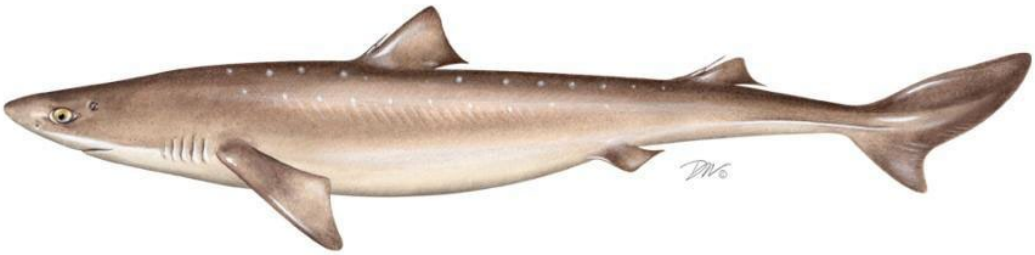
ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR SPINY DOGFISH
(*Squalus acanthias)*

2022/2023 FISHING YEAR



Prepared by the Plan Review Team

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN AND STATE COMPLIANCE FOR SPINY DOGFISH (*Squalus acanthias*) FOR THE 2021/2022 FISHERY

Management Summary

Date of FMP Approval:	November 2002
Amendments:	None
Addenda:	Addendum I (November 2005) Addendum II October 2008) Addendum III (April 2011) Addendum IV (August 2012) Addendum V (October 2014) Addendum VI (October 2019)
Management Unit:	Entire coastwide distribution of the resource from the estuaries eastward to the inshore boundary of the EEZ
States with Declared Interest:	Maine – North Carolina
Active Boards/Committees:	Spiny Dogfish Management Board, Advisory Panel, Technical Committee, and Plan Review Team

I. Status of the Fishery Management Plan

In 1998, NMFS declared spiny dogfish overfished and initiated the development of a joint fishery management plan (FMP) between the Mid-Atlantic (MAFMC) and New England Fishery Management Councils (NEFMC) in 1999. NMFS approved the Federal Fishery Management Plan (FMP) in September 1999, but implementation did not begin until May 2000 at the start of the 2000/2001 fishing year.

In August 2000, the Atlantic States Marine Fisheries Commission (Commission) took emergency action to close state waters to the commercial harvest, landing, and possession of spiny dogfish when Federal waters closed in response to the quota being fully harvested. With the emergency action in place, the Commission had time to develop an interstate FMP, which prevented the undermining of the Federal FMP and further overharvest of the coastwide spiny dogfish population. Needing additional time to complete the interstate FMP, the Commission extended the emergency action twice through January 2003. During that time, most spiny dogfish landings were from state waters because states had either no possession limits or less conservative possession limits than those of the Federal FMP.

The Commission approved the Interstate FMP for Spiny Dogfish in November 2002 (first implemented for the 2003-2004 fishing year). In general, the Interstate FMP (FMP) for spiny dogfish complements the Federal FMP. The goal of the FMP is "to promote stock rebuilding and management of the spiny dogfish fishery in a manner that is biologically, economically, socially, and ecologically sound." In support of this goal, the FMP established the following objectives:

1. Reduce fishing mortality and rebuild the spawning stock biomass to prevent recruitment failure and support a more sustainable fishery.
2. Coordinate management activities between state, Federal, and Canadian waters to ensure complementary regulations throughout the species' range.
3. Minimize the regulatory discards and bycatch of spiny dogfish within state waters.
4. Allocate the available resource in a biologically sustainable manner that is equitable to all the fishers.
5. Obtain biological and fishery related data from state waters to improve the spiny dogfish stock assessment that currently depends upon data from the Federal bottom trawl survey.

The original Interstate and Federal FMPs established an annual quota that was allocated via fixed percentages between two seasonal periods: 57.9% to Period I (May 1st to October 31st) and 42.1% to Period II (November 1st to April 30th). When the quota allocated to a period is exceeded, the amount over the allocation is deducted from the same period in the subsequent fishing year. The periods could have separate possession limits that were specified on an annual basis. The FMPs also allowed for a five percent rollover of the annual coastwide quota once the stock is rebuilt, and allows each state to harvest up to 1,000 spiny dogfish for biomedical supply or scientific research.

Addendum I (November 2005)

Addendum I to the Interstate FMP for Spiny Dogfish allows the Board to set the quota and trip limit for up to 5 years. This addendum was developed to provide fishermen with the ability to set long term business plans and goals for their fishery operations. The Board may adjust specifications during a fishing season with a 2/3-two-thirds majority vote.

Addendum II (October 2008)

Addendum II replaces the seasonal allocation with a regional distribution of the quota. The regional allocation distributes quota with 58% to Maine – Connecticut, 26% to New York – Virginia, and 16% to North Carolina. Paybacks to regional quota overages are applied in the subsequent fishing seasons.

Addendum III (April 2011)

Addendum III divides the southern region's annual quota of 42% into state-specific shares (see table below). It also allows for quota transfer between states, rollovers of up to 5% and state-specified possession limits, and includes a three-year reevaluation of the measures. The Addendum's provisions apply only to states in the southern region (New York through North

Carolina) and do not modify the northern region allocation. The states of Maine to Connecticut will continue to share 58% of the annual quota as specified in Addendum II.

Southern Region State Shares. Quota allocation differs slightly from specific options presented in the draft addendum and are based on needs of states in the southern region with a consideration of historic landings.

	NY	NJ	DE	MD	VA	NC
Percent of Annual Coastwide Quota	2.707%	7.644%	0.896%	5.920%	10.795%	14.036%

Addendum IV (August 2012)

The Addendum updates the definition of overfishing to be consistent with that of the Mid-Atlantic Fishery Management Council and provides the Board the flexibility to update or modify the management program's overfishing definition through Board action based on the recommendations of its Technical Committee. The prior overfishing definition, adopted in 2002, was based on the number of pups per female that recruit to the stock. The updated definition will now be based on maximum sustainable yield or a reasonable proxy, consistent with the best available science. Although there are no immediate impacts to regulations, the change allows the Commission and Council to work from the same starting point when determining annual specifications. The Board considered modifying the management program's 5% rollover provision to either preclude rollovers entirely without specific Board approval or to allow rollovers beyond the current 5% maximum with Board approval. The Board voted to maintain the 5% maximum rollover. Any rollover is predicated on a rebuilt stock.

Addendum V (October 2014)

Addendum V ensures consistency in spiny dogfish management with the Shark Conservation Act of 2010 by prohibiting processing at-sea, including the removal of fins. Prior to approval, states could process spiny dogfish at-sea if the fin to carcass ratio aboard the vessel did not exceed five percent by weight. The Board set an implementation date of May 1, 2015 for states to promulgate this measure.

Addendum VI (October 2019)

Addendum VI allows commercial quota to be transferred between all regions and states to enable full utilization of the coastwide commercial quota and avoid payback for unintended quota overages. Prior to this addendum, quota transfers were only possible between states with individual state quotas, whereas regions have not been granted the authority to donate or receive quota via transfers. Consequently, regions were unable to share in the benefits of quota transfers. For the northern region to participate in quota transfers, the Director of each state's marine fisheries agency within the region must agree to the transfer in writing. As with transfers between states, transfers involving regions do not permanently affect the shares of the coastwide quota. Additionally, the Addendum extends the timeframe for when quota transfers can occur up to 45 days after the end of the fishing year to allow for late reporting of landings data.

II. Status of the Stocks

Stock size estimates (e.g., female SSB) for spiny dogfish rely heavily on fishery-independent data collected during the Northeast Fisheries Science Center (NEFSC) spring bottom trawl survey. Due to mechanical problems, the 2014 survey was unable to sample strata in the mid-Atlantic region. As a result, the 2015 assessment update for spiny dogfish was unable to produce reliable estimates of stock size for 2014, as well as stock size projections utilized for annual specifications. Accordingly, at the direction of the MAFMC and the Science and Statistical Committee (SSC), the NEFSC examined alternative methods to smooth out the effects of the missing 2014 survey data on projected estimates of SSB, F, and other stock status indicators (NEFSC 2015b). A Kalman filter approach was ultimately chosen as the best method to smooth out the effects of the missing data, and to project SSB forward. In 2016, while all core survey strata were completed, the survey was delayed and the effects of the delay in survey timing on the abundance indices are unknown (NEFSC 2017). In 2017 and 2018, the survey was completed on time and all core strata were surveyed.

Based on results of the 2018 stock assessment update, and based on the biological reference points below, spiny dogfish are not overfished and overfishing is not occurring (NEFSC 2018). The MAFMC's SSC recommended not applying the Kalman filter to the three-year moving average of 2016-2018 given the survey data were available and gap filling was not needed. Spiny dogfish was declared rebuilt in 2008 when female SSB exceeded the target level for the first time since implementation of the Interstate FMP. Female SSB has remained above the threshold level and was estimated to be 106,753 metric tons (235.36 million pounds) in 2018 (Table 1 and Figure 1). In 2017, F on exploitable females was estimated to be 0.202 and has remained below the target level since 2005 (Table 1 and Figure 2).

	Female Spawning Stock Biomass (SSB)	**Fishing Mortality (F)**
Target	B_{msy} Proxy = SSB_{max} (the biomass that results in the maximum projected recruitment) = 159,288 metric tons	There is no F target defined for management use at this time
Threshold	½ of SSB_{max} = 79,644 metric tons	F_{msy} Proxy = 0.244

The 2018 assessment update utilizes catch and landings data from 1982-2017, and NEFSC spring survey data from 1968-2017 (as noted, the survey was incomplete in 2014 and the 2016 survey was delayed). From 2009-2015, female SSB estimates based on area swept by NEFSC bottom trawl during spring surveys were above the target-level (NEFSC 2017). The 2016 estimate increased, while the 2017 estimate decreased; in 2018 the estimate decreased further from 2017. It is important to note that these estimates from the assessment update are not based on outputs of the stochastic assessment model and cannot be directly compared to the SSB targets and thresholds.

The next management track stock assessment for spiny dogfish is ongoing and will likely be completed in late 2023. In the interim, the NEFSC will continue to summarize the most recent information on the status of spiny dogfish to inform fishery specifications.

III. Status of the Fishery

In the U.S., the majority of spiny dogfish commercial fisheries operate in state waters targeting aggregations of large females. As a result, an estimated 81% of the commercial landings (Sosebee, 2022) are comprised of females, which is consistent with the long-term pattern (NEFSC 2018).

For the 2022 fishing year (May 1, 2022 – April 30, 2023), total U.S. commercial landings based on state compliance reports and SAFIS were estimated at 12.6 million pounds (5,715 metric tons), which is approximately 43% of the coastwide quota and a 28% increase relative to the previous season (Table 4). Massachusetts (36%), Virginia (36%), and New Jersey (16%) accounted for the majority of commercial landings by weight (Table 4).

Atlantic coast landings from Canada were significant from the early 1990s to the mid-late 2000s (hovering around 4.5 million pounds or 2,000 metric tons). Commercial landings from Canada and Distant Water fleets since 2019 are not available at this time. Recreational harvest is estimated via the Marine Recreational Information Program (MRIP). In the 2022 fishing year, recreational harvest of spiny dogfish on the Atlantic coast was estimated at 45,693 fish or an estimated 211,608 pounds[1] (96 metric tons) which is a 41% decrease relative to FY 2021 (357,507 pounds). Calendar year landings estimates for the U.S. commercial and recreational sectors are provided in Table 2.

For 2022, dead discards from the U.S. commercial fishery were not available at the time of this report. Recreational releases for the 2022 fishing year (fish caught by recreational anglers and released back to the water) were estimated at 12.3 million pounds (5,571 metric tons). Applying a 20% post-release mortality rate (NEFSC 2018), 2022 recreational dead discards were estimated at 2.5 million pounds (1,114 metric tons), which is an 8% increase relative to 2021 levels (2.3 million pounds).

IV. Status of Management Measures and Issues

Specifications

The spiny dogfish commercial fishery runs from May 1-April 30. The coastwide quota for the 2022/2023 season was set at 29.56 million pounds. For the northern region, the maximum possession limit was set at 7,500 pounds. Possession limits for states of New York-North Carolina vary by state and are detailed in Table 6.

Quotas

[1] Assuming the average weight of landed and discarded spiny dogfish is 5.12 pounds or 2.5 kilograms.

Under Addendum III, 58% of the annual quota is allocated to the northern region (states from Maine-Connecticut), and the remaining 42% is allocated to the states of New York-North Carolina via fixed percentages. Table 4 details 2022/2023 commercial quotas by region and state. All regions and states harvested within their quota the previous fishing year, therefore no deductions were applied to 2022/2023 quotas. Quota transfers are allowed under Addendum III and until recently have been uncommon. For the 2022/2023 season, the Northern Region and North Carolina each transferred 1,500,000 pounds of quota to Virginia. As there was no stock assessment update or change to 2017 projections that indicated that the stock was below the biomass target, no quota was eligible for rollover per Addendum IV.

From 2000-2011, the U.S. spiny dogfish commercial fishery had, for the most part, fully utilized its quota (MAFMC 2017). However, in recent years (2012-2022), the commercial fishery has significantly underutilized its quota. The MAFMC Advisory Panel (2019) noted that markets are critical for stimulating fishing activity and that the low level of harvest relative to the quota in recent years is primarily due to low price per pound and effort, not biomass. Vessels generally have no problem catching their limits. Being such a low value fishery (hovering around $0.20/pound over the last 10-years; MAFMC 2018), even a small increase in price could stimulate fishing activity. Reasons for decreased participation in the fishery include increased fuel costs, fewer processors, and general public sentiment regarding sharks and shark fins which has created regulatory issues (e.g., foreign and domestic import and shipping bans) and other barriers to the market (e.g., the species common name dissuades many consumers).

V. Status of Research and Monitoring

Under the Interstate FMP for Spiny Dogfish, the states are not required to conduct any fishery-dependent or independent studies. The Interstate FMP requires an annual review of recruitment, spawning stock biomass, and fishing mortality, which relies heavily on the NEFSC's spring trawl survey data. However, states are encouraged to submit any spiny dogfish information collected while surveying for other species. Table 5 details state-implemented fishery-independent monitoring information relative to spiny dogfish compiled from annual state compliance reports. Please see individual reports for more information.

Exempted Fishing Permits (scientific/education permits)
States may issue exempted fishing permits (EFPs) for the purpose of biomedical supply, educational, or other scientific purposes. In 2022 and 2023, Maine issued ten EFPs for research and educational purposes, including for Maine's Department of Marine Resources fall and spring trawl surveys. The 2022 surveys caught a combined 592 spiny dogfish and results for the 2023 surveys will be available in 2024. Rhode Island issued 14 EFPs for scientific, educational, and/or biomedical research on spiny dogfish, and six spiny dogfish were collected. New Jersey issued three scientific collection permits that collected 405 spiny dogfish and retained 240. In 2022, North Carolina issued 49 scientific and educational permits, one of which reported 185 spiny dogfish captured and released, and 45 were issued in 2023.

VI. Annual State Compliance

The following lists the specific compliance criteria that a state or jurisdiction must implement to be in compliance with the Interstate FMP for Spiny Dogfish (*Section 5.1*):

1. States are required to close state waters to the commercial landing, harvest, and possession of spiny dogfish for the duration of the seasonal period when the commercial quota is projected to be harvested in their state or region.
2. States are required to report landings weekly to NOAA Fisheries or SAFIS.
3. Dealer permits issued pursuant to state regulations must submit weekly reports showing at least the quantity of spiny dogfish purchased (in pounds), the name, and permit number of the individuals from whom the spiny dogfish were purchased.
4. States are required to implement possession limits as determined through the annual specification process.
5. States may issue exempted fishing permits for the purpose of biomedical supply not to exceed 1,000 spiny dogfish per year.
6. State regulations must prohibit "finning" as described in Addendum V.

Additionally, each state must submit a compliance report detailing its spiny dogfish fisheries and management program for the previous fishing year. Compliance reports are due annually on July 1st (Table 6) and must include at a minimum:

1. the previous fishing year's fishery and management program including activity and results of monitoring, regulations that were in effect and harvest, including estimates of non-harvest losses;
2. the planned management program for the current fishing year summarizing regulations that will be in effect and monitoring programs that will be performed, highlighting any changes from the previous year; and
3. the number of spiny dogfish exempted fishing permits issued in the previous fishing year, the actual amount (in numbers of fish and pounds) collected under each exempted fishing permit, as well as any other pertinent information (i.e., sex, when and how the spiny dogfish were collected). The report should also indicate the number of exempted fishing permits issued for the current fishing year.

Under the Spiny Dogfish FMP, a state may request *de minimis* status if its commercial landings of spiny dogfish are less than 1% of the coastwide commercial total. If granted, the state is exempt from the monitoring requirements of the commercial spiny dogfish fishery for the following fishing year. However, all states, including those granted *de minimis* status, must continue to report any spiny dogfish commercial or recreational landings within their jurisdiction via annual state compliance reports. Delaware and New York requested and qualified for *de minimis* status for the 2022/2023 fishing season (Table 6).

VII. Plan Review Team Recommendations

In evaluating compliance with the FMP, the Plan Review Team (PRT) notes that Connecticut did not provide an annual compliance report and their landings are provided by the Standard Atlantic Fisheries Information System (SAFIS). Additionally, New York's current finning prohibitions only apply to coastal sharks, and the state is planning to implement regulations for spiny dogfish through their regulatory process.

Additionally, while all states within the management unit satisfied the weekly reporting requirements through either SAFIS or NOAA Fisheries, the following states did not clearly provide their reporting regulations: New Jersey and Delaware. Moving forward, the PRT recommends that states specifically reference regulations requiring weekly dealer and landings reporting in their compliance reports. Additionally, Connecticut's compliance report did not include information on any exempted fishing permits issued.

Furthermore, three states reported spiny dogfish harvest under exempted fishing permits, with no state approaching the 1,000 fish limit for "biomedical supply" as loosely defined in the FMP. The PRT notes that states are reporting harvest under a variety of purposes including research and education. The PRT may require Board input on the categories of harvest to count towards this limit in the future should any state near the limit.

Other than the issues described above, the PRT found that all states that submitted compliance reports have implemented regulations consistent with the requirements of the Interstate FMP for Spiny Dogfish and Addenda I-VI. Additionally, the Board should consider the current *de minimis* provisions and what the purpose of designation is given all states still must report annual landings.

Members of the PRT noted that states have improved in providing compliance reports that are standardized and uniform in format and should continue doing so moving forward. Staff will continue to provide states with a template for compliance reports to aid with consistency. Additionally, the PRT indicated the need to continue monitoring the resource based on the results of the 2018 assessment update that indicated a recent declining trend in female SSB.

VIII. Research Recommendations

The following research priorities pertaining to spiny dogfish were identified in Special Report No. 89 (2013). **Please note** that the Board does not need to take action on these recommendations currently and a number of them will be evaluated through the next stock assessment, which is currently underway.

Fishery-Dependent Priorities
High

- Determine area, season, and gear-specific discard mortality estimates coastwide in the recreational, commercial, and non-directed (bycatch) fisheries.
- Characterize and quantify bycatch of spiny dogfish in other fisheries.

- Increase the biological sampling of spiny dogfish in the commercial fishery and on research trawl surveys.
- Further analyses of the commercial fishery is also warranted, especially with respect to the effects of gear types, mesh sizes, and market acceptability on the mean size of landed spiny dogfish.

Fishery-Independent Priorities

- Conduct experimental work on NEFSC trawl survey gear performance, with focus on video work to study the fish herding properties of the gear for species like dogfish and other demersal groundfish.
- Investigate the distribution of spiny dogfish beyond the depth range of current NEFSC trawl surveys, possibly using experimental research or supplemental surveys.
- Continue to analyze the effects of environmental conditions on survey catch rates.

Modeling / Quantitative Priorities

- Continue work on the change-in-ratio estimators for mortality rates and suggest several options for analyses.
- Examine observer data to calculate a weighted average discard mortality rate based on an assumption that the rate increases with catch size.

Life History, Biological, and Habitat Priorities

- Conduct a coastwide tagging study to explore stock structure, migration, and mixing rates.
- Standardize age determination along the entire East Coast. Conduct an ageing workshop for spiny dogfish, encouraging participation by NEFSC, North Carolina Division of Marine Fisheries (NCDMF), Canada DFO, other interested agencies, academia, and other international investigators with an interest in spiny dogfish ageing.
- Identify how spiny dogfish abundance and movement affect other organisms.

Management, Law Enforcement, and Socioeconomic Priorities

- Monitor the changes to the foreign export markets for spiny dogfish, and evaluate the potential to recover lost markets or expand existing ones.
- Update on a regular basis the characterization of fishing communities involved in the spiny dogfish fishery, including the processing and harvesting sectors, based upon Hall-Arber et al. (2001) and McCay and Cieri (2000).
- Characterize the value and demand for spiny dogfish in the biomedical industry on a state by state basis.
- Characterize the spiny dogfish processing sector.

IX. References

Hall-Arber, M., C Dyer, J Poggie, J McNally and R Gagne. 2001. New England's Fishing Communities. Cambridge, Massachusetts: MIT Sea Grant.

McCay, B., and Cieri, M. 2000. *Fishing ports of the Mid-Atlantic.* Dover, Delaware: Mid-Atlantic Fishery Management Council.

Mid-Atlantic Fisheries Management Council (MAFMC). 2018a. Spiny Dogfish Information Document. Prepared by Jason Didden, Council Staff. 6 pages.

Mid-Atlantic Fisheries Management Council (MAFMC). 2018b. Spiny Dogfish Advisory Panel Fishery Performance Report. 4 pages.

Northeast Fisheries Science Center (NEFSC). 2018. Update on the Status of Spiny Dogfish in 2018 and Projected Harvests at the Fmsy Proxy and Pstar of 40%. Report to the Mid Atlantic Fishery Management Council (MAFMC) Scientific and Statistical Committee (SSC) August 31, 2018. 82 pages.

Northeast Fisheries Science Center (NEFSC). 2017. Update of Landings, Discards and Survey Indices for Spiny Dogfish in 2016-2017. Report to the Mid Atlantic Fishery Management Council (MAFMC) Scientific and Statistical Committee (SSC)
August 18, 2017. 30 pages

Northeast Fisheries Science Center (NEFSC). 2015b. Update on the Status of Spiny Dogfish in 2015 and Projected Harvests at the Fmsy Proxy and Pstar of 40%. Report to the Mid Atlantic Fishery Management Council (MAFMC) Scientific and Statistical Committee (SSC) August 26, 2015. 65 pages

Northeast Fisheries Science Center (NEFSC). 2015b. Evaluation of Alternative Smoothing Options for Spiny Dogfish Abundance Estimates. Report to MAFMC SSC November 22, 2015. 28 pages.

Special Report No. 89 of the Atlantic States Marine Fisheries Commission. 2013. Research priorities and recommendations to support interjurisdictional fisheries management.

Sosebee, K.A. 2022. Spiny dogfish catch summary and derivation of catch at length and sex. Working Paper Submitted as part of the 2022 Spiny Dogfish Research Track Assessment.

X. Tables

Table 1. Spiny dogfish female spawning stock biomass (SSB) in millions of pounds 1991-2018 and fishing mortality (F) point estimates, 1991-2017. A Kalman Filter was applied to the 2015 point-estimate. Point-estimates from 1991-2014 via the Kalman filter were not available at the time of this report. Although the absolute values will change after the Kalman filter is applied, the time series trend is similar. Source: NEFSC 2018.

Year	Female SSB	F
1991	516	0.082
1992	594	0.177
1993	485	0.327
1994	410	0.465
1995	294	0.418
1996	266	0.355
1997	252	0.234
1998	202	0.306
1999	114	0.289
2000	116	0.152
2001	136	0.109
2002	143	0.165
2003	129	0.168
2004	118	0.474
2005	105	0.128
2006	234	0.088
2007	312	0.090
2008	429	0.110
2009	360	0.113
2010	362	0.093
2011	373	0.114
2012	476	0.149
2013	466	NA
2014	NA	0.214
2015	306	0.126
2016	345	0.211
2017	257	0.202
2018	235	NA

Table 2. Calendar Year Landings estimates (pounds) of spiny dogfish off the Atlantic coast by commercial fisheries of the United States, Canada, and foreign fleets, and U.S. recreational harvest, 1987-2021. Source: Commercial Data through 2018 provided by NEFSC 2019. 2019-2022 U.S. Commercial landings provided through ACCSP. Recreational Data from MRIP.

Year	Canada	Distant Water Fleets	U.S. Commercial	U.S. Recreational	Total Landings
1987	619,498	306,442	5,758,100	1,134,111	7,818,151
1988	2,205	1,426,389	6,297,800	820,989	8,547,383
1989	368,172	564,383	9,758,700	947,769	11,639,024
1990	2,885,848	866,416	32,158,915	948,070	36,859,249
1991	676,818	515,881	25,433,105	753,259	27,379,063
1992	1,913,610	147,710	25,130,717	1,048,767	28,240,804
1993	3,163,630	59,525	35,800,043	480,204	39,503,402
1994	4,012,408	4,409	30,820,339	308,029	35,145,185
1995	2,107,617	30,865	42,990,104	218,908	45,347,494
1996	950,191	520,290	53,156,131	66,290	54,692,902
1997	983,261	471,789	43,177,848	240,496	44,873,394
1998	2,325,874	1,338,204	45,365,659	214,912	49,244,649
1999	4,609,860	1,221,359	33,463,598	158,006	39,452,823
2000	6,042,863	886,257	20,910,865	13,055	27,853,040
2001	8,421,648	1,492,528	4,920,944	47,935	14,883,055
2002	7,901,358	1,044,990	4,651,562	652,335	14,250,245
2003	2,870,415	1,417,571	2,352,291	103,962	6,744,239
2004	5,207,312	727,525	2,231,631	591,518	8,757,986
2005	5,004,487	727,525	2,503,047	107,477	8,342,536
2006	5,377,068	22,046	5,312,438	218,100	10,929,652
2007	5,255,814	68,343	6,537,566	287,978	12,149,701
2008	3,466,368	288,805	9,060,729	565,461	13,381,363
2009	249,122	180,779	12,145,049	235,674	12,810,624
2010	13,228	279,987	12,693,572	88,111	13,074,898
2011	273,373	315,261	21,600,293	203,366	22,392,293
2012	143,300	302,033	23,871,759	104,548	24,421,640
2013		134,482	16,063,726	190,810	16,389,018
2014	119,049	68,343	23,752,640	263,396	24,203,428
2015	2,205	50,706	20,113,655	137,037	20,303,603
2016	81,571	52,911	27,158,288	523,139	27,815,909
2017	119,049		19,259,449	319,009	19,697,507
2018	99,208		15,299,201	136,094	15,534,503
2019	NA	NA	17,462,685	116,376	17,579,061
2020	NA	NA	17,410,979	263,594	17,674,573
2021	NA	NA	10,253,530	471,864	10,725,394
2022	NA	NA	10,824,396	35,879	10,860,275

Table 3. Total calendar year dead discards estimates (pounds) from the U.S. Atlantic coast spiny dogfish fishery by sector, 1990-2021. Commercial dead discards for 2019-2021 are not available. Source: MRIP and NEFSC 2019.

Year	Commercial	Recreational (20% B2)	Total Dead Discards
1990	41,754,621	830,701	42,585,322
1991	28,668,217	1,146,402	29,814,619
1992	41,401,992	577,170	41,979,161
1993	25,898,443	858,479	26,756,922
1994	18,435,804	654,331	19,090,135
1995	23,812,762	392,863	24,205,625
1996	13,136,779	205,030	13,341,809
1997	9,255,656	537,045	9,792,702
1998	7,305,008	460,325	7,765,333
1999	9,865,123	399,477	10,264,600
2000	6,128,182	370,376	6,498,558
2001	10,236,492	1,271,184	11,507,675
2002	10,392,799	1,099,664	11,492,464
2003	7,998,031	1,746,500	9,744,531
2004	12,011,321	2,982,410	14,993,731
2005	10,775,411	2,186,542	12,961,953
2006	10,847,557	2,574,996	13,422,553
2007	12,456,478	2,660,094	15,116,572
2008	9,843,805	2,442,719	12,286,524
2009	11,735,909	3,180,385	14,916,294
2010	8,146,291	2,134,513	10,280,804
2011	9,533,163	2,615,120	12,148,283
2012	10,081,275	1,903,028	11,984,303
2013	9,875,386	5,295,056	15,170,442
2014	10,657,861	7,724,988	18,382,849
2015	6,783,726	1,886,273	8,669,999
2016	7,122,686	4,001,826	11,124,513
2017	6,756,168	1,572,335	8,328,503
2018	5,310,158	1,642,883	6,953,041
2019	NA	2,555,481	NA
2020	NA	1,717,694	NA
2021	NA	2,611,890	NA
2022	NA	1,962,308	NA

Table 4. Commercial quotas and landings estimates in pounds for May 1, 2022-April 30, 2023 by region and state. There was no adjustment to quotas due to the biomass estimate was below the target. Some values are listed as confidential to protect the confidentiality of other states. Source: State Compliance Reports and SAFIS.*CT landings provided by SAFIS

State	Fixed Percent Allocation	Preliminary Quota	Adjusted Quota	Estimated Landings
Northern Region	58.00%	17,144,556	15,644,556	4,017,767*
NY	2.71%	800,413	800,413	107,645
NJ	7.64%	2,259,728	2,259,728	1,682,797
DE	0.90%	264,866	264,866	Confidential
MD	5.92%	1,749,935	1,749,935	Confidential
VA	10.80%	3,191,020	6,191,020	5,852,669
NC	14.04%	4,149,062	2,649,062	Confidential
Total	**100%**			**12,598,716**
			% of quota harvested	**42.6%**
			% diff. relative to 2020/2021 fishing year landings (9,868,498 lbs.)	**28%**

Table 5. State implemented fishery-independent monitoring programs that encounter spiny dogfish. Source: State Compliance Reports. Note: this list is not comprehensive.

Fishery-Independent Monitoring Programs That Encounter Spiny Dogfish	# Spiny Dogfish Encountered	Comments
ME-NH Inshore Trawl survey	592	The 2022 spring survey caught a total of 40 spiny dogfish at a total weight of 59.49 kg. The 2022 fall survey caught a total of 552 spiny dogfish at a total weight of 805.19 kg.
RI DFW, Coastal Trawl Survey	See Comment	The 2022 Fall trawl survey caught 0.20 spiny dogfish per tow. The Monthly trawl survey in 2022 caught an average of 0.75 spiny dogfish per tow. The 2023 Spring trawl survey caught zero spiny dogfish.
CT Long Island Sound Trawl Survey	Unknown	
NY DEC Multispecies Ocean Trawl Survey	10,212	Five tows in October were cut short by five minutes each.
NJ Ocean Stock Assessment (trawl) Survey	2,841	
DE Bay Bottom Trawl (30- and 16-foot)	387	All from 30-foot bottom trawl
NC DMF Gill Net Survey	9	2020 sampling was suspended due to the COVID-19 pandemic. Sampling resumed July 1, 2021. No spiny dogfish were encountered during sampling in 2021.

Table 6. State-by-state compliance with the Interstate Fishery Management Plan for Spiny Dogfish, 2021/2022 reporting period. Source: State Compliance Reports. Y = Yes, met compliance requirement; N = No, did not meet compliance requirement; NA = Not applicable.

State	Report Submitted (Due July 1)	De Minimis Request	Exempted Fishing Permit Harvest	Finning Prohibition	Possession limit (lbs)
Maine	Y	NA	Y	Y	7,500
New Hampshire	Y	NA	NA	Y	7,500
Massachusetts	Y	NA	NA	Y	7,500
Rhode Island	Y	NA	Y	Y	7,500
Connecticut	Y	NA	NA	Y	7,500
New York	Y	Y	NA	Y	7,500
New Jersey	Y	NA	NA	Y	7,500
Delaware	Y	Y	NA	Y	10,000[#]
Maryland	Y	NA	NA	Y	up to 10,000
Virginia	Y	NA	NA	Y	7,500
North Carolina	Y	NA	Y	Y	20,000

[#]It is unlawful for DE commercial fishermen to possess spiny dogfish taken from federal waters in excess of the federal possession limit

*See PRT recommendations

XI. Figures

Figure 1. Spiny dogfish spawning stock biomass, 1991-2018. Point-estimate for 2015 was derived via application of a Kalman filter. NEFSC 2018.

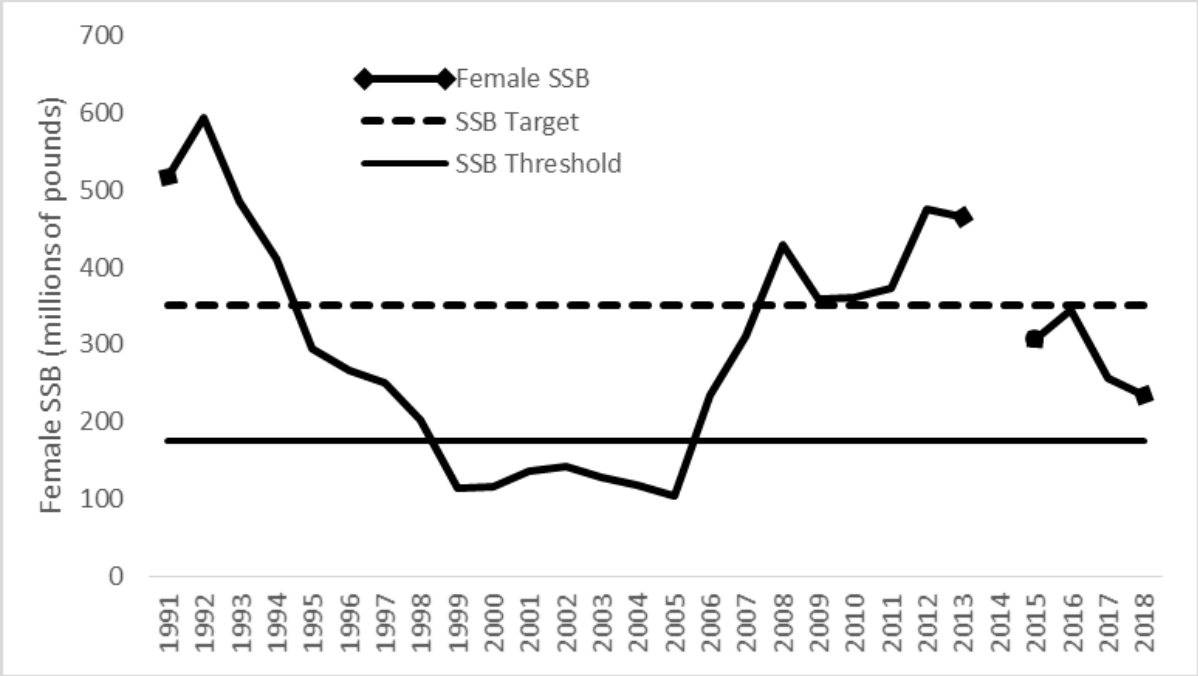


Figure 2. Fishing mortality rates in the spiny dogfish fishery, 1991-2017. Source: NEFSC 2018.