Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: 26 March 2018

To: Council

From: José Montañez, Staff

Subject: Review of Golden Tilefish 2019 Specifications

As part of the 2018-2020 multi-year specification process for Golden Tilefish, the Scientific and Statistical Committee (SSC) and Golden Tilefish Monitoring Committee (MC) reviewed the most recent information available to determine whether modification of the current 2019 specifications is warranted.

The following materials are enclosed on this subject:

1) March 2018 SSC Report – See Committee Reports Tab
2) Report of the March 2018 Meeting of the MAFMC Golden Tilefish MC
3) Golden Tilefish Fishery Performance Report (February 2018)
4) Golden Tilefish AP Information Document, Council Staff (February 2018)
5) Golden Tilefish Data Update, NEFSC (February 2018)
6) Staff Recommendation Memo to Chris Moore (February 2018)

Tilefish Monitoring Committee
Webinar Meeting Summary
March 16, 2018

2019 Golden Tilefish Recommendations

Attendees: José Montañez and Matt Seeley (Council Staff), John Maniscalco (NYSDEC), Paul Nitschke (NEFSC), Dan Farnham (Golden Tilefish Fishing Industry), Jeff Brust (NJDFW), and Cynthia Hanson for Doug Potts (GARFO). **Others in attendance:** Laurie Nolan (Golden Tilefish Fishing Industry and Council Member), Dewey Hemilright (Blueline Tilefish Fishing Industry and Council Member), Frank Green (Tilefish Advisory Panel Member), Fred Akers (Recreational Tilefish Angler), Steve Heins (Tilefish Committee Chair), and Jason Didden (Council Staff).

Discussion: The Tilefish Monitoring Committee (MC) was presented with a summary of the Scientific and Statistical Committee (SSC) deliberations of the March 2018 SSC meeting, where the SSC reviewed the Golden Tilefish Data Update, the 2018 Golden Tilefish Advisory Panel Fishery Performance Report, and the 2018 Golden Tilefish Advisory Panel Information Document. The data update provided by the NEFSC is consistent with the expectations of the SSC as the 2013 year class moves through the fishery. Therefore, the SSC recommends no change to ABC specifications for the 2019 fishing year (1.636 million pounds or 742 mt).

After reviewing all available data, the MC discussed the different components of the golden tilefish catch and recent fishery trends. The MC indicated that fishing trends are behaving as previously expected. Therefore, the MC recommends no change to the catch and landings limits specifications for the 2019 fishing year (Table 1).

The MC discussed recent trends in the recreational fishery and incidental commercial fishery. The MC did not recommend changes to the current 500-pounds whole weight (458-pounds gutted) incidental trip limit or the 8-fish per person per trip bag limit.

The MC indicated that in the future, they may evaluate the possibility of setting golden tilefish commercial quotas for longer than a 3-year specifications cycle. This may be advisable given that the industry is seeking long-term commercial stability in the fishery and the historical performance of the constant harvest strategy in stock rebuilding. Any changes to the current maximum specifications cycle would need to account for biological factors, Council's risk policy requirements, and other administrative issues.

Table 1. Summary of Monitoring Committee recommendation for catch and landings limits for golden tilefish for 2019. The 2019 values have been specified in the final specifications for 2018-2020.

	2019	2020	Basis (2018-2020)
IFQ ACT	**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	**0.08 m lb (37 mt)**	0.08 m lb (37 mt)	
IFQ Discards	**0**	0	
Incidental Discards	**0.009 m lb (4 mt)**	0.009 m lb (4 mt)	Avg. discard (2012-2016) mostly sm/lg mesh OT and Gillnet gear
IFQ TAL	**1.554 m lb (705 mt)**	1.554 m lb (705 mt)	IFQ ACT – IFQ discards
Incidental TAL	**0.07 m lb (33 mt)**	0.07 m lb (33 mt)	Incidental ACT – Incidental discards
IFQ Quota	**1,554,038 (704.90 mt)**	1,554,038 (704.90 mt)	
Incidental Quota	**72,398 lb (32.84 mt)**	72,398 lb (32.84 mt)	

2018 Tilefish Advisory Panel (AP)
Golden Tilefish Fishery Performance Report (FPR)

The Mid-Atlantic Fishery Management Council's (Council's) Tilefish Panel met via Webinar on February 21, 2018 to review the fishery information document and develop the Golden Tilefish Fishery Performance Report (FPR) based on advisor perspectives on catch and landings patterns and other trends in this fishery. The following is the report from the Tilefish AP.

The Advisers in attendance were: David Arbeitman, Skip Feller, Jeffry Gutman, and John Nolan III. They represent tilefish commercial fisherman (from New York) and recreational fishermen (private/head boats, bait and tackle business, from New Jersey and Virginia). Also in attendance were: Laurie Nolan - Council Members; Paul Nitschke - NEFSC; Yan Jiao (SSC member - Virginia Tech College of Natural Resources); Ec Newellman; Matt Seeley and José Montañez - Council Staff.

Market Issues

Prices continue to be stable in all market categories except the kitten category. In recent years there has been an increase in the amount of kitten size fish landed and they represent a large proportion of the total catch. The decrease in price ($/pound) in the kitten category in recent years has impacted the overall average tilefish price. In 2017 there was an increase in both landings and ex-vessel revenues, while the overall average coastwide golden tilefish price decreased, due to the decrease in the price for the kitten size category. A major reason for the stable tilefish prices in recent years is due to the fact that 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 sold as whole or gutted fish. Traditionally, most tilefish landings were sold to the Korean markets. Due to marketing efforts, tilefish has become a very well-known popular item. They are found as a "regular" on restaurant menus rather than an occasional "special." 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.

Traditionally, large tilefish were worth up to $1.00 more per pound than extra-large tilefish. Due to the head size of an extra-large tilefish, there is a lot of waste. Recently, price spread ($/pound) between large and extra-large fish is decreasing. Industry has been getting specific requests for extra-large fish. Rather than discarding the head and the rack of an extra-large, soups and broth are being made and the waste is eliminated. 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 change 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. Industry and Council/NEFSC staff will work to improve coordination across tilefish ports to better define fish market size (weight) to maintain reporting consistency.

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 since October 2017. *Illex* has gone from .50 to $1.00/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 Issues

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. Skate interaction also reduces tilefish catches; this is limited to the winter period. Skates can severely damage tilefish gear. When fishermen encounter skates, they move to other fishing areas.

Adverse weather conditions (e.g., storms, rough seas, high winds, and tide) can impact fishing operations. Severe winter conditions experienced in the Northeast in 2013-2017 significantly affected the effectiveness of tilefish fishing operations/practices, resulting in longer fishing trips.

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. Overall landings are on the rise for the current fishing year (November 1, 2017 – October 31, 2018) when compared to the same time last year and the Kitten fish size category (2 to 3.5 pounds) continues to be a large percentage of their overall catch composition.

Two advisors 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.

Industry members indicated that some lobster trap fishermen have caught small tilefish (~4-5) in 40/50 fathom range in statistical areas 613 (and perhaps 615 as well) through September. This is something that they have not seen before.

Management Issues & Management Induced Effort Shifts

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.

One advisory panel member indicated that changes in tilefish regulations in Virginia (from 7 fish any combination of golden/blueline tilefish per angler per trip to 7 blueline and 8 golden per angler per trip) could result in an increase in recreational golden tilefish effort.

Another advisor indicated that the current federal recreational blueline tilefish season/closures (not able to catch blueline from November 1 through April 30) will likely impact golden tilefish fishing effort as some anglers may stop fishing all together; as it is harder to sell golden tilefish only directed trips, especially in the winter fishery.

General Fishing Trends

AP members pointed out that for the last five winter seasons (January-March, 2013-2017) fishing practices have been impacted by severe weather resulting in longer fishing trips than on average. Panel members indicated that the slight increase in trip length is due to severe winter storm patterns. Severe winter conditions in the last four years have made fishing less productive and longer trips than average as fishing operations are significantly impacted. While severe weather conditions affect all fishing boats, smaller boats are particularly susceptible to severe winter and wind conditions.

Industry indicated that CPUE in 2017 increased and the percentage of kitten size category (2 to 3.5 pounds) in the catch is also increasing. The influx of kittens is all over the place.

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.

The topography of the traditional fishing areas is well known and they have the advantage of little or no gear conflict, unlike some of the potential tile fishing areas which are used for other fisheries.

Other Issues

- 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 2014), New Jersey has change 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. Industry and Council/NEFSC staff will work to improve coordination across tilefish ports to better define fish market size (weight) to maintain reporting consistency.

-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.

-One headboat captain indicated that five or six headboats[1] 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 advisor 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 (summer time). 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. The other four boats have substantially less tilefish trips scheduled per year.

-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. It was also stated that recreational values reported under the VTR data seems to be more realistic of tilefish catches.

-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

[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.

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.

-The 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.

-Two 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.

-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.

-Recreational AP members indicated that the for-hire fishery (more significantly the headboat fishery) seems to be losing trips due to weather conditions.

From: Jeff <jgutman28@comcast.net>
Sent: Tuesday, February 27, 2018 9:32:22 PM
To: Seeley, Matthew
Subject: Re: Tilefish Fishery Performance Reports

Matt and Jose,

I apologize for the late comment but I was out of town. I wanted to add that there are not hundreds of boats out everyday CANYON tuna fishing and then deep dropping for tilefish. I know this because I was out tuna fishing every fishable day in September and October. Tuna fishing was an absolute disaster in 2017 for the boats from Hyannis, Point Judith and Montauk through all of New Jersey and south to Virginia. Except for a few bluebird days, there was little effort by private boats. I was also out at the canyons, many different canyons throughout the summer and saw very few boats. There was some activity with tournaments but those guys rarely deep drop. I can't speak for summer time south of the Washington canyon but there was not much effort up where the goldens live.

Thanks,
Jeff Gutman
F/V Voyager

Golden Tilefish - Advisory Panel Information Document[1]
February 2018

Management System

The Fishery Management Plan (FMP) which initiated the management for this species became effective November 1, 2001 (66 FR 49136; September 26, 2001) and included management and administrative measures to ensure effective management of the golden tilefish resource. The FMP also implemented a limited entry program and a tiered commercial quota allocation of the overall TAL. Amendment 1 to the Tilefish FMP created an IFQ (Individual Fishing Quota) program that took effect on November 1, 2009 (74 FR 42580; September 24, 2009). 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.

Basic Biology

The information presented in this section can also be found in the Tilefish 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)[2] 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.

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

[2] See Tilefish FMP document for additional information on references used in this section (http://www.mafmc.org/fisheries/fmp/tilefish).

Tilefish are shelter seeking and perhaps habitat limited. There are indications that at least some of the population is relatively nonmigratory (Turner 1986). Warme et al. (1977) first reported that tilefish occupied excavations in submarine canyon walls along with a variety of other fishes and invertebrates, and they referred to these areas as "pueblo villages." Valentine et al. (1980) described tilefish use of scour depressions around boulders for shelter. Able et al. (1982) observed tilefish use of vertical burrows in Pleistocene clay substrates in the Hudson Canyon area, and Grimes et al. (1986) found vertical burrows to be the predominant type of shelter used by tilefish in the mid-Atlantic/southern New England region. Able et al. (1982) suggested that sediment type might control the distribution and abundance of the species, and the longline fishery for tilefish in the Hudson Canyon area is primarily restricted to areas with Pleistocene clay substrate (Turner 1986).

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

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

> "*These results show a significant decrease in size and age at maturation since the last evaluation of this stock in the early 1980's (Grimes et al. 1986). An environment in which survival rates are low for potentially reproducing individuals, often favors selection of individuals that are able to reproduce at smaller sizes and younger ages (Hutchings 1993; Reznick et al. 1990). In a hook fishery, it is assumed that the smallest fish in the population are less vulnerable to the gear depending on*

the hook size. In this fishery, hook size has been intentionally increased to avoid catch of the smallest fish in the population. The fact that such dramatic changes have manifested in this stock may suggest a density-dependent effect of decreased population size. It is uncertain at this point in time, whether these changes are consequences of phenotypic plasticity or selection towards genotypes with lower size and age at maturation."

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

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

Status of the Stock

Reports on stock status, including Stock Assessment Workshop (SAW) reports, and Stock Assessment Review Committee (SARC) reports, and assessment update reports are available online at the Northeast Fisheries Science Center (NEFSC) website: http://www.nefsc.noaa.gov/.

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).[3] The fishing mortality threshold for

[3] 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

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 ($SSB_{MSY\ proxy}$).

Data Update

The NEFSC is developing a golden tilefish data update through 2017. The update will contain recent trends in the golden tilefish fishery, including, commercial landings, stock size, fishing mortality rate, catch per unit effort, commercial landings by market category (size composition), and landings by area. The update will be posted at the Council's website (http://www.mafmc.org/) as soon as it is available.

Fishery Performance

For the 1970 to 2017 calendar years, golden tilefish landings have ranged from 128 thousand pounds (1970) to 8.7 million pounds (1979). For the 2001 to 2017 period, golden tilefish landings have averaged 1.8 million pounds, ranging from 1.1 (2016) to 2.5 (2004) million pounds. In 2017, commercial golden tilefish landings were 1.5 million pounds (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.

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.

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.[4]

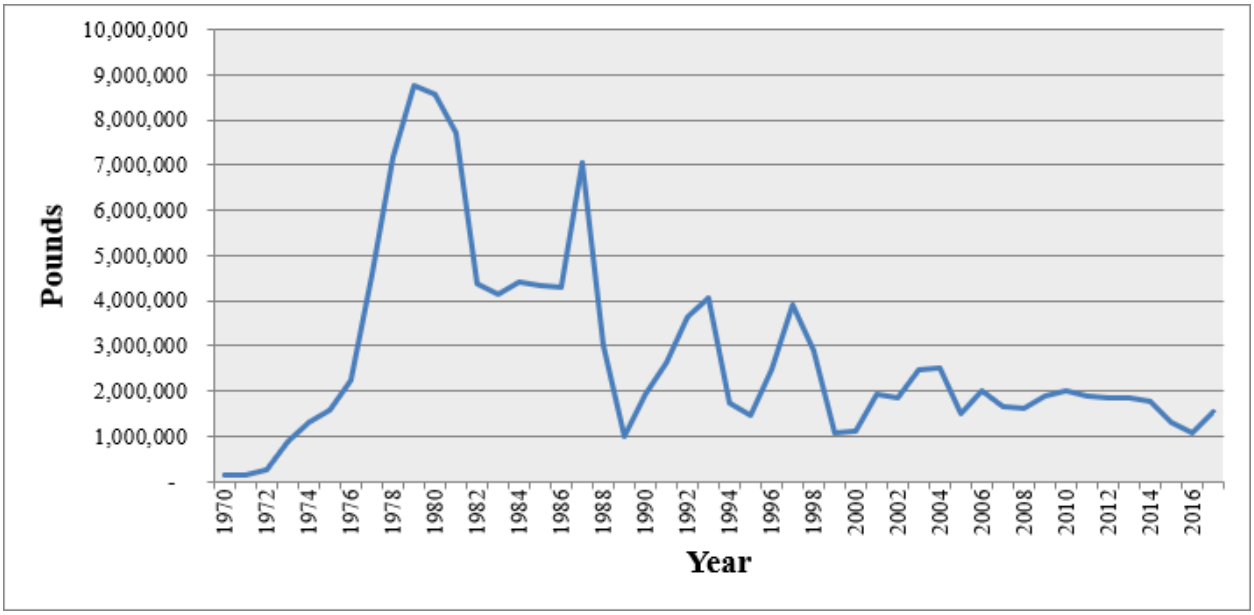

Figure 1. Commercial U.S. Golden Tilefish Landings (live weight) from Maine-Virginia, 1970-2017. Source: 1970-1993 Tilefish FMP. 1994-2017 NMFS unpublished dealer data.

Golden tilefish are primarily caught by longline and bottom otter trawl. Based on dealer data from 2013 through 2017, the bulk of the golden tilefish landings are taken by longline gear (98%) followed by bottom trawl gear (2%). No other gear had any significant commercial landings. Minimal catches were also recorded for hand line and gillnets (Table 2).

[4] 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 FY[a] 2005 through 2020.

Management Measures	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ABC (m lb)	-	-	-	-	-	-	-	-	2.013	2.013	1.766	1.898	1.898	1.636	1.636	1.636
TAL (m lb)	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.995	1.755	1.887	1.887	1.627	1.627	1.627
Com. quota-initial (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-adjusted (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. landings	1.497	1.897	1.777	1.672	1.887	1.997	1.946	1.874	1.841	1.830	1.354	1.060	1.485	-	-	-
Com. overage/underage (m lb)	-0.498	-0.098	-0.218	-0.323	-0.108	+0.002	-0.049	-0.121	-0.154	-0.165	-0.401	-0.827	-0.402	-	-	-
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, 2005 - October 31, 2006).
[b] Eight fish per person per trip.

Table 2. Golden tilefish commercial landings ('000 pounds live weight) by gear, Maine through Virginia, 2013-2017 combined.

Gear	Pounds	Percent
Otter Trawl Bottom, Fish	128	1.69
Otter Trawl Bottom, Other	*	*
Gillnet, Anchored/Sink/Other	7	*
Lines Hand	25	*
Lines Long Set with Hooks	7,396	97.7
Pot & Trap	*	*
Dredge, other	*	*
Unknown, Other Combined Gears	6,9	*
All Gear	7,570	100.0

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

Approximately 55 percent of the landings for 2017 were caught in statistical area 616; statistical area 537 had 26 percent; statistical areas 626 and 526 had 6 percent each (Table 3). NMFS statistical areas are shown in Figure 2.

For the 1999 to 2017 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, 1996-2017.

Year	525	526	537	539	612	613	616	622	626	Other
1996	0.05	5.22	64.04	0.39	*	1.09	27.81	0.01	-	1.40
1997	0.03	0.68	79.50	0.02	*	2.59	16.41	0.01	*	0.74
1998	1.26	2.19	81.95	0.04	0.02	5.45	8.55	*	*	0.53
1999	0.97	0.22	55.79	0.02	0.22	3.71	36.60	0.02	0.02	0.43
2000	0.36	3.80	46.09	0.01	0.05	2.36	43.94	0.47	0.14	2.78
2001	0.23	3.09	23.92	*	0.01	3.16	68.96	*	0.10	0.52
2002	0.13	8.73	35.85	0.07	0.01	18.49	36.54	0.02	0.02	0.14
2003	0.88	1.81	38.46	0.10	*	11.85	46.53	0.05	0.05	0.26
2004	1.02	2.59	62.63	0.05	5.28	0.71	25.96	0.03	0.06	1.66
2005	0.12	0.25	62.97	0.02	0.03	6.11	25.69	0.03	0.20	4.56
2006	*	1.54	64.28	0.50	1.24	0.71	30.10	0.04	0.05	1.53
2007	0.03	0.44	57.57	0.01	-	5.53	33.93	0.86	0.46	1.18
2008	1.09	0.08	44.03	0.01	*	4.61	46.95	2.05	0.02	1.15
2009	2.16	0.05	42.58	1.30	0.04	4.36	46.12	1.34	1.16	0.89
2010	0.01	0.03	57.09	0.55	0.02	8.38	32.85	0.70	0.04	0.32
2011	0.02	0.04	52.99	0.03	-	3.12	39.95	0.35	0.06	3.46
2012	0.01	0.03	52.35	0.04	0.01	0.58	43.78	0.45	0.10	2.65
2013	*	0.69	56.01	1.06	0.06	0.68	35.31	1.43	4.57	0.17
2014	0.01	0.56	49.18	1.88	0.01	1.28	42.68	2.97	0.36	1.08
2015	3.04	0.98	29.83	2.54	*	0.01	53.65	2.93	5.52	1.50
2016	1.02	4.80	32.16	0.01	-	0.98	54.18	0.66	5.79	0.41
2017	0.01	5.80	26.03	2.90	-	1.01	55.42	0.55	5.92	2.36
All	0.53	1.72	53.96	0.47	0.47	3.94	35.95	0.59	0.89	1.29

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

Table 4. Golden tilefish commercial landings (1,000 live pounds) by month and year, Maine through Virginia, 1999-2017.

Year	Month												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1999	118	114	124	103	93	91	55	106	83	59	77	75	1,096
2000	52	105	159	101	107	99	34	91	42	107	96	112	1,105
2001	107	151	159	188	153	179	177	157	156	156	161	176	1,920
2002	143	232	257	144	164	117	107	141	148	146	68	200	1,866
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	146	114	142	207	151	131	158	203	186	221	39	139	1,837
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	86	69	77	193	195	179	136	134	105	180	47	133	1,533
Total	2,374	2,776	3,963	3,415	2,930	2,672	2,441	2,641	2,460	2,787	1,799	2,699	32,955
Avg. 99-17	125	146	209	180	154	141	128	139	129	147	95	142	1,737

Table 5. Percent of golden tilefish commercial landings (live pounds) by month and year, Maine through Virginia, 1999-2017.

Year	Month												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
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	7.95	6.23	7.71	11.26	8.21	7.12	8.60	11.06	10.15	12.01	2.15	7.55	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	5.58	4.52	5.05	12.56	12.72	11.67	8.84	8.72	6.87	11.73	3.05	8.69	100.00
Total	7.20	8.42	12.03	10.36	8.89	8.11	7.41	8.01	7.46	8.46	5.46	8.19	100.00

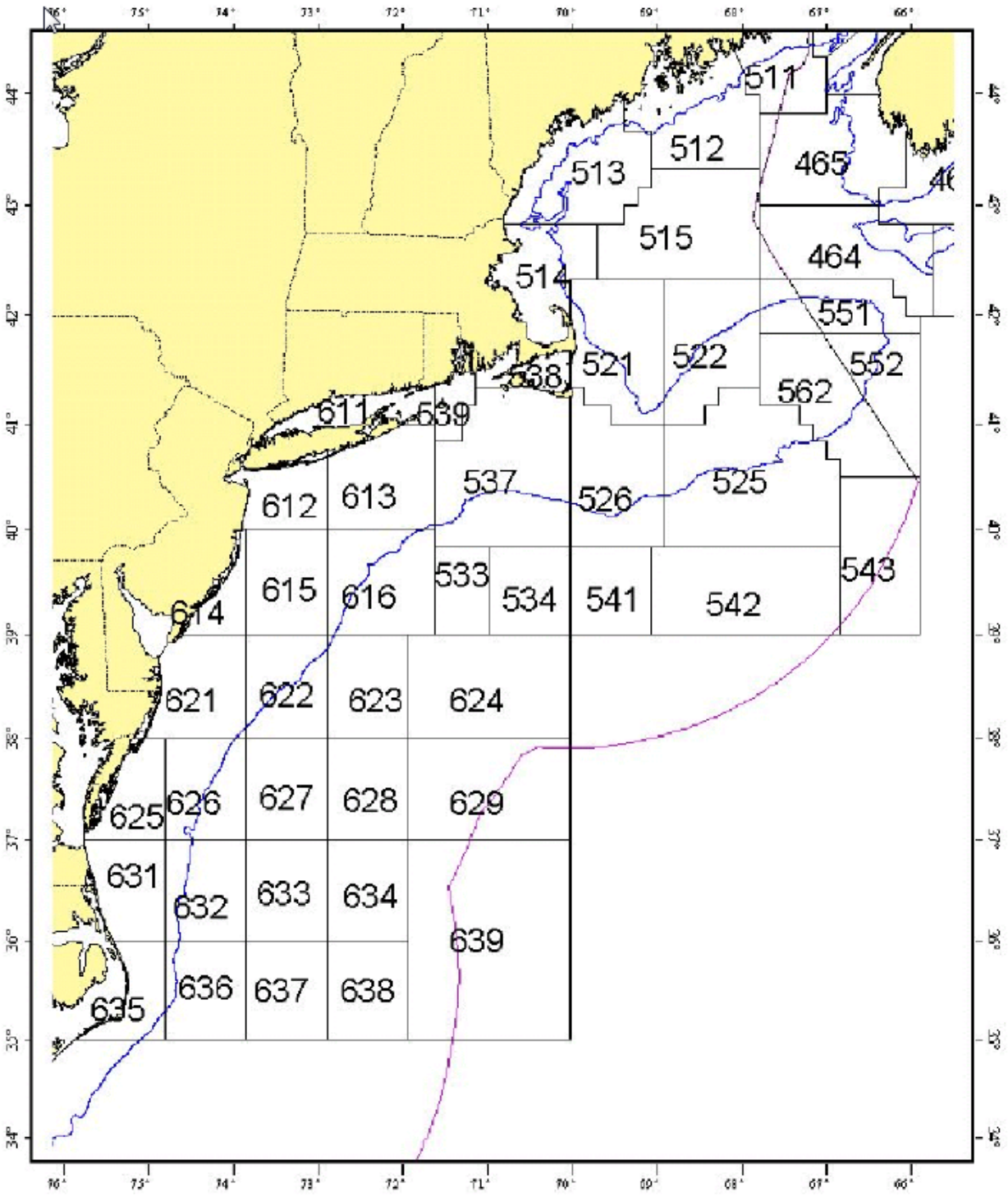

Figure 2. NMFS Statistical Areas.

Commercial golden tilefish landings (landed weight) have ranged from 1.0 million pounds in 2016 (calendar year) to 2.3 million pounds in 2004 for the 1999 through 2017 period. Commercial golden tilefish ex-vessel revenues have ranged from $2.5 (year 2000) to $5.9 (year 2013) million for the same time period. In 2017 ex-vessel revenues were approximatelly $4.6 million. In 2017 commercial tilefish landings and revenues increased by 41% and 9%, respectivley, compared to 2016.

The mean price for golden tilefish (adjusted) has ranged from $1.15 per pound in 2004 to $4.24 per pound in 2016 (Figure 3). For 2017, the mean price for golden tilefish was $3.33 per pound.

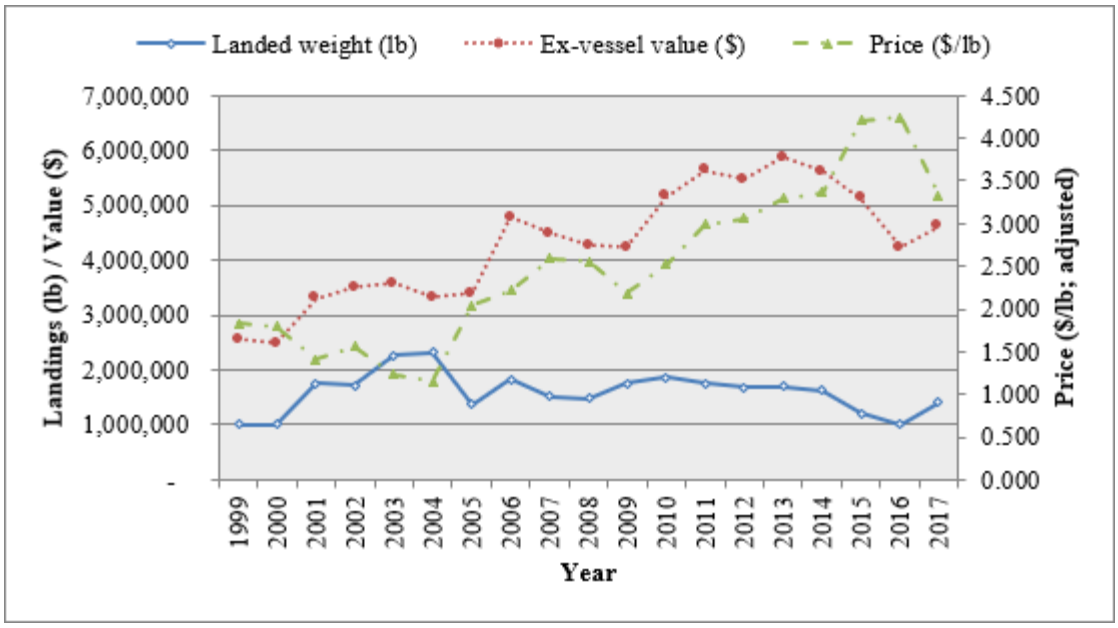

Figure 3. Landings (landed weight), ex-vessel value, and price for golden tilefish, Maine through Virginia combined, 1999-2017. Note: Price data have been adjusted by the GDP deflator indexed for 2016.

The 2013 through 2017 coastwide average ex-vessel price per pound for all market categories combined was $3.66. 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, goden 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 thought Virginia, 2013 through 2017.

Market category	Landed weight (pounds)	Value ($)	Price ($/pound)	Approximate market size range (pounds)
Extra large	396,322	1,744,842	4.40	> 25
Large	2,091,816	9,415,407	4.50	7 – 24
Large/medium[a]	593,064	2,534,485	4.27	5 -7
Medium	1,699,360	6,011,679	3.54	3.5 – 5
Small or kittens	1,757,980	4,595,091	2.61	2 – 3.5
Extra small	205,196	462,591	2.25	< 2
Unclassified	203,338	686,483	3.38	---
All	6,947,076	25,450,578	3.66	---

[a]Large/medium code was implemented on May 1, 2016. Prior to that, golden tilefish sold in the large/medium range were sold as unclassified fish.

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/fmp/pdf/Tilefish_Amend_1_Vol_1.pdf). 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, 2016-2017 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.

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Table 7. Top ports of landing (live weight) for golden tilefish, based on NMFS 2016 - 2017 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year.

Port	2016		2017	
	Landings (pounds)	# Vessels	Landings (pounds)	# Vessels
Montauk, NY	519,210 (514,439)	14 (3)	782,604 (775,018)	16 (4)
Barnegat Light/Long Beach, NJ	329,076 (326,815)	9 (7)	431,372 (431,372)	6 (6)
Hampton Bays, NY	210,701 (C)	5 (C)	257,944 (C)	5 (C)
Point Judith, RI	11,541 (0)	48 (0)	37,720 (0)	52 (0)

[a]Values in parenthesis correspond to IFQ vessels.
Note: C = Confidential.

Table 8. Ports that generated 1% or greater of total revenues from golden tilefish, 2013-2017 combined.

Port	State	Ex-vessel revenue all species combined	Ex-vessel revenue golden tilefish	Golden tilefish contribution to total port ex-vessel revenues
East Hampton	NY	338,430	105,709	31%
Montauk	NY	86,842,761	15,023,737	17%
Ocean City	NJ	25,794	4,565	18%
Hampton Bays	NY	31,921,718	3,395,931	11%
Barnegat Light/Long Beach	NJ	127,717,127	6,322,272	5%
Shinnecock	NY	6,446,815	302,681	5%

In 2016 there were 59 federally permitted dealers who bought golden tilefish from 104 vessels that landed this species from Maine through Virginia. In addition, 70 dealers bought golden tilefish from 130 vessels in 2017. These dealers bought approximately $4.2 and $4.6 million of golden tilefish in 2016 and 2017, 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 2016 - 2017.

Number of dealers	MA		RI		CT		NY		NJ		VA		Other	
	'16	'17	'16	'17	'16	'17	'16	'17	'16	'17	'16	'17	'16	'17
	7	11	10	13	6	9	20	22	13	9	C	4	2	2

Note: C = Confidential.

Table 10. Dealer dependence on golden tilefish, 2013-2017 combined.

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

According to VTR data, very little (< 0.4%) discarding was reported by longline vessels that targeted golden tilefish for the 2008 through 2017 period (Table 11). In addition, the 2014 golden tilefish stock assessment (NEFSC 2014) and stock assessment update (Nitschke 2017) indicate that golden tilefish discards in the trawl and longline fishery appear to be a minor component of the catch.

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Table 11. Catch disposition for directed golden tilefish trips[a], Maine through Virginia, 2008-2017 combined.

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
GOLDEN TILEFISH	13,969,451	100.00%	97.87%	0	0.00%	0.00%	13,969,451	0.00
SPINY DOGFISH	218,757	94.38%	1.53%	13,018	5.62%	26.15%	231,775	0.06
BLUELINE TILEFISH	25,433	99.98%	0.18%	5	0.02%	0.01%	25,438	0.00
DOGFISH SMOOTH	17,517	75.64%	0.12%	5,640	24.36%	11.33%	23,157	0.32
CONGER EEL	17,462	94.04%	0.12%	1,107	5.96%	2.22%	18,569	0.06
BLACK BELLIED ROSEFISH	6,871	100.00%	0.05%	0	0.00%	0.00%	6,871	0.00
DOLPHIN FISH	3,106	97.37%	0.02%	84	2.63%	0.17%	3,190	0.03
WRECKFISH	2,499	100.00%	0.02%	0	0.00%	0.00%	2,499	0.00
YELLOWFIN TUNA	2,189	97.99%	0.02%	45	2.01%	0.09%	2,234	0.02
GROUPER	1,353	100.00%	0.01%	0	0.00%	0.00%	1,353	0.00
BARRELFISH	1,615	100.00%	0.01%	0	0.00%	0.00%	1,615	0.00
SILVER HAKE (WHITING)	1,142	98.96%	0.01%	12	1.04%	0.02%	1,154	0.01
MAKO SHORTFIN SHARK	1,077	100.00%	0.01%	0	0.00%	0.00%	1,077	0.00
RED HAKE	951	60.73%	0.01%	615	39.27%	1.24%	1,566	0.65
SAND TILEFISH	804	100.00%	0.01%	0	0.00%	0.00%	804	0.00
BLUEFIN TUNA	691	100.00%	0.00%	0	0.00%	0.00%	691	0.00
MAKO SHARK	450	92.78%	0.00%	35	7.22%	0.07%	485	0.08
BLACK SEA BASS	444	97.80%	0.00%	10	2.20%	0.02%	454	0.02
ANGLER	290	100.00%	0.00%	0	0.00%	0.00%	290	0.00
BLACK WHITING	176	100.00%	0.00%	0	0.00%	0.00%	176	0.00
BIG EYE TUNA	179	100.00%	0.00%	0	0.00%	0.00%	179	0.00
AMERICAN EEL	150	100.00%	0.00%	0	0.00%	0.00%	150	0.00
REDFISH	149	100.00%	0.00%	0	0.00%	0.00%	149	0.00
MIX RED & WHITE HAKE	125	73.53%	0.00%	45	26.47%	0.09%	170	0.36
WHITE HAKE	125	100.00%	0.00%	0	0.00%	0.00%	125	0.00
SWORDFISH	115	100.00%	0.00%	0	0.00%	0.00%	115	0.00
SKATES OTHER	104	100.00%	0.00%	0	0.00%	0.00%	104	0.00
FISH OTHER	100	100.00%	0.00%	0	0.00%	0.00%	100	0.00
CUSK	97	100.00%	0.00%	0	0.00%	0.00%	97	0.00

Table 11 (continued). Catch disposition for directed golden tilefish trips[a], Maine through Virginia, 2008-2017 combined.

Common name	Kept pounds	% species	% total	Discarded pounds	% species	% total	Total pounds	Disc: Kept ratio
ALBACORE TUNA	75	100.00%	0.00%	0	0.00%	0.00%	75	0.00
SUMMER FLOUNDER	50	76.92%	0.00%	15	23.08%	0.03%	65	0.30
BLACK TIP SHARK	50	100.00%	0.00%	0	0.00%	0.00%	50	0.00
PORBEAGLE SHARK	45	100.00%	0.00%	0	0.00%	0.00%	45	0.00
BLUEFISH	37	1.19%	0.00%	3,070	98.81%	6.17%	3,107	82.97
WEAKFISH SQUETEAGUE	16	100.00%	0.00%	0	0.00%	0.00%	16	0.00
HAGFISH	5	100.00%	0.00%	0	0.00%	0.00%	5	0.00
POLLOCK	17	20.73%	0.00%	65	79.27%	0.13%	82	3.82
TIGER SHARK	0	0.00%	0.00%	13,420	100.00%	26.96%	13,420	--
SKATE BARDOOR	0	0.00%	0.00%	4,937	100.00%	9.92%	4,937	--
DOGFISH CHAIN	0	0.00%	0.00%	3,748	100.00%	7.53%	3,748	--
JONAH CRAB	0	0.00%	0.00%	1,850	100.00%	3.72%	1,850	--
LOBSTER	0	0.00%	0.00%	996	100.00%	2.00%	996	--
BLUE SHARK	0	0.00%	0.00%	680	100.00%	1.37%	680	--
BIG SKATE	0	0.00%	0.00%	220	100.00%	0.44%	220	--
HAMMERHEAD SHARK	0	0.00%	0.00%	100	100.00%	0.20%	100	--
SHARK OTHER	0	0.00%	0.00%	60	100.00%	0.12%	60	--
ALL SPECIES	14,273,717	99.65%	100.00%	49,777	0.35%	100.00%	14,323,494	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 = 1,182.

Golden tilefish incidental commercial fishery landings in FY 2018 are slightly ahead of FY 2017 landings (Figure 4; as of the week ending January 31, 2018). Incidental golden tilefish commercial landings for the last five fishing years are shown in Table 12.

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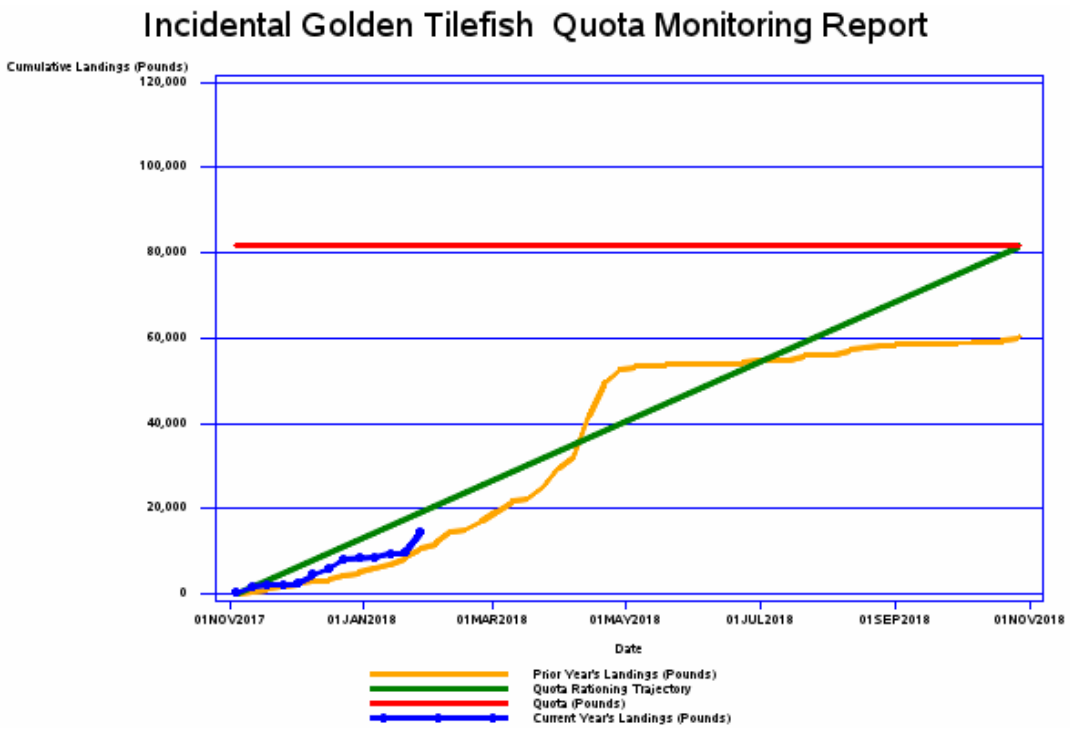

Figure 4. Incidental commercial landings for 2018 FY to date (Through January 31, 2018). Blue Line = FY 2018, Orange Line = FY 2017.
Source: http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm.

Table 12. Incidental golden tilefish commercial landings for 2013-2017 fishing years.

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

Source: http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm.

Recreational Fishery

A small recreational fishery briefly occurred during the mid-1970's, with less than 100,000 pounds annually (MAFMC 2001). Subsequent recreational catches have been low for the 1982 - 2016 period, ranging from zero for most years to approximately 30,000 fish in 2010 according to NMFS recreational statistics (Table 13). In 2017, approximately 16,000 fish were landed.

Vessel trip report (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). In 2017, party/charter anglers kept 2,334 fish. 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 2.6 fish for the 1996-2017 period.

According to VTR data, for the 1996 through 2017 period, the largest amount of golden tilefish caught by party/charter vessels were made by New Jersey vessels (36,519), followed by New York (10,446), Virginia (790), Delaware (771), Massachusetts (496), and Maryland (381; Table 15). The number of golden tilefish discarded by recreational anglers is low. According to VTR data, on average, approximately 8 fish per year were discarded by party/charter recreational anglers for the 1996 through 2017 period (165 discarded fish in total). The quantity of golden tilefish discarded by party/charter recreational anglers ranged from zero in most years to 60 in 2015.

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

Anglers are highly unlikely to catch golden tilefish while targeting tuna on tuna fishing trips. However, these boats may fish for golden tilefish at any time during a tuna trip (i.e., when the tuna limit has been reached, on the way out or on the way in from a tuna fishing trip, or at any time when tuna fishing is slow). While fishing for tuna recreational anglers may trawl using rod and reel (including downriggers), handline, and bandit gear.[5] 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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[5] 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, 1982-2017.

Year	Landed no. A and B1				Released no. B2 private	
	Party/charter		Private			
1982	0		984	(72.4)	0	
1983	0		0		0	
1984	0		0		0	
1985	0		0		0	
1986	0		0		0	
1987	0		0		0	
1988	0		0		0	
1989	0		0		0	
1990	0		0		0	
1991	0		0		0	
1992	0		0		0	
1993	0		0		0	
1994	608	(100.0)	0		0	
1995	0		0		0	
1996	6,842	(50.9)	0		0	
1997	0		0		0	
1998	0		0		0	
1999	0		0		0	
2000	0		0		0	
2001	148	(100.0)	0		0	
2002	0		20,068	(59.4)	1,338	(100.0)
2003	722	(69.1)	0		0	
2004	62	(99.3)	0		0	
2005	0		0		0	
2006	541	(100.4)	0		0	
2007	1,330	(78.3)	0		0	
2008	0		0		0	
2009	177	(87.8)	0		0	
2010	2,812	(90.5)	27,514	(77.2)	0	
2011	0		0		0	
2012	0		0		0	
2013	1,248	(100.0)	0		0	
2014	0		0		0	
2015	0		0		0	
2016	0		12,273	(81.0)	0	
2017	0		15,525	(52.1)	0	

Source: Recreational Fisheries Statistics Queries: http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index. PSE (proportional standard error) 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. 2017 values are preliminary.

Table 14. Number of golden tilefish kept by party/charter anglers and mean effort from Maine through Virginia, 1996 through 2017.

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	2,334	3.3
All	49,535	2.6

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Table 15. Number of golden tilefish caught by party/charter vessels by state, 1996 through 2017.

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	6,599
2014	0	0	0	3	957	5,716	180	40	73	6,866
2015	14	0	0	0	637	7,376	100	56	174	8,357
2016	0	0	0	0	676	5,073	69	43	67	5,787
2017	0	0	0	0	424	1,737	118	0	22	2,301
All	14	496	182	3	10,446	36,519	771	381	790	49,622

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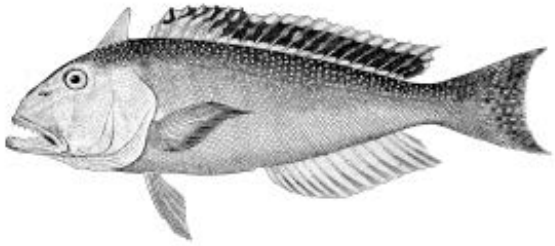
Golden Tilefish, *Lopholatilus chamaeleonticeps*, data update through 2017 in the Middle Atlantic-Southern New England Region



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Introduction

Golden tilefish, *Lopholatilus chamaeleonticeps*, inhabit the outer continental shelf from Nova Scotia to South America, and are relatively abundant in the Southern New England to Mid-Atlantic region at depths of 80 to 440 m. Tilefish have a narrow temperature preference of 9 to 14 C. Their temperature preference limits their range to a narrow band along the upper slope of the continental shelf where temperatures vary by only a few degrees over the year. They are generally found in and around submarine canyons where they occupy burrows in the sedimentary substrate. Tilefish are relatively slow growing and long-lived, with a maximum observed age of 46 years and a maximum length of 110 cm for females and 39 years and 112 cm for males (Turner 1986). At lengths exceeding 70 cm, the predorsal adipose flap, characteristic of this species, is larger in males and can be used to distinguish the sexes. Tilefish of both sexes are mature at ages between 5 and 7 years (Grimes et. al. 1988).

Golden Tilefish was first assessed at SARC 16 in 1992 (NEFSC 1993). The Stock Assessment Review Committee (SARC) accepted a non-equilibrium surplus production model (ASPIC). The ASPIC model estimated biomass-based fishing mortality (F) in 1992 to be 3-times higher than F_{MSY}, and the 1992 total stock biomass to be about 40% of B_{MSY}. The intrinsic rate of increase (r) was estimated at 0.22.

The Science and Statistical Committee reviewed an updated tilefish assessment in 1999. Total biomass in 1998 was estimated to be 2,936 mt, which was 35% of B_{MSY} = 8,448 mt. Fishing mortality was estimated to be 0.45 in 1998, which was about 2-times higher than F_{MSY} = 0.22. The intrinsic rate of increase (r) was estimated to be 0.45. These results were used in the development of the Tilefish Fishery Management Plan (Mid-Atlantic Fishery Management Council 2000). The Mid-Atlantic Fishery Management Council implemented the Tilefish Fishery Management Plan (FMP) in November of 2001. Rebuilding of the tilefish stock to B_{MSY} was based on a ten-year constant harvest quota of 905 mt.

SARC 41 reviewed a benchmark tilefish assessment in 2005. The surplus production model indicated that the tilefish stock biomass in 2005 has improved since the assessment in 1999. Total biomass in 2005 is estimated to be 72% of B_{MSY} and fishing mortality in 2004 is estimated to be 87% of F_{MSY}. Biological reference points did not change greatly from the 1999 assessment. B_{MSY} is estimated to be 9,384 mt and F_{MSY} is estimated to be 0.21. The SARC concluded that the projections are too uncertain to form the basis for evaluating likely biomass recovery schedules relative to B_{MSY}. The total allowable landings (TAL) and reference points were not changed based on the SARC 41 assessment.

Stock status from SARC 48 (2009) was also based on the ASPIC surplus production model which was the basis of the stock assessment for the last three assessments. The model is calibrated with CPUE series, as there are no fishery-independent sources of information on trends in population abundance. While the Working Group expressed concern about the lack of fit of the model to the VTR CPUE index at the end of the time series, they agreed to accept the estimates of current fishing mortality and biomass and associated reference points. The instability of model results in the scenario projections was also a source of concern. It was noted that the

bootstrap uncertainty estimates do not capture the true uncertainty in the assessment. The ASPIC model indicates that the stock is rebuilt. However, the working group acknowledges that there is high uncertainty on whether the stock is truly rebuilt.

The golden tilefish stock was last assessed at SARC 58 in 2014 with a terminal year of 2012 (http://nefsc.noaa.gov/publications/crd/crd1403/partb.pdf, http://nefsc.noaa.gov/publications/crd/crd1404/partb.pdf). The Golden Tilefish stock was not overfished and overfishing was not occurring in 2012 relative to the SARC 58 accepted biological reference points. The stock was declared rebuilt in 2014 by NMFS based of SARC 58 results which indicated that SSB was at 101% of the accepted SSB_{MSY}. A new model, ASAP, was used in this assessment to incorporate newly available length and age data. The ASAP model integrates more realistic life history information on size and growth into a single model framework and better characterizes the population dynamics of the tilefish stock.

A golden tilefish model update was done in 2017 with updated commercial fishery landings, landings size distributions, and CPUE indices of abundance through 2016. The Golden tilefish stock was not overfished and overfishing was not occurring in 2016 relative to the newly updated biological reference points.

In this report, commercial landings, longline fishery CPUE, and landings size distributions were updated an additional year of data through 2017. Commercial landings maps from 1998 to 2017 are also summarized in Appendix 1. Updated data is summarized in Tables 1 to 3 and Figures 1, 2, 4-7, 10-11. Figures 3, 8, and 9 are taken from the last data update in 2016 and have not been updated. Evidence of the strong 2013 year class that was predicted in the 2017 model update is evident in the updated 2017 data with an increase in the CPUE and tracking of a mode in the commercial size distribution.

Commercial catch data

Total commercial landings (live weight) increased from less than 125 metric tons (mt) during 1967-1972 to more than 3,900 mt in 1979 and 1980. Annual landings have ranged between 666 and 1,838 mt from 1988 to 1998. Landings from 1999 to 2002 were below 900 mt (ranging from 506 to 874 mt). An annual quota of 905 mt was implemented in November of 2001. Landings in 2003 and 2004 were slightly above the quota at 1,130 mt and 1,215 mt respectively. Landing from 2005 to 2009 have been at or below the quota. Landings in 2010 at 922 mt were slightly above the quota (Table 1, Figure 1). Since 2010 landings have been below the quota. The preliminary landings retrieval for 2017 as of 2/09/18 was 695 mt which was and increase from 2016 but remains below the TAL of 856 mt.

The TAL was reduced for the first time in 2015 to 796 mt from a TAL of 905 mt which was in place from 2001-2014. The TAL in 2016 and 2017 set at 856 mt based on projections from the SARC 58 assessment. The TAL was further reduced to 738 mt for 2018 to 2020 based on the model update in 2017.

During the late 1970s and early 1980s Barnegat, NJ was the principal tilefish port; more recently Montauk, NY has accounted for most of the landings. Most of the commercial landings are taken by the directed longline fishery. Discards in the trawl and longline fishery appear to be a minor component of the catch. Recreational catches have also appeared to be low and were not included as a component of the removals in the assessment model.

Commercial CPUE data

A fishery independent index of abundance does not exist for tilefish. Analyses of catch (landings) and effort data were confined to the longline fishery since directed tilefish effort occurs in this fishery (e.g. the remainder of tilefish landings are taken as bycatch in the trawl fishery). Most longline trips that catch tilefish fall into two categories: (a) trips in which tilefish comprise greater than 90% of the trip catch by weight and (b) trips in which tilefish accounted for less than 10% of the catch. Effort was considered directed for tilefish when at least 75% of the catch from a trip consisted of tilefish.

Three different series of longline effort data were analyzed. The first series was developed by Turner (1986) who used a general linear modeling approach to standardize tilefish effort during 1973-1982 measured in kg per tub (0.9 km of groundline with a hook every 3.7 m) of longline obtained from logbooks of tilefish fishermen. Two additional CPUE series were calculated from the NEFSC weighout (1979-1993) and the VTR (1995-2015) systems. Effort from the weighout data was derived by port agents' interviews with vessel captains whereas effort from the VTR systems comes directly from mandatory logbook data. In the SARC 58 assessment (2014) and in the 2009, 2005 and 1998 tilefish assessments, Days Absent was used as the best available effort metric. In the 1998 assessment an effort metric based on Days Fished (average hours fished per set / 24 * x number of sets in trip) was not used because effort data were missing in many of the logbooks and the effort data were collected on a trip basis as opposed to a haul by haul basis. In the SARC 58 assessment effort was calculated as:

Effort = days absent (time & date landed - time & date sailed) – 1 day per trip.

For some trips, the reported days absent were calculated to be a single day. This was considered unlikely, as a directed tilefish trip requires time for a vessel to steam to near the edge of the continental shelf, time for fishing, and return trip time. Thus, to produce a realistic effort metric based on days absent, a one day steam time for each trip (or the number of trips) was subtracted from days absents and therefore only trips with days absent greater than one day were used.

The number of vessels targeting tilefish has declined since the 1980s (Table 2, Figure 2); during 1994-2003 and 2005-2015, five vessels accounted for more than 70 percent of the total tilefish landings. The number of vessels targeting tilefish has remained fairly constant since the assessment in 2005. The length of a targeted tilefish trip had been generally increasing until the mid 1990s. At the time of the 2005 assessment trip lengths have shorten to about 5 days. Trip length has increased slightly until 2008 and has subsequently declined until 2011. Trip lengths have been increasing slightly since 2011 to about 8.5 days in 2017 (Figure 2). In the weighout

data the small number of interviews is a source of concern; very little interview data exists at the beginning of the time series (Table 2, Figure 3). The 5 dominant tilefish vessels make up almost all of the VTR reported landings.

The number of targeted tilefish trips declined in the early 1980s while trip length increased at the time the FMP was being developed in 2000 (Figures 2 and 4). During the 2005 assessment the number of trips became relatively stable as trip length decreased. The interaction between the number of vessels, the length of a trip and the number of trips can be seen in the total days absent trend in Figure 4. Total days absent remained relatively stable in the early 1980s, but then declined at the end of the weighout series (1979-1994). In the beginning of the VTR series (1994-2004) days absent increased through 1998 but declined to 2005. Days absent increased from 2005 to 2008 but subsequential declined until 2010. Again days absent increased from 2010 to 2014 and has subsequently declined. When interpreting total days absent trends, it is important to note with improvements in data collection more recently that the subset of CPUE landings makes up a greater proportion of the total dealer landings (Figure 4).

CPUE trends are very similar for most vessels that targeted tilefish. A sensitivity test of the general linear model (GLM) using different vessel combinations was done in SARC 41. The SARC 41 GLM was found not to be sensitive to different vessels entering the CPUE series. Very little CPUE data exist for New York vessels in the 1979-1994 weighout series despite the shift in landing from New Jersey to New York before the start of the VTR series in 1994. Splitting the weighout and VTR CPUE series can be justified by the differences in the way effort was measured and difference in the tilefish fleet between the series. In breaking up the series we omitted 1994 because there were very little CPUE data. The sparse 1994 data that existed came mostly from the weighout system in the first quarter of the year. Very similar trends exist in the four years of overlap between Turner (1986) CPUE and the weighout series (Figure 5). At SARC 58 additional logbook data for three New York vessels was collected from New York fishermen from 1991-1994 and added to the VTR series. This was done to provide more information (years of overlap) in the modeling between the Weighout and the VTR series.

Since 1979, the tilefish industry has changed from using cotton twine to steel cable for the backbone and from J hooks to circle hooks. The gear change to steel cable and snaps started on New York vessels in 1983. In light of possible changes in catchability associated with these changes in fishing gear, the working group considered that it would be best to use the three available indices separately rather than combined into one or two series. The earliest series (Turner 1986) covered 1973-1982 when gear construction and configuration was thought to be relatively consistent. The Weighout series (1979-1993) overlapped the earlier series for four years and showed similar patterns and is based primarily on catch rates from New Jersey vessels. The VTR (1991-2017) series is based primarily on information from New York vessels using steel cable and snaps.

The NEFSC Weighout and VTR CPUE series were standardized using a GLM incorporating year and individual vessel effects. The CPUE was standardized to an individual longline vessel and the year 1984; the same year used in the last assessment. For the VTR series the year 2000 was used as the standard. Model coefficients were back-transformed to a linear

scale after correcting for transformation bias. The updated GLM model that accounted for individual vessel effects appears to show more of an overall increasing trend in CPUE in comparison to the nominal series (Figure 6).

More recently changes in the CPUE can be generally explained with evidence of strong incoming year classes that track through the landings size composition over time (See below). Since the SARC 58 assessment there appear to be increases in CPUE due to one or two new strong year classes. In general, strong year classes appear to persist longer in the fishery after the FMP and after the constant quota management came into effect which is evident in both the CPUE and size composition data. The CPUE has increased in 2017 which is consistent with the growth of a strong 2013 year class.

Commercial market category and size composition data

Seven market categories exist in the database. From smallest to largest they are: extra small, small, kitten, medium, large/medium, large and extra-large as well as an unclassified category. Differences in the naming convention among ports tend to cause some confusion. For example, small and kitten categories reflect similar size fish. Smalls is the naming convention used in New Jersey whereas the kitten market category is used primarily in New York ports. A new code was recently developed for the large-medium category in 2013 and 2014. In 2014 it appears that fish which would have been called unclassified in the past are now being correctly coded as large-mediums.

The proportion of landings in the kittens and small market categories increased in 1996 and 1997. Evidence of several strong recruitment events can be seen tracking through the market category proportions (Table 3, Figures 7). The proportion of the large market category has been relatively low in the 1990s until around 2004. The proportion of larges has increased since 2005. The strong year class tracking through the small kitten and mediums in the late 1990s did not materialize into the large market category.

Evidence of two strong recruitment events can be seen tracking through these market categories. At the time of the 2005 tilefish assessment the proportion of large market category had declined since the early 1980s. However more recently a greater proportion of the landings are coming from the large market category as the last strong year class (1999) has grown (Table 3, Figure 7). Commercial length sampling was inadequate over most of the early time series. However, some commercial length sampling occurred in the mid to late 1990s. More recently there has been a substantial increase in the commercial length sampling from 2003 to 2015.

Commercial length frequencies were expanded for years where sufficient length data exist (1995-1999 and 2002-2015). The large length frequency samples from 1996 to 1998 were used to calculate the 1995 to 1999 expanded numbers at length while the large length samples from 2001 and 2003 were used to calculate the 2002 expanded numbers at length. No lengths for extra small (xs) exist in 2013. In 2013 kittens' lengths were used to characterize the extra small category.

Evidence of strong 1992/1993 and 1998/1999 year classes can be seen in the expanded numbers at length in the years when length data existed (1995-1999, 2002-2008, and 2008-2014) (Figures 8 to 11). The matching of modes in the length frequency with ages was done using Turner's (1986) and Vidal's (2009) growth studies and the 2007-2013 catch at age information. In 2004 and 2005 the 1998/1999 year class can be seen growing into the medium market category and in 2006 and 2007 the year class has entered the large market category (Figure 9). From 2002 to 2007 it appears that most of the landings were comprised of this year class.

A similar pattern occurred with the 2005 year class from 2009-2013. An increase in the landings and CPUE can be seen when the 1992/1993, 1998/1999 and 2005 year classes recruit to the longline fishery. As the year classes gets older the catch rates decline. At this point the catch also gets more widely distributed over multiple year classes. This can be seen in 2007-2008 and 2012-2015 (Figure 9). CPUE appears to decline as the strong year classes get older than about 6 years. From 2013 to 2015 catch appears to be comprised of multiple year classes with a wide distribution of fish sizes being caught as the catch rates have declined in the VTR series (Figure 10).

Concern was expressed at SARC 48 (2009) with little evidence of an incoming year class, catch rates declining and the mismatch between the biomass trends predicted by the surplus production model in comparison to the observed CPUE at the end of the time series. However, since the 2009 assessment there is evidence of a strong year class (2005) tracking through the landings size distributions. In 2012 that year class has entered the large market category and as expected, there is a decline in the CPUE since 2011. However, there is also some evidence of a broader size distribution of the fish being caught from 2011 to 2015 which suggests the fishery is less reliant on a single year class and that larger fish remain in the population.

The updated data in 2017 appears to comport with the 2017 model update with a 2016 terminal year. The model update predicted a strong 2013 year class which began to enter the fishery in 2016. This 2018 data update did show increases in CPUE as the strong year class became more selected by the fishery in 2017. There is also evidence for the 2013 year class with the tracking of the length model in the landings at length. The 2017 model update indicates that this year class was about 50% selected in 2017 and is predicted to be 100% selected in 2018. Therefore, catch rates in 2018 are predicted to continue to increase. However, considerable uncertainty remains with the estimated size of the 2013 year class since the model was not updated in 2018 to reestimate the size of the year class.

Conclusions

Landings have remained between 814 and 845 mt from 2012 to 2014. Landing has declined in 2016 to 494 mt which appears to be the result of a combination of lower catch rates and some inactive vessels. However landing have increase in 2017 to 695 mt. Updated CPUE in 2017 has also increase relative to 2016 which appears to be consistent with a strong 2013 year class that was estimated in the 2017 model update. The commercial size distribution provided further evidence for the strong 2013 year class with the tracking of the length mode into the kitten and small market categories.

Table 1. Landings of tilefish in live metric tons from 1915-2017. 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 2004-2017 is from Dealer electronic reporting. - indicates missing data. * Preliminary data retrieved on 1/17/18.

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		
1929	2,096	1974	586		
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 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 2017 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.

	Weighout		Commerical CPUE data subset								
	& Dealer	vtr	interview	No.	% interview	No.	subset	days	No.	da per	nominal
year	landings	landings	landings	interviews	trips	vessels	landings	absent	trips	trip	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	635				9	527	725	85	8.5	0.76

Table 3. Landing (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	695

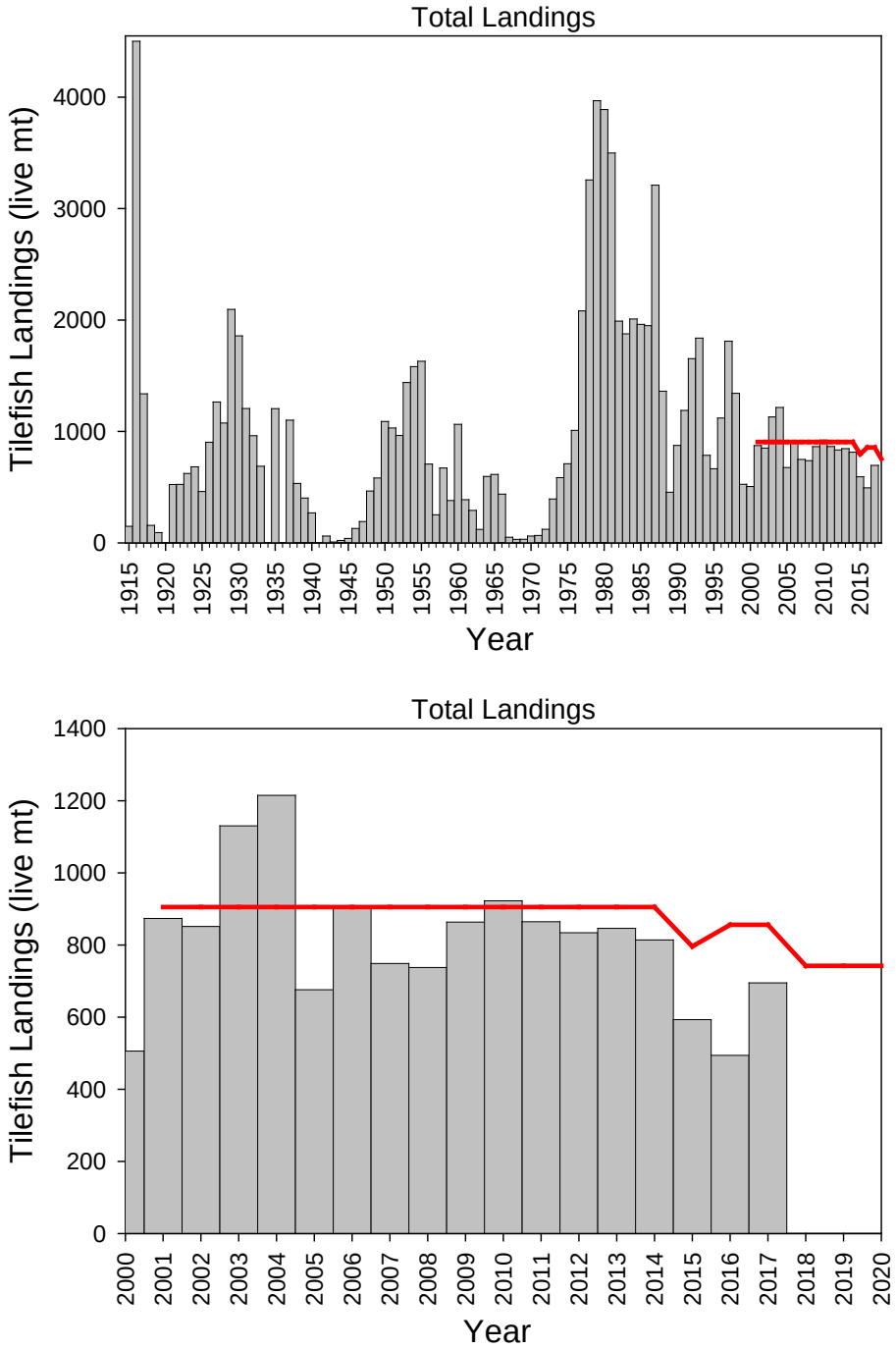


Figure 1. Landings of tilefish in metric tons from 1915-2015 (top) and from 2000-2015 (bottom). Landings in 1915-1972 are from Freeman and Turner (1977), 1973-1989 are from the general canvas data, 1990-1993 are from the weighout system, 1994-2003 are from the dealer reported data, and 2004-2015 is from dealer electronic reporting. Preliminary landings retrieved on 1/17/18. Red line is the TAL from 2001-2020.

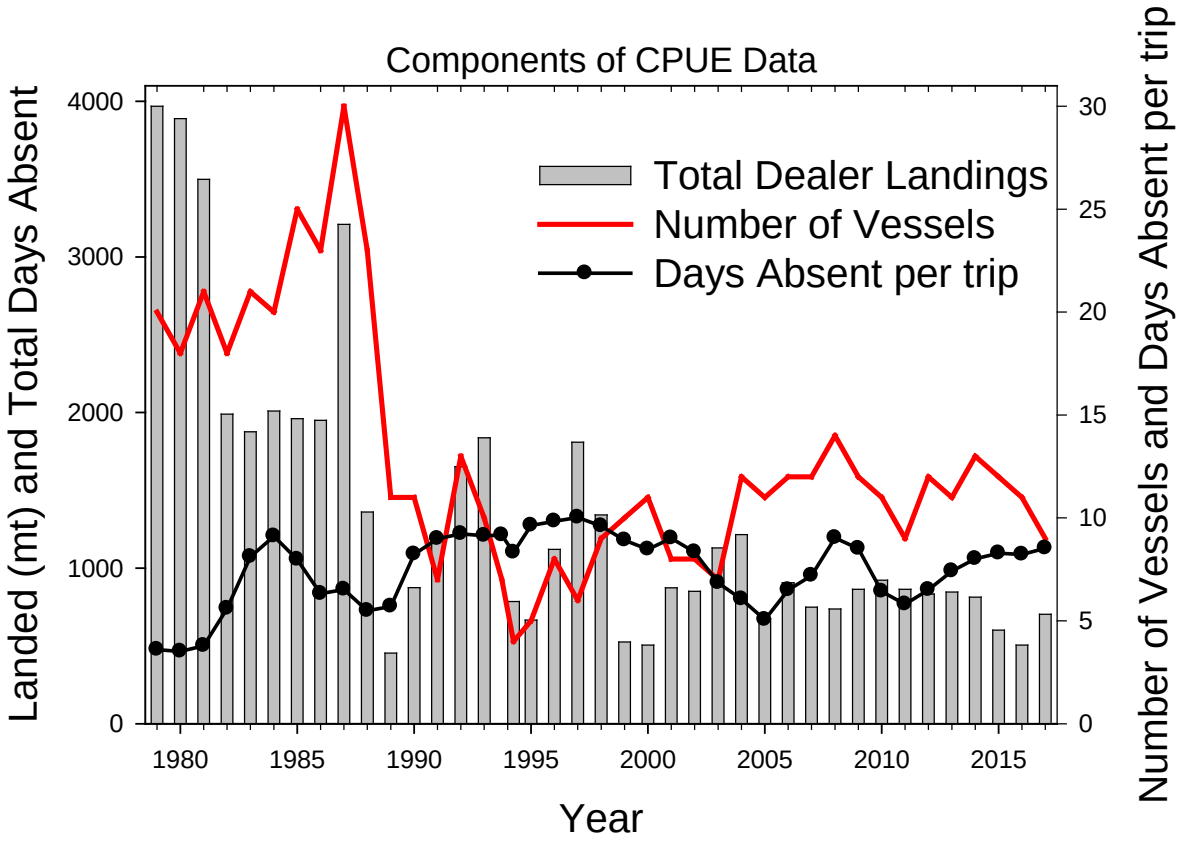


Figure 2. Number of vessels and length of trip (days absent per trip) for trips targeting tilefish (= or >75% tilefish) from 1979-2017. Total Dealer landings are also shown.

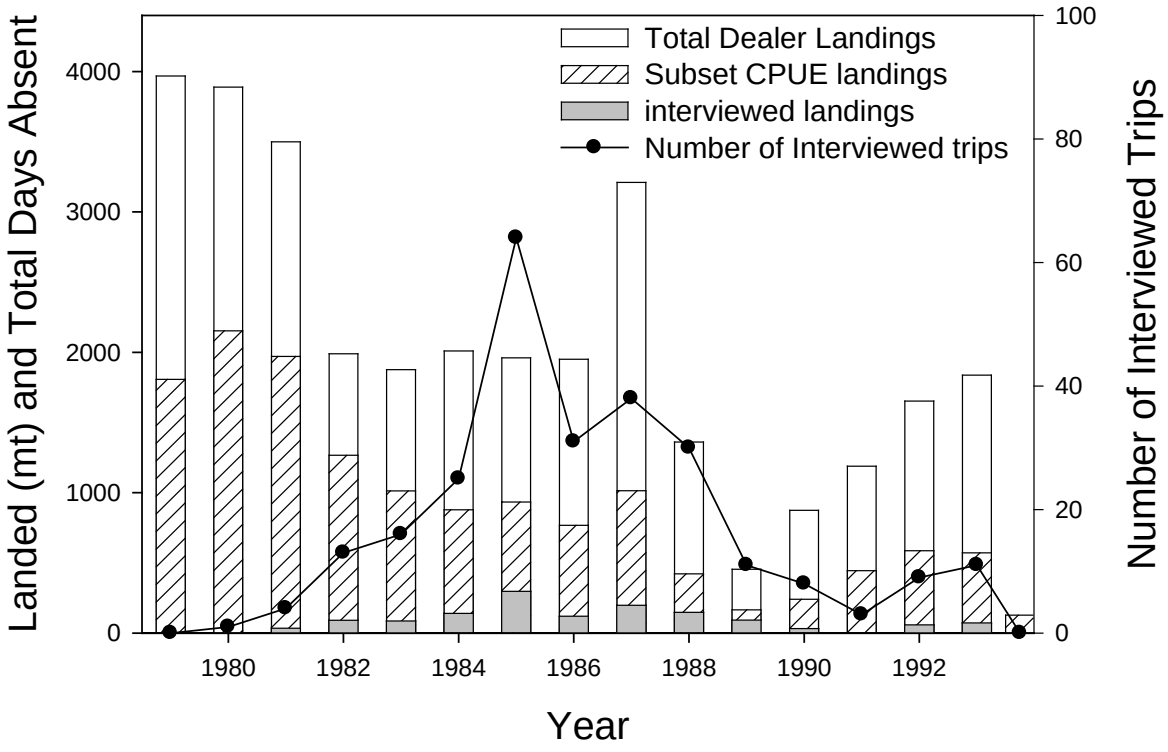


Figure 3. Number of interviewed trips and interviewed landings for trips targeting tilefish (= or >75% tilefish) for the Weighout data from 1979-1994. Total Weighout landings and the subset landings used in CPUE estimate are also shown.

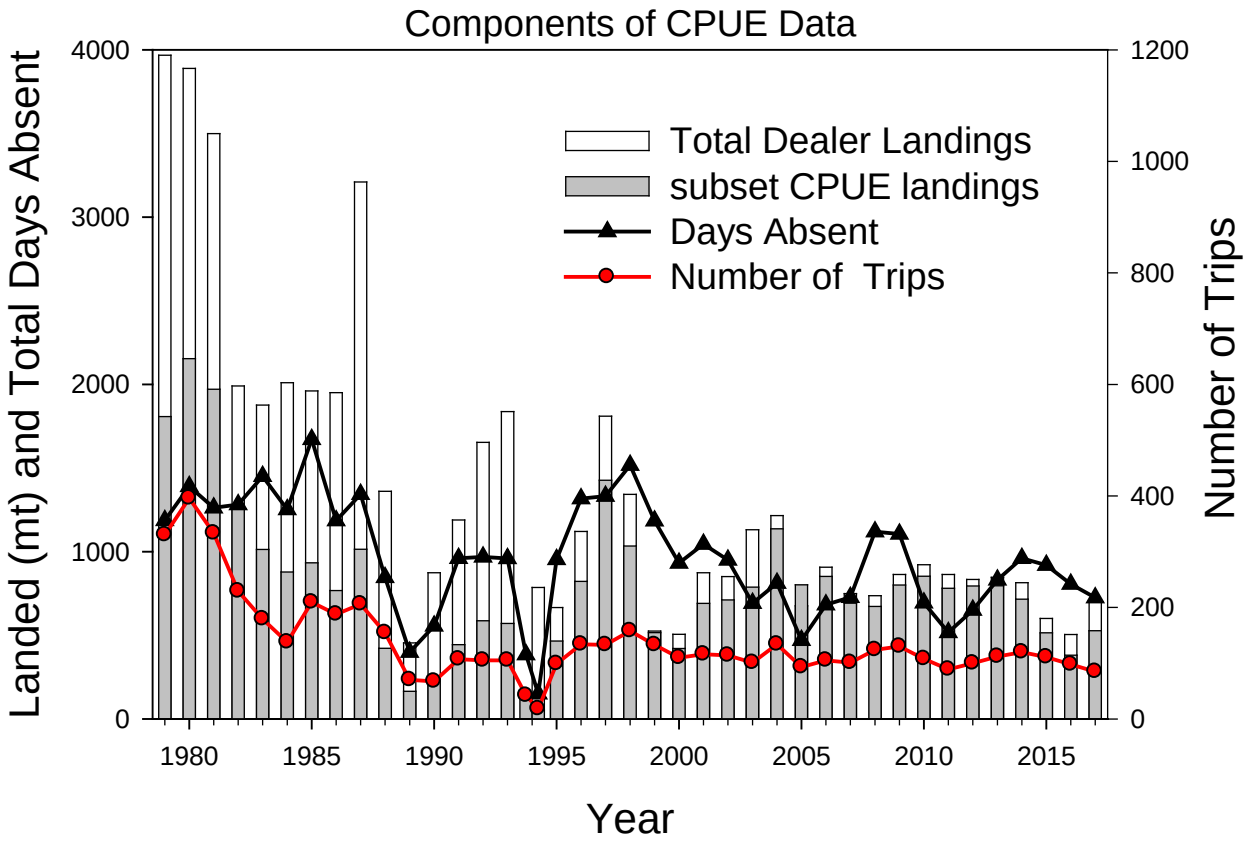


Figure 4. Total number of trips and days absent for trips targeting tilefish (= or >75% tilefish) from 1979-2017. Total Dealer and CPUE subset landings are also shown

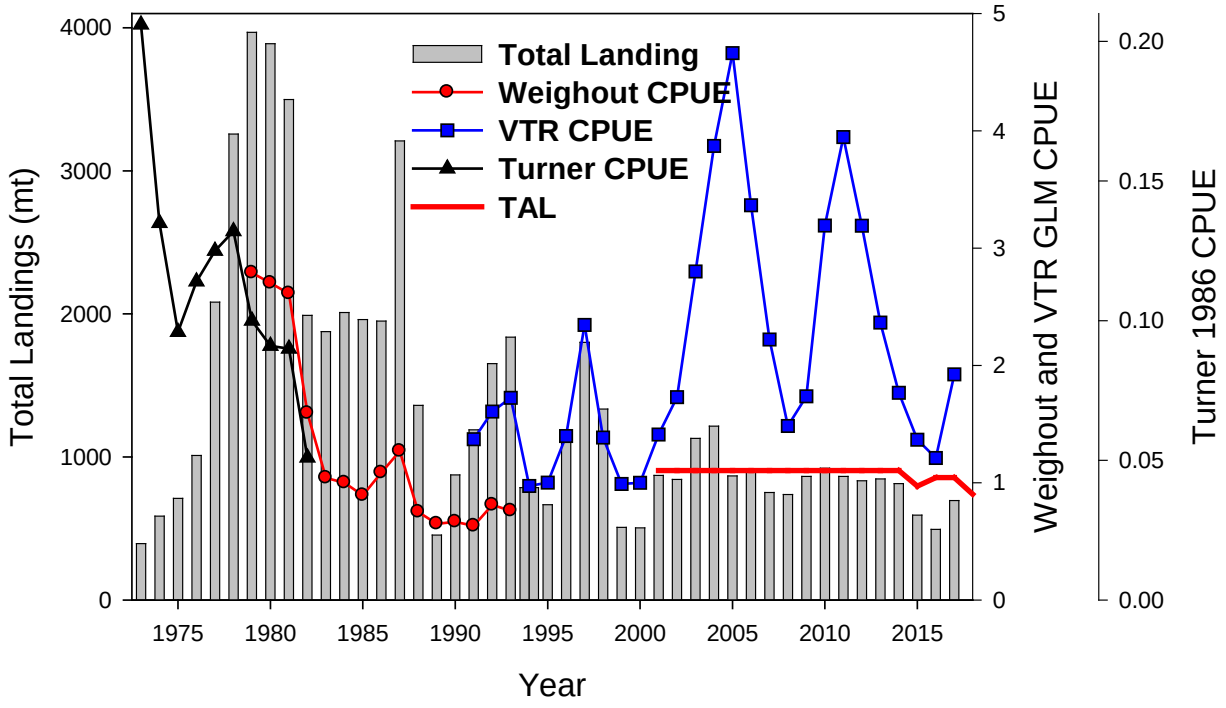


Figure 5. GLM CPUE for the Weighout and VTR data split into two series with additional New York logbook CPUE data from three vessels (1991-1994) added to the VTR series. Four years of overlap between Turner's and the Weighout CPUE series can also be seen. ASAP relative changes in qs amount CPUE series were not incorporated into the plot. Assumed total landings are also shown. Landing in 2005 was taken from the IVR system. Red line is the TAL.

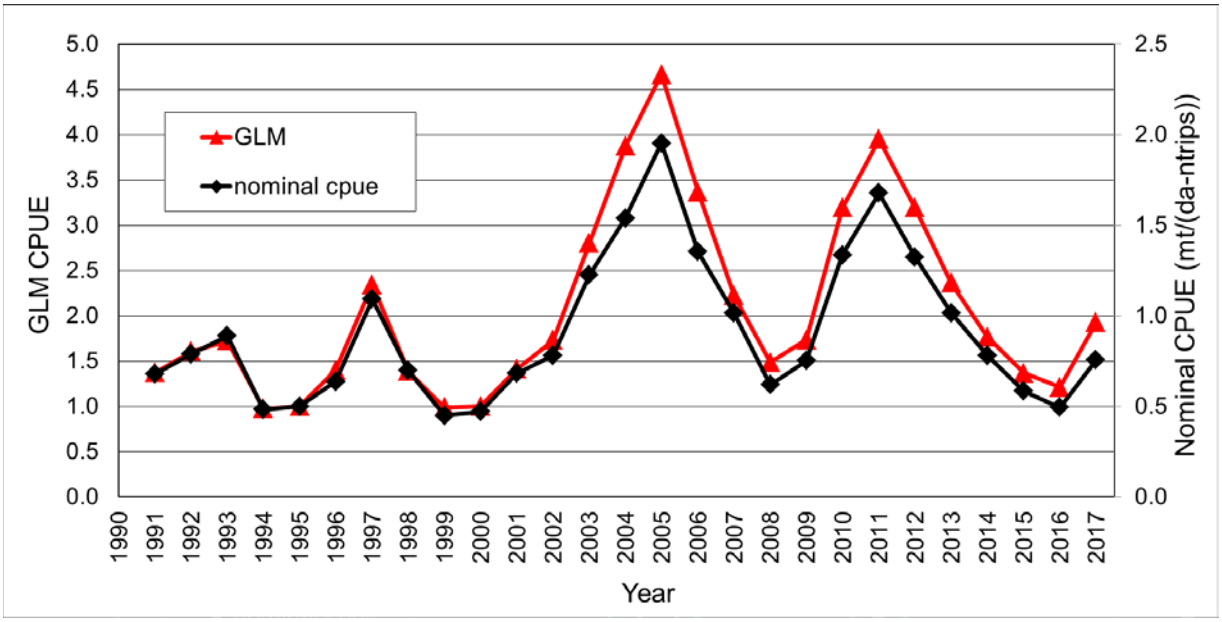


Figure 6. Comparison of the nominal and GLM VTR CPUE indices for golden tilefish with additional New York logbook CPUE data from three vessels (1991-1994) added to the VTR series.

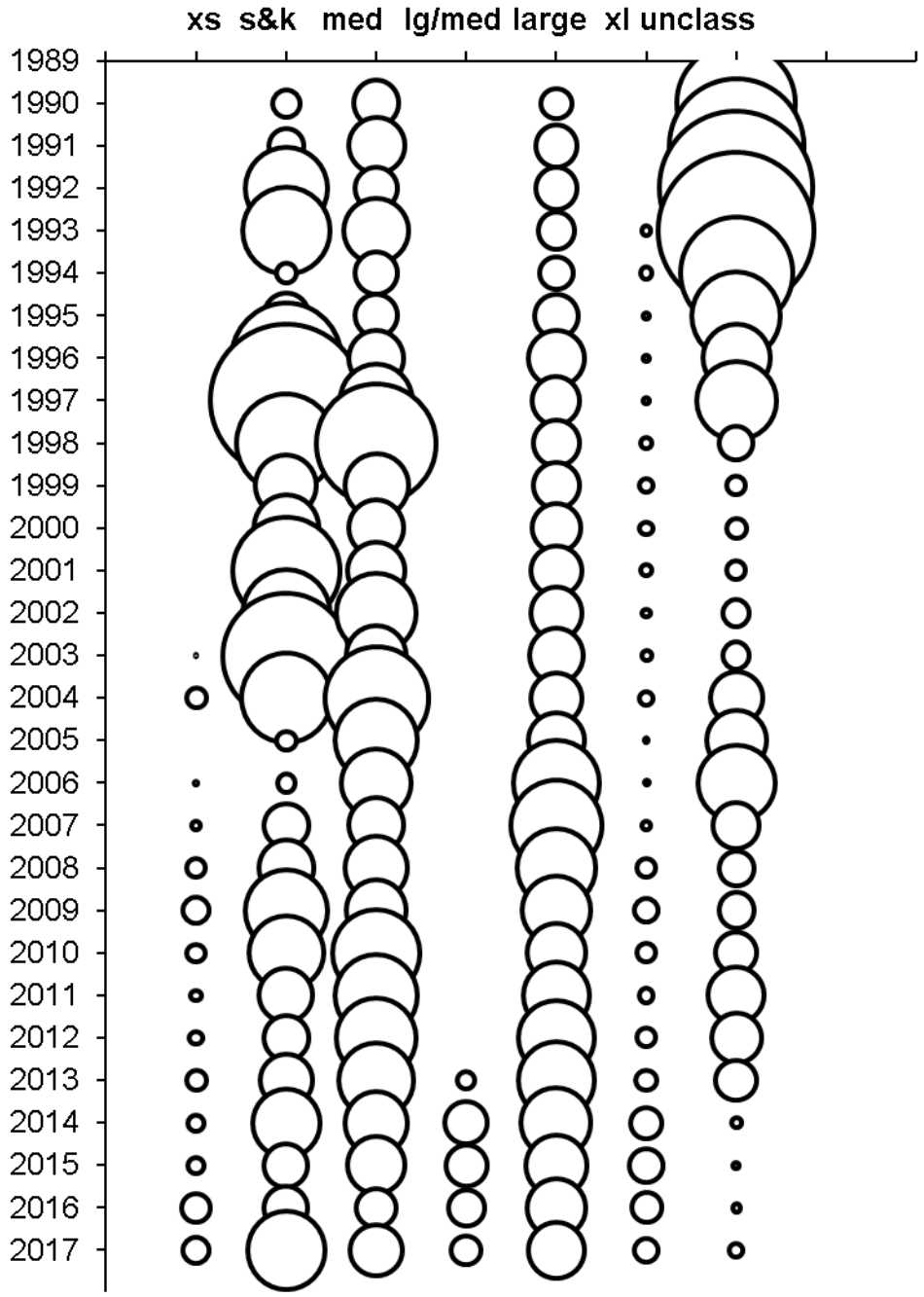


Figure 7. Bubble plot of Golden tilefish landings by market category. Large-medium market category code was added in 2013 and 2015. Smalls and Kittens (s&k) were combined since these categories possess similar size fish.

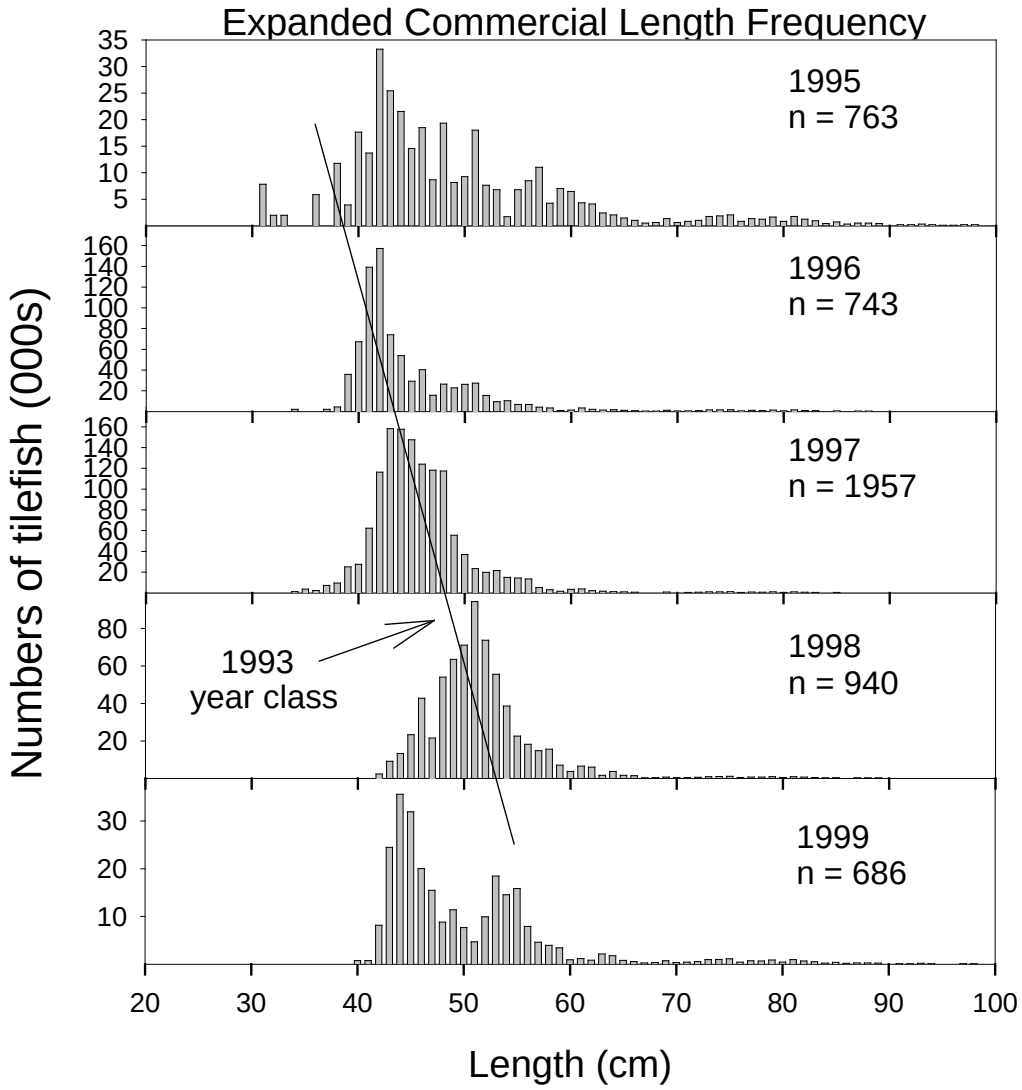


Figure 8. Expanded length frequency distributions by year. Large market category lengths used from 1995 to 1999 were taken from years 1996, 1998, and 1998. Smalls and kittens were combined and large and extra large were also combined.

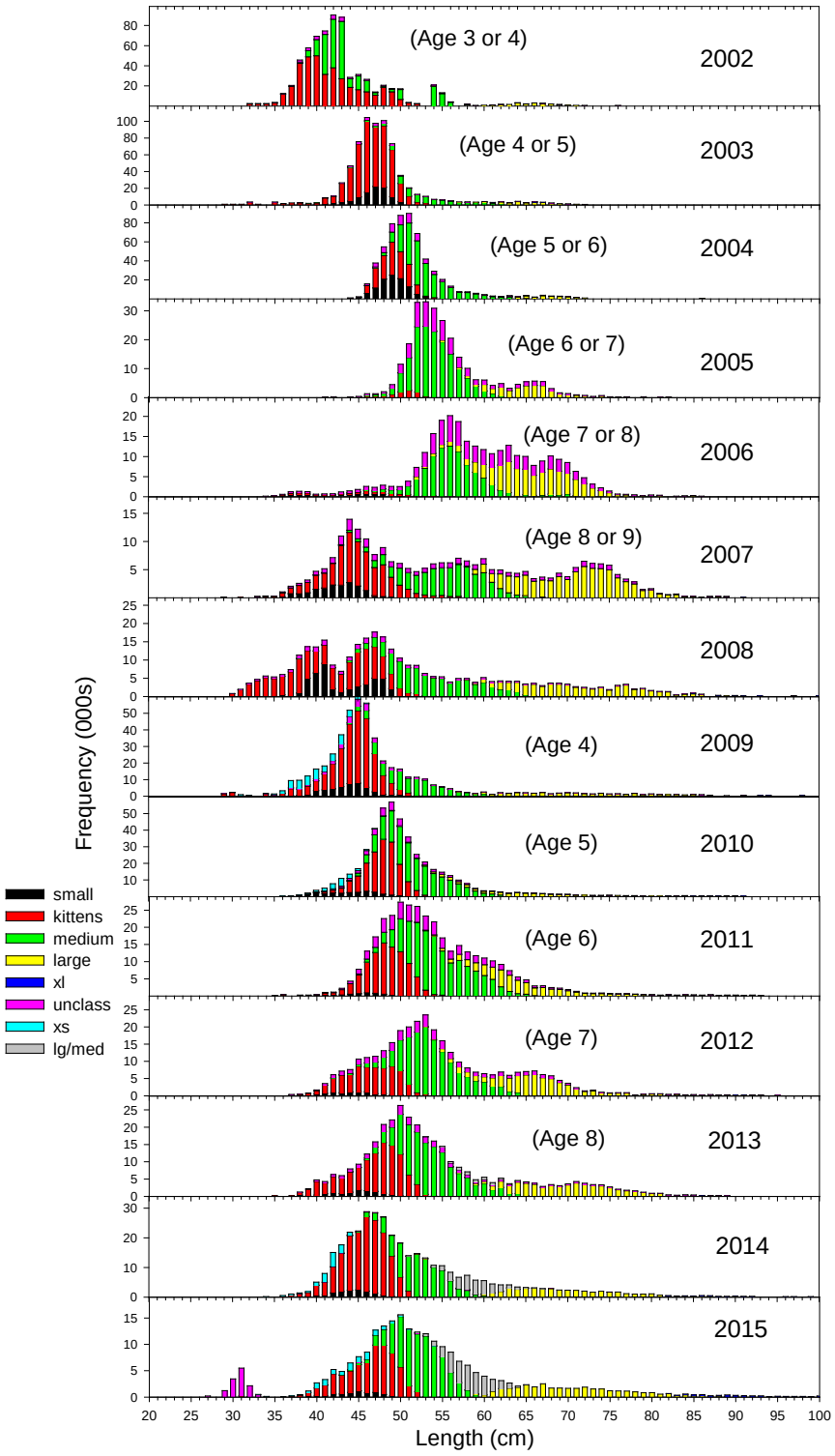


Figure 9. Expanded length frequency distributions from 2002 to 2015. Kittens lengths were used to characterize the extra small category in 2013. Y-axis is allowed to rescale.

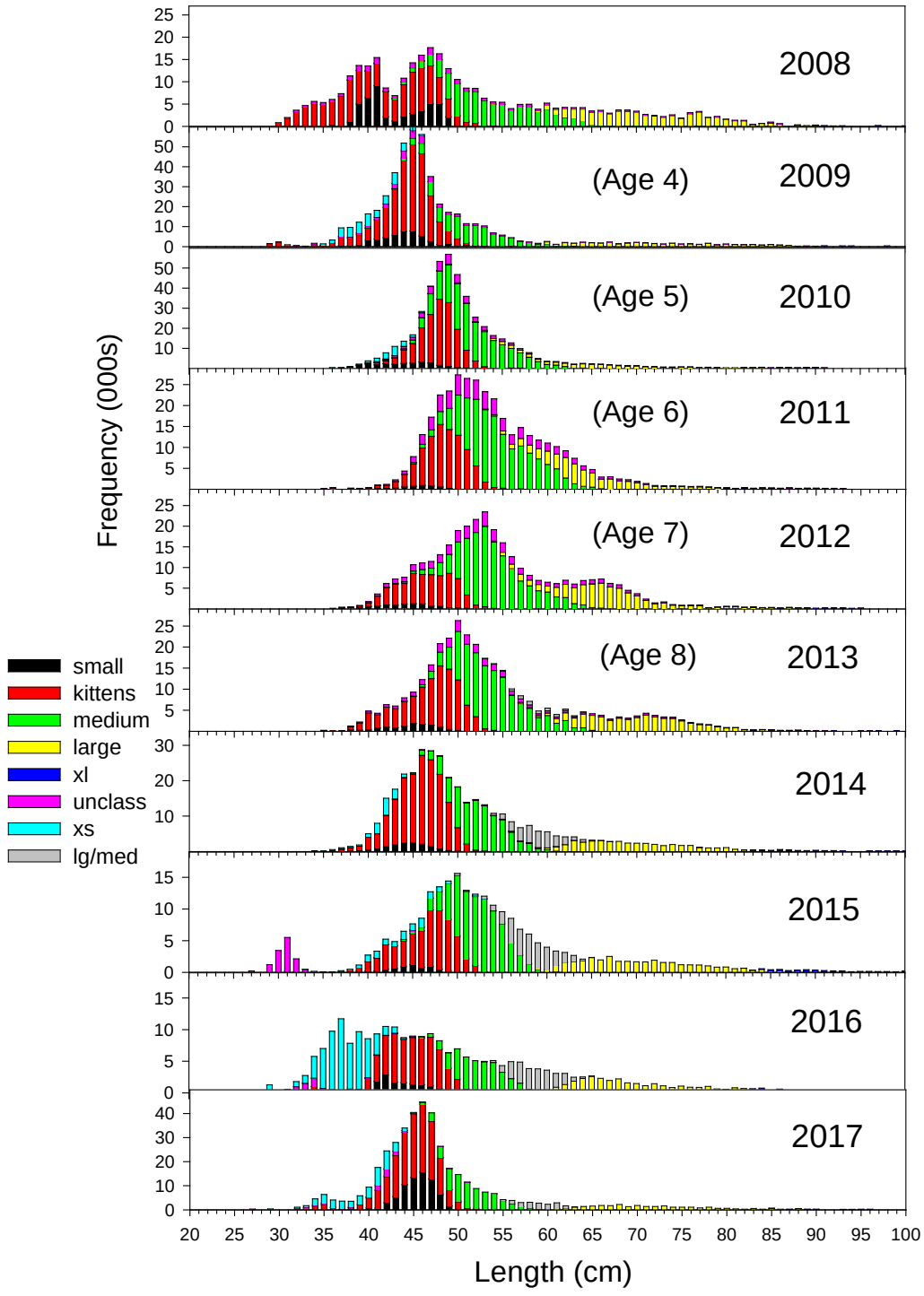


Figure 10. Expanded length frequency distributions from 2007 to 2017. No lengths for extra small (xs) exist in 2013. Kittens lengths were used to characterize the extra small category in 2013. No length samples for unclassified were used from 2007-2014. Unclassifieds in 2015 are based on two samples. Y-axis is allowed to rescale.

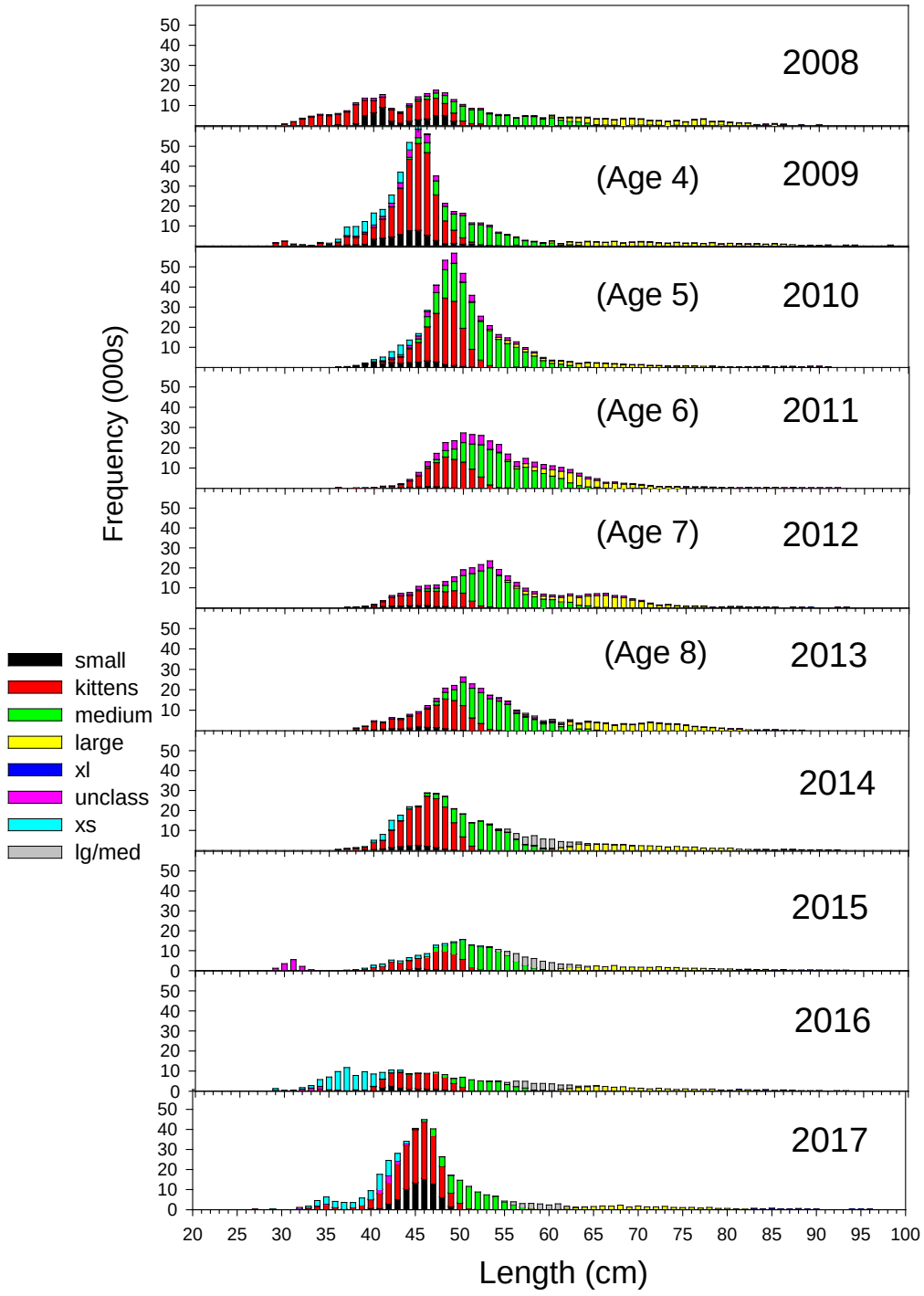
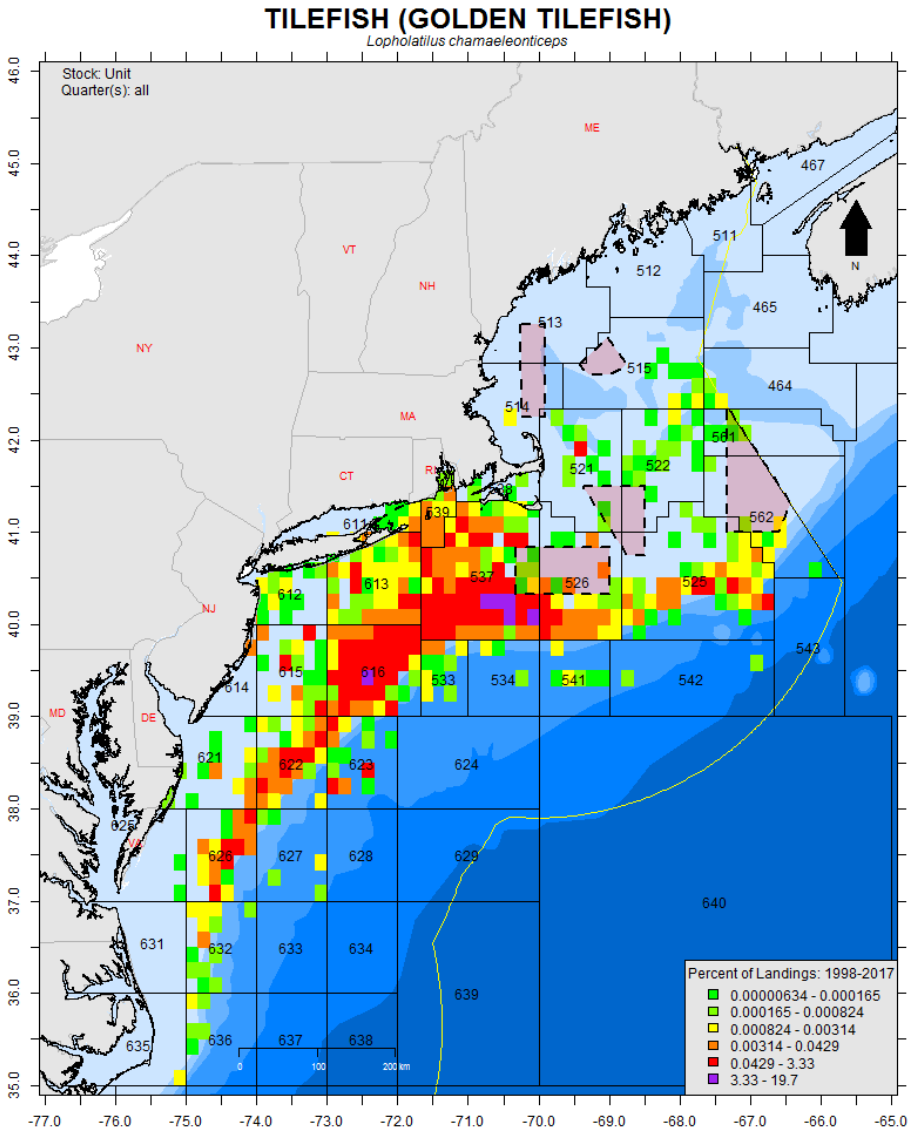
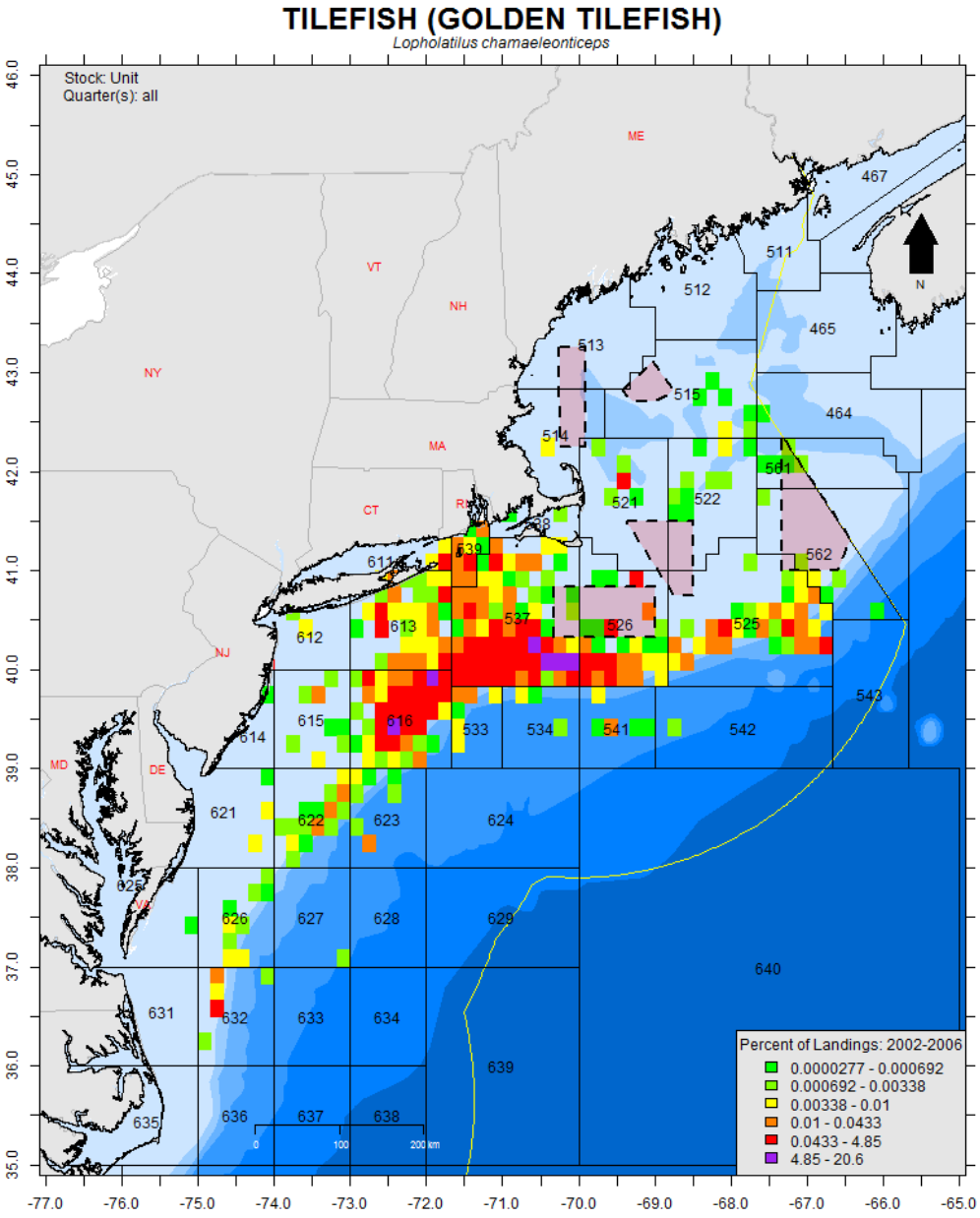


Figure 11. Expanded length frequency distributions from 2002 to 2017. Kittens lengths were used to characterize the extra small category in 2013. No length samples for unclassified were used from 2007-2014. Unclassifieds in 2015 are based on two samples. Y-axis scales is fixed.

Appendix 1. Golden tilefish 1998-2017 commercial landing (vessel trip reports) distributions maps (1998-2017, 2002-2006, 2007-2011, 2012-2016, 2012, 2013, 2014, 2015 & 2016). See map legend for specified years. Northeast Fisheries Science Center statistical areas are represented by numbered polygons and bathymetry is depicted in blue shading. Groundfish closed areas (dashed borders), and the Exclusive Economic Zone (yellow line) have been overlaid for your reference. Special thanks to Chris Kholke for providing these maps.




TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
ME
VT
NH
NY
MA
CT
RI
NJ
MD
DE
VA
467
511
512
465
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515
464
514
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521
522
562
539
611
613
537
526
525
612
543
615
616
533
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621
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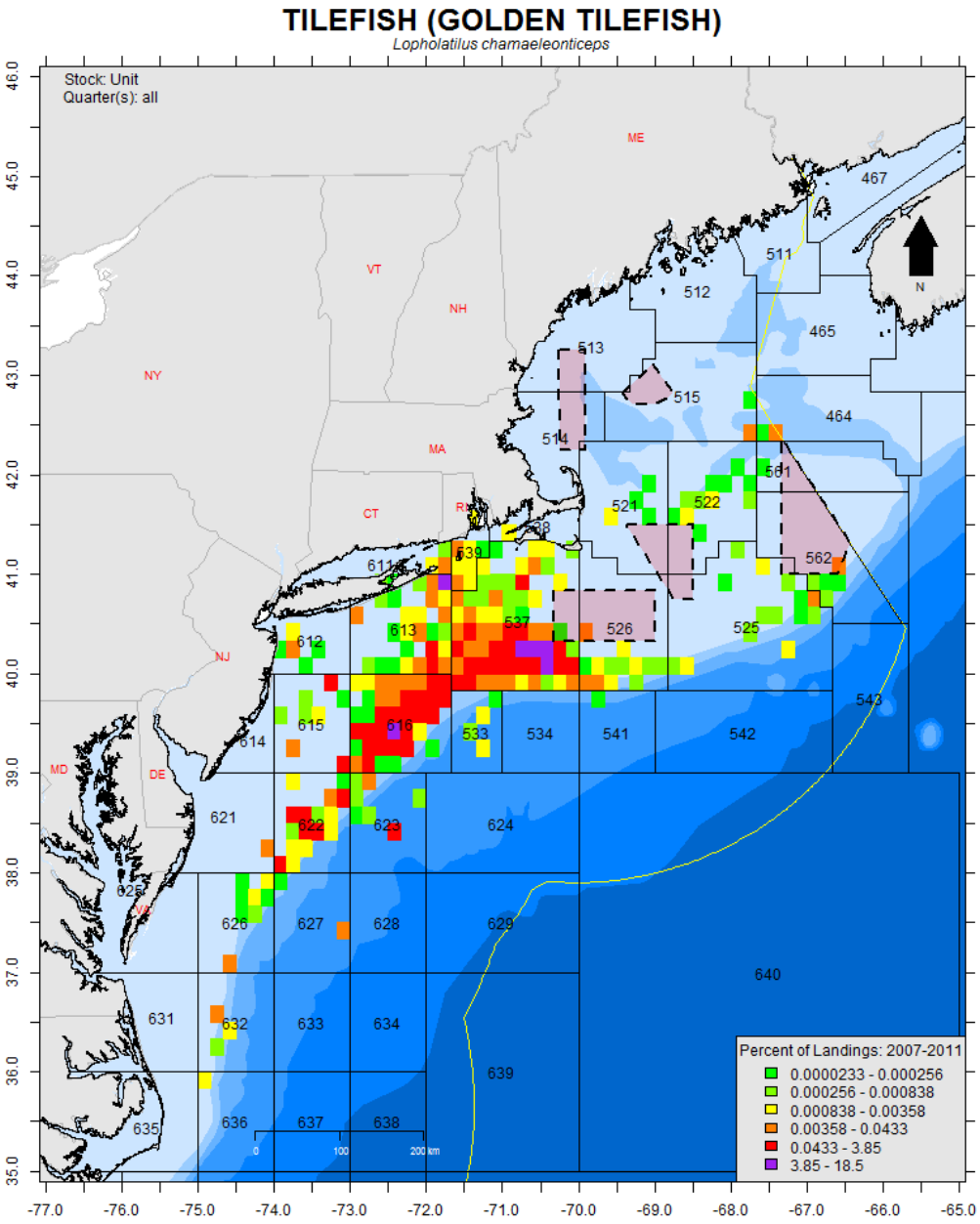
623
624
625
626
627
628
629
640
631
632
633
634
639
635
636
637
638
N
0
100
200 km
Percent of Landings: 2002-2006
0.0000277 - 0.000692
0.000692 - 0.00338
0.00338 - 0.01
0.01 - 0.0433
0.0433 - 4.85
4.85 - 20.6
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
-74.0
-73.0
-72.0
-71.0
-70.0
-69.0
-68.0
-67.0
-66.0
-65.0


TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
ME
VT
NH
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NJ
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637
638
0
100
200 km
N
Percent of Landings: 2007-2011
0.0000233 - 0.000256
0.000256 - 0.000838
0.000838 - 0.00358
0.00358 - 0.0433
0.0433 - 3.85
3.85 - 18.5
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
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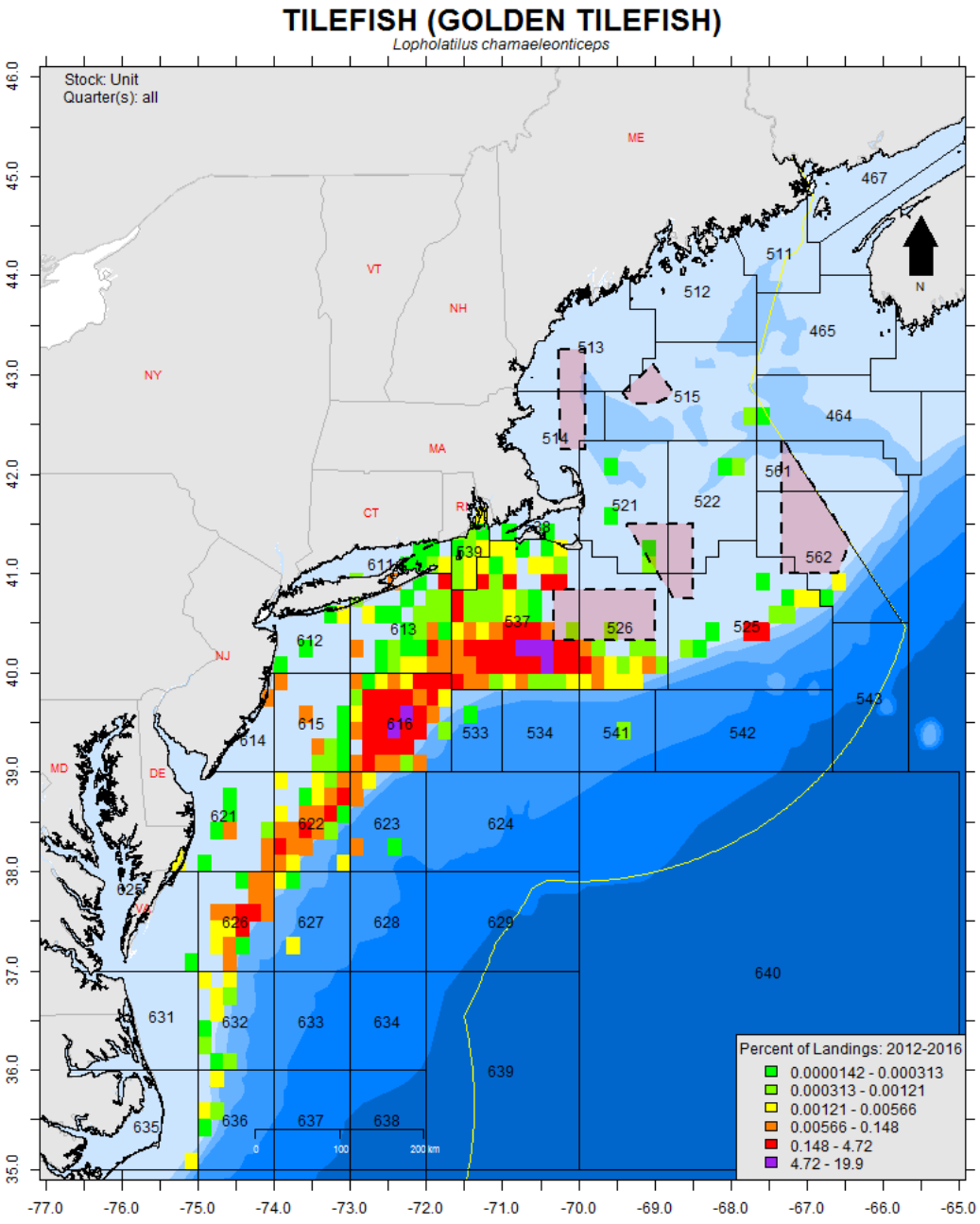
-67.0
-66.0
-65.0


TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
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0
100
200 km
Percent of Landings: 2012-2016
0.0000142 - 0.000313
0.000313 - 0.00121
0.00121 - 0.00566
0.00566 - 0.148
0.148 - 4.72
4.72 - 19.9
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
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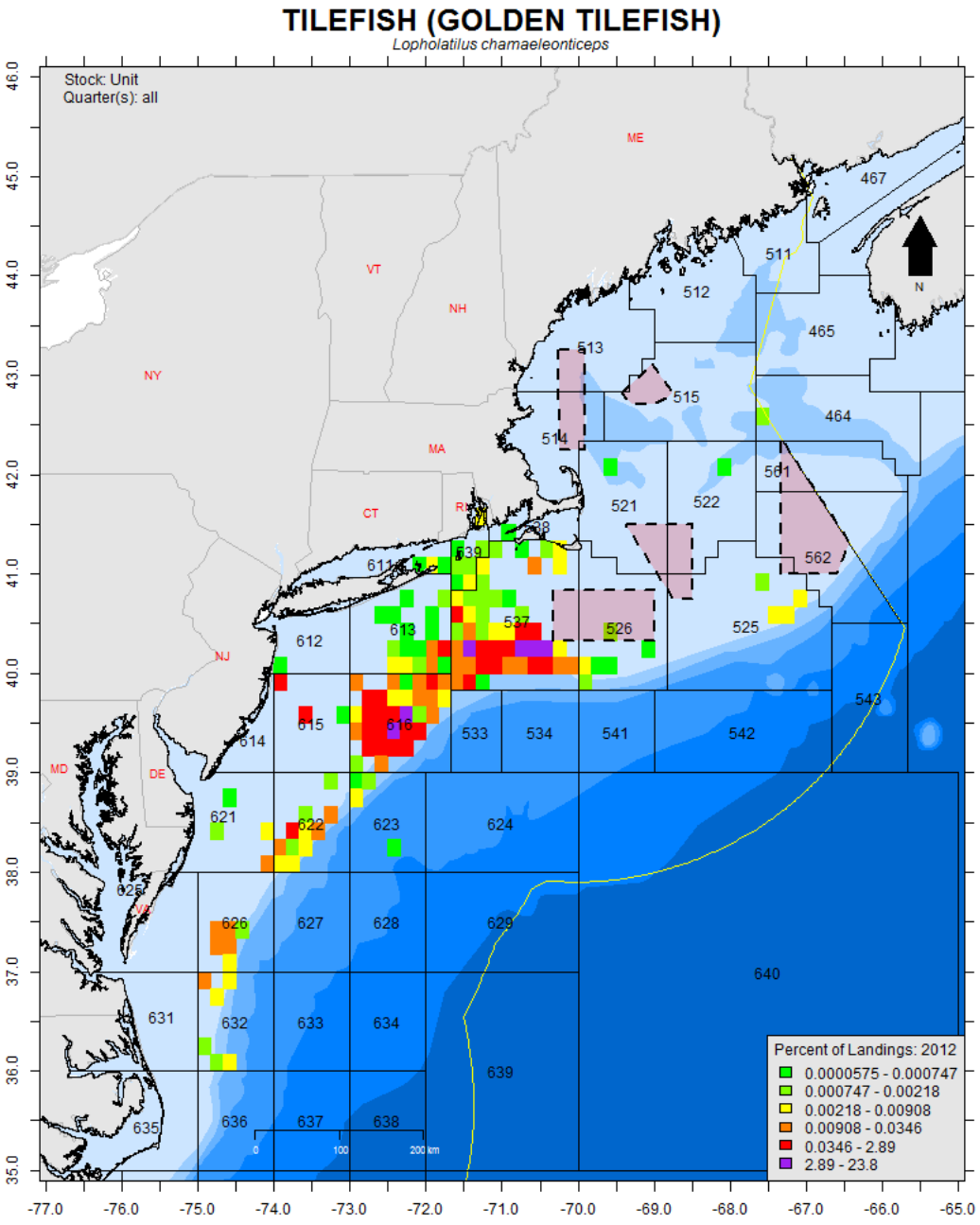
TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
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638
0
100
200 km
N
Percent of Landings: 2012
0.0000575 - 0.000747
0.000747 - 0.00218
0.00218 - 0.00908
0.00908 - 0.0346
0.0346 - 2.89
2.89 - 23.8
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
-74.0
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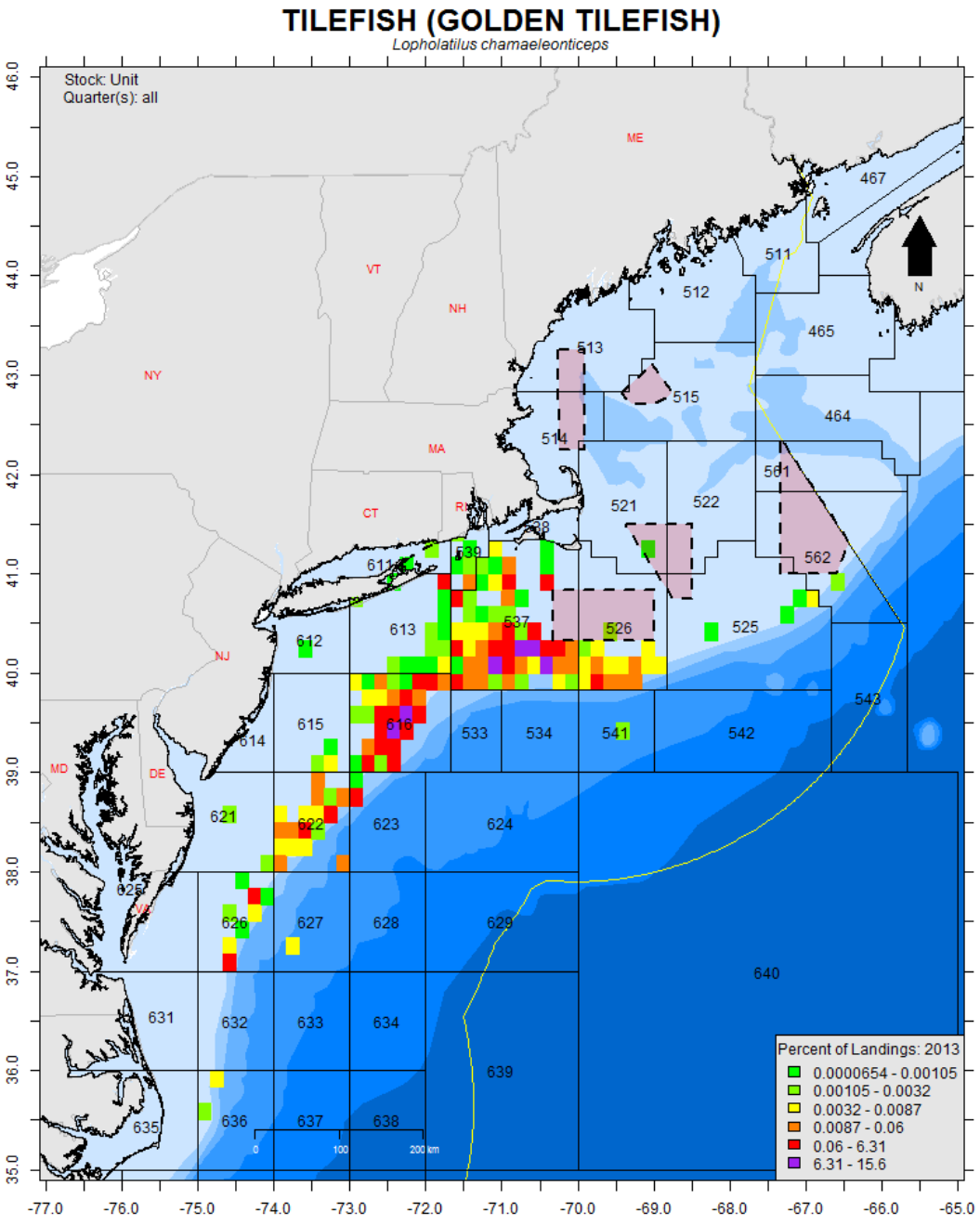
TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
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625
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631
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638
0
100
200 km
Percent of Landings: 2013
0.0000654 - 0.00105
0.00105 - 0.0032
0.0032 - 0.0087
0.0087 - 0.06
0.06 - 6.31
6.31 - 15.6
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
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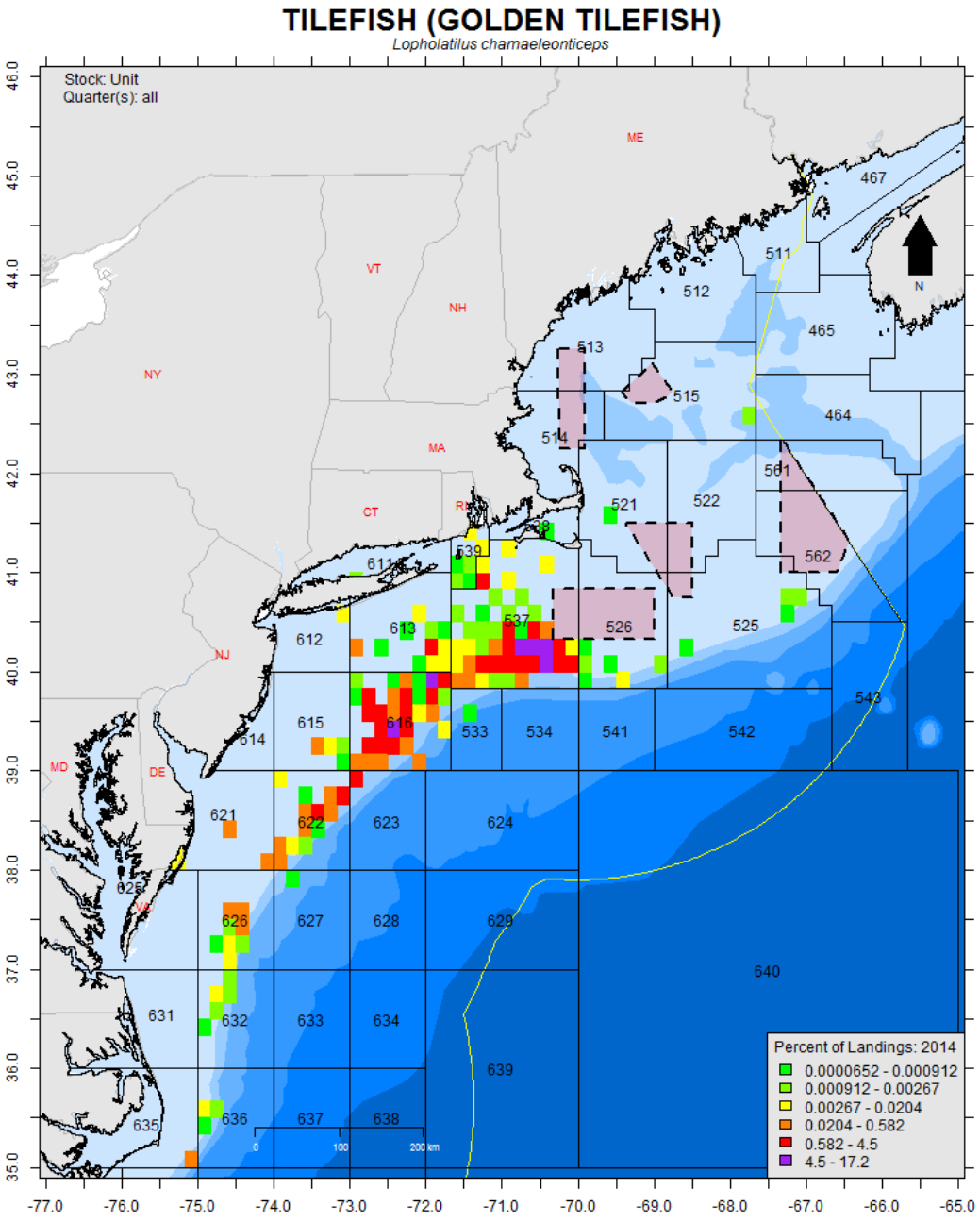
-66.0
-65.0


TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
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629
640
631
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633
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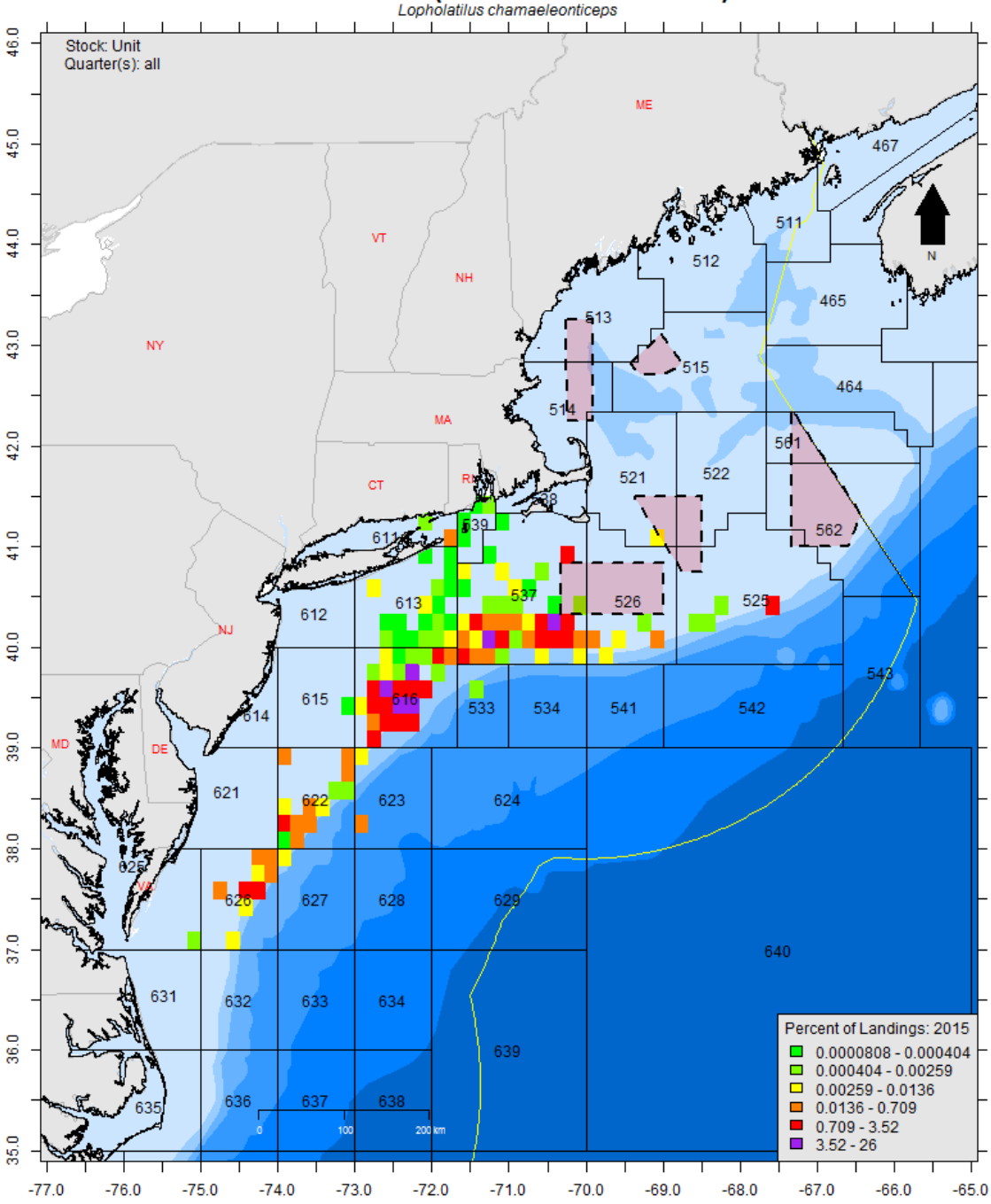
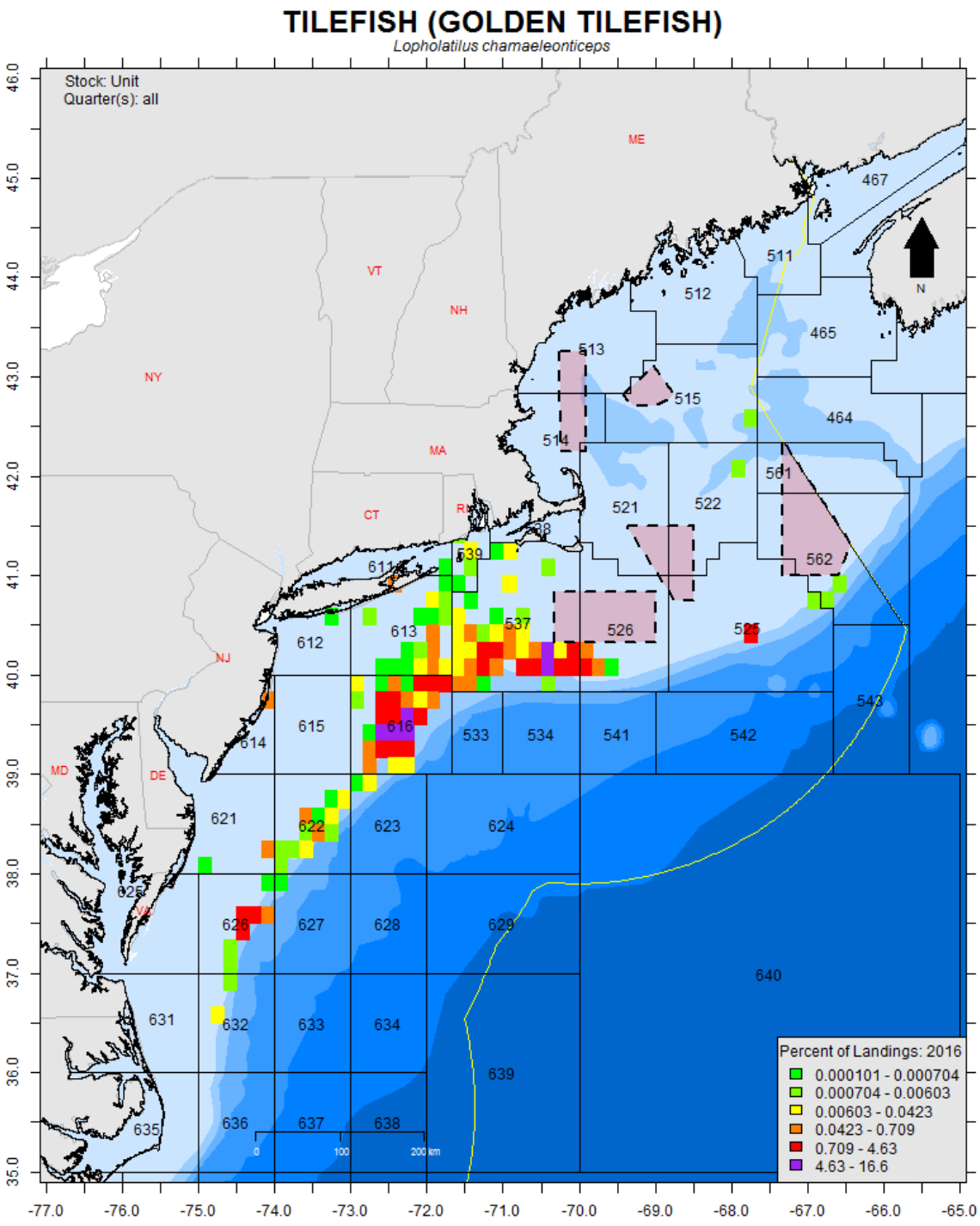
639
635
636
637
638
N
0
100
200 km
Percent of Landings: 2014
0.0000652 - 0.000912
0.000912 - 0.00267
0.00267 - 0.0204
0.0204 - 0.582
0.582 - 4.5
4.5 - 17.2
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
-74.0
-73.0
-72.0
-71.0
-70.0
-69.0
-68.0
-67.0
-66.0
-65.0

TILEFISH (GOLDEN TILEFISH)

Lopholatilus chamaeleonticeps




TILEFISH (GOLDEN TILEFISH)
Lopholatilus chamaeleonticeps
Stock: Unit
Quarter(s): all
ME
VT
NH
NY
MA
CT
RI
NJ
MD
DE
VA
467
511
512
465
513
515
464
514
561
521
522
562
539
537
526
525
612
613
615
616
614
533
534
541
542
543
621
622
623
624
625
626
627
628
629
640
631
632
633
634
639
635
636
637
638
0
100
200 km
Percent of Landings: 2016
0.000101 - 0.000704
0.000704 - 0.00603
0.00603 - 0.0423
0.0423 - 0.709
0.709 - 4.63
4.63 - 16.6
46.0
45.0
44.0
43.0
42.0
41.0
40.0
39.0
38.0
37.0
36.0
35.0
-77.0
-76.0
-75.0
-74.0
-73.0
-72.0
-71.0
-70.0
-69.0
-68.0
-67.0
-66.0
-65.0

Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: 21 February 2018

To: Chris Moore, Executive Director

From: José Montañez, Staff

Subject: Golden Tilefish Specifications Review for 2019 Fishing Year

As part of the 2018-2020 multi-year specification process for golden tilefish, the Scientific and Statistical Committee (SSC), Tilefish Monitoring Committee (MC), and Council will review the most recent information to determine whether modifications to the current 2019 specifications are warranted.

The NMFS Northeast Fisheries Science Center provided a data update for golden tilefish to support this review, which includes data on commercial landings, catch-per-unit-effort, market category, and size composition through 2017. From 2012 to 2015, commercial landings ranged from 1.4 to 1.9 million pounds. Landings declined in 2016 to 1.1 million pounds which appears to be the result of a combination of lower catch rates and some vessel inactivity. However, in 2017 landings increased to 1.5 million pounds. CPUE in 2017 increased when compared to 2016. The increase in CPUE appears to be consistent with the strong year class that was estimated last year in the 2017 model update. Commercial size distribution provides further evidence for the 2013 strong year class which is tracking the length mode into the kitten and small market categories. Historic patterns of year class effects on CPUE continue to be evident. The catch distribution of fish landed is wide and is comprised of all market categories. Large fish remain an important component of the catch. In addition, there has been an increase in the small/kittens and medium market categories.

Based on a review of this information, staff recommend no change to the 2019 fishing year specifications. In 2019, the SSC, MC, and Council will review the 2019 data update for golden tilefish, the Advisory Panel Information Document, the 2019 Fishery Performance Report, and other relevant information to support the specifications review for 2020 fishing year.