



## Golden Tilefish Fishery Information Document

February 2019<sup>1</sup>

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for golden tilefish with an emphasis on 2018. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. For more resources, including previous Fishery Information Documents, please visit <http://www.mafmc.org/tilefish/>.

### Key Facts

- There has been no change to the status of the golden tilefish stock in 2018, the stock is not overfished and overfishing is not occurring.
- Framework 2 to the Tilefish FMP (implemented in 2018) made several changes to the management system intended to improve and simplify the administration of the golden tilefish fishery.
- In 2018, 1.5 million pounds (landed weight) of golden tilefish were landed with an ex-vessel value (revenues) of \$4.8 million. This represented an increase in golden tilefish landings and ex-vessel value of approximately 4% and 4.5%, respectively, when compared to 2017. For 2018, the mean price for golden tilefish (unadjusted) was \$3.30 per pound, this represented a 1% increase from 2017 (\$3.27 per pound).
- Party/charter vessel landed 7,118 golden tilefish in 2018. This represented a 1.5% increase from 2017 (7,014 fish landed).

### Basic Biology

The information presented in this section can also be found in the Tilefish Fishery Management Plan (FMP) (MAFMC, 2001; <http://www.mafmc.org/fisheries/fmp/tilefish>). Golden tilefish (*Lopholatilus chamaeleonticeps*; tilefish from this point forward in this section) 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).

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<sup>1</sup> Table 6 was revised from the prior version of this document.

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). Warne 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 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 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 (Northeast Fisheries Science Center) 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 (NEFSC 2009).

*"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, tunicates 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" (Warne 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**

There has been no change to the status of the golden tilefish stock in 2018, the stock is not overfished and overfishing is not occurring.

### *Biological Reference Points*

The biological reference points for golden tilefish were updated during the 2017 stock assessment update (Nitschke 2017), as a result of a change to the recruitment penalty used in the assessment model (i.e., likelihood constant turned off).<sup>2</sup> The fishing mortality threshold for golden tilefish is  $F_{38\%}$  (as  $F_{MSY\ proxy}$ ) = 0.310, and  $SSB_{38\%}$  ( $SSB_{MSY\ proxy}$ ) is 21 million pounds (9,492 mt).

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<sup>2</sup> Incorporation of likelihood constants into the objective function can cause biases in assessment models. This bias can result in reductions in the estimated recruitment and biomass. For additional details see: Nitschke 2017; Golden Tilefish, *Lopholatilus chamaeleonticeps*, stock assessment update through 2016 in the Middle Atlantic-Southern New England Region. NMFS/NEFSC, Woods Hole, MA. Available at: <http://www.mafmc.org/council-events/2017/march-2017-ssc-meeting>.

### *Stock Status*

The last full assessment update was completed in February 2017. Fishing mortality in 2016 was estimated at  $F=0.249$ ; 20% below the fishing mortality threshold of  $F=0.310$  ( $F_{MSY\ proxy}$ ). SSB in 2016 was estimated at 18.69 million pounds (8,479 mt), and was at 89% of the biomass target ( $SSB_{MSY\ proxy}$ ). As such, the golden tilefish stock was not overfished and overfishing was not occurring in 2016, relative to the newly updated biological reference points.

### *Data Update*

The NEFSC is developing a golden tilefish data update through 2018. The update will contain recent trends in the golden tilefish fishery, including, commercial landings, stock size, fishing mortality rate, catch per unit effort, commercial landings by market category (size composition), and landings by area. The update will be posted at the Council's website (<http://www.mafmc.org/>) as soon as it is available.

## **Management System and Fishery Performance**

### *Management*

There have been no changes to the overall golden tilefish management system since the Individual Fishing Quota (IFQ) system was implemented in 2009 (Amendment 1). However, Framework 2 to the Tilefish FMP (implemented in 2018) made several changes to the management system intended to improve and simplify the administration of the golden tilefish fishery. These changes include removing an outdated reporting requirement, proscribing allowed gear for the recreational fishery, modifying the incidental trip landings, requiring commercial golden tilefish be landed with the head attached, and revising how assumed discards are accounted for when setting harvest limits.

The commercial golden tilefish fisheries (IFQ and incidental) are managed using catch and landings limits, commercial quotas, trip limits, gear regulations, permit requirements, and other provisions as prescribed by the FMP. While there is no direct recreational allocation, Amendment 1 implemented a recreational possession limit of eight golden tilefish per angler per trip, with no minimum fish length. Golden tilefish was under a stock rebuilding strategy beginning in 2001 until it was declared rebuilt in 2014. The Tilefish FMP, including subsequent Amendments and Frameworks, are available on the Council website at: <http://www.mafmc.org/fisheries/fmp/tilefish>.

### *Commercial Fishery*

In 2018, 1.5 million pounds (landed weight) of golden tilefish were landed with an ex-vessel value (revenues) of \$4.8 million. This represented an increase in golden tilefish landings and ex-vessel value of approximately 4% and 4.5%, respectively, when compared to 2017. For 2018, the mean price for golden tilefish (unadjusted) was \$3.30 per pound, this represented a 1% increase from 2017 (\$3.27 per pound).

For the 1970 to 2018 calendar years, golden tilefish landings have ranged from 128 thousand pounds live weight (1970) to 8.7 million pounds (1979). For the 2001 to 2018 period, golden tilefish landings have averaged 1.8 million pounds live weight, ranging from 1.1 (2016) to 2.5 (2004) million pounds. In 2018, commercial golden tilefish landings were 1.6 million pounds live weight (Figure 1).

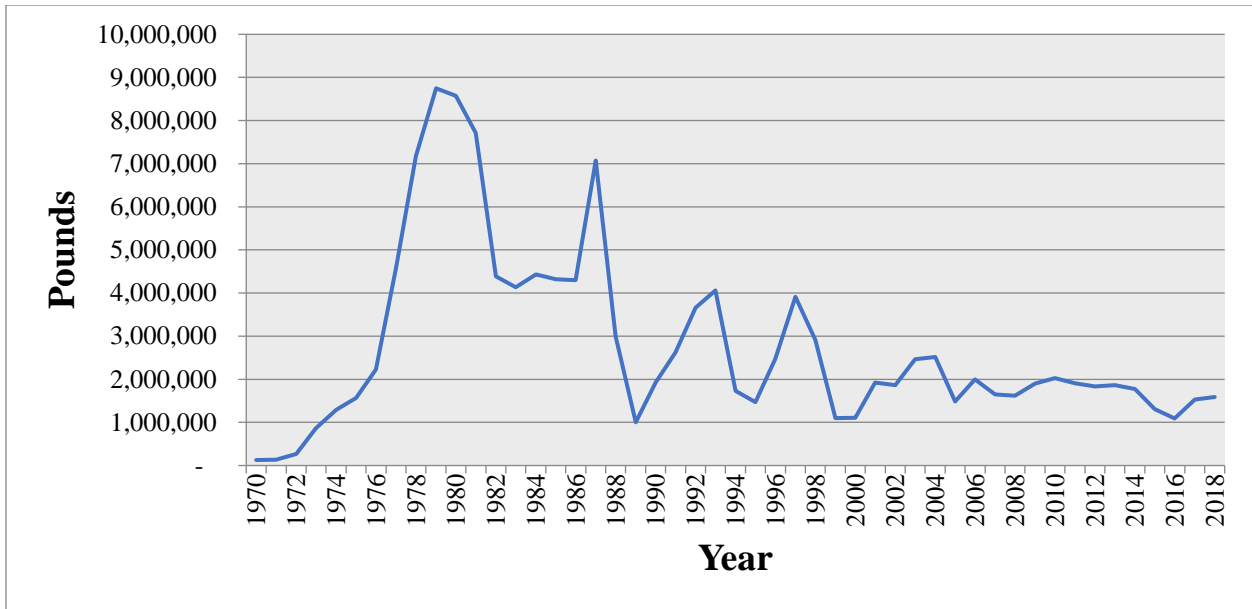
The principal measure used to manage golden tilefish is monitoring via dealer weighout data that is submitted weekly. The directed fishery is managed via an IFQ program. If a permanent IFQ allocation is exceeded, including any overage that results from golden tilefish landed by a lessee in excess of 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 an Open Access Commercial/Incidental Tilefish Permit can possess up to 500 pounds live weight (455 pounds 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 pounds may be reduced in the following fishing year.

Table 1 summarizes the golden tilefish management measures for the 2005-2020 fishing years (FYs). Commercial golden tilefish landings have been below the commercial quota specified each year since the Tilefish FMP was first implemented except for FY 2003/2004 (not shown in Table 1), and 2010. In 2003 and 2004, the commercial quota was exceeded by 0.3 (16%) and 0.6 (31%) million pounds respectively.<sup>3</sup>

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<sup>3</sup> 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 golden tilefish vessels to report their landings. In addition, during that time period, vessels that were not part of the golden tilefish limited entry program also landed golden tilefish.



**Figure 1.** Commercial U.S. Golden Tilefish Landings (live weight) from Maine-Virginia, 1970-2018. Source: 1970-1993 Tilefish FMP; 1994-2018 NMFS unpublished dealer data.

Golden tilefish are primarily caught by longline and bottom otter trawl. Based on dealer data from 2014 through 2018, the bulk of the golden 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 and gillnets (Table 2).

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**Table 1.** Summary of management measures and landings for FY<sup>a</sup> 2005 through 2020.

Management Measures	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ABC (m lb)	-	-	-	-	-	-	-	-	2.013	2.013	1.766	1.898	1.898	1.636	1.636	1.636
TAL (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.755	1.887	1.887	1.627	1.627	1.627
Com. quota-(m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.755	1.887	1.887	1.627	1.626	1.626
Com. landings	1.497	1.898	1.777	1.672	1.887	1.997	1.946	1.856	1.839	1.830	1.354	1.060	1.486	1.623	-	-
Com. overage/underage (m lb)	-0.498	-0.097	-0.218	-0.323	-0.108	+0.002	-0.049	-0.139	-0.156	-0.165	-0.401	-0.827	-0.401	-0.004	-	-
Incidental trip limit (lb)	133	300	300	300	300	300	300	500	500	500	500	500	500	500	500	500
Rec. possession limit	-	-	-	-	-	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>	8 <sup>b</sup>

<sup>a</sup> FY 2005 (November 1, 2004 - October 31, 2005). <sup>b</sup> Eight fish per person per trip.

**Table 2.** Golden tilefish commercial landings ('000 pounds live weight) by gear, Maine through Virginia, 2014-2018 combined.

<b>Gear</b>	<b>Pounds</b>	<b>Percent</b>
Otter Trawl Bottom, Fish	146	2.0
Otter Trawl Bottom, Other	2	*
Gillnet, Anchored/Sink/Other	6	*
Lines Hand	17	*
Lines Long Set with Hooks	7,116	97.5
Pot & Trap	1	*
Dredge, other	*	*
Unknown, Other Combined Gears	9	*
All Gear	7,297	100.0

Note: \* = less than 1,000 pounds or less than 1 percent. Source: NMFS unpublished dealer data.

Approximately 47 percent of the landings for 2018 were caught in statistical area 537; statistical area 616 had 40 percent; statistical area 626 had 6 percent, statistical area 539 had 4 percent, and statistical area 526 had 2 percent (Table 3). NMFS statistical areas are shown in Figure 2.

For the 1999 to 2018 period, commercial golden tilefish landings are spread across the years with no strong seasonal variation (Tables 4 and 5). However, in recent years, a slight downward trend in the proportion of golden tilefish landed during the winter period (November-February) and a slight upward trend in the proportion of golden tilefish landed during the May-June period are evident when compared to earlier years (Table 5).

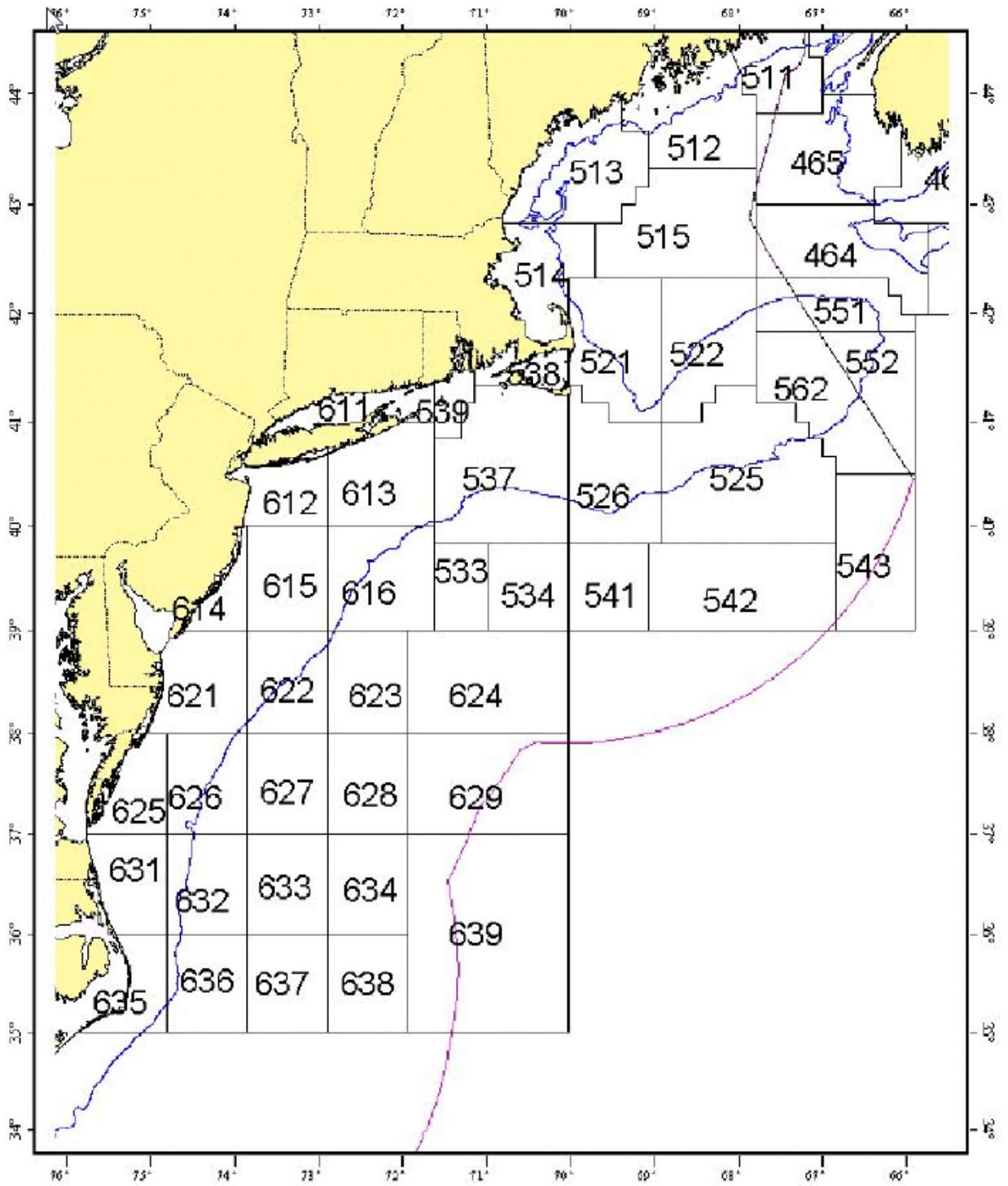
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**Table 3.** Golden tilefish percent landings by statistical area and year, 1996-2018.

Year	525	526	537	539	612	613	616	622	626	Other
1996	0.05	5.22	64.04	0.39	*	1.09	27.81	0.01	-	1.40
1997	0.03	0.68	79.50	0.02	*	2.59	16.41	0.01	*	0.74
1998	1.26	2.19	81.95	0.04	0.02	5.45	8.55	*	*	0.53
1999	0.97	0.22	55.79	0.02	0.22	3.71	36.60	0.02	0.02	0.43
2000	0.36	3.80	46.09	0.01	0.05	2.36	43.94	0.47	0.14	2.78
2001	0.23	3.09	23.92	*	0.01	3.16	68.96	*	0.10	0.52
2002	0.13	8.73	35.85	0.07	0.01	18.49	36.54	0.02	0.02	0.14
2003	0.88	1.81	38.46	0.10	*	11.85	46.53	0.05	0.05	0.26
2004	1.02	2.59	62.63	0.05	5.28	0.71	25.96	0.03	0.06	1.66
2005	0.12	0.25	62.97	0.02	0.03	6.11	25.69	0.03	0.20	4.56
2006	*	1.54	64.28	0.50	1.24	0.71	30.10	0.04	0.05	1.53
2007	0.03	0.44	57.57	0.01	-	5.53	33.93	0.86	0.46	1.18
2008	1.09	0.08	44.03	0.01	*	4.61	46.95	2.05	0.02	1.15
2009	2.16	0.05	42.58	1.30	0.04	4.36	46.12	1.34	1.16	0.89
2010	0.01	0.03	57.09	0.55	0.02	8.38	32.85	0.70	0.04	0.32
2011	0.02	0.04	52.99	0.03	-	3.12	39.95	0.35	0.06	3.46
2012	0.01	0.03	52.35	0.04	0.01	0.58	43.78	0.45	0.10	2.65
2013	*	0.69	56.01	1.06	0.06	0.68	35.31	1.43	4.57	0.17
2014	0.01	0.56	49.18	1.88	0.01	1.28	42.68	2.97	0.36	1.08
2015	3.04	0.98	29.83	2.54	*	0.01	53.65	2.93	5.52	1.50
2016	1.03	4.77	32.33	0.01	-	0.98	54.50	0.17	5.81	0.39
2017	0.01	5.46	27.73	2.69	-	0.94	55.34	0.16	5.49	2.19
2018	*	1.79	47.00	3.50		0.06	40.27	0.60	6.62	0.16
All	0.51	1.88	53.76	0.58	0.45	3.80	36.18	0.51	1.09	1.24

Note: - = no landings; \* = less than 0.01 percent. Source: NMFS unpublished VTR data.



**Figure 2.** NMFS Statistical Areas.

**Table 4.** Golden tilefish commercial landings (1,000 live weight) by month and year, Maine through Virginia, 1999-2018.

Year	Month												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1999	118	114	124	103	93	91	55	106	83	59	77	75	1,096
2000	52	105	159	101	107	99	34	91	42	107	96	112	1,105
2001	107	151	159	188	153	179	177	157	156	156	161	176	1,920
2002	143	232	257	144	164	117	107	141	148	146	68	200	1,866
2003	183	181	295	254	209	185	152	180	210	202	189	223	2,463
2004	197	355	514	332	132	77	113	119	183	187	120	189	2,519
2005	127	159	235	168	33	57	92	129	96	94	141	158	1,487
2006	159	245	324	108	127	142	86	138	129	141	169	228	1,996
2007	122	118	192	147	141	96	131	133	125	174	77	189	1,646
2008	235	206	202	173	124	123	62	90	101	90	109	104	1,619
2009	90	145	185	200	219	211	184	157	156	127	94	134	1,902
2010	128	152	274	216	195	157	149	157	156	186	119	137	2,025
2011	152	95	269	234	203	137	160	127	120	194	65	150	1,905
2012	145	114	141	204	150	129	156	201	184	217	39	138	1,818
2013	106	119	174	245	226	193	152	152	126	169	74	126	1,863
2014	114	93	146	183	187	233	214	172	134	153	46	102	1,777
2015	68	70	144	128	181	146	130	127	123	89	41	62	1,308
2016	43	52	91	93	88	119	150	127	91	112	68	64	1,089
2017	110	55	68	193	195	187	128	134	105	180	47	133	1,535
2018	81	134	124	194	149	185	192	148	133	102	64	83	1,589
Total	2,478	2,896	4,077	3,607	3,079	2,863	2,624	2,787	2,591	2,885	1,862	2,781	34,528
Avg. 99-18	124	145	204	180	154	143	131	139	130	144	93	139	1,726

Source: NMFS unpublished VTR data.

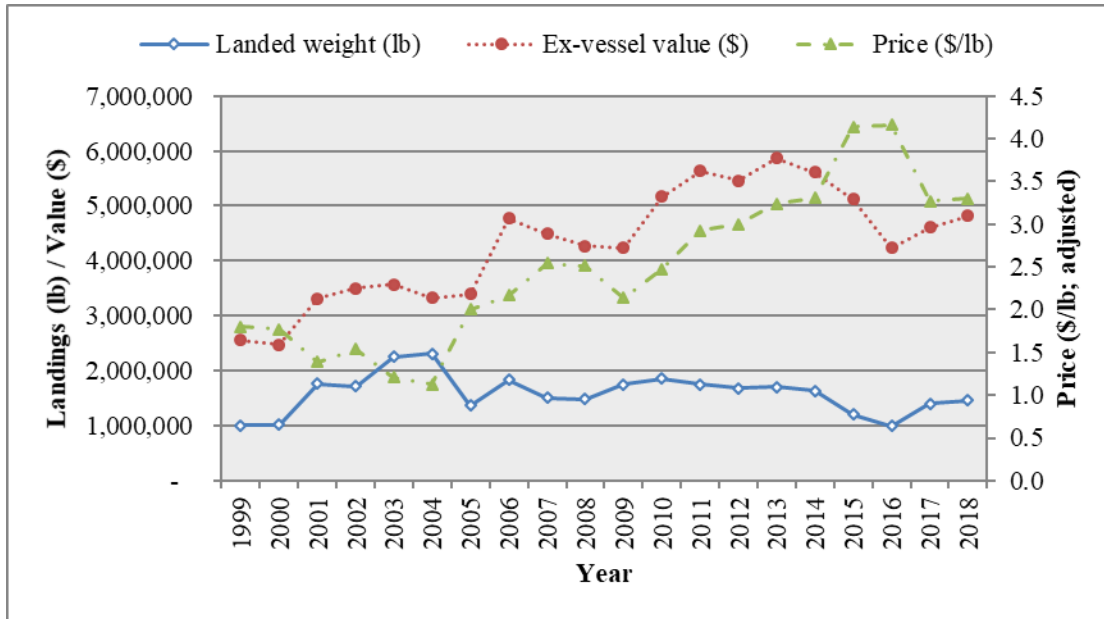
**Table 5.** Percent of golden tilefish commercial landings (live weight) by month and year, Maine through Virginia, 1999-2018.

Year	Month												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1999	10.75	10.38	11.28	9.41	8.50	8.29	4.99	9.66	7.55	5.36	6.98	6.86	100.00
2000	4.68	9.48	14.41	9.13	9.67	8.95	3.05	8.26	3.78	9.71	8.70	10.18	100.00
2001	5.59	7.88	8.30	9.77	7.95	9.32	9.24	8.16	8.13	8.11	8.40	9.14	100.00
2002	7.64	12.43	13.76	7.70	8.78	6.28	5.74	7.57	7.92	7.85	3.63	10.70	100.00
2003	7.44	7.33	11.98	10.31	8.47	7.52	6.18	7.32	8.52	8.19	7.68	9.05	100.00
2004	7.81	14.11	20.42	13.20	5.25	3.06	4.47	4.74	7.26	7.43	4.76	7.49	100.00
2005	8.54	10.70	15.78	11.28	2.24	3.82	6.16	8.66	6.44	6.32	9.46	10.60	100.00
2006	7.95	12.30	16.22	5.39	6.38	7.10	4.33	6.93	6.46	7.06	8.46	11.41	100.00
2007	7.43	7.15	11.67	8.93	8.58	5.85	7.94	8.08	7.61	10.60	4.68	11.47	100.00
2008	14.53	12.72	12.47	10.68	7.68	7.58	3.81	5.59	6.25	5.55	6.73	6.42	100.00
2009	4.72	7.62	9.74	10.50	11.52	11.08	9.66	8.26	8.22	6.69	4.93	7.04	100.00
2010	6.33	7.51	13.51	10.67	9.62	7.73	7.37	7.75	7.69	9.17	5.90	6.75	100.00
2011	7.96	4.96	14.13	12.26	10.66	7.20	8.40	6.66	6.31	10.18	3.42	7.87	100.00
2012	7.98	6.28	7.74	11.23	8.24	7.08	8.60	11.05	10.13	11.94	2.15	7.58	100.00
2013	5.67	6.39	9.34	13.17	12.14	10.37	8.18	8.17	6.75	9.07	3.97	6.78	100.00
2014	6.42	5.26	8.21	10.32	10.51	13.12	12.05	9.65	7.54	8.62	2.58	5.72	100.00
2015	5.21	5.38	10.98	9.79	13.87	11.16	9.91	9.72	9.40	6.97	3.12	4.73	100.00
2016	3.95	4.80	8.40	8.51	8.12	10.96	13.77	11.65	7.42	10.31	6.20	5.91	100.00
2017	7.14	3.58	4.46	12.57	12.71	12.19	8.32	8.72	6.87	11.72	3.05	8.69	100.00
2018	5.25	8.76	8.08	12.63	9.74	12.04	12.52	9.65	8.69	6.66	4.15	5.38	100.00
Total	7.18	8.39	11.81	10.45	8.91	8.29	7.60	8.07	7.50	8.36	5.39	8.05	100.00

Source: NMFS unpublished VTR data.

Commercial golden tilefish landings (landed weight) have ranged from 1.0 million pounds in 2016 (calendar year) to 2.3 million pounds in 2004 for the 1999 through 2018 period. Commercial golden tilefish ex-vessel revenues have ranged from \$2.5 (year 2000) to \$5.9 (year 2013) million for the same time period. In 2018 1.5 million spounds of tilefish were landed with an ex-vessel value (revenues) of \$4.8 million.

For the 1999 thught 2017 period, the mean price for golden tilefish (adjusted) has ranged from \$1.13 per pound in 2004 to \$4.16 per pound in 2016 (Figure 3). For 2018, the mean price for golden tilefish (unadjusted) was \$3.30 per pound.



**Figure 3.** Landings (landed weight), ex-vessel value, and price for golden tilefish, Maine through Virginia combined, 1999-2018. Note: Price data have been adjusted by the GDP deflator indexed for 2017. (2018 - unadjusted as GDP deflator for that year was not available when this figure was produced.) Source: NMFS unpublished dealer data.

The 2014 through 2018 coastwide average ex-vessel price per pound for all market categories combined was \$3.64. Price differential indicates that larger fish tend to bring higher prices (Table 6). Nevertheless, even though there is a price differential for various sizes of golden tilefish landed, golden tilefish fishermen land all fish caught as the survival rate of discarded fish is very low (L. Nolan 2006; Kitts et al. 2007). Furthermore, Amendment 1 to the Tilefish FMP prohibited the practice of highgrading (MAFMC 2009).

**Table 6.** Landings, ex-vessel value, and price of golden tilefish by size category, from Maine through Virginia, 2014 through 2018.

Market category	Landed weight (pounds)	Value (\$)	Price (\$/pound)	Approximate market size range (pounds)
Extra large	393,212	1,767,919	4.50	> 25
Large	1,723,182	8,216,209	4.77	7 – 24
Large/medium <sup>a</sup>	705,174	3,014,137	4.27	5 -7
Medium	1,593,514	5,649,344	3.55	3.5 – 5
Small or kittens	2,011,109	5,121,928	2.55	2 – 3.5
Extra small	220,118	492,343	2.24	< 2
Unclassified	51,294	130,220	2.54	---
All	6,697,603	24,392,100	3.64	---

<sup>a</sup>Large/medium code was implemented on May 1, 2016. Prior to that, golden tilefish sold in the large/medium range were sold as unclassified fish. Source: NMFS unpublished dealer data.

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

To examine recent landings patterns among ports, 2017-2018 NMFS dealer data are used. The top commercial landings ports for golden tilefish are shown in Table 7. A “top port” is defined as any port that landed at least 10,000 pounds of golden tilefish. Ports that received 1% or greater of their total revenue from golden tilefish are shown in Table 8.

**Table 7.** Top ports of landing (live weight) for golden tilefish, based on NMFS 2017 - 2018 dealer data. Since this table includes only the “top ports,” it may not include all of the landings for the year.

Port	2017		2018	
	Landings (pounds)	# Vessels	Landings (pounds)	# Vessels
Montauk, NY	782,924 (771,660) <sup>a</sup>	16 (3)	969,747 (961,955)	16 (3)
Barnegat Light/Long Beach, NJ	431,372 (431,372)	6 (6)	403,555 (403,555)	5 (5)
Hampton Bays, NY	258,145 (C)	5 (C)	170,928 (C)	5 (C)
Point Judith, RI	38,095 (0)	52 (0)	30,334 (0)	61 (0)

<sup>a</sup>Values in parenthesis correspond to IFQ vessels. Note: C = Confidential. Source: NMFS unpublished dealer data.

**Table 8.** Ports that generated 1% or greater of total revenues from golden tilefish, 2014-2018 combined.

Port	State	Ex-vessel revenue all species combined	Ex-vessel revenue golden tilefish	Golden tilefish contribution to total port ex-vessel revenues
East Hampton	NY	230,761	105,709	46%
Ocean City	NJ	25,018	4,565	18%
Montauk	NY	85,018,529	14,159,705	17%
Hampton Bays	NY	30,161,602	3,163,244	10%
Barnegat Light/Long Beach	NJ	126,335,731	6,380,715	5%
Shinnecock	NY	5,846,533	301,222	5%

Source: NMFS unpublished dealer data.

In 2017 there were 75 federally permitted dealers who bought golden tilefish from 131 vessels that landed this species from Maine through Virginia. In addition, 72 dealers bought golden tilefish from 136 vessels in 2018. These dealers bought approximately \$4.6 and \$4.8 million of golden tilefish in 2017 and 2018, respectively, and are distributed by state as indicated in Table 9. Table 10 shows relative dealer dependence on golden tilefish.

**Table 9.** Dealers reporting buying golden tilefish, by state in 2017 - 2018.

Number of dealers	MA		RI		CT		NY		NJ		VA		Other	
	'17	'18	'17	'18	'17	'18	'17	'18	'17	'18	'17	'18	'17	'18
	10	8	14	12	11	10	22	19	10	15	5	4	3	4

Note: C = Confidential. Source: NMFS unpublished dealer data.

**Table 10.** Dealer dependence on golden tilefish, 2014-2018 combined.

Number of dealers	Relative dependence on tilefish
74	<5%
2	5% - 10%
3	10% - 25%
1	25% - 50%
3	50% - 75%
1	90%+

Source: NMFS unpublished dealer data.

According to VTR data, very little (< 0.4%) discarding was reported by longline vessels that targeted golden tilefish for the 2009 through 2018 period (Table 11). In addition, the 2014

golden tilefish stock assessment (NEFSC 2014) and stock assessment update (Nitschke 2017) indicate that golden tilefish discards in the trawl and longline fishery appear to be a minor component of the catch.

**Table 11.** Catch disposition for directed golden tilefish trips<sup>a</sup>, Maine through Virginia, 2009-2018 combined.

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	13,877,691	100.00%	97.28%	0	0.00%	0.00%	13,877,691	0.00
SPINY DOGFISH	289,217	96.17%	2.03%	11,518	3.83%	24.08%	300,735	0.04
BLUELINE TILEFISH	27,556	99.98%	0.19%	5	0.02%	0.01%	27,561	0.00
DOGFISH SMOOTH	26,417	82.41%	0.19%	5,640	17.59%	11.79%	32,057	0.21
CONGER EEL	18,630	94.39%	0.13%	1,107	5.61%	2.31%	19,737	0.06
BLACK BELLIED ROSEFISH	6,863	99.97%	0.05%	2	0.03%	0.00%	6,865	0.00
DOLPHIN FISH	3,614	96.42%	0.03%	134	3.58%	0.28%	3,748	0.04
WRECKFISH	2,499	100.00%	0.02%	0	0.00%	0.00%	2,499	0.00
YELLOWFIN TUNA	2,299	98.08%	0.02%	45	1.92%	0.09%	2,344	0.02
BARRELFISH	1,632	100.00%	0.01%	0	0.00%	0.00%	1,632	0.00
SILVER HAKE (WHITING)	1,561	99.24%	0.01%	12	0.76%	0.03%	1,573	0.01
GROUPEL	1,240	100.00%	0.01%	0	0.00%	0.00%	1,240	0.00
MAKO SHORTFIN SHARK	1,077	100.00%	0.01%	0	0.00%	0.00%	1,077	0.00
RED HAKE	917	59.86%	0.01%	615	40.14%	1.29%	1,532	0.67
SAND TILEFISH	804	100.00%	0.01%	0	0.00%	0.00%	804	0.00
BLUEFIN TUNA	451	100.00%	0.00%	0	0.00%	0.00%	451	0.00
MAKO SHARK	438	92.60%	0.00%	35	7.40%	0.07%	473	0.08
SKATES OTHER	402	100.00%	0.00%	0	0.00%	0.00%	402	0.00
ANGLER	312	100.00%	0.00%	0	0.00%	0.00%	312	0.00
BLACK SEA BASS	258	96.27%	0.00%	10	3.73%	0.02%	268	0.04
BLUEFISH	254	8.99%	0.00%	2,570	91.01%	5.37%	2,824	10.12
BIG EYE TUNA	179	100.00%	0.00%	0	0.00%	0.00%	179	0.00
BLACK WHITING	176	100.00%	0.00%	0	0.00%	0.00%	176	0.00
AMERICAN EEL	150	100.00%	0.00%	0	0.00%	0.00%	150	0.00
WHITE HAKE	120	100.00%	0.00%	0	0.00%	0.00%	120	0.00
SWORDFISH	115	100.00%	0.00%	0	0.00%	0.00%	115	0.00
FISH OTHER	99	100.00%	0.00%	0	0.00%	0.00%	99	0.00



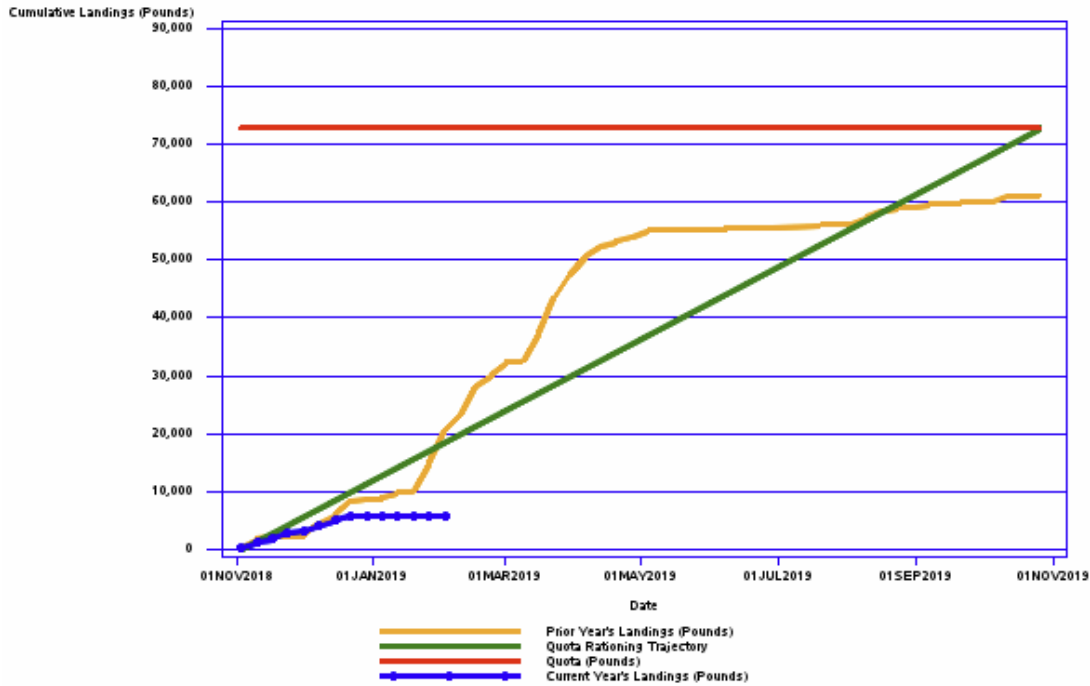
**Table 11 (continued).** Catch disposition for directed golden tilefish trips<sup>a</sup>, Maine through Virginia, 2009-2018 combined.

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
CUSK	97	100.00%	0.00%	0	0.00%	0.00%	97	0.00
BLACKFIN TUNA	92	100.00%	0.00%	0	0.00%	0.00%	92	0.00
REDFISH	77	100.00%	0.00%	0	0.00%	0.00%	77	0.00
ALBACORE TUNA	75	100.00%	0.00%	0	0.00%	0.00%	75	0.00
SUMMER FLOUNDER	50	76.92%	0.00%	15	23.08%	0.03%	65	0.30
BLACK TIP SHARK	50	100.00%	0.00%	0	0.00%	0.00%	50	0.00
PORBEAGLE SHARK	45	100.00%	0.00%	0	0.00%	0.00%	45	0.00
MIX RED & WHITE HAKE	37	45.12%	0.00%	45	54.88%	0.09%	82	1.22
TRIGGERFISH	20	100.00%	0.00%	0	0.00%	0.00%	20	0.00
POLLOCK	17	20.73%	0.00%	65	79.27%	0.14%	82	3.82
WEAKFISH	16	100.00%	0.00%	0	0.00%	0.00%	16	0.00
SQUETEAGUE	5	100.00%	0.00%	0	0.00%	0.00%	5	0.00
HAGFISH	5	100.00%	0.00%	0	0.00%	0.00%	5	0.00
TIGER SHARK	0	0.00%	0.00%	13,420	100.00%	28.06%	13,420	--
SKATE BARDOOR	0	0.00%	0.00%	4,937	100.00%	10.32%	4,937	--
DOGFISH CHAIN	0	0.00%	0.00%	3,748	100.00%	7.84%	3,748	--
JONAH CRAB	0	0.00%	0.00%	1,850	100.00%	3.87%	1,850	--
LOBSTER	0	0.00%	0.00%	996	100.00%	2.08%	996	--
BLUE SHARK	0	0.00%	0.00%	680	100.00%	1.42%	680	--
BIG SKATE	0	0.00%	0.00%	220	100.00%	0.46%	220	--
HAMMERHEAD SHARK	0	0.00%	0.00%	100	100.00%	0.21%	100	--
SHARK UNK	0	0.00%	0.00%	60	100.00%	0.13%	60	--
ALL SPECIES	14,265,552	99.67%	100.00%	47,829	0.33%	100.00%	14,313,381	0.00

<sup>a</sup> Directed trips for golden tilefish were defined as trips comprising 75 percent or more by weight of golden tilefish landed. Number of trips = 1,169. Source: NMFS unpublished VTR data.

Golden tilefish incidental commercial fishery landings in FY 2019 are slightly behind of FY 2018 landings for the same time period (Figure 4; as of the week ending January 6, 2019). Incidental golden tilefish commercial landings for the last six fishing years are shown in Table 12.

## Incidental Golden Tilefish Quota Monitoring Report



**Figure 4.** Incidental commercial landings for 2019 FY to date (Through February 6, 2019). Blue Line = FY 2019, Orange Line = FY 2018.

Source: [https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports\\_frame.htm](https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports_frame.htm).

**Table 12.** Incidental golden tilefish commercial landings for 2013-2018 fishing years.

Fishing year	Landings (pounds)	Incidental quota (pounds)	Percent of quota landed (%)
2013	36,442	99,750	37
2014	44,594	99,750	45
2015	18,839	87,744	21
2016	20,929	94,357	22
2017	60,409	94,357	64
2018	61,254	72,752	84

Source: [https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports\\_frame.htm](https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports_frame.htm).

### *Recreational Fishery*

According to vessel trip report (VTR) data, party/charter vessel landed 7,118 golden tilefish in 2018. This represented a 1.5% increase from 2017 (7,014 fish landed).

A small recreational fishery briefly occurred during the mid-1970's, with less than 100,000 pounds annually (MAFMC 2001). Subsequent recreational catches have been low for the 1982 - 2018 period, ranging from zero for most years to approximately 213,000 fish in 2010 according to NMFS recreational statistics (Table 13). In 2018, approximately 6,000 fish were landed.

VTR data indicates that the number of golden tilefish kept by party/charter vessels from Maine through Virginia is low, ranging from 81 fish in 1996 to 8,297 fish in 2015 (Table 14). 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 the late 1990s, averaging 2.8 fish for the 1996-2018 period.

According to VTR data, for the 1996 through 2018 period, the largest amount of golden tilefish caught by party/charter vessels were made by New Jersey vessels (46,728), followed by New York (11,668), Virginia (1,039), Delaware (805), Massachusetts (496), and Maryland (495; Table 15). The number of golden tilefish discarded by recreational anglers is low. According to VTR data, on average, approximately 7 fish per year were discarded by party/charter recreational anglers for the 1996 through 2018 period (165 discarded fish in total). The quantity of golden tilefish discarded by party/charter recreational anglers ranged from zero in most years to 60 in 2015.

Recreational anglers typically fish for golden 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 golden tilefish fishing in the winter months (Caputi pers. comm. 2006). In addition, recreational boats in Virginia are also reported to be fishing for golden tilefish (Pride pers. comm. 2006). However, it is not known with certainty how many boats may be targeting golden tilefish. Nevertheless, accounting for information presented in the Fishery Performance Reports (2012-2014) and a brief internet search conducted by Council Staff in 2014 indicates that there have been approximately 10 headboats actively engaged in the tilefish fishery in the Mid-Atlantic canyons in recent years. It is estimated that approximately 4 of these boats conducted direct tilefish fishing trips, while the other 6 boats may have caught tilefish while targeting tuna/swordfish or fishing for assorted deep water species. In addition, it appears that recreational interest onboard headboats for tilefish has increase in the last few years as seen in the FPRs, internet search conducted by Council staff, and recent VTR recreational party/charter statistics (MAFMC 2014).

Anglers are highly unlikely to catch golden tilefish while targeting tuna on tuna fishing trips. However, these boats may fish for golden 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.<sup>4</sup> Rod and reel is the typical gear used in the recreational golden tilefish fishery. Because golden tilefish are found in relatively deep waters, electric reels may be used to facilitate landing (Freeman and Turner 1977).

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<sup>4</sup> Bandit gear is a vertical hook and line gear with rods attached to the vessel when in use. Manual, electric, or hydraulic reels may be used to retrieve lines.

**Table 13.** Recreational golden tilefish data from the NMFS recreational statistics databases, 1982-2018.

Year	Landed no. A and B1				Released no. B2			
	Party/charter		Private/rental		Party/charter		Private/rental	
1982	0		2,225	(102.0)	0		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	555	(101.6)	0		0		0	
1995	0		0		0		0	
1996	1,765	(80.5)	0		0		0	
1997	0		0		0		0	
1998	0		0		0		0	
1999	0		0		0		0	
2000	0		0		0		0	
2001	98	(101.4)	122,443	(85.7)	0		0	
2002	0		0		0		8,163	(85.7)
2003	967	(75.2)	0		0		0	
2004	55	(102.2)	0		0		0	
2005	0		0		0		0	
2006	471	(103.7)	0		0		0	
2007	1,837	(71.4)	0		0		0	
2008	0		0		0		0	
2009	168	(89.8)	0		0		0	
2010	4,754	(81.9)	213,382	(98.4)	0		0	
2011	0		0		0		0	
2012	0		0		0		0	
2013	1,145	(0)	0		0		0	
2014	0		0		0		0	
2015	0		0		0		0	
2016	0		26,691	(70.4)	0		0	
2017	0		59,413	(59.4)	0		0	
2018	5,108	(80.4)	857	(102.9)	9	(107.2)	0	

Source: Recreational Fisheries Statistics Queries: <http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>. PSE (proportional standard error) values in parenthesis expresses the standard error of an estimate as a percentage of the estimate and is a measure of precision. A PSE value greater than 50 indicates a very imprecise estimate. 2018 values are preliminary.

**Table 14.** Number of golden tilefish kept by party/charter anglers and mean effort from Maine through Virginia, 1996 through 2018.

<b>Year</b>	<b>Number of golden tilefish kept</b>	<b>Mean effort</b>
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	1,100	1.3
2009	1,451	1.3
2010	1,866	2.0
2011	2,938	3.4
2012	6,424	2.8
2013	6,560	3.2
2014	6,958	3.1
2015	8,297	4.2
2016	5,919	4.1
2017	7,014	4.6
2018	7,118	3.9
All	61,333	2.8

Source: NMFS unpublished VTR data.

**Table 15.** Number of golden tilefish caught by party/charter vessels by state, 1996 through 2018.

Year	NH	MA	RI	CT	NY	NJ	DE	MD	VA	All
1996	0	0	0	0	81	0	0	0	0	81
1997	0	0	0	0	400	0	0	0	0	400
1998	0	0	102	0	141	0	0	0	0	243
1999	0	0	1	0	88	0	0	2	0	91
2000	0	0	0	0	108	39	0	0	0	147
2001	0	0	0	0	122	51	0	0	0	173
2002	0	0	0	0	401	373	0	0	0	774
2003	0	0	3	0	86	902	0	0	0	991
2004	0	0	0	0	12	628	0	0	104	744
2005	0	0	72	0	82	318	14	0	16	502
2006	0	0	0	0	265	65	2	133	12	477
2007	0	0	0	0	447	459	88	5	80	1,079
2008	0	0	3	0	488	545	22	32	10	1,100
2009	0	0	0	0	720	675	18	7	31	1,451
2010	0	0	0	0	595	1,194	19	23	48	1,879
2011	0	496	0	0	720	1,654	60	5	14	2,949
2012	0	0	1	0	1,116	5,146	42	23	98	6,426
2013	0	0	0	0	1,900	4,568	39	12	41	6,560
2014	0	0	0	3	957	5,716	180	40	73	6,969
2015	14	0	0	0	637	7,376	100	56	174	8,357
2016	0	0	0	0	676	5,073	69	43	67	5,928
2017	0	0	0	0	424	6,373	118	0	76	6,991
2018	0	0	0	0	1,202	5,573	34	114	195	7,118
All	14	496	182	3	11,668	46,728	805	495	1,039	61,430

Source: NMFS unpublished VTR data.

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