5. ECONOMIC STATUS OF HMS FISHERIES

Under the Magnuson-Stevens Act, NMFS must prepare an annual SAFE report in order to account for the best scientific information available. Each SAFE report should, among other things, provide information on the economic condition of the recreational and commercial fishing interests, communities, and industries.

In 1996, the Small Business Regulatory Enforcement Fairness Act amended the Regulatory Flexibility Act (RFA). This amendment added section 610 to the RFA. Section 610 requires NMFS to periodically review rules that had or will have a significant economic impact on a substantial number of small entities. The purpose of this review is to determine whether the significant rules should be continued without change or if they should be amended or rescinded in order to minimize the impact on small entities. The review should examine the impact of these rules consistent with the stated objectives of applicable statutes. NMFS has 10 years after the adoption of each rule in which to review the impact of the rule.

Thus, both the SAFE report and Section 610 to the RFA require similar information. For this reason, NMFS believes that the following section of the 2002 SAFE Report should fulfill NMFS' requirements under both the Magnuson-Stevens Act and Section 610 of the RFA. In addition to the information needed to fulfill Section 610 of RFA, this section will provide comprehensive economic information for all components of HMS fisheries including price and cost information.

The review of each rule and of HMS fisheries as a whole is facilitated when there is a baseline against which the rule or fishery may be evaluated. In this report, as in the 2001 SAFE report, NMFS decided to use 1996 as a baseline. NMFS believes that this baseline is appropriate because RFA was amended in 1996, the Magnuson-Stevens Act was amended in 1996, NMFS began to collect economic information voluntarily for vessels using the pelagic logbook, and regarding HMS specifically, no rules were implemented in 1996 that were classified as significant under RFA. Additionally, while the HMS FMP and the Billfish Amendment 1 were finalized in 1999, scoping for these two major documents and its final rule began in 1997. It is possible that anticipation of these documents and any potential changes in their implementing regulations could have begun to impact the decisions made by HMS fishermen and any associated businesses. Where noted, NMFS converted 2000 dollars to 1996 dollars using the consumer price index in order to help comparisons between years.

5.1 Commercial Fisheries

5.1.1 Economics of Commercial Fisheries across the United States in General[3]

In 2000, the total commercial landings at ports in the 50 states by U.S. fishermen were 9.1 billion pounds and were valued at $3.5 billion. While this was a three percent decrease from 1999 in terms of landings, the overall value increased by $82.4 million. Compared to 1996, this was an increase of $62.8 million from the estimated 1996 value. The 2000 ex-vessel price index indicated that 13 species of the 33 species tracked had increasing ex-vessel prices and 16 species had decreasing ex-vessel prices.

The estimated value of the 2000 domestic production of all fishery products was $7.2 billion. This is $95.2 million less than the estimated value in 1999. The estimated value of domestic production in 1996 was $7.4 billion. The total import value of fishery products was $19.0 billion in 2000. This is an increase of $2.0 billion from 1999. The total import value in 1996 was $13.1 billion. The total export value of fishery products was $10.9 billion in 2000. This is an increase of $892.1 million from 1999. The total export value in 1996 was $8.7 billion.

Consumers spent an estimated $54.4 billion for fishery products in 2000 including $38.0 billion at food service establishments, $16.1 billion for home consumption, and $317.8 million for industrial fish products. The commercial marine fishing industry contributed $27.8 billion to the U.S. Gross National Product in 2000. In 1996, consumers spent an estimated $41.2 billion including $27.8 billion at food service establishments, $13.2 billion for home consumption, and $283.9 billion for industrial fish products. The commercial marine fishing industry contributed $21.0 billion to the U.S. Gross National Product in 1996.

In both 1996 and 2000, Louisiana, Massachusetts, and Maine ranked in the top five states in value of commercial landings (Table 5.1). No HMS ranked in the top ten species for the United States in terms of landings or value for 1996 or 2000. The value of all HMS species (both Atlantic and Pacific) constituted 9.5 percent and 9.1 percent in 1996 and 2000, respectively, of the total U.S. finfish value. The ex-vessel values of HMS landings are listed in Table 5.2. The values of processed HMS products are listed in Table 5.3.

[3] All the information and data presented in this section were obtained from NMFS 1997a and NMFS 2001a. None of the 2000 prices in this section were converted to 1996 prices.

Table 5.1 **The top five states in the United States as ranked by value of commercial landings.** Source: NMFS, 1997a; NMFS, 2001a. 2000 dollars are not converted to 1996 dollars.

Rank in value of commercial landings	1996		2000	
	State	Value	State	Value
1	Alaska	$1.2 billion	Alaska	$957.0 million
2	Louisiana	$267.3 million	Louisiana	$401.1 million
3	Massachusetts	$231.4 million	Massachusetts	$288.3 million
4	Florida	$205.2 million	Maine	$275.1 million
5	Maine	$200.9 million	Texas	$232.4 million

Table 5.2 **U.S. domestic commercial landings in thousand dollars of HMS, by Species.** Note: Value includes Atlantic and Pacific landings. Source: NMFS, 1997a; NMFS, 2001a. 2000 dollars are not converted to 1996 dollars.

Species		1996	
Sharks	Dogfish	11,804	4,853
	Other	10,824	6,303
	Total	22,628	11,156
Swordfish		36,494	37,981
Tunas	Albacore	30,157	20,630
	Bigeye	23,673	24,862
	Bluefin	21,857	18,954
	Little (Tunny)	--	113
	Skipjack	7,084	2,551
	Yellowfin	27,060	27,651
	Unknown	425	416
	Total	110,256	95,176
Total value all HMS		169,378	144,313
Total value all finfish species		1,790,966	1,594,815

Table 5.3 **U.S. production in thousand dollars of HMS, by Species.** Note: Value includes Atlantic and Pacific caught fish. Source: NMFS, 1997a; NMFS, 2001a. 2000 dollars are not converted to 1996 dollars.

Product	Species		1996	2000
Fresh and Frozen Fillets	Shark		5,992	1,925
	Swordfish		34,277	29,284
	Tuna		62,456	54,741
	Total HMS		102,725	85,950
Fresh and Frozen Steaks	Shark		27	-
	Swordfish		12,725	11,301
	Tuna		14,669	12,457
	Total HMS		27,421	23,758
Total Fillets and Steaks, all finfish			885,665	829,534
Canned products	Tuna	Albacore	362,690	392,881
		Lightmeat	594,234	462,554
		Total	956,924	855,435
	Total, all finfish		1,298,489	1,194,085

5.1.2 Ex-Vessel Prices of Atlantic HMS

The average ex-vessel prices per lb dw for 1996 and 2000 by Atlantic HMS, major gear types, and area are summarized in Table 5.4. The average ex-vessel prices per lb dw for 1996 and 2000 by species and area are summarized in Table 5.5. For both of these tables, 2000 dollars are converted to 1996 dollars using the consumer price index conversion factor of 0.911. This conversion allows for easy comparisons in price. The ex-vessel price indices for some HMS for all commercial landings in the United States can be found in Table 5.6. The ex-vessel price depends on number of factors including the quality of the fish (e.g. freshness, fat content, method of storage), the weight of the fish, the supply of fish, and consumer demand.

Tables 5.4 and 5.5 indicate that the average ex-vessel prices for bigeye tuna have generally increased in across all regions. The gears used also influenced the average price of bigeye tuna

with longline-caught fish bringing the highest average value in 2000 in the Gulf of Mexico and South Atlantic while trawl-caught bigeye tuna received the highest average value in the mid-Atlantic. The mid-Atlantic region is the only region that had consistent uses of gear types in both 1996 and 2000. This region also showed a switch from high average values for handgear- and trawl-caught bigeye tuna to high average values for net- and trawl-caught bigeye tuna.

Average ex-vessel prices for bluefin tuna have generally declined in all regions (Tables 5.4 and 5.5). This is contrary to the ex-vessel value of bluefin tuna across the United States (Table 5.6). The highest average ex-vessel prices were found in the North Atlantic (Table 5.5). As with bigeye tuna, the combination of region and gear used to land bluefin tuna made a difference in the ex-vessel price (Table 5.4). In the Mid-Atlantic and North Atlantic, bluefin tuna caught with handgear had the highest average ex-vessel price in 2000. In 1996, bluefin tuna caught with handgear had higher average prices than those caught with longline, but purse seine-caught fish had the highest ex-vessel prices in the North Atlantic, and gillnet-caught fish (although few in number) had the highest average price in the Mid-Atlantic. The ex-vessel prices for bluefin tuna can be influenced by many factors, including market supply and the Japanese Yen/U.S. Dollar (¥/$) exchange rate. Figure 5.1 shows the average ¥/$ exchange rate, plotted with average ex-vessel bluefin tuna prices, from 1971 to 2000. Ex-vessel prices in 2000 were higher than in 1997, 1998, or 1999.

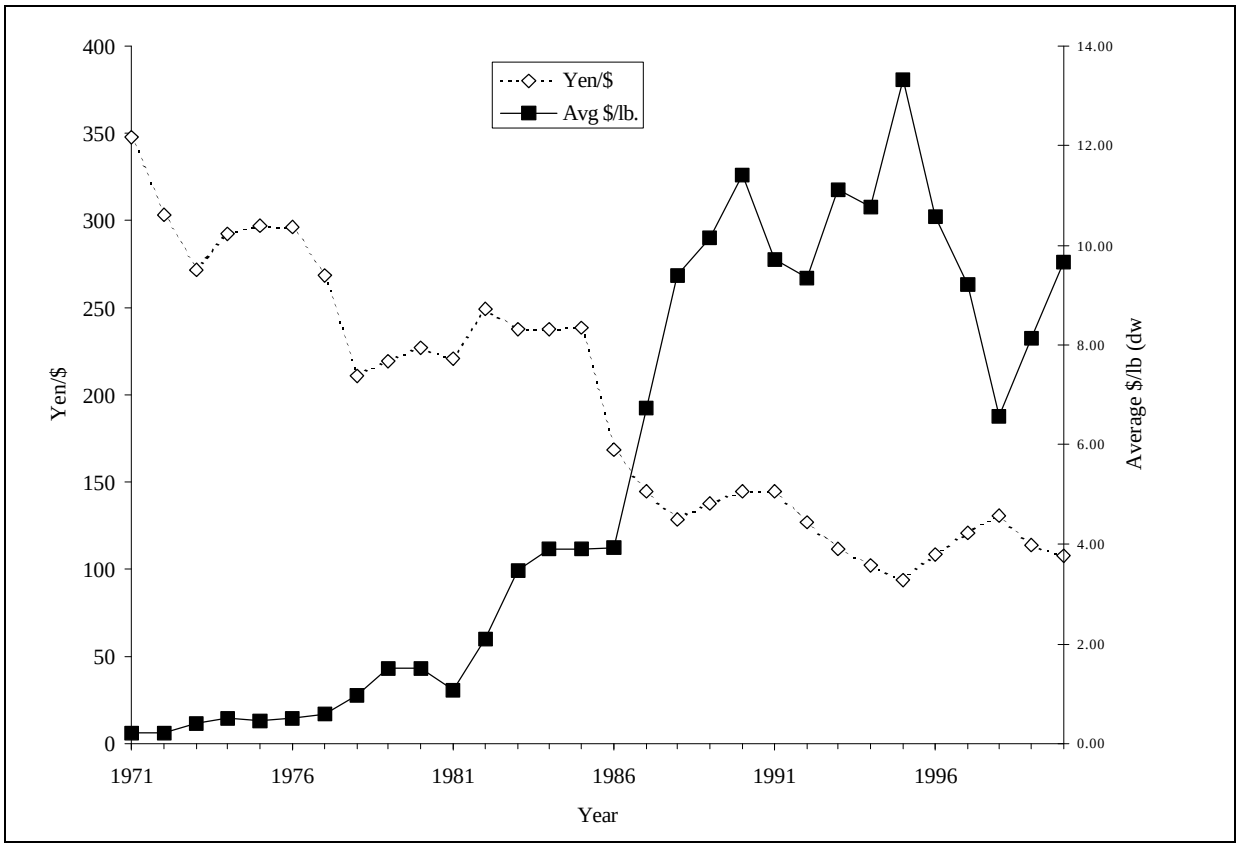
The average ex-vessel prices for yellowfin tuna have increased slightly in the South Atlantic and North Atlantic and have decreased in the mid-Atlantic (Table 5.5). No data was available from 1996 in the Gulf of Mexico region. In the United States, even though the ex-vessel price has increased since 1996, the ex-vessel price of all yellowfin tuna has generally decreased since 1995 (Table 5.6). Gears influenced the average prices, but changed between regions (Table 5.4).

The average ex-vessel prices for other tunas have generally decreased in all regions except the Gulf of Mexico where it increased. (Table 5.5). The average price of other tunas is the lowest in the Gulf of Mexico compared to the other regions. In both the South Atlantic and mid-Atlantic regions, the highest average price was obtained using longline gear, either bottom or pelagic (Table 5.4). In the North Atlantic, the highest average price was obtained using handgear.

In the South Atlantic region, the average ex-vessel price for swordfish has generally increased while the average ex-vessel price has decreased in the mid-Atlantic and North Atlantic regions (Table 5.5). Overall in the United States the ex-vessel price has decreased from 1996 to 1999 (Table 5.6). The highest average ex-vessel prices changed by area, region, and year and did not have a discernable pattern (Table 5.4).

The average ex-vessel price for large coastal sharks (LCS) increased in the Gulf of Mexico and North Atlantic regions and decreased slightly in the South and mid-Atlantic regions (Table 5.5). Average prices changed across regions and gear-type (Table 5.4).

The average ex-vessel price for pelagic sharks increased in the South Atlantic and decreased in the mid- and North Atlantic regions (Table 5.5). The highest average prices were



found with a variety of gears, mainly longline and handgear (Table 5.4).

Figure 5.1 **Average Annual Yen/$ Exchange Rate and Average U.S. BFT Ex-vessel $/lb (dw) for all gears: 1971-2000**. Source: Federal Reserve Bank (www.stls.frb.org) and Northeast Regional Office.

Small coastal sharks (SCS) have the lowest average ex-vessel price of all shark species but this price generally increased in all regions (Table 5.5). No data was available in the North Atlantic region for this species because these species are generally not found near the states in that region. Data was spotty in other regions, except the South Atlantic (Table 5.4).

The average ex-vessel price for shark fins has generally increased in the South and North Atlantic (Table 5.5). In the mid-Atlantic prices decreased slightly (Table 5.5). No data was available in 1996 in the Gulf of Mexico (Table 5.5). The highest average values are generally found in the Gulf of Mexico and North Atlantic regions (Table 5.4)

Table 5.7 summarizes the average value of the fishery based on average ex-vessel prices and the weight reported landed as reported in the United States National Report (NMFS 2001b), the 1997 and 2000 Shark Evaluation Reports (NMFS, 1997b; Cortes, 2000), information given to ICCAT (Cortes, 2001), as well as prices and weights reported to the Northeast Regional Office by Atlantic bluefin tuna dealers. These values indicate that the estimated total value of Atlantic HMS fisheries in 1996 dollars has increased 3.7 percent from approximately $68.1 million in 1996 to approximately $70.6 million in 2000. The bigeye tuna, bluefin tuna, yellowfin tuna, other tunas, and small coastal shark fisheries were the only Atlantic HMS fisheries that increased in value (by 1 percent, 8 percent, 97 percent, 77 percent, and 145 percent respectively). The value of the pelagic shark fishery decreased the most (71 percent) followed by the fisheries for swordfish (43 percent) and large coastal shark (33 percent).

Table 5.4 **Average ex-vessel prices per lb. dw for Atlantic HMS by gear and area.** 2000 dollars are converted to 1996 dollars using the consumer price index conversion factor of 0.911. Source: Dealer weigh out slips from the Southeast Fisheries Science Center and Northeast Fisheries Science Center, and bluefin tuna dealer reports from the Northeast Regional Office. HND=Handline, harpoon, and trolls, PLL=Pelagic longline, BLL=Bottom longline, Net=Gillnets and pound nets, TWL=Trawls. Gulf of Mexico includes: TX, LA, MS, AL, and the west coast of FL. S. Atlantic includes: east coast of FL. GA, SC, and NC dealers reporting to Southeast Fisheries Science Center. Mid-Atlantic includes: NC dealers reporting to Northeast Fisheries Science Center, VA, MD, DE, NJ, NY, and CT. N. Atlantic includes: RI, MA, NH, and ME. For bluefin tuna, all NC landings are included in the Mid-Atlantic.

Species	Gear	Gulf of Mexico		S. Atlantic		Mid-Atlantic			
		1996	2000	1996	2000	1996	2000	1996	
Bigeye tuna	HND	$0.68	$1.67	$1.30	$0.93	$5.74	$4.05	$3.69	$3.84
	PLL	-	$2.57	$1.33	$2.07	$3.51	$3.92	$3.36	$4.00
	BLL	-	$2.10	$1.30	$1.70	$2.61	$3.14	$2.15	-
	NET	-	-	$1.30	-	$3.87	$5.06	$3.31	$0.38
	TWL	-	-	-	-	$4.68	$5.17	$8.00	$3.53
Bluefin tuna	HND	-	$1.69	-	$7.28	$14.70	$6.01	$10.73	$9.13
	PLL	$5.83	-	$4.62	$4.88	$6.12	$5.22	$5.56	$5.15
	NET	-	-	-	-	$15.71	-	-	-
	P. Seine	-	-	-	-	-	-	$11.05	$7.11

Species	Gear	Gulf of Mexico		S. Atlantic		Mid-Atlantic			
		1996	2000	1996	2000	1996	2000	1996	
Yellowfin tuna	HND	-	$2.26	$1.55	$1.42	$2.49	$1.95	$2.50	$2.42
	PLL	-	$3.10	$1.63	$2.03	$2.51	$2.11	$2.14	$2.52
	BLL	-	$3.35	$1.41	$2.09	$3.28	$1.69	$2.03	$2.11
	NET	-	-	$1.07	-	$2.03	$1.61	$2.43	-
	TWL	-	-	-	-	$2.40	$1.42	$2.67	$2.10
Other tunas	HND	$0.28	$0.69	$0.75	$0.54	$1.34	$0.86	$1.90	$1.45
	PLL	-	$0.66	$0.79	$1.19	$1.84	$0.94	$0.98	$1.03
	BLL	-	$0.77	$0.87	$1.36	-	$1.07	$1.50	$0.46
	NET	$0.38	$0.53	$0.35	$0.18	$0.45	$0.40	$0.73	$0.46
	TWL	-	$0.56	$0.31	$0.23	$0.45	$0.64	$1.08	$0.20
Swordfish	HND	-	$3.56	$2.48	$3.57	$3.61	$2.96	$5.20	$7.29
	PLL	-	$3.03	$2.88	$2.84	$4.31	$3.27	$4.01	$3.34
	BLL	-	$2.82	$2.46	$3.12	$4.88	$2.65	$3.07	$1.82
	NET	-	-	-	-	$4.63	-	$5.62	-
	TWL	-	-	-	-	$4.56	$3.59	$3.08	$3.69
Large Coastal Sharks	HND	$0.23	$0.54	$0.72	$0.54	$0.74	$0.46	-	-
	PLL	-	$0.44	$1.54	$1.10	$0.58	$0.41	$1.03	$0.91
	BLL	$0.60	$0.39	$0.73	$0.71	$0.54	$0.37	$0.99	$0.59
	NET	$0.38	$0.44	$1.30	$0.83	$0.45	$0.48	$0.83	$0.97
	TWL	$0.15	$0.14	$0.86	$0.45	$0.47	$0.66	$0.80	$0.98
Pelagic sharks	HND	-	$1.26	$0.82	$0.71	$1.47	$1.28	$1.60	-
	PLL	-	$1.16	$0.68	$0.87	$1.25	$1.32	$1.26	$1.26
	BLL	-	$1.19	$0.59	$0.82	$1.47	$1.13	$1.85	$1.37
	NET	-	-	$0.33	$0.32	$0.99	$0.93	$1.12	$0.75
	TWL	-	-	-	$0.18	$1.00	$0.82	$0.96	$0.88
Small Coastal sharks	HND	-	$0.85	$0.25	$0.36	-	$0.35	-	-
	PLL	-	$0.43	-	$0.52	$0.25	$0.18	-	-
	BLL	-	$0.37	-	$0.51	-	-	-	-
	NET	-	-	$0.25	$0.44	-	$0.36	-	-
	TWL	-	-	-	$0.21	-	-	-	-
Shark fins	HND	-	$19.65	$14.00	$10.86	$2.74	$5.62	-	-

Species	Gear	Gulf of Mexico		S. Atlantic		Mid-Atlantic			
		1996	2000	1996	2000	1996	2000	1996	
	PLL	-	$14.26	-	$9.42	$7.79	$7.81	$4.25	$5.05
	BLL	-	$14.48	$14.00	$16.01	$8.00	-	$3.00	$22.95
	NET	-	$14.12	-	$6.33	$4.77	$3.08	$1.96	$2.20
	TWL	-	$8.35	$9.11	-	$1.99	$1.34	$2.32	$2.73

Table 5.5 **Average ex-vessel prices per lb. for Atlantic HMS by area.** 2000 dollars are converted to 1996 dollars using the consumer price index conversion factor of 0.911.

Species	Gulf of Mexico		S. Atlantic		Mid-Atlantic			
	1996	2000	1996	2000	1996	2000	1996	
Bigeye tuna	$0.68	$2.06	$1.32	$1.80	$3.99	$4.00	$3.59	$3.75
Bluefin tuna	$5.83	$1.69	$4.62	$6.22	$9.48	$5.45	$10.78	$8.14
Yellowfin tuna	-	$2.93	$1.56	$1.71	$2.43	$1.93	$2.35	$2.41
Other tunas	$0.29	$0.67	$0.62	$0.53	$1.10	$0.69	$1.31	$0.85
Swordfish	-	$2.96	$2.79	$2.95	$4.43	$3.34	$4.09	$3.53
Large coastal sharks	$0.21	$0.39	$1.02	$0.71	$0.55	$0.48	$0.88	$0.92
Pelagic sharks	-	$1.19	$0.62	$0.69	$1.21	$1.09	$1.31	$1.00
Small coastal sharks	-	$0.47	$0.25	$0.44	$0.25	$0.35	-	-
Shark fins	-	$14.57	$10.74	$12.90	$4.60	$4.46	$2.69	$6.22

Table 5.6 **Indices of ex-vessel prices for HMS, except sharks, by years 1993-2000.** 1982 is the base year and has a value of 100. 1996 and 2000 are in bold for easier referencing. Note: Indices based on Atlantic and Pacific ex-vessel prices. Source: NMFS, 2001a.

Year	Swordfish	Albacore	Bluefin	Skipjack	Yellowfin	
1993	92	132	766	85	112	117
1994	107	125	666	127	205	181
1995	104	120	954	83	283	212
1996	**103**	**130**	**229**	**82**	**113**	**105**
1997	91	124	353	93	126	118
1998	70	99	295	79	100	96

Year	Swordfish	Albacore	Bluefin	Skipjack	Yellowfin	Other Tuna
1999	76	125	736	63	88	94
2000	**78**	**134**	**760**	**52**	**122**	**109**

Table 5.7 **Estimates of the total ex-vessel value of Atlantic HMS fisheries.** Note: Average ex-vessel prices are the average of the values noted in Table 5.5 and may have some weighting errors, except for bluefin tuna which is based on a fleet-wide average. 2000 prices are converted to 1996 dollars using a conversion factor of .911. Sources: NMFS, 1997b; NMFS, 2001b; Cortes, 2000; Cortes, 2001; Cortes, 2001, pers. communication; and bluefin tuna dealer reports from the Northeast Regional Office.

Species	1996					
	Ex-vessel price ($/lb dw)	Weight (lb dw)	Fishery Value	Ex-vessel price ($/lb dw)	Weight (lb dw)	
Bigeye tuna	$2.40	1,212,706	$2,904,432	$2.90	1,012,352	$2,935,821
Bluefin tuna	$10.58	1,652,989	$17,488,624	$8.80	2,137,580	$18,810,704
Yellowfin tuna	$2.11	6,679,938	$14,116,936	$2.24	12,435,708	$27,855,986
Other tunas	$0.83	368,433	$305,799	$0.68	795,243	$540,765
Total tuna	--	--	$34,815,791	--	--	$50,143,276
Swordfish	$3.77	7,170,619	$27,033,234	$3.20	4,832,384	$15,463,629
Large coastal sharks	$0.67	5,262,314	$3,499,439	$0.62	3,762,000	$2,332,440
Pelagic sharks	$1.05	695,531	$727,989	$0.99	215,005	$212,855
Small coastal sharks	$0.25	460,667	$115,167	$0.42	672,245*	$282,343
Shark fins (weight = 5% of all sharks landed)	$6.01	320,926	$1,928,763	$9.54	232,462	$2,217,687

Total sharks	--	--	$6,271,358	--	--	$5,045,325
Total HMS	--	--	$68,120,382	--	--	$70,652,230

*1999 data used. 2000 data not available.

5.1.3 Wholesale Prices of Atlantic HMS

Currently, NMFS does not collect wholesale price information from dealers. However, the wholesale price of some fish species is available off the web (www.st.nmfs.gov/st1/market_news/index.html). The wholesale prices presented in Tables 5.8 through 5.11 are from the annual reports of the Fulton Fish Market. As with ex-vessel prices, wholesale prices depend on a number of factors including the quality of the fish (e.g., freshness, fat content, method of storage), the weight of the fish, the supply of fish, and consumer demand.

Tables 5.8 through 5.11 indicate that the average wholesale price, as reported by the Fulton Fish Market, of HMS sold in Atlantic and Gulf of Mexico states decreased by approximately 21 percent from 1996 to 2000. The wholesale price of swordfish weighing between 26 and 49 lbs decreased the most (40.7 percent), followed by the wholesale price of swordfish weighing between 50 and 99 lbs (28.6 percent) and the wholesale price of thresher sharks (25.0 percent). The wholesale price of mako sharks was the only increase (4.7 percent). The wholesale price of blacktip sharks decreased the least (9.5 percent). These tables also indicate that of all HMS, sharks appear to be worth the least in terms of wholesale prices while yellowfin tuna is worth the most. Additionally, swordfish and tunas that are cut into pieces are generally worth more than a whole fish, although the larger fish are generally worth more than smaller fish.

Table 5.8 **Average fresh wholesale price per lb of sharks sold in Atlantic and Gulf of Mexico states as reported by the Fulton Fish Market**. Note: 2000 dollars are converted to 1996 dollars using the conversion factor 0.911. "0.00" means that some information was provided for that year and species. " - " means that no information was provided for that year and species.

State	Species	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
FL	Blacktip	96	0.00	1.00	0.00	1.25	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Mako	96	0.00	2.50	0.00	0.00	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Thresher	96	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-

State	Species	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NC	Blacktip	96	1.13	1.07	1.01	1.25	1.14	0.89	0.72	1.06	0.00	0.00	1.05	0.00
		00	1.14	1.14	0.99	0.91	0.00	0.00	0.58	0.62	0.00	0.00	0.00	0.00
	Mako	96	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	3.19	2.73	3.19	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Thresher	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.91
NY	Blacktip	96	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
VA	Blacktip	96	0.00	1.01	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	1.14	0.00	0.00	0.91	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00
	Mako	96	0.00	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Thresher	96	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-

Table 5.9 **Average fresh wholesale price per lb of swordfish sold in Atlantic and Gulf of Mexico states as reported by the Fulton Fish Market**. Note: 2000 dollars are converted to 1996 dollars using the conversion factor 0.911. "0.00" means that some information was provided for that year and species. " - " means that no information was provided for that year and species.

State	Size	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
CT	Cuts	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	0.00	0.00	0.00	5.92	0.00	5.92	0.00	0.00	4.55	0.00
FL	100# Up	96	0.00	6.58	6.25	6.80	6.38	6.58	7.13	6.17	6.00	0.00	6.50	0.00
		00	4.87	4.52	4.94	4.94	4.86	5.40	4.71	5.01	5.92	0.00	3.87	4.25
	50-99#	96	0.00	0.00	6.25	7.00	5.63	6.38	6.75	0.00	5.50	0.00	6.00	0.00
		00	4.78	4.00	4.38	4.17	3.80	4.61	4.10	0.00	5.01	0.00	3.19	3.19
	26-49#	96	0.00	0.00	5.75	6.00	6.00	6.00	6.00	0.00	0.00	0.00	5.50	0.00
		00	3.64	3.64	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cuts	96	0.00	7.38	7.50	8.17	7.88	8.00	8.50	8.50	7.50	0.00	8.75	0.00
		00	6.28	5.37	6.27	6.08	5.99	6.38	5.47	6.38	0.00	0.00	5.01	5.24
LA	100# Up	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.73	0.00

State	Size	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Cuts	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.56	0.00
MA	100# Up	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	5.50	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	50-99#	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.75	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Cuts	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	7.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
NC	100# Up	96	0.00	5.75	0.00	6.63	6.25	0.00	0.00	0.00	0.00	6.13	5.25	5.65
		00	0.00	0.00	5.24	5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.24
	50-99#	96	0.00	5.13	0.00	7.50	6.38	0.00	0.00	0.00	0.00	5.63	4.75	5.30
		00	0.00	0.00	5.01	5.69	5.01	0.00	0.00	0.00	0.00	0.00	0.00	4.56
	26-49#	96	0.00	5.25	0.00	7.25	5.75	0.00	0.00	0.00	0.00	5.13	4.00	4.75
		00	0.00	0.00	0.00	0.00	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cuts	96	0.00	6.88	0.00	8.13	7.50	0.00	0.00	0.00	0.00	7.13	7.13	6.50
		00	0.00	0.00	6.72	6.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
NJ	100# Up	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	4.78	5.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.24	0.00	0.00
	50-99#	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cuts	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	6.38	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.38	0.00	0.00
NY	100# Up	96	0.00	0.00	0.00	0.00	0.00	0.00	7.38	6.50	6.00	6.38	6.00	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	4.45	5.05	5.62	5.13	3.64	0.00
	50-99#	96	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	5.63	5.63	5.75	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	4.10	4.06	4.78	4.10	3.19	0.00
	26-49#	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.75	5.13	5.25	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.26	0.00	0.00	0.00	0.00
	Cuts	96	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	7.50	7.50	7.50	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.09	6.38	0.00	4.56	0.00
SC	100# Up	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	4.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

State	Size	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	50-99#	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	26-49#	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 5.10 **Average fresh wholesale price per lb of yellowfin tuna (Y) sold in Atlantic and Gulf of Mexico states as reported by the Fulton Fish Market**. Note: 2000 dollars are converted to 1996 dollars using the conversion factor 0.911. #'s indicate quality (1 is highest, 3 is lowest). "BTF" is "by the fish".

State	Species and Size	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
FL	Y#2BTF	96	0.00	5.50	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00
	Y#2cut	96	0.00	7.50	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	0.00	0.00	0.00
LA	Y#1BTF	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	0.00	0.00	5.24	0.00	5.13	0.00	0.00	0.00	0.00	0.00
	Y#1cut	96	-	-	-	-	-	-	-	-	-	-	-	-
		00	0.00	0.00	0.00	0.00	7.52	0.00	7.06	0.00	0.00	0.00	0.00	0.00
	Y#2BTF	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00	0.00	5.00
		00	0.00	0.00	0.00	0.00	3.94	0.00	3.78	3.87	4.55	0.00	0.00	0.00
	Y#2cut	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	7.00
		00	0.00	0.00	0.00	0.00	5.77	0.00	5.51	5.69	6.38	0.00	0.00	0.00
NC	Y#2BTF	96	0.00	4.75	0.00	6.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55
	Y#2cut	96	0.00	6.50	0.00	8.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.38
	Y20-30# BTF	96	2.08	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y30-40# BTF	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y40-50# BTF	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-

State	Species and Size	Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NJ	Y#1BTF	96	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y#1cut	96	0.00	0.00	0.00	9.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y#2BTF	96	0.00	0.00	0.00	5.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00
	Y#2cut	96	0.00	0.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
NY	Y#1BTF	96	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y#1cut	96	0.00	0.00	0.00	9.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y#2BTF	96	4.75	4.75	0.00	5.50	0.00	4.13	4.63	3.83	3.63	3.58	3.38	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00
	Y#2cut	96	0.00	7.00	0.00	7.50	0.00	5.88	6.38	5.60	5.56	5.25	5.13	0.00
		00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.01	0.00	0.00	0.00
	Y40-60# BTF	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.50	0.00	2.50	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
TX	Y#2BTF	96	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y#2cut	96	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y40-60#BTF	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-
	Y60-80# BTF	96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00	0.00	0.00	0.00
		00	-	-	-	-	-	-	-	-	-	-	-	-

Table 5.11 **The overall average wholesale price per lb of fresh HMS sold in Atlantic and Gulf of Mexico states as reported by the Fulton Fish Market.** Note: 1999 dollars are converted to 1996 dollars using the conversion factor 0.94. 2000 dollars are converted to 1996 dollars using the conversion factor 0.911. #'s indicate quality (1 is highest, 3 is lowest); BTF is by the fish. No data reported in 1996 or 2000 for bigeye tuna or #3 yellowfin tuna.

Species	Description	1996 Price/lb	1999 Price/lb	2000 Price/lb	Percent Change 1996 to 2000
Blacktip	--	$1.05	$0.98	$0.95	-9.5%
Mako	--	$2.77	$2.58	$2.90	4.7%
Thresher	--	$1.00	$0.86	$0.75	-25.0%
Swordfish	100# and up	$6.28	$4.94	$4.79	-23.7%
	50-99#	$6.02	$4.27	$4.30	-28.6%
	26-49#	$5.50	$3.16	$3.26	-40.7%
	Cuts	$7.74	$6.16	$5.96	-23.0%
Yellowfin tuna	#1: BTF	$7.00	$5.61	$5.18	-26.0%
	#1: Cuts	$9.38	$7.74	$7.29	-22.3%
	#2: BTF	$5.00	$3.99	$3.97	-20.6%
	#2: Cuts	$6.52	$5.85	$5.65	-13.3%
	#3: BTF	--	$2.82	--	--
	#3: Cuts	--	$4.23	--	--
Bigeye tuna	#1: BTF	--	$3.76	--	--
	#1: Cuts	--	$5.17	--	--
	#2: BTF	--	$4.00	--	--
	#2: Cuts	--	$5.64	--	--

5.1.4 Fishing Costs and Revenues for Atlantic Commercial Fishermen

Except for pelagic longline gear, there are little additional data or new reports regarding fishing costs and revenues. Unless otherwise stated, the information included here is a summary of the information included in previous SAFE reports and the HMS FMP.

In general, a vessel owner will need to pay for a number of supplies for each fishing trip (e.g. hooks, bait, light sticks, ice, fuel, groceries, etc.), for vessel and gear repairs as needed, for crew members (the number of crew members may change depending on the type of fishing trip and the gear used), and for the proper permits (the information here does not include the price of the permit which is small for an annual renewal but may be large for someone trying to enter a

limited access fishery). Fishing trips themselves can be prohibitively expensive and there is no guarantee that the revenues from the harvest will be enough to cover the owner's expenses for that trip.

Pelagic longline

The amount of data available for this gear type is increasing although current information is needed. Since 1996, NMFS has been collecting economic information on a per trip basis through submission of voluntary forms in the pelagic logbook maintained in the Southeast Fisheries Science Center. Compared to the number of logbook reports, few economic data are collected (Table 5.12). NMFS may require this information in the future (64 FR 55900, October 15, 1999) in order to improve the economic data available for all HMS fisheries. There are now a few studies that have examined this voluntary data (Larkin *et al*.,1998; Ward and Hanson,1999; Larkin *et al*., 2000; and Larkin *et al*., in press). Additionally, in 1998, Porter *et al*., 2001, conducted a survey of pelagic longline vessel fishing operations in 1997. Because Larkin *et al*. (1998) and Ward and Hanson (1999) were discussed in last year's SAFE report, those studies will not be discussed in this SAFE report.

Larkin *et al.* (2000) examined 1996 logbooks and the 1996 voluntary forms and found that net returns to a vessel owner varied substantially depending on the vessel size and the fishing behavior (i.e. sets per trip, fishing location, season, target species). They found that out of 3,255 pelagic longline trips reported, 642 pelagic longline trips provided the voluntary economic information. From all trips, four species (swordfish, yellowfin tuna, dolphin fish, and sandbar sharks) comprised 77 percent of all species landed and accounted for 84 percent of the total gross revenues for the fleet. Larkin *et al*.(2000) suggest using median values (half of the fleet is less than this value and half is above) instead of mean values (the average of all vessels) given the high degree of skewness to the data. For example, the mean owner's share of a trip is $4,412 while the median is $2,242. Larkin *et al*. (2000) suggest that the median values identify the characteristics of the majority of the fleet better than the mean which can be influenced by outliers (a few vessels that may not be similar to the rest of the fleet). A summary of the trip characteristics can be found in Table 5.13. Generally, vessels that were between 46 and 64 feet in length, had between 10 and 21 sets per trip, fished in the second quarter, fished in the Caribbean, or had more than 75 percent of their gross revenues from swordfish had the highest net return to the owner (ranging from $3,187 to $13,097 per trip). Vessels that were less than 45 feet in length, had between one and three sets per trip, fished in the first quarter, fished between North Carolina and Miami, FL, or had between 25 and 50 percent of their gross revenues from swordfish had the lowest net return to the owner (ranging from $642 to $1,885 per trip).

Larkin *et al*. (in press) used the above data in a cost function model to determine if and how captains decide on levels of effort in order to minimize variable costs per trip. They found

that on average increasing the price of bait increased the demand from light sticks (i.e. these inputs are complements); changing the price of fuel did not affect any purchase decisions; and for every additional 10 feet in length, vessel operators demanded an additional 149 light sticks, 319 pounds of bait, and 540 gallons of fuel per trip. They also found that on average increasing swordfish landings required additional light sticks, bait and fuel. Increasing tuna landings reduced the demand for light sticks while increasing the demand for bait and fuel. Additionally, some inputs (i.e. light sticks, bait demand, and fuel demand) varied significantly with region, quarter, number of sets, and target species. They also found that if the price of light sticks or bait increases, the quantity demanded falls, particularly for light sticks (i.e. own-price elasticities are negative). However, elasticities could also change depending on region, target species, or number of trips but did not change between seasons.

Porter *et al*. (2001) conducted a survey of 147 vessels along the Atlantic and Gulf of Mexico (110 surveys were completed) in 1998 regarding 1997 operations. The survey consisted of 55 questions divided into five categories (vessel characteristics, fishing and targeting strategies, demographics, comments about regulations, and economic information of variable and fixed costs). The vessels interviewed were diverse in vessel size and target species (swordfish, tuna, mixed). Information was also used from trip tickets and logbooks. They found that on average, the average vessel received approximately $250,000 annual gross revenues, annual variable costs were approximately $190,000, and annual fixed costs were approximately $50,000. Thus, vessels were left with approximately $8,000 to cover depreciation on the vessel and the vessel owner lost approximately $3,500 per year. On a per trip level, gross revenues averaged $22,000 and trip expenses, including labor, were $16,000. Labor cost the owner the most (43 %) followed by gear. Generally trip returns were divided so the vessel owner received 43% and the captain and crew 57%. Along with other studies, Porter *et al*. (2001) noted differences between region, vessel size, and target species (Table 5.14). Porter *et al*. (2001) also noted that 1997 was probably a financially poor year due to a reduction in swordfish quota and a subsequent closure of the fishery.

In all, the new studies are consistent with Larkin *et al*. (1998) and Hanson and Ward (1999) in that characteristics of fishing trips can influence the success of the trip and that pelagic longline fishermen do not have large profits.

Table 5.12 Total Number of Logbook and Weigh-Out Observations. Source: Ward and Hanson, 1999.

	1996	**1997**	
Set Form	17,996	15,867	N/A
Weigh-Out Form	21,976	21,792	N/A
Trip Summary	1,310	624	383 (incomplete)

Table 5.13 **Characteristics of a 1996 pelagic longline trip.** Numbers are the median, not the mean. A median gross revenues of $0 means half the fleet earned $0 from that species and half the fleet earned more than $0 for that species. Not all characteristics studied are summarized. Source: Larkin *et al*., 2000.

Variable	All trips	Vessel length (feet)			Number of sets per trip				Quarter				Region			
		<=45	46-64	65-86	1-3	4-6	7-9	10-21	Jan. - Mar.	Apr. - June	Jul. - Sep.	Oct. - Dec.	ME-VA	NC-FL	TX-FL	Carib - bean
Number of trips	642	192	234	216	194	197	153	98	195	184	175	88	86	189	319	47
Number of crew	4	2	3	5	2	4	4	4	4	4	3	4	3	2	4	4
Swordfish gross revenues	$2,157	$2,157	$1,232	$3,081	$616	$1,849	$4,314	$9,089	$4,005	$2,003	$616	$3,697	$462	$2,157	$1,849	$2,2184
BAYS tunas gross revenues	$1,917	$0	$1,590	$6,282	$0	$2,296	$4,794	$8,242	$883	$2,561	$3,179	$2,128	$3,961	$0	$3,179	$2,447
LCS gross revenues	$0	$48	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pelagic sharks gross revenues	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$192	$0	$0	$24
Other species gross revenues	$306	$91	$378	$474	$0	$365	$711	$735	$108	$1,023	$397	$187	$91	$183	$412	$227
Total Gross Revenues	$8,916	$4,168	$9,506	$12,831	$2,507	$8,395	$14,173	$24,779	$6,761	$11,027	$7,395	$9,378	$7,060	$4,826	$9,387	$26,227
Fuel costs	$1,031	$251	$980	$1,866	$219	$1,095	$1,294	$2,406	$988	$1,058	$760	$1,417	$753	$410	$1,266	$1,970
Bait costs	$960	$258	$900	$2,250	$258	$960	$1,500	$2,685	$1,079	$1,035	$712	$1,037	$965	$590	$1,000	$2,705
Ice costs	$256	$90	$300	$400	$96	$280	$300	$386	$225	$262	$260	$300	$185	$150	$330	$300
Light sticks	$360	$198	$186	$827	$99	$560	$667	$1,597	$560	$421	$132	$631	$94	$198	$597	$1,295
Miscellaneous costs	$305	$57	$417	$1,405	$43	$526	$1,009	$1,591	$471	$363	$190	$87	$171	$42	$821	$1,560
Total costs	$3,666	$1,158	$3,352	$8,410	$981	$3,588	$4,264	$9,117	$4,188	$3,861	$2,817	$5,309	$2,831	$1,928	$5,230	$10,100

Variable	All trips	Vessel length (feet)			Number of sets per trip				Quarter				MD-VA
		<=45	46-64	65-86	1-3	4-6	7-9	10-21	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.	Oct. - Dec.	
Net return to owner	$2,242	$1,771	$3,187	$2,643	$642	$2,804	$5,291	$13,097	$1,472	$3,449	$2,097	$3,227	$2,(

Table 5.14 **Average Characteristics of a 1997 pelagic longline trip.** Not all of the characteristics studied are summarized here. Source: Porter *et al*. (2001)

Variable	All vessels	Region							
		New England	Mid-Atlantic	South Atlantic	Gulf of Mexico	Caribbean	<=50	51 to 95	
Length of trip	13	36	12	8	14	28	7	14	24
Gross revenues	$22,364	$81,569	$20,151	$11,242	$16,437	$67,440	$8,739	$25,076	$47,184
Fuel costs	$2,071	$9,209	$2,154	$717	$1,703	$5,601	$483	$1,713	$6,244
Ice costs	$297	$378	$252	$191	$469	$372	$232	$323	$391
Bait costs	$1,559	$4,779	$1,488	$882	$1,406	$3,771	$708	$1,694	$3,173
Light sticks	$738	$3,129	$635	$392	$490	$2,164	$318	$656	$1,815
Food costs	$897	$2,943	$817	$438	$881	$2,270	$349	$984	$1,939
Gear costs	$2,336	$6,800	$2,147	$1,381	$2,067	$5,808	$1,136	$2,608	$4,462
Other costs	$442	$1,687	$414	$206	$342	$1,293	$183	$413	$1,067
Total variable costs (not labor)	$9,634	$34,725	$8,839	$5,007	$7,867	$25,880	$3,916	$10,027	$21,468
Total labor costs	$7,173	$26,071	$6,558	$3,670	$4,727	$22,620	$2,693	$8,457	$14,591
Net return	$5,556	$20,772	$4,753	$2,565	$3,843	$18,940	$2,130	$6,593	$11,125

Bottom Longline

This gear is mainly used to target sharks. The fishing costs for this gear type should be similar to the fishing costs for pelagic longline. McHugh and Murray (1997) found that a seven day trip had an average profit (owner's share of catch minus all expenses) of $1,589. Vessels between 40 and 49 feet had an average profit of $1,975 for a seven day trip. Additional data are needed for this fishery.

Purse Seine

NMFS is continuing its efforts to collect economic data on the Atlantic tunas purse seine fishery. A voluntary survey has been distributed to the owners of the five Atlantic tuna purse seine vessels. The study is still in the data collection and compilation stage, and NMFS plans to collect additional data from the purse seine vessels in order have preliminary results available for next year's SAFE report. The purpose of the survey is to collect up-to-date information regarding the seasonal and/or yearly costs incurred by the purse seine fleet. Accurate cost information will be particularly useful when addressing the impact of regulations on Atlantic tuna fishery participants, including purse seiners, to ensure that the agency conducts adequate analyses as required under various legal mandates.

Handgear

The commercial handgear fishery targets mainly tunas, particularly bluefin tuna. For this reason, most of the economic information regarding this fishery is related to bluefin tuna. In 1999, researchers at the University of Rhode Island finalized a project that: 1) evaluated the influence of factors such as quantity supplied, time of harvest, and quality characteristics on the price of U.S. Atlantic bluefin tuna sold on the Japanese wholesale market; 2) determined the relationship between prices in Japan and ex-vessel prices received by U.S. fishermen, and 3) determined how different fishery management options influence gross revenues received by U.S. fishermen. The final report concluded that regulations should be developed and implemented that would help the fishery avoid capture seasons that are condensed into sporadic intervals. The report also recommended that consumer preferences should be considered for the efficient exploitation and trade of bluefin tuna in order to help increase revenues for the industry and to eliminate economic inefficiencies generated by public management. Specifically, the report suggests a more dispersed allocation of harvest planned in conjunction with periods of the year when fish seem to possess consumer-favored characteristics, such as high fat content. The researchers at the University of Rhode Island have continued their work, concentrating on the following research objectives: 1) to formally evaluate, using a hedonic model, the degree to which price of U.S. fresh bluefin tuna is determined by those quality attributes of each fish, rather than by just the quantity supplied; 2) to attempt to show how the quality of U.S. bluefin tuna depends

on harvest practices; and 3) to combine the results from the hedonic model and production model estimates to find quota allocations that could result in the highest payoffs to the industry.

Gillnets

In 1999, the use of pelagic driftnets was prohibited in both the swordfish and Atlantic tunas fisheries. Currently the only fishermen allowed to use this gear are fishermen targeting sharks. NMFS knows of six vessels that actively participated in this fishery in recent years. NMFS currently has very little economic information on the fishing costs related to this gear type. However, it is expected that the fishing costs per trip would be less than those of a pelagic or bottom longline fishing trip because the trips are usually shorter (an average of 18 hours per trip), vessels do not fish far offshore (within 30 nautical miles from port), and the gear does not need hooks, bait, or light sticks. Other costs may be incurred as the holes in the gear will need to be repaired regularly. NMFS estimates based on recent landings and average ex-vessel prices that most drift gillnet vessel has a gross revenues per trip of $380 to $9,000 with an average of $3,700.

Additionally, some shark drift gillnet vessels fish in a strike-net method. This method requires the use of a small vessel (used to run the net around the school of sharks) and a spotter plane. While the cost per trip is higher than the traditional drift gillnet method, bycatch in this method is extremely low, catch rates of the target species is high, and vessels can complete a set in less time. NMFS estimates that the smaller vessel could cost between $2,000 and $14,000 to buy. Because these second vessels need to be sturdy enough to hold the gillnet and move quicky around the school of sharks, it is likely that vessel owners would need to re-fit any vessel bought for this purpose. Additionally, a second vessel means additional fuel and maintenance costs. Spotter planes in other fisheries are paid based on the percentage of the proceeds from the trip, generally 10 to 25 percent of gross revenues. Thus, given the average gross revenues per trip, converting a drift gillnet vessel to a strikenet vessel could be prohibitive.

5.1.5 Costs and Revenues for Atlantic Dealers

NMFS does not currently have information regarding the costs to HMS dealers. In general, dealer costs include: paying the vessel owner/captain for fish; paying employees to process the fish; rent or mortgage on the appropriate building; and supplies to process the fish. Some dealers may provide loans to the vessel owner money for vessel repairs, fuel, ice, bait, etc. In general, fishing costs and revenues of dealers are not as variable or unpredictable as those of a vessel owner; however, dealer costs may fluctuate depending upon supply of fish, labor costs and equipment repair.

Although NMFS does not have specifics regarding HMS dealers, there is some information on the number of employees for processors and wholesalers in the United States provided in the HMS FMP (Section 2.2.4). Table 5.15 provides a summary of available information. Recent trends indicate that while the number of plants have decreased, the number of employees have increased. As in 1998, Florida and Massachusetts appear to have the largest number of plants and employees on the Atlantic coast.

NMFS also has information regarding the percent mark-up paid by consumers. A mark-up or margin is the difference between the price paid for the product by the consumer and the wholesale or dockside value for an equivalent weight of the product. This information is presented in Table 5.16. In both 1996 and 1999, the mark up was over 90 percent; however, in 2000 the mark-up decreased to 76 percent.

Table 5.15 The number of plants and employees for Atlantic processors and wholesalers , by State, in 1996 and 1999. Source: NMFS, 1998; NMFS, 2001a. 2000 data is not yet available.

State	1996			
	Number of plants	Number of employees	Number of plants	
Maine	267	3,353	278	3,350
New Hampshire	37	455	36	531
Massachusetts	374	4,964	369	4,988
Rhode Island	82	793	71	843
Connecticut	44	339	42	378
New York	339	2,622	355	2,748
New Jersey	150	2,090	16	1,168
Pennsylvania	68	2,017	71	2,796
Delaware	-	-	-	-
District of Columbia	7	73	6	94
Maryland	126	1,889	106	1,615
Virginia	129	2,115	116	2,187
N. Carolina	145	2,064	137	2,127
S. Carolina	37	337	35	265

State	1996			
	Number of plants	Number of employees	Number of plants	
Georgia	66	1,649	64	1,694
Florida	504	5,794	462	6,465
Alabama	144	2,425	128	2,144
Mississippi	64	1,142	72	2,956
Louisiana	311	4,280	283	3,862
Texas	136	2,384	139	2,603
Total	3,030	40,785	2,786	42,814

Table 5.16 **Summary of the mark-up and consumer expenditure for the primary wholesale and processing of domestic commercial marine fishery products: 1996 and 2000.** Source: NMFS, 1997a and NMFS, 2001a.

	1996	2000
Purchase of Fishery inputs	$5,377,442	$6,726,179
Percent mark-up of fishery inputs	96.6%	76.4%
Total mark-up	$5,192,619	$5,138,583
Total value of fishery inputs	$10,570,061	$11,864,762

5.2 Recreational Fisheries

5.2.1 Economics of Recreational Fisheries across the United States in General[4]

Although NMFS believes that recreational fisheries have a large influence on the economies of coastal communities, NMFS does not have a lot of current information on the costs and expenditures of anglers or the businesses that rely on them. An economic survey done by the

[4] Unless stated otherwise, all the information and data presented in this section is from NMFS 1997a and NMFS 2001a.

U.S. Fish and Wildlife Service[5] in 1996 found that 9.4 million saltwater anglers went on approximately 87 million fishing trips and spent approximately $8.1 billion (USFWS ,1997). Expenditures included lodging, transportation to and from the coastal community, vessel fees, equipment rental, bait, auxiliary purchases (e.g. binoculars, cameras, film, foul weather clothing, etc.), and fishing licenses (USFWS, 1997). Saltwater anglers spent $4.6 billion on trip related costs and $3.4 billion on equipment (USFWS, 1997). Approximately 76 percent of the saltwater anglers surveyed fished in their home state (USFWS, 1997). The next USFWS survey was expected in 2001.

The American Sportfish Association (ASA) also has a report listing the 1996 economic impact of sportfishing on specific states. This report states that all sportfishing has an overall economic importance of $108.4 billion dollars (ASA, 1997). Texas, Florida, New York, North Carolina, and Georgia are among the top ten states in terms of overall economic impact for both saltwater and freshwater fishing (ASA, 1997). Florida is also one of the top states in terms of economic impact of saltwater fishing with $2.2 billion in angler expenditures, $4.4 billion in overall economic impact, $1.2 billion in salaries and wages related to fishing, and 56,278 fishing related jobs (ASA, 1997). Texas followed Florida with $0.9 billion in angler expenditures, $2.0 billion in overall economic impact, $0.5 billion in salaries and wages, and 24,802 jobs (ASA, 1997). New Jersey and North Carolina were the next highest states in terms of economic impact (ASA, 1997).

In general, most anglers did not target HMS in 1996 or 2000. In 1996, over 8 million people made 64 million recreational fishing trips in the United States and caught over 313 million fish (over 50 percent were released alive). In the Atlantic and Gulf of Mexico alone, 8.8 marine recreational fishing participants took 56 million trips and caught a total of 280 million fish. The most commonly caught species by number overall were spotted seatrout, summer flounder, Atlantic croaker, black sea bass, bluefish, and striped bass. Thirteen percent of the total recreational harvest came from the Atlantic and Gulf of Mexico EEZ. The most common caught species caught in federal managed waters were black sea bass, Atlantic mackerel, dolphin, red snapper, and bluefish.

In 2000, over 9 million people made 76 million recreational fishing trips in the United States and caught over 429 million fish (over 57 percent were released alive). Along the Atlantic and Gulf of Mexico, 8.1 million participants took 66.9 million trips and caught a total of 401.6 million fish. Of the trips that occurred in the Atlantic, 24 percent were made in east Florida, 14 percent in New Jersey, and 13 percent in North Carolina. The most commonly caught species by number in the Atlantic were Atlantic croaker, summer flounder, striped bass, black sea bass, and bluefish. The top five most commonly caught fish by weight included yellowfin tuna, the only

[5] This survey interviewed 22,578 anglers.

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HMS in that list. The most commonly caught species in federally managed waters were black sea bass, Atlantic croaker, summer flounder, dolphin, bluefish, and Atlantic mackerel. Of the trips that occurred in the Gulf of Mexico, 72 percent were made in west Florida, 18 percent in Louisiana, and five percent in both Alabama and Mississippi. The most commonly caught species by number were spotted and sand seatrouts, red drum, white grunt, Atlantic croaker, and red and gray snappers. No HMS made the top five list for most commonly caught species by weight in the Gulf of Mexico. The most commonly caught species by number in federally managed waters were red snapper, white grunt, dolphin, black sea bass, and spotted seatrout.

5.2.2 Willingness to Pay to Fish for Atlantic HMS

The most recent data NMFS has comes from a 1994 survey of anglers in New England and the Mid-Atlantic (Hicks *et al.*, 1999). The data collected were used to estimate expenditures and economic value of the various groups of recreational fisheries in this area. One category of fishing, called "Big Game" consisted primarily of HMS, including sharks, billfish, and tunas. Although this study is not an exhaustive picture of the entire HMS recreational fishery, the results provide considerable insight into the absolute and relative values of the recreational fisheries for HMS. Overall average willingness to pay (WTP) for a one-day fishing trip ranged from a low of less than a dollar in New Hampshire to a high of $42 in Virginia. Aggregate WTP (average WTP times the number of trips) ranged from $18 thousand in New Hampshire to nearly $1 million in Virginia. Using model results, it was possible to estimate the WTP for a one fish increase in the expected catch rate across all sites in the choice set. The highest average value was attributed to big game fish, ranging from $5 to $7 per trip (about $5.40 on average), in addition to the value of the trip. The marginal value of an increase in catch per trip was highest for big game fish, and lowest for bottom fish.

The 1994 survey results also indicated that boat fees were responsible for the greatest percentage of expenditures. Roughly 70% and 53% of total expenditures went for private/rental boats and charter/party boats, respectively. Travel expenses were the smallest portion of expenditures, although travel costs for those fishing on party/charter vessels were about twice as high as for those fishing on private/rental boats ($28 *vs*. $16).

Angler WTP depends, in part, on the species sought and on the location. Ditton *et al*. (1998) found that the WTP for bluefin tuna in North Carolina ranged from $344 to 388 per person. Fisher and Ditton (1992a) found that anglers were willing to pay an additional $105 per trip rather than stop fishing for sharks.

While these results are useful in considering the economic value of HMS recreational fisheries, specific surveys focusing on HMS are preferable in order to consider the particular nature of these fisheries. NMFS will continue to pursue options for funding economic surveys of the recreational HMS fisheries.

5.2.3 Atlantic HMS Tournaments

In general, the most recent economic information associated with HMS tournaments can be found in the HMS FMP and the Billfish Amendment. A recent search for HMS tournaments on the web found a number of tournaments targeting HMS. This search found that HMS tournaments charge large fees for a team ($395 to $5000). This entry fee would pay for a maximum of two to six anglers per team during the course of the tournament. Additional anglers could join the team at a reduced rate of between $50-$450. The team entry fee did not appear to be directly proportional to the number of anglers per team but rather with the amount of money available for prizes and, possibly, the species being targeted. For example, in 2000 and 2001, Bisbee's Black and Blue Marlin Jackport Tournament had a $5,000 entry fee for teams consisting of a maximum of four anglers. This tournament awarded a total of $2.4 million and $1.7 million in 2000 and 2001, respectively. Conversely, the $15,000 New Jersey Shark tournament has an entry fee of $395 for a team with a maximum of five anglers. This tournament awarded a total of $15,000 in prizes with a possibility of a $50,000 bonus if a state record is landed. The number of vessels and participants at each tournament is also diverse. The smallest tournament found on the web had 18 vessels and 58 anglers participating. Some of the larger tournaments had between 250 and 400 vessels and over 1,300 anglers participating.

In general, it appears that billfish and tuna tournaments charge higher entry fees and award more prize money than shark tournaments although all species have a wide range. The web search found that while some tournaments award between $500 and $50,000 in prizes (third through first place) others award much larger prizes ranging from $81,000 to $840,000 in prizes. Some tournaments hand out equipments such as new cars, boats, fishing tackle with, or instead of, monetary prizes. The total amount of prize money distributed at any one tournament ranged from $9,500 to $2,385,900.

Most tournaments also have a type of betting called a "calcutta" where anglers pay between $200 to $5,000 to win more money than the advertised tournament prizes for a particular fish. Tournament participants do not have to enter calcuttas. Tournaments with calcuttas generally offer different levels depending on the amount of money an angler is willing to put down. Calcutta prize money is distributed based on the percentage of the total amount entered into that calcutta. Therefore, first place winner of a low level calcutta (entry fee ~$200) could win a lot less than a last place winner in a high level calcutta (entry fee~$1000). On the web pages, it was not always clear if the total amount of prizes distributed by the tournament included prize money from the calcuttas or the estimated price of any equipment. In other words, the range of prizes discussed above, could be a combination of fish prize money, calcutta prize money, and equipment/trophies.

Tournaments can bring in a lot of money for the surrounding communities and local businesses. Besides the entry fee to the tournament and possibly the calcutta, anglers also pay for

marina space and gas (if they have their own vessel), vessel rental (if they do not have their own vessel), meals and awards dinners (if not covered by the entry fee), hotel, fishing equipment, travel costs to and from the tournament, camera equipment, and other miscellaneous expenses. Fisher and Ditton (1992b) found that the average angler who attended a billfish tournament spent $2,147 per trip and that billfish tournament anglers spent an estimated $180 million in 1989. Ditton and Clark (1994) estimated that the total annual net economic benefits of billfish tournaments in Puerto Rico was $18 million. These estimates have likely increased.

5.2.4 Atlantic HMS Charter and Party boat Operations

Currently, specific information on the economic impact of HMS charter/headboat operations is sparse. Most of the data, as reported in the HMS FMP, are related to the bluefin tuna fishery and other tunas. There are, however, limited data on charter/headboats in general. The information below was also reported in the 2001 SAFE report. In 2001, HMS required all charter/headboat vessels fishing for Atlantic HMS to have a permit. This information indicates that a few thousand vessels either target, or feel they could catch, Atlantic HMS.

In 1998, a survey was completed of a number of charterboats (96 of an estimated 430) and party boats (21 out of 23) throughout Alabama, Mississippi, Louisiana, and Texas (Sutton *et al*., 1999). This study provides some economic information related to HMS. They defined charter boats as for-hire vessels that carry six or fewer passengers in addition to the crew while party boats are for-hire vessels that carry more than six passengers (up to 150 passengers). They found that the average charter boat base fees were $417 for a half day trip, $762 for a full day trip, and $1,993 for an overnight trip and 60 percent of all trips were taken May through August. The average party boat base fee were $41 for a half day trip, $64 for a full day trip, and $200 for an overnight trip and 48 percent were taken May through August. They found that 55 percent of charter boat operators reported targeting tuna at least once, 38 percent targeted sharks at least once, 41 percent reported targeting billfish at least once. Percentages by state are summarized in Table 5.17. Snapper (49 percent), king mackerel (10 percent) red drum (6 percent), cobia (6 percent), tuna (5 percent) and speckled trout (5 percent) were the species that received the largest percentage of effort by charter boat operators.

In the Sutton *et al*. study, party boat operators did not frequently target sharks, tunas or billfish. A total of 65 percent of party boat operators reported targeting sharks at least once; 55 percent indicated they had targeted tunas at least one time. Ninety percent reported that they did not target billfish. Snapper (70 percent), king mackerel (12 percent), amberjack (5 percent) and sharks (5 percent) were the species that received the largest percentage of effort by party boat operators. The economic information estimated in this study can be found in Table 5.18.

Holland *et al*. (1999) conducted a similar study on charter (boats that carry six or less passengers and charge for the entire boat) and headboats (boats that carry 10 or more passengers and charge by the person) in Florida, Georgia, South Carolina, and North Carolina. The survey interviewed 403 charter operators (24 percent of the estimated number of charter boats) and 52 head boat operators (35 percent of the estimated number of headboats). The average fees for charter and headboats are listed in Table 5.19. Charterboats and headboat operators are not targeting HMS as much as other species such as mackerel, grouper, snapper, dolphin, red drum. The percent charter and headboat operators report targeting HMS can be found in Table 5.20. Table 5.21 shows the economic information regarding these businesses. Unlike similar businesses in the Gulf of Mexico, these businesses appear to be profitable except for charter boats in Florida which are, on average, unprofitable.

Overall, charter/headboats appear to provide a substantial amount of employment and are economically important. Although HMS are targeted, they do not appear to be the primary objective for the majority of operations, and as such, HMS charter/headboat fisheries probably do not contribute as substantially to the economies of these communities compared to other fisheries such as mackerel and snapper.

Table 5.17 The percent of charter boat operators in Alabama, Louisiana, Mississippi, and Texas who reported targeting HMS at least once. Source: Sutton *et al*., 1999.

Target		Alabama	Louisiana	Mississippi	Texas
Tuna	Yes	61.9	66.7	6.3	65.2
	No	38.1	33.3	93.8	32.6
	Incidental	0.0	0.0	0.0	2.2
Sharks	Yes	4.5	16.7	75.0	67.4
	No	95.5	66.7	18.8	42.7
	Incidental	0.0	16.7	6.3	32.6
Billfish	Yes	61.9	41.7	6.3	43.5
	No	38.1	58.3	93.8	56.5
	Incidental	0.0	0.0	0.0	0.0

Table 5.18. The financial operations and economic impact of charter and party boat operators in Alabama, Louisiana, Mississippi, and Texas. Source: Sutton *et al*., 1999.

		Charter boats	Party boats
Average capital investment	Hull and superstructure	$97,713	$214,922
	Engine	$9,058	$2,571
	Electronics	$5,231	$7,429
	Other equipment and tackle	$7,298	$6,686
Annual costs	Wages and Salaries	$19,725	$64,064
	New hull or superstructure	$18,300	$23,076
	Maintenance and repair	$8,584	$26,919
	Engine	$4,890	$15,153
	Insurance	$3,799	$11,491
	Other costs	$6,020	$28,404
Average annual gross revenues		$68,934	$137,308
Average annual net revenues (includes capital expenses - e.g. purchase of new hull)		-$12,099	-$128,703
Average annual operating profit (does not include capital expenses - e.g. purchase of new hull)		$14,650	-$73,064
Economic output	Alabama	$13.8 M	$0.8 M
	Mississippi	$6.6 M	-
	Louisiana	$4.4 M	-
	Texas	$17.6 M	$3.5 M
Employment generated	Alabama	$5.6 M (282 jobs)	$0.3 M (16 jobs)
	Mississippi	$2.1 M (211 jobs)	-
	Louisiana	$1.8 M (118 jobs)	-
	Texas	$6.1 M (385 jobs)	$1.7 M (77 jobs)

Table 5.19 **The average fees for charter and headboats in Florida, Georgia, South Carolina, and North Carolina.** Source: Holland *et al*., 1999.

State	Length of trip	Charter boat	
Florida	Half-day	$348	$29
	Full day	$554	$45
	Overnight	$1,349	--
Georgia	Half-day	$320	--
	Full day	$562	--
	Overnight	$1000-$2000	--
South Carolina	Half-day	$296	$34
	Full day	$661	$61
	Overnight	$1000-$2000	--
North Carolina	Half-day	$292	$34
	Full day	$701	$61
	Overnight	$1000-$2000	--

Table 5.20 The percent of charter and headboat operators in Florida, Georgia, South Carolina, and North Carolina who reported targeting HMS at least once. Source: Holland *et al*., 1999.

Target species	Florida		Georgia		S. Carolina			
	Charter	Head	Charter	Head	Charter	Head	Charter	
Tuna	8.5	0.0	8.3	-	0.0	-	60.0	-
Sharks	22.6	9.7	33.3	-	35.0	-	23.3	-
Billfish	9.9	0.0	8.3	-	20.0	-	40.0	-

Table 5.21. The financial operations and economic impact of charter and party boat operators in Florida, Georgia, South Carolina, and North Carolina. Source: Holland *et al*., 1999.

		Charter boats			
		Florida	Other states	Florida	
Average capital investment	Hull and superstructure	$90,989	$39,445	$214,158	$178,833
	Engine	$40,518	$5,900	$40,000	$38,181

		Charter boats		Party boats	
		Florida	Other states	Florida	Other states
	Electronics	$5,568	$5,900	$5,560	$6,277
	Other equipment and tackle	$5,878	$4,463	$9,183	$3,600
Annual costs	Wages and Salaries	$25,810	$17,928	$52,000	$33,077
	New hull or superstructure	$3,020	$793-1,340	$3,333	$0.00
	Maintenance and repair	$5,720	$4,991-6,910	$13,385	$16,577
	Engine	$6,334	$172-2,738	$9,450	$14,545
	Insurance	$2,970	--	$8,570	--
	Other costs	$24,723	$971-18,883	$48,999	$40,846
Average annual gross revenues		$56,264	$26,304-$60,135	$140,714	$123,000
Average annual net revenues (Gross revenues - Annual costs)		-$12,313	$3,069-13,237	$4,977	$17,955
Economic output		$128 M	$34.4 M	$23.4 M	$5.8 M
Employment generated		$31 M (3,074 jobs)	$15.6 M (1,066 jobs)	$5.8 M (450 jobs)	$2.2 (81 jobs)

5.2.5 Other Recreational Fishing Costs Information

Besides willingness to pay and charterboat fees, recreational anglers can have other costs associated with fishing. These can include the cost of owning and outfitting their own vessel. A 1983 study found that a fully-outfitted (for tuna and marlin fishing) vessel in the mid-Atlantic region cost approximately $90,000 (Figley and Preim, 1983). This study estimated that the total value of the mid-Atlantic offshore sportfishing fleet was $202 million and that offshore boat owners in the mid-Atlantic spent $40 million to go tuna and marlin fishing (Figley and Preim, 1983). Each vessel at that time had approximately $5,000 worth of rods, reels, lines, and lures onboard (Figley and Preim, 1983). A similar study off New Jersey, found that the 1983 recreational shark fishery had a total value of outfitted vessels of approximately $88.6 million (NJDEP, 1984). These estimates have probably increased over time.

5.3 Periodic Review Under Section 610 of the Regulatory Flexibility Act

5.3.1 Introduction

In 1996, the Small Business Regulatory Enforcement Fairness Act amended the Regulatory Flexibility Act (RFA). This amendment added section 610 to the RFA. Section 610 requires NMFS to periodically review rules that had or will have a significant economic impact on a substantial number of small entities. The purpose of this review is to determine whether significant rules should be continued without change or if they should be amended or rescinded in order to minimize the impact on small entities. The review should examine the impact of these rules consistent with the stated objectives of applicable statutes. NMFS has 10 years after the adoption of each rule in which to review the impact of the rule. Section 610 states that NMFS must consider the following factors in its review:

- the continued need for the rule;
- the nature of complaints or comments received concerning the rule from the public;
- the complexity of the rule;
- the extent to which the rule overlaps, duplicates or conflicts with other Federal rules, and to the extent feasible, with State and local governmental rules; and,
- the length of time since the rule has been evaluated or the degree to which technology, economic conditions, or other factors have changed in the area affected by the rule.

5.3.2 Description of Rules Implemented Since 1996 that have been Classified as Economically Significant

A list of final regulations that were found significant under RFA or E.O. 12866[6] and were implemented by NMFS regarding HMS since 1996 can be found in Table 5.22.

Table 5.22. HMS regulations that were implemented after 1996 and were classified as significant under either RFA or E. O. 12866.

[6] NMFS is required to conduct economic analyses under E.O. 12866 as well as RFA. Unlike RFA, E.O. 12866 is concerned with economic impacts to the nation as a whole along with economic impacts on individual businesses.

Rule	Date published	FR cite	Action	
1.	4/7/97	62 FR 16648	Atlantic shark fisheries; Quotas, bag limits, prohibitions, and requirements and large coastal shark species: Final rule that reduced large coastal shark quota and the recreational bag limits and prohibited 5 shark species	Not significant under RFA or E. O. 12866. On 05/20/98, NMFS announced availability of a document examining the economic impacts as requested by Judge Merryday. This document states that 1997 quotas may have a significant economic impact on a substantial number of small entities.
2.	1/27/99	64 FR 4055	Atlantic swordfish fishery; Management of driftnet gear: Final rule that prohibited the use of driftnet gear in the N. Atlantic swordfish fishery.	Will have a significant economic impact on a substantial number of small entities. Not significant under E. O. 12866.
3.	5/28/99	64 FR 29090	Atlantic highly migratory species fisheries; Fishery management plan, plan amendment, and consolidation of regulations: Final rule implementing the HMS FMP and Billfish Amendment 1.	Will have a significant economic impact on a substantial number of small entities. Significant under E. O. 12866.
4.	8/1/00	65 FR 47214	Atlantic highly migratory species; Pelagic longline management: Final rule that closed certain times and area to fishermen using pelagic longline gear and prohibited the use of live bait by fishermen using pelagic longline gear in the Gulf of Mexico.	Will have a significant economic impact on a substantial number of small entities. Not significant under E. O. 12866.
5.	10/13/00	65 FR 60889	Atlantic highly migratory species; Pelagic longline fishery; Sea turtle protection measures: Emergency rule that implemented a time/area closure in the Northeast Distant Sampling area and required fishermen using pelagic longline gear to carry and use dipnets and line clippers.	Exempt from RFA requirements. Significant under E. O. 12866.

Rule	Date published	FR cite	Action	Classification
6.	12/12/00	65 FR 77523	Atlantic highly migratory species fisheries; Implementation of ICCAT recommendations: Final rule that implemented swordfish quotas through 2002, established a dead discard allowance for the swordfish fishery through 2002, and took several actions regarding import restrictions.	Could have a significant economic impact on a substantial number of small entities. Not significant under E. O. 12866

Rule 1 in Table 5.22 reduced the LCS commercial quota by 50 percent, reduced the recreational bag limit for all shark species by 50 percent, established a commercial quota for SCS, prohibited the retention of five species of sharks, and prohibited the filleting of sharks at sea. The intent of the rule was to reduce effective fishing mortality, stabilize the LCS population, facilitate enforcement, and improve management of the Atlantic sharks. The economic analyses conducted for this rule concluded that because the shark fisheries are so diversified and because there were alternative fisheries for fishermen to enter, that the reduction in the commercial quota and recreational bag limit would not have a significant economic impact. Similarly, the analyses found that the prohibited species regulations were similar to status quo and the prohibition of filleting at sea would have minimal impacts on fishing costs. In May 1997, a number of commercial fishermen and dealers sued NMFS regarding the commercial quota in this regulation. In February 1998, the Court remanded the economic analyses to the agency. In May 1998, NMFS announced the availability of the new economic analyses for the commercial quota reduction implemented with this regulation. The new analyses found that nearly all shark fishery operators are active in other fisheries. Despite this, NMFS concluded that the quota cuts may have had a significant economic impact on a substantial number of small entities and that these impacts may put a number of fishermen out of business.

Rule 2 in Table 5.22 prohibited the use of driftnet gear in the North Atlantic swordfish fishery. The intent of this regulation was to reduce the bycatch of protected resources in a manner that maximizes the benefit to the Nation. The economic analyses for this rule found that the 17 fishermen who used this gear type could: 1) transfer fishing effort into the longline/harpoon category and continue fishing for swordfish; 2) fish for other species with other gears; 3) use driftnet for other HMS including Pacific species; and 4) exit the fishery. In general, the analyses found that the rule would have a significant economic impact on a substantial number of small entities.

Rule 3 in Table 5.22 changed a number of regulations and fishing operations in the Atlantic HMS fisheries including tunas, swordfish, sharks, and billfish. These changes included, but are not limited to, limited access for shark, swordfish, and tuna longline fishermen, a time/area

closure for pelagic longline fishermen in the month of June, reduction in the bluefin tuna quota, establishing a recreational bag limit for yellowfin tuna, changing the shark commercial quota and recreational bag limit, and requiring VMS for all vessels with pelagic longline onboard. The intent of the regulations were to meet the new requirements of the Magnuson-Stevens Act, implement the recommendations of ICCAT, consolidate the HMS regulations into one part of the Code of Federal Regulations, and re-implement all previous regulations that were still necessary. The specific regulations were intended to meet a number of objectives, including but not limited to: prevent or end overfishing of Atlantic tuna, swordfish, sharks, and billfish and adopt the precautionary approach to fishery management; rebuild overfished fisheries in as short a time as possible and control all components of fishing mortality to ensure the long-term sustainability of the stocks; minimize economic displacement during the transition from overfished fisheries to healthy ones; and, minimize bycatch of living marine resources and the mortality of such bycatch. The economic analyses conducted for these regulations found that even though HMS fishermen fish for other species in addition to HMS, including mackerel, snapper-grouper, reef fish, dolphin, and oilfish, overall the final actions will have a significant economic impact on fishermen and related industries such as processors and suppliers. Soon after the regulations were published in the Federal Register, a number of different fishing groups and environmental sued NMFS on different aspects of the regulations and stated that the regulations were not consistent with RFA. Some of these lawsuits are still ongoing. Generally, the most recent economic data available only includes data for 2000. With approximately 1.5 years of data, a few economic impacts can be examined and are discussed in this document.

Rule 4 in Table 5.22 prohibited fishing with pelagic longline in a number of different times and areas within the Atlantic EEZ and prohibited the use of live bait in the Gulf of Mexico. The intent of the regulation was to reduce bycatch and incidental catch of overfished and protected species by pelagic longline fishermen who target HMS. The economic analyses found there were 450 commercial fishermen, 125 dealers, and a number of recreational businesses that might be affected by these regulations; that the average annual gross revenues for commercial fishermen might decrease by about 5 percent; that 14 percent of the vessels could experience a 50 percent decrease in gross revenues; and, that a number of dealers may also experience a decrease in the average weight of fish handled of at least 5 percent. Overall, the regulation was found to have a significant economic impact on a substantial number of small entities. NMFS has also been sued on this regulation by three different organizations. Because this rule was not be fully implemented until March 2001 and because a full year's worth of data will not be available for any subsequent analyses until 2002, the actual economic impacts of this regulation are unknown and will not be discussed in this document.

Rule 5 in Table 5.22 implemented a time/area closure for pelagic longline gear in the Northeast Distant Statistical Area (NED) from October 10, 2000, until April 9, 2001 and requires all pelagic longline vessels to carry and use line clippers and dipnets. The intent of this regulation is to reduce bycatch and bycatch mortality of loggerhead and leatherback sea turtles by the Atlantic pelagic longline fishery. The economic analyses for this regulation found that the

requirement of line clippers and dipnets would have minimal economic impacts; that closing the area could reduce gross revenues by 25 to 40 percent for the vessels fishing in the NED area assuming those vessels decide not to fish; and that while individual fishermen and processors are likely to be impacted, the fishery as a whole would not be because of the limited duration and scope of this rule. Because this rule was an emergency rule it was exempt from the economic analyses under RFA; however, it was found significant under E.O. 12866. Because all data during this closure will not be available for any subsequent analyses until mid-2002, the actual economic impacts of this regulation are unknown and will not be discussed in this document.

Rule 6 in Table 5.22 implemented, consistent with ICCAT recommendations, the swordfish annual landings quota for the fishing years 2000, 2001, and 2002, established dead discard allowances for 2000, 2001, and 2002 for the swordfish fishery, and implemented several import restrictions for bluefin tuna and swordfish from several countries. The intent of this rule was to improve the conservation and management of Atlantic swordfish and bluefin tuna while allowing harvests consistent with the recommendations of ICCAT. The economic analyses found that in the short-term, the quota reductions and dead discard allowance would reduce ex-vessel swordfish revenues for a substantial portion of the fleet. However, the estimated impacts could be lower if rule 5, above, is effective at reducing swordfish dead discards. The analyses also found that in the long-term, any negative short-term impacts would turn into positive impacts as the stock is rebuilt. The restrictions on importation of bluefin tuna and swordfish are unlikely to have an economic impacts because the relevant countries do not currently export to the United States.

5.3.3 Economic Impact of the Regulations

The actual economic impact of any specific regulation is difficult to quantify in any fishery because of changing factors that are not a result of the regulation such as changing consumer demand, weather patterns, and additional regulations in either that specific fishery or in related fisheries. For that reason, the actual impacts are not quantified but discussed qualitatively.

Rule 1 in Table 5.22 reduced the LCS commercial quota by 50 percent and reduced the recreational bag limit by 50 percent. Tables 5.5 and 5.7 indicate that in general from 1996 to 2000, the ex-vessel price of LCS and pelagic sharks stayed approximately the same, the SCS and fin prices increased. This indicates that the commercial quota reduction may not have impacted the price of LCS or pelagic meat and may have positively impacted the price of SCS meat and shark fins. This increase could be due, in part, to the substitution of SCS meat during an LCS closure (the SCS fishery has not closed to date while the LCS season is generally open on a few months during the year). Except for mako sharks, wholesale prices of shark meat have declined since 1996 (Table 5.11). While this reduction could be due to the reduction in LCS shark meat available, the wholesale price of thresher sharks (a pelagic shark) has also decreased indicating

that factors other than the LCS quota reduction may be influencing the price. While the reduction in the recreational bag limit may have had some impact on the recreational fishery, the exact degree is hard to quantify given the paucity of economic data directly related to HMS and the fact that the recreational bag limit was further reduced in July 1999. However, given the fact that most anglers do not target HMS in general, or sharks specifically, relative to the total salt water angler population, NMFS does not feel that the 1997 bag limit reduction had a significant impact on the recreational fishery.

Rule 2 in Table 5.22 prohibited the use of driftnet in the Atlantic swordfish fishery. The ex-vessel and wholesale prices of swordfish have declined since 1996. However, it is unlikely that the prohibition on driftnet gear caused this decline because few swordfish were landed using this gear type and only a few vessels were active in this fishery (10-12 vessels). Instead other factors, such as anticipation of the 1999 HMS FMP, the general decline in swordfish stocks between 1996 and 1999, overcapacity in the swordfish fishery, and the "Give swordfish a break" campaign may have influenced this price reduction.

Rule 3 in Table 5.22 implemented the HMS FMP and the Billfish Amendment in order to prevent overfishing and rebuild HMS stocks. These two documents and Rule 3 replaced the existing regulations for all HMS. Preparation and scoping for these documents began in 1997 with the formation of the Advisory Panels for HMS. It is likely that anticipation of these documents and its implementing regulations impacted all HMS fisheries economically. Generally, the value of HMS fisheries as a whole as increased, particularly the value of yellowfin tuna and other tunas (Table 5.7). However, the value of some of the major HMS fisheries, particularly swordfish, have continued to decline (Table 5.5, 5.6, and 5.7). Wholesale prices of HMS have also declined since 1996 (Table 5.11). Increases in some fisheries, such as yellowfin tuna, could be due to substitution of yellowfin tuna for other HMS. These declines could be due to reduced availability of HMS due to management measures in this rule such as reduced quotas, limited access, closed areas, and gear restrictions rather than environmental concerns or general economic concerns. This impression is strengthened if you look at the status of U.S. commercial fisheries as a whole versus Atlantic HMS commercial fisheries. As a whole, since 1996, commercial landings have increased, the value of U.S. fisheries has increased, consumer consumption has increased, and the number of employees at Atlantic wholesale firms has increased slightly. Contrary to Atlantic HMS commercial fisheries, Atlantic HMS recreational fisheries appear to be relatively healthy compared to 1996. For instance the number of charter/headboat permits have increased in recent years and HMS tournaments are still popular with many anglers and bring in a lot of money to local economies. Additional consideration of this rule on HMS fisheries will be easier as more data related specifically to HMS fisheries are collected over a longer period of time.

Rules 4, 5, and 6 of Table 5.22 are too recent for NMFS to examine any economic impacts at this time.

5.3.4 Continued Need for the Regulations

In 1998, the results of the shark evaluation workshop (SEW) indicated that the quota and bag limit reduction for LCS in 1997 (Rule 1 in Table 5.22) did not reduce fishing mortality enough to rebuild LCS stocks. Based on these results, in 1999, NMFS implemented new regulations that would further reduce the commercial quotas and the recreational bag limits and add additional species to the prohibited species list. The new recreational bag limits and recreational prohibited species went into effect on July 1, 1999. Due to a court injunction, many of the 1999 commercial regulations, including the quotas, did not go into effect and the 1997 regulations remained in effect. A settlement agreement was approved by the Court on December 7, 2000, that included a requirement for a peer review of the 1998 SEW. NMFS received the results of the peer review in October 2001 and recently published emergency regulations to maintain the 1997 quota levels until a new SEW can be conducted (66 FR 67118, December 28, 2001). Thus, despite the potential economic costs of the 1997 rulemaking, this Rule is still needed until a new rebuilding plan can be implemented.

Rule 2 was effective in 1999 and emergency regulations prohibited this gear type for most of 1998. NMFS implemented these regulations because of concerns over the number of interactions with protected species. These concerns are still relevant today. As such, NMFS believes that these regulations are still needed.

Rules 3 through 6 in Table 5.22 are all regulations implemented within the last two years. At this time, NMFS believes these regulations are still necessary, although, in some cases it has not been long enough to assess the efficacy of the specific regulations in terms of achieving the objectives of the FMPs.

5.3.5 Comments Received on Each Rule

NMFS always invites comments on current and proposed regulations. Currently, most comments on existing regulations occur in the form of litigation. For instance, a number of different commercial shark fishermen and dealers sued NMFS regarding Rule 1, a commercial driftnet fisherman sued NMFS on a takings claim for Rule 2, seven different groups of plaintiffs composed of recreational, commercial, and environmental interest groups sued NMFS on different aspects of Rule 3 in Table 5.22[7], three different groups sued NMFS on Rule 4, and one group sued NMFS on Rule 5. Almost all of these lawsuits include claims that NMFS did not

[7] These claims included, but are not limited to, the pelagic longline VMS requirement, shark commercial quotas, shark recreational bag limits, time/area closures, bycatch measures, bluefin tuna rebuilding plan, bluefin tuna purse seine cap, yellowfin tuna bag limit, and a limited access permit claim.

comply with RFA and various National Standards. NMFS is working with lawyers, plaintiffs, and constituents to ensure that all concerns are considered.

In 2000 and 2001, NMFS also received comments when commercial and recreational fishing groups took their concerns to Congress. Some of the bills that were introduced include: time/area closures similar to those in Rule 4 in Table 5.22 and a buy-back program for a number of vessels and permits; a bill to prohibit shark finning and monitor the trade of shark fins; and a bill to prohibit the use of spotter planes in the bluefin tuna fishery. Many of these bills originated because certain parties felt that NMFS had not done enough for the fishery, or that NMFS had done too much and did not consider all aspects of the fishery. In all cases, NMFS gave Congress comments on the proposed bills and continues to work with constituents to ensure all concerns are considered. In some cases Congress has passed and the President has signed bills that require NMFS to promulgate regulations (e.g. the Shark Finning Prohibition Act of 2000).

Outside of litigation and legislation, NMFS continues to receive comments during public comment periods on certain regulations and restrictions, at AP meetings, and during public comment periods of advanced notice of proposed rulemakings. NMFS is currently considering many of the comments received; some of the ideas NMFS is considering are outlined throughout this document.

5.3.6 Complexity of Each Rule

Neither Rule 1 nor Rule 2 on Table 5.22 were particularly complex. In the case of Rule 1, the regulations related to the recreational bag limits were simplified. The regulations in Rule 3 are complex and complicated because they involve all the regulations for all HMS: sharks, swordfish, tunas, and billfish. However, because this rule consolidated the regulations and removed duplicative text, this rule actually simplified the process of finding the regulations for Atlantic HMS. In general, many of the regulations in Rule 3 remained unchanged or similar to earlier regulations so individual fisherman should be able to understand the regulations relatively easily. The parts of the regulations that were new and also complex generated many phone calls. These parts included the qualifications and application process for limited access permits and the VMS requirement for pelagic longline fishermen (also complicated by repeated delays and finally a court remand). Other regulations that are not new but that still generate a substantial number of comments include the BFT catch limits for pelagic longline fishermen and effort controls in the BFT fishery. Rules 4 and 5 on Table 5.22 are not particularly complex in that they close areas and times to pelagic longline fishing, prohibit the use of live bait in the Gulf of Mexico, and require the use of line clippers and dipnets. These regulations do not include any additional reporting requirements. Rule 6 was not particularly complex in that it established a set landings quota for three years and determined the dead discard allowance for each year. Fishermen did not have to change their activities in order to comply with this regulation.

Overall, the complexity of the regulations have increased over time as loopholes in the regulations are fixed and new restrictions are added. NMFS is aware of this situation and has tried to make it easy for fishermen and other constituents to obtain the information they need to make informed decisions. Besides publishing the regulations in the Federal Register (see Table 1.1), NMFS efforts include faxing notices of rulemakings, season closures, and other information to dealers and marinas over our fax network, updating the HMS telephone information hotline, publishing compliance guides in an easy to read question/answer format, placing documents on the HMS website, and answering phone calls. Additionally, in 2001 NMFS implemented Fishnews, an electronic summary of current events and changes to regulations across the country. Any fisherman or interested constituent with access to email can sign up for this free service. The HMS Management Division often has major events announced on Fishnews.

5.3.7 Extent to Which the Rule(s) Overlaps, Duplicates or Conflicts with Other Federal Rules, and, to the Extent Feasible, with State and Local Governmental Rules

NMFS believes that all its regulations are consistent with and do not overlap with other Federal rules, except where necessary. In some cases, NMFS' regulations may overlap or be inconsistent with State regulations. In all cases, NMFS continues to work with the States to ensure consistent regulations where possible.

5.3.8 Length of Time Since the Rule Has Been Evaluated, and the Degree to Which Technology, Economic Conditions, or Other Factors Have Changed in the Area Affected by the Rule

All of the regulations listed in Table 5.22 were evaluated in 1999 HMS FMP or after and again in the 2001 SAFE report. Because it has been so short of a time period, there has not been a great deal of change in technology, economic conditions, or other factors that would have affected fishing communities on the Atlantic.

5.3.9 Conclusion

If ex-vessel and wholesale prices are a good indicator, the economic health of Atlantic HMS commercial fisheries has declined slightly since 1996 (Tables 5.7 and 5.11). At this point, it is unknown to what degree the economic health of the recreational fisheries has changed since 1996 although these fisheries appear to be relatively healthy. Given the status of HMS stocks, NMFS feels that all its current regulations are necessary and will benefit the fisheries economically

in the long-term. NMFS continues to work for sustainable HMS fisheries and welcomes comments on any of its regulations and on improving its methods of public outreach.

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