Sandbar Shark Length Composition Submitted for Use in the SEDAR 101 Data Workshop

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SEDAR101-DW-22

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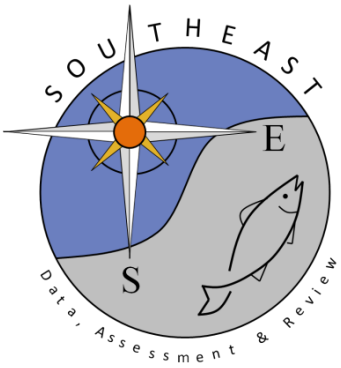

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SUMMARY

This document details length composition data sources submitted for sandbar shark for possible use in SEDAR 101 HMS Sandbar shark stock assessment. Sandbar shark (*Carcharhinus plumbeus*) length composition data were submitted from commercial, recreational, and scientific surveys and summarized here. The goal for all of the data is to provide numbers of available length data (and their distribution) by species so that the assessment team can decide which stock assessment software to use. Data were binned into 2,5, and 10 cm fork length increments by year (terminal year 2024) and matrices were extracted for stock assessment model input. Length compositions were plotted to show length-frequency histograms. Twenty-two data sources were submitted for a total of 121,161 records collected for sandbar sharks between 1974 and 2024. Variability in years of data available and the size distributions of recorded specimens was present among the different data sources. Fishery-dependent (commercial and recreational surveys) contributed records 85,574 whereas fishery-independent surveys contributed 37,407 records.

Methods

Length composition data for sandbar shark were submitted prior to the SEDAR101 Data Workshop, to take place April 21-24, 2026. The goal for all of the data is to provide numbers of available length data (and their distribution) so that the assessment team can decide which stock assessment software to use for sandbar. The available length composition data were obtained from fisheries-independent scientific surveys as well as from fishery-dependent sources from commercial and recreational catch data and were available form 1974-2024 (**Table** 1), depending on the data source. Data were recorded by research fisheries biologists, scientific observers, commercial, and recreational fishers from various surveys and fishing events. Fork length measurements (cm FL) were used if available and data were converted to cm FL from other measured length units with the equation for combined sexes given in SEDAR101-RD-04. Data were subset into three regions: Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean. Data were further subset into males, females, unknown sex, and combined sex for each region. Length data were then binned by year in 2, 5, and 10 cm FL increments and the matrices extracted for stock assessment model input. Length-frequency histograms were created for each matrix.

Fishery-Dependent Data Sources

Recreational Catches: Marine Recreational Information Program (MRIP), Southeast Region Head Boat Survey (SRHS), Large Pelagic Survey (LPS), and Maryland Department of Natural Resources (MDNR)

Length composition data for sandbar sharks were available via the Marine Recreational Information Program (MRIP) and the Southeast Region Headboat Survey (SRHS) operated by the Southeast Fisheries Science Center (SEFSC) Beaufort, SC Laboratory. These data were available from 1981-2024 (n = 1,859)(**Table** 2 & 3). Additional length composition data from 2003 – 2011 (n = 14) were available via the Large Pelagic Survey operated by the Northeast Fisheries Science Center (**Table** 2 &3). Personal logbooks of recreational charter captain, Mark Sampson, are archived in a database at Maryland Department of Natural Resource (MDNR),

these data were available from 2007-2024 (n = 2,218) (**Table**2). Data were split into three regions Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean.

Northeast Fisheries Observer Program (NEFOP)

Sandbar shark length composition data were available from 1995-2024 from observer coverage of the Northeast Fisheries Observer Program in the Atlantic Ocean (**Table** 2 & 3). Gears included were commercial trawl (n=3,188) and gillnet (n = 6433)(**Table** 2; **Figure**1).

Pelagic Longline Observer Program (POP)

Length composition data were available from 1992-2024 (n=1643) from observer coverage in the large pelagic fisheries longline fleet. Data were split into three regions Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean.

Southeast Reef fish Observer Program (SRFOP)

Observer coverage of the Southeast Reef Fish Observer Program provided length data from 2006 – 2024 (**Table** 2 & 3). Length composition data for sandbar shark were available from vertical longlines (n = 50) and bottom longline (n = 510). Data were split into three regions Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean.

Shark Bottom Longline Observer Program (SBLOP)

Observations by at-sea observers of the shark-directed bottom longline fishery in the Atlantic Ocean and Gulf of America were available from 2005-2021(n = 3,703) (**Table** 2 & 3). Data were split into three regions Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean.

Shark Research Fishery (SRF)

Length composition data were available from 2008-2024 (n = 41,960) from the Shark Research Fishery. Matrices were created for the Gulf of America, Atlantic Ocean, and regions.

Southeast Gillnet Observer Program

The Florida-Georgia Shark Gillnet Fishery observer program provided length composition data for sandbar sharks from 2008-2024 (n = 151)(**Table** 2 & 3). Data were split into three regions Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean.

University of Florida

Length composition data were available from 1993-2005 (n = 22,025) from the University of Florida shark-directed bottom longline. Matrices were created for the Gulf of America, Atlantic Ocean, and regions combined.

Fishery-Independent Data Sources

NOAA Fisheries Cooperative Atlantic States Shark Pupping and Nursery Longline Survey

Length compositions from longline surveys were available from 1998-2024 providing data for 6,593 animals (**Table** 4). Matrices were created for the Atlantic Ocean region.

Dauphin Island Sea Lab Bottom Longline

Length composition data were available for 763 animals from 2010-2024 (**Table** 4). Matrices were created for the Gulf of America region.

Delaware Bay Longline

Length composition data were available for 3,099 animals from 2006-2024 (**Table** 4). Matrices were created for the Atlantic Ocean region.

Mote Marine Laboratory Surveys

Length composition data were available from 2002-2022. Logline gear captured 148 animals while drumline gear captured 118 animals and the gear description was unavailable for one individual (**Table** 4). Matrices were created for the Gulf of America region.

NOAA Northeast Fisheries Science Center Longline Survey

Length composition data were available from 1996-2024 from 9,756 animals in the Atlantic Ocean region (**Table** 4).

NOAA Fisheries Southeast Fisheries Science Center Bottom Longline

Length Compositions were provided for 2,183 individuals from 1995-2024 (**Table** 4). Matrices were created for the Gulf of America, Atlantic Ocean, and regions combined.

Southeast Area Monitoring and Assessment Program Bottom Longline (SEAMAP)

Surveys spanned from South Carolina to the east coast of Florida providing length compositions for 4,111 animals from 2006-2024 (**Table** 4).

Virginia Institute of MARINE Science (COASTSPAN) Longline

Length composition data were available from 2012-2024 for 4,889 animals. Matrices were created for the Atlantic Ocean region.

Virginia Institute of Marine Science Longline

Length compositions were available from 1974-2024 for 5, 744 animals. Matrices were created for the Atlantic Ocean region (**Table** 4).

Results

Twenty-two data sources were submitted for possible use in the assessment, some with multiple gear types (**Table** 2 & 4). Fishery Dependent (commercial and recreational surveys) contributed records 85,574 (**Figure** 1, 2, & 4) whereas fishery-independent surveys contributed 37,407 records (**Figure** 3 & 5). Bottom longline gear was the primary gear that captured sandbar sharks, other gears used include pelagic and vertical longlines, drumlines, trawls, gillnets, seine, spear, and hook and line/rod and reel (**Figure** 1-5). Length compositions of each data source of males, females, unknown sex, and sexes combined were plotted to provide visualization of available data. Example plots of one fishery-dependent, one fishery-independent, and one recreational survey are provided below.

Example Length Frequency compositions for HMS sandbar sharks submitted for the SEDAR101 Data Workshop for possible inclusion in the SEDAR101 stock assessment.

1. Length composition data for sandbar shark were available from the Shark Bottom Longline Observer Program (SBLOP) (as described in the methods section of the main text and summarized in **Table** 2 and 3 above; **Figure** 11-13). Data were split into three regions: Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean regions.

2. Length composition data for sandbar shark were available from the National Marine Fisheries Service Shark Bottom Longline Survey operated by the Southeast Fisheries Science Center Pascagoula Mississippi Laboratory (as described in the methods section of the main text and summarized in **Table** 2 and 3 above; **Figure** 14-16). Data were split into three regions: Gulf of America, Atlantic Ocean, and combined Gulf of America and Atlantic Ocean regions.

3. Length Compositions for sandbar sharks were available from the Large Pelagic Survey (as described in the methods section of the main text and summarized in **Table** 2 and 3 above; **Figure** 17-18). Data was available for the Atlantic Ocean Region.

Tables

Table 1. summarizes the available length composition data for the sandbar shark (*Carcharhinus plumbeus*) spanning the period from 1974 to 2024. The data are categorized as either fishery-independent or fishery-dependent. Recreational data is included in the fishery-dependent data summaries. The term "Estimated" indicates that the fork length (FL) measurements were approximations rather than exact measurements. "Unknown" indicates fork length measurements for which information regarding whether they were measured or exact was not provided.

Data Sources	Sandbar Shark
Fishery-Independent	31529
Estimated Fishery-Independent	5873
Unknown Fishery-Independent	5
Total	**37407**
Fishery-Dependent	64777
Estimated Fishery-Dependent	18956
Unknown Fishery-Dependent	21
Total	**83574**
Grand Total	**121161**

Table 2. Fishery-dependent data sources from commercial and recreational catches broken up by gear type for possible use in the assessment.

Data Source	Years of Coverage	Gear Type	Sandbar (Estimated)	Sandbar (Measured)	Sandbar (Unknown)	Total
Recreational Catches						
MRIP	1986-2014					
		Unknown	0	105	0	105
SRHS	1981-2024					
		Gillnet	0	10	0	10
		Hook & Line	0	1672	0	1672
		Seine	0	3	0	3
		Spear	0	5	0	5
		Unknown	0	64	0	64
LPS	2003-2011					
		Hook & Line	0	14	0	14
MDNR	2007-2024					
		Hook & Line	0	2218	0	2218
Northeast Fisheries Observer Program (NEFOP)	1995-2024					
		Gillnet	2697	3736	0	6433
		Trawl	1488	1700	0	3188
Pelagic Longline Observer Program (POP)	1992-2024					
		Pelagic Longline	1362	281	0	1643
Reef Fish (REEF)	2006-2024					
		Bottom Longline	471	39	0	510
		Vertical Longline	46	4	0	50
Shark Observer Program (SBLOP)	2005-2021					
		Bottom Longline	794	2909	0	3703
Shark Research Fishery (SRF)	2008-2024					

Data Source	Years of Coverage	Gear Type	Sandbar (Estimated)	Sandbar (Measured)	Sandbar (Unknown)	Total
		Bottom Longline	12069	29891	0	41960
Southeast Gillnet (GILL)	2008-2024					
		Gillnet	29	101	21	151
University of Florida (UF)	1993-2005					
		Bottom Longline	0	22025	0	22025
Total(s)			18956	64777	21	**83574**

Table 3. Fishery-dependent data sources from commercial and recreational catches broken up by status (retained/discarded) for possible use in the assessment.

Data Source	Years of Coverage	Status	Sandbar (Estimated)	Sandbar (Measured)	Sandbar (Unknown)	Total
Recreational Catches						
MRIP	1986-2014					
		Unknown	0	105	0	105
SRHS	1981-2024					
		Unknown	0	1754	0	1754
LPS	2003-2011					
		Unknown	0	14	0	14
MDNR	2007-2024					
		Unknown	0	2218	0	2218
Northeast Fisheries Observer Program (NEFOP)	1995-2024					
		Retained	2491	2946	0	5437
		Discarded	1694	2490	0	4184
Pelagic Longline Observer Program (POP)	1992-2024					
		Retained	9	210	0	219
		Discarded	1351	71	0	1422
		Unknown	2	0	0	2
Reef Fish Bottom Longline	2006-2024					
		Retained	9	5	0	14
		Discarded	461	34	0	495
		Unknown	1	0	0	1
Reef Fish Vertical Longline	2019-2024					
		Retained	1	0	0	1
		Discarded	46	3	0	49
Shark Observer Program (SBLOP)	2005-2021					
		Retained	310	2772	0	3082
		Discarded	484	137	0	621

Data Source	Years of Coverage	Status	Sandbar (Estimated)	Sandbar (Measured)	Sandbar (Unknown)	Total
Shark Research Fishery (SRF)	2008-2024					
		Retained	9371	29395	0	38766
		Discarded	2494	438	0	2932
		Unknown	204	58	0	262
Southeast Gillnet (GILL)	2008-2024					
		Unknown	29	101	21	151
University of Florida (UF)	1993-2005					
		Unknown	0	22025	0	22025
Total(s)			18957	64776	21	**83574**

Table 4. Fishery-independent data broken up by gear type for potential use in the assessment.

Data Source	Years of Coverage	Gear	Sandbar (Estimated)	Sandbar (Measured)	Sandbar (Unknown)	Total
Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN)						
Northeast Atlantic	2001-2024					
		Longline	78	2883	5	2966
Southeast Atlantic	1998-2024					
		Longline	19	3608	0	3627
		Unknown	0	2	0	2
Dauphin Island Sea Lab Bottom Longline	2010-2024					
		Bottom Longline	0	763	0	763
Delaware Bay Longline	2006-2024					
		Longline	88	3011	0	3099
Mote Marine Lab	2002-2022					
		Drumline	0	118	0	118
		Longline	0	148	0	148
		Unknown	0	1	0	1
NEFSC	1996-2024					
		Longline	4692	5064	0	9756
NMFS Bottom Longline	1995-2024					
		Bottom Longline	734	1449	0	2183
Southeast Area Monitoring and Assessment Program	2006-2024					
		Longline	262	3849	0	4111
Virginia Institute Marine Science (COASTSPAN) Longline	2012-2024					
		Bottom Longline	0	4889	0	4889

Data Source	Years of Coverage	Gear	Sandbar (Estimated)	Sandbar (Measured)	Sandbar (Unknown)	Total
Virginia Institute Marine Science Longline	1974-2024					
		Bottom Longline	0	5744	0	5744
Total			5873	31529	5	**37407**

Figures

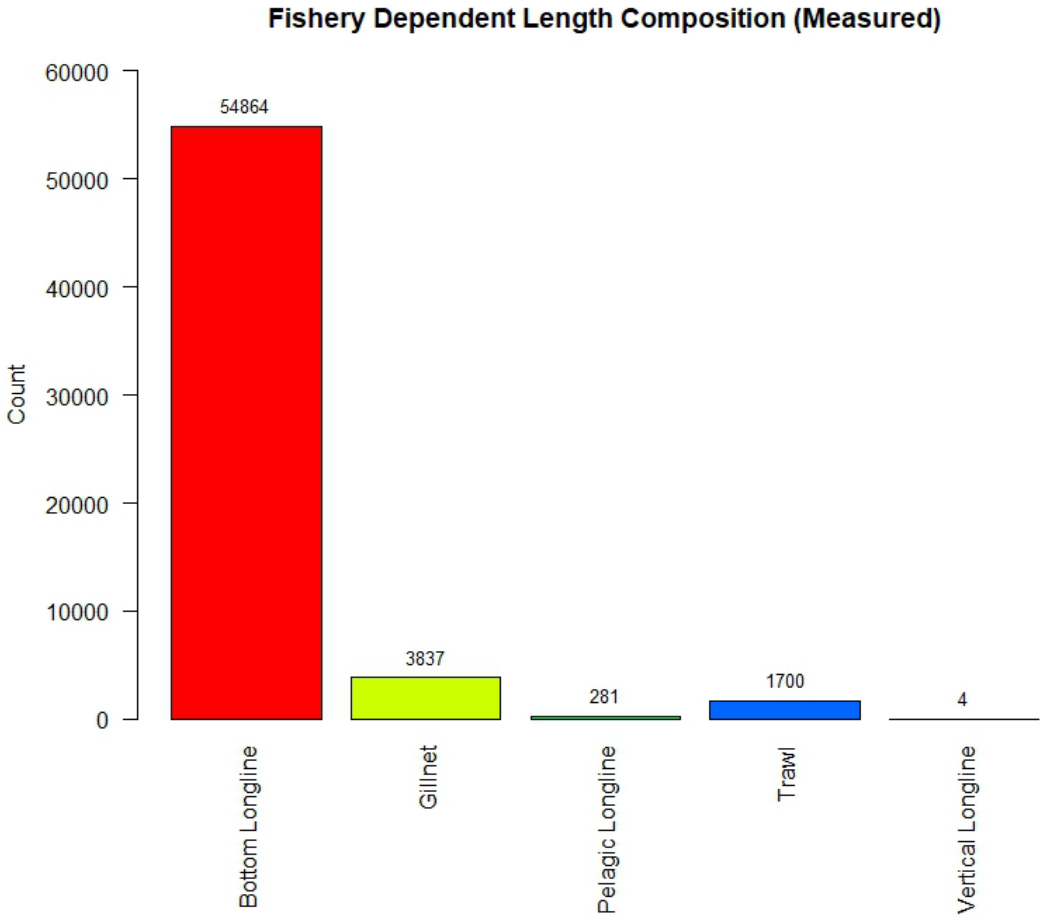

Figure 1. Length composition for sandbar sharks from fishery-dependent data sources where lengths were directly measured (not estimated). Gear types are combined for the Atlantic Ocean and Gulf of America regions.

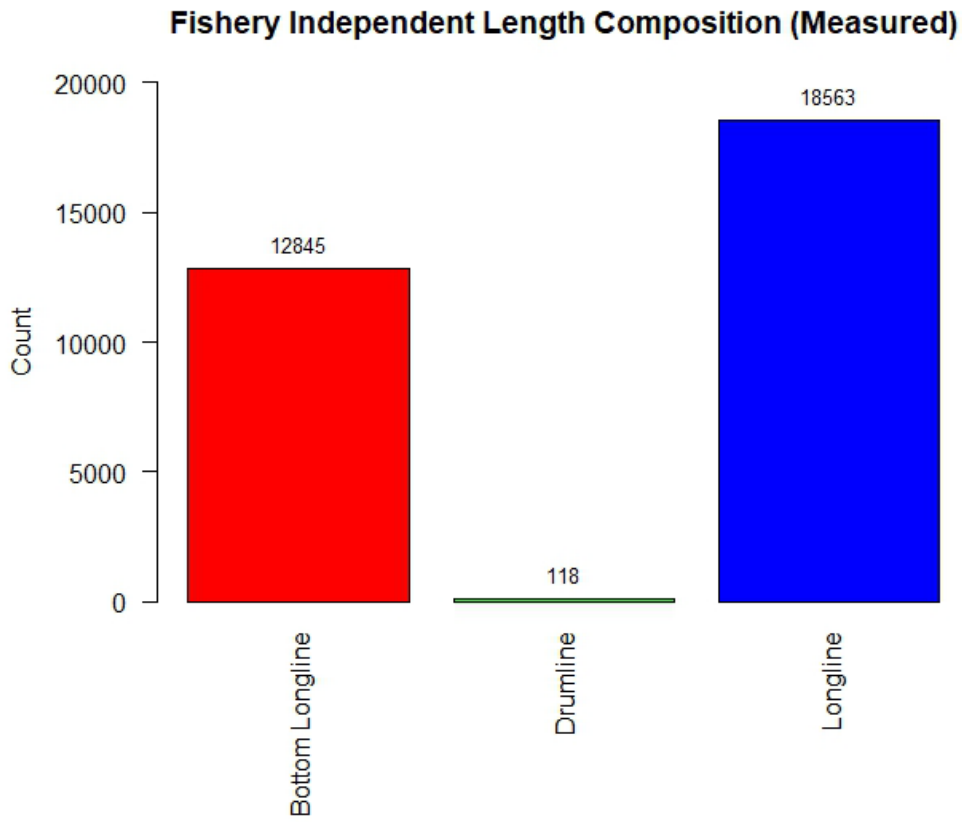

Figure 2. Length composition for sandbar sharks from fishery-independent data sources where lengths were directly measured (not estimated). Gear types are combined for the Atlantic Ocean and Gulf of America regions.

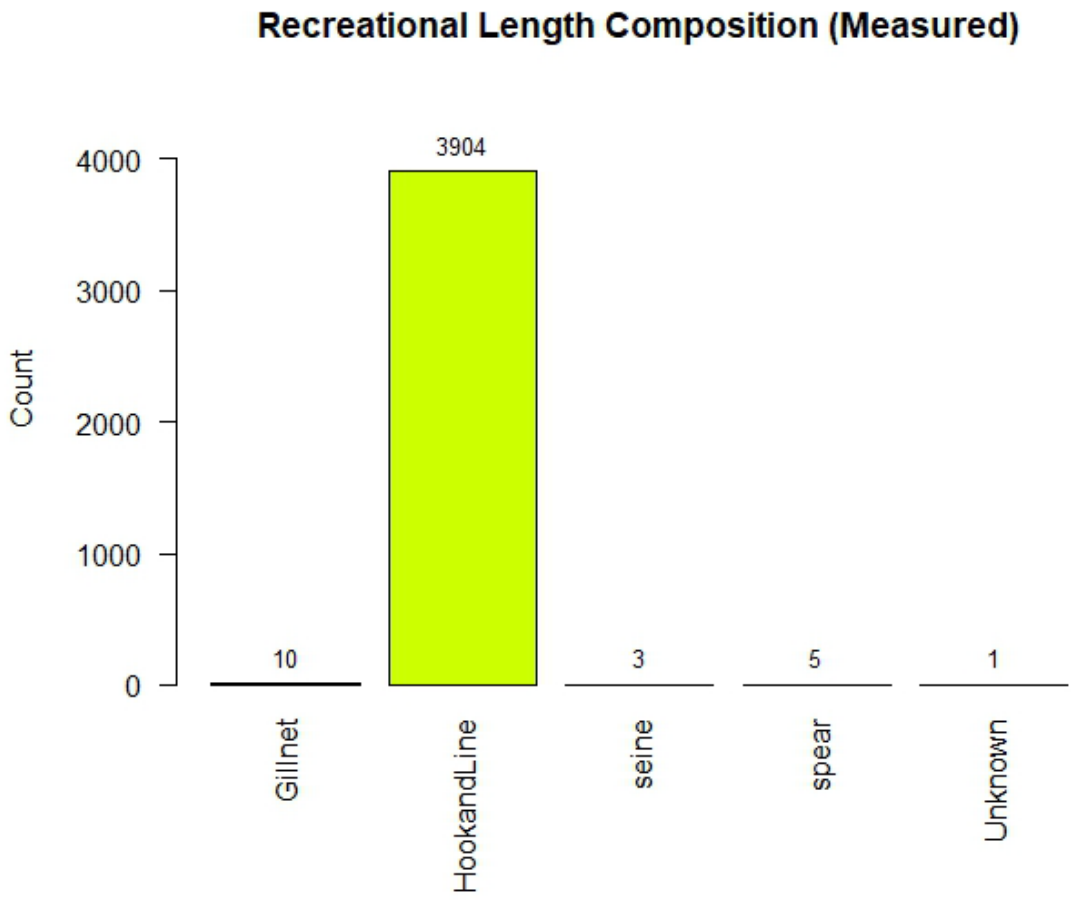

Figure 3. Length composition for sandbar sharks' recreational data sources where lengths were directly measured (not estimated). Gear types are combined for the Atlantic Ocean and Gulf of America regions.

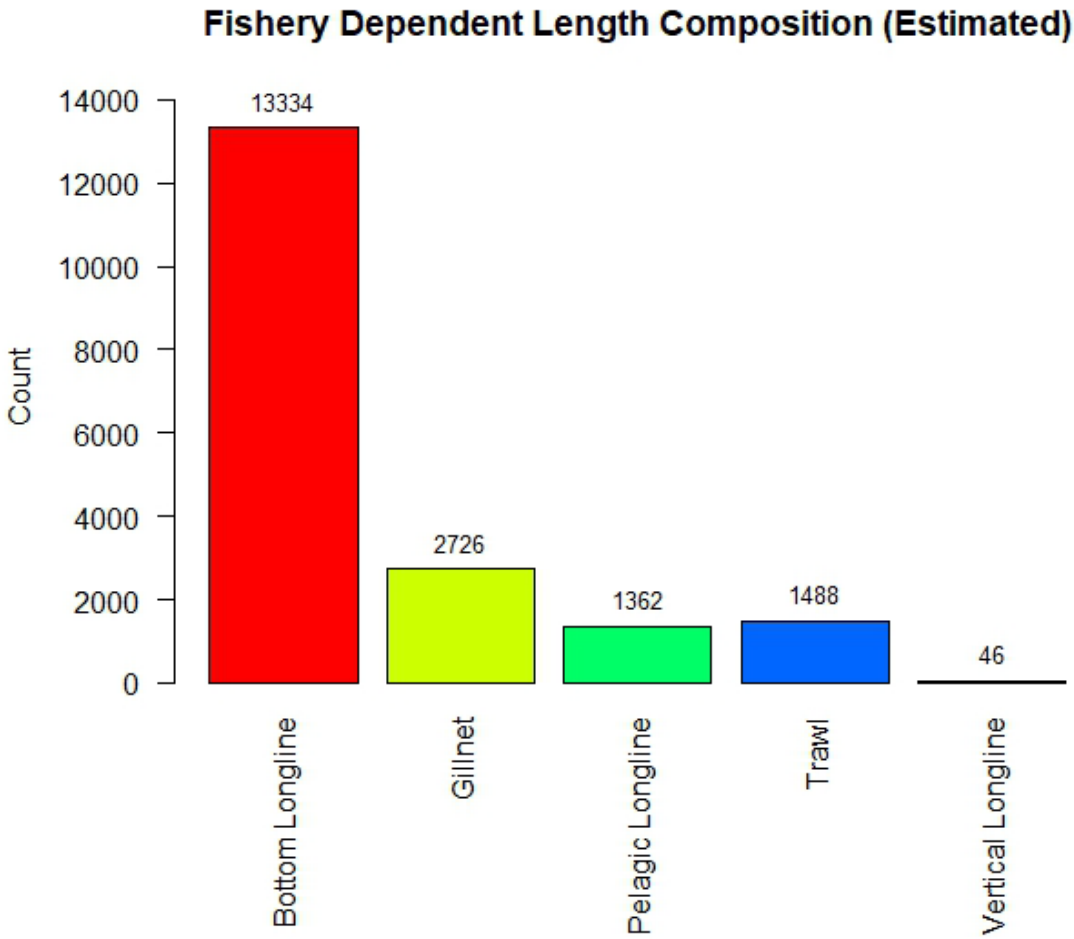

Figure 4. Length composition for sandbar sharks from fishery-dependent data sources where lengths were estimated. Gear types are combined for the Atlantic Ocean and Gulf of America regions.

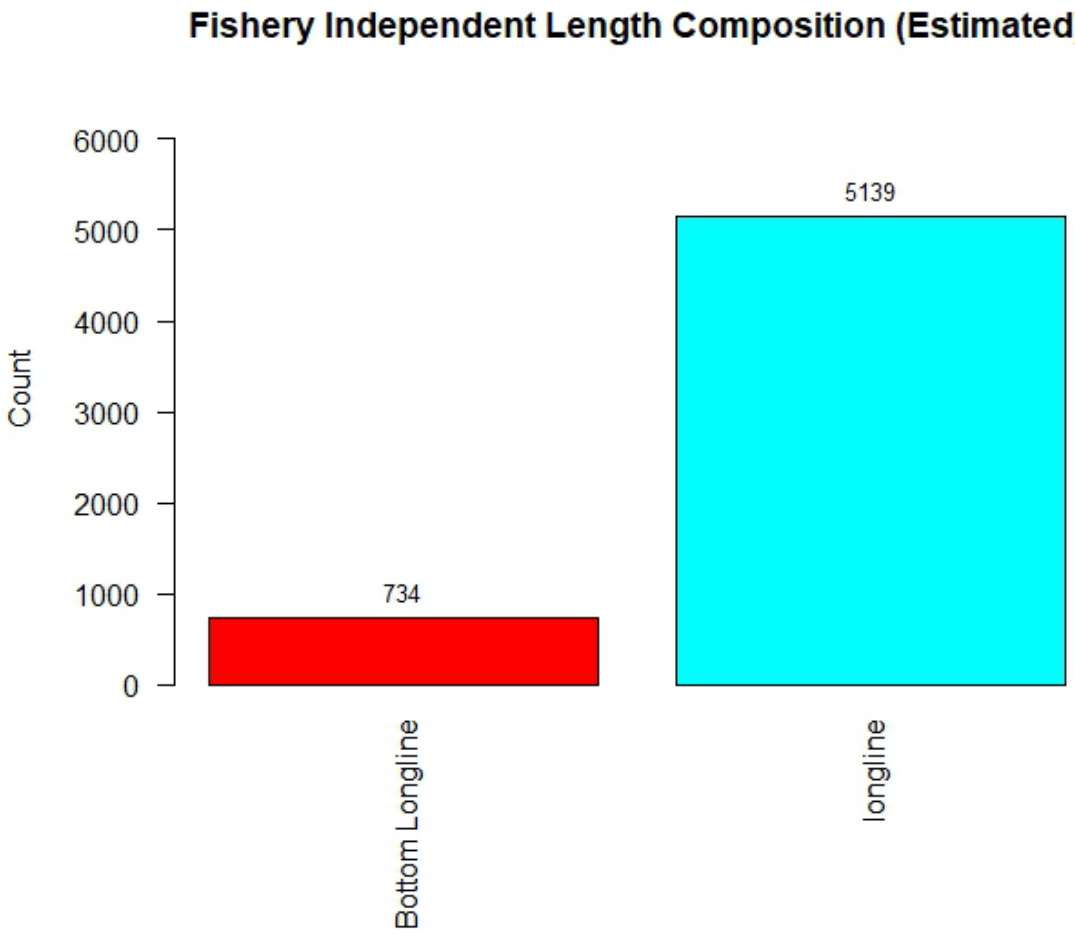

Figure 5. Length composition for sandbar sharks from fishery-independent data sources where lengths were not estimated. Gear types are combined for the Atlantic Ocean and Gulf of America regions.

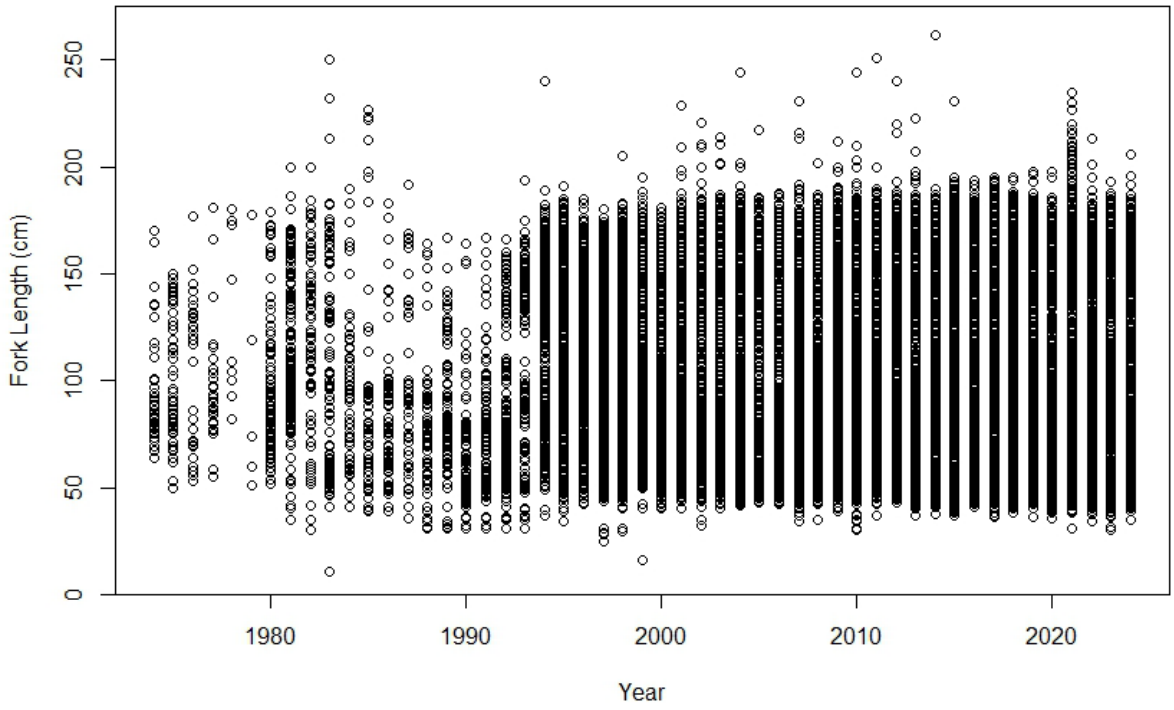

Figure 6. Length composition for sandbar sharks across available years where lengths were directly measured (not estimated) for potential use in assessment. Fishery-dependent and independent data are combined.

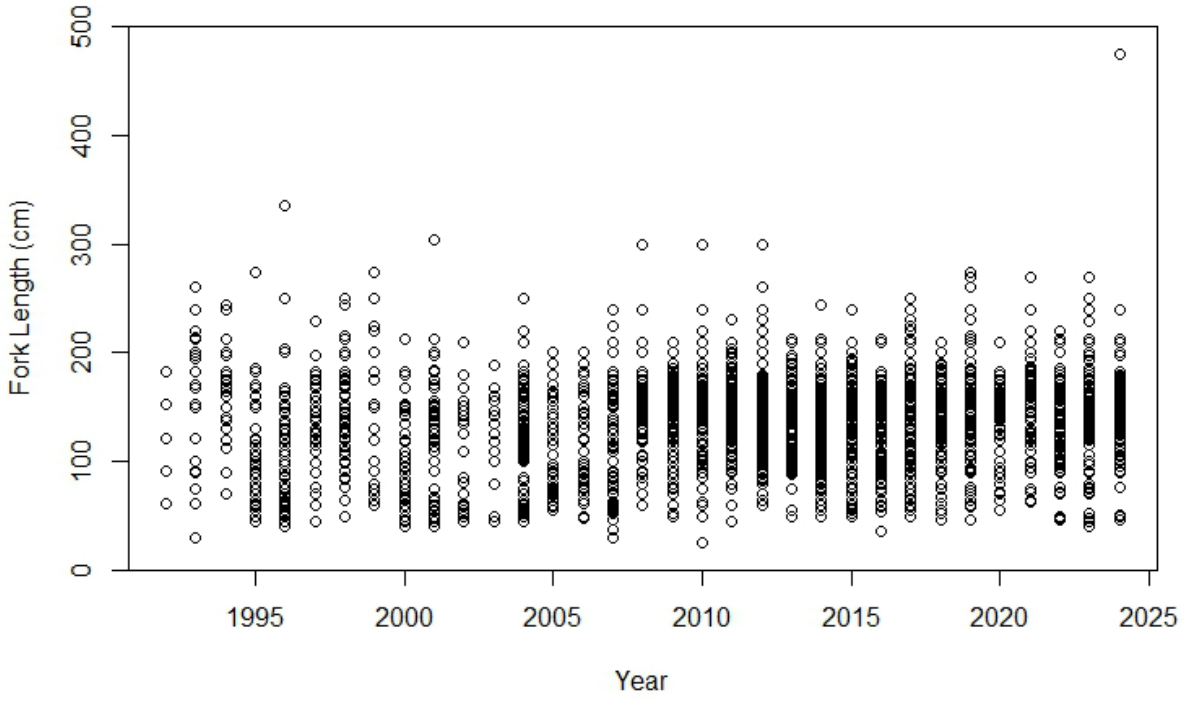

Figure 7. Length composition for sandbar sharks across available years where lengths were estimated for potential use in assessment. Fishery-dependent and independent data are combined.

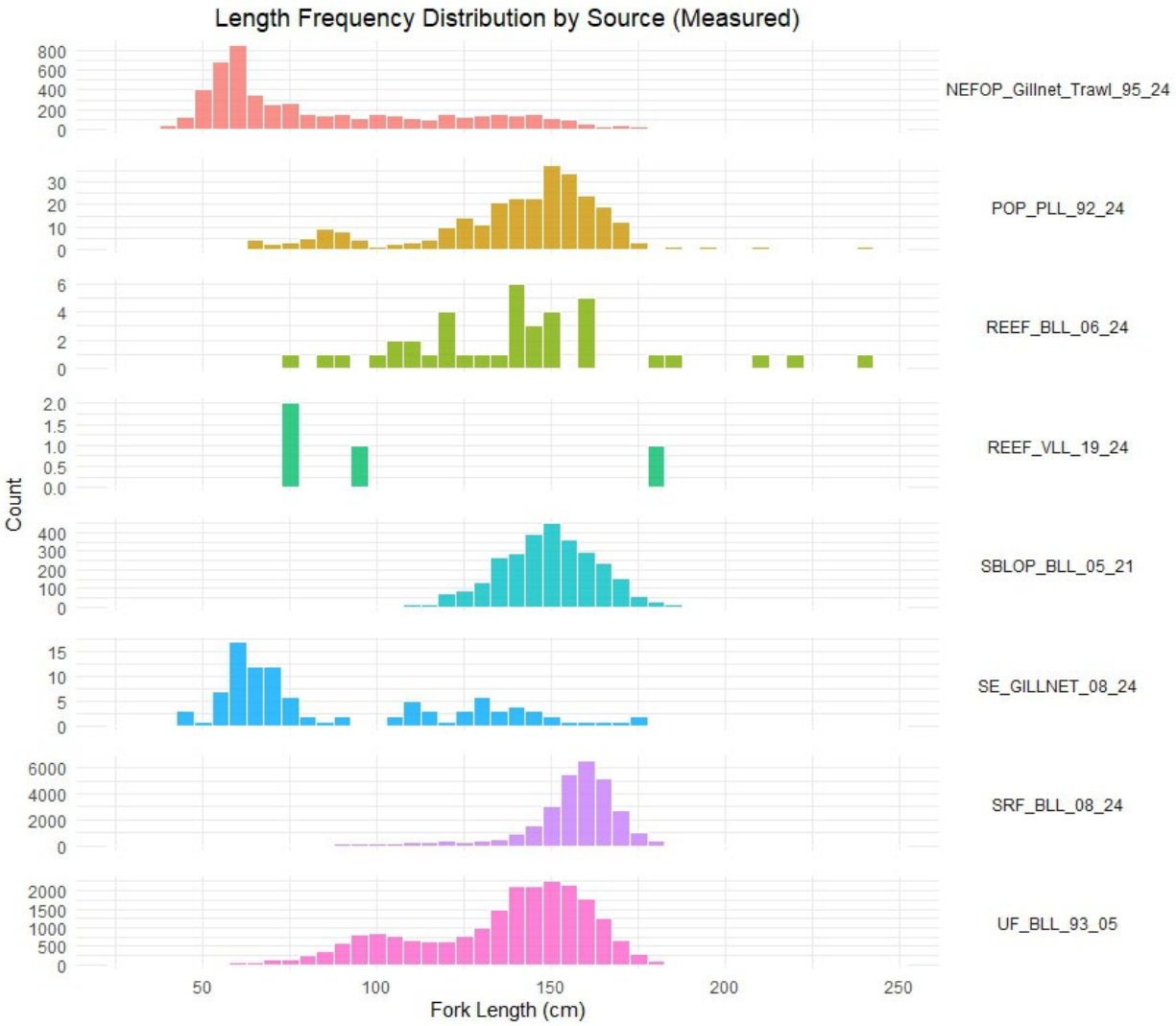

Figure 8. Length composition of sandbar shark from fishery-dependent data sources. Stacked histogram showing the counts of measured (not estimated) fork length measurements. The y-axis is scaled to total count per bin to allow for comparison across different total counts.

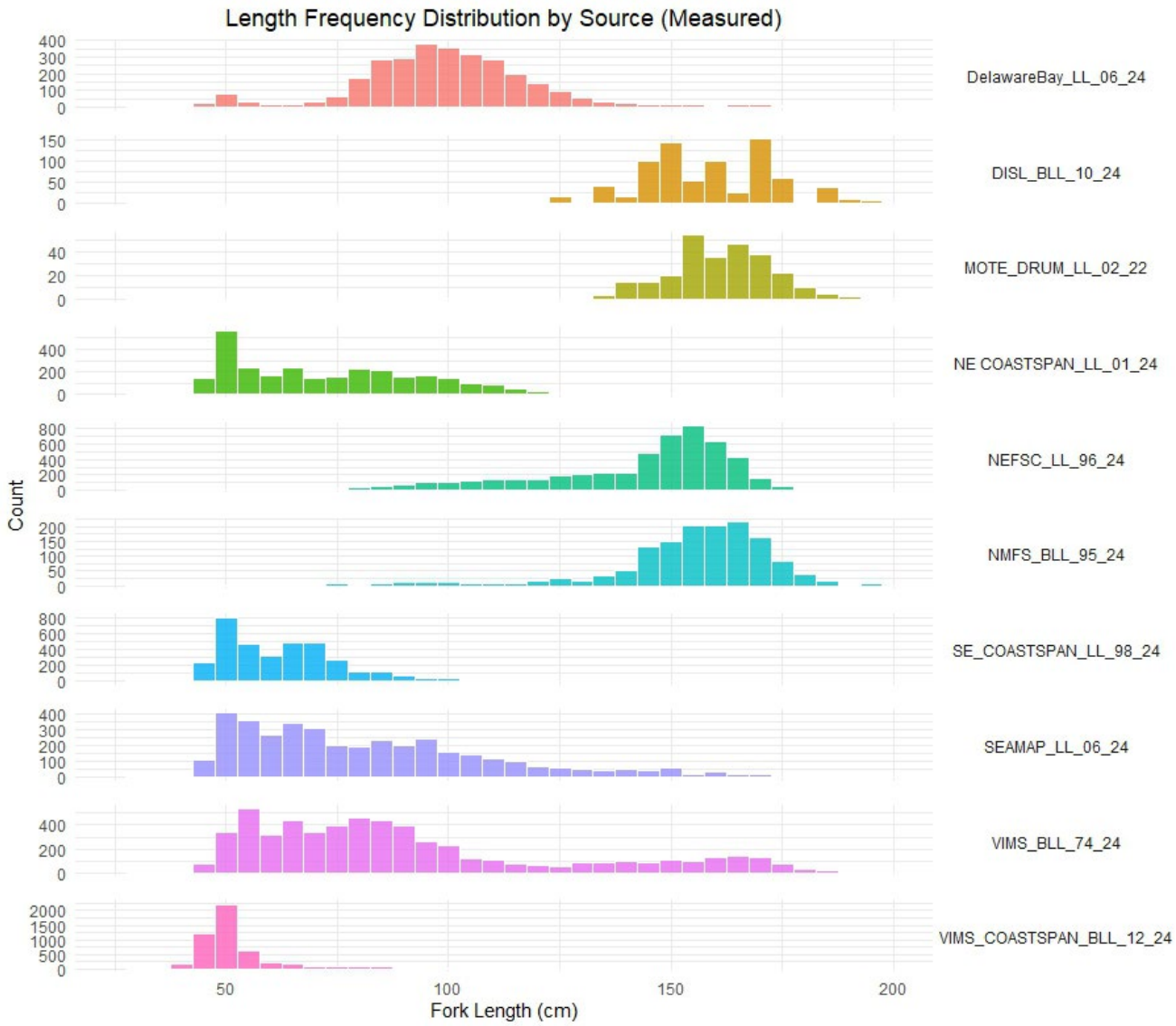

Figure 9. Length composition of sandbar shark from fishery-independent data sources. Stacked histogram showing the counts of measured (not estimated) fork length measurements. The y-axis is scaled to total count per bin to allow for comparison across different total counts.

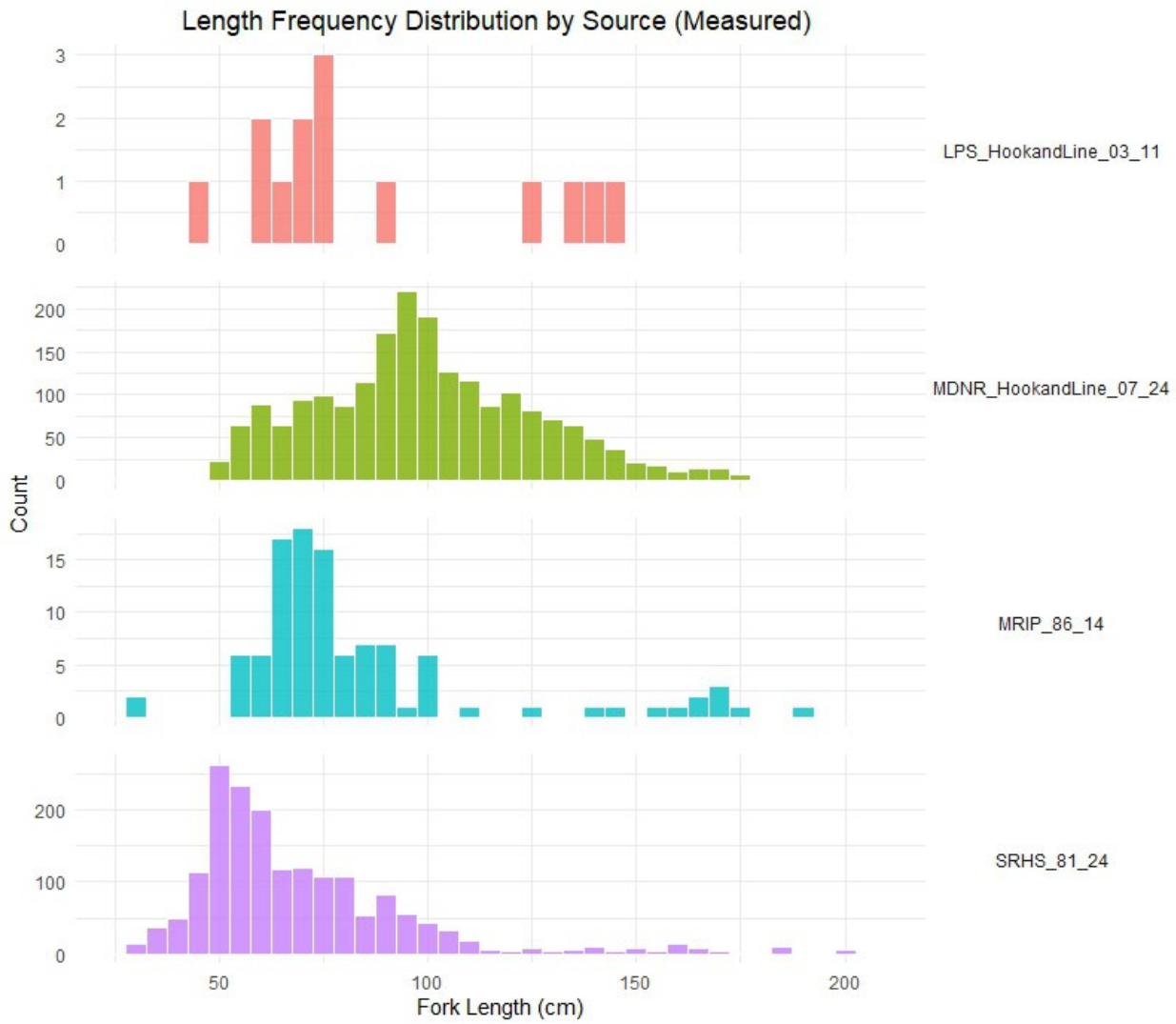

Figure 10. Length composition of sandbar shark from recreational data sources. Stacked histogram showing the counts of measured (not estimated) fork length measurements. The y-axis is scaled to total count per bin to allow for comparison across different total counts.

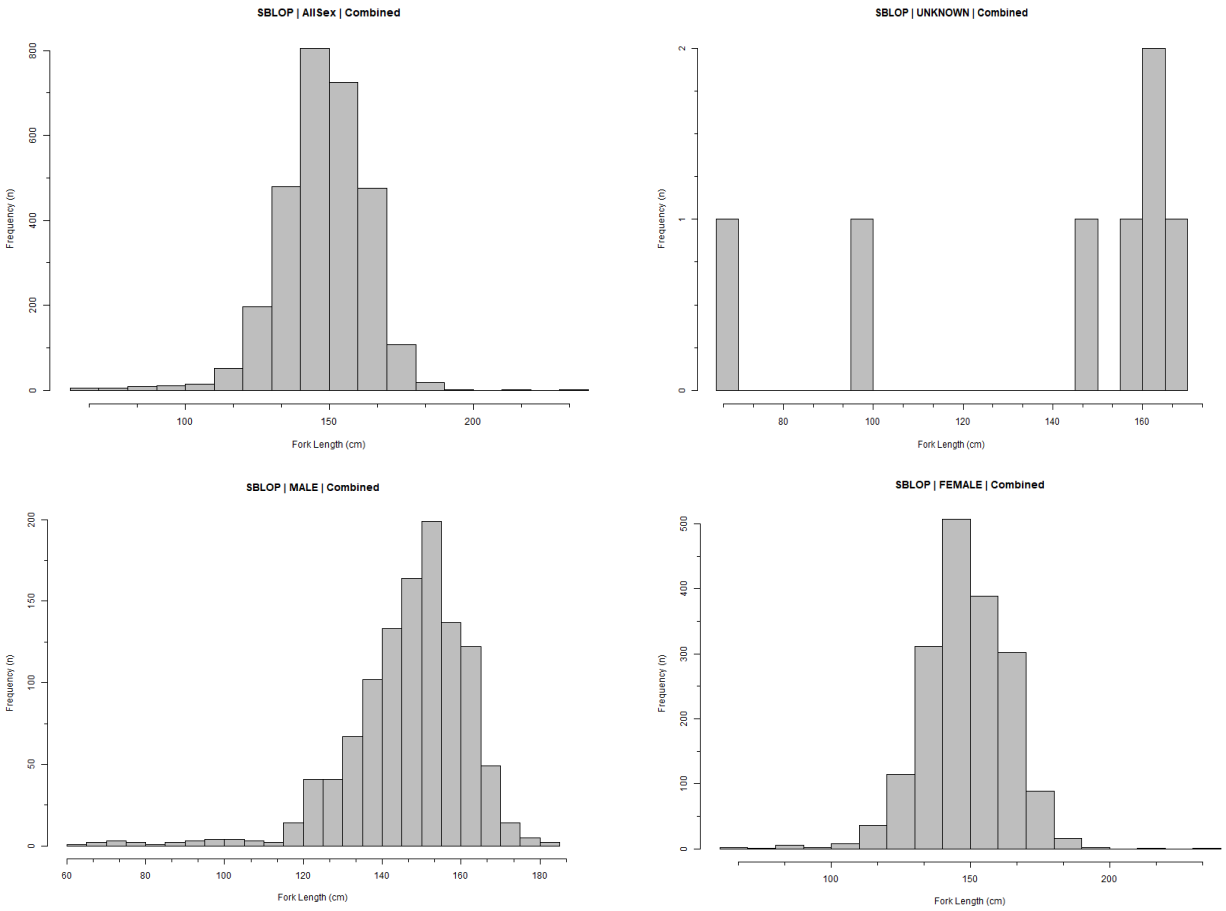

Figure 11. Fishery-dependent shark bottom longline observer program length composition data for sandbar shark for the combined Gulf of America and Atlantic regions combined.

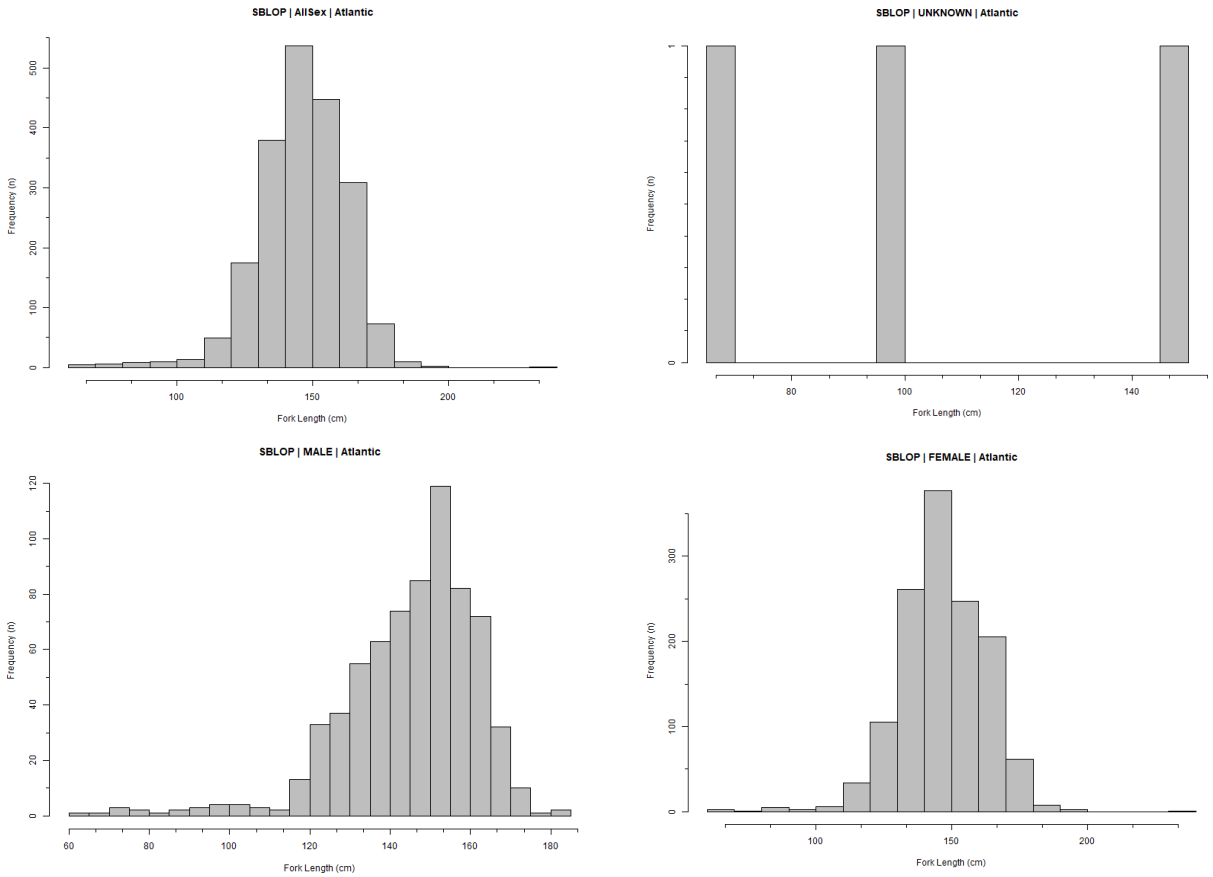

Figure 12. Fishery-dependent shark bottom longline observer program length composition data for sandbar shark for the Atlantic Ocean region.

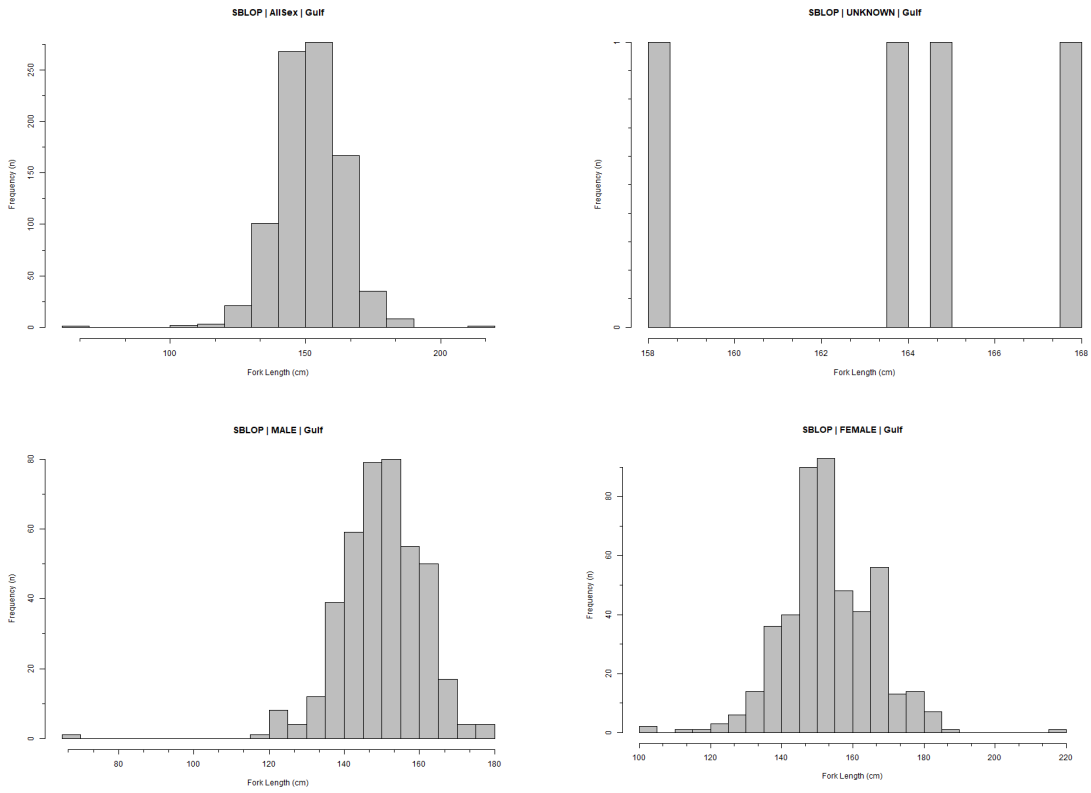

Figure 13. Fishery-dependent shark bottom longline observer program length composition data for sandbar sharks in the Gulf of America region.

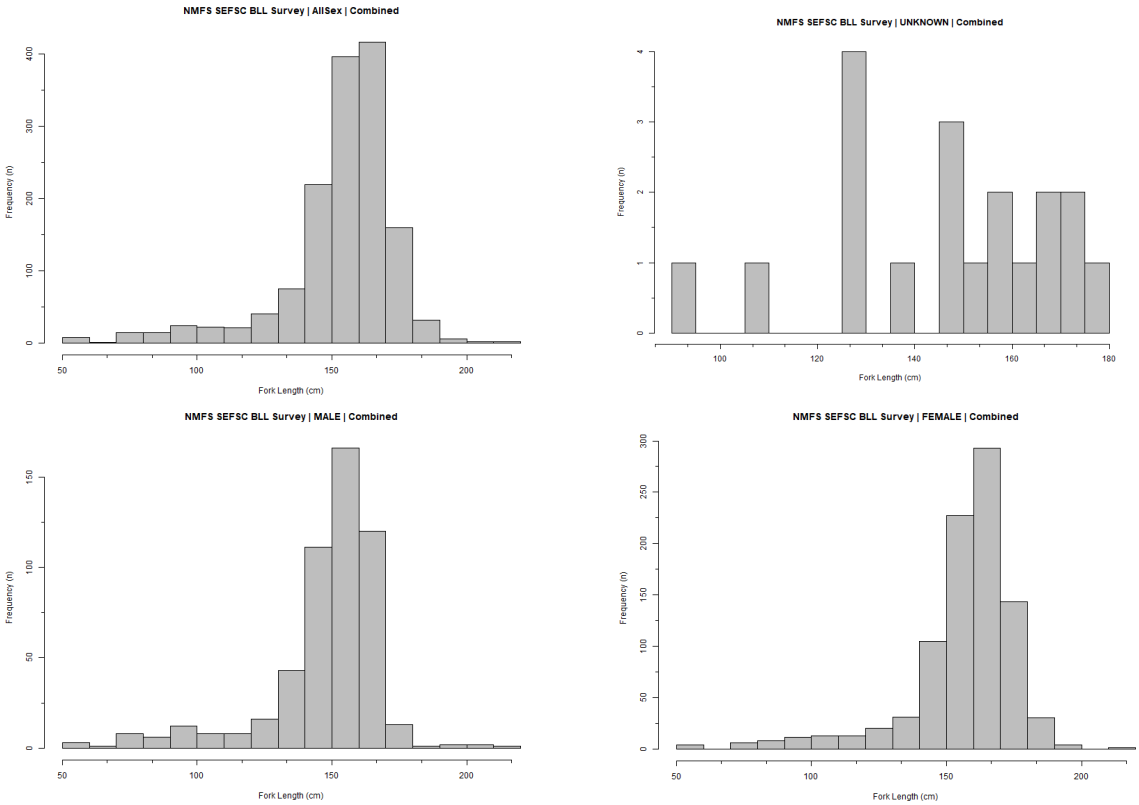

Figure 14. Fishery-independent NMFS bottom longline survey length composition data for the Gulf of America and Atlantic Ocean regions combined.

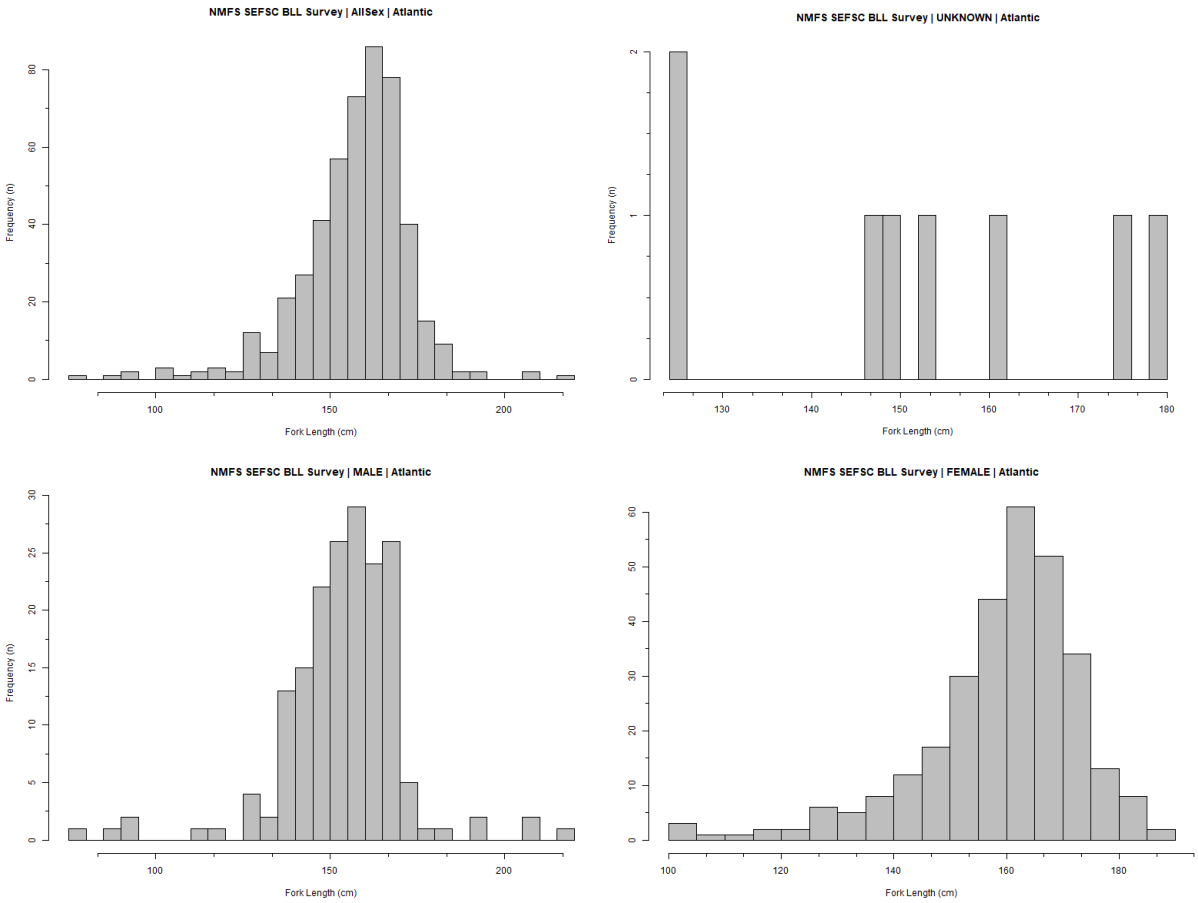

Figure 15. Fishery-independent NMFS bottom longline survey length composition data for sandbar shark for the Atlantic Ocean region.

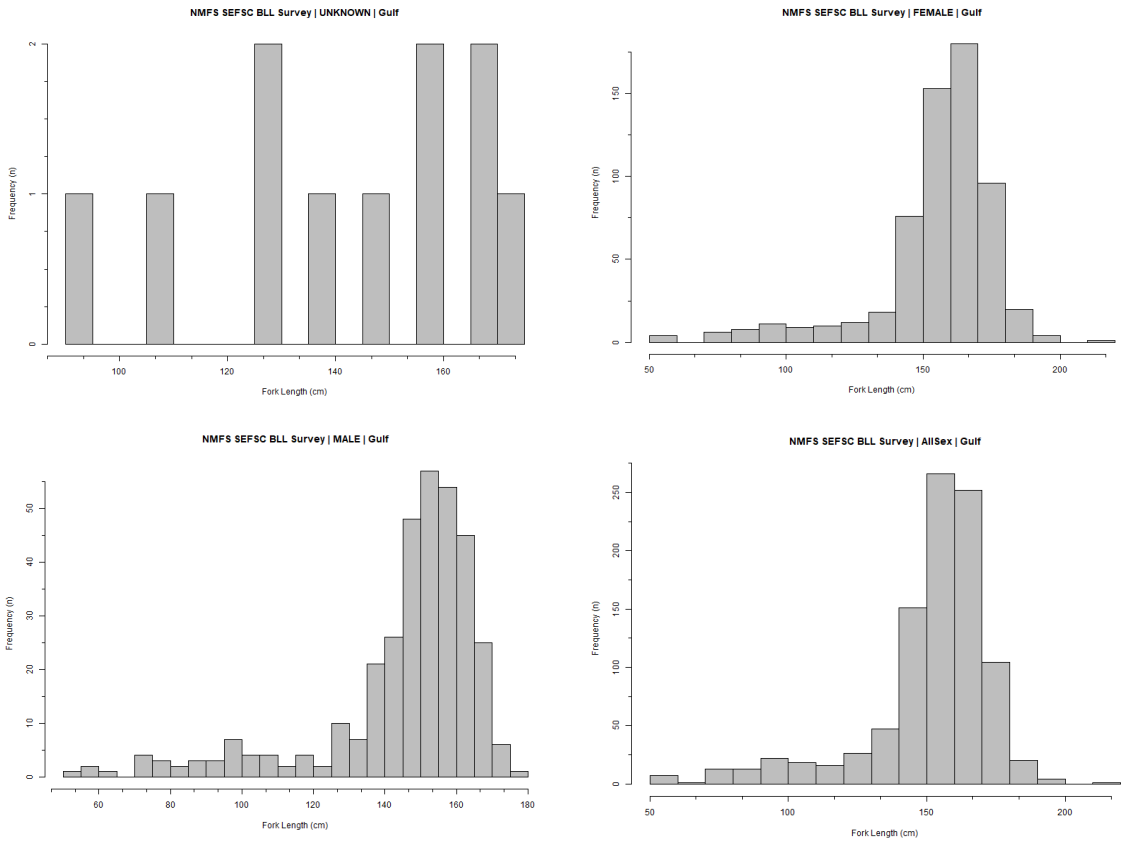

Figure 16. Fishery-independent NMFS bottom longline survey length composition data for sandbar shark for the Gulf of America region.

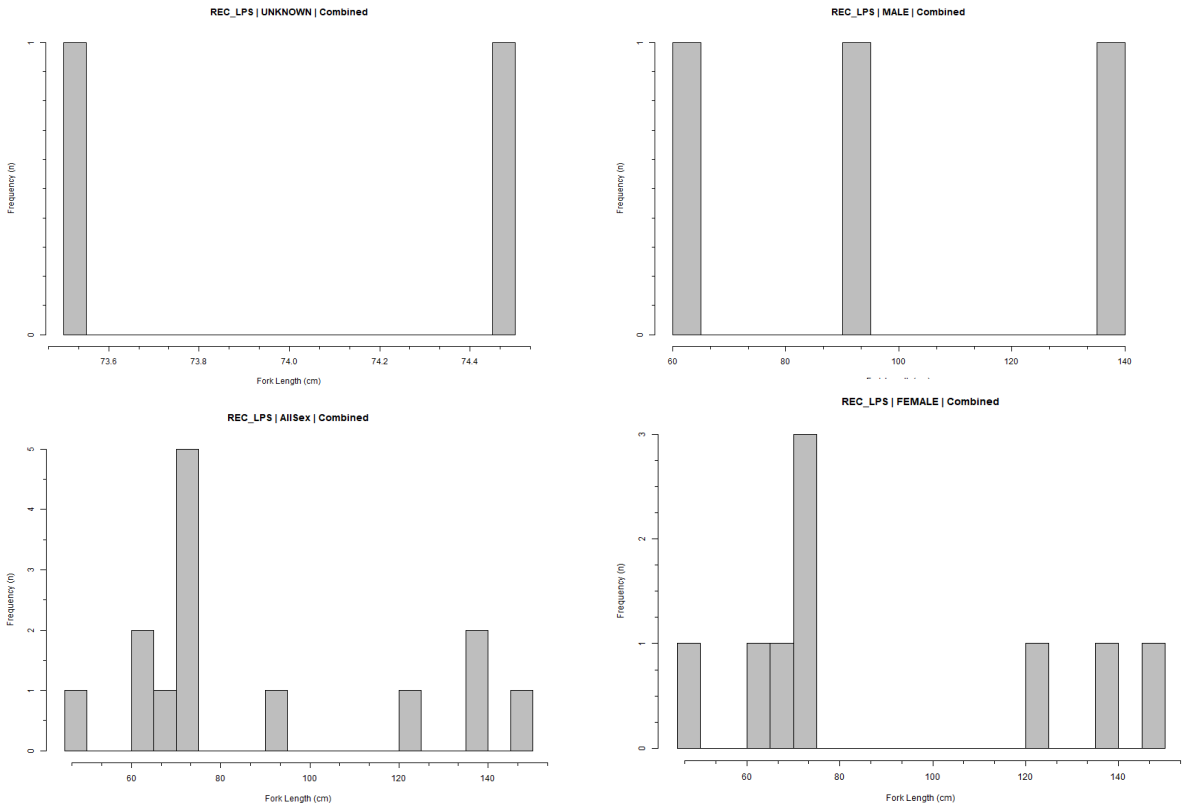

Figure 17. Recreational Large Pelagic Survey length composition data for sandbar shark for the Atlantic and Gulf of America regions combined.

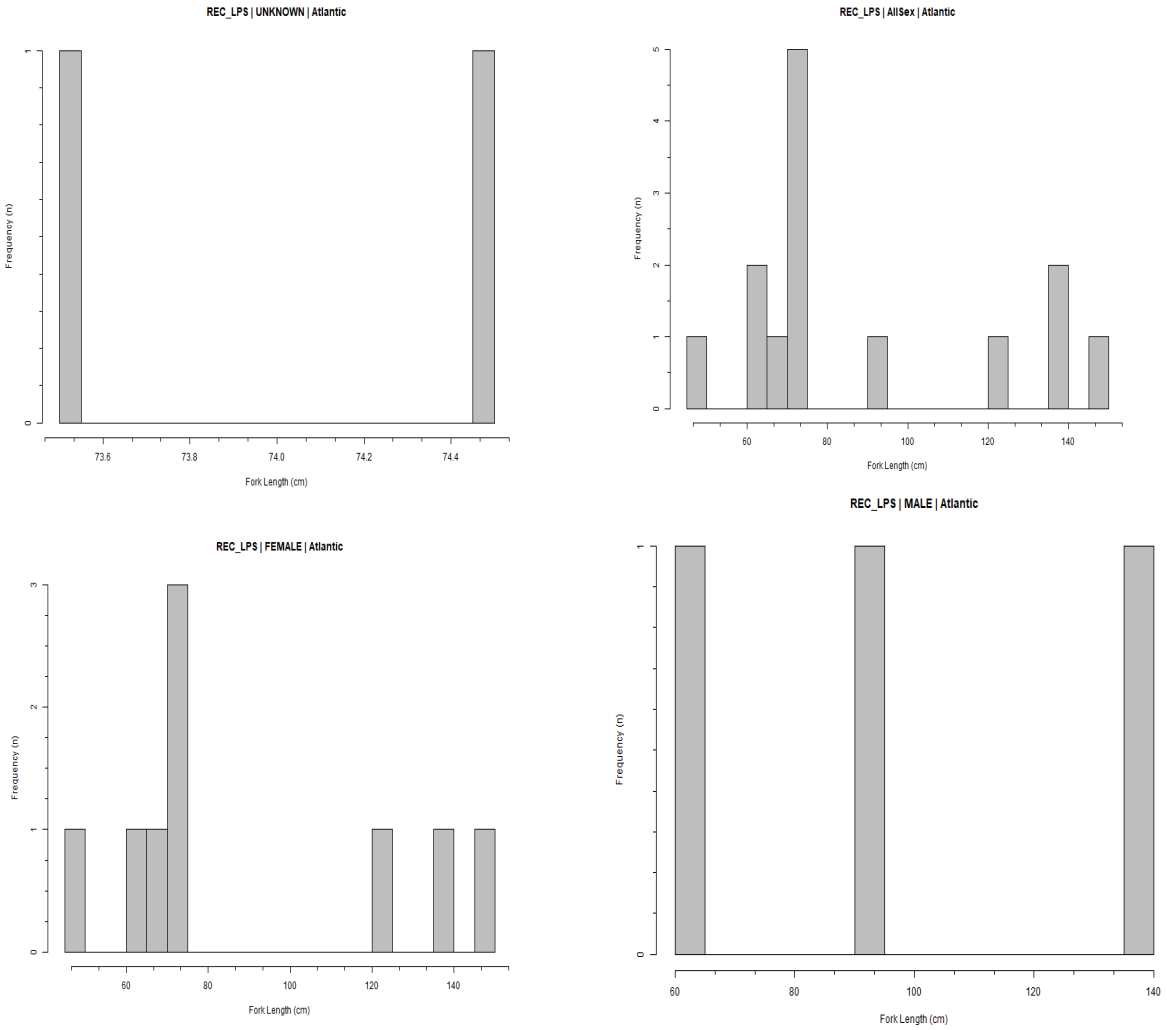

Figure 18. Recreational Large Pelagic Survey length composition data for sandbar shark for the Atlantic region.