



# What Happened After the Net Ban?<sup>1</sup>

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## Introduction

Amendment Three of the Florida Constitution, otherwise known as the *net ban*, was approved by voter referendum in November 1994. The amendment made unlawful the use of entangling nets (i.e., gill and trammel nets) in Florida waters. The use of other forms of nets, such as seines, cast nets, and trawls, was restricted, but not totally eliminated. For example, these types of nets could be used only if the total area of net mesh did not exceed 500 square feet. The amendment was implemented in July 1995, and represented the culmination -- but not the end -- of a lengthy debate between commercial fishers and environmental/recreational advocacy groups regarding the harvesting of Floridas nearshore finfish resources.

Implementation of the net ban has had an impact on several user groups. These groups include commercial fishers, seafood wholesalers and retailers, recreational fishers, marine supply dealers, and consumers of locally caught seafood. For some, the net ban may have generated positive benefits, while others experienced substantial costs. However, specific impacts of the net ban on various users are difficult to isolate, since other social, regulatory, economic, and environmental influences on resources and user groups occurred during and since the net bans implementation. These latter effects tend to mask or *cover-up* the impacts purely attributable to the net ban.

This brief report describes some of the observable changes that have occurred *since*, but not necessarily as a direct result of, the net ban. The primary focus of this report is directed towards the commercial seafood industry (a Florida Sea Grant study of commercial fishing families before the net ban already exists). A follow-up study provided a unique opportunity to measure the effects of the net ban on these same family-owned businesses. In addition to the family business impacts, changes observed in statewide commercial landings, dockside value, ex-vessel prices, and the status of finfish stocks will be discussed. Data available from the Florida Department of Environmental Protection (FDEP), the Gulf of Mexico and South

Atlantic Regional Fishery Management Councils, and a recently completed study conducted by University of Florida faculty and supported by the Florida Sea Grant College Program are used for the following discussion.

## Changes in Landings, Effort, Dockside Value, and Ex-Vessel Price

The primary species of finfish sought by commercial fishers with entangling nets included striped mullet, spotted sea trout, Spanish mackerel, sheepshead, bluefish, and lesser volumes of several other species. Because of the shallow-water habitat and schooling tendencies of these species, the use of gill and trammel nets before the net ban was a very efficient harvest method. Elimination of these gear types was intended to reduce fishing pressure on the targeted species, as well as those species thought to be harvested as unintended bycatch. For most of the key finfish species, this primary objective was achieved. In certain areas of Florida, effort was also reduced for nearshore net-caught shellfish, such as white shrimp in northeast Florida and Apalachicola Bay. A decline in landings was expected to decrease overall dockside values, but likely increased the price of the most affected species in the short-term, as locally-produced supplies were reduced.

The average annual commercial landings of 22 species of finfish reported by FDEP to be impacted the most by the net ban declined in aggregate from 52 million pounds (mp) during 1992-1994 to 18 mp during 1996-1998 (data for 1995 was excluded since the ban was implemented mid-year) (FDEP 1992-1998). Average annual dockside value decreased from \$21 million to \$13 million during the same period. Average annual number of trips to catch this complement of species declined from 226,000 to 97,194 during the same period. In addition, the average annual number of saltwater product licenses (a proxy for number of commercial fishers) decreased from 19,895 to 16,899, a 15% decrease. The number of retail and wholesale seafood dealers statewide, however, experienced very little, if any, change. Changes in landings, number of fishers, dockside value, number of seafood dealers, etc. may have been greater on a local basis. Florida communities more dependent on local commercial fishing activities, such as Cortez, Oak Hill, and Steinhatchee, may have experienced greater impacts than other more economically diversified locales.

Similar changes in landings, effort, dockside value, and ex-vessel price occurred with respect to individual species of finfish ([Table 1](#)). Striped mullet landings decreased 60%, while number of trips (effort) to harvest mullet declined 48%, and even though average ex-mullet prices increased from \$0.57 to \$0.78, dockside value decreased 49%. Spotted sea trout effort and landings each decreased 91%, and the average annual ex-vessel price received for spotted sea trout increased from \$1.22 to \$1.83, yet dockside value decreased 86% as landings fell dramatically. Spanish mackerel landings fell 56%, while effort declined 68%, and dockside value decreased 39%, even though ex-vessel price per pound increased from \$0.37 to \$0.50. Bluefish landings and effort decreased 76% and 68%, respectively, and given the dramatic decrease in landings, dockside value decreased 71%, even though ex-vessel prices increased from \$0.34 to \$0.41. Another species harvested by nets, sheepshead, was reportedly impacted less by the net ban. Sheepshead landings decreased 68%, while effort fell 63%, and ex-vessel price also increased

from \$0.49 to \$0.84, which contributed to a lesser dockside value decrease of 45%. Although the effort directed towards pompano decreased dramatically, only relatively modest declines in landings volume and value were reported. Interestingly, the average dockside price for pompano declined from \$3.20 before the net ban to \$2.74 afterwards.

Recreational catches also declined following the net ban. Average annual recreational landings of the same 22 species identified by FDEP as being most likely impacted by the net ban decreased 27% during the same period as discussed earlier. Sales of resident and nonresident saltwater recreational fishing licenses increased only about 3% during the period following the net ban. Declines in reported recreational landings may have resulted from more stringent regulations recently placed on the bag and size limits of important nearshore species such as spotted sea trout, flounders, and Spanish mackerel.

## Changes in the Fish Stocks

Concern for the long-term *health* of the finfish species being harvested by entangling nets is one of the more often stated motivations for the net ban by proponents. A measure of the health of fish stocks used by the FDEP is the *spawning potential ratio*, which is defined as the number of eggs that could be produced by an average female fish in the current fished stock *divided* by the same number for an unfished stock of fish. The spawning potential ratio, or SPR, is used as a proxy for the health of fish stocks. The Florida Marine Fisheries Commission tries to achieve an SPR of 35% for managed finfish species. Eliminating the use of entangling nets by both commercial fishers and recreational anglers reduces the *total* fishing effort directed toward the affected species. Theoretically, a reduction in effort would allow more female fish to produce eggs, thereby increasing the health of the fish stocks.

A recent report by FDEP provides the current assessment of the condition of fish stocks impacted by the net ban (Murphy and Muller 1998; Mahmoudi 1998). Stocks of striped mullet are increasing. The mullet SPR has increased since 1992 (18%-25%), and is expected to reach 35% by year 2000. Stocks of spotted sea trout have remained steady following the net ban, but SPR estimates ranging from 22% to 31% are still below target levels. The net ban has had less of an effect on spotted sea trout since this fishery has historically been predominantly recreational (i.e., hook and line). Spanish mackerel are primarily targeted by recreational fishers in the Gulf and commercial fishers in the Atlantic. However, following the net ban, Spanish mackerel are no longer overfished in the Gulf or Atlantic regions. SPR estimates have increased steadily since the net ban and currently exceed 50% for both regions (GMFMC 1999). Bluefish stocks are considered to be stable, yet overfished in the Gulf and Atlantic regions. SPR for bluefish in the Gulf is estimated to be less than 5%. As commercial landings have decreased since the net ban, recreational catch rates of bluefish have increased. Pompano are considered to still be overfished, although stocks are increasing. SPR estimates before the net ban were estimated to be 1%-2% in the Gulf and 12%-20% in the Atlantic. Although recreational catch rates have been relatively stable since the net ban, commercial landings of pompano have increased since 1996. This trend is expected to slow down the recovery of pompano stocks.

Several stocks of fish historically targeted with entangling nets have exhibited an improvement since the net ban. For some species, such as mullet, stock improvement was already being

reported as a result of management measures implemented before the net ban. For other species, such as Spanish mackerel, improvements in stocks have been accelerated following the net ban. And for others, such as spotted sea trout, bluefish, and pompano, the effect of the net ban is less clear. Overfishing still occurs for some of these species, reportedly due to increases in recreational and commercial harvests since the net ban.

## Changes in Commercial Fishing Family Businesses

This section summarizes the results of Florida Sea Grant-funded research on the impacts of the Florida net ban on family businesses (Smith *et al.* 1999). The study used a panel-approach that followed a group of 44 commercial fishing families with children. The families (and approximately 50 others) were first interviewed during 1991-1993 (Time 1) in an earlier Sea Grant study conducted before the net ban. The first study was an attempt to assess the impacts on commercial fishing families resulting from increasing marine resource regulations in general. A later study occurred during 1997-1998 (Time 2), two to three years after the net ban went into effect. The later study revisited a subset of families from the initial study and focused more specifically on the effects of the net ban. The sequential nature of the two studies and the similarity in questions asked allow a comparison of fishing family business activities before and after the net ban.

Study respondents resided in ten coastal communities in Florida, eight located on the Gulf coast and two located on the Atlantic coast. As a result, the study panel is not geographically representative of Florida and the findings can only be generalized for this study group. Despite this limitation, the Time 2 study is the only statewide assessment of the net ban impacts on Florida fishing families. Shivlani, Letson, and Sawczyn (1998) examined the impacts of the net ban on seafood dealers and fishers in Monroe County, Florida.

### Changes in Family Income Structure

When comparing the two time periods, three-quarters of the families interviewed remained in fishing following the net ban. The percentage of fishers fishing full-time dropped from 90% at Time 1 to 70% at Time 2. About one-quarter of the fishers interviewed had retired from commercial fishing entirely. Of those still fishing, 70% continue to fish full-time.

The percentage of family income from fishing was reduced from 80% to 55% following the net ban. These families reported becoming far more dependent on nonfishing sources of income. The additional nonfishing income sources were primarily contributed by wives. However, husbands nonfishing paid work doubled from an average of six hours at Time 1 to 12 hours per week at Time 2.

## Changes in Fishers' Business Activities

Fishers reported that the average time spent operating a boat dropped from 62 hours per week at Time 1 to 38 hours per week at Time 2. The average time spent by fishers for record keeping doubled from one hour per week to two hours per week. Average time spent on sales and marketing increased from one hour per week to five hours per week. On the basis of other information gleaned from the panel survey, this latter finding is likely due to the closure of local fish houses after the net ban. Although the change in total numbers of wholesale establishments did not show an appreciable change statewide, some specific locations did experience the closure of several small-scale fish houses or *first buyers* that had provided a market for locally caught seafood (e.g., Cedar Key and Oak Hill).

## Changes in Species Targeted by Fishers

Changes in legal gear imposed by the net ban caused significant changes in the species targeted by the remaining fishers ([Table 2](#)). It is important to note that these estimates do not indicate the intensity that species were targeted. For example, the percentage of fishers in the study who targeted blue crab increased only slightly, but those who targeted blue crab were spending more time crabbing and catching more crabs. Some of the more notable shifts in species targeting by survey participants following the net ban are as follows:

- \* Fishers targeting mullet decreased from 91% to 67%
- \* Fishers targeting sea trout decreased from 41% to 9%
- \* Fishers targeting pompano decreased from 50 % to 18%
- \* Fishers targeting stone crab increased from 9% to 36%
- \* Fishers targeting grouper increased from 7% to 15%

These findings, with the exception of Spanish mackerel, corroborate the changes in commercial landings. The shift from finfish to shellfish is the more notable gear-induced change, since crabs are caught with traps as opposed to nets. Increases in reef fish targeting is likely a result of individuals re-entering fishery in federal waters, if they held an active permit. Changes in species targeting is likely site-specific and the above estimates represent an average across the study sample.

## Participation in Programs to Assist Commercial Fishers in Adjusting to the Net Ban

The Florida net ban was passed as a constitutional amendment via public referendum. The net ban forced approximately 1,500 fishing families to alter fishing gear immediately or leave the industry. To help ease this burden and to ensure a more financially stable transition, Florida spent millions of dollars on several assistance programs including a net buy back program, unemployment compensation, job retraining, and assistance through the Florida Cooperative Extension Service (FCES).

In spite of the resources, these programs, for the most part, failed to meet the needs of many families. Study respondents indicated that this was primarily due to a perceived lack of coordination among various participating agencies; a lack of start-up capital for suggested alternative on-the-water investments, such as aquaculture or ecotourism; and insufficient information targeted at specific needs. Reported participation rates in net ban-related programs by respondents during Time 2 were as follows:

- \* 82% of families participated in the net buy back program
- \* 64% of families participated in programs offered by FCES
- \* 26% of families collected unemployment benefits
- \* 16% of fishers participated in aquaculture training
- \* 16% of fishers participated in job retraining efforts
- \* 16% of families began collecting food stamps

## Summary

The net ban is probably the most contentious fisheries management measure implemented in Florida. The elimination of the use of entangling nets, as well as the limits placed on other forms of nets, has had a dramatic impact on the nature of near-shore commercial fisheries in Florida, primarily through the reduction in landings for several important near-shore species. The short-term negative impacts of the net ban have been absorbed primarily by the small-scale commercial finfish businesses, many of which are owned and operated by independent families. These negative impacts have been manifested by changes in income sources, business management activities, fishing patterns, and species targeted, as well as participation in statetransitional assistance programs. Benefits resulting from the net ban will continue to be realized as the stocks of finfish continue to improve. However, estimating the exact magnitude of the costs and benefits resulting from the net ban will be confounded by other events that occurred simultaneously in Floridas economy, natural environment, and marine resource regulatory process.

## References

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## Tables

Table 1. Average Annual Florida Commercial Landings, Effort, Dockside Value, and Ex-vessel Price for Selected Finfish Species Before (A) and After (B) the *Net Ban* (A = 1992-1994, B = 1996-1998).

Species	Period	Landings (million lbs)	Effort (trips taken)	Dockside Value (\$ million)	Ex-vessel Price (\$ per pound)
Mullet	A	18.494	54,619	10.664	
	B	7.350	28,160	5.406	\$0.57
	% Change	-60%	-48%	-49%	\$0.76
Spotted Sea Trout	A	0.859	29,731	1.047	
	B	0.080	2,594	0.146	\$1.22
	% Change	-91%	-91%	-86%	\$1.83
Spanish Mackerel	A	5.780	15,413	2.131	
	B	2.555	4,957	1.290	\$0.37
	% Change	-56%	-68%	-39%	\$0.50
Bluefish	A	1.321	13,967	0.448	
	B	0.314	4,408	0.128	\$0.34
	% Change	-76%	-68%	-71%	\$0.41

Sheepshead	A	0.966	34,321	0.469	
	B	0.307	12,578	0.257	\$0.49
	% Change	-68%	-63%	-45%	\$0.84
Pompano	A	0.585	12,764	1.869	\$3.20
	B	0.550	4,941	1.512	\$2.74
	% Change	-6%	-61%	-19%	

Source: Florida Department of Environmental Protection, Florida Marine Research Institute, unpublished Trip Ticket Program data, 1992-1998 (the latter is preliminary). The tabulated values represent average annual estimates computed for the periods indicated. The 1995 year *has been omitted* since anticipation of and compliance with the implementation of the net ban may have altered expected patterns of commercial harvest.

Table 2. Percentage of Commercial Fishers Targeting Species in Time 1 and Time 2.

Species	Time 1	Time 2
Mullet	90.9	66.7
Trout	40.9	9.1
Pompano	50.0	18.2
Sheepshead	11.4	9.1
Spanish Mackerel	11.4	12.1
Blue Crab	18.2	21.2
Grouper	6.8	15.2
Stone Crab	9.1	36.4
Sharks	4.5	6.1



Jacks	13.6	9.1
Shrimp	6.8	9.1
Sandbream	2.3	9.1

Source: Smith, S., S. Jacob, C. Adams, G. Israel, G. Evans, J. Gates, and M. Zacks. 1999. The Impacts of the Florida Net Ban on Commercial Fishing Families. Technical Report No. 101. Florida Sea Grant College Program. University of Florida, Gainesville.

## Footnotes

1. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>.

A more thorough description of this information is contained in "The Impacts of the Florida Net Ban on Commercial Fishing Families", TP-101, available for \$8 from the Florida Sea Grant. To request a copy, contact Florida Sea Grant at:

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