

# Fisheries Buyouts: An Appropriate Solution to Conservation?

Anne M. Wakeford, Florida Marine Research Institute, St. Petersburg, Florida

**Abstract.** Various buyout or retirement schemes are used, primarily to reduce fishing effort and capacity. Buyouts are used to provide economic aid in cases of natural disaster and to reduce the numbers of vessels, licenses, and gear in a fishery, i.e., capacity reduction. This paper is part of a larger internship report conducted at the National Audubon Society's Living Oceans Program, Islip, New York. The report was the final requirement for an M.A. in Marine Affairs and Policy at the University of Miami, Florida. In this paper I briefly outline two case studies, The Texas shrimp license buyout and the Florida net ban. I also illustrate the complexities when discussing multiple buyout programs such as New England and Canada Atlantic groundfish. The impetus of this research project was to examine the case study of Atlantic swordfish and its pelagic longline fishery including the pros and cons of the management techniques of conservation and buyouts. In conclusion, I discuss the salient points of buyouts and provide recommendations for future buyouts.

## Introduction

Many fisheries have excess fishing capacity (Hardin, 1968). Capacity refers to vessels, licenses, and gear (Milazzo, 1998). Effort refers to the labor and use to which vessels, licenses, and gear are put. Overcapacity (excess fishing

vessels, permits and related gear) can result from legal, ecological, or economic factors. Programs that purchase fishing vessels and fishing permits attempt to reduce overcapacity. A subsidy is a government policy that alters market risks, rewards, and costs in ways that favor certain groups. (Roodman, 1996).

type of subsidy	example
direct income support	price supports or grants, discourage exit
reduce producers variable costs	fuel tax exemptions
use of capital to attract investment	low interest loans and tax concessions
governments charge less for exploitation	less for domestic, more for foreign fishers
general subsidy to shipbuilding industry	lower construction costs of vessels

**Table 1. Types of fishing industry subsidies and examples (Porter, 1997).**

Buyouts have been used to provide economic aid to fishers, in the case of natural disasters and for capacity reduction to purchase and reduce the numbers of vessels, licenses, and /or gear within a fishery (Read and Buck, 1997).

This paper briefly outlines two case studies, both of which occurred in the gulf states, the Texas shrimp fishery and the Florida Net Ban. I then briefly mention the complexities involved when considering multiple programs such as the New England and Canadian groundfish buyouts. I then discuss in detail, the Atlantic pelagic swordfish longline fishery buyout. I conclude with summarizing the salient points of buyouts and discussing recommendations for future buyouts.

## Case Study Histories

**License Buyouts** In 1985, the Texas legislature granted management authority over the Texas Shrimp industry to Texas Parks and Wildlife Department (TPWD), contingent upon the development of a shrimp management plan, which

was later adopted in November 1989 (TPWD, 1999). According to the evaluation of public testimony, additional traditional management measures such as gear restrictions, area and time closures, and size and bag limits would reduce the efficiency of individual shrimpers and cause increased enforcement costs. Therefore, the industry and TPWD began to work on an inshore limited entry program that would create long-term social, economical, and biological stability, which was needed in the industry (TPWD, 1999).

In 1995, the industry limited its bay and bait fisheries by issuing licenses to eligible participants based on historical participation in the fishery. As Texas does not have a fish-ticket system, it can not link licenses to specific catches, so it could not use catch histories in its allocation decision.<sup>1</sup> As there were increasing numbers of boats fishing inshore, overfishing was evident. Also, the small size in shrimp landed in port, not only hurt the bay fishery, but also the Gulf fishery, which catches shrimp after they migrate to the open ocean. (Kronman, 1998).

Therefore, to more effectively manage the shrimp fishery, and thus monitor fewer boats, a buyout program was initiated in October 1996. The program, like many other license buyout programs, is both voluntary and uses a reverse bid procedure, with anyone in the fishery (commercial bay and bait fishery) being allowed to submit bids (TPWD, 1999). The reverse bid procedure operates as follows. The TPWD calculates an estimated value of a license based on specific criteria, such as, how long the license has been in the fishery and the length of the vessel. The shrimper evaluates the value of his license and submits a sale offer (bid) to the TPWD. Each offer is then compared with the calculated value for that particular license. The shrimper's bid is accepted if it is less than the calculated value. Bids with the greatest monetary difference from the calculated value are selected to be purchased first. In FY 1996-97, 67 permits were bought at a cost of \$228,000. The next 61 licenses were bought at a cost of \$225,800. By late 1998, 255 bay and bait licenses were purchased for a total of \$985,607 (TPWD, 1999). An additional 115 licenses<sup>2</sup> were purchased in early August 1999, thus bringing the total purchased licenses to 370.

Funding for the program was initially established through a portion of license fees as established in Senate Bill 750. These funds accrue annually, based on the number of shrimp handling and catching monies sold (TPWD, 1999). In licensing, the fee is increased by 15% (to a maximum of \$25) on the cost of licenses to work with shrimp. The licenses include: the bay, bait, and gulf fishing licenses, as well as the licenses required for whole saling and retailing shrimp in Texas. This tax raises about \$180,000 to \$185,000 per year. The first buyout round was funded only with these monies. Additional funding of \$1.4 million was acquired in 1997, as a three-year federal grant to the TPWD. Private donations of \$95,000 have also financially aided the shrimp buyout program (TPWD, 1999). The most important aspects of the program, the cap on the number of licenses, will prevent increases in the number of participants in the fishery. Also, the voluntary license buyout will gradually reduce overall effort, which will enable the shrimp industry to be more effectively managed. Although some area and seasonal closures are currently in place, these types of closures, as well as additional conservation tools, are also being explored for use in the management of the fishery (TPWD, 1999).

**Gear buyouts** have not been employed as commonly as license and vessel buyouts, as they are often more costly and difficult to administer. Furthermore, gear buyouts have met with varying degrees of success depending on the person consulted. One of the most well-known gear buyouts occurred with nets in Florida. The Florida Net Ban, voted upon as State Amendment 3, on the November 8, 1994 Referendum, obtained the support of almost 72% of voters according to the Keynote (1994). The referendum resulted in the banning of entangling nets (gillnets and trammel nets) in Florida waters. Other types of nets such as seines, cast nets, and trawls could

be used if the total area of the net mesh was less than 500 square feet according to Adams et. al., (in press).

The elimination of entangling gears was intended to reduce the commercial fishing pressure on the targeted species as well as those species believed to be caught unintentionally. For the most important species this primary objective was achieved. For example, stocks of both striped mullet and Spanish mackerel have increased since the net ban (Adams, et. al., in press). Also, according to O'Hop at the Florida Marine Research Institute (FMRI),<sup>3</sup> those fish species that were entirely caught by inshore gillnets, such as mullet and other baitfish, have come back in such large numbers that the TAC has doubled in the last four years. In addition to the reduction in amount of gear, the average annual number of saltwater product licenses decreased from 19,895 to 16,899, which represents a decrease of 15% (Adams, et. al., in press).

Initially, three programs were used to provide economic relief to fishers: an unemployment compensation program, a net buyout program, and a retraining program. According to Palmer, with the Florida Fish and Wildlife Conservation Commission, (FWC) (formerly Florida Department of Environmental Protection (FDEP)),<sup>4</sup> only 50 fishers were covered under employment compensation and received a minimum of \$175 per week for 26 weeks. However, the buying of nets resulted in fishers prefabricating bizarre gear to get the most money. Therefore, this program ran out of money most rapidly.<sup>5</sup>

The most successful program was job training partnerships. According to Vaughan, Director of the Aquaculture Division at the Harbor Branch Oceanographic Institute,<sup>6</sup> \$1.1 million was spent, from 1995 to 1999, to retrain 165 displaced fishers into the occupation of aquaculture. In one year, fishers gained the skills necessary to become shellfish farmers. They also received leases to grow clams and started new businesses, many of which became profitable. As a result of this program, currently a \$10-20 million clam aquaculture industry operates in the State of Florida with 400 people employed. The program has been among the most successful in the United States in terms of dollars spent for job retraining.

According to Adams, Economist at the University of Florida, Gainesville,<sup>7</sup> the 1995 Florida net ban was estimated to directly affect 1,500 families along the coast of Florida and cost about US \$20 million. In a later study during 1997-98, of these 1,500 families affected according to Adams et. al., (in press),

- 82% participated in the net buyout program;
- 64% participated in programs offered by the Florida Cooperative Extension Service;
- 26% collected unemployment benefits; 16% participated in aquaculture training;
- 16% participated in other job retraining efforts; and

16% began collecting food stamps.

In addition to fishers, many others were impacted such as: seafood wholesalers, retailers, recreational fishers, marine supply dealers, and consumers of locally caught seafood (Adams, et. al., in press).

According to a study on the socioeconomic effects of the Florida Net Ban in Monroe County, the implementation of the net ban may only have displaced effort into other, already exploited fisheries (Shivlani et. al., 1998). For example, following the net ban, those individuals who were already participants in spiny lobster and stone crab fisheries greatly increased their effort in these fully-exploited and more highly valued fisheries (Shivlani et. al., 1998). In addition, according to the Monroe County net-ban survey, fishers perceived the ban as a way to reallocate resources to the recreational sector

because over half of the survey respondents believed that reallocation was the ban's primary purpose (Shivlani, et. al., 1998). Also, since the net ban, the recreational sector has landed more pounds of fish than has the commercial sector. However, a report submitted by the Florida Conservation Association, the primary recreational group supporting the net-ban amendment, stated that the recreational use of nearshore fishery resources in Monroe County is more valuable than the commercial net fishery, and that should be sufficient to justify a reallocation of common property to the public for recreation and tourism purposes (Shivlani, et. al., 1998). As a result, although the net ban appeared successful, in Monroe County the ban served to increase effort to offshore fishing as well as displace fishers into other fisheries (Shivlani, et. al., 1998).

Program	Time frame	Type of Buyout	Number Retired	Fleet Size Reduce	Funding and Source ( in millions)	Conservation measure associated
Texas Shrimp	1996-present	license	370	10%	license fees, private grant	permits retired, fleet more manageable
Florida Net Ban	1995-99	license/gear	1,500 families	15%	\$20 state	increased stocks of mullet and baitfish
	1995-99	retrain	165	< 10%	\$1.2 state	\$10-20 million clam industry fishers still employed

**Table 2. Summary of Two Fisheries Buyout Case Studies**

**Multiple programs**, in which both vessels and gear have been purchased, have occurred for groundfish in New England and Atlantic Canada. Despite major differences in management strategies and structures, both regions share similar factors responsible for groundfish declines. Some examples include problems with excessive fishing mortality, recruitment failure, environmental factors, and inadequate data-collection methods (Fordham, 1996). Also, both New England and Atlantic Canada groundfish fisheries have failed according to Doeringer and Terkla, (1995).

**Specific Case Study Swordfish Buyout**

According to both commercial and recreational fishers and industry representatives, a need and justification exists for a buyout of the Atlantic pelagic longline swordfish fleet. Highly Migratory Species (HMS), including North Atlantic swordfish, species of Atlantic billfish, and Atlantic coastal sharks are overfished (USDOC, 1999a). A reduction in the mortality of juvenile swordfish will contribute to the rebuilding of the North Atlantic swordfish stocks as confirmed by the Standing Committee on Research and Statistics (SCRS)

of the International Commission for the Conservation of Atlantic Tunas (ICCAT). Time/area closures can be beneficial and result in reductions of: mortality of HMS; conflicts between commercial and recreational fishers and small swordfish, blue and white marlin, sailfish, spearfish, sharks, and mahi mahi, according to Beideman, President of Bluewater Fishermen's Association, (BWFA, BWFA, 1999)).

The BWFA, the industry's primary lobbying arm, proposed a vessel-license buyout program that seeks to compensate impacted fishers, by establishing two seasonal closed areas that could reduce bycatch of juvenile swordfish and other pelagic species. Industry representatives claim that closing large areas will create extreme economic hardship for those vessels that have traditionally fished in those areas. Furthermore, the industry will oppose the establishment of any closed area unless impacted vessels are purchased.

Therefore, BWFA proposed a buyout of 47 eligible permit holders who fish in an area where large numbers of small swordfish and other bycatch occur, according to the following guidelines (BWFA, 1999):

- (1)- the vessel must have made at least 50% of its annual pelagic longline sets in any one of the last six years, within the proposed conservation zones;
- (2)- the vessel must have made at least 25 pelagic longline sets in any one of the last six years; and
- (3)- these fishers must qualify for an Initial Limited Access Directed Swordfish Permit.

However, no rules exist which prevent the boats with less than 50% of their catch in the proposed closed areas from fishing elsewhere, which could impact fish in those zones. Furthermore, the BWFA proposal only plans to buy the licenses, not the vessels.<sup>8</sup> According to Beideman,<sup>9</sup> eliminating the effort from the bought-out vessels, which do not have the ability to fish farther offshore, or in other areas, will boost the conservation benefit of reducing the year-round catch in these proposed closed areas.

	<b>New England</b>	<b>Atlantic Canada</b>
<b>labor markets</b>	mostly kinship (blood ties) and most boats nearshore	Mostly 2 large corporations and most boats offshore
<b>industrial structures</b>	small boats independently owned and operated and have multiple buyers	Vertical integration, 2 large corporations own most of the processing sector
<b>product markets</b>	fresh fish to select white table cloth markets, lots of small buyers and sellers, willing to pay (WTP) premium prices	Salt/frozen to large super- markets, lower quality fish, monopsy (one buyer)
<b>management strategies</b>	fishery management councils, laissez-faire approach, open access policies (gear restrictions /area closures), left North Atlantic Fisheries Organization (NAFO), and few subsidies provided	Centralized management, limited entry, Transferable quotas, government involvement, international organization, stayed in NAFO, and Subsidies provided in bad times

**Table 3. A Comparison of New England and Atlantic Canada Groundfish Fisheries.**

In initial drafts, financing for the proposed buyout will be split equally between the federal government and a government-guaranteed loan to be repaid by the industry (BWFA, 1999).

Also, most buyouts have historically been ineffective in achieving conservation goals. Also, although the BWFA plan indicates bycatch will be reduced, the plan does not indicate the length of time or the way standards will be measured. Furthermore, the BWFA buyout does not even purport to be necessary to achieve conservation; it is merely a proposal to link needed conservation measures to economic relief. In other words, the have been displaced by necessary conservation BWFA buyout seeks only to compensate those who measures. Compensation, not conservation, is thus the central point of their effort.

The conservation community agrees with BWFA in the need for a time/area closure. However, conservation advocates do not believe that a closed area should be linked to a buyout and propose three arguments.

- (1)- A vessel-buyout plan must not become a pre-condition for

the implementation of needed conservation measures. (2)- A vessel buyout is not necessary to implement area closures and other bycatch reduction measures and should not delay implementation of such measures by NMFS.

- (3)- Any buyout must permanently retire the vessels, not just the permits.

Implementation of conservation measures must be first and foremost. Time and area closures are key conservation measures to protect swordfish nursery areas, spawning grounds, and other critical areas. During closures, Hinman, President of National Coalition for Marine Conservation, (Hinman, 1998) recommends:

- (1)- a prohibition on fishing with longlines or other gear, which has a significant bycatch of swordfish under 41 pounds dressed weight;
- (2)-annual monitoring of the fishery in open areas, by observers, to determine: change (positive or negative) in catch rates and discards of undersized swordfish, and change (positive or negative) in bycatch rates for other species as a result of changes in fishing patterns; and

(3)- an annual assessment of the effectiveness of the closures and modifications needed to achieve swordfish conservation and management goals.

Closed areas could be reduced in size and/or time as fishers demonstrate cleaner fishing practices, thereby providing an incentive for fishers to experiment with gear modifications or alternative fishing methods. Conversely, if high discard rates occur in other areas, closures could be expanded in area and/or time. As a result of closures, it is imperative that:<sup>10</sup>

- (1)- all discarded fish be counted against the quota;
- (2)- all juvenile fish and other non-target species that are

- brought onboard the boat alive, should be released alive;
- (3)- the minimum size of swordfish that can be kept or sold be raised to discourage fishing in areas where juvenile fish congregate;
- (4)- the length of soak time of longlines be reduced to increase the survival of unintentionally-caught fish and other marine wildlife in areas open to fishing;
- (5)- import restrictions be imposed on undersized fish to encourage other nations to comply with internationally agreed conservation measures; and
- (6)- ATCA be changed to allow the United States to set its own quota.

<b>BWFA Swordfish Buyout Proposal</b>	<b>Conservation Community Criteria</b>
buyout of licenses only	buyout of licenses, boats, and gear
seasonal/area closures, but no provisions for monitoring and enforcement	seasonal/area closures in nursery and spawning grounds and other areas of high bycatch, with enhanced monitoring
bycatch reduction, but no target goals (% or time frame) set	bycatch reduction with hard targets (50% by 2002) and bench marks set to measure progress
bycatch reduction of other pelagic species, but no set target goals	minimize bycatch reduction of all over-fished pelagic species with target goals
no quota reduction provisions	Quota reduction at ICCAT
no raising of minimum size of swordfish	Raise minimum size of swordfish
no provisions for regulatory framework	Regulatory framework with an annual review of bycatch reduction and adjustment of conservation measures
no provisions for expansion of observer coverage	Expansion of at-sea observer coverage

**Table 4. A Comparison of the BWFA and Conservation Community Criteria.**

The conservation community believes NMFS must adopt effective conservation measures to:

- (1)- stop overfishing, which must be achieved both by fleet and quota reduction: (2) rebuild the swordfish population within ten years; and
- (3)- establish hard targets for bycatch reduction. For example, at least a 25-75% bycatch reduction within five years has been suggested (Federal Register, 1999).

In its final rule on the HMS and Billfish FMPs, in the May 28, 1999 Federal Register, NMFS states that bycatch has been minimized to the extent practicable because NMFS is:<sup>11</sup>

- (1)- pursuing gear modifications in the pelagic longline fisheries;
- (2)-implementing a time/area closure for bluefin tuna;
- (3)-reducing quotas in directed fisheries;
- (4)-implementing limited access;
- (5)-planning educational workshops;
- (6)- putting forward a proposal for counting dead discards against quotas; and
- (7)- developing larger time/area closures for juvenile swordfish and other bycatch.

Other factors must also be taken into consideration and several unanswered questions still exist, such as the following nine questions.

- (1)- How will the proposed closed areas be enforced? Currently, all pelagic longline vessels are required to have vessel monitoring systems (VMS). But how much observer coverage will be required to determine if the bycatch reduction targets are being met?
- (2)- How long will the closed areas be closed? Will the closed area be closed indefinitely? Will the areas remain closed even after the stocks of swordfish are rebuilt?
- (3)- What is a realistic number of years for rebuilding the swordfish population? Many populations of fish can be rebuilt to MSY levels in 10 years. However, as North Atlantic swordfish quotas are under the international jurisdiction of ICCAT and managed in the US by NMFS HMS, the process could be more complex and take longer.
- (4)- If the U.S. is allowed to reduce its swordfish quota, what is to prevent the re-allocation of this quota to foreign fleets and thus result in no stock enhancement?

(5)-What happens if small swordfish and other bycatch become concentrated in another area? Will that area need to be closed too? Will those boats need to be bought out?

(6)- How will it be determined if bycatch reduction is being met? Landings and size of fish will be reflected in fish tickets.

Discards will have to rely on fishers to keep accurate logbook data and/or additional observer coverage.

(7)- Would the proposed North Atlantic swordfish buyout set a precedent and result in other buyouts for the pelagic longline or other longline fleets? There have been many buyouts of fishing vessels, licenses, and gear in the U.S. and abroad. Many of these buyouts have indicated conservation measures.

Most have reduced capacity (number of vessels), but few have produced significant results in terms of conservation to the fisheries resources.

(8)- Can fish stocks be rebuilt and recover without fishers being bought out?

Although the Atlantic swordfish buyout looks good on paper compared with other fisheries buyouts that have occurred in the past, conservation measures are first and foremost and should be achieved first without a buyout.

(9)-Will a buyout in conjunction with closed area(s) help the fish?

The conservation community argues <sup>12</sup> if a vessel buyout proceeds, using federal funds, the buyout must be done only after certain basic conservation criteria are guaranteed. Necessary conservation measures can be accomplished through existing laws without a buyout. Also, the conservation community recommends that a comprehensive bycatch reduction program for the pelagic longline fleet should adhere to six basic criteria:

(1)- establish a goal of reducing bycatch by establishing hard targets (at least 50% by 2002), including benchmarks for measuring progress toward that goal (However, in all the closed areas that NMFS proposes, bycatch reduction will only be 20-24%);<sup>13</sup>

(2)- be truly comprehensive, with measures to minimize bycatch of all overfished pelagic species, including undersized swordfish, blue marlin, white marlin, and sharks;

(3)- employ immediate time and area closures in nursery and spawning grounds and other areas of high bycatch with enhanced monitoring and enforcement;

(4)- include a regulatory framework, providing for an annual review of bycatch reduction and adjustment in conservation measures as appropriate;

(5)- expand at-sea observer coverage, from 3 to 5%<sup>14</sup> to obtain adequate coverage on vessels fishing in open areas (As an interim precautionary measure, the conservation community proposes 25% observer coverage); and

(6)- require NMFS to conduct a three-year research program to modify gear and fishing practices to minimize mortality of unavoidable bycatch, beyond the 50% or more reduction achieved through area closures.

In conclusion: (1)- Any buyout must be part of a comprehensive rebuilding and bycatch reduction program and (a) rebuild overfished stocks as mandated by the Magnuson-

Stevens Act and (b) minimize bycatch, also in compliance with the Act. (2)- The comprehensive rebuilding and bycatch reduction program must include the six basic criteria, as above, and must help achieve recovery of North Atlantic swordfish and Atlantic blue marlin and white marlin within 10 years or less.

(3)- Any buyout must prevent the replacement of capacity that the reduction program removes through a moratorium on new entrants, restrictions on vessel upgrades and other effort control measures to avoid shifting retired capacity to the remaining fleet.

According to the Final FMP for Atlantic Tunas, Swordfish, and Sharks, Volume III (USDOC, 1999b) buyouts can only be implemented if: (1)- the program is shown necessary to prevent or end overfishing, rebuild fish stocks, or achieve significant improvements in the conservation and management of the fishery; and (2) an FMP is in place which prevents the replacement of fishing capacity removed by the program and establishes a specified or target TAC, which triggers closure of the fishery. Most importantly, to effectively monitor and regulate fisheries resources, managers must ensure both the sustainability of the resource as well as social and economic requirements of the community are achieved.

## Summary

Buyouts have many problems such as they do not prevent the use of vessels in other, usually foreign, fisheries. For example, Bob Spaeth, President of Madeira Beach Seafood,<sup>15</sup> is working on a proposal with the U.S. government to sell the bought out Atlantic swordfish pelagic longline boats to Nicaragua for use in underexploited fisheries. Also buyouts could induce industry to remain in marginally viable fisheries (Milazzo, 1998). For example, fishers may expect a government-funded bailout, especially if the buyout program becomes permanent. In addition, buyouts remove some boats, but do not control those that remain. Vessels that stay in the fishery may be upgraded and become more efficient, which undermines the potential conservation benefits for the program. Furthermore, buyouts could be implemented wastefully, *i.e.*, on parts of the industry whose operations do not pose the most threat to conservation. In other words, buyouts could lead to a bidding war among fishers, which could result in dissipation of the government's financial resources and consequent inefficient use.

However, despite the problems with conservation subsidies, they will probably continue, due to budgets and politics. In the United States, subsidies continue to be prevalent in agriculture such as for the dairy and tobacco industries. However, a buyout program can be targeted to address the most needed resource problems. Furthermore, conservation subsidies in fisheries have the potential to be effective in a single payment.

## Recommendations and Future Studies

Very few follow-up studies have been carried out to determine the effectiveness and success of buyout programs. Those that have been attempted do not portray the entire picture, as in most cases, less than half the individuals affected by the buyout have been contacted. In the United States, academic institution such as Sea Grant are working with community and industry leaders to attempt the development of adaptive strategies to better deal with changes associated in management and capacity reduction programs. The most important recommendation proposed is to develop a survey for distribution to fishers and other industry representatives affected by fishing capacity reduction programs to determine the effects as a result of management and buyouts. Sample questions could include:

(1)- What management techniques were imposed on the fishery before a buyout was instigated?

a. season/area closures; b. gear modification (mesh size, number of nets, BRDs) c- other (list) \_\_\_\_\_

(2)-What effect did these techniques have?

a. increased fish in terms of

1. size 2. catches 3. populations b. did nothing

(3)- In the capacity reduction program, what was bought? a. vessel b. license c. gear

(4)- What was done with the money?

a. Was the money re-invested in the same fishery, *i.e.*, upgrade? yes/no

b. Was the money invested in another fishery? yes/no. If yes, name \_\_\_\_\_

c. Was the money used to cover expenses until fishing got better? yes/no

(5)- Did you participate in a retraining program? yes/no

a. If so, what was the program? List \_\_\_\_\_

b. Was the program successful? yes/no. If yes are you earning sufficient income? yes/no

If no, what are you doing now to earn a living? List occupation \_\_\_\_\_

(6)- In your opinion, what happened to the fish stocks as a result of the buyout?

a. Did stock sizes increase? 1. in number 2. in size of fish b. Did stocks remain the same?

(7)- Have multiple buyout programs been utilized for the fishery? How many have you participated in? \_\_\_\_- Have they been for:

a. vessels? b. licenses? c. gear?

(8) What conservation measures were employed along with the buyout a. season/area closures; b. gear modification (mesh size, number of nets, BRDs); c- other (list) \_\_\_\_\_.

In conclusion, to ensure the most effective and efficient tools are used to manage a fishery, local communities as well as knowledgeable biologists need to be involved. A fishery can be better managed, utilizing effective conservation measures to ensure the sustainability of a fish stock before a buyout becomes necessary. Often several different management tools are needed for a single fishery, and a

technique that works for one fishery may not be successful for another fishery. A buyout can be successful if employed in conjunction with conservation measures but has never proven successful in the long run when used as the sole means of management.

## References

Adams, C. S. Jacob, and S. Smith, Since the Net Ban, University of Florida, Florida Sea Grant, 9pp. (in press).

Bluewater Fishermen's Association, Draft Buyout Proposal for North Atlantic Swordfish, April 15, 1999, 16pp.

Doeringer, P.B. and D.G. Terkla, Troubled Waters: Economic Structure, Regulatory Reform and Fisheries Trade, University of Toronto Press, Canada 1995, 206 pp.

Federal Register, May 28, 1999, Final Rule, 64 (103): 29090-29160, Atlantic Highly Migratory Species (HMS) Fisheries; Fishery Management Plan (FMP) Plan Amendment and Consolidation of Regulations.

Fordham, S.V. New England Groundfish: From Glory to Grief: A Portrait of America's Most Devastated Fishery, published by: the Center for Marine Conservation April 1996, 100pp.

Hardin, G. The Tragedy of the Commons. *Science*, 162, 1243-1248, 1968.

Hinman, K. Ocean Roulette, Conserving Swordfish, Sharks and Other Threatened Pelagic Fish in November 9, 1994.

Milazzo, M. *Subsidies in World Fisheries: A Reexamination* World Bank Technical Paper 406, 1998, 86pp.

Porter, G. The Role of Trade and Politics in the Fishing Sector. Background Paper for UNEP/WWF Workshop, Fishing Subsidies, Overfishing and Trade, Geneva, Switzerland, June 2-3, 1997.

Read, A.G. and E.H. Buck. Commercial Fishing: Economic Aid and Capacity Reduction. Congressional Research Service Report, 97-4412 ENR April 14, 1997, 69pp.

Shivlani, M., D. Letson, and C.R. Sawczyn Socioeconomic Effects of the Florida Net Ban in Monroe County The Florida Geographer 29(1):12-29, 1998.

Texas Parks and Wildlife Department (TPWD), Status of the Shrimp License Management Program: A Report to the Governor and the 76<sup>th</sup> Legislature of Texas, January 1999, 16pp.

USDOC, NOAA, NMFS, Final Fishery Management Plan (FMP) for Atlantic Tunas, Swordfish and Sharks, Vol. 1, April 1999 a.

\_\_\_\_\_ Vol. III. April 1999 b.

Longline Infested Waters, published by : The Center for Marine Conservation, Leesburg, VA, February 1998, 90 pp .

*Keynote*, Commercial Fishermen Plan to Fight New Ban, December 21, 1994, Florida Marine Fisheries Commission, Constitutional Amendment Results, Waldeck, D.A. and E.H. Buck, The Magnuson-Stevens Fishery Conservation and Management Act: Reauthorization Issues for the 196<sup>th</sup> Congress, Congressional Research Service Report RL30215, May 31, 1999, 45pp.

## Endnotes

<sup>1</sup> Notes from: Ben Muse, Economist, Alaska Commercial Fisheries Entry Commission (ACFEC) of conversation with: Robin Riechers, Economist, Coastal Fisheries Division of Texas Parks and Wildlife Department (TPWD) on: February 19, 1998 to: Anne Wakeford re: email October 1, 1998.

<sup>2</sup> Robin Riechers, personal communication, August 4, 1999, We will probably go for another round of buyouts in the fall, August 12, 1999. There were an additional 115 licenses purchased in late July.

<sup>3</sup> Joseph O'Hop, Florida Marine Research Institute, (FMRI), personal communication, June 16, 1999.

<sup>4</sup> Robert Palmer, Chief, Marine Fisheries Management, Florida Fish and Wildlife Conservation Commission, personal communication, June 16, 1999.

<sup>5</sup> *Ibid.*

<sup>6</sup> David Vaughan, Director of Aquaculture Division, Project Manager Retraining Program, Harbor Branch Oceanographic Institute, FL, personal communication, July 23, 1999. In 1995-96, 100 people were trained at a cost of \$8,000 per person; in 1996-97, 40 people were trained at a cost of \$5,000 per person and in 1998, 25 people were trained at a cost of \$3,000 per person. Therefore, the total cost of the retraining program was approximately \$1.1 million dollars.

<sup>7</sup> Charles Adams, Professor, Extension Marine Economics, University of Florida, personal communication, July 23, 1999.

<sup>8</sup> Nelson Beideman, President Bluewater Fishermen's

Association, personal communication, June 11, 1999. The proposal does not plan to buy boats, as fiberglass boats are too difficult to destroy. However, Bob Spaeth, President of Madeira Beach Seafood, Florida suggests that the boats could be sunk to create an artificial reef in a no-fishing zone or they could be sold to a third world country such as Nicaragua to fish an underexploited fishery.

<sup>9</sup> Nelson Beideman, personal communication, May 23, 1999.

<sup>10</sup> David Wilmot, Director, Ocean Wildlife Campaign, (OWC). Statement of the OWC on the Natural Resources Defense Council (NRDC)/Sea Web Swordfish Campaign Fact Sheet (ND).

<sup>11</sup> Memo from: Ken Hinman, National Coalition for Marine Conservation (NCMC) to: National Audubon Society (NAS), Natural Resources Defense Council (NRDC), and Ocean Law Project (OLP) Regarding: Impressions after reading NMFS rationale on bycatch reduction in the May 28, 1999, Federal Register, (May 28, 1999).

<sup>12</sup> Telephone conference calls with conservation community, June 14 and 28, 1999.

For all practical purposes, the conservation community is the same as the OWC and consists of NAS, NRDC, NCMC, CMC, WWF, and Wildlife Conservation Society (WCS).

<sup>13</sup> Karyl Brewster, Biologist, NMFS, presentation at Highly Migratory Species (HMS) Advisory Panel (AP) meeting, June 11, 1999.

<sup>14</sup> According to Jean Cramer and Gerry Scott, Biologists, NMFS SE Region, personal communication, June 28, 1999, ICCAT has established that 5% observer coverage is adequate for monitoring the swordfish pelagic longline fleet, has no plans for increase and many countries are not even up to that level, including the U.S. The conservation community does not believe this percentage of coverage is adequate as fishing boat captains have been known to change their practices when observers are onboard their boats.

<sup>15</sup> Bob Spaeth, President, Madeira Beach Seafood, personal communication, at HMS AP meeting, Silver Spring, MD, June 11, 1999.