Golden Tilefish Advisory Panel Information Document[1]
January 2014

Management System

The Fishery Management Plan (FMP) which initiated the management for this species became effective November 1, 2001 (66 FR 49136; September 26, 2001) and included management and administrative measures to ensure effective management of the tilefish resource. The FMP established a stock rebuilding strategy and total allowable landings (TAL) as the primary control on fishing mortality. This constant harvest strategy (905 mt) was expected to eliminate overfishing and rebuild the tilefish stock in the ten year rebuilding time frame. The FMP also implemented a limited entry program and a tiered commercial quota allocation of the overall TAL. Amendment 1 to the Golden Tilefish FMP created an IFQ (Individual Fishing Quota) program that took effect on November 1, 2009 (74 FR 42580; September 24, 2009).

Basic Biology

The information presented in this section can also be found in the Tilefish FMP (MAFMC, 2001; http://www.mafmc.org/fmp/history/tilefish.htm). Golden tilefish (*Lopholatilus chamaeleonticeps*) are found along the outer continental shelf and slope from Nova Scotia, Canada to Surinam on the northern coast of South America (Dooley 1978 and Markle et al. 1980) in depths of 250 to 1500 feet. In the southern New England/mid-Atlantic area, tilefish generally occur at depths of 250 to 1200 feet and at temperatures from 48°F to 62°F or 8.9°C to 16.7°C (Nelson and Carpenter 1968; Low et al. 1983; Grimes et al. 1986).

Katz et al. (1983) studied stock structure of tilefish from off the Yucatan Peninsula in Mexico to the southern New England region using both biochemical and morphological information. They identified two stocks -- one in the mid-Atlantic/southern New England and the other in the Gulf of Mexico and the south of Cape Hatteras.

Tilefish are shelter seeking and perhaps habitat limited. There are indications that at least some of the population is relatively nonmigratory (Turner 1986). Warme et al. (1977) first reported that tilefish occupied excavations in submarine canyon walls along with a variety of other fishes and invertebrates, and they referred to these areas as "pueblo villages." Valentine et al. (1980) described tilefish use of scour depressions around boulders for shelter. Able et al. (1982) observed tilefish use of vertical burrows in Pleistocene clay substrates in the Hudson Canyon

[1] This document was prepared by the MAFMC staff. Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases as of January 2013, unless otherwise noted.

area, and Grimes et al. (1986) found vertical burrows to be the predominant type of shelter used by tilefish in the mid-Atlantic/southern New England region. Able et al. (1982) suggested that sediment type might control the distribution and abundance of the species, and the longline fishery for tilefish in the Hudson Canyon area is primarily restricted to areas with Pleistocene clay substrate (Turner 1986).

Males achieved larger sizes than females, but they apparently did not live as long (Turner 1986). The largest male was 44.1 inches at 20 years old, and the largest female was 39 years at 40.2 inches FL. The oldest fish was a 46 year old female of 33.5 inches, while the oldest male was 41.3 inches and 29 years. On average, tilefish (sexes combined) grow about 3.5 to 4 inches fork length (FL) per year for the first four years, and thereafter growth slows, especially for females. After age 3, mean last back-calculated lengths of males were larger than those of females. At age 4 males and females averaged 19.3 and 18.9 inches FL, respectively, and by the tenth year males averaged 32.3 while females averaged 26.4 inches FL (Turner 1986). The largest male was 44.1 inches at 20 years old, and the largest female was 39 years at 40.2 inches FL. The oldest fish was a 46 year old female of 33.5 inches, while the oldest male was 41.3 inches and 29 years (Turner 1986).

The size of sexual maturity of tilefish collected off New Jersey in 1971-73 was 24-26 inches TL in females and 26-28 inches TL in males (Morse 1981). Idelberger (1985) reported that 50% of females were mature at about 20 inches FL, a finding consistent with studies of the South Atlantic stock, where some males delayed participating in spawning for 2-3 years when they were 4-6 inches larger (Erickson and Grossman 1986). Grimes et al. (1988) reported that in the late 1970s and early 1980s, both sexes were sexually mature at about 19-26 inches FL and 5-7 years of age; the mean size at 50% maturity varied with the method used and between sexes. Grimes et al. (1986) estimated that 50% of the females were mature at about 19 inches FL using a visual method and about 23 inches FL using a histological method. For males, the visual method estimated 50% maturity at 24 inches FL while the histological method estimated 50% maturity at 21 inches FL. The visual method is consistent with NEFSC estimates for other species (O'Brien et al. 1993). Grimes *et al.* (1988) reported that the mean size and age of maturity in males (but not females) was reduced after 4-5 years of heavy fishing effort. Vidal (2009) conducted an aging study to evaluate changes in growth curves since 1982, the last time the reproductive biology was evaluated by Grimes et al (1988). Histological results from Vidal's study indicate that size at 50% maturity was 18 inches for females and 19 inches for males. Vidal (in 48th SAW Assessment Report - NEFSC 2009a) summarizes the following:

> "*These results show a significant decrease in size and age at maturation since the last evaluation of this stock in the early 1980's (Grimes et al. 1986). An environment in which survival rates are low for potentially reproducing individuals, often favors selection of individuals that are able to reproduce at smaller sizes and younger ages (Hutchings 1993; Reznick et al. 1990). In a hook fishery, it is assumed that the smallest fish in the population are less vulnerable to the gear depending on the hook size. In this fishery, hook size has been intentionally increased to avoid catch of the smallest fish in the population. The fact that such dramatic changes have manifested in this stock may suggest a density-dependent effect of decreased*

population size. It is uncertain at this point in time, whether these changes are consequences of phenotypic plasticity or selection towards genotypes with lower size and age at maturation."

Nothing is known about the diets and feeding habits of tilefish larvae, but they probably prey on zooplankton. The examination of stomach and intestinal contents by various investigators reveal that tilefish feed on a great variety of food items (Collins 1884, Linton 1901a and 1901b, and Bigelow and Schroeder 1953). Among those items identified by Linton (1901a and 1901b) were several species of crabs, mollusks, annelid worms, polychaetes, sea cucumbers, anemones, unicates and fish bones. Bigelow and Schroeder (1953) identified shrimp, sea urchins and several species of fishes in tilefish stomachs. Freeman and Turner (1977) reported examining nearly 150 tilefish ranging in length from 11.5 to 41.5 inches. Crustaceans were the principal food items of tilefish with the squat lobster (*Munida*) and spider crabs (*Euprognatha*) were by far the most important crustaceans. The authors report that crustaceans were the most important food item regardless of the size of tilefish, but that small tilefish fed more on mollusks and echinoderms than larger tilefish. Tilefish burrows provide habitat for numerous other species of fish and invertebrates (Able et al. 1982 and Grimes et al. 1986) and in this respect they are similar to "pueblo villages" (Warme et al. 1977).

Able et al. (1982) and Grimes et al. (1986) concluded that a primary function of tilefish burrows was predator avoidance. The NEFSC database only notes goosefish as a predator. While tilefish are sometimes preyed upon by spiny dogfish and conger eels, by far the most important predator of tilefish is other tilefish (Freeman and Turner 1977). It is also probable that large bottom-dwelling sharks of the genus *Carcharhinus*, especially the dusky and sandbar, prey upon free swimming tilefish.

Status of the Stock

A surplus production model (ASPIC) was used in the 2009 Golden tilefish stock assessment (48th SAW). The ASPIC surplus production model has been the basis of the stock assessment for the last three assessments. The assessment summary report and the entire assessment report can be found at http://www.nefsc.noaa.gov/publications/crd/crd0910/crd0910.pdf and http://www.nefsc.noaa.gov/publications/crd/crd0915/, respectively.

The Golden tilefish stock is not overfished and overfishing is not occurring (Figures 1 and 2). The 2009 SARC 48 updated reference points derived from the SARC 48 are: B_{MSY} = 11,400 mt, F_{MSY} = 0.16 and MSY = 1,868 mt. The updated biomass reference points (B_{MSY} and K) increased by 21% from the 2005 SAW 41 estimates, updated F_{MSY} decreased by 24%, and updated MSY decreased by 6%. The current 2009 assessment provides a more optimistic evaluation of stock status in 2004 than did the 2005 SAW 41 assessment. Furthermore, based on the 2009 assessment model results and updated reference points, fishing mortality (F) in 2008 is estimated to be 0.06, 38% of F_{MSY} and stock biomass (B) in 2008 is estimated to be 11,910 mt, 4% above B_{MSY}. A benchmark stock assessment for Golden tilefish is currently being conducted by the NEFSC (SAW/SARC 58). Peer review for this benchmark assessment will take place the last week of January 2014 and a final report should be published shortly thereafter. The reference

points and status determination for tilefish may be revised based on the results of this latest stock assessment.

The SARC 48 review panel accepted the ASPIC model but concluded that the biomass estimates for recent years are over-optimistic because "*trends in commercial VTR CPUE declined recently in a manner consistent with the passage of the strong 1999 cohort through the population (an interpretation further supported by the length frequency data). The current assessment model (ASPIC) does not account for those factors. Much of the confidence interval around the 2008 biomass estimate falls below the updated B_{MSY} listed above. Based on these considerations there is no convincing evidence that the stock has rebuilt to levels above B_{TARGET}.*" Furthermore, the 48th SAW Assessment Summary Report states that: *"The SARC48 Review Panel concluded that the tilefish projections are useful for displaying the extent of uncertainty in future stock size, but not for predicting future stock size. They noted that the projections were highly variable depending on both the assumed future trend in commercial CPUE and to small changes in the magnitude of the assumed CPUE values. They also concluded that for the most recent years (e.g., 2008) the biomass estimates from the ASPIC model are likely overestimates and that the estimates are more uncertain than the model suggests."* (NEFSC 2009b). *(SARC reports are available at http://www.nefsc.noaa.gov/saw/reports.html under the heading "SARC 48 Panelist Reports")."*

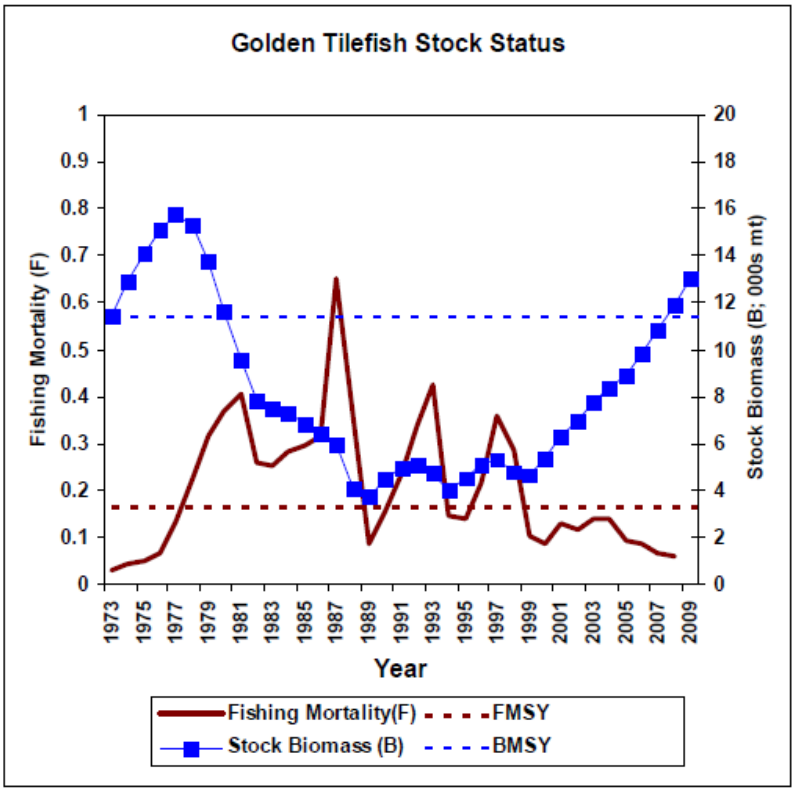

Figure 1. Estimates of tilefish stock biomass (1973-2009) and fishing mortality rate (1973-2008) derived from the ASPIC model. The two horizontal dashed lines represent the Biological Reference Points for the overfishing threshold (F_{MSY}, lower red line) and biomass target (B_{MSY}, upper blue line). Source: 48th SAW Assessment Summary Report, NEFSC.

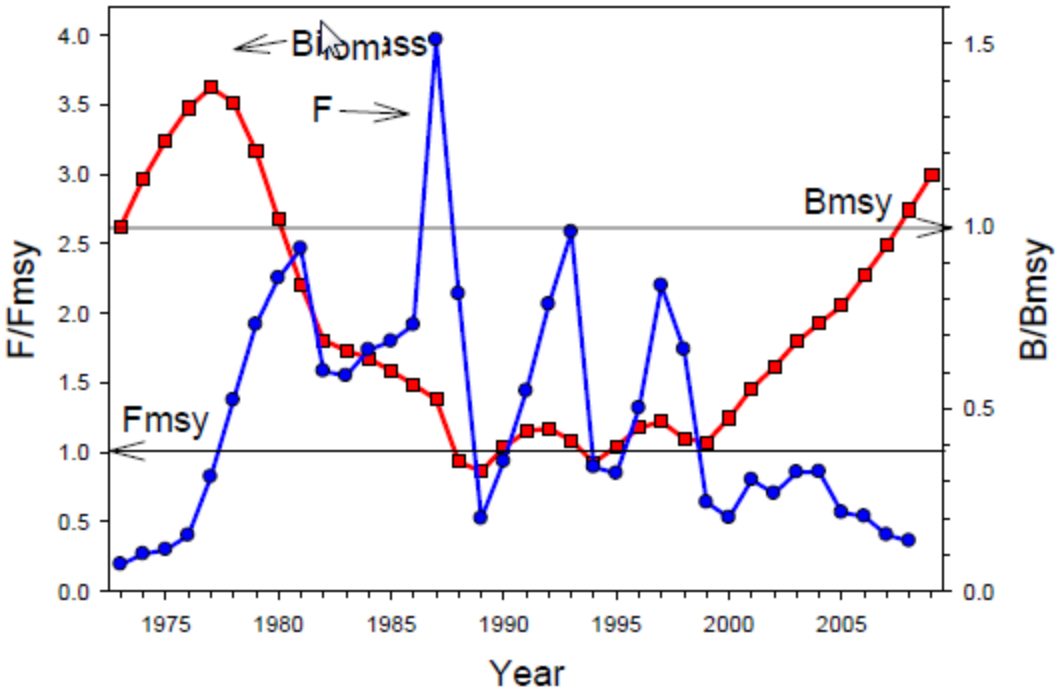

Figure 2. Estimates of tilefish B/B_{MSY} ratios (1973-2009) and F/F_{MSY} ratios (1973-2008). Estimates are from the 'base' ASPIC run which fixed the B1/K ratio at 0.5 and used three CPUE series (Turner, Weighout, and VTR) for tilefish. Source: 48th SAW Assessment Summary Report, NEFSC.

Updated Effort Information Through 2012

The NEFSC provided updated effort information in a document titled "Golden Tilefish data update through 2012, *Lopholatilus chamaeleonticeps*, in the Middle Atlantic-Southern New England Region. In summary, that document indicated that:

- Catch per unit effort (CPUE) has increased since the last stock assessment (SAW/SARC 48). The increase in CPUE appears to be due to the presence of one or more strong year classes (2005-2006).
- There is evidence that there is a broader size distribution of the fish being caught.

Fishery Performance

For the 1970 to 2013 calendar years, golden tilefish landings have ranged from 128 thousand pounds (1970) to 8.7 million pounds (1979). Since 2001, golden tilefish landings have ranged from 1.5 (2005) to 2.5 (2004) million pounds (Figure 3).

The principal measure used to manage golden tilefish is monitoring via dealer weighout data that is submitted weekly. Commercial vessels fishing under a tilefish IFQ Allocation Permit must submit a tilefish catch report by using the interactive voice response (IVR) phone line system within 48 hours after returning to port and offloading.

The directed fishery is managed via an IFQ program. If a permanent IFQ allocation is exceeded, including any overage that results from tilefish landed by a lessee in excess of the lease amount, the permanent allocation will be reduced by the amount of the overage in the subsequent fishing year. If a permanent IFQ allocation overage is not deducted from the appropriate allocation before the IFQ allocation permit is issued for the subsequent fishing year, a revised IFQ allocation permit reflecting the deduction of the overage will be issued. If the allocation cannot be reduced in the subsequent fishing year because the full allocation had already been landed or transferred, the IFQ allocation permit would indicate a reduced allocation for the amount of the overage in the next fishing year.

A vessel that holds a Commercial/Incidental Permit can possess up to 500 lb live weight (455 lb gutted) at one time without an IFQ Allocation Permit. If the incidental harvest exceeds 5 percent of the TAL for a given fishing year, the incidental trip limit of 500 lb may be reduced in the following fishing year.

Table 1 summarizes the tilefish management measures for the 2002-2014 fishing years (FY). With the exception of FY 2003, 2004, and 2010 commercial tilefish landings have been below the commercial quota specified each year since the Tilefish FMP was first implemented. As a result of the decision of the Hadaja v. Evans lawsuit, the permitting and reporting requirements for the FMP were postponed for close to a year (May 15, 2003 through May 31, 2004). During that time period, it was not mandatory for permitted tilefish vessels to report their landings. In addition, during that time period, vessels that were not part of the tilefish limited entry program also landed tilefish.

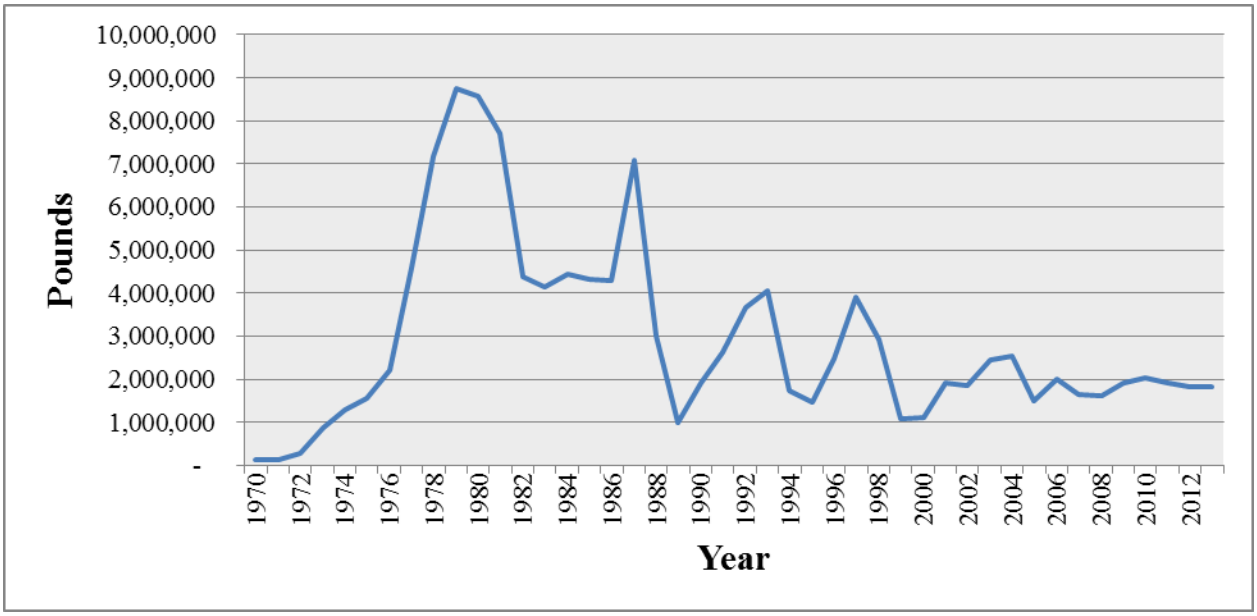

Figure 3. Commercial U.S. Golden Tilefish Landings (Pounds) from Maine-Virginia, 1970-2013. Source: 1970-1993 Tilefish FMP. 1994-2013 NMFS unpublished dealer data.

Table 1. Summary of management measures and landings for FY[a] 2002 through 2014.

Management measures	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ABC (m lb)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.013	2.013
TAL (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995
Com. quota-initial (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995
Com. quota-adjusted (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995
Com. landings	1.935	2.318[b]	2.647[b]	1.497	1.897	1.777	1.672	1.887	1.997	1.946	1.873	1.817	-
Com. overage/underage (m lb)	-0.060	+0.323	+0.652	-0.498	-0.098	-0.218	-0.323	-0.108	+0.002	-0.049	-0.122	-0.178	-
Incidental trip limit (lb)	300	300	300	133	300	300	300	300	300	300	500	500	500
Rec. possession limit	-	-	-	-	-	-	-	-	8[c]	8[c]	8[c]	8[c]	8[c]

[a] FY 2002 (November 1, 2001 - October 31, 2002).
[b] Lawsuit period (see text above).
[c] Eight fish per person per trip.

Tilefish are primarily caught by longline and bottom otter trawl. Based on dealer data from 2007 through 2013, the bulk of the tilefish landings are taken by longline gear (98%) followed by bottom trawl gear (2%). No other gear had any significant commercial landings. Minimal catches were also recorded for hand line, dredge (other), gillnets, and lobster pot/traps (Table 2).

Table 2. Tilefish commercial landings ('000 lb live weight) by gear, Maine through Virginia, 2009-2013 combined.

Gear	Pounds	Percent
Otter Trawl Bottom, Fish	143	1.5
Otter Trawl Bottom, Scallop	1	*
Otter Trawl Bottom, Other	4	*
Otter Trawl, Midwater	3	*
Gillnet, Anchored/Sink/Other	8	*
Pots and Traps, Lobster, Inshore/Offshore Combined	*	*
Pots and Traps, Fish/Other Combined	*	*
Lines Hand	19	*
Lines Long Set with Hooks	9,272	97.7
Dredge, Other	3	*
Unknown, Other Combined Gears	37	*
All Gear	9,490	100

Note: * = less than 1,000 pounds or less than 1 percent.

Over 56 percent of the landings for 2013 were caught in statistical area 537, which includes Atlantis and Block Canyons; statistical area 616 had 36 percent of the landings, which includes Hudson Canyon; and statistical area 626 had 5 percent of the landings (Table 3). Less than 1 percent of the total landings were caught in statistical areas 525 (includes Oceanographer, Lydonia, and Gilbert Canyons) and 526 (includes Hydrographer and Veatch Canyons). NMFS statistical areas are shown in Figure 4.

Table 3. Tilefish percent landings by statistical area and year, 1996-2013.

Year	Unk	525	526	536	537	539	612	613	616	622	626	Other
1996	19.88	0.07	5.18	-	44.02	0.38	*	1.07	27.99	0.01	-	1.39
1997	23.30	0.03	0.67	-	56.21	0.02	*	2.59	16.40	0.01	*	0.76
1998	16.22	1.25	2.15	-	65.86	0.04	-	5.45	8.53	*	*	0.50
1999	2.57	0.97	0.22	-	55.07	0.01	0.11	3.68	36.79	0.02	0.02	0.54
2000	*	0.36	3.79	-	46.10	0.01	0.05	2.37	43.93	0.47	0.14	2.78
2001	-	0.23	3.09	-	23.92	*	0.01	3.16	68.96	*	0.10	0.52
2002	-	0.12	8.73	-	35.86	0.07	0.01	15.39	39.64	0.02	0.02	0.14
2003	-	0.88	1.79	-	38.48	0.10	-	11.85	46.51	0.05	0.05	0.28
2004	-	1.03	2.59	-	61.67	0.06	5.28	0.70	25.92	0.03	0.06	2.66
2005	-	0.12	0.25	-	62.99	0.02	0.03	6.11	25.68	0.03	0.20	4.56
2006	-	*	1.54	1.96	61.70	0.50	1.24	0.71	30.09	0.04	0.05	2.16
2007	-	0.02	0.42	4.80	55.15	0.01	-	5.53	31.56	0.85	0.43	1.23
2008	-	1.09	0.06	8.17	39.57	0.01	-	4.62	43.26	2.05	0.02	1.15
2009	-	2.17	0.01	4.18	42.62	1.30	0.04	4.37	41.72	1.34	1.16	1.10
2010	-	0.01	0.01	-	57.14	0.55	0.02	7.28	33.95	0.69	0.04	0.31
2011	-	0.02	*	-	53.06	0.01	-	3.12	39.88	0.31	0.06	3.44
2012	-	0.01	0.01	-	52.54	0.03	*	0.58	43.92	0.20	0.10	2.62
2013	-	*	0.63	-	56.22	1.09	0.03	0.09	35.83	1.25	4.72	0.14
All	4.85	0.47	1.73	0.87	51.65	0.23	0.54	4.21	33.31	0.35	0.37	1.42

Note: - = no landings; * = less than 0.01 percent.

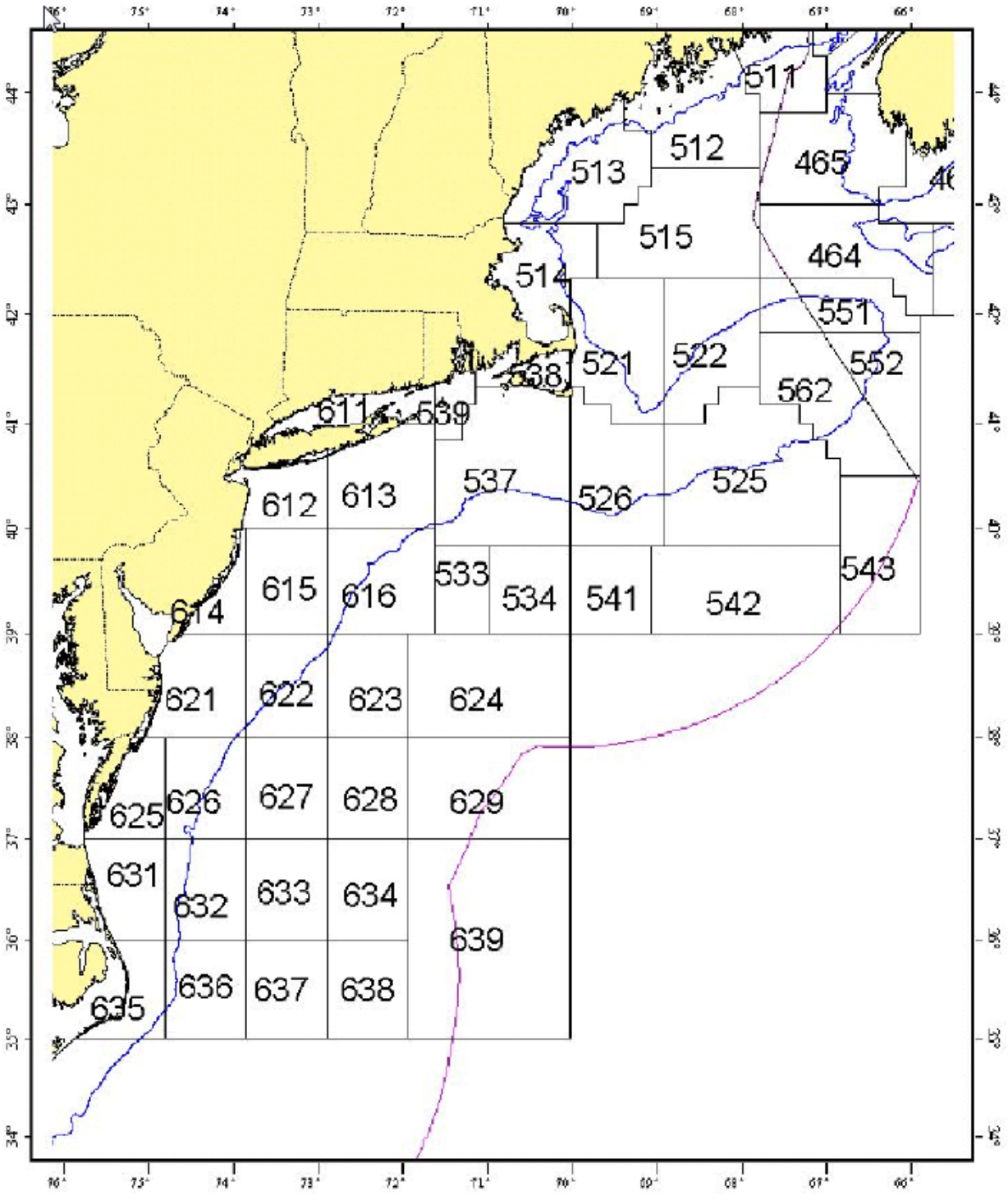

Figure 4. NMFS Statistical Areas.

Commercial tilefish ex-vessel revenues have ranged from $2.5 to $5.5 million for the 1999 through 2013 period. The mean price for tilefish (adjusted) has ranged from $1.03/lb in 2004 to $3.27/lb in 2013 (Figure 5).

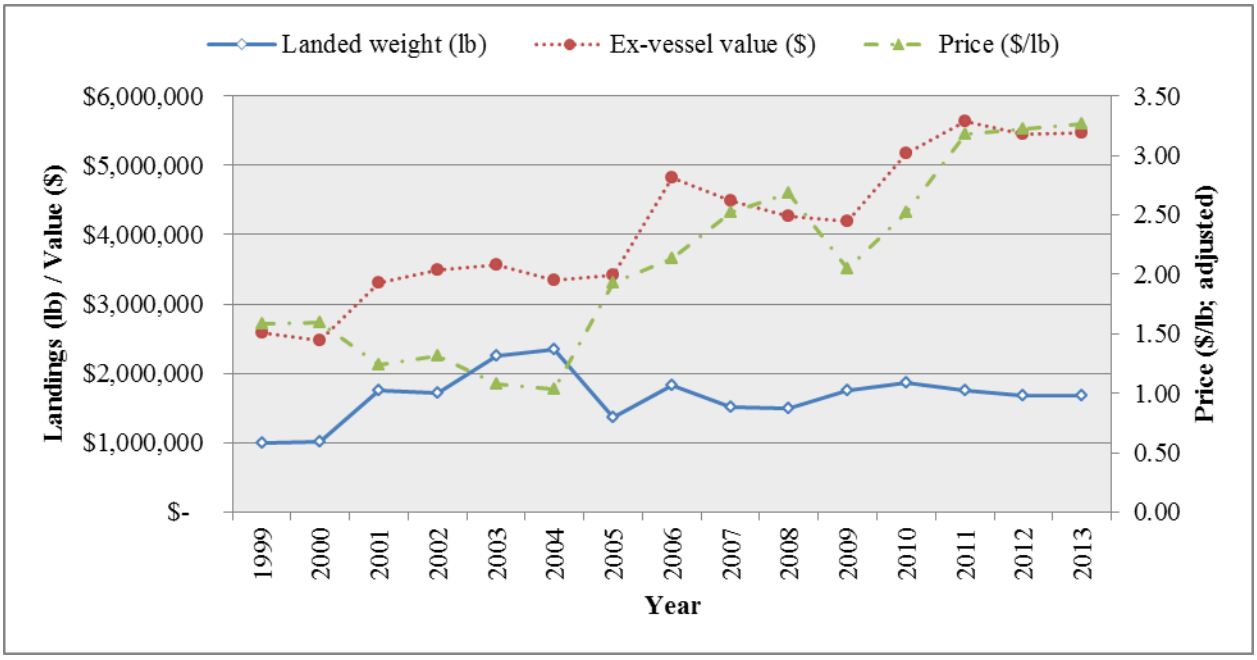

Figure 5. Landings, ex-vessel value, and price for tilefish, Maine through Virginia combined, 1999-2013. Note: Prices were adjusted to 2013 values using the Bureau of Labor Statistics Producer Price Index.

The 2009 through 2013 coastwide average ex-vessel price per pound for all market categories combined was $2.98, $3.31 for extra large, $3.71 for large, $2.86 for medium, $2.21 for kittens, $1.92 for small-kittens; $1.83 for small, and $3.29 for unclassified. Price differentials for the 2009 through 2013 period combined indicate that the ex-vessel price per pound for extra large tilefish was 72 percent and 81 percent greater than for small-kittens and small size categories, respectively. Price differentials for the same time period indicate that large tilefish was 93 percent and 103 percent greater than for small-kittens and small size categories, respectively. This price differential indicates that larger fish tend to bring higher prices (Table 4). Nevertheless, even though there is a price differential for various sizes of tilefish landed, tilefish fishermen land all fish caught as the survival rate of discarded fish is very low (L. Nolan 2006; Kitts et al. 2007).

Table 4. Landings, ex-vessel value, and price of tilefish by size category, from Maine thought Virginia, 2009 through 2013.

Size Category	Landed Weight ('000 lb)	Value ($1,000)	Price ($/lb)
Extra large	188,914	624,911	3.31
Large	2,375,270	8,802,967	3.71
Medium	2,990,944	8,554,064	2.86
Small	229,507	419,970	1.83
Kittens	1,744,892	3,855,677	2.21
Small-Kittens	168,219	323,821	1.92
Unclassified	1,016,436	3,347,014	3.29
All	8,714,182	25,928,424	2.98

The ports and communities that are dependent on tilefish are fully described in Amendment 1 to the FMP (section 6.5; MAFMC 2009; found at http://www.mafmc.org/fmp/pdf/Tilefish_Amend_1_Vol_1.pdf). Additional information on "Community Profiles for the Northeast US Fisheries" can be found at http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

To examine recent landings patterns among ports, 2012-2013 NMFS dealer data are used. The top commercial landings ports for tilefish are shown in Table 5. A "top port" is defined as any port that landed at least 10,000 lb of golden tilefish. Ports that received 1% or greater of their total revenue from tilefish are shown in Table 6.

Table 5. Top ports of landing (in lb) for golden tilefish, based on NMFS 2012 - 2013 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year. (Note: values in parenthesis correspond to IFQ vessels).

Port	2012		2013	
	Landings	# Vessels	Landings	# Vessels
MONTAUK, NY	1,193,294 (1,188,394)	17 (4)	1,183,535 (1,179,437))	14 (4)
BARNEGAT LIGHT/LONG BEACH, NJ	397,610 (396,054)	12 (9)	357,360 (355,845)	8 (6)
HAMPTON BAYS, NY	213,948 (C)	3 (1)	250,941 (C)	4 (1)
POINT JUDITH, RI	7,789 (0)	48 (0)	13,868 (0)	53 (0)

Note: C = Confidential.

Table 6. Ports that generated 1% or greater of total revenues from golden tilefish, 2009-2013.

Port	State
BARNEGAT	NEW JERSEY
OTHER MONMOUTH	NEW JERSEY
BARNEGAT LIGHT /LONG BEACH	NEW JERSEY
MONTAUK	NEW YORK
HAMPTON BAYS	NEW YORK
MATTICUT	NEW YORK
SHINNECOCK	NEW YORK

In 2013 there were 61 Federally permitted dealers who bought golden tilefish from 143 vessels that landed this species from Maine through Virginia. In addition, 74 dealers bought tilefish from 140 vessels in 2012. These dealers bought approximately $5.5 of tilefish in both 2012 and 2013, and are distributed by state as indicated in Table 7. Table 8 shows relative dealer dependence on tilefish.

Table 7. Dealers reporting buying golden tilefish, by state in 2012 - 2013.

# of Dealers	MA		RI		CT		NY		NJ		MD		VA		Other	
	'12	'13	'12	'13	'12	'13	'12	'13	'12	'13	'12	'13	'12	'13	'12	'13
	11	9	11	9	8	7	20	17	12	10	5	2	6	7	1	0

Note: C = Confidential.

Table 8. Dealer dependence on tilefish, 2009-2013.

Number of Dealers	Relative Dependence on Tilefish
82	<5%
3	5%-10%
2	10% - 25%
3	25% - 50%
1	50% - 75%
1	90%+

According to VTR data, very little (< 0.2%) discarding was reported by longline vessels that targeted tilefish for the 2004 through 2013 period (Table 9). In addition, the 2009 stock assessment indicates that recent observer directed tilefish longline trips also suggest that discards of tilefish is minimal. Observer trawl data for the 1989 through 2008 period indicates that discard

to kept ratios for trawl trips that either kept or discarded tilefish in the observer data varied from 0 in 1993 to 1.4 in 2001 (NEFSC 2009a).

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Table 9. Catch disposition for directed tilefish trips[a], Maine through Virginia, 2004-2013 combined.

Common Name	Kept lb	% species	% total	Discarded lb	% species	% total	Total lb	Disc: Kept Ratio
GOLDEN TILEFISH	16,363,998	100.00%	99.48%	0	0.00%	0.00%	16,363,998	0.00
SPINY DOGFISH	44,100	70.45%	0.27%	18,500	29.55%	58.85%	62,600	0.42
BLUELINE TILEFISH	9,626	100.00%	0.06%	0	0.00%	0.00%	9,626	0.00
CONGER EEL	8,051	94.15%	0.05%	500	5.85%	1.59%	8,551	0.06
BLACK BELLIED ROSEFISH	3,477	100.00%	0.02%	0	0.00%	0.00%	3,477	0.00
SKATES	3,201	67.66%	0.02%	1,530	32.34%	4.87%	4,731	0.48
SNOWY GROUPER	3,100	100.00%	0.02%	0	0.00%	0.00%	3,100	0.00
TILEFISH OTHER	2,692	100.00%	0.02%	0	0.00%	0.00%	2,692	0.00
DOGFISH SMOOTH	2,294	78.72%	0.01%	620	21.28%	1.97%	2,914	0.27
ELL OTHER	1,485	100.00%	0.01%	0	0.00%	0.00%	1,485	0.00
BLUEFISH	998	24.53%	0.01%	3,070	75.47%	9.77%	4,068	3.08
WRECKFISH	984	100.00%	0.01%	0	0.00%	0.00%	984	0.00
MONKFISH	868	100.00%	0.01%	0	0.00%	0.00%	868	0.00
YELLOWFIN TUNA	770	100.00%	0.00%	0	0.00%	0.00%	770	0.00
BLACK SEA BASS	497	100.00%	0.00%	0	0.00%	0.00%	497	0.00
MAKO SHORTFIN SHARK	465	100.00%	0.00%	0	0.00%	0.00%	465	0.00
AMERICAN EEL	460	100.00%	0.00%	0	0.00%	0.00%	460	0.00
BLUEFIN TUNA	440	91.67%	0.00%	40	8.33%	0.13%	480	0.09
RED HAKE	412	94.28%	0.00%	25	5.72%	0.08%	437	0.06
SILVER HAKE (WHITING)	296	96.42%	0.00%	11	3.58%	0.03%	307	0.04
OTHER FISH	218	100.00%	0.00%	0	0.00%	0.00%	218	0.00
MAKO SHARK OTHER	194	88.58%	0.00%	25	11.42%	0.08%	219	0.13
ALBACORE TUNA	183	100.00%	0.00%	0	0.00%	0.00%	183	0.00
MIX RED & WHITE HAKE	130	100.00%	0.00%	0	0.00%	0.00%	130	0.00
DOLPHIN FISH	119	100.00%	0.00%	0	0.00%	0.00%	119	0.00
COD	100	100.00%	0.00%	0	0.00%	0.00%	100	0.00
CUSK	97	100.00%	0.00%	0	0.00%	0.00%	97	0.00
PORBEAGLE SHARK	95	100.00%	0.00%	0	0.00%	0.00%	95	0.00
REDFISH	72	100.00%	0.00%	0	0.00%	0.00%	72	0.00
SUMMER FLOUNDER	72	100.00%	0.00%	0	0.00%	0.00%	72	0.00
WHITE HAKE	71	100.00%	0.00%	0	0.00%	0.00%	71	0.00

Table 9 (continued). Catch disposition for directed tilefish trips[a], Maine through Virginia, 2004-2013 combined.

Common Name	Kept lb	% species	% total	Discarded lb	% species	% total	Total lb	Disc: Kept Ratio
BLACK WHITING	24	100.00%	0.00%	0	0.00%	0.00%	24	0.00
POLLOCK	22	100.00%	0.00%	0	0.00%	0.00%	22	0.00
LOLIGO SQUID	20	100.00%	0.00%	0	0.00%	0.00%	20	0.00
AMBER JACK	18	100.00%	0.00%	0	0.00%	0.00%	18	0.00
BUTTERFISH	15	100.00%	0.00%	0	0.00%	0.00%	15	0.00
SKATE BARDOOR	0	0.00%	0.00%	2,599	100.00%	8.27%	2,599	--
DOGFISH CHAIN	0	0.00%	0.00%	1,001	100.00%	3.18%	1,001	--
TIGER SHARK	0	0.00%	0.00%	1,000	100.00%	3.18%	1,000	--
JONAH CRAB	0	0.00%	0.00%	785	100.00%	2.50%	785	--
BLUE SHARK	0	0.00%	0.00%	645	100.00%	2.05%	645	--
LOBSTER	0	0.00%	0.00%	614	100.00%	1.95%	614	--
SKATE ROSETTE	0	0.00%	0.00%	310	100.00%	0.99%	310	--
HAMMERHEAD SHARK	0	0.00%	0.00%	100	100.00%	0.32%	100	--
SHARK OTHER	0	0.00%	0.00%	60	100.00%	0.19%	60	--
ALL SPECIES	16,449,664	99.81%	100.00%	31,435	0.19%	100.00%	16,481,099	0.00

[a] Directed trips for tilefish were defined as trips comprising 75 percent or more by weight of tilefish landed. Number of trips = 1,155.

Recreational Fishery

A small recreational fishery briefly occurred during the mid 1970's, with less than 100,000 pounds annually (MAFMC 2000). Subsequent recreational catches have been low for the 1982 - 2013 period, ranging from zero for most years to approximately 30,000 fish in 2010 according to NMFS recreational statistics (Table 10).

VTR data indicates that the number of tilefish caught by party/charter vessels from Maine through Virginia is low, ranging from 81 fish in 1996 to 6,535 fish in 2013 (Table 11). Mean party/charter effort ranged from less than one fish per angler in 1999 throughout 2002 and 2005 to approximately eight fish per angler in 1998, averaging 2.0 fish for the entire time series.

According to VTR data, for the 1996 through 2013 period, the largest amount of tilefish caught by party/charter vessels were made by New Jersey vessels (16,592), followed by New York (7,772), Massachusetts (496), Virginia (454), Delaware (304), Maryland (242), and Rhode Island (182). Party/charter boats from New Jersey have shown a significant uptrend in the number of

tilefish caught during the time series while the boats from Rhode Island have shown a significant downward trend in the number of fish caught (Table 12).

The number of tilefish discarded by recreational anglers is low. According to VTR data, on average, approximately two fish per year were discarded by party/charter recreational anglers for the 1996 through 2013 period. The quantity of tilefish discarded by party/charter recreational anglers ranged from zero in most years to 13 in 2010.

Recreational anglers typically fish for tilefish when tuna fishing especially during the summer months (Freeman, pers. comm. 2006). However, some for hire vessels from New Jersey and New York are tilefish fishing in the winter months (Caputi pers. comm. 2006). In addition, recreational boats in Virginia are also reported to be fishing for tilefish (Pride pers. comm. 2006). However, it is not known with certainty how many boats may be targeting tilefish.

Anglers are highly unlikely to catch tilefish while targeting tuna on tuna fishing trips. However, these boats may fish for tilefish at any time during a tuna trip (i.e., when the tuna limit has been reached, on the way out or on the way in from a tuna fishing trip, or at any time when tuna fishing is slow). While fishing for tuna recreational anglers may trawl using rod and reel (including downriggers), handline, and bandit gear. Rod and reel is the typical gear used in the recreational tilefish fishery. Because tilefish are found in relatively deep waters, electric reels may be used to facilitate landing (Freeman and Turner 1977).

Table 10. Recreational tilefish data from the NMFS recreational statistics databases, 1982-2013.

Year	no. of fish measured	Landed no. A and B1		Released no. B2 private
		party/charter	private	
1982	0	0	984	0
1983	0	0	0	0
1984	0	0	0	0
1985	0	0	0	0
1986	0	0	0	0
1987	0	0	0	0
1988	0	0	0	0
1989	0	0	0	0
1990	0	0	0	0
1991	0	0	0	0
1992	0	0	0	0
1993	0	0	0	0
1994	0	608	0	0
1995	0	0	0	0
1996	0	6,842	0	0
1997	0	0	0	0
1998	0	0	0	0
1999	0	0	0	0
2000	0	0	0	0
2001	0	148	0	0
2002	0	0	20,068	1,338
2003	18	721	0	0
2004	3	62	0	0
2005	0	0	0	0
2006	0	541	0	0
2007	2	1,329	0	0
2008	0	0	0	0
2009	0	177	0	0
2010	3	2,812	27,514	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0

Source: Paul Nitschke (NEFSC).

Table 11. Number of tilefish kept by party/charter anglers and mean effort from Maine through Virginia, 1996 through 2013.

Year	Number of tilefish kept	Mean effort
1996	81	1.4
1997	400	7.5
1998	243	8.1
1999	91	0.4
2000	147	0.5
2001	172	0.7
2002	774	0.9
2003	991	1.6
2004	737	1.2
2005	498	0.9
2006	477	1.2
2007	1,077	1.2
2008	1,110	1.3
2009	1,451	1.3
2010	1,866	2.0
2011	2,938	3.4
2012	6,424	2.8
2013	6,535	3.2
All	26,012	2.0

Table 12. Number of tilefish caught by party/charter vessels by state, 1996 through 2013.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	All
1996	0	0	0	0	0	81	0	0	0	0	81
1997	0	0	0	0	0	400	0	0	0	0	400
1998	0	0	0	102	0	141	0	0	0	0	243
1999	0	0	0	1	0	88	0	0	2	0	91
2000	0	0	0	0	0	108	39	0	0	0	147
2001	0	0	0	0	0	122	51	0	0	0	173
2002	0	0	0	0	0	401	373	0	0	0	774
2003	0	0	0	3	0	86	902	0	0	0	991
2004	0	0	0	0	0	12	628	0	0	104	744
2005	0	0	0	72	0	82	318	14	0	16	502
2006	0	0	0	0	0	265	65	2	133	12	477
2007	0	0	0	0	0	447	459	88	5	80	1,079
2008	0	0	0	3	0	488	545	22	32	10	1,100
2009	0	0	0	0	0	720	675	18	7	31	1,451
2010	0	0	0	0	0	595	1,194	19	23	48	1,879
2011	0	0	496	0	0	720	1,654	60	5	14	2,949
2012	0	0	0	1	0	1,116	5,146	42	23	98	6,426
2013	0	0	0	0	0	1,900	4,543	39	12	41	6,535
All	0	0	496	182	0	7,772	16,592	304	242	454	26,042

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