# BOTTOM LONGLINE FISHERY BYCATCH OF GOLIATH GROUPER (*Epinephelus itajara*) FROM OBSERVER DATA

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## Introduction

Observations of the shark-directed bottom longline fishery in the Atlantic Ocean and Gulf of Mexico have been conducted since 1994 (e.g. Hale and Carlson 2007, Hale et al. 2007, Morgan et al. 2009, Hale et al. 2009, Hale et al. 2010). From 1994 through 2001, observer coverage was conducted on a voluntary basis. Beginning with the 2002 fishing season, observer coverage of the shark directed bottom longline fishery became mandatory under the current federal management plan for highly migratory species (50 CFR 635.7, NMFS 2003). Observer coverage from 1994 through the first trimester season of 2005 was coordinated by the Commercial Shark Fishery Observer Program (CSFOP), Florida Museum of Natural History, University of Florida, Gainesville, FL. Starting with the 2nd trimester season of 2005, responsibility for the fishery observer program was transferred to the National Marine Fisheries Service (NMFS), Southeast Fisheries Science Center (SEFSC), Panama City Laboratory. This report describes the bycatch of goliath grouper (*Epinephelus itajara*) on observed trips from 2005 through 2009.

## Methods

Vessels are selected from three fishing regions: northern Atlantic Ocean, southern Atlantic Ocean, and Gulf of Mexico. The northern Atlantic Ocean is defined from

Virginia through Maine, the southern Atlantic Ocean is from the east coast of Florida through North Carolina and the Caribbean, and the Gulf of Mexico is defined from Texas through the west coast of Florida including the Florida Keys (NMFS 2005).

In October 2008, NMFS announced its request for applications for the shark research fishery from commercial shark fishers with a directed or incidental permit for 2009. Commercial shark fishers submit applications to the Highly Migratory Species (HMS) Management Division. The HMS Management Division provide a list of qualified applicants to the Panama City Laboratory and based on the temporal and spatial needs of the research objectives, the availability of qualified applicants, and the available quota, qualified applicants are selected for observer coverage. These vessels carry observers on 100% of trips.

Outside the research fishery, vessels targeting shark and possessing current valid directed shark fishing permits are randomly selected for coverage with a target coverage level of 4-6%. Because of the overlap with vessels targeting reef fish (grouper, snapper, and tilefish) and shark within the same trip and vessels possessing directed shark permits (Hale and Carlson 2007), observers also board trips regardless of the indicated target species. Thus, observers work bottom longline trips that target grouper, snapper, and tilefish, as well as sharks.

Selection letters requiring observer coverage are issued to the permit holder via U.S. Certified mail approximately one month prior to the upcoming fishing season. Once the permit holder receives the selection letter, he or she is required to make contact with the observer coordinator and indicate intent to fish during the upcoming fishing season. If the permit holder intends to fish, the observer coordinator deploys an observer to the port

of departure. Vessels are required to pass a Coast Guard Vessel Safety Examination as well as a safety evaluation by the observer prior to coverage. While onboard the vessel, the observer completes three data forms: Gear Log, Haul Log, and Individual Animal Log. The Gear Log is used to record gear characteristics. The Haul Log is used to record the information on set and haulback, as well as environmental information. The Individual 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, finned, etc.). Mortality is determined from visual estimates.

**Results**

From July 2005 through December 2009, bottom longline observer program covered a total of 273 trips (defined as from the time when a vessel leaves the port until the vessel returns to port and lands catch, including multiple hauls therein) on 65 vessels with a total of 891 hauls (defined as setting gear, soaking gear for some duration of time, and retrieving gear from water) observed (Figure 1). Gear characteristics of trips varied by area (Gulf of Mexico or South Atlantic) and target species (grouper/snapper, grouper/shark mix, shark, or tilefish); for descriptions of gear see the programs year-end technical memoranda e.g. Hale and Carlson 2007, Hale et al. 2007, Hale et al. 2009, and Hale et al. 2010.

There were 47 goliath grouper incidentally caught in 36 hauls on 32 trips (Figure 1). The majority of the sets targeted shark (95.7%) while the remainder (4.3%) targeted grouper. Goliath groupers ranged in size from 57 to 219 cm total length (average 132.3 cm TL; Figure 2); however, most lengths (68.1%) were estimated due to the difficulty of boating large goliath groupers. The average depth of sets when groupers were caught

was 57.3 m, ranging from 3.5 to 275 m deep (Figure 3). The depths were recorded by the vessels' depth finder and represent the depth at the beginning and end of the set of gear, but may not reflect variations in depth between the two points.

Of the 47 goliath groupers, 46 (97.9 %) were alive when captured and of those, the majority (93.5 %) were released alive. Goliath groupers were vented by the crew and were coded as alive by the observer only if the fish swam down in the water column after release. The one goliath grouper that came up dead was caught at 13 m average depth (no predation noted), while three goliath groupers that were released dead after being caught alive were caught at 203 m average depth (102.5 m to 275 m depth range).

**Literature Cited**

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## Figures

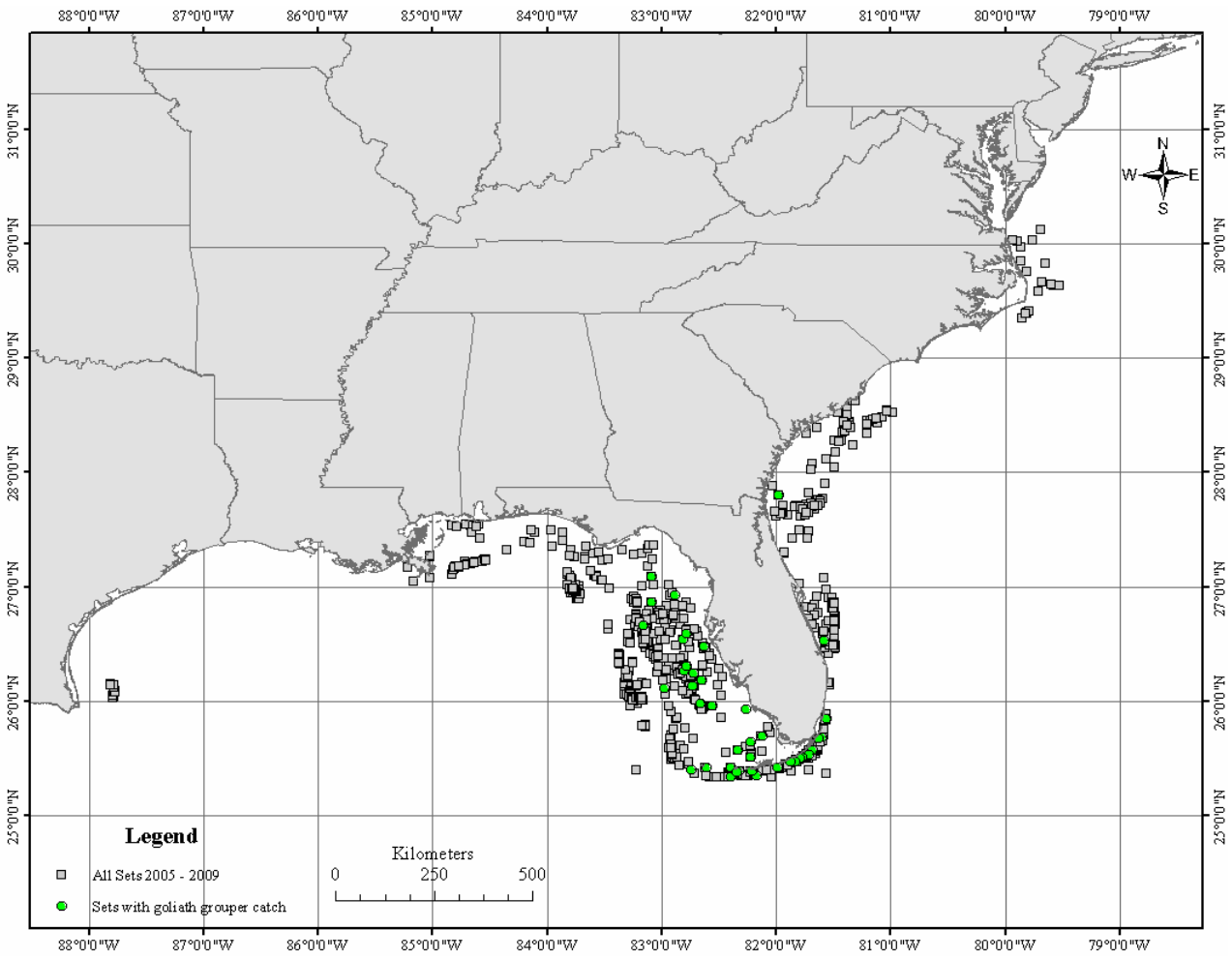


Figure 1. Map of observed sets made by the bottom longline fishery from 2005 through 2009. Sets where goliath grouper were incidentally caught are denoted by the green squares.

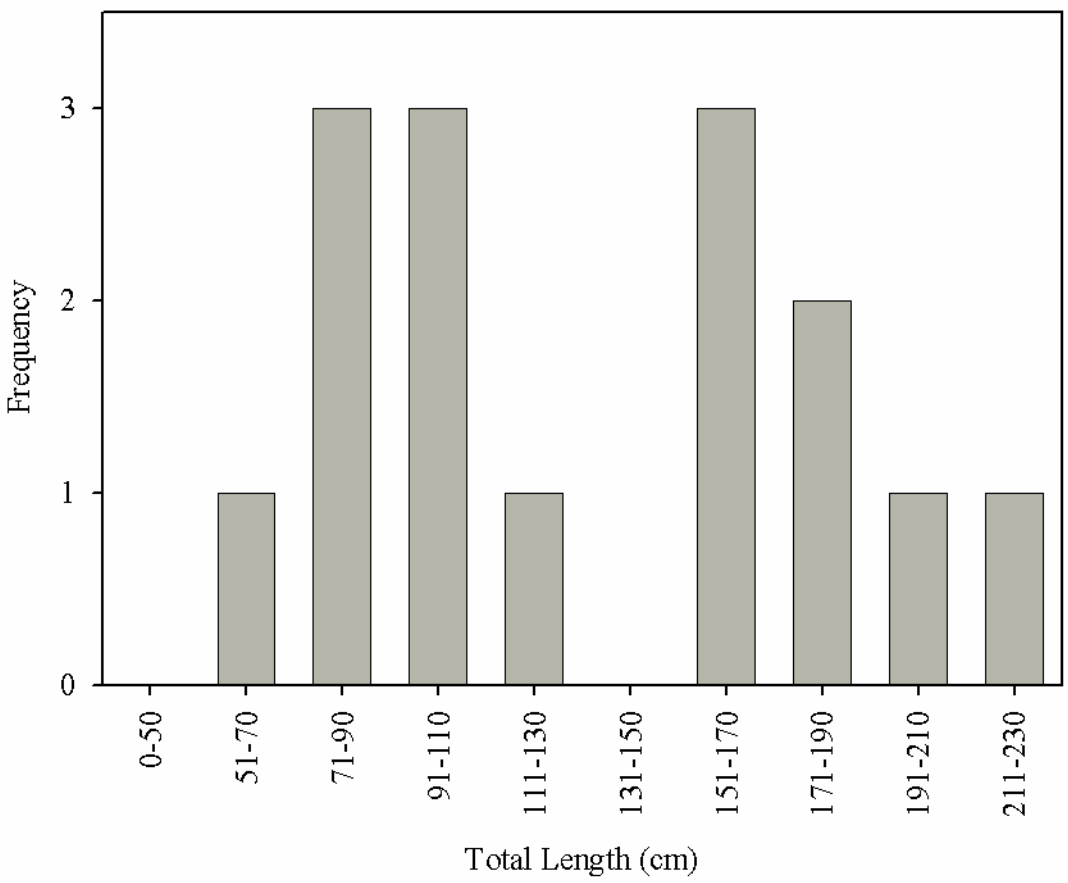


Figure 2. Length frequency of observed goliath grouper incidentally caught in the bottom longline fishery from 2005 through 2009 (n = 15). Lengths used only from actual measurements, not estimations.

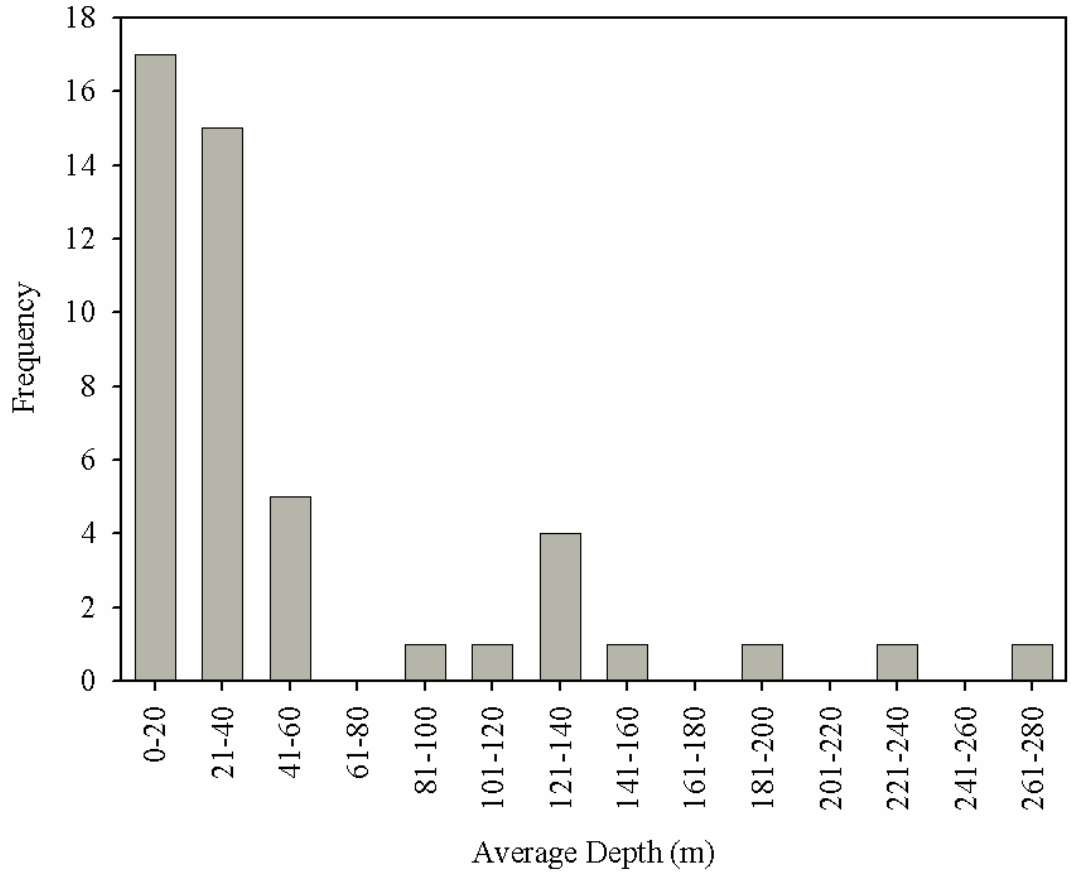


Figure 3. Depth frequency of observed goliath grouper incidentally caught in the bottom longline fishery from 2005 through 2009 (n = 47).