

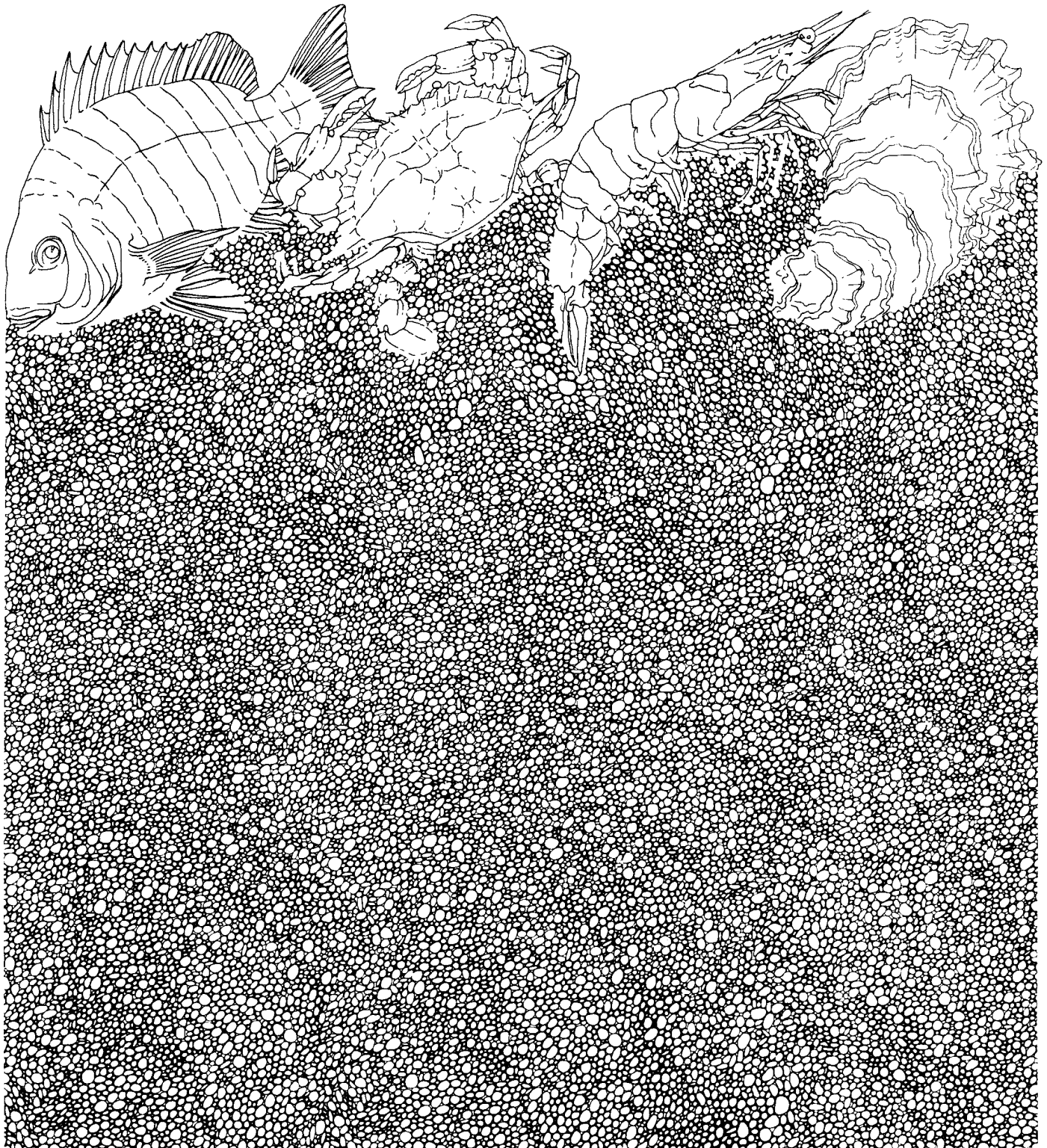
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# A Summary of Fish Tagging in Texas Bays, 1975-1982

by Steven R. Marwitz

Management Data Series Number 66  
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Texas Parks and Wildlife Department  
Coastal Fisheries Branch



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## ABSTRACT

During November 1975-December 1982, 40,333 fish (27 species) were tagged in Texas bay systems. Red drum (14,447) and spotted seatrout (12,349) comprised 66.4% of all fishes tagged. Of the 4704 tagged fish returned, 65.3% were returned by sport fishermen and 27.6% were returned by commercial fishermen. Eight-three percent of all tags returned came from the same bay systems in which the fishes were tagged. By December 1983, a recovery rate of 11.7% was obtained for all fishes tagged. Red drum had the highest recovery rate (20.4%) of all fishes tagged. The National Marine Fisheries Service and the Gulf Coast Conservation Association paid \$9048 in rewards.

## INTRODUCTION

Fish tagging in Texas bays and estuaries began in 1950 on the central coast (Simmons and Breuer 1976). These early tagging efforts were limited almost exclusively to Aransas Bay southward (Matlock and Weaver 1979). Important food and game fishes were marked with internal abdominal tags with attached streamers, monel jaw tags, Peterson disc tags or Floy tags. Over 77,000 fish were tagged and released between 1950 and 1970 (Simmons and Breuer 1976). In November 1975, the Texas Parks and Wildlife Department (TPWD) expanded and intensified fish tagging efforts in seven major bay systems on the Texas coast (Fig. 1). East Matagorda Bay was added in October 1976.

The objective of this ongoing tagging program is to obtain data concerning movement, growth, mortality and population size of finfishes. Red drum (Sciaenops ocellatus), spotted seatrout (Cynoscion nebulosus), black drum (Pogonias cromis), southern flounder (Paralichthys lethostigma), gulf flounder (P. albigutta) and sheepshead (Archosargus probatocephalus) were the primary species tagged; other species were tagged infrequently.

This report summarizes fish tagging from November 1975 to December 1982 and tagged fish recoveries from November 1975 to December 1983. Differences in this report compared to Matlock and Weaver (1979) are due to updating of the data base and the most recent report should be considered the most accurate.

## MATERIALS AND METHODS

Fish for tagging were obtained during routine and special sampling with rods and reels, gill nets and trammel nets in the Galveston, East Matagorda, Matagorda, San Antonio, Aransas, Corpus Christi and the upper and lower Laguna Madre bay systems from November 1975 to December 1982 (Hegen et al. 1984, Matlock and Weaver 1979). Numbered internal abdominal tags with external streamers were surgically inserted into a fish's abdominal cavity when it was judged to be healthy using the technique described by Moffett (1961). Prior to release of each fish, the total length was recorded; weight was recorded until June 1981. Tags were made of semihard glossy blue, green or red-orange plastic (25.4 x 6.4 x 0.8 mm) with round corners. Bright yellow flexible plastic hollow tubing (about 50 mm long; O.D. = 2.1 mm; I.D. = 1.0 mm) extended from a single hole in the center of each tag. "TEXAS PWD, ROCKPORT" or "TEXAS PWD, SEABROOK" was printed on each tag.

Posters were placed in commercial fish houses, fish camps and sporting goods stores and on fishing piers to publicize the tagging program. Information on the program was presented on radio and television stations in cities adjacent to each bay system as well as in newspapers throughout Texas and in the Texas Parks and Wildlife magazine. Each individual returning a tag was requested to provide the species, total length, weight, date and location of catch, and whether the individual was a sport or commercial fisherman. Each fisherman reporting a recaptured tagged fish was then categorized as sport (did not sell fish), commercial

(sold fish), unknown (information not available) or TPWD personnel (caught fish while performing official duties). For every 100 tags released there were two preselected \$25 rewards, five \$10 rewards, five \$5 rewards and eighty-eight \$1 rewards. Rewards were paid by the National Marine Fisheries Service (NMFS) until November 1978 and by the Gulf Coast Conservation Association (GCCA) since December 1978. A reward was paid for each tag returned regardless of the information given.

## RESULTS

In Texas bays, 40,333 fish of 27 species (Table 1) were tagged and released from November 1975 through December 1982 (Table 2). Red drum (14,447) and spotted seatrout (12,349) constituted 66.4% of all fishes tagged. Mean number of fishes tagged per year, excluding 1975 (an incomplete tagging year), was 5623; 3386 were tagged in 1977 and 7307 were tagged in 1982. The Aransas Bay system had the highest number tagged per year (1792 in 1980) and East Matagorda Bay system had the fewest in 1979 (112) (Table 2).

The number of tags returned by all fishing categories during November 1975 to December 1983 was 4704 (Table 3). Sport and commercial fishermen returned 65.3% and 27.6% of those tags, respectively. From 1975 through 1978, sport and commercial fishermen each returned approximately half of all the tags. By the end of 1982, sport fishermen returned 93.6% of the tags as compared to only 4.2% for commercial fishermen (Fig. 2). The mean number of tags returned per calendar year, excluding 1975, was 587 with the most being returned in 1980 (800) (Table 3).

Movement of fishes as recorded on the 4704 tags returned indicated 83.3% of all tags returned were from the same bay system in which the fishes were tagged (Table 4). Intrabay recovery rates for spotted seatrout, red drum, gulf flounder, southern flounder, black drum and sheepshead were 85.5%, 84.4%, 83.3%, 79.8%, 79.4% and 58.9%, respectively. Movement of tagged fishes from the original bay in which they were tagged was either into another bay system (7.8%) or into the Gulf of Mexico (3.4%); 5.5% of the returns were not identifiable as to location of capture.

Overall, 11.7% of all fishes tagged were returned. Red drum had the highest number of tag returns (2951) followed by spotted seatrout (910), black drum (630), southern flounder (109), sheepshead (95) and gulf flounder (6) (Tables 3 and 4). Red drum had 20.4% of the tags returned followed by southern flounder (7.6%), spotted seatrout (7.4%), black drum (7.2%), gulf flounder (3.6%), and sheepshead (3.3%).

Total monetary rewards paid for returned tags during November 1975-December 1982 was \$9048 (Table 5). The number of \$1 rewards was highest (4003) followed by \$10 rewards (193), \$5 rewards (188) and \$25 rewards (87). The mean annual amount paid for rewards, excluding 1975, was \$1130 with the highest amount paid in 1980 (\$1650).

## DISCUSSION

The tag recovery rate for red drum (20.4%) exceeded the red drum recovery rate of 11.6% reported by Matlock and Weaver (1979) and the 6.0-13.3% reported by Simmons and Breuer (1962) but was considerably lower than the 35.0-46.2% rate reported from Florida tagging programs conducted during 1962-1964 (Beaumariage 1964, Beaumariage and Wittich 1966). The spotted seatrout recovery rate of 7.4% was lower than the 9.2% reported by McEachron and Matlock (1980) and the 16.1% recovery rate reported in Florida by Beaumariage (1964). The black drum recovery rate of 7.2% is higher than the 3.4% rate reported by Matlock and Weaver (1979) and the 0.0-4.3% rate reported by Simmons and Breuer (1962). Again, recovery rates of 25.0-48.9% (Beaumariage 1964, Beaumariage and Wittich 1966) from the 1962-1964 Florida tagging programs far exceeded the Texas coastal black drum rates. Recovery rates for southern flounder (7.6%) and sheepshead (3.3%) were higher than the 4.5% and 2.9%, respectively, reported by Matlock and Weaver (1979). The gulf flounder recovery rate of 3.6% was considerably lower than the 9.3% rate reported by Matlock and Weaver (1979). The Florida recovery rates may have been influenced by extensive publicity and payment of extremely high monetary rewards (Matlock and Weaver 1979). When rewards as high as \$10,000 were offered to Florida anglers, they returned over 50% of the tagged red drum initially released (Beaumariage 1969). Excessive rewards may result in biased estimates of exploitation rates or population sizes if anglers actively seek tagged fish or have privileged knowledge of when and where fish were released (Matlock 1981).

The \$9048 paid in rewards by the NMFS and GCCA probably contributed to an overall 11.7% recovery rate for all species tagged. Rawston (1971) and Matlock (1981) reported that monetary rewards increase reporting rates. However, visibility of tags is also important to fishermen's reporting recaptured tagged fish (Green and Matlock 1983). They found angler tag reporting rates in Texas were 35% for red drum, 33% for spotted seatrout, 17% for black drum, 31% for flounder and 15% for sheepshead. Interviews with anglers that had returned tags revealed that 50% knew a reward would be paid (Matlock 1981), but 78% of the anglers who had not returned "surreptitiously implanted" tags reported they did not find tags. These results suggest that recovery rates could be increased by offering higher rewards, increasing public awareness and by making tags more visible (Matlock 1981).

Problems in obtaining tag returns from commercial fishermen exist. Beginning in 1978, the recovery rate from commercial fishermen began declining steadily until it reached a low in 1982. The reason for this drop in recovery rate may be attributed to commercial fisherman opposition to state laws and commission regulations restricting commercial fishing activities. Statutory and regulatory changes that may have contributed to the decline in recovery rates were the prohibition of the use of nets and trotlines on weekends (1977), the requirement of reporting individual commercial finfish fisherman harvest (1978), the establishment of commercial red drum harvest quotas (Anonymous 1979, 1981) and the prohibition of sale of native red drum and spotted seatrout (Anonymous 1983). Commercial fishermen have stated at public hearings and during fish house surveys that they would no longer return TPWD fish tags as a

sign of protest to the regulations. However, additional research is needed to estimate the non-reporting of tagged fish recaptured by commercial fishermen.

The majority of tagged recaptured fishes are caught in the bay in which they were tagged. Intrabay returns of red drum (84.4%) and black drum (79.4%) are similar to the return rates of 91.9% and 86.0%, respectively, found by Osburn et al. (1982) and Osburn and Matlock (1984). Matlock and Weaver (1979) reported intrabay return rates of 90.6% for red drum and 98.1% for black drum. Additional analyses of movement of other tagged species are needed.

These data can be used to determine growth, mortality and population size, as well as to further define movement of species of concern and to improve the efficiency of the TPWD tagging program. Annual updates will be useful in assessing gross changes in finfish fisheries in Texas.



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Table 1. List of common and scientific names of species tagged in Texas bays from November 1975 to December 1982<sup>a</sup>.

Common Name	Scientific Name
Atlantic croaker	<u>Micropogonias undulatus</u>
Atlantic spadefish	<u>Chaetodipterus faber</u>
Black drum	<u>Pogonias cromis</u>
Bonnethead	<u>Sphyrna tiburo</u>
Cravelle jack	<u>Caranx hippos</u>
Florida pompano	<u>Trachinotus carolinus</u>
Fringed flounder	<u>Etropus crossotus</u>
Hardhead catfish	<u>Arius felis</u>
Horse-eye jack	<u>Caranx latus</u>
Gizzard shad	<u>Dorosoma cepedianum</u>
Gulf flounder	<u>Paralichthys albigutta</u>
Gulf menhaden	<u>Brevoortia patronus</u>
Largemouth bass	<u>Micropterus salmoides</u>
Ocellated flounder	<u>Ancyclosetta quadrocellata</u>
Pigfish	<u>Orthopristis chrysoptera</u>
Pinfish	<u>Lagodon rhomboides</u>
Red drum	<u>Sciaenops ocellatus</u>
Sand seatrout	<u>Cynoscion arenarius</u>
Sheephead	<u>Archosargus probatocephalus</u>
Snook	<u>Centropomus undecimalis</u>
Southern flounder	<u>Paralichthys lethostigma</u>
Southern kingfish	<u>Menticirrhus americanus</u>
Spot	<u>Leiostomus xanthurus</u>
Spotted seatrout	<u>Cynoscion nebulosus</u>
Striped mullet	<u>Mugil cephalus</u>
Tripletail	<u>Lobotes surinamensis</u>
White bass	<u>Morone chrysops</u>

<sup>a</sup>Common and scientific names provided by Robins et al. (1980).

Table 2. Number of fishes tagged with internal abdominal anchor tags for each calendar year from November 1975 to December 1982.

Bay	Year	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Galveston	1975	80	47	2	0	0	8	0	137	
	1976	245	333	46	0	573	27	33 <sup>b</sup>	1257	
	1977	155	192	41	0	65	13	0	466	
	1978	287	282	55	1	130	68	0	823	
	1979	260	173	33	1	227	37	0	731	
	1980	241	11	19	0	803	17	0	1091	
	1981	126	109	14	0	762	25	0	1036	
	1982	210	43	5	0	868	11	0	1137	
	East Matagorda	1976 <sup>a</sup>	73	216	42	0	0	13	0	344
		1977	69	143	65	0	0	78	0	355
		1978	79	96	22	0	0	56	0	253
		1979	53	45	10	0	0	4	0	112
1980		102	47	2	0	0	30	0	181	
1981		37	27	4	0	327	13	0	408	
1982		83	107	11	0	453	27	0	681	
Matagorda		1975	74	29	11	0	0	0	0	114
	1976	468	340	58	2	1	36	1 <sup>c</sup>	906	
	1977	397	396	27	1	0	65	1 <sup>d</sup>	887	
	1978	519	260	25	0	217	79	0	1100	
	1979	771	155	18	5	0	60	0	1009	
	1980	285	63	8	0	9	10	0	375	
	1981	120	22	3	0	397	8	0	550	
	1982	72	67	4	0	633	10	0	786	
	San Antonio	1975	97	77	6	0	0	0	0	180
		1976	378	184	37	17	1	94	3 <sup>e</sup>	714
		1977	168	90	14	9	0	40	0	321
		1978	255	98	40	1	66	40	1 <sup>f</sup>	501
1979		676	154	73	3	0	179	5 <sup>f</sup>	1090	
1980		279	179	14	1	0	80	1 <sup>g</sup>	554	
1981		143	132	19	4	343	128	0	769	
1982		50	47	4	0	637	2	0	740	

Table 2. (Cont'd.).

Bay	Year	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Aransas	1975	33	56	2	0	0	0	0	91
	1976	330	387	36	3	22	74	14 <sup>h</sup>	866
	1977	146	135	25	0	0	33	0	339
	1978	401	237	33	8	33	108	0	820
	1979	438	225	46	6	167	157	1 <sup>i</sup>	1040
	1980	1217	193	53	0	223	102	4 <sup>c</sup>	1792
	1981	695	150	44	4	704	104	0	1701
	1982	296	297	50	2	760	70	0	1475
Corpus Christi	1975	53	51	27	5	0	28	2 <sup>j</sup>	166
	1976	169	163	48	39	21	298	17 <sup>k</sup>	755
	1977	220	77	33	8	1	58	4 <sup>l</sup>	401
	1978	268	106	43	17	6	126	3 <sup>m</sup>	569
	1979	337	113	53	13	105	98	12 <sup>n</sup>	731
	1980	307	49	26	0	161	29	2 <sup>o</sup>	574
	1981	190	106	12	0	445	7	0	760
	1982	96	65	3	0	673	3	0	840
Upper Laguna Madre	1975	31	129	6	0	0	0	0	166
	1976	120	248	3	6	8	7	4 <sup>p</sup>	396
	1977	64	98	0	0	3	5	0	170
	1978	83	117	15	0	27	0	0	242
	1979	113	47	2	0	49	0	0	211
	1980	203	124	8	0	44	22	0	401
	1981	92	142	7	0	355	0	0	596
	1982	66	78	17	0	624	0	0	785
Lower Laguna Madre	1975	32	72	13	0	0	0	0	117
	1976	219	221	30	1	26	20	125 <sup>q</sup>	642
	1977	139	285	11	0	2	10	0	447
	1978	356	328	23	4	145	180	2 <sup>d</sup>	1038
	1979	180	140	21	4	75	75	21 <sup>j</sup>	516
	1980	218	90	6	3	54	8	0	379
	1981	298	54	4	1	467	10	2 <sup>j</sup>	836
	1982	185	38	3	0	637	0	0	863

Table 2. (Cont'd.).

Bay	Year	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Coastwide	1975	400	461	67	5	0	36	2	971
	1976	2002	2092	300	68	652	569	197	5880
	1977	1358	1416	216	18	71	302	5	3386
	1978	2248	1524	256	31	624	657	6	5346
	1979	2828	1052	256	32	623	610	39	5440
	1980	2852	756	136	4	1294	298	7	5347
	1981	1701	742	107	9	3800	295	2	6656
	1982	1058	742	97	2	5285	123	0	7307
GRAND TOTAL		14,447	8785	1435	169	12,349	2890	258	40,333

a Tagging initiated in East Matagorda Bay in October 1976

b Hardhead catfish (6), Atlantic croaker (20), striped mullet (4), spot (1), gizzard shad (1) and trippletail (1)

c Hardhead catfish

d Cravelle jack

e Atlantic spadefish (2) and Florida pompano

f White bass

g Largemouth bass

h Striped mullet (8), gizzard shad (3) and spot (3)

i Snook

j Atlantic croaker

k Spot (5), gulf menhaden (1), Atlantic croaker (5), striped mullet (2) and hardhead catfish (4)

l Atlantic croaker (1), horse-eye jack (1) and bonnethead (2)

m Striped mullet (2) and fringed flounder

n Southern kingfish, Atlantic croaker (9) and crevalle jack (2)

o Atlantic croaker and sand seatrout

p Hardhead catfish (3) and striped mullet (1)

q Hardhead catfish (21), Atlantic croaker (27), striped mullet (51), spot (22), pinfish (2) and pigfish (2)

Table 3. Number of fish tags returned by fishing category by bay system and calendar year from November 1975 to December 1983<sup>a</sup>,

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Galveston	1975	Sport	2	0	0	0	0	0	0	2
		Commercial	0	0	0	0	0	0	0	0
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	2	0	0	0	0	0	2	
	1976	Sport	15	3	1	0	28	0	1 <sup>b</sup>	48
		Commercial	1	0	0	0	0	0	0	1
		TPWD	0	0	0	0	0	0	0	0
		Unknown	1	1	1	0	3	0	0	0
		Total	17	4	2	0	31	0	1	
	1977	Sport	12	4	1	0	21	0	0	38
		Commercial	0	2	0	0	0	0	0	2
		TPWD	1	0	0	0	0	0	0	1
		Unknown	3	1	0	0	3	0	0	7
		Total	16	7	1	0	24	0	48	
	1978	Sport	25	3	5	0	12	0	0	45
		Commercial	3	1	0	0	0	0	0	4
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	28	4	5	0	12	0	49	
	1979	Sport	23	1	4	0	6	1	0	35
		Commercial	4	1	1	0	1	0	0	7
		TPWD	1	0	0	0	0	0	0	1
		Unknown	2	1	0	0	0	0	0	3
		Total	30	3	5	0	7	1	46	
	1980	Sport	51	0	1	0	24	0	0	76
		Commercial	6	0	0	0	1	1	0	8
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	57	0	1	0	25	1	84	

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Galveston (Cont'd.)	1981	Sport	13	3	0	0	67	0	0	83
		Commercial	0	0	0	0	2	0	0	2
		TPWD	0	0	0	0	0	0	0	0
		Unknown	1	0	0	0	1	0	0	2
		Total	14	3	0	0	70	0	0	87
	1982	Sport	28	0	1	0	97	0	0	126
		Commercial	0	0	0	0	1	0	0	1
		TPWD	2	0	0	0	0	0	0	2
		Unknown	0	0	0	0	0	0	0	0
		Total	30	0	1	0	98	0	0	129
	1983	Sport	8	0	0	0	25	0	0	33
		Commercial	0	0	0	0	0	0	0	0
		TPWD	2	0	0	0	0	0	0	2
		Unknown	0	0	0	0	0	0	0	0
		Total	10	0	0	0	25	0	0	35
East Matagorda	1976 <sup>c</sup>	Sport	5	0	0	0	0	0	0	5
		Commercial	7	5	0	0	0	0	0	12
		TPWD	0	0	0	0	0	0	0	0
		Unknown	1	0	0	0	0	0	0	1
		Total	13	5	0	0	0	0	0	18
	1977	Sport	13	4	5	0	0	0	0	22
		Commercial	10	19	2	0	0	0	0	31
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	4	1	0	0	0	0	5
		Total	23	27	8	0	0	0	0	58
	1978	Sport	6	7	2	0	0	0	0	15
		Commercial	5	8	1	0	0	0	1	15
		TPWD	0	0	0	0	0	0	0	0
		Unknown	1	0	0	0	0	0	0	1
		Total	12	15	3	0	0	0	1	31





Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Matagorda (Cont'd.)	1976	Sport	27	9	3	1	0	0	0	40
		Commercial	16	6	0	0	0	0	0	22
		TPWD	3	2	0	0	0	0	0	5
		Unknown	1	0	0	0	0	0	0	1
	Total	47	17	3	1	0	0	0	0	68
1977	Sport	62	15	3	0	0	0	1	0	81
	Commercial	14	12	0	0	0	0	0	0	26
	TPWD	5	5	0	0	0	0	0	0	10
	Unknown	5	3	0	0	0	0	0	0	8
	Total	86	35	3	0	0	0	1	0	125
1978	Sport	87	25	2	0	0	11	0	0	125
	Commercial	35	15	0	0	0	0	1	0	51
	TPWD	28	9	0	0	0	0	0	0	37
	Unknown	11	6	0	0	0	0	0	0	17
	Total	161	55	2	0	0	11	1	0	230
1979	Sport	92	8	1	0	0	5	1	0	107
	Commercial	18	9	0	0	0	0	0	0	27
	TPWD	10	0	0	0	0	2	0	0	12
	Unknown	0	0	1	0	0	0	0	0	1
	Total	120	17	2	0	0	7	1	0	147
1980	Sport	100	2	0	0	0	1	1	0	104
	Commercial	6	2	0	0	0	0	0	0	8
	TPWD	2	2	0	0	0	0	0	0	4
	Unknown	0	0	0	0	0	0	0	0	0
	Total	108	6	0	0	0	1	1	0	116
1981	Sport	39	1	0	0	0	23	1	0	64
	Commercial	2	0	0	0	0	0	0	0	2
	TPWD	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0
	Total	41	1	0	0	0	23	1	0	66

Table 3. (Cont'd.),

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Matagorda (Cont'd.)	1982	Sport	16	0	0	0	46	0	0	62	
		Commercial	0	0	0	0	0	0	0	0	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	1	0	0	0	1
	Total	16	0	0	0	47	0	0	0	63	
	1983	Sport	4	0	0	0	9	0	0	13	
		Commercial	0	0	0	0	0	0	0	0	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
	Total	4	0	0	0	9	0	0	0	13	
San Antonio	1975	Sport	0	1	0	0	0	0	0	1	
		Commercial	0	0	0	0	0	0	0	0	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
	Total	0	1	0	0	0	0	0	0	1	
	1976	Sport	23	1	0	2	0	2	0	28	
		Commercial	13	1	0	0	0	1	0	0	15
		TPWD	13	0	0	0	0	0	0	0	13
		Unknown	5	1	0	0	0	0	0	0	6
	Total	54	3	0	2	0	3	0	0	62	
	1977	Sport	14	3	5	0	0	0	0	22	
		Commercial	34	10	1	0	0	0	0	0	45
		TPWD	3	1	0	0	0	0	0	0	4
		Unknown	3	2	0	0	0	0	0	0	5
	Total	54	16	6	0	0	0	0	0	76	
	1978	Sport	33	6	3	0	0	0	0	42	
		Commercial	23	6	0	0	0	0	0	0	29
		TPWD	4	0	0	0	0	0	0	0	4
		Unknown	6	1	0	0	0	0	0	0	7
	Total	66	13	3	0	0	0	0	0	82	



Table 3, (Cont'd.),

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Aransas (Cont'd.)	1976	Sport	33	19	1	0	0	4	0	57
		Commercial	22	8	0	1	0	0	0	31
		TPWD	1	1	0	0	1	0	0	3
		Unknown	2	0	1	0	0	1	0	4
	Total	58	28	2	1	1	5	0	95	
	1977	Sport	33	14	0	0	0	4	0	51
		Commercial	16	12	0	0	1	1	0	30
		TPWD	2	0	0	0	0	0	0	2
		Unknown	1	1	0	0	0	0	0	2
	Total	52	27	0	0	1	5	0	85	
	1978	Sport	57	7	3	0	2	5	0	74
		Commercial	54	14	0	0	0	1	0	69
		TPWD	1	2	0	0	0	0	0	3
		Unknown	2	0	0	0	0	0	0	2
	Total	114	23	3	0	2	6	0	148	
	1979	Sport	74	16	1	0	5	7	0	103
		Commercial	51	6	0	0	1	0	0	58
		TPWD	1	1	0	1	0	0	0	3
		Unknown	0	0	0	0	0	1	0	1
	Total	126	23	1	1	6	8	0	165	
	1980	Sport	171	19	2	0	17	3	0	212
		Commercial	71	8	2	0	4	1	0	86
		TPWD	40	1	0	0	0	0	0	41
		Unknown	3	0	0	0	0	0	0	3
	Total	285	28	4	0	21	4	0	342	
	1981	Sport	124	11	3	0	36	5	0	179
		Commercial	35	4	1	0	8	0	0	48
		TPWD	19	0	0	0	0	0	0	19
		Unknown	0	0	0	0	0	0	0	0
	Total	178	15	4	0	44	5	0	246	

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Aransas (Cont'd.)	1982	Sport	83	18	1	0	51	5	0	158
		Commercial	12	7	0	0	2	0	0	21
		TPWD	3	2	0	0	1	0	0	6
		Unknown	0	0	0	0	0	0	0	0
	Total	98	27	1	0	54	5	0	0	185
	1983	Sport	16	3	0	0	25	4	0	48
		Commercial	1	0	1	0	0	0	0	2
		TPWD	0	2	0	0	2	1	0	5
		Unknown	0	0	0	0	0	0	0	0
	Total	17	5	1	0	27	5	0	0	55
Corpus Christi	1975	Sport	0	0	0	0	0	0	0	0
		Commercial	1	0	1	0	0	0	0	2
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
	Total	1	0	1	0	0	0	0	0	2
1976	Sport	7	1	2	0	0	0	1	0	11
	Commercial	17	2	0	0	0	0	1	0	20
	TPWD	1	0	0	0	0	0	0	0	1
	Unknown	3	0	0	0	0	0	0	0	3
	Total	28	3	2	0	0	2	0	0	35
1977	Sport	32	2	2	0	0	0	2	0	38
	Commercial	15	6	1	0	2	2	3	0	27
	TPWD	1	0	0	0	0	0	1	0	2
	Unknown	0	0	0	0	0	0	0	0	0
	Total	48	8	3	0	2	6	0	0	67
1978	Sport	34	3	2	0	0	0	3	0	42
	Commercial	46	12	2	0	0	0	3	0	63
	TPWD	1	0	1	0	0	0	0	0	2
	Unknown	1	0	0	0	0	0	0	0	1
	Total	82	15	5	0	0	6	0	0	108

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Corpus Christi (Cont'd.)	1979	Sport	27	2	3	0	1	1	0	34
		Commercial	24	1	2	0	0	0	0	27
		TPWD	2	0	1	0	0	0	0	3
		Unknown	1	0	0	0	0	0	0	1
		Total	54	3	6	0	1	1	0	65
	1980	Sport	39	1	2	0	6	0	0	48
		Commercial	39	6	2	0	6	2	0	55
		TPWD	5	0	0	0	0	1	0	6
		Unknown	0	0	0	0	0	0	0	0
		Total	83	7	4	0	12	3	0	109
	1981	Sport	21	0	0	0	18	0	0	39
		Commercial	35	0	4	0	2	0	0	41
		TPWD	2	0	0	0	1	0	0	3
		Unknown	0	0	0	0	0	0	0	0
		Total	58	0	4	0	21	0	0	83
	1982	Sport	15	4	1	0	52	0	0	72
		Commercial	0	0	0	0	0	0	0	0
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	15	4	1	0	52	0	0	72
	1983	Sport	2	0	0	0	18	1	0	21
		Commercial	0	1	0	0	0	0	0	1
		TPWD	0	0	0	0	1	0	0	1
		Unknown	0	0	0	0	0	0	0	0
		Total	2	1	0	0	19	1	0	23
Upper Laguna Madre	1975	Sport	0	0	0	0	0	0	0	0
		Commercial	0	0	1	0	0	0	0	1
		TPWD	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	0	0	1	0	0	0	0	1

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Upper Laguna Madre (Cont'd.)	1976	Sport	10	2	1	0	0	0	0	13	
		Commercial	14	4	0	0	0	0	1 <sup>d</sup>	19	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	1	0	0	0	0	0	0	0	
		Total	25	6	1	0	0	0	0	1	33
	1977	Sport	7	2	0	0	0	0	0	9	
		Commercial	22	13	0	0	0	0	0	0	35
		TPWD	1	0	0	0	0	0	0	0	1
		Unknown	0	0	0	0	0	0	0	0	0
		Total	30	15	0	0	0	0	0	0	45
	1978	Sport	8	3	1	0	0	0	0	12	
		Commercial	15	9	0	0	3	0	0	0	27
		TPWD	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	23	12	1	0	3	0	0	0	39
	1979	Sport	5	1	0	0	1	0	0	7	
		Commercial	17	12	1	0	1	0	0	0	31
		TPWD	1	0	0	0	0	0	0	0	1
		Unknown	1	0	0	0	0	0	0	0	1
		Total	24	13	1	0	2	0	0	0	40
	1980	Sport	19	2	2	0	0	0	0	0	23
		Commercial	17	6	0	0	1	0	0	0	24
		TPWD	3	0	0	0	0	0	0	0	3
		Unknown	0	0	0	0	0	0	0	0	0
		Total	39	8	2	0	1	0	0	0	50
	1981	Sport	15	1	1	0	12	0	0	0	29
		Commercial	12	8	0	0	0	0	0	0	20
		TPWD	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	27	9	1	0	12	0	0	0	49



Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Upper Laguna Madre (Cont'd.)	1982	Sport	6	1	0	0	31	0	0	38	
		Commercial	0	1	0	0	0	0	0	1	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
		Total	6	2	0	0	31	0	0	0	39
	1983	Sport	3	0	0	0	13	0	0	16	
		Commercial	0	0	0	0	0	0	0	0	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	1	0	0	0	0	0	0	0	1
		Total	4	0	0	0	13	0	0	0	17
Lower Laguna Madre	1975	Sport	0	0	0	0	0	0	0	0	
		Commercial	0	0	0	0	0	0	0	0	
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	0
	1976	Sport	10	3	0	0	0	0	0	13	
		Commercial	20	5	0	0	0	0	0	0	25
		TPWD	0	0	0	0	0	0	0	0	
		Unknown	1	0	0	0	0	0	0	0	1
		Total	31	8	0	0	0	0	0	0	39
	1977	Sport	16	2	1	0	1	0	0	20	
		Commercial	26	14	0	0	0	1	0	0	41
		TPWD	1	1	0	0	0	0	0	0	2
		Unknown	0	1	0	0	0	0	0	0	1
		Total	43	18	1	0	1	1	0	0	64
	1978	Sport	16	9	1	1	4	0	0	31	
		Commercial	55	14	0	0	1	1	0	0	71
		TPWD	1	1	0	0	0	0	0	0	2
		Unknown	1	1	0	0	0	0	0	0	2
		Total	73	25	1	1	5	1	0	0	106

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Lower Laguna Madre (Cont'd.)	1979	Sport	13	3	0	0	9	1	0	26
		Commercial	32	15	0	0	0	2	0	49
		TPWD	2	1	0	0	1	0	0	4
		Unknown	0	0	0	0	0	0	0	0
	Total	47	19	0	0	10	3	0	0	79
1980	Sport	10	1	0	0	4	0	0	0	15
	Commercial	3	2	0	0	0	1	1	1 <sup>b</sup>	7
	TPWD	0	1	0	0	2	0	0	0	3
	Unknown	1	0	0	0	0	0	0	0	1
	Total	14	4	0	0	6	1	1	1	26
1981	Sport	18	1	0	0	12	0	0	0	31
	Commercial	3	1	0	0	0	0	0	0	4
	TPWD	4	0	0	0	1	0	0	0	5
	Unknown	2	0	0	0	0	0	0	0	2
	Total	27	2	0	0	13	0	0	0	42
1982	Sport	21	2	0	0	35	0	0	0	58
	Commercial	1	0	0	0	0	0	0	0	1
	TPWD	1	0	0	0	0	0	0	0	1
	Unknown	0	0	0	0	0	0	0	0	0
	Total	23	2	0	0	35	0	0	0	60
1983	Sport	3	0	0	0	25	0	0	0	28
	Commercial	0	0	0	0	0	0	0	0	0
	TPWD	2	0	0	0	1	0	0	0	3
	Unknown	0	0	0	0	1	0	0	0	1
	Total	5	0	0	0	27	0	0	0	32
Coastwide 1975	Sport	2	1	0	0	0	0	0	0	3
	Commercial	1	0	2	0	0	0	0	0	3
	TPWD	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0
	Total	3	1	2	0	0	0	0	0	6

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Coastwide (Cont'd.)	1976	Sport	130	38	8	3	28	7	1	215
		Commercial	110	31	0	1	0	2	1	145
		TPWD	18	3	0	0	1	0	0	22
		Unknown	15	2	2	0	3	1	0	23
	Total	273	74	10	4	32	10	2	405	
	1977	Sport	189	46	17	0	22	7	0	281
		Commercial	137	88	4	0	3	5	0	237
		TPWD	14	7	0	0	0	1	0	22
		Unknown	12	12	1	0	3	0	0	28
	Total	352	153	22	0	28	13	0	568	
1978	Sport	266	63	19	1	29	8	0	386	
	Commercial	236	79	3	0	4	7	0	329	
	TPWD	35	12	1	0	0	0	0	48	
	Unknown	22	8	0	0	0	0	0	30	
Total	559	162	23	1	33	15	0	793		
1979	Sport	288	37	16	0	27	12	0	380	
	Commercial	176	49	5	0	3	4	0	237	
	TPWD	21	3	1	1	3	1	0	30	
	Unknown	4	1	1	0	0	1	0	7	
Total	489	90	23	1	33	18	0	654		
1980	Sport	441	28	9	0	52	6	0	536	
	Commercial	152	25	5	0	12	6	1	201	
	TPWD	51	5	0	0	2	1	0	59	
	Unknown	4	0	0	0	0	0	0	4	
Total	648	58	14	0	66	13	1	800		
1981	Sport	258	25	5	0	202	8	0	498	
	Commercial	88	13	5	0	12	0	0	118	
	TPWD	26	0	0	0	2	0	0	28	
	Unknown	4	0	0	0	1	0	0	5	
Total	376	38	10	0	217	8	0	649		

Table 3. (Cont'd.).

Bay	Return year	Fishing category	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Coastwide (Cont'd.)	1982	Sport	184	33	4	0	353	10	0	584	
		Commercial	13	10	0	0	3	0	0	0	26
		TPWD	7	4	0	0	1	0	0	0	12
		Unknown	0	0	0	0	2	0	0	0	2
		Total	204	47	4	0	359	10	0	0	624
	1983	Sport	41	4	0	0	136	7	0	188	
		Commercial	1	1	1	0	0	0	0	0	3
		TPWD	4	2	0	0	5	1	0	0	12
		Unknown	1	0	0	0	1	0	0	0	2
		Total	47	7	1	0	142	8	0	0	205
GRAND TOTAL		Sport	1799	275	78	4	849	65	1	3071	
		Commercial	914	296	25	1	37	24	2	2	1299
		TPWD	176	36	2	1	14	4	0	0	233
		Unknown	62	23	4	0	10	2	0	0	101
		Total	2951	630	109	6	910	95	3	3	4704

<sup>a</sup>The year 1983 contains only fish tagged before 1983

<sup>b</sup>Atlantic croaker

<sup>c</sup>Tagging initiated in East Matagorda Bay in October 1976

<sup>d</sup>Hardhead catfish

Table 4. Number of fish tags returned from same bay system, from other bay system or from the Gulf of Mexico from November 1975 to December 1983<sup>a</sup>.

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Galveston	1975	Same bay	2	0	0	0	0	0	0	2	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
		Total	2	0	0	0	0	0	0	0	2
	1976	Same bay	16	4	2	0	29	0	1 <sup>b</sup>	52	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	1	0	0	0	1	0	0	0	2
		Unknown	0	0	0	0	1	0	0	0	1
		Total	17	4	2	0	31	0	0	1	55
	1977	Same bay	15	6	1	0	17	0	0	39	
		Other bay	0	0	0	0	1	0	0	0	
		Gulf of Mexico	1	1	0	0	6	0	0	0	8
		Unknown	0	0	0	0	0	0	0	0	
		Total	16	7	1	0	24	0	0	0	48
	1978	Same bay	27	4	5	0	10	0	0	46	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	1	0	0	0	2	0	0	0	3
		Unknown	0	0	0	0	0	0	0	0	
		Total	28	4	5	0	12	0	0	0	49
	1979	Same bay	29	3	4	0	5	1	0	42	
		Other bay	0	0	1	0	1	0	0	0	
		Gulf of Mexico	0	0	0	0	1	0	0	0	1
		Unknown	1	0	0	0	0	0	0	0	1
		Total	30	3	5	0	7	1	0	0	46
	1980	Same bay	56	0	1	0	24	1	0	82	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	1	0	0	0	1	0	0	0	2
		Unknown	0	0	0	0	0	0	0	0	
		Total	57	0	1	0	25	1	0	0	84

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Galveston (Cont'd.)	1981	Same bay	12	3	0	0	65	0	0	80	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	1	0	0	0	4	0	0	0	5
		Unknown	1	0	0	0	1	0	0	0	2
		Total	14	3	0	0	70	0	0	0	87
	1982	Same bay	27	0	1	0	84	0	0	112	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	2	0	0	0	13	0	0	0	15
		Unknown	1	0	0	0	1	0	0	0	2
		Total	30	0	1	0	98	0	0	0	129
	1983	Same bay	8	0	0	0	20	0	0	28	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	2	0	0	0	5	0	0	0	7
		Unknown	0	0	0	0	0	0	0	0	0
		Total	10	0	0	0	25	0	0	0	35
East Matagorda	1976 <sup>c</sup>	Same bay	13	5	0	0	0	0	0	18	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	13	5	0	0	0	0	0	0	18
	1977	Same bay	19	25	7	0	0	0	0	51	
		Other bay	4	2	1	0	0	0	0	0	7
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	23	27	8	0	0	0	0	0	58
	1978	Same bay	10	13	2	0	0	1	0	26	
		Other bay	2	2	1	0	0	0	0	0	5
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	12	15	3	0	0	0	1	0	31



Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Matagorda (Cont'd.)	1976	Same bay	46	16	3	1	0	0	0	66	
		Other bay	1	1	0	0	0	0	0	2	
		Gulf of Mexico	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
	Total	47	17	3	1	0	0	0	0	68	
	1977	Same bay	82	33	3	0	0	0	1	0	119
		Other bay	2	1	0	0	0	0	0	0	3
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	2	1	0	0	0	0	0	0	3
	Total	86	35	3	0	0	0	1	0	125	
1978	Same bay	142	48	2	0	11	0	0	0	203	
	Other bay	10	2	0	0	0	0	1	0	13	
	Gulf of Mexico	1	1	0	0	0	0	0	0	2	
	Unknown	8	4	0	0	0	0	0	0	12	
Total	161	55	2	0	11	0	1	0	230		
1979	Same bay	108	13	2	0	7	0	0	0	130	
	Other bay	3	1	0	0	0	0	0	0	4	
	Gulf of Mexico	2	3	0	0	0	0	0	0	5	
	Unknown	7	0	0	0	0	0	1	0	8	
Total	120	17	2	0	7	0	1	0	147		
1980	Same bay	99	6	0	0	1	0	0	0	106	
	Other bay	5	0	0	0	0	0	0	0	5	
	Gulf of Mexico	1	0	0	0	0	0	1	0	2	
	Unknown	3	0	0	0	0	0	0	0	3	
Total	108	6	0	0	1	0	1	0	116		
1981	Same bay	41	1	0	0	22	1	1	0	65	
	Other bay	0	0	0	0	0	0	0	0	0	
	Gulf of Mexico	0	0	0	0	1	0	0	0	1	
	Unknown	0	0	0	0	0	0	0	0	0	
Total	41	1	0	0	23	1	1	0	66		



Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Matagorda (Cont'd.)	1982	Same bay	14	0	0	0	44	0	0	58
		Other bay	1	0	0	0	1	0	0	2
		Gulf of Mexico	1	0	0	0	2	0	0	3
		Unknown	0	0	0	0	0	0	0	0
		Total	16	0	0	0	47	0	0	63
	1983	Same bay	4	0	0	0	7	0	0	11
		Other bay	0	0	0	0	0	0	0	0
		Gulf of Mexico	0	0	0	0	2	0	0	2
		Unknown	0	0	0	0	0	0	0	0
		Total	4	0	0	0	9	0	0	13
San Antonio	1975	Same bay	0	1	0	0	0	0	0	1
		Other bay	0	0	0	0	0	0	0	0
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	0	1	0	0	0	0	0	1
	1976	Same bay	52	3	0	2	0	1	0	58
		Other bay	0	0	0	0	0	2	0	2
		Gulf of Mexico	1	0	0	0	0	0	0	1
		Unknown	1	0	0	0	0	0	0	1
		Total	54	3	0	2	0	3	0	62
	1977	Same bay	50	12	3	0	0	0	0	65
		Other bay	1	3	2	0	0	0	0	6
		Gulf of Mexico	1	0	0	0	0	0	0	1
		Unknown	2	1	1	0	0	0	0	4
		Total	54	16	6	0	0	0	0	76
	1978	Same bay	55	8	3	0	0	0	0	66
		Other bay	7	3	0	0	0	0	0	10
		Gulf of Mexico	2	0	0	0	0	0	0	2
		Unknown	2	2	0	0	0	0	0	4
		Total	66	13	3	0	0	0	0	82

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
San Antonio (Cont'd.)	1979	Same bay	69	3	6	0	0	2	0	80	
		Other bay	8	2	0	0	0	0	0	10	
		Gulf of Mexico	1	0	0	0	0	0	0	0	1
		Unknown	5	1	0	0	0	0	0	0	6
		Total	83	6	6	0	0	2	0	0	97
	1980	Same bay	42	4	2	0	0	1	0	49	
		Other bay	3	0	0	0	0	1	0	0	4
		Gulf of Mexico	1	0	0	0	0	0	0	0	1
		Unknown	6	1	0	0	0	1	0	0	8
		Total	52	5	2	0	0	3	0	0	62
	1981	Same bay	20	1	0	0	8	2	0	31	
		Other bay	3	2	0	0	3	0	0	0	8
		Gulf of Mexico	2	0	0	0	0	0	0	0	2
		Unknown	1	0	0	0	0	0	0	0	1
		Total	26	3	0	0	11	2	0	0	42
	1982	Same bay	8	5	0	0	10	1	0	24	
		Other bay	1	2	0	0	4	1	0	0	8
		Gulf of Mexico	0	0	0	0	1	2	0	0	3
		Unknown	0	0	0	0	0	0	0	0	0
		Total	9	7	0	0	15	4	0	0	35
	1983	Same bay	2	0	0	0	7	1	0	10	
		Other bay	0	0	0	0	3	1	0	0	4
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	2	0	0	0	10	2	0	0	14
Aransas	1975	Same bay	0	0	0	0	0	0	0	0	
		Other bay	0	0	0	0	0	0	0	0	
		Gulf of Mexico	0	0	0	0	0	0	0	0	
		Unknown	0	0	0	0	0	0	0	0	
		Total	0	0	0	0	0	0	0	0	

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Arkansas (Cont'd.)	1976	Same bay	53	26	2	1	1	2	0	85	
		Other bay	3	2	0	0	0	1	0	6	
		Gulf of Mexico	1	0	0	0	0	2	0	0	3
		Unknown	1	0	0	0	0	0	0	0	1
		Total	58	28	2	1	1	5	0	0	95
	1977	Same bay	50	23	0	0	1	4	0	78	
		Other bay	2	3	0	0	0	0	0	0	5
		Gulf of Mexico	0	0	0	0	0	1	0	0	1
		Unknown	0	1	0	0	0	0	0	0	1
		Total	52	27	0	0	1	5	0	0	85
	1978	Same bay	100	17	3	0	2	6	0	128	
		Other bay	6	2	0	0	0	0	0	0	8
		Gulf of Mexico	2	0	0	0	0	0	0	0	2
		Unknown	6	4	0	0	0	0	0	0	10
		Total	114	23	3	0	2	6	0	0	148
	1979	Same bay	106	18	1	1	4	5	0	135	
		Other bay	7	1	0	0	2	0	0	0	10
		Gulf of Mexico	5	1	0	0	0	0	0	0	6
		Unknown	8	3	0	0	0	3	0	0	14
		Total	126	23	1	1	6	8	0	0	165
	1980	Same bay	246	21	2	0	18	3	0	290	
		Other bay	12	4	0	0	2	1	0	0	19
		Gulf of Mexico	6	0	1	0	0	0	0	0	7
		Unknown	21	3	1	0	1	0	0	0	26
		Total	285	28	4	0	21	4	0	0	342
	1981	Same bay	138	10	2	0	35	1	0	186	
		Other bay	3	1	1	0	0	3	0	0	8
		Gulf of Mexico	5	0	0	0	1	1	0	0	7
		Unknown	32	4	1	0	8	0	0	0	45
		Total	178	15	4	0	44	5	0	0	246

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Aransas (Cont'd.)	1982	Same bay	87	23	1	0	51	2	0	164	
		Other bay	2	2	0	0	3	1	0	8	
		Gulf of Mexico	9	2	0	0	0	2	0	0	13
		Unknown	0	0	0	0	0	0	0	0	0
		Total	98	27	1	0	54	5	0	0	185
	1983	Same bay	12	3	1	0	25	4	0	45	
		Other bay	3	2	0	0	2	0	0	0	7
		Gulf of Mexico	2	0	0	0	0	1	0	0	3
		Unknown	0	0	0	0	0	0	0	0	0
		Total	17	5	1	0	27	5	0	0	55
Corpus Christi	1975	Same bay	1	0	1	0	0	0	0	2	
		Other bay	0	0	0	0	0	0	0	0	0
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	1	0	1	0	0	0	0	0	2
	1976	Same bay	23	2	2	0	0	2	0	29	
		Other bay	5	1	0	0	0	0	0	0	6
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	28	3	2	0	0	2	0	0	35
	1977	Same bay	38	4	2	0	2	4	0	50	
		Other bay	7	4	1	0	0	2	0	0	14
		Gulf of Mexico	2	0	0	0	0	0	0	0	2
		Unknown	1	0	0	0	0	0	0	0	1
		Total	48	8	3	0	2	6	0	0	67
	1978	Same bay	55	5	5	0	0	2	0	67	
		Other bay	17	8	0	0	0	1	0	0	26
		Gulf of Mexico	1	0	0	0	0	2	0	0	3
		Unknown	9	2	0	0	0	1	0	0	12
		Total	82	15	5	0	0	6	0	0	108

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Corpus Christi (Cont'd.)	1979	Same bay	35	3	4	0	1	1	0	44	
		Other bay	10	0	1	0	0	0	0	11	
		Gulf of Mexico	3	0	0	0	0	0	0	0	3
		Unknown	6	0	1	0	0	0	0	0	7
		Total	54	3	6	0	1	1	1	0	65
	1980	Same bay	46	2	3	0	7	3	0	61	
		Other bay	16	3	0	0	2	0	0	0	21
		Gulf of Mexico	4	0	0	0	0	0	0	0	4
		Unknown	17	2	1	0	3	0	0	0	23
		Total	83	7	4	0	12	3	0	0	109
	1981	Same bay	21	0	1	0	16	0	0	38	
		Other bay	7	0	0	0	4	0	0	0	11
		Gulf of Mexico	2	0	0	0	0	0	0	0	2
		Unknown	28	0	3	0	1	0	0	0	32
		Total	58	0	4	0	21	0	0	0	83
	1982	Same bay	7	2	1	0	35	0	0	45	
		Other bay	4	2	0	0	14	0	0	0	20
		Gulf of Mexico	3	0	0	0	2	0	0	0	5
		Unknown	1	0	0	0	1	0	0	0	2
		Total	15	4	1	0	52	0	0	0	72
	1983	Same bay	2	1	0	0	12	0	0	15	
		Other bay	0	0	0	0	5	0	0	0	5
		Gulf of Mexico	0	0	0	0	1	1	0	0	2
		Unknown	0	0	0	0	1	0	0	0	1
		Total	2	1	0	0	19	1	0	0	23
Upper Laguna Madre	1975	Same bay	0	0	0	0	0	0	0	0	
		Other bay	0	0	1	0	0	0	0	0	1
		Gulf of Mexico	0	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0	0
		Total	0	0	1	0	0	0	0	0	1

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Upper Laguna Madre (Cont'd.)	1976	Same bay	17	5	1	0	0	0	1 <sup>d</sup>	24
		Other bay	7	1	0	0	0	0	0	8
		Gulf of Mexico	1	0	0	0	0	0	0	1
		Unknown	0	0	0	0	0	0	0	0
		Total	25	6	1	0	0	0	0	1
	1977	Same bay	23	11	0	0	0	0	0	34
		Other bay	6	4	0	0	0	0	0	10
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	1	0	0	0	0	0	0	1
		Total	30	15	0	0	0	0	0	0
	1978	Same bay	17	8	0	0	3	0	0	28
		Other bay	3	4	1	0	0	0	0	8
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	3	0	0	0	0	0	0	3
		Total	23	12	1	0	3	0	0	0
	1979	Same bay	23	11	1	0	2	0	0	37
		Other bay	1	1	0	0	0	0	0	2
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	1	0	0	0	0	0	1
		Total	24	13	1	0	2	0	0	0
	1980	Same bay	31	5	2	0	1	0	0	39
		Other bay	5	1	0	0	0	0	0	6
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	3	2	0	0	0	0	0	5
		Total	39	8	2	0	1	0	0	0
	1981	Same bay	22	9	1	0	10	0	0	42
		Other bay	1	0	0	0	2	0	0	3
		Gulf of Mexico	2	0	0	0	0	0	0	2
		Unknown	2	0	0	0	0	0	0	2
		Total	27	9	1	0	12	0	0	0

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Upper Laguna Madre (Cont'd.)	1982	Same bay	5	1	0	0	31	0	0	37
		Other bay	1	1	0	0	0	0	0	2
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	6	2	0	0	31	0	0	39
	1983	Same bay	2	0	0	0	13	0	0	15
		Other bay	0	0	0	0	0	0	0	0
		Gulf of Mexico	2	0	0	0	0	0	0	2
		Unknown	0	0	0	0	0	0	0	0
		Total	4	0	0	0	13	0	0	17
Lower Laguna Madre	1975	Same bay	0	0	0	0	0	0	0	0
		Other bay	0	0	0	0	0	0	0	0
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0
	1976	Same bay	31	8	0	0	0	0	0	39
		Other bay	0	0	0	0	0	0	0	0
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	31	8	0	0	0	0	0	39
	1977	Same bay	39	12	0	0	1	1	0	53
		Other bay	0	3	0	0	0	0	0	3
		Gulf of Mexico	4	1	1	0	0	0	0	6
		Unknown	0	2	0	0	0	0	0	2
		Total	43	18	1	0	1	1	0	64
	1978	Same bay	73	20	1	0	5	0	0	99
		Other bay	0	2	0	0	0	1	0	3
		Gulf of Mexico	0	1	0	1	0	0	0	2
		Unknown	0	2	0	0	0	0	0	2
		Total	73	25	1	1	5	1	0	106

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Lower Laguna Madre (Cont'd.)	1979	Same bay	37	13	0	0	10	1	0	61
		Other bay	3	3	0	0	0	1	0	7
		Gulf of Mexico	1	0	0	0	0	1	0	2
		Unknown	6	3	0	0	0	0	0	9
		Total	47	19	0	0	10	3	0	79
	1980	Same bay	13	3	0	0	6	0	1 <sup>b</sup>	23
		Other bay	1	1	0	0	0	1	0	3
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	14	4	0	0	6	1	0	26
	1981	Same bay	22	1	0	0	13	0	0	36
		Other bay	1	0	0	0	0	0	0	1
		Gulf of Mexico	4	1	0	0	0	0	0	5
		Unknown	0	0	0	0	0	0	0	0
		Total	27	2	0	0	13	0	0	42
	1982	Same bay	19	2	0	0	30	0	0	51
		Other bay	1	0	0	0	5	0	0	6
		Gulf of Mexico	3	0	0	0	0	0	0	3
		Unknown	0	0	0	0	0	0	0	0
		Total	23	2	0	0	35	0	0	60
	1983	Same bay	5	0	0	0	24	0	0	29
		Other bay	0	0	0	0	2	0	0	2
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	1	0	0	1
		Total	5	0	0	0	27	0	0	32
Coastwide	1975	Same bay	3	1	1	0	0	0	0	5
		Other bay	0	0	1	0	0	0	0	1
		Gulf of Mexico	0	0	0	0	0	0	0	0
		Unknown	0	0	0	0	0	0	0	0
		Total	3	1	2	0	0	0	0	6



Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species	
Coastwide (Cont'd.)	1976	Same bay	251	69	10	4	30	5	2	371	
		Other bay	16	5	0	0	0	3	0	24	
		Gulf of Mexico	4	0	0	0	1	2	0	0	7
		Unknown	2	0	0	0	1	0	0	0	3
		Total	273	74	10	4	32	10	2	2	405
	1977	Same bay	316	126	16	0	21	10	0	489	
		Other bay	22	20	4	0	1	2	0	0	49
		Gulf of Mexico	8	2	1	0	6	1	0	0	18
		Unknown	6	5	1	0	0	0	0	0	12
		Total	352	153	22	0	28	13	0	0	568
	1978	Same bay	479	123	21	0	31	9	0	663	
		Other bay	45	23	2	0	0	3	0	0	73
		Gulf of Mexico	7	2	0	1	2	2	0	0	14
		Unknown	28	14	0	0	0	1	0	0	43
		Total	559	162	23	1	33	15	0	0	793
	1979	Same bay	412	69	19	1	29	12	0	542	
		Other bay	32	9	3	0	3	1	0	0	48
		Gulf of Mexico	12	4	0	0	1	1	0	0	18
		Unknown	33	8	1	0	0	4	0	0	46
		Total	489	90	23	1	33	18	0	0	654
	1980	Same bay	540	41	10	0	57	8	1	657	
		Other bay	45	9	1	0	4	3	0	0	62
		Gulf of Mexico	13	0	1	0	1	1	0	0	16
		Unknown	50	8	2	0	4	1	0	0	65
		Total	648	58	14	0	66	13	1	1	800
	1981	Same bay	280	29	5	0	185	4	0	503	
		Other bay	16	4	1	0	15	3	0	0	39
		Gulf of Mexico	16	1	0	0	7	1	0	0	25
		Unknown	64	4	4	0	10	0	0	0	82
		Total	376	38	10	0	217	8	0	0	649

Table 4. (Cont'd.).

Bay	Return year	Return location	Red drum	Black drum	Southern flounder	Gulf flounder	Spotted seatrout	Sheepshead	Other species	All species
Coastwide (Cont'd.)	1982	Same bay	172	37	4	0	309	3	0	525
		Other bay	12	8	0	0	29	3	0	52
		Gulf of Mexico	18	2	0	0	18	4	0	42
		Unknown	2	0	0	0	3	0	0	5
		Total	204	47	4	0	359	10	0	624
	1983	Same bay	38	5	1	0	116	5	0	165
		Other bay	3	2	0	0	14	1	0	20
		Gulf of Mexico	6	0	0	0	10	2	0	18
		Unknown	0	0	0	0	2	0	0	2
		Total	47	7	1	0	142	8	0	205
GRAND TOTAL		Same bay	2491	500	87	5	778	56	3	3920
		Other bay	191	80	12	0	66	19	0	368
		Gulf of Mexico	84	11	2	1	46	14	0	158
		Unknown	185	39	8	0	20	6	0	258
		Total	2951	630	109	6	910	95	3	4704

<sup>a</sup>The year 1983 contains only fish tagged before 1983

<sup>b</sup>Atlantic croaker

<sup>c</sup>Tagging initiated in East Matagorda Bay in October 1976

<sup>d</sup>Hardhead catfish

Table 5. Total number of rewards and total amount paid for returned internal abdominal anchor tags from November 1975 to December 1983<sup>a</sup>.

Bay	Year	Amount of reward				Total amount paid (\$)
		\$1	\$5	\$10	\$25	
Galveston	1975	2	0	0	0	2
	1976	54	0	1	0	64
	1977	43	1	2	1	93
	1978	43	2	1	3	138
	1979	41	1	2	1	91
	1980	66	10	5	3	241
	1981	79	3	4	1	159
	1982	119	4	4	0	179
	1983	29	1	3	0	64
East Matagorda	1976 <sup>b</sup>	15	3	0	0	30
	1977	52	1	3	2	137
	1978	27	1	2	1	77
	1979	15	0	0	0	15
	1980	9	1	1	0	24
	1981	32	1	1	0	47
	1982	40	0	0	0	40
	1983	12	2	1	1	57
Matagorda	1975	0	0	0	0	0
	1976	57	5	1	0	92
	1977	106	2	6	1	201
	1978	171	10	8	4	401
	1979	121	5	6	3	281
	1980	99	5	6	2	234
	1981	58	2	2	4	188
	1982	55	7	1	0	100
	1983	13	0	0	0	13
San Antonio	1975	1	0	0	0	1
	1976	44	1	3	1	104
	1977	65	2	3	2	155
	1978	67	6	4	1	162
	1979	75	6	6	4	265
	1980	53	3	4	0	108
	1981	39	1	1	0	54
	1982	29	2	2	0	59
	1983	10	0	2	1	55
Aransas	1975	0	0	0	0	0
	1976	81	3	4	4	236
	1977	74	5	2	2	169
	1978	131	6	7	1	256
	1979	146	10	5	1	271

Table 5. (Cont'd.).

Bay	Year	Amount of reward				Total amount paid (\$)
		\$1	\$5	\$10	\$25	
Aransas (Cont'd.)	1980	274	8	13	6	594
	1981	213	2	8	4	403
	1982	155	7	12	5	435
	1983	47	2	1	0	67
Corpus Christi	1975	2	0	0	0	2
	1976	28	4	1	1	83
	1977	56	6	3	0	116
	1978	94	3	5	4	259
	1979	56	2	1	3	151
	1980	84	7	7	5	314
	1981	72	4	3	1	147
	1982	65	2	2	3	170
	1983	18	2	2	0	48
Upper Laguna Madre	1975	1	0	0	0	1
	1976	29	2	2	0	59
	1977	41	1	1	1	81
	1978	33	3	2	1	93
	1979	37	1	1	0	52
	1980	43	2	0	2	103
	1981	44	1	3	1	104
	1982	36	1	0	2	91
	1983	17	0	0	0	17
Lower Laguna Madre	1975	0	0	0	0	0
	1976	31	5	3	0	86
	1977	56	4	1	1	111
	1978	98	2	3	1	163
	1979	67	3	5	0	132
	1980	22	0	1	0	32
	1981	34	0	3	0	64
	1982	49	2	6	2	169
	1983	28	0	1	0	38
Coastwide	1975	6	0	0	0	6
	1976	339	23	15	6	754
	1977	493	22	21	10	1063
	1978	664	33	32	16	1549
	1979	558	28	26	12	1258
	1980	650	36	37	18	1650
	1981	571	14	25	11	1166
	1982	548	25	27	12	1243
	1983	174	7	10	2	359
GRAND TOTAL		4003	188	193	87	9048

<sup>a</sup>The year 1983 contains only information from fish tagged before 1983.

<sup>b</sup>Tagging initiated in East Matagorda Bay in October 1976.

Figure 1. The eight Texas bay systems in which tagging occurred from November 1975 to December 1982. No tagging occurred in Sabine Lake during this period.

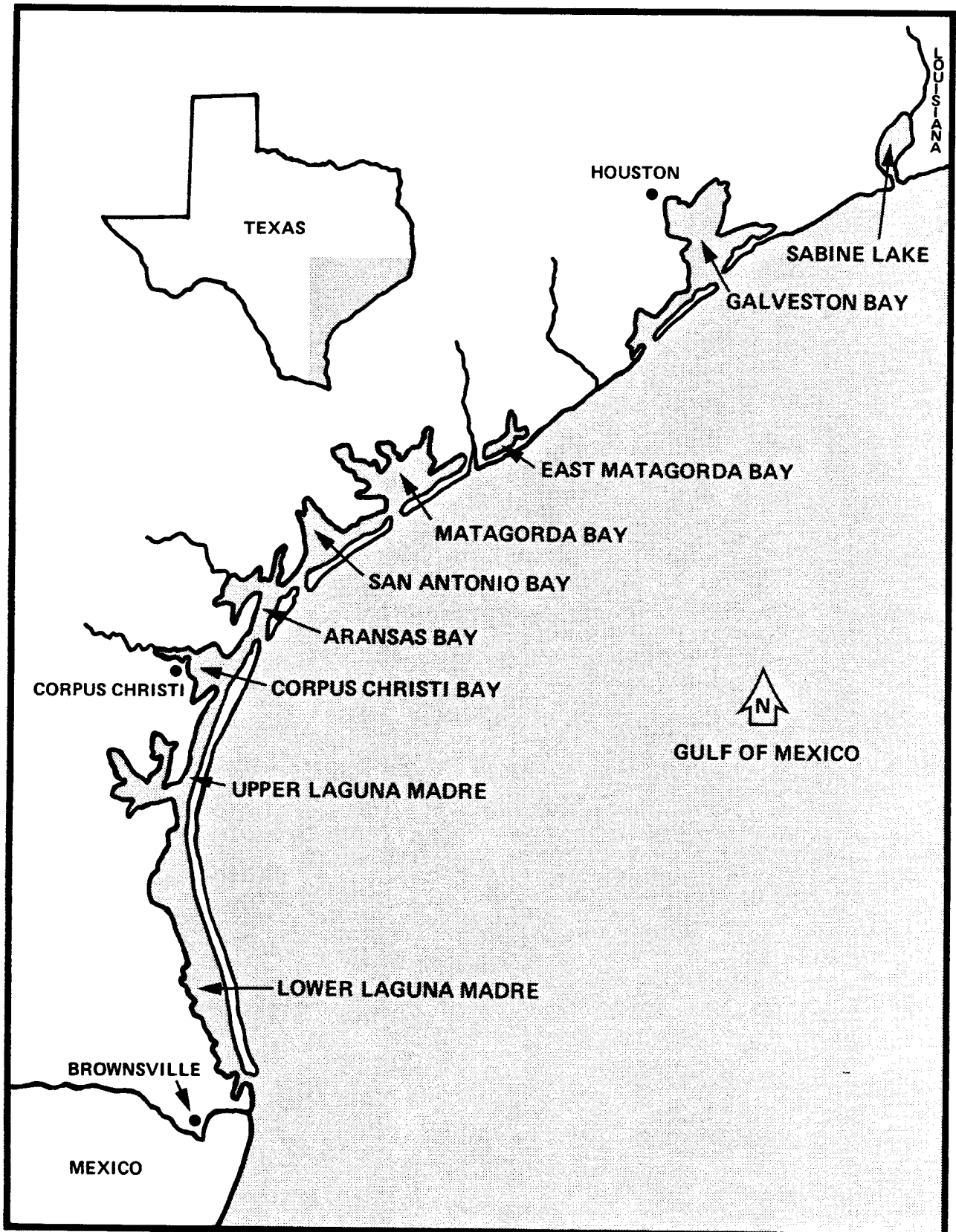


Figure 2. Percentage of tag returns reported by each fishing category from November 1975 to December 1983.

