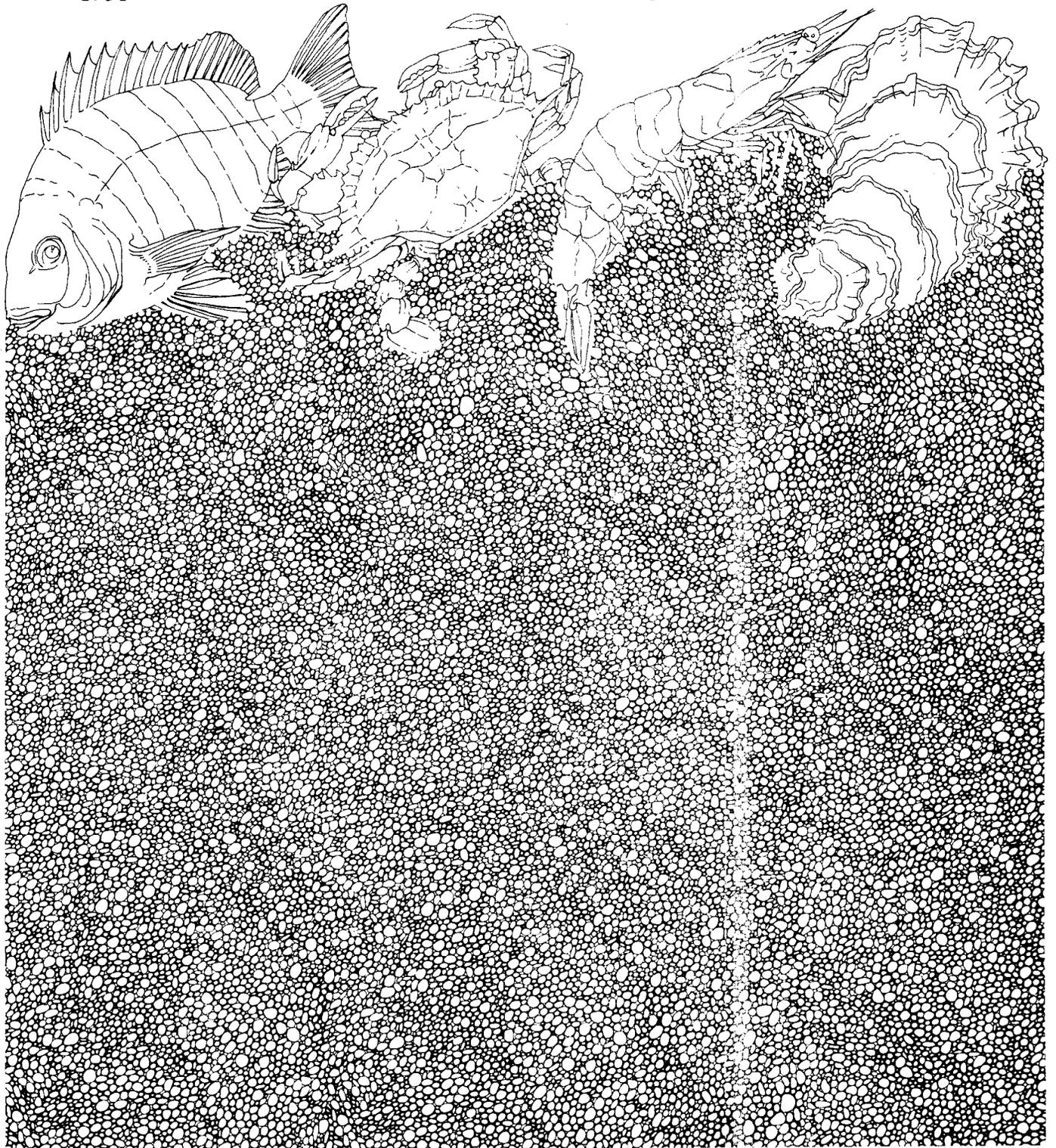


# A SUMMARY OF 7 YEARS OF STOCKING TEXAS BAYS WITH RED DRUM

by Gary C. Matlock

Management Data Series Number 60  
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Texas Parks and Wildlife Department  
Coastal Fisheries Branch



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## ABSTRACT

During October 1975-1982 Texas bays were stocked with over 56 million red drum eggs (8.5 million), fry (45.1 million), and fingerlings (2.8 million) to enhance existing populations. Most of the bays except the lower Laguna Madre were stocked in summer and fall 1975, 1979, and 1980. No fish were stocked into the lower Laguna Madre. About 49,000 fingerlings were tagged, most with magnetic nose tags.

## INTRODUCTION

Red drum (Sciaenops ocellatus) support recreational and commercial fisheries along the Atlantic and Gulf of Mexico coasts (Matlock 1980). In Texas, the status of red drum populations has been the center of controversy between fishermen for over 100 years (Matlock 1982). The declining populations of red drum claimed by sport fishermen were difficult to document coastwide until 1975, but Texas Parks and Wildlife (TPWD) bag seine and trammel net collections in the lower Laguna Madre reflected dramatic reduction since 1968 (Breuer 1975). Although minimum and maximum size limits, bag limits, and commercial gear restrictions were enacted as early as 1920 for red drum they appeared inadequate to reverse the declining trend in abundance (Matlock 1982).

The development in 1975 of techniques to spawn and rear red drum in captivity (Arnold et al. 1977) added stocking to the list of potential management tools. The potential success of stocking red drum was indicated by a strong year class that was recruited to bays along most of the Texas coast after Hurricane Beulah (Breuer 1967, Matlock 1984). This occurrence indicated that populations may be below carrying capacity.

Examination of the feasibility of stocking Texas bays with red drum to enhance existing stocks began in 1975, but stocking activity over the past 7 years had not been summarized. This paper tabulates and summarizes stocking data for eggs, fry, and fingerlings during 1975-1982 to provide a reference document for the activity and a basis for evaluating future red drum stockings.

## MATERIALS AND METHODS

Fish reared in captivity by TPWD, National Marine Fisheries Service, and the University of Texas were stocked in bays. Data contained in written stocking summaries, preliminary and progress reports, letters, stocking trip tickets, TPWD memoranda, news releases, and annual and operations plans were tabulated by date and bay system to obtain red drum stocking data. Stocking trip tickets were considered to be most accurate. If stocking tickets were unavailable and the stocking was documented in only one other document, those data were also included in this summary. If data for stocking were inconsistent on two or more documents, production records from the TPWD Marine Fisheries Research Station at Palacios were used to resolve discrepancies. If these records were unavailable, the document with the latest date was considered correct. Dr. Connie Arnold provided data on eggs stockings by the University of Texas Marine Science Institute at Port Aransas.

Each stocking was summarized separately for eggs, fry, and fingerlings by bay system and site. The total length range and mean was included for fingerlings, if available. The number of tagged fingerlings stocked was also included. The data were then summarized by calendar year for each bay system stocked for each life history stage of red drum.

## RESULTS AND DISCUSSION

During October 1975-1982 Texas bays (Figure 1) were stocked with over 56 million red drum eggs, fry, and fingerlings (Table 1). Most of these fish were fry (80%) followed by eggs (15%) and fingerlings (5%). The high fecundity of red drum (about 500,000 eggs/female/spawn) resulted in egg and fry production exceeding rearing capacity. As a result, mainly bays along the middle coast were stocked directly with fry. Matagorda and San Antonio Bays received at least twice as many fry as any other bay system (Table 1) and Corpus Christi received all of the eggs (stocked by The University of Texas Marine Science Institute). Aransas Bay received most of the fingerlings (2.2 million) with Matagorda Bay receiving almost one-half million fingerlings.

Most of the stocking occurred in 1975, 1979, and 1980 with almost 47 million fish being released in those 3 years (Table 1). Other years were spent developing and refining spawning and rearing techniques and replacing brood fish lost to disease. The emphasis for the TPWD Marine Fisheries Research Station at Palacios was modified in 1980 from producing fish for stocking to research on other marine fishes. Construction of the John Wilson Hatchery at Corpus Christi in 1982 provided the primary source of red drum for future bay stockings.

Only Corpus Christi Bay near The University of Texas Marine Science Institute was stocked with eggs (Table 2). These eggs were surplus to the Institute's research needs and were disposed of in the bay (Arnold, personal communication).<sup>1</sup>

All fry were distributed during summer and fall except for 4.7 million placed in Galveston Bay in May 1979 (Table 3). All fry were surplus to culture research and production needs of TPWD. They were distributed throughout the coast but at few sites within each bay.

Most fingerlings were distributed during summer and fall (Table 4). St. Charles Bay in the Aransas Bay system received most of these fish as part of a study to assess directly the success of fingerling stockings. To assist in the evaluation, 49,194 were tagged; 5,942 with monel jaw tags, 130 with plastic streamer tags and 43,122 with magnetic nose tags. Fish placed in St. Charles Bay in May and June were also identifiable by size which allowed for assessment through bag seine collections for several months because stocked fish were  $\leq 90$  mm total length and about 30-60 mm smaller than the size of juvenile wild fish (Figure 2) in this and adjacent bays.

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<sup>1</sup>Dr. Connie Arnold, pers. commun., The University of Texas Marine Science Institute, Port Aransas, Texas, August 31, 1982.

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Table 1. (Cont'd).

Calendar year	Life stage	Bay system										Total	
		Sabine Lake	Galveston	East Matagorda	Matagorda	San Antonio	Aransas	Corpus Christi	Upper Laguna Madre				
1982	Eggs												
	Fry												
	Fingerlings												
	Total												280,000
													280,000
All years	Eggs												
	Fry												
	Fingerlings												
	Total												8,500,000
													8,500,000
													14,514,000
													1,900,000
													18,596
													23,017,000
													1,918,596
													56,380,410

Table 2. Site and number of red drum eggs stocked placed in Corpus Christi Bay system during October 1975-1982 as reported by the University of Texas (U.T.) Marine Science Institute.

Date	Site	Number
10-08-79	Redfish Bay, Harbor Island Corpus Christi Channel, near Port	500,000
09-26-80	Aransas Airport Corpus Christi Channel, near Port	500,000
10-05-80	Aransas Airport	500,000
10-13-80	Corpus Christi Channel at U.T. Lab	500,000
10-16-80	Caster's Cut	500,000
10-19-80	Corpus Christi Channel at U.T. Lab	500,000
10-23-80	Corpus Christi Channel at U.T. Lab	500,000
10-24-80	Caster's Cut	500,000
10-25-80	Ponds-Charlie's Pasture	500,000
10-26-80	Ponds-Charlie's Pasture	500,000
10-27-80	Corpus Christi Channel at U.T. Lab	500,000
11-03-80	Caster's Cut	500,000
11-09-80	Corpus Christi Channel at U.T. Lab	500,000
11-12-80	Corpus Christi Channel at U.T. Lab	500,000
09-03-81	Pond near Port Aransas Airport	500,000
09-05-81	Corpus Christi Channel at U.T. Lab	500,000
09-15-81	Corpus Christi Channel at U.T. Lab	500,000

Table 3. Date, location, and number of red drum fry (1-3 days old) placed in Texas bays during October 1975-1982 by Texas Parks and Wildlife Department.

Date	Bay system	Bay	Site	Number
08-25-75	Corpus Christi	Redfish	Harbor Island	1,200,000
09-29-75	Corpus Christi	Corpus Christi	Mustang Island	1,000,000
10-03-75	Corpus Christi	Corpus Christi	Mustang Island	500,000
11-09-75	Corpus Christi	Redfish	Harbor Island	10,000,000
11-10-78	San Antonio	Espiritu Santo		2,250,000
11-13-78	Matagorda	Tres Palacios	Turtle Bay	20,000
11-16-78	Matagorda	Tres Palacios	Turtle Bay	20,000
05-11-79	Galveston	West	Christmas Bay	540,000
05-12-79	Galveston	West	Christmas Bay	700,000
05-13-79	Galveston	West	Christmas Bay	1,100,000
05-14-79	Galveston	West	Christmas Bay	600,000
05-15-79	Galveston	West	Christmas Bay	900,000
05-18-79	Galveston	West	Christmas Bay	400,000
05-19-79	Galveston	West	Christmas Bay	500,000
07-14-79	Corpus Christi	Corpus Christi	Shamrock Cove	914,000
07-21-79	Corpus Christi	Corpus Christi	Shamrock Cove	900,000
08-20-79	San Antonio	Espiritu Santo	Pringle Lake	300,000
08-23-79	San Antonio	Espiritu Santo		300,000
08-26-79	San Antonio	Espiritu Santo	Pringle Lake	300,000
08-28-79	Aransas	Redfish		100,000
08-30-79	San Antonio	Espiritu Santo	Pringle Lake	900,000
09-04-79	San Antonio	Espiritu Santo	Pringle Lake	360,000
09-13-79	Aransas	Redfish		80,000
10-06-79	Aransas	Redfish		800,000
10-10-79	Aransas	Redfish		1,350,000
10-12-79	Aransas	Redfish		500,000
10-18-79	Matagorda	Carancahua	Redfish Lake	1,500,000
07-15-80	Matagorda	Carancahua	Redfish Lake	1,600,000
07-16-80	Matagorda	Carancahua		700,000
07-17-80	Matagorda	Carancahua	Redfish Lake	780,000
07-18-80	Matagorda	Carancahua	Redfish Lake	400,000
07-19-80	Matagorda	Carancahua	Redfish Lake	600,000
07-20-80	Matagorda	Carancahua	Redfish Lake	470,000
07-24-80	Matagorda	Carancahua	Redfish Lake	300,000
08-06-80	Matagorda	Carancahua	Redfish Lake	186,000
08-27-80	San Antonio	San Antonio	Swan Point	1,700,000
08-28-80	San Antonio	San Antonio	Swan Point	1,300,000
08-29-80	San Antonio	Barroom		2,200,000
08-31-80	San Antonio	Barroom		1,600,000
09-10-80	Upper Laguna Madre	Upper Laguna Madre	Padre Island between North and South Bird Islands	500,000

Table 3. (Cont'd).

Date	Bay system	Bay	Site	Number
09-14-80	Upper Laguna Madre	Upper Laguna Madre	South of John F. Kenedy Causeway	600,000
09-15-80	Upper Laguna Madre	Upper Laguna Madre		500,000
09-21-80	Upper Laguna Madre	Upper Laguna Madre		300,000
10-07-80	Matagorda	Matagorda	Well's Point	1,000,000
10-28-80	Matagorda	Tres Palacios	Turtle Bay at Bridge	1,300,000
10-30-80	Matagorda	Matagorda	Well's Point	300,000
10-31-80	Matagorda	Matagorda	Well's Point	700,000

Table 4. Site and number of red drum fingerlings placed in Texas bays during October 1975-1982 (blanks = no data). All tagged fish had magnetic tags inserted into the snout except those tagged in April 1976 which received monel jaw tags and those in April 1978 which received plastic streamers.

Date	Bay system	Bay	Site	Number	Total length (mm)		No. tagged
					Range	Mean	
10-02-75	Sabine Lake	Sabine Lake	South Impoundment at Ship Channel	20,000		31	0
10-02-75	Matagorda	Matagorda	Oyster Lake	10,000		31	0
10-02-75	Matagorda	Turtle	Turtle Bayou	40,000		31	0
10-02-75	Matagorda	Tres Palacios	Grassy Point	5,000		31	0
10-02-75	Matagorda	Tres Palacios	Collegeport	5,000		31	0
10-02-75	Aransas	Copano	Italian Bend	17,000		31	0
10-02-75	Corpus Christi	Nueces	Sunset Lake	3,000		31	0
10-08-75	Matagorda	Lavaca	Swan Lake	42,000		33	0
04-28-76	Matagorda	Matagorda	Well's Point	6,842	102-203	152	5,942
04-25-78	Galveston	West	Jenkins Bayou	130	152-203		130
11-16-78	Aransas	St. Charles	Big Tree	50,800	45-55		0
11-20-78	Aransas	St. Charles	Big Tree	3,500	45-55		1,585
11-22-78	Aransas	St. Charles	Big Tree	8,000	45-55		1,998
12-06-78	Aransas	St. Charles	Big Tree	1,303	45-55		1,303
01-17-79	Aransas	St. Charles	Big Tree	2,856		25	0
06-06-79	Aransas	St. Charles	Big Tree	85,000	37-45		0
06-07-79	Aransas	St. Charles	Big Tree	45,000	40-50		0
06-08-79	Aransas	St. Charles	Big Tree	92,000	40-50		1,345
06-11-79	Aransas	St. Charles	Little Devil Bayou	291,000	35-40		0
06-12-79	Aransas	St. Charles	Little Devil Bayou	358,000	35-40		0
06-13-79	Aransas	St. Charles	Cavasso Creek	83,000	40-55		0
06-25-79	Aransas	St. Charles	Big Tree	1,834	64-89		1,834
06-26-79	Aransas	St. Charles	Big Tree	3,007		76	3,007
06-27-79	Aransas	St. Charles	Big Tree	5,638		76	5,638
06-28-79	Aransas	St. Charles	Big Tree	6,850		76	6,850
07-05-79	Aransas	St. Charles	Big Tree	7,500		102	7,500
07-24-79	Upper Laguna Madre	Upper Laguna Madre	Padre Island, between North and South Bird Islands	14,600	38-64		0

Table 4. (Cont'd).

Date	Bay system		Site	Number	Range	Total length (mm)		No. tagged
	Upper Laguna Madre	Bay				Mean	Mean	
08-16-79	Upper Laguna Madre	Upper Laguna Madre	Padre Island, between North and South Bird Islands	3,996	45-55			0
10-23-79	Matagorda	Matagorda	Oyster Lake	34,000	39-45			0
10-25-79	Matagorda	Matagorda	Oyster Lake	25,000	40-55			0
10-30-79	Matagorda	Turtle	Jensen Point	69,000	32-44			0
11-01-79	Matagorda	Turtle	Jensen Point	53,000	32-44			0
11-05-79	Matagorda	Turtle	Jensen Point	11,000	32-38			0
11-06-79	Matagorda	Keller	Keller Creek	142,000	25-32			0
11-07-79	Matagorda	Turtle	Jensen Point	10,000	25-32			0
07-17-80	Galveston	Jones Lake	Highland Bayou Boat Ramp	46,000	35-45			0
08-04-80	Aransas	St. Charles	Little Devil Bayou	18,940	30-55			0
08-05-80	Aransas	St. Charles	Little Devil Bayou	40,100	40-50			3,974
08-06-80	Aransas	St. Charles	Little Devil Bayou	52,100				1,422
08-07-80	Aransas	St. Charles	Little Devil Bayou	45,000	45-55			6,666
08-07-80	Aransas	St. Charles	Little Devil Bayou	102,000	30-35			0
08-26-80	Galveston	Galveston	Moses Lake	10,714	57-72	66		0
08-27-80	Aransas	St. Charles	Little Devil Bayou	9,100	57-72	66		0
09-02-80	Aransas	St. Charles	Little Devil Bayou	9,300	35-75			0
09-23-80	East Matagorda	East Matagorda	St. Mary's Bayou	32,000	38-44			0
09-24-80	Galveston	West	State Park	17,000	35-45			0
09-25-80	Galveston	West	Christmas Bay	8,000	45-55			0
09-26-80	Galveston	West	Christmas Bay	5,800				0
05-11-81	Aransas	St. Charles	Little Devil Bayou	577,500	25-32			0
10-21-82	Aransas	St. Charles		280,000				0

Figure 1. Map of Texas coast.

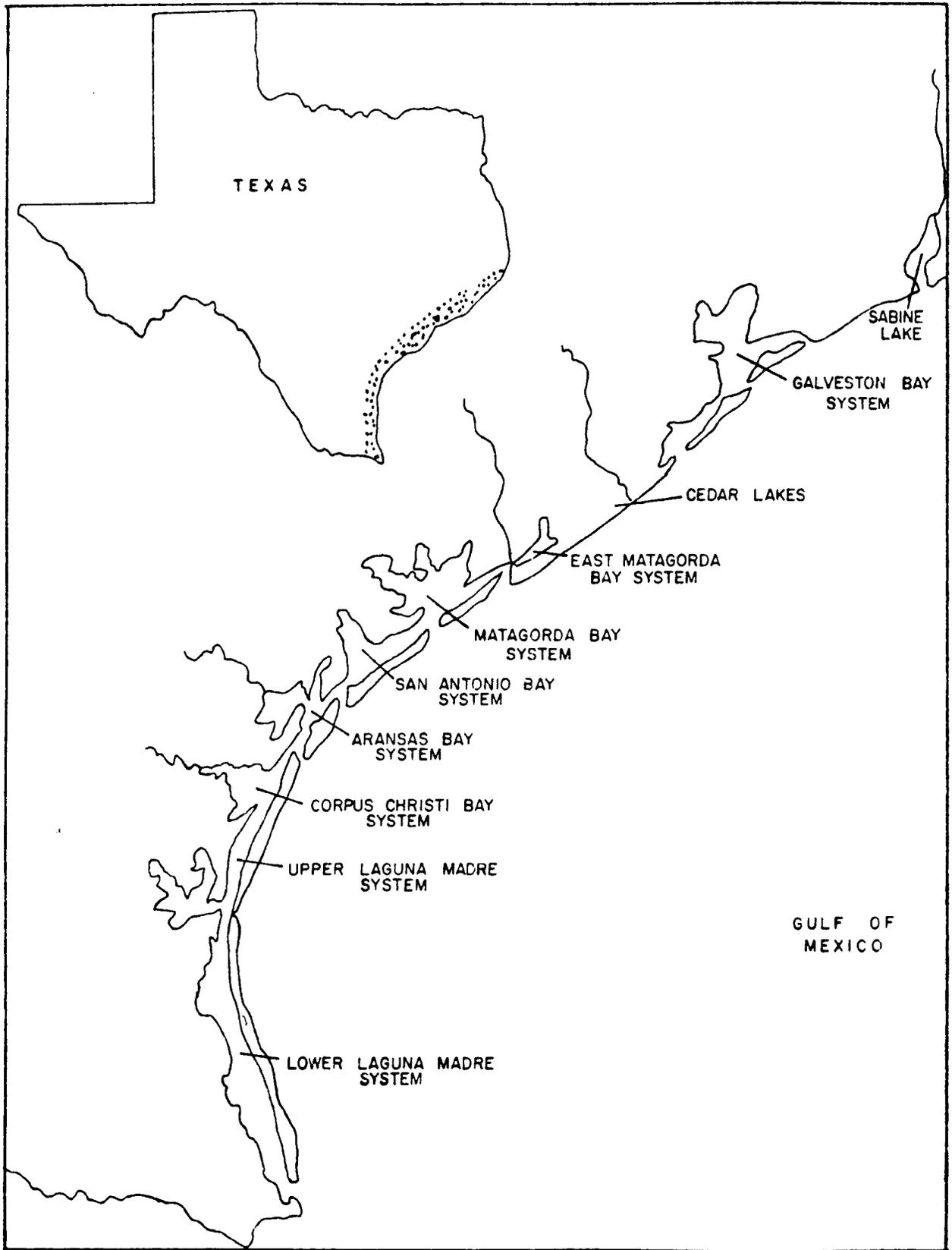


Figure 2. Individual total lengths of wild red drum caught in 18.3-m bag seines with 12.7 to 19.0-mm stretched mesh in three Texas bay systems during October 1977-August 1981.



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