



SCIENCE SNAPSHOT

July 17, 2025

2024 Bycatch Study Final Report: Characterization of Bycatch for the Menhaden Purse Seine Fishery Occurring off the Coast of Louisiana

Overview

In July 2025, LGL Ecological Research Associates released the final report, "*Characterization of Bycatch for the Menhaden Purse Seine Fishery Occurring off the Coast of Louisiana*," marking the most comprehensive assessment of bycatch in the Gulf Menhaden fishery to date. The findings confirm and expand on the preliminary results published in June 2025, bringing new validation to this long-standing conservation concern.

The Gulf menhaden fishery is the largest fishery by volume in the Gulf of Mexico and the second largest in the U.S., nationwide. It contributes significantly to the reduction industry (fishmeal, oil, and animal feed). However, the lack of mandatory bycatch monitoring, absence of a Gulf-wide ecosystem-based catch limit, and growing mortality of sportfish, like red drum, continue to raise serious ecological and economic concerns.

Key Findings - What's New in the Final Report

Study Scope & Design

- 418 sets sampled (3.2% of total LA sets), representative across space, time, set size, and bycatch excluder devices
- Used stratified random sampling and both design- and model-based estimation for high confidence in results

Bycatch Composition & Totals

- Total estimated bycatch: 145.8 million fish, 12.5 million kg, representing ~3.6% of landings by weight
- 62 species observed, including high mortality of sportfish
 - Red drum: ~25,000 killed (consistent with preliminary report)
 - Spotted seatrout: ~240,000 retained individuals, all dead
 - Atlantic croaker: ~122,500 retained, all dead

New Insights from Final Study:

- Spotted seatrout retained bycatch was vastly underestimated in preliminary analysis (was ~1,132; now ~240,000).
- Bycatch survival correlated well with Reflex Action Mortality Predictors (RAMP) scores, validating predictive vitality assessments.
 - This means the health of the fish when they were caught gave a good clue about whether they would survive. The better they "looked" and "acted," the more likely they were to live after release.
- Retained bycatch dominated by small species, but even high-value sportfish were found in the hold, where survival is zero.

- Chute mortality is extremely high:
 - Red drum: 98% mortality
 - Black drum: 99%
 - Spotted seatrout: 100%
- Rollover bycatch offers better survival prospects (83-91% for key species) but only occurs in a subset of hauls (~10% have no bycatch)
 - This means that fish that stay in the net and are released without being pumped onto the boat have a better chance of surviving.

Technological Analysis

- Principal Component Analysis (PCA) of bycatch exclusion devices revealed significant fleet-wide variability, supporting future engineering improvements.
 - Each boat in the Menhaden fleet has different types of bycatch excluder devices, or cages and grates, with varying features like size, shape, number of openings, spacing, etc. Because there are so many variables, it's difficult to make apples-to-apples comparisons in bycatch studies.
 - This study grouped boats into three clusters based on gear types. This helped researchers choose representative boats to study and helped them better understand how gear design might affect bycatch.
- Video analysis validation confirmed that retained bycatch estimates were not biased low, adding confidence in subsample expansion methods.

Potential Considerations

- An ecosystem-based management (EBM) approach should be adopted for Menhaden. The Gulf lacks a Total Allowable Catch (TAC) system that accounts for bycatch mortality and predator-prey dynamics. This is in contrast to the Atlantic Menhaden fishery, which has moved toward EBM.
- A federally coordinated observer program should be mandated. The fishery currently has no required annual observer coverage. This study was voluntary and externally funded. Ongoing accountability requires institutionalized, standardized monitoring.
- Bycatch-adjusted quotas or caps should be implemented. Setting bycatch thresholds or deducting bycatch mortality from predator harvest quotas (e.g., red drum) would ensure sustainability.
- There are opportunities to advance bycatch reduction technologies. Fleet variability in gear design shows promise for standardized improvements, such as enhanced excluder devices, tank oxygenation, and gentle handling protocols.
- From the PAC technological analysis above, engineering observations and considerations include:
 - Given the PAC technological analysis (referenced above), considerations may include engineers modifying dimensions like grate spacing or cage size to improve survival rates for sportfish, and agencies recommending or requiring the most effective gear setups across the fleet to reduce bycatch.
- Key sportfish stocks should be protected. Red drum, black drum, and spotted seatrout have recreational and cultural value in the Gulf. TRCP and partners should advocate for integrating bycatch mortality into stock assessments and management.

Why This Matters

- **More than 145 million fish were unintentionally killed** in the 2024 Gulf Menhaden fishery. That includes nearly 250,000 spotted seatrout, a species important to many anglers in the Gulf region.
- Sportfish like red drum and black drum are dying not from angling, but from industrial bycatch. These numbers should be reflected in state and federal management.
- A science-based cap should be placed on Gulf Menhaden harvest that reflects ecosystem needs and bycatch mortality.

- Gulf Menhaden management should align more with Atlantic Menhaden standards, which include EBM and transparent bycatch oversight.

The Charge: Advocacy & Action

- Advocating for Congressional or Gulf States Commission legislation requiring observer programs and TAC reform
- Facilitating gear innovation partnerships with academic institutions and industry
- Partnering with recreational fishing groups and coastal communities to elevate the issue with state resource managers
- Using these findings to inform environmental reviews of Menhaden processing facilities and permits

References

- Lockwood, R., 2024. 2024 Gulf Menhaden Bycatch Study Offers Insights into Number of Fish Killed. Theodore Roosevelt Conservation Partnership. <https://www.trcp.org/2025/07/08/2024-gulf-menhaden-bycatch-study-offers-insights-into-number-of-fish-killed/>
- Naisbett-Jones, L., Mudrak, P., Raborn, S. 2025. Characterization of Bycatch for the Menhaden Purse Seine Fishery Occurring off the Coast of Louisiana. LGL Ecological Research Associates, Inc. https://www.wlf.louisiana.gov/assets/Resources/Publications/Saltwater_Fish/CharacterizationOfBycatch_July_8_Presentation_LGL.pdf.
- Ellis, J. 2025. [Science Snapshot Menhaden Preliminary Bycatch Study Summary 060425](#).
- Ellis, J. 2025. [Science Snapshot Gulf Menhaden Annotated Bibliography 060625](#).

The Science Snapshot is intended to provide an overview of science-based topics and convenings that are relevant to the mission of the TRCP. If you have additional questions, please contact Jamelle Ellis at jellis@trcp.org.