

Scoping Document:
Amendment 16 to the 2006
Consolidated Atlantic Highly
Migratory Species Fishery
Management Plan



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1 BACKGROUND

Atlantic Highly Migratory Species (HMS) fisheries are managed under the dual authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1801 *et seq.*) and the Atlantic Tunas Convention Act (ATCA; 16 U.S.C. 971 *et seq.*). The 2006 Consolidated Atlantic HMS Fishery Management Plan (2006 Consolidated HMS FMP) and its amendments are implemented by regulations at 50 CFR part 635. Under the Magnuson-Stevens Act, conservation and management measures must prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery (16 U.S.C. § 1851(a)(1)). Where a fishery is determined to be in or approaching an overfished condition, the National Marine Fisheries Service (NOAA Fisheries) must adopt conservation and management measures to prevent or end overfishing and rebuild the fishery (16 U.S.C. §§ 1853(a)(10) and 1854(e)). In addition, NOAA Fisheries must, among other things, comply with the Magnuson-Stevens Act's 10 National Standards, including a requirement to use the best scientific information available as well as to consider potential impacts on residents of different States, efficiency, costs, fishing communities, bycatch, and safety at sea (16 U.S.C. § 1851(a)(1-10)). Internationally, the International Commission for the Conservation of Atlantic Tunas (ICCAT) has issued recommendations for the conservation of shark species caught in association with ICCAT fisheries, while the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has passed measures that place requirements or restrictions on the trade of some shark species and shark fins. The purpose of this document is to consider possible options for future Atlantic shark management based on the framework action in Amendment 14 and the findings from the Atlantic shark fishery review (SHARE) document (88 FR 16944, March 21, 2023), described below.

Any written comments on this document should be submitted to NOAA Fisheries via the Federal e-Rulemaking Portal (NOAA-NMFS-2023-0010) by August 18, 2023. For further information, contact Guy DuBeck, Karyl Brewster-Geisz, Ann Williamson, or Carrie Soltanoff at (301) 427-8503.

Atlantic Shark Management History

In 1993, NOAA Fisheries finalized the first FMP for Sharks of the Atlantic Ocean (58 FR 21931, April 26, 1993) (1993 FMP). The 1993 FMP established many of the management measures that are the basis for those in place today, including permitting and reporting requirements, management complexes, commercial quotas, and recreational bag limits. Many of the methods for establishing the commercial quotas in effect currently relate back to those established in the 1993 FMP.

Over the years, NOAA Fisheries has implemented various management measures for Atlantic shark fisheries, including revised quotas and a mechanism for establishing ACLs. Some of these measures are discussed below. For more detailed information, see the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks (1999 FMP), Amendment 1 to the 1999 FMP, the 2006 Consolidated HMS FMP, and Amendments 2, 3, 5a, 5b, 6, 9, 11, and 14 to the 2006

Consolidated HMS FMP (<https://www.fisheries.noaa.gov/atlantic-highly-migratory-species/atlantic-hms-fishery-management-plans-and-amendments>).

Amendment 14 to the 2006 Consolidated HMS FMP

In Amendment 14 (88 FR 4157, January 24, 2023), NOAA Fisheries:

- Set forth a revised framework for establishing quotas and related management measures for Atlantic shark fisheries.
- Incorporated, for potential use, several optional fishery management tools that were adopted in the revised guidelines for implementing National Standard 1 (NS1) of the Magnuson-Stevens Act (81 FR 71858, October 18, 2016).
- Modified the general procedures that are followed in establishing the acceptable biological catch (ABC) and annual catch limits (ACLs), and the process used to account for carryover or underharvest of quotas.
- Provided the option to phase-in ABC control rules and to adopt multi-year overfishing status determination criteria (SDC) in certain circumstances.

In this scoping document, NOAA Fisheries begins the process to implement, via Amendment 16, the revised framework for establishing quotas and related management measures for Atlantic shark fisheries, as established in Amendment 14.

Other Considerations

In addition to Amendment 14, in considering options for Amendment 16, NOAA Fisheries is aware of other documents or issues that could impact available management measures. These documents and issues are described briefly below.

Atlantic Shark Fishery Review

In March 2023, NOAA Fisheries released the Final SHARE document, which analyzed trends within the commercial and recreational shark fisheries to identify main areas of success and concerns with conservation and management measures and to find ways to improve management of the shark fishery. Overall, the review found that NOAA Fisheries is sustainably managing shark stocks; however, the commercial shark fishery is in decline in terms of use of available quota and the number of participants. This decline is happening despite fishermen having available quotas for many species, and, in most regions, an open season year-round. The review also identified a need in the recreational fishery to improve angler education so species identification could improve shark fishery data, thus improving management overall. The final report can be found here: <https://www.fisheries.noaa.gov/action/atlantic-shark-fishery-review-share>.

Shark Fin Sales Elimination Act

On December 23, 2022, President Biden signed into law the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 (NDAA), Pub. L. 117-263. Section 5946(b) of the NDAA, which is also known as the Shark Fin Sales Elimination Act, makes it illegal, with certain exceptions, to possess, buy, sell, or transport shark fins or any product containing shark

fins, with an exemption for smooth or spiny dogfish fins. The Agency is currently considering a separate rule to implement the SFSEA.

As described in the SHARE document, state and territorial shark fin bans have had direct and indirect impacts on the U.S. commercial shark fishery. In particular, there have been direct impacts on the sale and trade of shark fins through interstate commerce, which has led to an indirect impact on lawful harvest. Indirectly, the state fin bans likely have caused a decrease in the marketability of shark products in the United States. The SFSEA will likely have a major impact on the viability of the commercial shark fishery. If the commercial shark fishery continues, it will likely be greatly changed.

Convention on International Trade in Endangered Species of Wild Fauna and Flora

NOAA Fisheries actively participates in international bodies that could affect U.S. shark fishermen and the shark industry including CITES. CITES is an international agreement that regulates the global trade in plants and wildlife to ensure that international trade does not threaten their survival. To help accomplish this mission, CITES has three appendices: Appendix I includes species prohibited in international commercial trade; Appendix II includes international trade of regulated species in part through CITES export permits issued by the exporting country; and Appendix III includes species for which a country has requested help with monitoring trade. Currently, 183 countries are Parties to CITES. The Convention calls for meetings of the Conference of the Parties, held every 3 years, at which the Parties review treaty implementation, make provisions enabling the CITES Secretariat to carry out its functions, consider amendments to the lists of species in Appendices I and II, consider reports presented by the Secretariat, and make recommendations for the improved effectiveness of CITES. Any country that is a Party to CITES may propose amendments to Appendices I and II, and resolutions, decisions, and agenda items for consideration by all the Parties. More information about CITES and its appendices is available on the CITES Secretariat's website at <https://cites.org/eng/app/appendices.php>.

In the United States, the requirements of CITES are managed by the U.S. Fish and Wildlife Service (USFWS). Any products of any species that is listed on Appendix II must be properly certified and permitted by the USFWS before it can be imported or exported. Over the years, more and more of the shark species that are landed in fisheries that are managed by NOAA Fisheries have been listed on Appendix II. At the November 2022 Conference of the Parties, CITES decided to list all *Carcharhinidae* species (requiem sharks) on Appendix II with a 12-month implementation delay. Of the requiem shark species listed, Atlantic sharpnose, blacknose, blacktip, blue, bull, lemon, sandbar, and spinner sharks are managed by the HMS Management Division and can be retained by commercial fishermen. In November 2022, bonnethead sharks were also listed in Appendix II with the rest of the non-listed hammerhead shark species based on the similarity in appearance of specimens of these species to others in the CITES Appendices. This listing means that as of November 2023 all of the authorized shark species, except for smoothhound sharks, in the Atlantic HMS fishery management unit will require CITES permits before any trade can occur. While the impacts of these new listings are as yet unknown, it is likely that these listings will negatively impact the commercial shark fishery if

import and export dealers are discouraged by the process to obtain CITES permits and the domestic meat market is unable to accommodate shark meat. Additionally, the listings may impact shark science if shark researchers are unable to exchange shark samples with scientists around the globe. If this happens, the scientific and management uncertainty involved in setting quotas and other management measures could be higher than currently expected.

Atlantic Shark Stock Assessments

Atlantic shark stock assessments for large coastal sharks (LCS), small coastal sharks (SCS), and smoothhound sharks are generally completed through the SouthEast Data, Assessment, and Review (SEDAR) process. SEDAR assessments have previously been classified as benchmark-type, standard-type, or update-type assessments. More recently, SEDAR assessments have been classified as either research track or operational assessments. These new classifications apply to future assessments undertaken under this new scheme; older assessments will remain as previously classified. Research track assessments are similar to benchmark assessments, in that they are peer-reviewed and have numerous opportunities for public input; and are used to develop the tools, data, and models used in the stock assessment process. Research track assessments are not used to provide management advice. Instead, they establish the foundations for operational assessments that do provide management advice. Operational assessments, which may include procedures similar to the previous standard-type and update-type assessments, use previously approved methods and data sources to provide management advice quickly and efficiently. The major differences between research track and operational assessments are summarized in Table 2 of the Atlantic HMS Best Scientific Information Available Regional Framework (<https://www.fisheries.noaa.gov/resource/document/atlantic-highly-migratory-species-best-scientific-information-available-regional>). The first HMS stocks that are being assessed using this approach are the hammerhead shark species, in 2021-2024.

Some shark stock assessments are conducted outside the SEDAR process. ICCAT, through its Standing Committee on Research and Statistics (SCRS), conducts stock assessments for some pelagic sharks (blue, porbeagle, and shortfin mako sharks). Information on these assessments is available at <https://www.iccat.int/en/assess.html>. In addition, NOAA Fisheries has accepted peer-reviewed stock assessments conducted by academia in the past and in limited instances has used them for management purposes, and is exploring the use of peer-reviewed stock assessments conducted externally to the agency for management purposes. Recent stock assessments have aimed to assess species individually at the stock level to the extent possible, with the assessment providing a total allowable catch (TAC) for that species (Table 1).

Table 1. Current shark stock assessments and determinations by year.

Year	Species	Stock Status Determination
2007 (SEDAR 13) ¹	Finetooth sharks - All regions	Not overfished, overfishing is not occurring
2009 (Hayes et al. 2009)	Scalloped hammerheads - All regions	Overfished, overfishing is occurring
2010 (SEDAR 21) ²	Blacknose sharks - Gulf of Mexico region	Unknown
	Blacknose sharks - Atlantic region	Overfished, overfishing is occurring
2013 (SEDAR 34)	Atlantic sharpnose sharks - Atlantic region	Not overfished, overfishing is not occurring
	Atlantic sharpnose sharks - Gulf of Mexico region	Not overfished, overfishing is not occurring
	Bonnethead sharks - Atlantic region	Unknown
	Bonnethead sharks - Gulf of Mexico region	Unknown
2015 (SEDAR 39)	Smooth dogfish sharks - Atlantic region	Not overfished, overfishing is not occurring
	Smoothhound Complex - Gulf of Mexico region	Not overfished, overfishing is not occurring
2015 (ICCAT) ³	Blue sharks - North Atlantic stock	Not overfished, overfishing is not occurring
2016 (SEDAR 21 Update)	Dusky sharks - All regions	Overfished, overfishing is occurring
2017 (SEDAR 54)	Sandbar sharks - All regions	Overfished, overfishing is not occurring
2017 (ICCAT)	Shortfin mako sharks - North Atlantic stock	Overfished, overfishing is occurring
2018 (SEDAR 29 Update)	Blacktip sharks - Gulf of Mexico region	Not overfished, overfishing is not occurring
2020 (SEDAR 65)	Blacktip sharks - Atlantic region	Not overfished, overfishing is not occurring
2020 (ICCAT)	Porbeagle sharks - Northwest Atlantic stock	Overfished, overfishing is not occurring
2021-2024 (SEDAR 77)	Hammerhead sharks - All regions	TBD

Note: Each species stock assessment lists who conducted the assessment and the reference to the stock assessment number.

¹ SEDAR 13 stock assessment also included blacknose sharks, bonnethead sharks, and Atlantic sharpnose sharks.

² SEDAR 21 stock assessment also included dusky sharks and sandbar sharks.

³ An ICCAT blue shark stock assessment is being conducted in 2023.

2 PURPOSE AND NEED

This document was prepared by NOAA Fisheries for use in scoping of significant issues related to the management of Atlantic shark fisheries. Scoping is a public process during which NOAA Fisheries will consider a range of issues and objectives, as well as possible options for future Atlantic shark management measures. The management options presented in this document are not intended to be comprehensive with respect to potential modifications to the regulations, but form the basis for further discussion and refinement of the potential objectives and measures. Public comment should be submitted via www.regulations.gov. When submitting comments, search for: NOAA-NMFS-2023-0010, click the “Comment” icon, complete the required fields, and enter or attach your comments. NOAA Fisheries is requesting comments on the management options described in this scoping document and other relevant options that would meet the purpose and need for this action. Following consideration of comments received during scoping, NOAA Fisheries will develop Draft Amendment 16 to the 2006 Consolidated HMS FMP (Amendment 16).

This action is necessary to implement the revised framework for establishing quotas and related management measures for Atlantic shark fisheries, as established in Amendment 14 to the 2006 Consolidated HMS FMP (Amendment 14) (88 FR 4157, January 24, 2023), based on the best available science. The action is intended to incorporate the ABC control rule framework to modify the ACLs for non-prohibited Atlantic shark stocks established in Amendment 14 and the findings from the SHARE document (88 FR 16944, March 21, 2023). In addition, NOAA Fisheries considers some recent national law and international agreements that are likely to have direct and indirect impacts on the commercial shark fishery. The range of topics under consideration focus on the shark fisheries managed by NOAA Fisheries’ HMS Management Division. Given the substantial amount of existing relevant information (e.g., Amendment 14, the SHARE document, and different state, national or international regulations), the scoping document for this FMP amendment begins with a brief summary of the relevant fisheries and their management measures, followed by an outline of potential management measures for these fisheries. Additional background information may be referenced in previously developed NOAA Fisheries documents, as identified throughout the text of this scoping document.

Objectives

NOAA Fisheries developed the following potential management objectives for scoping based on the issues listed above, and suggestions from fishery participants, the HMS Advisory Panel, and the public. The specific objectives reflect the current status of the relevant fisheries, the objectives of the 2006 Consolidated HMS FMP and its amendments, NOAA Fisheries policies such as National Standard guidelines, legal obligations, and conservation and management goals. As with Amendment 14, Amendment 16 is not expected to modify the ACLs for prohibited sharks. The ACLs for prohibited shark species will remain at zero.

The potential objectives of management options to be explored during scoping are as follows:

- Establish ABCs for non-prohibited shark species consistent with the ABC control rule established in Amendment 14.
- Establish ACLs for non-prohibited shark species, consistent with the framework established in Amendment 14, taking into account the appropriate scientific and management uncertainty.
- Optimize the ability for the commercial and recreational shark fisheries to harvest available, science-based shark quotas to the extent practicable.
- Increase management flexibility to react to additional factors impacting the Atlantic shark fisheries and account for changes in the distribution of shark harvest among sectors.

3 CALCULATING THE OFL, ABC, AND ACLS

Two of the objectives for Amendment 16 are to establish ABCs and ACLs for non-prohibited shark species consistent with the framework established in Amendment 14. As described in Amendment 14, the methodology that will be used to determine the OFL, ABC, and scientific uncertainty from each individual assessment, is highly technical. At this time, NOAA Fisheries has worked through the process only for blacktip sharks in the Atlantic. Therefore, as described in Amendment 14, at this time, NOAA Fisheries will be using a phased approach to calculate the ABC and resulting ACLs for most shark stocks. As stock assessments are completed that incorporate the changes needed to implement Amendment 14 (e.g., SEDAR 77 and hammerhead sharks), NOAA Fisheries will fully implement the ABC control rule in Amendment 14.

In this document, NOAA Fisheries plans to show examples of how the ACLs could be calculated for one species from each tier as described in the ABC control rule. The examples would represent how NOAA Fisheries may establish the ACL framework for non-prohibited shark species from Amendment 14 (Figure 1). For each example, NOAA Fisheries will provide preliminary estimates of the OFL (or OFL proxy), ABC (or ABC proxy), overall ACL, and sector ACLs. These examples are provided to show potential ways in which the management uncertainty (e.g., shark mortality from fisheries not managed directly by the NOAA Fisheries HMS Management Division and any research mortality) could be accounted for and show how the overall ACL could be further divided between the commercial and recreational fishery sector ACLs. The examples provided in this document are just examples. The resulting ACLs will likely change in Draft Amendment 16 based on different options and additional data. For each example, the commercial sector ACL is provided in metric tons (mt) dressed weight (dw) while the recreational sector ACL is provided in numbers of sharks.

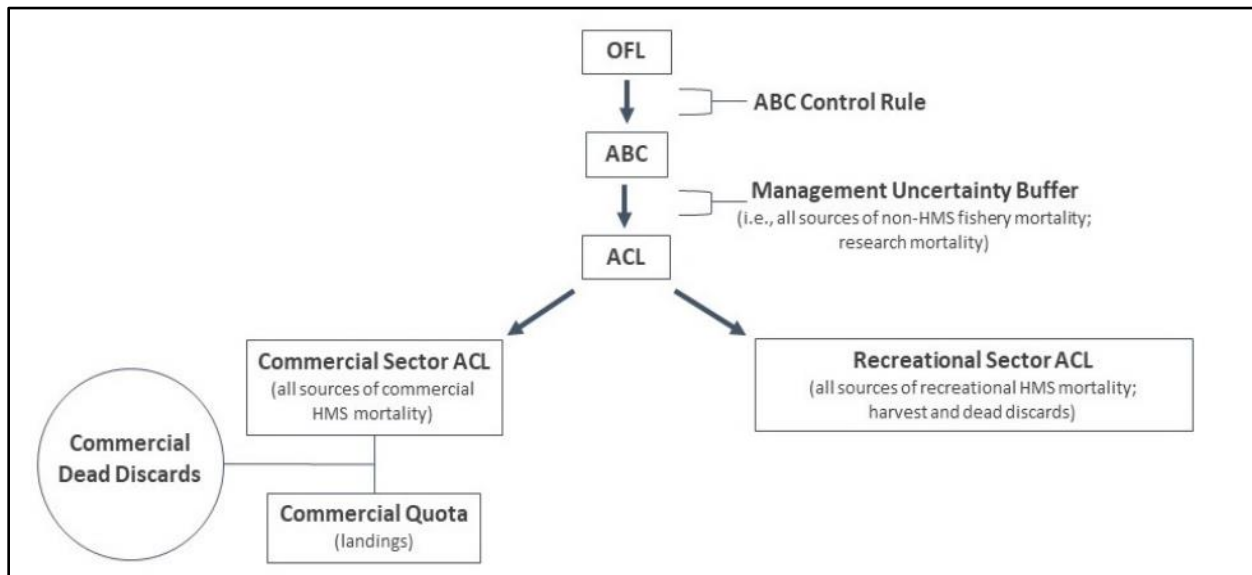


Figure 1. The ACL framework for non-prohibited shark species based on Amendment 14.

The following sections provide the different options for calculating and providing estimates for the ABCs, ACLs, and sector ACLs for non-prohibited shark stocks. The topics under consideration are:

- Addition of a new species to the fishery management unit.
- Potential placement of shark stocks in the ABC control rule tier structure.
- Determining the appropriate number of years of data to use.

Addition of a New Species to the Fishery Management Unit

Since 1993, NOAA Fisheries has managed four hammerhead shark species (great (*Sphyrna mokarran*), smooth (*S. zygaena*), scalloped hammerhead (*S. lewini*), and bonnethead sharks (*S. tiburo*)). In 2013, Quattro et al. identified a new species of hammerhead shark, the Carolina hammerhead (*S. gilberti*), based on 54 specimens collected in coastal waters off of South Carolina. Quattro et al. determined that the Carolina hammerhead is separable from the scalloped hammerhead morphologically only in the number of precaudal vertebrae (Carolina hammerheads have 83-91, and scalloped hammerheads have 92-99). Although the range of the Carolina hammerhead is unknown, so far they have only been found off the east coast of the United States from North Carolina to Florida with a few exceptions off southern Brazil (Pinhal et al. 2012, Quattro et al. 2013). This identified distribution overlaps with the range of scalloped hammerhead sharks in the Northwest Atlantic Ocean.

Additionally, scalloped hammerheads were found to breed with the Carolina hammerhead in the Northwest Atlantic Ocean and Gulf of Mexico (Barker et al. 2019). From 2010 through 2017, fin clips were collected from 600 individuals identified as scalloped hammerheads from North Carolina south through Texas. Of the 600 samples, Barker et al. (2019) assigned a hybrid class to 4.5-4.9 percent, which included 10 first-generation hybrids and 15–17 backcrosses indicating the hybrids were viable. All hybrids, with the exception of one case, were the result of female Carolina hammerheads mating with male scalloped hammerheads. It is unknown whether this hybridization would have a negative or positive impact on scalloped hammerheads. More likely, repeated hybridization and backcrossing with scalloped hammerheads could lead to the loss of endemic Carolina hammerheads (Barker et al. 2019).

Given the discovery of the Carolina hammerhead, the inability to practically differentiate them from scalloped hammerheads, and the recent evidence of hybridization between the two species, NOAA Fisheries is considering adding Carolina hammerhead to the fishery management unit. Carolina hammerheads are also being assessed with scalloped hammerheads in the SEDAR 77 stock assessment for hammerhead sharks, anticipated for completion in 2024.

Potential Placement of Shark Stocks in the ABC Control Rule Tier Structure

In Amendment 14, NOAA Fisheries adopted an ABC control rule framework for establishing ABCs. The ABC control rule adopted a tiered approach to appropriately consider differences in the available data and levels of uncertainty. More information on the ABC control rule is provided in Amendment 14 and is not repeated here.

Table 2 presents the potential placement of various non-prohibited shark stocks from the fishery management unit in the tier structure based on the available data, reliability of the data and modeling time series, the structure of a stock assessment, and the availability of key status determination criteria. The scientific uncertainty that needs to be accounted for is different for each row in Table 2 so placement of the species within the appropriate tier is critical. NOAA Fisheries is looking for comments regarding whether the stocks were placed in the appropriate tier. It is important to note that as stock assessments are completed, shark stocks could move into different tiers. For example, SEDAR 77 for assessing great, smooth, scalloped, and Carolina hammerhead sharks is currently underway. Once those assessments are complete, great, smooth, and Carolina hammerhead sharks may move out of Tier 4 and scalloped hammerheads, if determined to be rebuilt, may move out of the “under the rebuilding plan” row. Movement into a different tier could result in different ABC estimations.

Table 2. Potential placement of each Atlantic shark stock in the ABC control rule tier structure finalized in Amendment 14.

ABC Control Rule Structure	Shark Species	Region
<u>Tier 1</u> Accepted data-rich stage-structured stock assessment approach that includes reliable time series of catch, size or age composition, and index of abundance.	Blacktip	Atlantic
	Smoothhound	Atlantic
<u>Tier 2</u> Accepted data-moderate stock assessment approach that includes two of the three reliable time series listed in Tier 1.	Atlantic sharpnose	Atlantic
	Atlantic sharpnose	Gulf of Mexico
	Blacktip	Gulf of Mexico
	Finetooth	All
	Smoothhound complex	Gulf of Mexico
<u>Tier 3</u> Accepted stock assessment available, but the data used are relatively limited and do not meet the standards regarding time series set for Tiers 1 and 2.	-	-
<u>Tier 4</u> No accepted stock assessment available, and, therefore, data quality and data availability have not been fully vetted through an assessment process.	Blacknose	Gulf of Mexico
	Bonnethead	Atlantic
	Bonnethead	Gulf of Mexico
	Bull	All
	Carolina hammerhead*	All
	Great hammerhead*	All
	Lemon	All

	Nurse	All
	Smooth hammerhead*	All
	Spinner	All
	Silky	All
	Tiger	All
Under Rebuilding Plan (Outside the Specific Tier Structure)	Blacknose	Atlantic
	Sandbar	All
	Scalloped hammerhead*	All
ICCAT Assessed Stocks and Pelagic Sharks (Outside the Specific Tier Structure)	Blue	North Atlantic
	Porbeagle	Northwest Atlantic
	Shortfin mako	North Atlantic
	Thresher	All

* The hammerhead shark species may move tiers when SEDAR 77 is complete.

Determining the Appropriate Number of Years of Data to Use

In providing estimates for sector ACLs, NOAA Fisheries will need to determine the appropriate number of years of data to use to calculate the split. Similarly, there will be times, particularly during this phase-in period or when dealing with Tier 4 stocks, where NOAA Fisheries would need to determine the appropriate number of years of data to calculate the ABC. The options below discuss different ways of deciding how many years of data to use. NOAA Fisheries could consider other options (e.g., less than five years) based on public comment.

Option A1: Use all the years of available catch history for each shark stock.

Under Option A1, NOAA Fisheries would gather all of the available commercial and recreational catch history for each shark stock to determine the ABC (if the ABC is not already provided by the assessment) and any sector ACL split.

Pros:

- Would be consistent with one of the ways NOAA Fisheries has determined the sector ACL split in the past.
- Using all available data may mitigate any recent changes between sectors.
- Using all available data is consistent with the approach of many stock assessments.

Cons:

- May not represent how the fishery is currently operating, since recent catch data would be averaged out with older data.

Option A2: Use the last 10 years of available catch history for each shark stock.

Option A2 would gather the available commercial and recreational catch history for each shark stock from the last 10 years to determine the ABC, if the ABC is not already provided by the assessment, and any sector ACL split. In Amendment 12 to the 2006 Consolidated HMS FMP (Amendment 12) (86 FR 46836, August 20, 2021), NOAA Fisheries established, among other things, triggers for review of allocations of quota-managed HMS. One of those triggers was time, which ensures that quota allocations are reviewed by NOAA Fisheries on a periodic basis (e.g., at least every 10 years) if other allocation triggers are not met.

Pros:

- Would match the allocation trigger in Amendment 12.
- May represent how the fishery is currently operating more closely than Option A1.

Cons:

- Management measures in the past 10 years would have more of an impact on the resulting split than older catch history. This impact could negatively impact one sector over another if, for example, that management measure intentionally reduced the landings of one sector more than another sector.

Option A3: Use the last five years of available catch history for each shark stock.

Under Option A3, NOAA Fisheries could gather all the available commercial and recreational catch history for each shark stock from the last five years to determine the ABC, if the ABC is not already provided by the assessment, and any sector ACL split.

Pros:

- Most recent catch history trend data would represent how the fishery is operating now.
- Would be consistent with the allocation trigger in Amendment 12.

Cons:

- Could underestimate sector ACL split due to external factors (weather, different state and international regulations, etc.) that may have impacted the catch history.

4 EXAMPLE ABCS AND RESULTING ACLS FOR SHARKS FROM SOME TIERS

Below, NOAA Fisheries presents some examples of ABCs and resulting ACLs for sharks from some of the tiers to show potential impacts of the changes. These examples represent potential changes for constituents to consider and provide comments on, not only with respect to the specific species discussed, but with respect to the potential approaches described for the different tiers; these examples, both for the individual species and the different tiers, are not final and may change throughout the rulemaking process. In this section, NOAA Fisheries provides the revised ABCs and resulting ACLs.

Example Tier 1 Assessment – Blacktip Shark, Atlantic Region

The blacktip shark in the Atlantic region has a stock assessment that is categorized as a Tier 1 assessment (see SEDAR 65). Tier 1 assessments are those that are data-rich, with a full age-structured model (e.g., catch-at-age or catch-at-length model with sufficient life history data to fully parameterize the population dynamics) that includes, at a minimum, reliable time series of catch, size or age composition, and an index of abundance. These stock assessments would provide the following inputs or proxies for these inputs: MSST, maximum fishing mortality threshold (MFMT), and OFL. The OFL (or the OFL proxy) is the annual catch amount that corresponds to the estimate of MFMT (or MFMT proxy) applied to a stock's or stock complex's abundance and is expressed in terms of numbers or weight of fish. The ABC is derived from the OFL (or the OFL proxy), reduced (buffered) as needed to account for both scientific uncertainty and the risk policy (i.e., reflect the acceptable probability of overfishing). After each Tier 1 assessment, an estimate of sigma from the assessment, for example if available from stock assessment projections, would be compared to sigma_min. The larger of the two values would be used to estimate the uncertainty around the OFL. For Tier 1 stocks, consistent with the existing HMS risk policy for Atlantic shark stocks or complexes, NOAA Fisheries could apply an acceptable probability of overfishing occurring (P*) based on a range of 30 to 50 percent. This would be applied corresponding to a likelihood of success in ending and preventing overfishing and maintaining healthy stocks of 70 percent for most shark stocks, although a range of 50 to 70 percent may be considered depending on the stock and relevant circumstances.

For this example, NOAA Fisheries considers a few options for the HMS risk policy. NOAA Fisheries could consider these HMS risk policy options for other Tier 1 assessments. Under each option, NOAA Fisheries provides the preliminary ABC, overall ACL, and sector ACLs for blacktip sharks in the Atlantic region. All of these options start with an OFL of 422.3 mt dw (73,070 sharks) and a minimum estimated scientific uncertainty in OFL (e.g., sigma_min = 0.415) (Courtney and Rice, in prep.).

Option B1: Use an HMS risk policy of 70 percent for Tier 1 assessments.

Under Option B1, NOAA Fisheries could use an HMS risk policy of 70 percent for Tier 1 assessments, which provides a buffer from the OFL at the 30-percent acceptable risk of

overfishing ($P^* = 0.3$). The final numbers are provided in Figure 2 for the example of blacktip sharks in the Atlantic region.

In going through all the needed calculations for the example, NOAA Fisheries determined the overall ABC for blacktip sharks in the Atlantic region would be 339.7 mt dw (58,780 sharks). NOAA Fisheries also calculated the overall management buffer to be 1.9 mt dw (172 sharks). This results in an overall ACL of 337.8 mt dw (58,608 sharks) ($339.7 \text{ mt dw} - 1.9 \text{ mt dw} = 337.8 \text{ mt dw}$; $58,780 \text{ sharks} - 172 \text{ sharks} = 58,608 \text{ sharks}$). Additionally, as described above, NOAA Fisheries is considering a few options (A1-A3) on how to initially split the ACL between the commercial and recreational sectors. Depending on which option is chosen, the sector ACLs would be different. For purposes of this example, NOAA Fisheries used available catch history from SEDAR 65 under Option A1, which included data on number of sharks and weight from 1990 through 2018. Under Option A1 (all available catch history), the recreational catch accounted for approximately 86 percent of the number of sharks and approximately 58 percent of the weight of blacktip sharks, while the commercial catch accounted for approximately 14 percent of the number of sharks and approximately 42 percent of the weight of blacktip sharks.

This could result in a potential recreational sector ACL of 50,180 sharks. Based on a three-year average of recreational catch and dead discard estimates from 2019 through 2021, fishermen would have accounted for approximately 89 percent of this potential recreational sector ACL. This also could result in an overall commercial sector ACL of 142.8 mt dw (8,428 sharks). After considering dead discards, the potential commercial quota for Atlantic blacktip sharks could be 136.3 mt dw (300,426 lb dw) ($142.8 \text{ mt dw overall commercial sector ACL} - 6.5 \text{ mt dw of HMS dead discards} = 136.3 \text{ mt dw commercial quota}$). Based on three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 38 percent of this potential commercial quota.

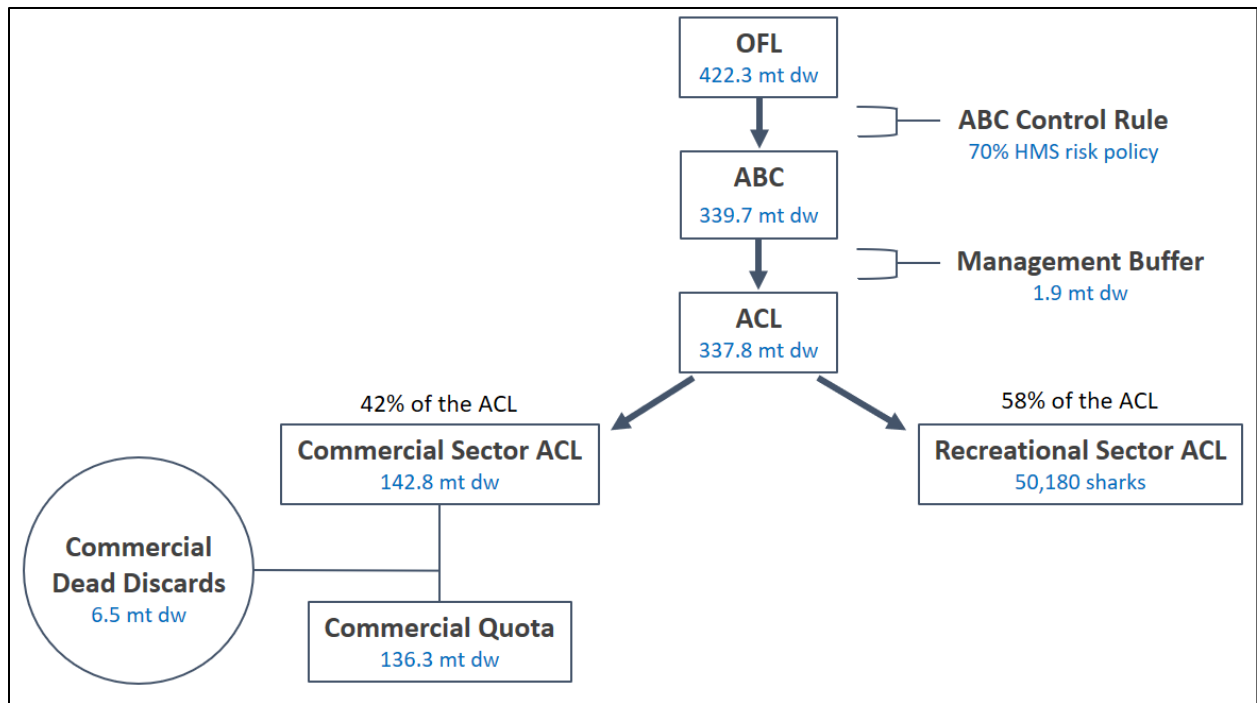


Figure 2. Potential ACL framework for blacktip sharks in the Atlantic region under Option B1.

Pros:

- Would maintain continuity of using a 70-percent HMS risk policy for most sharks.
- Under this option and example, the current harvest levels of blacktip sharks in the Atlantic region would be below the potential sector ACLs.
- Would establish the ABC, ACL, and resulting quotas using the framework established in Amendment 14.

Cons:

- Because the ABC control rule determined the scientific uncertainty for this species, NOAA Fisheries could use a less conservative risk policy (i.e., 50 or 60 percent).
- This option would not allow as much management flexibility compared to a less conservative risk policy.

Option B2: Use an HMS risk policy of 60 percent for Tier 1 assessments.

Under Option B2, NOAA Fisheries could use an HMS risk policy of 60 percent, which provides a buffer from the OFL at the 40-percent acceptable risk of overfishing ($P^* = 0.4$). Following all the same calculations as Option B1, the resulting numbers of the blacktip shark example are (Figure 3):

- Overall ABC: 380.1 mt dw (65,763 sharks)
- Overall ACL: 378.2 mt dw (65,591 sharks)
- Recreational sector ACL: 56,158 sharks.

- Based on a three-year average of recreational catch and dead discard estimates from 2019 through 2021, fishermen would have accounted for 79 percent of this potential recreational sector ACL.
- Overall commercial sector ACL: 159.9 mt dw (9,433 sharks)
- Commercial quota: 153.3 mt dw (338,047 lb dw).
 - Based on a three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 34 percent of this potential commercial quota.

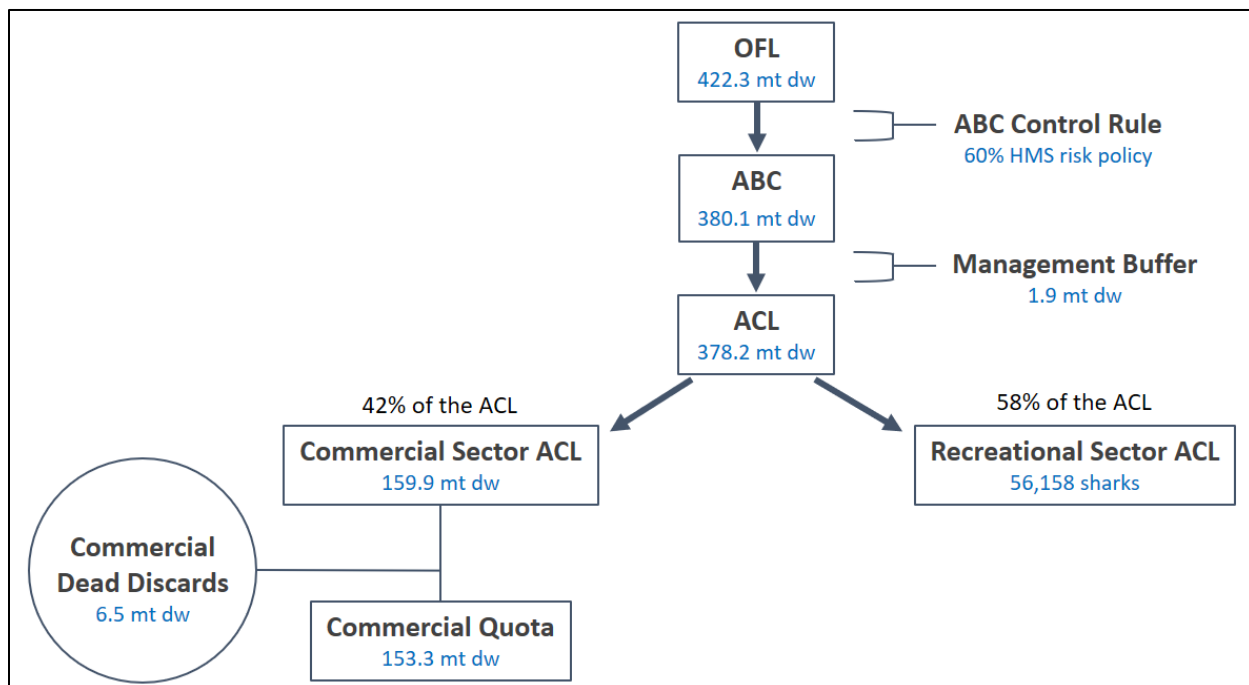


Figure 3. Potential ACL framework for blacktip sharks in the Atlantic region under Option B2.

Pros:

- With a less conservative risk policy, this option under this example would allow for more management flexibility and more harvest of blacktip sharks in the Atlantic region under the same OFL, compared to Option B1.
- Under this option and example, the current harvest levels of blacktip sharks in the Atlantic region would be below the potential sector ACLs.
- Would establish the ABC, ACL, and resulting quotas using the framework established in Amendment 14.

Cons:

- Would decrease the uncertainty buffer and the ABC would be 90 percent of the OFL.

Option B3: Use an HMS risk policy of 50 percent for Tier 1 assessments.

Under Option B3, NOAA Fisheries could use an HMS risk policy of 50 percent, which provides a buffer from the OFL at the 50-percent acceptable risk of overfishing ($P^* = 0.5$). Following all the same calculations as Option B1, the resulting numbers of the blacktip shark example are (Figure 4):

- Overall ABC: 422.3 mt dw (73,070 sharks)
- Overall ACL: 420.4 mt dw (72,898 sharks)
- Recreational sector ACL: 62,415 sharks.
 - Based on a three-year average of recreational catch and dead discard estimates from 2019 through 2021, fishermen would have accounted for approximately 71 percent of this potential recreational sector ACL.
- Overall commercial sector ACL: 177.7 mt dw (10,483 sharks)
- Commercial quota: 171.2 mt dw (377,402 lb dw).
 - Based on a three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 31 percent of this potential commercial quota.

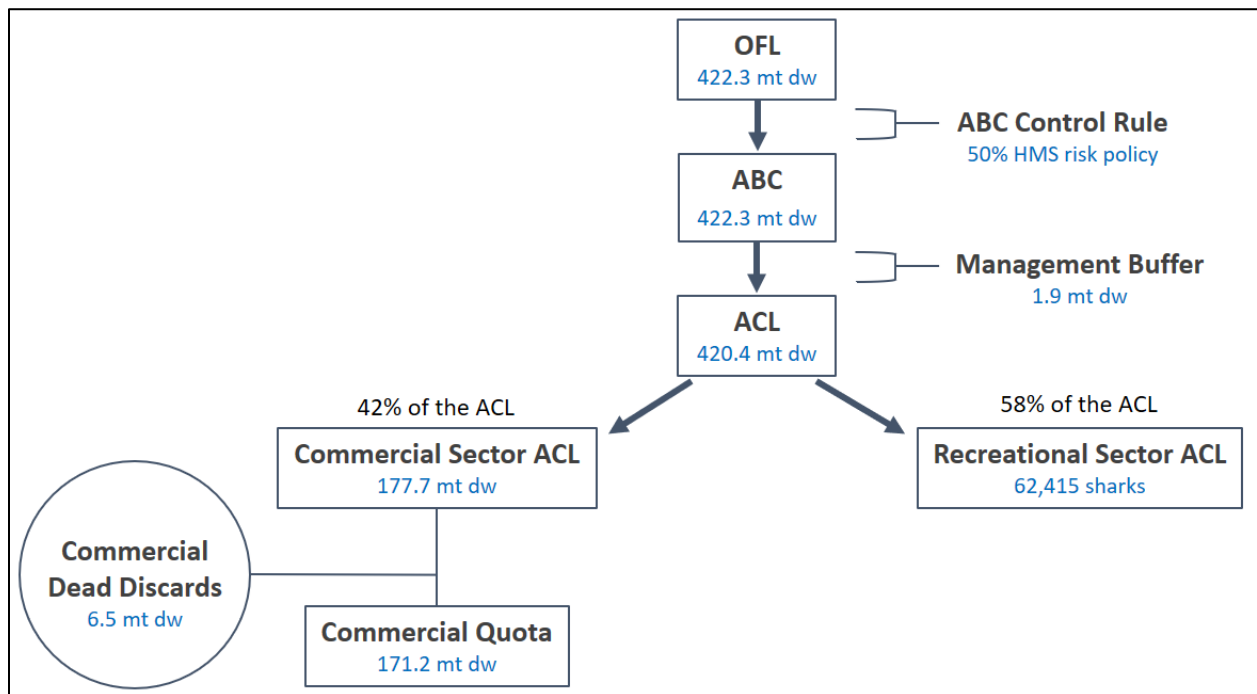


Figure 4. Potential ACL framework for blacktip sharks in the Atlantic region under Option B3.

Pros:

- The potential ACL framework would match how NOAA Fisheries plans to manage the other shark stocks (OFL=ABC=TAC from assessment).
- With a less conservative risk policy, this option under this example allows for more management flexibility and more harvest of blacktip sharks in the Atlantic region under the same OFL, compared to Option B1.
- Would establish the ABC, ACL, and resulting quotas using the framework established in Amendment 14.

Cons:

- Would have no uncertainty buffer between the OFL and ABC.

Example Tier 2 Assessment – Blacktip Shark, Gulf of Mexico Region

Tier 2 stocks are those that are data-moderate (e.g., insufficient time series or life history data to fully parameterize catch-at-age or catch-at-length population dynamics) with a stock assessment that includes two of the three time series listed in Tier 1. The stock assessment provides estimates of MSST, MFMT, or OFL, or provides proxies for MSST, MFMT, or OFL. The methods to derive OFL and ABC are the same as the approach under Tier 1, but given the data-moderate considerations, a higher level of uncertainty (multiple of the σ_{\min}) would be used. Under Tier 2, the scientific uncertainty of the OFL is determined from either the larger value of the most recent assessment (σ), for example if available from stock assessment projections, or $1 \times \sigma_{\min}$ through $2 \times \sigma_{\min}$ based on the stock assessment recommendations regarding overall stock assessment uncertainty. For Tier 2 stocks, consistent with the HMS risk policy for Atlantic shark stocks, NOAA Fisheries could apply an acceptable probability of overfishing occurring (P^*) based on a range of 30 through 50 percent. This would be applied corresponding to the likelihood of success in ending and preventing overfishing and maintaining healthy stocks at 70 percent for most shark stocks, although a range between 50 and 70 percent may be considered depending on the stock and relevant circumstances.

As mentioned above, NOAA Fisheries would phase-in the ABC control rule for Tier 2 stocks so the OFL=ABC=TAC from the stock assessment. In Tier 2, NOAA Fisheries will use the Gulf of Mexico blacktip shark stock as an example. NOAA Fisheries is considering a few options on which HMS risk policy to use for Gulf of Mexico blacktip sharks since it is a healthy stock and has been under-harvested for years. In update to SEDAR 29 stock assessment, NOAA Fisheries decided to use the baseline model that provided projections through 2046. NOAA Fisheries used the HMS risk policy from the model (74, 65, and 54 percent). Under each option, NOAA Fisheries could show the preliminary ABC, overall ACL, and sector ACLs. As described above, NOAA Fisheries is considering a few options (A1-A3) on how to initially split the ACL between the commercial and recreational sectors. Depending on which option is chosen, the sector ACLs would be different. For purposes of this example, NOAA Fisheries used available catch history from the updated assessment to SEDAR 29 under Option A1, which included data on number of sharks and weight. Thus, both were used to calculate the estimates.

Option C1: Use an HMS risk policy of at least 70 percent for Tier 2 assessments.

Under this option, NOAA Fisheries could use an HMS risk policy of at least 70 percent. For this example, NOAA Fisheries used an HMS risk policy of 74 percent, which provides an OFL=ABC=TAC as 9,798 mt dw (900,000 sharks). The final numbers are provided in Figure 5 for the example of blacktip sharks in the Gulf of Mexico region.

In going through all the needed calculations, NOAA Fisheries calculated the overall management buffer to be 52.9 mt dw (10,693 sharks). This results in an overall ACL of 9,745.1 mt dw (889,307 sharks) ($9,798 \text{ mt dw} - 52.9 \text{ mt dw} = 9,745.1 \text{ mt dw}$; $900,000 \text{ sharks} - 10,693 \text{ sharks} = 889,307 \text{ sharks}$). Additionally, as described above, NOAA Fisheries is considering a few options (A1-A3) on how to initially split the ACL between the commercial and recreational sectors. Depending on which option is chosen, the sector ACLs would be different. For purposes of this example, NOAA Fisheries used available catch history from updated SEDAR 29 under Option A1, which included data on number of sharks and weight from 1990 through 2016. Under Option A1 (all available catch history), the recreational catch accounted for approximately 53 percent of the number of sharks and approximately 23 percent of the weight of blacktip sharks, while the commercial catch accounted for approximately 47 percent of the number of sharks and approximately 77 percent of the weight of blacktip sharks. This could result in a potential recreational sector ACL of 471,053 sharks. Based on a three-year average of recreational catch and dead discard estimates from 2019 through 2021, fishermen would have accounted for approximately 10 percent of this potential recreational sector ACL. This also could result in an overall commercial sector ACL of 7,543.5 mt dw (418,254 sharks). After considering dead discards, the potential commercial quota for Atlantic blacktip sharks could be 7,541.5 mt dw (16,626,079 lb dw) ($7,543.5 \text{ mt dw overall commercial sector ACL} - 2 \text{ mt dw of HMS dead discards} = 7,541.5 \text{ mt dw commercial quota}$). Based on a three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 2 percent of this potential commercial quota.

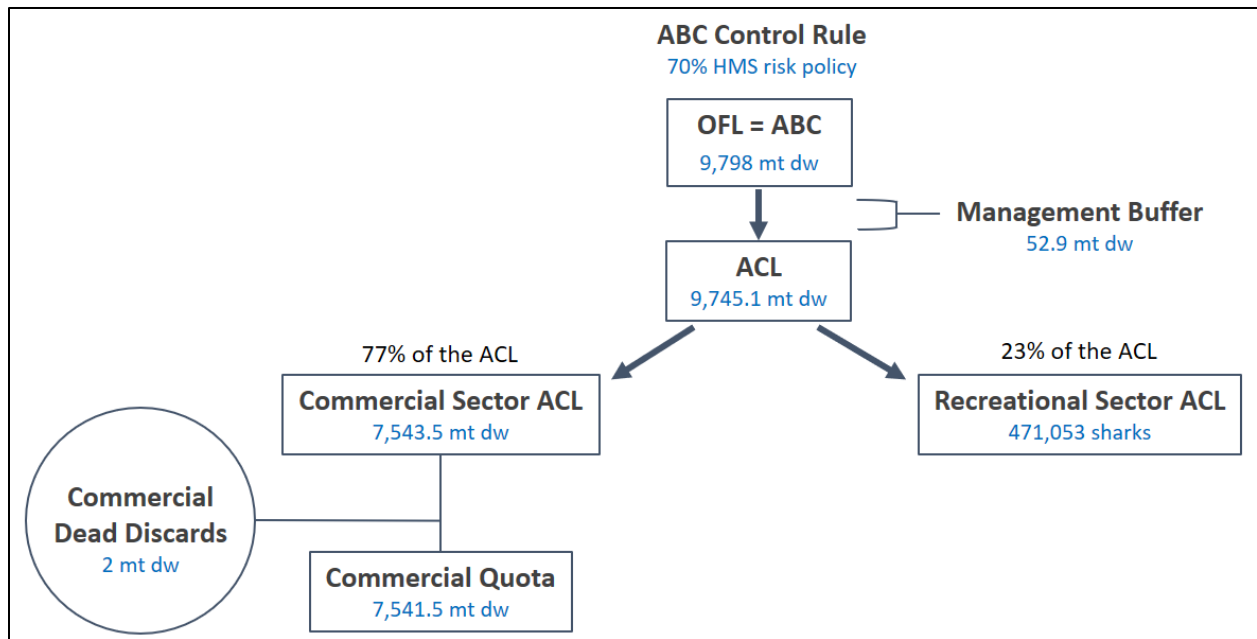


Figure 5. Potential ACL framework for blacktip sharks in the Gulf of Mexico region under Option C1.

Pros:

- Maintains continuity of using a 70-percent HMS risk policy for most sharks.
- Under this option and example, the current harvest levels of Gulf of Mexico blacktip sharks would be below the potential sector ACLs.

Cons:

- Would not allow as much management flexibility compared to a less conservative risk policy even though this is a healthy stock.

Option C2: Use an HMS risk policy of at least 60 percent for Tier 2 assessments.

Under Option C2, NOAA Fisheries could use an HMS risk policy of at least 60 percent. Based on the updated assessment to SEDAR 29 baseline model, NOAA Fisheries calculated the OFL=ABC=TAC as 11,975 mt dw (1,100,000 sharks) at an HMS risk policy of 65 percent under this example. Following all the same calculations as Option C1, the resulting numbers of the blacktip shark example are (Figure 6):

- Overall ACL: 11,922.1 mt dw (1,089,307 sharks).
- Recreational sector ACL: 471,053 sharks.
 - Based on a three-year average of recreational catch estimates from 2019 through 2021, fishermen would have harvested approximately 8 percent of this potential recreational sector ACL.
- Overall commercial sector ACL: 9,229 mt dw (512,317 sharks).
- Commercial quota: 9,227 mt dw (20,341,887 lb dw).

- Based on a three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 2 percent of this potential commercial quota.

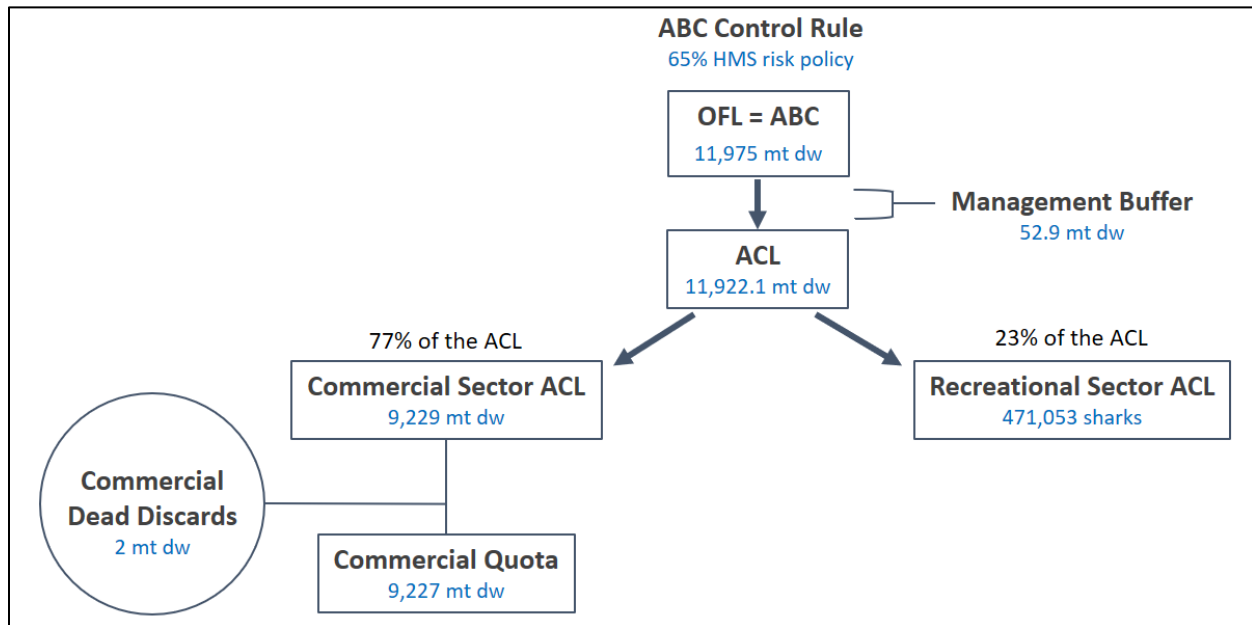


Figure 6. Potential ACL framework for blacktip sharks in the Gulf of Mexico region under Option C2.

Pros:

- With a less conservative risk policy, this option under this example allows for more management flexibility and more harvest of Gulf of Mexico blacktip sharks, compared to Option C1.
- The current harvest levels of Gulf of Mexico blacktip sharks would be below the potential sector ACLs under this example.

Cons:

- Some of the impacts of a 60-percent risk policy would be unknown since the OFL equals the ABC.

Option C3: Use an HMS risk policy of at least 50 percent for Tier 2 assessments.

Under Option C3, NOAA Fisheries could use an HMS risk policy of at least 50 percent. Based on the updated assessment to SEDAR 29 baseline model, NOAA Fisheries calculated the OFL=ABC=TAC as 14,152 mt dw (1,300,000 sharks) at an HMS risk policy of 54 percent under this example. Following all the same calculations as Option C1, the resulting numbers for blacktip shark example are (Figure 7):

- Overall ACL: 14,099.1 mt dw (1,289,307 sharks).
- Recreational sector ACL: 682,927 sharks.

- Based on a three-year average of recreational catch estimates from 2019 through 2021, fishermen would have harvested approximately 7 percent of this potential recreational sector ACL.
- Overall commercial sector ACL: 10,914.4 mt dw (606,380 sharks).
- Commercial quota: 10,912.4 mt dw (24,057,611 lb dw).
 - Based on a three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 2 percent of this potential commercial quota.

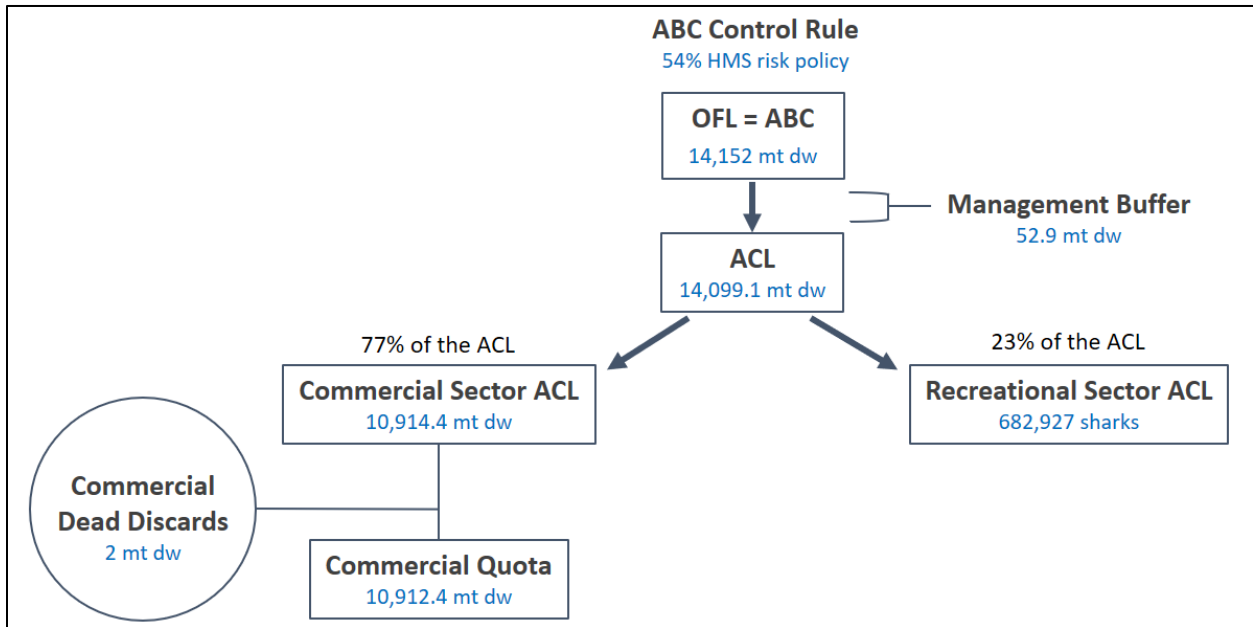


Figure 7. Potential ACL framework for blacktip sharks in the Gulf of Mexico region under Option C3.

Pros:

- With a less conservative risk policy, this option under this example allows for more management flexibility and more harvest of Gulf of Mexico blacktip sharks, compared to Options C1 and C2.
- Under this option and example, the current harvest levels of Gulf of Mexico blacktip sharks would be below the potential sector ACLs.

Cons:

- NOAA Fisheries has never established a 50-percent risk policy for an authorized shark species.
- Some of the impacts of a 50-percent risk policy would be unknown since the OFL would equal the ABC.

Example Tier 3 Assessment – N/A

Tier 3 stocks are those that are data-limited, with an accepted stock assessment that does not contain as much time series data as required for Tiers 1 and 2. Given the data-limited considerations, a higher level of uncertainty (multiple of the σ_{\min}) would be used. In Tier 3, the scientific uncertainty of the OFL is determined from either the larger value of the most recent assessment (σ), for example if available from stock assessment projections, or greater than or equal to $2 \times \sigma_{\min}$ based on the stock assessment recommendations regarding overall stock assessment uncertainty. For Tier 3 stocks, consistent with the HMS risk policy for Atlantic shark stocks, NOAA Fisheries would apply an acceptable probability of overfishing occurring (P^*) based on a range of 30 through 50 percent. This would be applied corresponding to a likelihood of success in ending and preventing overfishing and maintaining healthy stocks of 70 percent for most shark stocks, although a range between 50 and 70 percent may be considered depending on the stock and relevant circumstances.

Currently, NOAA Fisheries has not placed any non-prohibited shark stocks from the fishery management unit into Tier 3 (Table 2). NOAA Fisheries is looking for comments regarding whether the stocks were placed in the appropriate tier. It is important to note that as stock assessments are completed, shark stocks could move into different tiers.

Example Tier 4 Assessments – Bull Sharks, All Regions

Tier 4 shark stocks are those without an accepted stock assessment, and therefore data quality and data availability have not been fully vetted through a stock assessment process that is subject to peer review. Because the data are not fully vetted, the figures needed to calculate OFL are not available and OFL is unknown. Thus, an OFL proxy would be set equal to the mean of reference period catch multiplied by a scalar less than or equal to three, as described in Amendment 14. The specific scalar would be derived from the data for the particular shark stock or stock complex, such as life history characteristics (e.g., productivity), susceptibility to fishing pressure, or other appropriate considerations (e.g., results of an ecological risk assessment) of the fishery for each shark stock. ABC would then be set at less than or equal to 90 percent of the OFL proxy, based on scientific uncertainty associated with data for the particular shark stock or stock complex.

In this document, NOAA Fisheries plans to use the bull shark stock as an example of a Tier 4 stock. Since bull sharks have not been assessed, NOAA Fisheries plans to use the mean of reference period catch multiplied by the scalar to determine the OFL proxy. The scalars would be based on the productivity of each shark stock and the susceptibility to fishing pressure. Since these stocks are data limited, NOAA Fisheries would use proxy values of productivity and susceptibility to fishing pressure from similar species if needed to compile the information. The productivity attributes NOAA Fisheries is considering are age at maturity, maximum age, reproductive cycle, and number of pups (Table 3). Based on the preliminary productivity data available for the bull shark stock, this species overall ranked among the lowest in productivity among the Tier 4 species. Age at maturity for bull sharks was estimated at 15 to 17 years for males and 15 years for females, while maximum age for males and females was 25 and 27 years

of age, respectively (Natanson et al. 2014). Thus, bull sharks ranked in the middle of the productivity range for the age at maturity and maximum age. Jensen et al. (2002) stated that litters ranged from 1 to 10 pups and that the average size was 5.5 pups. The gestation period is estimated at 10 to 11 months (Clark and von Schmidt, 1965). The length of the reproductive cycle has not been published, but it is probably biennial. Thus, this species ranked low in productivity due to the species low number of pups on a biennial reproductive cycle.

Table 3. Productivity attributes and ranges for components of productivity for bull sharks.

Attribute	Productivity	Scalar
Age at Maturity	Females: 15 years Males: 15-17 years	Moderate
Maximum Age	Females: 27 years Males: 25 years	Moderate
Reproductive Cycle	Biennial	Low
Number of Pups	1-10 pups	Low

The susceptibility to fishing pressure attributes NOAA Fisheries is considering are post-release mortality rates, the percentage of commercial landings and recreational catch within the last five years (2017-2021), and overlap of the essential fish habitat (EFH) of each species range with the commercial shark fishery (Table 4). For the overlap of range attribute, NOAA Fisheries plans to overlay the EFH data for each Tier 4 stock with the commercial fishery based on sets targeting sharks to determine the potential impacts to the stock. Based on preliminary analysis of the susceptibility attributes, the bull shark stock ranked on the lower side for susceptibility to fishing pressure. Based on Whitney et al. (2021), bull sharks have a low post-release mortality rate in the commercial fishery of 7.1 percent on bottom longline gear. Bull sharks ranked in the middle of post-release rates (25.9 percent) in the recreational fishery based on Gallagher et al. (2014). Regarding landings, bull sharks rank in the middle of the percentage of commercial landings within the aggregated LCS management group at 29.7 percent, and ranked in the low end of percentage of recreational catch (9.8 percent).

Table 4. Susceptibility attributes and ranges for components of susceptibility for bull sharks.

Attribute	Susceptibility	Scalar
Commercial Post-Release Mortality Rates	7.1% (bottom longline)	Low
Recreational Post-Release Mortality Rates	25.9%	Moderate
Percentage of Commercial Landings within Management Group	29.7%	Moderate
Percentage of Recreational Catch	9.8%	Low
Overlap of EFH Range and Commercial Fishery	60.0%	Moderate

In Figure 8, NOAA Fisheries shows the bull shark (adult and juvenile) EFH and 95-percent distribution of the bottom longline shark fishing sets. The yellow color shows where the overlap occurs between the bull shark EFH and the fishery, which accounts for 60 percent of the bull shark EFH area. Based on this preliminary analysis, NOAA Fisheries considers this overlap for bull sharks to be in the middle rank of susceptibility to fishing pressure (Figure 8).

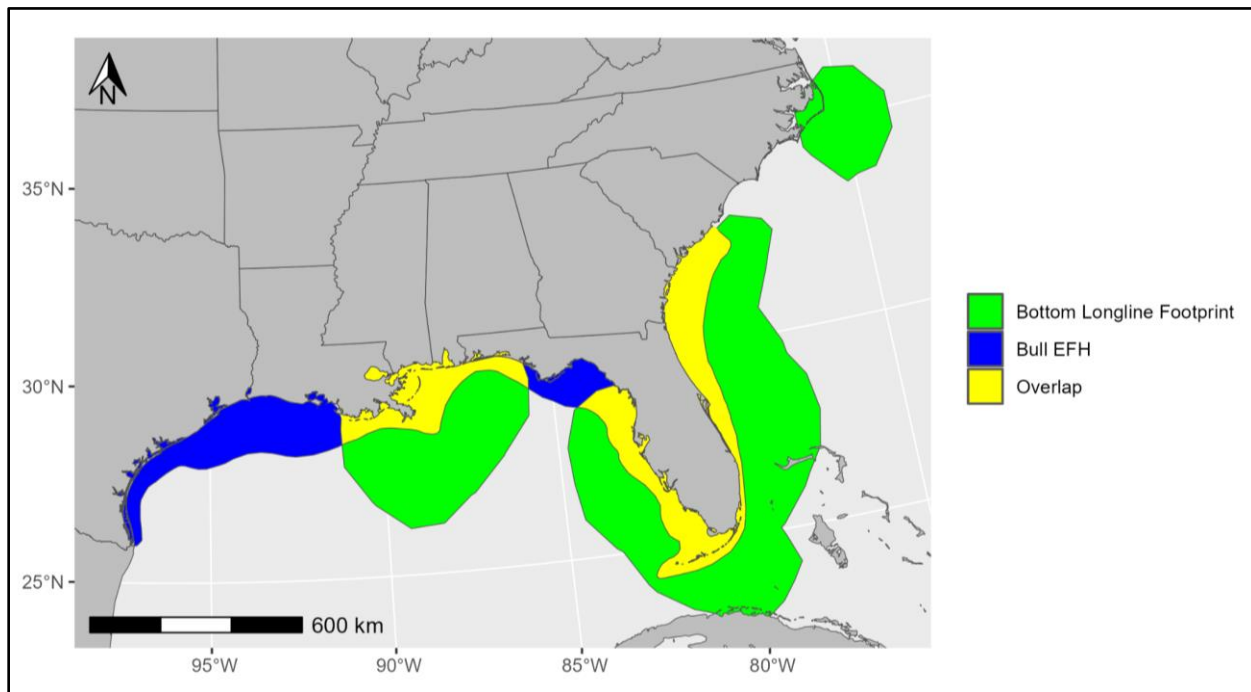


Figure 8. Overlap of bull shark EFH and commercial fishery shark sets.

For this example, NOAA Fisheries did not have any options for the public to consider. However, NOAA Fisheries would welcome any comments regarding the potential scalars, productivity or susceptibility attributes, or calculations for the potential ABC and resulting ACLs for bull sharks.

Based on all this information, NOAA Fisheries is considering using a scalar of 2 as the multiplier of the mean of reference period catch for the bull shark example. Even though this species is preliminarily ranked among the lowest in productivity among the Tier 4 species, NOAA Fisheries believes the fishing pressure on this species is low and will continue to decrease based on recent regulations regarding the SFSEA and listing under CITES Appendix II.

With a scalar of 2, NOAA Fisheries needs to determine the mean reference period of catch. For this example, NOAA Fisheries plans to use all of the available catch data (Option A1) to represent what a potential ABC and resulting ACLs for bull sharks. From 2014 through 2021, the bull shark mean reference period of catch was 8,050 sharks. Thus, the OFL proxy for bull sharks could be 16,100 sharks (8,050 sharks x scalar of 2 = 16,100 sharks). Based on Amendment 14, the ABC would then be set at less than or equal to 90 percent of the OFL proxy, based on scientific uncertainty associated with data for the particular shark stock or stock

complex. For this example, NOAA Fisheries decided to use 70 percent of the OFL proxy due to some uncertainty in the data used. In the recreational fishery, bull sharks are the fifth most commonly released LCS. Similar to most LCS, bull sharks are generally a rare-event species in recreational catch surveys with annual harvest estimate percent standard errors (PSEs) over 50 percent. In addition, NOAA Fisheries used proxy estimates for the non-HMS and HMS fisheries discard data. However, the ABC could be revised once NOAA Fisheries compiles all the data and presents it in a future document.

Using 70 percent of the OFL, NOAA Fisheries determined the ABC would be 11,270 sharks (16,100 shark OFL proxy x 70 percent = 11,270 sharks). The potential management buffer would be 334 sharks. The overall ACL would be 10,936 sharks (11,270 shark ABC - 334 shark management buffer = 10,936 sharks). To determine the sector ACL split, NOAA Fisheries decided to use all the available data (2014-2021) as described under Option A1. Based on all the available catch data, the recreational sector ACL could get 44 percent of the ACL or 4,812 sharks (10,936 shark ACL x 44 percent = 4,812 sharks), while the commercial sector ACL could get 56 percent of the ACL or 6,124 sharks (10,936 shark ACL x 56 percent = 6,124 sharks). NOAA Fisheries used a proxy estimate of 100 sharks as the HMS discard mortality so the commercial bull shark quota could be 6,024 or 136.6 mt dw (301,199 lb dw) (6,124 shark commercial sector ACL - 100 shark HMS mortality = 6,024 sharks; 6,024 sharks x 50 lb dw bull shark average weight = 301,199 lb dw; 301,199 lb dw / 2,204.6 lb dw per 1 mt dw = 136.6 mt dw). Based on current data from 2019 through 2021, shark fishermen could have potentially harvested approximately 34 percent of this recreational sector ACL and 54 percent of this commercial quota (Figure 9).

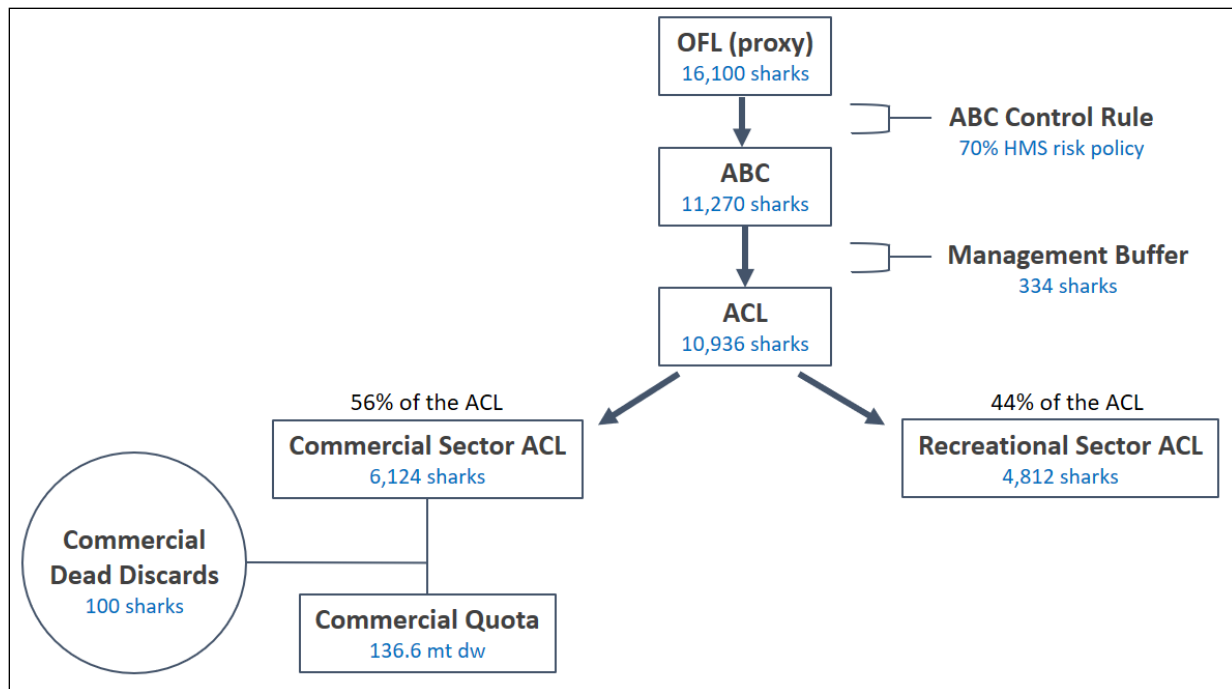


Figure 9. Potential ACL framework for bull sharks.

Example under Rebuilding Plan – Sandbar Sharks, All Regions

Consistent with National Standard 1 guidelines, § 600.310(f)(3)(ii), overfished stocks and stock complexes must have a rebuilding ABC that reflects the annual catch that is consistent with the schedule of fishing mortality rates (i.e., $F_{rebuild}$) in the rebuilding plan. Thus, for species in this category, a rebuilding ABC would be determined consistent with a stock’s rebuilding plan, and outside the tier structure described above.

Similar to other shark stocks, NOAA Fisheries plans to have $OFL=ABC=TAC$ from the stock assessment for rebuilding stocks. In this document, NOAA Fisheries will use sandbar sharks as an example of a stock under a rebuilding plan and provide preliminary estimates based on the SEDAR 54 stock assessment. For these estimates, NOAA Fisheries will use a HMS risk policy of 70 percent.

Based on SEDAR 54, NOAA Fisheries calculated the $OFL=ABC=TAC$ of as 177 mt dw (7,963 sharks) with an (Figure 10). For the management buffer, NOAA Fisheries calculated an overall management buffer was 62.2 mt dw (2,605 sharks). This would result in an overall ACL of 114.4 mt dw (5,358 sharks) ($177 \text{ mt dw} - 62.2 \text{ mt dw} = 114.4 \text{ mt dw}$; $7,963 \text{ sharks} - 2,605 \text{ sharks} = 5,358 \text{ sharks}$). For the purposes of the sandbar shark ACL framework example, NOAA Fisheries could use all the available data as described under Option A1. Based on all the available catch data, the recreational sector ACL could be approximately 25 percent of the ACL or 1,319 sharks ($5,358 \text{ shark ACL} \times 25 \text{ percent} = 1,319 \text{ sharks}$), while the commercial sector ACL could be approximately 75 percent of the ACL or 4,039 sharks ($5,358 \text{ shark ACL} \times 75 \text{ percent} = 4,039 \text{ sharks}$). Since 2008, sandbar sharks have been prohibited from retention in the

recreational fishery. However, the recreational sector ACL would cover any sandbar sharks that have been mistakenly retained by recreational fishermen or potentially allow retention of sandbar sharks by recreational fishermen in the future.

As for the overall commercial sector ACL, the catch history split described above could potentially result in an ACL of 108.1 mt dw (4,039 sharks). After considering dead discards, the potential commercial quota for sandbar sharks could be 85.9 mt dw (189,326 lb dw) (108.1 mt dw overall commercial sector ACL – 22.2 mt dw of HMS dead discards = 85.9 mt dw commercial quota). NOAA Fisheries plans to continue monitoring the commercial quota in weight. Based on three-year average of commercial landings from 2019 through 2021, fishermen would have harvested approximately 59 percent of this potential commercial quota (Figure 10).

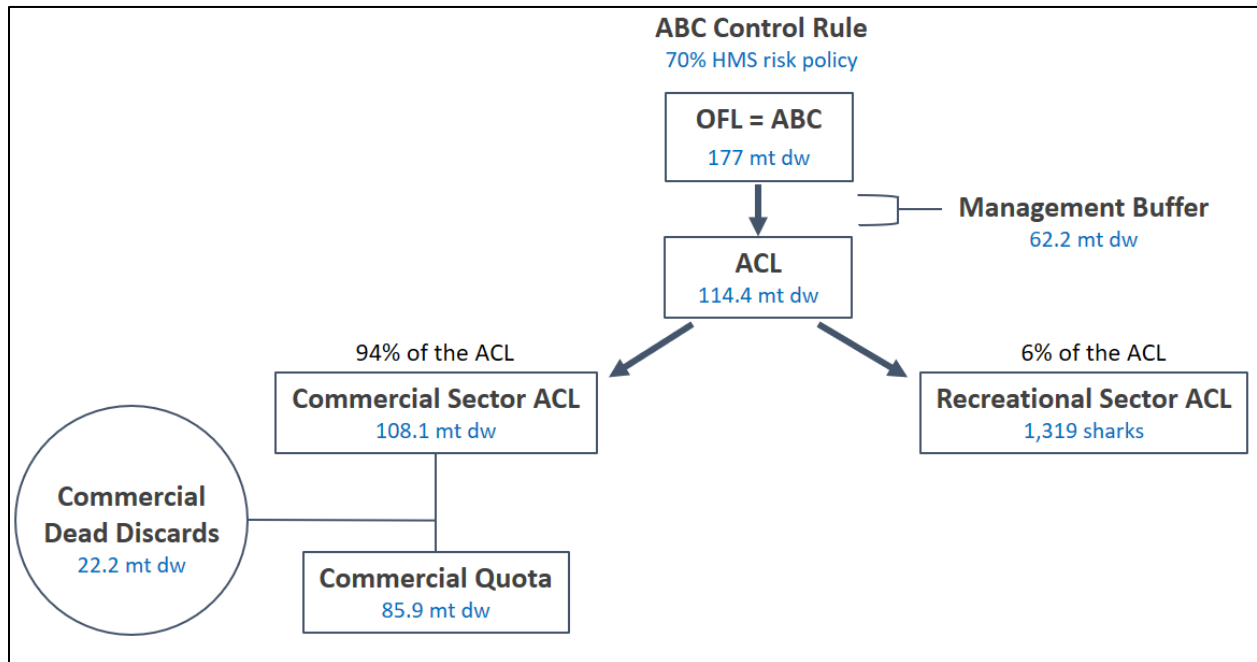


Figure 10. Potential ACL framework for sandbar sharks under Option H1.

This sandbar shark example represents the potential ABC and resulting ACLs with a HMS risk policy of 70 percent. NOAA Fisheries did not provide other options for this example, but could consider using a different HMS risk policy (60 or 50 percent) for sandbar sharks. When considering a different HMS policy, NOAA Fisheries could consider a variety of factors like the research fishery quota has been underharvested and the stock has been rebuilding faster than predicted in the stock assessments. NOAA Fisheries would appreciate any input on the sandbar shark example and potential HMS risk policy to consider in the future.

Example ICCAT Assessed Stocks and Pelagic Sharks – Blue Sharks, North Atlantic Region

Blue sharks, along with porbeagle and shortfin mako sharks, are assessed by ICCAT. In Amendment 14, NOAA Fisheries stated that, for shark stocks that are assessed or could be assessed by ICCAT, the ABC, where required, would be calculated outside of the tiered ABC control rule. Specifically, if an ICCAT recommendation provides a specific quota allocation to the United States, then NOAA Fisheries would implement that allocation, consistent with the ATCA and also considering consistency with Magnuson-Stevens Act requirements. If, however, ICCAT does not provide a specific allocation to the United States, NOAA Fisheries may decide to calculate an OFL proxy, if it determines that an ABC, ACL, or other related measures are needed for the U.S. fishery for monitoring or other purposes, consistent with the Magnuson-Stevens Act. In those cases, NOAA Fisheries would use U.S. catch information from an appropriate reference period and take into consideration relevant ICCAT recommendations or resolutions, stock status information or trends if available, and other appropriate considerations. This OFL proxy calculation may scale the catch as refined per life history characteristics (e.g., productivity), susceptibility to fishing pressure, or other appropriate considerations (e.g., results of an ecological risk assessment). The resulting U.S. catch limit may be set equal to or less than the OFL proxy as determined by scientific uncertainty.

In addition, as discussed above, Amendment 14 stated that, where NOAA Fisheries determines ACLs are needed for ICCAT assessed stocks, NOAA Fisheries would actively manage commercial and recreational sector ACLs. For the commercial ACL, NOAA Fisheries would manage commercial quotas and account for HMS commercial fishery dead discards. The overall ACL would be set below the ABC to account for management uncertainty. Management uncertainty includes, but is not limited to, shark mortality from fisheries not managed directly by the NOAA Fisheries HMS Management Division and any research mortality. NOAA Fisheries plans to manage ICCAT assessed and pelagic sharks differently than the other shark species.

At present, the United States does not have any specific quota allocations for sharks under ICCAT recommendations. The pelagic shark species under the Atlantic HMS regulations are blue, oceanic whitetip, porbeagle, shortfin mako, and thresher sharks. NOAA Fisheries currently implements commercial quotas for blue sharks, porbeagle sharks, and a pelagic shark complex that includes shortfin mako, thresher, and oceanic whitetip sharks (50 CFR 635.27(b)(1)(iii)(D)). For purposes of this scoping document, NOAA Fisheries describes options for changes to blue shark ACLs, as an example.

Option D1: No action. Maintain the current blue shark management group and quota.

Under Option D1, NOAA Fisheries would maintain the current blue shark commercial quota of 273 mt dw (655 mt whole weight (ww)), using the commercial conversion factor of 2.4). The pelagic shark quotas were implemented in 2008 in Amendment 2 to the 2006 Consolidated HMS FMP (Amendment 2).

Pros:

- Current management strategies would be maintained.

Cons:

- The quota amount would not be in line with more recent catch data, which is significantly lower than 655 mt ww.
- Commercial, recreational, and dead discard ACLs are not defined for blue sharks.
- The current blue shark quota is commercial only.

Option D2: Determine blue shark ACLs, or pelagic shark complex ACLs, based on reference years.

Under Option D2, NOAA Fisheries could determine sector ACLs for blue sharks based on average catch during different potential reference years. Four potential reference year periods are:

- The year the pelagic shark quotas were implemented in Amendment 2 through the most recent year of data available, 2008 through 2021.
- The most recent five years of available data, 2017 through 2021.
- The five years leading up to the most recent blue shark stock assessment, 2011 through 2015.
- The three years with the highest blue shark catch during the 2008 through 2021 time period, 2010 through 2012.

Noting that the blue shark stock is being assessed in 2023, so more recent years of data could be considered moving forward with this action, following release of the 2023 SCRS report.

Rather than implement separate ACLs for blue sharks, NOAA Fisheries could also combine blue, porbeagle, shortfin mako, and thresher sharks into one pelagic shark complex and determine new ACLs based on the reference years listed above. Oceanic whitetip sharks are not included in consideration of a new pelagic shark complex because NOAA Fisheries recently published a proposed rule that considers adding oceanic whitetip sharks to the prohibited shark complex (88 FR 17171, March 22, 2023).

Pros:

- A longer time period (2008-2021) captures a larger range of higher and lower catch years for blue sharks.
- Recent years (2017-2021) are more representative of current catch levels under current management.
- Catch levels in the years leading up to the stock assessment (2011-2015) are typically the basis for scientific advice for management measures at ICCAT, or for setting an overall TAC (e.g., current blue shark Recommendation 19-07).
- Using the years with the highest catch (2010-2012) to set ACLs would provide the most generous buffer to account for catch at current levels. Current U.S. catches are in line with ICCAT recommendations so lower, restrictive ACLs may not be needed.

- One ACL for a pelagic shark complex may allow more flexibility within the fishery than individual species ACLs, while still complying with current ICCAT recommendations which do not include U.S. shark quotas. This approach also simplifies management of pelagic sharks compared to having separate ACLs for individual species. Summing the average catch levels for the four individual species to determine ACLs provides a buffer for fluctuations in catch of any one species.

Cons:

- ACLs based on a longer time period (2008-2021), an older stock assessment (2011-2015), or the three highest years of catch (2010-2012) may not be in line with more recent catch data under current domestic management and current ICCAT recommendations.
- Annual catches of blue sharks have been lower in recent years, which could be due to a number of factors including the COVID-19 pandemic, so using these reference years (2017-2021) could be unnecessarily restrictive.
- For a pelagic shark complex, if catch levels dramatically increase in the future, there would not be individual species ACLs in place to monitor those catches against.

Option D3: Implement ICCAT’s quota for blue sharks.

Under Option D3, NOAA Fisheries would implement the ICCAT quota for blue sharks. At the moment, there is no ICCAT based quota for blue sharks so NOAA Fisheries would no longer implement a quota for blue sharks. In other words, NOAA Fisheries would remove the current quota described under Option D1. As described above, Amendment 14 stated that, for ICCAT assessed shark stocks, NOAA Fisheries would implement U.S. quotas resulting from ICCAT recommendation, of which there are currently none in place. Otherwise, NOAA Fisheries would determine whether ACLs or other related measures are needed for the U.S. fishery for monitoring or other purposes. Even if there were no quota, NOAA Fisheries would continue to monitor harvest levels.

Pros:

- Would be consistent with all current ICCAT recommendations for blue sharks, which do not include U.S. shark quotas.
- Other management measures in place, such as minimum sizes and retention limits, may be sufficient to restrict catch of blue sharks.
- Would avoid unilateral quotas for blue sharks that may be unnecessary or overly restrictive.

Cons:

- Removing the quota might lead to confusion and the incorrect belief that the fishery is unregulated.
- If catch levels dramatically increase in the future, a new ACL would need to be implemented, which would take time.

5 MANAGEMENT GROUP STRUCTURE

Given the changes that are being considered to ACLs and quotas, NOAA Fisheries is also considering modifications to how the various shark species are grouped into shark management groups. Over time, the species in the various management groups have changed as stock assessments have been completed or stock status has changed. In general, having species that are caught on the same gear at the same time grouped together can simplify management. However, having species groups together also means management may not have the flexibility needed to react to the needs of specific species. Not grouping any species together can mean complex regulations, especially if there are different management measures for each of the currently 46 shark stocks being managed.

Table 5 outlines the species included in the current shark fishery management groups and the 2023 final adjusted commercial quotas. In the Gulf of Mexico and sub-regions, there are currently separate shark management groups for blacktip, aggregated LCS, hammerhead, non-blacknose SCS, and smoothhound sharks. In the Atlantic, aggregated LCS, hammerheads, non-blacknose SCS, blacknose, and smoothhound sharks are managed in separate groups. Not associated with any region, aggregated LCS and sandbar sharks are each managed separately under the shark research fishery (SRF), and there are three separate management groups for blue, porbeagle, and pelagic sharks (other than porbeagle or blue sharks).

This section outlines four different options for potential shark management group changes. Note that potential management group options for pelagic sharks are outlined above. NOAA Fisheries may revise these options based on public comment.

Table 5. Current shark fishery management groups and 2023 commercial shark quotas.

Region or Sub-region	Shark Management Group	2023 Final Adjusted Annual Quota
Western Gulf of Mexico (West of 88° W. long. only)	Blacktip	347.2 mt (765,392 lb)
	Aggregated LCS	72 mt (158,724 lb)
	Hammerhead	11.9 mt (26,301 lb)
Eastern Gulf of Mexico (East of 88° W. long. only)	Blacktip	37.7 mt (83,158 lb)
	Aggregated LCS	85.5 mt (188,593 lb)
	Hammerhead	13.4 mt (29,421 lb)
Gulf of Mexico	Non-Blacknose SCS	112.6 mt (248,215 lb)
	Smoothhound	504.6 mt (1,112,441 lb)
Atlantic	Aggregated LCS	168.9 mt (372,552 lb)
	Hammerhead	27.1 mt (59,736 lb)
	Non-Blacknose SCS	264.1 mt (582,333 lb)
	Blacknose	17.2 mt (37,921 lb)
	Smoothhound	1,802.6 mt (3,973,902 lb)
No Region	SRF (Aggregated LCS)	50 mt (110,230 lb)
	SRF (Sandbar only)	90.7 mt (199,943 lb)
	Blue	273 mt (601,856 lb)
	Porbeagle	1.7 mt (3,748 lb)
	Pelagic Sharks Other Than Porbeagle or Blue	488 mt (1,075,856 lb)

Note: All quotas are in dw.

Option E1: No action. Maintain the current shark management groups.

Under Option E1, NOAA Fisheries would maintain the current shark management groups described in Table 5. This would keep the current shark species within each shark management group and potentially update the commercial quotas based on the ACLs described above.

Pros:

- Would maintain current continuity in management strategies.

Cons:

- The original shark management groups were based on the gear used to target the species in the late 1980s and early 1990s. Since then, the fishery, the fishing gear, and fishing techniques have changed; the current groupings may not be appropriate if the species are no longer caught together or are harvested at different times and regions.
- Would exclude the possibility of developing management strategies that are more responsive to the most recent changes in stock status.

Option E2: Create individual shark management groups for assessed shark stocks, and combine unassessed shark stocks.

Option E2 would create individual shark management groups for those species or stocks that are assessed, and an additional management group would be created for those that do not currently have an accepted stock assessment (see Table 6). Individual management groups could be created for blacktip, smoothhound, and Atlantic sharpnose in both the Gulf of Mexico and Atlantic regions, and blacknose in the Atlantic region. Several shark stocks would be across both regions: sandbar, finetooth, and lemon sharks. In addition, some shark species that belong to Tier 4 and do not have accepted stock assessments would be combined into a single management group. These shark stocks would be bonnethead in the Gulf of Mexico and Atlantic regions, blacknose in the Gulf of Mexico region, and several species across both regions (bull, nurse, spinner, silky, and tiger sharks).

Under Option E2, NOAA Fisheries could create individual sector ACLs for each individual management group and combine the sector ACLs for the Tier 4 stocks. For example, NOAA Fisheries would have sector ACLs for blacktip sharks in the Atlantic that would be separate from the sector ACLs in the Gulf of Mexico for blacktip sharks. The lemon shark sector ACLs would be for all fishermen in both regions. For combined management groups, NOAA Fisheries could have one overall ACL for these species or break them up based on historical species management groups (e.g., SCS, LCS). In addition, NOAA Fisheries will wait for the results of SEDAR 77 before considering potential management groups for hammerhead sharks.

Table 6. Potential shark management groups under Option E2.

Potential Management Groups	Shark Species	Region	Stock Assessment
Individual ACLs	Blacktip	Atlantic	SEDAR 65
	Blacktip	Gulf of Mexico	SEDAR 29 Update
	Smoothhound	Atlantic	SEDAR 39
	Smoothhound complex	Gulf of Mexico	SEDAR 39
	Atlantic sharpnose	Atlantic	SEDAR 34
	Atlantic sharpnose	Gulf of Mexico	SEDAR 34
	Blacknose	Atlantic	SEDAR 21
	Sandbar	All	SEDAR 54
	Finetooth	All	SEDAR 13
	Lemon	All	Manuscript
Combined ACLs (Tier 4 stocks)	Blacknose	Gulf of Mexico	*SEDAR 21
	Bonnethead	Atlantic	*SEDAR 34
	Bonnethead	Gulf of Mexico	*SEDAR 34
	Bull	All	
	Nurse	All	
	Spinner	All	
	Silky	All	
	Tiger	All	

*Assessments not currently accepted as best scientific information available for these particular stocks.

Note: Currently, all of the hammerhead (scalloped, great, smooth, and Carolina) shark species are being assessed in SEDAR 77. NOAA Fisheries plans to wait until this assessment is complete before considering management measures for these species.

Pros:

- Would allow for different management strategies for assessed and unassessed species.
- Within the unassessed species group, management strategies would be more flexible than managing at the species level.

Cons:

- Within the unassessed species combined management group, management strategies may not account for significant changes that occur at the species or stock level, such as overfishing.
- Since the shark fishery operates differently in each region, managing some shark stocks across regions could cause allocation issues. For example, if a sector ACL is being caught entirely in one region with no quota available for the other region.
- It might be difficult to determine the appropriate quota for Tier 4 when those species are pulled out because an assessment was finalized.
- Would increase complexity in understanding which species are open and which are closed given the number of stocks currently assessed and the possibility of additional stocks being assessed in the future.

Option E3: Create regional shark management groups for assessed and unassessed stocks.

Under Option E3, NOAA Fisheries could create regional shark management groups for assessed species (blacktip, smoothhound, and Atlantic sharpnose sharks) and unassessed species that include Tier 4 stocks (blacknose, bonnethead, bull, nurse, spinner, silky, and tiger sharks). Finetooth, lemon, and sandbar sharks could be combined into a separate management group, without any regional associations (Table 7). This option would allow regional shark management groups with separate or combined ACLs. NOAA Fisheries will wait for the results of SEDAR 77 before considering potential management groups for hammerhead sharks.

Table 7. Potential shark management groups under Option E3.

Region	Assessed or Unassessed	Shark Species
Atlantic Region	Assessed Stocks (Separate ACLs)	Atlantic sharpnose
		Blacknose
		Blacktip
		Smoothhound
	Unassessed (Combined ACLs)	Bonnethead
		Bull
		Nurse
		Spinner
		Silky
		Tiger
Gulf of Mexico	Assessed Stocks (Separate ACLs)	Atlantic sharpnose,
		Blacktip
		Smoothhound
	Unassessed (Combined ACLs)	Bonnethead
		Blacknose
		Bull
		Nurse
		Spinner
		Silky
		Tiger
No region	Assessed Stocks (Separate ACLs)	Finetooth
		Lemon
		Sandbar

Note: Currently, all of the hammerhead (scalloped, great, smooth, and Carolina) shark species are being assessed in SEDAR 77. NOAA Fisheries plans to wait until this assessment is complete before considering management measures for these species.

Pros:

- Would allow for different management strategies that account for stocks that have been assessed and other stocks that have an unknown status.
- Would allow for different management strategies that account for regional differences.
- Managing groups of species could be more flexible than implementing management measures at the species level.

Cons:

- Managing multiple species in an aggregate manner may obscure significant changes related to a single species, such as overfishing.
- Depending on how quotas are split between these regional groups, one region may receive less quota than expected and could lead to seasonal closures.

Option E4: Create shark management groups based on shark species typically caught together during the same trip.

This option was formulated in response to comments received from constituents requesting management measures based on typical catch composition. Under Option K4, management groups would be created based on groupings of species that are typically caught together during the same trip.

In the Atlantic region, NOAA Fisheries could consider four shark management groups: blacktip shark, aggregated LCS (bull, lemon, nurse, silky, spinner, and tiger sharks), SCS (Atlantic sharpnose, blacknose, bonnethead, and finetooth sharks), and smoothhound sharks. In the Gulf of Mexico region, NOAA Fisheries could consider five shark management groups: blacktip shark, bull/spinner shark, aggregated LCS (lemon, nurse, silky, and tiger sharks), SCS (Atlantic sharpnose, blacknose, bonnethead, and finetooth sharks), and smoothhound sharks. An additional shark management group could be created for sandbar sharks, with no regional associations (Table 8). NOAA Fisheries will wait for the results of SEDAR 77 before considering potential management groups for hammerhead sharks. Each management group would have an ACL, either for individual species such as blacktip and sandbar sharks, or combined ACLs for management groups such as aggregated LCS and SCS.

Table 8. Potential shark management groups under Option E4.

Region	Management Group	Shark Species
Atlantic Region	Blacktip	-
	Aggregated LCS	Bull
		Lemon
		Nurse
		Silky
		Spinner
		Tiger
	SCS	Atlantic sharpnose
		Blacknose
		Bonnethead
		Finetooth
	Smoothhound	Smooth dogfish
		Florida smoothhound
	Gulf of Mexico	Blacktip
Bull/Spinner		Bull
		Spinner
Aggregated LCS		Lemon
		Nurse
		Silky
		Tiger
SCS		Atlantic sharpnose
		Blacknose
		Bonnethead
		Finetooth
Smoothhound		Smooth dogfish
		Florida smoothhound

		Gulf smoothhound
No region	Sandbar	-

Pros:

- This option would allow for ease of management compared to managing separate ACLs for many species.
- This option would allow for ease of reporting since species that are typically caught together would be in the same management group with the one ACL.
- This strategy may reduce potential discards, as targeted species would be in the same management group.
- This strategy would be responsive to requests from constituents.
- There would be some continuity for fishermen since the potential shark management groups could be similar to current groups.

Cons:

- Setting ACLs for groups of species could result in an overall smaller ACL than if they were set separately.

6 REGIONAL AND SUB-REGIONAL QUOTAS

Given the changes that are being considered to ACLs and quotas and potential shark management groups, NOAA Fisheries is also considering modifications to the regional and sub-regional quotas. Some of these quota splits have not been examined in many years and might not be appropriate in the future.

Atlantic and Gulf of Mexico Regional ACL Split

The current regional definition between the Atlantic region and Gulf of Mexico region was implemented for LCS in Amendment 1 to the 1999 FMP. The boundary between the Gulf of Mexico region and the Atlantic region is defined as a horizontal line beginning on the east coast of Florida at the mainland at 25°20.4' N. lat., proceeding due east. NOAA Fisheries considers the Atlantic region as any water and land to the north and east of that line, and the Gulf of Mexico region as any water and land to the south and west of that line. At this time, most LCS and all SCS are managed using that regional split. The pelagic shark management groups are not split between these two regions (pelagic shark complex (thresher sharks, shortfin mako sharks, and oceanic whitetip sharks), porbeagle sharks, and blue sharks). NOAA Fisheries is not planning to change this definition. However, NOAA Fisheries is considering how to best split the ACLs, particularly for those species that do not have Atlantic and Gulf of Mexico regional stocks.

The current LCS quota for both the Gulf of Mexico and Atlantic regions is 326.4 mt dw. In the Gulf of Mexico, the current aggregated LCS quota is 157.5 mt dw, and does not include the blacktip shark base quota, which is currently 256.6 mt dw. In the Atlantic region, 168.9 mt dw is currently allocated for LCS, which include blacktip sharks. To properly represent the aggregated LCS quota split, NOAA Fisheries would need to remove the blacktip shark allocation from the aggregated LCS in the Atlantic region. NOAA Fisheries used the same method to remove the Gulf of Mexico blacktip shark allocation from the aggregated LCS, as described in Amendment 5a. For the Atlantic LCS, NOAA Fisheries would use the proportion of shark species landings from 2014 through 2021. See Table 9 for apportioned contributions of the current quota based on percent commercial landings for blacktip and other LCS species. Based on the landings, the potential revised Atlantic aggregated LCS quota could be 63 mt dw (15.2 mt dw bull shark + 8.8 mt dw lemon shark + <0.1 mt dw nurse shark + 0.3 mt dw silky shark + 30.9 mt dw spinner shark + 7.8 mt dw tiger shark = 63 mt dw new Atlantic aggregated LCS). Thus, the overall LCS commercial quota for both regions is 220.5 mt dw (157.5 mt dw Gulf of Mexico + 63 mt dw Atlantic = 220.5 mt dw).

Table 9. Atlantic LCS quota apportioned by percent of commercial landings, 2014-2021.

	Blacktip Shark	Bull Shark	Lemon Shark	Nurse Shark	Silky Shark	Spinner Shark	Tiger Shark
Percent of total landings	62.7	9.0	5.2	<0.1	0.2	18.3	4.6
Apportioned Contribution (mt dw) to overall quota of 168.9 mt dw	105.9	15.2	8.8	<0.1	0.3	30.9	7.8

The SCS complex consists of Atlantic sharpnose, blacknose, bonnethead, and finetooth sharks. In Amendment 3, NOAA Fisheries, among other things, established the non-blacknose SCS management group. NOAA Fisheries established the current commercial quota for this management group in Amendment 6. In the Gulf of Mexico region, the non-blacknose SCS management group quota is 112.6 mt dw, while the Atlantic non-blacknose SCS management group quota is 264.1 mt dw. Thus, the overall non-blacknose SCS quota is 376.7 mt dw (112.6 mt dw Gulf of Mexico + 264.1 mt dw Atlantic = 376.7 mt dw).

While quotas for blacktip sharks in both regions will be set using ACLs, options described in this section consider methods for determining Atlantic and Gulf of Mexico regional quota splits for aggregated LCS and non-blacknose SCS based on catch history. The following are potential options NOAA Fisheries is considering for the Atlantic and Gulf of Mexico regional split.

Option F1: No Action. Keep the current regional splits.

Under Option F1, NOAA Fisheries would maintain the current regional quota splits between the Atlantic and the Gulf of Mexico. Overall, the LCS commercial quota would be 220.2 mt dw for both regions. The Gulf of Mexico region quota is 157.5 mt dw (71.5 percent), while the Atlantic quota would be 62.7 mt dw (28.5 percent). For the non-blacknose SCS quota, the overall quota is 376.7 mt dw. The Gulf of Mexico region quota is 112.6 mt dw (30 percent), while the Atlantic quota is 264.1 mt dw (70 percent).

Pros:

- Would maintain continuity of management strategies.
- Would support the development of management strategies that are specific to the two regions.

Cons:

- Would not allow for flexibility in management measures across the entire region.
- Would not incorporate a buffer to allow for fluctuations in catch for either region.
- Would not based upon recent catch history.

Option F2: Determine regional split based on catch history (10 years).

Under Option F2, NOAA Fisheries could determine regional quota splits for aggregated LCS and non-blacknose SCS between the Gulf of Mexico and Atlantic regions based on 10 years of catch history (2012-2021). NOAA Fisheries compiled all of the commercial landings for each management group and determined the percentage of landings from each region (Table 10). NOAA Fisheries used that percentage of landings to determine the potential new regional management group quotas (Table 11). Option F2 would result in a Gulf of Mexico aggregated LCS quota of 169.3 mt dw, which is an increase from the current quota, and Atlantic aggregated LCS quota of 50.9 mt dw, which is a decrease from the current quota. For the non-blacknose SCS, the Gulf of Mexico non-blacknose SCS quota would be 140.7 mt dw, which is an increase from the current quota, and the Atlantic non-blacknose SCS quota would be 236 mt dw, which is a decrease from the current quota.

Table 10. Commercial landings and percentage of overall landings of aggregated LCS and non-blacknose SCS species by region, 2012-2021.

Management Group	Gulf of Mexico Landings (A)	Atlantic Landings (B)	Total Landings (A+B=C)	Percentage of Gulf of Mexico Catch (A/C=D)	Percentage of Atlantic Catch (B/C=E)
Aggregated LCS	1,567	470.7	2,037.7	76.9	23.1
Non-Blacknose SCS	719.1	1,206	1,925.1	37.4	62.6

Note: All the commercial landings are in mt dw.

Table 11. Potential new commercial quotas for aggregated LCS and non-blacknose SCS species under Option F2.

Management Group	Overall Quota (A)	Percentage of Gulf of Mexico Catch (B)	Gulf of Mexico Quota (A*B=C)	Percentage of Atlantic Catch (D)	Atlantic Quota (A*D=E)
Aggregated LCS	220.2	76.9	169.3	23.1	50.9
Non-Blacknose SCS	376.7	37.4	140.7	62.6	236

Note: All quotas are in mt dw.

Pros:

- Management measures would be informed by data from a longer time period, which captures more of the variation in catch, including higher and lower catch years.
- Basing management measures on data from a long time period may reduce the impacts of outlier years.
- Would increase the Gulf of Mexico aggregated LCS and non-blacknose SCS quotas.

Cons:

- This strategy may not reflect current fishery operations.
- Would underestimate some regional landings during this time period due to quota linkages.
- This option would reduce the Atlantic aggregated LCS and non-blacknose SCS quotas.
- This 10-year period may still include recent years of catch data that were impacted by factors such as weather and the COVID-19 pandemic.

Option F3: Determine regional split based on catch history (5 years).

Under Option F3, NOAA Fisheries could determine regional quota splits for aggregated LCS and non-blacknose SCS between the Gulf of Mexico and Atlantic regions based on five years of catch history (2017-2021). NOAA Fisheries compiled all of the commercial landings for each management group and determined the percentage of landings from each region (Table 12). NOAA Fisheries used that percentage of landings to determine the potential new regional management group quotas (Table 13). Option F3 would result in a Gulf of Mexico aggregated LCS quota of 170.4 mt dw, which is a slight increase from Option E2 and an increase from the current quota, and Atlantic aggregated LCS quota of 49.8 mt dw, which is a decrease from Option F2 and from the current quota. For the non-blacknose SCS, the Gulf of Mexico non-blacknose SCS quota would be 123.5 mt dw, which is a decrease from Option F2 but an increase from the current quota, and the Atlantic non-blacknose SCS quota would be 253.2 mt dw, which is an increase from Option F2 but a decrease from the current quota.

Table 12. Commercial landings and percentage of overall landings of aggregated LCS and non-blacknose SCS species by region, 2017-2021.

Management Group	Gulf of Mexico Landings (A)	Atlantic Landings (B)	Total Landings (A+B=C)	Percentage of Gulf of Mexico Catch (A/C=D)	Percentage of Atlantic Catch (B/C=E)
Aggregated LCS	699.3	204.4	903.7	77.4	22.6
Non-Blacknose SCS	294.1	602.9	897	32.8	67.2

Note: All the commercial landings are in mt dw.

Table 13. Potential new commercial quotas for aggregated LCS and non-blacknose SCS species under Option D3.

Management Group	Overall Quota (A)	Percentage of Gulf of Mexico Catch (B)	Gulf of Mexico Quota (A*B=C)	Percentage of Atlantic Catch (D)	Atlantic Quota (A*D=E)
Aggregated LCS	220.2	77.4	170.4	22.6	49.8
Non-Blacknose SCS	376.7	37.4	123.5	62.6	253.2

Note: All quotas are in mt dw.

Pros:

- Compared to determining the regional split based on a 10-year catch history, this option would inform management strategies based on relatively more recent catch data, which more closely reflect current management practices.
- Would increase the Gulf of Mexico aggregated LCS and non-blacknose SCS quotas.

Cons:

- Recent years of catch data has been impacted by factors such as weather and the COVID-19 pandemic.
- This option would reduce the Atlantic aggregated LCS and non-blacknose SCS quotas.

Option F4: Remove the regional splits for all stocks that do not have regional assessments.

Under Option F4, NOAA Fisheries could remove the existing quota splits between the Gulf of Mexico and Atlantic regions, which would then together be managed under a single quota allocation for aggregated LCS and non-blacknose SCS. This would result in an aggregated LCS commercial quota of 220.2 mt dw and non-blacknose SCS quota of 376.7 mt dw.

Pros:

- This strategy would incorporate a buffer to account for higher or lower catches in either the Gulf of Mexico or Atlantic regions.
- Potentially would allow the opportunity for all of the commercial quotas to be harvested.

Cons:

- Management strategies may not be responsive to regional differences.

Atlantic Blacknose Shark Management Boundary

NOAA Fisheries is considering changes to the boundary for Atlantic blacknose sharks given the changes to the ACL and quotas for blacknose sharks in the Atlantic region and the migratory pattern of sharks has shifted north. In addition, Amendment 14 removed quota linkages and the current management boundary may no longer be relevant. Currently, blacknose sharks may only be commercially harvested south of 34°00' N. lat. (approximately at Wilmington, North Carolina). The following are potential options under consideration for Atlantic blacknose shark management boundary delineations.

Option G1: No Action. Keep the current blacknose shark management boundary in the Atlantic region.

Under Option G1, NOAA Fisheries would continue management based on the current Atlantic blacknose shark management boundary. Thus, blacknose sharks would not be allowed to be retained north of 34°00' N. lat.

Pros:

- Would be consistent with current management measures.

Cons:

- Management actions may not reflect the current extent of stock distributions.
- Management boundary would continue to affect utilization of the Atlantic blacknose shark quota, which is underharvested.

Option G2: Remove the shark management boundary in the Atlantic region.

Under Option G2, NOAA Fisheries could remove the Atlantic blacknose shark management boundary. This option would allow commercial fishermen north of 34°00' N. lat. to retain blacknose sharks.

Pros:

- Would support management strategies that are more responsive to the distribution of this species.
- Would allow the opportunity for fishermen north of 34°00' N. lat. to retain blacknose sharks instead of discarding them.

Cons:

- Since more fishermen may have the opportunity to retain blacknose sharks, the commercial quota could be harvested faster than it is currently.

Gulf of Mexico Sub-Regional Split

NOAA Fisheries defines the Gulf of Mexico region as any water and land to the south and west of 25°20.4' N. lat. In Amendment 6, NOAA Fisheries, among other things, split the Gulf of Mexico region into western and eastern sub-regions at 88°00' W. long. All sharks harvested within the Gulf of Mexico region in catch areas in waters westward of 88°00' W. long. are from the western Gulf of Mexico sub-region, and all sharks harvested within the Gulf of Mexico region in catch areas in waters eastward of 88°00' W. long., including within the Caribbean Sea, are from the eastern Gulf of Mexico sub-region. This sub-regional split was implemented to allow equitable fishing opportunities for fishermen in each sub-region. Since NOAA Fisheries is changing the ACLs and quotas for blacktip sharks, aggregated LCS, and hammerhead sharks in the Gulf of Mexico region, the sub-regional splits may not be appropriate in the future.

Table 14 shows the current western and eastern sub-regional quota splits and percentage of quotas for each shark management group implemented in Amendment 6. As described in Amendment 6, the sub-regional quota splits were based on data from 2008 through 2013 for the blacktip shark and aggregated LCS management groups. The following are potential options NOAA Fisheries is considering for Gulf of Mexico sub-regional splits.

Table 14. Western and eastern Gulf of Mexico sub-regional quota splits for blacktip shark and aggregated LCS management groups.

Species	Gulf of Mexico quota	Sub-regional quota splits (Quota Percentage)	
		Western sub-region	Eastern Sub-region
Blacktip	256.6	231.5 (90.2%)	25.1 (9.8%)
Aggregated LCS	157.5	72 (45.7%)	85.5 (54.3%)

Note: All the commercial quotas are in mt dw.

Option H1: No Action. Keep the current sub-regional splits.

Under Option H1, NOAA Fisheries would maintain the current quota splits between the western and eastern Gulf of Mexico sub-regions for blacktip sharks and aggregated LCS management groups as shown in Table 14.

Pros:

- Current management strategies would be maintained.
- Would support sub-region-specific management measures.

Cons:

- Would not support flexible management strategies across the Gulf of Mexico.
- The sub-regional split was based on commercial fishing habits over 10 years ago and does not reflect the current fishing rates and participation.

Option H2: Determine sub-regional split based on catch history since the implementation of Amendment 6 (2016 through 2021).

Under Option H2, NOAA Fisheries could determine the quota split between the eastern and western sub-regions of the Gulf of Mexico based on catch history since the implementation of Amendment 6. Because the Gulf of Mexico LCS quotas were harvested and the fishery remained closed in 2015 despite implementation of Amendment 6 (80 FR 50073, August 18, 2015), NOAA Fisheries would consider looking at the catch history from 2016 through 2021 (Table 15). Based on the landings, the blacktip shark sub-regional quota percentages shown in Table 30 are close to the actual catch percentages (91 percent from the western sub-region and 9 percent from the eastern sub-region). Under this option, the aggregated LCS sub-regional quota percentages shown in Table 30 are slightly different from the actual catch percentages (49.9 percent from the western sub-region and 50.1 percent from the eastern sub-region).

Table 15. Commercial landings of blacktip shark and aggregated LCS management groups, 2016-2021.

Species	Western Gulf of Mexico	Eastern Gulf of Mexico	Total	Percentage Western Sub-regional Landings	Percentage Eastern Sub-regional Landings
Blacktip Shark	1,237.5	122.3	1,359.7	91%	9%
Aggregated LCS	395.7	397.7	793.4	49.9%	50.1%

Note: Commercial landings are in mt dw.

Pros:

- Using data from these years would provide information on landings that are representative of current management practices.

Cons:

- Opportunities for sub-regional commercial fishermen to harvest the quotas have been affected by external factors (markets, various state, federal, and international regulations).

Option H3: Remove Gulf of Mexico sub-regional blacktip shark and aggregated LCS management group quota split.

Under Option H3, the Gulf of Mexico sub-regional blacktip shark and aggregated LCS management group quota splits would be removed. There would be an overall Gulf of Mexico blacktip shark management group quota of 256.6 mt dw and aggregated LCS management group quota of 157.5 mt dw.

Pros:

- Would simplify management strategies and provide for additional flexibility in management approaches across the Gulf of Mexico for blacktip shark and aggregated LCS management groups.

Cons:

- Would not be responsive to differences in eastern and western sub-regions of the Gulf of Mexico.

Option H4: Establish a flexible sub-regional split.

Under Option H4, NOAA Fisheries would establish a flexible sub-regional quota split for the Gulf of Mexico. One example of this type of strategy would be to implement management measures that would establish a sub-regional split after a threshold percentage of the overall Gulf of Mexico quota has been reached. For example, when 50 percent of the quota for the entire Gulf of Mexico region is met, then sub-regional quotas could be established, at which time 20 percent of the remaining original quota would be allocated to one of the sub-regions, and 30 percent

would be allocated to the other sub-region. The allocation percentage split would be determined based on which sub-region has harvested the majority of the quota. Meaning that the sub-region would get the higher percentage of remaining quota.

Pros:

- A flexible sub-regional split could help to distribute fishing opportunities across the entire Gulf of Mexico region.
- Would allow for initial flexibility across the Gulf of Mexico region, and would then allow for sub-region specific management needs, should a threshold be met.

Cons:

- Would be a relatively more complex management strategy.
- Would increase the administrative burden through the need for an additional inseason action.

Caribbean Shark Regional Quota

The Caribbean region includes the Caribbean Sea and Atlantic Ocean seaward of Puerto Rico, the U.S. Virgin Islands, and possessions of the United States in the Caribbean Sea (50 CFR 622.2). NOAA Fisheries manages HMS, including sharks, in this area. In the Caribbean, commercial fishermen are allowed to retain and sell sharks if they have a directed, incidental, smoothhound, or HMS Commercial Caribbean Small Boat Permit. However, there are no directed, incidental, or smoothhound shark permit holders in the Caribbean at this time. Thus, only HMS Commercial Caribbean Small Boat Permit holders are allowed to retain sharks commercially in the region. Under this permit, commercial vessels are allowed up to three sharks from the following groups per vessel per trip: smoothhound, non-blacknose SCS, and/or non-prohibited LCS. This means they may retain and sell any blacktip, bull, lemon, nurse, spinner, tiger, Atlantic sharpnose, bonnethead, finetooth, and smoothhound sharks. They are not allowed to retain and sell any hammerhead, blacknose, silky, sandbar, blue, thresher, oceanic whitetip, shortfin mako, or prohibited sharks. On average, in 2017 through 2021, 36 HMS Commercial Caribbean Small Boat Permits were issued each year (Table 16).

Table 16. Number of HMS Commercial Caribbean Small Boat Permits by year.

Year	Number of Permits Issued
2017	39
2018	40
2019	35
2020	30
2021	37
Average	36

In the Caribbean region, all reports of shark landings come through the territorial reporting programs. All shark landings from the Caribbean are currently accounted for under the eastern Gulf of Mexico sub-regional quotas. Table 17 shows landings of authorized and

unauthorized shark species in the Caribbean region. There are landings of unauthorized species because fishermen continue to miss-identify shark species and, in some cases, report the incorrect species on their landings reports. Given the changes that are being considered to ACLs and quotas and the shark management groups, NOAA Fisheries is also considering creating a separate Caribbean shark regional quota and some potential options based on comments from constituents.

Table 17. Total shark landings of authorized and unauthorized species from the Caribbean region.

Species	2017	2018	2019	2020	2021	Average
Authorized Species	5,178	5,159	7,306	6,985	3,295	5,585
Unauthorized Species	1,247	350	3	0	0	320
Total	6,425	5,509	7,309	6,985	3,295	5,905

Note: All shark landings are in lb dw.

Option I1: No Action. Account for all Caribbean shark landings under the eastern Gulf of Mexico sub-regional quotas.

Under Option I1, all authorized shark landings in the Caribbean would continue to be accounted for under the eastern Gulf of Mexico sub-regional quotas. On average, this option would have 5,585 lb dw of authorized shark species from the region accounted towards the eastern Gulf of Mexico sub-regional quotas. There were hammerhead shark landings reported from the Caribbean region, but were included in the unauthorized species landings in Table 17 and not shown to species due to confidentiality issues. NOAA Fisheries would continue to account for the hammerhead shark landings under the eastern Gulf of Mexico sub-regional hammerhead shark quota.

Pros:

- Current management measures would be maintained.

Cons:

- Would not consider the differences in fisheries and fishing techniques between the Caribbean region and the Gulf of Mexico.

Option I2: Create a separate Caribbean regional quota that would be higher than average reported landings of authorized shark species.

Under Option I2, a separate Caribbean regional quota would be established that would be higher than the average reported landings for authorized shark species (Table 17). For example, the quota could be 25 percent, 50 percent, 75 percent, or some other amount higher than the average landings for authorized shark species. Using 50 percent, the Caribbean regional quota would be 3.8 mt dw (8,378 lb dw) (5,585 lb dw x 150 percent = 8,378 lb dw). This commercial quota could ensure that the fishery remains open and creates a buffer for growth in the region.

Pros:

- Would allow the Caribbean region to operate independently.
- The potential buffer could allow the fishery not to exceed the quota.

Cons:

- Enforcement concerns in the region could allow quotas to be exceeded or unauthorized species to continue to be landed.

Option I3: Create a separate Caribbean regional quota that would be higher than highest reported yearly landings of authorized species.

Under Option I3, a separate Caribbean regional quota would be established at some amount higher than the highest reported yearly landings (2019) of authorized species (Table 17). For example, the quota could be 25 percent, 50 percent, 75 percent, or some other amount higher than the highest yearly reported landings for authorized shark species. Using 50 percent, the Caribbean regional quota would be 5 mt dw (10,959 lb dw) (7,306 lb dw x 150 percent = 10,959 lb dw). This commercial quota could ensure that the fishery remains open and creates a buffer for growth in the region.

Pros:

- Would allow the Caribbean region to operate independently.
- Using the highest landings could increase the likelihood of allowing the fishery to remain open all season.

Cons:

- Enforcement concerns in the region could allow quotas to be exceeded or unauthorized species to continue to be landed.

7 EXEMPTED FISHING PERMIT PROGRAM AND SHARK RESEARCH FISHERY

NOAA Fisheries issues HMS exempted fishing permits (EFPs), scientific research permits (SRPs), Display permits, and letters of acknowledgement under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.) and/or ATCA (16 U.S.C. 971 et seq.). EFPs, SRPs, and Display permits authorize the collection of HMS, including sharks, from federal waters in the Atlantic Ocean and Gulf of Mexico for the purposes of scientific data collection and public display when research and/or collection activities would otherwise be prohibited by regulations.

The EFP quota was established in the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks. In Amendment 1 to the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks, a separate Display permit quota was established to operate apart from the exempted fishing activities that focus on scientific research. A separate smoothhound shark research set-aside quota was established in Amendment 3 to the 2006 Consolidated HMS FMP when smooth dogfish became a federally managed species. To ensure that the SRF had as much quota as possible without exceeding the TAC, separate EFP and Display permit quotas were implemented for sandbar sharks. The sandbar SRF quota was last adjusted in Amendment 6 and the sandbar EFP and Display quotas have not changed since implemented in Amendment 2. Dusky and shortfin mako sharks have additional restrictions including no display permits for dusky sharks.

The SRF was implemented in Amendment 2 under the auspices of the HMS EFP Program. Participants in the SRF assist NOAA Fisheries in collecting valuable shark life history and other scientific data required for shark stock assessments. Vessel participation is contingent upon vessels meeting specific criteria designed to meet research objectives while allowing fishermen to earn revenue from selling sandbar (which are otherwise prohibited in commercial and recreational fisheries) and other sharks that are caught under the purview of this fishery. Quotas for the SRF are available only to the owners of commercial shark vessels that have been issued a valid shark research permit and that have a NOAA Fisheries approved observer on board.

In Amendment 16, NOAA Fisheries is considering changes to the EFP and SRF quotas, and the SRF more broadly. Because ACLs would be revised for all authorized species (including sandbar sharks) under the ABC control rule (see above), EFP and SRF quotas should be revised accordingly. Additionally, in recent years, the number of participants and effort levels in the SRF have declined. Therefore, NOAA Fisheries is considering some potential options to increase participation in the SRF and continue collecting vital data for future shark stock assessments.

Option J1: No action. Maintain the current quotas for EFPs, SRPs, display permits, and the SRF.

Option J1 maintains the current quotas for EFPs, SRPs, display permits, and the SRF. These quotas do not change year to year. A separate base annual quota for smoothhound sharks collected under an EFP or Display permit would be maintained.

There is a 60-mt ww (132,276 lb ww) quota allocated for sharks taken under an EFP, Display permit, or SRP. Of this 60-mt ww quota:

- 1.4 mt ww (3,064 lb ww) is allocated to sandbar sharks taken under Display permits;
- 1.4 mt ww (3,064 lb ww) is allocated to sandbar sharks taken under EFPs; and
- 57.2 mt ww (126,147 lb ww) is allocated to all other shark species.

There is a 6-mt ww (13,227 lb ww) base annual quota for smoothhound sharks collected under an EFP or Display permit.

The SRF has base annual commercial quotas for sandbar sharks and Research LCS:

- 90.7 mt dw (199,943 lb dw) is allocated to sandbar sharks; and
- 50 mt dw (110,234 lb dw) is allocated to Research LCS.

Pros:

- Would allow continuity in management measures for EFP holders and SRF participants to operate the same as in the past.
- Limited risk that the EFP and SRF quotas would be exceeded.

Cons:

- Use of existing quotas would not accurately reflect the current state of shark fisheries.
- Unused quota would be lost at the end of the year if not fully utilized by the SRF.

Option J2: Revise the quotas for EFPs and the SRF.

Under Option J2, NOAA Fisheries could create a new EFP quota for prohibited species, including sandbar sharks. Because NOAA Fisheries accounts for EFP mortality in the management buffer when establishing quotas for authorized species, a separate EFP quota is not needed for sharks other than sandbar and prohibited species. The SRF quota would be revised based on recent usage.

Pros:

- The quotas would more likely be fully utilized if they are set based on the current state of shark fisheries.
- The current EFP quotas have not been updated since 1999 and 2010 (other sharks and smoothhound, respectively) and sandbar quotas have not been updated since 2008 and 2015 (EFP and SRF, respectively) and may benefit from an updated look at information on quota utilization.

- Would result in reduced administrative burden compared to monitoring multiple EFP quotas.

Cons:

- EFP and SRF quotas would be lower than the current quotas.
- Unlimited take of authorized species under an EFP, SRP, or Display permits could potentially result in exceeding the amount of mortality accounted for in the management buffer. As a result, quotas for those species may be lower in future years.
- Reducing the SRF quotas could potentially impact the research needed on shark stocks.

Option J3: Allow the transferability of underutilized SRF sandbar quota to the commercial or recreational fishery.

Under Option J3, unused SRF sandbar quota could be transferred to the commercial or recreational fishery during the fishing year if the SRF is not expected to harvest the available quota before the end of the year. Unused SRF sandbar quota would not be transferred to either fishery if the SRF sandbar quota is anticipated to be met or if the fishery is not utilizing their existing available quota.

Pros:

- Unused quota would not be lost at the end of the year if not fully utilized by the SRF.
- Transfer of SRF quota to the commercial or recreational fishery could provide limited additional opportunities to harvest available quota.

Cons:

- SRF participants may feel that it is unfair for quota available to them to be taken away and transferred to the commercial or recreational fishery.

Option J4: Revise the SRF structure, objectives, and goals.

Under Option J4, NOAA Fisheries could revise the SRF structure, objectives, and goals. For example, NOAA Fisheries could modify the bycatch limit restrictions within the SRF, reduce the mandatory observer coverage rate for SRF trips, and/or allow retention of prohibited shark species.

Pros

- Could increase interest and participation in the SRF, which could improve data collection (e.g., on prohibited species that are data poor).
- Some changes could relieve restrictions that currently limit fishing opportunities (e.g., the dusky shark bycatch limit).

Cons

- Management measures would not impact the low market demand for shark products that could restrict SRF participants and effort levels.

- Some changes could impair the collection of accurate and vital shark data on non-observed SRF trips (e.g., reduced observer coverage) or increase mortality on shark stocks that are overfishing with overfishing occurring (e.g., dusky shark).

8 COMMERCIAL RETENTION LIMITS

Given the changes that are being considered to ACLs and quotas, NOAA Fisheries is also considering modifications to the commercial retention limits. Amendment 6 implemented the current LCS retention limit of 0-55 LCS other than sandbar sharks per trip. The retention limit for LCS was in part based on how many sandbar sharks would be discarded dead from the number of shark trips that were expected to interact with sandbar sharks. Since the implementation of Amendment 6, the effort levels in the commercial shark fishery have declined due to a variety of factors (e.g., markets, state and international regulations). In addition, under this action, NOAA Fisheries is considering actively adjusting the ACL for dead discards of sandbar sharks so this does not need to be a primary factor in establishing the LCS retention limit. As described in this document, NOAA Fisheries may also revise the ACLs for blacktip sharks due to the updated Gulf of Mexico species stock assessment and a new Atlantic species stock assessment. Both shark stocks are healthy (not overfished with overfishing not occurring) and changes to the commercial quotas are being considered.

In 2017, NOAA Fisheries established a commercial retention limit of eight blacknose sharks for all Atlantic shark limited access permit holders in the Atlantic region south of 34°00' N. lat. (81 FR 90241, December 14, 2016). This action was taken to reduce discards of non-blacknose SCS while increasing the utilization of available Atlantic non-blacknose SCS quota and aid in rebuilding and ending overfishing of Atlantic blacknose sharks. According to comments from constituents, the blacknose shark retention limit in the Atlantic region has restricted their ability to fully harvest both the available blacknose shark and non-blacknose SCS quotas.

The pelagic shark retention limit is being reviewed based on ICCAT recommendations that have impacted U.S. fishermen's ability to harvest those shark species. For shortfin mako sharks, Recommendation 21-09, implemented in 2022, prohibits retention of North Atlantic shortfin mako sharks caught in association with ICCAT fisheries starting in 2022. For porbeagle sharks, Recommendation 15-06, implemented in 2016, requires fishing vessels to promptly release unharmed, to the extent practicable, porbeagle sharks caught in association with ICCAT fisheries that are alive at the time of haulback. In addition to management changes for ICCAT measures, NOAA Fisheries recently published a proposed rule that considers adding oceanic whitetip sharks to the prohibited shark complex (88 FR 17171, March 22, 2023). In this document, NOAA Fisheries considers some potential options to revise the commercial retention limits for LCS, SCS, and pelagic sharks.

Option K1: No Action. Maintain the current commercial retention limits.

Option K1 would maintain the current LCS, SCS, and pelagic shark retention limits for directed and incidental limited access permit (LAP) holders. For directed LAP holders, the limit is 0-55 LCS other than sandbar shark per vessel per trip. There are no limits on non-blacknose SCS and pelagic sharks, but there is an eight blacknose sharks per vessel per trip limit. For incidental LAP holders, the limit is 3 LCS other than sandbar shark per vessel per trip and a

combination of 16 non-blacknose SCS and pelagic sharks per vessel per trip with no more than 8 blacknose sharks per trip.

Pros:

- Would allow continuity in management measures for commercial fishing operations.

Cons:

- May not allow the fishery to be economically viable for commercial fishermen, due to additional factors affecting the shark fishery.
- Without increasing the retention limits, the commercial quotas would continue to be underharvested.
- Commercial retention limits are one of the reasons why the commercial quotas are not being fully utilized.
- The blacknose shark retention limit would continue to result in discards that would otherwise be landed.

Option K2: Revise the commercial retention limits.

Under Option K2, NOAA Fisheries could revise commercial LCS, SCS, and pelagic shark retention limits. NOAA Fisheries could consider species specific limits (e.g., blacktip sharks) or different regional limits.

For directed LAP holders, NOAA Fisheries could establish a flexible commercial retention for blacktip sharks and LCS other than sandbar sharks per vessel per trip. Based on the healthy stock status of blacktip sharks in the Gulf of Mexico and Atlantic regions, NOAA Fisheries could create a separate retention limit for this species. For directed LAP holders, the limit could be, for example, 0-100 blacktip sharks and 0-100 LCS other than sandbar sharks per vessel per trip. Due to the potential differences in the blacktip shark stock ACLs, NOAA Fisheries could establish a flexible regional commercial retention limits for blacktip sharks and other LCS. In the Atlantic region, similarly, NOAA Fisheries could consider a range of 0-100 blacktip sharks and 0-100 LCS other than sandbar shark per vessel per trip for directed LAP holders. In the Gulf of Mexico region, NOAA Fisheries could consider a range of 0-300 blacktip sharks and 0-100 LCS other than sandbar shark per vessel per trip for directed LAP holders. For SCS and pelagic sharks, NOAA Fisheries could remove existing limits for directed LAP holders.

For incidental LAP holders, as an example, NOAA Fisheries could establish a limit of 0-30 blacktip sharks and 0-10 LCS other than sandbar shark per vessel per trip and a combination of 30 SCS and pelagic sharks per vessel per trip.

Pros:

- Would allow commercial fishermen the opportunity to be economically viable by landing more sharks per trip.
- Would allow commercial fishermen the opportunity to fully harvest the LCS, SCS, and pelagic shark quotas.

- Would allow flexibility to set the commercial retention limits at the beginning of the season and adjust them if needed.
- Establishing regional retention limits would allow NOAA Fisheries to set the blacktip shark retention limit based on the regional commercial sector ACL.
- Since other accountability measures are in place, commercial quotas would not be overharvested.

Cons:

- Current commercial shark fishing vessels might not be able to properly store the higher number of sharks on board with a larger retention limit.
- Markets might not be able to sustain the larger volume of product.
- Could create inequitable fishing opportunities for fishermen in different parts of the region to harvest the quotas before others.

Option K3: Remove the commercial retention limit for directed LAP holders and revise the limit for incidental LAP holders.

Under Option K3, NOAA Fisheries could remove the commercial retention limit for directed LAP holders and revise the limit for incidental LAP holders. For example, NOAA Fisheries could establish a limit of 30 LCS other than sandbar shark per vessel per trip and no limit on non-blacknose SCS, blacknose sharks, and pelagic sharks for incidental LAP holders. Per conversations with dealers and fishermen, the number of sharks retained per trip is driven by the markets and not the retention limits.

Pros:

- Would allow commercial fishermen the ability to harvest sharks under the commercial sector ACLs without discarding authorized species.
- Would allow commercial fishermen the opportunity to fully harvest the SCS and pelagic shark quotas.

Cons:

- Would remove an accountability measure to ensure equitable fishing opportunities for all fishermen.
- Could turn the shark fishery back into a derby fishery where fishermen would race to harvest the quota.
- Would remove some accountability measures to limit the retention of SCS and pelagic sharks.

9 RECREATIONAL FISHERY CHANGES

Given the changes that are being considered to ACLs and quotas, NOAA Fisheries is also considering modifications to the recreational shark fishery minimum size and bag limits. The number of trips targeting or catching coastal sharks in the Atlantic has been increasing, but trips in the Gulf of Mexico have stayed fairly consistent. For pelagic sharks, the target effort levels have decreased significantly since the prohibition on shortfin mako sharks. NOAA Fisheries needs to be adaptive to these changes. One step is to review the current recreational shark fishery regulations. This includes authorized species, minimum size limits, and bag limits. The current list of authorized species for recreational fishermen has been in place since 2008 when NOAA Fisheries revised the list based on the sandbar shark stock assessment. As mentioned above, NOAA Fisheries is revising the sandbar shark ACL and the effort levels in the SRF have been decreasing in recent years. Thus, there might be an opportunity for recreational fishermen to retain sandbar sharks.

Minimum size limits and bag limits for sharks are the main accountability measures NOAA Fisheries can implement to control or adjust recreational shark harvest rates during the fishing year. As described earlier in this document, NOAA Fisheries intends to implement recreational sector ACLs for sharks. NOAA Fisheries will be able to monitor recreational landings against recreational sectors ACLs and overall ACLs for each shark species or management group, and consider if additional actions are needed to allow or control landings accordingly. Below, NOAA Fisheries considers some potential changes to recreational minimum size limits and bag limits for sharks.

Option L1: No action. Maintain the current minimum size and bag limits for sharks.

Under Option L1, NOAA Fisheries would maintain the current bag limits (50 CFR 635.22(c)) and minimum size limits (50 CFR 635.20(e)) for sharks under the HMS regulations. The trip bag limits are one Atlantic sharpnose shark per person, one bonnethead shark per person, no limit for smoothhound sharks, and one per vessel for all other authorized shark species. These bag limits were implemented in Amendment 2, with the default limit of one shark per vessel per trip originating with the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks. The current minimum size limit for most shark species is 54 inches (137 cm) fork length (FL), which was implemented in the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks and was based on the size at maturity of sandbar sharks. The minimum size for hammerhead sharks is 78 inches (198.1 cm) FL, which was implemented in Amendment 5a and was based on the size when female scalloped hammerhead sharks reach maturity. For shortfin mako sharks landed when the recreational retention limit is greater than zero, males must be at least 71 inches (180 cm) FL, and females must be at least 83 inches (210 cm) FL. The shortfin mako shark minimum sizes were based on ICCAT Recommendations 17-08 and 19-06 and implemented in Amendment 11 to the 2006 Consolidated HMS FMP. There are no minimum size limits in place for Atlantic sharpnose, bonnethead, or smoothhound sharks.

Pros:

- Current management strategies would be maintained.
- Having one minimum size and bag limits for most sharks may be easier for anglers to not have to identify as many species at the vessel.
- Having one minimum size and bag limit for most sharks may be easier to enforce.

Cons:

- The current minimum size for most sharks is based on sandbar sharks, while retention of sandbar sharks is prohibited.
- The current minimum size and bag limits for most sharks was implemented in 1999 and may benefit from an updated look at information on size at maturity for shark species.
- The current minimum size for most sharks is higher than the size at maturity for some recreationally caught species, precluding landings from Federal waters.
- The current bag limit for most sharks may benefit from an update in conjunction with active management of recreational sector ACLs under this action.
- Having a mix of per-person and per-vessel bag limits depending on the species can be confusing.

Option L2: Revise the minimum size and bag limits for all authorized shark species

Under Option L2, NOAA Fisheries could revise minimum size and bag limits for all authorized shark species. NOAA Fisheries is considering a few potential changes to the minimum size and bag limits:

- Set minimum size based on the female size of maturity for a management group or shark species.
- Increase the bag limits of some shark species.

For minimum size revisions, NOAA Fisheries is focusing on the female size at maturity for each species. NOAA Fisheries could select one species in a management group to base the minimum size on that species' female size at maturity. Updated female size at maturity information is available in stock assessment documentation, the SHARE document, and HMS essential fish habitat documentation (e.g., Amendment 10 to the 2006 Consolidated HMS FMP). For example, looking at some species discussed earlier in this document, the female size at maturity for bull sharks is 88 inches total length (TL), for lemon sharks is 94 inches TL, for porbeagle sharks is 81 inches FL, and for blacktip sharks is 49 inches FL. As described in the SHARE document, only about 5 percent of measured blacktip sharks exceeded the Federal minimum size limit of 54 inches FL and most are harvested in Florida state waters where the species is not managed under a minimum size limit.

NOAA Fisheries could establish a range of minimum sizes for shark species or management groups, with default minimum sizes established for the beginning of the fishing season. The minimum size could be increased as an accountability measure if landings are approaching the recreational sector ACL. NOAA Fisheries could also take into account the overall ACL for a species or management group, and allow additional recreational landings

beyond the recreational sector ACL, if commercial catch is low, with the ability to make these adjustments inseason.

For bag limit revisions, NOAA Fisheries could increase the bag limits for all sharks. For example, bag limits could be increased to between 2 and 10 sharks per vessel per trip, depending on the size of the sharks and stock status, among other considerations. NOAA Fisheries could establish regional flexible bag limits for blacktip sharks. For example, a bag limit with a range from 1 to 5 sharks per person per vessel with a maximum of 5 to 10 sharks per vessel per trip. As discussed above, blacktip shark stocks are healthy. Default bag limits could be set higher for this species, with the flexibility to decrease the bag limit inseason if landings are approaching the recreational sector ACL. The bag limit could be higher in the Gulf of Mexico where landings are not approaching the recreational sector ACL, and lower in the Atlantic where landings are closer to the ACL.

Pros:

- Minimum sizes would be tailored to the biology of more shark species beyond sandbar, scalloped hammerhead, and shortfin mako sharks.
- Lowering the minimum size for shark species that reach maturity under 54 inches FL, such as blacktip sharks, would allow landings of those species while still taking into account their biology.
- Raising the minimum size for shark species that reach maturity over 54 inches FL would provide additional protection for those species where needed considering stock status.
- For many shark species, recreational landings are a greater portion of the overall ACL than commercial catch. Since recreational landings would now be accounted for and monitored under sector ACLs, anglers could be granted more opportunity to fish for sharks.
- Increased bag limits could improve opportunity for charter/headboat vessel operators, particularly for species that are caught farther offshore.
- Creating flexible minimum size and bag limits would allow greater management flexibility to adjust the limits based on how close the recreational sector ACL is being harvested.

Cons:

- Flexible minimum sizes and bag limits could lead to greater uncertainty by anglers at any given time. It could be difficult to communicate changes to the large number of HMS anglers in real time. This would be further complicated by the fact that most coastal sharks retained in the recreational fishery are retained by state water anglers that are not required to possess an HMS permit.
- Flexible minimum sizes and bag limits could complicate HMS regulations and enforcement. It would also complicate efforts by the Atlantic States Marine Fisheries Commission and state agencies to remain consistent with HMS shark fishing regulations.
- A lack of timeliness in the release of recreational catch estimates generated by MRIP could make such inseason adjustments difficult to implement.

- This option could confuse constituents if some of the bag limits are per person and some are per vessel.

Option L3: Remove minimum size and bag limits for some shark species.

Under Option L3, NOAA Fisheries would remove minimum size and bag limits for some shark species or management groups. For example, the blacktip shark in the Gulf of Mexico region are a healthy stock and the potential changes to the ABC and resulting ACLs would be large. NOAA Fisheries could consider having no minimum size or bag limit for this species. Depending on the resulting ACLs, NOAA Fisheries could consider this for other shark species or management groups.

Pros:

- Would allow maximum flexibility for anglers to catch sharks within recreational sector ACLs.
- Would eliminate the need for anglers to have contact with hooked sharks in order to gauge their size.
- Removing minimum sizes would allow anglers to land smaller sharks that are easier to handle.
- Removing minimum sizes would simplify HMS regulations and enforcement.

Cons:

- Removing minimum sizes would eliminate an accountability measure to actively manage the recreational shark fishery and remain within recreational sector ACLs.
- Removing minimum sizes would eliminate a management tool to aid in rebuilding some shark species by allowing sharks to be harvested before they reach maturity.
- Could be confusing if some minimum size or bag limits are removed for some species and not others.

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