Longfin Squid (*Doryteuthis pealeii*) Fishery Information Document

July 2023

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for longfin squid ("longfin" hereafter, formerly known as "*Loligo*"), 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 Data sources for Fishery Information Documents include unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and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

- Landings have been typically variable and well below the annual quota in recent years. Considerable variability is expected in abundance, availability, and landings for any squid fishery.
- A management track assessment for Longfin was conducted in 2023. Based on 2022 data the stock was not overfished. The two-year average of the combined spring and fall NEFSC surveys showed continued variability, ending relatively high in 2022. Overfishing reference points are not available. A research track assessment will begin soon for review in early 2026.
- 2022 longfin landings and revenues increased substantially compared to 2021, and 2022 revenues set a new record for the fishery, slightly eclipsing 2016.
- Average annual prices in 2021 and 2022 were very similar, but prices fell considerably at the end of 2022. Average annual prices are still below pre-Covid levels.
- 2023 landings to date have been lower than 2022. Trimester 1 2023 landings were less than half of trimester 1 2022's landings, but as of early July, trimester 2 of 2023 was on a path to catch its quota.
- Similar to previous analyses, about 1/3 of catch on observed longfin trips is discarded. Butterfish, scup, sea robin, *Illex*, longfin, little skate, and spotted hake represented 67% of the discards based on raw observer data.

Basic Biology

Longfin is a neritic (from the shore to the edge of the continental shelf), semi-pelagic schooling cephalopod species primarily distributed between Georges Bank and Cape Hatteras, NC. The squid, and the fishery, generally occur offshore in the winter and inshore during the summer, with mixing and migrations from one to the other in spring and fall. Spawning/ recruitment occurs year-round with seasonal peaks in cohorts. The average lifespan of a cohort is about six

months. Individuals hatched inshore during the summer are taken in the winter offshore fishery and those hatched in the winter are taken in the inshore summer fishery. Age data indicate that NEFSC spring surveys (March-April) capture longfin that were hatched during the previous six months, in the fall, and those caught in the NEFSC fall surveys (September-October) were hatched during the previous spring. Longfin attach egg masses to the bottom substrate and fixed objects. Fishing and spawning mortality occur concurrently inshore during late spring through fall. The locations of spawning sites offshore at other times of the year are not well understood. Additional life history information is detailed in the Essential Fish Habitat (EFH) document for the species, located at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

Status of the Stock

Based on the 2023 management track assessment, longfin was not overfished in 2022 but there are no overfishing reference points available (available at https://apps-nefsc.fisheries.noaa.gov/saw/sasi/sasi_report_options.php). See Figure 1 for trends in biomass and catch from the last assessment through 2022. If considered separately, the cohorts represented by the spring and fall surveys would have been well-above their potential individual proxy biomass thresholds in 2022.

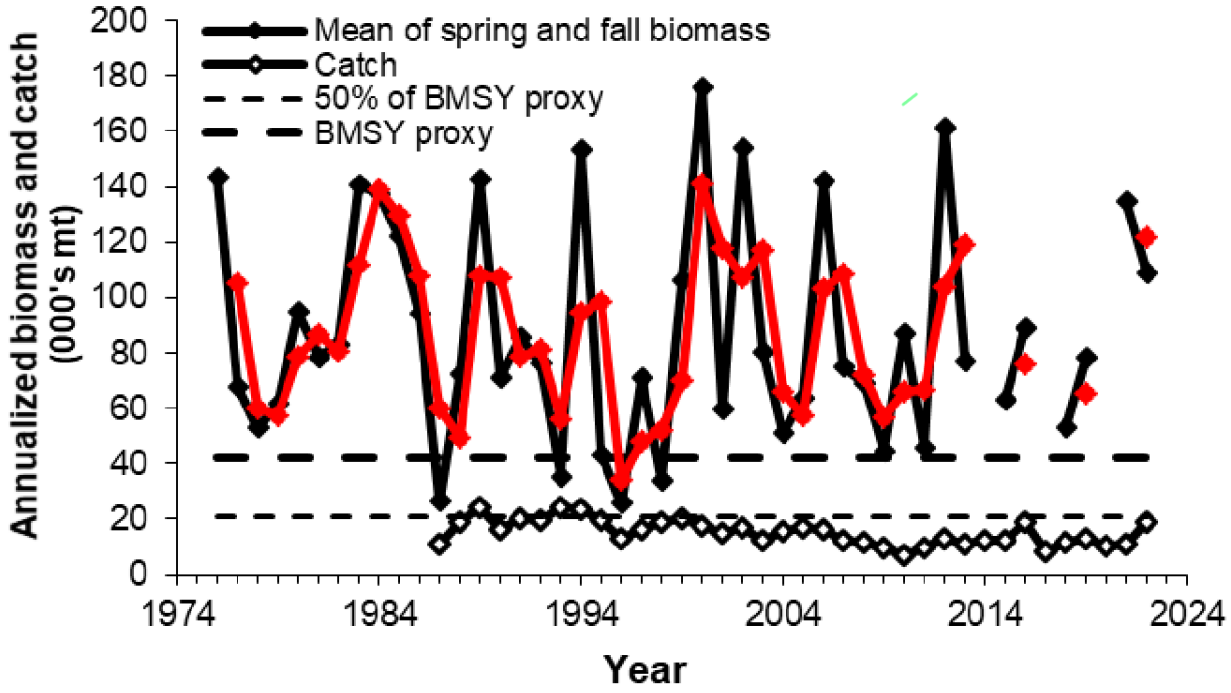

Figure 1. Longfin annualized biomass estimates (averages of the NEFSC spring and fall survey biomasses, in MT), in relation to the biomass target (42,205 MT) and biomass threshold (50% of target), and annual catches. The red line represents the two-year moving average of the annualized biomass estimates. Biomass estimates are q-adjusted swept area estimates.

Management System and Fishery Performance

Management

The Council established management of longfin in 1978 and the management unit includes all federal East Coast waters.

Access is limited with several moratorium permit categories. The quota is divided into three, 4-month trimesters (T) - 43% (T1 Jan-Apr), 17% (T2 May-Aug), and 40% (T3 Sept-Dec). Unused quota can roll over into later trimesters within a year depending on the amount of longfin landed. Underages from T1 that are greater than 25% are reallocated to trimesters 2 and 3 (split equally between both trimesters) of the same year. However, the T2 quota may only be increased 50% above its base and the remaining portion of the underage is reallocated to T3. Any underages for T1 that are less than 25% of the T1 quota are applied only to T3 of the same year. Any overages for T1 and T2 are subtracted from T3 of the same year as needed.

The 2023 longfin ABC is 23,400 MT, with a commercial quota of 22,932 MT (reduced to account for discards). Weekly monitoring, closure triggers, and trip limits are used to avoid substantial overages (measures modified occasionally based on performance).

Recreational catch of longfin is believed to be negligible relative to commercial catch. There are no recreational regulations except for party/charter vessel permits and VTR reporting. MRIP does not collect information on invertebrates, but social media indicates recreational fishing (private and for-hire) for longfin occurs.

Commercial Fishery

Figure 2 describes longfin landings 1963-2022. Figures 3-4 include domestic landings, ex-vessel revenues (2022 dollars[1]), and prices (2022 dollars) since 1996. Figure 5 highlights the drop in longfin prices at the end of 2022. Figure 6 illustrates preliminary landings throughout the year for 2022 and 2021 and Figures 7/8 illustrate preliminary landings for trimesters 1/2 for 2023 and 2022.

Table 1 describes 2022 longfin landings by state and table 2 describes 2021 and 2022 longfin landings by NMFS Statistical Areas. Almost all landings that have gear identified are bottom trawl.

[1] Unless noted otherwise, revenues/prices are provided as inflation-adjusted “2022 dollars” via the Gross Domestic Product Implicit Price Deflator.

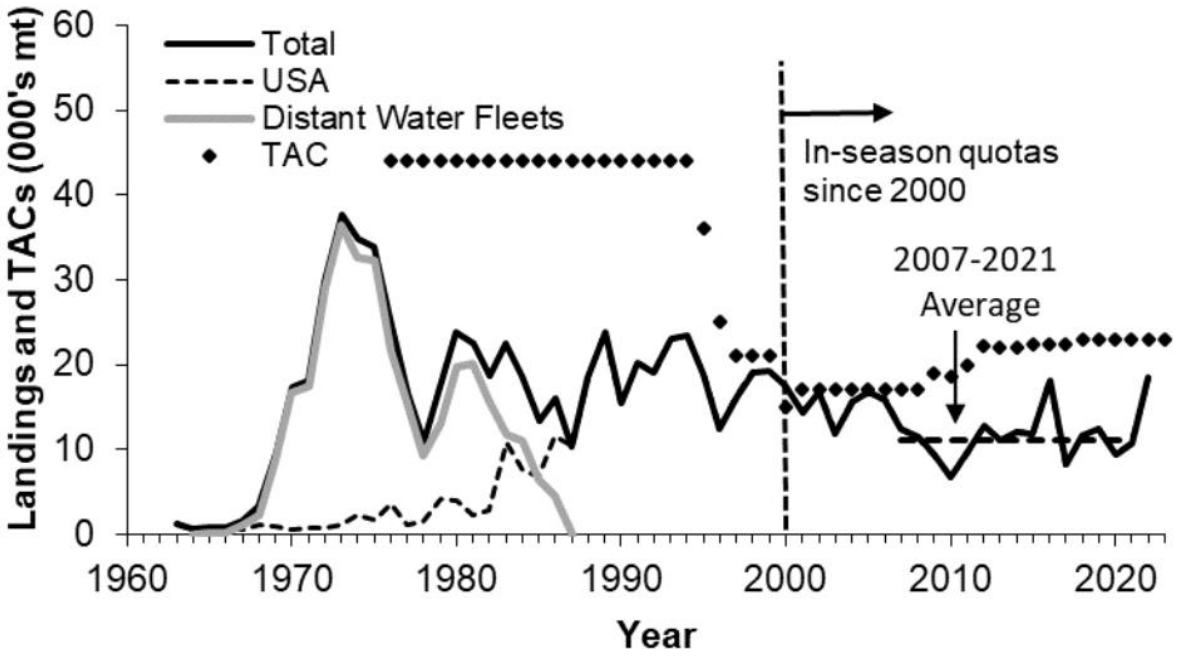

Figure 2. Landings of longfin, by USA and international fleets, on the Northeast USA continental shelf during 1963-2022 and annual TACs during1974-2022. In-season quotas were quarterly-based during 2001-2006 and trimester-based during 2000 and 2007-current.

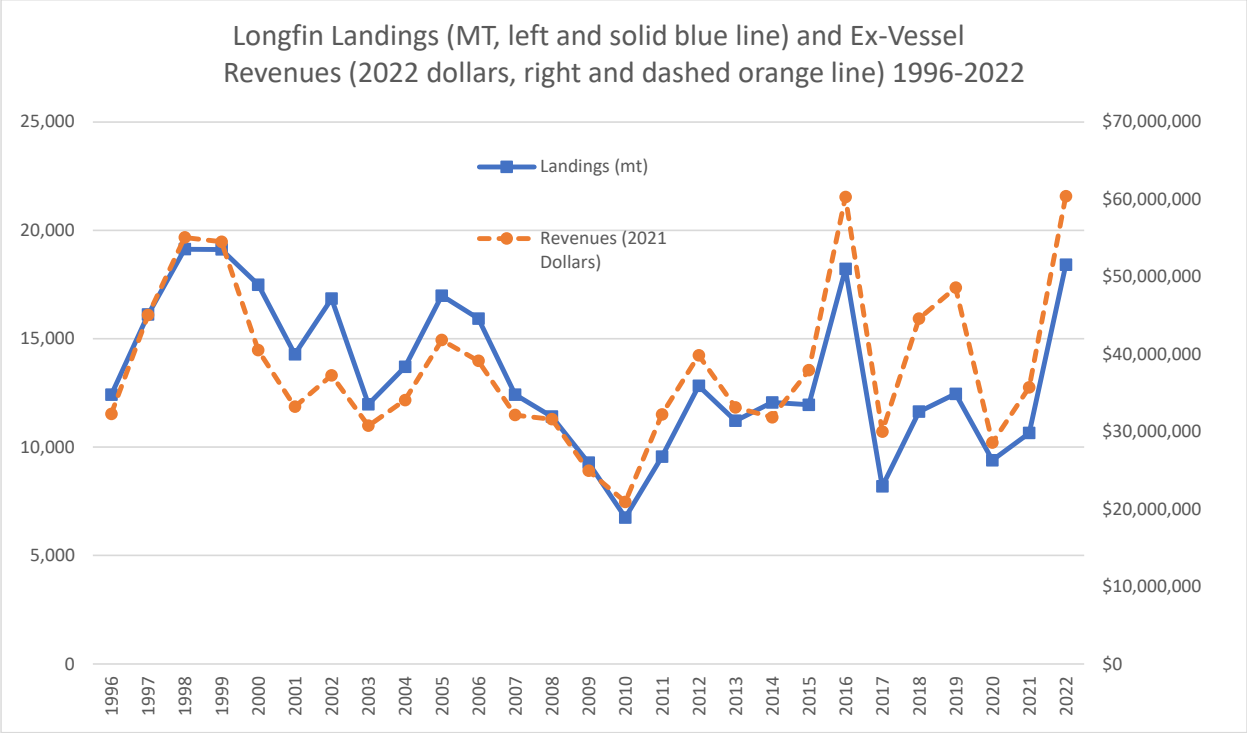

Figure 3. U.S. Longfin Landings and Longfin Ex-Vessel Values 1996-2022. Source: NMFS unpublished dealer data.

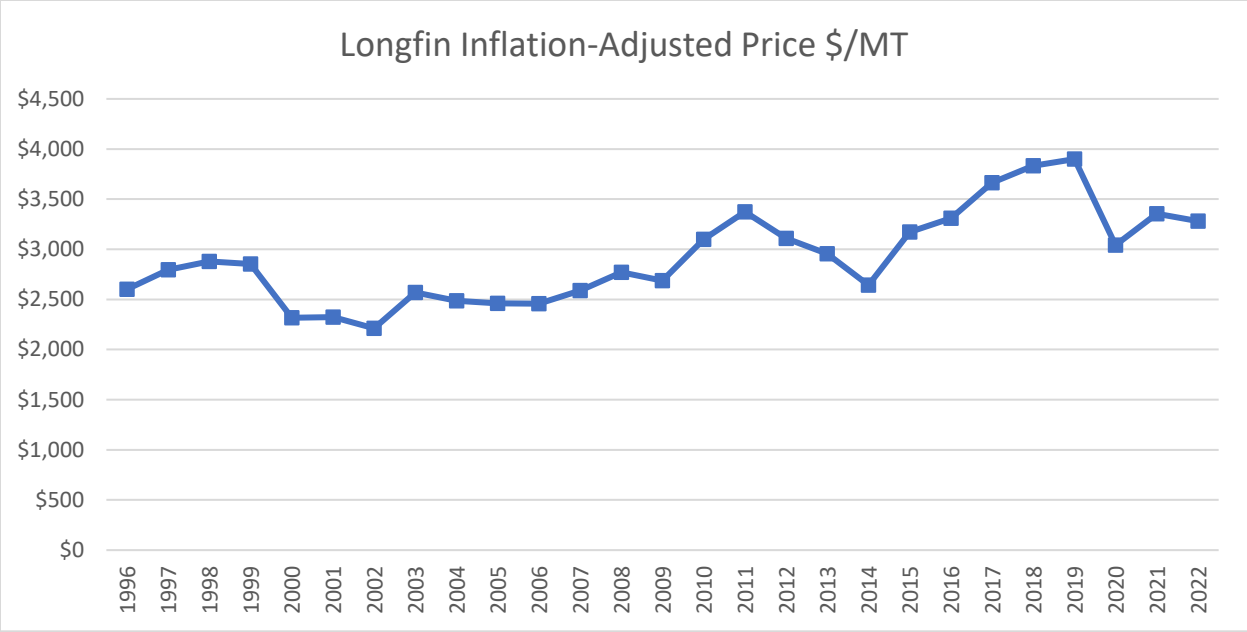

Figure 4. Annual Ex-Vessel Longfin Prices 1996-2022 Adjusted to 2022 Dollars Source: NMFS unpublished dealer data.

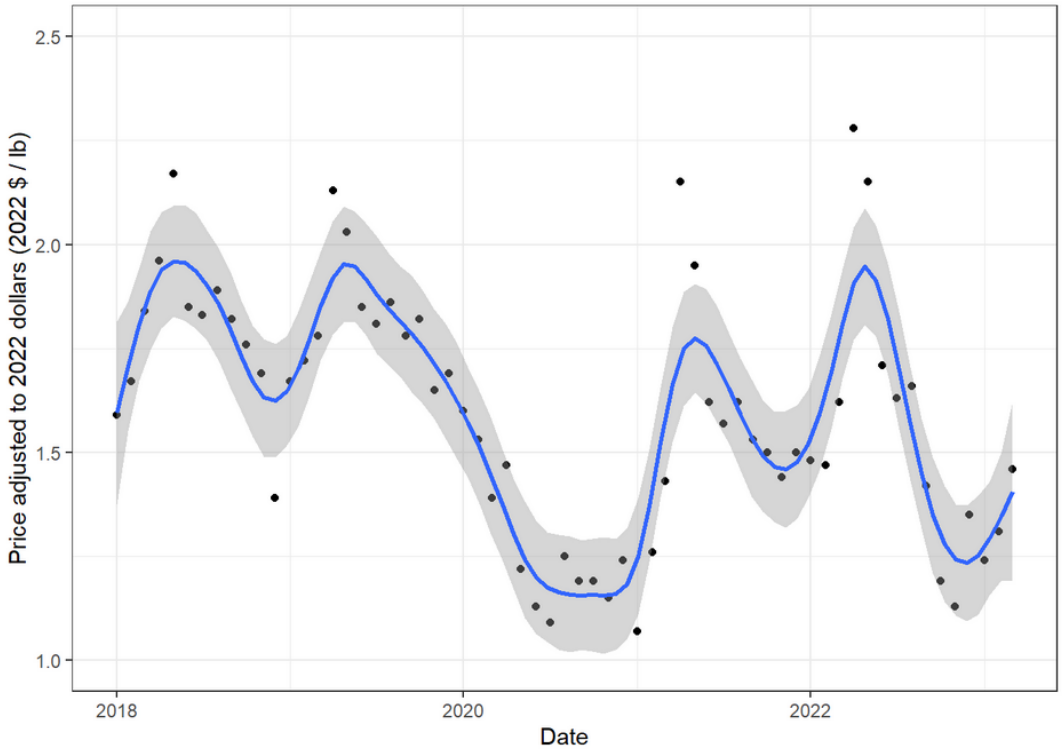

Figure 5. Recent monthly Ex-Vessel Longfin Prices through March 2023 (dots are monthly average prices with trend-smoother illustrated). Source: NMFS unpublished dealer data.

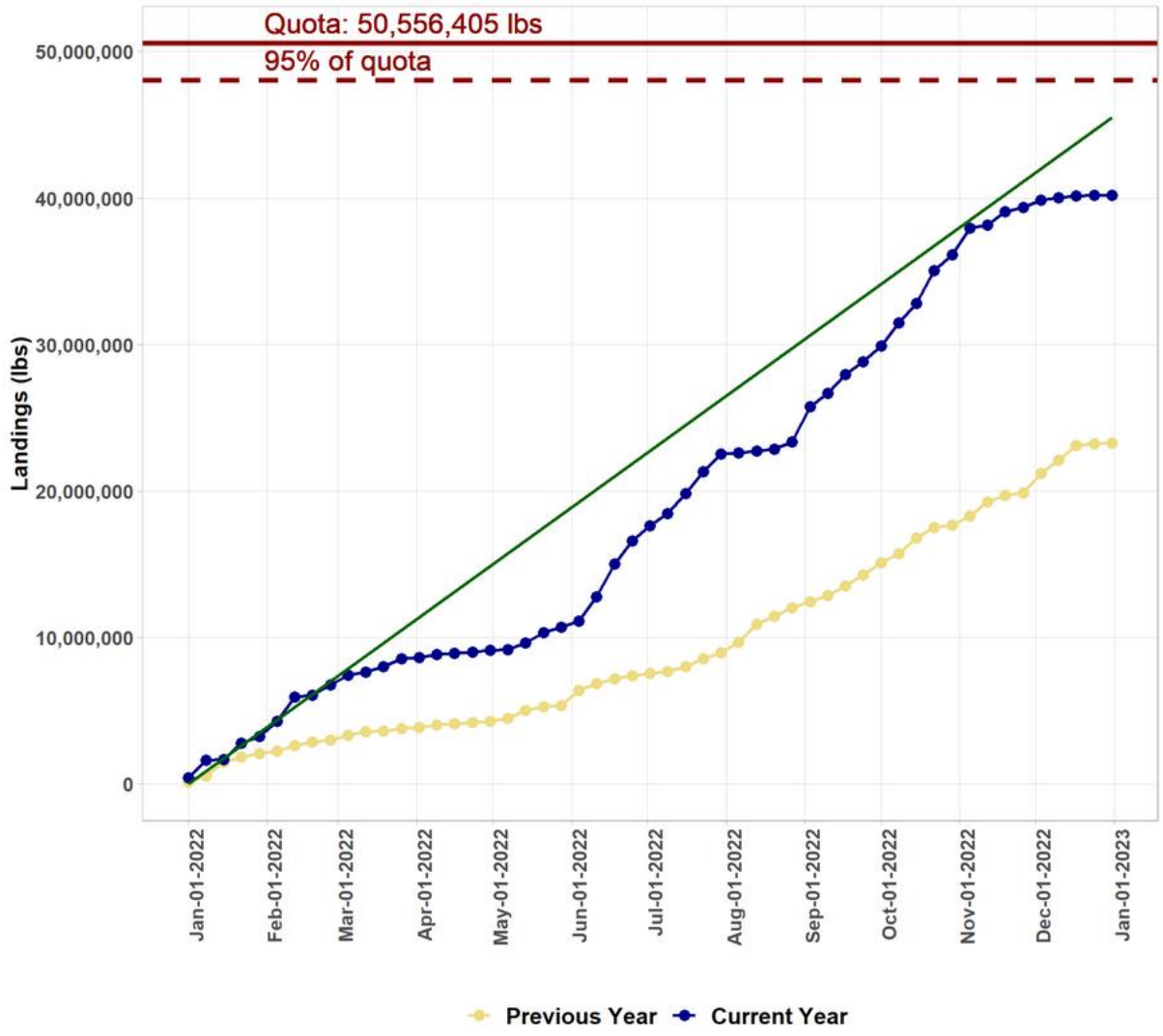

Figure 6. U.S. Preliminary Weekly Longfin landings; 2022 in blue, 2021 in yellow-orange. Source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region.

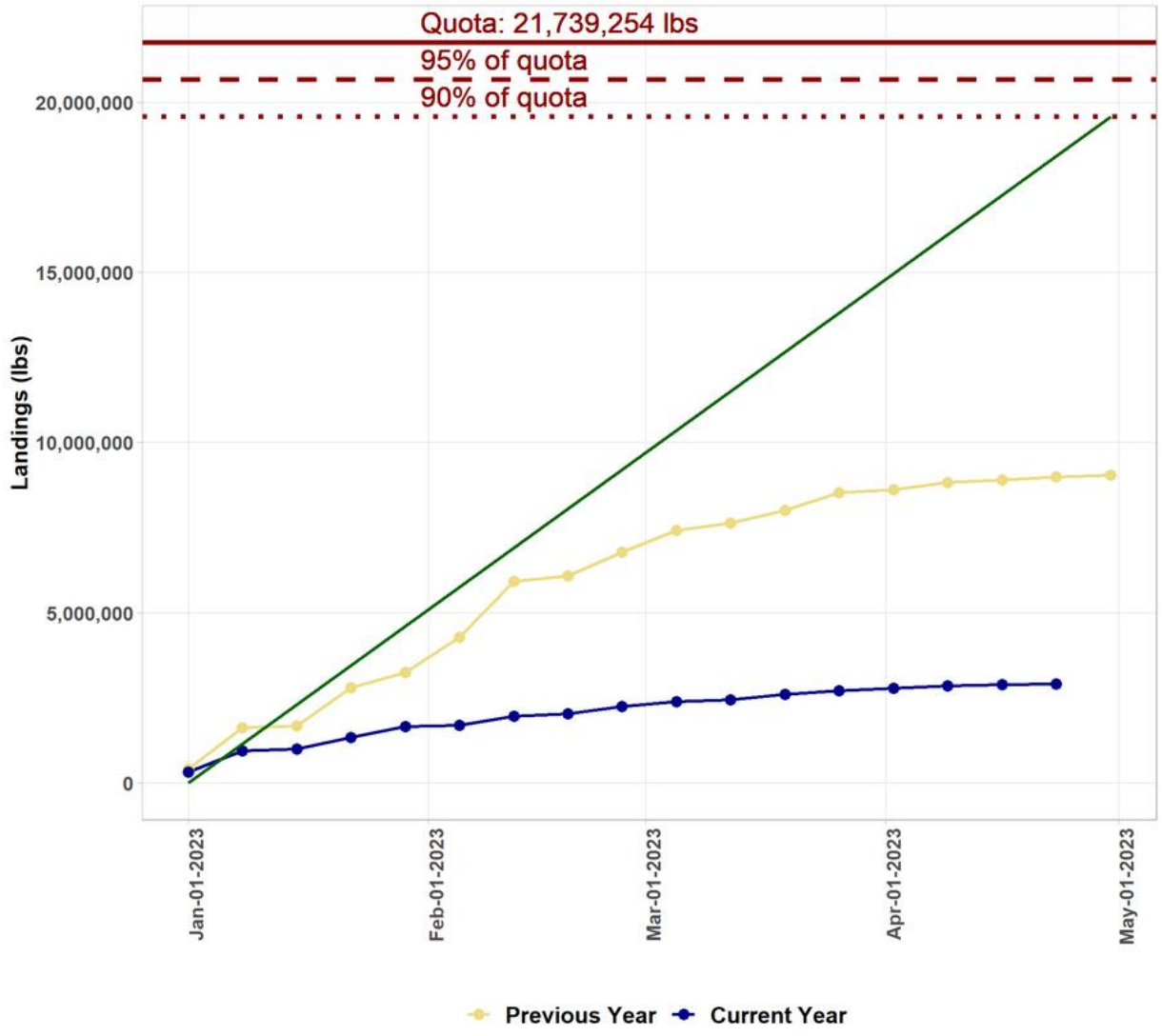

Figure 7. U.S. Preliminary Weekly Trimester 1 Longfin landings; 2023 Trimester 1 in blue, 2022 Trimester 1 in yellow-orange. Source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region.

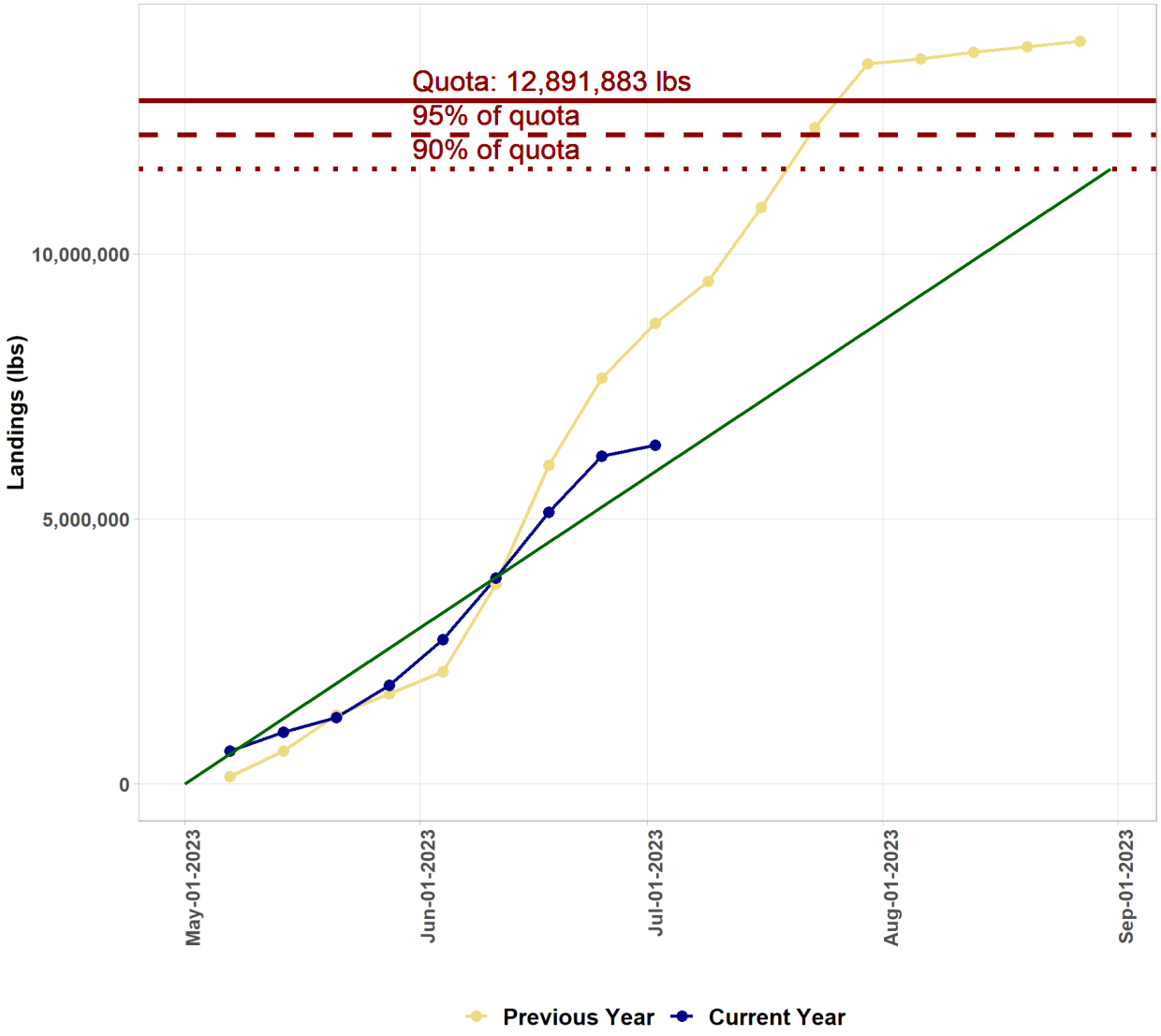

Figure 8. U.S. Preliminary Weekly Trimester 2 Longfin landings; 2023 Trimester 2 in blue, 2022 Trimester 2 in yellow-orange. Through July 6, 2023. Source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region.

Table 1. Commercial Longfin landings (live wt) by state in 2022. Source: NMFS unpublished dealer data.

State	Metric Tons
RI	11,787
NJ	2,258
NY	2,059
MA	1,680
CT	456
Other	165
Total	18,406

Table 2. Commercial longfin landings by statistical area in 2021 and 2022. Source: NMFS unpublished VTR data.

2021		2022	
Stat Area	Metric Tons	Stat Area	Metric Tons
537	2,267	537	4,516
613	2,115	613	2,862
616	1,574	616	2,481
622	1,216	622	1,821
626	472	626	1,609
539	408	631/632	978
526	340	538	590
538	264	539	465
611	254	526	388
525	230	611	306
612	152	623	305
167	124	612	217
Other	725	525	176
Total	10,141	562	143
		Other	744
		Total	17,601

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

Non-Target Catches and Discards

Environmental Assessments for longfin specifications developed by staff include tables of incidental catches with a directed fishery definition of at least 40% of retained catch being longfin squid. 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 with 2021-2022 data – 2020 data was severely impacted by Covid-19. 2021-2022 coverage improved but still only averaged 153 observed longfin squid trips versus the 394 observed annually 2017-2019.

Using discard ratio data from these observed hauls and 2021-2022 average longfin landings (14,624 MT), Table 3 below approximates annual catch/discards in the directed longfin squid fishery from 2021-2022, for species with extrapolated annual 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. On the trips identified in this analysis, the 2021-2022 overall discard rate (raw observer data) was 34% (similar to previous analyses).

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. Non-expanded counts of these individual fish records from the same trips are provided in Table 4 below.

The longfin squid fishery is also subject to a butterfish discard cap, which has not affected the longfin squid fishery in recent years – weekly monitoring reports are available at https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region.

Table 3. Longfin 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 longfin Kept	Pounds of given species discarded per mt longfin Kept	Rough Annual Catch (pounds) based on 2-year (2021-2022) average of longfin landings (14,624 mt)	Rough Annual Discards (pounds) based on 3-year (2021-2022) average of longfin landings (14,624 mt)
SQUID, ATL LONG-FIN	3,611,912	112,343	6%	3%	2,275	71	33,275,343	1,034,980
BUTTERFISH	608,147	579,258	29%	95%	383	365	5,602,659	5,336,512
SCUP	196,035	164,263	8%	84%	123	103	1,806,008	1,513,303
SQUID, SHORT-FIN	193,786	128,182	6%	66%	122	81	1,785,284	1,180,897
SEA ROBIN, NORTHERN	154,652	154,652	8%	100%	97	97	1,424,757	1,424,757
HAKE, SILVER (WHITING)	105,192	62,946	3%	60%	66	40	969,096	579,902
SKATE, LITTLE	102,443	100,907	5%	99%	65	64	943,777	929,625
HAKE, SPOTTED	94,096	93,250	5%	99%	59	59	866,877	859,077
DOGFISH, SMOOTH	64,557	56,898	3%	88%	41	36	594,741	524,183
SKATE, WINTER (BIG)	62,081	57,322	3%	92%	39	36	571,928	528,091
DOGFISH, SPINY	61,795	61,735	3%	100%	39	39	569,296	568,743
FLOUNDER, SUMMER	54,327	25,611	1%	47%	34	16	500,495	235,949
SEA BASS, BLACK	46,526	36,259	2%	78%	29	23	428,630	334,039
HAKE, RED (LING)	45,971	43,986	2%	96%	29	28	423,517	405,228
SCALLOP, SEA	30,049	26,851	1%	89%	19	17	276,833	247,366
BASS, STRIPED	29,741	28,621	1%	96%	19	18	273,993	263,679
SQUID, NK	26,228	23,625	1%	90%	17	15	241,630	217,648
BLUEFISH	20,094	1,887	0%	9%	13	1	185,121	17,387
SKATE, NK	18,225	16,270	1%	89%	11	10	167,902	149,885
SEA ROBIN, STRIPED	14,567	14,413	1%	99%	9	9	134,198	132,778
SEAWEED, NK	14,098	14,098	1%	100%	9	9	129,878	129,878
MACKEREL, ATLANTIC	13,300	9,409	0%	71%	8	6	122,526	86,684
DORY, BUCKLER (JOHN)	13,251	5,900	0%	45%	8	4	122,081	54,353
FLOUNDER, FOURSPOT	12,893	12,893	1%	100%	8	8	118,779	118,779
MONKFISH (GOOSEFISH)	12,789	6,931	0%	54%	8	4	117,824	63,849
SKATE, CLEARNOSE	10,396	10,331	1%	99%	7	7	95,777	95,172
SKATE, LITTLE/WINTER, NK	9,247	9,226	0%	100%	6	6	85,192	84,999
FLOUNDER, WINTER	8,905	8,751	0%	98%	6	6	82,036	80,623
SKATE, BARNDOOR	8,546	8,546	0%	100%	5	5	78,731	78,731
MENHADEN, ATLANTIC	7,400	7,120	0%	96%	5	4	68,176	65,594
CHUB MACKEREL	6,710	6,677	0%	100%	4	4	61,814	61,515

Table 3. Longfin Target/Non-Target Catches (continued)

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 longfin Kept	Pounds of given species discarded per mt longfin Kept	Rough Annual Catch (pounds) based on 2-year (2021-2022) average of longfin landings (14,624 mt)	Rough Annual Discards (pounds) based on 3-year (2021-2022) average of longfin landings (14,624 mt)
HAKE, MIX SIL/OFF	5,656	4,667	0%	83%	4	3	52,105	42,999
STARFISH, SEASTAR, NK	5,241	5,241	0%	100%	3	3	48,285	48,285
LONG-FIN EGGS	4,957	4,957	0%	100%	3	3	45,664	45,664
DOGFISH, CHAIN	4,503	4,503	0%	100%	3	3	41,482	41,482
BOARFISH, DEEPBODY	4,338	4,338	0%	100%	3	3	39,962	39,962
SEA ROBIN, NK	4,310	4,310	0%	100%	3	3	39,702	39,702
CRAB, JONAH	4,150	4,118	0%	99%	3	3	38,233	37,941
CRAB, LADY	3,928	3,928	0%	100%	2	2	36,186	36,186
WEAKFISH	3,907	3,510	0%	90%	2	2	35,998	32,334
CRAB, HORSESHOE	3,654	3,617	0%	99%	2	2	33,659	33,323
CRAB, ROCK	3,115	3,115	0%	100%	2	2	28,701	28,701
HAKE, NK	3,112	2,543	0%	82%	2	2	28,666	23,431
FISH, NK	2,813	2,630	0%	94%	2	2	25,915	24,231
BEARDFISH	2,568	2,568	0%	100%	2	2	23,661	23,661
SKATE, ROSETTE	2,368	2,368	0%	100%	1	1	21,817	21,817
KINGFISH, NORTHERN	2,235	1,308	0%	59%	1	1	20,587	12,047
RAY, BULLNOSE	2,157	2,157	0%	100%	1	1	19,868	19,868
CRAB, SPIDER, NK	2,053	2,053	0%	100%	1	1	18,912	18,912
SHAD, AMERICAN	1,797	1,786	0%	99%	1	1	16,559	16,455
TAUTOG (BLACKFISH)	1,758	1,619	0%	92%	1	1	16,199	14,915
LOBSTER, AMERICAN	1,744	1,301	0%	75%	1	1	16,068	11,986
HAKE, MIX RED/WHITE/SPOTD/SOUTH	1,711	1,573	0%	92%	1	1	15,760	14,489
TILEFISH, GOLDEN	1,354	432	0%	32%	1	0	12,474	3,984
SCAD, ROUGH	1,320	1,320	0%	100%	1	1	12,161	12,161
PUFFER, NORTHERN	1,280	1,264	0%	99%	1	1	11,791	11,647
ALEWIFE	1,271	1,271	0%	100%	1	1	11,709	11,709
EEL, CONGER	1,254	607	0%	48%	1	0	11,553	5,596
DOGFISH, NK	1,233	1,233	0%	100%	1	1	11,359	11,359
SEA ROBIN, ARMORED	1,223	1,223	0%	100%	1	1	11,267	11,267
TILEFISH, BLUELINE	1,093	407	0%	37%	1	0	10,071	3,751

Table 4. Counts (not expanded) in Individual Animal Records on all observed “longfin” trips, 2021-2022

COMNAME	count
SHARK, SANDBAR (BROWN	132
BONITO, ATLANTIC	130
STINGRAY, ROUGHTAIL	118
SHARK, ATL ANGEL	94
RAY, TORPEDO	66
MOLA, OCEAN SUNFISH	62
SWORDFISH	41
SHARK, CARCHARHINID,N	37
TUNA, NK	34
SHARK, TIGER	29
SHARK, NK	28
SHARK, HAMMERHEAD, SC	23
STURGEON, ATLANTIC	19
SHARK, THRESHER	15
STINGRAY, NK	13
SHARK, BASKING	12
TUNA, LITTLE (FALSE A	12
AMBERJACK, NK	11
SHARK, BLUE (BLUE DOG	10
SHARK, WHITE	9
RAY, BUTTERFLY, SPINY	8
STINGRAY, BLUNTNOSE	8
BARRACUDA, NK	6
MOLA, NK	6
TUNA, YELLOWFIN	5
COBIA	4
GROUPER, NK	4
SHARK, SPINNER	4
MACKEREL, FRIGATE	3
SHARK, GREENLAND	3
SHARK, PORBEAGLE (MAC	3
SHARK, SILKY	3
SHARK, BLACK TIP	2
SHARK, PELAGIC	2
SHARK, SAND TIGER	2
TUNA, BIG EYE	2
TUNA, BLUEFIN	2
DOLPHINFISH (MAHI MAH	1
RAY, BUTTERFLY, NK	1
RAY, NK	1
SHARK, CARCHARHINID,	1
SHARK, HAMMERHEAD, NK	1
SHARK, HAMMERHEAD,NK	1
STURGEON, NK	1
TUNA, SKIPJACK	1

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