Atlantic Smoothhound Shark Commercial Quota Calculation Methodology

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Amendment 9 to the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP) implemented, among other things, regional commercial quotas for Atlantic and Gulf of Mexico smoothhound sharks. The commercial quotas were based on results from the Southeast Data, Assessment, and Review (SEDAR) 39 stock assessments. This document focuses on the Atlantic smoothhound shark stock since the primary commercial fishery occurs in that region. All data and calculations can be found in the Amendment 9 and no new information is presented in this document. The Gulf of Mexico commercial quota calculation follows a similar methodology and details can be found in Section 2.2 of the Amendment 9 Environmental Assessment (http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am9/a9_final_ea.pdf).

How are quotas calculated?

Generally, Atlantic shark commercial quotas, including smoothhound sharks, are calculated the same way for all species assessed through the SEDAR process. First, the stock assessment provides an absolute maximum level of fishing mortality that can occur while still maintaining a sustainable fishery. The maximum level of fishing mortality, or total allowable catch (TAC), is typically presented with a probability of maintaining a healthy stock or rebuilding a depleted one. Thus, multiple TACs are provided in the stock assessment, each with its own probability of maintaining a healthy stock or rebuilding a depleted one. For SEDAR-assessed Atlantic sharks, NMFS typically uses a TAC corresponding to at least a 70 % chance of successfully maintaining a healthy stock. Note that for most Atlantic sharks, including smoothhound sharks, the overall annual catch limit (ACL) is set a level equal to the TAC, meeting the requirement to establish an ACL. This overall ACL is then split into sector-ACLs (recreational harvest, commercial landings, and commercial dead discards) as described below.

Once a TAC is established, all sources of fishing mortality (excluding commercial landings) provided by the stock assessment are deducted from the TAC. Sources of fishing mortality include recreational landings, research set-aside, and, if available, estimate(s) of the number of fish that die after being released alive (post-release mortality). Once estimates of all sources of fishing mortality (excluding commercial landings) are deducted from the TAC, the remainder becomes the commercial quota. The figure below summarizes this process.

TAC → Remainder of TAC (Recreational Landings, Recreational Post-Release Mortality, Commercial Post-Release Mortality, Research Set-Aside) → Commercial Quota
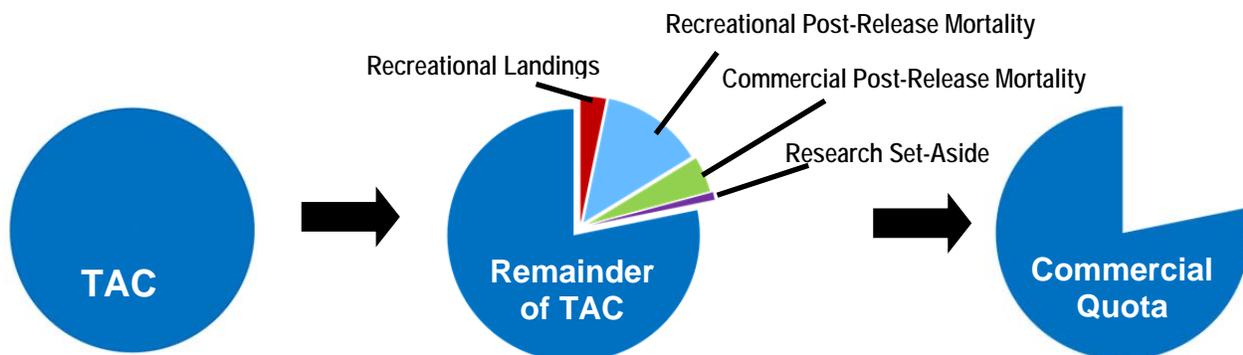
Smoothhound shark quota calculation methodology

<u>Data and sources:</u> All stock assessment documents can be found at: <u>http://sedarweb.org/sedar-39</u>

- TAC = **550,000 sharks** = **1,430.6 mt dw**
  - TAC associated with 70 % probability of maintaining a healthy stock; Table 2 on Page 17 of the Projections for the SEDAR 39 Atlantic Smooth Dogfish (*Mustelus canis*) Stock Assessment Report Base Model Configuration document. This document was presented at the Review Workshop, and is a separate document from the actual final Stock Assessment Report.
  - Average weight of smooth dogfish sharks = 8.2 lb ww. This is the average weight of smooth dogfish caught in the gillnet fishery. NMFS felt this average weight is appropriate to use because the majority of landings of smooth dogfish are from this fishery.
  - Conversion factor = 1.43. This is the conversion factor ACCSP uses for smooth dogfish to convert whole weight to dressed weight.
  - 550,000 sharks * 8.2 lb ww (average weight) = 4,510,000 lb ww
  - 4,510,000 lb ww/1.43 (conversion factor to dressed weight) = 3,153,846.1 lb dw
  - 3,153,846 lb dw/2204.6 lb/mt = 1,430.6 mt dw

- Commercial post-release mortality = **39.1 mt dw**
  - Average annual estimate from 2008-2012, converted from whole weight to dressed weight using 1.43 conversion factor; Table 2.1 on pages 25 and 26 of Section III (Assessment Process Report) of the SEDAR 39 HMS Atlantic Smooth Dogfish Shark Stock Assessment Report. If you are reading the electronic version of the Stock Assessment Report, these are pdf pages 107 and 108.

- Recreational landings = **23.5 mt dw**
  - Average annual landings from 2008-2012, converted from whole weight to dressed weight using 1.43 conversion factor; Table 2.1 on pages 25 and 26 of Section III (Assessment Process Report) of the SEDAR 39 HMS Atlantic Smooth Dogfish Shark Stock Assessment Report. If you are reading the electronic version of the Stock Assessment Report, these are pdf pages 107 and 108.

- Recreational post-release mortality = **164.9 mt dw**
  - Average annual estimate from 2008-2012, converted from whole weight to dressed weight using 1.43 conversion factor; Table 2.1 on pages 25 and 26 of Section III (Assessment Process Report) of the SEDAR 39 HMS Atlantic Smooth Dogfish Shark Stock Assessment Report. If you are reading the electronic version of the Stock Assessment Report, these are pdf pages 107 and 108.

- Research set-aside = **1.4 mt dw**
  - Amendment 3 to the 2006 Consolidated HMS FMP established a 4.2 mt dw research set aside, covering both the Atlantic and Gulf of Mexico. The Atlantic's share of the research set-aside, 1.4 mt dw, is based on the proportion of mortality occurring under exempted fishing permits in the Atlantic from 2008-2012.

<u>Commercial Quota Calculation Methodology</u>

As described above, NMFS calculated the Atlantic regional smooth dogfish shark commercial quota by subtracting all sources of smoothhound shark mortality. The resulting Atlantic smoothhound shark commercial quota is **1,201.7 mt dw**.

> **1,430.6 mt dw** (Atlantic smoothhound shark TAC)
> −   23.5 mt dw (recreational Atlantic smoothhound shark landings)
> − 164.9 mt dw (recreational Atlantic smoothhound shark post release mortality)
> −   39.1 mt dw (commercial Atlantic smoothhound shark post release mortality)
> −   1.4 mt dw (research set-aside)
> = **1,201.7 mt dw** (Atlantic commercial smoothhound shark quota)