

## MEMORANDUM

**Date:** September 23, 2021  
**To:** Chris Moore, Executive Director  
**From:** Staff  
**Subject:** Spiny Dogfish Specifications

The Spiny Dogfish Monitoring Committee (SDMC) endorsed status quo 2022 specifications and discussed various issues regarding a potential trip limit change (see SDMC summary). NMFS may provide additional information during the Spiny Dogfish Committee meeting that warrants a reconsideration, but given the available information, staff observes/recommends the following:

1. Based on discussion at the Monitoring Committee, an emergency action request to change the trip limit seems likely to be declined by NMFS given trip limit issues have been an ongoing consideration.
2. The last two trip limit changes made via the specifications process were increases of 25% and then 20%. Increases around this range, i.e. up to 7,500 pounds, seem reasonable to continue to consider within the specifications process. The use of a Supplemental Environmental Assessment (EA) that focuses just on trip limit changes would lessen workload issues. However, there may still be substantial protected resource concerns to address and implementation would not be expected until May 1.
3. A separate framework action could facilitate public awareness and participation given that the fishery is in the middle of static multi-year specifications and some fishery participants may not be expecting consideration of trip limit changes at this time. Because spiny dogfish are jointly managed with the NEFMC, a framework would be on both Council's agendas twice. A separate framework action could likely still utilize a Supplemental EA that focuses on the trip limit issue, but implementation would likely be later than using specifications given the required meeting sequence.

Due to the short term uncertainty created by the pending research track assessment and limited input about policy preferences across the fishery, staff recommends status-quo measures to maintain stability. Staff has no sense yet of the outcome of the assessment, which will be considering substantially different models.

Other included briefing materials are the Monitoring Committee Summary, the SSC Report (separate tab), the staff memo to the SSC, the Advisory Panel Fishery Performance Report, and the staff Fishery Information Document.





## **Spiny Dogfish Monitoring Committee (SDMC) Meeting Summary**

**September 22, 2021**

*Webinar*

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Monitoring Committee (SDMC) met on September 20, 2021 at 1:30 pm. The purpose of this meeting was to review spiny dogfish management and make any appropriate recommendations.

**SDMC Attendees: Jason Didden, Scott MacDonald (Mid-Atlantic industry ex-officio member), Nichola Meserve, Conor McManus, Cynthia Ferrio, John Whiteside (New England industry ex-officio member), Kathy Sosebee, Angel Willey, David Behringer**

**Other Attendees: Alan Bianchi, James Fletcher, Hannah Novotny**

Jason Didden summarized recent fishery performance, the input of the Advisory Panel, and the findings of the Scientific and Statistical Committee (SSC). The SSC did not recommend any changes to the spiny dogfish Acceptable Biological Catch (ABC), and no changes to specifications were deemed warranted by the SDMC.

Jason Didden also described a price analysis conducted to examine if there was any indication of substantial effects or disruption of fishery operations after the two most recent trip limit increases. This analysis (contained in the Fishery Information Document) was undertaken by staff following a Council tasking to better inform consideration of a potential trip limit increase. These prior increases occurred on September 8, 2014 (4,000 pounds to 5,000 pounds and August 15, 2016 (5,000 pounds to 6,000 pounds). The changes went into effect through the normal specifications rulemaking process each with an accompanying Environmental Assessment (EA), though implementation occurred later in each respective fishing year due to Council processes.<sup>1</sup> The analysis of prices around the times of those trip limit changes did not suggest substantial effects.

The industry ex-officio members proposed that a doubling of the trip limit to 12,000 pounds be implemented via an emergency action to help provide additional incentive to the current fleet to harvest more dogfish (i.e. return to the somewhat higher levels seen in recent years). The emergency rationale is primarily related to declining participation/landings and potential loss of markets leading to long-term missed economic opportunities. Per the Advisory Panel Report, recent trends appear to be due to increased fuel costs and better opportunities in other/new

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<sup>1</sup> For 2014's 4,000 to 5,000 lb increase: MAFMC recommended 4,000 lb in October 2013, revisited in December 2013 without changing, and NEFMC recommended no limit in January 2014. NMFS proposed no trip limit in May 2014 (for sake of maximum public comment) and issued a final rule in August 2014 for the 5000 lb limit. For 2016's 5,000 to 6,000 lb increase: MAFMC recommended 5000 lb in October 2015, as did NEFMC in December 2015. In April 2016, both Councils voted to revise to 6,000 lb based on a request from ASMFC (vote taken February 2016). In June 2016, NMFS proposed 5,000 lb, but the final rule in August 2016 implemented the 6,000 lb limit.

fisheries rather than Covid impacts or declining resource availability. There was substantial discussion about the potential for emergency action including the criteria and available resources to complete accompanying NEPA analyses and rulemaking. NMFS will provide additional guidance on potential emergency rulemaking at the Committee meeting.

The SDMC noted that as long as the states are adhering to their quotas based on the overall ABC/ACL, different trip limits should not lead to ACL overages or negatively affect stock size. From a process perspective, substantial changes are more appropriate for frameworks or amendments where more analysis and public comment can be evaluated, though it can be challenging to determine a trigger point necessitating a particular type of action. NMFS will likely have additional input on potential process considerations at the upcoming Committee meeting, including as related to joint-management requirements. Regardless of the Council approach (framework, specifications, emergency action request), an Environmental Assessment (EA) would likely be appropriate from a National Environmental Policy Act (NEPA) perspective to accompany any potential trip limit increase given heightened large whale concerns and the potential for a higher trip limit to lead to additional effort and/or additional time of gear in the water compared to the current situation. Council staff noted that creating an EA for spiny dogfish is not included in the Council's 2021 work plan, but the Council could prioritize such work for 2022 (or re-prioritize 2021 resources).

The SDMC also noted that a research track assessment is in development that will hopefully bring new tools to the assessment of the spiny dogfish stock. The peer review for the assessment is scheduled for July 2022.

There was public comment from James Fletcher asking when provisions for an industrial fishery would be considered. J. Fletcher also noted that whale issues could be addressed by moving from fixed gear to mobile gear.

The SSC Report is  
behind the  
Committee  
Reports Tab.





## Mid-Atlantic Fishery Management Council

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

# MEMORANDUM

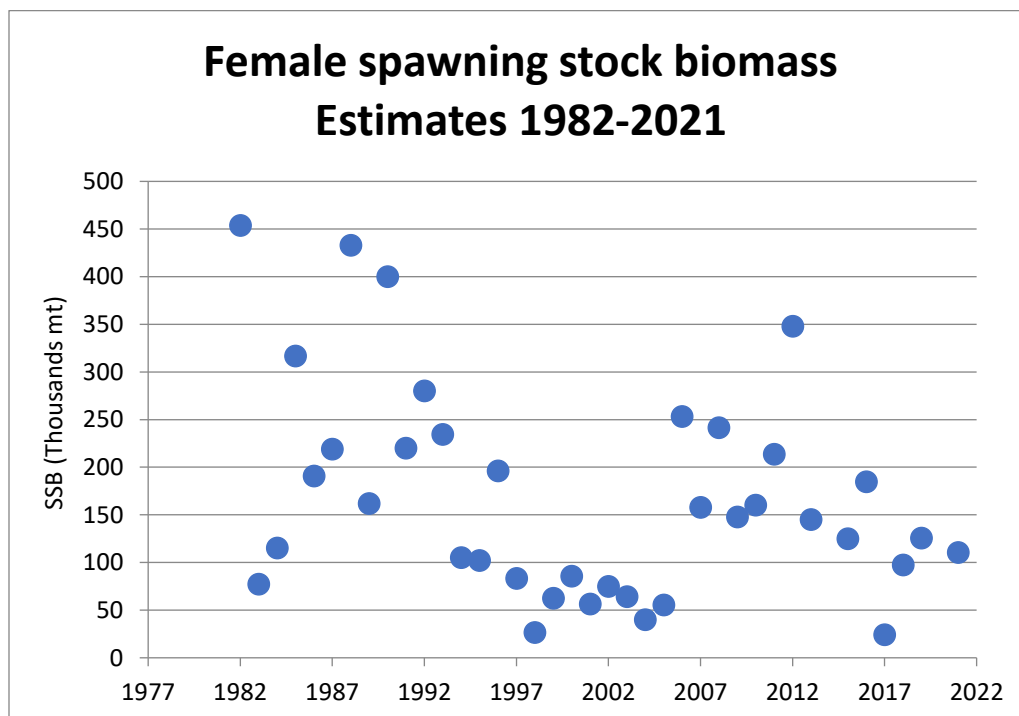
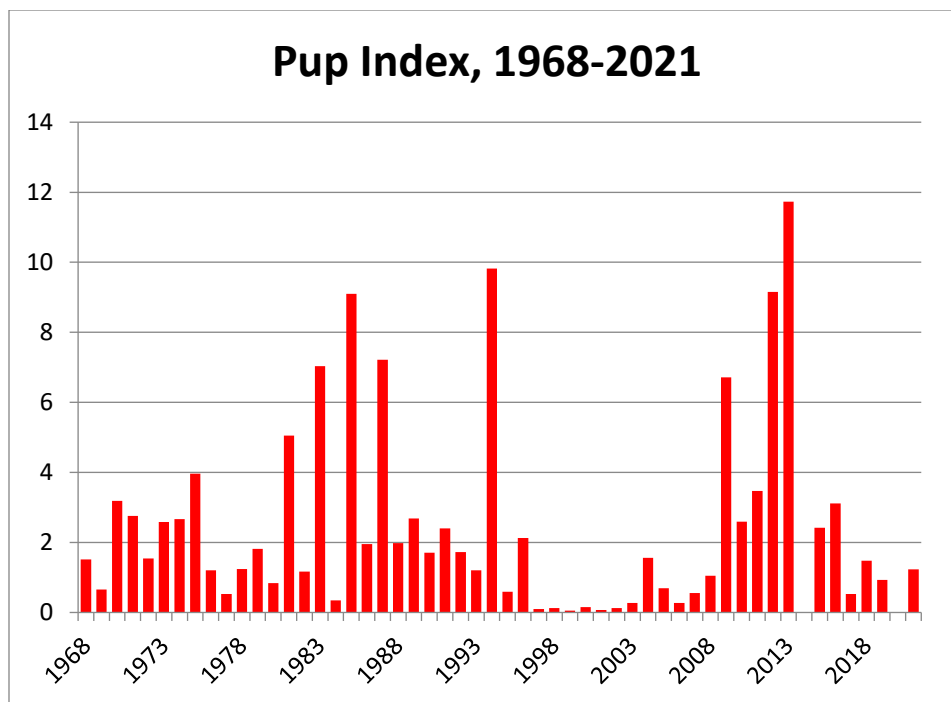
**Date:** August 30, 2021  
**To:** Chris Moore, Executive Director  
**From:** Jason Didden, Staff  
**Subject:** Spiny Dogfish Acceptable Biological Catch (ABC)

The spiny dogfish fishery is in multi-year specifications for the 2021-2022 fishing years with an ABC of 17,498 metric tons. The Council's Scientific and Statistical Committee (SSC) is scheduled to review the 2022 dogfish ABC during its September 2021 meeting.

Given the recently-commenced research track assessment and management track assessment scheduling, NMFS' Northeast Fisheries Science Center (NEFSC) did not produce any specific documents for spiny dogfish for this meeting. However, the results of the 2021 NEFSC spring trawl survey for pups and female spawning stock biomass are attached below. Also, updated landings are available in the fishery information document, which has been posted to the SSC meeting page, along with the Advisory Panel's Fishery Performance Report.

Staff has some concern about this fishery. Both landings and trawl survey results have been trending down since the post-FMP peaks in 2012. Prices declined substantially from 2012 to 2013 but have been trending up since 2013. The 2021 spring survey results were nearly evenly divided between the two preceding data points (2018/2019) for both pups and biomass. However, the 2021 spring survey missed four strata south of Virginia representing about 2.7% of the total area surveyed (K. Sosebee pers. comm.). No adjustments were made for the missing area with the current data, but previous discussions have highlighted that Mid-Atlantic strata are important for spiny dogfish during the spring survey.

Given that the 2021 survey data point is about midway between the preceding two data points, staff recommends maintaining the previously-recommended ABC.







## **Spiny Dogfish AP Fishery Performance Report August 2021**

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Advisory Panel (AP) met via webinar on August 19, 2021 to review the Spiny Dogfish Fishery Information Document and develop the following Fishery Performance Report. The primary purpose of this report is to contextualize catch histories for the Scientific and Statistical Committee (SSC) by providing information about fishing effort, market trends, environmental changes, and other factors. Trigger questions (see below) were posed to the AP to generate discussion of observations in the spiny dogfish fishery. Advisor comments described below are not necessarily consensus or majority statements.

**Advisory Panel members attending:** Scott MacDonald, John Whiteside, Jr., Jeremy Hancher, James Fletcher, Scott Curatolo-Wagemann, and Roger Rulifson. **Others attending:** Jason Didden, Daniel Salerno, Chris Batsavage, Alan Bianchi, Angel Willey, Willow Patten, John Almeida, Kirby Rootes-Murdy, Sonny Gwin, and Stephanie Sykes.

### **Trigger questions:**

The AP was presented with the following trigger questions:

1. What factors have influenced recent catch (markets/economy, environment, regulations, other factors)?
2. Are the current fishery regulations appropriate? How could they be improved?
3. What would you recommend as research priorities?
4. What else is important for the Council to know?

### **Market/Economic Conditions**

COVID-19 has not had a large impact to date. Similar market issues persist as with previous years – demand has been low but stable recently – market could support more landings than in most recent year if participation/production at the vessel level increases.

Changing the name to Chip Fish would help with marketing/exports. We could sell these in the U.S. if we could change the name (like snakehead). No advisors were opposed but practical challenges were highlighted.

There are no Southern processors – they were “burnt” by previous management and won’t get back in without quota stability on a decadal timeframe. They would need to know that the quota won’t go down for 5-10 years. Southern fishermen have to ship to MA.

Previous reports have noted not having a processor also depresses NY landings.

Developing industrial markets, be it fertilizer, processed export, or pharmaceutical (livers), requires a higher trip limit for trawlers.

Expanding use of liver components could increase overall value – several outreach efforts have occurred to pharmaceutical companies with no interest expressed back.

Regarding the fin market – there are self-imposed bans by cargo lines than prohibit fin transport even from sustainable sources (i.e. this is beyond our control).

General reasons for reduced participation: Increased fuel costs and opportunities in other fisheries.

In VA, fishermen have calculated that other fisheries (oysters, shrimp) are better opportunities and have reduced spiny dogfish effort. Shrimping drew off 8 boats last year.

The lowering of the quota from 38 million to 20 million had a negative impact on landings – would have been better to have taken an averaged approach.

Cornell has continued efforts to expand domestic consumption of spiny dogfish and other “exotic” species. E.g. chefs sampler events, underserved communities/foodbanks.

Public: Stephanie Sykes - One MA buyer had stipulations around having to land both skate and dogfish for a portion of the season, so if fishermen were unable to land both species they were forced to take days off or find another buyer.

## **Environmental Conditions**

Environmental conditions are always a factor.

Public: Stephanie Sykes – Early in summer 2021 Cape Cod fishermen had trouble finding dogfish and switched over to other fisheries (hook/tub-trawl and gillnet). Dogfish came inshore and some shifted to dogfish with steady landings. When buyers stopped buying mackerel more shifted back to dogfish. Catches really dropped in mid-August, seem to be improving currently. Water temperatures are particularly warm – dogfish are not coming up cold currently.

In VA weather (late January through March 2021) further reduced catches for remaining vessels.

## **Management Issues**

Regulations (especially the trip limit) do not allow a male fishery. State regulations do not allow new fishermen to participate. The current regulations are geared to keep price up and production limited and do not allow industrial production.

Raising the trip limit to 10,000 pounds could entice more vessels to participate and allow higher landings once dogfish are located. Vessels won’t immediately all land 10,000 pounds but helps with flexibility.

## **Other Issues**

Given the lack of an off-shelf survey and vertical water column usage by dogfish, we don’t really know the population size. See Carlson AE, Hoffmayer ER, Tribuzio CA, Sulikowski

JA (2014) The Use of Satellite Tags to Redefine Movement Patterns of Spiny Dogfish (*Squalus acanthias*) along the U.S. East Coast: Implications for Fisheries Management. PLoS ONE 9(7): e103384. <https://doi.org/10.1371/journal.pone.0103384>. The general biological section of the fishery information document should be updated accordingly. Also see Garry Wright's thesis that concluded that the NEFSC trawl survey is not accurately representing spiny dogfish biomass.

Allowing dogfish populations to increase has hurt all other fish populations. We need calculations regarding consumption by dogfish of other fish.

You should note the continual nature of embryo development/pupping in the general biological information section.

The repeated failure of the Bigelow since 2014 to complete its mission in terms of not fishing at a consistent time and not achieving planned stations eliminates our ability to have good information about spiny dogfish abundance given the dependence on the survey for spiny dogfish. This compounds uncertainty concerns and the Bigelow performance degrades the credibility of the resulting information (individual years and interpreting the time series). We have 1/8 years of full surveys in recent years. This affects all species' management. The Council should call in NEFSC maritime operations manager (D. Simon?) to account for Bigelow performance. The advisors agreed that the Bigelow performance issues are doing a disservice to all the fisheries and fishermen.

There is concern whether the NEFSC is continuing wire/net measurements to ensure survey consistency. The timing of the survey is critical for spiny dogfish due to the observed migration patterns and not sampling the same areas consistently reduces the meaningfulness of the resulting data.

Condition of NC inlets makes it very difficult to get product into NC. NC trawl fishermen can't land spiny dogfish in VA due to state regulations.

## **Research Priorities**

To add fishery value, we should research the value and production of squalamine in spiny dogfish livers for medical use.

The assessment needs to account for the continual pup production observed in females, which is primarily affected by food availability/consumption.

We should conduct research into the purposes of the horn/spine – is it offensive (weakening potential prey), or defensive?

Off the shelf sampling needs to occur to understand biomass. Why can't Bigelow do some deeper sampling? Could we send a drone to monitor?

East Carolina Univ has tagged 43,000 + spiny dogfish – trying to get graduate student to publish. Appears to be an availability gap from years 2-8/10 where if not caught in first few years fish are not caught for a number of years but then eventually show back up in commercial catches.





## Spiny Dogfish Fishery Information Document

August 2021

This Fishery Information Document provides an 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

- 2020 fishing year landings were about 12.8 million pounds; 2019 fishing year landings were about 19.1 million pounds.
- The current 2021 fishing year quota is 29.6 million pounds.
- The 2022 fishing year quota is planned to stay the same if no changes are recommended by the Scientific and Statistical Committee (SSC) or the Councils.
- A formal update from the NMFS Science Center is not anticipated, but we expect an update of the spring trawl survey results and pup index through 2021. The previous data update is available at [https://www.mafmc.org/s/3\\_2019-Data-Update-for-spiny-dogfish.pdf](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>.<sup>1</sup>

## 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 research track assessment has begun and is scheduled for review in 2022. The spiny dogfish spawning stock biomass estimate timeseries is provided in Figure 1.<sup>2</sup> Updated trawl data, which is the chief determinant of biomass in the assessment, will be distributed when available.

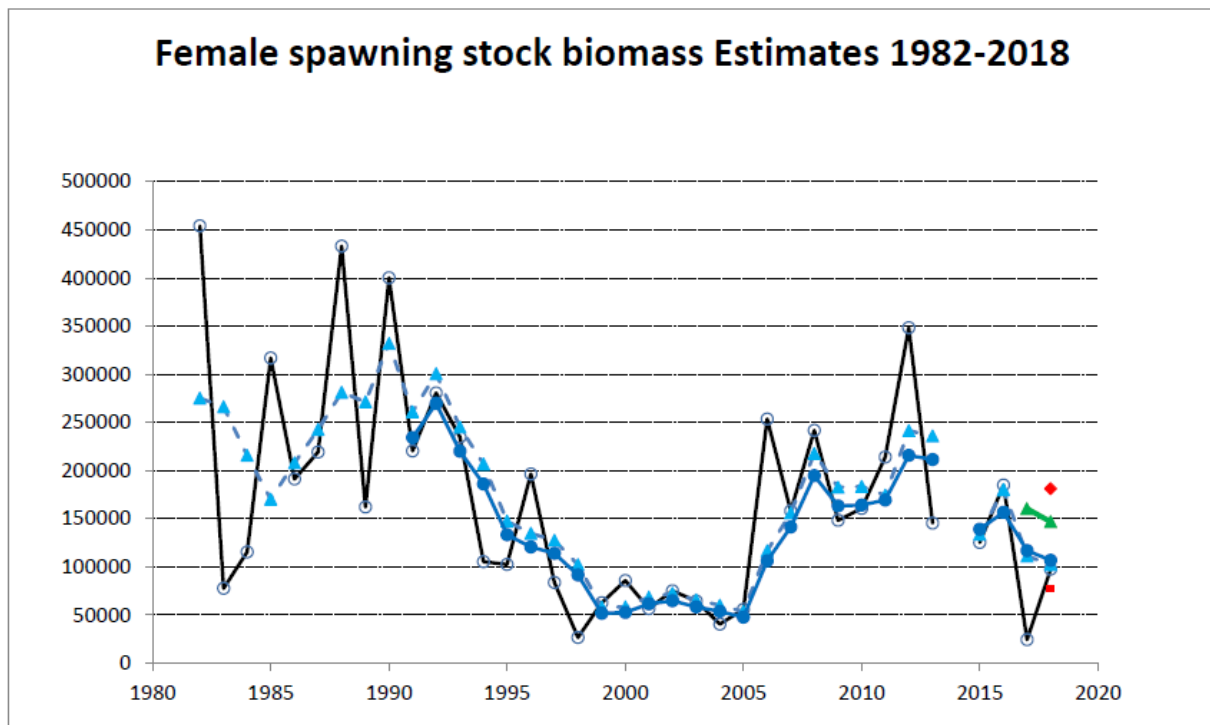


Figure 1. Stochastic SSB estimates for 1991 to 2018. Year refers to the terminal year in the three point moving average. The open circles are the yearly swept area SSB estimates, the blue triangles are the 3-year moving average of the swept area estimates, and the **closed blue circles are the stochastic 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).<sup>2</sup>

## **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 were adjusted to the current 29.6 million pounds for the 2021 fishing year after an adjustment to the Council's risk policy and are planned to remain there since a 2022 research track assessment should be able to project catches for specifications starting with the 2023 fishing year.

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 2000-2020 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 2021 and 2020 fishing years relative to the current quota. The last 2021/blue data point is typically the most incomplete.

Tables 2-4 provide information on landings in the 2018-2020 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.

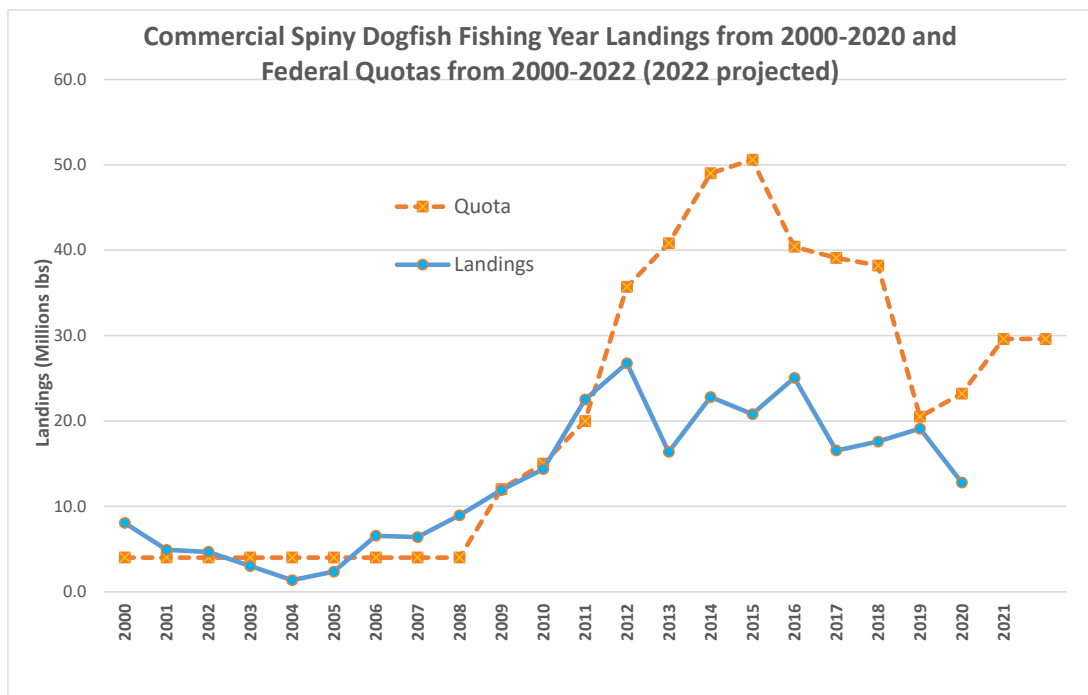


Figure 2. Annual spiny dogfish landings and federal quotas since 2000. <sup>4</sup>

Table 1. Commercial spiny dogfish fishing year landings from 2000-2020 and federal quotas from 2000-2022 (2022 Proposed)<sup>4</sup>

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	19.1
2020	23.2	12.8
2021	29.6	
2022	29.6	



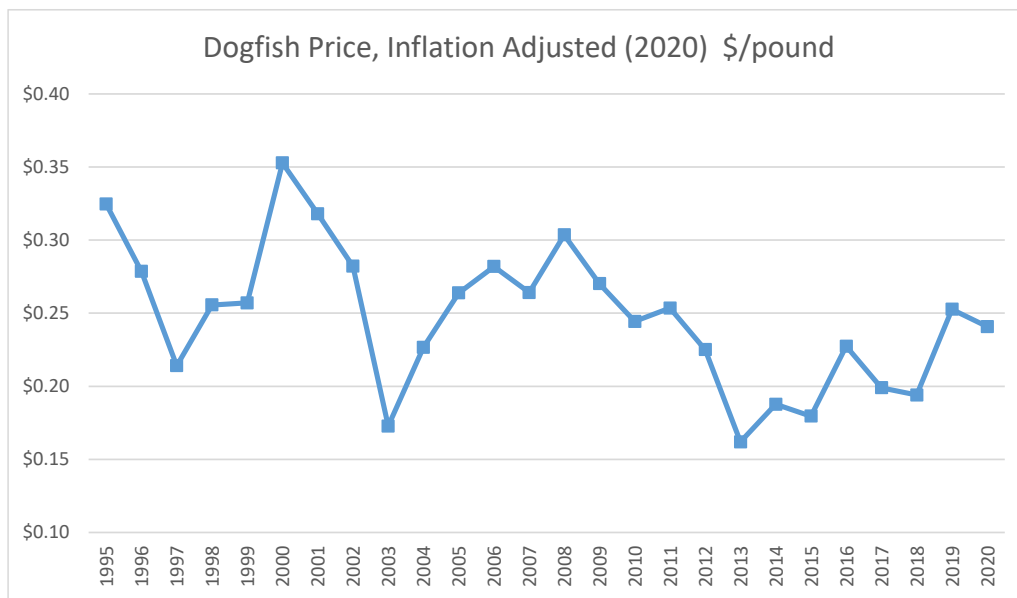


Figure 3. Price of spiny dogfish (\$/live pound) (adjusted to 2020 “real” dollars using the GDP deflator, 1995-2020 fishing years. Given the difference between fishing year and the calendar year used for inflation adjusting, adjusted prices are approximate. Source: NMFS unpublished dealer data. <sup>4</sup>

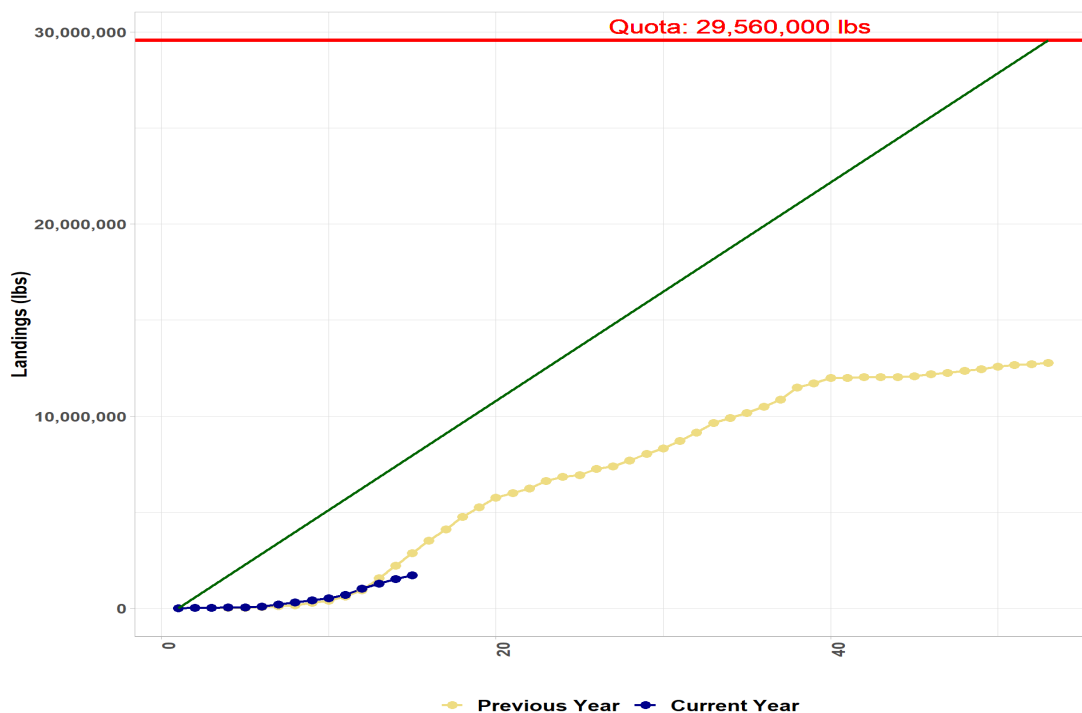


Figure 4. Preliminary Spiny dogfish landings; the 2021 fishing year (Starts May 1) is in blue through August 11, 2021, and the 2020 fishing year is in yellow-orange. Source: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region> . <sup>4</sup>

Table 2. Commercial Spiny Dogfish landings (live weight – millions of pounds) by state for 2018-2020 fishing years. Source: NMFS unpublished dealer data. <sup>4</sup>

fishyear	MA	VA	NJ	Other (NC,NH, MD, RI,CT, NY)	Total
2018	7.7	5.6	1.3	3.0	17.6
2019	6.6	7.4	1.9	3.1	19.1
2020	6.6	2.9	1.9	1.4	12.8

Table 3. Commercial Spiny Dogfish landings (live weight – millions of pounds) by month for 2018-2020 fishing years. Source: NMFS unpublished dealer data. <sup>4</sup>

fishyear	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
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	2.6	2.3	1.9	2.4	0.4	19.1
2020	0.0	0.3	1.8	2.8	1.5	0.9	1.4	1.6	1.6	0.0	0.4	0.3	12.8

Table 4. Commercial Spiny Dogfish landings (live weight – millions of pounds) by gear for 2018-2020 fishing years. Source: NMFS unpublished dealer data. <sup>4</sup>

fishyear	GILL_NET_SINK_OTHER	UNKNOWN	LONGLINE_BOTTOM	GILL_NET_SETS_TAKE_SEA_BASS	HAND_LINE_OTHER	TRAWL_OTTER_BOTTOM_FISH	Other	Total
2018	10.2	2.9	0.5	1.3	1.8	0.4	0.4	17.6
2019	12.1	3.0	1.3	1.5	0.5	0.5	0.3	19.1
2020	9.0	1.2	2.0	0.1	0.0	0.4	0.0	12.8

Table 5. Participation by fishing year of federally-permitted vessels. State-only vessels are not included.<sup>4</sup>

<b>YEAR</b>	<b>Vessels 200,000+</b>	<b>Vessels 100,000 - 199,999</b>	<b>Vessels 50,000 - 99,999</b>	<b>Vessels 10,000 - 49,999</b>	<b>Total with at least 10,000 pounds landings</b>
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
2020	23	27	15	22	87

Staff received a request about participation in May-August 11, 2021 (i.e. most recent year to date). While very preliminary, no federally-permitted vessels had yet landed over 200,000 pounds and only 22 had landed over 10,000 pounds.

## **Trip Limits and Prices**

To consider the potential effect of federal trip limit changes on spiny dogfish ex-vessel prices, staff examined the most recent two federal trip limit changes, which occurred on September 8, 2014 (4,000 pounds to 5,000 pounds and August 15, 2016 (5,000 pounds to 6,000 pounds). The May 1, 2013 trip limit change (3,000 pounds to 4,000 pounds) occurred during a time of the year when weekly landings are low, making analysis across the trip limit change date problematic. Trip limit changes further back in time may be less reflective of current conditions.

Staff first noted that looking at annual prices (Figure 3), there did not seem to be negative changes in the relevant fishing years. The changes took place about one-third into the fishing year (begins May 1) so were in effect for about two-thirds of each respective fishing year. Compared to the prior year, annual average price increased in both 2014 (vs 2013) and 2016 (vs 2015). While average price fell in each subsequent year (the first full year after the trip limit change), the subsequent full year's average price was still above the prior full year's average price in both instances (i.e. 2015 vs 2013 and 2017 vs 2015).

Staff then reviewed landings data from the four weeks preceding and following the two respective trip limit changes. In both instances, vessels began using the higher trip limit after the change, but not all trips landed at or near the trip limit. In neither case did there appear to be a negative effect on prices. Staff examined these relatively small time periods in an effort to isolate the effect of the trip limit change from other potential external effects on supply and demand that could affect prices paid to vessels.

In 2014, in the four weeks before the change (September 8, 2014), 2.6 million pounds of spiny dogfish were landed at an average price of \$0.21. In the four weeks after the change, 2.2 million pounds were landed at an average price of \$0.22.

In 2016, in the four weeks before the change (August 15, 2016), 4.2 million pounds of spiny dogfish were landed at an average price of \$0.23. In the four weeks after the change, 3.8 million pounds were landed at an average price of \$0.25.

Staff also reviewed 2018-2020 data for trips over 10,000 pounds, which all occurred in North Carolina. Prices for these trips (about 120 and averaging 12,800 pounds) averaged \$0.12 per pound, well below the average prices in those years. However differences in shipping costs make it difficult to determine if trip size is a factor in the differences in ex-vessel prices. By comparison, landings from those years between 5,000 pounds and 6,000 pounds averaged \$0.17 per pound in Virginia and \$0.22 per pound in Massachusetts.

In general, a review of fishery performance bridging the last two trip limit increases does not raise concern to staff that a relatively small, incremental trip limit change would substantially affect ex-vessel prices. However, data are not available to examine larger changes and any proposal for a large increase in trip limits should be considered cautiously.

## References

<sup>1</sup> 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.

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

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

<sup>4</sup> Unpublished NMFS dealer and/or Vessel Trip Report data.

