Marine Recreational Fisheries in the Southeastern United States: An Overview

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Purpose and Methods

This paper describes the nature and extent of marine recreational fisheries (MRF) in the southeastern United States and briefly highlights some of the problems and opportunities surrounding the future management of saltwater sport fisheries in the region. This region includes coastal states in the South Atlantic (North Carolina, South Carolina, Georgia, Florida east coast) and Gulf of Mexico (Florida west coast, Alabama, Mississippi, Louisiana, and Texas), as well as the U.S. Virgin Islands (U.S.V.I.) and Puerto Rico in the Caribbean.

Unless otherwise noted, the principal source of statistical information used in this paper is the National Marine Recreational Fisheries Statistics Survey conducted by the National Marine Fisheries Service (NMFS) in the South Atlantic and Gulf annually since 1979. In 1979 and 1981, surveys were conducted in the Caribbean, but since 1981 Caribbean data are incomplete in some respects, this paper cites only 1979 data.

Background

The demand for outdoor recreation increased dramatically in the United States in the years following World War II. Much of this increased demand stemmed from a marked rise in affluence and mobility of Americans, and from attendant increases in leisure time and discretionary income. Concurrently, many Americans were moving from cities to suburbs and from the hinterlands to the coasts. Undoubtedly, the proximity of larger portions of the population to water is partial explanation for the fact that by 1960, over 44 percent of outdoor recreation participants preferred water-based recreation activities. (U.S. Outdoor Recreation Resources Review Commission, 1962). Participation in water-based recreation continues to grow at a faster rate than the U.S. population (HCRS, 1979).

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ABSTRACT—Marine recreational fishing in the southeastern United States is an outdoor recreational activity of increasing popularity, economic significance, and consequence to the region's fishery resources. In 1985, over 11 million anglers made 44 million fishing trips in the South Atlantic and Gulf and caught 222 million fish. Thirty-five percent were landed weighing over 131 million pounds, representing 40 percent of total edible finfish landings in the region. In 1985, the region accounted for 40 percent of all U.S. saltwater anglers, 62 percent of all trips, and 50 percent of the total number of recreationally caught fish. Direct expenditures by South Atlantic and Gulf anglers in 1985 were estimated to be nearly $3.4 billion. These expenditures are estimated to have generated an additional $1.5 billion in value added and supported over 42,000 person-years of employment in marine recreational fisheries related support and service industries. Additional detailed discussion of the nature and extent of marine recreational fishing in the South Atlantic, Gulf of Mexico, Puerto Rico and U.S. Virgin Islands is presented.

Based on available data, it is evident that saltwater sport fishing was, and continues to be, pursued by growing coastal populations to partially fulfill the desire for water-based recreation. In the United States, participation in saltwater sport fishing increased 2.7 times and related expenditures grew sevenfold between 1955 and 1980 (Table 1). Major advances made during this period in the design and manufacture of recreational boats, outboard motors, navigational equipment and sport fishing gear further contributed to increased participation in saltwater sport fishing.

In the southeastern United States, marine recreational fishing has become an outdoor recreation activity of considerable significance in terms of participation, catch, and economics. In 1985, more than 11 million anglers made over 44 million sport fishing trips and caught an estimated 222 million fish in this region. Over 35 percent of these fish were landed, weighing in excess of 131 million pounds. Recreationally landed fish represented about 40 percent of total regional landings (commercial and recreational combined) of edible finfish. Recreational harvest of shellfish and crustaceans in the southeast is significant but of unknown magnitude.

Notably, the southeast region has accounted for a major portion of the total U.S. growth in saltwater sport fishing participation, catch, and expenditures since 1955. In 1985, the southeast accounted for over 40 percent of the nation's saltwater anglers, 62 percent of all trips, 50 percent of the catch in number of fish and over 55 percent of all direct expenditures made nationally by saltwater anglers. These regional and national per-

Table 1.—Participation and expenditures for saltwater sport fishing in the United States[1].

Criteria	1955	1960	1965	1970	1975	1980
Number of saltwater sport fishermen[2]	4,557,000	6,292,000	8,305,000	9,460,000	13,738,000	13,332,000
Number of recreation days of saltwater sport fishing	58,621,000	80,602,000	95,837,000	113,694,000	167,499,000	160,678,000
Expenditures of saltwater sport fishermen ($U.S.)	488,939,000	626,191,000	799,656,000	1,224,705,000	3,095,369,000	3,611,373,000

[1]Data from 1970, 1975 and 1980 editions of "National Survey of Fishing and Hunting and Wildlife Associated Recreation," U.S. Dep. Int., Wash., D.C.
[2]Since the survey defined saltwater sport fishermen differently in several years, the data have been adjusted to represent participation and expenditures for anglers 12 years old and older.

spectives are perhaps slightly underestimated since data for the U.S. Virgin Islands and Puerto Rico are not available for 1985. The importance of marine recreational fisheries in the southeast warrants closer examination of participation, catch, and economic indicators.

The Setting

In 1985, an estimated 11.4 percent (6.5 million) of the 56.8 million Americans residing in coastal states of the South Atlantic, Gulf of Mexico and Caribbean (Puerto Rico and U.S.V.I.) participated in marine recreational fishing. Another 4.6 million visiting anglers also fished in the region. This significant participation continues to be influenced by at least three major factors.

First, the rapid population growth of the southeast between 1955 and present, linked with the area's warm climate, diverse and abundant marine fishery resources, extended fishing seasons, and strong historic participation trends in fishing, boating, and other water-based recreation activities set the stage for strong saltwater sport fishing participation levels.

Second, the substantial fishing infrastructure that occurs along the region's estimated 30,000 miles of shoreline (Lane, 1986) provides the physical means for residents to participate. In 1985, the region had over 150 coastal fishing piers, 1,630 coastal marinas (Ross[1]), over 2.5 million private recreational boats, 950 charterboats, 180 headboats, hundreds of diveboats and small guideboats, untold miles of "fishable" beaches, bridges, and jetties, and an unequaled assemblage of artificial fishing reefs. Increased state funds under the Wallop-Breaux program are being used to further upgrade the quantity and quality of boating and fishing facilities.

Third, growing recognition of the importance of saltwater sport fishing as both a resident outdoor recreation activity and tourist attraction has precipitated expanded public education and information programs (literature, television shows, fishing clinics, etc.) that have helped "socialize" residents and tourists into marine recreational fishing activities.

Marine Recreational Fishermen

Marine recreational fishing (MRF) in the southeastern U.S. is primarily an activity involving family and friends participating in small groups averaging 3-4 people. According to a social-economic study of MRF in 1981 (KCA, 1983), marine anglers in the South Atlantic and Gulf averaged 31-32 years of age and were primarily white males having annual household incomes between $15,000 and $35,000. Fishermen having personal incomes between $10,000 and $15,000 were the most avid anglers averaging 26.3 fishing days per year in the Atlantic area and 32.3 days in the Gulf. The overall average participation rate was estimated to be 23.5 days per year for the Atlantic and 25.9 days per year in the Gulf in 1981. More recent social and economic data do not exist, so it is unclear how these general parameters might have changed since 1981. Comparable data are not available for Puerto Rico or the U.S. Virgin Islands.

Dramatic efforts by private groups[2] like the Coast Conservation Association and United Sport Fishermen are underway to better organize saltwater anglers in the Gulf and South Atlantic, but as of 1981, only 5 percent of all anglers were estimated to be members of fishing clubs or related organizations (KCA, 1983). Interestingly, only three states in the southeast currently require saltwater sport fishing licenses. Texas requires all anglers to obtain a general sport fishing license and a saltwater stamp. Louisiana requires resident and nonresident marine recreational fishermen to purchase both a basic fishing license and a saltwater angling license. Alabama requires nonresidents to purchase a fishing license which allows them to fish in fresh-, brackish- or saltwater. Alabama residents need no license to fish in saltwater.

Sport Fishing Patterns

In 1985, an estimated 2.4 million residents of U.S. South Atlantic coastal states, and 4.0 million Gulf coastal state residents participated in marine recreational fishing. These participation rates reflected a 14 and 38 percent increase, respectively, over 1979 and 1984 average participation rates for the South Atlantic and Gulf areas. Collectively, coastal state residents accounted for 78 percent of the 44 million fishing trips made in the Gulf and South Atlantic areas in 1985. An estimated 4.6 million visitors accounted for the remaining 10 million sport fishing trips. Ninety-seven percent of the estimated 679,000 saltwater fishing trips made in Puerto Rico and the U.S.V.I. in 1979 were made by residents.

As Table 2 shows, residents of the South Atlantic and Gulf fished most frequently from private boats and man-made structures. Visiting anglers in the South Atlantic were most apt to fish from beaches, banks, party boats, and charter-

[1]Ross, N., and P. Joyce. 1987. Information regarding International Marina Association data base. Personal commun., Middletown, R.I.

[2]Mention of commercial firms, products, or private organizations does not imply endorsement by the National Marine Fisheries Service, NOAA.

Table 2.—Characterization of marine recreational fishing in the South Atlantic, Gulf of Mexico, and Caribbean[1].

Characteristic		South Atlantic		Gulf		Caribbean			
						U.S.V.I		Puerto Rico	
1 MRF licenses		None required by NC, SC, GA, or FL		TX & LA require res. & nonres. licenses. AL requires nonres. license.		None required		None required	
2. No. of participants (1985)									
Resident		2,423,000		3,959,000		2,300		83,900	
Visitor		2,272,000		2,302,000		500		6,200	
3. No. of private recreational boats (1985)[2]		962,425		1,547,960		2,718		23,025	
4. No. of paying passenger vessels, fishing piers & coastal marinas (1985-86)									
Charterboat		492		441		8		7	
Headboat		99		78		1		0	
Fishing piers		82		67		0		0	
Coastal marinas		660		915		31		24	
5. Number of saltwater tournaments (1985-86)[3]		North Carolina	= 30	Florida (w.)	= 58	5		20	
		South Carolina	= 82	Alabama	= 15				
		Georgia	= 5	Mississippi	= 9				
		Florida (east)	= 90	Louisiana	= 6				
				Texas	= 69				
6. Top five species sought (1985)		Spotted seatrout		Spotted seatrout		Other fishes[4]		Other fishes[4]	
		Bluefish		Red drum		Dolphins		Ladyfish	
		Red drum		Other fishes[4]		Mackerel/tunas		Jacks	
		Other fishes[4]		Groupers		Cero mackerel		Herrings	
		King mackerel		Sea basses		King mackerel		Snappers	
7 Most frequently caught fish as percent of total fish caught (1985)		Spot	16%	Saltwater catfishes	14%	False pilchard	31%	Herrings	19%
		Black sea bass	8%	Spotted seatrout	10%	Sea basses	6%	Scaled sardine	12%
		Atlantic croaker	7%	Atlantic croaker	9%	Atlantic croaker	6%	Other fishes[4]	6%
		Bluefish	7%	Sand seatrout	7%	Coney	5%	Anchovies	5%
		Hearings	7%	Pinfish	7%	Mackerel/tunas	5%	Ballyhoo	4%
8. Most frequently landed fish as percent of total fish landed (1985)		Spot	21%	Spotted seatrout	19%	False pilchard	48%	Anchovies	9%
		Black sea bass	10%	Sand seatrout	12%	Mackerels/tunas	6%	Herring	8%
		Bluefish	9%	Atlantic croaker	8%	Cero	6%	Ballyhoo	6%
		Atlantic croaker	6%	Black sea bass	7%	Red hind	4%	Balao	2%
		Mullets	5%	White grunt	6%	Tunas	4%	Bar jack	5%
9. Total number of fish caught	1979	101,595,000		162,279,000		81,300		2,664,000	
	1980	77,477,000		154,176,000					
	1981	54,964,000		131,407,000					
	1982	76,844,000		154,405,000					
	1983	77,955,000		109,745,000					
	1984	69,410,000		135,134,000					
	1985	79,523,000		142,695,000					
10. Estimated total number of fish landed as percent of total fish caught	1979	39,711,000	(39%)	58,428,000	(36%)	271,000	(63%)	1,556,900	(58%)
	1980	33,964,000	(44%)	63,294,000	(41%)				
	1981	27,364,000	(50)	46,076,000	(35%)				
	1982	33,474,000	(44%)	45,339,000	(29%)				
	1983	42,543,000	(55%)	23,672,000	(22%)				
	1984	32,184,000	(46%)	39,485,000	(29%)				
	1985	37,930,000	(48%)	33,518,000	(23%)				
11 Est. total wt. (lb.) of fish landed	1979	48,572,000		71,841,000		272,048		1,910,065	
	1980	62,734,000		117,666,000					
	1981	52,216,000		93,810,000					
	1982	46,197,000		87,968,000					
	1983	60,679,000		33,583,000					
	1984	78,858,000		55,505,000					
	1985	74,683,000		56,622,000					

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boats, while Gulf visitors apparently preferred to fish from man-made structures (bridges, piers, and jetties) and private boats. Both resident and visiting anglers in Puerto Rico and the U.S.V.I. preferred to fish from beaches, banks, and private boats in 1979.

Angler success, if measured by average number of fish caught per trip was greatest for anglers fishing from private boats in the South Atlantic (5.6 fish per trip), Gulf of Mexico (8.7 fish per trip) and Puerto Rico (3.8 fish per trip). Fishing from beaches and banks in the Virgin Islands yielded the highest local catch rate of 5.7 fish per trip in 1979.

In 1985, South Atlantic anglers were able to put the greatest weight of fish in their coolers by fishing from party or charter boats more than 3 miles from shore during March and April. In the Gulf, the same result was achieved by fishing from private boats more than 3 miles from shore during July and Au-

Table 2.—Continued.

Characteristic	South Atlantic	Gulf	Caribbean	
			U.S.V.I	Puerto Rico
12. Percent total wt. fish landed by area caught (1985)				
Bays, sounds, rivers	13%	19%	1%	9%
Ocean <3 mi. from shore	29%	33%	34%	38%
Ocean >3 mi. from shore	58%	48%	65%	43%
Unknown	0%	0%	0%	0%
13. Percent fishing trips by method (1985)	Total trips = 19,840,000	Total trips = 24,227,000	Total trips = 39,400	Total trips = 639,200
Bridge, pier, jetty	25%	27%	7%	24%
Beach or bank	24%	18%	32%	43%
Private or rental boat	33%	48%	50%	26%
Charter or party boat	18%	7%	11%	7%
14. Percent of fishing trips by mode for coastal state visitors and residents (1985)	Vis./Res.	Vis./Res.	Vis./Res.	Vis./Res.
Bridge, pier, jetty	24 25	33 25	0 8	15 24
Beach or bank	27 23	14 19	5 35	14 43
Private or rental boat	14 41	43 50	76 47	38 26
Charter or party boat	35 11	11 6	19 10	3 7
15. Estimated economic impacts (1985)[5]				
Sales	$2,038,691,000	$1,354,585,000	Data not avail.	Data not avail.
Value added	908,538,000	619,085,000		
Wages and salaries	402,225,001	270,656,000		
Employment (person-years)	25,126	17,120		
Annual capital expenditures	62,064,000	55,212,000		

[1]Unless otherwise noted data sources include the 1985 NMFS National Marine Recreational Fisheries Statistics Survey, Atlantic and Gulf Coasts, and the 1979 National Marine Recreational Fisheries Statistics Survey, Caribbean Region. Unless otherwise noted, data are for calendar year 1985 for South Atlantic and Gulf and calendar year 1979 for Caribbean.
[2]Data from Boating Statistics 1985. U.S. Dep. Transp., U.S. Coast Guard, 1986. Wash., D.C., 34 p.
[3]O'Hara (1985).
[4]"Other fishes" is a species grouping used in the National MRF Statistics Survey which includes 130 assorted unrelated species that individually are "rarely" caught and for which there are insufficient observations to generate a reliable estimate.
[5]Estimates generated by authors using data in: Sport Fishing Institute (1983), p. IX.

gust. Based on 1979 statistics, Caribbean anglers landed the most pounds of fish by fishing from private boats less than 3 miles from shore during January and February in Puerto Rico or by fishing from private boats more than 3 miles from shore in May and June in the U.S.V.I.

Several other aspects of marine recreational fishing patterns in the southeastern U.S. warrant mentioning. First, saltwater sport fishing tournaments are becoming increasingly importnat. According to one source, almost 400 tournaments were held in the region in 1986 (Table 2, item 5) (O'Hara, 1986). In addition to increased numbers, tournaments have diversified beyond the classic high-stakes billfish kill competitions to include tournaments appealing to both males and females of all ages, skill levels, and target species preferences. Some tournaments like the Scott's Hill Mackerel Tournament (N.C.) are being used to help develop fisheries for species that have been historically snubbed by anglers as "trash fish" (e.g., amberjack, *Seriola* spp.; triggerfish, *Balistes* spp.; Atlantic spadefish, *Chaetodipterus faber*; sharks, and sea catfish, *Arridae*). Also, in many cases, tournaments such as the Pompano Beach Fishing Rodeo (Fla.) are being used as fund raisers for locally important fishery development projects, tourist attractions, or as a means to promote conservation practices among anglers.

Second, in a similar fashion, it is important to note the expanding role of artificial reef development in the southeast. The region is unsurpassed in terms of the number and diversity of artificial reefs built to enhance fisheries habitat and saltwater angling. Including an estimated 3,700 offshore structures, the Gulf probably has in excess of 4,000 artificial reefs. Based on a recent survey by Witzig[3], more than 37 percent of all 1984 saltwater fishing trips by Louisiana coastal residents and 28 percent of those made by Texas residents were made to sites within 200 feet of an offshore structure. Significant positive differences in catch rates and composition existed for many trips made around offshore structures. While not measured in the survey, the positive impacts of non-oil and gas related artificial reefs on saltwater sport fishing and tourism in the South Atlantic, Gulf and Caribbean are well recognized, and are being enhanced through artificial reef development programs supported by every southeastern coastal state, Puerto Rico, the U.S.V.I., and the NMFS Southeast Regional Office.

[3]Witzig, J. F., 1985. Rig fishing in the Gulf of Mexico - 1984 marine recreational fishing survey results. Unpubl. rep., Natl. Mar. Fish. Serv., Wash., D.C., 4 p.

Catch

In 1985, average catch rates and total catches in the South Atlantic and Gulf were not significantly different from the 1979-84 averages. It is, however, interesting to look at several aspects of recreational catches in the southeast in 1985.

Of the 79.5 million fish caught in the South Atlantic in 1985, 37.9 million (48 percent) were landed, 19.4 million (24 percent) were used for bait, discarded dead, or filleted at sea, and 22.2 million (28 percent) were released alive. The

37.9 million fish that were landed weighed approximately 74.7 million pounds.

Interesting differences exist between the species anglers say they target and what they actually land (Table 2, items 6, 7, and 8). In 1985, over 56 percent of South Atlantic anglers didn't fish for a specific species of fish. Of the more selective anglers, spotted seatrout, *Cynoscion nebulosus*; bluefish, *Pomatomus saltatrix*; red drum, *Sciaenops ocellatus*; other fishes (a broad 130-species category including Atlantic spadefish, sailfish, *Istiophorus platypterus*; and marlin, *Istiophoridae*), and king mackerel, *Scomberomorus cavalla*, commanded the most attention. Five species (spot, *Leiostomus xanthurus*; black sea bass, *Centropristis striata*; bluefish; Atlantic croaker, *Micropogonias undulatus*; and mullet, *Mugil* spp.) accounted for 51 percent of all fish landed. All five of these species are found relatively close to shore and are easily available to the bulk of South Atlantic anglers.

Catch and catch disposition patterns in the Gulf in 1985 yielded a slightly different pattern. Of the 142.7 million fish caught, 33.5 million (24 percent) were landed, 44.9 million (31 percent) were either used for bait, discarded dead, or filleted at sea, and 64.2 million (45 percent) were released alive. Landed fish weighed approximately 56.6 million pounds.

As in the South Atlantic, a large proportion (58 percent) of Gulf anglers had no species preference, and of those that did, spotted seatrout, red drum, and "other fishes" (Atlantic spadefish, sailfish, marlins, etc.) again scored high marks. Interestingly, only three of the five most frequently caught fish in the Gulf showed up in the five most frequently landed category compared to four out of five in the South Atlantic. The smaller proportion of Gulf fish that are landed (24 vs. 48 percent in the South Atlantic), is largely explained by the large numbers of sea catfishes, pinfish, *Lagodon rhomboides*; croaker, mullet, and spotted seatrout that are caught but not landed. These fish were either viewed as undesirable or were not landed because of regulatory (size/bag limits) or self-imposed conservation limitations. As in the South Atlantic, five species of fish accounted for over 50 percent of the total number of landed fish.

The Caribbean has yet a different picture. Based on 1979 data, it appears that a much higher percentage of recreationally caught fish is landed in Puerto Rico (58 percent) and the U.S. Virgin Islands (63 percent). There is also a marked difference between what is sought and caught. With the exception of mackerels/tuna in the Virgin Islands and herrings in Puerto Rico, none of the species targeted show up in the top five species caught. Similarly, only two of the top five fish landed in the Virgin Islands and one in Puerto Rico are included among the top five fish sought.

A point worth noting is that in 1979, 85 percent of Puerto Rican anglers and 50 percent of U.S.V.I. anglers reported that they had no target species preferences. This lack of selectivity, taken in conjunction with the large percentage of fish landed, reflects the extent of intermixing between recreational and subsistence fishermen in Puerto Rico and in the Virgin Islands. Local fishery officers report that it is difficult to differentiate between nonselective recreational anglers and subsistence fishermen when conducting field surveys. This subsistence orientation also partially explains the high proportion of fish that are caught and landed.

Analysis of catch and catch disposition patterns in the southeastern United States has prompted personnel in the NMFS Southeast Regional Office to initiate several noteworthy projects. First, given the increasing magnitude of recreational fishing participation and catch and the growing number of fisheries that have come under Federal management and regulation, expanded efforts were initiated in 1987 to better inform anglers of Federal fishing regulations and to encourage their support and compliance.

Second, because of the large numbers of recreationally caught fish that are released alive, a high quality video and printed brochure are being developed to inform anglers of proper catch and release techniques. This will encourage anglers to use catch and release conservation practices and help increase the survival rate for released fish.

Third, an expanded program is being implemented to help anglers make better use of their catches. Based on several surveys and studies (KCA, 1983; Johnson and Griffith, 1985), it is apparent that many fish are not landed and used by anglers because they are perceived to be undesirable or unusable. In many instances these perceptions are based on local biases and incorrect or incomplete information. The NMFS Southeast Region launched a regionwide research and education program in 1983 to identify and correct these misconceptions. Thus far, basic research identifying southeastern species with MRF development potential has been completed, education materials have been developed (brochures, posters, underutilized species cookbook, tournament guides, etc.), and an educational program initiated. A more expansive education effort and a media "blitz" are being planned for 1988.

Collectively, these three initiatives, in conjunction with other state and Federal fisheries management programs, should help reduce fishing pressure on currently stressed species, reduce waste, help anglers more fully utilize available fishery resources, and help maintain angler satisfaction with their sport fishing experiences.

Economic Significance

Marine recreational fishing the U.S. southeast is indeed an activity of economic significance to the region. Not only are saltwater anglers visiting the productive waters of the region in growing numbers, but they are also spending increasing amounts of money. According to a study conducted by the Sport Fishing Institute (1983), marine recreational fishermen spent nearly $2.2 billion in the Gulf and South Atlantic areas in 1980 on fishing tackle, boats, motors, trailers, marine services, charter and headboat trips, boat fuel, boat insurance, bait, food, lodging, transportation, and other miscellaneous items. These direct sales resulted in over $986 million in indirect economic impacts as money was respent throughout the region. Furthermore, direct sales stimulated nearly $88 million

worth of capital investment and directly supported nearly 36,000 person-years of employment representing $381.7 million in wages and salaries. From a national perspective, the Gulf and South Atlantic areas accounted for over 55 percent of all retail sales associated with marine recreational fishing in the United States in 1980 (Sport Fishing Institute, 1983). While economic data are not currently available for the Caribbean area, it is clear that marine recreational fishing is an integral and important part of the area's economically significant tourist industry.

To estimate the expenditures and associated economic impacts resulting from marine recreational fishing the southeast in 1985, the 1980 estimates were adjusted by an annual real growth factor of 3.4 percent and a MRF composite Consumer Price Index factor of 1.3059 (SFI, 1987). This annual real growth factor of 3.4 percent was reported by Sport Fishing Institute (1983) for the period 1972-80 and was used for this estimate even though the recession that occurred in the United States in the early 1980's probably reduced the rate of real growth in MRF expenditures. However, based on the estimate, direct MRF expenditures in the South Atlantic and Gulf could have grown from $2.2 billion in 1980 to nearly $3.4 billion in 1985. Associated estimated increases in value added, employment, wages and salaries, and capital expenditures are presented in Table 2, item 15.

There is still considerable discussion and debate regarding the magnitude of MRF related economic impacts and proper methods for estimating those impacts and values in the southeast. For example, a study done by Bell (1982) of the University of Florida concluded that in 1980, resident and tourist marine recreational fishermen spent $1.87 billion in Florida on fishing-related, nondurable goods at the retail level. This estimate appears out of proportion with the Sport Fishing Institute's $2.2 billion estimate of direct MRF-related expenditures for the entire South Atlantic and Gulf of Mexico area in 1980. The range of "values" that have resulted from these various economic studies is perhaps equalled only by the number of estimation methods that have been used. Appropriate methods for estimating economic impacts and value of marine recreational fishing need to be developed and applied consistently.

Discussion

The importance of marine recreational fisheries in the southeastern United States is receiving growing recognition among local, state, and Federal resource managers. In October 1983, the NMFS Southeast Regional Office and Southeast Fisheries Center implemented an MRF Program Development Plan (PDP) to promote the stability and growth of marine recreational fisheries in the region. In addition to briefly describing MRF in the region, the PDP outlines a long-term program directed at resolving the following seven major impediments:

1) Lack of comprehensive and reliable MRF data base,

2) Lack of organization unity in the MRF community,

3) Need for more effective fishery habitat protection and enhancement,

4) Need to resolve MRF-related fishery allocation, conservation, and management problems,

5) Need to improve access to coastal waters and fishery resources,

6) Need for improved communication and relations with MRF constituents and improved user information, and

7) Need for improved coordination between MRF-related government programs.

With the assistance and cooperation of the states, universities, Sea Grant programs and the marine recreational fishing community, significant progress is being made in resolving these problems. Ultimately, the stability and growth of marine recreational fisheries in the southeastern United States will be secured.

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