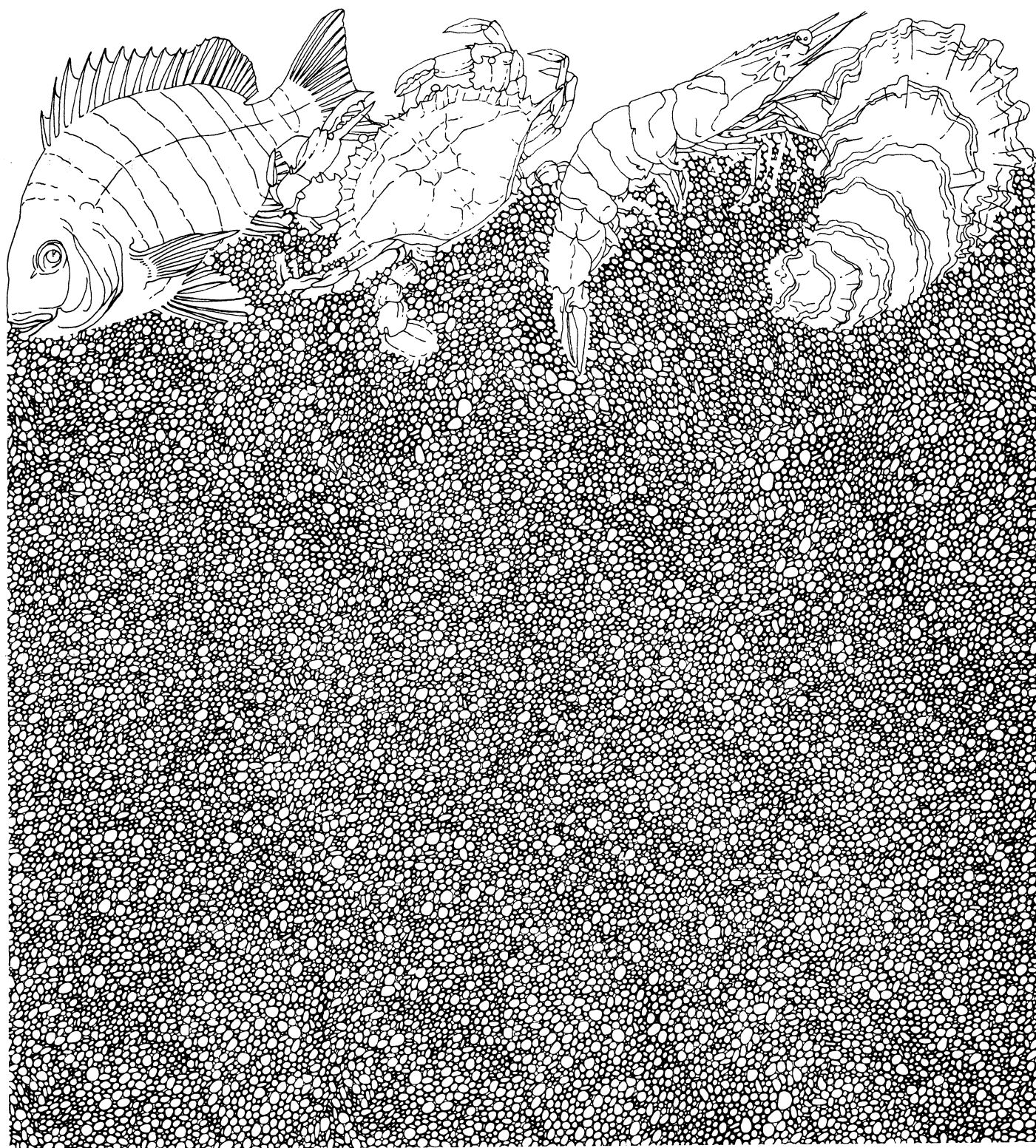


Trends in Composition of the Texas Commercial Shrimp Fleet

by Arthur L. Crowe and C. E. Bryan

Management Data Series Number 121
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Texas Parks and Wildlife Department
Coastal Fisheries Branch



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ABSTRACT

A description of the Texas commercial shrimp fleet was developed to determine trends in numbers, size, license classes and home port distribution during the period 1979-1985. The number of commercial shrimp boats increased only 1% while the number of boats holding multiple shrimp boat licenses increased 35% between 1979-1985. The number of licensed shrimp boats increased from 6889 in 1979 to 7333 in 1983 then decreased to 6959 in 1985. The largest decrease (768 boats) during 1979-1985 was in part-time commercial bay boats (≤ 7.6 m). Out-of-state boats increased from 294 in 1979 to 688 in 1985 with the greatest increase in commercial Gulf vessels (> 16.8 m). Part-time commercial bay boats were most numerous in the Beaumont-Nederland, Houston-Pasadena-Baytown, Seabrook-Kemah-San Leon-Texas City and Corpus Christi areas. Commercial bay boats (> 7.6 m-16.8 m) were most numerous in the Seabrook-Kemah-San Leon-Texas City, Galveston, Palacios-Port Lavaca-Port O'Connor and Corpus Christi areas. Commercial Gulf vessels were most numerous in the Port Arthur-Sabine Pass, Galveston, Corpus Christi and Brownsville areas.

INTRODUCTION

Shrimp constitute the most valuable commercial fishery in Texas. They comprised 82% of the weight and 92% of the total value of Texas commercial landings in 1985 (Osburn et al. 1986). From 1979 to 1985 brown shrimp landings fluctuated between 22.9 and 35.8 million kg and white shrimp landings fluctuated between 6.5 and 12.7 million kg. The annual ex-vessel value of all shrimp species combined fluctuated between \$140 million in 1979 and \$180 million in 1984 (Osburn et al. 1986).

The total fishing effort used to land these shrimp is unknown. No direct measure of total effort has been obtained. License sales do not represent the number of boats in the fleet because many boats are licensed in more than one category (Warren and Bryan 1981). Commercial shrimp vessels are licensed in one or more of three categories: bay, bait, and Gulf, depending on area shrimped and the use of the catch. An individual must purchase licenses from the Texas Parks and Wildlife Department (TPWD). The number of these licenses sold increased from 9560 in 1979 to 9704 in 1985 (Osburn et al. 1986).

The objectives of this report are to summarize statistics on the:

- 1) trends in numbers, size and license classes of the Texas shrimp fleet,
- 2) home port distribution of the fleet, and
- 3) trends in number of boats with multiple licenses.

These data will help determine harvest capacity and effort which can be used in models pertaining to allocation and economic assessments.

MATERIALS AND METHODS

Data were summarized using TPWD computer records of commercial license sales during fiscal years (1 Sep-31 Aug) 1979-1985. An individual boat could hold one or more of three licenses. In this report, a boat was reported only one time no matter how many licenses it held.

The vessel length classes (m) used for this report are the same as presented by Warren and Bryan (1981). They are:

<7.6 = part-time commercial bay boats

>7.6-16.8 = commercial bay boats

>16.8 = commercial Gulf vessels

Major shrimp boat ports in Texas were grouped into geographical areas and coastal counties were considered those adjacent to coastal bays (Fig. 1). Ports with $\geq 2\%$ of the licenses issued in any one of the different length classes for 1979 were tabulated individually; all other ports were pooled.

RESULTS

The commercial shrimp fleet in Texas is comprised of about 7000 vessels (Table 1). There has been no significant change in fleet size over the past 7 years (Table 1). However, there have been significant changes in the composition of the fleet. The largest decrease (768 boats) from 1979 to 1985 was for part-time commercial bay boats, 80% of which were in ports from Galveston Bay north (Table 2). Out-of-state boats increased from 294 to 711 from 1979 to 1984, then decreased to 688 in 1985. The greatest increase in out-of-state boats was for commercial Gulf vessels. In 1985, out-of-state boats accounted for 27% of the Gulf vessels ≥ 16.8 m-21.3 m and 50% of the vessels > 21.3 m (Table 1).

Most of the fleet licensed to fish in Texas were from Texas regardless of year or length. Coastal counties (Fig. 1) had the greatest percentage (49%-95%) of boats in each length class (Table 1). Non-coastal counties accounted for $\sim 12\%$ of the part-time commercial bay boats and generally $\leq 5\%$ of the boats in the other two classes.

The top three port areas for the three length classes remained relatively stable from 1979 to 1985 (Table 2). Part-time commercial bay boats were most numerous in the ports of Beaumont-Nederland, Houston-Pasadena-Baytown, and Seabrook-Kemah-San Leon-Texas City from 1979 to 1984. Corpus Christi replaced the Seabrook area in 1985. Commercial bay boats were most numerous in Galveston, Palacios-Port Lavaca-Port O'Connor and Corpus Christi from 1979 to 1983. The Seabrook area replaced Corpus Christi in 1984 and 1985. Commercial Gulf vessels were most numerous in Galveston, Corpus Christi and Brownsville from 1979 to 1983. The Port Arthur-Sabine Pass area replaced Galveston in 1984 and 1985.

Individual bay and Gulf licenses accounted for the majority (56-66%) of all licenses sold in any one year (Table 3). Individual bay licenses decreased from 2481 in 1979 to 1784 in 1985. Individual Gulf licenses increased from 2086 in 1979 to 2411 in 1983, then decreased to 2094 in 1985. Individual bait licenses increased from 437 in 1979 to 614 in 1985. Boats with combination licenses increased 31% from 1979 to 1985 while the total number of boats increased only 1%. The increase in combination licenses was mostly for commercial bay boats holding combination bay/bait licenses. The majority of boats > 16.8 m were licensed for Gulf or some combination of Gulf shrimping.

DISCUSSION

Changes in the composition of the Texas commercial shrimp fleet probably reflect increased demand for shrimp, changes in regulations and license cost, and changing economic conditions in Texas. The increase in the number of full-time commercial shrimp boats and the yearly increase in the percentage of boats holding multiple licenses was probably due to increased demand for shrimp (Thompson 1984) and modifications in shrimping regulations (Crowe and Bryan 1986). The 69th legislature increased license fees from \$60 to \$80 for bay licenses and \$80 to \$100 for Gulf licenses (Texas Parks and Wildlife Laws 1985). The greatest fluctuations in size categories were in the smallest boats. Increased license fees may have greater impact on part-time operators as opposed to full-time operators. The reduction in the number of part-time commercial boats and the increase in full-time commercial boats on the upper Texas coast is interesting, but not explainable at the present time. The reason for this shift may reflect changing economic conditions in an area rather than a shift in shrimp populations since shrimp populations remained relatively stable during 1979-1985 (Hammerschmidt and McEachron 1986).

Yearly fluctuations in size and license categories and distribution of the fleet point to the need for yearly updating of the data base. For instance, the steady increase in the number of out-of-state boats from 1979 to 1983 (Crowe and Bryan 1986) slowed dramatically in 1984 and actually decreased in 1985.

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Table 1. Number of commercial shrimp boats licensed in Texas by length class (m) and area for fiscal years 1979-1985.

Year	Area	Total	Length class				
			<7.6	>7.6-12.2	>12.2-16.8	>16.8-21.3	>21.3
1979	Coastal	6118	3157	1290	380	1004	287
	Non-coastal	477	380	11	18	3	
	Out-of-state	294	7	28	174	80	
	Total	6889	3544	1360	419	1196	370
1980	Coastal	5821	2853	1372	395	916	285
	Non-coastal	460	357	69	12	6	
	Out-of-state	317	5	7	31	169	105
	Total	6598	3215	1448	438	1101	396
1981	Coastal	6450	3248	1529	448	981	244
	Non-coastal	564	444	89	13	6	
	Out-of-state	569	7	16	75	200	
	Total	7583	3699	1634	536	1264	450
1982	Coastal	6121	2265	2261	400	963	232
	Non-coastal	514	309	164	17	4	
	Out-of-state	668	2	22	49	234	
	Total	7303	2576	2447	466	1344	470
1983	Coastal	6487	3107	1687	566	882	245
	Non-coastal	537	399	94	23	7	
	Out-of-state	709	6	19	90	246	
	Total	7733	3512	1800	679	1244	498

Table 1. (Cont'd.).

Year	Area	Total	Length class				
			<7.6	>7.6-12.2	>12.2-16.8	> 16.8-21.3	>21.3
1984	Coastal	6198	2804	1607	648	890	249
	Non-coastal	477	346	88	26	11	6
	Out-of-state	711	7	24	78	318	284
	Total	7386	3157	1719	752	1219	539
1985	Coastal	5762	2419	1562	659	876	253
	Non-coastal	509	350	108	34	11	6
	Out-of-state	688	7	17	77	326	261
	Total	6959	2776	1687	770	1213	520

Table 2. Number of commercial shrimp boats licensed in Texas by length class (m) and selected ports for fiscal years 1979-1985.

Year	Length class	Ports ^a													Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	
1979															
	<7.6	250	180	713	239	183	56	48	79	25	83	92	11	1585	3544
	>7.6-12.2	12	50	128	144	214	20	38	130	76	112	213	5	218	1360
	>12.2-16.8	2	21	46	8	106	0	5	45	19	8	79	10	70	419
	>16.8-21.3	2	19	20	2	139	13	0	35	0	21	244	308	393	1196
	>21.3	0	2	3	1	38	10	0	28	0	10	49	89	140	370
	Total	266	272	910	394	680	99	91	317	120	234	677	423	2406	6889
1980															
	<7.6	203	153	593	222	177	49	36	79	22	74	130	6	1471	3215
	>7.6-12.2	11	52	127	165	232	15	40	165	63	113	228	7	230	1448
	>12.2-16.8	0	29	52	8	118	1	4	50	23	1	84	9	59	438
	>16.8-21.3	3	22	16	3	143	7	0	43	1	14	247	299	303	1101
	>21.3	0	4	0	1	70	2	0	25	0	8	46	92	148	396
	Total	217	260	788	399	740	74	80	362	109	210	735	413	2211	6598
1981															
	<7.6	247	138	635	227	188	65	53	96	46	70	140	10	1784	3699
	>7.6-12.2	12	55	143	183	269	20	42	192	68	127	224	7	292	1634
	>12.2-16.8	0	38	52	14	120	0	6	65	26	7	87	10	111	536
	>16.8-21.3	1	26	14	4	155	16	0	48	1	14	241	292	452	1264
	>21.3	0	4	0	0	35	2	0	26	0	6	52	85	240	450
	Total	260	261	844	428	767	103	101	427	141	224	744	404	2879	7583

Table 2. (Cont'd.).

Year	Length class	Ports ^a												Total	
		1	2	3	4	5	6	7	8	9	10	11	12		13
1982															
	<7.6	238	154	536	190	186	61	48	94	29	67	135	10	1630	3378
	>7.6-12.2	6	59	137	208	272	18	43	186	73	142	229	7	265	1645
	>12.2-16.8	1	38	51	21	121	4	7	65	25	4	97	9	120	563
	>16.8-21.3	0	33	17	2	123	10	0	45	1	11	225	295	485	1247
	>21.3	0	6	3	0	34	3	0	23	0	3	44	81	273	470
	Total	245	290	744	421	736	96	98	413	128	227	730	402	2773	7303
1983															
	<7.6	242	135	524	194	215	58	51	119	28	72	151	11	1712	3512
	>7.6-12.2	12	72	149	232	277	24	46	228	72	149	237	7	295	1800
	>12.2-16.8	1	61	55	61	117	3	8	92	29	21	94	8	124	679
	>16.8-21.3	1	72	16	0	97	12	0	46	1	11	194	284	510	1244
	>21.3	0	17	2	0	25	1	0	22	0	2	50	83	296	498
	Total	256	357	746	487	731	98	105	507	130	255	726	393	2942	7733
1984															
	<7.6	197	122	457	161	201	49	48	115	27	75	156	8	1541	3157
	>7.6-12.2	6	47	173	229	230	27	50	215	86	154	168	5	329	1719
	>12.2-16.8	0	48	80	100	108	3	8	129	35	39	75	6	121	752
	>16.8-21.3	1	86	33	2	84	7	0	51	0	13	174	288	480	1219
	>21.3	0	25	12	0	19	2	0	19	0	3	50	80	329	539
	Total	204	328	755	492	642	88	106	529	148	284	623	387	2800	7386

Table 2. (Cont'd.).

Year	Length class	Ports ^a													Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13			
1985																	
	<7.6	177	103	381	118	169	43	42	90	32	70	154	9	1381	2769		
	>7.6-12.2	8	43	210	218	207	30	53	218	86	173	139	4	298	1687		
	>12.2-16.8	1	38	114	105	89	5	10	136	38	46	61	5	122	770		
	>16.8-21.3	1	73	99	2	70	10	1	55	0	16	154	260	472	1213		
	>21.3	0	30	35	0	15	1	0	13	0	2	46	80	298	520		
	Total	187	287	839	443	550	89	106	512	156	307	554	358	2571	6959		

^a 1 = Beaumont, Nederland; 2 = Port Arthur, Sabine Pass; 3 = Houston-Pasadena-Baytown; 4 = Seabrook-Kemah-San Leon-Texas City; 5 = Galveston; 6 = Freeport; 7 = Matagorda; 8 = Palacios-Port Lavaca-Port O'Connor; 9 = Seadrift; 10 = Fulton-Rockport-Aransas Pass; 11 = Corpus Christi; 12 = Brownsville; 13 = all other ports pooled.

Table 3. (Cont'd.).

Year	Length class	License class							
		Total	Bay	Gulf	Bait	Bay and bait	Bay and Gulf	Bay and Gulf and bait	
1982									
	<7.6	3378	1733	494	354	283	363	39	112
	>7.6-12.2	1645	301	109	110	521	120	57	427
	>12.2-16.8	563	41	150	16	62	56	19	219
	>16.8-21.3	1247	10	1175	0	2	47	2	11
	>21.3	470	1	458	1	1	8	1	0
	Total	7303	2086	2386	481	869	594	118	769
1983									
	<7.6	3512	1726	485	411	355	330	42	163
	>7.6-12.2	1800	284	101	109	624	91	47	544
	>12.2-16.8	679	106	146	14	75	46	22	270
	>16.8-21.3	1244	12	1184	0	1	31	1	15
	>21.3	498	1	495	0	0	1	0	1
	Total	7733	2129	2411	534	1055	499	112	993
1984									
	<7.6	3157	1605	323	453	343	255	38	140
	>7.6-12.2	1719	287	64	127	612	71	39	519
	>12.2-16.8	752	87	112	25	92	76	29	331
	>16.8-21.3	1219	8	1156	0	3	27	2	23
	>21.3	539	0	534	0	0	3	1	1
	Total	7386	1987	2189	605	1050	432	109	1014

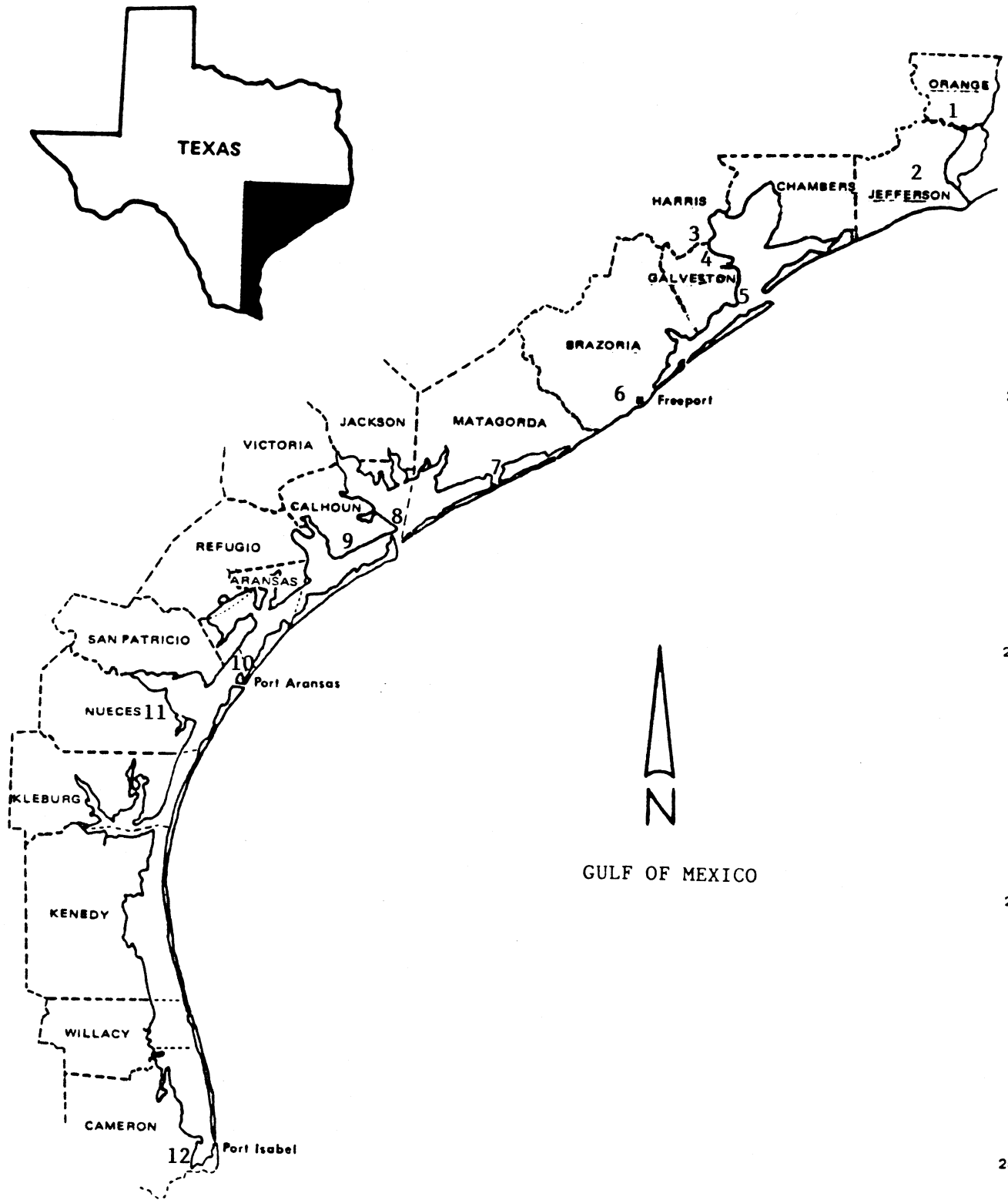
Table 3. Number of commercial shrimp boats licensed in Texas by license class and length (m) for fiscal years 1979-1985.

Year	Length class	License class							
		Total	Bay	Gulf	Bait	Bay and bait	Bay and Gulf	Bay and Gulf and bait	
1979									
	<7.6	3544	2062	427	342	176	428	23	86
	>7.6-12.2	1360	345	66	87	452	103	22	285
	>12.2-16.8	419	66	74	7	58	58	5	151
	>16.8-21.3	1196	7	1152	0	2	22	2	11
	>21.3	370	1	367	1	0	1	0	0
	Total	6889	2481	2086	437	688	612	52	533
1980									
	<7.6	3215	1708	423	395	213	366	33	77
	>7.6-12.2	1448	294	76	116	493	107	45	317
	>12.2-16.8	438	40	73	13	69	51	15	177
	>16.8-21.3	1101	9	1055	0	3	21	2	11
	>21.3	396	0	392	0	0	4	0	0
	Total	6598	2051	2019	524	778	549	95	582
1981									
	<7.6	3699	2140	370	333	280	419	36	121
	>7.6-12.2	1634	344	74	94	579	124	28	391
	>12.2-16.8	536	53	131	8	67	49	16	212
	>16.8-21.3	1264	9	1184	1	2	53	2	13
	>21.3	450	1	434	1	0	13	0	1
	Total	7583	2547	2193	437	928	658	82	738

Table 3. (Cont'd.).

Year	Length class	License class							
		Total	Bay	Gulf	Bait	Bay and bait	Bay and Gulf	Gulf and bait	Bay and Gulf and bait
1985									
	<7.6	2769	1403	260	430	312	230	19	115
	>7.6-12.2	1687	283	52	150	621	79	37	465
	>12.2-16.8	770	87	119	34	88	80	26	336
	>16.8-21.3	1213	11	1145	0	3	34	2	18
	>21.3	520	0	518	0	0	1	0	1
	Total	6959	1784	2094	614	1024	424	84	935

Figure 1. Texas coast illustrating coastal counties, bay systems and major shrimp ports (1 = Beaumont-Nederland; 2 = Port Arthur-Sabine Pass; 3 = Houston-Pasadena-Baytown; 4 = Seabrook-Kemah-San Leon-Texas City; 5 = Galveston; 6 = Freeport; 7 = Matagorda; 8 = Palacios-Port Lavaca-Port O'Connor; 9 = Seadrift; 10 = Fulton-Rockport-Aransas Pass; 11 = Corpus Christi; 12 = Brownsville).



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