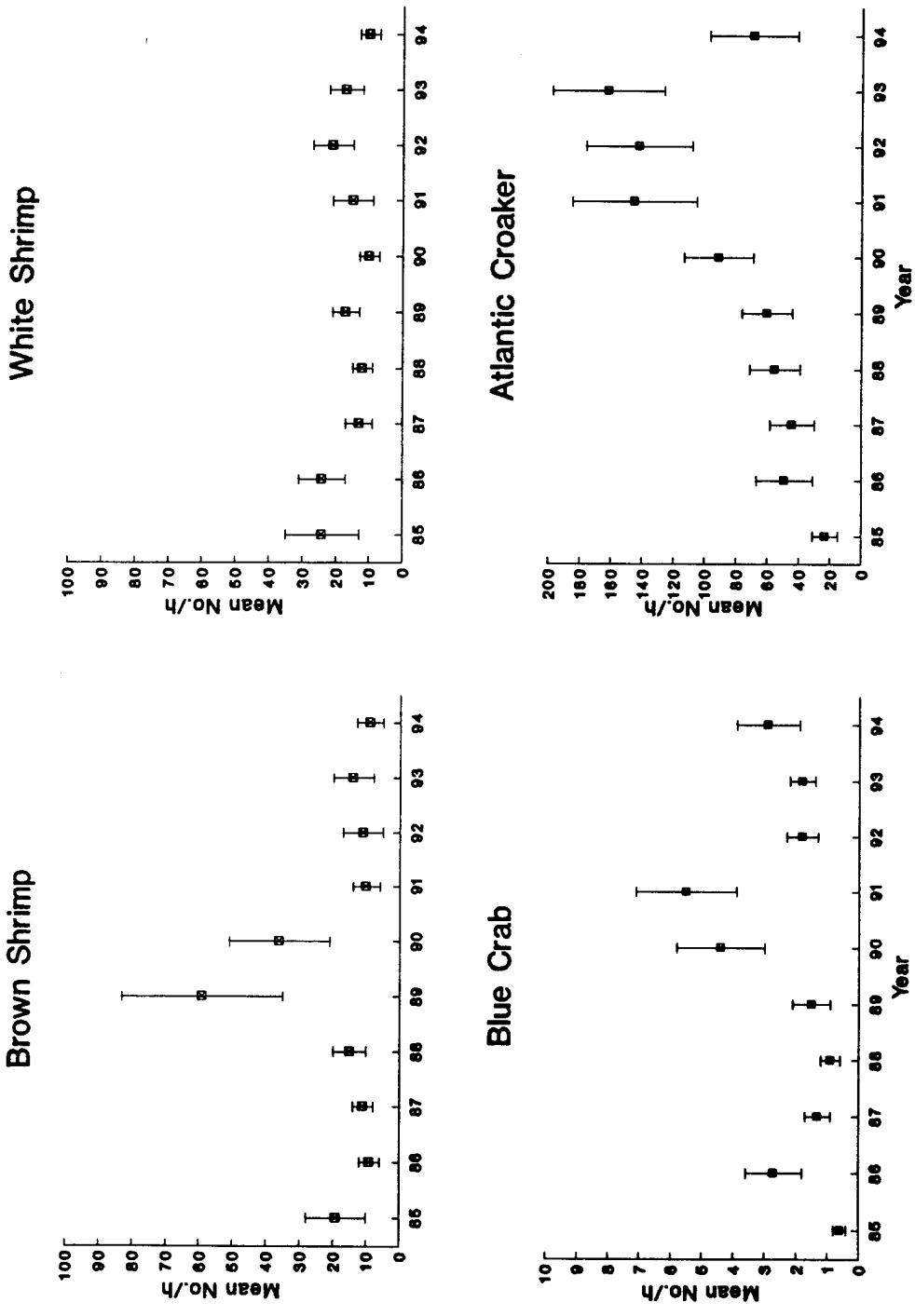

Figure 12. Annual gulf trawl mean catch rates (No./h ± 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982–94.

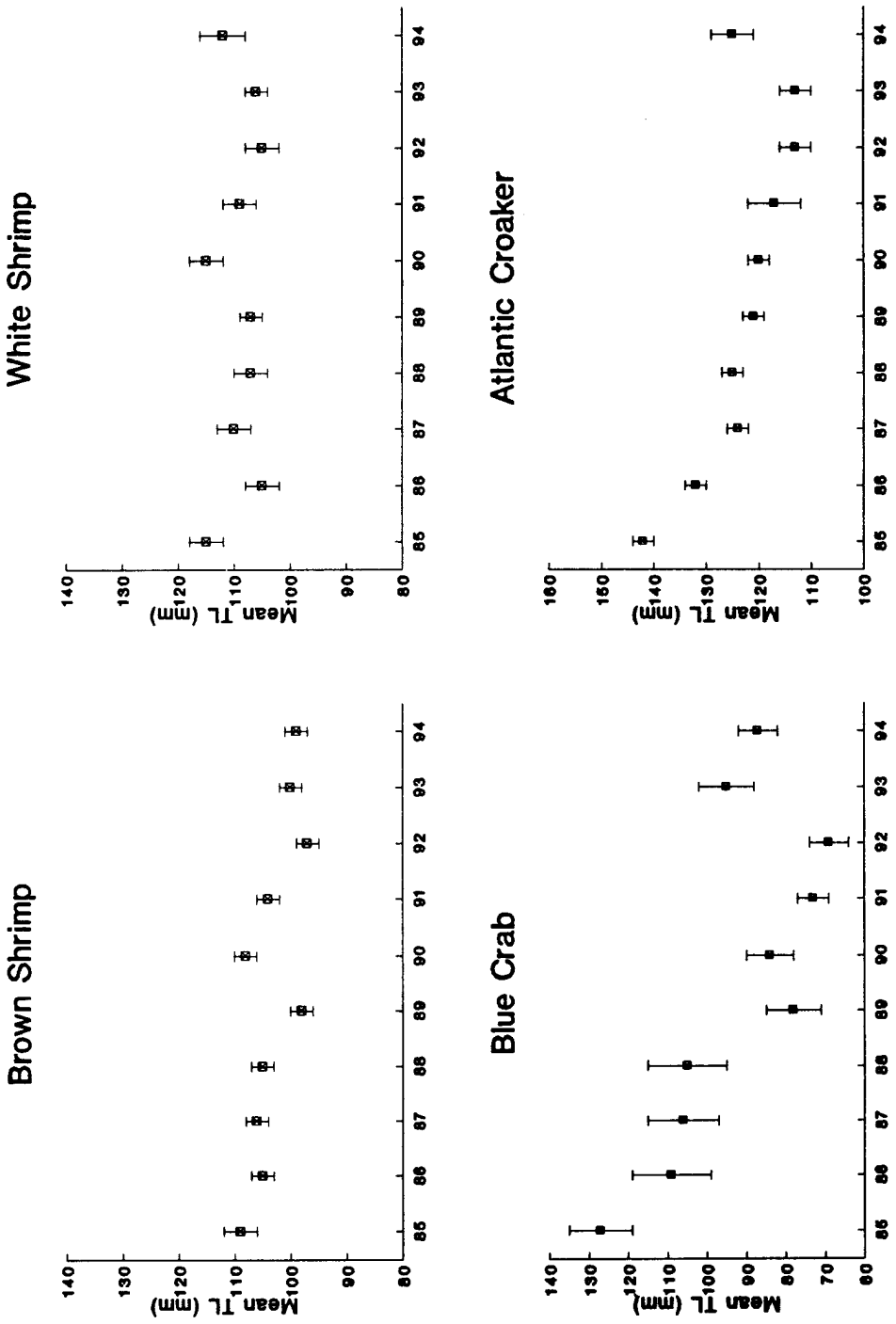

Figure 13. Annual gulf trawl mean total lengths (mm ± 1SE) for brown shrimp, white shrimp, blue crab and Atlantic croaker during 1982-94.

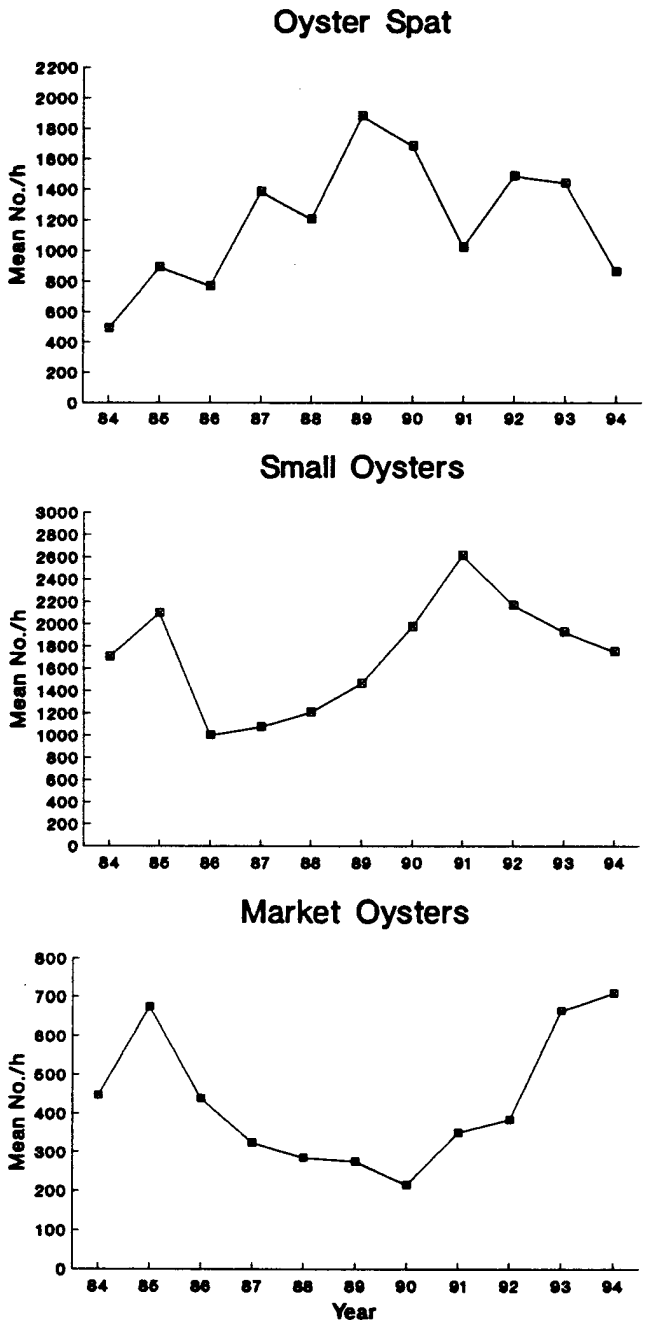

Figure 14. Annual mean catch rates (No./h) for Eastern oyster spat (≤25 mm), small oysters (26-75 mm) and market oysters (≥76 mm) during 1984-94.

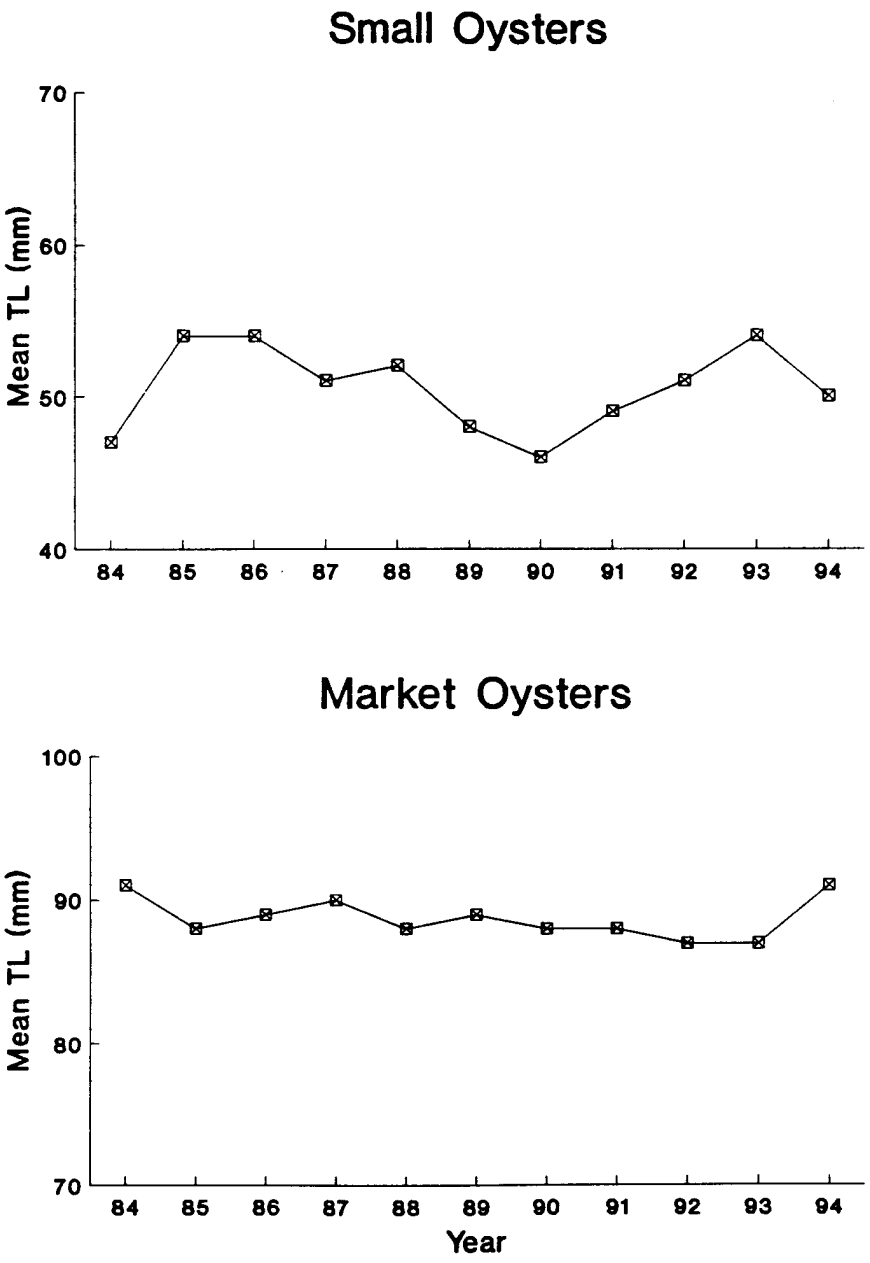

Figure 15. Annual mean total lengths (mm) for small and market Eastern oysters during 1984-94.

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	GALVESTON	EAST MATAGORDA	MATAGORDA	SAN ANTONIO	ARANSAS-COPANO	CORPUS CHRISTI	UPPER LAGUNA	LOWER LAGUNA
GILL NET	April 1986-Present.	Nov. 1975-Present.	Feb. 1976-Present.	Nov. 1975-Present.	Nov. 1975-Present.	Nov. 1975-Present.	Nov. 1975-Present.	Nov. 1975-Present.	Nov. 1975-Present.
GULF TRAWL	Jan. 1986-Present.	Jan. 1986-Present.	Not used.	Not used.	Jan. 1986-Present.	Not used.	Jan. 1986-Present.	Not used.	Jan. 1986-Present.
BAY TRAWL	Jan. 1986-Present.	Jan. 1982-Present.	April 1987-Present.	Jan. 1982-Present.	Jan. 1982-Present.	Jan. 1982-Present.	Jan. 1982-Present.	Jan. 1982-Present.	Jan. 1982-Present.
ICWW TRAWL	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.	Jan. 1991-Present.
BEACH SEINE	Oct. 1987-Present.	Oct. 1987-Present.	Oct. 1987-Present.	Not used.	Oct. 1987-Present.	Oct. 1987-1991.	Not used.	Oct. 1987-Present.	Oct. 1987-Present.
BEACH BAG SEINE	Oct. 1987-Present.	Oct. 1987-Present.	Oct. 1987-Present.	Not used.	Oct. 1987-Present.	Oct. 1987-1991.	Not used.	Oct. 1987-Present.	Oct. 1987-Present.
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.	Oct. 1977-Present.
OYSTER REEF DREDGE	Jan. 1986-1991.	Jan. 1984-Present.	Jan. 1986-1991	Jan 1986-Present.	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.	1986-1989.	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 0.6 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 8-tooth: 46 cm wide, 25 cm tall with a 36-cm deep bag. 6 bottom rows of linked metal rings 5 cm in diameter; four top rows of 7.6-cm mesh webbing made of 0.8-cm nylon rope.

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 April 1986 (Figure 1). Prior to September 1984, sites for setting gill nets during spring (15 April-15 June) and fall (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. 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. No more than nine stations were duplicated each season.
GULF TRAWLS	Trawls have been systematically used in 5 gulf areas of Texas Territorial Seas since January 1986. Methods have not changed since the program began.
BAY TRAWLS	Trawls have been systematically used in Texas bays since January 1982; Sabine Lake was added January 1986 and East Matagorda Bay April 1987. Beginning in January 1982, 20 monthly samples were collected in the Galveston, San Antonio and Aransas systems. Beginning in May 1982 current methods were adopted.
ICWW TRAWLS	This program was initiated in 1992.

Table A.3. (Cont'd.)

BEACH SEINE	Beach seines have been systematically used on Texas gulf beaches since October 1987. Between October 1987 and November 1989, three beach seine samples were collected during the 1st-15th and during the 16th-31st of each month along gulf beach shoreline areas. Beginning January 1990 current methods were adopted.
BEACH BAG SEINE	Beach bag seine samples have been systematically used on Texas gulf beaches since October 1977. Between October 1987 and November 1989, three beach bag seine samples were collected during the 1st-15th and during the 16th-31st of each month along gulf beach shoreline areas. Beginning January 1990 current methods were adopted.
BAY BAG SEINE	Bay bag seine samples have been systematically collected in Texas bays since October 1977. 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 bag 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. 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, five stations were sampled during the 1st-15th and during the 16th-31st of each month. During April 1988 through December 1989, 6 bag seine samples were collected during the 1st-15th and during the 16th-31st of each month in each bay system. Beginning January 1990, 8 bag seine samples were collected during the 1st-15th and during the 16th-31st of each month in each bay system. Beginning January 1992 current methods were adopted.

Table A.3. (Cont'd.)

OYSTER REEF DREDGE	Oyster dredges have been systematically used in Texas bays since January 1986. Monthly sample sizes in the Galveston system were: 20 in 1984; 80 in 1985; and 56 in 1986-1991. Monthly sample sizes 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 current methods were adopted.
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.

		Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Bay Bag Seine	1977	0	22	0	22	22	22	22	22	22	154
	1978	0	66	0	66	66	66	66	66	66	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	120	240	240	240	240	240	238	2,038
	1993	240	240	120	240	240	240	240	240	240	2,040
	1994	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	239	120	240	240	240	240	120	120	1,679
Gill Net (Spring)	1976	0	2	0	1	1	1	2	1	1	9
	1977	0	8	4	4	4	4	6	6	4	40
	1978	0	6	6	8	6	6	6	6	6	50
	1979	0	10	10	11	10	10	8	10	10	79
	1980	0	8	9	9	10	10	10	9	10	75
	1981	0	7	6	7	8	8	7	7	7	57
	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
	1988	45	45	20	45	45	45	45	45	45	380
	1989	45	45	20	45	45	45	45	45	45	380
	1990	45	45	20	45	45	45	45	45	45	380

Table A.4. (Cont'd.)

		Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
Gill Net (Spring) (Cont'd.)	1991	45	45	20	45	45	45	45	45	45	380
	1992	45	45	20	45	45	45	45	45	45	380
	1993	45	45	20	45	45	45	45	45	45	380
	1994	45	45	20	45	45	45	45	45	45	380
Gill Net (Fall)	1975	2	8	0	5	5	5	5	5	5	40
	1976	0	12	4	8	8	8	8	8	8	64
	1977	0	8	8	8	8	8	8	8	8	64
	1978	0	7	7	7	7	8	8	8	7	59
	1979	0	18	9	17	17	16	15	17	16	125
	1980	0	11	10	9	9	10	10	10	10	79
	1981	0	45	8	45	45	45	45	45	45	323
	1982	0	45	11	45	45	45	45	45	45	326
	1983	0	45	12	45	45	45	45	45	45	327
	1984	0	45	20	45	45	45	45	45	45	335
	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
	1988	45	45	20	45	45	45	45	45	45	380
	1989	45	45	20	45	45	45	45	45	45	380
	1990	45	45	20	45	45	45	45	45	45	380
	1991	45	45	20	45	45	45	45	45	45	380
	1992	45	45	20	45	45	45	45	45	45	380
	1993	45	45	20	45	45	45	45	45	45	380
	1994	45	45	20	45	45	45	45	45	45	380
ICWW Trawl	1992	72	72	72	72	72	72	72	72	72	648
	1993	72	72	72	72	72	72	72	72	72	648
	1994	72	72	72	72	72	72	72	72	72	648

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

		Galveston	Matagorda	San Antonio	Aransas	Coaswide
Oyster Reef 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	239	240	240	1,079
	1994	360	240	240	240	1,080

Table A.6. Number of samples collected during routine monitoring in 5 Texas Gulf surf zones by gear and year.

		Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
Beach Bag Seine	1987	9	15	25	21	12	82
	1988	28	56	101	67	42	294
	1989	29	55	91	74	42	291
	1990	30	54	98	70	42	294
	1991	26	58	97	71	42	294
	1992	27	57	84	42	42	252
	1993	28	56	84	42	42	252
	1994	27	57	84	42	42	252
Beach Seine	1987	9	15	26	22	12	84
	1988	28	56	100	68	42	294
	1989	29	55	91	74	42	291
	1990	30	54	98	70	42	294
	1991	26	58	97	71	42	294
	1992	27	57	84	42	42	252
	1993	28	56	84	42	42	252
	1994	27	57	84	42	42	252

Table A.7. Number of Gulf trawl samples collected during routine monitoring in 5 Gulf zones, by Gulf area and year.

		Sabine Lake	Galveston	Port O'Connor	Port Aransas	Port Isabel	Coastwide
Gulf Trawl	1985	0	80	80	176	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	189	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

Table A.8. Weighting factors used in calculating coastwide average catch rates.

Area	Gill net and[a] bay beg 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	61.6	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[f]	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					262
Galveston					273
Port O'Connor					277
Port Aransas					257
Port Isabel					
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 Lagunas Madre) or minus the mean of 1972 and 1977 estimates (for other bays)(Matlock and Osborn 1982).
[c] Equals nautical miles of ICWW.
[d] Equals total number of grids containing oyster reef.
[e] Equals total number of Gulf trawlable grids.
[f] No estimate was avilable 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.9. Species caught (alphabetical by scientific name; Robins et al. 1991) in Texas marine waters by TPWD sampling gear during 1975-1994. Common names in () are assigned common names by TPWD for identification purposes.

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

Table A.9. (Cont'd.)

Scientific Name	Common Name
Finfish (Cont'd.)	
Carassius auratus	Goldfish
Carcharhinus acronotus	Blacknose shark
Carcharhinus brevipinna	Spinner shark
Carcharhinus falciformis	Silky shark
Carcharhinus isodon	Finetooth shark
Carcharhinus leucas	Bull shark
Carcharhinus limbatus	Blacktip shark
Carcharhinus obscurus	Dusky shark
Carcharhinus plumbeus	Sandbar shark
Carcharhinus porosus	Smalltail shark
Centropomus parallelus	Fat snook
Centropomus undecimalis	Common snook
Centropristis ocyurus	Bank sea bass
Centropristis philadelphica	Rock sea bass
Chaetodipterus faber	Atlantic spadefish
Chaetodon ocellatus	Spotfin butterflyfish
Chasmodes bosquianus	Striped blenny
Chilomycterus schoepfi	Striped burrfish
Chloroscombrus chrysurus	Atlantic bumper
Citharichthys macrops	Spotted whiff
Citharichthys spilopterus	Bay whiff
Conodon nobilis	Barred grunt
Ctenopharyngodon idella	Grass carp
Cyclopsetta chittendeni	Mexican flounder
Cyclopsetta fimbriata	Spotfin flounder
Cynoscion arenarius	Sand seatrout
Cynoscion nebulosus	Spotted seatrout
Cynoscion nothus	Silver seatrout
Cyprinodon variegatus	Sheepshead minnow
Cyprinus carpio	Common carp
Dasyatis americana	Southern stingray
Dasyatis sabina	Atlantic stingray
Dasyatis say	Bluntnose stingray
Decapterus punctatus	Round scad
Diapterus auratus	Irish pompano
Dibranchus atlanticus	Atlantic batfish
Diodon hystrix	Porcupinefish
Diplectrum bivittatum	Dwarf sand perch
Diplectrum formosum	Sand perch
Diplodus holbrooki	Spottail pinfish
Dormitator maculatus	Fat sleeper
Dorosoma cepedianum	Gizzard shad
Dorosoma petenense	Threadfin shad
Echeneis naucrates	Sharksucker
Echiophis intertinctus	Spotted spoon-nose eel
Elagatis bipinnulata	Rainbow runner
Elops saurus	Ladyfish
Epinephelus nigritus	Warsaw grouper
Epinephelus niveatus	Snowy grouper
Equetus umbrosus	Cubbyu
Erotelis smaragdus	Emerald sleeper

Table A.9. (Cont'd.)

Scientific Name	Common Name
Finfish (Cont'd.)	
Etropus crossotus	Fringed flounder
Etrumeus teres	Round herring
Eucinostomus argenteus	Spotfin mojarra
Eucinostomus gula	Silver jenny
Eucinostomus lefroyi	Mottled mojarra
Eucinostomus melanopterus	Flagfin mojarra
Evorthodus lyricus	Lyre goby
Fundulus chrysotus	Golden topminnow
Fundulus grandis	Gulf killifish
Fundulus pulvereus	Bayou killifish
Fundulus similis	Longnose killifish
Gadella maraldi	(Barbelless codlet)
Gambusia affinis	Western mosquitofish
Gerres cinereus	Yellowfin mojarra
Gnathagnus egregius	Freckled stargazer
Gobiesox punctulatus	Stippled clingfish
Gobiesox strumosus	Skilletfish
Gobioides broussoneti	Violet goby
Gobiomorus dormitor	Bigmouth sleeper
Gobionellus boleosoma	Darter goby
Gobionellus hastatus	Sharptail goby
Gobionellus shufeldti	Freshwater goby
Gobiosoma bosc	Naked goby
Gobiosoma robustum	Code goby
Gonioplectrus hispanus	Spanish flag
Gunterichthys longipenis	Gold brotula
Gymnachirus texae	Fringed sole
Gymnothorax nigromarginatus	Blackedge moray
Gymnura micrura	Smooth butterfly ray
Haemulon aurolineatum	Tomtate
Halieutichthys aculeatus	Pancake batfish
Harengula jaguana	Scaled sardine
Hemicaranx amblyrhynchus	Bluntnose jack
Hemipteronotus novacula	Pearly razorfish
Hemiramphus balao	Balao
Hemiramphus brasiliensis	Ballyhoo
Hildebrandia flava	Yellow conger
Hippocampus erectus	Lined seahorse
Hippocampus zosterae	Dwarf seahorse
Histrio histrio	Sargassumfish
Holacanthus bermudensis	Blue angelfish
Hoplostethus mediterraneus	Armorhead
Hypleurochilus geminatus	Crested blenny
Hyporhamphus unifasciatus	Silverstripe halfbeak
Hypsoblennius hentz	Feather blenny
Hypsoblennius ionthas	Freckled blenny
Ictalurus furcatus	Blue catfish
Ictalurus punctatus	Channel catfish
Ictiobus bubalus	Smallmouth buffalo
Ictiobus cyprinellus	Bigmouth buffalo
Isurus oxyrinchus	Shortfin mako

Table A.9. (Cont'd.)

Scientific Name	Common Name
Finfish (Cont'd.)	
Jenkinsia lamprotaenia	Dwarf herring
Kyphosus incisor	Yellow chub
Kyphosus sectatrix	Bermuda chub
Labrisomus nuchipinnis	Hairy blenny
Lactophrys quadricornis	Scrawled cowfish
Lagocephalus laevigatus	Smooth puffer
Lagodon rhomboides	Pinfish
Larimus fasciatus	Banded drum
Leiostomus xanthurus	Spot
Lepisosteus oculatus	Spotted gar
Lepisosteus osseus	Longnose gar
Lepisosteus platostomus	Shortnose gar
Lepisosteus spatula	Alligator gar
Lepomis cyanellus	Green sunfish
Lepomis gulosus	Warmouth
Lepomis macrochirus	Bluegill
Lepomis megalotis	Longear sunfish
Lepomis microlophus	Redear sunfish
Lepophidium brevibarbe	Blackedge cusk-eel
Lobotes surinamensis	Tripletail
Lucania parva	Rainwater killifish
Lutjanus apodus	Schoolmaster
Lutjanus campechanus	Red snapper
Lutjanus griseus	Gray snapper
Lutjanus jocu	Dog snapper
Lutjanus synagris	Lane snapper
Lutjanus vivanus	Silk snapper
Megalops atlanticus	Tarpon
Membras martinica	Rough silverside
Menidia beryllina	Inland silverside
Menidia clarkhubbsi	Texas silverside
Menidia peninsulae	Tidewater silverside
Menticirrhus americanus	Southern kingfish
Menticirrhus littoralis	Gulf kingfish
Menticirrhus saxatilis	Northern kingfish
Microgobius gulosus	Clown goby
Microgobius thalassinus	Green goby
Micropogonias undulatus	Atlantic croaker
Micropterus salmoides	Largemouth bass
Monacanthus hispidus	Planehead filefish
Monacanthus setifer	Pygmy filefish
Morone americana	White perch
Morone chrysops	White bass
Morone mississippiensis	Yellow bass
Morone saxatilis	Striped bass
Morone X	Hybrid bass (striped x white)
Mugil cephalus	Striped mullet
Mugil curema	White mullet
Mullus auratus	Red goatfish
Mustelus canis	Smooth dogfish
Mycteroperca bonaci	Black grouper

Table A.9. (Cont'd.)

Scientific Name	Common Name
Finfish (Cont'd.)	
Mycteroperca microlepis	Gag
Mycteroperca phenax	Scamp
Mycteroperca rubra	Comb grouper
Myrophis punctatus	Speckled worm eel
Narcine brasiliensis	Lesser electric ray
Negaprion brevirostris	Lemon shark
Neomerinthe hemingwayi	Spinycheek scorpionfish
Ogcocephalus nasutus	Shortnose batfish
Ogcocephalus pantostictus	Spotted batfish
Ogcocephalus parvus	Roughback batfish
Ogcocephalus radiatus	Polka-dot batfish
Ogcocephalus sp.	(Batfish-unidentified)
Oligoplites saurus	Leatherjacket
Ophichthus gomesi	Shrimp eel
Ophichthus ophis	Spotted snake eel
Ophichthus puncticeps	Palespotted eel
Ophidion grayi	Blotched cusk-eel
Ophidion holbrooki	Bank cusk-eel
Ophidion marginatum	Striped cusk-eel
Ophidion welshi	Crested cusk-eel
Opisthonema oglinum	Atlantic thread herring
Opsanus beta	Gulf toadfish
Opsanus pardus	Leopard toadfish
Orthopristis chrysoptera	Pigfish
Parablennius marmoreus	Seaweed blenny
Paraconger caudilimbatus	Margintail conger
Paralichthys albigutta	Gulf flounder
Paralichthys lethostigma	Southern flounder
Paralichthys sp.	(Flounder-unidentified)
Paralichthys squamilentus	Broad flounder
Parasudis truculenta	Longnose greeneye
Peprilus alepidotus	Harvestfish
Peprilus burti	Gulf butterfish
Phaeoptyx conklini	Freckled cardinalfish
Physiculus fulvus	Metallic codling
Platybelone argalus	Keeltail needlefish
Poecilia formosa	Amazon molly
Poecilia latipinna	Sailfin molly
Pogonias cromis	Black drum
Polydactylus octonemus	Atlantic threadfin
Pomacentrus fuscus	Dusky damselfish
Pomacentrus variabilis	Cocoa damselfish
Pomadasys crocro	Burro grunt
Pomatomus saltatrix	Bluefish
Pomoxis annularis	White crappie
Pomoxis nigromaculatus	Black crappie
Pontinus longispinis	Longspine scorpionfish
Porichthys plectrodon	Atlantic midshipman
Priacanthus arenatus	Bigeye
Prionotus longispinosus	Bigeye searobin
Prionotus martis	Barred searobin

Table A.9. (Cont'd.)

Scientific Name	Common Name
Finfish (Cont'd.)	
Prionotus ophryas	Bandtail searobin
Prionotus paralatus	Mexican searobin
Prionotus roseus	Bluespotted searobin
Prionotus rubio	Blackwing searobin
Prionotus scitulus	Leopard searobin
Prionotus stearnsi	Shortwing searobin
Prionotus tribulus	Bighead searobin
Pristigenys alta	Short bigeye
Pristipomoides aquilonaris	Wenchman
Pristis pectinata	Smalltooth sawfish
Pylodictis olivaris	Flathead catfish
Rachycentron canadum	Cobia
Raja eglanteria	Clearnose skate
Raja texana	Roundel skate
Remora remora	Remora
Rhinobatos lentiginosus	Atlantic guitarfish
Rhinoptera bonasus	Cownose ray
Rhizoprionodon terraenovae	Atlantic sharpnose shark
Rhomboplites aurorubens	Vermilion snapper
Rypticus saponaceus	Greater soapfish
Sardinella aurita	Spanish sardine
Saurida brasiliensis	Largescale lizardfish
Saurida caribbaea	Smallscale lizardfish
Scartella cristata	Molly miller
Sciaenops ocellatus	Red drum
Scomber japonicus	Chub mackerel
Scomberomorus cavalla	King mackerel
Scomberomorus maculatus	Spanish mackerel
Scomberomorus sp.	(Mackerel-unidentified)
Scorpaena brasiliensis	Barbfish
Scorpaena calcarata	Smoothhead scorpionfish
Scorpaena plumieri	Spotted scorpionfish
Scyliorhinus retifer	Chain dogfish
Selar crumenophthalmus	Bigeye scad
Selene setapinnis	Atlantic moonfish
Selene vomer	Lookdown
Seriola dumerili	Greater amberjack
Seriola zonata	Banded rudderfish
Serraniculus pumilio	Pygmy sea bass
Serranus atrobranchus	Blackear bass
Serranus phoebe	Tattler
Serranus subligarius	Belted sandfish
Sparisoma radians	Bucktooth parrotfish
Sphoeroides parvus	Least puffer
Sphoeroides spengleri	Bandtail puffer
Sphyraena barracuda	Great barracuda
Sphyraena guachancho	Guaguanche
Sphyrna lewini	Scalloped hammerhead
Sphyrna mokarran	Great hammerhead
Sphyrna tiburo	Bonnethead
Sphyrna tudes	Smalleye hammerhead

Table A.9. (Cont'd.)

Scientific Name	Common Name
Finfish (Cont'd.)	
Stellifer lanceolatus	Star drum
Stenotomus caprinus	Longspine porgy
Strongylura marina	Atlantic needlefish
Strongylura timucu	Timucu
Syacium gunteri	Shoal flounder
Syacium papillosum	Dusky flounder
Symphurus civitatus	Offshore tonguefish
Symphurus diomedianus	Spottedfin tonguefish
Symphurus parvus	Pygmy tonguefish
Symphurus plagiusa	Blackcheek tonguefish
Symphurus urospilus	Spottail tonguefish
Syngnathus floridae	Dusky pipefish
Syngnathus louisianae	Chain pipefish
Syngnathus pelagicus	Sargassum pipefish
Syngnathus scovelli	Gulf pipefish
Synodus foetens	Inshore lizardfish
Synodus poeyi	Offshore lizardfish
Thunnus thynnus	Bluefin tuna
Tilapia aurea	Blue tilapia
Trachinocephalus myops	Snakefish
Trachinotus carolinus	Florida pompano
Trachinotus falcatus	Permit
Trachinotus goodei	Palometa
Trachurus lathami	Rough scad
Trichiurus lepturus	Atlantic cutlassfish
Trinectes maculatus	Hogchoker
Umbrina coroides	Sand drum
Upeneus parvus	Dwarf goatfish
Urophycis cirrata	Gulf hake
Urophycis floridana	Southern hake
Xanthichthys ringens	Sargassum triggerfish
Invertebrates	
Acetes americanus	(Sergestid shrimp)
Agriopoma texasianum	Texas venus
Albunea gibbesii	Surf mole crab
Albunea paretii	Beach mole crab
Alpheus estuariensis	Estuarine snapping shrimp
Amaea mitchelli	Mitchell's wentletrap
Anachis avara	Greedy dovesnail
Anadara brasiliana	Incongruous ark
Anadara floridana	Cut-ribbed ark
Anadara ovalis	Blood ark
Anadara transversa	Transverse ark
Anasimus latus	Stilt spider crab
Anomia simplex	Common jingle
Aplysia brasiliana	Sooty seahare
Arbacia punctulata	Red sea urchin
Arca imbricata	Mossy ark
Architectonica nobilis	Common sundial

Table A.9. (Cont'd.)

Scientific Name	Common Name
Invertebrates (Cont'd.)	
Arcinella cornuta	Florida spiny jewelbox
Arenaeus cribrarius	Speckled swimming crab
Argopecten gibbus	Atlantic calico scallop
Argopecten irradians	Bay scallop
Armina tigrina	Tiger armina
Astropecten duplicatus	Two-spined starfish
Atrina serrata	Sawtooth pen shell
Aurelia aurita	Moon jellyfish
Barbatia candida	White-beard ark
Beroe ovata	Sea walnut
Brachidontes exustus	Scorched mussel
Brissopsis alta	Heart urchin
Bulla striata	Striate bubble
Bursatella leachii pleii	Ragged seahare
Busycon sinistrum	Lightning whelk
Busycotypus spiratus	Pearwhelk
Calappa flammea	Flame box crab
Calappa ocellata	Ocellate box crab
Calappa sulcata	Yellow box crab
Callianassa louisianensis	Gulf estuarine ghost shrimp
Callinectes marginatus	(Sargassum crab)
Callinectes sapidus	Blue crab
Callinectes similis	Lesser blue crab
Cancellaria reticulata	Common nutmeg
Cantharus cancellarius	Cancellate cantharus
Cerithidea pliculosa	Plicate hornsnail
Cerithium lutosum	Variable cerith
Chasmocarcinus mississippiensis	Roughwrist soft crab
Chione cancellata	Cross-barred venus
Chione clenchi	Clench venus
Chione intapurpurea	Lady-in-waiting venus
Chiropsalmus quadrumanus	Sea wasp
Chrysaora quinquecirrha	Sea nettle
Clibanarius vittatus	Thinstripe hermit
Crassostrea virginica	Eastern oyster
Crepidula convexa	Convex slippersnail
Crepidula fornicata	Common Atlantic slippersnail
Crepidula plana	Eastern white slippersnail
Cyclinella tenuis	Thin cyclinella
Cyrtopleura costata	Angelwing
Dardanus fucosus	Bareye hermit
Dinocardium robustum	Atlantic giant-cockle
Distorsio clathrata	Atlantic distorsio
Donax variabilis	Variable coquina
Dosinia discus	Disk dosinia
Dromidia antillensis	Hairy sponge crab
Dyspanopeus texana	Gulf grassflat crab
Echinometra lucunter	Rock-boring urchin
Emerita portoricensis	Puerto Rican sand crab
Ensis minor	Minor jacknife
Euceramus praelongus	Olivepit porcelain crab

Table A.9. (Cont'd.)

Scientific Name	Common Name
Invetebrates (Cont'd.)	
Eurypanopeus abbreviatus	Lobate mud crab
Eurypanopeus depressus	Flatback mud crab
Exhippolysmata oplophoroides	Redleg humpback shrimp
Fasciolaria lilium lilium	Banded tulip
Glypturus acanthochirus	Ghost shrimp
Haminoea antillarum	Antilles glassy-bubble
Hepatus epheliticus	Calico box crab
Hepatus pudibundus	Flecked box crab
Heterocrypta granulata	Smooth elbow crab
Hexapanopeus angustifrons	Smooth mud crab
Hexapanopeus paulensis	Knobbed mud crab
Hypoconcha arcuata	Granulate shellback shrimp
Hypoconcha sabulosa	Shellback crab (Dromiid)
Ischadium recurvum	Hooked mussel
Isocheles wurdemanni	Surf hermit
Laevicardium mortoni	Morton eggcockle
Latreutes fucorum	Slender sargassum shrimp
Latreutes parvulus	Sargassum shrimp
Leander tenuicornis	Brown grass shrimp
Leiolambrus nitidus	White elbow crab
Lepidopa benedicti	(Gulf mole crab)
Libinia dubia	Longnose spider crab
Libinia emarginata	Portly spider crab
Littorina irrorata	Marsh periwinkle
Loligo pealeii	Longfin squid
Loligo pleii	Arrow squid
Lolliguncula brevis	Atlantic brief squid
Lucifer faxoni	Sergestid shrimp
Lucina pectinata	Thick lucine
Luidia alternata	Banded sea star
Luidia clathrata	Large sea star
Lysiosquilla scabricauda	(Giant) mantis shrimp
Lysmata wurdemanni	Peppermint shrimp
Lytechinus variegatus	Short spined sea urchin
Macrobrachium acanthurus	Cinnamon river shrimp
Macrobrachium ohione	Ohio shrimp
Macrocallista maculata	Calico clam
Mactra fragilis	Fragile Atlantic mactra
Melampus bidentatus	Eastern melampus
Mellita quinquiesperforata	Five-lunuled sand dollar
Menippe adina	Gulf stone crab
Mercenaria campechiensis	Southern quahog
Mercenaria campechiensis texana	Texas quahog
Metoporhaphis calcarata	False arrow crab
Mnemiopsis mccradyi	Phosphorus jelly
Molgula manhattensis	Sea squirt
Mulinia lateralis	Dwarf surf clam
Muricanthus fluvescens	Giant eastern murex
Nassarius vibex	Bruised nassa
Nemopsis bachei	(Hydromedusa)
Neritina virginea	Virgin nerite

Table A.9. (Cont'd.)

Scientific Name	Common Name
Invertebrates (Cont'd.)	
Neverita duplicata	Shark eye
Noetia ponderosa	Ponderous ark
Octopus vulgaris	Common octopus
Oculina diffusa	Ivory coral
Ocypode quadrata	Atlantic ghost crab
Oliva sayana	Lettered olive
Ophiolepis elegans	Brittle star
Orchestia grillus	Beach flea (amphipod)
Ostreola equestris	Crested oyster
Ovalipes floridanus	Florida lady crab
Paguristes hummi	(Blue spot hermit crab)
Pagurus annulipes	(Brown-banded hermit crab)
Pagurus brevidactylus	Short-fingered hermit
Pagurus impressus	Dimpled hermit
Pagurus longicarpus	Longwrist hermit
Pagurus pollicaris	Flatclaw hermit
Palaemonetes pugio	Daggerblade grass shrimp
Palaemonetes vulgaris	Marsh grass shrimp
Panopeus simpsoni	Oystershell mud crab
Paranthus rapiformis	Onion anemone
Parthenope serrata	Sawtooth elbow crab
Pelia mutica	Cryptic teardrop crab
Penaeus aztecus	Brown shrimp
Penaeus duorarum	Pink shrimp
Penaeus setiferus	White shrimp
Persephona crinita	Pink purse crab
Persephona mediterranea	Mottled purse crab
Petrochirus diogenes	Giant hermit
Petrolisthes armatus	Green porcelain crab
Phalium granulatum	Scotch bonnet
Physalia physalis	Portuguese man-of-war
Pinnotheres maculatus	Squatter pea crab
Pleuroploca gigantea	Horse conch
Podochela riisei	Longfinger neck crab
Podochela sidneyi	Shortfinger neck crab
Polymesoda maritima	Southern marshclam
Porcellana sayana	Spotted porcelain crab
Porcellana sigsbeiana	Striped porcelain crab
Portunus anceps	Delicate swimming crab
Portunus gibbesii	Iridescent swimming crab
Portunus sayi	Sargassum swimming crab
Portunus spinicarpus	Longspine swimming crab
Portunus spinimanus	Blotched swimming crab
Portunus ventralis	(Portunid swimming crab)
Procambarus clarkii	Red swamp crawfish
Pseudocyphoma intermedium	Intermediate cyphoma
Rangia cuneata	Atlantic rangia
Rangia flexuosa	Brown rangia
Raninoides louisianensis	Gulf frog crab
Renilla mulleri	Sea pansy
Rhithropanopeus harrisii	Harris mud crab

Table A.9. (Cont'd.)

Scientific Name	Common Name
Inveterbrates (Cont'd.)	
Scyllaea pelagica	Sargassum nudibranch
Sesarma reticulatum	Heavy marsh crab
Sicyonia brevirostris	Brown rock shrimp
Sicyonia dorsalis	Lesser rock shrimp
Sicyonia stimpsoni	Eyespot rock shrimp
Sicyonia typica	Kinglet rock shrimp
Simnialena marferula	Sea-whip simnia
Sinum perspectivum	White baby-ear
Solenocera vioscai	Humpback shrimp
Speocarcinus lobatus	Gulf squareback crab
Spisula lidissima	Atlantic surfclam
Squilla chydaea	(Offshore mantis shrimp)
Squilla empusa	Mantis shrimp
Squilla neglecta	Lesser mantis shrimp
Stenorhynchus seticornis	Yellowline arrow crab
Stomolophus meleagris	Cabbagehead
Strombus alatus	Florida fighting conch
Suborder Zygoptera	(Damselfly nymphs)
Synalpheus fritzmuelleri	Speckled snapping shrimp
Tagelus plebeius	Stout tagelus
Tellina alternata	Alternate tellin
Tellina tampaensis	Tampa tellin
Terebra protexta	Fine-ribbed auger
Thais haemastoma floridana	Florida rocksnail
Thyone mexicana	Sea cucumber
Tonna galea	Giant tun
Tozeuma carolinense	Arrow shrimp
Trachycardium muricatum	Yellow pricklycockle
Trachypenaeus constrictus	Roughneck shrimp
Trachypenaeus similis	Roughback shrimp
Uca panacea	Gulf sand fiddler
Upogebia affinis	Coastal mud shrimp
Velella velella	By-the-wind sailor
Xiphopenaeus kroyeri	Seabob

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

Table B.1. Mean surface salinity (o/oo) at sampled gill net sites by bay system during spring and fall, 1975-94. ND = no data.

	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Year	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
1975	ND	ND	ND	13.9	ND	ND	ND	22.2	ND	17.6	ND	18.5	ND	20.0	ND	33.3	ND	25.7	ND	20.5
1976	ND	ND	ND	19.6	ND	20.1	0.0	18.8	ND	17.9	ND	10.9	ND	14.9	35.5	26.0	ND	23.2	12.5	18.9
1977	ND	ND	15.4	23.2	14.2	18.6	19.2	15.0	14.3	19.1	9.0	19.1	18.2	30.9	26.1	37.0	28.5	30.5	18.2	24.0
1978	ND	ND	18.5	21.3	20.8	18.4	19.2	15.6	26.0	13.9	19.0	12.5	26.5	26.2	38.2	39.3	31.8	18.2	24.5	20.4
1979	ND	ND	7.6	13.3	14.0	11.8	11.1	9.6	7.5	12.3	9.4	7.7	18.2	23.4	35.0	28.2	30.3	26.0	15.8	16.1
1980	ND	ND	11.3	22.6	17.0	24.1	14.3	23.4	20.8	18.2	17.4	19.7	30.0	27.0	37.3	24.6	30.3	30.8	21.2	23.5
1981	ND	ND	25.8	10.3	26.8	17.5	20.1	13.6	19.0	10.8	20.2	8.4	29.4	21.5	30.6	25.3	33.1	31.5	25.3	16.4
1982	ND	ND	12.1	20.5	18.3	24.1	12.4	23.0	17.3	26.9	12.1	25.1	23.6	32.8	24.0	39.8	27.0	36.0	17.4	27.8
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	33.7	31.2	24.0	18.4
1984	ND	ND	21.4	19.0	23.1	15.8	23.8	19.0	27.4	29.6	22.1	26.8	30.2	33.6	38.9	44.2	35.1	23.3	27.5	26.1
1985	ND	ND	18.0	22.3	14.7	23.5	11.0	23.3	12.8	23.7	13.4	24.2	22.3	30.3	35.1	39.6	33.0	32.3	20.0	27.0
1986	11.7	13.1	15.0	20.9	25.3	14.1	23.9	22.3	21.9	22.9	21.4	24.4	30.9	36.6	41.7	46.9	34.0	38.2	25.0	27.8
1987	8.2	14.3	19.7	21.5	15.8	13.6	16.1	20.4	12.3	16.1	16.7	13.5	32.8	33.7	28.8	37.5	28.2	34.1	20.6	23.5
1988	7.8	12.1	18.3	21.8	24.9	27.3	25.4	32.4	23.8	23.0	21.3	24.8	33.6	36.8	42.3	47.9	32.8	30.9	26.1	29.1
1989	5.5	8.7	15.9	14.8	26.0	26.3	26.5	28.4	26.5	29.9	30.8	34.3	35.3	36.9	47.2	52.7	30.5	38.3	27.7	30.4
1990	2.0	10.4	12.4	19.3	19.2	27.8	19.6	25.3	23.7	24.3	27.0	22.2	31.5	27.0	41.6	51.9	31.2	39.0	23.9	27.9
1991	0.2	5.4	9.4	17.4	11.7	19.4	11.2	19.5	16.3	25.1	16.9	18.4	26.9	31.0	39.7	36.7	26.1	30.5	18.3	23.4
1992	2.0	12.1	10.4	22.4	21.5	23.4	5.7	23.1	2.7	20.9	4.1	17.6	16.7	26.7	18.9	29.5	24.2	33.5	11.0	23.9
1993	2.1	8.3	12.1	21.2	11.5	26.0	10.8	24.5	9.2	17.5	10.2	18.7	26.5	31.8	26.0	31.6	27.3	32.0	15.7	24.1
1994	1.4	5.1	11.3	12.3	21.4	24.3	18.2	18.8	12.2	18.5	17.3	22.4	27.7	31.2	31.0	39.9	29.9	34.5	19.2	23.0

Table B.2. Mean surface water temperature (C) at sampled gill net sites by bay system during spring and fall, 1975-94. ND = no data.

	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Year	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
1975	ND	ND	ND	20.7	ND	ND	ND	21.2	ND	22.4	ND	17.4	ND	23.9	ND	23.0	ND	24.4	ND	21.6
1976	ND	ND	30.0	18.2	ND	14.5	ND	24.8	ND	24.6	ND	24.0	ND	24.2	27.0	19.6	ND	20.8	29.0	21.7
1977	ND	ND	24.9	20.6	25.0	21.3	25.2	23.1	25.8	23.2	25.6	22.7	25.5	23.3	26.4	21.3	26.6	24.1	25.6	22.4
1978	ND	ND	26.5	21.5	25.6	24.2	25.8	24.1	25.1	24.2	26.3	24.7	27.3	23.5	26.4	23.2	27.0	24.6	26.3	23.5
1979	ND	ND	26.5	22.8	27.4	23.4	27.3	23.6	27.3	24.2	26.8	24.0	27.1	24.5	28.1	25.0	27.4	25.6	27.1	24.1
1980	ND	ND	25.9	24.4	25.9	23.5	26.0	25.6	26.8	24.6	26.8	24.1	27.0	25.2	29.0	27.0	28.6	26.2	27.0	25.2
1981	ND	ND	27.1	25.3	27.3	23.1	26.0	24.6	27.4	25.0	27.4	24.7	27.3	25.2	26.9	25.9	26.9	26.3	27.0	25.2
1982	ND	ND	26.1	24.6	26.9	25.1	27.2	24.6	25.7	25.6	26.2	24.1	26.3	24.1	27.8	24.9	27.6	25.8	26.7	24.8
1983	ND	ND	25.7	25.3	25.8	25.9	25.0	25.5	25.6	25.3	26.2	25.2	26.6	25.3	27.4	27.0	26.4	26.8	26.0	25.7
1984	ND	ND	26.7	25.0	25.7	27.2	25.1	25.3	26.0	25.0	25.8	25.2	26.2	25.0	27.3	25.9	27.5	26.8	26.4	25.5
1985	ND	ND	27.9	25.5	28.6	25.6	27.4	25.0	26.3	27.3	27.5	25.8	26.3	26.0	27.6	26.3	28.2	27.4	27.5	26.1
1986	26.8	26.3	26.4	25.1	27.0	23.9	26.3	25.4	27.2	25.3	27.9	24.8	26.2	24.5	26.3	26.6	27.9	25.7	26.9	25.3
1987	25.7	24.0	26.4	24.0	27.1	24.5	26.4	25.1	26.7	26.3	26.4	24.8	25.9	24.8	27.6	26.2	25.2	25.2	26.4	25.0
1988	25.4	26.2	25.3	25.8	26.2	26.3	25.0	26.9	24.9	27.3	26.9	25.9	24.4	25.8	26.6	27.4	27.4	27.5	25.8	26.6
1989	25.0	24.8	25.7	24.0	28.7	25.6	26.4	24.3	26.6	24.1	26.6	24.1	26.8	25.5	26.5	26.4	27.4	27.0	26.5	24.9
1990	23.3	25.7	24.6	23.8	27.8	25.5	26.8	24.7	25.6	25.2	27.0	24.9	25.7	26.3	27.7	27.0	27.5	26.3	26.2	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	28.6	25.8	26.8	24.5
1992	27.5	23.5	26.3	23.0	24.8	24.3	24.6	24.3	26.7	24.3	27.3	24.7	26.8	23.7	28.0	25.3	27.4	25.5	26.6	24.3
1993	25.9	22.9	25.8	22.4	26.9	24.1	25.6	23.2	26.1	24.0	26.3	24.0	25.8	23.7	25.2	24.8	26.7	25.3	26.0	23.8
1994	27.1	25.1	26.7	24.9	26.7	26.3	26.6	26.2	25.4	26.0	27.2	26.5	27.3	26.4	27.9	26.7	27.8	27.3	26.9	26.1

Table B.3. Annual mean surface turbidity at sampled gill net sites by bay system during spring and fall 1975-94. ND = no data.

	Sabine Lake		Galveston		East Matagorda		Matagorda		San Antonio		Aransas		Corpus Christi		Upper Laguna Madre		Lower Laguna Madre		Coastwide	
Year	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	ND	53	ND	ND	ND	30	ND	42	ND	24	ND	27	ND	42	ND	28	ND	37
1976	ND	ND	109	52	ND	157	ND	33	ND	25	ND	63	ND	60	24	51	ND	38	79	50
1977	ND	ND	80	75	118	46	46	67	48	13	41	52	169	47	34	39	40	31	64	50
1978	ND	ND	47	44	36	15	68	74	55	20	55	50	61	47	66	67	37	39	54	48
1979	ND	ND	153	72	38	28	74	66	80	22	70	42	67	51	39	32	34	83	80	55
1980	ND	ND	99	69	67	49	74	33	17	19	53	40	51	36	57	55	64	71	64	48
1981	ND	ND	68	68	62	64	82	64	81	21	43	58	67	39	185	45	87	66	84	55
1982	ND	ND	66	56	82	55	75	47	35	27	91	33	49	38	63	32	113	79	72	47
1983	ND	ND	57	63	61	27	50	40	41	32	49	38	41	42	50	40	59	72	51	48
1984	ND	ND	43	34	27	25	35	44	47	40	40	39	47	38	69	56	113	90	54	47
1985	ND	ND	26	28	59	37	52	51	57	49	46	39	57	41	72	41	98	56	55	42
1986	43	28	32	35	64	37	60	31	46	32	38	41	57	26	61	85	53	59	48	43
Nephelometric Units																				
1987	30	18	18	17	42	19	28	19	26	15	10	7	22	7	14	11	23	13	21	14
1988	21	11	16	11	29	19	16	19	22	21	13	15	24	10	18	14	26	29	19	17
1989	25	9	12	9	16	22	36	15	30	12	22	8	18	12	12	9	45	13	24	11
1990	16	8	9	13	23	13	26	15	38	15	21	13	16	11	24	11	29	14	22	13
1991	15	6	20	8	52	21	29	15	19	13	23	13	13	12	25	18	13	10	21	12
1992	20	11	21	10	22	13	46	17	52	14	41	14	23	11	25	12	22	16	32	13
1993	24	11	24	16	35	14	46	16	29	11	24	15	17	14	18	15	23	14	27	14
1994	13	13	19	23	24	15	27	26	19	9	21	10	18	9	12	11	25	15	20	16

Table B.4. Annual mean surface salinity (o/oo) at sampled bag seine sites by bay system during 1977-94. 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	29.2	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	17.3	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	34.9	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

Table B.5. Annual mean surface temperature (C) at sampled bag seine sites by bay system during 1977-94. 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	23.2	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	24.4	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	23.3	22.6	23.4	24.3	25.9	23.0
1993	22.4	22.2	24.3	22.9	22.5	23.9	23.6	23.4	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

Table B.6. Annual mean surface turbidity at sampled bag seine sites by bay system during 1977-94. 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	55
1978	ND	78	ND	55	33	41	43	51	34	51
1979	ND	90	ND	70	31	53	44	47	59	60
1980	ND	90	ND	42	24	47	52	75	73	61
1981	ND	87	ND	54	25	65	44	107	95	71
1982	ND	105	ND	50	31	60	46	69	87	69
1983	ND	96	88	54	30	51	46	57	48	58
1984	ND	79	42	41	36	48	41	82	61	57
1985	ND	52	67	45	54	47	40	108	68	59
1986	46	84	59	46	51	46	44	60	80	61
Nephelometric Units										
1987	24	28	39	36	32	9	26	15	17	24
1988	26	26	28	29	29	28	20	22	24	26
1989	25	29	26	25	40	22	20	22	22	26
1990	21	29	26	30	31	23	21	20	23	26
1991	28	25	32	33	42	25	17	21	15	26
1992	24	23	34	41	43	31	21	17	25	29
1993	21	30	27	38	24	30	23	26	36	30
1994	21	24	31	26	25	17	17	10	40	24

Table B.7. Annual mean bottom salinity (o/oo) at sampled oyster dredge "reef" sites in Texas bay systems from 1984-94. 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	25.0	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

Table B.8. Annual mean bottom temperature (C) at sampled oyster dredge "reef" sites in Texas bay systems from 1984-94. 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

Table B.9. Annual mean bottom turbidity at sampled oyster dredge "reef sites" in Texas bay systems from 1984-94. 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

Table B.10. Annual mean bottom salinity (o/oo) at sampled bay trawl sites in Texas bay systems from 1977-94. 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	29.6	21.7	25.7	34.9	45.0	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	11.9	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	21.3	15.7	21.0	30.8	35.4	32.9	19.5

Table B.11. Annual mean bottom temperature (C) at sampled bay trawl sites in Texas bay systems from 1977-94. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1977	ND	18.7	ND	17.9	21.1	17.8	ND	ND	ND	18.8
1978	ND	21.6	ND	23.5	24.2	24.8	ND	ND	ND	22.9
1979	ND	22.5	ND	21.6	25.5	ND	ND	ND	ND	22.8
1980	ND	23.8	ND	ND	ND	ND	ND	ND	ND	23.8
1981	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1982	ND	21.8	ND	24.8	23.3	23.1	25.0	26.1	25.1	23.5
1983	ND	21.5	ND	21.7	21.7	22.3	22.2	21.8	22.7	21.8
1984	ND	22.2	ND	22.8	21.6	23.4	21.8	22.0	22.8	22.3
1985	ND	21.9	ND	22.5	22.5	21.7	21.9	23.0	22.8	22.2
1986	22.1	22.2	ND	23.3	23.1	22.1	21.8	23.3	22.5	22.6
1987	20.0	21.5	24.3	21.9	21.8	21.3	21.1	22.3	22.6	21.6
1988	21.8	21.8	21.1	20.2	22.1	21.3	22.2	22.1	24.5	21.6
1989	20.8	20.4	21.0	20.5	21.1	20.5	21.8	23.8	23.6	21.0
1990	21.2	21.4	22.7	22.6	21.9	22.6	23.4	23.8	24.2	22.3
1991	21.7	21.5	22.0	21.5	22.2	21.7	22.8	23.4	23.2	21.9
1992	20.7	21.6	20.6	21.1	22.6	21.4	21.4	22.9	23.5	21.7
1993	21.0	20.9	22.2	22.2	22.5	21.8	22.1	21.3	23.7	21.7
1994	22.1	22.2	22.6	22.6	22.7	20.9	23.0	23.6	24.8	22.5

Table B.12. Annual mean bottom turbidity at sampled bay trawl sites in Texas bay systems from 1983-94. 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	20	15	28	17	11	15	13	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

Table B.13. Annual mean bottom salinity (o/oo) at sampled gulf trawl sites in the Texas Territorial Sea 1985-94. 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	21.3	27.2	28.1	31.7	33.9	28.4

Table B.14. Annual mean bottom temperature (C) at sampled gulf trawl sites in the Texas Territorial Sea 1985-94. 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	21.8	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

Table B.15. Annual mean bottom turbidity at sampled gulf trawl sites in the Texas Territorial Sea 1985-94. 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

Table B.16. Annual mean shoreline salinity (o/oo) at sampled 60.9-m beach seine sites in 5 Texas gulf areas 1987-94.

Year	Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
1987	28.0	29.8	30.7	32.9	33.5	30.7
1988	28.6	30.8	31.9	35.8	36.8	32.2
1989	22.6	25.3	31.3	32.9	32.9	28.9
1990	24.2	26.5	31.3	31.5	35.6	29.5
1991	24.1	26.1	28.2	30.9	31.5	27.8
1992	27.0	30.3	30.9	32.1	31.7	30.2
1993	23.4	27.4	28.6	32.3	32.5	28.3
1994	23.3	26.4	28.2	31.4	34.6	28.1

Table B.17. Annual mean shoreline temperature (C) at sampled 60.9-m beach seine sites in 5 Texas gulf areas 1987-94.

Year	Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
1987	21.0	21.0	22.2	23.4	22.6	22.0
1988	26.7	26.5	26.9	27.5	26.5	26.8
1989	24.2	26.0	26.3	26.6	26.7	25.9
1990	26.1	26.4	26.3	26.9	27.1	26.5
1991	25.8	26.9	26.6	26.8	27.5	26.6
1992	26.5	26.0	25.1	25.9	26.6	25.9
1993	25.9	26.1	25.9	24.8	26.0	25.7
1994	27.7	26.9	26.9	26.9	27.2	27.1

Table B.18. Annual mean shoreline turbidity (NTU) at sampled 60.9-m beach seine sites in 5 Texas gulf areas 1987-94.

Year	Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
1987	51	36	41	16	12	35
1988	43	23	30	9	10	26
1989	131	26	39	13	7	50
1990	48	31	28	14	10	28
1991	73	31	31	12	18	36
1992	71	22	35	18	22	37
1993	68	28	35	19	23	37
1994	61	18	25	13	16	29

Table B.19. Annual mean shoreline salinity (o/oo) at sampled 18.3-m bag seine sites in 5 Texas gulf areas 1987-94.

Year	Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
1987	27.7	30.0	30.3	33.1	33.6	30.5
1988	28.6	30.8	31.9	35.8	36.8	32.3
1989	22.5	25.3	31.3	32.9	32.9	28.9
1990	25.2	26.6	31.1	32.2	35.5	29.8
1991	23.9	26.1	28.0	31.2	31.5	27.8
1992	27.2	30.0	30.9	32.0	31.7	30.2
1993	23.3	27.3	28.6	32.2	32.4	28.2
1994	23.2	26.9	28.4	31.3	34.4	24.2

Table B.20. Annual mean shoreline temperature (C) at sampled 18.3-m bag seine sites in 5 Texas gulf areas 1987-94.

Year	Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
1987	21.9	21.2	22.3	23.8	22.6	22.4
1988	26.8	26.8	26.9	27.5	26.4	26.9
1989	24.3	26.2	26.4	26.6	26.7	26.0
1990	26.2	26.7	26.3	27.1	27.1	26.6
1991	25.8	27.3	26.7	26.9	27.5	26.7
1992	26.6	26.3	25.2	26.0	26.6	26.0
1993	25.8	26.3	25.8	24.8	26.2	25.8
1994	27.9	27.2	26.9	27.2	27.3	27.3

Table B.21. Annual mean shoreline turbidity (NTU) at sampled 18.3-m bag seine sites in 5 Texas gulf areas 1987-94.

Year	Gulf-17	Gulf-18	Gulf-19	Gulf-20	Gulf-21	Coastwide
1987	56	41	45	16	12	38
1988	38	24	28	9	10	24
1989	134	29	37	13	7	51
1990	44	32	28	14	10	28
1991	73	31	31	12	18	36
1992	69	24	37	14	23	37
1993	92	30	36	21	26	44
1994	59	18	26	15	15	29

Table B.22. Annual mean surface salinity (o/oo) at sampled ICWW trawl sites by bay system during 1992-94. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1992	8.9	20.0	15.8	19.1	10.6	15.2	26.3	30.8	30.1	19.5
1993	6.2	18.5	18.4	18.1	15.3	22.1	32.0	31.9	30.6	20.5
1994	5.4	16.4	24.1	20.4	20.1	24.3	31.6	36.0	33.0	22.3

Table B.23. Annual mean surface temperature (C) at sampled ICWW trawl sites by bay system during 1992-94. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1992	20.2	21.5	20.8	20.6	22.1	22.5	21.8	23.0	23.8	21.6
1993	21.9	22.2	23.3	22.3	22.4	21.7	22.1	22.0	23.2	22.2
1994	21.6	22.7	23.1	22.7	22.8	21.7	22.8	23.9	23.4	22.7

Table B.24. Annual mean surface turbidity (NTU) at sampled ICWW trawl sites by bay system during 1992-94. ND = no data.

Year	Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre	Lower Laguna Madre	Coastwide
1992	29	23	22	27	38	25	9	7	22	28
1993	45	22	20	33	22	16	9	6	32	23
1994	33	17	17	12	16	14	6	6	47	16

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 1982-94.

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 1982-93. Blanks indicate no measurement taken.

Year	Depth (m)	Samples (No.)	Brown Shrimp		White Shrimp		Pink Shrimp		Blue Crab	
			No./h	Length	No./h	Length	No./h	Length	No./h	Length
1982	0-18	22	1,222	108	15	173	161	136	8	
	19-37	50	1,427	115	0		20	138	1	
	38-55	29	138	145	0		<1	126	0	
	56-73	5	117	179	0		0		0	
	74-91	3	79	182	0		0		0	
1983	0-18	28	254	99	20	153	195	127	8	
	19-37	47	1,445	119	1	167	87	121	4	
	38-55	24	304	132	0		1	118	1	
	56-73	8	66	156	0		0		0	
	74-91	2	71	168	0		0		0	
1984	0-18	16	733	116	30	174	4	151	6	
	19-37	40	1,594	116	1	168	3	150	0	
	38-55	16	544	131	0		0		0	
	56-73	12	194	138	0		0		0	
	74-91	5	86	151	0		0		0	
1985	0-18	30	450	98	41	168	15	135	20	
	19-37	40	1,362	112	2	167	10	131	4	
	38-55	14	150	127	0		<1	127	0	
	56-73	5	154	144	0		0		0	
	74-91	1	36	179	0		0		0	
1986	0-18	35	250	98	33	165	18	116	11	
	19-37	43	809	108	0		42	130	10	
	38-55	10	311	124	0		0		0	
	56-73	5	176	136	0		0		0	
	74-91	3	49	147	0		0		0	
1987	0-18	74	189	103	15	159	24	115	3	
	19-37	56	606	107	3	162	19	108	7	
	38-55	17	26	142	0		<1	180	2	
	56-73	8	16	177	0		0		1	
	74-91	7	11	177	0		0		0	
1988	0-18	75	227	106	4	166	22	110	5	
	19-37	50	309	113	0		2	127	2	
	38-55	17	18	126	0		0		0	
	56-73	7	4	180	0		0		0	
	74-91	7	3	198	0		0		0	
1989	0-18	85	556	101	16	167	51	116	6	111
	19-37	54	928	118	4	126	24	116	1	144
	38-55	12	212	129	0		<1	135	0	
	56-73	8	40	140	0		0		0	
	74-91	7	11	159	0		0		0	
1990	0-18	74	279	113	17	171	18	126	5	127
	19-37	48	850	123	1	156	62	122	2	81
	38-55	16	202	136	0		<1	135	1	79
	56-73	10	76	140	0		0		0	
	74-91	8	16	154	0		0		<1	164
1991	0-18	92	202	106	31	167	27	125	14	90
	19-37	51	1,153	125	7	173	64	136	4	143
	38-55	20	186	143	0		<1	157	1	135
	56-73	10	76	171	0		0		1	96
	74-91	9	41	176	0		0		0	

Table C.1. (Cont'd.)

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
1992	0-18	85	234	100	36	166	15	112	4	114
	19-37	58	217	127	<1	185	6	121	1	148
	38-55	17	22	158	0		0		<1	248
	56-73	10	15	180	0		0		0	
	74-91	8	10	186	0		0		0	
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
1994	0-18	93	113	109	9	169	58	124	6	125
	19-37	50	850	120	0		27	118	<1	102
	38-55	19	46	151	0		0		0	
	56-73	11	36	181	0		0		0	
	74-91	3	12	181	0		0		0	

*Data presented here were collected by R/V OREGON II (NMFS) in conjunction with TPWD research vessels. The data were made available by the Southeast Area Monitoring and Assessment Program (SEAMAP). Samples collected with 12.2-m trawl, except 6.1-m trawl by TPWD vessels 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 1986-93. Blanks indicate no measurement taken.

	Depth	Samples	Brown shrimp		White shrimp		Pink shrimp		Blue crab	
Year	(m)	(No.)	No./h	Length	No./h	Length	No./h	Length	No./h	Length
1986	0-18	12	71		77		26		0	
	19-37	34	93		15		2		1	
	38-55	26	68		0		0		0	
	56-73	12	41		0		0		0	
	74-91	4	22		0		0		0	
1987	0-18	65	20		89		18		0	
	19-37	40	50		7		2		<1	
	38-55	12	21		0		0		0	
	56-73	2	6		0		0		0	
	74-91	1	0		0		0		0	
1988	0-18	77	21		98		9		0	
	19-37	49	48		15		12		0	
	38-55	16	44		0		1		0	
	56-73	10	15		0		0		0	
	74-91	7	8		0		0		0	
1989	0-18	78	21	100	137	102	16	124	2	45
	19-37	60	68	140	23	117	10	123	<1	83
	38-55	20	71	169	<1		1	124	<1	94
	56-73	7	43	173	0		0		<1	74
	74-91	9	5	185	0		0		0	
1990	0-18	64	18	105	56	129	11	137	<1	70
	19-37	59	69	140	5	159	7	126	<1	87
	38-55	22	60	168	<1	185	1	129	1	75
	56-73	9	34	173	0		0		1	74
	74-91	6	7	190	0		0		0	
1991	0-18	88	28	107	31	124	14	108	<1	52
	19-37	57	120	134	4	166	4	107	<1	133
	38-55	20	65	161	0		0		1	135
	56-73	12	31	172	0		0		0	
	74-91	11	12	181	0		0		0	
1992	0-18	89	11	115	135	115	3	131	<1	34
	19-37	55	80	135	8	157	1	122	<1	141
	38-55	18	42	164	0		0		<1	141
	56-73	8	49	172	0		0		0	
	74-91	4	33	176	0		0		0	
1993	0-18	88	11	126	160	119	31	95	3	160
	19-37	55	91	119	17	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	
	74-91	5	17	85	<1	119	<1	98	<1	144
1994	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	
	56-73	13	26	177	0		0		0	
	74-91	11	8	192	0		0		0	

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

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