NOAA FISHERIES
SEFSC

Overview of Available Length Composition Data Provided for use in SEDAR 77

Andrea Kroetz, Alyssa Mathers, and Dean Courtney

SEDAR 77 Review Workshop
Panama City, FL
August 28, 2023

Overview

6.1 Length Composition Submitted For Use In The Assessment Workshop

Overview

This document details length composition data sources submitted for four species of hammerhead sharks during the SEDAR 77 Data Workshop for possible use in the SEDAR 77 HMS Hammerhead Sharks stock assessment. Great (*Sphyrna mokarran*), scalloped (*S. lewini*), smooth (*S. zygaena*), and Carolina (*S. gilberti*) hammerheads length composition data were submitted from commercial, recreational, and scientific surveys and summarized here.

Analytical approach

- Length-based, age-structured statistical model : Stock Synthesis (SS)

- SS utilizes an integrated modeling approach (Maunder and Punt 2013) to take advantage of the many data sources available, including length composition data. Once data are organized into 'fleets' based on similar length compositions, selectivity for each fleet can be estimated in the SS model from the time series of binned length data.

- Length-based selectivity for CPUE indices with representative length composition distributions were estimated in the SS model from the time series of binned length data.

Data collection

- Data were provided by researchers/experts at the Data Workshop held in December 2021
  - Available data were solicited from fishery-independent and fishery-dependent sources (e.g., commercial, recreational, scientific surveys)

- Sub-group for length-frequency was created at the Data Workshop to review and discuss
  - Persons who contributed data comprised the sub-group
  - Data were presented by the persons who collected the data for review/discussion
  - (details in the SEDAR 77 HMS Hammerhead Sharks Data Workshop Report)

Data collection

- Recommendations were aggregated from the sub-group to be discussed with the entire DW group as follows:
  - Stock ID based on recommendations in the Stock ID Process Final Report
    - GOM, ATL, GOM+ATL (scalloped hammerheads only)
  - Length database (raw data) was created for each species for each data source and stock
  - Data binned by year in 5 cm increments
    - Used cm FL if available (or convert other measured length units to cm FL)
  - Separate scalloped hammerheads by age classes
    - Age 0 complex : ≤ 61 cm FL (SEDAR77-DW24)
    - Age 1+ complex: ≥ 62 cm FL (SEDAR77-DW24)
  - Not enough data to split great, smooth, or Carolina hammerheads by age class
  - Subset data into males, females, unknown sex, and include a combined sex complex for analyses
  - Data matrices extracted for stock assessment model input

Data collection

Data and recommendations were presented to the whole participant group at the Data Workshop, discussed, and agreed upon

Available Length Composition SEDAR 77

1. Used cm FL if available (or convert other measured length units to cm FL)
2. Subset length data into GOM, ATL, and GOM+ATL (for scalloped hammerhead)
3. Subset length data into males, females, unknown sex, combined sex
4. Bin length data by year (5 cm) and extract for stock assessment model input
5. Plot available length composition

- Scalloped Hammerhead (*Sphyrna lewini*)

Split scalloped hammerhead data by age class (age 0 and age 1+)

Age 0 cut off is 61 cm FL

- Great Hammerhead (*Sphyrna mokarran*)

Not enough great hammerhead data to split great by age class

- Smooth Hammerhead (*Sphyrna zygaena*)

*Not enough smooth hammerhead data to plot

- Carolina Hammerhead (*Sphyrna gilberti*)

*Not enough Carolina hammerhead data to plot

Summary of Length Composition Data Provided

Surveys	Age 0 SHH	Age 1+ SHH	All GHH	All SMH	All CHH	Totals
Fishery Independent	3748	5147	2206	42	64	11207
Fishery Dependent	933	1102	224	103	26	2388
Estimated Fishery Independent	3	3096	284	95		3478
Totals	4684	9345	2714	240	90	
Grand Total						**17073**