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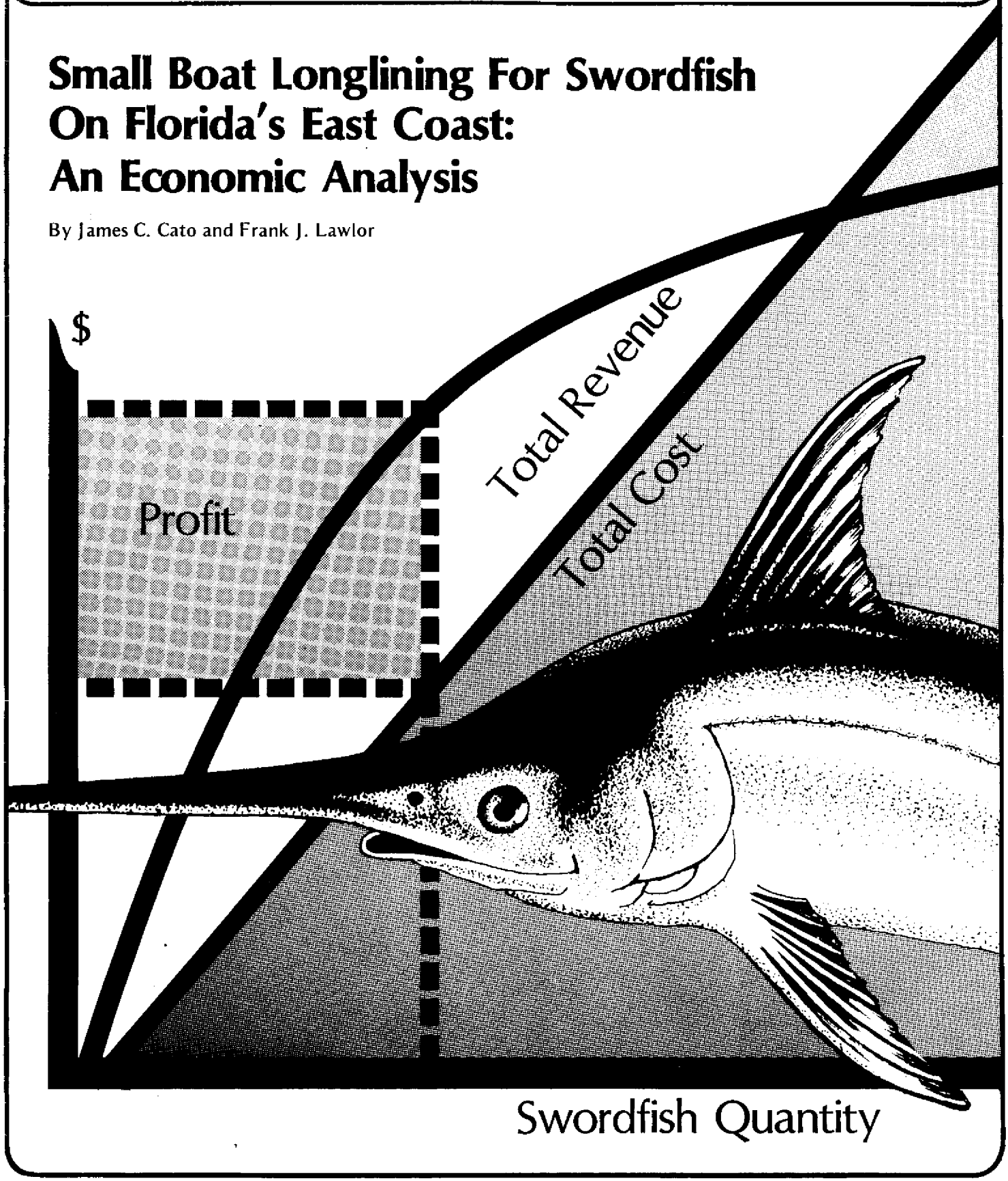
Small Boat Longlining For Swordfish On Florida's East Coast: An Economic Analysis

By James C. Cato and Frank J. Lawlor



SMALL BOAT LONGLINING FOR SWORDFISH ON FLORIDA'S EAST COAST AN ECONOMIC ANALYSIS

James C. Cato
and
Frank J. Lawlor

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University of Florida

For more information on Florida's swordfish fishery, see Marine Advisory Bulletin, "Florida's Commercial Swordfish Fishery: Longline Gear and Methods" (MAP-14).

TABLE OF CONTENTS

LIST OF TABLES

SMALL BOAT LONGLINING FOR SWORDFISH ON FLORIDA'S EAST COAST: AN ECONOMIC ANALYSIS

James C. Cato

and

Frank J. Lawlor

INTRODUCTION

The commercial swordfish fishery in the U.S. dates back to the mid-1800's, although it was not until the early 1960's that a longline fishery for swordfish began. The fishery existed primarily from Cape Hatteras northward to Canadian waters. During the early 1970's, the swordfish fishery almost became non-existent due to Food and Drug Administration regulations regarding mercury levels in swordfish. In 1976, a commercial longline fishery began to develop in Florida based on techniques developed from Cuban American longliners. During 1978, a court ruling raised the allowable mercury level for swordfish and the fishery has since expanded rapidly.

One new area of expansion has been the lower Atlantic coast of Florida, particularly from Cape Canaveral southward, although fishing occurs throughout the Gulf of Mexico and northward to Canada depending on the type of vessel and season. Florida vessels range from 26 to 65 feet in length. Probably the most popular type along Florida's lower Atlantic coast ranges from 35 to 50 feet. Berkeley, et. al. (1981) give a description of the various types of vessels.

Because of the major interest in swordfish along Florida's Atlantic coast, many present and potential fishermen have become interested in entering the fishery. This bulletin was prepared to assist fishermen in an economic analysis of the fishery before they invest in a new vessel or before they change their gear on their existing vessel to enter the swordfish fishery. In addition, many requests about "how much profit can I make?" are received from both existing fishermen and persons considering making fishing

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their occupation. This bulletin contains a method for making a profitability analysis. Swordfish is the example, based on cost and returns of a 36-foot swordfish longline vessel on Florida's lower Atlantic coast. In addition, a number of other factors which merit consideration before becoming a fisherman are also discussed. Potential investors who are not experienced in fishing should pay particular attention to the estimated costs and returns statements. Net returns and the return on investment to an absentee owner are often much different than those to a captain/owner. This is discussed in the sections on profit.

Although this bulletin is about swordfish, the same techniques can be used in analyzing any fishery. In a similar manner, Roberts (1979) presents a number of considerations that should be made before purchasing a shrimp vessel for use in Louisiana.

LEARN ABOUT THE FISHERY

Before investing in a fishing boat, consider the future availability of swordfish stocks from which the boat will earn its income. The swordfish stock is influenced by some elements beyond the control of the individual fisherman. The swordfish fishery is an open access fishery, as are most fisheries in the Southeast U.S. Anyone can enter the fishery. Unlimited competition will certainly affect plans for the boat. Will the stock of fish support increased fishing pressure over the life of the boat? Will so many boats enter the fishery that no one earns a living? Will limits or regulations that affect catch and/or costs, and thus profit levels, be placed on the fishery?

Consider the Gulf of Mexico shrimp industry. Biological studies indicate that the Gulf of Mexico has virtually no remaining unutilized penaeid shrimp stocks and is biologically incapable of producing a greater stock. Yet, during the last half of the 1970's, many new shrimp boats entered the fleet. The result is that each boat catches fewer shrimp and, without large price increases, experiences lower total revenue. Increasing costs then make even lower and sometimes negative net revenues. Fortunately, the annual nature of the shrimp crop makes it difficult to biologically overfish the stock. Prochaska and Cato (1981) describe the development of the economic problems in the shrimp fishery.

Swordfish probably represent a different situation. Swordfish live about nine years and first spawn around five or six years. As a general rule, this type of long-lived, slow growing fish is much easier to biologically overfish than shorter-lived species. Since 1974, the total catch of swordfish by all nations in the entire North Atlantic has ranged between 6,000 and 8,000 metric tons. In 1978, the reported U.S. catch of swordfish in the entire Atlantic was 3,000 metric tons, which is believed to be an underestimate. The U.S. recreational catch was estimated at 200 metric tons. At this time, biologically sound estimates are not available for how many swordfish can be caught each year without damaging the stock. Based partly on data from Japanese longline tuna vessels, fishing pressure had not significantly reduced the swordfish stock in 1976. Whether this remains true in 1981 is subject to question. The number of swordfish boats in Florida has increased from 20 to 30 in 1974 to over 200 in 1981. New England boats are also fishing more off Florida. Fishing is occurring off Georgia and the Carolinas. More than 50 shrimp boats in the Gulf of Mexico have converted to swordfish longlining. No one really knows if the stocks can stand this type fishing pressure.

Recreational fishing pressure also offers competition for the stock. Many recreational fishermen would prefer to see commercial swordfishing regulated out of existence. This represents an area of political, rather than biological, instability for the investor in a swordfish vessel. In addition, the swordfish stock is affected by foreign fishing for tuna in U.S. waters. Swordfish are sometimes an incidental catch of the foreign tuna longline vessels.

The prudent investor will examine the biological strength of the stock and the potential for regulatory restrictions as well as the economic feasibility before making the investment decision. Good sources of information on the biology of the fishery are the Gulf of Mexico and South Atlantic Fisheries Management Councils, the Florida Department of Natural Resources Marine Research Laboratory, and the National Marine Fisheries Service (NMFS) Southeast Fisheries Center. The South Atlantic Fisheries Management Council (1980) has published a profile of the swordfish fishery. The Florida Sea Grant Program has also funded research on the biology and catch/effort characteristics of the swordfish during 1979 and 1980.

THE MARKET

An investment decision in the swordfish fishery should include an analysis of market stability and growth potential. Dockside prices can be obtained from the fish dealers or buyers and from state and federal agency market information sources. Prior to 1974, very few swordfish were landed in Florida. Since then, landings have increased to 2.6 million pounds in 1980 (Table 1). Average price per pound across all swordfish sizes was fairly stable between 1974 and 1976, fell in 1977 and increased to the all-time high of $2.03 per pound in 1979. Prices fell again across all sizes to $1.77 per pound in 1980 due to heavy summer production. Prices for large swordfish have been as high as $3.75 to $3.90 per pound for brief periods during 1981 but average yearly price will not be that high. This represents a slight decline since 1974 in terms of deflated price. However, the swordfish market does not appear to be affected by declines in consumer demand to the same degree as shrimp, and does not fluctuate as substantially on a seasonal basis. This represents a favorable market outlook for interested participants. The swordfish market is fairly small, not affected by imports, with the only potential limiting factor being regulatory problems should mercury content rulings be changed. The NMFS has some information on swordfish markets in McAvoy (1980).

THE INVESTMENT

Several ways are available to determine the amount of capital necessary to enter the swordfish fishery. Talk to existing fishermen, potential buyers of swordfish, boat builders, equipment dealers, and others who have current knowledge of the fishery. Travel to other regions where similar boats and fishing techniques are used. Observe their operation. The local Sea Grant marine extension agent will have current knowledge of the fishery and should have a list of contacts and existing publications about the fishery. Florida Department of Natural Resources and National Marine Fisheries Service personnel also often have useful information.

This represents the first attempt at making economic information available on this type swordfish vessel in Florida. Rock and Flechsig (circa 1975) have published cost and returns data on a 42-foot California swordfish

Table 1.--Landings, value and average dockside price of swordfish in Florida, 1974-1980.

Year	Landings		Value	
	Metric tons	Thousand pounds	Thousand dollars	Dollars per pound[a]
1974	23	50	86	1.72
1975	59	131	226	1.73
1976	296	653	1,171	1.79
1977	53	116	174	1.50
1978	267	589	1,034	1.76
1979	775	1,709	3,472	2.03
1980	1,195	2,634	4,628	1.77

[a]Average across all sizes of fish.

Source: National Marine Fisheries Service. Fishery Statistics of the U.S., 1974-1976. Data for 1977-1980 are preliminary from Southeast Fisheries Center, National Marine Fisheries Service, Miami, Florida.

vessel, and Nichols, Gerlow and Swartz (1980) have demonstrated the economic feasibility of converting shrimp vessels to swordfish longlining.

Once all the investment data have been collected, determine on paper the necessary investment. This will also be necessary information to determine expected costs and net returns. For example, the total investment for a small swordfish vessel on the Florida lower Atlantic coast during 1979 was $76,855 (Table 2). This type swordfish vessel had a hull valued at $47,250 and an engine valued at $11,000. Electronics were worth $9,100 and the 10-mile longline was valued at $9,505. This knowledge is necessary to determine the amount of equity and loan capital needed before making the first fishing trip. An additional cash reservoir will also be necessary for operating expenses.

Many additional factors other than the actual dollar outlay and expected net returns affect the decision to invest money in the swordfish fishery. Fishing is a tough way to earn a living, as any experienced fisherman will testify. And, it's even harder for a newcomer. It's not an eight-to-five job; it is risky, influenced by uncontrollable factors such as weather; and often requires long hours and days away from home and family.

Table 2.--Estimated value of a 36-foot swordfish vessel using a 10-mile longline on the South Florida Atlantic Coast, 1979.

Item		1979 Value[c]	19__ Value[b]
	----------Dollars----------		
Hull		47,250	_____
Engine		11,000	_____
Electronics[a]			
fathometer (2 @ 500)	1,000		_____
radar	5,000		_____
loran	2,000		_____
VHF	500		_____
single side band	500		_____
CB	100		
		9,100	_____
Longline			
reel and leader cart	3,500		_____
hiflyers (.8 per mile) including strobe, rod, radar reflector, buoy	1,200		_____
tarred main line - 53,300 feet (5,330 per mile)	2,239		_____
100-foot drops, 250 feet apart, from buoys and hiflyers - 21,200-foot line	742		_____
bullet buoys, 203 (20.3 per mile)	609		_____
gangions, 200, 150 feet each monafilament (20 per mile)	700		_____
snaps, 409 (40.9 per mile)	385		_____
hooks, 200 (20 per mile)	130		
		9,505	_____
Total investment		76,855	

[a]Some boats do not use this full array of electronic equipment and thus costs may vary slightly among boats.

[b]This column will be used later in the bulletin.

[c]These values represent used values of the vessel and equipment except for the longline. Replacement values would be higher.

Source: Data collected from four full-time swordfish vessels.

Think twice about believing the quaint dockside television scenes from the half-times of football games. It takes a unique, hard working person who values a large variety of factors other than just earning a living to be a successful fisherman. Think about all these things. Then, if the decision is still favorable, go the next step of an investment analysis.

REVENUE AND EXPENSES

Fishermen sometimes have very little control over the two most important factors in the business. These are the amount of swordfish caught and the price received for the catch. The "best" or "hi-liner" fisherman always catches the most due to his experience, skill, and the desire to work harder than other fishermen. However, even the "hi-liner" can't control the weather, the abundance of the swordfish, and many other factors which affect the volume of fish caught. The fisherman cannot directly control the amount of fish the environment produces, nor can the fisherman control the amount of fish caught by other fishermen. This affects the catch of each fisherman and also influences the market price as dictated by the consumer.

Each fisherman is but one of many fishermen catching and selling swordfish and, in reality, the individual fisherman must accept the price offered as determined by consumer demand. Consumers cannot be "forced" to pay a higher price just because the fisherman needs the higher price to continue operating. The fisherman is essentially a price taker. And, in some fisheries, the fisherman is faced with even other uncontrollable factors that affect the price. The classic example is shrimp where about one-half the shrimp consumed in the U.S. are imports.

Swordfish sales and the costs incurred in catching them determine the amount of profit or net return to the fisherman's labor, management and capital. Since the fisherman can probably have more direct influence on operating costs than on revenues, good business management practices should focus on factors affecting costs. This management should begin before the boat is purchased and includes proper selection of boat size, engine size, etc. that will ultimately influence operating costs.

Revenue

Revenue is generated from swordfish and small catches of tuna and other primarily migratory fishes. The small Florida longline vessels operate

primarily on overnight trips. The average number of trips taken in 1979 was 86. This may appear to be a low number of trips. However, an absolute minimum of two days is involved in one trip in addition to boat and line maintenance time, and it will be difficult to average more than 86 trips per year. Total revenue per boat resulting from swordfish longlining in 1979 was $142,327 or $1,654 per trip (Table 3). Ninety-seven percent was from small, medium, and large swordfish bringing $2.08, $1.82 and $1.52 per pound, respectively. The remaining three percent was from swordfish chunks (damaged by sharks) and other incidental catches.

Costs

Fishing costs can be organized several ways. One method is to relate costs to those determined by the catch, overhead costs and operating costs. Another distinction is variable costs and fixed costs. Some fishermen keep a trip cost ledger. This includes all costs incurred during the fishing trip. All trip costs are variable costs, but not all variable costs are trip costs. This bulletin divides costs into variable and fixed costs. Total variable and fixed costs per boat amounted to $86,514 in 1979 (Table 3).

Variable.--The trip cost components of variable costs for the small swordfish vessel are bait, cyalume lights (chemical light sticks tied above the bait), ice, fuel, batteries, groceries, and miscellaneous expenditures. These seven trip cost components of variable cost totaled $30,774 or 36 percent of total costs. Cyalume lights, fuel and bait were the three highest cost items (Table 3).

Crewshares in the swordfish fishery, as in most other fisheries, occur only during the trip. However, they are related to the catch rather than the trip. Crewshares are determined in a number of ways depending on the fishery. In most fisheries, certain expenses are deducted from the trip's revenue before the remaining revenue is distributed to the boat, captain and crew. The typical share method used in the small boat swordfish fishery was for trip expenses for bait, lights, ice, fuel, batteries, groceries and miscellaneous costs to be deducted from total revenues with the remainder divided among the boat (40 percent) and the captain and crew (60 percent). The 60 percent is then divided by the captain (35 percent), first mate (15

percent) and crewman (10 percent).[1] This results in annual crewshares to each of $39,044, $16,733 and $11,155, respectively. Note that total crewshares (Table 3) were $27,888 since the captain was also the owner and the total net revenue (including the captain's share) is calculated to the owner/captain. Crewshare costs represented 32 percent of total costs.

The remaining variable cost items result from repairs and maintenance on the longline, vessel and other equipment. Longline repairs and maintenance of $6,023 consists mainly of replacing line, gangions, buoys, hooks, strobes, hiflyers, snaps and buoy drops. Vessel repair and maintenance costs to the hull, engine and electronics totals $5,574. Total longline and vessel repair and maintenance costs of $11,597 then amounts to 13 percent of total costs. Total variable costs amounted to $70,259. This was 81 percent of total costs.

Fixed.--Total fixed costs for the small swordfish vessel were $16,255 or 19 percent of total costs. Depreciation of the longline, hull, engine and electronics amounted to $10,452. Depreciation rates for a vessel could vary substantially depending on the individual, the tax strategy employed, and the type of vessel. Typical depreciation rates for the longline and electronics might be three years; for the engine, five to seven years; and for the hull, 7 to 15 years. Rates used for this budget were longline and electronics (three years), engine (7 years) and hull (10 years). Salvage values were assigned to the engine and hull.

Insurance is also a costly item in operating a fishing business. For this type swordfish vessel, the total cost of insurance is $2,660 per year which is approximately four percent of the value of the hull, engine and electronics. This protects the vessel owner against a loss if the boat is sunk or severely damaged. The rates for boat insurance may vary dramatically depending on whether the hull is wood, steel, or fiberglass. It may be difficult to even secure insurance on a wood hull. If a boat is mortgaged, the owner will probably be required to carry liability insurance. For older boats and boats on which no mortgage exists, many fishermen may

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[1]This method was used for this bulletin and appears to be typical for the small boat swordfish fishery. Methods and actual percentages used may vary, however, among individual boats in the fishery. Sometimes minor longline maintenance and repair costs may be deducted from total revenue before crewshares are determined.

Table 3.--Costs and returns budget for a 36-foot swordfish vessel using a 10-mile longline on the South Florida Atlantic Coast, 1979.

	Price per Pound (Dollars)	1979						19__ Budget[c]				
		Number of Fish		Pounds or Units		Dollars		Units or Pounds per Trip	x Number of Trips	x Price or Cost per Pound or Unit	= Total Revenue or Cost	Revenue or Cost per Trip
		Total	Per Trip[a]	Total	Per Trip[a]	Total	Per Trip[a]					
										------Dollars-----		
Revenue												
Large swordfish	2.08	257	2.9	45,834	533	95,308	1,108					
Medium swordfish	1.82	224	2.6	16,161	188	29,485	343					
Small swordfish	1.52	260	3.0	8,631	100	13,112	152					
Total		741	8.6	70,626	821	137,905	1,603					
Swordfish chunks	1.50	26	.3	1,331	15	1,998	23					
Tuna	.82	34	.4	2,142	25	1,751	20					
Other	.89	--	--	759	9	673	8					
Total		801	9.3	74,858	870	142,327	1,654					
Expenses												
Variable												
Bait (pounds)				11,024	128	6,134	71					
Cyalume lights (number)				12,900	150	10,191	119					
Ice (pounds)				28,566	332	592	7					
Fuel (gallons)				10,320	120	8,978	104					
Batteries (number)				1,290	15	889	10					
Groceries				--	--	3,440	40					
Misc. (gloves, saws, etc.)						550	6					
Crewshare						27,888[d]	324					
Longline repairs and maintenance												
mainline reel (feet)				7,980	93	336	4					
gangions				43	1	2,408	28					
bullet buoys (number)				30	(b)	90	1					
hooks (number)				2,580	30	1,548	18					
strobes (number)				860	10	99	1					
hiflyers (number)				2	(b)	360	4					
snaps (number)				860	10	808	9					

Continued

Table 3.--Costs and returns budget for a 36-foot swordfish vessel using a 10-mile longline on the South Florida Atlantic Coast, 1979--Continued.

	Price per Pound (Dollars)	1979 Number of Fish Total	1979 Number of Fish Per Trip[a]	1979 Pounds or Units Total	1979 Pounds or Units Per Trip[a]	1979 Dollars Total	1979 Dollars Per Trip[a]	19__ Budget[c] Units or Pounds per Trip	x	Number of Trips	x	Price or Cost per Pound or Unit	=	Total Revenue or Cost	Revenue or Cost per Trip
												------Dollars-----			
buoy drops (feet)				2,120	25	74	1								
miscellaneous						300	3								
Vessel repair and maintenance															
hull						2,362	27								
engine						1,100	13								
electronics						2,112	25								
Total variable costs						70,259	817								
Fixed															
Depreciation															
longline						3,168	37								
hull						3,225	38								
engine						1,143	13								
electronics						2,916	34								
Insurance						2,660	31								
Interest						2,659	31								
Dockage						432	5								
Vessel registration						52	1								
Total fixed costs						16,255	189								
Total Costs						86,514	1,006								
Net Revenue to owner/captain's crewshare, management and capital						55,813	649								

[a]Totals may not add due to rounding. Average number of trips was 86.

[b]Less than one half.

[c]This column will be used later in the bulletin.

[d]Does not include captain's share of $39,044. This is included in the net revenue to owner/captain of $55,813.

Source: Data collected from four full-time swordfish vessels.

elect to carry their own risk and not insure the boat.

The other type of coverage is property and indemnity (P & I) insurance. This coverage offers protection to the owner for damage to the property of others caused by the boat and against injury to crewmen. Sometimes the owner/captain chooses not to carry P & I insurance since the vessel is owner operated. The absentee owner has less control and should seriously consider taking both hull and P & I insurance.

The remaining fixed costs incurred by operating the swordfish vessel were interest, dockage and vessel registration. Both dockage and vessel registration are determined by boat length. Dockage charges faced by small swordfish vessels along the lower Florida Atlantic coast approximate one dollar per foot per month or $432 per year. Vessel registration for this boat length is $52 per year. The interest charge paid by the average vessel could also vary dramatically depending on the interest rate at the time the loan was made and the amount of the loan. Some fishermen own their boats outright, and thus would have no interest charge. The charge reflected for the swordfish vessel in 1979 was at a rate of 12 percent per year for an outstanding loan balance of one-third the value of hull, engine, and electronics. Much higher rates may now be experienced.

Net Revenue or Profit

Net revenue to the average lower Florida Atlantic coast 36-foot swordfish vessel using a 10-mile longline was $55,813 during 1979. This was the return to the owner/captain's labor and management (captain's crewshare of $39,044) plus a return for the capital invested in the vessel ($16,769). This return to capital of $16,769 represents a 22 percent return based on the value of the vessel and gear of $76,855 (Table 2). This indicates that, had the captain been serving on the boat owned by another person (absentee owner), the investor would have earned $16,769.

Charges such as depreciation, insurance and interest charges may not occur for all vessels. And, from the viewpoint of the vessel owner, the depreciation charges actually allow for a cash flow realized from the depreciation allowance. In addition, in some cases boats often appreciate in value and the owner will realize additional income at the time the boat is sold or replaced. All these factors should be considered in the profit analysis of the swordfish vessel. The profit analysis may differ depending on whether it is for tax calculations, allowing for the captain's and family's

labor, and whether it is for cash on hand at the end of the year. Dockside statements about "the profit I made last year" should be examined carefully before accepting them as facts.

ENTERING A NEW FISHERY

The cost and returns budgets presented above give a person considering entering the swordfish fishery a useful guideline in making the investment decision. Two basic decisions must be made. First, how much will it cost to enter the fishery; and second, how much profit can be made? The budget information in Tables 2 and 3 can be updated to provide this information. The interested investor can go to boat dealers, other fishermen, equipment suppliers, etc. and the various sources mentioned earlier to get hull, engine, electronics and longline investment costs for the current year. These costs can be entered in the blanks in Table 2 and total investment costs can be determined. A 10-mile longline is budgeted in Table 2. Requirements per mile can be used to modify the table for longlines other than 10 miles in length.[1]

The expected net revenue or return to owner's management, labor and capital can then be estimated by modifying Table 3. It will be necessary to determine the expected catch, the expected prices that will be received, the cost per pound or unit of expense item used, and the anticipated number of trips that will be taken. Care should be exercised in determining the number of trips and expected catch per trip to see if current conditions might be different from those in 1979. If not, the catch data shown in Table 3 should provide a useful guideline.

CHANGING FISHERIES

Fishermen who are already fishing for other species might be considering a change to the swordfish fishery. For example, boats used in the king and Spanish mackerel fishery and the spiny lobster fishery could be converted to swordfishing with minimal physical changes. Large mackerel gill net boats (30 to 55 feet) earned an average net return to the owner's

[1]For example, during 1980, fishermen began to use slightly longer lines (14 miles) but maintained the total number of hooks at 200.

labor, management and investment in 1979 of $30,111 (Table 4). Mackerel fishermen might anticipate that swordfish longlining was a more profitable fishing alternative. To evaluate this alternative, rather than estimate the entire investment requirements and cost and returns budget, the existing boat owner would only want to analyze revenues and costs that would change in making the change from mackerel netting to swordfish longlining. Almost no physical changes must be made to existing mackerel boats, and only a longline reel and longline must be added. The hydraulic reel might be removed. To answer the question, "Will it pay to make the conversion?", the technique of partial budgeting can be used.

This technique analyzes only the costs and revenues that change. In switching from mackerel netting to swordfish longlining, losses occur from any increases in fishing costs and decreases in income. Economic gains occur from decreases in costs and increases in income. If the gains are larger than the losses, the change is economically feasible. To analyze the changes:

Increased Costs		Decreased Costs	
Bait	$ 6,134	Fuel (12,211 - 8,978) =	$ 3,233
Cyalume lights	10,191	Crewshare (51,324 - 27,888) =	23,436
Batteries	889	Spotter plane	7,852
Groceries	3,440	Ice (2,536 - 592) =	1,944
Longline r & m	6,023	Gear (1,443 - 550) =	893
Longline depreciation	3,168	Net r & m	1,784
		Net depreciation	7,094
Decreased Income		**Increased Income**	
	0	Fish sales (142,327 - 130,870) =	$11,457
Loss effect	$29,845	Gain effect	$57,693

Gain effect	$57,693
Loss effect	-29,845
Profit from change	$27,848

By changing to swordfishing, the former mackerel fisherman realizes an additional $11,457 in income. Decreased costs resulted from using less fuel, ice and gear, paying a smaller crewshare, not requiring a spotter plane, and not having expenses for net repair and maintenance and net depreciation. Increased costs resulted from bait, cyalume lights, batteries

Table 4.--Estimated costs and returns for large lower Florida Atlantic Coast mackerel net boats, 1979.

Item	Dollars	
Revenue		
king mackerel		25,760
Spanish mackerel		59,764
other fish		45,346
Total		130,870
Variable Costs		82,352
fuel and oil	12,211	
crewshare and picking labor	51,324	
spotter plane	7,852	
ice	2,536	
raingear and gloves	1,443	
hull and engine repair and maintenance	4,888	
net repair and maintenance	1,784	
electronics repair and maintenance	314	
Fixed Costs		18,407
hull and engine depreciation	6,269	
electronics depreciation	363	
net depreciation	7,094	
insurance, interest, registration, dockage	4,681	
Total Costs		100,759
Net returns to owner's labor, management and investment		30,111

Source: Updated from Cato, Morris and Prochaska (1978).

and groceries. Costs will also be incurred from longline repair and maintenance and from depreciating the newly acquired longline and reel. The net effect of switching is then $27,848. This analysis means the mackerel fisherman will make an additional $27,848 by making the switch for a total income of $57,959. This result is slightly higher than that earned from the 36-foot swordfish boat. The larger vessel will consume more fuel than the smaller vessel. However, this difference was not calculated for this partial budget analysis.

The fisherman should always consider a number of other factors before making the change. Can the existing mackerel nets be sold? Is enough capital available to purchase the longline and reel? Will the crew be happy in changing from a strictly day, nearshore fishery to an overnight, offshore fishery? Does the captain and the crew have enough experience to initially make this level of swordfish catch? All these factors, in addition to the anticipated profit increase, merit serious consideration.

During 1979 and 1980, a large number of shrimp vessels in the Gulf of Mexico converted to swordfish longlining. A detailed analysis of the economic feasibility of this type vessel conversion can be examined in Nichols, Gerlow and Swartz (1980). Economic information also exists on several of Florida's more important fisheries. Cost and returns information on shrimp can be found in Blomo and Griffin (1978), Roberts (1979) and Warren and Griffin (1978). Data on spiny lobster fishing by vessel size can be found in Prochaska and Williams (1976). Red snapper and grouper fishing is analyzed in Cato and Prochaska (1977), and king mackerel hook and lining is described in Prochaska, Morris and Cato (1977). Smith and Prochaska (1972a, 1972b) describe blue crab and mullet fishing. Although the vessels in some of these fisheries cannot be converted to swordfish longlining, they do provide sources of economic information on some of Florida's fisheries.

TAXES

The net revenue shown for the average swordfish vessel represents profit before taxes. Taxes due from net revenue will depend on the tax situation of the individual who pays the tax and the method of business organization (single proprietorship, corporation, etc.). There are several unique distinctions relating to federal taxes from fishing. Owners of fishing boats do not have to withhold income tax from the crewshares paid to crewmen as long as certain requirements are met, most notably that the crew is paid on a share-of-the-catch basis and the crew is normally less than 10. The owner also does not have to pay the employer's share of Social Security taxes. Federal unemployment taxes must be paid if the vessel is over 10 net tons. Exact rules and regulations are published by the Internal Revenue Service (1980).

Florida swordfish fishermen also can avoid paying state sales tax on their vessels and most supplies that are used since swordfish are caught outside the territorial waters of the state. There are certain tax exemption procedures which must be completed before the purchase as established by the Florida Department of Revenue.

Another important tax break allowed fishermen is the Capital Construction Fund (CCF). The CCF program allows fishermen to set aside a portion of their earnings without being taxed on them for the purpose of constructing,

reconstructing or acquiring fishing vessels. This allows the use of before-tax dollars in improving the fisherman's future vessels. The money must be used for the stated purpose or taxes will have to be paid on it. A booklet on the CCF can be obtained by writing:

Financial Services Division
National Marine Fisheries Service
9450 Koger Blvd., Duval Bldg.
St. Petersburg, FL 33702

FINANCING

Most swordfish longliners (as well as all types of fishermen) admit that making a living from the sea is a risky proposition. Both lenders and fishermen are in business to make money. Fishermen have accepted this risk. Lenders often don't, and won't, until after a careful review of a fisherman's business condition and the purpose of the loan. The fisherman must project the image of a knowledgeable businessman both on paper and in a face-to-face meeting with the lender, regardless of whether the lender is a private bank or a government-backed program. Loans are available for sound financial proposals. Most complaints that loans are not available are due to poorly prepared applications. Fishermen know fishing and banks know banking. It's the fisherman's job to educate the bankers that the loan proposal represents a worthy credit risk.

Good records are the starting point for any credit application. Records should be simple, yet useful in a decision-making framework. No one system is best, and several sample fishermen's systems exist. The fisherman's credit application should provide a business portrait of the fisherman. This should include references and past fishing experiences. The portrait should also contain a historical record of past business performance. The fisherman should be expected to provide a current financial statement and profit projections. The impact of the loan on the business should also be demonstrated. A person with no fishing experience will have a great degree of difficulty in securing a fishing loan without a large down payment.

The local bank should be the starting point for fishing loan applications. There is usually at least one local bank in a fishing area interested in lending to fishermen. Some government-based programs also require

local bank participation (or rejection). Sometimes specialized marine financiers are also interested in making fishing loans. One problem with banks and private financiers is that they are often reluctant to make loans longer than 7 to 10 years. This may be too short on large vessels. Boat builders are a good source of information about local banks and specialized marine financiers.

Although there are several government programs that participate in fishing loans, there is no such thing as a low-interest government loan for fishing borrowers. The National Marine Fisheries Service's Fishing Vessel Obligation Guarantee (FVOG) program guarantees the lender that a fisherman will repay the loan. If not, the loan will be paid by the government. The fisherman pays an annual fee to participate and insure that the lender is repaid if the fisherman defaults. The FVOG program is primarily for new vessels over 5 net tons. It can be applied for used vessels only when the owner wants to reconstruct or refinance an existing vessel. The applicant must have a 12½ to 25 percent down payment. A guarantee may be for 15 to 20 years depending on the amount of the loan. Three years' demonstration of economic soundness is also required. All these requirements may change depending on general economic conditions and the particular fishery. A booklet on the FVOG program can be obtained from the National Marine Fisheries Service address in the section on taxes.

The National Marine Fisheries Service has a direct loan program called the Fisheries Loan Fund. However, it has not been active (not funded) for a number of years. Therefore, there are no direct loans available from the NMFS.[1]

The Small Business Administration (SBA) has the authority to make direct loans to fishermen and also has a loan guarantee program which it prefers to use rather than the direct loan. However, it cannot duplicate the programs of other agencies. Thus, it cannot guarantee a loan for a fisherman who is eligible for the FVOG program. The main advantage of the SBA guarantee is that vessels under 5 net tons can be guaranteed. These vessels are not eligible for the FVOG program. Any SBA office can provide details on the direct loan or loan guarantee program where requirements are different than that of the FVOG program.

[1]Legislative changes in this and other programs were being proposed during 1981.

The Farmers Home Administration has a guaranteed loan program for shoreside processing facilities and the Economic Development Administration sometimes has specialized programs designed to fit special loan needs of fishermen. Both FmHA and EDA are rarely used by fishermen, as most other loan sources are much better suited to fishermen's needs.

The Production Credit Associations (PCA's) are located throughout Florida and provide a loan source highly favorable to fishermen since the PCA's loan only to farmers and fishermen and are familiar with their needs. Both short and intermediate-term loans can be made on new or used boats of any size and for operating capital. Loans can be up to 15 years and simple interest is charged on the outstanding balance. A borrower must become a PCA member and buy a small amount of stock in the PCA. This stock purchase may be a part of the loan. Only borrowers are members of the PCA.

ABSENTEE OWNERS

Many people view owning a fishing vessel with a hired captain as an attractive investment. Well maintained boats often appreciate in value and when sold the gain is taxed according to the long-term capital gains provisions of tax laws. None of the gain is taxed if a CCF is utilized to replace the vessel. However, the prospective absentee owner should be aware that the costs and returns often shown in studies may reflect owner-operator captains and that the hired captain and crew may not provide the same returns. Some studies have shown, particularly in shrimp, that hired captains and crew usually experience much higher fishing costs.

Fishing, particularly in the southeast, has often been a family business. The owner/captain often does much of the repair work on the vessel, utilizes family labor where possible, and is usually much more conscientious in operating the boat. In this case, most maintenance costs are normally lower, less fuel is consumed, and thus net returns are much higher. More care is usually taken in the boat's operation and insurance costs are normally lower for the owner/captain.

The absentee owner should consider how all these factors might influence the expected net revenue. Sharing systems such as a bonus system should be considered as an effort to offset potentially higher costs. Permitting the captain to be a part owner through a profit sharing system would

also be an incentive to lowering costs. A profit share/purchase plan whereby the absentee owner could complete the sale of the boat to the captain when the boat becomes fully depreciated might be a wise tax strategy. As in any industry, the possibility of a dishonest captain exists in the fishing industry. It is easy to sell a part of the catch "on the side" without reporting this to the owner. A bonus or profit sharing plan might discourage this activity.

In reality, the outside investor is financing a floating business, one that must follow the fish to be successful. The hired captain must be capable of spending long periods away from home. Another consideration is that the boat should not be so specialized as to prohibit changing fisheries. The captain will have to be capable and trustworthy of managing a part of the financial dealings of the business. Above all, since the business floats, you can't "drop in" to check on it when you please.

SUMMARY

Although the commercial swordfish fishery dates back to the mid-1800's, it was not until the early 1960's that a longline fishery developed in the U.S. And, it was not until the late 1970's that a Florida longline swordfish fishery developed. This bulletin is designed to present an economic analysis of the cost and returns that might be expected from operating a 36-foot swordfish longline vessel along the Florida South Atlantic coast to provide an investment decision guide to both existing and potential fishermen who might want to enter the swordfish longline fishery. The same method can be utilized regarding investment decisions for fisheries other than swordfish.

Any investment decision should include a market analysis as well as learning about the stock of fish from which the catch is to be made. Those factors which are beyond the control of the fishermen but yet affect the costs and revenues that will accrue to the fishermen should be carefully analyzed. The estimated value of the investment that will be required to enter the fishery should be well thought out. For the small boat swordfish longline fishery in 1979, the average investment in a vessel and gear was $76,855. Expected net returns to the owner/captain's labor, management and investment was $55,813 before taxes.

Some existing fishermen might also consider changing fisheries. The technique of partial budgeting provides a useful tool for making this type investment analysis. It was demonstrated that a large vessel Spanish mackerel gill net owner/captain could have made an extra $27,848 by changing to swordfish longlining in 1979.

Taxes and financing both offer unique situations when fishing vessels such as swordfish vessels are involved. There are both special state and federal tax regulations that apply to fishing vessels. Lenders also make careful examination of all aspects of fishing vessel loans. Analysis of the various loan sources and programs available before making the loan application should be made to see which best fits the fisherman's needs. Absentee owners should also closely examine the fishing business before investing in a fishing vessel with a hired captain.

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