Preliminary Report on Catch and Bycatch in the South Atlantic Reef Fish Vertical Line Fishery, 2018-2020.

Alyssa N. Mathers[1]

Heather E. Moncrief-Cox[1]

John K. Carlson[2]

NOAA Fisheries

Southeast Fisheries Science Center

Panama City Laboratory[2]

A.I.S., Inc.[1]

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Introduction

The United States (U.S.) south Atlantic reef fish vertical line fishery has had limited observer coverage historically. The Gulf and South Atlantic Fisheries Foundation conducted at-sea sampling of the vertical line fishery using a small number (30) of selected vessels, which were not necessarily representative of the fleet (approximately 450 vessels) (Helies and Jamison 2013). In 2014, the National Marine Fisheries Service's (NMFS) Southeast Fisheries Science Center (SEFSC) conducted a randomized survey of the south Atlantic vertical line fishery using 62 days at sea to record information on catch and bycatch within the fishery. Additionally, biological samples were collected at a rate of 4.0 samples per sea day from vermilion snapper, *Rhomboplites aurorubens*, red porgy, *Pagrus pagrus*, red snapper, *Lutjanus campechanus*, gag grouper, *Mycteroperca microlepis*, gray snapper, *Lutjanus griseus*, and yellowtail snapper, *Ocyurus chrysurus* (Enzenauer et al. 2015). In 2017, the SEFSC Panama City Observer Program received funding from the Atlantic Coastal Cooperative Statistics Program (ACCSP) to place observers on south Atlantic vertical line vessels with snapper-grouper permits in order to compare observed versus self-reported discard rates in the fishery. Biological samples (e.g. otoliths, gonads) are being collected to provide information for stock assessments. There are currently 480 unlimited snapper-grouper permits and 89 limited (225 lbs) snapper-grouper permits issued to fishers in the south Atlantic. This report summarizes observer coverage of the reef fish vertical line fishery from January 2018 to March 2020. The Panama City Observer Program continues coverage with the remaining sea days.

Methods

The U.S. southeast coast was divided into three fishing regions for the purposes of vessel selection: The Carolinas, Georgia/ Florida (Cape Canaveral) and southern Florida (Cape Canaveral to Key West). Vessels were randomly selected from all three fishing regions and observer coverage was divided accordingly based on the fishing effort and landings report from the previous year. Selection letters requiring observer coverage were issued to the permit holders via U.S. Certified mail approximately one month prior to the upcoming quarter. Once the permit holder received the selection letter, they were required to make contact with the observer coordinator and indicate intent to fish during the quarter. If the permit holder intended to fish, the observer coordinator deployed an observer to the port of departure. Vessels were required to possess a valid U.S. Coast Guard Commercial Fishing Vessel Safety Examination decal and complete a safety evaluation by the observer prior to departure. A "Trip" was defined as from the time a vessel leaves the port until the vessel returns to port and lands catch, including multiple hauls therein.

While onboard the vessel, the observer completes three data forms: Vertical Gear Log, Vertical Haul Log, and Animal Log. The Vertical Gear Log is used to record gear characteristics. The

Vertical Haul Log is used to record the information on fishing effort and environmental parameters. Hauls were defined as the time the first line was dropped into the water to the time the last line left the water at every location fished. In some instances, breaks in fishing or repositioning of the boat over the fishing location occurred. To account for this, if the break or repositioning lasted less than 20 minutes, a continuation of the previous haul was assumed and the time with no lines in the water recorded. If the break or repositioning lasted greater than 20 min, then the previous haul ended at the time the last line left the water and a new haul started when the lines were dropped again. Regardless of time, if the boat moved to a new location, a new haul began with the first line dropped. A new haul could also occur if the target species or reel type (e.g. electric, hydraulic, hand, etc.) changed. The Animal Log records all species caught, condition of the catch (e.g. alive, dead, damaged, or unknown), and the final disposition of the catch (e.g. kept, released alive, discarded dead, etc.).

Biological samples (e.g. otoliths and gonads) were collected from randomly sampled select reef fish species based on pending Southeast Data, Assessment, and Review (SEDAR) stock assessments. The biological samples were logged in the Panama City Observer database and samples were sent to the NMFS laboratory in Beaufort, NC for processing. Biological samples will ultimately be used to estimate age structure, longevity, maturity schedules and fecundity.

To estimate the level of under- or over-reporting, pairwise comparisons on a trip-by-trip basis will be made using the Coastal Fisheries Logbook data and observer data collected as part of this study. Comparisons will be made for the dominant reef fish species measuring bias associated with discards (live vs dead) over a temporal (season) and spatial (statistical grid) scale.

Preliminary Results and Discussion

Seventeen vessels were observed making 467 vertical line hauls on 34 trips from January 2018 to March 2020, totaling 63 sea days. Trip length varied from one to seven sea days. Trips were made targeting the following: vermilion snapper, gray triggerfish, *Balistes capriscus*, black sea bass, *Centropristis striata*, mutton snapper, *Lutjanus analis*, blueline tilefish, *Caulolatilus microps*, gag grouper, snowy grouper, *Hyporthodus niveatus*, and yellowtail snapper. Gears used included handlines, handcrank reel, and both hydraulic and electric bandit.

There were 7,462 individual animals caught on observed vertical line hauls in the southern Atlantic. Catch was mostly comprised of teleosts (97.56 %), with 1.06 % elasmobranchs and 0.05 % invertebrates (Table 1). There were no observed interactions with protected resources. A total of 807 samples were taken on vertical line trips, 411 of which were otoliths and 396 of which were gonads (Table 2). The most sampled teleost was vermilion snapper (37.79 %), followed by yellowtail snapper (13.88 %) and gag grouper (10.78 %).

Coverage of this fishery has been low, primarily due to low compliance. Many fishers did not contact the office upon receipt of their selection letter and/or when making a fishing trip, as required. Some fishers contacted the office at the beginning of the selection period with their fishing plans for the quarter, but then did not notify the office of any fishing trips following the initial contact. Most of this fleet reported that they switch from commercial fishing to charter fishing in the spring and summer. However, these same fishers reported that if they did not have any charters booked, they would commercial fish, making a 24-48 hour notice of fishing difficult. Vessel owners appear to lease their permit and/or vessel in high numbers in this fishery, contributing to a delay in notifying the correct vessel operator of coverage. Some fishers reported that they target king mackerel only and the program did not attempt to cover those vessels, since they were selected using their snapper-grouper permits. Logbook data, however, showed that some fishers landed king mackerel as well as other reef fish species in the same trip, in about equal amounts.

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Table 1. Number caught (n > 5) and disposition of catch in percentage for all observed hauls in the south Atlantic vertical line fishery, 2018-2020. Disposition of catch is divided into kept (K), discard dead (DD), discard alive (DA), and unknown (U).

Species Caught	**Common Name**	**N**	**Kept (%)**	**D.A. (%)**	**D.D. (%)**	**U (%)**
Rhomboplites aurorubens	Vermilion Snapper	3567	94.7	2.8	2.4	0.2
Ocyurus chrysurus	Yellowtail Snapper	870	94.5	3.6	0.0	2.0
Balistes capriscus	Gray Triggerfish	798	94.0	6.0	0.0	0.0
Centropristis striata	Black Sea Bass	553	65.5	34.4	0.0	0.2
Pagrus pagrus	Red Porgy	295	49.8	44.1	6.1	0.0
Lutjanus campechanus	Red Snapper	257	6.6	87.9	3.9	1.6
Caranx crysos	Bluerunner Jack	215	94.9	4.7	0.0	0.5
Seriola rivoliana	Almaco Jack	190	93.2	4.2	1.6	1.1
Mycteroperca microlepis	Gag Grouper	161	50.9	49.1	0.0	0.0
Caulolatilus microps	Blueline Tilefish	107	100.0	0.0	0.0	0.0
Hyporthodus niveatus	Snowy Grouper	88	100.0	0.0	0.0	0.0
Seriola zonata	Banded Rudderfish	79	84.8	3.8	11.4	0.0
Haemulon aurolineatum	Tomtate	76	26.3	46.1	25.0	2.6
Haemulon plumieri	White Grunt	73	56.2	19.2	24.7	0.0
Seriola dumerili	Greater Amberjack	69	37.7	56.5	2.9	2.9
Holocentridae	Squirrelfishes	63	100.0	0.0	0.0	0.0
Sparidae	Porgy Family	57	87.7	12.3	0.0	0.0
Caranx ruber	Bar Jack	52	0.0	1.9	98.1	0.0
Euthynnus alletteratus	Little Tunny	44	95.5	0.0	4.6	0.0
Lutjanus griseus	Gray Snapper	39	97.4	2.6	0.0	0.0
Rhizoprionodon terraenovae	Atlantic Sharpnose Shark	35	17.1	74.3	0.0	8.6
Seriola	Amberjacks	27	100.0	0.0	0.0	0.0
Lutjanus analis	Mutton Snapper	24	66.7	29.2	4.2	0.0
Echeneis naucrates	Sharksucker	20	10.0	85.0	5.0	0.0
Carcharhinus falciformis	Silky Shark	20	0.0	95.0	5.0	0.0
Coryphaena hippurus	Dolphinfish	14	100.0	0.0	0.0	0.0
Diplodus holbrookii	Spottail Pinfish	13	7.7	92.3	0.0	0.0
Remora	Remora	12	0.0	100.0	0.0	0.0
Calamus nodosus	Knobbed Porgy	11	90.9	9.1	0.0	0.0

Mycteroperca phenax	Scamp Grouper	11	100.0	0.0	0.0	0.0
Carcharhinus plumbeus	Sandbar Shark	11	0.0	54.6	0.0	45.5
Chaetodipterus faber	Spadefish	9	11.1	77.8	0.0	11.1
Calamus leucosteus	Whitebone Porgy	7	85.7	14.3	0.0	0.0
Rachycentron canadum	Cobia	7	57.1	28.6	0.0	14.3
Elagatis bipinnulata	Rainbow Runner	7	71.4	28.6	0.0	0.0
Carangidae	Jack Family	6	100.0	0.0	0.0	0.0
Elasmobranchii	Sharks	6	0.0	33.3	0.0	66.7
Sphyraena barracuda	Great Barracuda	5	0.0	60.0	40.0	0.0
Diplectrum formosum	Sand Perch	5	80.0	20.0	0.0	0.0
Strongylura marina	Atlantic Needlefish	5	0.0	80.0	20.0	0.0