

Characterization of Bycatch for the Menhaden Purse Seine Fishery Occurring off the Coast of Louisiana:

Proposed Methods for the 2024 Season

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LGL was contracted by GSMFC in August 2023

- Goal: characterize bycatch for this fishery during the 2024 Season
- Contract period: August 1, 2023 – June 30, 2025
- Ultimate deliverable is a scientifically defensible set of peer-reviewed publications that detail the results of this study

Primary Objectives:

1. Estimate the quantity of bycatch species (by weight and number of individuals) for the menhaden purse seine fishery occurring in Louisiana and adjacent federal waters for the 2024 season
2. Estimate bycatch species-specific size (length and weight) distributions, as well as sex ratios when possible

Secondary Objectives:

1. Estimate near-term mortality rates (“fate”) of released bycatch species using onboard tanks
2. Record “vitality” of each fish tested in the fate studies via Reflex Action Mortality Predictors (RAMP); includes ~5 reflexes that are typically present in vigorous individuals

Stratified Random Survey Design

- Primary sampling unit will be an individual set; study must sample >2% of all sets made by the fleet
- We anticipate this effort to require 90 field days to sample about 400 sets, but our sample size will not be limited by this target
- Estimates must allow for spatio-temporal patterns in bycatch to be rendered
- Area stratification will be represented by sampling boats operating out of the three processing plants:
 - Empire, LA (Daybrook)
 - Abbeville, LA (Omega)
 - Moss point, MS (Omega)
- Samples will be stratified across the seven months (April-October) to address seasonality
- This results in 21 possible area-month strata; samples will be parsed across these strata based on the fleet's pattern in effort (number of sets) from recent years

Field Sampling Methods—Choice of Vessels

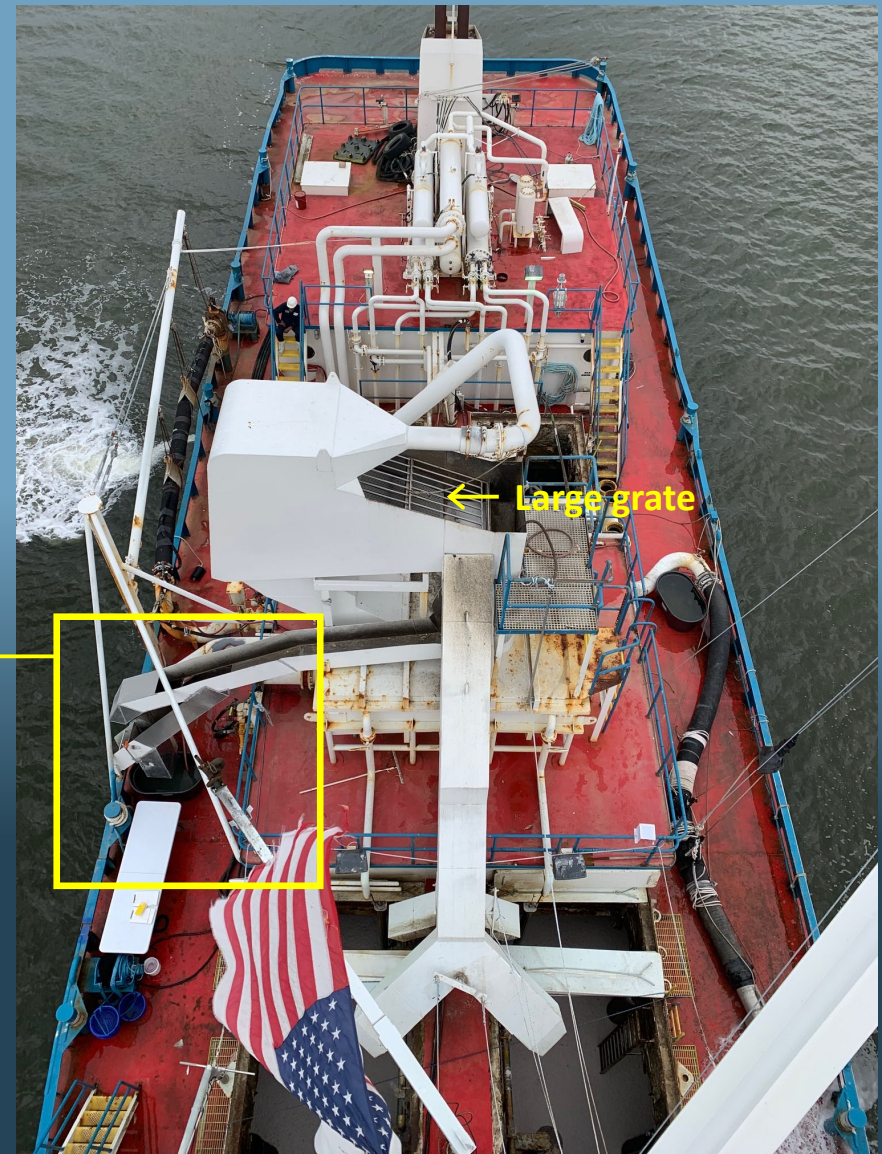
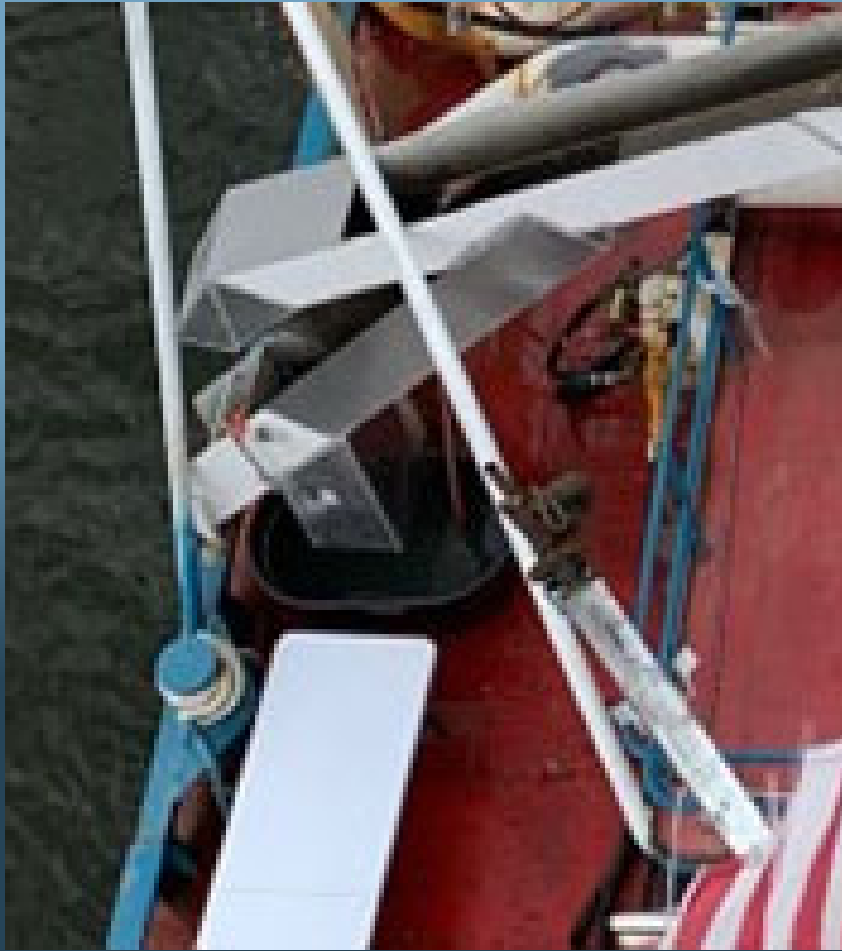
- All operations will occur off of “run boats” that do not fish, but pump catch from sets made by other boats
- Omega already has dedicated run boats; Daybrook will dedicate a run boat for the 2024 season
- Benefits of only sampling off of run boats:
 - Normal fishing vessels, “steamers”, require a full crew leaving room for only a single observer; run boats have ample space for multiple observers
 - Ample room for large circular tanks required for the fate studies
 - Sampled sets will be spread across more of the vessels and not restricted to a single vessel per trip

As we heard it said, “The steamers fish the fish, and the run boats fish the steamers”.

Field Sampling Methods—Bycatch Locations

- What happens to bycatch is the same regardless of whether a set is pumped by a run boat or the steamer that made the set
- Bycatch can occur in four ways:
 1. Chute bycatch: larger individuals separated from the catch by a large grate that sends them down a release chute
 2. Retained bycatch: smaller individuals that pass through the grate and end up in the hold along with targeted catch
 3. Rollover bycatch: fish remaining in the seine once the pumping process is complete and rolled over the cork line for release
 4. Dewatering bycatch: very small individuals that pass through the finer dewatering grates and join the release chute

Sampling the Chute Bycatch



Sampling the Retained Bycatch



Retained Bycatch-Verification With Cameras



Sampling the Rollover Bycatch



Sampling the Dewatering Bycatch



Fate Studies

- Will include several species (e.g., red drum, black drum, gafftopsail catfish) as sample size allows
- Target sample size will be 50-100 for each
- Will also conduct separate studies for chute and rollover bycatch

Space for Two Large Circular Tanks on Back Deck



Pilot Study Conducted on October 8-9, 2023

Lessons Learned

- Will require a four-person crew
- Camera placement and operation for retained bycatch verification was refined
- Large, crane supported dipnets were designed to better handle sets with large rollover bycatch

Questions