



Mid-Atlantic Fishery Management Council

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

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

M E M O R A N D U M

Date: July 29, 2022
To: Council
From: Jason Didden, Council Staff
Subject: 2023-2024 Butterfish Specifications

The Council will set 2023-2024 butterfish specifications at the August 2022 meeting. The Monitoring Committee reached consensus on recommendations for butterfish specifications – please see the Monitoring Committee summary (and other supporting documents) attached below:

- Monitoring Committee Summary
- SSC Report – See Committee Reports Tab
- 2022 Management Track Assessment available via July 2022 SSC meeting page:
<https://www.mafmc.org/ssc-meetings/2022/july-25-26>
- Staff ABC Recommendation Memo to Chris Moore
- Fishery Performance Report
- Fishery Information Document



MSB Monitoring Committee Meeting Summary - Butterfish

July 28, 2022
Webinar

The Mid-Atlantic Fishery Management Council’s (Council) Mackerel, Squid, and Butterfish (MSB) Monitoring Committee met on July 28, 2022. The purposes were to develop recommendations regarding 2023-2024 butterfish specifications and 2023 *Illex* specifications. Given the different topics, two summaries were created – this summary is for butterfish.

Monitoring Committee Attendees: Jason Didden, Aly Pitts, Lisa Hendrickson, and Chuck Adams.

Other Attendees: Greg DiDomenico, Meghan Lapp, and Melanie Griffin.

The MSB Monitoring Committee developed 2023-2024 butterfish specifications recommendations in light of the Scientific and Statistical Committee’s (SSC) Acceptable Biological Catch (ABC) recommendations. The Monitoring Committee’s recommendations are summarized below (all numbers are metric tons (MT); 1 MT equals about 2,205 pounds):

	Specification	2023	2024	Rationale Summary
	OFL	17,631	16,096	from projections
a	ABC	17,267	15,764	from SSC, scientific uncertainty
b	ACT Buffer %	5%	5%	for management uncertainty
c	ACT Buffer	863	788	a times b
d	ACT (a-c)	16,404	14,976	a-c
e	Butterfish Cap (longfin discards)	3,884	3,884	set by Council
f	Assumed other discards	1,248	1,248	2013-2021 average plus 1 SD
g	Total discard set-aside	5,132	5,132	e+f
h	Landings or "Domestic Annual Harvest" (DAH)	11,271	9,844	d-g
i	Close primary directed at this amount, i.e. with 1,000 mt left; go to 5,000 pound trip limit	10,271	8,844	h-1000

The Monitoring Committee did not see the need for substantial changes given recent fishery performance and the similarity of the new ABCs to the current 2022 ABC (17,854 MT). The recommendations likely set aside more than enough catch for discards, which should maintain fishery stability by avoiding ABC overages (ABC also equals the Annual Catch Limit or ACL). Two previous discard categories have been consolidated into one “other” category, but the outcome is similar. The Annual Catch Target (ACT) buffer should also help avoid ABC/ACL overages. The closure approach, while untested, should balance achievement of optimum yield, avoidance of overages, and avoidance of excessive regulatory discarding from low trip limits. Maintaining the current butterfish cap on the longfin squid fishery should continue to control butterfish discards without creating an unreasonable burden on the longfin squid fishery.



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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

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

MEMORANDUM

Date: July 15, 2022
To: Chris Moore, Executive Director
From: Jason Didden, staff
Subject: 2023-2024 specifications for Atlantic butterfish

Executive Summary

Based on the 2022 Management Track Assessment, as of 2021, butterfish are neither overfished nor experiencing overfishing.

The current 2022 Acceptable Biological Catch (ABC) for butterfish is 17,854 MT. For 2023-2024, staff recommends using the 2/3 M value as a starting point for P* calculations, along with a 100% C.V. The resulting ABCs would be 17,267 MT for 2023 and 15,764 MT for 2024.

Additional information on fishery performance and past management measures can be found in the 2022 Butterfish Fishery Information Document created by staff and the 2022 Butterfish Fishery Performance Report developed by the Mackerel-Squid-Butterfish (MSB) Advisory Panel (AP).

The Council will meet in August 2022 to review the recommendations of the AP, the SSC, the MSB Monitoring Committee, as well as receive input from the public. The Council will then recommend catch and landings limits and other management measures for 2023-2024.

Current Measures and Review of Prior SSC Recommendations

The last setting of butterfish specifications occurred in 2020 and the SSC utilized a 100% C.V. when calculating an ABC. From the 17,854 MT ABC for 2022, a 5% management uncertainty buffer is set aside, potential discards are set aside, and the remaining catch constitutes the quota of 11,495 MT. Approximately 1/3 of the annual catch target is set aside for potential discards. A discard cap on the longfin squid fishery ensures that annual discards are unlikely to exceed what had been set aside.

The directed fishery operates under limited access, and open access/incidental permits are limited to 600 pounds per trip. Vessels fishing with otter trawl gear that possess 5,000 pounds or more of butterfish, must use nets that have a minimum codend mesh of 3 inches. The directed limited access fishery does not otherwise start with trip limits, but the fishery is slowed with a 5,000-pound trip limit for all limited access permits once landings approach 1,000 MT of the

quota. Once 100% of the quota is reached, all federally-permitted vessels are subject to a 600-pound trip limit.

Recent Catch and Landings

Since the resumption of directed fishing in 2013, catch has varied between about 1,500 MT and 5,000 MT, and since the substantial increase in quota in 2015, landings have been well below the quotas. See Figure 2 in the Butterfish Information Document. The Fishery Performance Report documents industry perspectives on why recent landings have been low.

Stock Status and Biological Reference Points

There are new research track and management track assessments for butterfish that indicate that, as of 2021, butterfish are neither overfished nor experiencing overfishing. However, there was concern by the research track peer reviewers about the reference point developed through the research track working group. The peer review suggested that a fishing mortality (“F”) reference point equal to 2/3 of the assumed natural mortality (M) “may be more appropriate.” Taking 2/3 of $M = 0.85$ and would still be substantially higher than recent realized Fs.

Staff Recommendation

The 2/3 M approach appears to be reasonable recently given the assessment results. Staff recommends its continued use, along with a 100% C.V. While there is considerable variability with the butterfish stock from year to year and thus considerable uncertainty in projections, the stock’s apparent resiliency and lack of any negative long term trends suggests that a 100% C.V. is reasonable. Staff also notes the consistency in projected 2022/2023 ABCs across the previous and current assessments. The resulting ABCs would be 17,267 MT for 2023 and 15,764 MT for 2024.



Butterfish Fishery Performance Report and

Addendum to the *Illex* Fishery Performance Report

July 2022

The Mid-Atlantic Fishery Management Council's (Council) Mackerel-Squid-Butterfish (MSB) Advisory Panel (AP) provided input via a webform and/or email in July 2022 regarding butterfish and *Illex*. The questions focused mostly on butterfish because the AP already developed a [2022 *Illex* Fishery Performance Report](#)¹ earlier in 2022. A question was also added for early input on 2022 *Illex* fishing. The Council dealt with longfin squid, chub mackerel, and Atlantic mackerel earlier in the year.

Advisors who provided input included Eleanor Bochenek, Gus Lovgren, Meghan Lapp, Gerry O'Neill, Jeff Kaelin, Pam Lyons Gromen, Greg DiDomenico, and Katie Almeida (8 out of 16 advisors). The questions and a summary of responses follow. The summary captures the individual responses and does not indicate a consensus from the AP.

1. What factors have influenced recent butterfish catch (general, markets, environment, regulations, other, etc.)?

In 2021, longfin squid was a more attractive option than butterfish for vessels.

COVID is still problematic overall. The cargo company Ocean Alliance stopped shipping out of Boston for 4 months. Containers were hard to come by. Chinese ports were backed up/delayed because of a lack of port workers. China was also requiring that US exporters indemnify them if they couldn't receive the shipment once it reached China; they wanted to ship back to the US at no penalty to themselves.

In 2022 so far, high fuel prices and a "tremendous" longfin squid fishery have reduced effort toward butterfish.

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https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/62266e163deb785057c50968/1646685718710/d_2022+Illex-Mack_FPR.pdf

2. Are the current butterfish fishery regulations appropriate? How could they be improved?

No recommendations were provided regarding current regulations, but there remains concern that imprecise butterfish biomass estimates may cause shutdowns in the longfin squid fishery if a low butterfish acceptable biological catch (ABC), and then a low butterfish cap on the longfin squid fishery, cause shutdowns of the longfin squid fishery (as occurred in the past).

3. What would you recommend as butterfish research priorities?

Recommendations included:

- Windfarm impacts (on both butterfish and the fishery);
- More accurate biomass estimates; directed surveys to obtain biomass estimates of butterfish;
- More precise techniques (e.g. molecular) for identifying butterfish in fish stomach contents as even minor amounts of digestion can render small individuals difficult to identify macroscopically (see Brian Smith's "Consumption of butterfish at various life stages by fishes of the Northeast US continental shelf.");
- Re-evaluating natural mortality ("M"); and
- Re-evaluating survey catchability (as the assessment report recommends).

4. What else is important for the Council to know about butterfish?

Although the butterfish fishery is small, it does affect other major fisheries like longfin squid. Newer Council members should know that though NMFS declared the stock overfished (in 2005) and closed the directed fishery for a decade, it was later discovered that the stock had never been overfished in the first place and the fishery suffered for no reason.

A State of the Ecosystem Report product should be developed that provides ecosystem-level advice/information for Councils to consider as specifications and other management measures are established for individual stocks. For example, a state of the ecosystem report summary page for each managed species could be created. It is very concerning that the biomass (and availability to predators) of Atlantic herring and Atlantic mackerel is so low and that both stocks are in low recruitment regimes. A number of studies (for example, see Overholtz and Link 2000²) describe how consumption data track prey abundance closely. In the Northeast shelf, butterfish may be rising in importance to predators. The Council (SSC) has used the 1992 Patterson advice ($F=2/3M$) for the last 10 years to set the butterfish OFL. Since the M estimate for butterfish is much higher than for most other forage species, it is questionable whether this is the best strategy. Since it has been 10 years since this strategy was first employed, it would seem to warrant a re-evaluation, especially given uncertainties around estimating M.

² Overholtz, W. J., Link, J. S., and Suslowicz, L. E. 2000. Consumption of important pelagic fish and squid by predatory fish in the northeastern USA shelf ecosystem with some fishery comparisons. – ICES Journal of Marine Science, 57: 1147–1159.

5. The *Illex* Fishery Performance Report for the 2021 fishery was completed earlier this year and can be found in the documents linked above [on the original webform]. This report will be provided to the SSC as it sets a preliminary 2023 *Illex* quota in July. We don't have much more information now compared to when the SSC set the 2022 ABC back in March 2022, but we will have the research track peer review summary and some information about the 2022 *Illex* fishery, which has started slowly. The plan is that in March 2023 the SSC will review an update of the various indirect methods developed through the assessment (and used to set the 2022 ABC at 40,000 MT), and then set a final 2023 *Illex* ABC at that time. If there's anything you'd like to add regarding the 2021 or 2022 *Illex* fisheries, or anything else for the SSC to consider as it sets a preliminary 2023 *Illex* ABC, please do so here.

The 2022 landings to date are minimal because many *Illex* fisherman have been focused on longfin squid. The summer longfin fishery has been strong, and most fresh harvest ("wet boat") vessels with both *Illex* and longfin permits have been engaging in the longfin fishery, especially since the fish are abundant and available close to port (which is important given high fuel costs). *Illex* are further offshore which would entail higher fuel costs. Freezer vessels still target *Illex* all summer regardless of what longfin are doing because that's what they were designed for, and since they can hold product indefinitely, tend to stay out on longer trips, with less running back and forth to port. (They can only freeze so fast also.)

Water temperatures have been pretty cold until recently and could be why we have seen such a slow start to the 2022 *Illex* season. It would be good for the SSC to touch base with the Squid Squad out of Woods Hole (Anna Mercer can provide contact information for that group). They are looking into oceanographic conditions that might be affecting the movement of *Illex* onto and off the shelf. They noted the lack of warm core rings this year as compared to the past.

To put the *Illex* ABC discussion in context, skates have almost the same ABC as *Illex*. Skates are caught by every single fishery in the GARFO region, whether directed or as bycatch, by every kind of gear, and they live on the shelf year-round. Skates have an ABC of 37,236 MT. But for an *Illex* fishery that is seasonal, only caught by a relatively small number of vessels, with only one type of gear, and where the majority of the stock range is out of reach of the fishery, the ABC is 40,000 MT. Last year it was 33,000 MT - a smaller ABC than skates. The comparison of risk of overfishing from the skate fishery vs the *Illex* fishery is much higher regarding skates than *Illex*. Yet, this is not reflected in the quota. Understanding that the *Illex* stock does not have a defined OFL, neither do skates. At the March SSC meeting, the methodology used evaluated a range of *Illex* quotas from 24,000 MT to 64,000 MT. A value of 47,000 MT was found to be consistent with the Council's Risk Policy with an escapement threshold of 50%. All other squid species given as comparable fisheries manage to an escapement of 40%. As using an escapement threshold of 50% is even more conservative than that, it is recommended that the SSC consider a 2023 ABC of 47,000 mt.

The research goal of 'real-time management' should be removed as operationally unlikely and with the potential to reduce the fishery's productivity. For example, a pre-fishery survey may miss the body of fish that could become available later in the fishing season.



Butterfish Fishery Information Document

June 2022

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for butterfish, with an emphasis on 2021. Data sources for Fishery Information Documents include unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. For more resources, including previous Fishery Information Documents, please visit <http://www.mafmc.org/msb>.

Key Facts

- Landings have generally been variable and well below the quota in recent years. 2021 landings and revenues were down compared to 2020. The average ex-vessel price for butterfish increased.
- The recently completed research track and management track assessments found that butterfish was neither overfished nor experiencing overfishing, and biomass in 2021 was above the target.
- Considerable variability is expected in abundance, availability, and landings due to butterfish's relatively short lifespan, environmental factors, and market conditions.

Basic Biology

Atlantic butterfish is a semi-pelagic/semi-demersal schooling fish species primarily distributed between Nova Scotia, Canada and Florida. They are most abundant from the Gulf of Maine to Cape Hatteras and form loose schools. They winter near the edge of the continental shelf and migrate inshore in the spring and offshore in the fall.

Butterfish are relatively short-lived and grow rapidly; few individuals live beyond 3 years. The maximum age reported is 6 years. The recent assessment reevaluated median length (L50) at maturity and median age at maturity (A50) using NEFSC spring bottom trawl survey data for 5,686 females and 5,089 males (1985–2019). For both females and males, the median length at maturity was just over 11 cm and the median age at maturity was about 3/4 of one year.

See the 2022 Research Track Assessment report (long version) for more life history information at: https://apps-nefsc.fisheries.noaa.gov/saw/sasi/sasi_report_options.php.

Status of the Stock

Based on the 2022 management track assessment (MTA), the status of butterfish in 2021 was not overfished, with no overfishing occurring, and the stock size was above the target (available at https://apps-nefsc.fisheries.noaa.gov/saw/sasi/sasi_report_options.php). (Figure 1).

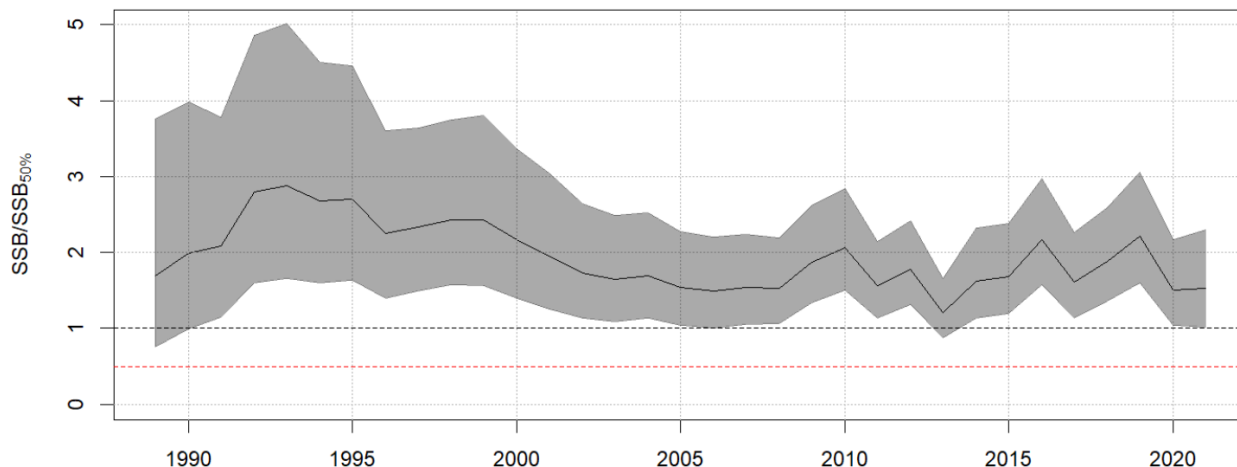


Figure 1. Butterfish stock status, 1989–2021, relative to the 2021 MTA’s revised biological reference points, biomass target = “1” or 39,436 MT (upper horizontal dashed line) and overfished threshold = 0.5 or 19,718 MT (lower horizontal dashed line).

Management System and Fishery Performance

Management

The Mid-Atlantic Fishery Management Council (the Council or MAFMC) established management of butterfish in 1978 and the management unit includes all federal East Coast waters.

Limited access commercial vessels can fish year-round until quotas are achieved, subject to applicable gear requirements. Incidental permits are limited to 600 pounds per trip. The ABC for 2022 is 17,854 MT, with a commercial quota of 11,495 MT. If landings get within 1,000 MT of the quota, a 5,000-pound trip limit is implemented to slow the fishery and avoid having to go to the lower 600-pound trip limit that is implemented once the full quota is reached. Additional summary regulatory information is available at <https://www.fisheries.noaa.gov/region/new-england-mid-atlantic>.

Recreational landings are negligible. There are no recreational regulations except for party/charter vessel permits to catch butterfish, and any vessel that has any Mid-Atlantic party/charter permits must report ALL catch on ALL trips.

Commercial Fishery

Figure 2 below, from the 2022 MTA, describes U.S. butterfish catch 1965-2021. Following, Figures 3-4 describe domestic landings, ex-vessel revenues and prices (inflation adjusted) since 1996. The Gross Domestic Product Implicit Price Deflator was used to report revenues/prices as “2021 dollars.” Table 1 describes 2021 butterfish landings by state, and Table 2 describes 2021 butterfish landings by gear type. Table 3 describes 2021 butterfish landings by NMFS Statistical Area as reported in Vessel Trip Reports (Figure 5 at the end shows where the NMFS Statistical Areas are located).

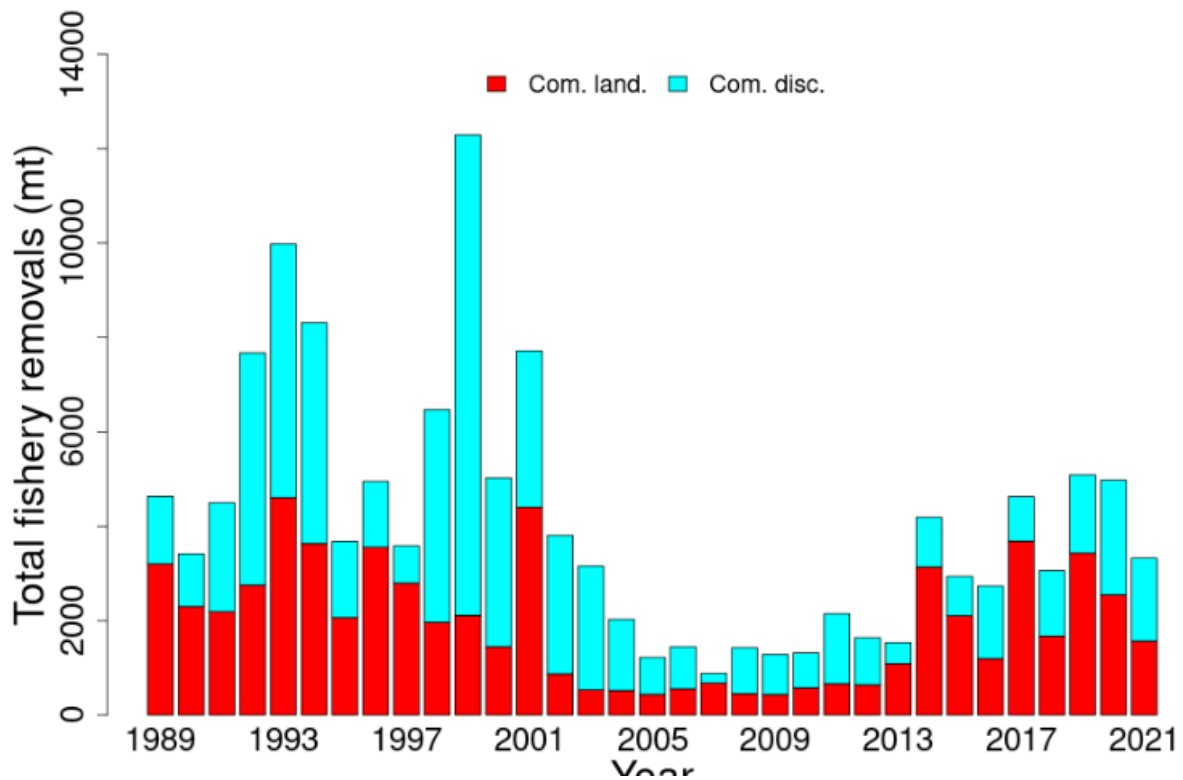


Figure 2. Total commercial catch of butterfish between 1989 and 2021 (landings and discards).

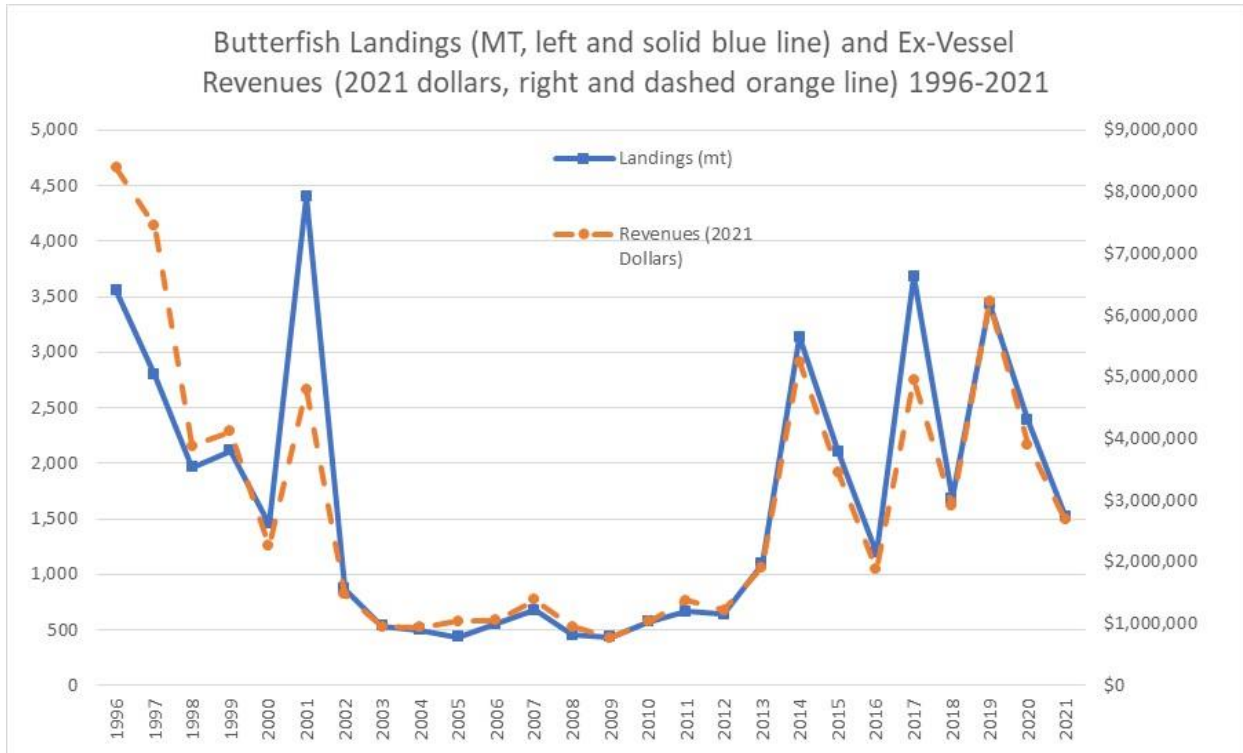


Figure 3. U.S. Butterfish Landings and Butterfish Ex-Vessel Values 1996-2021. Source: NMFS unpublished dealer data.

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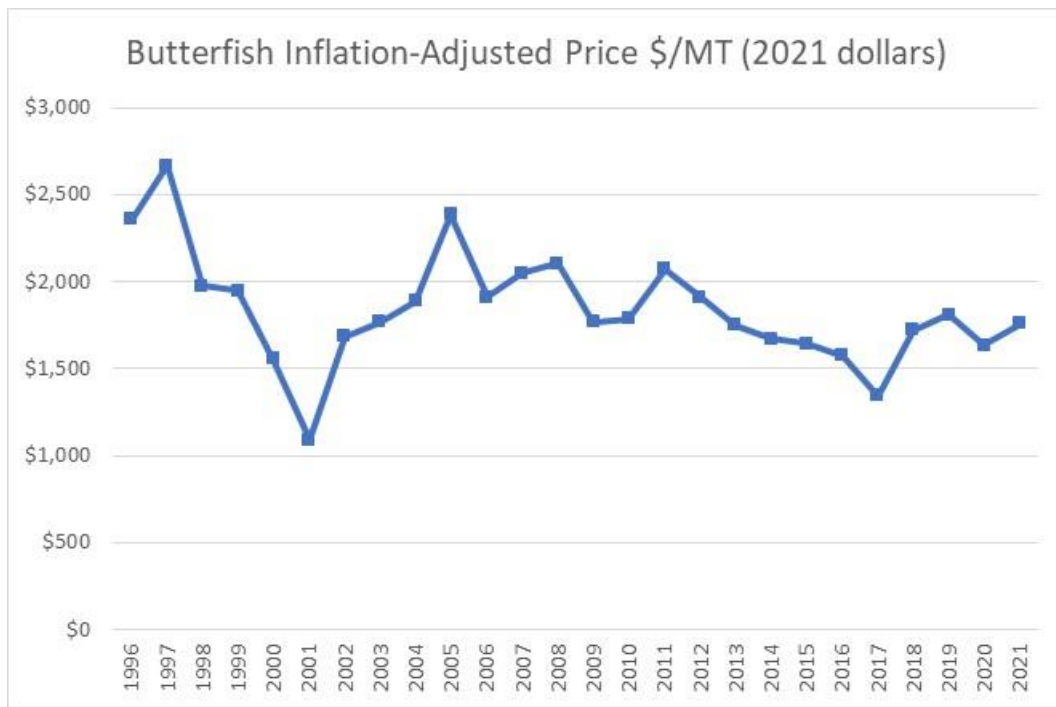


Figure 4. Ex-Vessel Butterfish Prices 1996-2021 Adjusted to 2021 Dollars Source: NMFS unpublished dealer data.

Table 1. Commercial Butterfish landings by state in 2021. Source: NMFS unpublished dealer data.

State	Metric Tons
RI	1,207
NY	180
MA	61
CT	48
NJ	27
Other	2
Total	1,524

Table 2. Commercial Butterfish landings by gear in 2021. Source: NMFS unpublished dealer data.

GEAR	Metric Tons
TRAWL,OTTER,BOTTOM,FISH	1,399
UNKNOWN	100
TRAWL,OTTER,BOTTOM,OTHER	15
POUND NET, OTHER	5
Other	5
Total	1,524

Table 3. Commercial butterfish landings by statistical area in 2021. Source: NMFS unpublished VTR data.

Stat Area	Metric Tons
526	773
537	233
539	139
534	80
616	57
611	56
613	53
525	22
562	17
Other	57
Total	1,486

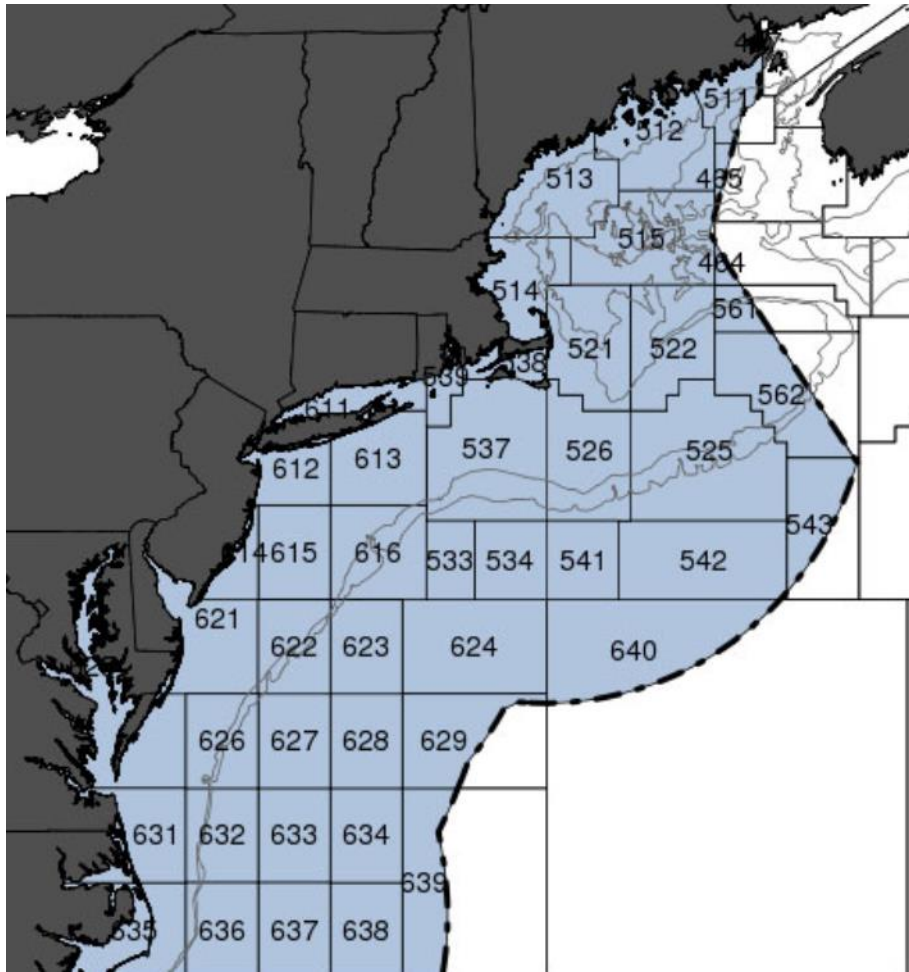


Figure 5. NMFS Statistical Areas

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