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Bottom longline fishery bycatch of black grouper 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. From 1994 through 2001, observer coverage was conducted on a voluntary basis, but beginning with the 2002 fishing season, observer coverage became mandatory under authority of 50 CFR 635.7. Observer coverage from 1994 through the 1st trimester of 2005 was coordinated by the Commercial Shark Fishery Observer Program (CSFOP), Florida Museum of Natural History, University of Florida, Gainesville, FL (Morgan et al. in press). Observer coverage for this fishery is required under the current federal management plan for highly migratory species (NMFS 2007). Starting with the 2nd trimester season of 2005, responsibility for the fishery observer program was transferred to National Marine Fisheries Service (NMFS), Southeast Fisheries Science Center (SEFSC), Panama City Laboratory.

Initially, shark bottom longline vessels were selected randomly each trimester shark season based on the following criteria: (1) the vessel/owner possessed a current directed shark permit, (2) the permit holder (i.e. vessel/owner) reported fishing for sharks with bottom longline gear in the same season of the previous year, and (3) the permit holder had not been selected for observer coverage during the prior three consecutive shark seasons. Vessels were selected from three fishing regions: northern Atlantic

Ocean, southern Atlantic Ocean, and Gulf of Mexico. The northern Atlantic Ocean was defined from Virginia through Maine, the southern Atlantic Ocean was from the east coast of Florida through North Carolina and the Caribbean, and the Gulf of Mexico was defined from Texas through the west coast of Florida including the Florida Keys (NMFS 2005). Regardless of the target species, if a vessel was selected during the coverage period it was required to carry an observer. Thus, observers boarded bottom longline fishing trips that targeted grouper, snapper, and tilefish, as well as sharks. Because of the overlap observed in 2005 with grouper/snapper and tilefish longline sets and those vessels possessing directed shark permits, the vessel pool was expanded in 2006 to cover all bottom longline vessels regardless if they reported fishing for sharks with bottom longline gear in the same season of the previous year.

The objectives of this study were to report observations on the catch and bycatch of black grouper (*Mycteroperca bonaci*) in the Gulf of Mexico for 2005–2008.

Methods

Observer Protocol

Selection letters requiring observer coverage were issued to permit holders via U.S. certified mail approximately one month prior to the upcoming fishing season. Once the permit holder received the selection letter, he or she was required to contact the observer coordinator and indicate intent to fish during the upcoming fishing season. If the permit holder intended to fish, the observer coordinator deployed an observer to the port of departure (Hale et al. 2007).

For consistency among longline observer programs throughout the Southeast Fisheries Science Center, we adopted the methods outlined for the Pelagic Longline

Observer Program (Beerkircher et al. 2004). While aboard the vessel, the observer completes three data forms: Longline Gear Characteristic Log, Longline Haul Log, and Individual Animal Log. The Longline Gear Characteristic Log is used to record the type and length of the mainline used, number and length of gangions, and make and model of hooks used. The Longline Haul Log is used to record the length, location, and time duration for each set and haulback, as well as environmental information and the type(s) of bait used. The Individual Animal Log records all species caught, condition of the catch (e.g. alive, dead, damaged, or unknown) when brought to the vessel, and the final disposition of the catch (e.g. kept, released, finned, etc.). When an animal is brought aboard the vessel, the observer records species, sex (sharks only), and length. Mortality was determined visually. The soak duration of a set was defined as the time from when the last hook entered the water until the first hook was hauled back, and hook hours were defined as the sum of the total hooks fished multiplied by the soak duration for each set.

Results and Discussion

Observer coverage summary

A total of 134 trips on 60 vessels (623 sets) were observed in the Gulf of Mexico and South Atlantic regions from July of 2005 through December of 2008 (Figure 1). Based on Richards (2008), the percent observed of the total reef fish bottom longline effort was 0.75-2.1% for 2006-2007. All sets utilized bottom longline gear with 63.2% (394 sets) targeting reef fish (grouper, snapper, tilefish) and 36.8% (229 sets) targeting shark or a combination of shark and reef fish (Figure 1). A total of 22 vessels were observed on 27 trips (average trip length was 9.8 days) targeting reef fish, while a total of 44 vessels were observed on 114 trips (average trip length was 3.1 days) targeting shark.

Some vessels targeted different species on different trips within the same year or between years. Additional information on catch, gear, and set locations can be found in yearly technical memoranda (Hale and Carlson 2007, Hale et al. 2007, Hale et al. 2009).

Of the 623 sets observed (all targets combined), 29 sets (4.7%) caught black grouper. Twenty two (22) sets targeted a mix of grouper/snapper (REF), while the other seven (7) sets targeted shark (SHX) (Figure 2). Fifty (50) black groupers were caught and ranged in size from 56 to 153 cm total length (average 100.7 cm TL) (Figure 3). Average depth of sets when black groupers were caught was 65.9 m, ranging from 21 to 141 m. Of the 50 black groupers, 46 (92.0 %) were alive when captured and of those, 45 (97.8 %) were kept for landing (one was released alive). Four (4) black groupers were dead when captured (8.0%) and of those, three (3) were kept for landing (75.0%) and one (1) was discarded dead (25.0 %).

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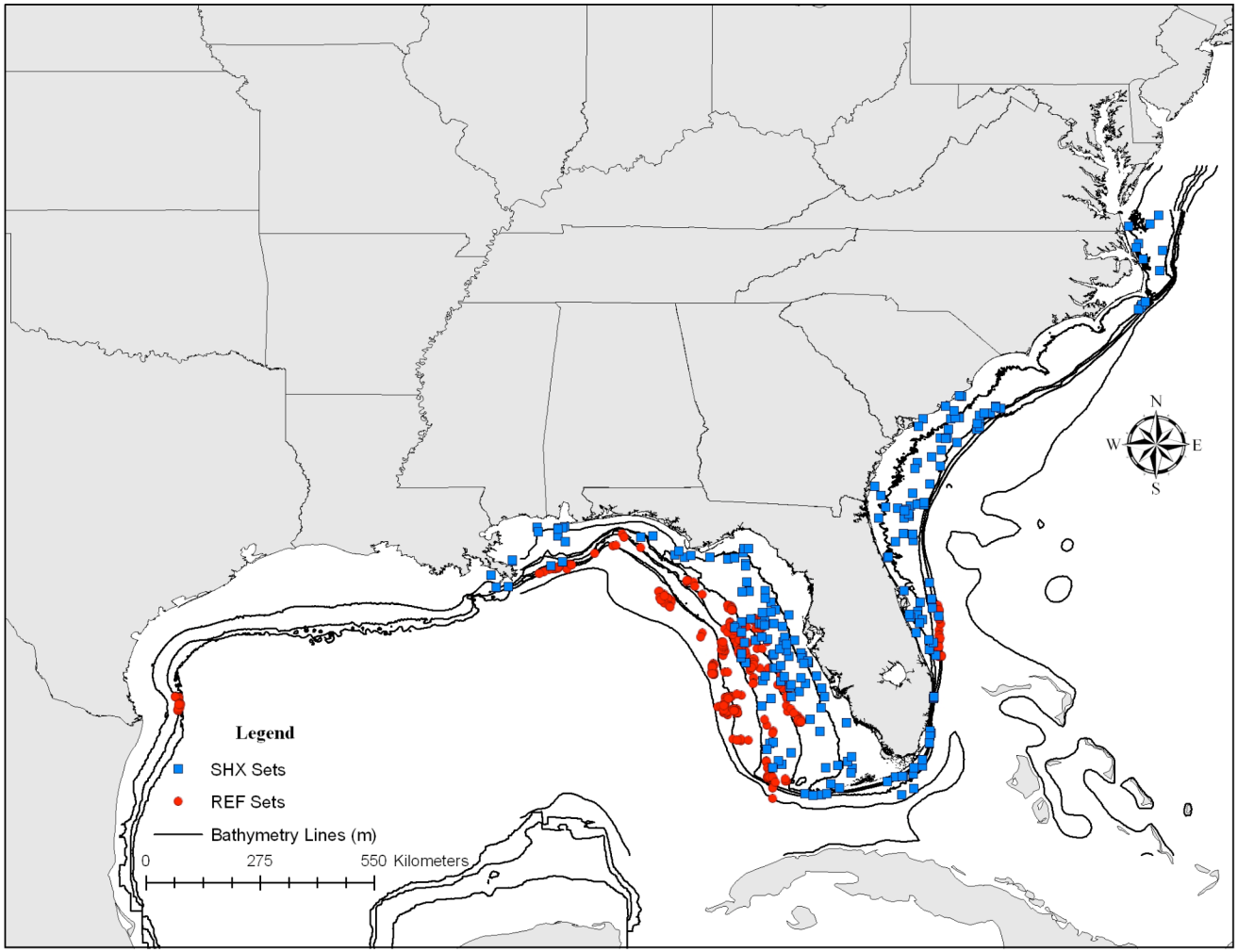

Figure 1. Distribution of sets for all observed hauls by target in the Gulf of Mexico and U.S. Atlantic Ocean from July 2005 through December 2009. Sets are separated by target species, including shark (SHX) and grouper/snapper/tilefish (REF) targeted sets.

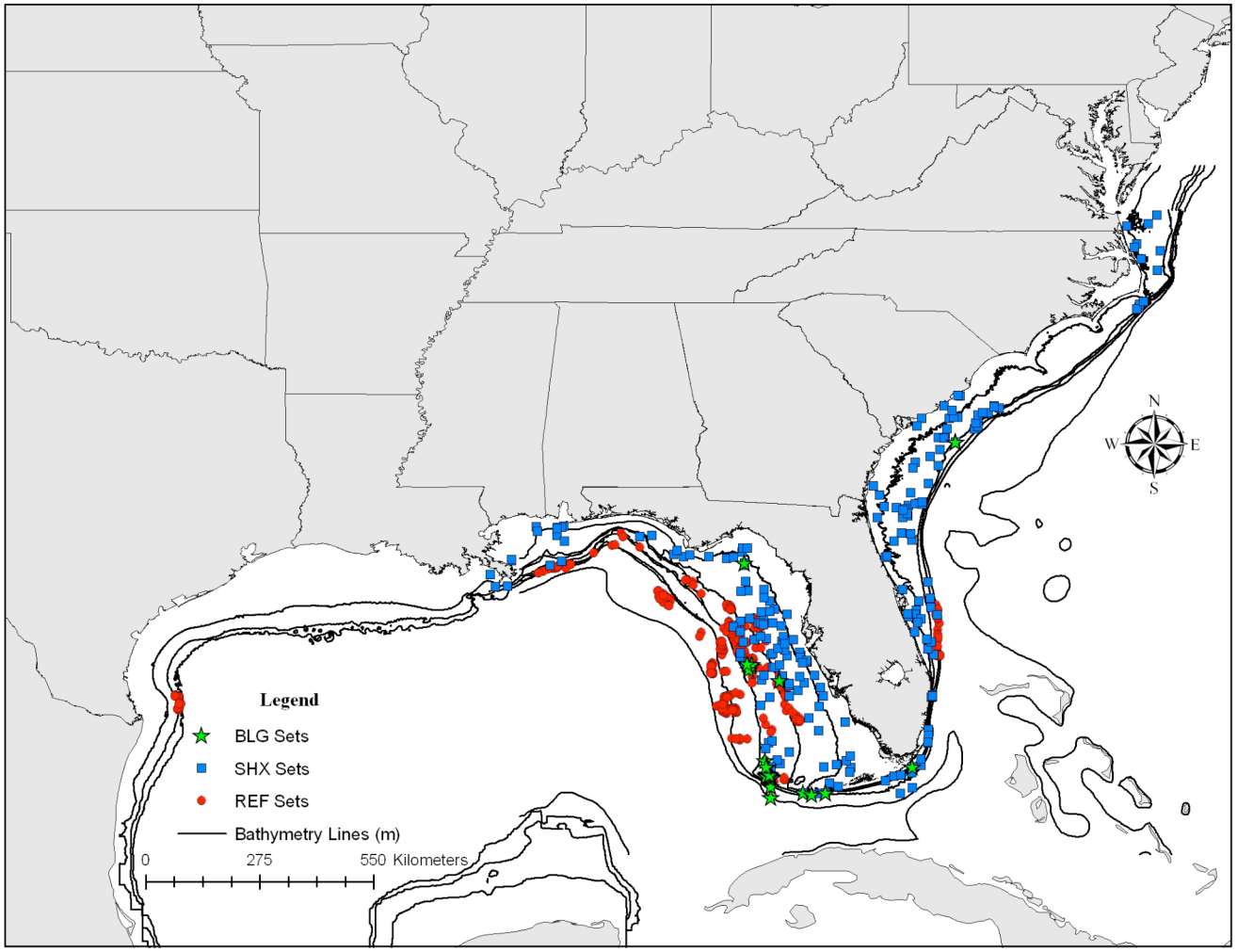

Figure 2. Distribution of sets for all observed hauls by target in the Gulf of Mexico and U.S. Atlantic Ocean from July 2005 through December 2009. Sets are separated by target species, including grouper/snapper/tilefish (REF) and shark (SHX). Sets that caught black grouper (BLG) are indicated separately.

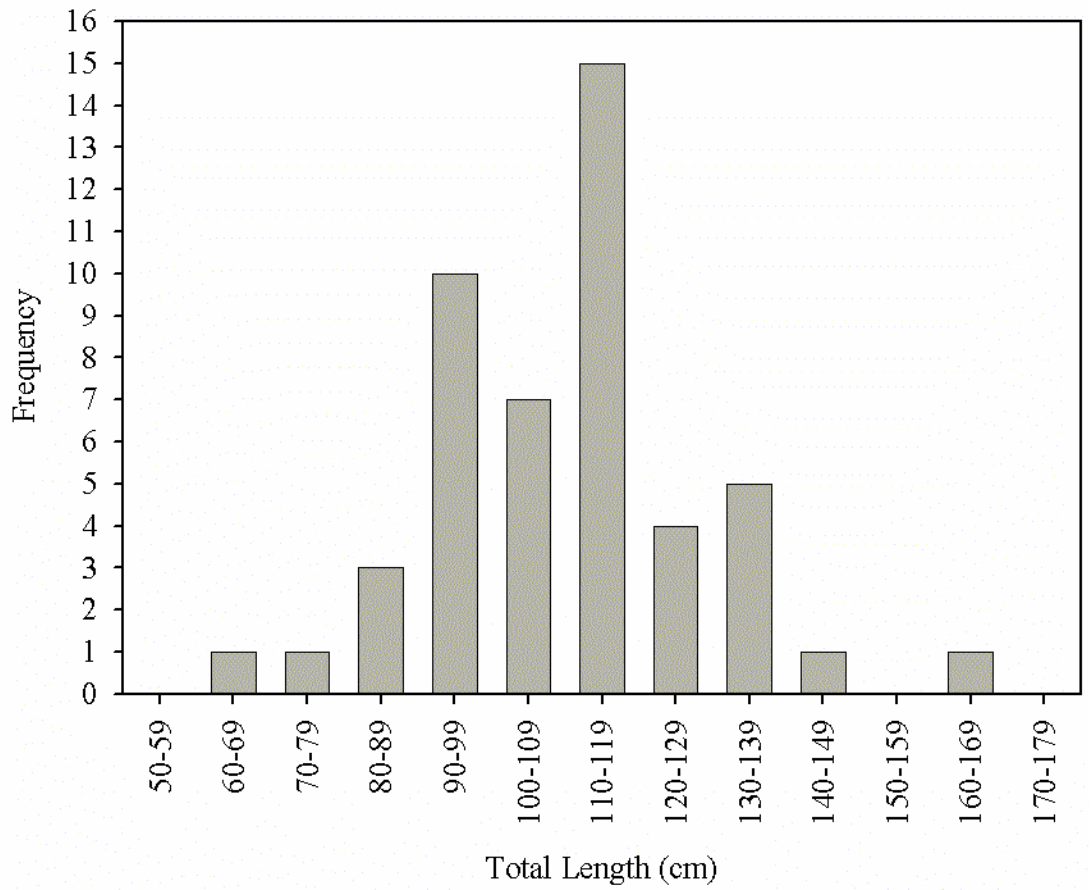

Figure 3. Length frequency of black grouper observed caught in the bottom longline fishery from 2005-2009 (n = 48). Two (2) black grouper were excluded from the histogram because the fish were partially eaten and therefore not measured by the observer.