



**Mid-Atlantic Fishery Management Council**

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

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

## **MEMORANDUM**

**Date:** September 22, 2022  
**To:** Council  
**From:** Jason Didden, Council staff  
**Subject:** 2023 Spiny Dogfish Specifications

Please find attached the following documents to support Council action regarding 2023 spiny dogfish specifications:

Spiny Dogfish Committee Meeting Summary (with Committee recommendation motion)

Spiny Dogfish Staff Memo to the Committee with staff recommendation

Spiny Dogfish Monitoring Committee Summary

Scientific and Statistical Report (see Committee Reports Tab)

Staff Acceptable Biological Catch (ABC) Memo

Advisory Panel (AP) Fishery Performance Report

Fishery Information Document

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## **Spiny Dogfish Committee Meeting Summary**

**September 20, 2022**

*Webinar*

The Spiny Dogfish Committee (“the Committee” hereafter) met on September 16, 2022 to develop recommendations regarding 2023 spiny dogfish specifications. The Committee is primarily made up of members of the Mid-Atlantic Fishery Management Council (MAFMC) and the New England Fishery Management Council (NEFMC) for this jointly-managed species (NMFS and the ASMFC also have one seat each).

**Committee Attendees: Sonny Gwin (chair), Nichola Meserve (vice-chair), Daniel Salerno, Dan Farnham, Mark Alexander, Dewey Hemilright, David Stormer, Chris Batsavage, Jay Hermsen, Skip Feller, and Rick Bellavance (11/14 with a 15<sup>th</sup> vacant from NEFMC)**

**Other Attendees: Jason Didden, Scott MacDonald, John Whiteside, Cynthia Ferrio, Mark Sanford, Caitlin Starks, Albert Didden, James Fletcher, Hannah Novotny, and Kris Winiarski**

Staff reviewed the recommendations of staff, the Monitoring Committee, and the Scientific and Statistical Committee (SSC), as well as input from the Advisory Panel. Several questions were asked by the Committee or public including:

What is the precision of the recreational landings? Staff: MRIP Coastwide Proportional Standard Errors (PSEs) 2018-2021 ranged from about 34%-50% (i.e. not very precise for a coastwide estimate).

What research is addressing how spiny dogfish biomass may have shifted or day/night differences? Staff: The assessment is evaluating using vector autoregressive spatio-temporal (VAST) models to standardize the survey information. Not every possible factor can be considered, but a variety is being analyzed.

There was a clarification that with spiny dogfish, stock status is not a factor for Annual Catch Limit (ACL) overage paybacks. There is always a pound for pound payback of U.S. ACL overages. We account for Canada in the specifications as a good-faith effort, but under-specifying Canadian landings will not lead to U.S. paybacks. The only in-season controlled component of catch is the federal commercial landings quota. Discards and recreational landings are tallied after the fishing year. Staff clarified that there are no federally-based state allocations and that the ASMFC would likely need an Addendum to change or eliminate the state quotas.

There was a question about the location of observed fishery spiny dogfish catch (staff analysis) outside of the NMFS survey strata. Preliminary qualitative analysis suggests most of the relevant observer data is within the NMFS survey strata area.

There was a clarification that with spiny dogfish, management uncertainty buffers have not been used recently because the catch has been substantially below the ACLs in most years.

Could the recent use of gear that sheds spiny dogfish be responsible for the more recent decline in spiny dogfish catch rates (rather than a decline in spiny dogfish abundance)? Staff: That's possible, one could potentially examine or remove those gear types from future similar analyses. There are many potentially confounding factors that are not accounted for in the exploratory observer data analysis conducted by staff.

There was a question what preliminary information was available from the assessment pointing toward lower productivity. Staff relayed it was tied to aging work, but the assessment work group was still analyzing data. In the survey, it also appears that 95+ cm females never fully recovered, so growth reduction may be tied to not having as many of the largest females in the stock as earlier.

#### Public Comments:

John Whiteside: The apparent catastrophic drops in survey biomass should not be included and each step of this process has huge buffers already built in. Relying on the survey since 2016 is misplaced given the poor survey performance since then in terms of completing scheduled tows at the standard time of year. To reduce to a 12-million-pound quota is the bare minimum industry needs to hang on. If set at 12-million we won't land that much because of the state quotas, like in 2019, and this creates a large buffer. At the substitute motion (that ultimately passed) the industry will likely land less than 10-million pounds (due to state allocations). There's a real risk that below a 12-million-pound quota, the last processor will exit, and then everyone who went along with this will be responsible for the ecological disaster from dogfish preying on all other species.

Scott McDonald: What John said, plus: We've had people buying boats/permits based on the very recent trip limit increase to 7,500 pounds. There's outrage throughout the fishing community because we still don't believe the science. What time of year is the survey fishing off of Virginia? Can we double check it? I can have two vessels next to each other catch totally differently based on experience and how gear is hung. How do we know they can catch fish? We don't believe they are fishing in the right areas. Distributions are changing – we're going to new areas but the survey is fishing in the same footprint. At the Virginia quota, we'll be finished before Christmas, no one is coming down for that. Even best case I see us collapsing in Virginia. We really need this quota around 15 million pounds to save the industry – with that we might reach 12 million in actual landings. At this rate, myself, and all the vessels I've been packing out for the last 30 years are all going to be out of business. I was told in 1999 at a meeting that spiny dogfish would never be rebuilt in my lifetime, and then 10-11 years later they were begging us to catch them and the stock was off the charts so there's something different going on besides the trawl indices, "science," and what's going on out on the water.

The Committee passed the following motion:

I move to recommend to the Council to use a 5% management uncertainty buffer with the other specifications used by the Monitoring Committee to result in an 11.2-million-pound commercial quota.

7/3/1

The rationale for this approach included that given the uncertainty in discards, and the threat of substantial 2025 re-payments due to potential 2023 overages of the ACL, some management uncertainty buffer appears warranted. The 5% buffer balances the potential re-payment issue with 2023 industry viability, considering there will be some additional buffering since landings will probably come in under any quota given the state allocation issues previously discussed. Chris Batsavage indicated that with the recent history of landings, North Carolina may be able to transfer quota faster than in preceding years.

The above-passed motion was a substitute for this original motion:

I move to recommend to the Councils that a 0% management uncertainty buffer be used with the other specifications used by the Monitoring Committee to result in a 12.0-million-pound commercial quota. (The substitute for this passed by a vote of 6/4/1)

The rationales for the original motion were primarily that the result will be a disaster otherwise and we need to keep in mind the damage potentially caused from an out-of-control dogfish population. It was also noted that the states need to more flexibly transfer quota given the current circumstances, and they won't be able to transfer so efficiently as to land 12 million pounds. Also, the industry appears well aware of the risk of paybacks in 2025, but appears to need a 12-million-pound quota to just stay viable for another year.

Note: there was a request that before the Council meeting, staff provide information on how landings occur among the states through a year. Staff will attempt to provide relevant information, but may be constrained by data confidentiality issues.

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

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

# MEMORANDUM

**Date:** September 19, 2022  
**To:** Spiny Dogfish Committee  
**From:** Jason Didden, Council staff  
**Subject:** Spiny Dogfish Specifications

A Spiny Dogfish Monitoring Committee (MC) meeting summary follows this cover memo. The MC summary provides several options for management uncertainty buffers as part of the 2023 specifications. The primary source of catch uncertainty is the level of 2023 discards.

The management uncertainty buffers address whether the fishery might exceed its Annual Catch Limit (ACL). Exceeding the ACL could negatively impact the stock and 2023 overages would most likely be repaid in 2025. The preliminary signals coming out of the ongoing research track assessment suggest to staff that 2025 catch limits will not likely be higher to absorb overage repayments.

Staff weighed the concerns regarding negatively impacting the spiny dogfish stock and/or the 2025 fishery. Industry members on the MC indicated that 2023 quotas lower than 12 million pounds may mean that there will be no remaining fishery infrastructure to even worry about affecting in 2025.

Given the considerable uncertainty in the discard specification for 2023 and the input from industry, staff recommends a 5% uncertainty buffer as described in the MC summary. If assessment developments warrant additional concern in late 2022 upon conclusion of the research track assessment, or in mid-2023 after the management track assessment, the Council could request emergency action at that time if deemed appropriate.

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

**September 16, 2022**

*Webinar*

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Monitoring Committee (MC) met on September 16, 2022 to develop recommendations regarding 2023 spiny dogfish specifications.

**Monitoring Committee Attendees: Jason Didden, Cynthia Ferrio, Nichola Meserve, Dvora Hart, John Whiteside, Scott MacDonald, and Chris Kellogg (left early) (7 of 10).**

**Other Attendees: Mark Alexander, Daniel Salerno, Jesse Hornstein, Kris Winiarski, and James Fletcher.**

Staff reviewed the binding 2023 spiny dogfish Acceptable Biological Catch (ABC) recommendation from the Council's Scientific and Statistical Committee (SSC): 7,788 MT. Noting the uncertainty and challenge of setting ABCs without assessments, the SSC used the approximately 40% decline from the 2016/17/18 Northeast Fisheries Science Center spring trawl survey index average to the subsequent 2021/2022 average (no survey in 2020 due to COVID) to scale what would have been the 2019 ABC under the current risk policy [12,978 metric tons (MT)] down to a 2023 ABC of 7,788 MT. A 40% decline over the survey years' midpoints equates to about an 11% decline in the stock each year over this 4.5-year period.

A research track assessment is scheduled for peer review for December 2022 with a management track assessment scheduled for 2023 to determine stock status and future ABCs. The preliminary indications of the assessment suggest the stock has been in decline and has been less productive recently. While the MC noted this preliminary information as background, the MC also voiced caution regarding basing decisions on preliminary assessment outputs.

The current charge of the MC is to make appropriately justified recommendations on measures that ensure that the annual catch limit (ACL) is not exceeded, i.e., to address management uncertainty (not the scientific uncertainty addressed by the SSC). Staff noted the only way to completely ensure no ACL overages would be to essentially close the fishery, but the general approach has been to recommend measures that seem reasonably likely to adhere to the ACL, and to explain the potential risks of overages. Besides potential harm to the stock, a key risk of exceeding the ACL is that overages trigger paybacks. Any 2023 overages are likely to be deducted from the 2025 fishery's ACL. If ABCs are higher in 2025 than 2023, paybacks have less impact. However, if ABCs are even lower in 2025, paybacks have even more impact. The management uncertainty buffer provides more assurance that the ACL is not exceeded, or at least not exceeded by as much as would occur without some buffer.

Given recent trends, the MC agreed that setting aside 37 MT for Canadian landings (= 2019 estimate) and 214 MT for U.S. recreational landings (= 2021 estimate) should be sufficient.

Canadian landings have been low since 2009. Based on the last 20 years of U.S. recreational landings, occasional landings above 200 MT are usually followed by similar or lower landings two years later (i.e. 2021 to 2023) and recreational landings have usually been lower than 200 MT. Setting aside 214 MT for 2023 recreational landings will likely provide some inherent buffering, as opposed to the three-year (2019–2021) average of 129 MT as was discussed as a possible alternative.

Discussion then turned to an appropriate amount to set aside for discards, the primary specification that could lead to overages. Staff noted analyses done for the SSC that indicated annual *trawl fishery spiny dogfish observed catch rates* (i.e., observer data of trawl fishing) seem to closely track the NEFSC spring index (<https://www.mafmc.org/s/Spiny-dogfish-trawl-observer-data-analysis.pdf>). Exploratory trawl catch per unit of effort (CPUE) analyses for the research track assessment also align with the staff analysis, and suggest further catch rate declines after 2019 into 2021. (The staff analyses stop in 2019 due to COVID-related issues with the observer program, but the CPUE analyses for the assessment also integrate study fleet data which were not as impacted by COVID.) With most dead discards occurring incidentally in trawl fisheries in recent years, these lines of evidence suggested to staff that if spiny dogfish biomass is actually declining, discards should also go down. The 2016-2018 dead discard average equaled 3,479 MT. Reducing that amount by the same 40% as the SSC used results in a 2023 discard set aside of 2,088 MT. The MC settled on 2,088 MT of discards for 2023 being a reasonable approach, though also discussed a proposal by John Whiteside that would have scaled discards down more, to 1,816 MT based in the 55.5% reduction between the 2022 and 2023 ABCs. Part of obtaining consensus on this discard set-aside was noting that other approaches could have resulted in lower discard set-asides, potentially creating some buffering via the agreed-upon discard set-aside, which some MC members noted should be considered in discussion of a management uncertainty buffer. While this approach seems reasonable given the available information, 2,088 MT involves substantial uncertainty and would be less discards than estimated for any time in the time series being considered in the current research track assessment (1989-2019). A management uncertainty buffer, discussed next, could guard against this discard projection uncertainty causing an ACL overage if realized discards are higher.

Regarding an appropriate management uncertainty buffer, the primary concern communicated by staff is that if the fishery catches its quota and the recreational landings projection is accurate, then any underestimate of discards is likely to force paybacks in 2025. For example, if 2,088 MT are set aside for discards without any management uncertainty buffer and 4,088 MT ends up as the 2023 discard estimate, then 2,000 MT (4.4 million pounds) would have to be paid back in 2025 (assuming the other catches occur as predicted). If the base quota in 2025 is even lower than 2023, then any paybacks may be even more impactful.

The ex-officio industry MC members recommended no management uncertainty buffer because the ABC is already accounting for substantial precaution and quotas lower than 12 million pounds would threaten the survival of the last remaining processor, the survival of the industry, and related infrastructure. They indicated the fishery is already hanging on by a thread. While the danger of paybacks in 2025 was acknowledged, the focus was on allowing the industry to survive at least through the 2023 fishing year. It was also noted that state/regional allocations/quotas will cause logistical challenges for fully landing a 12-million-pound (or similarly low) quota because of the needed contortions for interstate transfers and states'

hesitancy to transfer quota early in the fishing year. For example, the fishery was constrained by state quotas in 2019 and ended up about 1.4 million pounds below the coastwide quota largely due to transfer challenges according to the industry MC members. It was also noted that while some increase in vessel interest is beginning due to the higher 7,500-pound trip limit (as of May 1, 2022), in Virginia a substantial component of relevant fleet travels there for fishing, and they won't be convinced to travel for a small quota. Overall, the industry MC members concluded these issues will create enough of a *de facto* buffer against any uncertainty in discards and that the imminent risk to the fishery from quotas below 12 million justifies accepting some possible risk for 2025 paybacks (otherwise there won't be a fishery around to worry about in 2025).

Other MC members (i.e., not John Whiteside or Scott McDonald) focused on the risk of underestimating 2023 discards and causing paybacks in 2025. Staff noted that buffering by 18% (holding back about the amount of the proposed discard reduction from the 2016-2018 average) would likely mitigate the potential for at least large paybacks. However, the MC concluded that, if the approaches justifying a lower presumed 2023 discard value are reasonable, it doesn't seem appropriate to then just set the same amount aside as a buffer. The issue is really "now risk" versus "later risk" and depends on the Councils' risk tolerances. The MC struggled with a particular amount to recommend given all the various factors, including immediate survival of the industry, the relatively high amount set aside for recreational landings, and the state apportionment and transfer issue described above.

The MC could not come up with a particular recommendation, but agreed that discards are the key source of uncertainty in terms of risk of exceeding the ACL in 2023 and triggering paybacks. It was noted that a 13% buffer would create about 1,000 MT (2.2 million pounds) of buffer, which would cover about a 50% higher realized discard estimate for 2023. The MC also noted that a 5% buffer would be nearly a million pounds, and if a similar landings quota underage as 2019 occurred (1.4 million pounds), the combined effects would be roughly equivalent to a 13% uncertainty buffer scenario (if all landings occurred with the 13% scenario). See Table 1 below for the 2023 specifications resulting from the range of management uncertainty buffers discussed (0%, 5%, 13%, and 18%).

The MC did not delve into the trip limit issue, but noted that the Councils have been planning for a potential action to consider trip limit modifications once the assessment results are available.

The MC also noted that potential gear restriction actions related to mitigating risks for protected resources (e.g., sturgeon) are likely for 2023, and warrant tracking by interested parties.

Table 1. 2023 Specification Options with Different Management Uncertainty Buffers

Specifications	2023		2023		2023		2023	
	mil pounds	metric tons	mil pounds	metric tons	mil pounds	metric tons	mil pounds	metric tons
OFL (from SSC)	na	na	na	na	na	na	na	na
ABC (from SSC)	17.2	7,788	17.2	7,788	17.2	7,788	17.2	7,788
Canadian Landings	0.1	37	0.1	37	0.1	37	0.1	37
Domestic ABC	17.1	7,751	17.1	7,751	17.1	7,751	17.1	7,751
ACL = ABC	17.1	7,751	17.1	7,751	17.1	7,751	17.1	7,751
Mgmt Uncert Buffer	0%	0%	5%	5%	13%	13%	18%	18%
Amount of buffer	0	0	0.9	388	2.2	1,008	3.1	1,395
ACT (minus buffer)	17.1	7,751	16.2	7,363	14.9	6,743	14.0	6,356
U.S. Discards	4.6	2,088	4.6	2,088	4.6	2,088	4.6	2,088
TAL (minus discards)	12.5	5,663	11.6	5,275	10.3	4,655	9.4	4,268
U.S. Rec Landings	0.5	214	0.5	214	0.5	214	0.5	214
Com Quota (Minus Rec)	12.0	5,449	11.2	5,061	9.8	4,441	8.9	4,054
Rationale for Management Uncertainty Buffer	No buffer: other buffers effectively built in; concern that further reduced quota will collapse infrastructure.		Some explicit buffer included (discard uncertainty primary concern); other factors will limit landings below the specified quota.		A 13% buffer could absorb a realized 2023 discard estimate that is 50% higher than specified even if other specified catches occur.		An 18% buffer fully offsets the reduction in specified discards; least likely to result in large 2023 overages and large 2025 paybacks if discards don't decrease as predicted.	

Public comments

J. Fletcher: The real issue is the collection of the science or entering of the data and using bad data to set the ABC. Staff noted that one of two scenarios must be true given the quotas have not been exceeded: either the science is wrong now, or the science was wrong in recent years when those quotas were set.

D Salerno: While we may see higher discard rates than projected, effort and trawl landings may be reduced.

See Committee Reports Tab for SSC Spiny Dogfish ABC  
Recommendations

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

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

# MEMORANDUM

**Date:** September 2, 2022  
**To:** Chris Moore, Executive Director  
**From:** Jason Didden, staff  
**Subject:** 2023 Spiny Dogfish Acceptable Biological Catch (ABC)

## Executive Summary

In 2018 spiny dogfish was neither overfished nor experiencing overfishing, and estimated to be at 67% of its biomass target. The 2022 data point for female spawners, which is the driver for spawning stock biomass in the last assessment, is the lowest in the time series.

The Spiny Dogfish Research Track Assessment Peer Review has been delayed until late 2022, so the current plan is to set 1-year (2023) specifications. A Management Track Assessment is expected in 2023.

The 2021 fishing year continued a declining landings trend. However, 2022 fishing year landings to date appear similar to 2021. This memo uses updated landings information from the new Catch Accounting and Monitoring System (CAMS) which indicates higher (6%-13% annually) landings than previously estimated.

The Mid-Atlantic Fishery Management Council (MAFMC) will meet in October 2022 to review the recommendations of the AP, the SSC, the Monitoring Committee, and input from the public. The Council will then recommend catch and landings limits and other management measures for the 2023 fishing year. The New England Fishery Management Council (NEFMC) will take similar action in December 2022.

Staff recommends a 2023 ABC of 8,284 MT (18.3 million pounds), which would likely result in a U.S. commercial quota of 4,785 MT (10.5 million pounds) after accounting for other sources of mortality.

## Current Measures and Review of Prior SSC Recommendations

The last setting of spiny dogfish specifications occurred in 2020 for the 2021 and 2022 fishing years. The resulting 17,498 MT (38.6 million pounds) ABC and 13,408 MT (29.6-million pounds) quota was a result of the then current assessment and the Council's risk policy, which is designed to avoid overfishing and achieve optimum yield. Once the coastwide quota is caught, federal waters are closed for possession of spiny dogfish. If the Annual Catch Limit (ACL) is exceeded, overages are deducted as soon as possible from the ACL for a subsequent fishing year. In 2021 the Councils (MAFMC and NEFMC) voted to increase the trip limit for spiny dogfish to 7,500 pounds, which was implemented for the 2022 fishing year.

## **Recent Catch and Landings**

Recent landings peaked in 2012 and declined to about 5,175 MT (11.4 million pounds) in 2021. These updated landings numbers are outputs of the new CAMS database that accounts for “orphan VTRs” that don’t appear in traditional dealer landings totals. The Fishery Performance Report documents industry perspectives on why recent landings have been low relative to quotas, including market constraints and other fishing opportunities.

## **Stock Status and Biological Reference Points**

In 2018 spiny dogfish was neither overfished nor experiencing overfishing, and at 67% of its biomass target. A research track assessment is underway. There are some preliminary indications that stock productivity may have been overestimated in previous assessments and the 2022 data point for female spawners, which is the driver for spawning stock biomass in the last assessment, is the lowest in the time series.

## **Staff Recommendation**

Given the date of the last assessment and the uncertainty about the outcome of the current research track assessment, staff notes the Council’s risk policy amendment advises more precautionary ABCs as assessment uncertainty increases.

Staff observes that as the fishery re-established in 2006-2010, the survey biomass trend was relatively stable (Figure 1, 2022 Fishery Information Document). CAMS landings over this period averaged 4,785 MT (10.5 million pounds), about 7.5% less than 2021 landings of 5,175 MT (11.4 million pounds). Based on the current uncertainty with the ongoing assessment and declining trawl index trends, an ABC resulting in 4,785 MT of landings appears to be a reasonable recommendation at this time. After accounting for other sources of mortality, the associated ABC would be 8,284 MT (18.3 million pounds). Other sources of mortality include U.S. discards, recreational harvest, and Canadian landings.<sup>1</sup> If the upcoming assessment indicates the initial 2023 ABC is substantially too high or too low, an in-season action could be considered.

Staff concluded that this “reverse engineering” approach is more appropriate than starting with average total dead realized catch over 2006-2010. With discards and Canadian landings both lower recently, if one starts with the 2006-2010 total catches there would not likely be any constraint on U.S. landings in 2023 after the various deductions for quota determinations are made. Some precautionary constraint on landings appears warranted to staff at this time, which would be achieved by the recommended ABC.

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<sup>1</sup> 2017-2019 data were examined due to discard availability for that time period. 2017-2019 U.S. dead discards averaged 3,368 MT (range 2,829-3,786 MT). 2017-2019 Canadian landings averaged 45 MT. 2017-2019 recreational harvest averaged 86 MT.





## **Spiny Dogfish AP Fishery Performance Report July 2022**

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Advisory Panel (AP) met via webinar on July 28, 2022 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:** James Fletcher, Scott MacDonald, Roger Rulifson, John Whiteside, Sonja Fordham, Kevin Wark, Mark Sanford, Chris Rainone, Sam Martin, Jeremy Hancher

**Others attending:** Jason Didden, Chris Batsavage, Cynthia Ferrio, Sonny Gwin, Lewis Gillingham, Mark Alexander, Yan Jiao, Geret DePiper, Daniel Salerno, Caitlin Starks, Angel Willey, Willow Patten, Chris Kellogg, Alan Bianchi, Hannah Novotny

### **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**

**Critically increased fuel costs** and relatively low dogfish availability to some ports have combined to keep 2022 calendar year landings low.

COVID-19 did not have a large impact on this fishery. 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. Could help develop a market for male dogfish.

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

Better opportunities in other fisheries reduce spiny dogfish effort. For example, in Virginia, fishermen have calculated that oysters and shrimp are better opportunities.

Cornell has continued efforts to expand domestic consumption of spiny dogfish and other undervalued/underutilized/lesser-known species through chefs' sampler events, underserved communities/foodbanks, etc. See <https://www.localfish.org/>.

### *Public Input*

Lack of crew has hampered trips in the Gulf of Maine. The Portland Fish Exchange was allowing spiny dogfish landings to try to build market but hasn't been super successful to date.

## **Environmental Conditions**

Environmental conditions are always a factor in terms of dogfish distribution and availability to fishermen.

In VA, early 2022 weather was a neutral factor considering a span of years (neither great nor horrible weather).

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. Fish houses continue to go out of business due to low seafood supply.

In NJ/Viking Village, spiny dogfish keep showing up well in the fall. In spring 2022, very poor weather off NJ contributed to very low spring participation (plus greying of the fleet/participants).

## **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. More important now with fuel prices and just one fish house left – if we lose the last buyer, what will we do with these fish?

Biomass trends raise the question of whether management is restrictive enough and suggests that management is insufficiently restrictive. The SSC should consider interim advice for current fishing year given trends.

## **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>. 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.

Bigelow performance issues are doing a disservice to all the fisheries and fishermen. 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 2/9 years of full surveys in recent years. This affects all species' management. The Council should call in NEFSC maritime operations manager to account for Bigelow performance.

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.

High fuel costs adds to trucking costs, which is a substantial issue for this fishery given the processing situation.

## **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.

Updated bycatch mortality information could help us understand biomass trends.

Could there be electromagnetic energy being transferred to the trawl affecting survey catches?

Why are people opting out of this fishery? Greying of the fleet? Costs? Other fisheries? We need to understand the vast drop in participation and what is projected for future trends.

Loss of fish houses is a coast-wide issue – and the loss of infrastructure needs to be addressed to maintain a healthy fishery.

Spiny dogfish fishing could have an environmental justice component as a relatively low-priced seafood.



## Spiny Dogfish Fishery Information Document

July 2022

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. Due to various database issues, 2022 landings data are less certain than would be the case in most years. For more resources, including previous Fishery Information Documents, please visit <http://www.mafmc.org/dogfish>.

### Key Facts

- The 2021 fishing year continued the recent declining landings trend. 2021 fishing year landings were about 10.1 million pounds; 2020 fishing year landings were about 12.8 million pounds.
- The current 2022 fishing year quota is 29.6 million pounds (same as previous year).
- The Spiny Dogfish Research Track Assessment Peer Review has been delayed until later in the year, so the current plan is to set 1-year (2023) specifications.
- Updates of the spring trawl survey results and pup index through 2022 are included. The 2022 data point for female spawners is the lowest in the time series.
- Staff has concerns about this stock, including whether the ongoing assessment may find the stock was previously estimated to be overly productive, and whether the stock may be overfished.

### Basic Biology

Spiny dogfish is the most abundant shark in the western north Atlantic and ranges from Labrador to Florida, being most abundant from Nova Scotia to Cape Hatteras, North Carolina. Migrations are believed to primarily occur 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<sup>2</sup> (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 late 2022. NEFSC staff provided updated NEFSC spring trawl data (the chief determinant of biomass in the assessment) through 2022. See Figures 1/2 (female spawning stock biomass/pup indices). The two vertical blue lines align the shared 1982-2022 years in the two figures below.

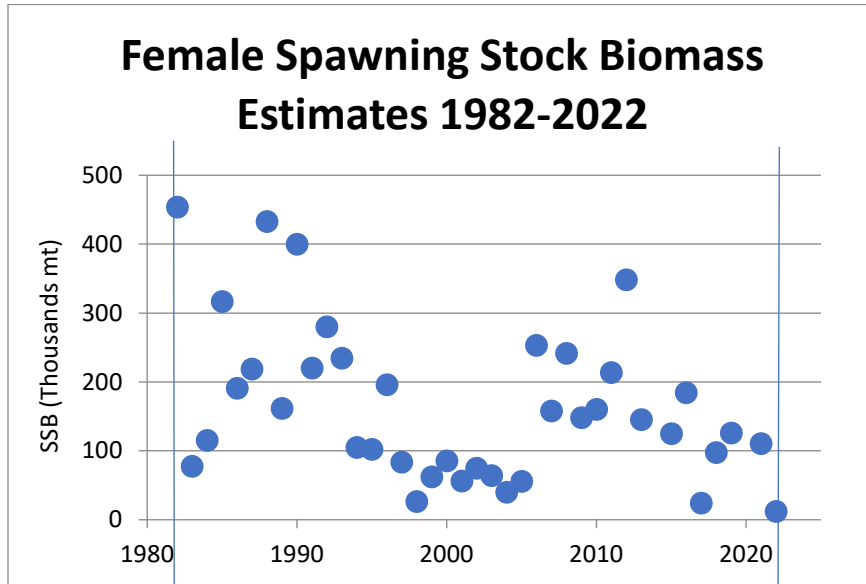


Figure 1. Female Spawning Stock Biomass Estimates 1982-2022, NEFSC Spring Trawl

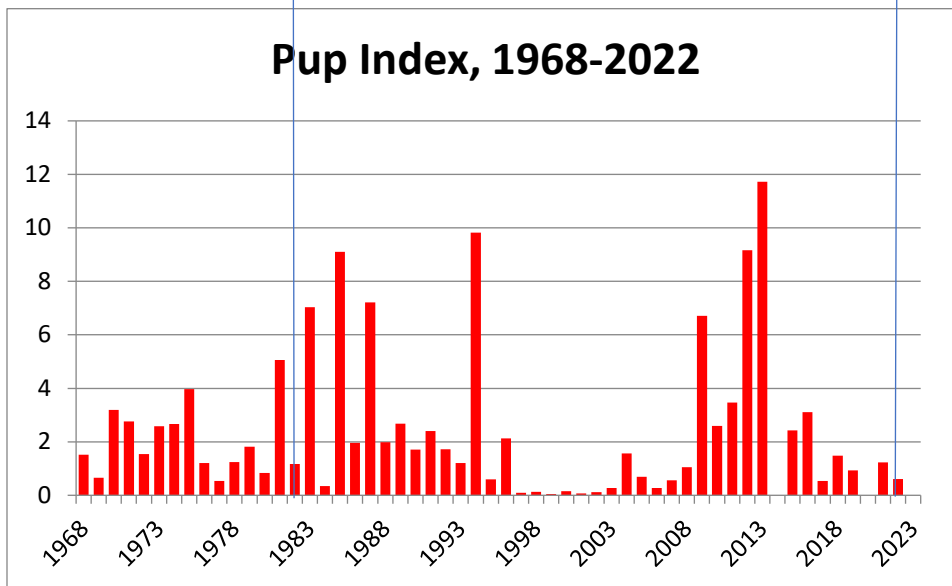


Figure 2. NEFSC Spring Trawl Pup Index 1968-2022

## 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. Quotas are set based on the current science and Council's risk policy to avoid overfishing and rebuild stocks if/when necessary.

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 7,500 pounds (increased from 6,000 for the 2022 fishing year). 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 specifications are generally set for multiple years, but with the research track assessment delayed, the plan is to just set 2023 fishing year specifications for now. Once management track assessment results are available in 2023, those results will be utilized as soon as practicable.

### *Commercial Fishery (Recreational catch comprises a relatively low portion of fishing mortality)*

Figure 3 and Table 1 illustrate spiny dogfish landings for the 2000-2021 fishing years relative to the quotas in those years. The Advisory Panel has previously noted that the fishery is subject to strong market constraints given weak demand.

Figure 4 provides inflation-adjusted spiny dogfish ex-vessel prices in "real" 2021 dollars.

Figure 5 illustrates preliminary landings from the 2022 and 2021 fishing years relative to the current quota. The last blue (2022) data point is typically the most incomplete.

Tables 2-4 provide information on landings in the 2019-2021 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 overall trends in participation.

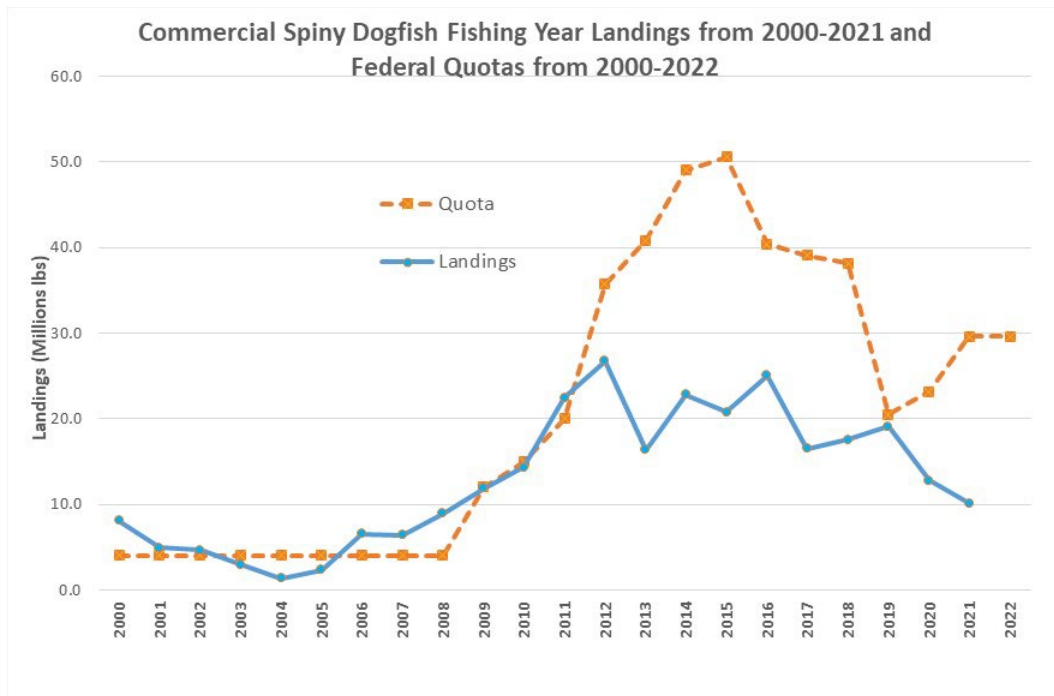


Figure 3. Annual spiny dogfish landings and federal quotas since 2000 Source: NMFS unpublished dealer data.<sup>3</sup>

Table 1. Annual spiny dogfish landings and federal quotas since 2000 Source: NMFS unpublished dealer data.<sup>3</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	10.1
2022	29.6	



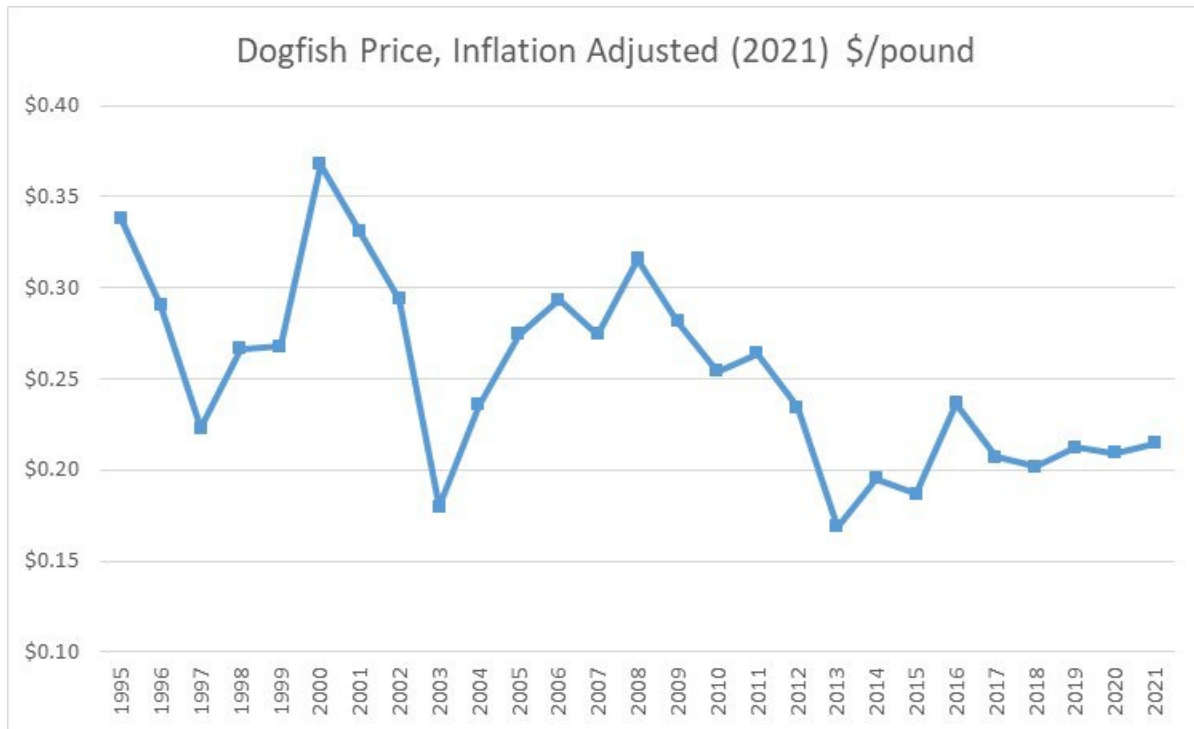


Figure 4. Price of spiny dogfish (\$/live pound) (adjusted to 2021 “real” dollars using the GDP deflator, 1995-2021 fishing years. Given the difference between fishing year and the calendar year used for inflation adjusting, adjusted prices are approximate. Source: NMFS unpublished dealer data.<sup>3</sup>

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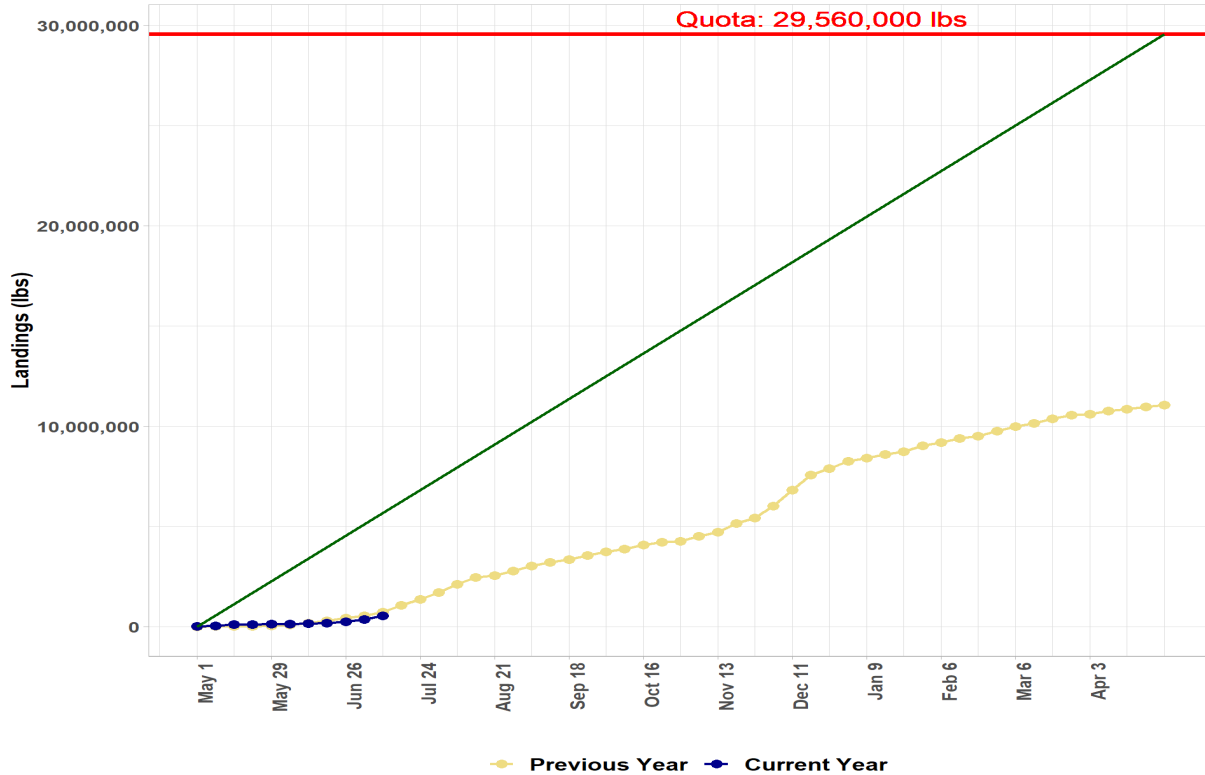


Figure 5. Preliminary Spiny dogfish landings; the 2022 fishing year (Starts May 1) is in blue through July 22, 2022, and the 2021 fishing year is in yellow-orange. Source: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region> .<sup>3</sup>

Table 2. Commercial Spiny Dogfish landings (live weight – millions of pounds) by state for 2019-2021 fishing years. Source: NMFS unpublished dealer data.<sup>3</sup>

fishyear	MA	VA	NJ	Other (NC,NH, MD, RI,CT, NY)	Total
2019	6.6	7.4	1.9	3.1	19.1
2020	6.6	2.9	2.0	1.4	12.8
2021	3.8	3.5	1.6	1.2	10.1

Table 3. Commercial Spiny Dogfish landings (live weight – millions of pounds) by months for 2019-2021 fishing years. Source: NMFS unpublished dealer data.<sup>3</sup>

fishyear	May-June	July-Aug	Sept-Oct	Nov-Dec	Jan-Feb	Mar-April	Total
2019	0.3	5.0	2.6	4.1	4.2	2.8	19.1
2020	0.3	4.6	2.4	3.0	1.6	0.7	12.8
2021	0.5	2.4	1.3	3.0	1.6	1.3	10.1

Table 4. Commercial Spiny Dogfish landings (live weight – millions of pounds) by gear for 2019-2021 fishing years. Source: NMFS unpublished dealer data.<sup>3</sup>

fishyear	GILL_NET_SIN K_OTHER	UNKNOWN	LOGLINE_B OTTOM	GILL_NET_SET _STAKE_SE A_BASS	HAND_LINE_ OTHER	TRAWL_OTTE R_BOTTOM_F ISH	Other	Total
2019	12.1	3.0	1.3	1.5	0.5	0.5	0.3	19.1
2020	9.1	1.3	1.8	0.1	0.0	0.4	0.0	12.8
2021	8.7	0.2	0.5	0.1	0.1	0.3	0.2	10.1

Table 5. Participation by fishing year of federally-permitted vessels. State-only vessels are not included. Source: NMFS unpublished dealer data.<sup>3</sup>

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
2020	23	27	15	22	87
2021	15	27	11	26	79

## 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> Unpublished NMFS dealer and/or Vessel Trip Report data.

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