Economic Activities Associated with the Commercial Fishing Industry in Monroe County, Florida

by

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Abstract

The commercial fishing industry represents an important source of revenue for Monroe County, Florida. In 1990, commercial fishermen landed 19.7 million pounds of finfish, shellfish, and other aquatic organisms. These landings were valued at $48.4 million dockside. The commercial fishing industry of Monroe County produces over 20 percent of the statewide total for at least 12 economically important species. There are 3,550 commercial vessels, 3,294 saltwater products licenses, 83 wholesale seafood dealers, and 155 retail seafood dealers registered in the county. The total wholesale value of the various products landed by the commercial fishing industry in Monroe County totals $64 million. Assuming 85 percent of these products leave the county via wholesale markets, the economic impact generated includes: economic activity - $90.4 million, earnings - $32.2 million, and employment - 2,230 FTEs.

Keywords: commercial fishing, economic activity, Monroe County

Table 1: Top Ten Florida Counties Producing Commercial Fisheries Landings, 1990.

County	Pounds Landed*	% of State Total
Monroe	19.7	10
Gulf	15.9	8
Pinellas	14.7	8
Lee	11.3	6
Bay	10.4	5
Brevard	9.9	5
Manatee	9.5	5
Duval	7.6	4
Hillsborough	6.1	3
St. Johns	4.8	2
State Total	**195.9**	

Data Source: Florida DNR unpublished Trip Ticket data, 1990.

*Units of one million.

Monroe County is particularly important in terms of the overall state production of high-value shellfish species. Shellfish has historically been the most important component of the commercial fishing industry in Monroe County. In 1990, commercial fishermen in Monroe County harvested approximately 12.1 million pounds of shellfish valued at $40.7 million (Table 2) (for this discussion, sponges are included in "shellfish"). Finfish landings totalled about 7.6 million pounds, valued at $7.7 million. Finfish landings and dockside value represent 6 and 9 percent, respectively, of the state total. In contrast, shellfish volume and dockside value represent 23 and 37 percent, respectively, of the state's entire shellfish harvest.

Although shellfish harvesting in aggregate has historically exceeded finfish harvest in terms of volume and dockside value, the total volume and dockside value share represented by shellfish has been declining (Table 3). During the twenty-year period from 1971 to 1990, finfish landings volume has remained about steady. Year to year fluctuations have occurred, with peak levels occurring in the mid-1970's, but finfish has represented (on average) 33 percent of the total volume of fisheries landings. Shellfish landings, on the other hand, peaked during the early 1980's, and has been declining ever since. In 1981, shellfish landings totaled 22.8 million pounds. With the exception of

Table 2: Percent of Total Florida Commercial Finfish and Shellfish Landings* and Dockside Value Represented by Monroe County, Florida, 1990.

	Finfish Pounds	Finfish Value	Shellfish Pounds	Shellfish Value
Florida	125,250	87,122	52,795	108,804
Monroe County	7,596	7,655	12,096	40,745
Monroe County as % of Florida	6%	9%	23%	37%

Data Source: Florida DNR unpublished Trip Ticket data.

*Units of one thousand.

Table 3: Finfish and Shellfish Landings* for Monroe County, Florida, 1971-1990

Year	Finfish Pounds	Finfish % Total Pounds	Shellfish Pounds	Shellfish % Total Pounds	Total County Pounds
1971	6.5	29	16.8	71	23.3
1972	4.6	22	15.9	78	20.5
1973	8.3	32	17.9	68	26.2
1974	10.8	36	18.7	64	29.6
1975	6.7	30	15.6	70	22.3
1976	11.9	44	15.2	56	27.2
1977	10.3	35	18.8	65	29.1
1978	6.3	26	18.3	74	24.6
1979	6.0	22	21.9	78	27.9
1980	5.6	24	17.7	76	23.3
1981	8.6	27	22.8	73	31.4
1982	9.1	37	15.6	63	24.8
1983	7.0	36	12.6	64	19.6
1984	9.4	34	18.5	66	27.9
1985	7.2	29	17.7	71	24.9
1986	7.8	38	13.0	62	20.8
1987	7.9	36	13.9	64	21.8
1988	7.3	39	11.4	61	18.7
1989	8.1	44	10.4	56	18.5
1990	7.6	39	12.1	61	19.7

Data Source: Florida DNR unpublished Trip Ticket data and National Marine Fisheries Service data.

*Units of one million.

increases during 1984 and 1985, shellfish landings have been decreasing steadily. Shellfish landings decreased to 10.4 million pounds in 1989, which represents a 54 percent decrease from 1981.

A number of species are of importance to Monroe County's commercial seafood industry (Table 4). The most important species in terms of dockside value is spiny lobster. In 1990, 5.3 million pounds of spiny lobster (whole weight) were landed. The dockside value was reported to be about $21.2 million. Pink shrimp, stone crab claws, yellowtail snapper, and sponge represent other species whose dockside value is of major commercial importance. These five species represent approximately 90 percent of the total dockside generated by all species. Other species of importance include king and spanish mackerel, mangrove and mutton snapper, dolphin, pompano, black and red grouper, amberjack, and others.

Monroe County is a leading producer of many high-value finfish and shellfish species. The commercial fishing industry of Monroe County produces over 20 percent of the statewide total for at least 12 species (Table 4). For example, approximately 90 percent of the total Florida landings of spiny lobster and yellowtail snapper are landed in Monroe County. In addition, 55 percent of the total state landings of mangrove and mutton snapper, and over 40 percent of the pink shrimp, stone crab, dolphin, and sponge are landed in Monroe County. The county is also a leading producer of ballyhoo and other baitfish, which represent important commodities for the region's charter and private recreational fishing industry.

Monroe County has more registered commercial vessels and boats that any other Florida county (Table 5). There were 3,550 commercial registrants in 1990, representing over eleven percent of the state total. These registered vessels and boats inolude both commercial fishing craft and craft used in other commercial applications. According to "intended-use" data provided on registrations forms, most registered commercial fishing vessels were to be employed in the broadly defined activity of "fish" production (Table 6). The majority of the remaining vessels were reportedly intended for use in crawfish production or charter/hire activities. More blue crab, stone crab, crawfish, and purse seine permits were sold in Monroe County than any other county (Table 7). In addition, a total of

Table 4: Species of Major Commercial Importance to Monroe County, 1990.

Species	Pounds[1]	Dockside Value[1]	Top 20 Rank in Value	Percent of State Total Harvested in Monroe County[2]
Spiny Lobster	5,277	21,161	1	91
Shrimp				
Pink	3,714	9,583	2	44
Other	25	26		
Stone Crab	2,622	7,282	3	44
Snapper				
Yellowtail	1,516	2,811	4	90
Mangrove	254	399	8	55
Mutton	224	363	10	55
Lane	29	28		
Other	98	145	17	
Sponge	387	2,516	5	41
King Mackerel	715	729	6	26
Grouper/Grunts				
Black	154	283	12	
Red	176	267	14	
Snowy	49	79		
Grunts	64	33		
Yellowedge	10	17		
Other	89	41		
Spanish Mackerel	1,147	470	7	26
Dolphin	451	379	9	38
Pompano	109	285	11	
Jack	660	278	13	
Amberjack	362	235	15	21
Baitshrimp	45	155	16	
Ballyhoo	417	125	18	20
Shark	275	102	19	
Swordfish	32	97	20	
Other Finfish	810	490		
Other Shellfish	27	21		
Total	**19,693**	**48,400**		

Data Source: Florida DNR unpublished Trip Ticket data.
[1]Units of one thousand. Pounds given in whole weight.
[2]Reported if 20 percent or greater.

Table 5: Recreational and Commercial Vessel Registration by Florida Coastal County, 1990.

County	Number of Recreational Craft	% of Recreational Craft in Florida	Number of Commercial Craft	% of Commercial Craft in Florida
Escambia	15,432	2.2	407	1.3
Santa Rosa	6,731	1.0	274	.9
Okaloosa	12,158	1.8	588	1.9
Walton	2,276	.3	97	.3
Bay	12,997	1.9	1,269	4.1
Gulf	1,836	.3	299	1.0
Franklin	1,309	.2	1,075	3.5
Wakulla	2,243	.3	503	1.6
Jefferson	576	.1	14	.0
Taylor	2,298	.3	285	.9
Dixie	1,398	.2	511	1.6
Levy	1,998	.3	358	1.2
Citrus	11,808	1.7	1,015	3.3
Hernando	5,152	.8	159	.5
Pasco	13,684	2.0	434	1.4
Pinellas	43,181	6.3	1,656	.5
Manatee	12,840	1.9	619	2.0
Sarasota	16,928	2.5	545	1.8
Hillsborough	37,047	5.4	641	2.1
Collier	13,699	2.0	1,056	3.4
Charlotte	13,948	2.0	730	2.3
Lee	29,947	4.4	1,772	5.7
Monroe	15,812	2.3	3,550	11.4
Dade	47,691	7.0	1,505	4.8
Broward	40,937	6.0	1,646	5.3
Indian River	7,570	1.1	421	1.4
St. Lucie	8,991	1.3	433	1.4
Martin	11,830	1.7	539	1.7
Palm Beach	30,823	4.5	780	2.5
Brevard	25,597	3.7	1,226	3.9
Nassau	2,804	.4	200	.6
Duval	28,672	4.2	897	2.9
Putnam	6,702	1.0	421	1.4
St. Johns	5,209	.8	325	1.0
Volusia	18,481	2.7	860	2.8
Flagler	2,630	.4	83	.3
Florida	685,875		31,126	

Source: Florida Department of Natural Resources, unpublished vessel registration data.

Table 6 -- Intended-Use Designation for Commercially Registered Vessels.

County	Fish	Shrimp	Oyster	Sponge	Charter	Crawfish	Live Bait	Mackerel	Hire	Blue Crab
Escambia	380	48	3	0	18	1	0	3	36	1
Santa Rosa	182	4	1	0	2	71	0	0	8	0
Okaloosa	282	28	0	0	63	50	1	1	63	1
Walton	113	7	3	0	1	1	0	0	11	0
Bay	556	87	55	0	39	8	0	2	141	2
Gulf	149	20	8	0	3	37	0	0	36	1
Franklin	398	86	278	0	1	193	0	0	7	0
Wakulla	278	11	13	1	0	106	0	1	7	9
Jefferson	10	1	0	0	0	0	0	0	0	0
Taylor	144	8	0	0	1	0	0	2	5	20
Dixie	293	9	10	0	2	73	1	0	38	9
Levy	192	2	2	0	0	92	0	1	13	0
Citrus	347	20	5	0	10	342	0	1	81	13
Hernando	71	3	2	0	2	26	0	0	29	6
Pasco	181	28	1	0	11	3	1	6	4	4
Pinellas	650	60	2	3	93	11	6	9	248	16
Manatee	332	14	0	0	27	3	1	1	108	6
Sarasota	275	2	0	0	37	2	0	0	45	2
Hillsborough	348	44	1	0	184	5	2	1	342	0
Collier	594	2	0	0	129	9	1	4	188	0
Charlotte	256	11	0	0	29	93	3	0	38	8
Lee	817	94	6	0	107	14	12	2	337	47
Monroe	2,291	84	1	14	173	244	6	6	367	1
Dade	645	19	0	6	77	200	2	2	127	0
Broward	215	1	0	0	308	34	1	3	340	1
Indian River	281	2	1	0	4	134	0	0	2	1
St. Lucie	273	1	2	0	6	6	0	2	6	0
Martin	157	0	1	0	18	107	0	1	95	0
Palm Beach	366	0	1	0	49	14	0	2	105	2
Brevard	1,022	10	30	0	17	256	0	3	47	10
Nassau	101	99	3	0	7	0	2	0	14	2
Duval	327	39	2	1	12	231	1	1	138	5
Putnam	236	3	0	0	3	0	1	0	84	2
St. Johns	88	11	5	0	6	44	0	1	23	8
Volusia	427	35	3	1	7	124	8	2	141	6
Flagler	16	1	0	0	1	0	0	1	15	0
Florida	15,382	918	440	30	1,490	3,133	54	81	4,000	187

Source: Florida Department of Natural Resources Vessel Titling and Registration system unpublished data.

Table 7: Seafood Producer Licenses and Permits by Florida Coastal County, 1990.

County	Blue Crab	Stone Crab	Crawfish	Shrimp	Purse Seine	Saltwater Products Licenses
Escambia	23	5	6	0	0	362
Santa Rosa	33	10	*	0	4	205
Okaloosa	16	7	*	*	*	264
Walton	13	*	*	0	*	76
Bay	49	20	*	*	8	586
Gulf	18	11	*	*	9	169
Franklin	135	57	6	0	0	1,429
Wakulla	106	100	*	0	*	348
Jefferson	*	*	*	*	*	17
Taylor	75	71	*	*	*	234
Dixie	128	107	*	*	4	312
Levy	142	126	5	0	*	263
Citrus	167	167	16	0	*	420
Hernando	35	46	11	0	0	103
Pasco	73	115	36	0	*	382
Pinellas	261	357	127	0	4	1,032
Manatee	75	97	28	*	18	363
Sarasota	83	130	35	0	8	275
Hillsborough	133	91	97	*	*	511
Collier	88	156	77	*	5	467
Charlotte	95	93	25	*	*	293
Lee	148	179	158	0	0	941
Monroe	411	1,635	1,808	0	23	3,294
Dade	320	579	845	19	16	1,758
Broward	72	123	264	*	*	744
Indian River	59	38	26	*	*	284
St. Lucie	44	34	58	0	5	337
Martin	37	22	52	0	*	304
Palm Beach	61	82	313	0	11	767
Brevard	231	169	96	0	0	927
Nassau	23	4	*	0	0	139
Duval	111	47	34	0	0	639
Putnam	105	26	*	0	0	126
St. Johns	97	72	16	0	0	286
Volusia	172	124	36	0	*	627
Flagler	7	4	*	*	*	31
Florida	3,863	5,097	4,467	54	156	20,708

Source: Florida Department of Natural Resources, Bureau of Marine Research, unpublished data.

*Less than four units reported, but more than zero.

3,294 saltwater product licenses (SPLs) were sold to full and part-time commercial fishermen in Monroe during 1990. This is more than for any other county. Although the number of SPLs is not an entirely accurate measure of the number of commercial fishermen in any one county, the total does provide further evidence regarding the importance of the Monroe County industry to the state, as well as the intensity as to which it is conducted.

Wholesaling, Processing, and Distribution Sectors

The amount of seafood processing that occurs in Monroe County varies considerably by species. For example, shrimp is landed as both tails and head-on. However, virtually no heading is performed by the shrimp plants currently in operation. The shrimp is washed, graded, boxed, and shipped to processing centers in central Florida where most of the value-added processing, such as peeling, deveining, breading, etc., occurs. Most of the finfish leaves the county in fresh, whole form. Some filleting, portioning, and smoking of certain species does occur. However, this reportedly represents a small portion of the total. Stone crab claws are typically steamed prior to shipment. The most complex species market in terms of processing, however, is that for spiny lobster (crawfish). Similar to shrimp, crawfish are landed in both tail and whole forms. The predominant product forms are cooked tails, whole raw (green), and whole cooked. Some crawfish are picked for meat. In addition, some live shipments of crawfish occur. Although obviously not a "seafood" product, sponge represents an important industry in Monroe County. In general, sponge is simply cleaned and trimmed prior to shipment. Most of the other value-added activities, such as final shaping, bleaching, and individual packaging of sponges, occur elsewhere in the state, although a small amount of these activities do occur in the county. To accomplish the movement of such large and varied quantities of seafood products, Monroe County possesses a considerable number of licensed seafood wholesale and retail establishments. In 1990, 83 wholesale dealers and 155 retail establishments were licensed in Monroe County (Table 8).

Table 8: Wholesale and Retail Dealers Licenses by Florida Coastal County, 1990.

County	Wholesale Dealer Licenses	Retail Dealer Licenses
Escambia	17	60
Santa Rosa	6	47
Okaloosa	28	94
Walton	8	28
Bay	51	320
Gulf	12	40
Franklin	49	43
Wakulla	30	46
Jefferson	0	5
Taylor	12	24
Dixie	12	16
Levy	25	38
Citrus	18	81
Hernando	8	15
Pasco	22	56
Pinellas	58	136
Manatee	16	45
Sarasota	9	25
Hillsborough	46	435
Collier	17	40
Charlotte	9	54
Lee	38	73
Monroe	83	155
Dade	224	413
Broward	71	450
Indian River	9	19
St. Lucie	13	29
Martin	15	30
Palm Beach	47	125
Brevard	45	118
Nassau	10	23
Duval	50	208
Putnam	10	41
St. Johns	20	43
Volusia	47	88
Flagler	3	19
Florida	1,220	4,713

Source: Florida Department of Natural Resources, Bureau of Marine Research unpublished dealer license data.

Anecdotal evidence suggests that a large percentage of the total volume of fishery products landed in Monroe County eventually is shipped out of the county. Previous studies of the Florida seafood industry support this assumption (Adams, 1986; Adams and Mulkey, 1988; Prochaska and Cato, 1981). Informal discussions with industry representatives indicate that as much as 95 percent of the fishery products initially landed in Monroe County leave the county for further processing or final consumption. The remainder are consumed locally by residents or tourists.

Some fishery products originating from Monroe County are not only destined for domestic markets, but may also enter international markets. For example, an estimated 2.6 million pounds of spiny lobster products valued at $12.3 million was exported from the U.S. during 1990 (U.S. Department of Commerce, National Marine Fisheries Service). Although this volume represents a significant share of the total production of spiny lobster in Monroe County, the exact percentage is indeterminant since spiny lobster is exported in several product forms.

Wholesale Value

As fishery products are sold by wholesalers into the next higher market level, a wholesale value is generated. This value includes the initial dockside value, plus any additional "markups", resulting from processing costs, shipping fees, profit margin, etc. The markup, and thus the resulting price, that wholesalers in Monroe County will charge distributors, retailers, processors, and others that purchase Monroe County fishery products varies considerably. A "wholesale" price may depend on season, buyer, volume of shipment, product form, market destination, and other factors. The wholesale market for seafood is very complex. To arrive at an estimate of wholesale value for Monroe County fishery products, some simplifying assumptions were utilized. Informal discussions with numerous industry representatives generated some average per pound markups to be applied to the per pound dockside prices for several species of major importance. For the remaining species, an average markup per pound is applied (the various species specific markups utilized can be found as a footnote following Table 9). These markups are clearly meant to be approximations and simplify

Table 9: Dockside and Wholesale Value* of Commercial Seafood Produced in Monroe County, Florida, 1990

	Dockside Value	Margin	Wholesale Value**
Finfish	$ 7,655	$ 2,393	$10,048
Shellfish	$40,745	$13,198	$53,943
Total	$48,400	$13,591	$63,991

Data Source: Dockside value data is from Florida DNA unpublished Trip Ticket data.

*Units of one thousand.

**The following approximate per pound wholesale markups were obtained from various industry representatives. These markups by species are given in dollars as follows: Amberjack (.25), Cobia (.40), Dolphin (.50), Grouper (.40), King Mackerel (.35), Spanish Mackerel (.30), Pompano (.60), Shark (.50), Mutton Snapper (.40), Other Snapper (.30), Swordfish (.50), Stone Crab (1.00), Spiny Lobster (1.50), Shrimp Tails (1.60), Head-on Shrimp (1.00), Sponge (1.30), Baitfish (.20). Ballyhoo was valued at wholesale at .10 per fish at 8-10 fish per pound. All other species were assigned a markup to wholesale of 25 percent of dockside price per pound.

a very complex system of pricing. The resulting difference between dockside and wholesale prices is referred as the "margin".

Given the assumed dockside to wholesale markups, the total dockside to wholesale margins for both finfish and shellfish were estimated (Table 9). The total finfish margin was estimated to be $2.4 million. This produced a total wholesale value for finfish of $10 million. The total shellfish margin was estimated to be $13.6 million, which generated a total wholesale value for shellfish of approximately $54 million. The total wholesale markup for fishery products in Monroe County is estimated to be about $16 million, or about 33 percent of the total 1990 dockside value of $48 million. Therefore, the total wholesale value of Monroe County produced fishery products was estimated to be $64 million.

The Concept of Economic Impact[2]

Basic Industries and Regional Economic Activity: Previous sections presented information on the dockside and wholesale value of commercial fishery landings in Monroe County. Dockside value (i.e. sales by fishermen) of all species exceeds $48 million and wholesale value exceeds $63 million. However, these data do not fully reflect the total economic impact of the commercial fishing industry in Monroe County. Commercial fishing represents a "basic" industry in the local economy in that it produces a product for sale outside the county. Dollars generated through these out-of-county sales, when respent in the county, produce additional county-wide economic impacts. Prior to discussing specific impact estimates for commercial fishing, discussing the relationship between basic industries and regional economic activity will clarify terminology and provide a basis for the discussion of impact estimates.

The idea of a basic industry is grounded in the concepts of "export base" theory. Using this approach, the local economy of a region (Monroe County in this study) consists of two types of businesses, those that produce for markets located outside the county and those that produce products to satisfy local demands. Businesses that sell their products outside the local area are designated "basic industries", and collectively, these businesses comprise the export sector of the local economy. Businesses which serve local needs are designated as "non-basic" industries. In a functional sense, export industries bring outside dollars into the local area through sales in markets located elsewhere, and then the non-basic businesses recirculate those dollars in the local economy.

Thus, the total economic activity in a local area is a function of the size of the area's export sector. The larger the export sector, the larger the local labor force, and the larger the demand for locally originated goods and services. Further, the total economic activity in a local area changes as changes occur in the amounts of goods and services sold outside the local area by basic industries. For example, when basic industries expand sales, they increase their labor force and their orders for

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[2]The following discussion was taken directly from an earlier publication by Adams and Mulkey (1988), which estimated the economic impact of commercial seafood harvesting and wholesaling on the Lee County, Florida economy.

other local goods and services used to produce the export product. The result is a "multiplier" or "ripple" effect throughout the local economy. Growth (or decline) in a local area results from the expansion (contraction) of sales outside the area by the basic sector of the economy.

A "basic" industry directly affects economic activity in the county when its product is sold outside the local area. For commercial fishing in Monroe County, this would include sales, jobs, and earnings generated in commercial fishing and other activities related to the preparation of the catch for shipping. These direct activities produce additional indirect effects in the local economy as dollars earned through the sale of fish are respent locally. Indirect effects represent purchases of local products by fishermen such as ice, fuel, boat parts and repair services, etc.. All the indirect effects are additional economic activity in the county and are indicative of additional jobs and income generated by the sale of fishery products outside the local area.

Direct and indirect activities associated with commercial fishing and the sale of the catch outside the county then produce additional (induced) local impacts. These impacts are associated with the spending of income earned in the direct and indirect activities. This spending translates into local retail sales, local bank accounts, and purchases of a wide variety of consumer goods.

The total impact of a basic industry such as commercial fishing must consider the sum of direct, indirect and induced activities. In essence, the sale of fishery products outside the county triggers a chain of local spending which generates income and leads to additional spending. This process, however, is not infinite in nature, and at each round of spending, some dollars are lost to the local economy. Leakages are in the form of savings in non-local institutions, taxes and other fees paid to the state and federal governments, and payments for goods and services which are purchased outside the local area.

The total respending associated with one dollar of sales outside the area by a particular industry is designated the "multiplier" effect. For a particular sector the multiplier is a measure of the total economic activity associated with the external sales of that sector. Multiplier effects may be measured and expressed in terms of output, income (earnings), or employment. The size of the

multiplier varies with the size of the local area and with the industry in question. In general, the larger and more diverse the local economy and the more complex the industry in terms of local economic linkages, the larger the multiplier.

Multipliers may be used to assess the total economic impact of a particular industry once out-of-county sales are known. They may also be used to assess increases/decreases in local economic activity associated with the expansion or contraction of a local industry. It is important to note that multipliers consider only expenses (purchases) associated with the current production of a product. They do not include investment activity. For example, in commercial fishing, multipliers presented later will include boat repair and maintenance but do not consider the purchase of new boats.

Commercial Fishing Impacts: Multipliers which measure the regional impact of particular industries are based on regional input-output models which reflect the distribution of sales and purchases for each industry in the regional economy.[3] For each industry, the model shows the dollar value of sales and purchases from every other local industry, thereby providing a picture of interactions within the local economy and allowing dollars to be traced through the economy. Multipliers for commercial fishing in Monroe County were estimated by the Bureau of Economic Analysis of the U.S. Department of Commerce using their Regional Input-Output Modeling System (RIMS II).[4] The multipliers were originally estimated for the Lee County, Florida commercial fishing industry. Given that the Lee County economy may likely be more diverse than for Monroe County, the multipliers can be assumed to be an upper limit, or liberal, estimate. The commercial fishing industry of Lee County resembles that for Monroe County in that most fishing products are sold out-of-county with little value added processing. Multipliers are measured in terms of output (sales), employment, and earnings and capture the total impact of additional sales for each industry sector in Monroe County.

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[3]For a more detailed description of input-output models, see: W.H. Miernyk, The Elements of Input-Output Analysis, Random House, New York, 1965.

[4]For a more detailed explanation of multiplier estimation techniques, see: Bureau of Economic Analysis, Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II), U.S. Government Printing Office, Washington, D.C., 1986 and Joseph V. Cartwright, Richard M. Beemiller, and Richard D. Gustely, RIMS II Regional Input-Output Modeling System, National Technical Information Service, Washington, D.C., 1981.

Multipliers: Table 10 presents output, earnings, and employment multipliers for commercial fishing in Monroe County. The output multiplier of 1.49 means that one dollar of fishery sales outside Monroe County results in a total impact of $1.49 in the local economy. This includes the $1.00 of direct out-of-county sales plus an additional 49 cents in indirect and induced impacts. Earnings and employment multipliers, respectively, measure the total income and employment impacts of each one million dollars in external sales. A sale of one million in fishery products outside the county, for example, generates $594,000.00 in local earnings and 41 fulltime equivalent jobs.

Estimated Economic Impacts

The estimation of the economic impacts associated with Monroe County fishery products utilized the multipliers and estimates associated with the value of wholesale fishery sales outside the county. Since precise estimates of external wholesale sales are unavailable, three different possibilities were considered to provide a range of estimates. The scenarios examined were based on conversations with individuals familiar with the local commercial fishing industry in Monroe County. Scenario 1 assumes that 95 percent of the wholesale value of fishery products sold by Monroe County firms is represented by sales outside of the county. Scenario 2 assumes that 85 percent of the sales are outside of the county. And scenario 3 assumes the percentage falls to a relatively conservative 75 percent of all fishery products harvested in Monroe County are eventually sold to out-of-county buyers. The wholesale values associated with each of the three scenarios were estimated (Table 11).

Using the assumptions given above, the various economic impacts associated with out-of-county wholesale transactions were estimated (Table 12). Total sales impacts (economic activity) range from slightly over $87 million under scenario 3 to almost $94 million under scenario 1. Earnings (incomes) generated from these out-of-county wholesale transactions range from $28.5 million (scenario 3) to over $36 million (scenario 1). These sales also created employment in the commercial fishing industry and associated local industries and businesses (the latter of which may or may not be directly involved with the commercial fishing industry). The out-of-county sales

Table 10: Economic Impact Multipliers for Output, Earnings, and Employment in Commercial Fishing for Application to Monroe County.

Sector	Output	Earnings	Employment
Commercial fishing	1.4856/$1.00*	0.5940/$Million*	41.0/$Million*

Source: Estimated by the Bureau of Economic Analysis, U.S. Department of Commerce, using the Regional Input-Output Modeling System (RIMS II). The multipliers were originally estimated for the Lee County commerical fishing industry.

*Sales outside of county.

created 1,968 full time jobs when only 75 percent of the fishery products are exported out of Monroe County. But 2,492 full time jobs were estimated to be created when 95 percent of the fishery products are exported out of Monroe County. Notice that the number of jobs created is substantially less than the number of SPLs sold in Monroe County in 1990. This may be explained by the fact that the multiplier analysis estimates full time equivalent positions (FTEs). Some of the total number of SPLs sold are likely to be held by part-time or effectively inactive commercial fishermen. In addition, all of the scenarios assumed less than 100 percent external sales. Also, recall that the economic impacts estimated are only those associated with out-of-county sales.

Summary

Based on available secondary data and some anecdotal observations of the industry, out-of-county wholesale sales by the commercial fishing industry in Monroe County generates between $94 and $87 million in economic activity, between $36 and $29 million in local earnings, and provides the equivalent of between 2,492 and 1,968 full time jobs. Again, these are estimates based on the assumptions outlined above regarding out-of-county wholesale sales and on the assumptions inherent in estimating multipliers for local areas. In addition, the assumptions regarding wholesale markups must also be considered. Thus, the numbers presented should be interpreted only as estimates and not as precise measures of economic impacts. Importantly, estimates of total impact are conservative since investment purchases of the industry are not considered in the multipliers. In addition, the economic impact of tourist consumption of locally landed seafood has not been included.

Table 11: Estimates of the Wholesale Value of Out-of-County Sales of Locally Produced Seafood[1] From Monroe County, Florida, Under Three Distribution Scenarios.

Distribution Scenario	Total Wholesale value (1990)[2]	Wholesale to local market[2]	Wholesale to out-of-county markets[2]
Scenario 1 95% of all species sold out of county	$63,991	$ 3,200	$60,791
Scenario 2 85% of all species sold out of county	$63,991	$ 9,599	$54,392
Scenario 3 75% of all species sold out of county	$63,991	$15,998	$47,993

[1]Includes all species of finfish and shellfish landed in Monroe County.

[2]Units of one thousand.

Table 12: Estimated Economic Impact of Monroe County Wholesale Seafood Transactions to Out-of- County Markets

Distribution Scenario	Estimated Wholesale to out-of-county markets (1990)[1]	Economic Activity Generated[1,2]	Earnings Generated[1]	Employment Generated
Scenario 1 95% of all species sold out of county	$60,791	$93,511	$36,110	2,492
Scenario 2 85% of all species sold out of county	$54,392	$90,404	$32,309	2,230
Scenario 3 75% of all species sold out of county	$47,993	$87,291	$28,508	1,968

[1]Units of one thousand.

[2]Includes sales to local markets.

The preliminary findings of this report suggest topics of further analysis concerning the commercial fishing industry in Monroe County. A more thorough account of wholesale markup and market channels could provide a better assessment of the wholesale value of locally produced seafood to the Monroe County economy. The study would also benefit from multipliers derived specifically for the Monroe County commercial fishing industry. In addition, an analysis of the economic activities associated with tourist purchases of local produced fishery products is needed. Also, this study points out the need for a more comprehensive assessment of the economic impacts associated with other marine resource-based industries in the county, such as recreational fishing, charter businesses, and the broad tourism industry. Such analyses would help local decision-makers better assess the economic consequences of adjustments of land use plans, change in water-dependent industry mix, establishment of marine resource sanctuaries (such as the currently planned Keys marine sanctuary), natural resource damage assessment, and other issues. Local policy makers should bear in mind, however, that economic impact estimates do not serve as adequate measures of the economic consequences of reallocation of resources between competing user groups. More fundamental measures of true economic value are required. Economic impact estimates, such as presented above, allow us to talk only about expenditures. Reallocation of resources requires us to probe much deeper into actual economic value, which may or may not be revealed by the market. ...But that is another story!

References and Further Reading

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