

GEORGIA RED DRUM LONGLINE SURVEY

DATA ACKNOWLEDGEMENT AND DATA CAVEATS

January 2014

I. ACKNOWLEDGEMENT

The following survey design, protocols, and data caveats are included to assist the data user in acquiring a thorough understanding of the survey before querying the SEAMAP-SA database for Georgia Department of Natural Resources' Coastal Resources Division (GADNR CRD) Red Drum Longline Survey (GA-LLS) data. The data user is responsible for reading all of the following text and fully comprehending every aspect of the requested data. Each requestor is solely accountable for any further analysis, manipulations, or presentations. It is also the responsibility of the data user to cite and acknowledge SEAMAP and the GA-LLS (see [SEAMAP-SA Intellectual Property protocol](#))

II. BACKGROUND

The GA-LLS is a National Marine Fisheries Service funded fishery independent longline survey conducted by GADNR CRD since 2006. The primary objective of the GA-LLS is to develop a state specific sampling protocol that provides a fisheries independent index of abundance for adult red drum. Additional objectives of the GA-LLS include:

- To sample adult red drum and develop information on catch per unit effort (CPUE) and size, to collect migratory and stock identification data on adult red drum.
- To evaluate the age composition of adult red drum.
- To collect additional biological information and samples (otoliths, gonads, muscle, fin clips etc.) from a sub-sample of red drum that can be used to determine size at age, recruitment to adult spawning population, mercury contamination, and genetic composition of the stock.
- To disseminate accomplishments and results to the Atlantic States Marine Fisheries Commission (ASMFC) and National Marine Fisheries Service (NMFS) for inclusion in stock assessment efforts.

This survey will provide Georgia with the resources necessary to develop a fishery-independent index of abundance for adult red drum occurring in state waters that will be used in future stock assessment work. Tagging of red drum captured during the study will allow for additional information on migratory behavior and stock identification. Collection of age structures will provide insight on escapement rates from specific cohorts and provide a means to evaluate the age structure of the adult population.

III. METHODOLOGY

Study Area

The nearshore red drum survey design encompasses state and federal waters off the coast of Georgia and northeast Florida, generally bounded by 32° 05' N latitude to the north, 29° 20' N latitude to the south, 80° 30' W longitude to the east, and the coastline to the west. Current sampling occurs in a smaller area in waters off the Altamaha River drainage in Georgia to the St. Johns River drainage in Florida (Figure 1).

Sampling will be conducted monthly from April through December. From April through August, 25 stations will be sampled each month in waters off southeast Georgia. From September through November, 35 stations will be sampled each month, 10 of which will be in waters off northeast Florida. Stations are randomly chosen from a subset of sites identified as areas with high encounter probabilities for April through August sampling events. From September through December, three strata are delineated off Georgia (inshore behind the ColReg lines; near shore <3nm from the beach; offshore <12 nm) and sampling efforts are proportionally allocated, to match the emigration pattern of adult reds. Stations sampled off Florida are randomly sampled from sites with high encounter probabilities. Maximum number of sampling days per month range from 5 (during months with 25 stations) to 6 (during months with 35 stations). All stations are sampled during daylight hours. Stations are generally located in water depths between 4 and 20 meters.

Gear

Bottom longline gear consisted of a 926 m mainline of 2.5 mm diameter monofilament nylon line anchored at both ends with weights of up to 50 lbs. Large orange surface floats labeled with agency identification information will be attached to each end of the mainline to enable pickup and retrieval of the longline. Up to 60 branch lines or gangions will be clipped to the bottom section of the longline at 15 m intervals. Stop sleeves are placed at 30 m intervals in order to prevent gangions from sliding down the mainline and becoming entangled when large species are encountered. Each gangion will consist of 0.7 m of 1.6 mm diameter monofilament nylon line terminated with either one 15/0 or one 12/0 circle hook. Hooks will have depressed barbs with no offset and be baited with squid. Only one longline will be deployed at any time. Soak times will be 30 minutes in duration, measured from second anchor deployed to first anchor retrieved. Soak times, bait size, bait type, hook size, number of hooks, gangion length and distance between hooks are standardized as much as possible.

Changes in Sampling Methodology

The GADNR CRD red drum longline survey has had some notable changes since its pilot study years during 2006 and 2007. These changes have included bait type, hook size and the inclusion of adaptive sampling. The timeline of changes made are outlined in in Table 1.

IV. RESULTS

Environmental and Habitat Data

Environmental and location data are recorded during when the line is being set. Variables measured include: start and end locations, duration/soak time, depth, surface temperature (°C), surface salinity (ppt), surface dissolved oxygen (mg/L), weather conditions, wind direction, wind speed (knots), and air temperature (°C).

Catch Data

All individuals captured were processed at the species level and were measured to the nearest millimeter for fork and total length. Hook size and species condition (alive or dead) were also recorded. Red drum and selected shark species were tagged and released. Each red drum was tagged with both an external Hallprint stainless steel dart tag (SSD) and an internal Passive Integrated Transponder (PIT) tag. PIT tags provide a means to monitor tag loss/non-reporting and also provide an internal means to means to monitor recaptures within the study (i.e. the public cannot detect and remove a PIT tag unlike SSD tags). The presence or absence of drumming sounds was noted for all red drum captured. Selected red drum species were retained and taken to the lab where age structures (otoliths) were removed and sex was determined. Genetic material (fin clip) was removed for later processing from all red drum captured. All finclips were sent to SCDNR for further processing and analysis.

Table 1. GA DNR Longline Survey Changes in Sampling Methodology. November 2006 – December 2011.

Bait Type	
Nov-Dec 2006:	Mackerel
Apr-Dec 2007:	50% of hooks mackerel, 50% squid
Apr 2008 – Present:	Squid
Hook Size	
Nov 2006 – Dec 2007:	15/0
Apr 2008 – present:	Equal split of 15/0 and 12/0
Sample Design	Random stratified based on Region (SGA and NFL) and Zone (Estuary, 0-3nm, 3-12nm, > 12nm). Grids ½ x ½ nm.
Nov 2006 – Dec 2008:	Adaptive. If 2 or more red drum captured, the adjacent site would also be sampled.
Sep-Dec 2009 – Present: (Fall only)	Adaptive
Sep-Dec 2007 – Present: (Fall only)	Allocation shift. Monthly station allocation shifts from inshore to offshore as the season progresses.

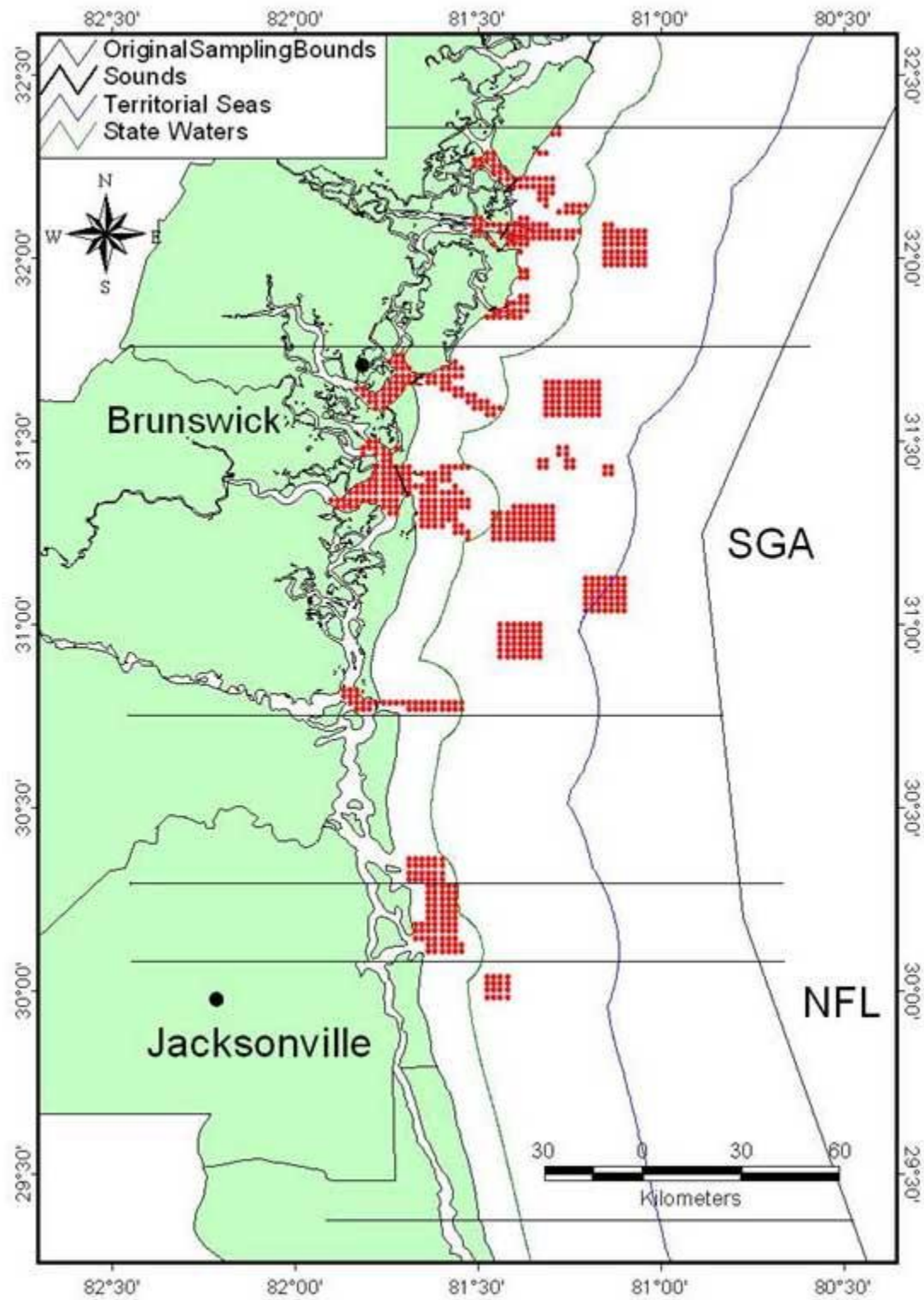


Figure 1. Georgia Longline Survey potential stations.