



Atlantic Mackerel Fishery Information Document

July 2023

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for Atlantic mackerel (“mackerel” hereafter), 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 Data sources for Fishery Information Documents include unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and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 more resources, including previous Fishery Information Documents, please visit <http://www.mafmc.org/msb>.

Key Facts

- Mackerel began a rebuilding program on November 29, 2019. A revised rebuilding plan was implemented in 2023, based on catches that had a predicted 61% probability of rebuilding the stock by 2032.
- The 2023 rebuilding Acceptable Biological Catch (ABC) is 8,094 metric tons (MT); the predicted 2024 rebuilding ABC was 9,274 MT.
- The results of the 2023 mackerel management track assessment are not yet available. NMFS Northeast Fisheries Science Center staff will use those results to project catches that have a 61% probability of rebuilding by 2032
- The 2023 Canadian assessment showed a continued decline in spawning stock size estimates from 2020 to 2021/2022. Canadian Spawning stock size estimates are at an all-time low.
- The mackerel fishery was not constrained by its river herring and shad (RH/S) cap in 2021 or 2022.

Basic Biology

Mackerel is a semi-pelagic/semi-demersal (may be found near the bottom or higher in the water column) schooling species, primarily distributed historically between Labrador (Newfoundland, Canada) and North Carolina. The stock is considered to comprise two spawning contingents: a northern contingent spawning primarily in the southern Gulf of St. Lawrence and a southern contingent spawning in the Mid-Atlantic Bight, Southern New England and the western Gulf of Maine. The two contingents mix during winter months on the Northeast U.S. shelf. The Canadian fishery likely primarily catches the northern contingent while the U.S. fishery appears to catch both contingents.

Mackerel spawning occurs during spring and summer and progresses from south to north as surface waters warm. Atlantic mackerel are serial, or batch spawners. Eggs are pelagic. Post-larvae gradually transform from planktonic to swimming and schooling behavior at about 30-50 mm. Almost all fish are mature by age 3 in most years. Age 2 maturity appears to vary between around 50% to nearly 100%. Atlantic mackerel are opportunistic feeders that can ingest prey either by individual selection of prey organisms or by passive filter feeding. See <https://www.nefsc.noaa.gov/nefsc/habitat/efh/> for more life history information.

Status of the Stock

Based on a 2018 assessment (NEFSC 2018, available at <http://www.mafmc.org/ssc-meetings/2018/may-8-9>), the mackerel stock was declared overfished, with overfishing occurring based on data through 2016. A 2021 management track assessment (MTA) indicated rebuilding from 2014 to 2018 but the stock was at only 24% of the biomass rebuilding target in 2019 (and still overfishing). However, the productivity of the stock appears to have declined - in the 2021 MTA, the estimated proxy for Maximum Sustainable Yield declined by 17% to 34,103 metric tons (MT) compared to the previous assessment.

Historical assessments (which used different methods and data) appear to have been substantially over-optimistic about the stock's productivity: the 1997 mackerel allowable biological **catch** was specified about **ten times higher than** what we now think the **total SSB** was in that year.

A 2023 MTA that uses data through 2022 is pending and will be posted to the relevant meeting pages as soon as possible. A 2023 Canadian assessment¹ showed the Northern Mackerel Contingent continued a decline from 2020 to 2021/2022 (to all-time lows). The Canadian and U.S. assessments share much of the same data but the U.S. assessment combines the Canadian egg data with egg data collected by a U.S. Ecosystem Monitoring survey conducted in late May and June.

Management System and Fishery Performance

Management

The Mid-Atlantic Fishery Management Council (the Council or MAFMC) established management of mackerel in 1978 and the management unit includes all federal East Coast waters. Expected Canadian landings are deducted from the total Acceptable Biological Catch (ABC) that is recommended by the Council's Scientific and Statistical Committee (SSC), but there is no formal sharing agreement. If Canada keeps its fishery closed, as occurred in 2022 and 2023, the fish set aside for expected Canadian catch remain set aside.

Access is limited with several tiers having different trip limits. Stricter trip limits are triggered when the quota is approached. Additional summary regulatory information is available at <https://www.fisheries.noaa.gov/region/new-england-mid-atlantic>.

After the initial rebuilding plan appeared infeasible due to slow stock growth, a revised rebuilding plan was implemented for 2023 to achieve a 61% probability of rebuilding the stock by 2032. The 2023 ABC is 8,094 MT. From the ABC, 2,197 MT was deducted for potential Canadian landings,

¹ <https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/41111126.pdf>

2,143 MT was deducted for expected recreational catch, and 115 MT was deducted for expected commercial discards, resulting in a commercial quota of 3,639 MT. The initial series of rebuilding catches is provided in Table 1 with the 2024+ catches conditional on the expected increase in biomass.

Table 1. Revised rebuilding plan catch and initial biomass trajectory.

	Catch (MT)	Biomass (MT)
2023	8,094	80,745
2024	9,274	91,738
2025	10,540	103,756
2026	11,906	116,857
2027	13,408	131,291
2028	15,004	146,553
2029	16,631	162,239
2030	18,261	177,731
2031	19,814	192,045
2032	21,215	204,796

Fisheries

Figure 1 describes mackerel catches (all known sources) 1960-2019 and highlights the scale of the early foreign fishery in the late 1960s and 1970s. Figures 2-3 describe domestic landings, ex-vessel revenues, and prices (inflation adjusted) since 1996. Domestic landings dropped dramatically from 2006-2011 and have been relatively low since. Prices have shown an increasing trend since 2001 and the price jump in 2022 may have been associated with the complete Canadian fishery closure in 2022. Figure 4 describes preliminary weekly landings throughout the year for 2023 and 2022. Early season landings were higher in 2023 compared to 2022.

Table 2 describes 2022 commercial mackerel landings by state and Table 3 describes 2022 commercial mackerel landings by gear type. Table 4 describes 2021 and 2022 commercial mackerel landings by NMFS statistical area. While variable, the landings patterns are generally consistent with recent operation of the fishery.

Figure 5 describes 2018-2022 Atlantic mackerel recreational annual total catches (numbers of fish, VA-ME, all modes combined, all areas combined) and indicates stable catches from 2018-2021 with a decline in 2022. Most recreational catch is retained, most occurs in the private/rental mode, and most catch occurs in state waters (predominantly Massachusetts, New Hampshire, and Maine). Data after 2018 are not affected by calibrations that were applied to earlier data due to methods changes to the Marine Recreational Information Program (MRIP).

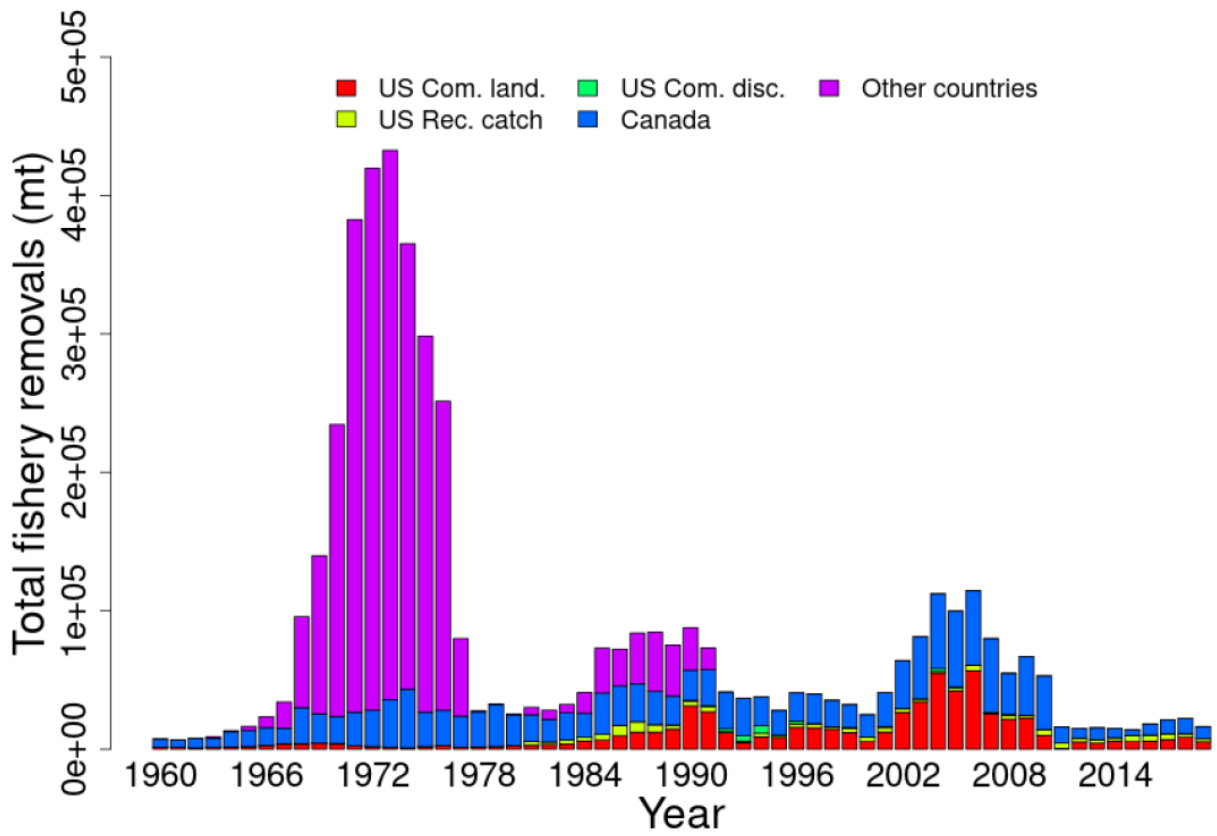


Figure 1. Total catch of northwest Atlantic mackerel between 1960 and 2019 by all known sources. U.S. recreational catch represents recreational landings plus discards, Canada represents Canadian landings (discards are not available), and other countries represents landings by all other countries.

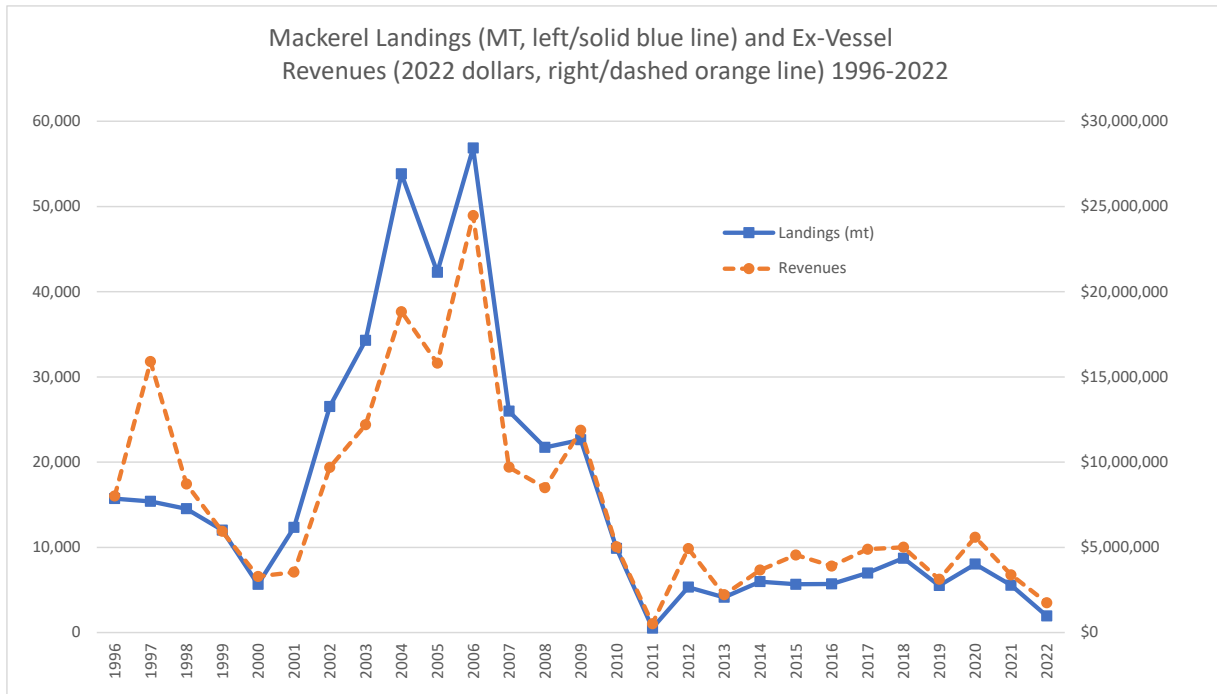


Figure 2. U.S. Mackerel Landings and Mackerel Ex-Vessel Values 1996-2022. Source: NMFS unpublished dealer data. [PRELIMINARY]

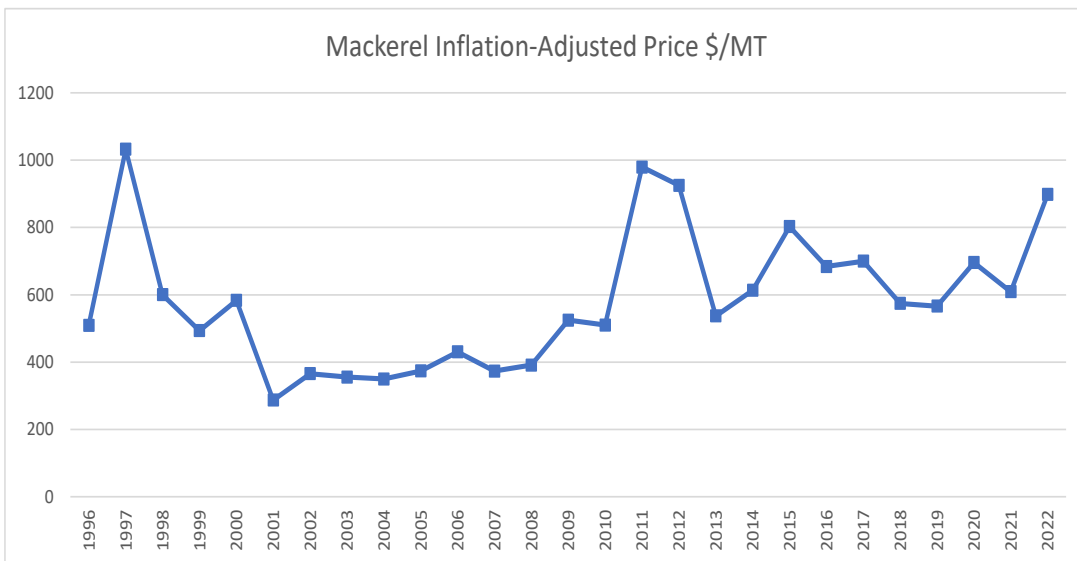


Figure 3. Ex-Vessel Mackerel Prices 1996-2022, Inflation-Adjusted to 2022 Dollars Source: NMFS unpublished dealer data. [PRELIMINARY]

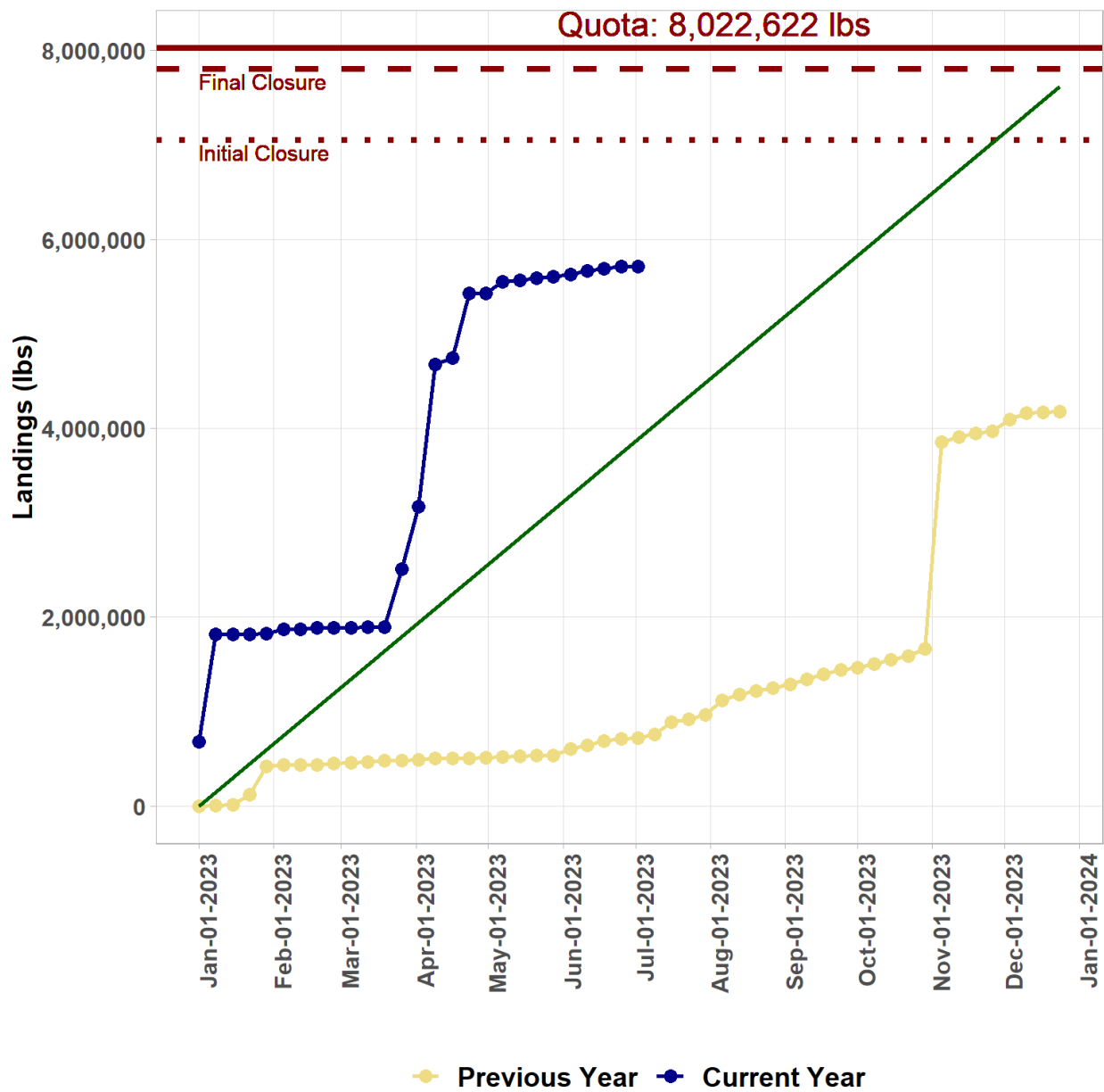


Figure 4. U.S. Preliminary Mackerel landings; 2023 in blue, 2022 in yellow-orange. As of July 6, 2023. Source: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region>.

Table 2. Commercial Mackerel landings (live weight) by state in 2022. Source: NMFS unpublished dealer data.

State	Metric_Tons
MA	1,530
ME	302
RI	88
NY	11
Other	17
Total	1,948

Table 3. Commercial Mackerel landings (live weight) by gear in 2022. Source: NMFS unpublished dealer data.

GEAR	MT
TRAWL,OTTER,MIDWATER	1,155
HAND LINE, OTHER	249
LONGLINE, BOTTOM	247
UNKNOWN	165
TRAWL,OTTER,BOTTOM,FISH	90
Other	42
Total	1,948

Table 4. Commercial mackerel landings by statistical area in 2021 and 2022. Source: NMFS unpublished VTR data.

2021		2022	
Stat Area	Metric Tons	Stat Area	Metric Tons
522	2,023	514	1,412
521	1,854	522	147
612	992	521	47
514	450	537	35
Other/CI	332	539	25
Total	5,652	611	22
		616	12
		Other/CI	27
		Total	1,725

Note: VTR expected to be lower than dealer database due to state landings.

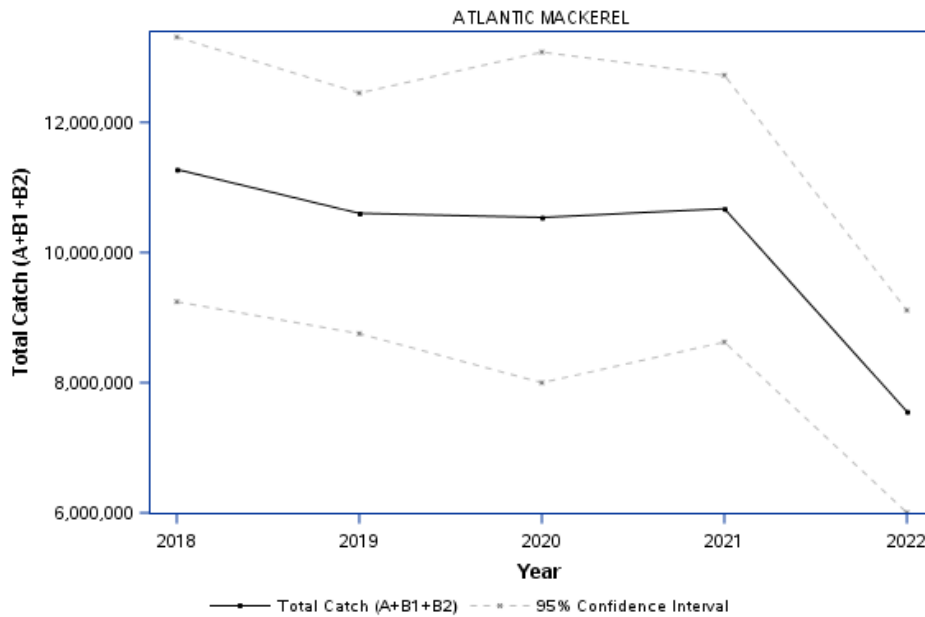


Figure 5. 2018-2022 Atlantic mackerel recreational total catches (numbers of fish), annual, VA-ME, all modes combined, all areas combined Source: NMFS MRIP query <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>.

(Data after 2018 not affected by calibrations that must be applied to earlier data due to methods changes.)

Non-Target Catches and Discards

Environmental Assessments for mackerel specifications developed by staff include tables of incidental catches using a directed fishery definition of at least 50% of retained catch being mackerel. 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. Staff updated previous analyses using 2019-2022 data – 2020 data was severely impacted by Covid-19 but most observed mackerel trips would generally occur early in the year before 2020’s disruptions. There were only 14 total observed mackerel trips (as defined) during this time period.

Using discard ratio data from these observed hauls and 2019-2022 average mackerel landings (5,267 MT), Table 5 below approximates annual catch/discards in the directed mackerel fishery from 2019-2022, 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 species that may be affected by the fishery rather than precise amounts (especially given the low number of observed trips in this fishery). On the trips identified in this analysis, the 2019-2022 overall discard rate was 0.4 % (similar to previous analyses).

Preliminary weekly 2023/2022 river herring and shad (RH/S) cap performance is described in Figure 6 (next page).

The observer program creates individual records for some species of interest, mostly larger pelagics and/or less common sharks/rays, as well as tagged fish. However, on these trips only three unknown sharks and one bluefin tuna were noted.

Table 5. Mackerel Target/Non-Target Catches

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 mackerel Kept	Pounds of given species discarded per mt mackerel Kept	Rough Annual Catch (pounds) based on 4-year (2019-2022) average of mackerel landings (5,267 mt)	Rough Annual Discards (pounds) based on 4-year (2019-2022) average of mackerel landings (5,267 mt)
MACKEREL, ATLANTIC	2,238,955	321	2%	0%	2,205	0	11,613,397	1,663
HERRING, ATLANTIC	930,524	1,022	7%	0%	916	1	4,826,604	5,302
BUTTERFISH	20,760	3	0%	0%	20	0	107,680	16
MENHADEN, ATLANTIC	15,492	2	0%	0%	15	0	80,354	8
DOGFISH, SPINY	14,132	9,316	66%	66%	14	9	73,301	48,321
HERRING, BLUEBACK	14,098	892	6%	6%	14	1	73,124	4,628
HAKE, SILVER (WHITING)	7,601	21	0%	0%	7	0	39,427	110
ALEWIFE	6,094	50	0%	1%	6	0	31,608	258
FISH, NK	2,441	2,281	16%	93%	2	2	12,661	11,831

Report Run on: 2023-07-07
 Quota Year: 2023 (January 1, 2023 to December 31, 2023)

Catch Cap	Quota (mt)	Cumulative Catch (mt)	Percent Quota Caught
Atlantic Mackerel River Herring/Shad	129	105.9	82%

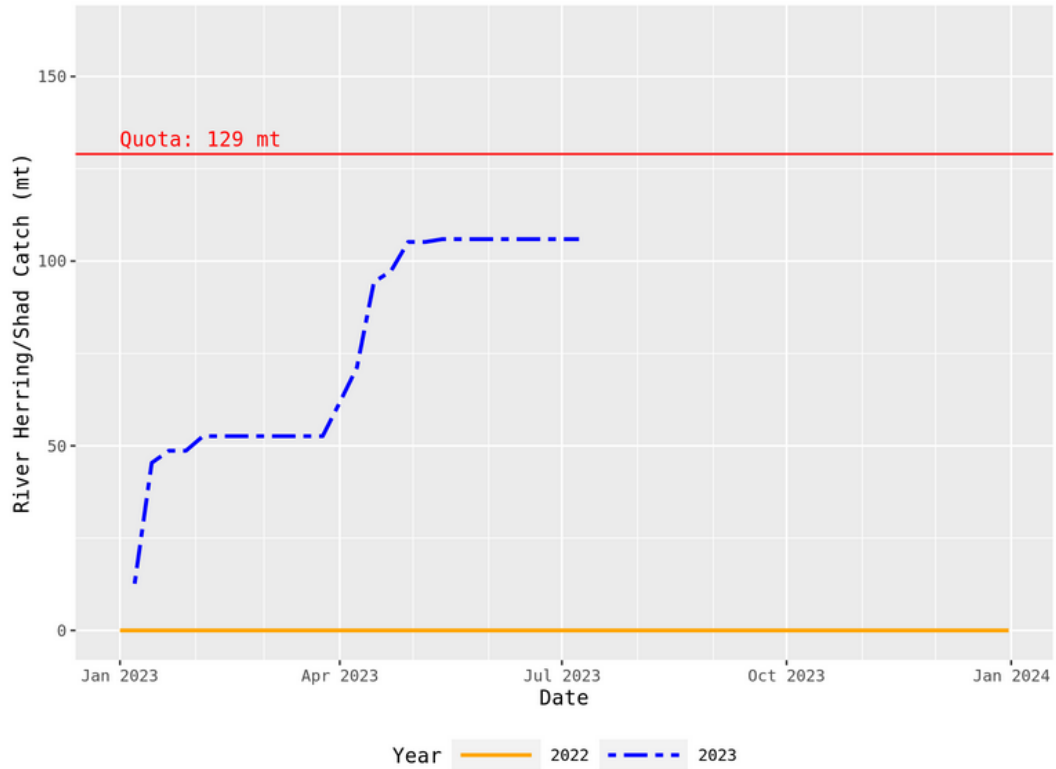


Figure 6. Preliminary Weekly RH/S Cap Monitoring; 2023 in blue, 2022 in yellow-orange. As of July 7, 2023. Source: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region>.

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