



Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman
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MEMORANDUM

Date: March 26, 2020
To: Council
From: José Montañez, Staff
Subject: Golden Tilefish Specifications for 2021 and 2022 Interim

The following materials are enclosed for Council consideration of the 2021-2022 golden tilefish management measures.

The following materials are enclosed on this subject:

- 1) Report of the March 2020 Meeting of the MAFMC Tilefish MC
- 2) March 2020 SSC Report – See Committee Reports Tab
- 3) Golden Tilefish Fishery Performance Report (February 2020)
- 4) Golden Tilefish Fishery Information Document, Council Staff (February 2020)
- 5) Golden Tilefish Data Update, NEFSC (February 2020)
- 6) Staff Recommendation Memo to Chris Moore (March 2020)



Tilefish Monitoring Committee 2021 Golden Tilefish Recommendations

March 2020

The Mid-Atlantic Fishery Management Council's (Council) Tilefish Monitoring Committee (MC) met via webinar on March 24, 2020 to review the most recent information and make recommendations for the 2021 and 2022 golden tilefish specifications. The primary purpose of this report is to summarize the MC recommendations from this meeting. Please note: MC comments described below are not necessarily consensus or majority statements.

Attendees: José Montañez and Matthew Seeley (Council Staff), Douglas Potts (GARFO), Jeff Brust (NJDFW), Dan Farnham (Golden Tilefish Fishing Industry), John Maniscalco (NYSDEC), and Paul Nitschke (NEFSC).

Others in attendance: Laurie Nolan (Golden Tilefish Fishing Industry and Council Member) and Michael Auriemma (NJDFW).

Discussion: The MC was presented with a summary of the Scientific and Statistical Committee (SSC) deliberations of the March 2020 SSC meeting, where the SSC reviewed the Golden Tilefish Data Update, the 2020 Golden Tilefish Fishery Performance Report, and the 2020 Golden Tilefish Fishery Information Document. Based on the updated information presented, the SSC recommended *status quo* ABCs for 2021 and 2022 (interim). The SSC indicated that no compelling evidence from either the data update or recent fishing trends suggested the need to change the current ABC. The SSC noted that this is a textbook example of an equilibrium fishery, with stable catches, high constant prices, stable seasonal supply, and low levels of discards. Past assessments have revealed that the fishery depends on the periodic recruitment of year classes. As a result, the catch per unit effort (CPUE) is characterized by cycles of increasing and decreasing stanzas. Currently much of the fishery is dependent on the 2013 year class and, based on historical patterns, further increases in CPUE are expected. Lastly, the SSC also took into consideration that the 2021 management track assessment would then be used to revise the interim 2022 specifications and set specifications for the 2023 and 2024 fishing seasons. The golden tilefish recommended ABC for each year 2021 and 2022 is 1.636 million pounds (742 mt). The MC discussed the different components of the golden tilefish catch and recent fishery trends.

The Monitoring Committees' Comments and Recommendations

Annual Catch Targets and Landings Limits and Basis for Derivation

The recommendations in this section were made for the next two years (2021 and 2022 interim). The MC endorses the management measures recommended by staff for 2021-2022. The Tilefish MC recommended no reduction in catch from the annual catch limit (ACL) when deriving annual catch targets (ACTs). Therefore, no adjustment for management uncertainty was deemed necessary. This would result in an individual fishing quota (IFQ) ACT and an incidental ACT of 1.554 million pounds (705 mt; 95% of the ACL) and 0.082 million pounds (37 mt; 5% of the ACL) for each 2021 and 2022. The committee recommended the total allowable landings (TAL) for the incidental sector be reduced by 0.011 million pounds (5 mt)¹ from the incidental ACT. No discard adjustment was required for the IFQ sector (directed fishery). The recommended ITQ total allowable landings (TAL) is 1.554 million pounds (705 mt) and the incidental TAL is 0.070 million pounds (32 mt) for each 2021 and 2022.

The MC shares the SSC's concern over the poorly described level of recreational catch for golden tilefish, and recreational catch is currently unaccounted for within the stock assessment. However, it was noted that the new recreational fishing permitting and reporting initiative under Amendment 6 to the Tilefish Fishery Management Plan may improve quality of estimates.

Relevant Sources of Management Uncertainty

Past sector-specific performance and catch performance can be used as a basis for qualifying management uncertainty (implementation error), and as an indicator of future availability to achieve the 2021-2022 ACTs. The commercial fishery landings performance has been in line with expectations and the MC recommends that an adjustment to address this aspect of management uncertainty is not necessary. The MC noted that IFQ vessels have been landing nearly the entirety of the IFQ in 2018 and 2019 fishing years. Furthermore, since the IFQ system became effective, golden tilefish landings are closely scrutinized. The incidental fishery landed approximately 22,000 pounds (31% of their allocation) in 2019 fishing year, and this year the landings trajectory is slightly behind when compared to last year's landings trajectory.

Commercial Discards

Development of a time series of discards was not done in the assessment model since discarding was considered negligible and information on discards do not exist for most of the time series. Very low or insignificant discards were estimated in other fisheries (incidental tilefish fisheries). There is higher uncertainty (high CVs) on some of the low recent discard estimates since the discarding of tilefish is a rare event on observed trips. Therefore, an average of several years was used to judge the recent relative magnitude of discarding in other fisheries. Following the flowchart for golden tilefish catch and landings

¹ According to the "Discard Estimation, Precision, and Sample Size Analysis" conducted by the NEFSC, an average of 11,524 pounds (5.22 mt) were discarded for the 2015-2019 period (mostly large/small mesh trawls and gillnets). Available at <https://nefsc.noaa.gov/fsb/SBRM/>

limit, the MC adjusted the incidental TAL from the incidental ACT using average annual discards for 2015-2019 as presented in “Discard Estimation, Precision, and Sample Size Analysis” conducted by the NEFSC (0.011 million pounds or 5 mt).¹ The MC also discussed that the directed commercial fishery (IFQ fishery) did not generate discards.

Other Management Measures

Incidental Trip Limit

The MC did not recommend changes to the current 500-pounds whole weight (458-pounds gutted) incidental trip limit. The MC noted that for 2018, 84% (61,254/72,752 pounds) of the incidental quota was landed and in 2019, 31% (22,246/72,752 pounds) of the incidental quota was landed.

Recreational Bag Limit

The MC discussed the overall increase in recreational landings from 2007-2018 and those landings to potentially becoming significant. However, it was noted that the number of fish landed by the party/charter sector decreased significantly in 2019. The MC expressed concern about the increase in effort in the recreational fishery in recent years and the fact that we do not have a good understanding of the magnitude of those landings.

The MC shares the SSC’s concerns over the poorly described level of recreational catch of golden tilefish, which is currently unaccounted for within the stock assessment. The MC will continue to monitor the recreational catch in the fishery. The MC is hopeful that the recreational data collection requirements (for blueline and golden tilefish) under Amendment 6 will provide additional information regarding tilefish landings in the recreational fishery. The MC also indicated that the fishery is performing well and no changes to the recreational management measures (i.e., 8-fish per angler per trip) are required at the moment. However, the MC indicated that when more recreational data is available (i.e., under the new recreational fishing permitting and reporting initiative), recreational measures may need to be reevaluated and stock assessment implications considered.

Other Issues

An industry member inquired about the possibility to allow for a onetime roll-over of unused quota from 2020 to 2021 due to the difficulties the fishery is experiencing as a consequence of COVID-19. It was indicated that boats are not fishing as tilefish prices have drastically decreased due to lack of product demand. The price of tilefish has decreased so drastically in the past month that fishermen cannot afford fishing. A small roll-over of unused quota (e.g., 5% to 10%) will allow the industry to potentially recoup lost earnings due to COVID-19. This is a one-time request due to extraneous circumstances and not to be construed as a permanent roll-over of unused quota.

A MC member indicated that the current reduction in effort due to COVID-19 may provide a positive biological outcome as less fish will likely be taken during the summer spawning season. This would likely mitigate any adverse biological impacts of a small quota roll-over from 2020 to 2021.

The MC did not make any specific recommendations regarding the roll-over issue but recommended this be further investigated by the Council and GARFO.

Table 1. Staff recommendation for catch and landings limits for golden tilefish for 2021 and 2022 (interim) compared to 2020 measures.

	2020 (Current)	2021	2022 (interim)	Basis (2021-2022)
OFL	2.290 m lb (1,039 mt)	NA	NA	NA
ABC	1.636 m lb (742 mt)	1.636 m lb (742 mt)	1.636 m lb (742 mt)	Staff recommendation, based on recent fishing trends and scheduled 2021 management track assessment update
ABC % of OFL	72%	NA	NA	
ACL	1.636 m lb (742 mt)	1.636 m lb (742 mt)	1.636 m lb (742 mt)	ABC = ACL
IFQ ACT	1.554 m lb (705 mt)	1.554 m lb (705 mt)	1.554 m lb (705 mt)	IFQ 95% of ACL Incidental 5% of ACL. Deduction for management uncertainty = 0
Incidental ACT	0.082 m lb (37 mt)	0.082 m lb (37 mt)	0.082 m lb (37 mt)	
IFQ Discards	0	0	0	Discards in the IFQ fishery are prohibited
Incidental Discards	0.009 m lb (4 mt)	0.011 m lb (5 mt)	0.011 m lb (5 mt)	Avg. discard (2015-2019) mostly sm/lg mesh OT and Gillnet gear
IFQ TAL	1.554 m lb (705)	1.554 m lb (705 mt)	1.554 m lb (705 mt)	IFQ ACT - IFQ Discards
Incidental TAL	0.072 m lb (33 mt)	0.070 m lb (32 mt)	0.070 m lb (32 mt)	Incidental ACT - Incidental Discards



Golden Tilefish Fishery Performance Report

February 2020

The Mid-Atlantic Fishery Management Council's (Council) Tilefish Advisory Panel (AP) met via webinar on February 20, 2020 to review the Fishery Information Document and develop the following Fishery Performance Report. The primary purpose of this report is to contextualize catch histories by providing information about fishing effort, market trends, environmental changes, and other factors. A series of trigger questions listed below were posed to the AP to generate discussion of observations in the golden tilefish fishery. Please note: Advisor comments described below are not necessarily consensus or majority statements.

Advisory Panel members present:

Fred Akers (Private), David Arbeitman (Bait and tackle), Ron Callis (Private), Dan Farnham (Commercial), Carl Forsberg (For-hire), Gregory Hueth (Private/For-hire), and Michael Johnson (Fisherman).

Others present: Paul Nitschke (NEFSC), Laurie Nolan (Council Member), Doug Potts (GARFO), Paul Rago (SSC), John Boreman (SSC), Andy Loftus (Loftus Consulting), Matthew Seeley (Council Staff), and José Montañez (Council Staff).

Trigger questions:

1. What factors have influenced recent catch (markets/economy, environment, regulations, other factors)?
2. Are the current fishery regulations appropriate? How could they be improved?
3. What would you recommend as research priorities?
4. What else is important for the Council to know?

Market/Economic Conditions

Prices continue to be stable in all market categories. Tilefish prices have remained stable because the tilefish industry continues to coordinate times of landings to avoid market gluts and market floods and spread tilefish landings throughout the year. The ability to do this has improved since IFQs came into place.

Golden tilefish caught in the Mid-Atlantic region are mostly sold as gutted fish (95% of fish sold). Traditionally, most tilefish landings were sold to the Korean markets. Due to marketing efforts, tilefish has become a popular item. They are regularly found on restaurant menus rather than an occasional "specials." Local fish markets, as well as grocery stores like Whole Foods, carry tilefish. Businesses like Sea to Table, a door-to-door seafood delivery service, have also

helped spread the word on what a great eating fish tilefish are. Having a steady year-round supply of tilefish has influenced the positive market development for this product.

Extra-large fish have been marketed as 25+ pound fish in both New York and New Jersey in past years. However, more recently (since around 2016), New Jersey has changed the extra-large to 20+ pounds fish. This may explain some of the small increase in extra-large market category landings that has been observed in the last few years. AP members reported that extra-large fish continues to be worth as much as large fish.

Fishing trip expenses continue to rise (e.g., gear, bait, ice, tackle, and food). Due to the high cost of operations, tilefish vessels fish as close to home port as possible. For example, the cost of squid used for bait has doubled. *Illex* cost is \$1.00 to \$1.50/pound. While the domestic squid season/landings have been good, low foreign landings and high demand are expected to keep squid prices at the current high level or even higher.

Environmental Conditions

The industry has observed no tilefish aggregation changes due to changes in water temperatures, in contrast with what they observe with other fishes. The temperatures where golden tilefish are found seem stable due to extreme depth. (Note: tilefish are generally found in rough bottom, small burrows, and sheltered areas at bottom water temperatures ranging from 48.2°F to 57.2°F [9°C to 14°C], generally in depths between 328 and 984 ft [100 to 300 m]).

Dogfish interaction reduces tilefish catches and strongly affects where people fish. The dogfish are so thick now, when fishermen encounter them, they have no choice but to move to other fishing areas. The dogfish interaction used to be about two or three months in the winter. However, in the last seven years, dogfish presence is about eight months, and extends to June. Additionally, in the last couple of years, after the dogfish have left the tilefish fishing grounds, fishermen are encountering smooth dogfish which are bigger animals, more robust, and harder to release. The interaction with smooth dogfish is not such a big problem when compared to the dogfish interactions. Additionally, skate interactions reduce tilefish catches as well; this is limited to the winter period. Skates can severely damage tilefish gear. When fishermen encounter skates, they move to other fishing areas.

Staff asked the AP members to comment on the timing of the 2020 golden tilefish survey which is scheduled to be conducted May 22 to June 4, 2020. Staff specifically asked about the potential for high dogfish interactions which could adversely affect the survey results. Advisors indicated that it is possible that there may be large quantities of dogfish still around during that time period. They also indicated that lobster gear may also be still deployed in potential survey areas during May/June and will not be moved inshore until later on. They recommended that it may be more advisable to conduct the survey in June/July. Paul Nitschke (NEFSC) will be in contact with industry members to assess fishery interactions with dogfish prior to initiating the survey.

Adverse weather conditions (e.g., storms, rough seas, high winds, and tide) can impact fishing operations. Severe winter conditions experienced in the Northeast in 2013-2019 significantly affected the effectiveness of tilefish fishing operations/practices, resulting in longer fishing trips. Some advisors indicated that in 2019, winter conditions arrived early in October and Northeast

winds affected fishing operations towards the end of the 2019 fishing year. Some boats were not able to leave the docks and boats that were offshore could not fish (forcing them to relocate to the west). In addition, with the arrival of early winter conditions, dogfish and skates interactions also increased. These factors resulted in a small underage in landings for the 2019 fishing year.

Recreational and commercial fishermen continue to see aggregations of fish in small areas in the spring/summer-time around the Wilmington canyon (>80 to 90 fathoms).

Commercial fishermen indicated that they continue to see aggregations of large fish in all canyons in the Mid-Atlantic region. Landings for the 2019 fishing year were slightly lower than for the 2018 fishing year.

Two AP members representing the recreational fishery indicated that the amount of large fish aggregations in some southern Mid-Atlantic canyons (e.g., Washington, Baltimore, Poor Man's, Wilmington, and Norfolk) have decreased in size. They also indicated that a higher percentage of their catch is comprised of smaller fish.

Some AP members reported that in the northern canyons they have seen smaller size classes move into larger size classes, when compared to 2 or 3 years ago. Their observations of a strong year class moving through the fishery are similar to those seen by the commercial fleet.

Management Issues

The number of tilefish vessels participating in the fishery was steady since the onset of the IFQ management system. Currently, three vessels constitute the vast bulk of the landings (~ 70% of the landings/IFQ allocation). New Jersey currently holds 30% of the allocation.

The implementation of the IFQ system has particularly benefited those in the former "part-time" and "tier 2" vessel categories of the old limited access program. These vessels can plan their fishing activities throughout the year, rather than being forced into a derby fishery on November 1 (start of the fishing year) if they plan to harvest tilefish in a given year. These vessels participate in several fisheries (e.g., monkfish, scallop, and swordfish) and the IFQ system allows them to "fill in" tile fishing when it works best for them. Under the IFQ system, the former "part-time, tier 2, and full-time" vessels are working closely with each other and dealers to avoid landing large quantities of tilefish at the same time and avoid drastic price reductions.

One panel member indicated that even smaller participants in the tilefish IFQ fishery (smaller in terms of IFQ allocation and/or boat size) have greatly benefited from the IFQ management system as they can better plan their fishing operations (fish when and where they need to) and the fact that tilefish prices are relatively good and stable, and in fact, a large proportion of their ex-vessel revenues come from tilefish can be attributed to the IFQ program.

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them to "fill in" tile fishing when it works best for them. Under the IFQ system, the former "part-time, tier 2, and full-time" vessels are working closely with each other and dealers to avoid landing large quantities of tilefish at the same time and avoid drastic price reductions.

General Fishing Trends

AP members observed a new year class coming into the fishery in 2019. Specifically, they have seen larger landings in the extra small size category (<2 pounds). They have also seen a wide range of fish landed in terms of size and weight when compared to the year before.

AP members pointed out that for the last six winter seasons (January-March, 2013-2019) fishing practices have been impacted by severe weather resulting in longer fishing trips than on average. Severe winter conditions in the last five years have made fishing less productive. In 2019, winter like conditions started earlier (October). While severe weather conditions affect all fishing boats, smaller boats are particularly susceptible to severe winter and wind conditions.

Industry indicated that they experience an increase in CPUE in 2019. Fishing has gotten better, outside/external conditions affecting fishery have gotten worse: 1) dogfish interactions in 2019 continued to be high but at the same level seen in 2018, 2) skates interactions increased in 2019 when compared to 2018 (increased size of skates and numbers). Also, interaction with smooth dogfish (e.g., encountering more animals and further east), 3) weather in 2019 continued to be poor, winter started earlier in 2019 (October) when compared to 2018 conditions, 4) they are catching more fish and fishing is improving.

Industry tries to fish as close to port as possible. Basically, fishing in the same areas to maintain low trip expenses. Increasing operating costs keep people from going further out and searching. Industry also indicated that due to recent Northeast Canyons and Seamounts Marine National Monument closures, they do not have access to fishing grounds in the Oceanographer, Gilbert, and Lydonia canyons.

Fishermen are not moving around much as they are finding a healthy mix of animals in traditional fishing grounds. However, there are areas that are thought to have more quantities of larger fish than smaller fish that could be targeted if needed.

AP members indicated that they have observed a new development regarding gear interaction with other fisheries between Block and Atlantic canyons. They reported to have seen more crab gear in the wintertime, which caused tilefish boats to be pushed out of that area. Also, reported an increase in lobster gear/boat interactions in the summer. In general, industry members are observing more gear competition throughout the year.

AP members have also observed more trawling traffic in the Hudson canyon area, especially when *loligo* availability is high and prices are robust. When trawling activity increases in the Hudson area, tilefish boats are pushed out of that area.

Other Issues

Constant harvest strategy worked well in rebuilding the fishery. Industry would like to get back to a constant ACL in the future given healthy trends in the catch. Industry does not want to see a different ACL every year.

Consider implementing golden tilefish specifications for a longer time period if possible (e.g., 5 year specifications cycle).

One headboat captain indicated that five or six headboats¹ directly fish for golden tilefish but not 100% or full time. Some AP members commented that while the headboat participation in the golden tilefish recreational fishery appears stable they have seen an increase in participation by recreational private boats (July through September) and that private golden tilefish recreational landings are not recorded (and potential sale of fish recreationally caught).

Another AP member indicated that while there are five headboats that fish for tilefish (both blueline and golden) in the mid-Atlantic they have a limited number of dedicated tilefish trips throughout the season (summertime). For example, the boat that has the largest number of trips scheduled during the year (a boat Point Pleasant) has about 24 scheduled trips per year and not all trips are conducted (i.e., taking 50 to 60% of scheduled trips) and in some instances not all of them are full. The other four boats have substantially less tilefish trips scheduled per year.

Industry members indicated that for-hire trips targeting golden tilefish went down in 2019. This decreased in effort was due to weather factors. Also, improved tuna and swordfish fishing conditions in 2019 when compared to 2018 also caused less trips targeting golden tilefish.

Panel members raised concerns and questioned the tilefish catches reported in the NMFS recreational statistics database as they are inaccurate and unreliable. It was recommended that this type of data is not be used for the management of this species. AP members also stated that recreational values reported under the vessel trip report (VTR) data seems to be more realistic of tilefish catches. It was also indicated that electronic VTR need to be implemented as this may improve data collection.

AP members indicated that Captains and crew should be included in the comingled bag limit (recreational possession limit) for a trip. In other words, the Captain and Crew should also be allotted a bag limit.

AP members are concerned about the fishermen targeting golden tilefish under the incidental limit rules. Some of the vessels engaging in this practice do not have the required permitting requirements to sell fish and do not have the Coast Guard Safety requirements needed to be in compliance with Federal regulations as applicable to commercial vessels.

¹ Two from New Jersey, one from New York, one from Ocean City, MD (direct tilefish but only a few times per year), and 1 from Rudee Inlet, VA.

AP members indicated that the landings monitoring program of the IFQ system is very reliable. In all, there is good accountability mechanisms to track landings in the directed commercial fishery (IFQ vessel) and VTR data (commercial and recreational vessels). However, there is concern that directed incidental trips (non-otter trawl vessels) may be missing. In addition, there is no accurate information of catch/landings by private recreational anglers.

Some AP members would like the Council to consider a differential trip limit (for-hire vs private) and longer recreational trips. In addition, they suggested that the Council considers recreational management strategies (e.g., longer recreational trips, multi-day bag limits), structured after the Gulf of Mexico regulations (would make filling trips easier). Multi-day bag limits are important because a hand full of boats target tilefish in January-February when the black sea bass season is closed and while they do not catch much tilefish, this management change could help their business sell more trips. These management changes could be considered when a quota liberalization is on the table (quota going up).

Some AP members would like the Council to consider a recreational allocation.

Some AP members indicated concerns about relaxing recreational regulations (as they could potentially lead to higher recreational landings) while the commercial quota could remain at status quo levels or potentially decrease in the future.

A commercial AP member expressed concerns over increasing any effort, bag limit or quota in the fishery at this time. They felt it would be unfair to allow for an increase in effort/bag limit in the recreational sector while maintaining status quo for the commercial sector.

A recreational AP member articulated that, it should be noted that the commercial sector, pre-IFQ, were the ones that brought the tilefish stock to its knees, not the recreational sector. The commercial sector has 100% of the quota between IFQ and Incidental fisheries. Recreational fishing has always been de minimis. If it were not, AP member assumes that there would be a significant recreational allocation. To say that the three players that catch 70% of the IFQ or the handful of others that make up the remaining 30% would be harmed by allowing a few more recreational fish in the for-hire industry seems preposterous. The fact that those who have 100% of the quota have suffered cutbacks should not constrain the recreational angling public from catching a few extra fish. This is particularly true in the for-hire fleet where reporting is mandatory.

Recreational AP members indicated that the for-hire fishery (more significantly the headboat fishery) seems to be losing more trips due to weather conditions. The commercial sector complains of losing trips to weather but drift fishing for tilefish requires even better weather. In fact, near pristine conditions for both small boats and headboats are required and the loss of trips is far greater than that of the commercial fleet.

Some commercial AP members were very concerned about the tilefish landings by the private/rental mode that are not reported. It is possible that these landings are very high and we have no way to account for them. Since we do not have available information regarding the “true” recreational landings, we should not consider recreational liberalizations.

The AP was unanimous in their recommendation that permitting and reporting be developed for private recreational anglers. This information will offer insight into the impacts private anglers have on the recreational fishery for catch/landings and effort. Furthermore, the Council approved private permitting and reporting requirements for tilefish in 2017 through Amendment 6 to the Tilefish Fishery Management Plan (FMP) (added blueline tilefish to the FMP) and are now awaiting implementation.

Research Priorities

Consider the possibility of collecting detailed spatial fishing information from industry to better assess stock status. In addition, consider collecting biological information (e.g., age, length, sex) from golden tilefish directed trips.



Golden Tilefish Fishery Information Document

February 2020

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 2019. 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 2019; the stock is not overfished and overfishing is not occurring.
- In 2019, 1.4 million pounds (landed weight) of golden tilefish were landed with an ex-vessel value (revenues) of \$5.4 million. This represented a decrease in golden tilefish landings of approximately <1% and an increase in ex-vessel value of 10%, respectively, when compared to 2018. For 2019, the mean price for golden tilefish was \$3.81 per pound, which represents a 15% increase from 2018 (\$3.31 per pound).
- According to VTR data, party/charter vessel landed 2,733 golden tilefish in 2019. This represented a 62% decrease from 2018 (7,101 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).

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 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% 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).

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 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 2019; 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).¹ 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).

Stock Status

The last 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 2019. 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.

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,

¹ 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>.

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 2019, 1.4 million pounds (landed weight) of golden tilefish were landed with an ex-vessel value (revenues) of \$5.4 million. This represented a decrease in golden tilefish landings of approximately <1% and an increase in ex-vessel value of 10%, respectively, when compared to 2018. For 2019, the mean price for golden tilefish (unadjusted) was \$3.81 per pound, this represented a 15% increase from 2018 (\$3.31 per pound).

For the 1970 to 2019 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 2019, commercial golden tilefish landings were 1.5 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.²

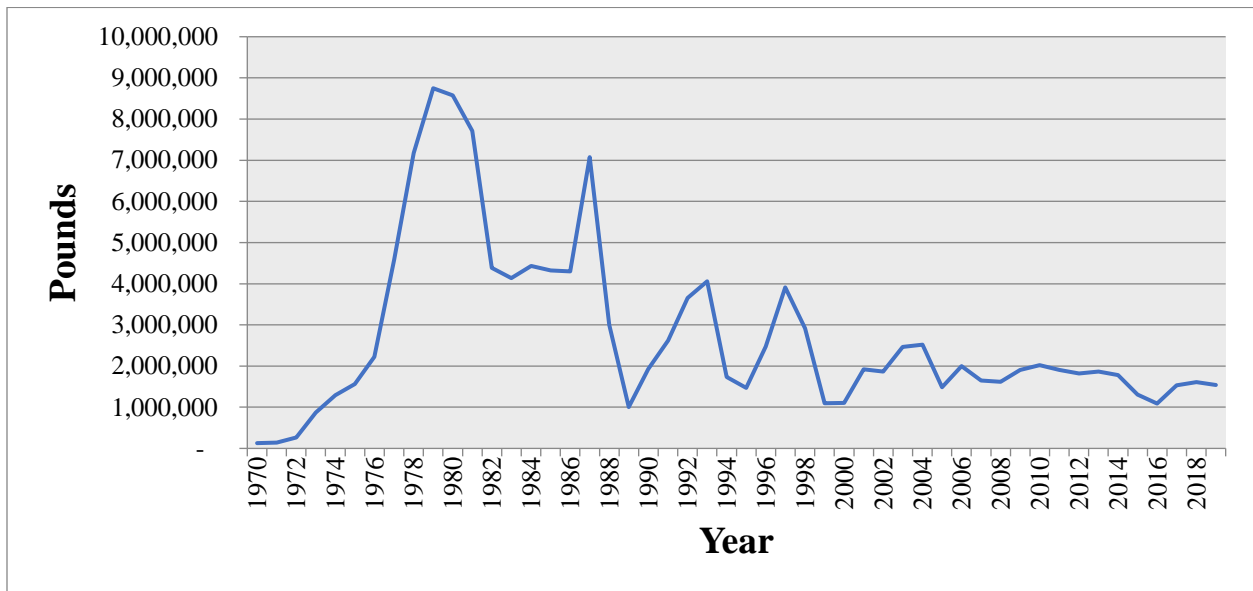


Figure 1. Commercial U.S. Golden Tilefish Landings (live weight) from Maine-Virginia, 1970-2019 (calendar year). Source: 1970-1993 Tilefish FMP; 1994-2018 NMFS unpublished dealer data.

Golden tilefish are primarily caught by longline and bottom otter trawl. Based on dealer data from 2015-2019, the bulk of the golden tilefish landings are taken by longline gear (97%) 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).

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 2005-2020.

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	1.487	1.626	1.562	-
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	<-0.001	-0.064	-
Incidental trip limit (lb)	133	300	300	300	300	300	300	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

^a Fishing year 2005 (November 1, 2004 – October 31, 2005). ^b Eight fish per person per trip.

Table 2. Golden tilefish commercial landings ('000 pounds live weight) by gear, Maine through Virginia, 2015-2019 (calendar year).

Gear	Pounds	Percent
Otter Trawl Bottom, Fish	143	2.0
Otter Trawl Bottom, Other	1	*
Gillnet, Anchored/Sink/Other	17	*
Lines Hand	23	*
Lines Long Set with Hooks	6,885	97.3
Pot & Trap	1	*
Dredge, other	*	*
Unknown, Other Combined Gears	4	*
All Gear	7,074	100.0

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

Approximately 56 percent of the landings for 2019 were caught in statistical area 537; statistical area 616 had 38 percent; statistical areas 539 and 613 each had 2 percent (Table 3). NMFS statistical areas are shown in Figure 2.

For the 1999 to 2019 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, 1996-2019 (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	1.38	55.55	1.86	-	1.69	38.40	0.07	0.33	0.70
All	0.49	1.85	53.80	0.62	0.43	3.71	36.31	0.49	1.06	1.22

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

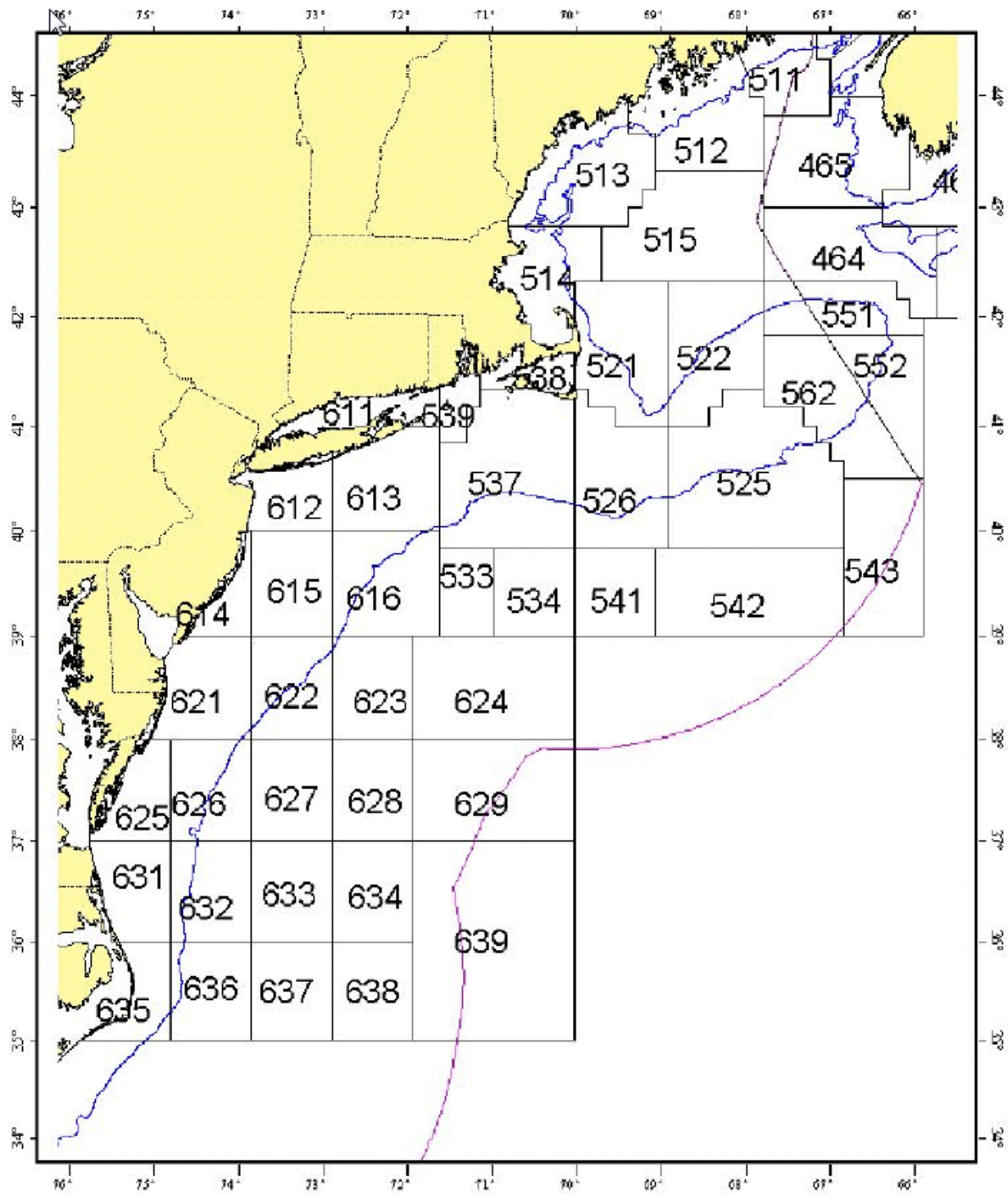


Figure 2. NMFS Statistical Areas.

Table 4. Golden tilefish commercial landings (1,000 live weight) by month and year, Maine through Virginia, 1999-2019 (calendar year).

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	135	125	194	149	213	165	148	134	103	64	98	1,607
2019	91	106	131	130	234	163	131	137	158	119	40	96	1,536
Total	2,570	3,002	4,209	3,737	3,312	3,054	2,727	2,924	2,749	3,005	1,903	2,892	36,082
Avg. 10-19	104	99	156	182	181	168	153	148	132	152	60	111	1,646

Source: NMFS unpublished dealer data.

Table 5. Percent of golden tilefish commercial landings (live weight) by month and year, Maine through Virginia, 1999-2019 (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	7.70	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	5.26	8.77	8.12	12.63	9.74	13.86	10.72	9.65	8.72	6.70	4.18	6.38	100.00
2019	5.94	6.88	8.55	8.47	15.26	10.65	8.51	8.92	10.27	7.78	2.62	6.25	100.00
Total	7.12	8.32	11.66	10.36	9.18	8.46	7.56	8.10	7.62	8.33	5.27	8.02	100.00

Source: NMFS unpublished dealer 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 from 1999-2019. Commercial golden tilefish ex-vessel revenues have ranged from \$2.5 million in 2000 to \$5.9 million in 2013 from 1999-2019. In 2019, 1.4 million pounds of tilefish were landed with an ex-vessel value (revenues) of \$5.4 million.

From 1999-2018, the mean price for golden tilefish (adjusted) has ranged from \$1.10 per pound in 2004 to \$4.06 per pound in 2016 (Figure 3). For 2019, the mean price for golden tilefish (unadjusted) was \$3.81 per pound.

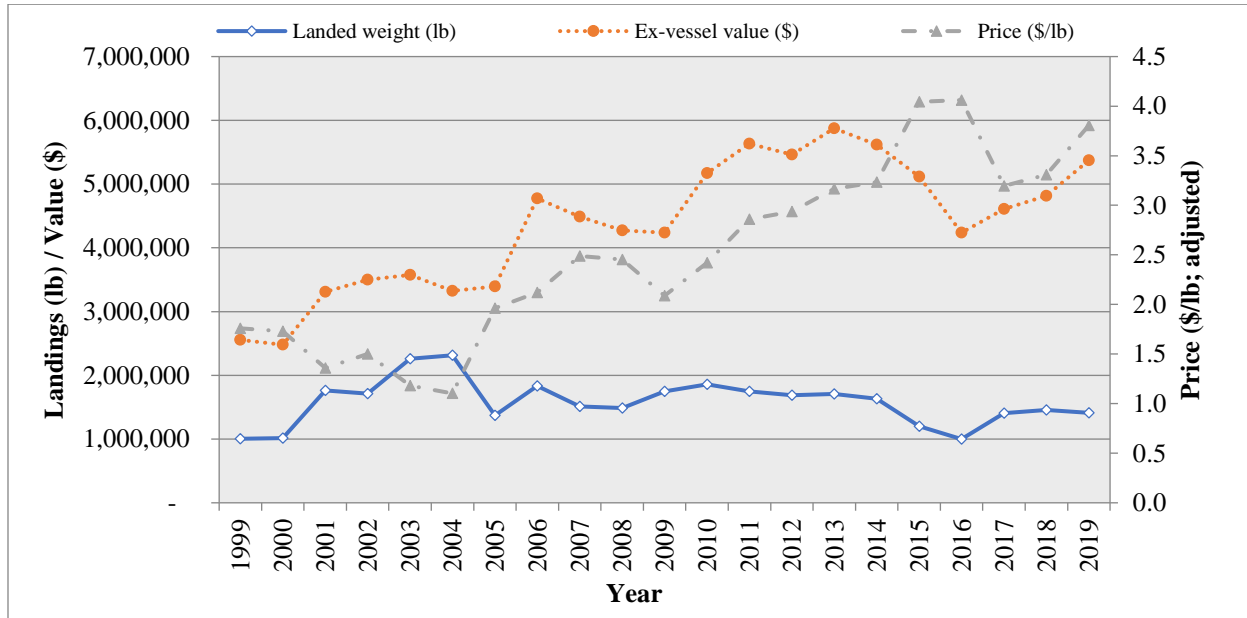


Figure 3. Landings (landed weight), ex-vessel value, and price for golden tilefish, Maine through Virginia combined, 1999-2019 (calendar year). Note: Price data have been adjusted by the GDP deflator indexed for 2018. (2019 – unadjusted as GDP deflator for that year was not available when this figure was produced.) Source: NMFS unpublished dealer data.

The 2015 through 2019 coastwide average ex-vessel price per pound for all market categories combined was \$3.72. 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, 2015-2019 (calendar year).

Market category	Landed weight (pounds)	Value (\$)	Price (\$/pound)	Approximate market size range (pounds)
Extra large	330,664	151,711	4.58	> 25
Large	1,533,249	7,678,687	5.01	7 – 24
Large/medium ^a	790,054	3,383,838	4.28	5 – 7
Medium	1,800,409	6,360,181	3.53	3.5 – 5
Small or kittens	1,779,704	4,669,761	2.62	2 – 3.5
Extra small	203,740	456,816	2.24	< 2
Unclassified	56,048	125,515	2.24	---
All	6,493,848	24,187,509	3.72	---

^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://www.nefsc.noaa.gov/read/socialsci/communitySnapshots.php>.

To examine recent landings patterns among ports, 2018-2019 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 2018-2019 dealer data (calendar year). Since this table includes only the "top ports," it may not include all of the landings for the year.

Port	2018		2019	
	Landings (pounds)	# Vessels	Landings (pounds)	# Vessels
Montauk, NY	985,037 (977,049)	16 (3)	909,882 (906,163)	16 (3)
Barnegat Light/Long Beach, NJ	403,583 (403,583)	5 (5)	398,374 (398,374)	5 (5)
Hampton Bays, NY	171,220 (C)	5 (C)	201,246 (C)	5 (C)
Point Judith, RI	30,669 (0)	62 (0)	5,763 (C)	5 (C)

^aValues in parentheses 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, 2015-2019 (calendar year).

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	192,455	105,709	55%
Ocean City	NJ	25,018	4,565	18%
Montauk	NY	85,288,503	13,766,717	16%
Hampton Bays	NY	30,239,738	3,448,598	11%
Barnegat & Barnegat Light/Long Beach	NJ	127,124,297	6,357,297	5%
Lynnhaven	VA	419,638	20,183	5%
Shinnecock	NY	5,476,653	243,972	4%

Source: NMFS unpublished dealer data.

In 2018 there were 76 federally permitted dealers who bought golden tilefish from 138 vessels that landed this species from Maine through Virginia. In addition, 49 dealers bought golden tilefish from 106 vessels in 2019. These dealers bought approximately \$4.9 and \$5.4 million of golden tilefish in 2018 and 2019, 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 2018-2019 (calendar year).

Number of dealers	MA		RI		CT		NY		NJ		VA		Other	
	'18	'19	'18	'19	'18	'19	'18	'19	'18	'19	'18	'19	'18	'19
	8	4	13	8	10	9	20	16	16	8	4	C	4	4

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

Table 10. Dealer dependence on golden tilefish, 2015-2019 (calendar year).

Number of dealers	Relative dependence on tilefish
69	<5%
4	5% - 10%
1	10% - 25%
3	25% - 50%
2	50% - 75%
1	90%+

Source: NMFS unpublished dealer data.

According to VTR data, none to very little (0.03%) discarding was reported by longline vessels that targeted golden tilefish from 2017-2019 (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^a, Maine through Virginia, 2017, 2018, and 2019 (calendar year).

(2017)

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	1,177,980	100.00%	93.47%	0	0.00%	0.00%	1,177,980	0.00
SPINY DOGFISH	60,462	100.00%	4.80%	0	0.00%	0.00%	60,462	0.00
SMOOTH DOGFISH	10,774	100.00%	0.85%	0	0.00%	0.00%	10,774	0.00
CONGER EEL	3,166	86.36%	0.25%	500	13.64%	43.03%	3,666	0.16
BLUELINE TILEFISH	2,798	100.00%	0.22%	0	0.00%	0.00%	2,798	0.00
YELLOWFIN TUNA	1,573	97.22%	0.12%	45	2.78%	3.87%	1,618	0.03
BLACK BELLIED ROSEFISH	980	99.80%	0.08%	2	0.20%	0.17%	982	0.00
SILVER HAKE (WHITING)	779	100.00%	0.06%	0	0.00%	0.00%	779	0.00
MAKO SHORTFIN SHARK	435	100.00%	0.03%	0	0.00%	0.00%	435	0.00
DOLPHIN FISH	333	86.95%	0.03%	50	13.05%	4.30%	383	0.15
BLUEFIN TUNA	251	100.00%	0.02%	0	0.00%	0.00%	251	0.00
ANGLER	173	100.00%	0.01%	0	0.00%	0.00%	173	0.00
BARRELFISH	151	100.00%	0.01%	0	0.00%	0.00%	151	0.00
BLACK SEA BASS	119	100.00%	0.01%	0	0.00%	0.00%	119	0.00
BLACKFIN TUNA	92	100.00%	0.01%	0	0.00%	0.00%	92	0.00
WRECKFISH	87	100.00%	0.01%	0	0.00%	0.00%	87	0.00
SUMMER FLOUNDER	50	100.00%	0.00%	0	0.00%	0.00%	50	0.00
MAKO SHARK	31	100.00%	0.00%	0	0.00%	0.00%	31	0.00
FISH OTHER	17	100.00%	0.00%	0	0.00%	0.00%	17	0.00
RED HAKE	2	0.40%	0.00%	500	99.60%	43.03%	502	250.00
POLLOCK	0	0.00%	0.00%	65	100.00%	5.59%	65	--
ALL SPECIES	1,260,253	99.91%	100.00%	1,162	0.09%	100.00%	1,261,415	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 = 120. Source: NMFS unpublished VTR data.

(2018)

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	1,247,057	100.00%	94.55%	0	0.00%	--	1,247,057	0.00
SPINY DOGFISH	58,560	100.00%	4.44%	0	0.00%	--	58,560	0.00
SMOOTH DOGFISH	6,321	100.00%	0.48%	0	0.00%	--	6,321	0.00
CONGER EEL	2,386	100.00%	0.18%	0	0.00%	--	2,386	0.00
BLUELINE TILEFISH	2,213	100.00%	0.17%	0	0.00%	--	2,213	0.00
DOLPHIN FISH	458	100.00%	0.03%	0	0.00%	--	458	0.00
SILVER HAKE (WHITING)	438	100.00%	0.03%	0	0.00%	--	438	0.00
SILVER HAKE (WHITING)	438	100.00%	0.03%	0	0.00%	--	438	0.00
BLACK BELLIED ROSEFISH	370	100.00%	0.03%	0	0.00%	--	370	0.00
SKATES OTHER	298	100.00%	0.02%	0	0.00%	--	298	0.00
BLUEFISH	217	100.00%	0.02%	0	0.00%	--	217	0.00
ANGLER	133	100.00%	0.01%	0	0.00%	--	133	0.00
YELLOWFIN TUNA	60	100.00%	0.00%	0	0.00%	--	60	0.00
WHITE HAKE	27	100.00%	0.00%	0	0.00%	--	27	0.00
TRIGGERFISH	20	100.00%	0.00%	0	0.00%	--	20	0.00
ALL SPECIES	1,318,996	100.00%	100.00%	0	0.00%	--	1,318,996	0.00

^a Directed trips for golden tilefish were defined as trips comprising 75 percent or more by weight of golden tilefish landed. Number of trips = 93. Source: NMFS unpublished VTR data.

(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

^a Directed 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.

Golden tilefish incidental commercial fishery landings in FY 2020 are slightly behind FY 2019 landings for the same time period (Figure 4; for data reported through January 22, 2020). Incidental golden tilefish commercial landings for the last six fishing years are shown in Table 12.

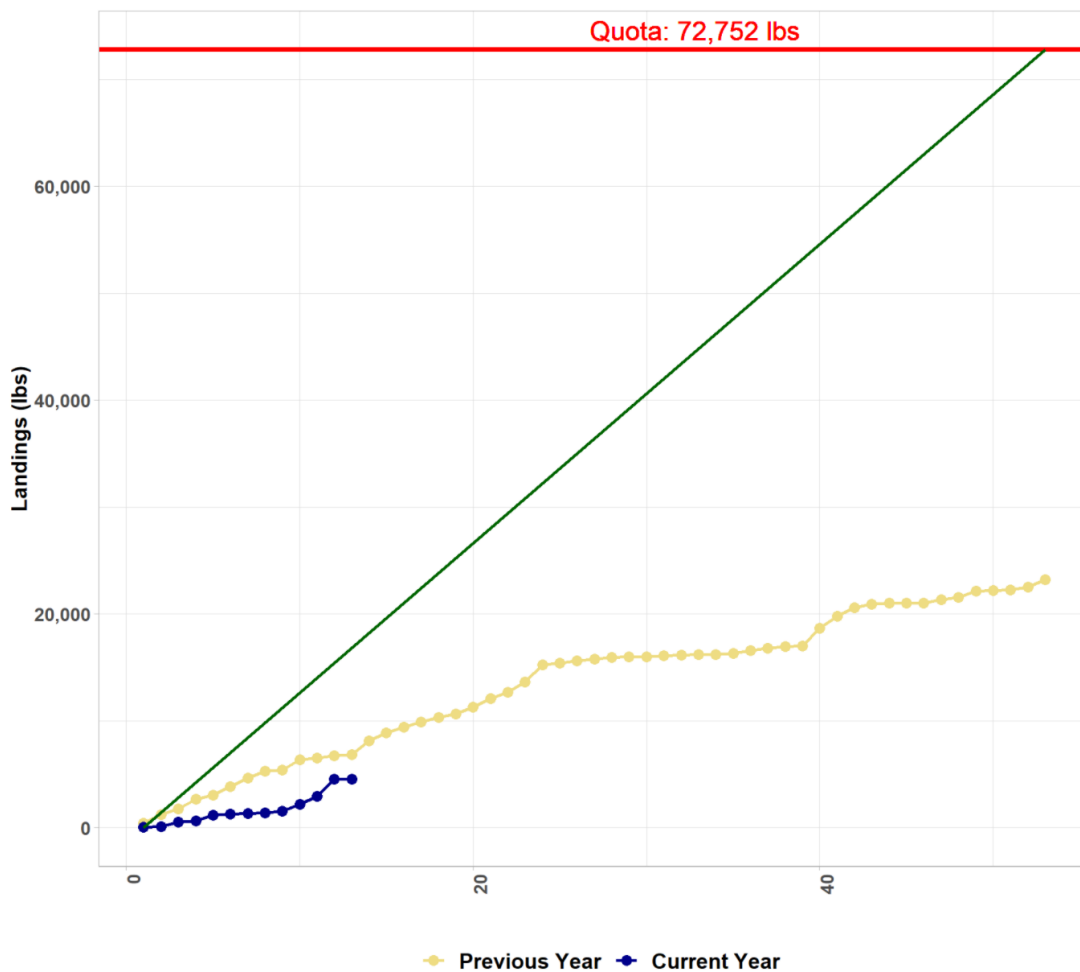


Figure 4. Incidental commercial landings for 2020 fishing year (FY) to date (for data reported through January 22, 2020). Blue Line = FY 2020, Yellow Line = FY 2019.

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 2013-2019.

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

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

Recreational Fishery

According to vessel trip report (VTR) data, party/charter vessel landed 2,733 golden tilefish in 2019. This represented a 62% decrease from 2018 (7,101 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 - 2019 period, ranging from zero for most years to approximately 213,000 fish in 2010 according to NMFS recreational statistics (Table 13). In 2019, approximately 11,000 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 1996-2019 period.

According to VTR data, for the 1996-2019 period, the largest amount of golden tilefish caught by party/charter vessels were made by New Jersey vessels (48,499; average = 2,021), followed by New York (12,513; average = 521), Virginia (1,057; average = 44), Delaware (846; average = 35), Massachusetts (496; average = 21), and Maryland (495; average = 24; Table 15). The number of golden tilefish discarded by recreational anglers is low. According to VTR data, on average, approximately 6 fish per year were discarded by party/charter recreational anglers for the 1996-2019 period (135 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 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).

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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.

Table 13. Recreational golden tilefish data from the NMFS recreational statistics databases, 1982-2019 (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	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)	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		10,503	(64.4)	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. 2019 values are preliminary.

Table 14. Number of golden tilefish kept by party/charter anglers and mean effort from Maine through Virginia, 1996-2019 (calendar year).

Year	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	7,101	3.9
2019	2,733	3.4
All	64,049	2.8

Source: NMFS unpublished VTR data.

Table 15. Number of golden tilefish caught by party/charter vessels by state, 1996-2019 (calendar year).

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	76	38	7,029
2018	0	0	0	0	1,202	5,573	46	87	193	7,101
2019	0	0	0	0	845	1,771	29	30	58	2,733
All	14	496	182	3	12,513	48,499	846	574	1,057	64,184

Source: NMFS unpublished VTR data.

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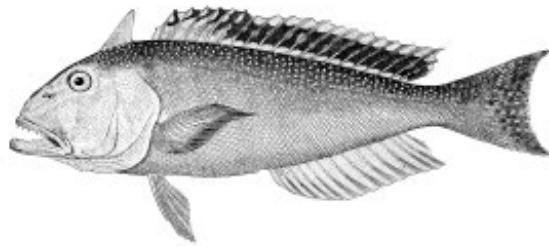
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Golden Tilefish, *Lopholatilus chamaeleonticeps*, data update
through 2019 in the Middle Atlantic-Southern New England
Region



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Reported 2019 landings in the commercial fishery were 697 mt, a decrease of 4% from 2018, and 94% of the 2019 total allowable landings (Table 1; Figure 1).

Commercial landings per unit effort is the only index of abundance for golden tilefish. Landings per unit of effort in 2019 increased relative to 2018 as predicted from growth of the strong 2013 year class.

Tracking of the strong 2013 year class is also reflected in the landings market category proportions and the landings at length distributions (Tables 2 and 3; Figures 2 and 3).

Table 1. Landings of tilefish in live metric tons from 1915-2019. Landings in 1915-1972 are from Freeman and Turner (1977), 1973-1989 are from the general canvas data, 1990-1993 are from the weighout system, 1994-2003 are from the dealer reported data, and 2004-2019 is from Dealer electronic reporting. - indicates missing data. * Preliminary 2019 landings data retrieved on 2/6/20.

year	mt	year	mt	year	mt
1915	148	1960	1,064	2005	676
1916	4,501	1961	388	2006	907
1917	1,338	1962	291	2007	749
1918	157	1963	121	2008	737
1919	92	1964	596	2009	864
1920	5	1965	614	2010	922
1921	523	1966	438	2011	864
1922	525	1967	50	2012	834
1923	623	1968	32	2013	846
1924	682	1969	33	2014	814
1925	461	1970	61	2015	593
1926	904	1971	66	2016	494
1927	1,264	1972	122	2017	695
1928	1,076	1973	394	2018	728
1929	2,096	1974	586	2019	*697
1930	1,858	1975	710		
1931	1,206	1976	1,010		
1932	961	1977	2,082		
1933	688	1978	3,257		
1934	-	1979	3,968		
1935	1,204	1980	3,889		
1936	-	1981	3,499		
1937	1,101	1982	1,990		
1938	533	1983	1,876		
1939	402	1984	2,009		
1940	269	1985	1,961		
1941	-	1986	1,950		
1942	62	1987	3,210		
1943	8	1988	1,361		
1944	22	1989	454		
1945	40	1990	874		
1946	129	1991	1,189		
1947	191	1992	1,653		
1948	465	1993	1,838		
1949	582	1994	786		
1950	1,089	1995	666		
1951	1,031	1996	1,121		
1952	964	1997	1,810		
1953	1,439	1998	1,342		
1954	1,582	1999	525		
1955	1,629	2000	506		
1956	707	2001	874		
1957	252	2002	851		
1958	672	2003	1,130		
1959	380	2004	1,215		

Table 2. Total commercial dealer and vessel trip report (VTR) landings in live mt and the commercial catch-per-unit effort (CPUE) data used for tilefish. Dealer landings before 1990 are from the general canvas data. CPUE data from 1979 to the first half of 1994 are from the NEFSC weighout database, while data in the second half of 1994 to 2019 are from the vtr system (below the dotted line). Effort data are limited to longline trips which targeted tilefish (= or >75% of the landings were tilefish) and where data existed for the days absent. Nominal CPUE series are calculated using landed weight per days absent minus one day steam time per trip. Da represents days absent.

year	Weighout & Dealer		Commerical CPUE data subset								
	landings	vtr landings	interview landings	No. interviews	% interview trips	No. vessels	subset landings	days absent	No. trips	da per trip	nominal cpue
1979	3,968		0.0	0	0.0%	20	1,807	1,187	330	3.6	1.93
1980	3,889		0.8	1	0.3%	18	2,153	1,390	396	3.5	1.99
1981	3,499		35.0	4	1.2%	21	1,971	1,262	333	3.8	1.95
1982	1,990		90.7	13	5.7%	18	1,267	1,282	229	5.6	1.10
1983	1,876		85.8	16	8.9%	21	1,013	1,451	179	8.1	0.73
1984	2,009		140.1	25	18.2%	20	878	1,252	138	9.1	0.72
1985	1,961		297.1	64	30.6%	25	933	1,671	209	8.0	0.59
1986	1,950		120.7	31	16.5%	23	767	1,186	188	6.3	0.71
1987	3,210		198.5	38	18.5%	30	1,014	1,343	206	6.5	0.82
1988	1,361		148.2	30	19.4%	23	422	846	154	5.5	0.56
1989	454		92.8	11	15.7%	11	165	399	70	5.7	0.46
1990	874		32.4	8	11.9%	11	241	556	68	8.2	0.45
1991	1,189		0.8	3	2.8%	7	444	961	107	9.0	0.48
1992	1,653		58.0	9	8.6%	13	587	969	105	9.2	0.62
1993	1,838		71.9	11	10.5%	10	571	959	105	9.1	0.61
1994	-		0	0	0.0%	7	127	385	42	9.2	0.34
1994	786	30				4	53	150	18	8.3	0.37
1995	666	547				5	466	954	99	9.6	0.50
1996	1,121	865				8	822	1,318	134	9.8	0.64
1997	1,810	1,439				6	1,427	1,332	133	10.0	1.09
1998	1,342	1,068				9	1,034	1,517	158	9.6	0.70
1999	525	527				10	516	1,185	133	8.9	0.45
2000	506	446				11	421	932	110	8.5	0.47
2001	874	705				8	691	1,046	116	9.0	0.68
2002	851	724				8	712	951	114	8.3	0.78
2003	1,130	790				7	788	691	101	6.8	1.22
2004	1,215	1,153				12	1,136	811	134	6.1	1.54
2005	676	808				11	802	470	93	5.1	1.95
2006	907	870				12	852	682	105	6.5	1.35
2007	749	710				12	691	727	101	7.2	1.01
2008	737	675				14	672	1,119	124	9.0	0.62
2009	864	812				12	800	1,106	130	8.5	0.75
2010	922	871				11	853	694	108	6.4	1.33
2011	864	822				9	781	517	89	5.8	1.68
2012	834	799				12	795	651	100	6.5	1.32
2013	846	844				11	796	831	112	7.4	1.02
2014	814	790				13	716	961	120	8.0	0.78
2015	593	593				12	515	920	111	8.3	0.58
2016	494	491				11	381	806	98	8.2	0.49
2017	695	690				9	578	785	91	8.6	0.76
2018	728	724				8	612	638	85	7.5	1.02
2019	697	695				8	628	604	85	7.1	1.11

Table 3. Landings (metric tons) by market category. A large-medium (lg/med) code was developed in 2013 and 2014. Smalls and Kittens were combined since these categories possess similar size fish. Xs is extra small and xl is extra large.

year	xs	small & kittens	medium	lg/med	large	xl	unclassified	total
1990	0	38	103	-	46	0	687	874
1991	0	59	154	-	85	0	891	1189
1992	0	330	88	-	86	0	1,149	1653
1993	0	368	206	-	66	4	1,193	1838
1994	0	19	89	-	54	7	617	786
1995	0	99	88	-	91	2	386	666
1996	0	592	149	-	156	2	221	1121
1997	0	1,130	260	-	111	2	307	1810
1998	0	475	700	-	103	6	58	1342
1999	0	181	201	-	106	8	29	525
2000	0	210	153	-	115	8	20	506
2001	0	564	161	-	124	6	19	874
2002	0	369	311	-	128	3	40	851
2003	0	776	171	-	144	5	35	1130
2004	20	397	523	-	129	9	137	1215
2005	0	18	335	-	149	1	173	676
2006	1	16	233	-	369	1	287	907
2007	3	96	142	-	397	4	106	749
2008	17	149	195	-	299	17	60	737
2009	35	334	179	-	226	28	61	864
2010	16	269	373	-	166	17	81	922
2011	6	142	339	-	216	10	152	864
2012	8	95	308	-	285	17	121	834
2013	19	138	281	14	290	21	82	846
2014	13	227	195	88	238	47	5	814
2015	12	92	160	84	186	57	2	593
2016	42	93	75	65	172	44	3	494
2017	35	299	132	43	152	26	9	696
2018	7	285	231	70	108	20	6	728
2019	5	110	292	130	139	16	5	697

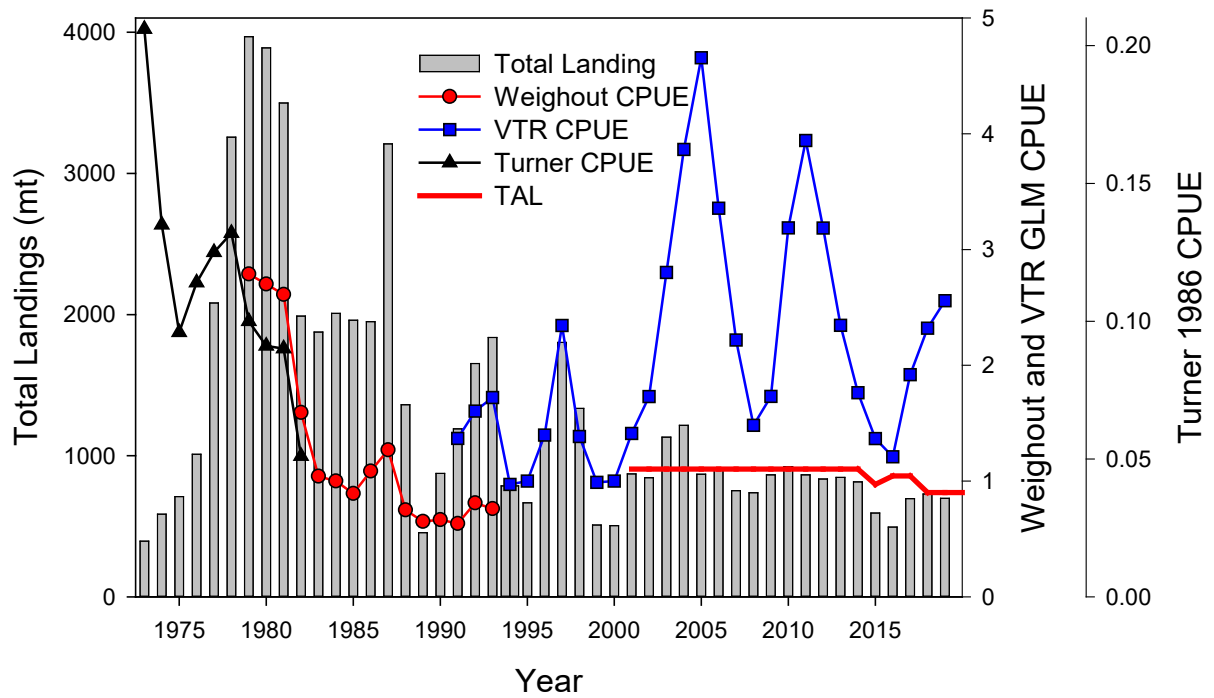


Figure 1. GLM CPUE for the Weighout and VTR data split into two series with additional New York logbook CPUE data from three vessels (1991-1994) added to the VTR series. Four years of overlap between Turner’s and the Weighout CPUE series can also be seen. ASAP relative changes in qs amount CPUE series were not incorporated into the plot. Assumed total landings are also shown. Landings in 2005 were taken from the IVR system. Red line is the TAL.

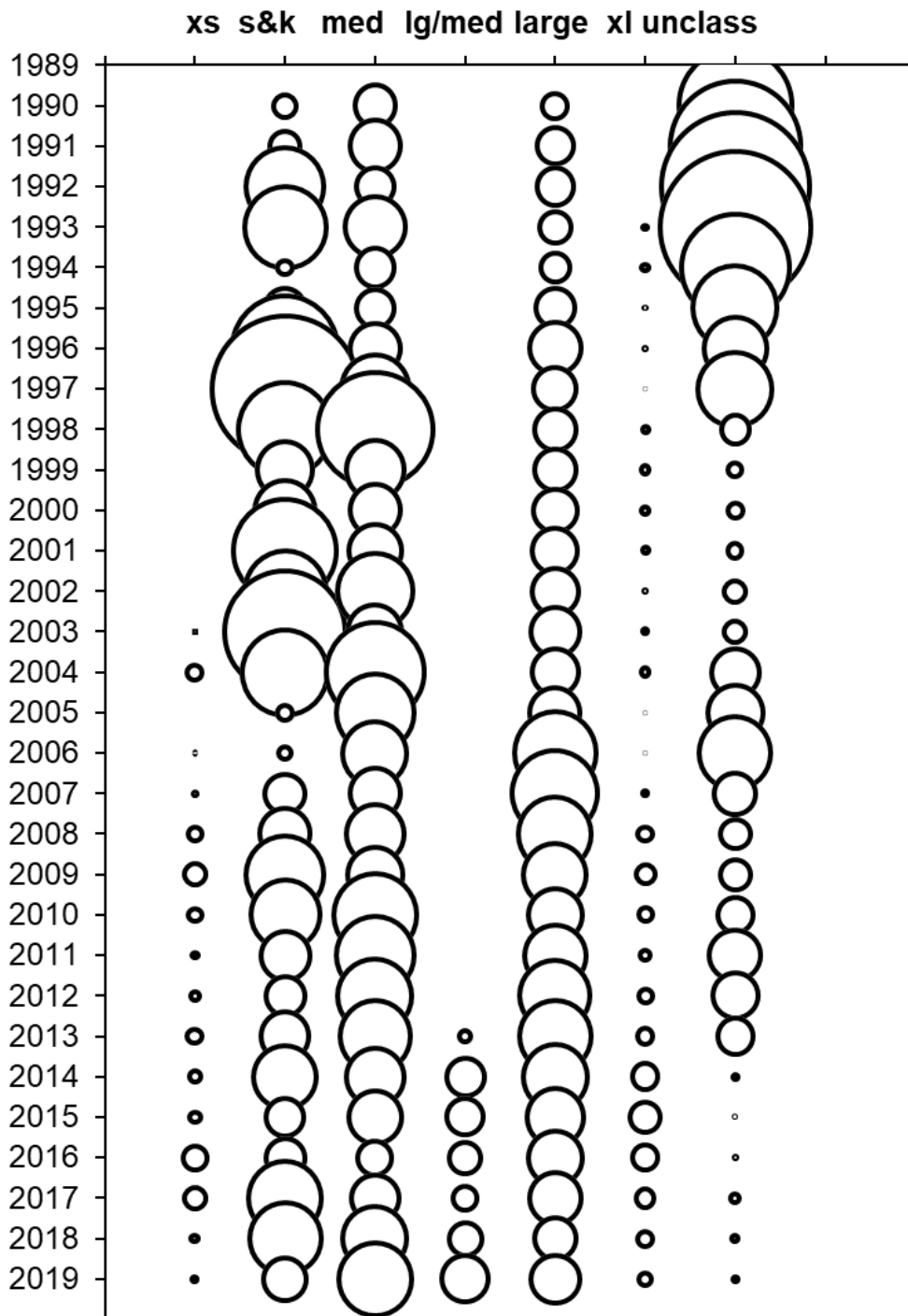


Figure 2. Bubble plot of Golden tilefish landings by market category. Large-medium market category code was added in 2013 and 2015. Smalls and Kittens (s&k) were combined since these categories possess similar size fish.

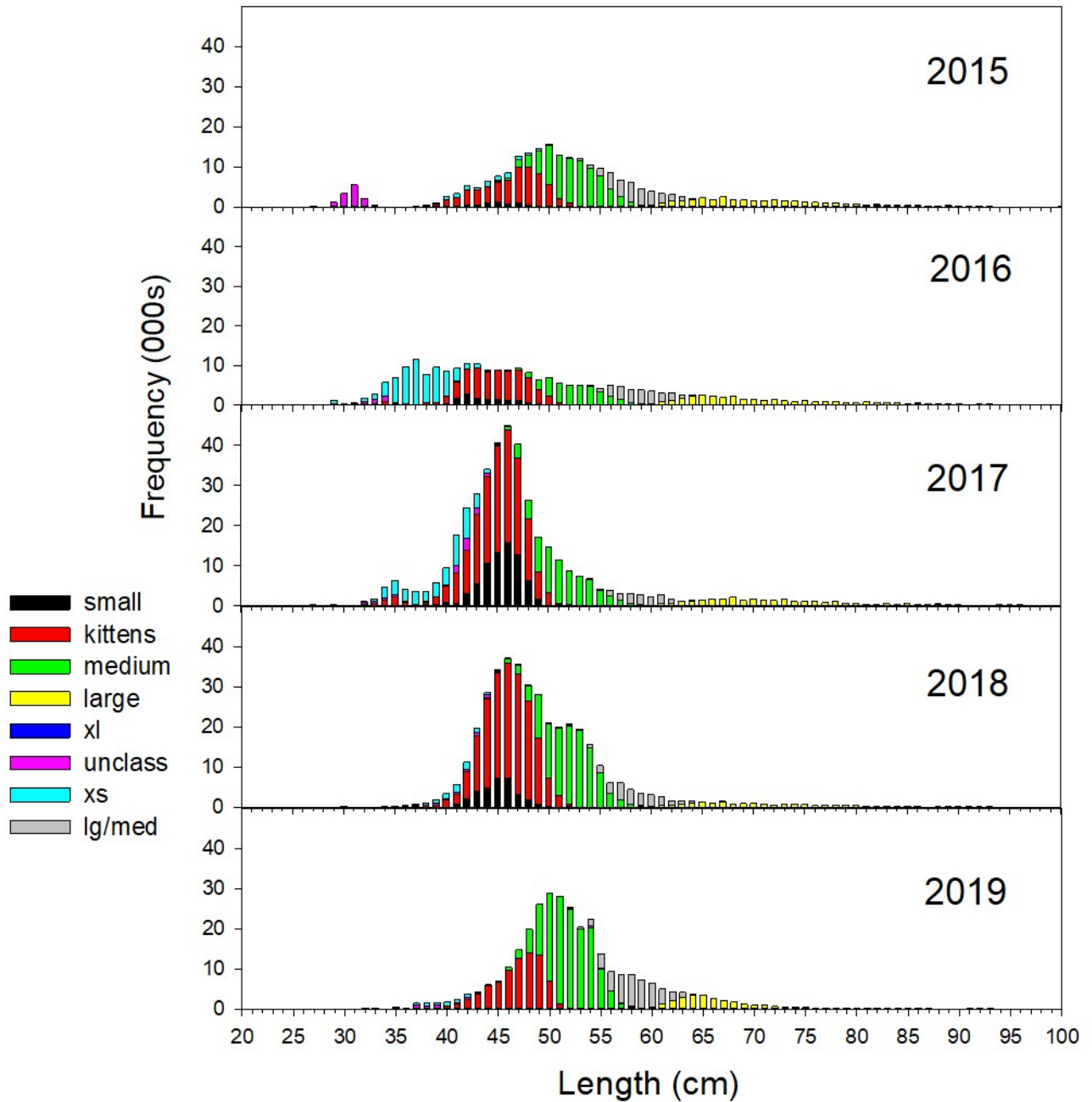


Figure 3. Expanded length frequency distributions from 2015 to 2019. No lengths for extra small (xs) exist in 2013 and smalls in 2019. Kittens lengths were used to characterize the extra small category in 2013 and smalls in 2019. Unclassifieds in 2015 are based on two samples. **Y-axis scales is fixed.**



Mid-Atlantic Fishery Management Council

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: March 2, 2020
To: Chris Moore, Executive Director
From: José Montañez, Staff
Subject: Golden Tilefish Management Measures (2021 and 2022 interim)

Executive Summary

Our current 3-year specifications cycle (2018-2019-2020) ends with the 2020 fishing year (November 1, 2019 to October 31, 2020). Given the new stock assessment process the Northeast Regional Coordinating Council recently approved, the next management track assessment update for golden tilefish is currently scheduled for 2021. Therefore, the Council will need approve 2021 specifications using information contained in the 2020 NEFSC data update (Nitschke 2020). Additional relevant information about fishery performance and past management measures is presented in the 2020 Golden Tilefish Fishery Information Document prepared by Council staff and the 2020 Fishery Performance Report developed by the Council Tilefish Advisory Panel. Staff also recommend the Council set interim 2022 specifications because of potential timing constraints with the 2021 management track assessment. Specifically, if a peer review is needed for the 2021 management track assessment (peer review scheduled for June 2021), the Council will likely have to take final action in August of 2021; this may not provide adequate administrative time to have specifications in place for the 2022 fishing year which starts November 1, 2021. The 2021 management track assessment would then be used to revise the interim 2022 specifications and set specifications for the 2023 and 2024 fishing seasons.

Based on the results of the 2017 stock assessment update, the tilefish resource is not overfished and overfishing is not occurring in assessment terminal year (2016; Nitschke 2017).¹ The 2016 stock is at 89% of the accepted reference point (SSB_{MSY} proxy = $SSB_{38\%}$). The fishing mortality rate (F) in 2016 was 0.249, 20% below the fishing mortality threshold reference point F_{MSY} proxy = $F_{38\%} = 0.310$.²

There are no fishery independent surveys available for this stock, so commercial catch per unit effort (CPUE) is relied upon for indications of population abundance. CPUE can be generally explained with evidence of strong incoming year classes that track through the landings size composition over time. The

¹ Nitschke, P. 2017. Golden Tilefish, *Lopholatilus chamaeleonticeps*, stock assessment update through 2016 in the Middle Atlantic-Southern New England Region. NMFS/NEFSC, Woods Hole, MA. Found online at <http://www.mafmc.org/council-events/2017/march-2017-ssc-meeting>.

² See discussion under biological reference points section for further details.

2020 golden tilefish data update (Nitschke 2020) indicates that the CPUE in 2019 increased relative to 2018 as predicted from growth of a strong 2013 year class. Lastly, commercial Advisory Panel (AP) members reported an increase in the landings of extra-small tilefish (< 2 pounds) towards the last quarter of 2019 and the beginning of 2020. AP members also reported a wide range of fish landed in terms of size and weight when compared to the year before. According to AP member's observations, a new year class may have started to enter the fishery recently.

Staff recommends specifications be set for 2 years (i.e., 2021 and interim 2022). Staff recommends the acceptable biological catch (ABC) for each year be set at the *status quo* level or 1.636 million pounds (742 mt)³. This ABC has been in place since 2018 fishing year. Setting ABCs at the *status quo* level would provide for continued stability and allow for the fishery to continue to operate efficiently in 2021 and 2022, while the Council waits for the results of the 2021 management track assessment which will be used to revise the 2022 specifications and set specifications for the 2023 and 2024 fishing seasons. Given recent fishery and biological trends, there is no indication that the recommended *status quo* ABC for 2021 and 2022 would negatively affect the tilefish stock given recent fishery trends.

The FMP specifies that the annual catch limit (ACL) equals the ABC. After considering relevant sources of management uncertainty, 5 percent of the annual catch target (ACT) is allocated to the incidental sector of the fishery and the remaining 95 percent to the individual fishing quota (IFQ) sector. Staff recommends an IFQ ACT of 1.554 million pounds (705 mt) and an incidental ACT of 0.082 million pounds (37 mt) for each year. After removing projected incidental discards, the resulting IFQ total allowable landings (TAL) is 1.554 million pounds (705 mt) and the resulting incidental TAL is 0.070 million pounds (32 mt) for each year. These values, when compared to current ACTs and TALs are consistent for the IFQ fishery and near identical for the incidental fishery.

Staff do not recommend any changes to the current recreational possession limit (8-fish per angler per trip with no minimum size), or incidental trip limit (500 pounds live weight or 455 pounds gutted weight).

Introduction

The Magnuson-Stevens Act (MSA) requires each Council's SSC (Scientific and Statistical Committee) to provide ongoing scientific advice for fishery management decisions, including recommendations for ABC, preventing overfishing, and maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. In addition, the Monitoring Committee (MC) established by the Fishery Management Plan (FMP) is responsible for developing recommendations for management measures designed to achieve the recommended catch limits.

Multi-year specifications may be set for golden tilefish for up to three years at a time. The SSC must recommend ABCs that addresses scientific uncertainty, while the MC must recommend ACTs that address management uncertainty. Based on the SSC and MC recommendations, the Council will make a recommendation to the National Marine Fisheries Service (NMFS) Greater Atlantic Regional

³ 1 mt = 2,204.6226 lb.

Administrator. In this memorandum, information is presented to assist the SSC and MC in developing recommendations for the Council to consider for the 2021-2022 fishing years for golden tilefish.

Additional relevant information about fishery performance and past management measures is presented in the 2020 Golden Tilefish Fishery Information Document prepared by Council staff and the 2020 Fishery Performance Report developed by the Council Tilefish Advisory Panel. The NMFS Northeast Fisheries Science Center provided a data update (through 2019) for golden tilefish to support this specifications process (Nitschke 2020).⁴

Catch and Landings Update

Commercial landings (calendar year) from 1970 to 2019 are presented graphically in Figure 1 of the 2020 Golden Tilefish Fishery Information Document (FID; MAFMC 2020) and landings for fishing years (FYs) 2005 through 2019 are presented in Table 1. Except for FY 2010 commercial golden tilefish landings have been below the commercial quota specified each year since the IFQ system was first implemented in 2009.

Commercial discards are described in the FID (page 15). According to VTR data, very little (< 0.03%) discarding was reported by longline vessels that targeted tilefish for the 2017 through 2019 period (Table 11 of the FID). According to the “Discard Estimation, Precision, and Sample Size Analysis” conducted by the Northeast Fisheries Science Center (NEFSC), discard estimations for commercial fisheries (mostly large/small mesh trawls and gillnets) appears to be low (several metric tons per gear type).⁵ For the last five years (2015-2019), on average 11,524 pounds (5.22 mt) of tilefish were discarded.

Recreational catches and landings are described in the FID (pages 18-22). A small recreational fishery briefly occurred during the mid-1970's, with less than 100,000 pounds annually (MAFMC 2000). Recreational catches have been low for the 1982 - 2019 period, ranging from zero for most years to approximately over 200,000 fish in 2010 according to NMFS recreational statistics (Table 13 of the FID). VTR data indicates that the number of tilefish caught by party/charter vessels from Maine through Virginia is low, ranging from 81 fish in 1996 to 8,297 fish in 2015 (Table 14 of the FID). On average, 2,700 tilefish were caught by party/charter vessels during the 1996-2019 period. In 2019, party/charter boats reported 2,733 fish landed, a 62% decrease from 2018 (7,101 fish landed). However, recreational catches have been traditionally considered an insignificant component of the removals and not included into the assessment. To improve tilefish management and reporting, the Greater Atlantic Regional Fisheries Office (GARFO)

⁴ These documents are available at: <http://www.mafmc.org/council-events/2020/march-ssc-meeting>.

⁵ 2015-2019 Discard Estimation, Precision, and Sample Size Analysis available at: <http://www.nefsc.noaa.gov/femad/fsb/SBRM/>.

Table 1. Summary of management measures and landings for FY^a 2005-2020.

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	1.487	1.626	1.562	-
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	<-0.001	-0.064	-
Incidental trip limit (lb)	133	300	300	300	300	300	300	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

^a FY 2005 (November 1, 2001 - October 31, 2002).

^b Eight fish per angler per trip.

is initiating recreational reporting for private tilefish anglers. This action was approved in late 2017, but with delayed implementation. A final rule is expected to be published by May 1, 2020. Extensive outreach will be provided by GARFO and the Council leading up to the final rule.

Review of SSC Recommendations from March 2017

In March 2017, the SSC met to recommend an ABC for tilefish for FYs 2018, 2019, and 2020. The SSC deemed that the golden tilefish benchmark stock assessment (SAW/SARC 58; NEFSC 2014)⁶ was a Level 3 assessment.

Based on the results of the 2017 stock assessment update, the Golden Tilefish resource is not overfished and overfishing is not occurring in assessment terminal year (2016). In 2016, the stock was at 89% of the accepted reference point ($SSB_{MSY\text{ proxy}} = SSB_{38\%}$) and the fishing mortality rate (F) in 2016 was 0.249, 20% below the fishing mortality threshold reference point $F_{MSY\text{ proxy}} = F_{38\%} = 0.310$.

The SSC accepted the overfishing limit (OFL) estimate provided in the assessment, and determined the level of uncertainty of OFL in the assessment requires an SSC-specified coefficient of variation (CV) of 100%. The SSC maintained its 2014 determination based on consistency between input data and model dynamics, the available model diagnostics, and the lack of a pathological retrospective pattern.

Based on the $F_{MSY\text{ proxy}}$ of $F=0.31$ ($F_{38\%}$), the SSC identified an overfishing limit (OFL) for golden tilefish for 2018, 2019, and 2020 of 2.332 million pounds (1,058 mt; $P^*=0.34$), 2.420 million pounds (1,098 mt; $P^*0.32$), and 2.290 million pounds (1,039 mt; $P^*0.34$), respectively.

The SSC recommends a three-year ABC specification using the Council's revised approach to its risk policy, which seeks to maintain consistency in catch advice. The average ABC over the three-year period ($ABC = 1.635$ million pounds or 742 mt) was calculated based on the $F_{MSY\text{ proxy}}$, an assumed lognormal coefficient of variability around OFL of 100%, the assumption that the ABC is taken each year, and applying the Council's risk policy for a typical life history. This ABC was then applied for each year of the three-year specification period to calculate the related OFLs and P^* s.

The SSC identified the following to be the most significant sources of uncertainty associated with determination of OFL and ABC:

- Reliance on fishery-dependent data in the assessment.
- Reliability of the $F_{MSY\text{ proxy}}$ and its relationship to potential SPR-based reference points.
- The dome-shape selectivity curve that makes a strong assumption about the presence of older fish in the population, for which strong empirical evidence is lacking.

⁶ Northeast Fisheries Science Center. 2014. 58th Northeast Regional Stock Assessment Workshop (58th SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 14-04; 784 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://nefsc.noaa.gov/publications/>.

- The extent of site fidelity of individuals, uncertainty in the stock range and distribution, and the consequences of the newly closed areas on stock dynamics that increase uncertainty and potential bias in assessment results.
- The lack of reliable recreational catch information.
- The use of a pooled age-length key that may lead to misspecification of age structure and reduced ability to both follow and estimate the size of year classes.
- The lack of a recruitment index that places a heavy burden on the estimation of past recruitments from size composition in the landings.

Biological Reference Points

The biological reference points for golden tilefish were updated during the 2017 stock assessment update, as a result of a change to the recruitment penalty used in the assessment model (i.e., likelihood constant turned off).⁷ 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).

Stock Status

The last full assessment update was completed in February 2017. This update indicates that the golden tilefish stock was not overfished and overfishing was not occurring in 2016, relative to the newly updated biological reference points. 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 ($SSB_{MSY\ proxy}$).

2020 Data Update

Commercial landings per unit effort is the only index of abundance for golden tilefish. Landings per unit of effort in 2019 increased relative to 2018 as predicted from growth of the strong 2013 year class.

Tracking of the strong 2013 year class is also reflected in the landings market category proportions and the landings at length distributions (Tables 2 and 3, and Figures 2 and 3, of the 2020 data update).⁸

⁷ 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, P. 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>.

⁸ Nitschke, P. 2020. Golden Tilefish, *Lopholatilus chamaeleonticeps*, data update through 2019 in the Middle Atlantic-Southern New England Region NMFS/NEFSC, Woods Hole, MA. 8 pp. Found online at <http://www.mafmc.org/council-events/2020/march-ssc-meeting>.

Advisory Panel Fishery Performance Report

Some relevant key points of the 2020 Fishery Performance Report for consideration include:

- Fishermen are not moving around much as they are finding a healthy mix of animals in traditional fishing grounds.
- Industry members have observed a new year class coming into the fishery in 2019. Specifically, they have seen larger landings in the extra-small size category. They have also seen a wide range of fish landed in terms of size and weight when compared to the year before.
- Industry indicated that they experience an increase in CPUE in 2019. Fishing has gotten better, outside/external conditions affecting fishery have gotten worse. In general terms, it was reported that these factors may have impacted CPUE:
 1. Dogfish interactions in 2019 continued to be high but at the same level seen in 2018
 2. Skates interactions increased in 2019 when compared to 2018 (increased size of skates and numbers)
 3. Smooth dogfish have increased in recent years (e.g., encountering more animals and further east)
 4. Weather in 2019 continued to be poor, winter started earlier in 2019 (October) when compared to 2018 conditions
 5. Catching more fish and fishing is improving.
- Dogfish, skate, and smooth dogfish interactions affect fishing practices.
- Severe winter conditions experienced in the Northeast in 2013-2019 significantly affected the effectiveness of tilefish operations/practices, resulting in longer fishing trips.
- Constant harvest strategy worked well in rebuilding the fishery. Industry would like to get back to a constant ACL in the future given healthy trends in the catch. Industry does not want to see different ACL every year.
- Industry members indicated that for-hire trips targeting golden tilefish went down in 2019. This decreased in effort was due to weather factors. Also, improved tuna and swordfish fishing conditions in 2019 when compared to 2018 also caused less trips targeting golden tilefish.
- Consider implementing golden tilefish specifications for a longer time period if possible (e.g., 5 year specifications cycle).
- Some AP members would like the Council to consider a differential trip limit (for hire vs private) and longer recreational trips. In addition, they suggested that the Council considers recreational management strategies (e.g., longer recreational trips), structured after the Gulf of Mexico regulations.
- Some AP members would like the Council to consider a recreational allocation.
- Some AP members indicated concerns about relaxing recreational regulations (as they could potentially lead to higher recreational landings) while the commercial quota could remain at *status quo* levels or potentially decrease in the future.
- All commercial AP members expressed concerns over increasing any effort, bag limit or quota in the fishery at this time. They felt it would be unfair to allow for an increase in effort/bag limit in the recreational sector while maintaining *status quo* for the commercial sector.

Basics for 2021-2022 ABC Recommendation

Our current 3-year specifications cycle (2018-2019-2020) ends with the 2020 fishing year (November 1, 2019 to October 31, 2020). Given the stock assessment process and timing changes the Northeast Regional Coordinating Council recently approved, the next management track assessment update for golden tilefish is currently scheduled for 2021. Therefore, the Council will need approve 2021 specifications utilizing information contained in the 2020 NEFSC data update (Nitschke 2020) and additional relevant information about fishery performance and past management measures is presented in the 2020 Golden Tilefish Fishery Information Document prepared by Council staff and the 2020 Fishery Performance Report developed by the Council Tilefish Advisory Panel. Staff also recommend the Council set interim 2022 specifications because of potential timing constraints with the 2021 management track assessment. If a peer review is needed for the 2021 management track assessment (peer review scheduled for June 2021), the Council will likely have to take final action in August of 2021; this may not provide adequate administrative time to have specifications in place for the 2022 fishing year which starts November 1, 2021. By having default specifications already in place for 2022, we would be in a much better position to implement new specifications for the next specifications cycle after November 1, 2021. The 2021 management track assessment would then be used to revise the interim 2022 specifications and set specifications for the 2023 and 2024 fishing seasons. Lastly, the Council will use the results from the next research track stock assessment for golden tilefish, currently scheduled for spring of 2024, to set specifications for the 2025-2026-2027 multi-year specifications cycle.

Given the stock status from the last full assessment update completed in February 2017, the 2020 NEFSC data update and recent fishing trends, setting ABC at the current *status quo* level for 2021 and 2022 (interim) would allow the fishery to continue to operate efficiently while not likely negatively impacting the status of the stock.

Staff recommend measures be developed for 2-years, to provide for continued stability in the fishery and markets. This will also provide management measures to be in place until the 2021 management track assessment update is completed.

Staff recommend ABCs for 2021 and 2022 (interim) at the *status quo* level. The recommended ABC in each 2021 and 2022 (interim) is 1.636 million pounds (742 mt) to provide for continued stability in the fishery and markets (Table 2).

Other Management Measures

Annual specification process - the MC shall review the ABC recommendation of the SSC, golden tilefish landings and discards information, and any other relevant available data to determine if the golden tilefish ACL and ACT and/or TAL for the IFQ and/or incidental sectors of the fishery require modification to respond to any changes to the golden tilefish stock's biological reference points or to ensure any applicable rebuilding schedule is maintained. The MC will consider whether any additional management measures or revisions to existing measures are necessary to ensure that the IFQ and/or incidental TAL will not be exceeded. Based on that review, the MC will recommend golden tilefish ACL, ACTs, and TALs to the Council.

Annual Catch Limits

As defined in the Framework Adjustment 2 to the Tilefish FMP, ABC is equivalent to the total allowable catch (ACL; Figure 1). Table 2 shows the ACLs associated with the staff recommendations for ABC based on *status quo* level for tilefish.

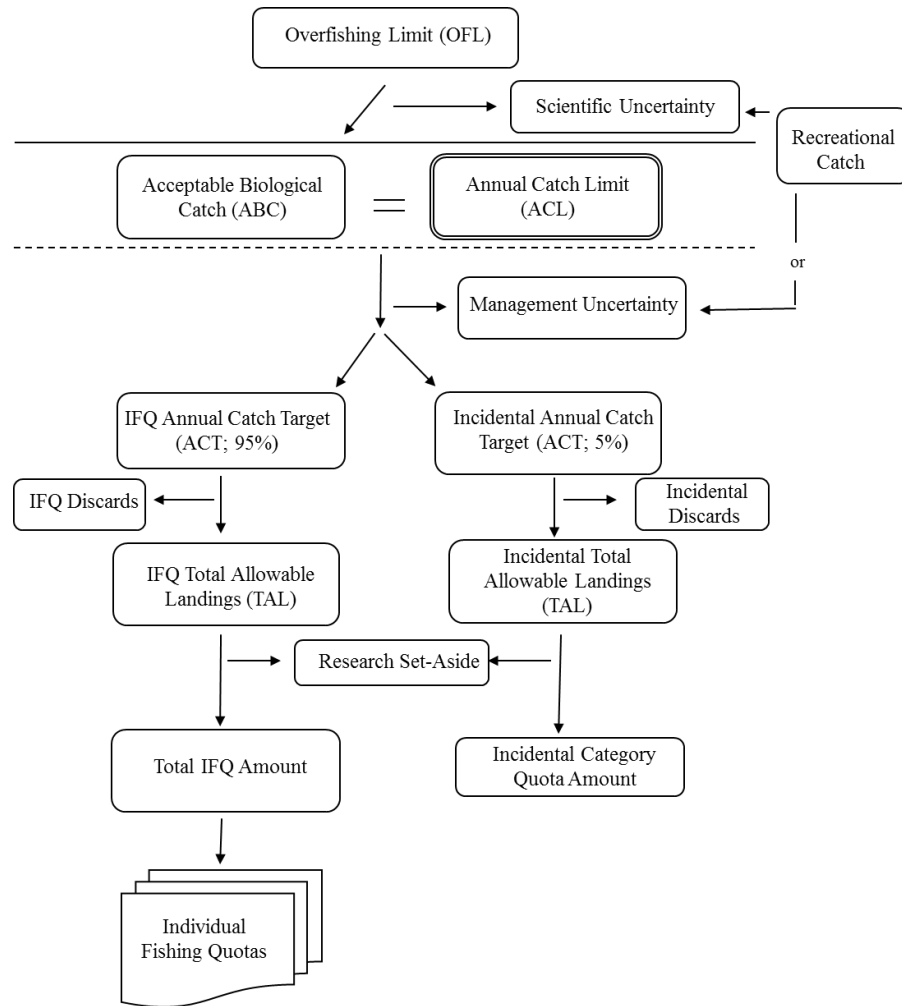


Figure 1. Flowchart for tilefish catch and landings limits.

Table 2. Staff recommendation for catch and landings limits for golden tilefish for 2021 and 2022 (interim) compared to 2020 measures.

	2020 (Current)	2021	2022 (interim)	Basis (2021-2022)
OFL	2.290 m lb (1,039 mt)	NA	NA	NA
ABC	1.636 m lb (742 mt)	1.636 m lb (742 mt)	1.636 m lb (742 mt)	Staff recommendation, based on recent fishing trends and scheduled 2021 management track assessment update
ABC % of OFL	72%	NA	NA	
ACL	1.636 m lb (742 mt)	1.636 m lb (742 mt)	1.636 m lb (742 mt)	ABC = ACL
IFQ ACT	1.554 m lb (705 mt)	1.554 m lb (705 mt)	1.554 m lb (705 mt)	95% ACL
Incidental ACT	0.082 m lb (37 mt)	0.082 m lb (37 mt)	0.082 m lb (37 mt)	5% ACL
IFQ Discards	0	0	0	Discards in the IFQ fishery are prohibited
Incidental Discards	0.009 m lb (4 mt)	0.011 m lb (5 mt)	0.011 m lb (5 mt)	Avg. discard (2015-2019) mostly sm/lg mesh OT and Gillnet gear
IFQ TAL	1.554 m lb (705)	1.554 m lb (705 mt)	1.554 m lb (705 mt)	IFQ ACT - IFQ Discards
Incidental TAL	0.072 m lb (33 mt)	0.070 m lb (32 mt)	0.070 m lb (32 mt)	Incidental ACT - Incidental Discards

Annual Catch Targets

The Tilefish MC is responsible for recommending ACTs for the IFQ and incidental sectors of the fishery, which are intended to account for management uncertainty, for the Council to consider. The ACTs, technical basis for ACTs considerations, sources of management uncertainty should be described and technical approaches to mitigating these sources of uncertainty should be defined and provided to the Council. The relationship between the ACTs and other catch/landing components are given in Figure 1.

Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur because of a lack of sufficient information about the catch (e.g., due to late reporting, underreporting, and/or misreporting of landings or discards) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

Staff recommend the MC consider past specific landings performance, as a basis for quantifying management uncertainty (i.e., implementation error) and as an indicator of future ability to achieve catch target when developing the 2021-2022 ACT recommendation for the IFQ and incidental sectors

(Table 2). The MC should also consider the potential imprecision/variability in expected observed commercial and recreational catch⁹ to ensure the ACLs are not exceeded.

The tilefish fishery is managed via an IFQ system and managers believe that all tilefish commercial landings values under this program are reliable. The IFQ monitoring system is timely and successful in managing the landings. The commercial landings performance for the last nine years has been near or below the commercial quotas. The recreational catch is minimal. Staff recommend no reduction in catch from the ACL. The recommended ACTs in each 2021 and 2022 are 1.554 million pounds (705 mt) for the IFQ fishery and 0.082 million pounds (37 mt) for the incidental fishery (Table 2).

Total Allowable Landings

Management uncertainty can occur because of insufficient information about discards (Figure 1). Development of a time series of discards was not done in the assessment model since discarding was considered negligible and information on discards do not exist for most of the time series. Therefore, discards have not been included in the assessment due to the high uncertainty associated with the discard estimates over the time series. Very low or insignificant discards have been estimated for recent years according to the discard estimation, precision, and sample size analysis conducted by the NEFSC (see page 3 for additional information). There is higher uncertainty (CVs) on the low recent discard estimates since the discarding of tilefish is a rare event on observed trips. Therefore, an average of several years was used to judge recent relative magnitude of discarding for this fishery. For the last five years (2015-2019), on average 11,524 pounds (5.22 mt) of tilefish were discarded according to the discard estimation, precision, and sample size analysis conducted by the NEFSC. Commercial discards are not generated by the IFQ fishery due to the fact that all fish caught (given the standard hook size/type use by the industry) are marketable. In addition, 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 (Nolan, pers. comm. 2006; Kitts et al. 2007). Furthermore, Amendment 1 to the Tilefish FMP prohibited the practice of highgrading (MAFMC 2009). It is estimated that most of the discards that have occurred in recent years have been by large/small mesh trawls and gillnets used by the incidental fishery. Staff recommends a reduction in catch from the incidental ACT to account for discards in that component of the fishery. Staff recommends no reduction in catch from the IFQ ACT. The recommended IFQ TAL is 1.554 million pounds (705 mt) and the resulting incidental TAL is 0.070 million pounds (32 mt) for each 2021 and 2022 (Table 2).

Recreational Bag Limit

A recreational bag limit was implemented under Amendment 1 in 2009 (MAFMC 2009). Current regulations require an 8-fish recreational bag-size limit per angler per trip. This limit was set at the upper range of mean effort observed during the 1996-2005 period. VTR data indicates that mean effort for the 2006 to 2019 period has ranged from 1.2 to 4.6 fish per angler. The recreational bag limit may be changed through specifications based on the recommendations of the MC. Staff does not recommend any changes to the recreational bag limit.

⁹ Recreational tilefish trips appear to be limited and a minor component of the catch as indicated in the FID, the FPR, and the 2017 Golden Tilefish Assessment Update (Nitschke 2017).

Incidental Trip Limit

The current 500 pound incidental trip limit has been in place since 2012. Fishing regulations state that if the incidental harvest exceeds the incidental TAL for a given fishing year, the incidental trip limit specified may be reduced in the following fishing year. In addition, the harvest of the tilefish incidental TAL monitoring is based on dealer reports and other available information, and determines the date when the incidental tilefish TAL has been landed. The Regional Administrator publishes a notice in the Federal Register notifying vessel and dealer permit holders that, effective upon a specific date, the incidental tilefish fishery is closed (in-season closure of the incidental fishery) for the remainder of the fishing year. Golden tilefish incidental commercial fishery landings in FY 2020 are slightly behind FY 2019 landings for the same time period (Figure 4 of the FID; for data reported through January 22, 2020). Incidental golden tilefish commercial landings for the last six years are shown in Table 3. Staff does not recommend any changes to the incidental trip limit.

Table 3. Incidental golden tilefish commercial landings for fishing year 2013-2019.

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

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

2020 Golden Tilefish Survey Update

The Council, in collaboration with industry and the NEFSC are in the process of conducting a fishery-independent bottom longline survey for the Mid-Atlantic Golden tilefish stock. The 2020 survey design was developed using the findings from the pilot golden and blueline tilefish survey conducted in the summer of 2017 by SUNY Stony Brook. The goal of this 2020 initial bottom longline survey design is to develop an abundance index for the golden tilefish stock.

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