

Development of a U.S.-Based Longline Fishery for Swordfish (*Xiphias gladius*) in the Caribbean Region: Problems and Opportunities

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ABSTRACT

En los pasados tres inviernos, se ha desarrollado una pesca comercial viable del pez espada por barcos palangreros de los E.E.U.U., en el este de la Cuenca del Caribe y aguas contiguas del oeste del Océano Atlántico. Luego de las primeras incursiones por varios barcos durante el invierno de 1983-84, un número creciente de palangreros de alta mar de la costa este de los E.E.U.U. han dirigido sus operaciones pesqueras "de invierno" hacia el Mar Caribe. Durante el invierno de 1985-86, cerca de 43 embarcaciones estuvieron operando en un momento dado desde San Juan, Puerto Rico. El promedio de barcos operando durante esa temporada fue de alrededor de 25.

Inicialmente, la mayor parte de esfuerzo pesquero estuvo concentrado en o cerca de la Zona Económica Exclusiva de los E.E.U.U. alrededor de Puerto Rico y las Islas Vírgenes Americanas. Un acuerdo final permitió a un número de barcos pescar desde las Islas Vírgenes Británicas durante las temporadas de 1984-85 y 1985-86. Otros acuerdos informales fueron realizados por "barcos individuales" con otras islas, y como resultado, una cantidad considerable de pesca se llevó a cabo a lo largo del nordeste, este central y sureste del Mar Caribe y Atlántico Occidental.

Prácticamente todo el esfuerzo pesquero se dirigió hacia el pez espada. Cantidades variables de pesca incidental del patudo (big eye tuna) rabil (yellowfin tuna) y dorado contribuyeron significativamente al ingreso bruto. Casi todos los pez espada y atunes fueron enviados por avión desde San Juan hacia los mayoristas de la costa este de los E.E.U.U. Sobre 1.5 millones de libras de pez espada fueron embarcados durante el período de octubre de 1985 y mayo de 1986. Durante este tiempo, el ingreso bruto por barco excedió los seis millones de dólares. Dos incidentes recientes recientes en donde estuvo envuelto la aprehensión de dos barcos de los E.E.U.U. por naciones soberanas, destacan la necesidad de acuerdos pesqueros de beneficio mutuo entre la industria pesquera de los E.E.U.U. y los países del Caribe. Nuestra presentación describe un acuerdo simple, conciso y verificable, el cual estamos tratando de negociar bajo los auspicios del Instituto de Pesquerías del Golfo y el Caribe.

INTRODUCTION

The swordfish *Xiphias gladius* is distributed worldwide in tropical and temperate seas. Palko *et al.* (1981) provide a synopsis of swordfish biology, and Grall *et al.* (1983) review current literature on aspects of life history. While descriptive papers are abundant, information on stock structure and population condition relative to exploitation in the North Atlantic Ocean and contiguous waters is both limited and subject to considerable controversy.

Commercial fisheries target the species throughout much of its range. Fishing commenced in the 1800's in the western Atlantic. The primary gear was harpoons, and fishing was constrained in time and space to the summer months off the northeastern U.S. and Canada. Longline gear was introduced in the early 1960's, after which the fishery expanded to year round operation south through the Gulf of Mexico (Berkeley and Houde, 1980). The fishery resumed after a hiatus from 1971-1978 caused by U.S. Food and Drug Administration regulations governing allowable mercury content of swordfish sold to the public (Caddy, 1976). Through 1982, much of the effort by U.S. East Coast fishermen has been concentrated off New England (primarily Georges Bank and the Grand Banks) and Florida (especially the Straits of Florida).

Several high seas, longline vessels from the eastern U.S. made forays into the Caribbean during the winter of 1983-1984. Operations were based in San Juan, Puerto Rico. Since then, a growing number of longliners hailing from Massachusetts to Florida have been shifting wintertime effort to the Caribbean Basin and adjacent southwestern Atlantic waters. The objectives of this paper are to:

1. Briefly describe the development of the fishery.
2. Discuss some problems that have arisen.
3. To propose a mutually beneficial opportunity for cooperation between the U.S. swordfish industry and Caribbean region governments.

DESCRIPTION OF THE FISHERY

Fishing effort the first winter (1983-1984) was limited primarily to the U.S. Fishery Conservation Zone (FCZ) around Puerto Rico and the U.S. Virgin Islands. More vessels entered the fishery during the following two winter seasons (1984-1985 and 1985-1986), causing increased crowding, and, consequently, pressure to expand to other areas. A fishing agreement arranged through informal channels by U.S. Caribbean Fishery Management Council personnel allowed a number of vessels to fish off the British Virgin Islands in 1984-1985 and 1985-1986. Some informal deals were arranged by individual vessels with other islands. None of these latter agreements, however, resulted in stable, sustained involvement. Numerous other vessels fished without permission from sovereign authorities throughout the north central, eastern, and southern Caribbean Sea and nearby western Atlantic. At one time in the 1985-1986 season, 43 vessels were operating from San Juan. An overall average of approximately 25 vessels were fishing between October 1985 and May 1986. After this time many boats had departed for summer fishing off the eastern U.S.

Swordfish were the target species of virtually all of the effort expended by the expanding fleet, although by-catch of bigeye tuna, yellowfin tuna, and dolphin in varying amounts, and occasional mako sharks, contributed significantly to gross revenues. Other sharks, marlin, sailfish, spearfish, and

oilfish comprised most of the remainder of the by-catch, and were usually discarded along with small tuna.

Length of trips depended somewhat on vessel size and accommodations. The range was commonly one to four weeks, with an average of perhaps 2.5 weeks. Most vessels deployed 300 to 500 hooks per set, averaging perhaps 350, depending on conditions. Hook density usually ranged from 10 to 14 per mile, with maximum gear length not greater than 40 miles. Average catch per trip of swordfish varied widely by vessel, but was usually between 5,000 and 15,000 pounds (dressed weight). Average catch of tuna per vessel per trip was often between 1,000 and 3,000 pounds.

Nearly all swordfish and tuna were air freighted from San Juan to eastern U.S. wholesalers, who primarily supply the northeastern U.S. restaurant market. Wholesale buyers paid vessels between \$2.75 and \$5.25 per pound for swordfish during the 1985-1986 season, averaging perhaps \$3.50 per pound overall. Conservatively, in excess of 2,000,000 pounds were shipped from San Juan between October 1985 and May 1986, of which approximately 75 percent was swordfish and 25 percent tuna. Thus gross revenue to the fishermen was over \$6,000,000.

PROBLEMS AND OPPORTUNITIES

Unfortunately, a considerable proportion of the gross revenue realized from the 1985-1986 season was generated by vessels fishing without permission in or near exclusive economic zones (EEZ'S) of foreign nations. This resulted in two incidents where U.S. swordfish longliners were seized by sovereign governments. Venezuela seized two vessels off Isla de Aves in the east central Caribbean in early spring of 1986, and St. Lucia arrested three vessels fishing in the St. Lucia - St. Vincent area in late spring.

Such incidents create severe, immediate problems with finances and insurance for individual vessel owners, and the attendant publicity increases the chances of arrest for other vessels that persist in unauthorized fishing. While confusion over boundaries may have played a role in at least the first seizure, the industry has since availed itself of the necessary information regarding EEZ's. Owners, captains, and crews would much prefer legitimate fishing agreements to illegal fishing.

The problem, then, for elements of the U.S. swordfish industry is how to go about this. The industry, unlike some of its government-run counterparts from other fishing nations, is comprised of independent, competing fishing companies which in many cases consist of a single vessel. This makes the appointment of a single industry negotiator who would not have conflict of interest difficult or impossible. Furthermore, the majority of those who make up the industry have little knowledge of or experience with Caribbean nations.

On the other side, potential revenues generated by swordfishing agreements would not be insignificant to most of the nations in the region. Also, the combination of the capital intensive nature of required vessels and equipment and the capricious character of the present market make longlining for swordfish by local nations an unpromising prospect. Thus it is probably in the best interest of these governments to let U.S. private sector interests take the financial risks and concentrate instead on extracting a reasonable fee for the use of the resource within their EEZ's.

The Caribbean region has at least one problem in common with the U.S. swordfish industry - it too is comprised of a large number of independent elements. Since the exploited resource is in this case highly mobile throughout the region, an optimal agreement would require some degree of cooperation between nations as well as between elements of the U.S. industry.

The potential for mutual benefit is obvious. Typically, for example, the budget for fisheries research and management is extremely low on most of the small island nations in the Caribbean, making rational management of locally exploited resources difficult or impossible. Yet U.S. vessels are regularly grossing \$30,000 to \$60,000 (U.S.) in the immediate vicinity and are readily willing to pay a fee for the right to fish. Another typical characteristic of the region is difficulty providing an adequate supply of local fish to both the tourist and domestic markets. U.S. swordfisherman have already demonstrated a willingness to provide a portion of the catch for local use toward payment for fishing rights. They have also been amenable to hiring local citizens for everything from crew positions to stevedores, which addresses the omnipresent problem of unemployment. These various compensations could substantially help the area.

We suggest that, since both the U.S. swordfish industry and island nations in the Caribbean are relatively large, autonomous collections of entities, an unbiased mediator would facilitate negotiation of an agreement. We believe that scattered attempts at bilateral arrangements between individuals from the two groups will continue to result in delays and disorganization leading to lost opportunities for both sides. The Gulf and Caribbean Fisheries Institute (GCFI) can at least provide a forum for discussion, and could perhaps, in conjunction with the University of Miami Division of Marine Affairs or some other source, physically provide appropriate personnel for effective mediation.

Given that an acceptable mediator(s) is arranged, we propose that a short, simple, and verifiable agreement be presented individually to appropriate personnel from a number of nations with potentially productive fishing grounds. The presentation would be made personally, with a short deadline for positive response. The initial consortium of nations would sign an agreement with the U.S. industry, which would be represented by a selection of individuals, under the auspices of GCFI. Payment would be in the form of an annual lump sum contributed by the industry, and divided among member nations by some sort of weighted scheme based, for example, on size of EEZ.

We have attempted to present a general format for a mutually beneficial agreement between U.S. swordfishing interests and Caribbean nations. While many more specific details would be considered in the course of the actual agreement, we believe that the general idea presented has considerable potential for eliminating current problems and helping both sides take advantage of the opportunities presented by longlining for swordfish in the Caribbean.

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