Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901
Phone: 302-674-2331 | FAX: 302-674-5399 | www.mafmc.org
Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: May 22, 2023

To: Council

From: Jason Didden

Subject: Butterfish Specifications – Review of Planned 2024 Measures

As part of the 2023-2024 multi-year specification process for butterfish, the Council reviews recent information to determine if modification of the previously approved specifications may be warranted. Neither staff, nor the Scientific and Statistical Committee (SSC), nor the Monitoring Committee members[1] recommended any changes for the planned 2024 butterfish specifications. No action is required by the Council.

Based on 2022 projections, the butterfish quota would decrease from 11,271 metric tons (MT) in 2023 to 9,844 MT for 2024. Recent landings have been well below these quotas. A Management Track Assessment is planned for 2024 to inform specifications for 2025 and beyond (https://www.nefmc.org/library/2022-2026-stock-assessment-schedule).

The following materials are included for Council consideration:

1) Report of the May 2023 SSC Meeting – See Committee Reports Tab

2) Staff ABC Recommendation Memo (May 1, 2023)

3) Advisory Panel Butterfish Fishery Performance Report (April 2023)

4) Butterfish Fishery Information Document (April 2023)

[1] After email communication confirmed that no Monitoring Committee members had any butterfish issues to discuss, the scheduled May 12, 2023 Monitoring Committee Meeting was canceled.

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MEMORANDUM

Date: May 1, 2023

To: Chris Moore

From: Jason Didden, staff

Subject: 2024 Butterfish ABC Review – Staff Recommendation

Butterfish is in multiyear specifications for 2023-2024 (see Fishery Information Document for details). The butterfish Acceptable Biological Catch (ABC) is scheduled to decrease from 17,267 metric tons (MT) in 2023 to 15,764 MT in 2024. After reviewing fishery trends, survey trends, and April 2023 Advisory Panel input, staff recommends maintaining the planned 2024 specifications.

A management track stock assessment is planned for 2024 to set 2025-2026 specifications.

Butterfish
Fishery Performance Report

April 2023

The Mid-Atlantic Fishery Management Council's (Council) Mackerel-Squid-Butterfish (MSB) Advisory Panel (AP) provided input during a webinar meeting on April 26, 2023. A separate report was generated for chub mackerel during the same meeting.

Advisors who attended included Emerson Hasbrouck, Gerry O'Neill, Greg DiDomenico, Katie Almeida, Meghan Lapp, and Pam Lyons Gromen (6 out of 16 advisors). Other participants included Jason Didden, Julia Beaty, Mark Holliday, Carly Bari, Maria Fenton, and Melanie Griffin. Jason Didden presented an overview of recent fishery information, and then the AP considered the questions below as the report was developed during the meeting. This 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 and 2022, longfin squid was a more attractive option for vessels. In 2022, high fuel prices and a "tremendous" longfin squid fishery reduced effort toward butterfish.

The early 2023 butterfish fishery was good also until the fish became full of feed (less desirable product).

Shipping problems have diminished.

It would be useful to investigate why butterfish discards are occurring on directed butterfish trips. Could be due to size/market demand, or regulations.

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

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

There was concern that the current specifications' set-asides (management buffer and discards) may be overly precautionary.

3. What would you recommend as butterfish research priorities?

Recommendations included (no change from 2022):

-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 2018 Atlantic mackerel assessment report – 64th SAW) describe how consumption data track prey abundance. In the Northeast shelf, butterfish may be rising in importance to predators.

There remains concern whether setting ABCs based on a fishing mortality reference point of 2/3 the estimated natural mortality will work in the long run. (The fishing mortality reference point issue was evaluated in detail in recent assessments, but a conclusive determination remains elusive).

Butterfish Fishery Information Document

April 2023

This document provides an overview of the biology, stock condition, management system, and fishery performance for butterfish, with an emphasis on 2022. 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 additional resources, including previous Fishery Information Documents, please visit http://www.mafmc.org/msb.

Key Facts

- Landings have been variable and well below the quota in recent years. 2022 landings and revenues were down compared to 2021. The average ex-vessel price for butterfish increased slightly from 2021 to 2022.
- The 2022 management track assessment found that butterfish was neither overfished nor experiencing overfishing, and biomass in 2021 was above the biomass target.
- Considerable variability is expected in abundance, availability, and landings due to butterfish's relatively short lifespan, environmental factors, and market conditions.
- R/V Bigelow indices are provided at the end of this document. 2022 values (both spring and fall) were the highest in the 2009-2022 time series.

Basic Biology

Atlantic butterfish is a semi-pelagic/semi-demersal loose-schooling fish species primarily distributed between Nova Scotia, Canada and Florida. They are most abundant from the Gulf of Maine to Cape Hatteras. 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 re-evaluated median length (L50) at maturity and median age at maturity (A50). For both females and males, the median length at maturity was just over 11cm 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). Updated R/V Bigelow indices are provided on the last page of this document.

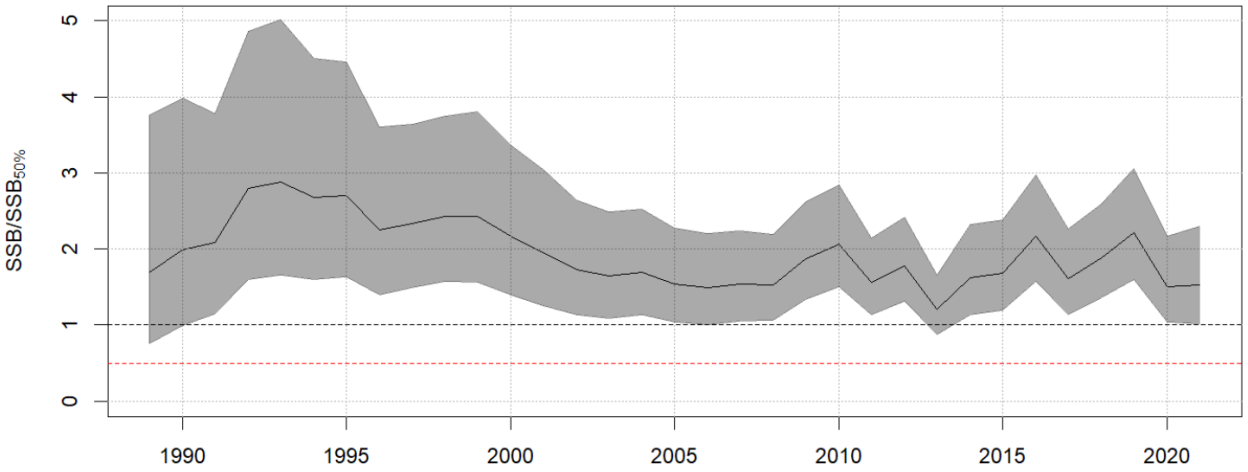

Figure 1. Butterfish stock status, 1989–2021, relative to the current biological reference points, biomass target = "1" or 39,436 MT (upper horizontal dashed line) and overfished threshold = 0.5 or 19,718 MT (lower horizontal dashed line).

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. 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. Incidental permits are limited to 600 pounds per trip.

Recreational landings are negligible. There are no recreational regulations except party/charter vessels need permits to catch/possess butterfish in federal waters, and any vessel that has any Mid-Atlantic party/charter permit must report ALL catch on ALL trips via Vessel Trip Reports.

Additional summary regulatory information is available at https://www.fisheries.noaa.gov/region/new-england-mid-atlantic.

2023-2024 specifications, as previously adopted, are described in Table 1 below.

Table 1. Preferred 2023-2024 Butterfish Specifications

	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

Commercial Fishery

Figure 2 below, from the 2022 assessment, describes U.S. butterfish catches 1989-2021. 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 in "2022 dollars." Table 2 describes 2022 butterfish landings by state, and Table 3 describes 2022 butterfish landings by gear type. Table 4 describes 2022 butterfish landings by NMFS Statistical Area as reported in Vessel Trip Reports (Figure 5 shows where the NMFS Statistical Areas are located).

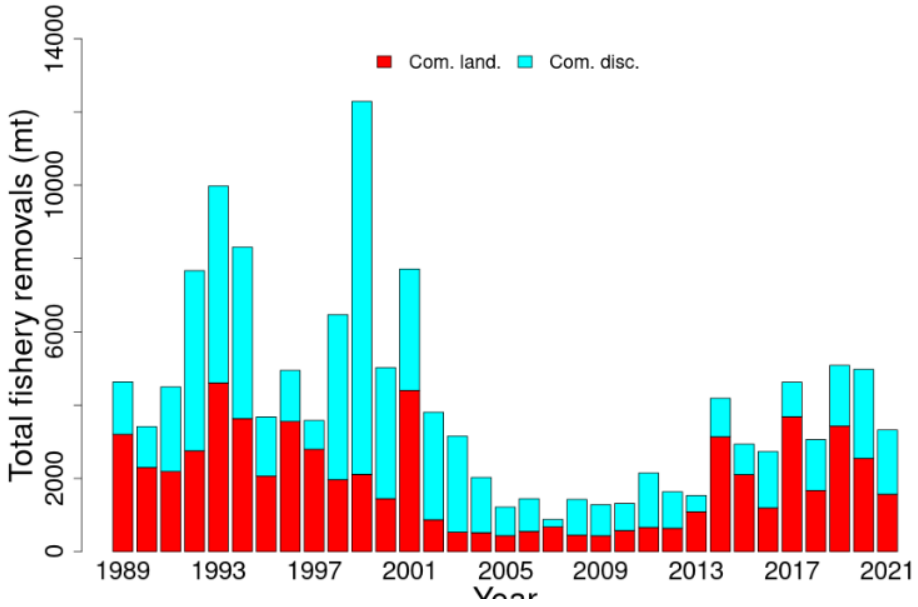

Figure 2. Total commercial catch of butterfish between 1989 and 2021 (landings and discards).

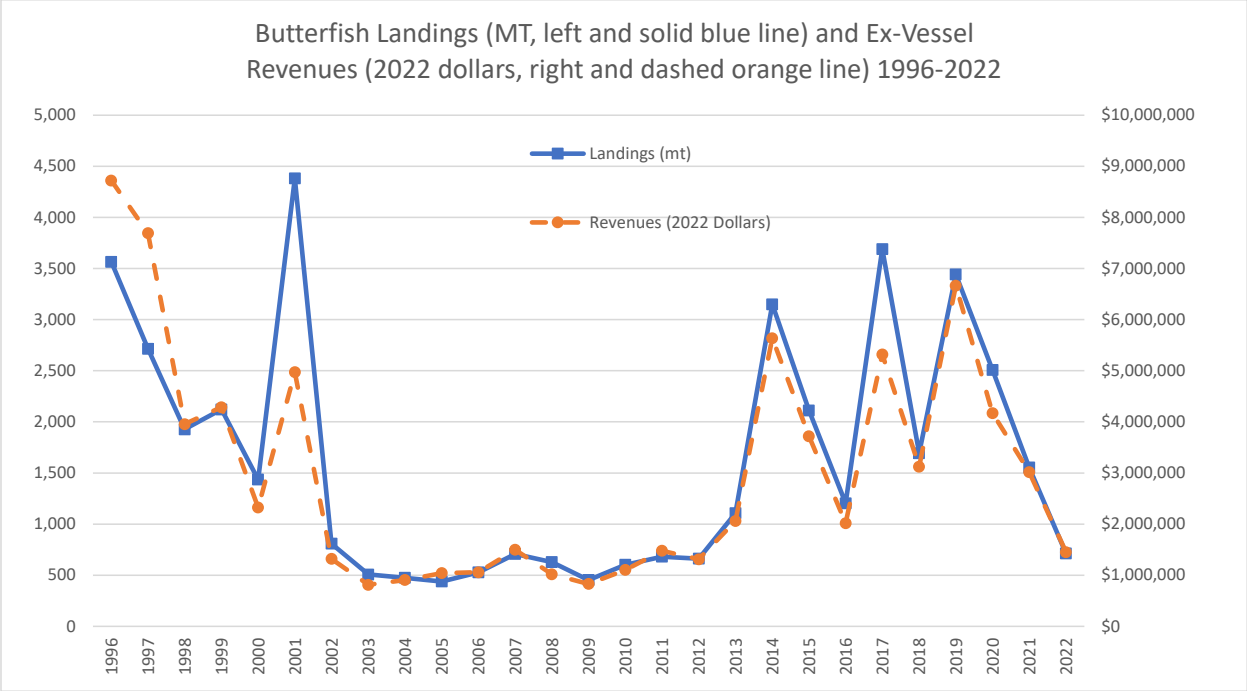

Figure 3. U.S. Butterfish Landings and Butterfish Ex-Vessel Values 1996-2022. Source: NMFS unpublished dealer data.

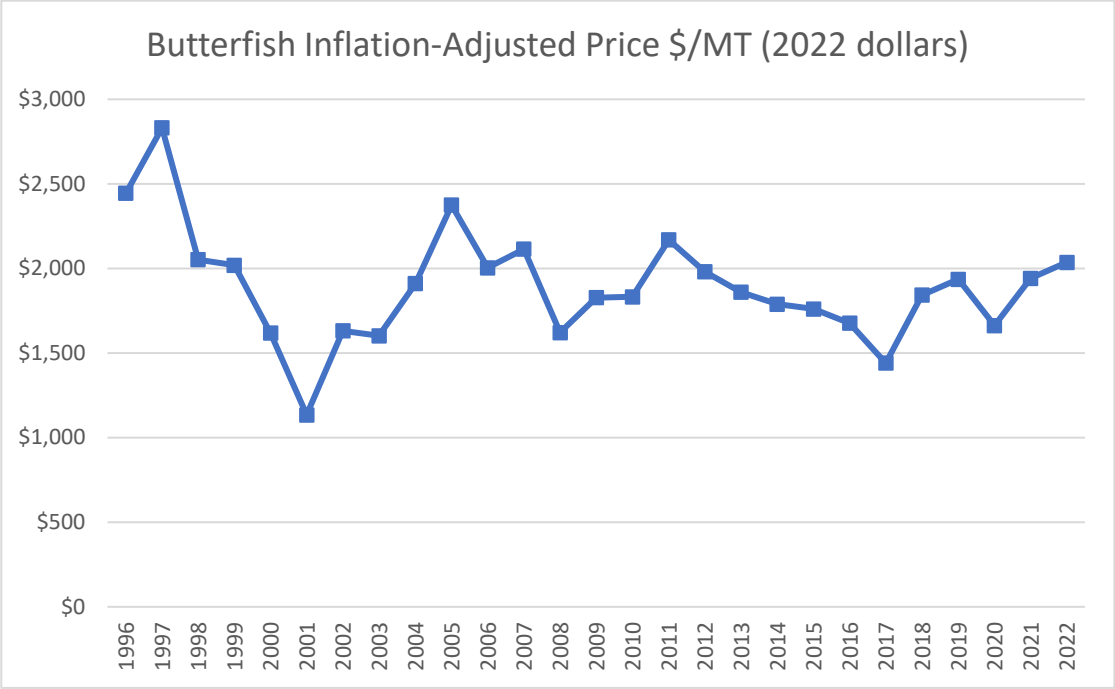

Figure 4. Ex-Vessel Butterfish Prices 1996-2022 Adjusted to 2022 Dollars Source: NMFS unpublished dealer data.

Table 2. Commercial Butterfish landings by state in 2022. Source: NMFS unpublished dealer data.

State	Metric Tons 2022
RI	373
NY	169
MA	96
NJ	38
CT	19
VA	14
MD	2
Other	2
Total	713

Table 3. Commercial Butterfish landings by gear in 2022. Source: NMFS unpublished dealer data.

Gear	Metric Tons 2022
Otter Trawl, Bottom	654
Other	59
Total	713

Table 4. Commercial butterfish landings by statistical area in 2022. Source: NMFS unpublished VTR data.

Statistical Area	Metric Tons 2022
537	156
539	149
611	79
613	59
562	58
616	54
622	52
522	20
514	15
525	12
538	9
612	6
521	6
533	6
626	5
526	3
Other	24
Total	713

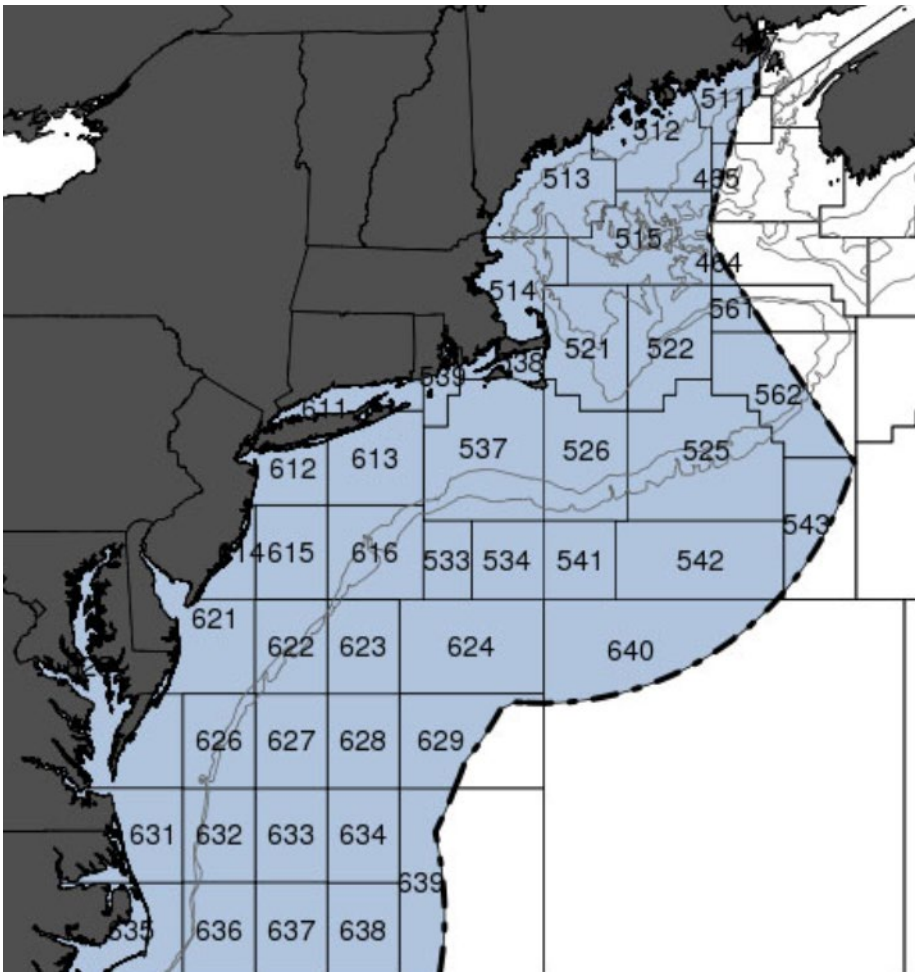

Figure 5. NMFS Statistical Areas

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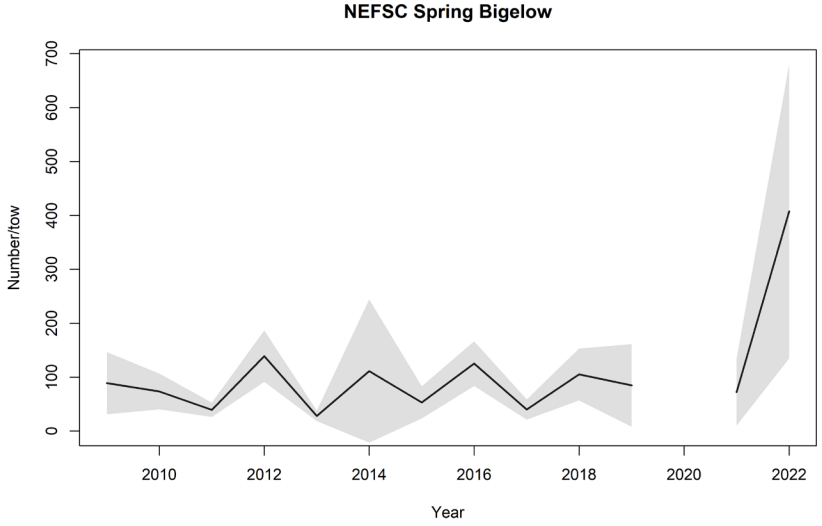
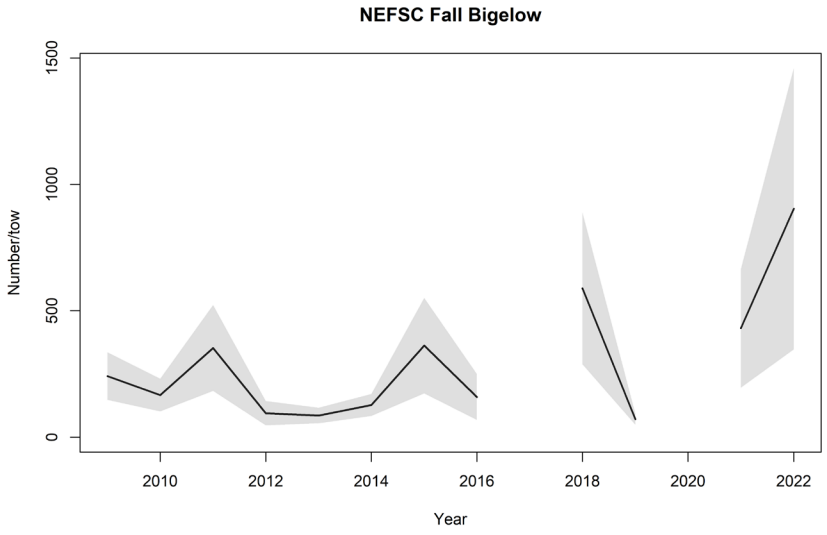
Data updates from NMFS Northeast Fisheries Science Center (NEFSC)

Bigelow indices for butterfish with 90% confidence intervals are below. Notes are from Chuck Adams, NEFSC butterfish lead:

Spring 2022 Notes
- Had 3 of the 10 biggest tows in the time series (including the biggest)
- 2nd highest percent positive in the time series (48.3%)
- 3rd highest bottom temperature in the spring time series (8.4°C)

Fall 2022 Notes
- Had 2 of the 10 biggest tows in the time series
- Highest percent positive in the time series (88.1%)
- 4th highest bottom temperature in the fall time series (12.8°C)





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Non-Target Species – Directed Butterfish Fishery (summarized from draft Environmental Assessment (EA) for 2021-2022 Butterfish Specifications)

Staff was directed to include available discard information as part of all 2023 specifications processes. Since the Standardized Bycatch Reporting Methodology focuses on **discards of managed stocks** rather than discards in managed fisheries, staff analyses of discards vary fishery by fishery depending on data availability and historical practices. The EA for 2021-2022 butterfish specifications used discard ratios and recent landings to develop approximate bycatch amounts for various species encountered in the butterfish fishery. Due to reduced observer coverage in 2020-2022 (from COVID-19), observer data from 2017-2019 are still used for this document. Landings in recent years have been less than levels used in the extrapolations below (2020-2022 average of about 1,600 MT vs 2,900 MT over 2017-2019), but landings could increase going forward and one would expect a similar mix of species.

From 2017-2019 there were on average 22 observed trips annually where butterfish accounted for at least 50% of retained catch, and those trips form the basis of the following analysis. These trips made 267 hauls of which 93% were observed.

Using the discard ratio data from these observed hauls and 2017-2019 butterfish landings, Table 1 below approximates annual discards in the directed butterfish fishery from 2017-2019, for species with extrapolated catch of at least 10,000 pounds. The method used for the estimates in the table is a custom staff analysis, and is best considered as a relative indicator of discard species that may be affected by the fishery. On the trips identified in this analysis, the 2017-2019 overall discard rate was 17%. Species noted with a "*" were overfished, rebuilding, or otherwise depleted when the 2021-2022 Specifications EA was written.

The observer program creates individual animal records for some fish species of interest, mostly larger pelagics and/or elasmobranchs, as well as tagged fish. Non-expanded counts of these individual fish records from the same trips are provided in Table 2 below.

Table 1. Incidental Catch and Discards in the Butterfish Fishery.

NE Fisheries Science Center Common Name	Pounds Observed Caught	Pounds Observed Discarded	Of all discards observed, percent that comes from given species	Percent of given species that was discarded	Pounds of given species caught per mt Butterfish Kept	Pounds of given species discarded per mt butterfish Kept	Rough Annual Catch (pounds) based on 3-year (2017-2019) average of butterfish landings (2,933 mt)	Rough Annual Discards (pounds) based on 3-year (2017-2019) average of butterfish landings (2,933 mt)
BUTTERFISH	1,153,015	101,677	37%	9%	2,418	213	7,091,225	625,330
SQUID, ATL LONG-FIN	167,780	1,836	1%	1%	352	4	1,031,876	11,290
SQUID, SHORT-FIN	52,988	6,638	2%	13%	111	14	325,885	40,825
DOGFISH, SPINY	37,318	37,314	14%	100%	78	78	229,511	229,485
SCUP	37,271	28,763	11%	77%	78	60	229,222	176,898
HAKE, SILVER (WHITING	23,422	10,728	4%	46%	49	22	144,051	65,981
SKATE, LITTLE	15,201	15,125	6%	99%	32	32	93,490	93,021
SKATE, WINTER (BIG)	13,098	10,466	4%	80%	27	22	80,552	64,367
HAKE, SPOTTED	8,871	6,746	2%	76%	19	14	54,560	41,490
FLOUNDER, SUMMER (FLU	7,194	3,530	1%	49%	15	7	44,246	21,709
SEA ROBIN, NORTHERN	6,922	6,922	3%	100%	15	15	42,571	42,571
DOGFISH, SMOOTH	5,155	4,380	2%	85%	11	9	31,703	26,938
SEA BASS, BLACK	4,617	3,270	1%	71%	10	7	28,397	20,111
SEA ROBIN, STRIPED	3,922	3,891	1%	99%	8	8	24,118	23,933
HAKE, RED (LING) *	3,690	2,434	1%	66%	8	5	22,694	14,969
SKATE, CLEARNOSE	3,071	3,071	1%	100%	6	6	18,885	18,885
MENHADEN, ATLANTIC	2,329	2,040	1%	88%	5	4	14,324	12,545
WEAKFISH *	2,250	2,006	1%	89%	5	4	13,835	12,337
FLOUNDER, WINTER *	2,028	2,015	1%	99%	4	4	12,472	12,390
BLUEFISH *	1,898	1,395	1%	74%	4	3	11,674	8,581
SKATE, BARNDOOR	1,774	1,774	1%	100%	4	4	10,910	10,910
FLOUNDER, SAND DAB *	1,765	1,765	1%	100%	4	4	10,856	10,856
FLOUNDER, FOURSPOT	1,724	1,724	1%	100%	4	4	10,602	10,602
ALEWIFE *	1,684	1,682	1%	100%	4	4	10,359	10,347

Table 2. Counts of fish in Individual Animal Records on observed butterfish trips from 2017-2019

COMNAME	count
BONITO, ATLANTIC	1
MOLA, OCEAN SUNFISH	2
RAY, TORPEDO	4
SHARK, BASKING	1
SHARK, BLUE (BLUE DOG	1
SHARK, PORBEAGLE (MAC	7
STINGRAY, BLUNTNOSE	2
STURGEON, ATLANTIC	3
TUNA, LITTLE (FALSE A	4