



Golden Tilefish Fishery Information Document

February 2022

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 2021. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and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 2021; the stock is not overfished and overfishing is not occurring.
- In 2021, 1.4 million pounds (landed weight) of golden tilefish were landed with an ex-vessel value (revenues) of \$6.2 million. This represented an increase in golden tilefish landings and ex-vessel value of approximately 13 percent and 29 percent, respectively, when compared to 2020. For 2021, the mean price for golden tilefish was \$4.31 per pound, this represented a 15 percent increase from 2020 (\$3.75 per pound).
- According to VTR data, party/charter vessel landed 6,799 golden tilefish in 2021. This represented a 96 percent increase from 2020 (3,466 fish landed).
- Private Recreational Angler Permitting and Reporting started August 2020. According to VTR data, private recreational vessels landed a total of 50 golden tilefish in 2020 (August 2020 to December 2020). For 2021, 199 golden tilefish were landed by recreational anglers.

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 1,500 feet. In the southern New England/mid-Atlantic area, tilefish generally occur at depths of 250 to 1,200 feet and at temperatures from 48°F to 62°F (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). 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 achieve larger sizes than females, but do not live as long (Turner 1986). The largest male reported by Turner was 44.1 inches at 20 years old, and the largest female was 39 years at 40.2 inches FL (fork length). 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 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 (total length) in females and 26-28 inches TL in males (Morse 1981). Idelberger (1985) reported that 50 percent 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 percent maturity varied with the method used and between sexes. Grimes et al. (1986) estimated that 50 percent 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 percent maturity at 24 inches FL while the histological method estimated 50 percent 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 percent maturity was 18 inches for females and 19 inches for males (NEFSC 2009).

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,b, and Bigelow and Schroeder 1953). Among those items identified by Linton (1901a,b) 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 squat lobster (*Munida*) and spider crabs (*Euprognatha*) 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 2021; the stock is not overfished and overfishing is not occurring.

Biological Reference Points

The biological reference points for golden tilefish were updated during the 2021 management track assessment (Nitschke 2021). The fishing mortality threshold for golden tilefish is $F_{40\%}$ (as F_{MSY} proxy) = 0.261, and $SSB_{40\%}$ (SSB_{MSY} proxy) is 24.23 million pounds (10,995 mt).

Stock Status

The latest assessment indicates that the golden tilefish stock was not overfished and overfishing was not occurring in 2020, relative to the newly updated biological reference points (Nitschke 2021). Fishing mortality in 2020 was estimated at $F=0.160$; 39 percent below the fishing mortality threshold of $F=0.261$ (F_{MSY} proxy). SSB in 2020 was estimated at 23.28 million pounds (10,562 mt), and was at 96 percent of the biomass target (SSB_{MSY} proxy).

Data Update

The NEFSC is developing a golden tilefish data update through 2021. The update will contain recent trends in the golden tilefish fishery, including, commercial landings, catch per unit effort, and commercial landings by market category (size composition). The update will be posted at the Council's website (<http://www.mafmc.org/>) as soon as it is available.

The next research track assessment for golden tilefish will be conducted in the Spring of 2024.

Management System and Fishery Performance

Management

There have been no significant 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.

In the Fall on 2021, the Council submitted to NMFS Framework Adjustment 6 to the Tilefish Fishery Management Plan, which proposes measures to revise the specifications process by considering the duration for setting multi-year management measures and the timing of the fishing year. The final rule for this framework is expected in early 2022.

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 amendments and frameworks, are available on the Council website at:

<http://www.mafmc.org/fisheries/fmp/tilefish>.

Commercial Fishery

In 2021, 1.4 million pounds (landed weight) of golden tilefish were landed with an ex-vessel value (revenues) of \$6.2 million. This represented an increase in golden tilefish landings and ex-vessel value of approximately 13 percent and 29 percent, respectively, when compared to 2020. For 2021, the mean price for golden tilefish was \$4.31 per pound, this represented a 15 percent increase from 2019 (\$3.75 per pound).

For the 1970 to 2021 calendar years, golden tilefish landings (live weight) have ranged from 128 thousand pounds live weight (1970) to 8.7 million pounds (1979). For the 2001 to 2021 period (since FMP was implemented), golden tilefish landings have averaged 1.8 million pounds live weight, ranging from 1.1 (2016) to 2.5 (2004) million pounds. In 2021, 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 to the Greater Atlantic Regional Fisheries Office (GARFO). 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.

The commercial/incidental trip limit (for vessels that possess a Commercial/Incidental Tilefish Permit without an IFQ Allocation Permit) is 500 pounds or 50 percent, by weight, of all fish (including the golden tilefish) onboard the vessel, whichever is less. 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 2007-2024 fishing years.¹ Commercial golden tilefish landings have been below the commercial quota specified each year since the Tilefish FMP was first implemented except for fishing years 2003-2004 (not shown in Table 1), and 2010. In 2003 and 2004, the commercial quota was exceeded by 0.3 (16 percent) and 0.6 (31 percent) million pounds, respectively.² In 2020 and 2021, 1.4 million pounds (86 percent of the quota) and 1.5 million pounds (93 percent of the quota) of golden tilefish were landed, respectively.

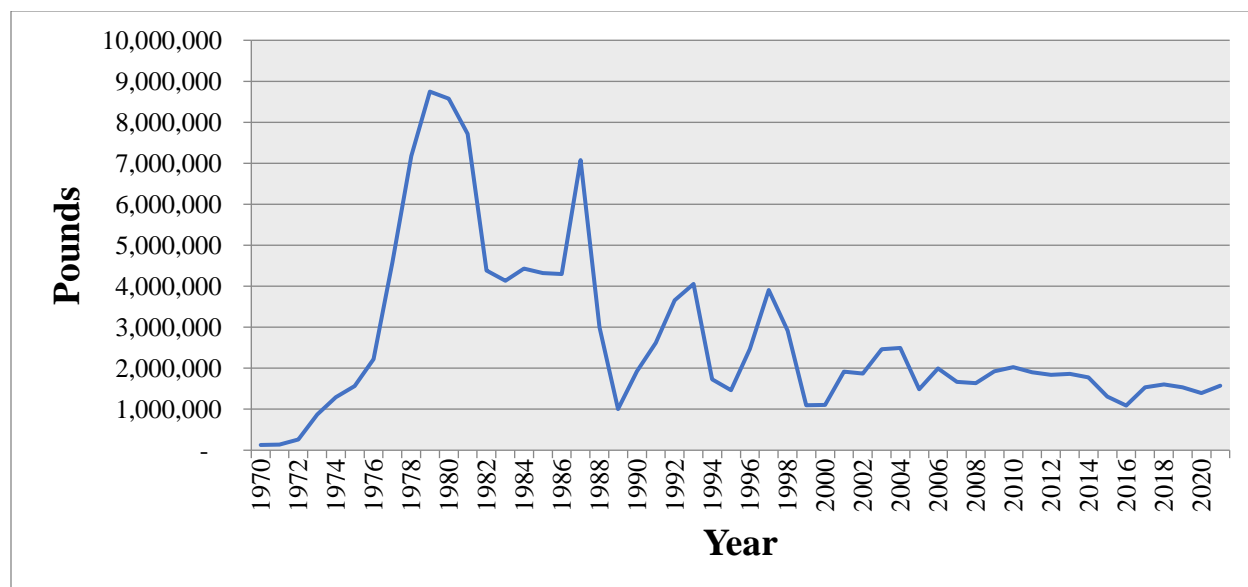


Figure 1. Commercial U.S. Golden Tilefish Landings (live weight) from Maine-Virginia, 1970-2021 (calendar year). Source: 1970-1993 Tilefish FMP; 1994-2021 NMFS unpublished dealer data.

Golden tilefish are primarily caught by longline and bottom otter trawl. Based on dealer data from 2017-2021, the bulk of the golden tilefish landings are taken by longline gear (97 percent) followed by bottom trawl gear (< 2 percent). No other gear had any significant commercial landings. Minimal catches were also recorded for hand line, gillnets, and dredge (Table 2).

¹ Note that measures for the 2022 to 2024 fishing years were approved by the Council but have not yet been implemented by NMFS yet. The proposed rule implementing these measure is expected in early 2022.

² 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.

Table 1. Summary of management measures and landings for fishing year 2007-2024.^a

Management Measures	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ABC (m lb)	-	-	-	-	-	-	2.013	2.013	1.766	1.898	1.898	1.636	1.636	1.636	1.636	1.964	1.964	1.964
TAL (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.755	1.887	1.887	1.626	1.626	1.626	1.625	1.839	1.839	1.839
Com. quota- (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.755	1.887	1.887	1.626	1.626	1.626	1.625/ 1.672*	1.839	1.839	1.839
Com. landings	1.794	1.689	1.906	2.021	1.924	1.873	1.840	1.826	1.351	1.051	1.501	1.624	1.563	1.403	1.546	-	-	-
Com. Overage / underage (m lb)	-0201	-0.306	-0.089	+0.026	-0.071	-0.122	-0.155	-0.169	-0.404	-0.836	-0.387	-0.003	-0.064	-0.223	-0.125	-	-	-
Incidental trip limit (lb)	300	300	300	300	300	500	500	500	500	500	500	500	500	500	500	500	500	500
Rec. possession limit	-	-	-	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b	8 ^b

^a From 2001 to 2021, fishing year = November 1 – October 31 period. For example, 2007 fishing year = November 1, 2006 – October 31, 2007. For 2022, proposed fishing year = November 1, 2021 – December 31, 2022. For 2023 on, proposed fishing year = January 1 – December 31. ^b Eight fish per person per trip. *The Council requested for emergency action to allow unharvested 2020 IFQ pounds to be carried over into the 2021 fishing year, up to 5 percent of the quota shareholders initial 2020 allocation.

Table 2. Golden tilefish commercial landings ('000 pounds live weight) by gear, Maine through Virginia, 2017-2021 (calendar year).

Gear	Pounds	Percent
Otter Trawl Bottom, Fish	125	1.6
Otter Trawl Bottom, Other	5	*
Gillnet, Anchored/Sink/Other	12	*
Lines, Hand	27	*
Lines, Long Set with Hooks	7,414	97.0
Pot & Trap	*	*
Dredge, other	19	*
Unknown, Other Combined Gears	42	*
All Gear	7,646	100.0

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

Approximately 54 percent of the landings for 2021 were caught in statistical area 616; statistical area 537 had 39 percent; statistical areas 539, 613, and 612 had slightly over 1 percent each (Table 3). NMFS statistical areas are shown in Figure 2.

For the 1999 to 2021 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).

Intentionally Left Blank

Table 3. Golden tilefish percent landings by statistical area and year, 1996-2021 (calendar year).

Year	525	526	537	539	612	613	616	622	626	Other
1996	0.05	5.21	64.04	0.39	*	1.09	27.81	0.01	-	1.40
1997	0.03	0.67	79.51	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	3.79	46.10	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	0.12	8.73	35.86	0.07	0.01	18.50	36.54	0.02	0.02	0.14
2003	0.88	1.81	38.48	0.10	-	11.85	46.51	0.05	0.05	0.26
2004	1.03	2.59	62.85	0.05	5.28	0.70	25.95	0.03	0.06	1.66
2005	0.12	0.25	62.99	0.02	0.03	6.11	25.68	0.03	0.20	4.56
2006	*	1.54	64.30	0.50	1.24	0.71	30.09	0.04	0.05	1.53
2007	0.02	0.42	57.61	0.01	-	5.53	33.93	0.85	0.45	1.18
2008	1.09	0.06	44.07	0.01	-	4.62	46.94	2.05	0.02	1.14
2009	2.17	0.01	42.62	1.30	0.04	4.37	46.12	1.34	1.16	0.88
2010	0.01	0.01	57.14	0.55	0.02	8.39	32.83	0.69	0.04	0.31
2011	0.02	*	53.06	0.01	-	3.12	39.98	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	*	0.67	56.22	1.06	0.03	0.68	35.39	1.21	4.59	0.16
2014	0.01	0.52	49.36	1.89	0.01	1.29	42.85	2.67	0.35	1.06
2015	3.06	0.98	30.00	2.55	-	0.01	55.02	2.34	5.53	1.50
2016	1.03	4.77	32.33	0.01	-	0.98	54.50	0.17	5.81	0.39
2017	0.01	5.45	27.73	2.69	0.01	0.94	55.33	0.16	5.49	2.19
2018	*	1.65	46.99	3.27	-	0.06	41.18	0.57	6.13	0.15
2019	0.01	1.39	55.63	1.86	*	1.69	38.64	0.06	0.35	0.74
2020	0.02	3.40	35.98	4.81	0.02	1.39	48.19	0.10	2.15	3.95
2021	*	0.22	39.24	1.43	1.09	1.20	54.46	0.13	0.39	2.93
All	0.46	1.85	52.77	0.78	0.41	3.56	37.29	0.47	1.07	1.35

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

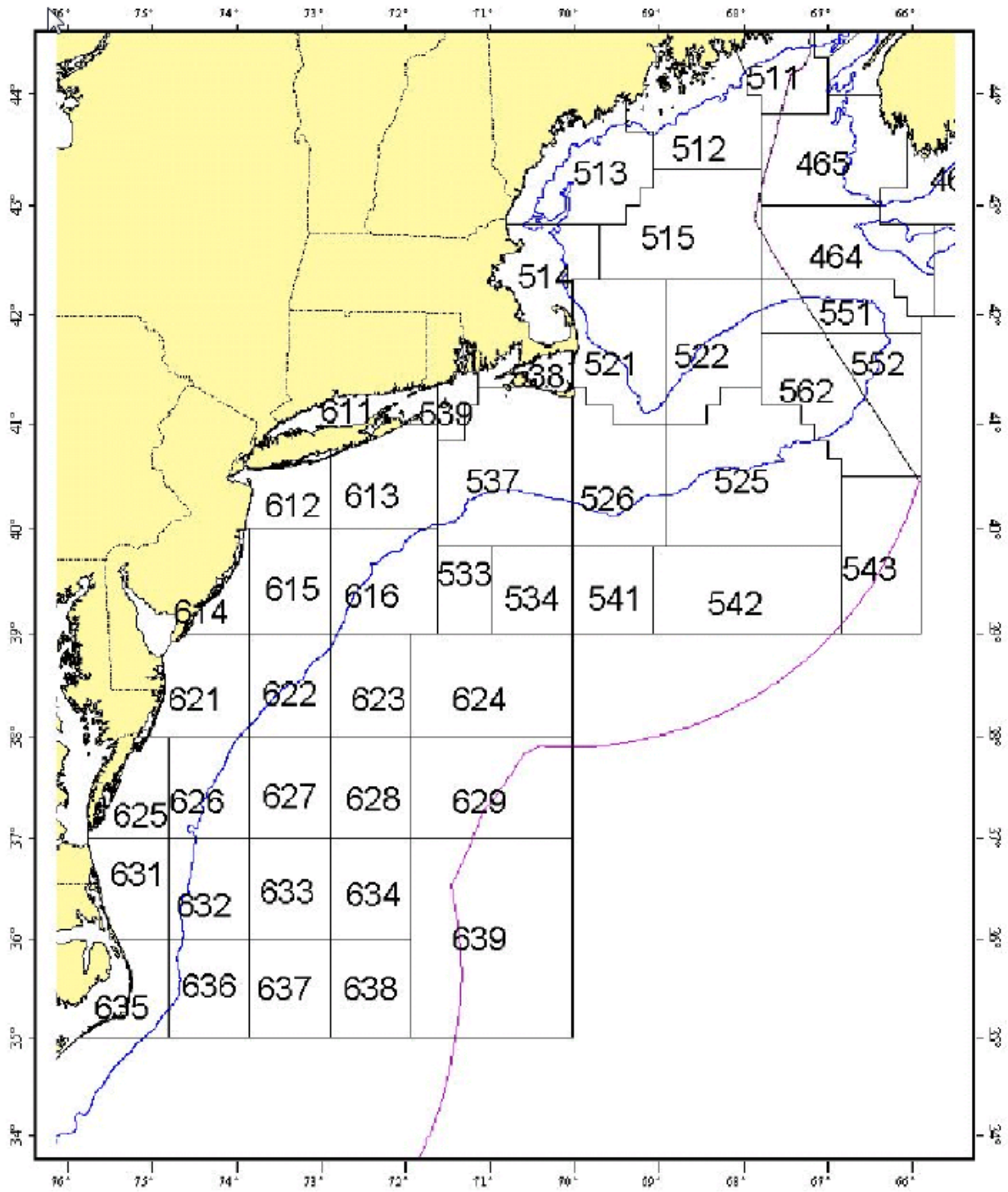


Figure 2. NMFS Statistical Areas.

Table 4. Golden tilefish commercial landings ('000 pound live weight) by month and year, Maine through Virginia, 1999-2021 (calendar year).

Year	Month												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
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	1,867
2003	183	181	295	254	209	185	152	180	210	202	189	223	2,463
2004	192	354	514	323	143	56	113	122	181	236	71	189	2,492
2005	127	159	234	168	33	57	117	104	96	94	141	158	1,487
2006	210	226	292	125	127	124	86	152	116	140	169	228	1,996
2007	122	118	192	147	159	96	131	133	125	174	77	189	1,664
2008	235	206	219	173	124	123	62	90	101	90	109	104	1,636
2009	90	145	185	200	237	211	184	157	157	128	94	134	1,922
2010	149	133	273	216	195	157	149	157	176	188	98	137	2,027
2011	152	94	269	209	227	137	138	149	120	194	65	150	1,905
2012	146	114	142	207	151	131	157	204	186	221	39	139	1,836
2013	105	115	146	269	234	193	147	157	126	169	67	133	1,862
2014	114	93	146	183	187	233	215	171	134	149	50	102	1,778
2015	68	70	144	128	181	146	130	127	123	82	48	62	1,308
2016	43	53	91	71	110	119	131	136	91	96	83	64	1,089
2017	86	69	77	193	195	179	135	134	105	180	47	133	1,533
2018	81	134	124	194	149	196	181	148	133	103	64	98	1,606
2019	91	106	131	130	234	164	131	137	158	119	40	96	1,537
2020	75	95	143	54	187	160	147	133	93	180	65	66	1,397
2021	77	125	128	143	180	190	137	166	131	139	49	109	1,574
Total	2,764	3,193	4,446	3,923	3,780	3,342	3,015	3,252	2,990	3,351	1,967	3,075	39,098
Avg. 12-21	89	98	127	157	181	171	151	151	128	144	55	100	1,552

Source: NMFS unpublished dealer data.

Table 5. Percent of golden tilefish commercial landings (live weight) by month and year, Maine through Virginia, 1999-2021 (calendar year).

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	7.73	8.78	6.28	5.74	7.56	7.91	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	7.69	14.21	20.64	12.95	5.74	2.23	4.52	4.88	7.25	9.46	2.87	7.57	100.00
2005	8.54	10.71	15.77	11.28	2.24	3.82	7.85	6.98	6.43	6.32	9.46	10.60	100.00
2006	10.50	11.32	14.65	6.28	6.38	6.22	4.33	7.60	5.82	7.04	8.46	11.41	100.00
2007	7.35	7.08	11.55	8.83	9.56	5.79	7.86	7.99	7.53	10.48	4.63	11.35	100.00
2008	14.37	12.59	13.40	10.56	7.60	7.50	3.77	5.53	6.18	5.49	6.66	6.35	100.00
2009	4.67	7.55	9.64	10.39	12.36	10.97	9.56	8.18	8.16	6.65	4.88	6.99	100.00
2010	7.35	6.54	13.49	10.68	9.61	7.73	7.37	7.75	8.68	9.25	4.81	6.74	100.00
2011	7.96	4.96	14.13	10.99	11.93	7.20	7.24	7.82	6.30	10.18	3.41	7.88	100.00
2012	7.94	6.22	7.72	11.26	8.22	7.11	8.57	11.09	10.14	12.03	2.15	7.55	100.00
2013	5.66	6.18	7.84	14.47	12.54	10.37	7.90	8.45	6.75	9.07	3.61	7.14	100.00
2014	6.41	5.25	8.20	10.31	10.50	13.09	12.07	9.63	7.55	8.40	2.84	5.74	100.00
2015	5.21	5.37	10.97	9.78	13.86	11.15	9.91	9.71	9.40	6.23	3.67	4.73	100.00
2016	3.94	4.85	8.34	6.52	10.11	10.97	12.00	12.47	8.39	8.85	7.66	5.91	100.00
2017	5.59	4.52	5.05	12.56	12.72	11.67	8.84	8.72	6.87	11.73	3.05	8.68	100.00
2018	5.02	8.37	7.73	12.07	9.31	12.20	11.28	9.22	8.31	6.40	3.99	6.10	100.00
2019	5.93	6.87	8.53	8.46	15.24	10.64	8.49	8.92	10.26	7.77	2.62	6.27	100.00
2020	5.38	6.78	10.24	3.86	13.42	11.43	10.52	9.52	6.66	12.85	4.62	4.71	100.00
2021	4.86	7.96	8.14	9.10	11.41	12.09	8.72	10.52	8.30	8.85	3.10	6.94	100.00
Total	7.07	8.17	11.37	10.03	9.67	8.55	7.71	8.32	7.65	8.57	5.03	7.87	100.00

Source: NMFS unpublished dealer data.

For the 1999 to 2021 calendar years, commercial golden tilefish landings (landed weight) have ranged from 1.0 million pounds in 2016 (calendar year) to 2.3 million pounds in 2004. Commercial golden tilefish ex-vessel revenues have ranged from \$2.5 million in 2000 to \$6.2 million in 2021. In 2021, 1.4 million pounds (landed weight) of goldend tilefish were landed with an ex-vessel value (revenues) of \$6.2 million.

From 1999-2020, the mean price for golden tilefish (adjusted) has ranged from \$2.00 per pound in 2004 to \$4.77 per pound in 2016 (Figure 3). For 2021, the mean price for golden tilefish was \$4.31 per pound.

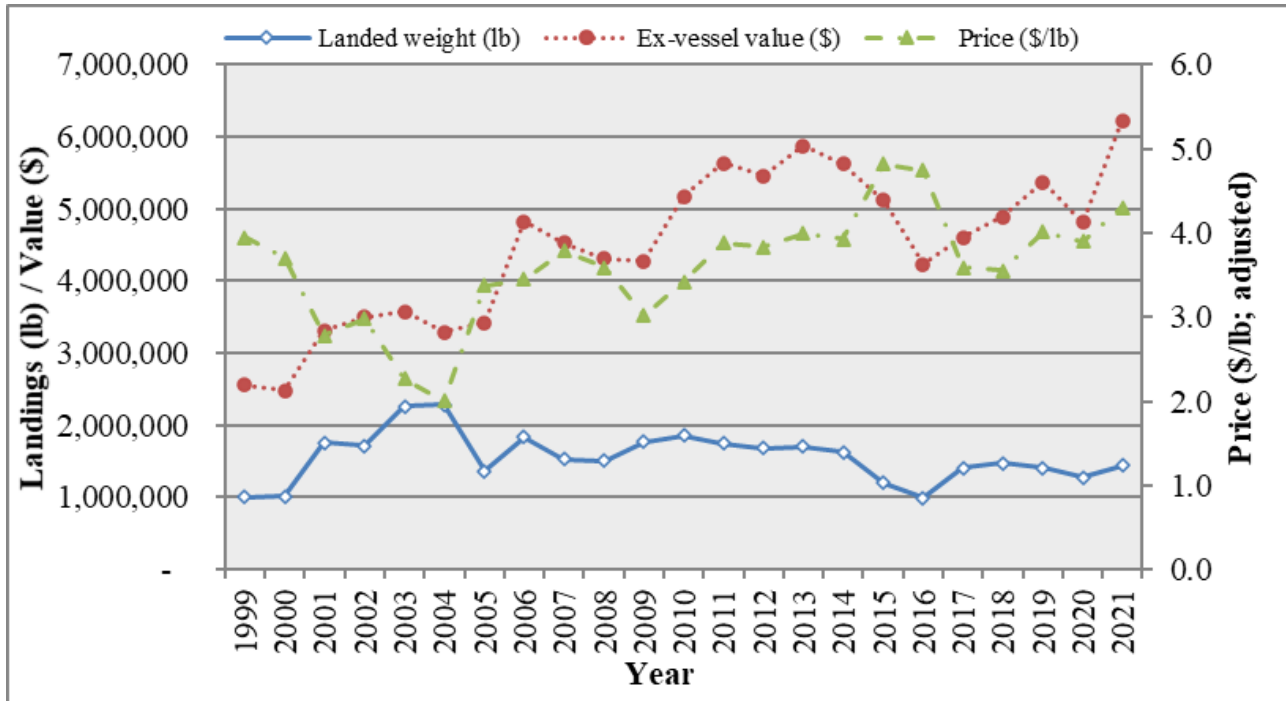


Figure 3. Landings (landed weight), ex-vessel value, and price for golden tilefish, Maine through Virginia combined, 1999-2021 (calendar year). Note: Price data have been adjusted by the GDP deflator indexed for 2021 (<https://fred.stlouisfed.org>). Source: NMFS unpublished dealer data.

The 2017 through 2021 coastwide average ex-vessel price per pound for all market categories combined was \$3.69. 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, 2017-2021 (calendar year).

Market category	Landed weight (pounds)	Value (\$)	Price (\$/pound)	Approximate market size range (pounds)
Extra large	158,618	749,261	4.72	> 25
Large	1,560,477	7,666,936	4.91	7 – 24
Large/medium ^a	929,819	3,872,904	4.17	5 – 7
Medium	2,173,011	7,774,254	3.58	3.5 – 5
Small or kittens	1,975,855	5,236,496	2.65	2 – 3.5
Extra small	126,923	267,533	2.11	< 2
Unclassified	96,326	333,446	3.46	---
All	7,021,029	25,900,830	3.69	---

^aLarge/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://apps-nefsc.fisheries.noaa.gov/read/socialsci/communitySnapshots.php>.

To examine recent landings patterns among ports, 2020-2021 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 percent or greater of their total revenue from golden tilefish are shown in Table 8.

Intentionally Left Blank

Table 7. Top ports ($\geq 10,000$ pounds per year) of landing (live weight) for golden tilefish, based on NMFS 2020-2021 dealer data (calendar year). Since this table includes only the “top ports,” it may not include all of the landings for the year.

Port	2020		2021	
	Landings (pounds)	# Vessels	Landings (pounds)	# Vessels
Montauk, NY	782,096 (777,381)	13 (3)	940,776 (938,183)	15 (3)
Barnegat Light/Long Beach, NJ	C (374,995)	C (5)	C (366,946)	C (4)
Hampton Bays, NY	188,556 (C)	5 (C)	220,645 (C)	4 (C)
Point Judith, RI	9,792 (0)	52 (0)	12,070 (0)	57 (0)

*Values in parentheses correspond to IFQ vessels. Note: C = Confidential. Source: NMFS unpublished dealer data. Note: ports that may have had landings $\geq 10,000$ pounds not added to this table due to confidentiality issues.

Table 8. Ports that generated 1 percent or greater of total revenues from golden tilefish, 2016-2020 (calendar year).

Port	State	Ex-vessel revenue all species combined	Ex-vessel revenue golden tilefish	Golden tilefish contribution to total port ex-vessel revenues
Ocean City	NJ	18,405	4,565	25%
Montauk	NY	85,039,313	15,092,495	18%
Hampton Bays	NY	27,781,838	3,968,469	14%
Barnegat & Barnegat Light/Long Beach	NJ	122,578,564	6,222,422	5%
Shinnecock	NY	7,484,160	237,445	3%

Source: NMFS unpublished dealer data.

In 2021 there were 47 federally permitted dealers who bought golden tilefish from 110 vessels that landed this species from Maine through Virginia. In addition, 54 dealers bought golden tilefish from 105 vessels in 2020. These dealers bought approximately \$6.2 and \$4.8 million of golden tilefish in 2020 and 2021, respectively, and are distributed by state as indicated in Table 9. Table 10 shows relative dealer dependence on golden tilefish. In 2021, 1,897 open access commercial/incidental tilefish permits (valid for both golden and blueline tilefish) were issued.

Table 9. Dealers reporting buying golden tilefish, by state in 2020-2021 (calendar year).

# of dealers	MA		RI		CT		NY		NJ		VA		MD		Other	
	'20	'21	'20	'21	'20	'21	'20	'21	'20	'21	'20	'21	'20	'21	'20	'21
	6	6	11	6	6	6	14	14	8	7	4	4	3	4	2	0

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

Table 10. Dealer dependence on golden tilefish, 2017-2021 (calendar year).

Number of dealers	Relative dependence on golden tilefish
65	<5%
4	5% - 10%
5	10% - 25%
3	25% - 50%
2	50% - 75%
2	90%+

Source: NMFS unpublished dealer data.

According to VTR data, none to very little discarding was reported by longline vessels that targeted golden tilefish from 2019-2021 (Table 11). In addition, the 2021 management track assessment (Nitschke 2021) 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^a, Maine through Virginia, 2019, 2020, and 2021 (calendar year).

(2019)

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	1,316,702	100.00%	95.87%	0	0.00%	--	1,316,702	0.00
SPINY DOGFISH	41,605	100.00%	3.03%	0	0.00%	--	41,605	0.00
SMOOTH DOGFISH	5,315	100.00%	0.39%	0	0.00%	--	5,315	0.00
BLUELINE TILEFISH	3,551	100.00%	0.26%	0	0.00%	--	3,551	0.00
CONGER EEL	2,134	100.00%	0.16%	0	0.00%	--	2,134	0.00
YELLOWFIN TUNA	2,086	100.00%	0.15%	0	0.00%	--	2,086	0.00
BIG EYE TUNA	734	100.00%	0.05%	0	0.00%	--	734	0.00
SAND TILEFISH	506	100.00%	0.04%	0	0.00%	--	506	0.00
DOLPHIN FISH	455	100.00%	0.03%	0	0.00%	--	455	0.00
ANGLER	119	100.00%	0.01%	0	0.00%	--	119	0.00
SKATES OTHER	80	100.00%	0.01%	0	0.00%	--	80	0.00
ALBACORE TUNA	50	100.00%	0.00%	0	0.00%	--	50	0.00
BLACK BELLIED ROSEFISH	44	100.00%	0.00%	0	0.00%	--	44	0.00

SILVER HAKE (WHITING)	43	100.00%	0.00%	0	0.00%	--	43	0.00
SHKIPJACK TUNA	24	100.00%	0.00%	0	0.00%	--	24	0.00
BLACK SEA BASS	9	100.00%	0.00%	0	0.00%	--	9	0.00
ALL SPECIES	1,373,457	100.00%	100.00%	0	0.00%	--	1,373,457	0.00

^aDirected trips for golden tilefish were defined as trips comprising 75 percent or more by weight of golden tilefish landed. Number of trips = 92.
Source: NMFS unpublished VTR data.

(2020)

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	1,118,461	100.00%	95.68%	0	0.00%	--	1,118,461	0.00
SPINY DOGFISH	41,350	100.00%	3.54%	0	0.00%	--	41,350	0.00
BLUELINE TILEFISH	3,474	100.00%	0.30%	0	0.00%	--	3,474	0.00
SMOOTH DOGFISH	2,425	100.00%	0.21%	0	0.00%	--	2,425	0.00
CONGER EEL	1,512	100.00%	0.13%	0	0.00%	--	1,512	0.00
YELLOWFIN TUNA	733	100.00%	0.06%	0	0.00%	--	733	0.00
DOLPHIN FISH	451	100.00%	0.04%	0	0.00%	--	451	0.00
MAKO SHORTFIN SHARK	100	100.00%	0.01%	0	0.00%	--	100	0.00
RED HAKE	98	100.00%	0.01%	0	0.00%	--	98	0.00
BIG EYE TUNA	80	100.00%	0.01%	0	0.00%	--	80	0.00
WHITE HAKE	68	100.00%	0.01%	0	0.00%	--	68	0.00
ALBACORE TUNA	60	100.00%	0.01%	0	0.00%	--	60	0.00
CUNNER	47	1	0.00%	0	0.00%	--	47	0.00
SWORDFISH	40	100.00%	0.00%	0	0.00%	--	40	0.00
BARRELFISH	33	100.00%	0.00%	0	0.00%	--	33	0.00
BLACK BELLIED ROSEFISH	28	100.00%	0.00%	0	0.00%	--	28	0.00
SILVER HAKE (WHITING)	14	100.00%	0.00%	0	0.00%	--	14	0.00
ANGLER	2	100.00%	0.00%	0	0.00%	--	2	0.00
ALL SPECIES	1,168,976	100.00%	100.00%	0	0.00%	--	1,168,976	0.00

^aDirected trips for golden tilefish were defined as trips comprising 75 percent or more by weight of golden tilefish landed. Number of trips = 86.
Source: NMFS unpublished VTR data.

(2021)

Common name	Kept pounds	% species	% Total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	1,384,226	100.00%	94.50%	3	0.00%	0.02%	1,384,229	0.00
SPINY DOGFISH	66,860	100.00%	4.56%	0	0.00%	0.00%	66,860	0.00
DOGFISH SMOOTH	7,075	100.00%	0.48%	0	0.00%	0.00%	7,075	0.00

CONGER EEL	4,199	100.00%	0.29%	0	0.00%	0.00%	4,199	0.00
BLUELINE TILEFISH	1,507	99.93%	0.10%	1	0.07%	0.01%	1,508	0.00
SAND TILEFISH	300	100.00%	0.02%	0	0.00%	0.00%	300	0.00
DOLPHIN FISH	199	100.00%	0.01%	0	0.00%	0.00%	199	0.00
YELLOWFIN TUNA	192	100.00%	0.01%	0	0.00%	0.00%	192	0.00
WRECKFISH	56	100.00%	0.00%	0	0.00%	0.00%	56	0.00
ALBACORE TUNA	50	100.00%	0.00%	0	0.00%	0.00%	50	0.00
WHITE HAKE	45	100.00%	0.00%	0	0.00%	0.00%	45	0.00
BLACK BELLIED ROSEFISH	22	100.00%	0.00%	0	0.00%	0.00%	22	0.00
ANGLER	10	20.83%	0.00%	38	79.17%	0.22%	48	3.80
BLACK SEA BASS	5	100.00%	0.00%	0	0.00%	0.00%	5	0.00
TIGER SHARK	0	0.00%	0.00%	6,050	100.00%	34.35%	6,050	--
SANDBAR SHARK	0	0.00%	0.00%	5,525	100.00%	31.37%	5,525	--
DOGFISH CHAIN	0	0.00%	0.00%	1,480	100.00%	8.40%	1,480	--
SKATE BARDOOR	0	0.00%	0.00%	1,420	100.00%	8.06%	1,420	--
HAMMERHEAD SHARK	0	0.00%	0.00%	1,250	100.00%	7.10%	1,250	--
JONAH CRAB	0	0.00%	0.00%	1,239	100.00%	7.03%	1,239	--
MAKO LONGFIN SHARK	0	0.00%	0.00%	250	100.00%	1.42%	250	--
SILVER HAKE (WHITING)	0	0.00%	0.00%	125	100.00%	0.71%	125	--
PORBEAGLE SHARK	0	0.00%	0.00%	100	100.00%	0.57%	100	--
LOBSTER	0	0.00%	0.00%	73	100.00%	0.41%	73	--
BLUEFISH	0	0.00%	0.00%	50	100.00%	0.28%	50	--
RED HAKE	0	0.00%	0.00%	10	100.00%	0.06%	10	--
ALL SPECIES	1,464,746	0.00%	100.00%	17,614	0.00%	100.00%	1,482,360	0.01

^a Directed trips for golden tilefish were defined as trips comprising 75 percent or more by weight of golden tilefish landed. Number of trips = 90. Source: NMFS unpublished VTR data.

Golden tilefish incidental commercial fishery landings in fishing year 2022 are slightly ahead of fishing year 2021 landings for the same time period (Figure 4; for data reported through February 2, 2022). Incidental golden tilefish commercial landings for 2013-2020 fishing years are shown in Table 12.

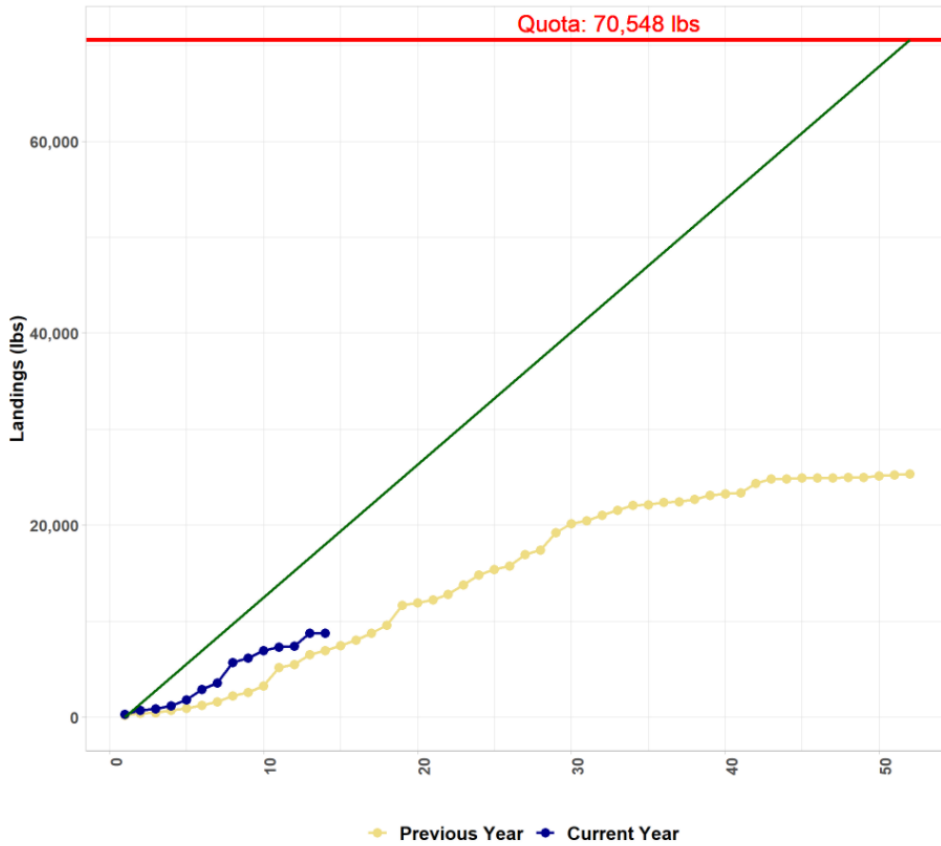


Figure 4. Incidental commercial landings for 2022 fishing year (FY) to date (for data reported through February 2, 2022). Blue Line = FY 2022, Yellow Line = FY 2021.

Source: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/quota-monitoring-greater-atlantic-region>.

Table 12. Incidental golden tilefish commercial landings for fishing year 2013-2021.

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
2019	22,246	72,752	31
2020	25,864	72,752	36
2021	25,356	70,548	36

Source: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/quota-monitoring-greater-atlantic-region>.

Recreational Fishery

In 2021, 680 open access charter/party tilefish permits were issued. According to vessel trip report (VTR) data, 41 party/charter vessels reported a total of 152 trips that landed golden tilefish in 2021.

VTR data indicates that party/charter vessel landed 6,799 golden tilefish in 2021. This represented an increase of 96 percent from 2020 (3,466 fish landed).

A small recreational fishery briefly occurred during the mid-1970's, with less than 100,000 pounds landed annually (MAFMC 2001). Subsequent recreational catches have been low for the 1982 - 2021 period, ranging from zero for most years to approximately 213,000 fish in 2010 according to NMFS recreational statistics (Table 13). In 2021, approximately 10,000 fish were landed according to MRIP data.

VTR data indicates that the number of golden tilefish kept by party/charter vessels from Maine through Virginia is low for the 1996-2021 period, 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 2.9 fish for the 1996-2021 period.

According to VTR data, for the 1996-2021 period, the largest number of golden tilefish caught by party/charter vessels were made by New Jersey vessels (57,094; average = 2,196), followed by New York (15,564; average = 599), Virginia (1,566; average = 60), Delaware (1,271; average = 49), Massachusetts (561; average = 22), and Maryland (939; average = 36; Table 15). The number of golden tilefish discarded by recreational anglers is low. According to VTR data, on average, approximately 8 fish per year were discarded by party/charter recreational anglers for the 1996-2021 period (196 discarded fish in total). The quantity of golden tilefish discarded by party/charter recreational anglers ranged from zero in most years to 60 in each 2015 and 2021.

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 increased 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.³ 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).

Private Recreational Angler Permitting and Reporting

To improve tilefish management and reporting, GARFO implemented mandatory private recreational permitting and reporting for tilefish anglers in August 2020. This action was approved in late 2017, but with delayed implementation. Outreach materials and webinars were provided by GARFO and the Council leading up to the final rule and will continue to be circulated as these regulations become commonplace.

Under this rule, private recreational vessels (including for-hire operators using their vessels for non-charter, recreational trips) are required to obtain a federal vessel permit to target or retain golden or blueline tilefish north of the Virginia/North Carolina border. These vessel operators would also be required to submit VTRs electronically within 24 hours of returning to port for trips where tilefish were targeted or retained. For more information about the proposed requirements, check out the [Recreational Tilefish Permitting and Reporting FAQs](#).

Permitting

Get your federal private recreational tilefish vessel permit through [Fish Online](#). This new permit is required even if a vessel already holds a for-hire tilefish permit. Call the GARFO Permit Office at 978-282-8438 for questions about the permitting process.

Reporting

NOAA Fisheries is encouraging anglers not already using another electronic VTR system to utilize NOAA Fish Online, which is available through a mobile app or a web-based portal. Other systems that may be suitable for recreational anglers include SAFIS eTrips/mobile and SAFIS eTrips Online. You can access information about approved applications and other aspects of electronic reporting on the [NOAA Fisheries website](#).

Additionally, a new app has been released to make the reporting process increasingly easy and convenient. Harbor Light Software's *eFin Logbook* has received certification from NOAA Fisheries as an approved application through which anglers can report their trips. Funded by the Council, *eFin Logbook* is a user-friendly application designed specifically for recreational tilefish anglers. The app is available for use on all Apple and Android mobile devices (iPhone, iPad, Android phone, and Android tablet).

At present, *eFin Logbook* can only be used by tilefish recreational anglers to satisfy reporting requirements. Future modifications may expand its capabilities to other reporting and personal fishing log applications. For-hire operators, many of whom have other reporting requirements, are encouraged to choose different software. To learn more about other electronic reporting options and decide which one is right for you, visit the [NOAA Fisheries Greater Atlantic Region Electronic Reporting Web Page](#).

³ 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.

As of October 28, 2021, 814 tilefish permits have been issued for private recreational anglers. This permit allows recreational anglers to land both golden and blueline tilefish. For the 2021, 199 fish were reported landed on 24 private recreational trips (with 5 fish discarded).

Table 13. Recreational golden tilefish data from the NMFS recreational statistics databases, 1982-2021 (calendar year).

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	
1983-93	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)	0		0		0	
2002	0		122,443	(85.7)	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	7,925	(80.3)	893	(102.9)	4	(106.8)	0	
2019	0		10,364	(64.2)	0		0	
2020	1,933	(30.3)	9,336	(94.7)	41	(100.3)	0	
2021	233	(103.0)	9,778	(55.5)	0		0	

Source: Recreational Fisheries Statistics Queries: <https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/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. 2021 values are preliminary.

Table 14. Number of golden tilefish kept by recreational anglers and mean effort from Maine through Virginia, 1996-2021 (calendar year).

Year	Party/Charter		Private	
	Number of golden tilefish kept	Mean effort	Number of golden 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	1,100	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	7,110	3.9	---	---
2019	5,424	3.1	---	---
2020 ^a	3,466	3.2	50	5.0
2021	6,799	3.2	199	2.7
All	77,048	2.9	50	5.0

^a 2020 private recreational landings reported from August 1 to December 31, 2020. Source: NMFS unpublished VTR data.

Table 15. Number of golden tilefish caught by party/charter vessels by state, 1996-2021 (calendar year).

Year	NH	MA	RI	CT	NY	NJ	DE	MD	VA	Unknown	All
1996	0	0	0	0	81	0	0	0	0	0	81
1997	0	0	0	0	400	0	0	0	0	0	400
1998	0	0	102	0	141	0	0	0	0	0	243
1999	0	0	1	0	88	0	0	2	0	0	91
2000	0	0	0	0	108	39	0	0	0	0	147
2001	0	0	0	0	122	51	0	0	0	0	173
2002	0	0	0	0	401	373	0	0	0	0	774
2003	0	0	3	0	86	902	0	0	0	0	991
2004	0	0	0	0	12	628	0	0	104	0	744
2005	0	0	72	0	82	318	14	0	16	0	502
2006	0	0	0	0	265	65	2	133	12	0	477
2007	0	0	0	0	447	459	88	5	80	0	1,079
2008	0	0	3	0	488	545	22	32	10	0	1,100
2009	0	0	0	0	720	675	18	7	31	0	1,451
2010	0	0	0	0	595	1,194	19	23	48	0	1,879
2011	0	496	0	0	720	1,654	60	5	14	0	2,949
2012	0	0	1	0	1,116	5,146	42	23	98	0	6,426
2013	0	0	0	0	1,900	4,568	39	12	41	0	6,560
2014	0	0	0	3	957	5,716	180	40	73	0	6,969
2015	14	0	0	0	637	7,376	100	56	174	0	8,357
2016	0	0	0	0	676	5,073	69	43	67	0	5,928
2017	0	0	0	0	424	6,373	118	76	38	0	7,029
2018	0	0	0	0	1,202	5,573	46	87	195	7	7,110
2019	0	0	5	0	995	3,956	146	56	267	0	5,425
2020	0	32	0	0	447	2,536	233	33	185	0	3,466
2021	0	33	0	4	2,454	3,874	75	306	113	0	6,859
All	14	561	187	7	15,564	57,094	1,271	939	1,566	7	77,210
Avg. 96-21	< 1	22	7	<1	599	2,196	49	36	60	<1	2,970

Source: NMFS unpublished VTR data.

References

- Able, K.W., C.B. Grimes, R.A. Cooper, and J.R. Uzmann. 1982. Burrow construction and behavior of tilefish, *Lopholatilus chamaeleonticeps*, in the Hudson Submarine Canyon. *Environ. Biol. Fishes* 7: 199-205.
- Bigelow, H.B. and W.C. Schroeder. 1953. Fishes of the Gulf of Maine. U.S. Fish Wildl. Serv., Fish. Bull. 53 577 p.
- Caputi, G. 2006. Personal communication. Ex-member of the MAFMC, recreational angler, and offshore editor for the saltwater sportsman magazine. Brick, NJ.
- Collins, J.W. 1884. History of the tilefish. U.S. Comm. Fish Fisheries Rep. Commissioner for 1882, Part X. Appendix B (XI):237-294a.
- Dooley, J.K. 1978. Systematics and biology of the tilefishes (*Perciformes: Brachiostegidae* and *Malacanthidae*), with descriptions of two new species. NOAA Tech. Rep. NMFS Circ. 411. 78 pp.
- Erickson, D.L. and G.D. Grossman. 1986. Reproductive demography of tilefish from the South Atlantic Bight with a test for the presence of protogynous hermaphroditism. *Trans. Am. Fish. Soc.* 115: 279-285.
- Freeman, B. 2006. Personal communication. Ex-member of the MAFMC. Trenton, NJ.
- Freeman, B.L. and S.C. Turner. 1977. Biological and fisheries data on tilefish, *Lopholatilus chamaeleonticeps* Goode and Bean. U.S. Natl. Mar. Fish. Serv., Northeast Fisheries Sci. Cent. Sandy Hook Lab. Tech. Ser. Rep. No. 5. 41 pp.
- Grimes, C.B., K.W. Able and R.S. Jones. 1986. Tilefish, *Lopholatilus chamaeleonticeps*, habitat, behavior and community structure in Mid-Atlantic and southern New England waters. *Environ. Biol. Fishes* 15: 273-292.
- Grimes, C.B., C.F. Idelberger, K.W. Able, and S.C. Turner. 1988. The reproductive biology of tilefish, *Lopholatilus chamaeleonticeps* Goode and Bean, from the United States Mid-Atlantic Bight, and the effects of fishing on the breeding system. *Fish. Bull. (U.S.)* 86: 745-762.
- Idelberger, C.F. 1985. Reproductive biology of the tilefish, *Lopholatilus chamaeleonticeps*, in the Middle Atlantic Bight. M.S. thesis, Rutgers Univ., New Brunswick, NJ. 51 p.
- Katz, S.J., C.B. Grimes, and K.W. Able. 1983. Delineation of tilefish, *Lopholatilus chamaeleonticeps*, stocks along the United States east coast and in the Gulf of Mexico. *Fish. Bull. (U.S.)* 81: 41-50.
- Kitts, A., P. Pinto da Silva, and B. Rountree. 2007. The evolution of collaborative management in the Northeast USA tilefish fishery. *Marine Policy* 31(2), 192-200.
- Linton, E. 1901a. Fish parasites collected at Woods Hole in 1898. *Bulletin of the United States Fish Commission.* 19:267-304.
- Linton, E. 1901b. Parasites of fishes of the Woods Hole region. *Bull. U.S. Fish. Comm.* 19: 405-492.
- Low, R.A., Jr., G.F. Ulrich, and F. Blum. 1983. Tilefish off South Carolina and Georgia. *Mar. Fish. Rev.* 45(4-6):16-26.
- Markle, D.F., W.B. Scott, and A.C. Kohler. 1980. New and rare records of Canadian fishes and the influence of hydrography on resident and nonresident Scotian Shelf ichthyofauna. *Can. J. Fish. Aquat. Sci.* 37: 49-65.
- Mid-Atlantic Fishery Management Council. 2001. Tilefish Fishery Management Plan. Dover, DE. 443 pp. + appends.

Mid-Atlantic Fishery Management Council. 2009. Amendment 1 to the Tilefish Fishery Management Plan. Dover, DE. Volume 1, 496 pp.

Mid-Atlantic Fishery Management Council. 2014. Tilefish white paper. Dover, DE. 33 pp.

Morse, W.W. 1981. Length, weight, spawning, and fecundity of the tilefish, *Lopholatilus chamaeleonticeps*, from New Jersey waters. U.S. Natl. Mar. Fish. Serv., Northeast Fish. Sci. Cent. Sandy Hook Lab. Rep. 81-02.

Nelson, W. R. and J.S. Carpenter. 1968. Bottom longline explorations in the Gulf of Mexico. A report on "Oregon II's" first cruise. Comm. Fish. Rev. 30(10):57-62.

Nitschke, P. 2021. Golden Tilefish, *Lopholatilus chamaeleonticeps*, Management Track Assessment through 2020 in the Middle Atlantic-Southern New England Region. NMFS/NEFSC, Woods Hole, MA. <https://www.mafmc.org/council-events/2021/ssc-july-21-23>

Nolan, L. 2006. Personal communication. Member of the MAFMC and tilefish commercial fisher. Montauk, NY.

Northeast Fisheries Science Center. 2009. 48th Northeast Regional Stock Assessment Workshop (48th SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 09-15; 834 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://nefsc.noaa.gov/publications/>.

O'Brien, L., J. Burnett, and R.K. Mayo. 1993. Maturation of nineteen species of finfish off the northeast coast of the United States, 1985-1990. NOAA Tech. Rep. NMFS 113. 66 p.

Pride, B. 2006. Personal communication. Ex-member of the MAFMC. Newport News, VA.

Turner, S.C. 1986. Population dynamics of and, impact of fishing on, tilefish, *Lopholatilus chamaeleonticeps*, in the Middle Atlantic-southern New England region during the 1970's and early 1980's. Ph.D. dissertation. Rutgers Univ., New Brunswick, NJ. 289 pp.

Valentine, P.C., J.R. Uzzmann, and R.A. Cooper. 1980. Geology and biology of Oceanographer Submarine Canyon. Mar. Geol. 38: 283-312.

Vidal, T. 2009. Evaluating shifts in size and age at maturity of Golden tilefish from the Mid-Atlantic Bight. NOAA/UMass Cooperative Marine Education & Research Program Northeast Fisheries Science Center. SAW48 Appendix A2. Available at <https://www.nefsc.noaa.gov/publications/crd/crd0915/pdfs/appa2.pdf>.

Warne, J.E., R.A. Slater, and R.A. Cooper. 1977. Bioerosion in submarine canyons. Pp. 65-70. In: D.J. Stanley and G. Keiling (eds). Submarine canyon, fan, and trench sedimentation. Dowden, Hutchinson, and Ross, Stroudsburg, PA.