Spiny Dogfish Fishery Information Document

August 2020

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for spiny dogfish (*Squalus acanthias*) with an emphasis on recent data. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and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/dogfish.

Key Facts

- 2019 fishing year landings were about 18.6 million pounds; 2018 fishing year landings were about 17.6 million pounds.
- The current 2020 fishing year quota is 23.2 million pounds.
- The 2021 quota would increase to 27.4 million pounds under previously-adopted multi-year specifications if no changes are recommended by the Scientific and Statistical Committee (SSC) or the Council. If projections are amended and accepted by the SSC just based on the Council's new risk policy, the 2021 quota could approximately increase by another 3 million pounds to around 30 million pounds.
- Due to the cancelation of the Spring NMFS trawl survey, there is not much data to update so there is not a separate data update document from NMFS. 2019 calendar year landings (calendar year is used in the assessment but not management) were 17.4 million pounds. The previous data update is available at https://www.mafmc.org/s/3_2019-Data-Update-for-spiny-dogfish.pdf.

Basic Biology

Spiny dogfish is a coastal shark with populations on the continental shelves of northern and southern temperate zones throughout the world. It is the most abundant shark in the western north Atlantic and ranges from Labrador to Florida, but is most abundant from Nova Scotia to Cape Hatteras, North Carolina. Its major migrations on the northwest Atlantic shelf are north and south, but it also migrates inshore and offshore seasonally in response to changes in water temperature. Spiny dogfish have a long life, late maturation, a long gestation period, and relatively low fecundity, making them generally vulnerable to depletion. Fish, squid, and ctenophores dominate the stomach contents of spiny dogfish collected during the Northeast Fisheries Science Center (NEFSC) bottom trawl surveys, but spiny dogfish are opportunistic and

have been found to consume a wide variety of prey. More detailed life history information can be found in the essential fish habitat (EFH) source document for spiny dogfish at: https://www.fisheries.noaa.gov/region/new-england-mid-atlantic#science. [1]

Status of the Stock

Based on the current biomass reference point and an assessment update considering data through spring of 2018 (available at http://www.mafmc.org/ssc-meetings/2018/sept-11), the spiny dogfish stock is not overfished or experiencing overfishing. The 2018 biomass was 67% of the target. Fishing mortality in 2017, the most recent year available, was 83% of the overfishing threshold. A benchmark assessment is scheduled for 2022. The spiny dogfish spawning stock biomass estimate timeseries is provided in Figure 1. [2]

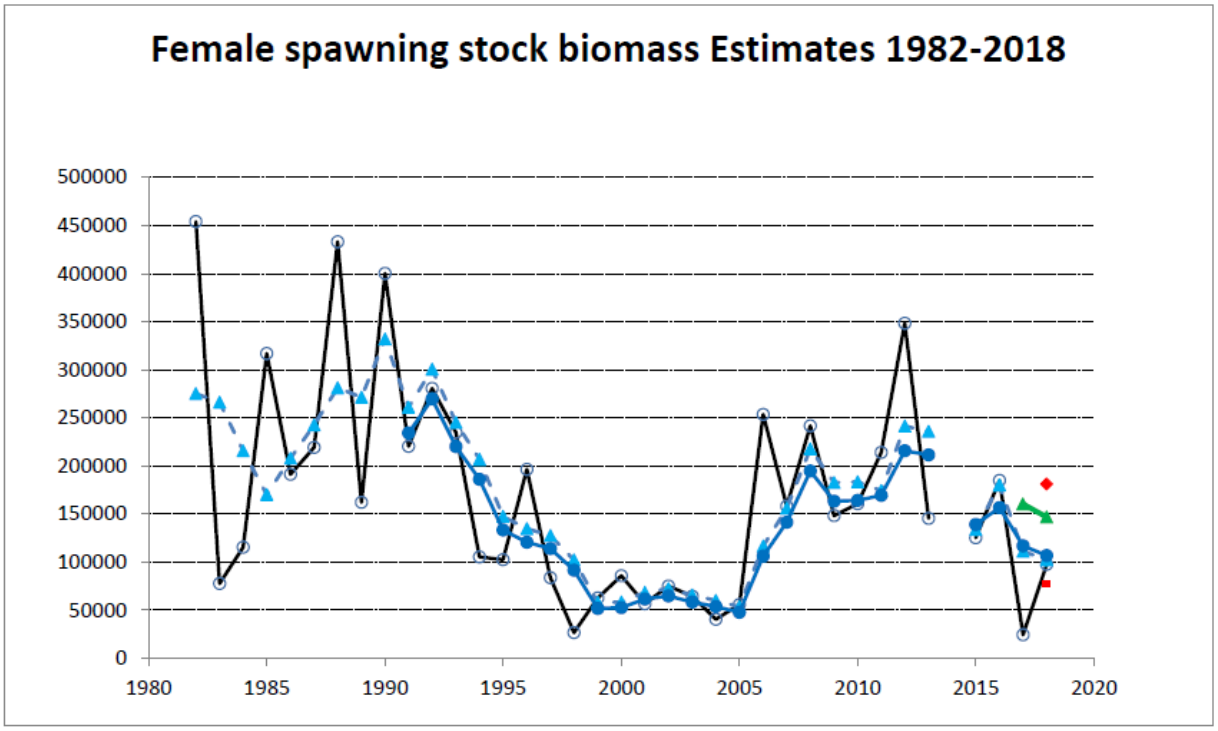

Figure 1. Stochastic SSB estimates for 1991 to 2018. Year refers to the terminal year in the three point moving average. The open circles are the yearly swept area SSB estimates, the blue triangles are the 3-year moving average of the swept area estimates, and the **closed blue circles are the stochastic SSB estimates**. The green triangles are the stochastic estimates not including 2017 and not adjusted with a Kalman filter, and the red diamond (no 2017) and square (with 2017) are the stochastic estimates adjusted with a Kalman filter (not used in last update). [2]

Management System and Fishery Performance

Management

The Council established management of spiny dogfish in 2000 and the management unit includes all federal East Coast waters.

Access to the fishery is not limited, but a federal permit must be obtained to fish in federal waters and there are various permit conditions (e.g. trip limit and reporting). There is a federal trip limit of 6,000 pounds. Some states mirror the federal trip limit, but states can set their own

trip limits. The annual quota has been allocated to state shares through the Atlantic States Marine Fisheries Commission (http://www.asmfc.org/species/spiny-dogfish).

Spiny Dogfish three-year specifications were adopted by the Council in October 2018 for May 1, 2019 through April 30, 2022 (the 2019-2021 fishing years). Quotas for these fishing years are 20.5 million pounds (2019), 23.2 million pounds (2020), and 27.4 million pounds (2021). If projections are amended and accepted by the Scientific and Statistical Committee SSC just based on the Council's new risk policy, the 2021 quota could approximately increase by another 3 million pounds to around 30 million pounds.

Recreational landings are a minimal component of fishing mortality, and dead recreational discards comprise a relatively low portion of discard mortality.

Commercial Fishery

Figure 2 and Table 1 illustrate spiny dogfish landings for the 2000-2019 fishing years relative to the quotas in those years. Additional years' landings are available in the 2019 NMFS Science Center data update. The Advisory Panel has previously noted that the fishery is subject to strong market constraints given weak demand.

Figure 3 provides inflation-adjusted spiny dogfish ex-vessel prices in "real" 2019 dollars.

Figure 4 illustrates preliminary landings from the 2020 and 2019 fishing years relative to the current quota. The last 2020/blue data point is typically the most incomplete.

Tables 2-4 provide information on landings in the 2017-2019 fishing years by state, month, and gear type.

Table 5 provides information on the numbers of participating vessels that have at least one federal permit. State-only vessels are not included, but the table should still illustrate trends in participation.

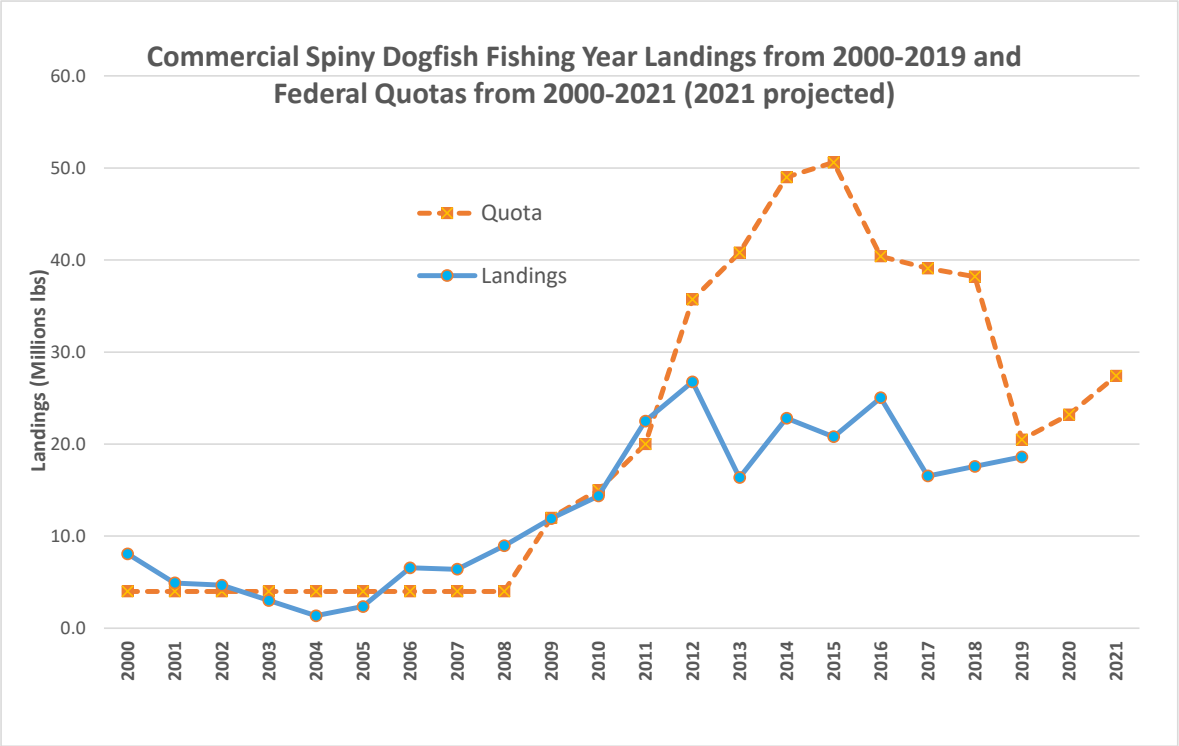

Figure 2. Annual spiny dogfish landings and federal quotas since 2000. [4]

Table 1. Commercial spiny dogfish fishing year landings from 2000-2019 and federal quotas from 2000-2021 (2020-2021 Proposed)[4]

Fishing year	Fed Quota (M lb)	Landings (M lb)
2000	4.0	8.1
2001	4.0	4.9
2002	4.0	4.7
2003	4.0	3.0
2004	4.0	1.3
2005	4.0	2.3
2006	4.0	6.6
2007	4.0	6.4
2008	4.0	8.9
2009	12.0	11.9
2010	15.0	14.4
2011	20.0	22.5
2012	35.7	26.8
2013	40.8	16.4
2014	49.0	22.8
2015	50.6	20.8
2016	40.4	25.0
2017	39.1	16.5
2018	38.2	17.6
2019	20.5	18.6
2020	23.2	
2021	27.4	

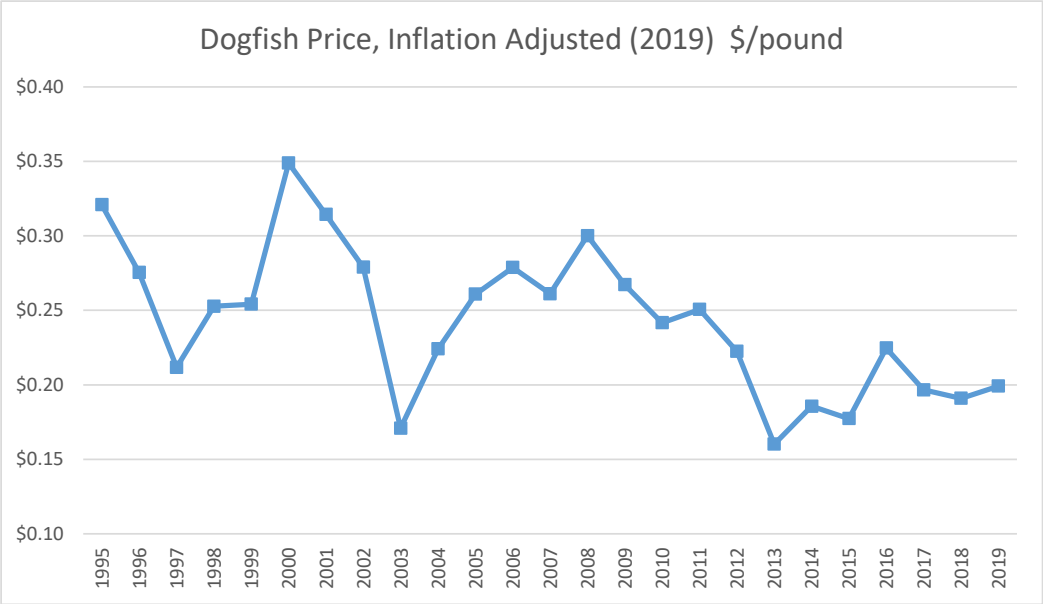

Figure 3. Price of spiny dogfish ($/live pound) (adjusted to 2019 “real” dollars using the GDP deflator, 1995-2019 fishing years. Given the difference between fishing year and the calendar year used for inflation adjusting, adjusted prices are approximate. Source: NMFS unpublished dealer data. [4]

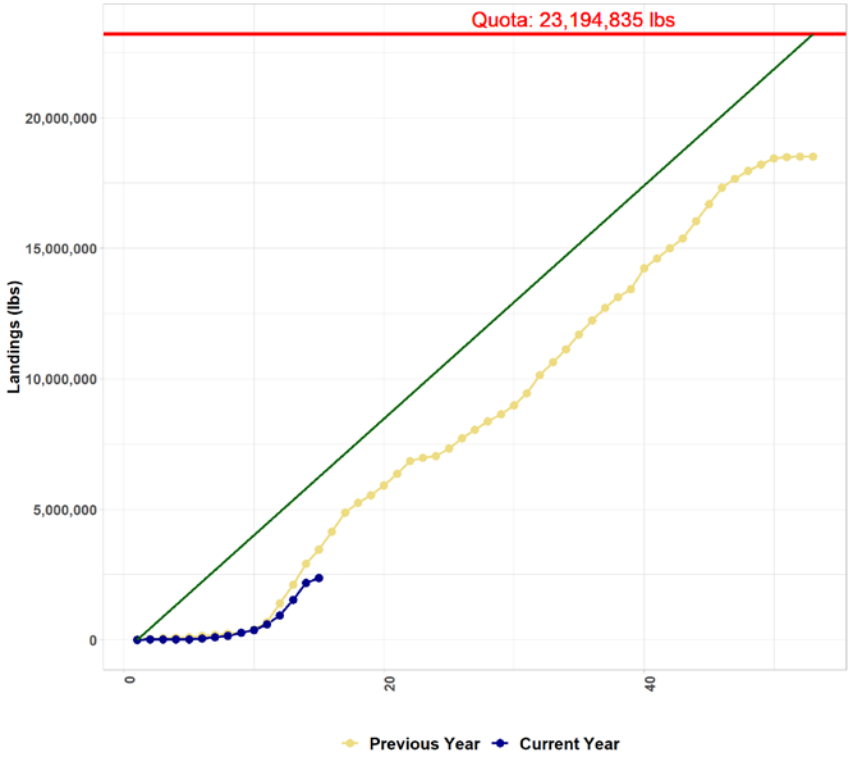

Figure 4. Preliminary Spiny dogfish landings; the 2020 fishing year is in blue through August 12, 2020, and the 2019 fishing year is in yellow-orange. Source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region . [4]

Table 2. Commercial Spiny Dogfish landings (live weight – millions of pounds) by state for 2017-2019 fishing years. Source: NMFS unpublished dealer data. [4]

fishyear	MA	VA	NJ	NC	NH	MD	RI	Other	Total
2017	9.6	2.5	1.9	0.7	0.8	0.6	0.3	0.1	16.5
2018	7.7	5.5	1.3	1.4	0.5	0.9	0.2	0.1	17.6
2019	6.6	7.0	1.9	1.6	0.7	0.4	0.3	0.1	18.6

Table 3. Commercial Spiny Dogfish landings (live weight – millions of pounds) by month for 2017-2019 fishing years. Source: NMFS unpublished dealer data. [4]

fishyear	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
2017	0.2	0.4	3.7	3.3	1.5	1.6	1.0	1.7	0.7	0.9	0.9	0.5	16.5
2018	0.0	0.1	2.3	2.7	1.8	1.5	1.3	2.5	1.6	1.8	1.2	0.8	17.6
2019	0.1	0.2	2.3	2.7	1.6	1.0	1.6	2.5	2.2	1.9	2.2	0.3	18.6

Table 4. Commercial Spiny Dogfish landings (live weight – millions of pounds) by gear for 2017-2019 fishing years. Source: NMFS unpublished dealer data. [4]

fishyear	GILL_NET_SINK__OTHER	UNKNOWN	HAND_LINE__OTHER	GILL_NET_SET__STAKE__SEA_BASS	TRAWL_OTTER_BOTTOM_FISH	LONGLINE__BOTTOM	Other	Total
2017	8.7	4.1	1.9	0.7	0.8	0.0	0.3	16.5
2018	10.0	3.2	1.8	1.3	0.4	0.5	0.4	17.6
2019	11.8	2.7	0.5	1.5	0.5	1.3	0.3	18.6

Table 5. Participation by fishing year of federally-permitted vessels. State-only vessels are not included.[4]

YEAR	Vessels 200,000+	Vessels 100,000 - 199,999	Vessels 50,000 - 99,999	Vessels 10,000 - 49,999	Total with at least 10,000 pounds landings
2000	16	10	8	43	77
2001	4	12	10	33	59
2002	2	14	8	31	55
2003	4	5	3	17	29
2004	0	0	0	42	42
2005	0	0	1	67	68
2006	0	4	11	114	129
2007	1	2	21	72	96
2008	0	5	20	119	144
2009	0	11	42	166	219
2010	0	26	54	124	204
2011	1	48	73	135	257
2012	25	55	56	146	282
2013	10	27	45	87	169
2014	27	38	38	81	184
2015	31	33	36	59	159
2016	52	26	14	45	137
2017	28	27	24	32	111
2018	28	26	20	35	109
2019	29	25	21	29	104

Staff received a request about participation in May-July 2020 (i.e. most recent year to date) versus May-July 2019. GARFO staff was able to look at recent data, and noted the following. In 2020 so far through July, numbers of federal permits landing any spiny dogfish dropped from 90 to 64; numbers of federal permits landing at least 25,000 pounds dropped from 34 to 24; numbers of federal permits landing at least 50,000 pounds dropped from 24 to 18.

References

[1] Stehlik, Linda. 2007. Essential Fish Habitat source document: Spiny Dogfish, *Squalus acanthias*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-203; 52 p.

[2] NEFSC 2018. Spiny Dogfish Assessment Update. Available at http://www.mafmc.org/ssc-meetings/2018/sept-11.

[3] NEFSC 2019. Spiny Dogfish Data Update. Available at http://www.mafmc.org/ssc-meetings/2019/september-9-11.

[4] Unpublished NMFS dealer and/or Vessel Trip Report data.