

**FISHERY MANAGEMENT PLAN UPDATE  
SPINY DOGFISH  
AUGUST 2025**

**STATUS OF THE FISHERY MANAGEMENT PLAN**

**Fishery Management Plan History**

|                       |                 |               |
|-----------------------|-----------------|---------------|
| FMP Documentation:    | MAFMC/NEFMC FMP | January 2000  |
|                       | Framework 1     | 2006          |
|                       | Amendment 1     | 2007          |
|                       | Framework 2     | 2009          |
|                       | Amendment 2     | 2011          |
|                       | Amendment 3     | 2014          |
|                       | Amendment 4     | 2015          |
|                       | Amendment 5     | 2017          |
|                       | Framework 3     | 2018          |
|                       | Framework 4     | 2020          |
|                       | Framework 5     | 2020          |
|                       | Framework 6     | 2025          |
|                       | ASMFC FMP       | November 2002 |
|                       | Addendum I      | November 2005 |
|                       | Addendum II     | October 2008  |
|                       | Addendum III    | April 2011    |
|                       | Addendum IV     | August 2012   |
|                       | Addendum V      | October 2014  |
|                       | Addendum VI     | October 2019  |
|                       | Addendum VII    | February 2025 |
| Comprehensive Review: | 2023            |               |

Spiny dogfish sharks are interjurisdictionally managed by the Mid-Atlantic and New England Fishery Management Councils (MAFMC/NEFMC) in federal waters and the Atlantic States Marine Fisheries Commission (ASMFC) in state waters. A fishery management plan (FMP) was created for the stock in 2000 (MAFMC and NEFMC 2000). The FMP includes an annual commercial quota allocated for each fishing year (May 1–April 30).

The MAFMC/NEMFC spiny dogfish FMP has had five amendments since initiated in 2000. Amendment 1 required a standardized method to report by-catch, Amendment 2 established annual catch limits (ACLs) and Accountability Measures (AMs), Amendment 3 allowed for updates to essential habitat definitions, established provisions to maintain existing management measures (including quotas) in the event of delayed rulemaking, and eliminated the seasonal allocation of the coast-wide commercial quota, Amendment 4 implemented a standardized bycatch reporting methodology, and Amendment 5 implemented management measures to prevent the development of new, and the expansion of existing, commercial fisheries of certain forage species in the Mid-Atlantic. All amendments were approved by the National Oceanic and Atmospheric Association (NOAA). The MAFMC/NEMFC spiny dogfish FMP, associated amendment documents, and framework information can be found at <https://www.mafmc.org/dogfish>.

In state waters, the ASMFC 2002 Interstate FMP for spiny dogfish establishes the annual quota and possession limits (ASMFC 2002). The Spiny Dogfish Coast Wide Management Board, Advisory Panel, Technical Committee, and Plan Review Team oversee the management of spiny dogfish in state waters. The management unit includes the U.S. Atlantic coast (Maine-Florida) distribution of spiny dogfish from the estuaries eastward to the inshore boundary of the exclusive economic zone.

There are no amendments to the ASMFC interstate FMP but there are seven addenda. Addendum I allows the Spiny Dogfish Management Board to set multi-year specifications and Addendum II establishes regional allocation of the annual quota (58%) to states from Maine to Connecticut. Addendum III was added to create flexibility in quota shares for southern Atlantic States (New York to North Carolina). Addendum III allows for quota transfer between states, rollovers of up to 5%, state-specified possession limits, and includes a three-year reevaluation of the measures. North Carolina is allocated 14.04% of the quota. Addendum IV standardizes the definitions of overfishing between the three management agencies and adopts a fishing mortality threshold consistent with the federal FMP. 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. Addendum VI allows quota to be transferred between all regions and states to enable full utilization of the coast-wide commercial quota and avoid quota overages. Addendum VII supported consistency with the federal FMP for Spiny Dogfish Framework Adjustment 6 by prohibiting overnight gillnet soaks for state spiny dogfish permit holder on nets 5.25” –10” mesh in November through March in specified areas off of Virginia and Maryland. These were passed to reduce Atlantic sturgeon bycatch in the spiny dogfish gillnet fishery. The ASMFC spiny dogfish FMP and associated addendum documents can be found at <http://www.asmfc.org/species/spiny-dogfish>.

To ensure compliance with interstate requirements, North Carolina (N.C.) also manages spiny dogfish under the North Carolina Fishery Management Plan for Interjurisdictional Fisheries (IJ FMP). The goal of the IJ FMP is to adopt fishery management plans, consistent with N.C. law, approved by the Mid-Atlantic Fishery Management Council, South Atlantic Fishery Management Council, or the ASMFC by reference and implement corresponding fishery regulations in North Carolina to provide compliance or compatibility with approved fishery management plans and amendments, now and in the future. The goal of these plans, established under the Magnuson-Stevens Fishery Conservation and Management Act (federal council plans) and the Atlantic Coastal Fisheries Cooperative Management Act (ASMFC plans) are like the goals of the Fisheries Reform Act of 1997 to “ensure long-term viability” of these fisheries (NCDMF 2022).

### **Management Unit**

For spiny dogfish, the entire U.S. Atlantic Coast from the estuaries eastward to the inshore boundary of the exclusive economic zone is considered a single stock which is managed by the ASMFC, NEFMC, and MAFMC. North Carolina is allotted a state-specific share of the coast-wide quota and allowed to specify possession limits in state waters.

### **Goal and Objectives**

The overall goal of the joint MAFMC/NEFMC FMP is to conserve spiny dogfish to achieve optimum yield from the resource. In support of this goal, the following objectives were adopted:

- Reduce fishing mortality to ensure that overfishing does not occur.
- Promote compatible management regulations between state and council jurisdictions and the US and Canada.
- Promote uniform and effective enforcement of regulations.
- Minimize regulations while achieving the management objectives stated above.
- Manage the spiny dogfish fishery to minimize the influences of the regulations on the prosecution of other fisheries, to the extent practicable.
- Contribute to the protection of biodiversity and ecosystem structure and function.

The goal of the ASMFC FMP for spiny dogfish 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 following objectives are recommended:

- Reduce fishing mortality and rebuild the female portion of the spawning stock biomass (SSB) to prevent recruitment failure and support a more sustainable fishery.
- Coordinate management activities between state, federal, and Canadian agencies to ensure complementary regulations throughout the species range.
- Minimize the regulatory discards and bycatch of spiny dogfish within state waters.
- Allocate the available resource in biologically sustainable manner that is equitable to all the fishers.
- 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.

## DESCRIPTION OF THE STOCK

### Biological Profile

Spiny dogfish (*Squalus acanthias*) are found across the Atlantic Ocean in temperate and subarctic waters. In the northwest Atlantic, they range from Labrador, Canada to Florida but are most abundant from Nova Scotia, Canada to Cape Hatteras, North Carolina (Nammack et al. 1985). Spiny dogfish migrate to coastal waters of North Carolina in the winter and move north along the Atlantic coast in the spring (Sulikowski et al. 2010). Spiny dogfish are a relatively long-lived and slow growing species, reaching a maximum length of approximately 4 feet. Males are mature at approximately 23.6 inches (6 years old), while females mature at between 29.5 and 31.5 inches (12 years old; Nammack et al. 1985). The maximum recorded age is 35 years for males and 40 years for females (Campana et al. 2006). Spiny dogfish give birth to live young called pups. Spiny dogfish gestation is approximately 22 months with two to 15 pups produced (average of six) in each litter and offspring production (fecundity) increases with fish length (Ketchen 2011). Mating occurs during the fall and winter offshore in the mid-Atlantic and pups are born during the winter in the offshore wintering grounds (Campana et al. 2009).

### Stock Status

The 2023 Management Track Stock Assessment indicates that spiny dogfish are not overfished and overfishing is not occurring (NOAA 2023).

### Stock Assessment

The 2023 Management Track Stock Assessment indicated that spiny dogfish are not overfished and overfishing is not occurring. The spawning stock biomass estimate of 191 million pups is slightly above the SSB threshold of 188 million pounds. The fishing mortality estimate (0.02) is just below the fishing mortality threshold (0.0246). However, the assessment also found a lower productivity of the stock, requiring reduced quotas to prevent overfishing in the future.

## DESCRIPTION OF THE FISHERY

### Current Regulations

The fishery is typically opened via proclamation from November through April, as the quota allows; this time period corresponds to the time when spiny dogfish are available in North Carolina waters [see most recent [North Carolina Division of Marine Fisheries \(DMF\) proclamation](#)]. Commercial harvest of spiny dogfish is quota managed with harvest periods and trip limits in federal waters and regional and state quota allocations in state waters. There are no recreational harvest restrictions for spiny dogfish.

### Commercial Fishery

In North Carolina, spiny dogfish commercial landings peaked in 1996 and declined sharply through 2001. Landings remained low through 2008 and then steadily increased from 2009 through 2014. Landings have declined since 2014 (Table 1; Figure 1A). In 2024, 156,831 pounds of spiny dogfish were harvested which

is well below the last decade’s average of 1,656,369 pounds. This was likely due to commercial fishers not targeting spiny dogfish due to the reduced market demand. In 2024, most of the spiny dogfish were landed from the ocean gill net fishery with others landed from estuarine gill nets. Historically, spiny dogfish have also been landed with beach seines, ocean trawls, and hook-and-line gears.

Table 1. Spiny dogfish recreational harvest and number released (NOAA Marine Recreational Information Program) and commercial harvest (North Carolina Trip Ticket Program), 2015–2024.

| Year | Recreational  |                 |                    | Commercial         | Total Weight Landed (lb) |
|------|---------------|-----------------|--------------------|--------------------|--------------------------|
|      | Number Landed | Number Released | Weight Landed (lb) | Weight Landed (lb) |                          |
| 2015 | 7,302         | 657,373         | 36,376             | 4,247,213          | 4,283,589                |
| 2016 | 22,611        | 52,562          | 173,584            | 2,271,201          | 2,472,840                |
| 2017 | 683           | 44,038          | 5,616              | 393,085            | 398,701                  |
| 2018 | 7,514         | 157,394         | 43,732             | 1,168,247          | 1,211,979                |
| 2019 | 6,106         | 261,322         | 43,551             | 1,124,291          | 1,167,842                |
| 2020 | 1,785         | 31,195          | 13,638             | 1,501,331          | 1,514,969                |
| 2021 | 21,587        | 400,905         | 117,447            | 131,501            | 248,948                  |
| 2022 | 3,903         | 70,502          | 12,295             | 70,392             | 82,687                   |
| 2023 | 52,623        | 456,305         | 260,605            | 6,147              | 266,752                  |
| 2024 | 19,317        | 161,618         | 93,796             | 156,831            | 250,627                  |
| Mean | 14,343        | 229,321         | 80,064,            | 1,107,024          | 1,189,893                |

### Recreational Fishery

Recreational estimates across all years have been updated and are now based on the NOAA Marine Recreational Information Program (MRIP) new Fishing Effort Survey-based calibrated estimates. For more information on MRIP, please see [MRIP \(NOAA\)](#). Total annual North Carolina recreational landings, obtained from the NOAA Marine Recreational Information Program, were minimal in the 90s and early 2000s and have been highly variable since (Table 1; Figure 1B). 2024 was above average recreational landings estimate at 93,796 pounds. Mean lengths measured in MRIP have varied in the last decade, likely due to the extremely small sample sizes. The smallest average length was 24 inches in 2022 with 10 fish measured and the highest average length was 35 inches in 2016, and 2019 with two, and three fish measured, respectively (Table 2).

Table 2. Spiny dogfish length (total length, inches) data from NOAA Marine Recreational Information Program recreational samples, 2015–2024.

| Year | Mean Length | Minimum Length | Maximum Length | Total Number Measured |
|------|-------------|----------------|----------------|-----------------------|
| 2015 | 27          | 16             | 40             | 2                     |
| 2016 | 35          | 31             | 38             | 2                     |
| 2017 | 33          | 31             | 34             | 5                     |
| 2018 | 30          | 25             | 38             | 11                    |
| 2019 | 35          | 32             | 38             | 3                     |
| 2020 | 32          | 27             | 38             | 11                    |
| 2021 | 29          | 24             | 35             | 10                    |
| 2022 | 24          | 18             | 27             | 10                    |
| 2023 | 27          | 23             | 31             | 7                     |
| 2024 | 27          | 23             | 32             | 6                     |

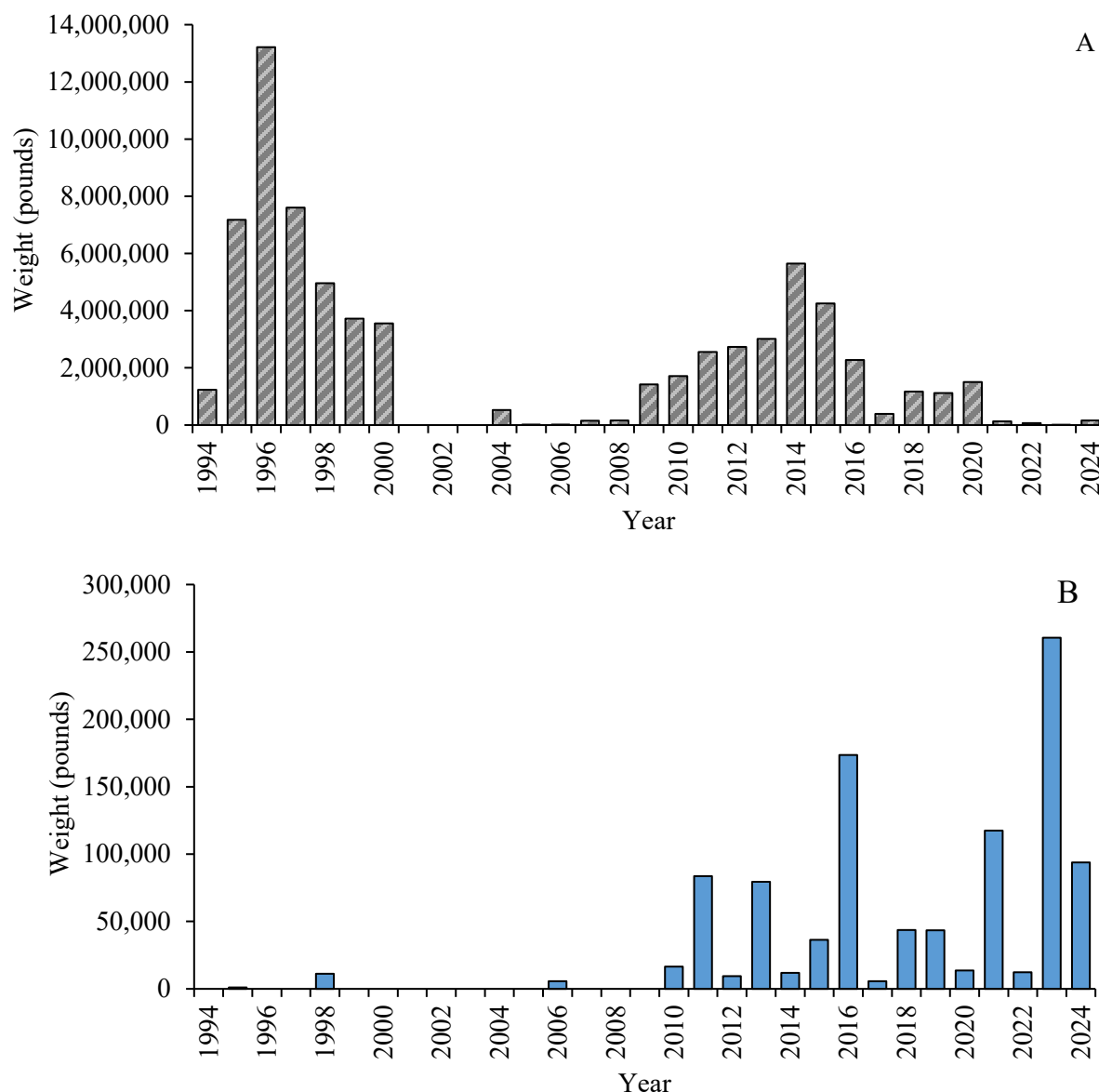


Figure 1. Annual commercial (A) and recreational (B) landings in pounds for spiny dogfish in North Carolina, 1994–2024.

## MONITORING PROGRAM DATA

### Fishery-Dependent Monitoring

Fishery-dependent monitoring programs for beach seine, estuarine gill net, ocean gill net, and ocean trawl sampled spiny dogfish from 1994 to 2024. Prior to 1999, sampling was minimal, and sex was not recorded. Samples were collected at fish packing houses while the catches were offloaded. Fishing captain or crew members were interviewed to obtain information including area fished, gear specifications, and water depth. For each sample collected, total length (TL) and fork length (FL), aggregate weight (nearest kg), and sex were recorded. From 1999 through 2024, sampled spiny dogfish TL averaged 33 inches and ranged from 19 to 43 inches. In the last decade, there has been much less variability (Table 3). Female spiny dogfish are typically encountered more often during sampling events due to their relatively higher abundance in nearshore areas where fishing occurs (Table 4). Like many elasmobranch species, spiny dogfish exhibit

sexual dimorphism; males are generally smaller than females. There were no commercially harvested spiny dogfish measured in 2023 or 2024. Low landings and a very limited number of trips reporting any spiny dogfish harvest contributed to the inability to obtain fishery-dependent biological samples.

Table 3. Spiny dogfish length (total length, inches) data from commercial fish house samples, 2015–2024.

| Year | Mean Length | Minimum Length | Maximum Length | Total Number Measured |
|------|-------------|----------------|----------------|-----------------------|
| 2015 | 34          | 19             | 40             | 1,365                 |
| 2016 | 34          | 25             | 40             | 795                   |
| 2017 | 33          | 24             | 39             | 67                    |
| 2018 | 34          | 27             | 40             | 380                   |
| 2019 | 34          | 24             | 39             | 580                   |
| 2020 | 31          | 23             | 41             | 454                   |
| 2021 | 34          | 28             | 38             | 76                    |
| 2022 | 33          | 26             | 38             | 114                   |
| 2023 | -           | -              | -              | 0                     |
| 2024 | -           | -              | -              | 0                     |

Table 4. Spiny dogfish length (total length, inches) data by sex from commercial fish house samples, 2015–2024.

| Year | Female      |                |                |                       | Male        |                |                |                       |
|------|-------------|----------------|----------------|-----------------------|-------------|----------------|----------------|-----------------------|
|      | Mean Length | Minimum Length | Maximum Length | Total Number Measured | Mean Length | Minimum Length | Maximum Length | Total Number Measured |
| 2015 | 35          | 25             | 40             | 1,281                 | 31          | 25             | 38             | 84                    |
| 2016 | 35          | 24             | 40             | 727                   | 30          | 26             | 35             | 68                    |
| 2017 | 34          | 29             | 39             | 53                    | 30          | 27             | 32             | 14                    |
| 2018 | 35          | 27             | 40             | 343                   | 30          | 27             | 35             | 37                    |
| 2019 | 34          | 25             | 39             | 523                   | 30          | 24             | 35             | 57                    |
| 2020 | 32          | 23             | 41             | 362                   | 29          | 25             | 37             | 88                    |
| 2021 | 31          | 31             | 31             | 1                     | 34          | 28             | 38             | 75                    |
| 2022 | 33          | 27             | 38             | 98                    | 30          | 26             | 32             | 16                    |
| 2023 | -           | -              | -              | 0                     | -           | -              | -              | 0                     |
| 2024 | -           | -              | -              | 0                     | -           | -              | -              | 0                     |

### Fishery-Independent Monitoring

The DMF initiated a fishery-independent gill net survey of Pamlico Sound in 2001 (P915). DMF has conducted a fishery-independent gill net survey (P915) which has been conducted in Pamlico Sound since 2001. Sampling was expanded to the Pamlico, Pungo, and Neuse Rivers in 2003 and to the Cape Fear and New Rivers in 2008. Coverage was further expanded to Bogue, Back, and Core Sounds in 2018. The objective of this project is to provide annual indices of relative abundance for key estuarine species in North Carolina estuaries that can be incorporated into stock assessments. Data from this survey are used to improve bycatch estimates, evaluate management measures, and evaluate habitat usage. Results from this project are used by the DMF and other Atlantic coast fishery management agencies to evaluate the effectiveness of current management measures and to identify additional measures that may be necessary to conserve marine and estuarine stocks. Developing fishery independent indices of abundance for target species allows the DMF to assess the status of these stocks without relying solely on commercial and recreational fishery dependent data. The survey employs a stratified random sampling design and utilizes multiple mesh gill nets (3.0 inch to 6.5 inch stretched mesh, by 0.5-inch increments). A total of 1,883 spiny

dogfish have been measured in the Pamlico Sound Independent Gill Net Survey from 2001 to 2024. Total length ranged from 20 to 40 inches and averaged 31 inches during the survey period.

## **RESEARCH NEEDS**

Research needs from the ASMFC's 2022 FMP review are provided below:

### **Fishery-Dependent Priorities**

- 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 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

## MANAGEMENT

To set the annual spiny dogfish quotas, an annual joint meeting between the ASMFC Technical Committee and MAFMC Monitoring Committee is held. The Technical and Monitoring committees make quota recommendations after considering discards, Canadian landings, and management uncertainty. To ensure effective management, quota recommendations are formed using fisheries data collected from the previous fishing season. These quota recommendations are then communicated to the Spiny Dogfish Management Board and MAFMC for approval. After revision to quotas based on the results of the 2023 management track assessment, the Board approved revised commercial quotas for 2024–2026 seasons. The current 2024/2025 quota (10.7 million pounds) was set by the committee. However, after revision made by the Science and Statistical Committee, MAFMC and NEFMC approved a new recommended quota for the 2025/2026 of 9,338,770-pound coastwide quota a 17.5% reduction in allotment.

## LITERATURE CITED

- ASMFC (Atlantic States Marine Fisheries Commission). 2002. Interstate Fishery Management Plan for Spiny Dogfish. Atlantic States Marine Fisheries Commission. Arlington, Virginia.
- ASMFC. 2019. 2019 Review of the Atlantic States Marine Fisheries Commission Fishery Management Plan for Spiny Dogfish (*squalus acanthias*): 2019/2019 Fishing Year. Atlantic States Marine Fisheries Commission. Arlington, Virginia.
- Campana, S.E., C. Jones, and G.A. McFarlane. 2006. Bomb dating and age validation using the spines of spiny dogfish (*Squalus acanthias*). In Special Issue: Age and Growth of Chondrichthyan Fishes: New Methods, Techniques and Analysis, pp. 327-336.
- Campana, S.E., W. Joyce, and D.W. Kulka. 2009. Growth and reproduction of spiny dogfish off the eastern coast of Canada, including references on stock structure. Biology and management of dogfish sharks, pp. 195-208.
- Ketchen, K.S. 2011. Size at maturity, fecundity, and embryonic growth of the spiny dogfish (*Squalus acanthias*) in British Columbia Waters. Canadian Journal of Fisheries Research. 29(12): 1717-1723.
- MAFMC (Mid-Atlantic Fishery Management Council) and NEFMC (New England Fishery Management Council). 2000. Spiny Dogfish Fishery Management Plan. Mid-Atlantic Fishery Management Council. Dover, DE.
- Nammack, M.F., J.A. Musick, and J.A. Colvocoresses. 1985. Life history of spiny dogfish off the northeastern United States. Transactions of the American Fisheries Society. 114(3) 367-376.
- NCDMF (North Carolina Division of Marine Fisheries). 2022. North Carolina Fishery Management Plan for Interjurisdictional Fisheries, 2022 Information Update. North Carolina Division of Marine Fisheries, Morehead City, North Carolina. 19 pp.
- NOAA (National Oceanic and Atmospheric Administration). 2023. Atlantic Spiny Dogfish 2023 Management Track Assessment Report. National Marine Fisheries Service. Woods Hole, Massachusetts.
- Sulikowski, J.A., B. Galuardi, W. Bebley, N.B. Furey, W.B. Driggers, G.W. Ingram, and P.C. Tsang. 2010. Use of satellite tags to reveal the movements of spiny dogfish *Squalus acanthias* in the western North Atlantic Ocean. Marine Ecology Progress Series. 418: 249-254.