

FLORIDA SEA GRANT PROGRAM

FLORIDA COMMERCIAL MARINE FISHERIES: GROWTH, RELATIVE IMPORTANCE, AND INPUT TRENDS

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INTRODUCTION

Commercial fisheries have long been an important component of Florida's economy. Economic research, however, has only been applied to commercial fisheries in relatively recent years. The author's department began a comprehensive research program in marine economics with major emphasis in fishery economics in 1971. A marine economics extension program was developed in 1973. This paper reports part of the initial research undertaken in the department.

The purpose of this paper is to inform commercial fishermen, industry groups, trade associations, County Cooperative Extension Service personnel, and government officials of events and trends in Florida commercial marine fisheries during the 1952-72 period.¹ This paper is not intended to provide an in-depth analysis of all reasons underlying changes or events in the industry nor to analyze the relationship of the

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¹Value and quantity data for 1973 was released after this publication was in press. The 1973 data are reported in Appendix Table A. A cursory review of the 1973 landings shows them to be consistent with trends reported in this report.

fishery sector with the processing and marketing sectors. These latter considerations are the subject of other reports and current and future research.

The organizational plan of this report is to first consider trends in total landings in Florida during the 1952-72 period and to analyze Florida's relative importance as a fishing state both with respect to the United States and within the southeast fisheries region. Following this, the location of Florida's fisheries is discussed in terms of relative importance and growth in landing by coastal counties. The final section of the commercial marine landings discussion is concerned with the composition of Florida landings in terms of the current situation and trends in food fish, non-food fish, shellfish and major species landed. The second part of this report presents a discussion and analysis of Florida fishermen, fishing craft, and productivity.

COMMERCIAL MARINE LANDINGS

Florida Landings

The value of Florida commercial fishery landings trended slightly downward during the decade of the nineteen fifties. However, since that time the current value of commercial landings increased at an increasing rate², reaching a high of over \$57 million in 1972 (Table 1, Figure 1).

²The regression equation for trend in total value of landings is $Y = 28,575.11 + 721.26X_1 + 97.10X_2$ where Y represents current dollars expressed per thousand, X represents time with the mean, $\bar{X} = 0$, and $X_2 = X_1^2$. The regression equation was estimated for the 1952-1970 time period because of the lack of non-preliminary data for later years at the time the equations were estimated and because of the extreme influence of inflation in the 1972 data. All regressions in this report are based on the same time period. With few exceptions the equations fit the 1971 and 1972 data exceptionally well.

During this same time period, 1952-72, the volume of landings exhibited considerable variation from year to year with no significant statistical trend³ for the period (Table 1, Figure 2). During the middle and latter years of the 1950 decade production was considerably less than the 21 year mean of over 195 million pounds. Apparently these low production levels are at least partly responsible for the downward trend in total value of landings throughout the 1950's since, except for 1959, average prices generally trended upward during this period (Table 1). Price changes have offset some of the variation in year-to-year changes in value of total landings. In 17 of the 20 price and quantity movements observed in the 21 year period, prices moved in the opposite direction to yearly production. Price movements were of sufficient magnitude that in 12 of the yearly changes in value and volume of landings, total value moved in the opposite direction to changes in quantity landed. Thus, the over-all upward trend in average prices from a low of 10 cents per pound in 1952 to 32 cents per pound in 1972, along with no significant change in production, shows price to be the key factor in the over-all trend in value of landings.

Several possible explanations exist for the increases in both prices and the value of landings expressed in current dollars. Among these are (1) increases in the aggregate demand for all seafood, (2) increases in demand for specific products produced by Florida fishermen, (3) increases in production costs and/or (4) changes in the species composition of

³The estimated trend regression equation for total volume of landings is $Q = 197,843.16 - 863.61X$, where Q represents pounds landed and X represents years with the mean, \bar{X} , coded to be equal to zero.

Table 1. Florida commercial fishery landings, values and average prices, 1952-72^a

Year	Pounds	Value (current dollars)	Price Per Lb. ^b	Value ^c (real dollars)
1952	264,563,700	27,474,875	.10	29,702,568
1953	209,458,800	31,799,407	.15	34,199,535
1954	173,686,200	25,244,942	.15	26,971,092
1955	178,176,700	26,221,181	.15	28,104,159
1956	215,399,700	30,808,625	.14	32,532,867
1957	164,100,400	30,411,987	.19	31,032,640
1958	175,703,800	30,078,719	.17	29,869,632
1959	212,950,400	23,227,022	.11	22,883,766
1960	196,945,900	26,828,334	.14	26,021,662
1961	201,100,200	27,206,971	.14	26,110,337
1962	197,822,700	32,354,741	.16	30,697,098
1963	195,721,400	29,049,374	.15	27,255,280
1964	187,015,400	30,786,547	.16	28,479,692
1965	211,886,900	35,345,871	.17	32,161,848
1966	203,604,000	34,400,000	.17	30,415,561
1967	207,414,000	32,941,000	.16	28,324,162
1968	190,895,000	39,226,000	.21	32,364,686
1969	179,877,000	41,603,000	.23	32,578,700
1970	192,698,835	43,264,730	.22	31,976,888
1971	179,497,155	46,023,872	.26	32,641,044
1972	179,116,613	57,025,860	.32	39,139,231

^aPounds landed and value for 1973 are reported in Appendix Table A. These were released after the present report was in press.

^bComputed by dividing current dollars by pounds landed.

^cValue of landings in current dollars deflated by the Consumer Price Index for all Commodities, 1967=100.

Source: Pounds and dollars were derived from [2,4]

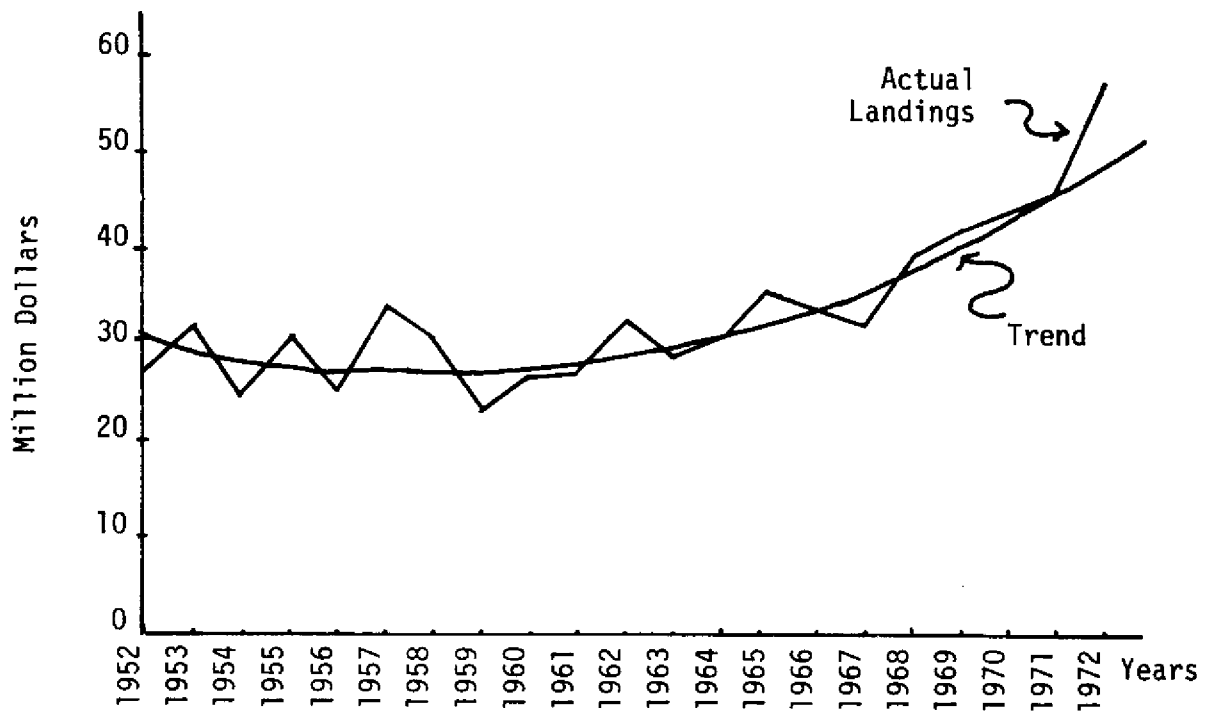


Figure 1.--Value of Florida commercial marine landings, 1952-72.

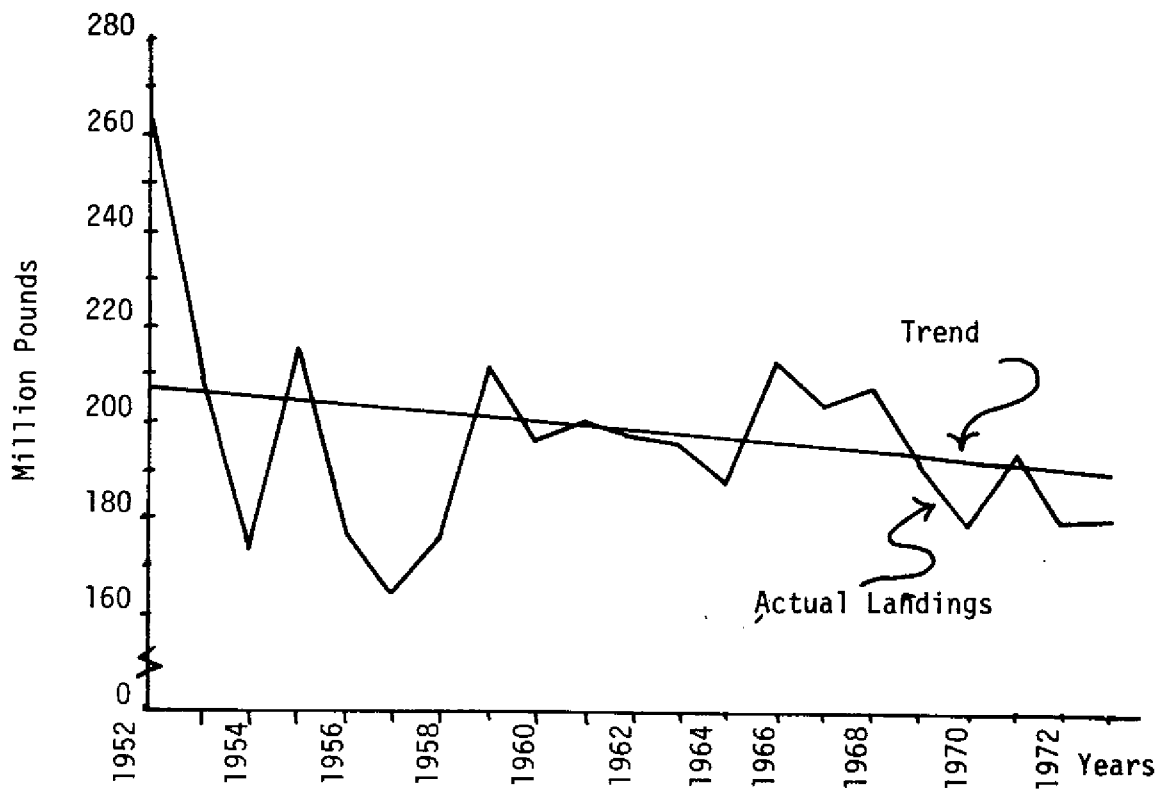


Figure 2.--Florida landings of commercial marine products, 1952-72.

Florida landings. Detailed analysis of demand for Florida fishery products is necessary to test the first two hypotheses. Analysis of production cost is necessary to test the third hypothesis. Both sets of analyses are presently the subject of on-going research. Analysis of landings of specific species in this report will tend to support the fourth hypothesis concerning species landings.

The upward trend in value of landings is misleading in that it may suggest higher levels of gross income for fishermen. Deflating total annual values by the consumer price index for all commodities gives an indication of the purchasing power resulting from gross income generated by fishermen. There is no significant upward or downward trend⁴ in total value of commercial landings when measured in real dollars (Table 1). However, considerations such as the number of fishermen, productivity, and costs need to be considered before any conclusions can be reached as to the net changes in fishermen's welfare or net income.

Relative Importance of Florida Fisheries

Relative to United States landings, Florida's commercial marine landings are rather small in terms of quantity landed but more significant in terms of value of landings. In 1972 Florida ranked seventh among all states in volume landed and fifth in value of landings.⁵ Florida accounted for an average of 3.9 percent of the total volume landed in the U. S.

⁴The estimated trend regression equation for total value of landings, R, expressed in 1967 dollars is $R = 29,564.63 + 77.92X$ where X represents years with the mean $\bar{X} = 0$.

⁵In terms of volume of landings Florida is surpassed by Louisiana, California, Virginia, Alaska, Mississippi and Massachusetts (listed in order of importance). In terms of value of landing Alaska, California, Louisiana and Texas are the four most important states.

for the 1952-1972 period. This percentage was fairly constant, ranging from a low of 3.3 percent in 1959 to a high of 6 percent in 1952. During this time period Florida's average price was twice the average U. S. price. Consequently, Florida accounted for between 6.7 and 9 percent of the total value of commercial landings for the period, averaging 7.8 percent for the 21 years (Table 2).

Florida is unique in that it is the only state participating in two regional fisheries, the Gulf and South Atlantic which, when combined, make up the Southeastern fisheries region.⁶ Of the two regional fisheries, Florida's major involvement is in the Gulf where approximately 75 percent of the total value of Florida's catch is landed. Florida's relative contribution to the total pounds landed in the Southeast has declined steadily throughout the past two decades, decreasing from 22.1 percent to approximately 9 percent in recent years (Table 2). Florida has not kept pace with increased production in the Southeast; however, the state still ranked 3rd among states in the Southeast in 1972.

A somewhat smaller downward trend is seen with respect to the relative value of total landings in the Southeast region (Table 2). Florida's share has decreased from over 30 percent to slightly over 20 percent. An upward trend in relative prices has partly offset the downward trend in proportion of volume landed in the Southeast. For the 21-year period Florida prices averaged over 200 percent of those received in the Southeast region. The superior price reflects the makeup of Florida landings which consists of a

⁶The Southeastern region includes the coastal states Texas through North Carolina as defined by the National Marine Fisheries Service.

Table 2.--National and regional importance of Florida commercial marine landings, 1952-72

Year	United States		Southeast		Florida as a percent of					
	1000 pounds	1000 dollars	1000 pounds	1000 dollars	United States		Southeast		prices	
					pounds	dollars	pounds	dollars		
1952	4,418,442	360,135	1,195,814	87,838	6.0	7.6	22.1	31.3	137	
1953	4,467,960	352,275	1,085,967	103,315	4.7	9.0	19.3	30.8	158	
1954	4,741,843	355,639	1,080,765	90,133	3.7	7.1	16.1	28.0	181	
1955	5,251,686	369,018	1,343,689	105,298	4.1	8.3	16.0	29.3	180	
1956	4,794,281	335,778	1,176,212	93,561	3.7	7.8	15.1	28.0	186	
1957	4,778,458	351,116	1,027,121	105,012	3.4	8.7	16.0	29.0	186	
1958	4,735,845	370,697	1,184,492	106,617	3.7	8.1	14.8	28.2	190	
1959	6,384,539	346,051	1,623,663	96,510	3.3	6.7	13.1	24.1	186	
1960	4,942,229	353,565	1,664,829	105,689	4.0	7.6	12.0	25.4	219	
1961	5,186,709	362,210	1,779,358	95,457	3.9	7.5	11.3	28.5	259	
1962	5,354,185	396,428	1,742,826	117,966	3.7	8.2	11.4	27.4	235	
1963	4,847,109	377,162	1,770,229	118,258	4.0	7.7	11.1	24.6	224	
1964	4,540,622	389,498	1,653,831	120,017	4.1	7.9	11.3	25.7	219	
1965	4,776,766	445,679	1,820,127	140,331	4.4	7.9	11.6	25.2	221	
1966	4,365,894	472,354	1,563,945	149,650	4.7	7.3	13.0	23.0	177	
1967	4,054,557	439,579	1,534,125	152,432	5.1	7.5	13.5	21.6	162	
1968	4,116,000	472,000	1,628,346	171,911	4.6	8.3	11.7	22.8	198	
1969	4,292,500	518,500	1,933,215	188,677	4.2	8.0	9.3	22.0	235	
1970	4,883,600	601,900	1,988,222	194,959	3.9	7.2	9.7	22.2	225	
1971	4,969,400	643,200	2,352,129	241,157	3.6	7.2	7.6	19.1	260	
1972	4,710,400	703,600	1,868,967	267,728	3.8	8.1	9.6	21.3	229	

Source: Pounds and dollars are derived from [2,3]

high proportion of high value species.⁷ Of the ten leading food fish species in terms of value of landings in the Southeast fisheries, Florida is the leading state for spiny lobster, red snapper, mullet, spotted sea trout, grouper, spanish mackerel and king mackerel.

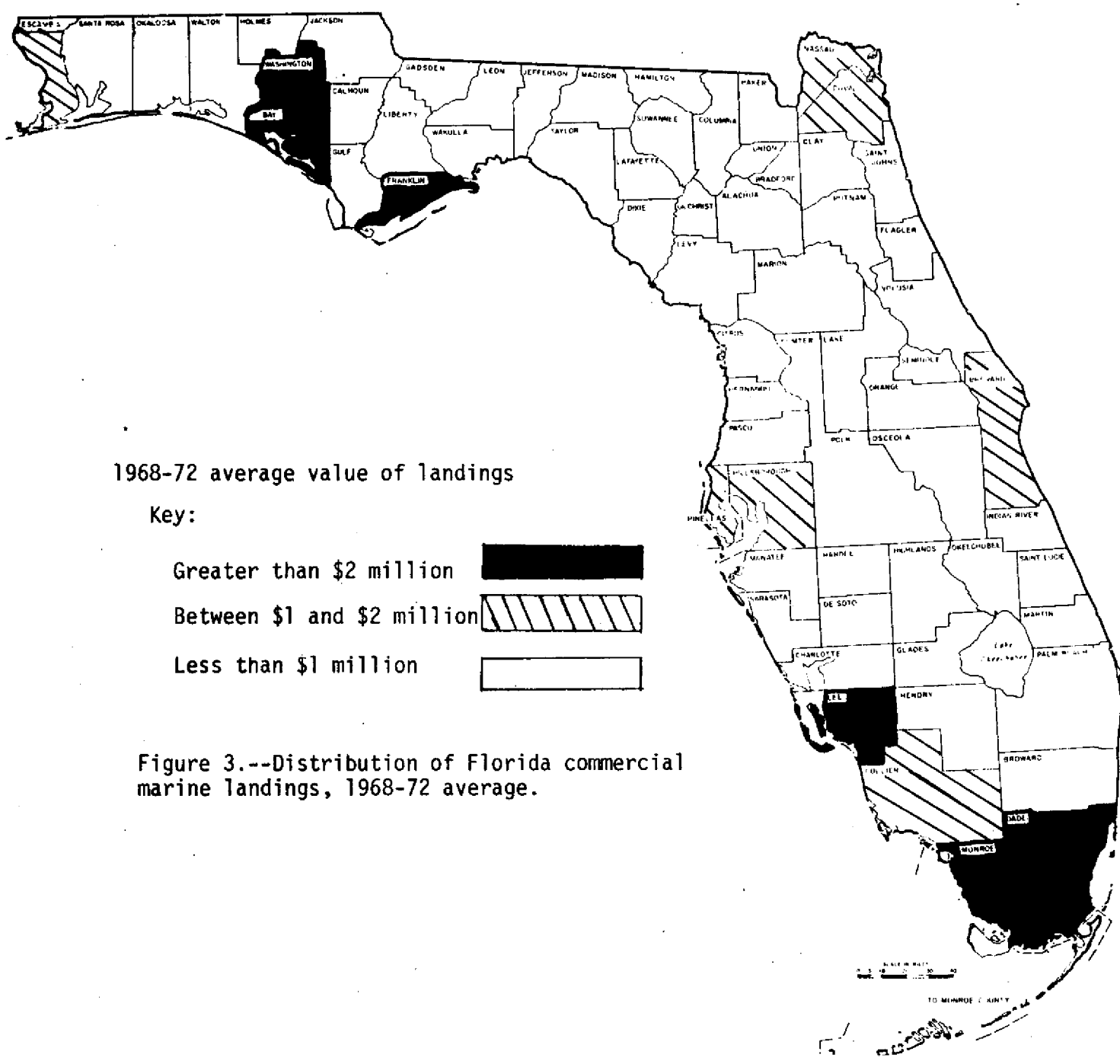
Location of Florida Fisheries: Relative Importance and Growth by Counties

Commercial marine landings are currently reported for all coastal counties in Florida except Flagler and Jefferson and also for Washington County and Putnam County located on the St. Johns River (Figure 3). Although nearly all coastal counties land marine products, there is some concentration of landings. Based on the 1968-72 average value of landings five counties⁸ had sales between \$1 and \$2 million per year (Table 3, Figure 3). Monroe County currently accounts for 24.8 percent of the total state dockside value of landings. The five counties with sales in excess of \$2 million had 54.4 percent of total sales and the 12 counties with sales in excess of \$1 million had 76.6 percent (Table 3).

Counties with the largest proportion of the value of marine landings in the state normally account for the largest proportion of total volume landed. However, there are a few exceptions. Dade County accounted for 6.8 percent of value but only 2.5 percent of volume; Hillsborough accounted for 4.2 percent of the value of landings but for only 2.3 percent of volume (Tables 3 and 4). Monroe County shows similar differences of 24.8 percent

⁷More detailed discussion of landings and value of individual species later in the paper will provide some explanation of the trends and relative positions discussed in this paragraph.

⁸Actually there were six counties involved since Washington is included with Bay County. However, since Washington County landings are nominal Bay and Washington will be referred to as one county in this report.



of value yet only 13.3 percent of volume. These differences largely reflect the large proportion of lobsters and shrimp with higher values landed in these counties. Nassau, on the other hand, accounted for 2.9 percent of value but 13.2 percent of volume, reflecting the large proportion of menhaden in its landings (90 percent in 1972).

During the period between 1960-1964 and 1968-1972 four counties experienced decreases in value of landings ranging from 2 percent (Levy) to 62 percent (Hillsborough) (Table 3, Figure 4). At the same time 12 counties experienced decreases in volume of landing (Table 4, Figure 5). With a few exceptions the counties from the central and mid-western part of the state declined in volume landed. That more counties experienced declines in average volume than those with decreases in value of landings reflects the strong upward movement in prices and is consistent with the aggregate trends already discussed. For those counties experiencing growth, the range of increase in landings was 2 percent (Collier) to 151 percent (Dade) (Table 4, Figure 5). Growth in average annual value of landings ranged from 6 percent (Wakulla) to 629 percent (Dade). The latter reflects the growth in the Florida spiny lobster industry.

Although only four counties had a negative absolute growth rate in value of landings, 13 experienced a decline relative to the value of state landings. That is, their percent of state landings was less in 1968-72 than in 1960-64. Twelve counties experienced a decline relative to the volume of state landings; however, not all counties had both a decrease in relative volume and value of state landings because of the relative importance and prices of individual species.

Table 3.--Distribution of value of Florida fishery landings by counties, 1960-64 and 1968-72 averages

County	Average annual value of landings (dollars)			Percent of state landings		
	1960-64	1968-72	Percent change	1960-64	1968-72	Change
Bay & Washington	1,263,513	2,191,250	73	4.5	4.8	.3
Brevard	717,934	1,403,090	95	2.6	3.1	.5
Broward	40,328	32,221	-20	.1	.1	0
Charlotte	377,649	490,995	30	1.4	1.1	-.3
Citrus	193,776	434,672	124	.7	1.0	.3
Collier	628,699	1,088,372	73	2.3	2.4	.1
Dade	424,264	3,092,191	629	1.5	6.8	5.3
Dixie & Taylor	122,643	239,883	96	.4	.5	.1
Duval	707,580	1,590,335	125	2.5	3.5	1.0
Escambia	655,134	1,284,774	96	2.4	2.8	.4
Franklin	2,015,663	2,938,083	46	7.2	6.5	-.7
Hillsborough	5,046,310	1,895,544	-62	18.1	4.2	-13.9
Gulf	^a	627,294		^a	1.4	
Indian River	211,729	377,793	70	.8	.8	0
Lee	3,466,215	5,241,407	51	12.4	11.5	-.9
Levy	291,854	284,578	-2	1.0	.6	-.4
Manatee	445,257	881,896	98	1.6	1.9	.3
Martin	191,269	444,622	132	.7	1.0	.3
Monroe	6,143,073	11,257,519	83	22.0	24.8	2.8
Nassau	930,481	1,327,099	43	3.3	2.9	-.4

Continued

Table 3.--Distribution of value of Florida fishery landings by counties, 1960-64 and 1968-72 averages--
Continued

County	Average annual value of landings (dollars)			Percent of state landings		
	1960-64	1968-72	Percent change	1960-64	1968-72	Change
Okaloosa	376,943	552,700	47	1.4	1.2	-.2
Palm Beach	371,380	853,364	130	1.3	1.9	.6
Pasco & Hernando	58,567	78,416	34	.2	.2	0
Pinellas	1,094,665	1,487,549	36	3.9	3.3	-.6
Putnam	485,828	438,040	-10	1.7	1.0	-.6
St. Johns	499,649	733,413	47	1.8	1.6	-.2
St. Lucie	258,115	755,206	193	.9	1.7	.8
Sarasota	194,388	252,390	30	.7	.6	-.1
Volusia	383,019	444,553	16	1.4	1.0	-.4
Wakulla	313,181	331,343	6	1.1	.7	-.4
Walton	a	44,340		a	.1	
Santa Rosa	a	54,213		a	.1	

^aNot reported

Source: Derived from [1]

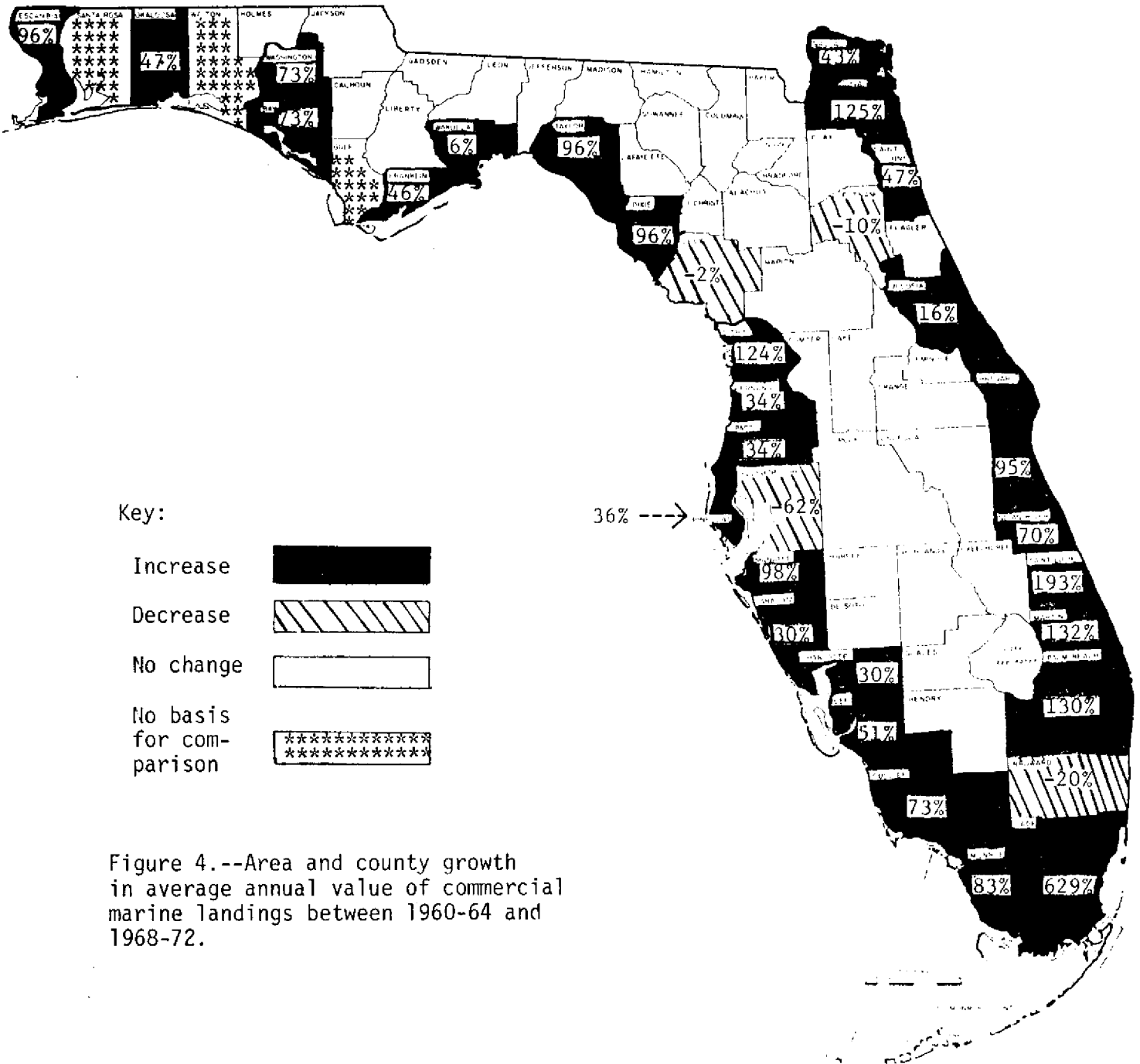


Figure 4.--Area and county growth in average annual value of commercial marine landings between 1960-64 and 1968-72.

Composition and Growth in Florida Landings

Non-food, Shellfish, and Food Fish.

Non-food fish are of considerable importance in terms of total quantity of marine landings in Florida. Nevertheless, because of their relatively low dockside prices, they are relatively unimportant in relation to total value of landings. Non-food fish ranged between 11.8 to 29.6 percent of total quantity of state landings during the 1960-72 period (Table 5). Yearly variation, without any apparent trend, in the quantity, both in absolute and relative measures of non-food fish landed in the state was evidenced between 1960 and 1967, but a general decline occurred after 1967. The relatively stable proportion of total value of marine landings in the state, between 1.0 and 2.3 percent, accounted for by non-food fish suggests that the growth rate in value closely parallels that for all species landed in the state. Menhaden is the most important non-food fish, accounting for over 13 percent of total landings, but only one-half of one percent of total value in 1972.

Shellfish are the most valuable marine commodity landed in Florida, making up a relatively stable 63.9 to 69.5 percent of the total value of all landings during the 1960-72 time period. A comparison of the relative importance of shellfish in quantity units with its importance in value units reflects the premium prices received for shellfish compared with all fish landed in Florida (Table 5). There has been a slight downward trend in quantity of landing. However, this trend is offset by increasing average prices, resulting in a slight upward trend in total value of shellfish landings. However, this upward trend in total value was less than the trend for other fish and thus the shellfish share of the total

Table 4.--Distribution of volume of Florida fishery landings by counties, 1960-64 and 1968-72 averages

County	Average volume of landings			Percent of state landings			Change
	1960-64	1968-72	Percent change	1960-64	1968-72	1968-72	
Bay & Washington	9,069,901	7,712,631	-15	4.9	4.2	4.2	-.7
Brevard	4,302,051	5,942,160	38	2.3	3.2	3.2	.9
Broward	137,000	55,062	-60	.1	.0	.0	-.1
Charlotte	4,707,085	3,639,453	-29	2.5	2.0	2.0	-.5
Citrus	2,529,405	4,319,107	71	1.4	2.3	2.3	.9
Collier	6,242,612	6,377,400	2	3.4	3.5	3.5	.1
Dade	1,829,977	4,594,382	151	1.0	2.5	2.5	1.5
Dixie & Taylor	1,530,521	2,516,867	64	.8	1.4	1.4	.6
Duval	3,519,459	4,192,270	19	1.9	2.3	2.3	.4
Escambia	3,477,402	4,109,245	18	1.9	2.2	2.2	.3
Franklin	13,503,389	11,526,866	-15	7.3	6.3	6.3	-1.0
Hillsborough	15,715,120	4,197,216	-73	8.5	2.3	2.3	-6.2
Gulf	a	4,095,579			2.2	2.2	
Indian River	2,850,890	2,728,596	-4	1.5	1.5	1.5	0
Lee	16,103,153	16,755,474	4	8.7	9.1	9.1	.4
Levy	5,180,878	2,452,520	-53	2.8	1.3	1.3	-1.5
Manatee	5,419,517	6,341,192	17	2.9	3.4	3.4	.5
Martin	1,888,923	3,139,265	66	1.0	1.7	1.7	.7
Monroe	23,699,079	24,528,844	4	12.8	13.3	13.3	.5
Nassau	30,428,535	24,398,480	-20	16.4	13.2	13.2	-3.2

Continued

Table 4.--Distribution of volume of Florida fishery landings by counties, 1960-64 and 1968-72 averages--
Continued

County	Average volume of landings			Percent of state landings		
	1960-64	1968-72	Percent change	1960-64	1968-72	Change
Okaloosa	2,338,873	2,559,038	9	1.3	1.4	.1
Palm Beach	2,891,498	3,958,012	37	1.6	2.1	.5
Pasco & Hernando	738,933	621,987	-16	.4	.3	-.1
Pinellas	8,025,273	5,660,437	-30	4.3	3.1	-1.2
Putnam	4,082,034	2,651,208	-35	2.2	1.4	-.8
St. Johns	2,508,779	2,823,535	13	1.4	1.5	.1
St. Lucie	2,258,218	3,353,022	49	1.2	1.8	.6
Sarasota	2,092,849	2,241,591	7	1.1	1.2	.1
Volusia	2,271,137	2,278,578	0	1.2	1.2	0
Wakulla	6,026,887	4,051,899	-35	3.3	2.2	-1.1
Walton	a	310,613		a	.2	
Santa Rosa	a	213,710		a	.1	

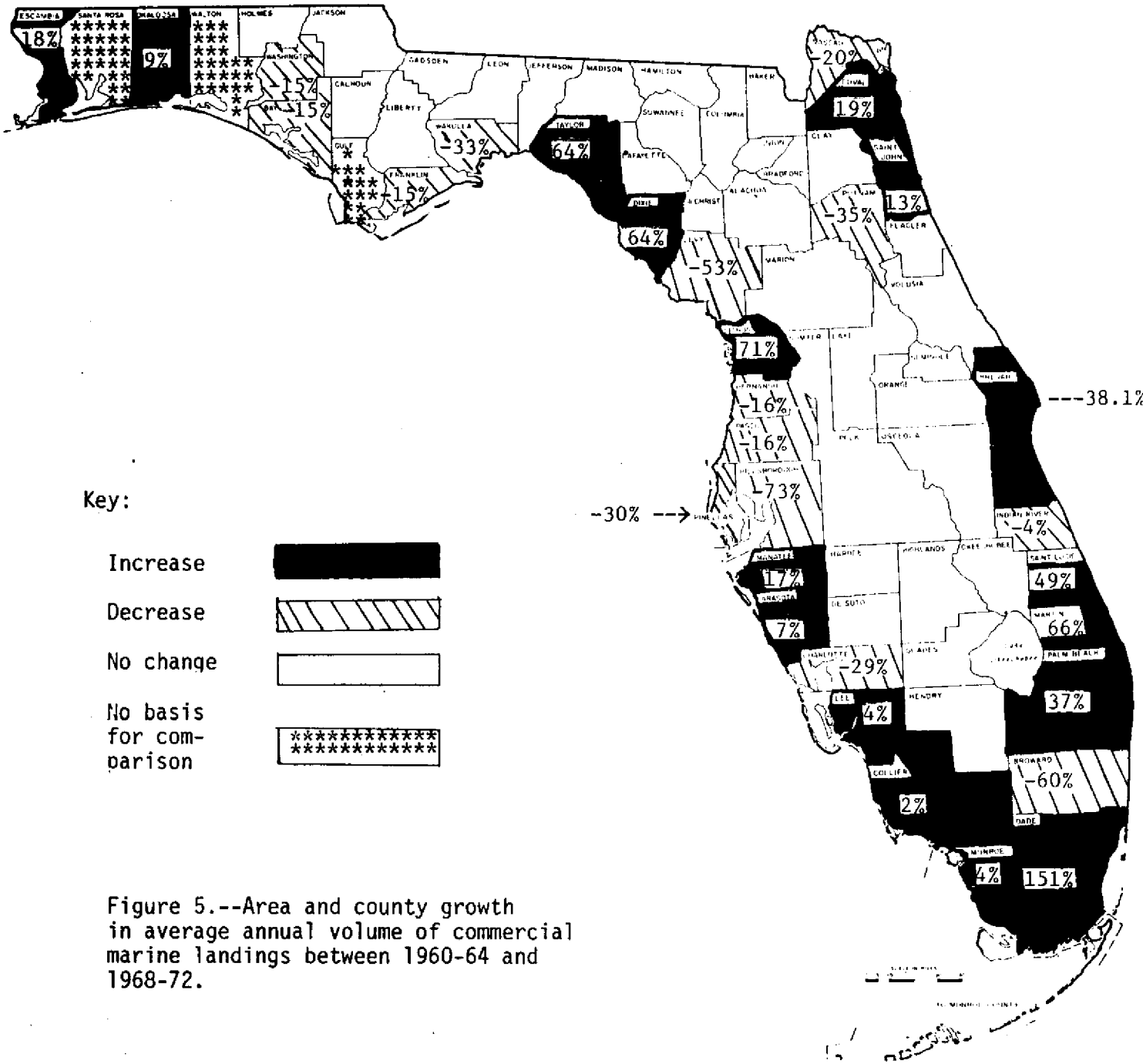


Figure 5.--Area and county growth in average annual volume of commercial marine landings between 1960-64 and 1968-72.

Table 5.--Shellfish, food fish and non-food fish landed in Florida, 1960-72

Year	Non-food Fish				Shellfish			
	Pounds	Percent total pounds	Dollars	Percent total dollars	Pounds	Percent total dollars	Dollars	Percent total dollars
1960	33,667,105	17.7	332,539	1.3	82,294,800	43.2	17,657,308	68.3
1961	39,119,349	20.6	395,860	1.5	73,506,053	38.6	17,213,353	67.0
1962	36,721,590	19.6	424,567	1.4	64,897,123	34.8	21,439,744	69.3
1963	30,785,900	16.5	395,056	1.4	70,324,800	37.9	13,312,092	67.7
1964	20,842,769	11.8	654,833	2.3	73,142,033	40.7	18,838,096	65.2
1965	35,291,537	17.6	581,306	1.7	79,569,723	39.9	22,887,240	68.4
1966	42,755,603	22.2	697,206	2.1	68,675,774	35.8	21,127,838	65.2
1967	85,134,882	29.6	708,411	2.3	62,489,349	31.8	19,675,693	63.9
1968	40,069,385	22.2	555,902	1.5	57,638,589	34.2	24,493,842	66.1
1969	29,044,848	17.1	514,599	1.3	60,649,313	35.8	25,634,689	65.0
1970	31,784,984	17.4	600,881	1.5	70,657,974	38.6	26,581,724	64.1
1971	24,746,650	15.0	575,583	1.3	62,495,097	37.8	28,413,589	65.8
1972	25,568,317	15.2	534,609	1.0	61,722,839	36.7	38,015,508	69.5

Continued

Table 5.--Shellfish, food fish and non-food fish landed in Florida, 1960-72--Continued

Year	Food Fish			Total		
	Pounds	Percent total pounds	Dollars	Percent total dollars	Pounds	Dollars
1960	74,514,004	39.1	7,865,668	30.4	190,475,019	25,855,515
1961	77,542,924	40.8	8,092,065	31.5	190,168,326	25,701,278
1962	85,272,061	45.6	9,060,225	29.3	186,900,774	30,884,536
1963	84,910,200	45.6	8,792,545	30.9	186,020,900	28,499,693
1964	83,988,016	47.5	9,398,054	32.5	176,972,818	28,890,983
1965	85,220,663	42.6	10,028,860	29.9	200,081,923	33,497,406
1966	80,853,026	42.0	10,626,891	32.7	192,284,403	32,451,935
1967	75,743,509	38.6	10,385,137	33.8	196,367,740	30,769,241
1968	78,792,684	43.6	12,020,249	32.4	180,500,658	37,069,993
1969	80,010,348	47.1	13,281,499	33.7	169,704,509	39,430,787
1970	80,335,058	44.0	14,255,228	34.4	182,778,017	41,437,833
1971	79,084,852	47.8	14,182,420	32.9	165,326,599	43,171,592
1972	80,980,557	48.1	16,160,963	29.5	168,271,713	54,711,080

Source: Based on annual issues of [1]

value of landings in the state decreased.

Food fish are the most important in quantity landed of the three groups, accounting for between 39.1 and 48.1 percent of total landings in the state during the 1960-1972 period. There has been no apparent significant trend in pounds of food fish landed. Due to increasing average prices, the value of food fish landed in the state increased steadily during the 1960-1972 period; its share of the total value of landings in the state has also increased (Table 5). The average price of food fish is about one-third the price per pound of shellfish. Considering the relative stability of quantity of food fish landed, it appears that most of the annual variation in total landings in Florida can be attributed to non-food fish and shellfish landings.

Major Species

Although over 70 species are landed and reported separately in Florida, 12 species generated 86 percent of the average annual value in the latest five years (Table 6). These 12 represent 70 percent of the total volume during the same period. Menhaden accounted for an additional 15 percent of the volume landed but were an insignificant amount of the total value.

Shrimp are by far the most important species landed, accounting for 37.4 percent of total state value of landings and 16.6 percent of the volume during the 1968-72 period. A comparison with landings during the 1952-56 period shows shrimp to have declined in relative importance. Spiny lobsters currently are the second most important species, accounting for 15.3 percent of total value of landings. Lobsters were seventh in value during the 1952-56 period. Mullet was second in importance by

weight in the 1952-56 period, but currently ranks fourth in dollars value. By value, red snapper has remained the third most important species. Sea trout declined from fourth in the 1952-56 period to ninth currently. Oysters have moved from eleventh place to fifth in value importance. The remaining species--blue crab, grouper, Spanish and king mackerel, pompano and stone crab--essentially maintained the same relative importance.

An analysis of trends in volume landed for each species shows considerable differences in growth rates. Four species show significant negative trends, seven show significant positive trends and one, sea trout, shows no statistically significant trend (Table 7, Figures 6-13).

Shrimp landings show a significant negative trend with a decrease of 1,374 thousand pounds per year⁹ (Table 7, Figure 6). However, shrimp prices have generally trended upward and have to some extent offset the downward trend in volume of landing, leaving value of shrimp landings down only slightly (Table 7). The decline in Florida shrimp landings is due to a reduction in landings caught outside of Florida waters and landed in Florida ports.

Spiny lobsters have experienced the most significant upward trend¹⁰ in volume of landings (Table 7, Figure 7). Volume of landings more than tripled during the 1960's and reached over 11 million pounds in 1972.

⁹The regression equation for trend in pounds of shrimp landed, Q, is $Q = 42,483.53 - 1,373.71X$: where, X represents years coded so that the mean equals zero.

¹⁰The regression equation for trend in pounds of lobsters landed, Q, is $Q = 3,224.26 + 319.53X + 26.20X^2$, where X represents years coded so that the mean equals zero.

Table 6.--Relative importance of major species^a landed in Florida, 1952-56 and 1968-72 averages

Species	Percent of State		1968-1972 Average Landings		Percent of State		1952-1956 Average Landings	
	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars
Shrimp	16.6	37.4	28,845,561	16,828,913	25.0	60.0	52,146,508	16,982,372
Spiny Lobster	5.0	15.3	8,645,643	6,882,510	1.1	1.9	2,192,672	522,605
Red Snapper	2.7	5.7	4,608,705	2,546,553	3.0	5.5	6,034,169	1,553,741
Black Mullet	15.1	5.0	26,091,113	2,239,660	13.1	8.1	27,361,169	2,298,564
Oysters	2.5	3.8	4,315,113	1,726,729	.3	.6	674,431	179,499
Blue Crab	10.8	3.6	18,773,538	1,606,155	5.0	1.8	10,397,099	498,020
Grouper	4.2	3.3	7,194,663	1,477,460	2.5	2.0	5,279,655	564,767
Spanish Mackerel	6.2	2.7	10,709,370	1,231,070	3.0	2.2	6,187,028	631,874
Pompano	.7	2.7	1,121,442	1,193,624	.3	1.5	635,163	431,962
King Mackerel	3.4	2.6	5,919,199	1,182,804	1.3	1.3	2,636,535	369,957
Spotted Sea Trout	1.8	2.1	3,077,102	961,287	1.7	3.1	3,581,198	873,214
Stone Crab	.9	2.0	1,623,173	871,594	.1	.3	207,014	91,944
TOTAL	69.9	86.2	120,924,622	38,748,359	56.3	88.3	117,332,641	24,998,519

Source: Computed from annual issues of [1, 4]

^aScientific names of major species are presented in Appendix Table B.

Table 7.--Florida landings, value and prices of major species for 1952-72

Year	Shrimp			Spiny Lobster			Red Snapper		
	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.
1952	43,834,480	13,750,627	.31	1,612,356	403,089	.25	5,888,965	1,366,009	.23
1953	58,471,431	21,389,490	.37	1,995,411	399,082	.20	5,538,345	1,511,457	.27
1954	50,882,876	14,574,945	.29	1,947,321	447,884	.23	6,119,655	1,652,307	.27
1955	52,733,990	15,440,180	.29	2,295,362	527,934	.23	6,426,304	1,675,817	.26
1956	54,809,765	19,756,616	.36	3,112,908	835,038	.27	6,197,576	1,563,114	.25
1957	47,099,595	18,517,519	.40	4,039,839	1,123,564	.28	6,229,325	1,639,793	.26
1958	51,110,580	18,520,501	.36	2,954,315	836,550	.28	6,433,777	1,708,145	.27
1959	36,763,885	11,112,388	.30	3,180,733	954,605	.30	6,028,884	1,595,033	.26
1960	51,256,803	14,318,197	.28	2,848,540	1,100,248	.39	6,113,737	1,612,912	.26
1961	42,127,663	13,546,633	.32	2,803,439	969,303	.35	6,124,276	1,635,840	.27
1962	37,334,443	17,099,383	.46	3,107,018	1,188,949	.38	6,014,234	1,519,134	.25
1963	39,447,753	13,992,153	.35	3,585,194	1,407,746	.39	6,403,199	1,711,570	.27
1964	44,456,483	15,293,273	.34	3,361,130	1,562,163	.43	7,073,997	2,202,939	.31
1965	43,153,796	16,292,705	.38	5,714,093	3,219,241	.56	6,696,951	2,145,931	.32
1966	33,918,073	15,153,399	.45	5,350,266	2,468,969	.46	5,879,934	2,101,274	.36
1967	28,383,664	12,975,625	.46	4,413,567	2,733,014	.62	5,916,826	2,210,379	.36
1968	32,076,844	15,718,921	.49	6,155,036	4,408,569	.72	5,253,955	2,166,609	.41
1969	28,151,686	15,319,101	.54	7,581,133	5,257,541	.69	4,913,948	2,645,829	.54
1970	31,172,033	15,752,624	.51	9,869,462	5,918,479	.60	4,439,098	2,505,185	.56
1971	25,658,085	16,286,911	.64	8,205,803	7,056,536	.86	4,342,946	2,556,300	.59
1972	27,169,159	21,067,006	.78	11,416,782	11,771,425	1.03	4,093,578	2,858,842	.70
1968- 1972 Avg.	28,845,561	16,828,913	.583	8,645,643	6,882,510	.796	4,608,705	2,546,553	.552

Continued

Table 7.--Florida landings, value and prices of major species for 1952-72 (Continued)

Year	Black Mullet			Oysters			Blue Crab (Hard)		
	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.
1952	24,444,968	2,680,268	.11	562,987	287,123	.51	8,181,211	368,154	.04
1953	27,317,616	2,411,170	.09	585,356	117,071	.20	9,560,535	446,490	.05
1954	27,766,391	2,221,311	.08	685,496	137,099	.20	9,829,503	491,476	.05
1955	28,690,269	2,203,487	.08	649,581	142,908	.22	12,636,803	631,840	.05
1956	28,586,601	1,976,585	.07	888,735	213,296	.24	11,777,441	552,142	.05
1957	32,104,132	1,880,403	.06	734,878	205,507	.28	11,834,256	618,324	.05
1958	35,677,921	2,221,026	.06	824,729	232,395	.28	16,689,958	820,596	.05
1959	33,055,418	1,865,882	.06	1,454,998	416,931	.29	20,507,915	1,018,113	.05
1960	32,933,129	1,856,806	.06	1,975,400	496,082	.25	25,609,464	1,243,177	.05
1961	35,608,219	1,939,942	.05	3,326,601	1,052,864	.32	24,615,215	1,080,911	.04
1962	35,676,305	1,967,461	.06	5,019,771	1,426,688	.29	18,224,856	921,090	.05
1963	35,930,349	1,880,712	.05	4,362,848	1,248,906	.29	21,743,699	1,137,644	.05
1964	37,802,216	2,061,572	.05	2,885,123	808,844	.28	21,019,194	1,290,327	.06
1965	34,217,479	1,915,187	.06	2,954,745	987,392	.33	26,560,778	1,594,796	.06
1966	30,057,023	2,088,151	.07	4,291,925	1,343,034	.31	23,870,223	1,440,473	.06
1967	26,179,518	1,937,926	.07	4,761,130	1,501,187	.32	23,295,962	1,450,794	.06
1968	22,646,286	1,840,844	.08	5,568,773	1,853,634	.33	15,623,371	1,241,138	.08
1969	27,857,454	2,378,868	.09	5,152,742	1,963,531	.38	17,307,783	1,631,201	.09
1970	25,172,075	2,196,122	.09	3,786,519	1,593,873	.42	22,564,954	1,227,297	.08
1971	25,925,674	2,226,154	.09	3,710,542	1,641,076	.44	21,410,927	1,789,594	.08
1972	28,854,074	2,556,310	.09	3,357,371	1,581,530	.47	16,960,655	1,641,545	.10
1968-1972 Avg.	26,091,113	2,239,660	.086	4,315,189	1,726,729	.400	18,773,538	1,606,155	.086

Continued

Table 7.--Florida landings, value and prices of major species for 1952-72 (Continued)

Year	Grouper			Spanish Mackerel			Pompano		
	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.
1952	5,249,335	635,858	.12	7,189,692	835,213	.12	952,514	577,857	.60
1953	4,843,575	499,072	.10	6,493,670	633,207	.10	612,991	345,993	.56
1954	5,407,307	594,804	.11	4,948,488	593,818	.12	634,029	418,459	.66
1955	4,870,523	494,567	.10	4,858,281	502,035	.10	455,249	353,205	.78
1956	6,027,534	599,534	.10	7,445,010	595,098	.08	521,034	464,332	.89
1957	7,007,991	713,123	.10	7,815,898	617,005	.08	718,483	578,781	.81
1958	4,376,844	481,896	.11	11,137,072	837,038	.08	731,547	352,846	.48
1959	5,941,943	677,976	.11	7,021,653	613,270	.09	526,014	302,188	.57
1960	6,175,534	692,419	.11	7,717,326	734,557	.10	683,738	445,978	.65
1961	6,627,737	671,715	.10	7,146,375	708,159	.10	693,213	490,526	.71
1962	7,212,689	735,418	.10	9,447,116	915,418	.10	811,828	629,433	.78
1963	6,778,551	674,708	.10	7,528,299	683,635	.09	775,972	530,031	.68
1964	7,876,212	849,589	.11	5,881,591	538,891	.09	764,401	482,116	.63
1965	8,446,443	927,988	.11	7,784,279	875,309	.11	832,888	542,917	.65
1966	7,376,539	934,520	.13	9,185,524	1,045,062	.11	1,005,722	724,140	.72
1967	6,774,577	978,501	.14	7,669,076	763,864	.10	1,272,003	783,860	.62
1968	6,831,259	1,169,061	.17	11,472,712	1,179,620	.10	1,318,441	909,659	.69
1969	7,593,433	1,478,182	.19	10,533,448	1,199,163	.11	984,014	951,420	.97
1970	7,536,669	1,433,043	.19	11,674,479	1,397,275	.12	1,095,022	1,257,410	1.15
1971	7,018,644	1,419,904	.20	9,964,946	1,138,082	.11	955,053	1,210,308	1.27
1972	6,993,309	1,887,112	.27	9,901,267	1,241,211	.13	1,254,679	1,639,322	1.31
1968-1972	7,194,663	1,477,460	.205	10,709,370	1,231,070	.115	1,121,442	1,193,624	1.06
Avg.									

Table 7.--Florida landings, value and prices of major species for 1952-72 (Continued)

Year	King Mackerel			Spotted Sea Trout			Stone Crab		
	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.	Pounds	Dollars	\$/Lbs.
1952	2,527,036	453,040	.18	4,763,767	1,160,590	.24	99,294	49,647	.50
1953	2,546,337	432,877	.17	3,669,887	893,161	.24	115,433	46,173	.40
1954	2,004,309	260,560	.13	3,458,786	830,109	.24	264,990	111,296	.42
1955	2,679,297	322,544	.12	2,921,714	730,428	.25	279,505	131,367	.47
1956	3,425,698	380,762	.11	3,091,835	751,782	.24	275,850	121,238	.44
1957	3,347,391	384,834	.11	3,403,907	832,016	.24	240,543	89,242	.37
1958	3,205,920	340,558	.11	3,690,294	819,492	.22	318,016	130,078	.41
1959	3,434,343	362,746	.11	3,539,396	813,428	.23	324,782	122,452	.38
1960	3,591,902	407,944	.11	3,554,636	795,933	.22	415,330	150,595	.36
1961	3,759,269	444,942	.12	3,130,663	736,324	.24	478,339	164,595	.34
1962	4,096,425	520,276	.13	3,383,498	808,900	.24	655,336	236,850	.36
1963	4,990,063	544,325	.11	3,372,745	793,875	.24	817,271	270,002	.33
1964	3,333,893	383,617	.12	3,563,202	912,325	.26	942,616	316,856	.34
1965	4,447,335	606,432	.14	4,051,792	973,294	.24	872,336	352,814	.40
1966	4,414,661	642,566	.15	3,897,774	974,540	.25	1,070,186	454,155	.42
1967	6,072,184	847,948	.14	3,236,015	859,090	.26	971,105	477,901	.49
1968	6,189,412	966,791	.16	3,703,269	1,061,906	.29	1,402,785	660,235	.47
1969	6,185,119	1,013,872	.16	3,098,401	967,832	.31	1,365,809	756,586	.55
1970	6,709,694	1,334,449	.20	3,353,835	1,042,330	.31	1,613,658	839,840	.52
1971	5,644,148	1,292,381	.23	2,455,817	781,531	.32	1,741,295	874,886	.50
1972	4,867,623	1,306,528	.27	2,774,188	952,837	.34	1,992,317	1,226,425	.62
1968-1972	5,919,199	1,182,804	.199	3,077,102	961,287	.312	1,623,173	871,594	5.37
Avg.									

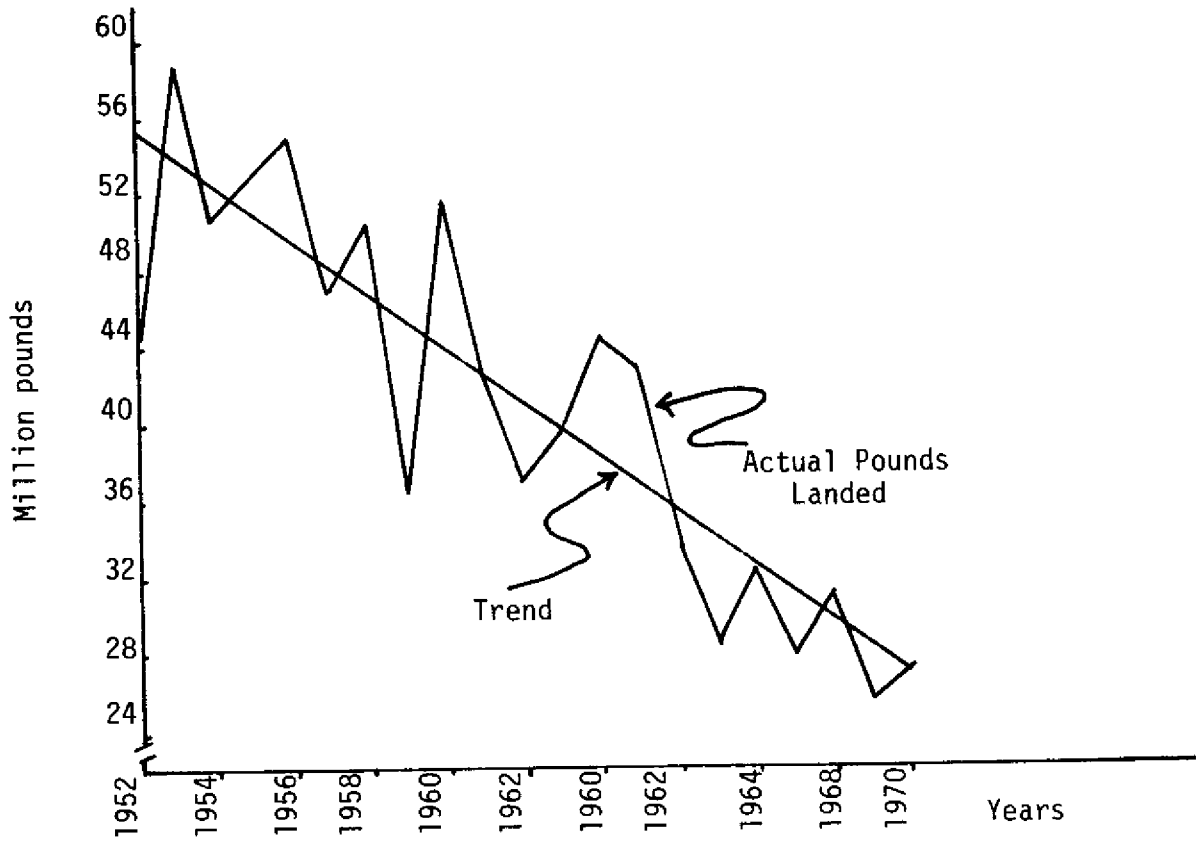


Figure 6.--Volume of shrimp landed in Florida, 1952-72.

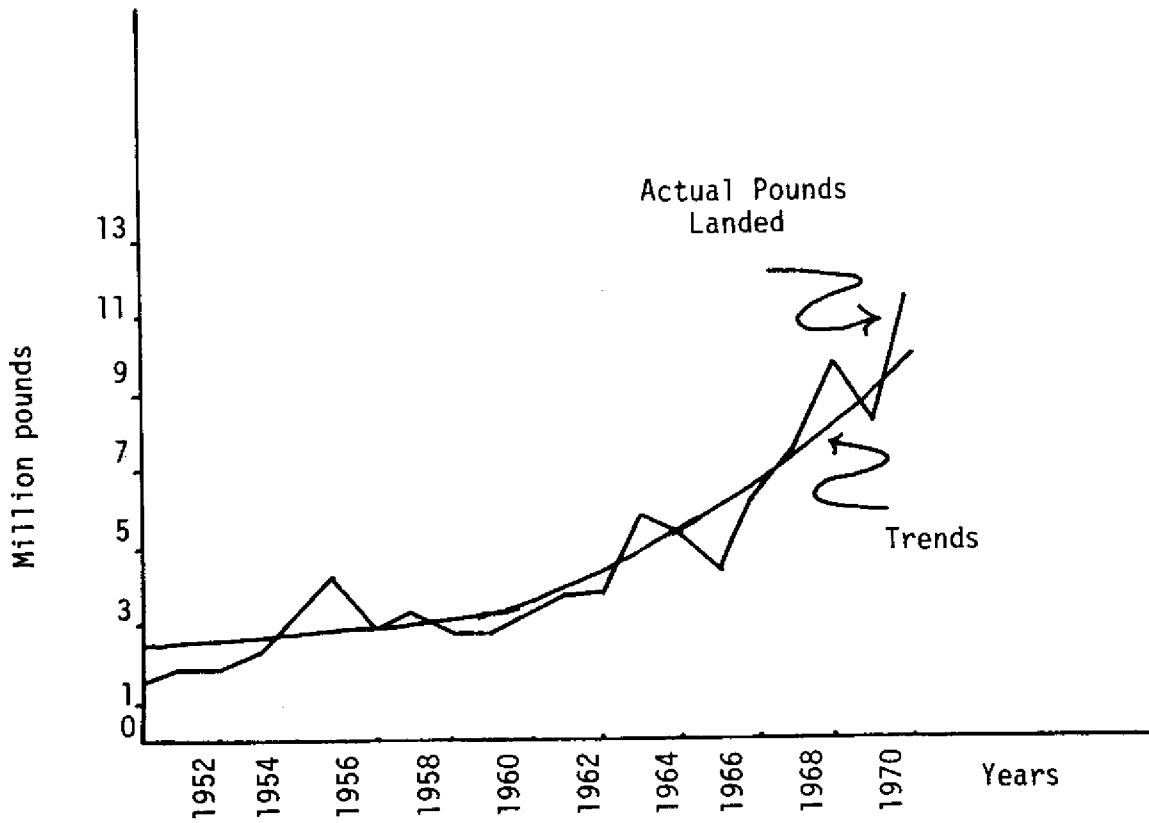


Figure 7.--Volume of spiny lobster landings in Florida, 1952-72.

Several factors may have served to increase total landings. Prices increased from a little over \$.20 per pound in the early 1950's to \$1.00 per pound in 1972. The increase in prices makes the increase in value more dramatic than the trend in volume of landings. Conversion of several shrimp vessels to lobster vessels for fishing in the Caribbean in recent years undoubtedly has had some influence on the total trend. In addition, there has been a sizeable increase in landings of lobsters caught in Bahamian water. Since 1964, landings in Florida of lobsters caught in non-Florida waters have increased from approximately 27 percent to 54 percent of total lobster landings.¹¹ Additionally, landings caught outside of Florida waters and landed in Florida ports during the closed season were legal beginning in 1972.

Red snapper, mullet and blue crabs all show similar trends for the last two decades.¹² All three species experienced an increase in volume landed, reaching a peak during the early 1960's but declining in recent years (Table 7, Figures 8, 9, 10). Mullet is experiencing the most severe decline which is related to the continuing relatively low prices mullet fishermen have received in recent years (Table 7). However, mullet landings made some recovery in recent years. Unlike mullet, prices for red snapper and blue crab have trended upward and

¹¹Based on unpublished data.

¹²The regression equations for red snapper, mullet and blue crab are, respectively, $Q = 6,451.24 - 42.65X - 15.58X^2$; $Q = 34,869.09 - 16.45X_1 - 141.74X^2$; $Q = 12,144.61 + 742.78X - 105.78X^2$ where X represents years coded so that the mean, 1961, equals zero.

have resulted in an increase in total value of landings for these species.

There are several hypotheses why landings of these species have declined in recent years. First, as mentioned above, low prices for mullet may have encouraged fishing for other species or leaving the industry. A related hypothesis is that profitability of species other than red snapper and blue crab may have increased more than the increase for these two species causing fishermen to reallocate their efforts. Thirdly, the capacity of the fishery resource may have been exceeded; i.e., over-fishing for some of these species by commercial and sport fishermen. Fourth, pollution of estuaries may have reduced harvestable stocks of some species such as blue crabs. A fifth hypothesis is that a stable or declining productivity trend and/or increased input prices may have made these fisheries unprofitable in spite of the upward trend in prices for two of the three under consideration. Other possible hypotheses no doubt exist.

The remaining species--grouper, king and Spanish mackerel, pompano, stone crab, and oysters--all exhibited significant upward trends¹³ (Figures 10-13). Although one of the most variable from year to year, the trend in oyster landings is probably the most significant. Except for Spanish mackerel and stone crabs, dockside prices have increased considerably over the time period, resulting in a considerable

¹³The regression equations for pounds landed, Q, of these species are: grouper, $Q = 6,475.11 + 156.84X$; king mackerel, $Q = 4,050.37 + 227.64X$; Spanish mackerel, $Q = 8,049.95 + 229.42X$; pompano, $Q = 809.95 + 30.78X$; stone crab, $Q = 659.11 + 79.56X$; and oysters, $Q = 2,656.53 + 290.09X$ where X represents years so that the mean, 1961, equals zero.

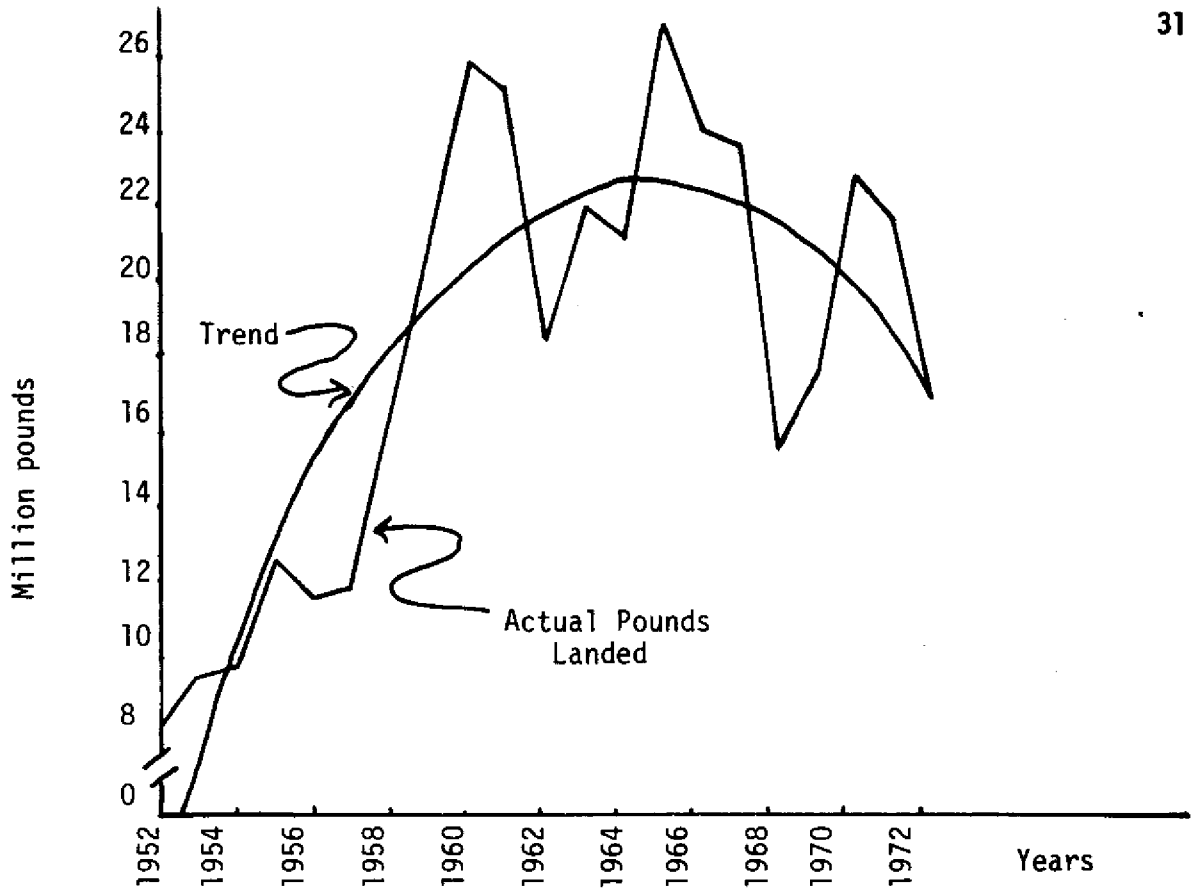


Figure 8.--Volume of blue crabs landed in Florida, 1952-72.

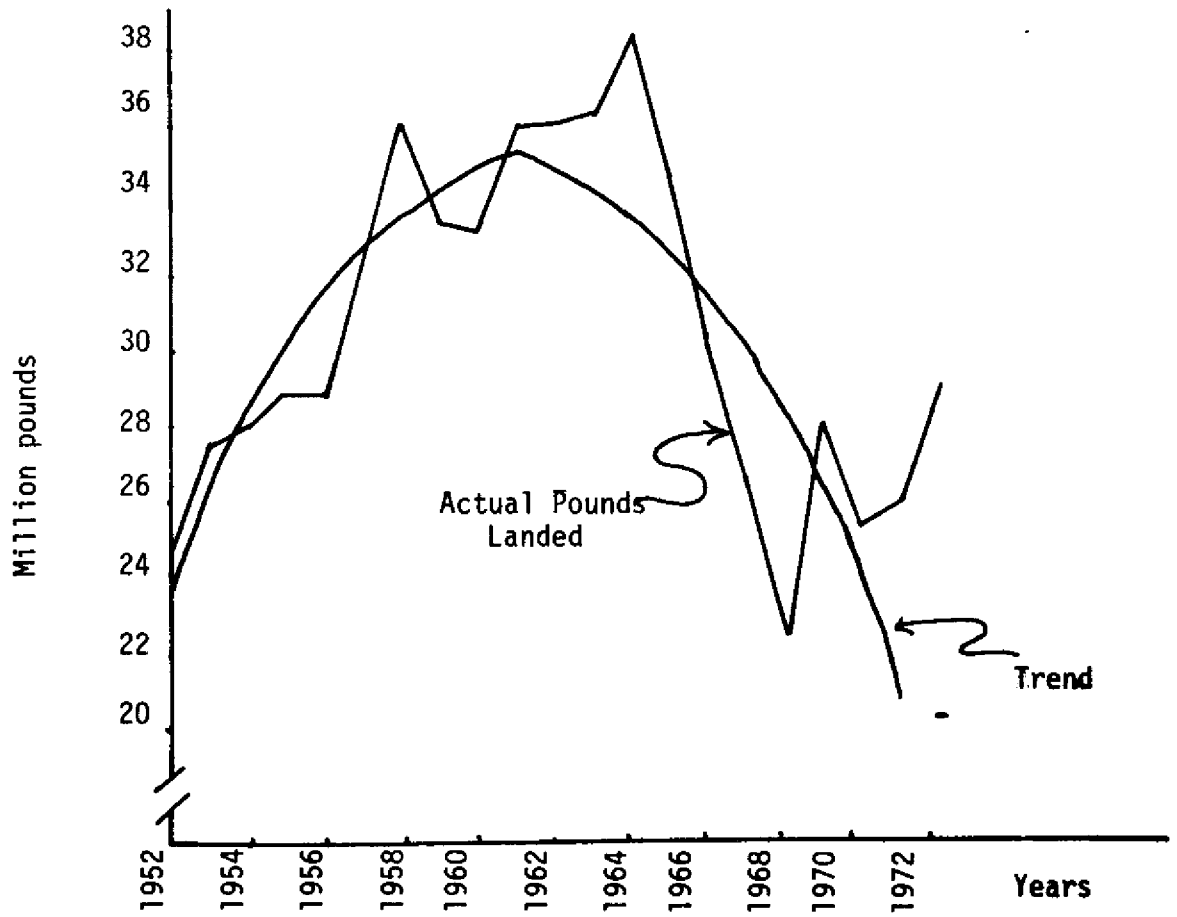


Figure 9.--Volume of mullet landed in Florida, 1952-72.

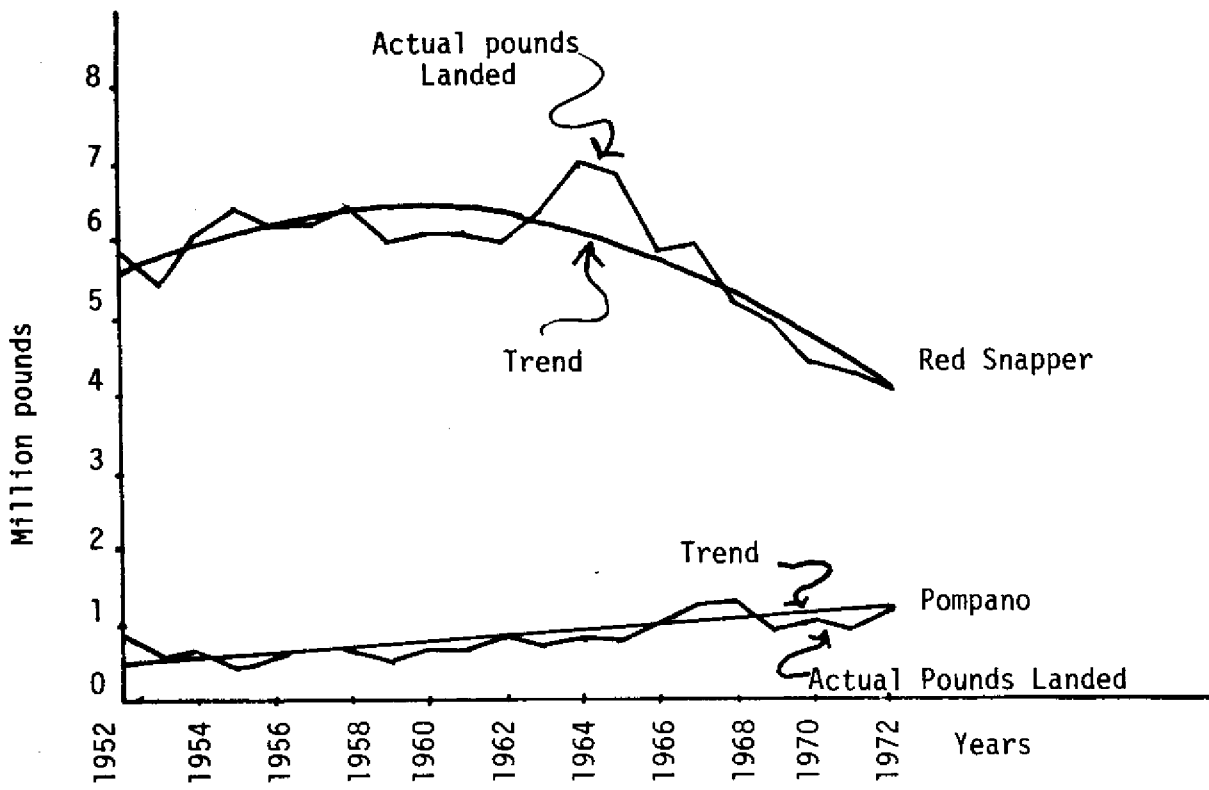


Figure 10.--Volume of red snapper and pompano landed in Florida, 1952-72.

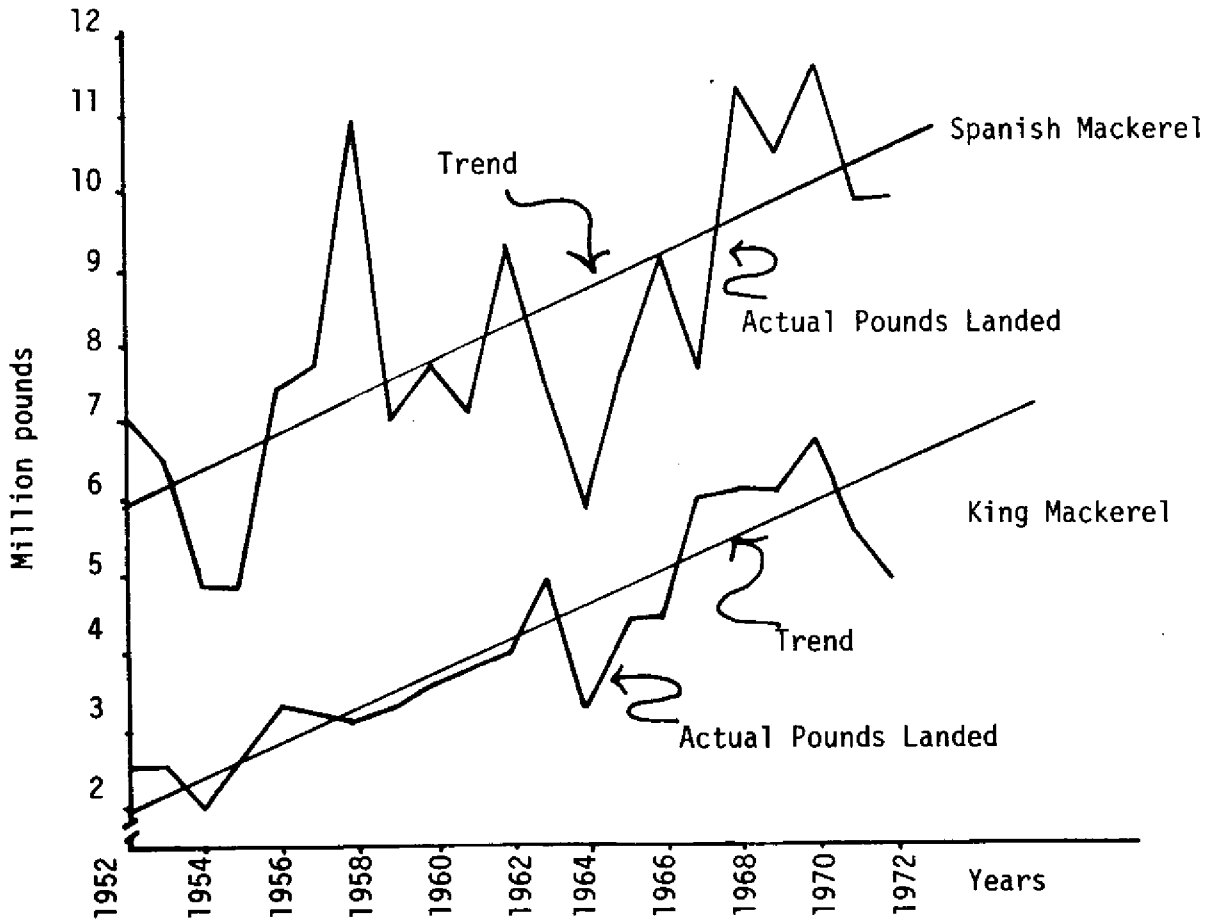


Figure 11.--Volume of king mackerel and Spanish mackerel landed in Florida, 1952-72.

increase in value of landings (this is true for Spanish mackerel and stone crabs in spite of lack of upward trend in their prices). (Table 7).

FISHERMEN AND COMMERCIAL FISHING CRAFT

Commercial marine landings in Florida are closely associated with inputs of fishermen and their vessels and boats into the fishery. During the 1952-70 period, significant changes took place in the employment of fishermen in the industry and the number and type of craft fished. These trends are presented in the two following sections. In the final section, Florida fishermen and craft are compared with those in the Southeastern fisheries to put the trends in perspective and in an attempt to explain the decline of Florida's relative importance in the fishery.

Fishermen

The total number of Florida fishermen reached a peak of 15,192 in 1956 and has since declined to a low of 9,454 in 1970 (Table 8, Figure 14). A review of the trend in number of "casual" fishermen (those earning less than 50 percent of their income from fishing) on boats and shore shows this group to be responsible for most of the annual variation in total fishermen landing their catch in Florida ports.¹⁴ The number of casual fishermen varied significantly, ranging from a high of 6,861 in 1956 to a low in 1968 when only 1,395 part-time or casual fishermen fished in Florida. Overall, there has been a gradual decrease in the number of casual fishermen since 1958.

¹⁴Boats are defined to be a fishing craft with a capacity of less than five tons. Craft with a greater capacity are referred to as vessels.

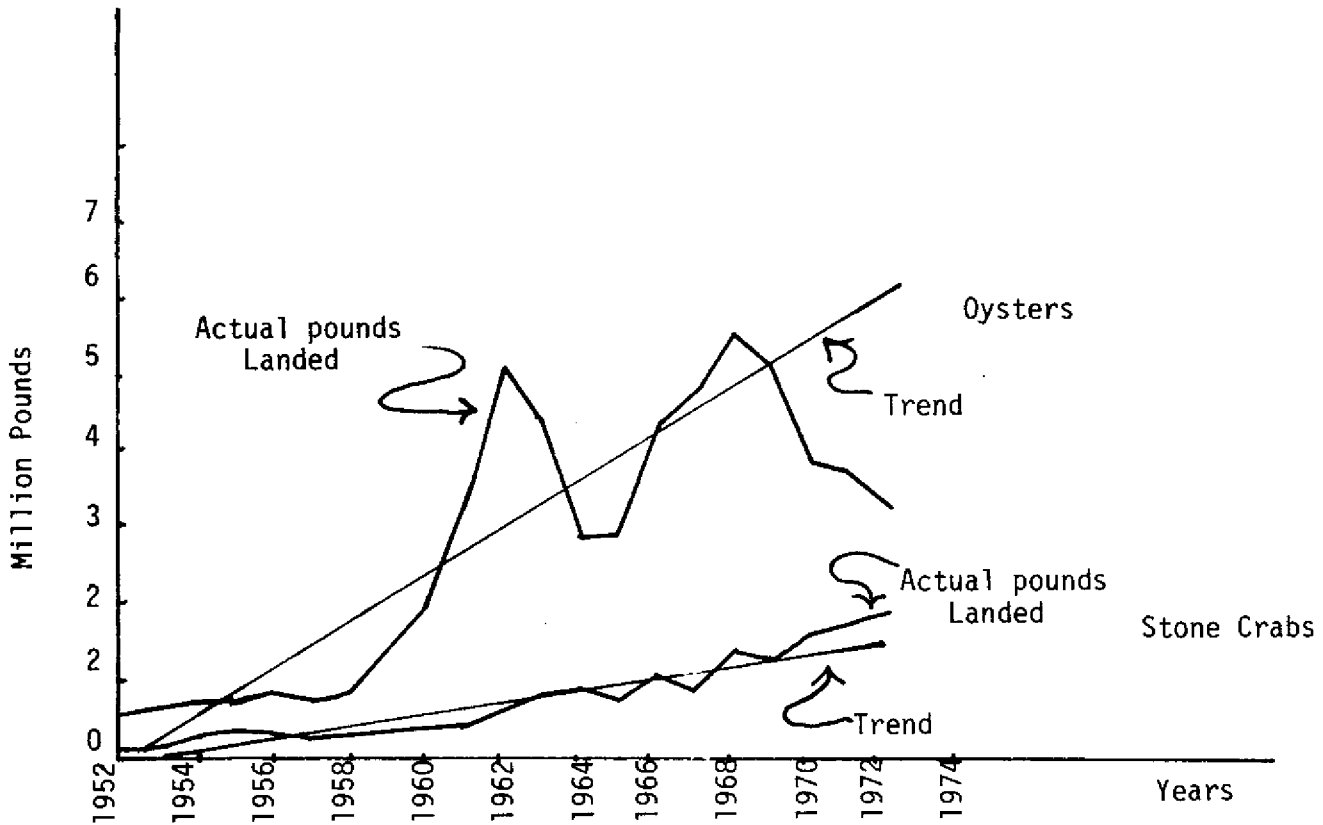


Figure 12.--Volume of stone crab and oysters landed in Florida, 1952-72.

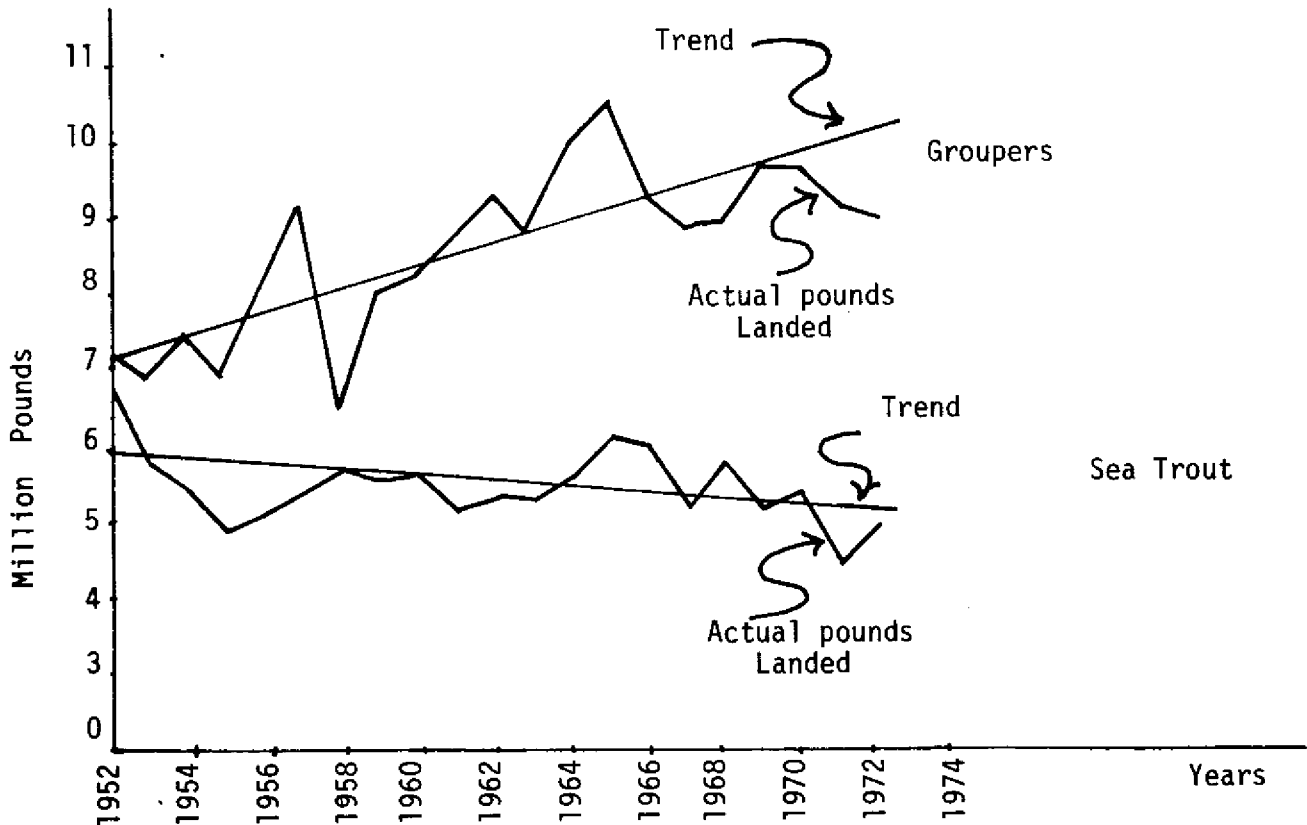


Figure 13.--Volume of groupers and sea trout landed in Florida, 1952-72.

Table 8.--Florida fishermen on vessels, boats and shore, 1952-70^a

Year	East Coast				West Coast				Total for Florida ^b				
	On boats & shore		On vessels		On boats & shore		On vessels		On boats & shore		On vessels		Total
	Regular	Casual	Regular	Casual	Regular	Casual	Regular	Casual	Regular	Casual			
1952	864	1,790	1,534	4,188	2,745	2,764	1,273	6,782	3,439	4,554	2,807	10,800	
1953	1,109	1,685	1,434	4,228	2,082	2,771	1,570	6,423	3,105	4,456	3,004	10,565	
1954	868	1,513	4,329	6,728	2,943	3,214	1,867	8,024	3,601	4,727	6,196	14,524	
1955	1,043	1,810	3,696	6,549	3,412	2,704	1,978	8,094	4,144	4,514	5,674	14,332	
1956	1,063	1,680	4,294	7,037	3,099	2,817	2,567	8,483	3,834	4,497	6,861	15,192	
1957	1,202	1,797	3,642	6,641	3,102	2,757	2,211	8,070	3,951	4,554	5,853	14,358	
1958	1,301	1,753	1,746	4,800	3,574	2,642	1,286	7,502	4,362	4,395	3,032	11,789	
1959	1,246	1,584	1,099	3,929	3,675	2,667	1,406	7,748	4,430	4,251	2,505	11,186	
1960	1,090	1,390	741	3,221	3,327	2,707	1,579	7,613	4,103	4,097	2,320	10,520	
1961	1,098	1,452	574	3,124	3,411	2,678	1,300	7,389	4,152	4,130	1,874	10,156	
1962	1,011	1,574	432	3,017	3,311	3,132	1,431	7,874	4,020	4,706	1,863	10,589	
1963	924	1,447	527	2,898	3,478	3,058	1,299	7,835	4,152	4,505	1,826	10,483	
1964	852	1,673	430	2,955	3,932	3,034	1,618	8,584	4,496	4,707	2,048	11,251	
1965	913	1,798	409	3,120	3,825	2,953	1,564	8,342	4,524	4,751	1,973	11,248	
1966	1,052	2,014	457	3,523	3,795	2,831	1,371	7,997	4,583	4,845	1,828	11,256	
1967	1,019	2,045	422	3,495	3,712	2,778	1,298	7,788	4,489	4,832	1,720	11,041	
1968	1,247	1,712	377	3,336	4,050	2,251	1,018	7,319	5,008	3,963	1,395	10,366	
1969	1,029	1,556	343	2,928	3,811	2,253	1,129	7,223	4,550	3,839	1,742	9,861	
1970	1,012	1,243	477	2,732	3,465	2,204	1,264	6,933	4,266	3,447	1,741	9,454	

^aIncludes freshwater commercial fishermen of the East coast. Vessels are defined to have capacity of five tons or greater. Boats have capacity of less than five tons.

^bExclusive of duplication

Source: Annual issues of [2]

The number of "regular" fishermen (those earning more than 50 percent of their income from fishing) on boats and shore has remained relatively stable. A slight decline occurred until 1960, when a gradual increase began until 1967. Since then, the number of regular fishermen declined each year. Comparing the first three years with the last three years in the 1952-70 period shows a decline of 18 percent in the number of regular fishermen.

The decline in number of regular fishermen on boats and shore is more than offset by the slightly upward trend in number of fishermen on vessels.¹⁵ Between the periods 1952-54 and 1968-70, the number of fishermen on vessels increased over 35 percent. Like the number of regular fishermen, there has been considerable variation from year to year, and with few exceptions, the yearly variation in number of fishermen within each of these groups trended in the same direction.

Commercial Fishing Craft

Total number of boats has trended downward since 1956 with considerable year-to-year variation (Table 9, Figure 15). Most of the annual variation in the number of boats employed in Florida fisheries tends to be associated with the number of casual fishermen, except for the latest three years when the decline is related to the drop in regular fishermen. Within the boat category of fishing craft the number of motorboats increased 95 percent between the periods 1952-54 and 1968-70.

¹⁵ Fishermen on vessels are not classified as regular or casual by the National Marine Fisheries Service. These fishermen are assumed to be regular fishermen.

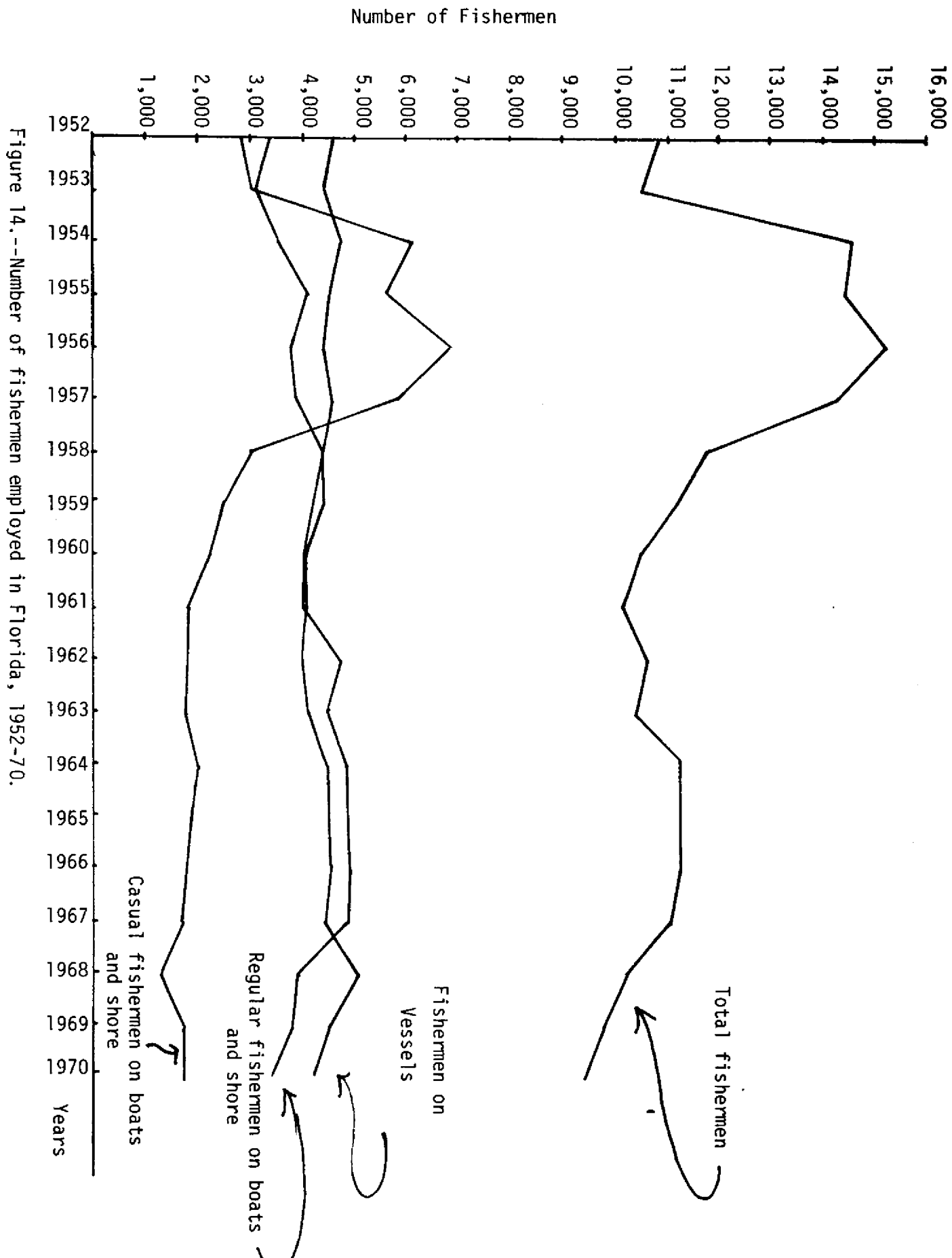


Figure 14.--Number of fishermen employed in Florida, 1952-70.

Table 9.--Florida fishing boats, 1952-70

Year	Boats														
	Motor					Other					Accessory ^b				
	East coast	West coast	Total ^a	East coast	West coast	Total ^a	East coast	West coast	Total ^a	East coast	West coast	Total ^a	East coast	West coast	Total ^a
1952	615	592	1,207	1,349	2,361	3,710	30	41	71	30	41	71	4,988		4,988
1953	695	678	1,373	931	2,047	2,978	39	18	51	39	18	51	4,408		4,408
1954	1,853	2,120	3,973	500	1,181	1,681	33	4	37	33	4	37	5,691		5,691
1955	2,316	2,087	4,403	296	903	1,199	54	19	73	54	19	73	5,675		5,675
1956	2,464	2,682	5,146	400	1,059	1,459	27	15	42	27	15	42	6,647		6,647
1957	2,566	2,437	5,003	165	739	904	23	34	57	23	34	57	5,964		5,964
1958	2,049	2,219	4,268	79	719	798	27	6	33	27	6	33	5,099		5,099
1959	1,690	2,908	4,598	107	453	560	21	24	45	21	24	45	5,203		5,203
1960	1,374	3,001	4,375	88	402	490	9	22	31	9	22	31	4,896		4,896
1961	1,483	2,946	4,429	58	229	287	--	--	--	--	--	--	4,716		4,716
1962	1,657	3,361	5,014	21	222	243	--	--	--	--	--	--	5,261		5,261
1963	1,610	3,072	4,682	49	224	273	--	--	--	--	--	--	4,955		4,955
1964	1,681	3,391	5,072	37	187	224	--	--	--	--	--	--	5,296		5,296
1965	1,836	3,307	5,143	39	114	153	--	--	--	--	--	--	5,296		5,296
1966	2,051	3,079	5,130	38	65	103	--	--	--	--	--	--	5,233		5,233
1967	1,987	3,143	5,130	39	26	65	--	--	--	--	--	--	5,195		5,195
1968	1,795	2,606	4,401	10	38	48	--	--	--	--	--	--	4,449		4,449
1969	1,664	2,685	4,349	6	28	34	--	--	--	--	--	--	4,383		4,383
1970	1,437	2,599	4,036	34	18	52	--	--	--	--	--	--	4,088		4,088

^aExclusive of duplication

^bNot reported after 1960

Source: Based on annual issues of [2]

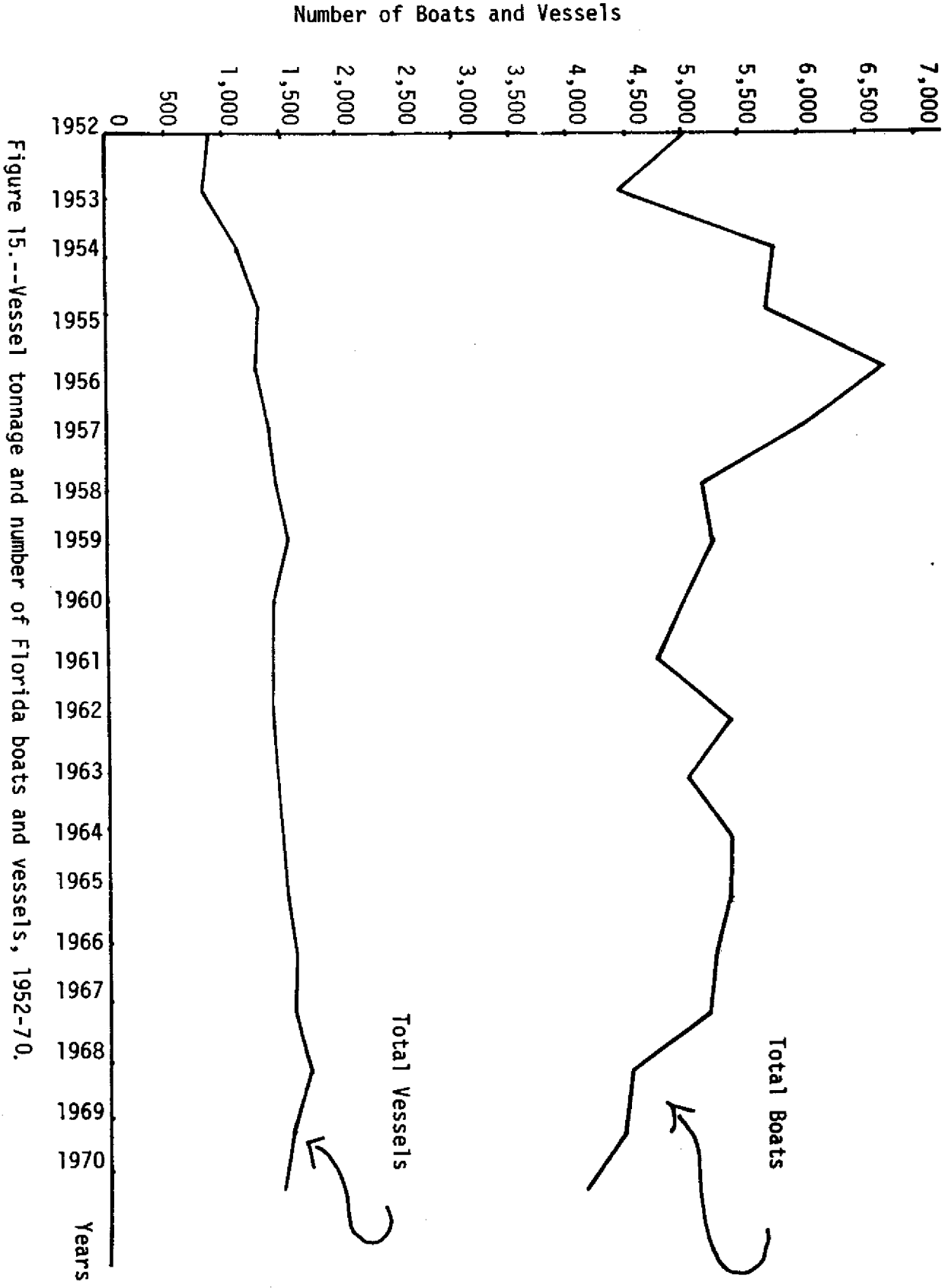


Figure 15.--Vessel tonnage and number of Florida boats and vessels, 1952-70.

However, the number of motorboats is currently below the number for the mid-1950's and mid-1960's when over 5,000 were in use.

The number of vessels trended upward during the 1952-70 period, ranging from a low of 876 in 1953 to a high of 1,735 in 1968 (Table 10). Comparing the first three years with the last three years shows an increase of 66 percent. The increase in number of vessels, however, does not fully reflect the increased fishing ability because, in addition to the increase in number of vessels, the average size of vessel has increased. Total vessel tonnage increased from an average of 18,342 tons in the 1952-54 period to an average of 73,740 tons in the 1968-70 period. This represents an increase of 302 percent.

Florida-Southeast Input and Productivity Comparisons

It was noted in an earlier section that Florida has not kept pace with the Southeast fisheries in terms of quantity landed. Florida's share of landings has declined from 22 percent in 1952 to 9.7 percent in 1970. In this section, fishing effort (number of fishermen and fishing craft) expended in Florida fisheries will be compared with that for the total Southeast fishery region in an attempt to determine if effort explains the decline in relative share of landings.

Florida fishermen have represented between 28 and 38 percent of the total number of fishermen in the Southeast during the 1952-72 period (Table 11, Figure 16). The number of Florida fishermen grew proportionally more than the numbers for the Southeast between 1952 and 1956, the same period in which Florida landings were a declining share (Table 12). However, it was noted in previous sections that this increase was associated with part-time fishermen. Since 1956 the

Table 10.--Florida fishing vessels, 1952-70

Year	Vessels					
	Number			Tons		
	East coast	West coast	Total ^a	East coast	West coast	Total ^a
1952	234	723	898	4,126	12,063	15,189
1953	294	600	876	4,821	12,577	16,981
1954	254	952	1,110	4,419	20,876	22,948
1955	293	1,107	1,299	5,380	23,686	27,164
1956	383	1,050	1,282	6,795	22,581	26,323
1957	414	1,126	1,378	7,340	25,069	29,290
1958	470	1,194	1,451	8,673	27,327	31,651
1959	471	1,301	1,567	8,469	29,234	33,358
1960	458	1,111	1,426	16,485	46,248	56,432
1961	469	1,141	1,433	17,075	46,132	55,580
1962	429	1,116	1,401	15,602	43,877	53,744
1963	393	1,148	1,423	14,407	45,542	54,886
1964	351	1,278	1,495	12,863	50,070	57,238
1965	356	1,255	1,508	13,560	49,411	58,432
1966	418	1,279	1,573	15,968	52,597	62,791
1967	413	1,277	1,579	16,005	55,051	66,086
1968	470	1,394	1,735	19,913	64,000	77,259
1969	401	1,299	1,565	17,619	64,268	73,826
1970	386	1,209	1,499	17,212	58,852	70,136

^aExclusive of duplication

Source: Based on annual issues of [2]

Table 11.--Florida fishermen and commercial craft relative to the Southeast, 1952-70

Year	Fla. fishermen as percent of Southeast	Fla. vessels as percent of Southeast	Fla. boats as percent of Southeast	Fla. vessel tonnage as percent of Southeast
1952	29.8	30.0	31.9	19.2
1953	29.6	25.5	29.8	19.8
1954	36.6	30.9	34.8	27.3
1955	37.0	33.8	35.8	27.9
1956	38.4	33.6	39.8	25.2
1957	36.1	34.8	37.7	25.7
1958	31.6	35.4	33.0	25.7
1959	30.1	36.3	33.6	26.0
1960	29.2	34.1	30.8	25.0
1961	29.1	36.2	30.0	25.4
1962	29.6	35.4	30.7	24.5
1963	28.8	34.1	28.9	24.7
1964	30.9	34.7	31.6	25.8
1965	31.0	33.5	31.6	24.1
1966	31.4	32.7	31.1	23.7
1967	30.7	33.0	31.2	22.2
1968	30.1	31.6	27.9	27.6
1969	28.7	30.9	27.6	22.3
1970	28.0	27.6	28.3	24.1

Source: Computed from annual issues of [2]

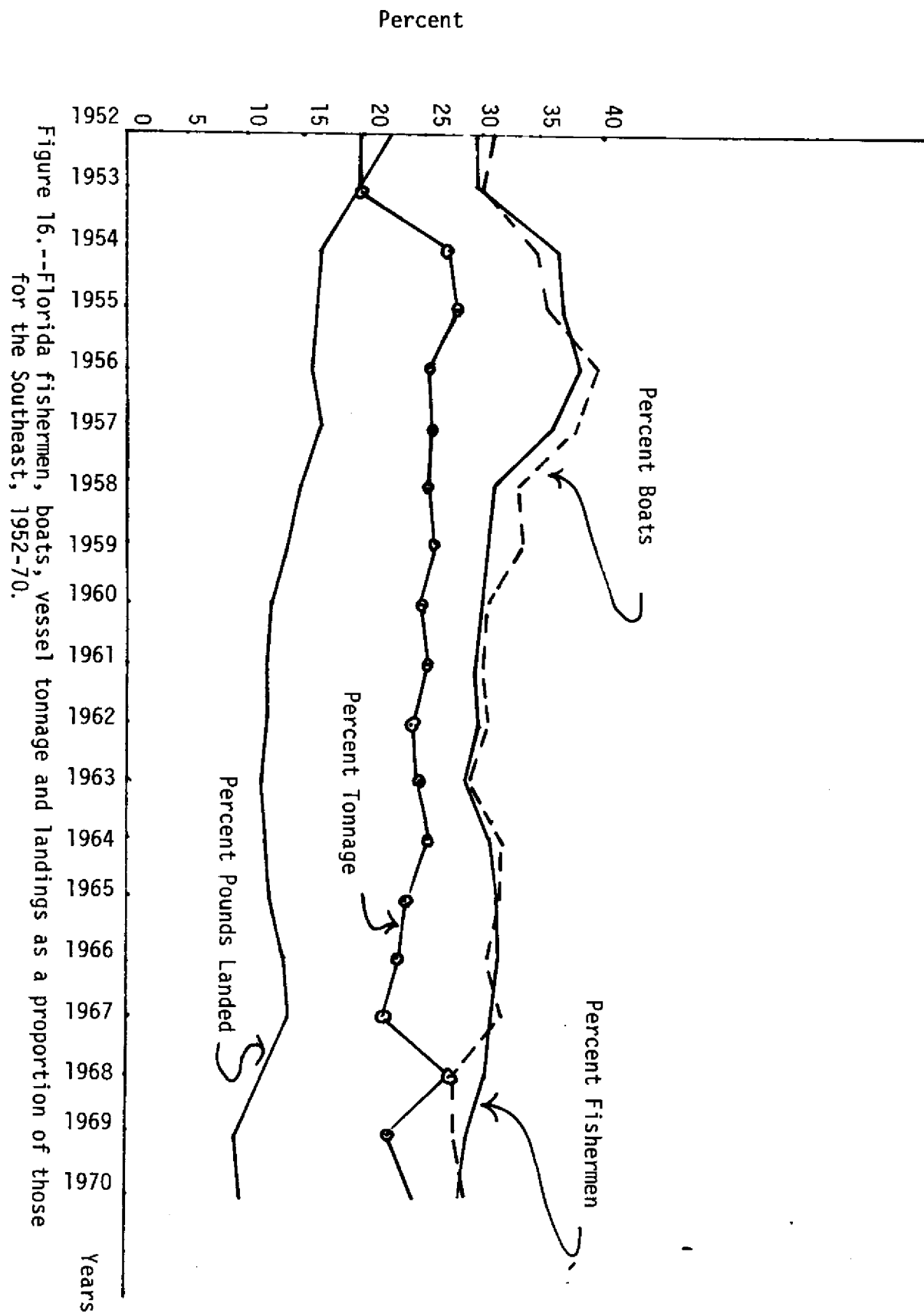


Figure 16.--Florida fishermen, boats, vessel tonnage and landings as a proportion of those for the Southeast, 1952-70.

trend in percent landings and percent fishermen tended to move in parallel fashion, suggesting some relationship between the two. It should be noted that the number of fishermen is only a proxy for effort since other inputs such as boats and vessels affect the effort, and output per fishermen and their combinations are not necessarily the same throughout the region.

The number of boats as a proportion of those employed in the Southeastern fisheries varied from a high of 39.9 percent in 1956 to a low of 27.6 percent in 1969. This trend in proportion of boats closely parallels that of proportion of fishermen and thus suggests the same relationship. That is, the proportion of boats in the Southeast fisheries that fish in Florida waters tends to be directly related to the proportion of the Southeast fisheries catch which is landed in Florida. Thus, it appears that the decline in relative importance of Florida fisheries in the region is at least partly associated with declines in resources (fishermen and boats) employed in Florida fisheries.

Vessel tonnage as a proportion of total vessel tonnage in the Southeast remained relatively stable at 25 percent during the 1956-64 period and since 1964 has declined. There does not appear to be any relation between relative vessel tonnage in Florida waters and the decline in relative landings.

SUMMARY

The value of Florida commercial marine landings trended downward during the decade of the nineteen-fifties, but since then rose at an increasing rate to a high of over \$57 million in 1972. The increase in value of landings is attributed to price increases since no trend in volume landed was evident for the 1952-72 period. Florida currently

ranks seventh among all states in the U. S. in volume landed and fifth in value of landings. In the Southeast fisheries region, Florida ranks third, but has declined in relative importance in terms of both volume and value of landings during the past two decades.

Commercial marine landings are currently reported in all Florida coastal counties except Flagler and Jefferson and in two inland counties, Putnam and Washington. However, one-third of the counties landing marine products account for over 76 percent of the total value of landings in the state. Only four counties experienced a decrease in total value of landings during the past two decades; however, 12--or approximately one-third--of the counties experienced a decline in volume of landings.

Shellfish account for slightly over two-thirds of the value of Florida landings and finfish make up the remainder. Approximately 85 percent by volume and 99 percent by value of Florida landings are food fish as opposed to non-food fish. Over 70 species are landed and reported separately in Florida, but over 86 percent of the average value of landings is accounted for by 12 species. In terms of value of landings, shrimp are the most important species landed in the state. Spiny lobsters rank second in importance. The 10 remaining most important species, in order of value are red snapper, black mullet, oysters, blue crab, grouper, Spanish mackerel, sea trout, king mackerel, pompano, and stone crabs. Four species--shrimp, blue crabs, mullet, and red snapper--experienced a significant negative trend in volume of landings. Sea trout showed no significant trend. The remaining seven species experienced a significant positive trend.

Landings are closely associated with the number of fishermen and their vessels and boats. The total number of fishermen reached a peak in 1956 and since has declined. Most of the annual variation in number

of fishermen is attributed to part-time fishermen. The number of fishermen on vessels increased substantially. The number of boats employed by Florida fishermen has trended downward since 1956 and is closely associated with the number of part-time fishermen. However, both the number and size of vessels increased considerably. A comparison of the number of Florida fishermen and fishing boats with the number of fishermen and boats in the Southeast fishery regions suggests the decline in relative importance of Florida fisheries in the region is partly associated with declines in resources (fishermen and boats) used in Florida fisheries.

DATA SOURCES

- [1] Florida Department of Natural Resources. Division of Marine Resources. Summary of Florida Commercial Marine Landings, Tallahassee: Annual issues, 1952-73.
- [2] U. S. National Marine Fisheries Service, (Formerly U. S. Bureau of Commercial Fisheries), Fisheries of the United States; Current Fishing Statistics, Washington: U. S. Government Printing Office. Annual issues, 1970-74.
- [3] U. S. National Marine Fisheries Service, (Formerly U. S. Bureau of Commercial Fisheries), Fishery Statistics of the United States, Washington: U. S. Government Printing Office. Annual issues, 1952-70.
- [4] U. S. National Marine Fisheries Service, (Formerly U. S. Bureau of Commercial Fisheries), Florida Landings, Washington: U. S. Government Printing Office. Monthly and annual issues, 1970-74.

APPENDIX

Table A-1.-- Volume and value of Florida commercial marine landings, 1973

Species	Pounds	Dollars
Total all species	164,462,591	62,495,574
Grouper	5,536,709	1,702,117
King Mackerel	5,928,846	2,134,712
Black Mullet	29,279,198	3,215,967
Spiny Lobster	11,171,708	11,661,141
Oysters	2,531,325	1,592,967
Shrimp	29,197,597	26,247,871
Spanish Mackerel	9,397,233	1,536,601
Blue Crab (Hard)	13,511,913	1,678,901
Stone Crab	2,087,766	1,425,464
Pompano	1,251,722	1,484,407
Sea Trout (Spotted)	2,892,115	1,104,504
Snapper (Red)	4,088,416	3,093,133

Source: [1]

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
Groupers	Epinephelus
King Mackerel	Scomberomorus cavalla
Black Mullet	Mugil
Spiny Lobster	Panulirus argus
Oysters	Crassostrea virginica
Shrimp	
Spanish Mackerel	Scomberomorus maculatus
Blue Crab (Hard)	Callinectes sapidus
Stone Crab	Menippe mercenaria
Pompano	Trachenotus carolinus
Sea Trout (Spotted)	Cynoscion nebulosus
Red Snapper	Lutjanus campechanus

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OTHER SEA GRANT REPORTS

- No. 1 -- Research and Information Needs of the Florida Spiny Lobster Fishery
- No. 2 -- St. Lucie Inlet - Sea Grant Glossary of Inlets Report #1
- No. 3 -- Fort Pierce Inlet - Sea Grant Glossary of Inlets #2
- No. 4 -- A System for the Determination of Chronic Effects of Pollutants on the Physiology and Behavior of Marine Organisms
- No. 5 -- On the Mariculture of the Florida Seaweed, Eucheuma isiforme
- No. 6 -- Seawall and Revetment Effectiveness, Cost and Construction
- No. 7 -- Stabilization of Beaches and Dunes by Vegetation in Florida
- No. 8 -- An Indexed Bibliography of the Spiny Lobsters, Family Palinuridae
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