


U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

3209 Frederic St.
Pascagoula, MS 39564

Cruise Report

Date Submitted: 11/02/2023
Platform: NOAA Ship OREGON II
Cruise Number: R2-23-03(349)
Project Title: Red Snapper/Shark Bottom Longline
Cruise Dates: 07/25/2023 - 09/28/2023

Submitted by: HANNAN.KRISTIN.M
AUREEN.1390493483 Digitally signed by
HANNAN.KRISTIN.MAUREEN.1
390493483
Date: 2023.12.05 08:43:27 -0600 **Field Party Chief** **Date:** 12/05/2023

Approved by: 
KELLISON.GREGORY.TODD.13
65849206 Digitally signed by
KELLISON.GREGORY.TODD.13
65849206
Date: 2023.12.05 15:05:13 -0500 **Division Director** **Date:** 12/05/2023

Approved by: DESFOSSE.LISA.
LYNN.1365834519 Digitally signed by
DESFOSSE.LISA.LYNN.1365834
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Date: 2023.12.05 14:45:02 -0600 **Director, SEFSC** **Date:** 12/05/2023

CRUISE RESULTS

NOAA Ship *Oregon II*, Cruise R2-23-03 (349)

INTRODUCTION

NOAA Ship *Oregon II* departed Pascagoula, MS, July 25, 2023 for the annual Red Snapper/Shark Bottom Longline Survey conducted in U.S. waters in the western North Atlantic Ocean. The purpose of the longline survey is to collect information on coastal species found between 9 and 366 m, in particular red snapper (*Lutjanus campechanus*) and sharks to gain further understanding of abundance, distribution, and life history traits of captured species. In addition, environmental data are collected to help characterize the abiotic and biotic conditions at each sampling location.

The start of the bottom longline survey was delayed 1 day past the planned start date of July 23, 2022, due to OMAO staffing issues. The start of the second leg of the survey was delayed two days due to contamination of the delivered fuel in Cape Canaveral; additional fuel wasn't able to be procured over the weekend, delaying the start of the leg until Monday, August 14, 2023. The start of the third leg of the survey was delayed two days due to Hurricane Idalia in the Gulf. The fourth leg of the survey was ended 2 days at sea earlier than planned on September 28, 2023 due to weather conditions making the remaining days unworkable. Additional weather and/or seas not permitting longline fishing operations on NOAA Ship *Oregon II* was approximately one and a half days cumulatively over the duration of the survey.

SUMMARY OF OBJECTIVES

1. Collect data within the sampling universe pertaining to the abundance and distribution of shark and red snapper populations for stock assessment purposes.
2. Collect morphological measurements and biological samples to facilitate life history studies.
3. Tag coastal teleosts and sharks to assess their residency and movement patterns.
4. Conduct Conductivity, Temperature, Depth (CTD) casts to profile water column temperature, conductivity (salinity), transmissivity, dissolved oxygen concentrations and fluorometry.
5. Characterize bottom type at each sampling site using videos, obtained from Paralenz cameras mounted on the CTD rosette.

MATERIALS AND METHODS

Sampling gear consisted of 1.842 km (1 nm) of monofilament mainline (4 mm diameter); 100 gangions constructed of a snap, 3.7 m monofilament leader (3 mm diameter) and a hook (#15/0 circle, Mustad #39960D) baited with Atlantic mackerel (*Scomber scombrus*), cut to fit the circle hooks; three weights (5-10 kg, at beginning, mid, and end of the mainline); and two radar reflective highflyers, one at each end of the mainline. Mainline length was determined as the distance between the first and last weight deployed. Vessel speed ranged from 2.5 – 3.5 kt during deployment. Gear was allowed to soak for 1 hr, defined by the time between the last highflyer deployed and the first highflyer retrieved; however, some variability in soak times occurred due to inclement weather or gear problems. Haulback speed was approximately 3.0 kt, with haulback time ranging from 30 – 120 min depending on catch rate and sea conditions.

Environmental data were collected during the longline soak time using a Seabird SBE-911+ CTD and observations by the scientific party. An Orion LDO HQ10 portable DO meter

was also used at a random station once a week, or as necessary, to verify DO readings collected by oxygen sensors on the CTD. Percent cloud cover, sea state and Forel-ule water color were recorded by scientific personnel during the CTD cast. A Paralenz Vaquita dive camera and light were also deployed on the frame of the CTD in order to characterize bottom type.

Longline gear deployment and haulback were monitored using the shipboard Scientific Computing System (SCS)/Fisheries Scientific Computing System (FSCS) and the Southeast Longline Input Technology (SELLIT, v. 7). CTD cast data were also recorded using SCS and the program SeaSave 7.

SURVEY DESIGN

Stations were pre-selected before the beginning of the survey using a stratified- random sampling design with proportional allocation. Strata were defined by water depth with stratum size determined by continental shelf area within 60 nm zones. Two depth strata were utilized in the Atlantic; 9 – 55 m (5 – 30 fm) and 55 – 183 m (30 – 100 fm), with 60% and 40% of effort allocated respectively. In the GOM three depth strata were utilized; 9 – 55 m (5 – 30 fm), 55 – 183 m (30 – 100 fm), 183 – 366 m (100 – 200 fm), with effort being allocated respectively to depth, 50%, 40%, 10%.

In some instances pre-selected stations were moved or dropped to avoid hazards to navigation (e.g. shipping lanes, oil rigs), bad conditions (i.e. fast current), or to ensure adequate coverage of the survey area in the available number of sea days. The number of pre-selected stations generated each year is based on previous survey years' results and the number of available sea days.

RESULTS

There were 178 total bottom longline sets completed for the Red Snapper/Shark Bottom Longline Survey on the NOAA Ship *Oregon II*, with 44 sets occurring off the East Coast and 134 sets occurring in the northern GOM (Figure 1). There were 178 total CTD casts associated with the longline sets. CTD videos for bottom type characterization were available for 173 of the stations; mechanical issues with some of the cameras or the light source malfunctioning prevented collection at all sites. Longline effort resulted in 1342 total captures. Elasmobranchs represented 63% of the catch, with representation from 20 species. Teleosts constituted the remaining 37%, with representation from 28 species. The most frequently captured elasmobranch was the Atlantic sharpnose shark (*Rhizoprionodon terraenovae*) constituting 47% of shark captures, followed by the sandbar shark (*Carcharhinus plumbeus*) (14%), the blacktip shark (*Carcharhinus limbatus*) (11%), and the tiger shark (*Galeocerdo cuvier*) (6%). The most frequently captured teleost was red snapper constituting 59% of teleosts captured, followed by gafftopsail catfish (*Bagre marinus*) (7%), red grouper (*Epinephelus morio*) (7%), and king snake eel (*Ophichthus rex*) (6%) (Table 1).

A total of 76 NEFSC Narragansett Lab tags were deployed on 6 different species during cruise R2-23-03 (349). An additional 204 SEFSC tags were deployed on 17 different species. Samples were collected on NOAA Ship *Oregon II* for various life history, genetic and diet projects at both SEFSC and collaborative agencies. All biological samples collected were frozen or preserved as specified and returned to NOAA MS Labs, NOAA Panama City Labs (otoliths, genetics, gonads, eyes), Texas A&M University (blood, tissue, tag data), and Jacksonville State University (vertebrae) (Table 2).

CRUISE PARTICIPANTS

Leg I (25 July – 9 August, 2023)

Name	Title	Organization
William Driggers	Field Party Chief/WL	NMFS PEM Division
Christian Jones	Biologist/WL	NMFS PEM Division
Nick Hopkins	Gear specialist	NMFS Fates Division
Taniya Wallace	Biologist	ERT/NMFS PEM Division
Martin McClure	Teacher at Sea	TAS Program
Caitlin Retzlaff	Volunteer	FIU
Noah Harris	Volunteer	Pearl River Community College
John Brule	Volunteer	Auburn University
Hannah Acock	Volunteer	University of Miami
Macie Henson	Volunteer	Jacksonville State University

Leg II (14 August – 26 August, 2023)

Name	Title	Organization
Kristin Hannan	Field Party Chief/WL	NMFS PEM Division
Eric Hoffmayer	Biologist/WL	NMFS PEM Division
Taniya Wallace	Biologist	ERT/PEM Division
Nick Hopkins	Gear specialist	NMFS FATES Division
Scott VanSant	Biologist	NMFS Fish. Stat. Division
Samantha Faller	Biologist	A.I.S., Inc.
Lisa Crawford	Knauss fellow	HMS Division
Morgan Cleary	Volunteer	Arizona State University
Elizabeth Norton	Volunteer	University of Miami
Abigail Cavaris	Volunteer	Coastal Carolina University

Leg III (31 August – 12 September, 2023)

Name	Title	Organization
Kristin Hannan	Field Party Chief/WL	NMFS PEM Division
Eric Hoffmayer	Biologist/WL	NMFS PEM Division
Walter Ingram	Biologist	NMFS PEM Division
Jim Patterson	Biologist	NMFS Fish. Stat. Division
Steve Garner	Biologist	CIMAS
Heather Moncrief-Cox	Biologist	CIMAS
Steven Ksepka	Volunteer	Auburn University
Jill Thompson-Grim	Volunteer	University of South Florida
Jack Grady	Volunteer	TAMU
Jake Shurba	Volunteer	University of Auburn

Leg IV (15 September – 28 September, 2023)

Name	Title	Organization
Kristin Hannan	Field Party Chief/WL	NMFS PEM Division
William Driggers	Biologist/WL	NMFS PEM Division
Christian Jones	Biologist	NMFS PEM Division
Joey Salisbury	Biologist	ERT/ NMFS PEM Division

Walter Ingram
 Laura Thornton
 Dana Jordan
 Jim Patterson
 Annsli Hilton

Biologist
 Biologist
 Biologist
 Biologist
 Biologist

NMFS PEM Division
 CIMAS
 A.I.S., Inc.
 NMFS Fish. Stat. Division
 A.I.S., Inc.

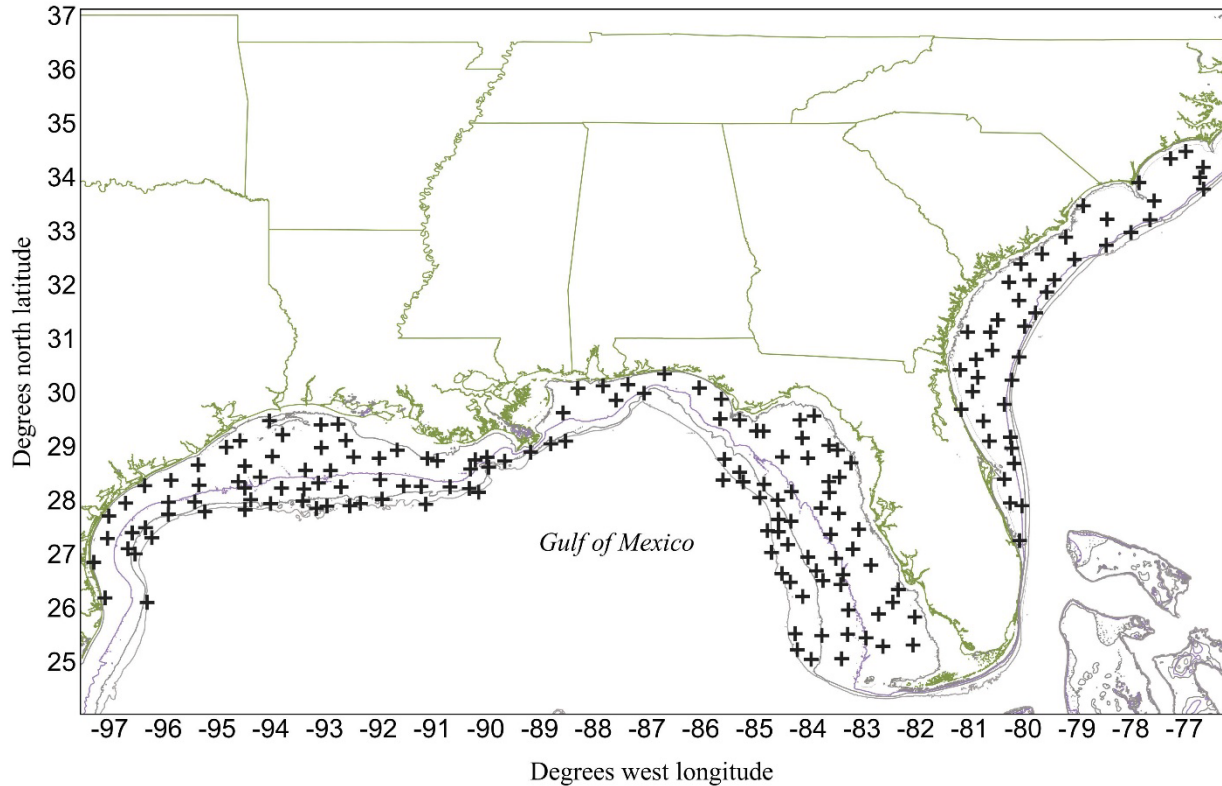


Figure 1. Locations of completed bottom longline stations during NOAA Ship OREGON II Cruise R2-23-03 (349) (crosses). Pictured isobaths are 10, 50, 100, and 200 m.

Table 1. Catch summary for 2023 Red Snapper/Shark Bottom Longline survey R2-23-03 (349).

Atlantic sharpnose shark (<i>Rhizoprionodon terraenovae</i>)	397
Sandbar shark (<i>Carcharhinus plumbeus</i>)	117
Blacktip shark (<i>Carcharhinus limbatus</i>)	96
Tiger shark (<i>Galeocerdo cuvier</i>)	51
Gulf smoothhound (<i>Mustelus sinusmexicanus</i>)	39
Blacknose shark (<i>Carcharhinus acronotus</i>)	37
Scalloped hammerhead (<i>Sphyrna lewini</i>)	25
Nurse shark (<i>Ginglymostoma cirratum</i>)	20
Great hammerhead (<i>Sphyrna mokarran</i>)	12
Spinner shark (<i>Carcharhinus brevipinna</i>)	11
Bull shark (<i>Carcharhinus leucas</i>)	10
Silky shark (<i>Carcharhinus falciformis</i>)	7
Carcharhinidae	4

Bignose shark (<i>Carcharhinus altimus</i>)	4
Lemon shark (<i>Negaprion brevirostris</i>)	3
Dusky smoothhound (<i>Mustelus canis</i>)	3
Narrowfin smoothhound (<i>Mustelus norrisi</i>)	2
Bonnethead (<i>Sphyrna tiburo</i>)	2
Dusky shark (<i>Carcharhinus obscurus</i>)	1
Mustelus sp.	1
Genie's dogfish (<i>Squalus clarkae</i>)	1
Bullnose ray (<i>Myliobatis feminillei</i>)	1

Red snapper (<i>Lutjanus campechanus</i>)	293
Gafftopsail catfish (<i>Bagre marinus</i>)	36
Red grouper (<i>Epinephelus morio</i>)	35
King snake eel (<i>Ophichthus rex</i>)	29
Tilefish (<i>Lopholatilus chamaeleonticeps</i>)	26
Yellowedge grouper (<i>Hyporthodus flavolimbatus</i>)	19
Hardhead catfish (<i>Ariopsis felis</i>)	10
Pale spotted eel (<i>Ophichthus puncticeps</i>)	7
Snakefish (<i>Trachinocephalus myops</i>)	5
Great barracuda (<i>Sphyraena barracuda</i>)	5
Toadfish (<i>Opsanus</i> sp.)	5
Whitefin sharksucker (<i>Echeneis neucratoides</i>)	4
Blacktail moray (<i>Gymnothorax kolpos</i>)	2
Snowy grouper (<i>Hyporthodus niveatus</i>)	2
Gag grouper (<i>Mycteroperca microlepis</i>)	2
Scamp (<i>Mycteroperca phenax</i>)	2
Blueline tilefish (<i>Caulolatilus microps</i>)	2
Sharksucker (<i>Echeneis naucrates</i>)	2
Greater amberjack (<i>Seriola dumerili</i>)	2
Stippled spoon-nose eel (<i>Echiophis punctifer</i>)	1
Gulf hake (<i>Urophycis cirrata</i>)	1
Speckled hind (<i>Epinephelus drummondhayi</i>)	1
Goliath grouper (<i>Epinephelus itajara</i>)	1
Cobia (<i>Rachycentron canadum</i>)	1
Dolphinfish (<i>Coryphaena hippurus</i>)	1
Wenchman (<i>Pristipomoides aquilonaris</i>)	1
Croaker (<i>Micropogonias undulatus</i>)	1
Red drum (<i>Sciaenops ocellatus</i>)	1

Table 2. Summary of samples collected on the 2023 Red Snapper/Shark Bottom Longline Survey, R2-23-03 (349).

Specimen	Otoliths	Genetics	Gonads	Stomachs	Eyeballs	Parasites	Vertebrae
Blacknose shark (<i>Carcharhinus acronotus</i>)		32		1			2
Bignose shark (<i>Carcharhinus altimus</i>)		4					
Spinner shark (<i>Carcharhinus brevipinna</i>)		9					2
Silky shark (<i>Carcharhinus falciformis</i>)		8					
Bull shark (<i>Carcharhinus leucas</i>)		3					
Blacktip shark (<i>Carcharhinus limbatus</i>)		77		11		5	19
Dusky shark (<i>Carcharhinus obscurus</i>)		1					
Sandbar shark (<i>Carcharhinus plumbeus</i>)		97				1	2
Blueline tilefish (<i>Caulolatilus microps</i>)	2	2	2				
Sharksucker (<i>Echeneis naucrates</i>)						2	
Whitefin sharksucker (<i>Echeneis neucratoides</i>)						3	
Speckled hind (<i>Epinephelus drummondhayi</i>)	1	1	1		1		
Goliath grouper (<i>Epinephelus itajara</i>)		1					
Red grouper (<i>Epinephelus morio</i>)	34	34	33		1	1	
Tiger shark (<i>Galeocerdo cuvier</i>)		42				2	3
Nurse shark (<i>Ginglymostoma cirratum</i>)		17					
Yellowedge grouper (<i>Hyporthodus flavolimbatus</i>)	19	19	19		6		
Snowy grouper (<i>Hyporthodus niveatus</i>)	2	2	2		2		
Tilefish (<i>Lopholatilus chamaeleonticeps</i>)	26	26	25		8		
Red snapper (<i>Lutjanus campechanus</i>)	275	273	155		31	1	
Dusky smoothhound (<i>Mustelus canis</i>)		3					
Gulf smoothhound (<i>Mustelus sinusmexicanus</i>)		24		2		9	3
Gag grouper (<i>Mycteroperca microlepis</i>)	1	1	1		1	1	
Scamp (<i>Mycteroperca phenax</i>)	1	1	1		1		
Bullnose ray (<i>Myliobatis freminvillei</i>)		1					
Lemon shark (<i>Negaprion brevirostris</i>)		2					
Pale spotted eel (<i>Ophichthus puncticeps</i>)						1	
Atlantic sharpnose shark (<i>Rhizoprionodon terraenovae</i>)		23		1		15	4
Greater amberjack (<i>Seriola dumerili</i>)	1	1	1		1		
Great barracuda (<i>Sphyraena barracuda</i>)						4	
Scalloped hammerhead (<i>Sphyrna lewini</i>)		30		1			3
Great hammerhead (<i>Sphyrna mokarran</i>)		8				1	
Bonnethead (<i>Sphyrna tiburo</i>)		1		1			
Genie's dogfish (<i>Squalus clarkae</i>)		1					

