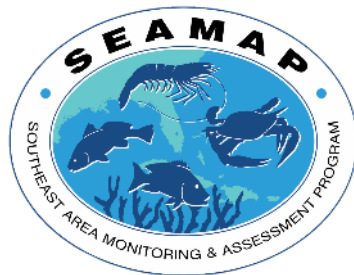


SCDNR Updates for Regional Fishery-independent Surveys

Relative Abundance Trends, Distributions & Demography

Tracey Smart, Julie Vecchio, Margaret Finch, Amy Zimney,
Dimitrios Kyridis, Elizabeth Bullard & Walter Buble (SCDNR)
Nathan Bacheler, Kevin Craig & Christina Schobernd (SEFSC)

April SAFMC SSC Meeting



Presentation Overview

Regional Fishery-Independent Surveys

MARMAP/SERFS Chevron-Video Trap

Coastal Trawl Survey

South Atlantic Deep-water Longline Survey

Survey Design

Index of Abundance Methods

Distribution, Abundance & Length for Selected Spp.

Caveats for Today's Data Products

- Not updates of stock status
- One (of several) data inputs
- May not have been reviewed in an assessment framework (SEDAR or otherwise) yet
- Constraints, stratification, units, and models may be different from those used in stock assessments (SEDAR or otherwise)





Southeast Reef Fish Survey (SERFS)

2010-Present:

MARMAP + SEAMAP-SA + SEFIS

Chevron-Video Trap

1990-2009:

MARMAP

Chevron Trap



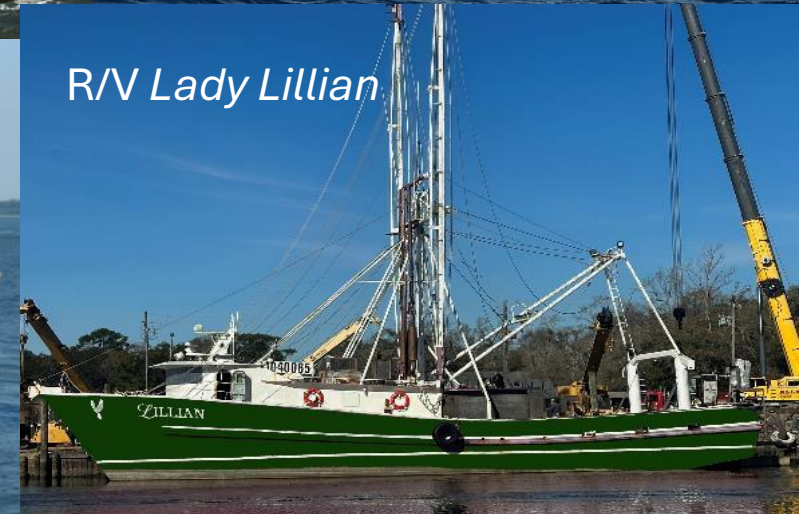
R/V Savannah



NOAA Ship *Pisces*



R/V Palmetto

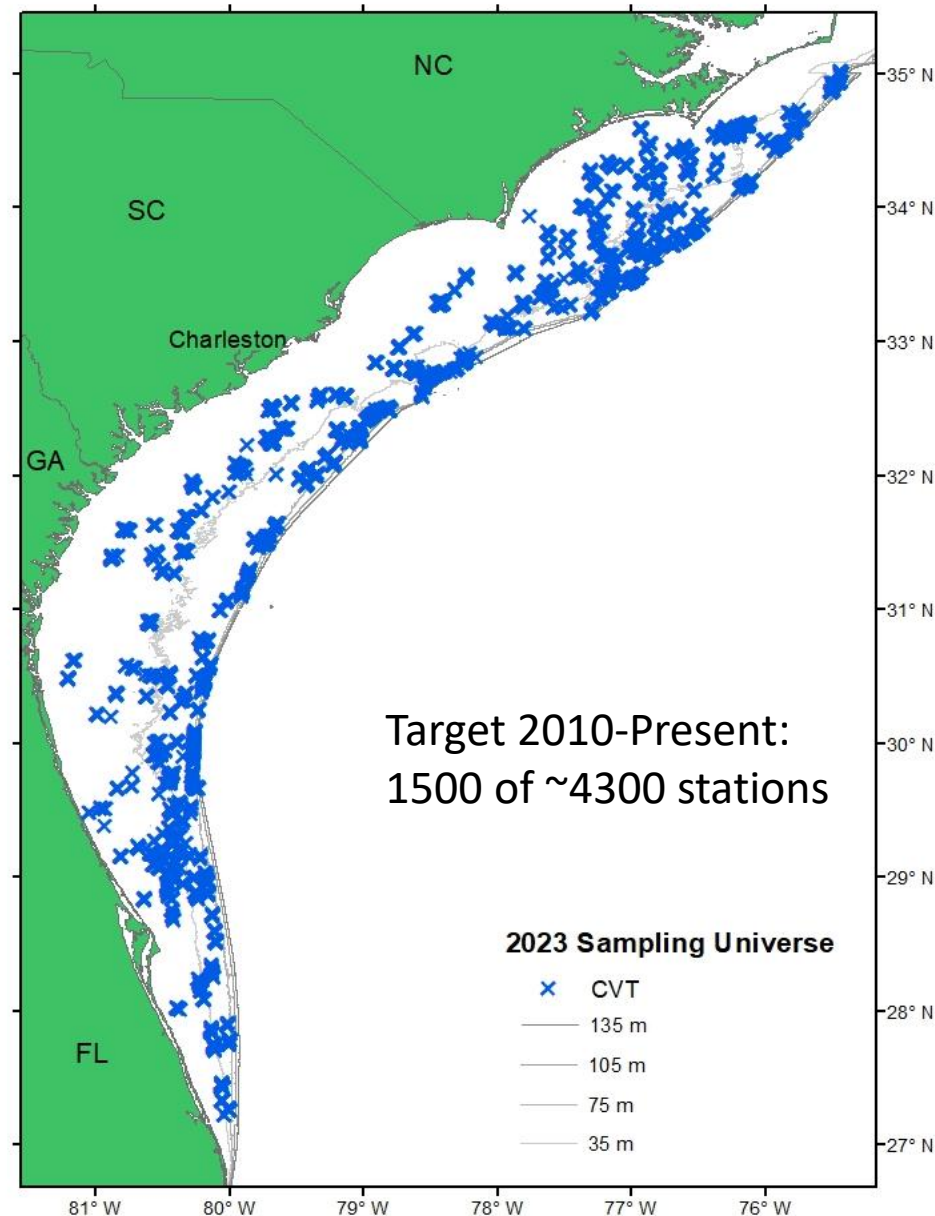
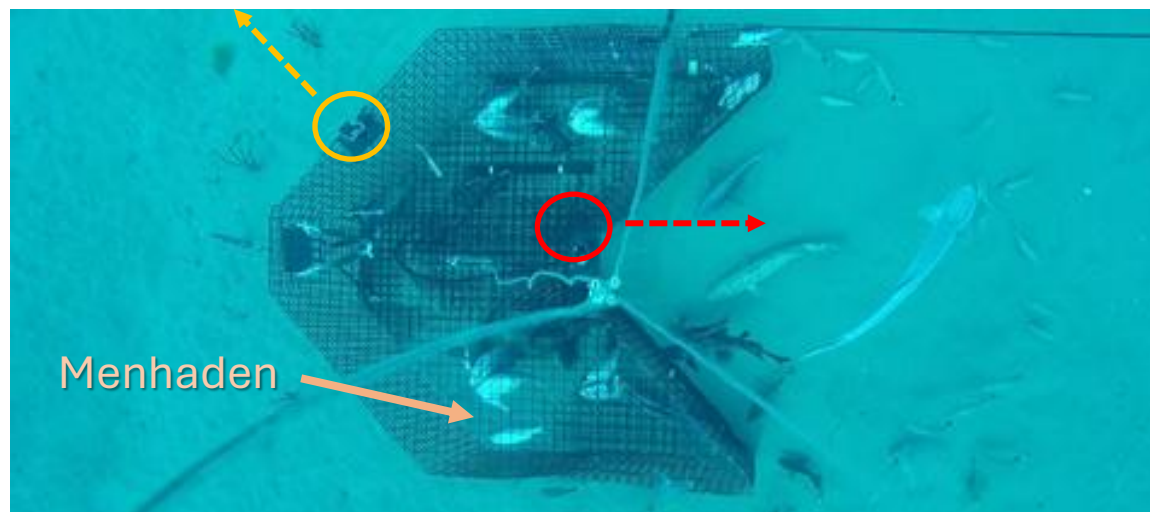


R/V Lady Lillian

Marine Resources Monitoring, Assessment & Prediction Program (SCDNR)
Southeast Area Monitoring & Assessment Program - South Atlantic (SCDNR)
Southeast Fishery-Independent Survey (SEFSC)

Chevron-Video Trap (CVT) Design

- Target low to medium relief, hard-bottom habitats
- Simple, random selection
 - with Common-Sense execution
- Depths ~15-110 m
- ~April 15 - Oct. 14
- Paired with bottom water temperature
- 2011: all traps have 2 video cameras (2010 ~half)





2025 SERFS Sampling

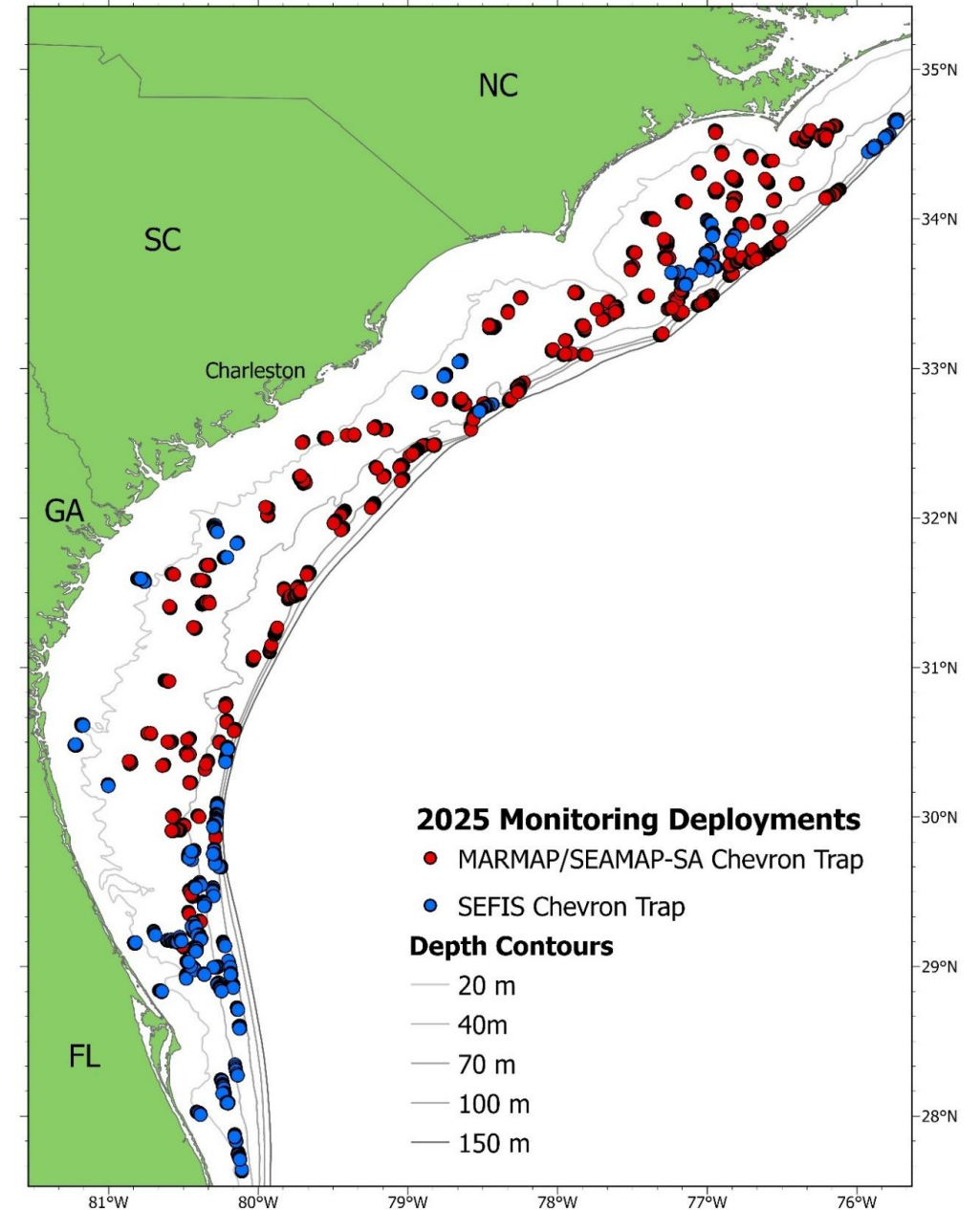
85 Days at sea

1,518 Stations sampled (100% completion)

38 Potential stations investigated

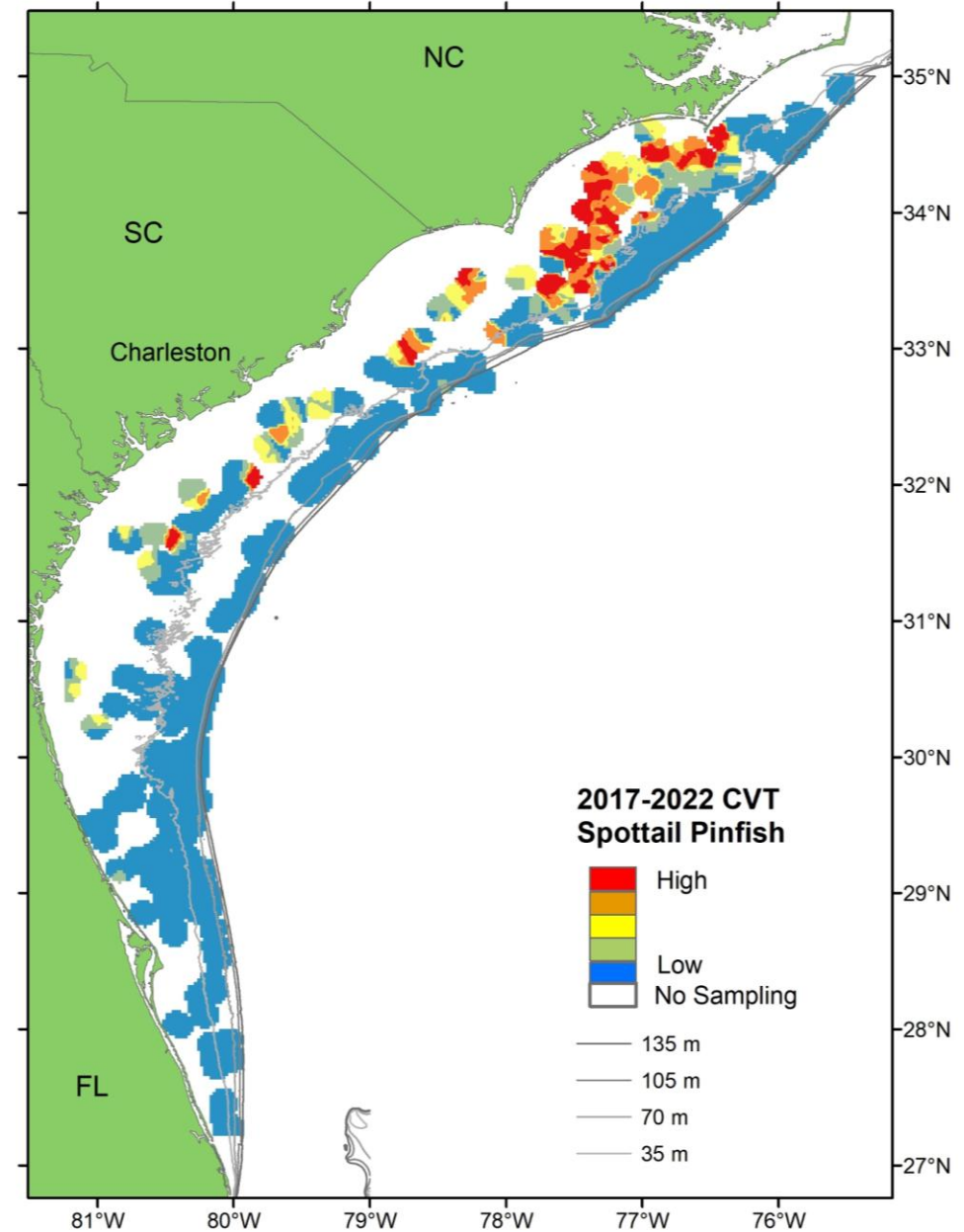
60 Species counted, weighed & measured

26 Species sampled for life history



Data Products Methods: CVT Distributions

- Only CVT catch
- Catch abundance in quintiles (5 bins)
 - # fish / trap hour
- 5 most recent years: 2021-2025
- Cooler colors => lower nominal abundance
- Warmer colors => higher nominal abundance
- White => no sampling



Data Products Methods: CVT Abundance Indices

Zero-Inflated Negative Binomial (ZINB) or Poisson (ZIP) model

- Depth
- Day of Year
- Latitude
- Bottom Temperature
- Video: Bottom Habitat types

Catch:

- Number of fish
- Trap soak time

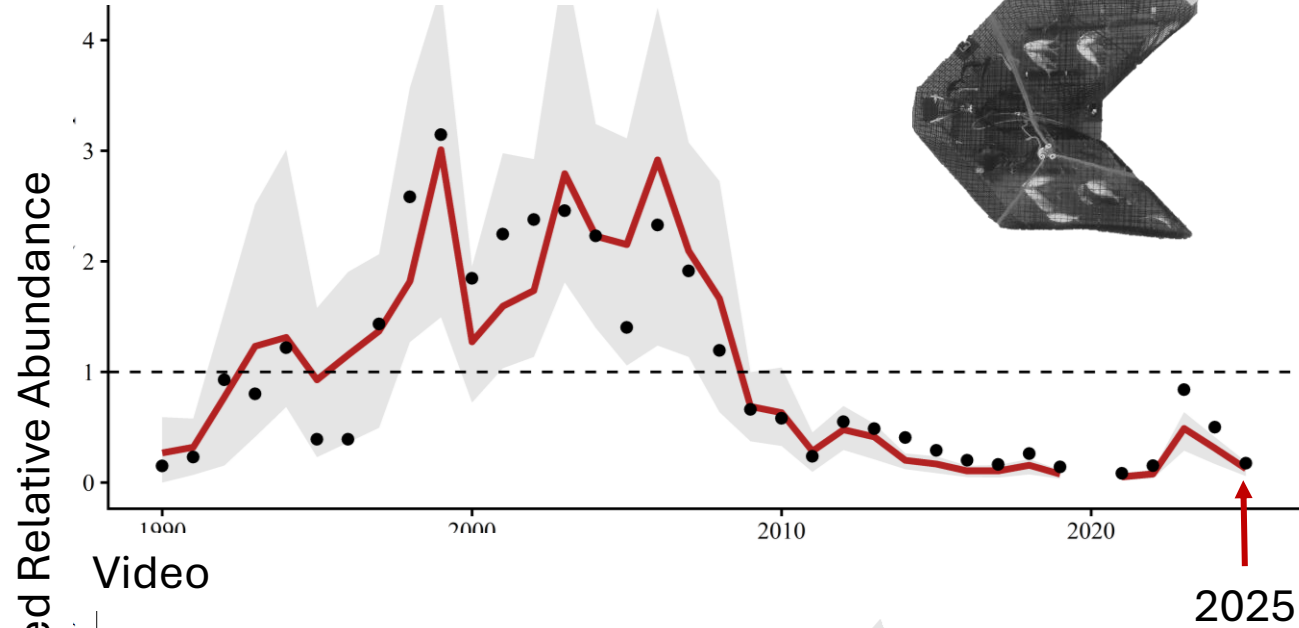
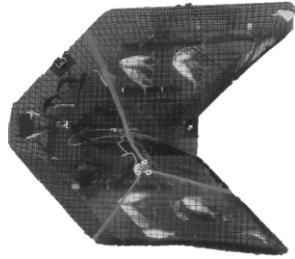
Video:

- SumCount
- 10 min after trap lands
- One frame every 30 s for 20 min



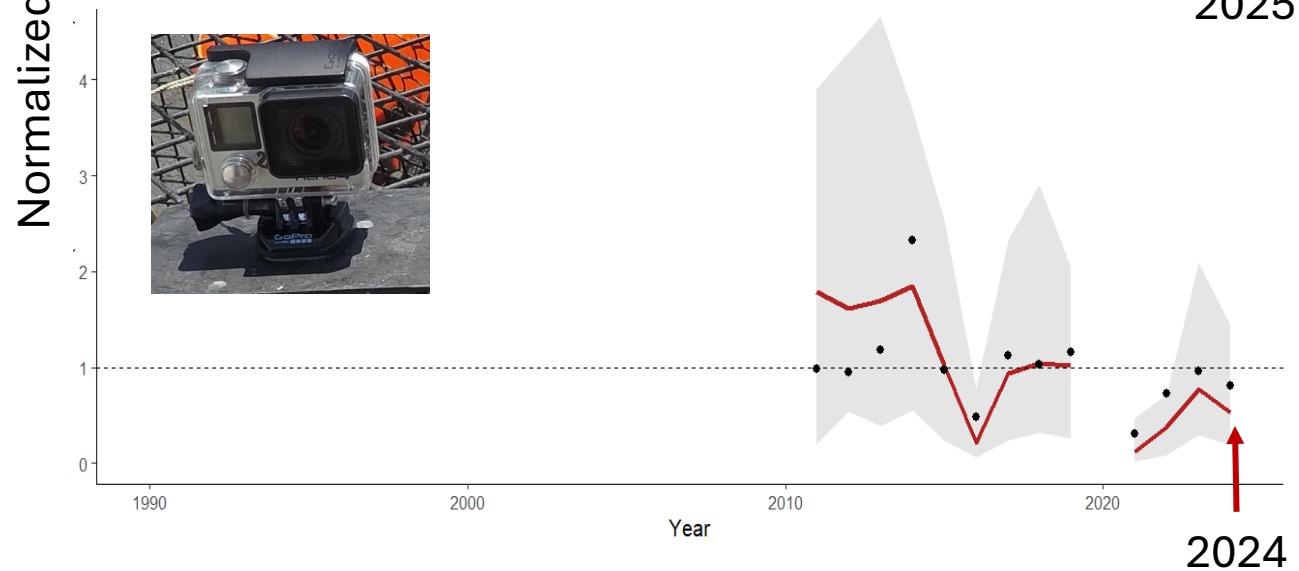
Indices- Example

Catch



| | |
|-----------------|------------------------------------|
| Red Line | Index Time Series |
| Gray Shading | 95 % Confidence Interval (“error”) |
| Black Dots • | Nominal Values (“basic counts”) |

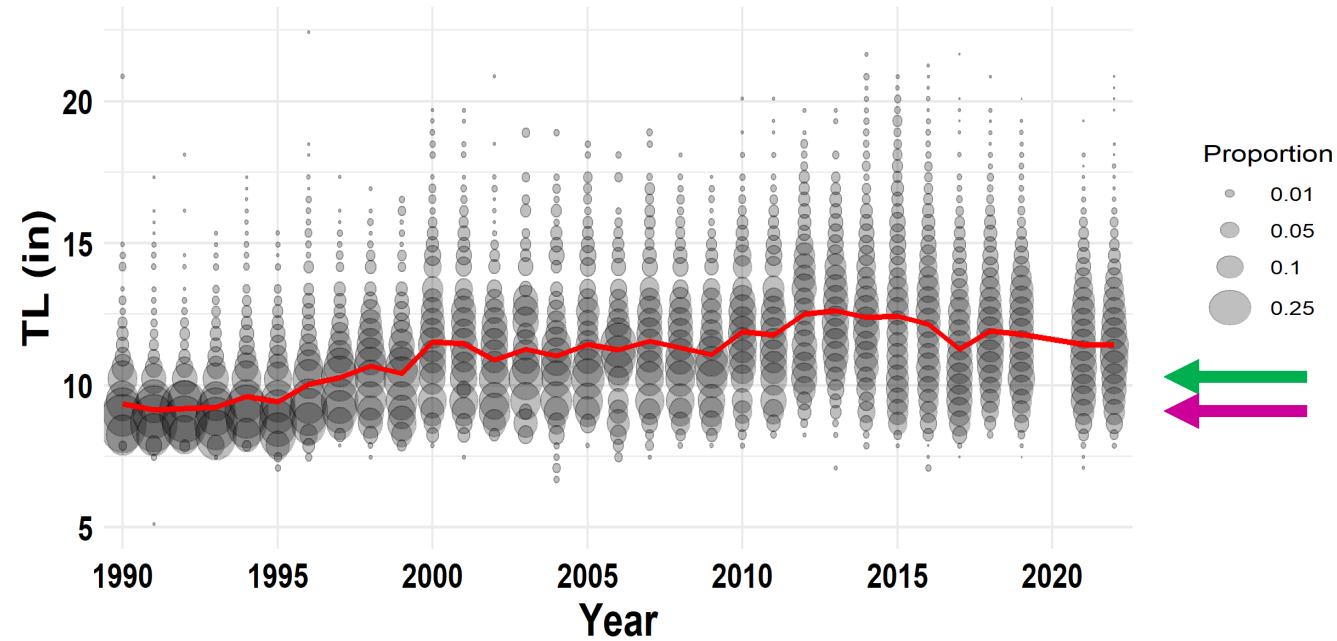
Video



Normalized to long-term average
(dashed line at 1)

- 2 = twice long-term average
- 0.5 = half long-term average

Data Products Methods: CVT Length Compositions

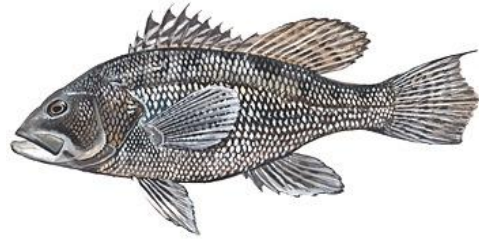


- Catch Only
- Maximum (Pinched) Total Length (in)
- 1-in Length Bins
- Bubble size = # fish in length bin / # fish measured in a year
- Red Line = Average TL
- Green Arrow = Commercial MSL
- Pink Arrow = TL at 50% Maturity, Female

CVT Catch Only* or Catch & Video Selected Species 2025 Catch Rankings



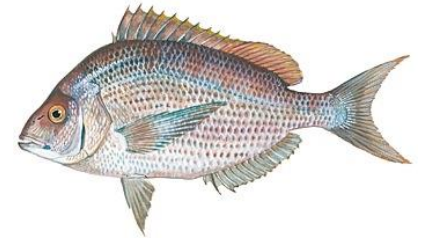
1. Tomtate*



2. Black Sea Bass



3. Vermilion Snapper



4. *Stenotomus* spp.*



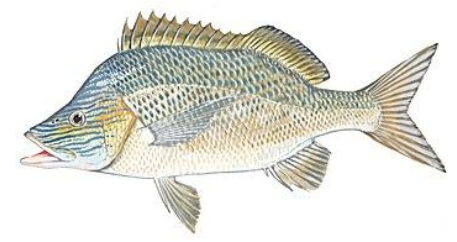
5. Red Snapper



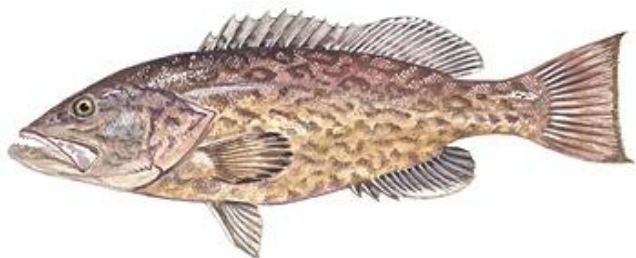
6. Gray Triggerfish



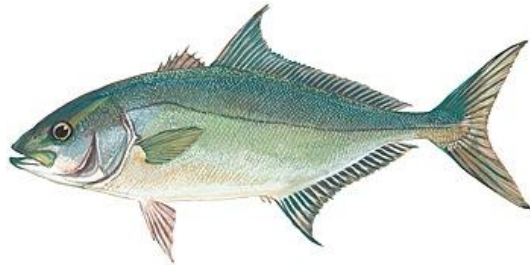
9. Red Porgy



10. White Grunt



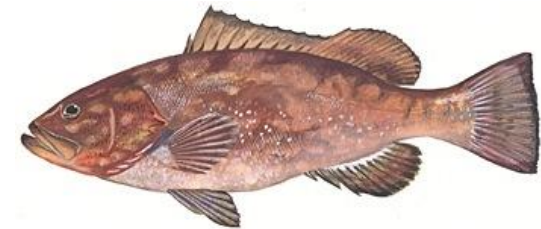
14. Gag



15. Almaco Jack

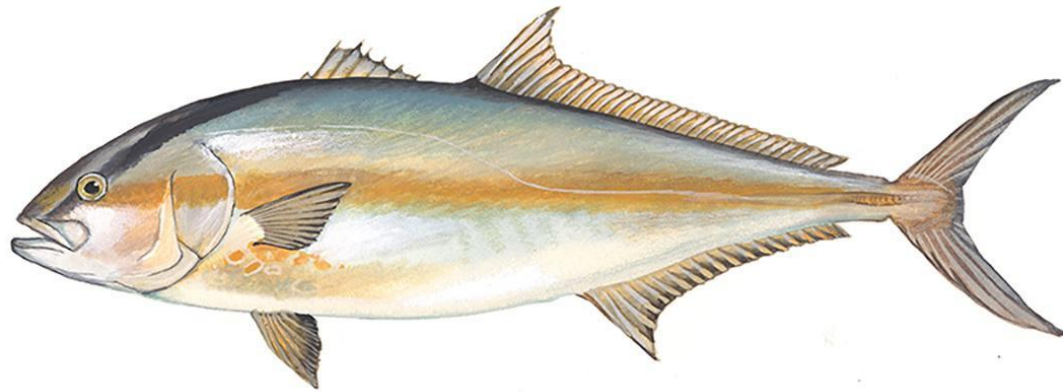


16. Scamp

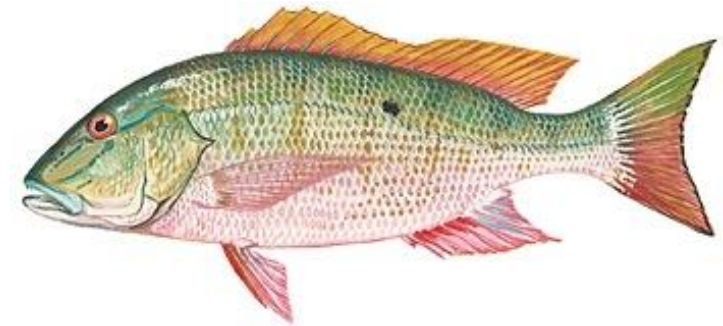


20. Red Grouper

CVT Video Only Selected Species



Greater Amberjack



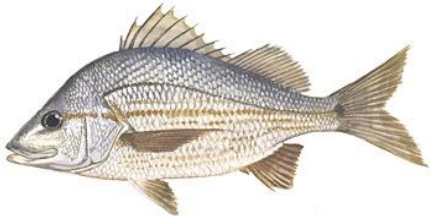
Mutton Snapper

CVT Video Only Selected Species

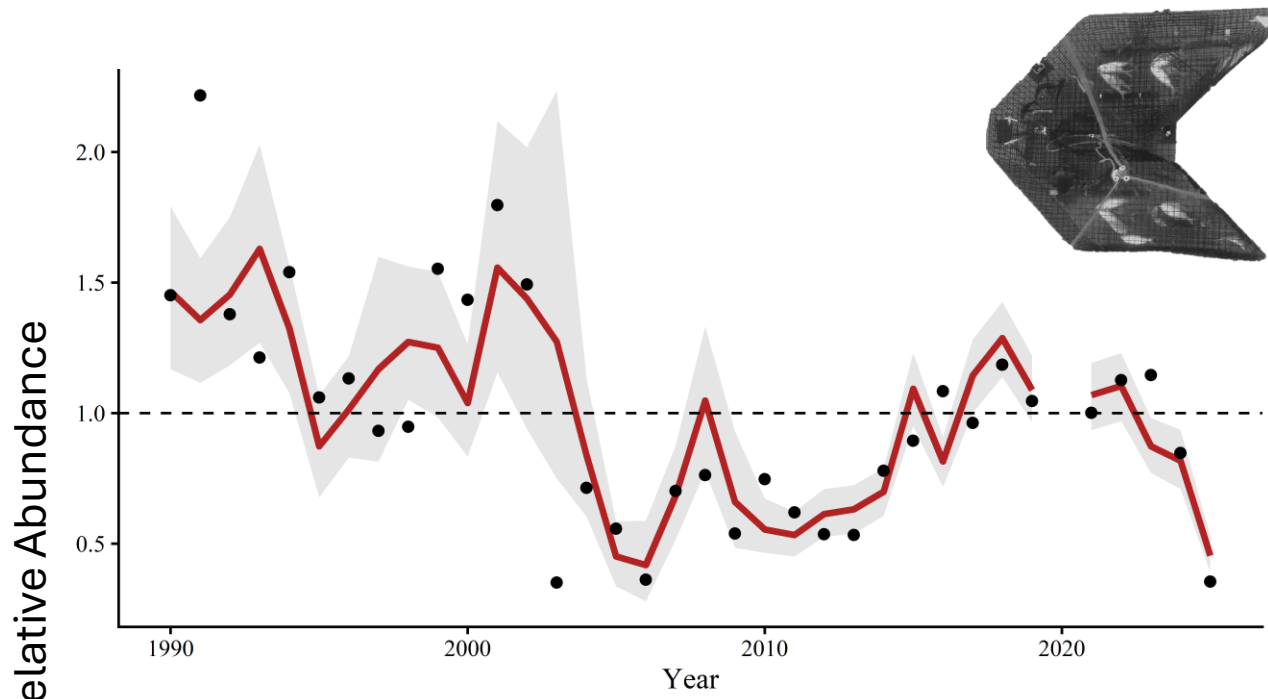
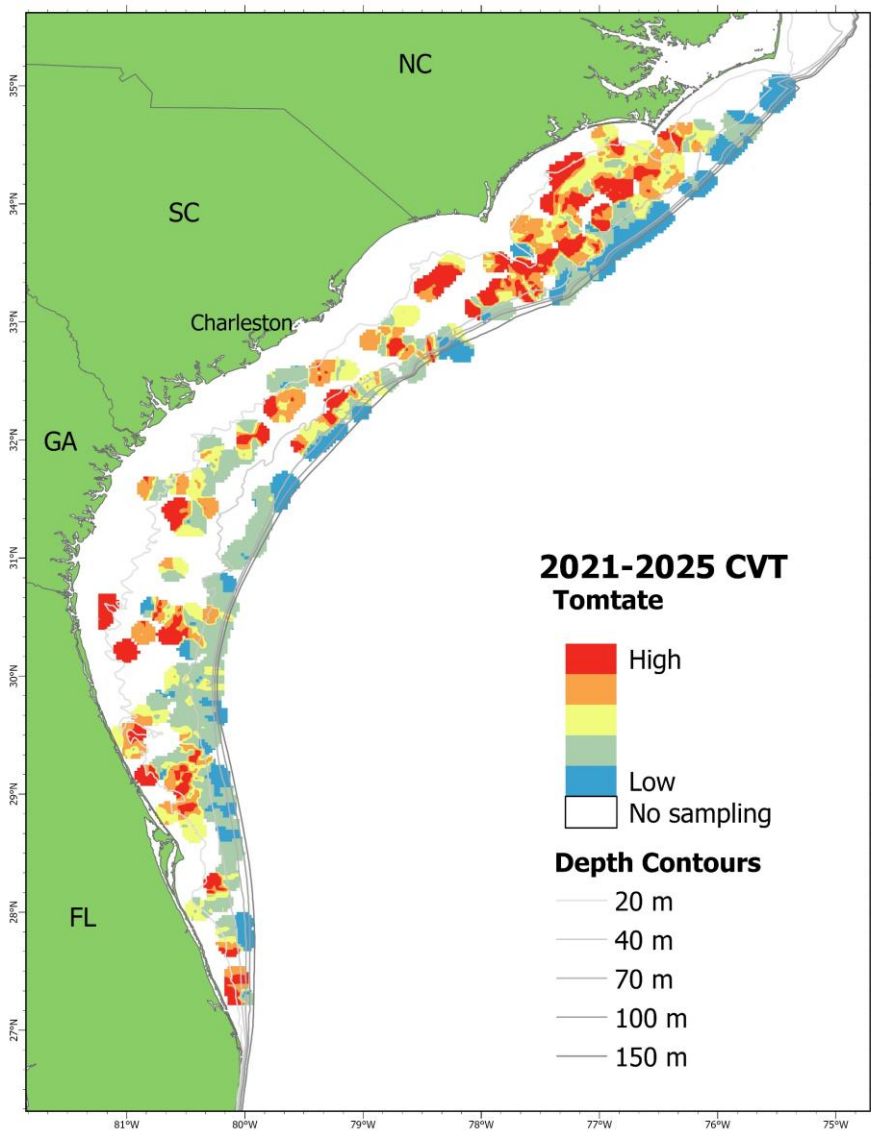


Cobia?

er

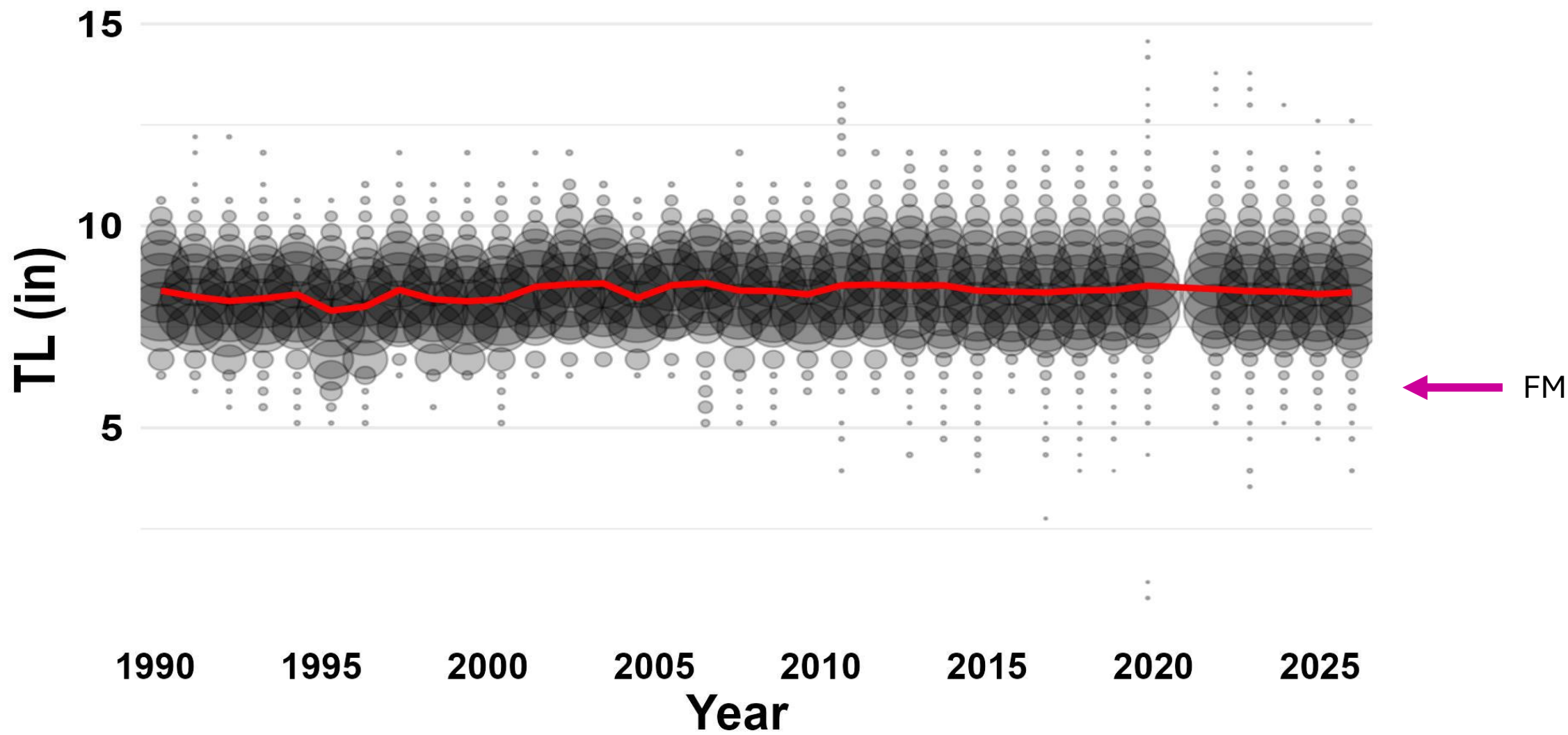


Tomtate



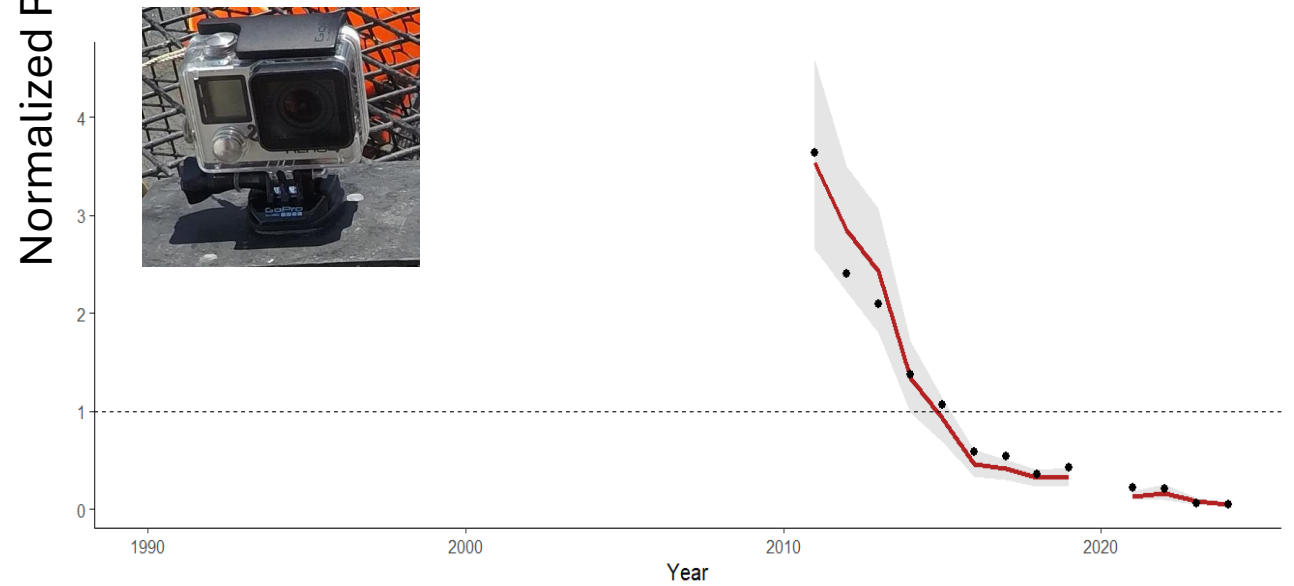
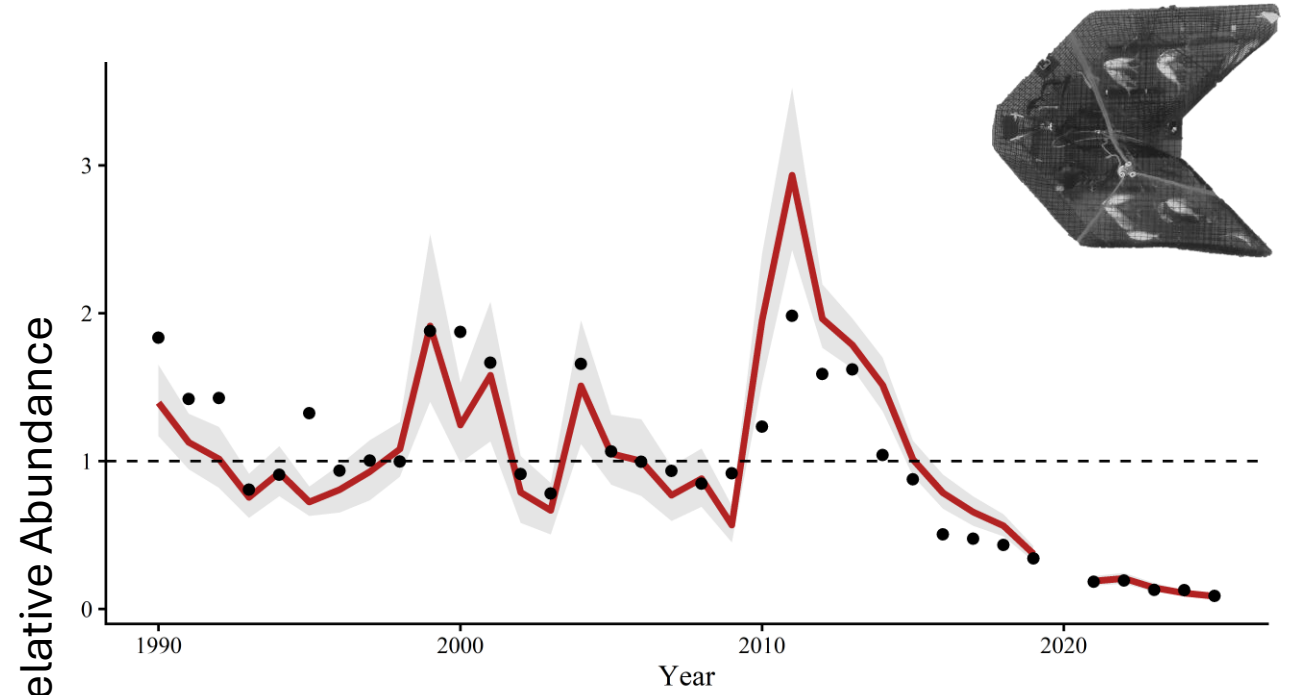
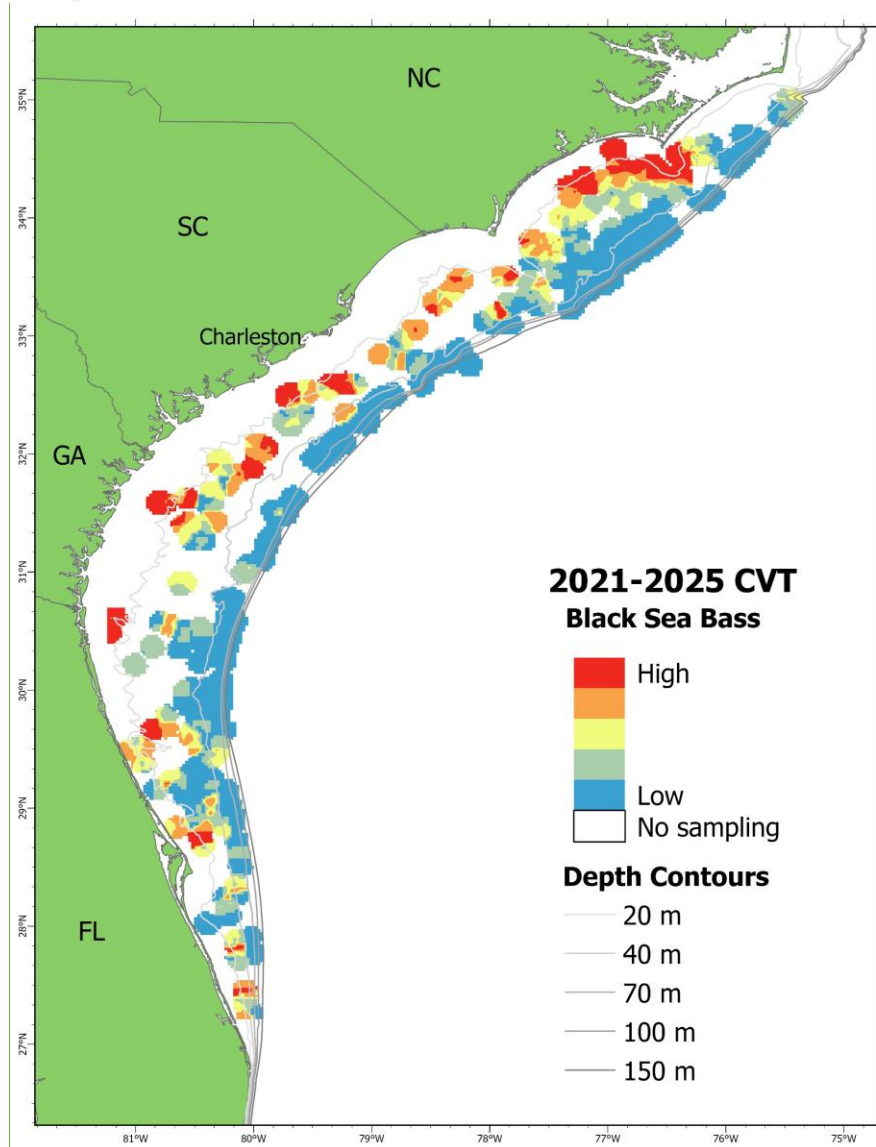


Tomtate



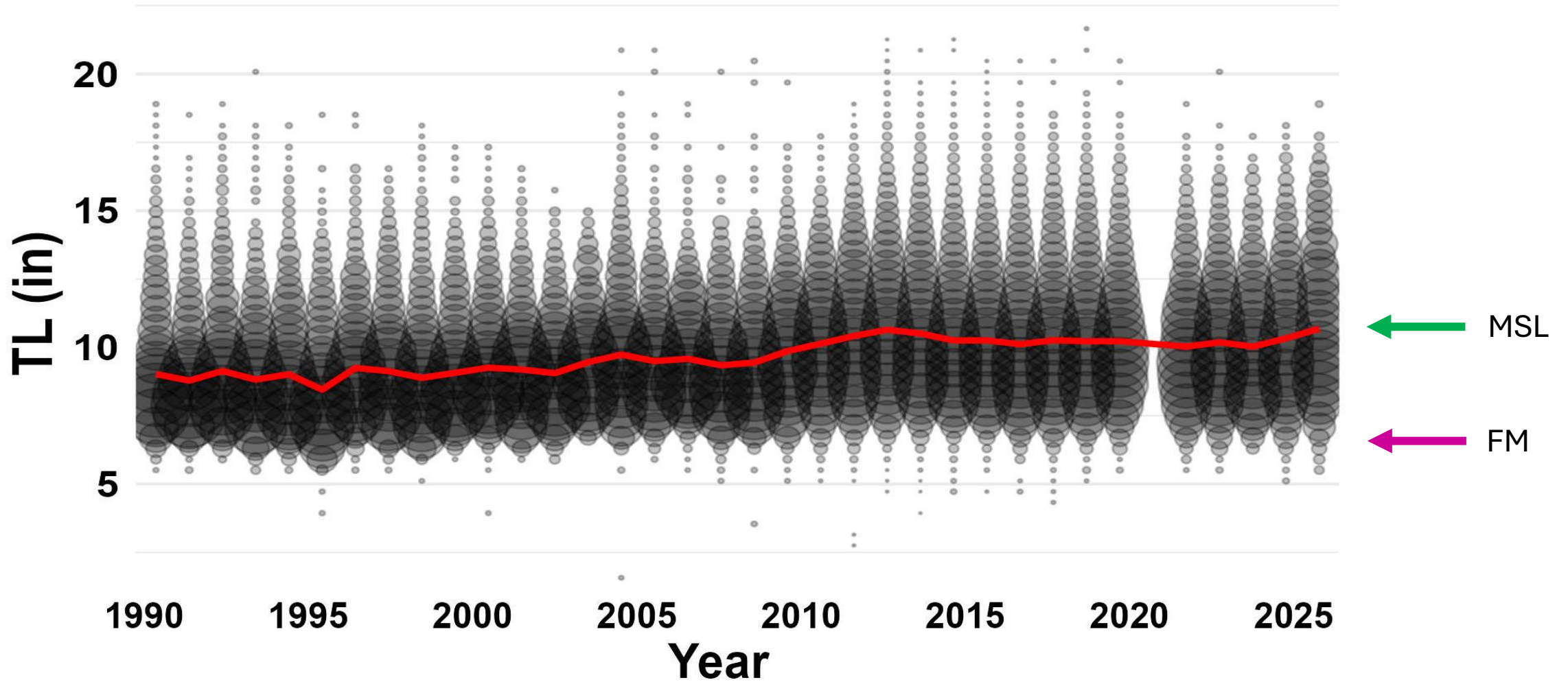


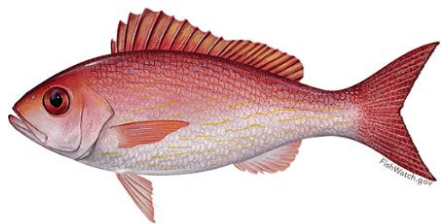
Black Sea Bass



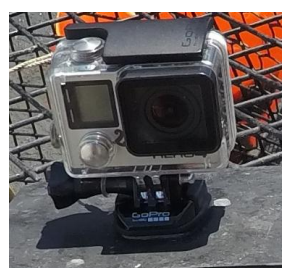
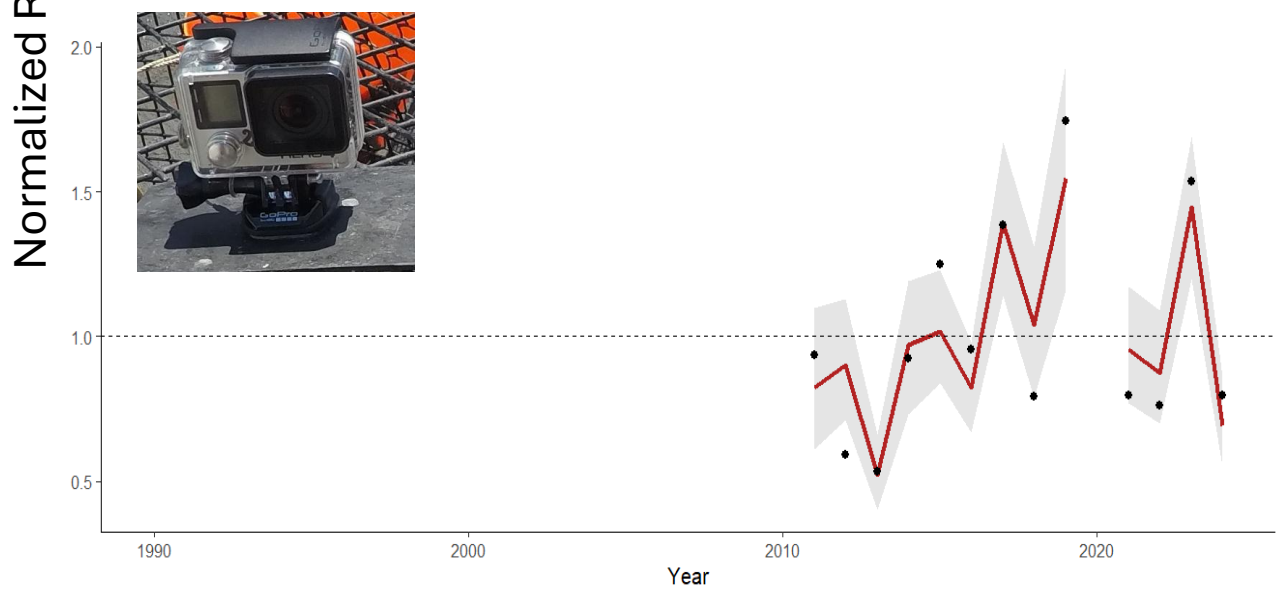
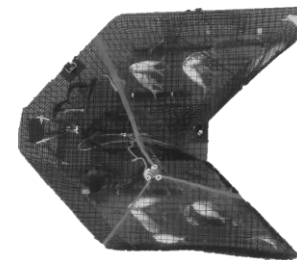
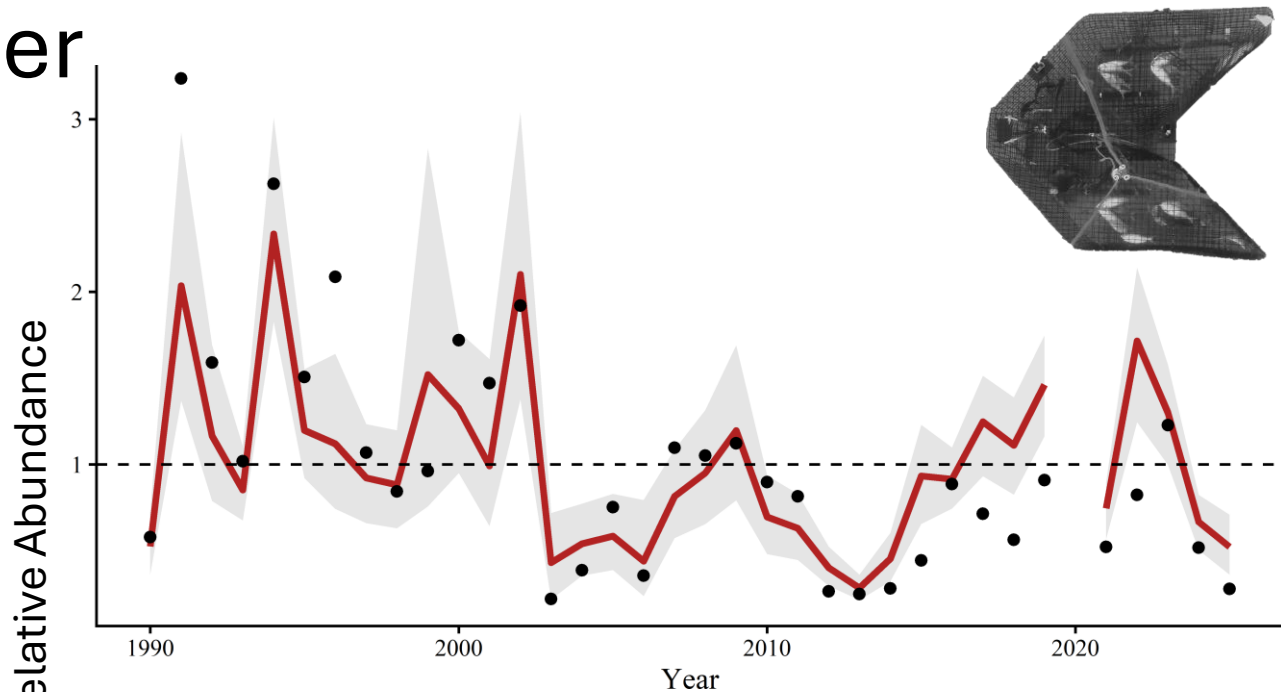
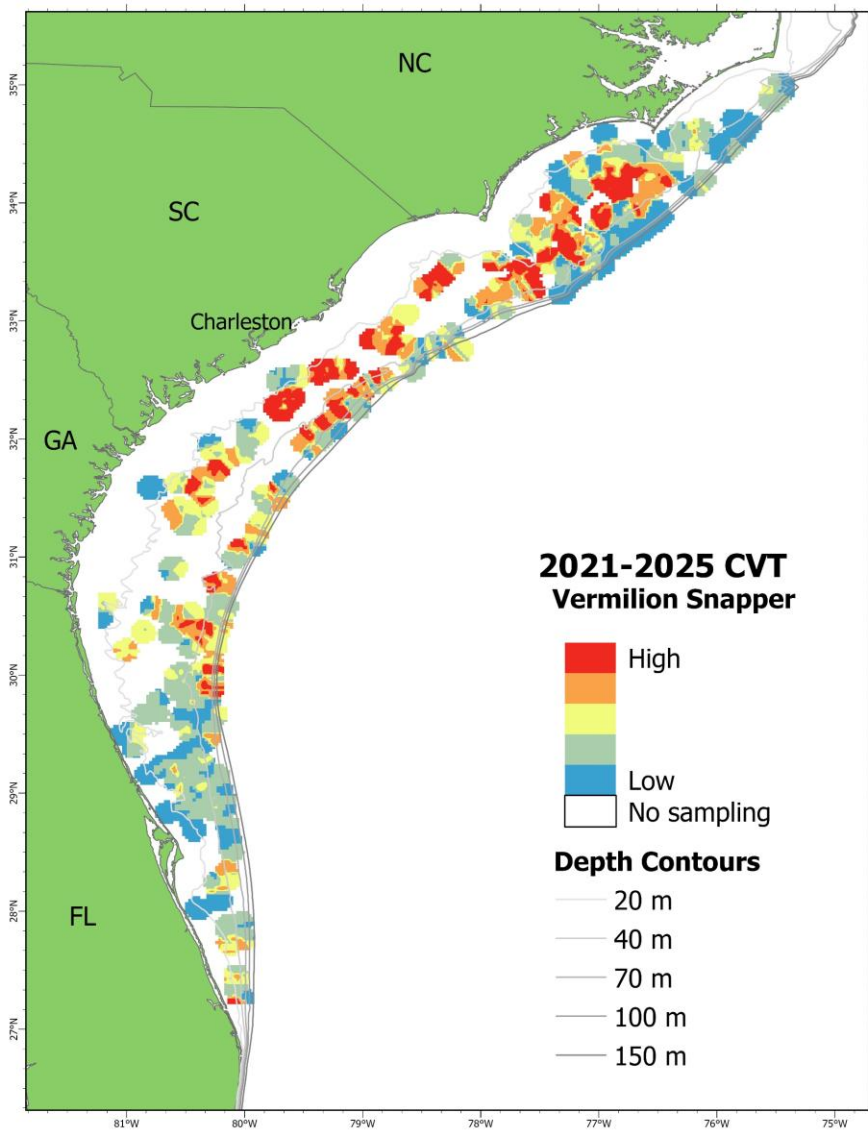


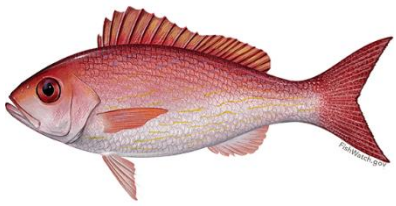
Black Sea Bass



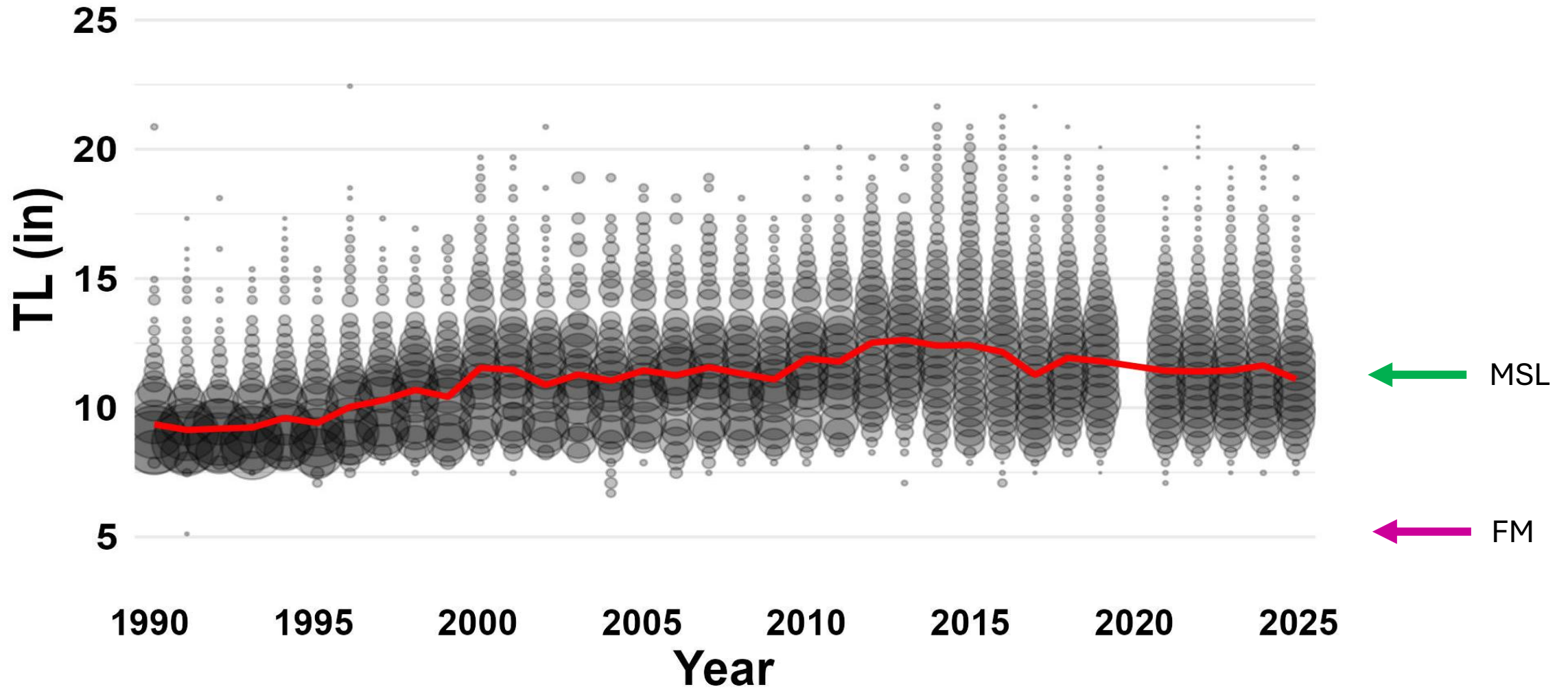


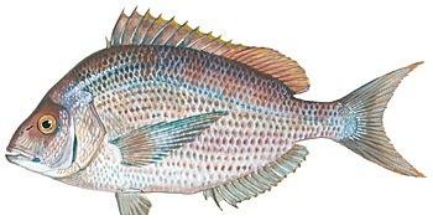
Vermilion Snapper



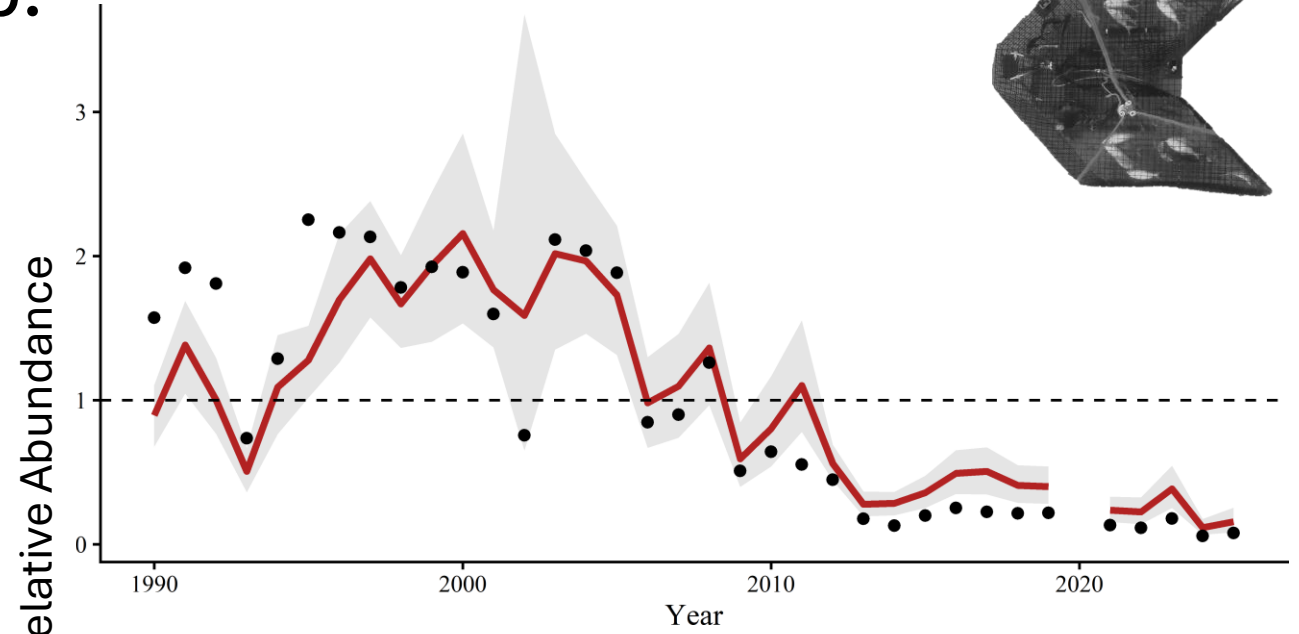
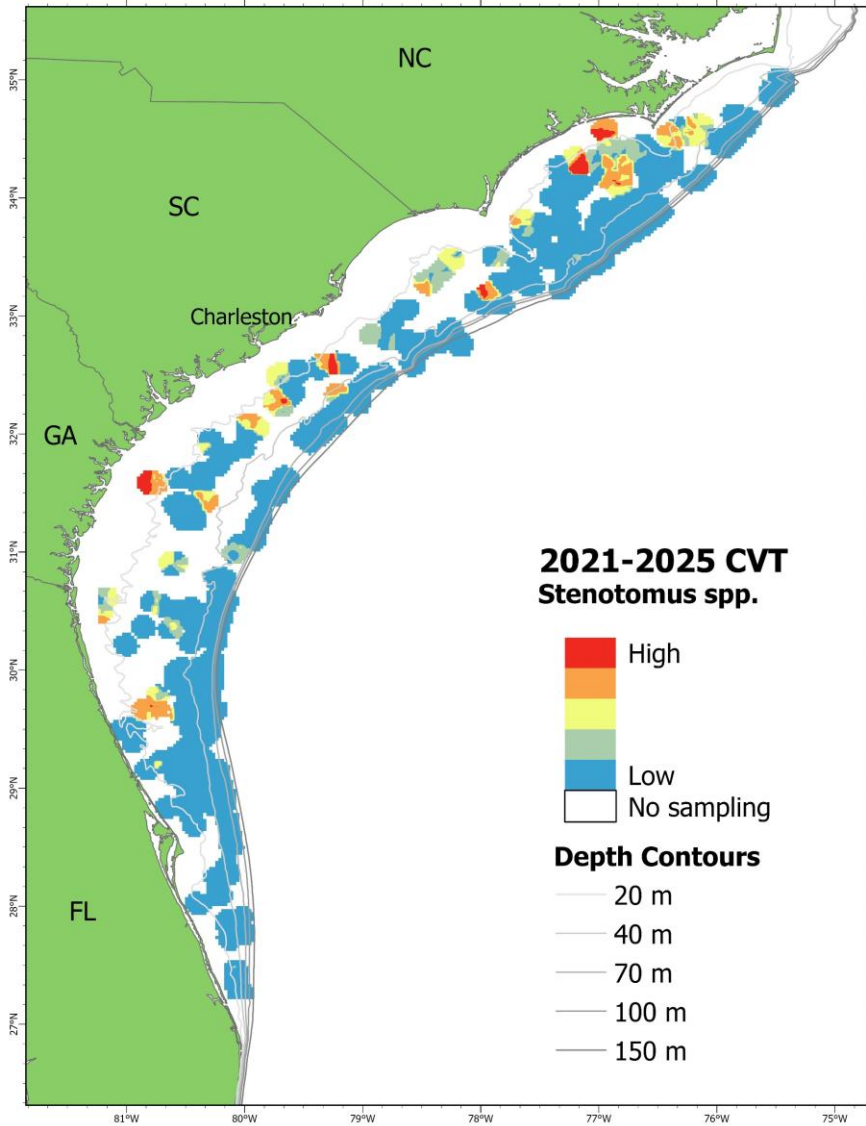
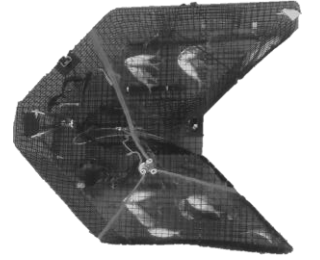


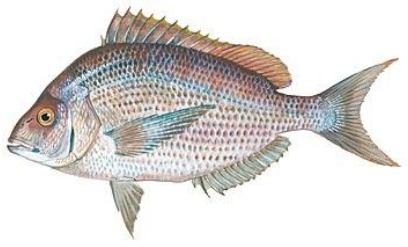
Vermilion Snapper



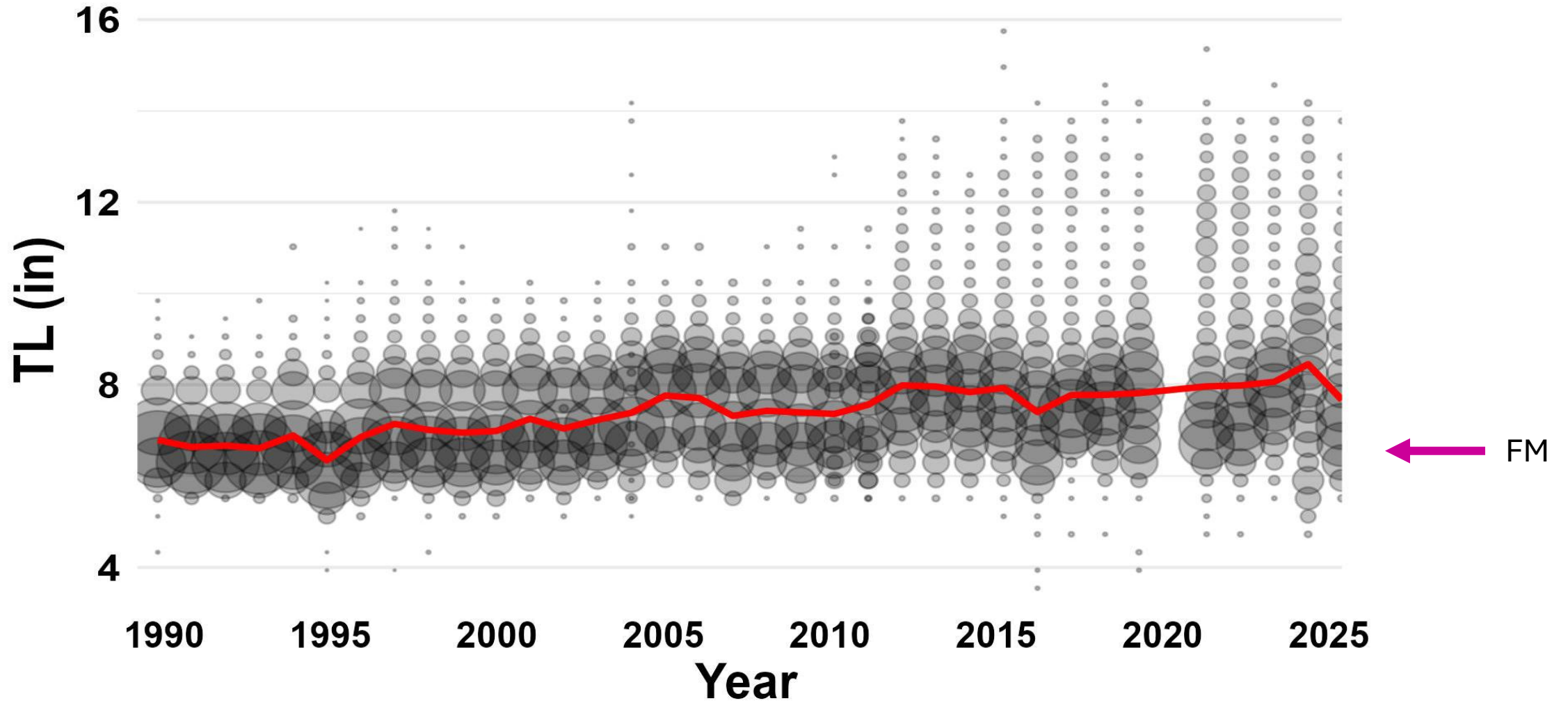


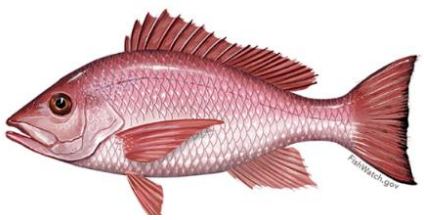
Stenotomus spp.



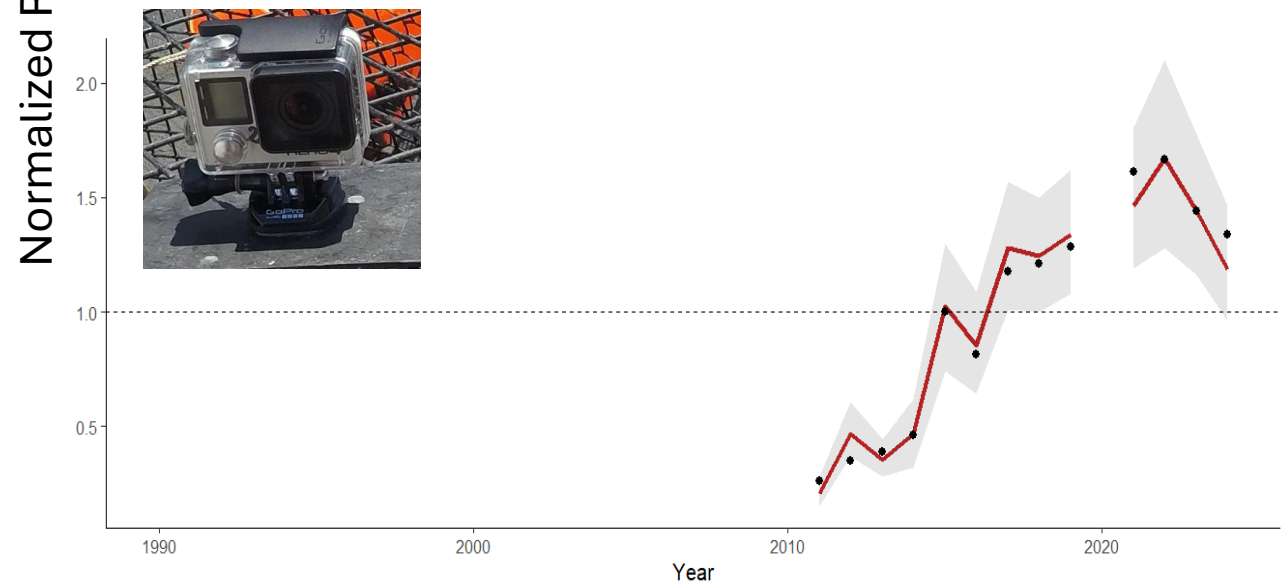
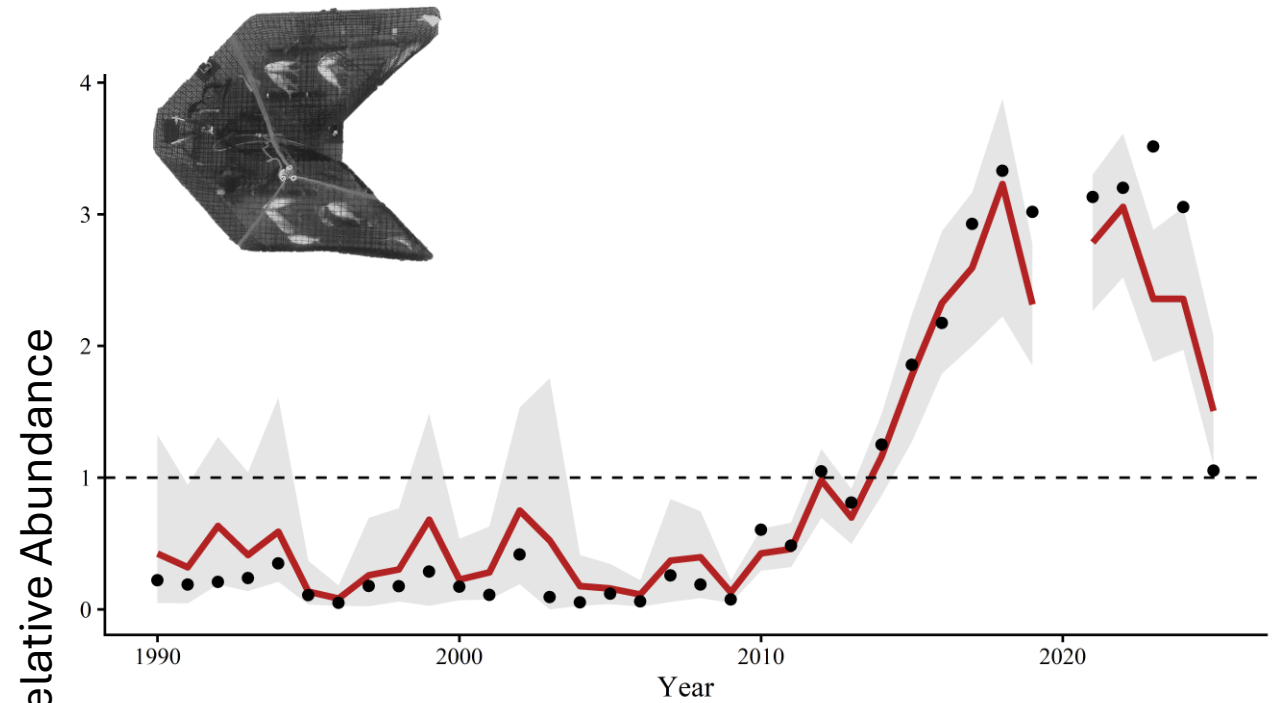
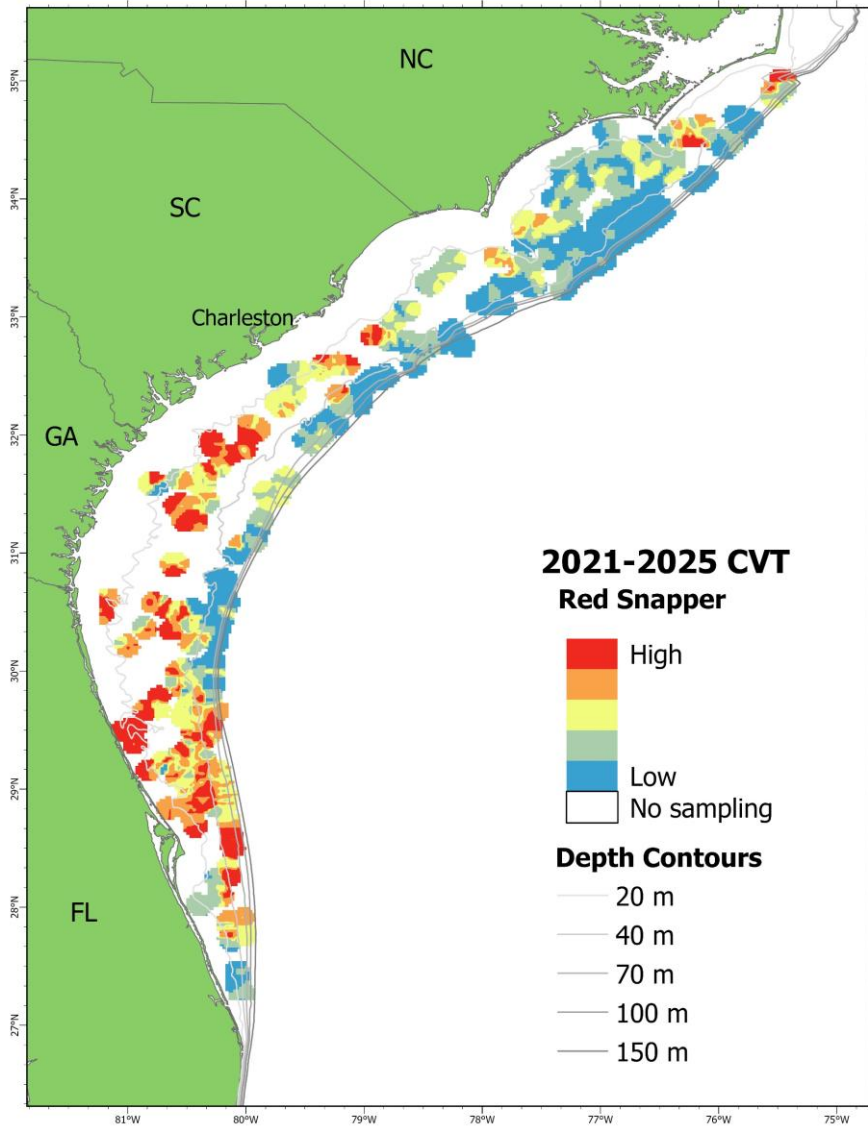


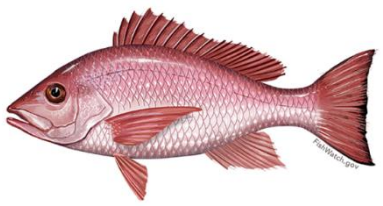
Stenotomus spp.



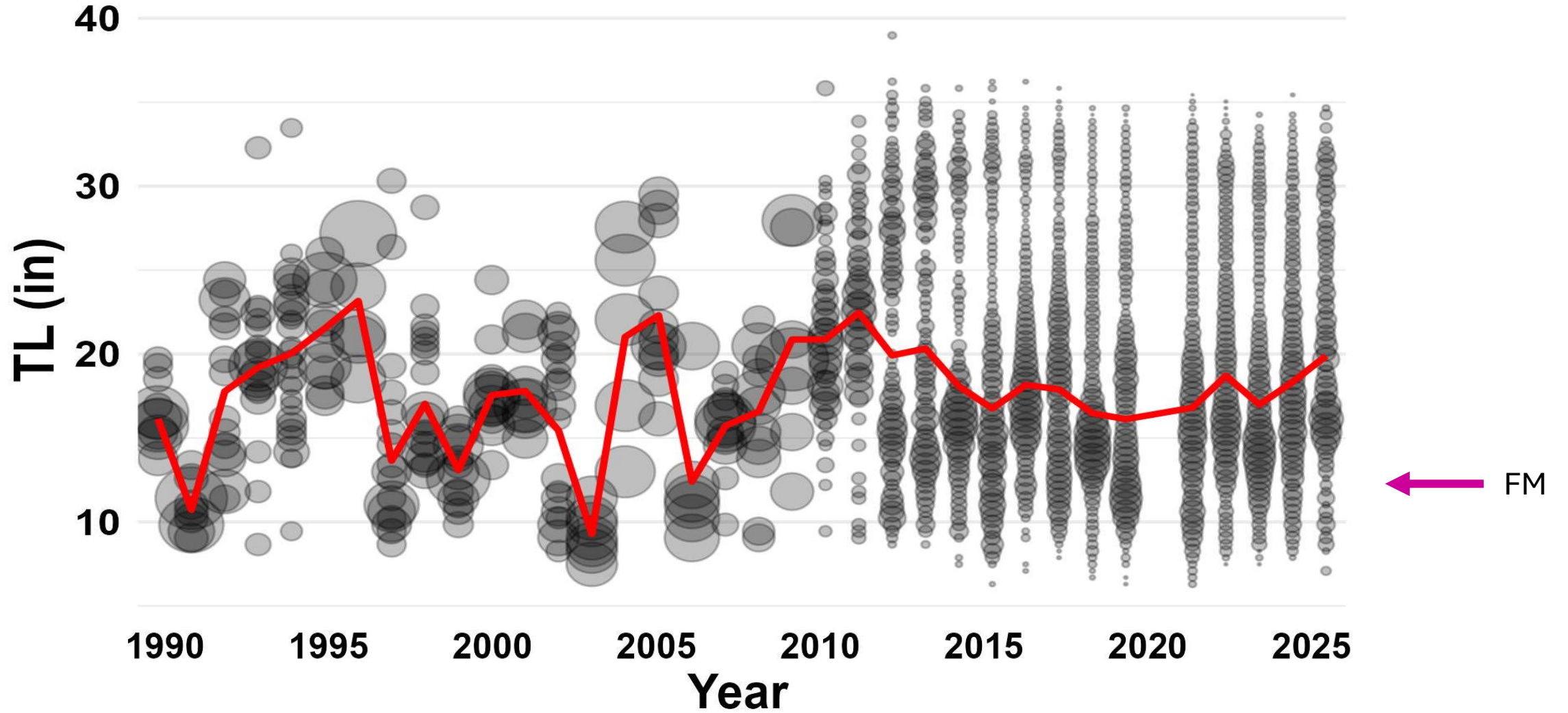


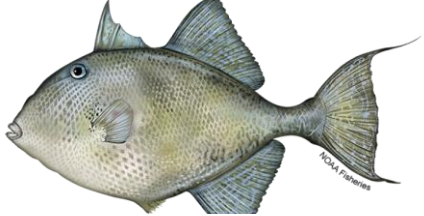
Red Snapper



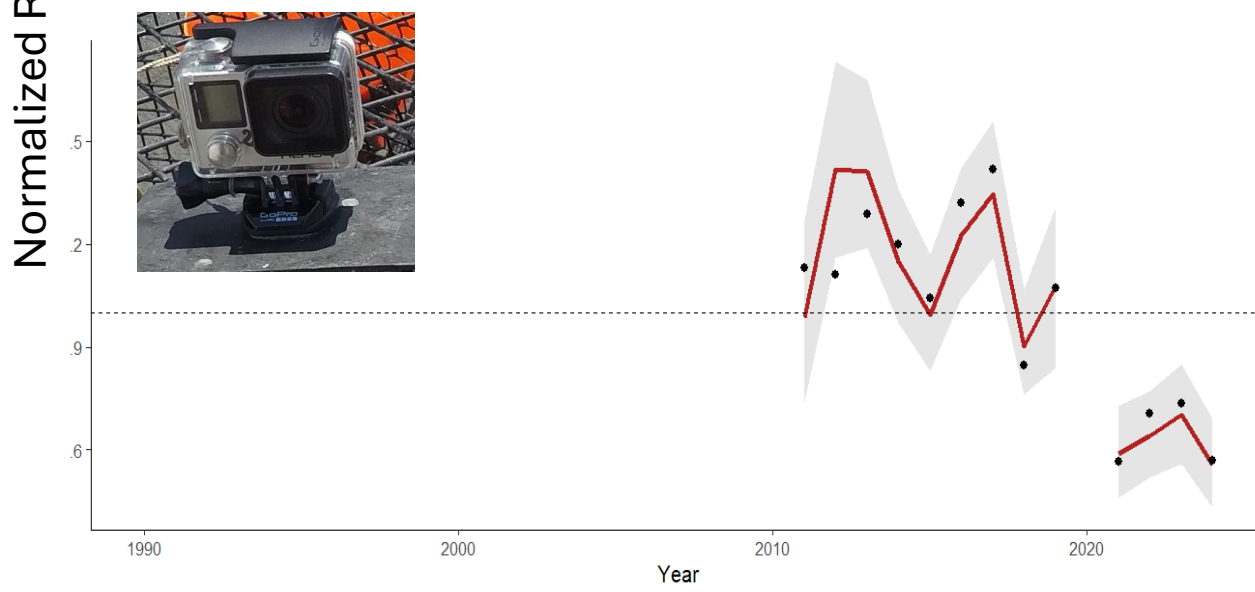
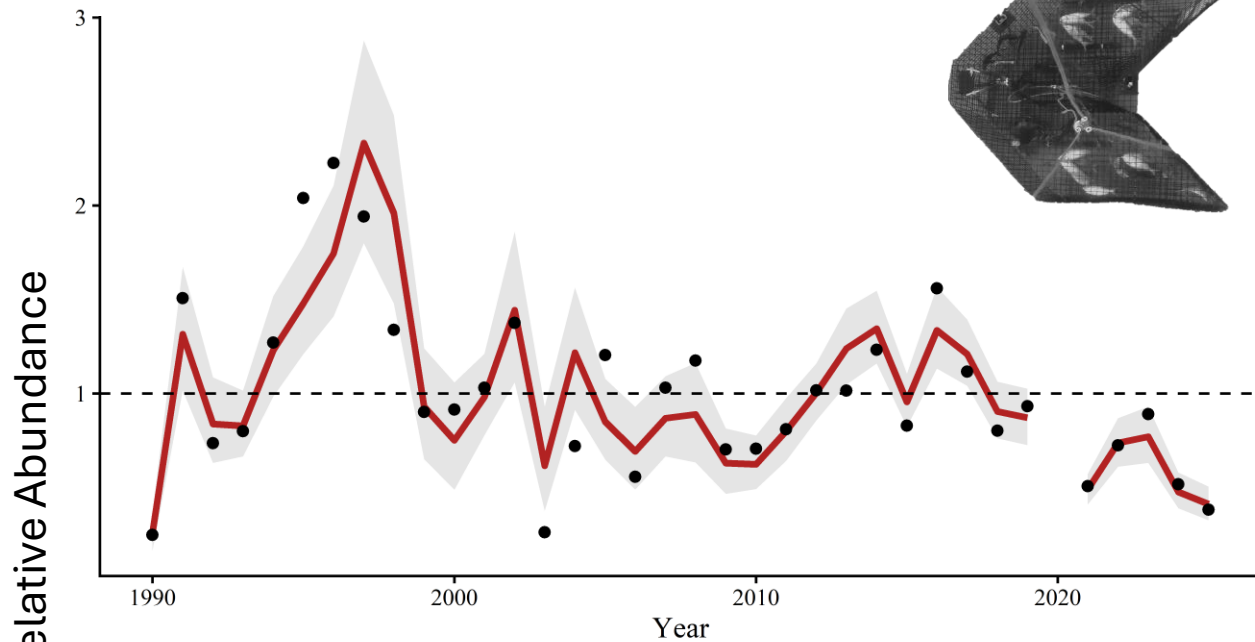
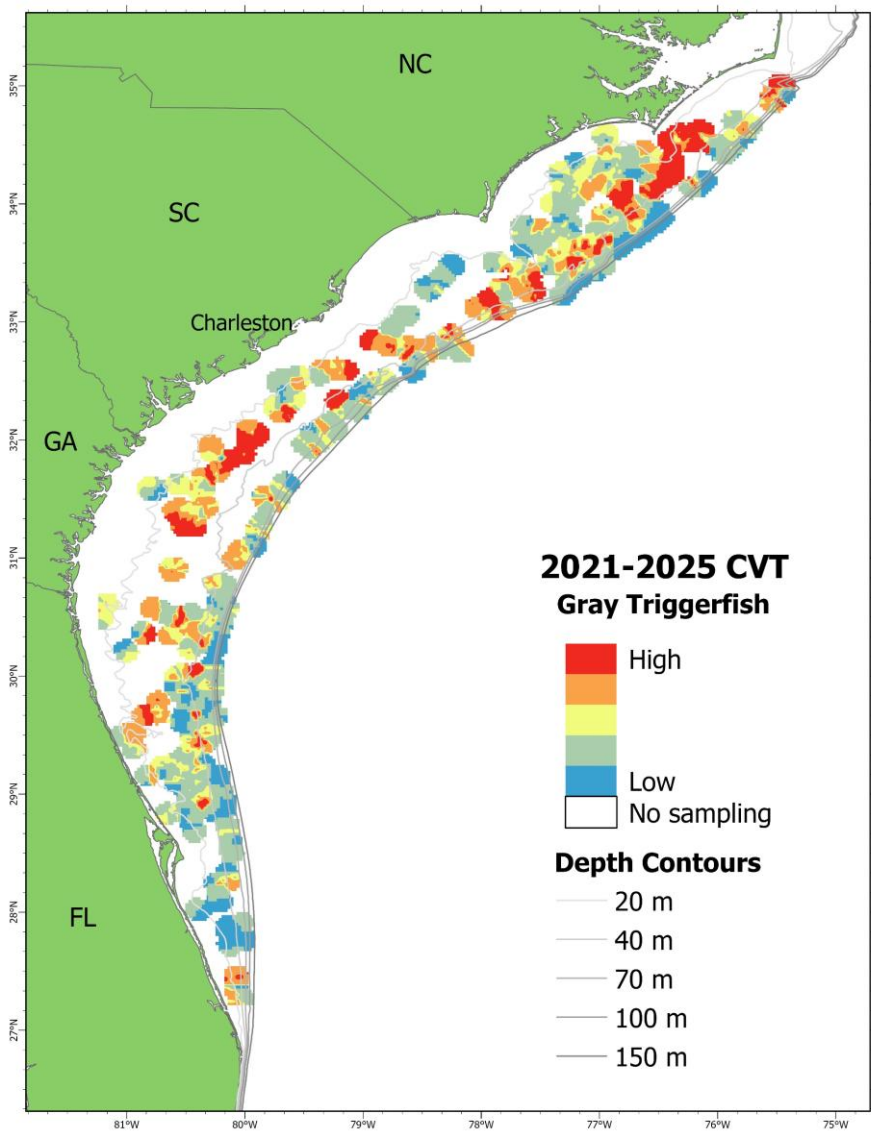


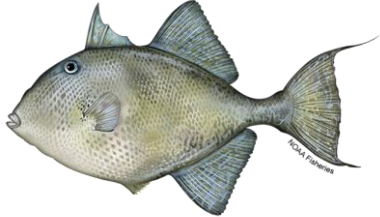
Red Snapper



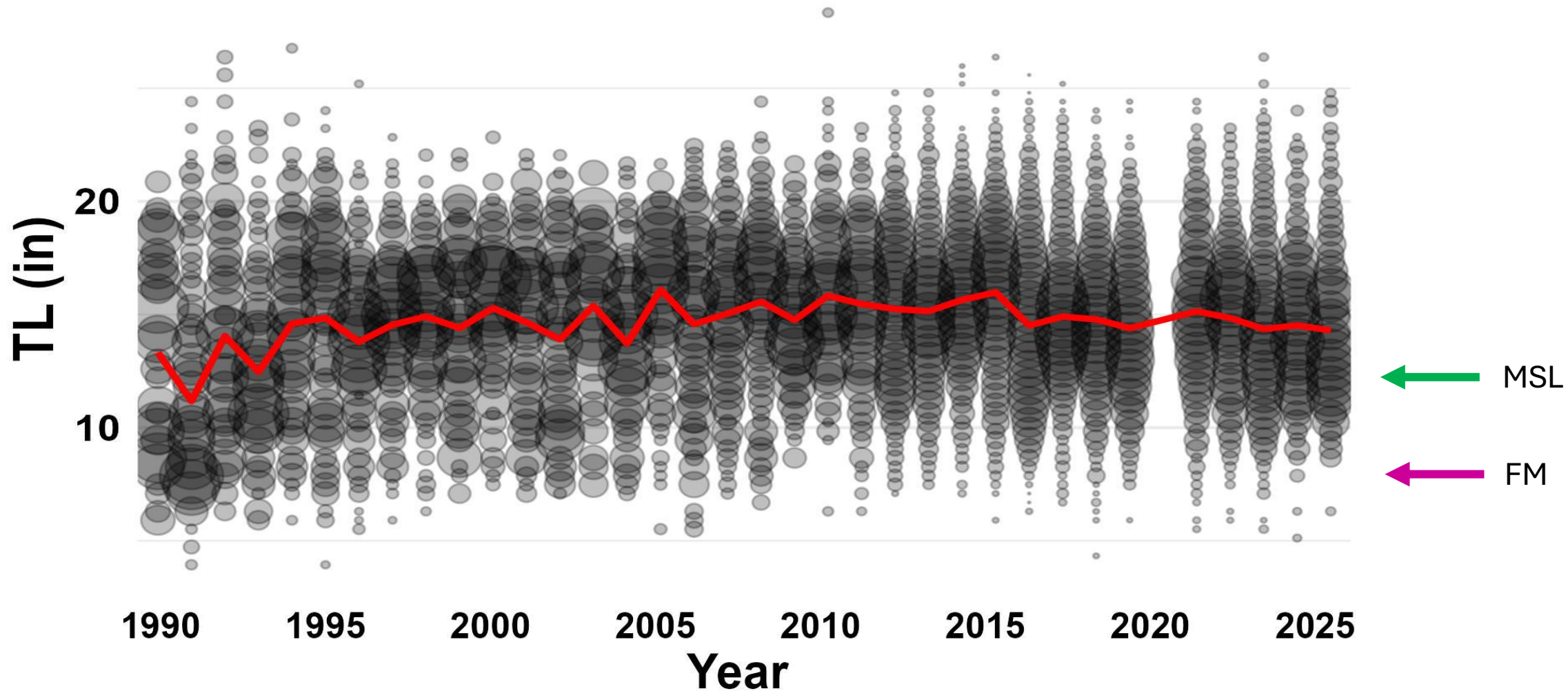


Gray Triggerfish



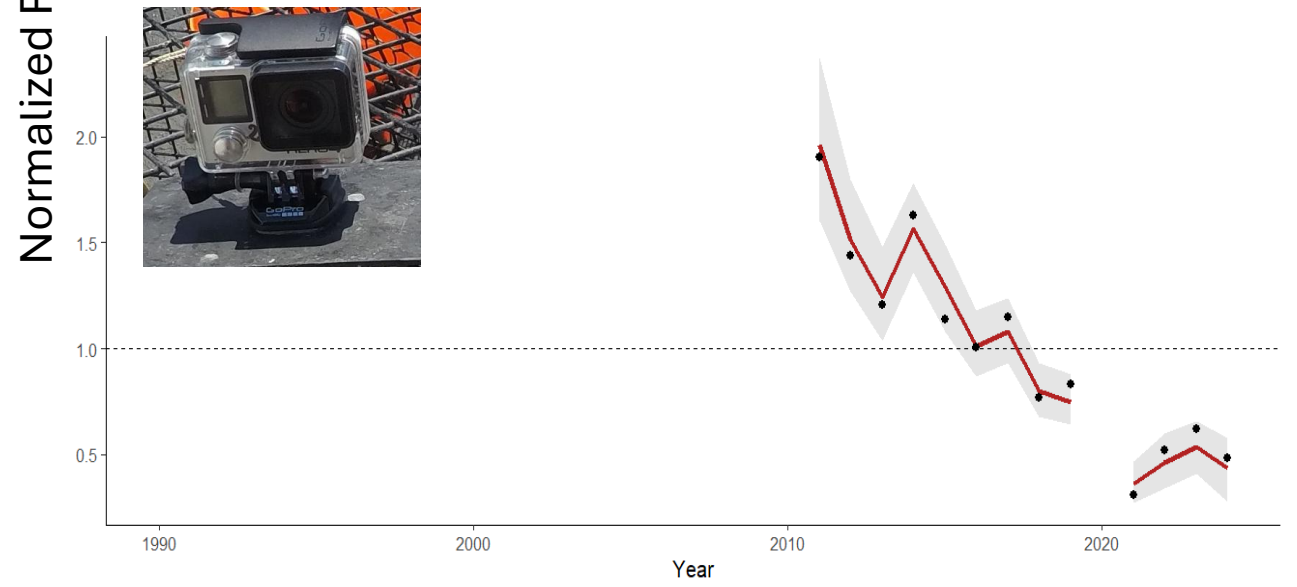
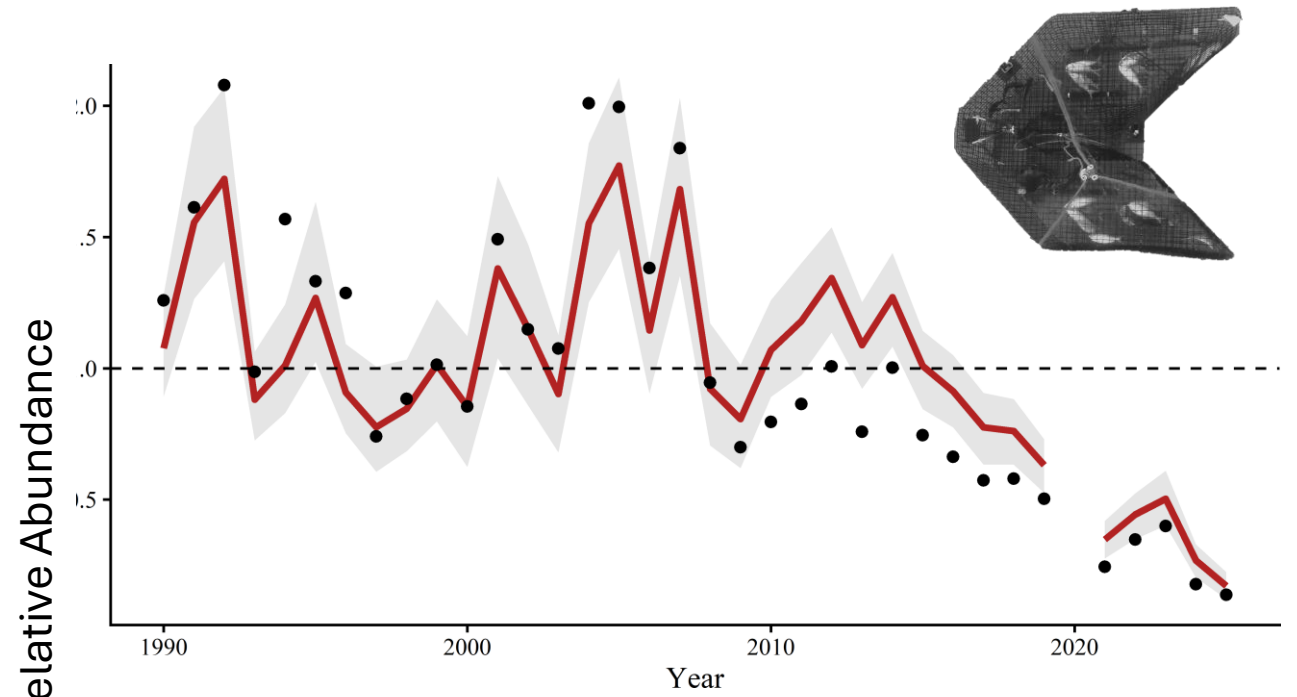
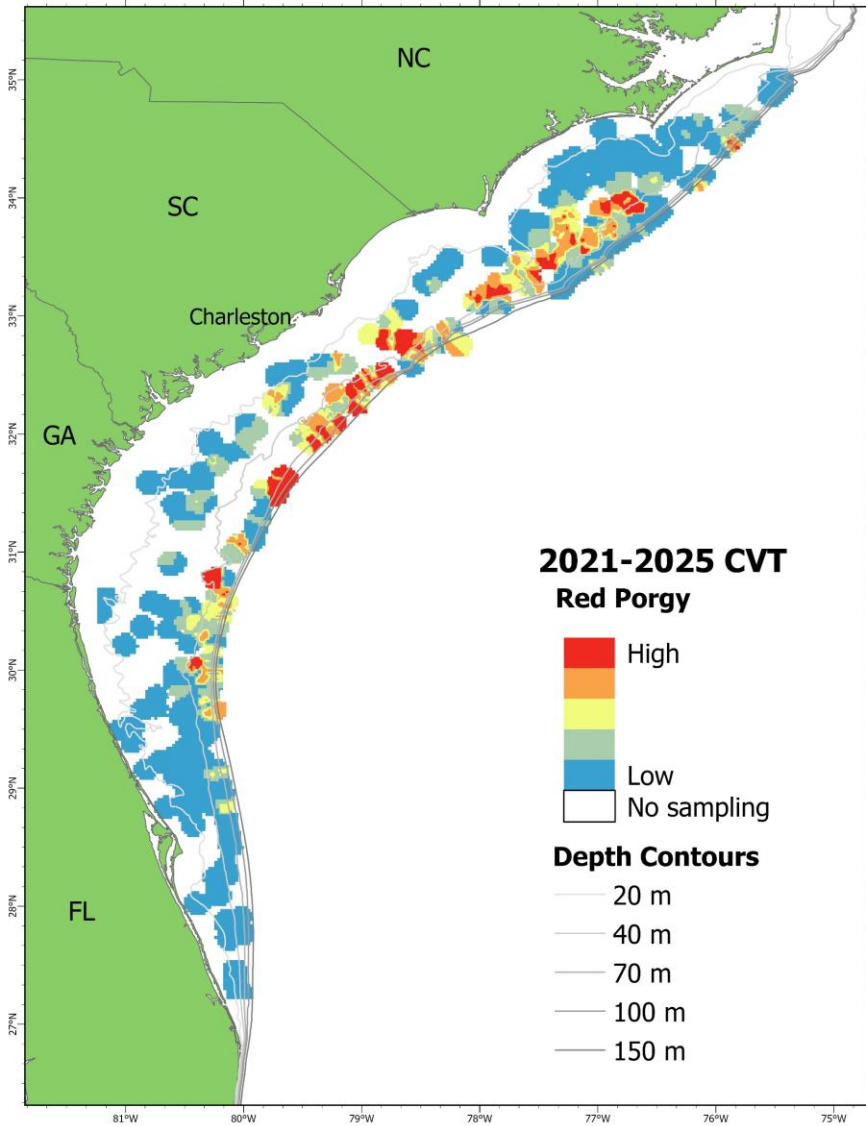


Gray Triggerfish



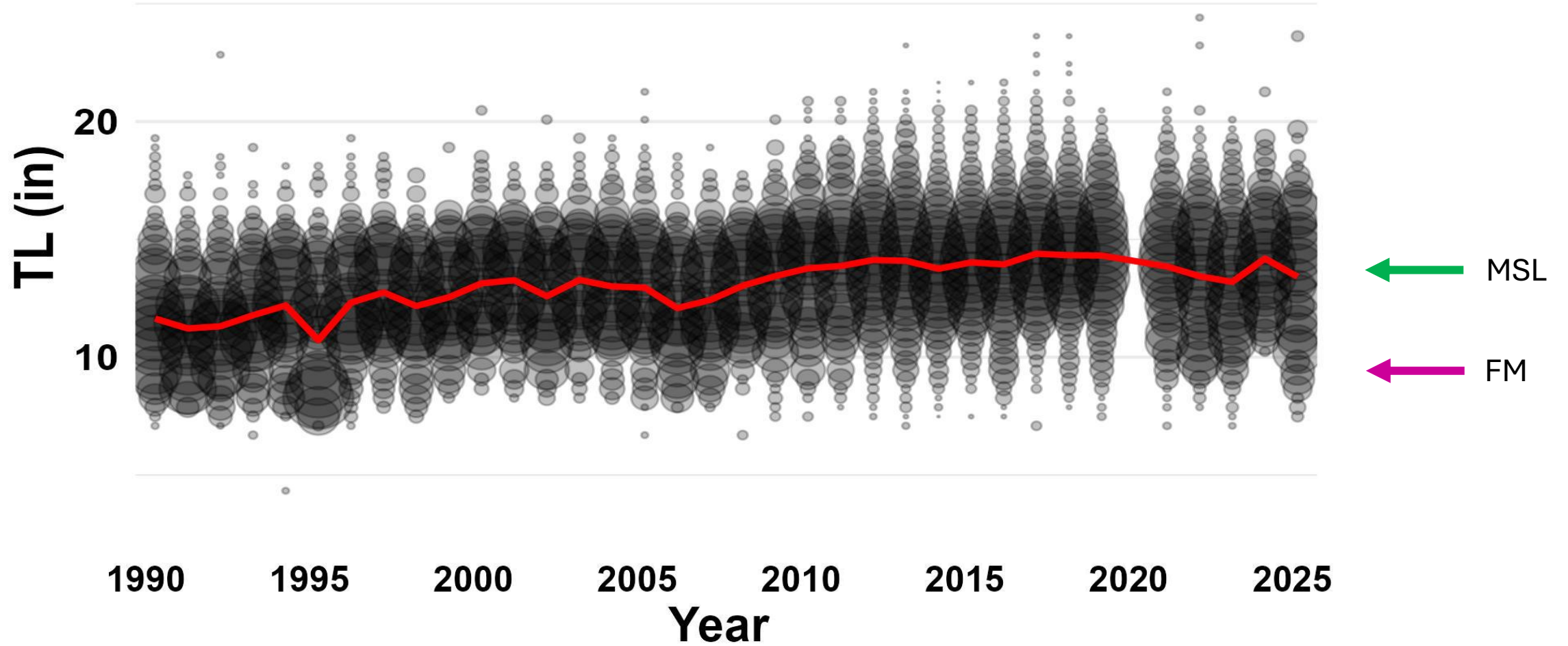


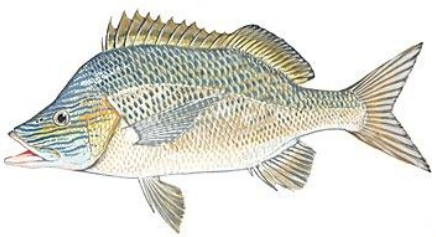
Red Porgy



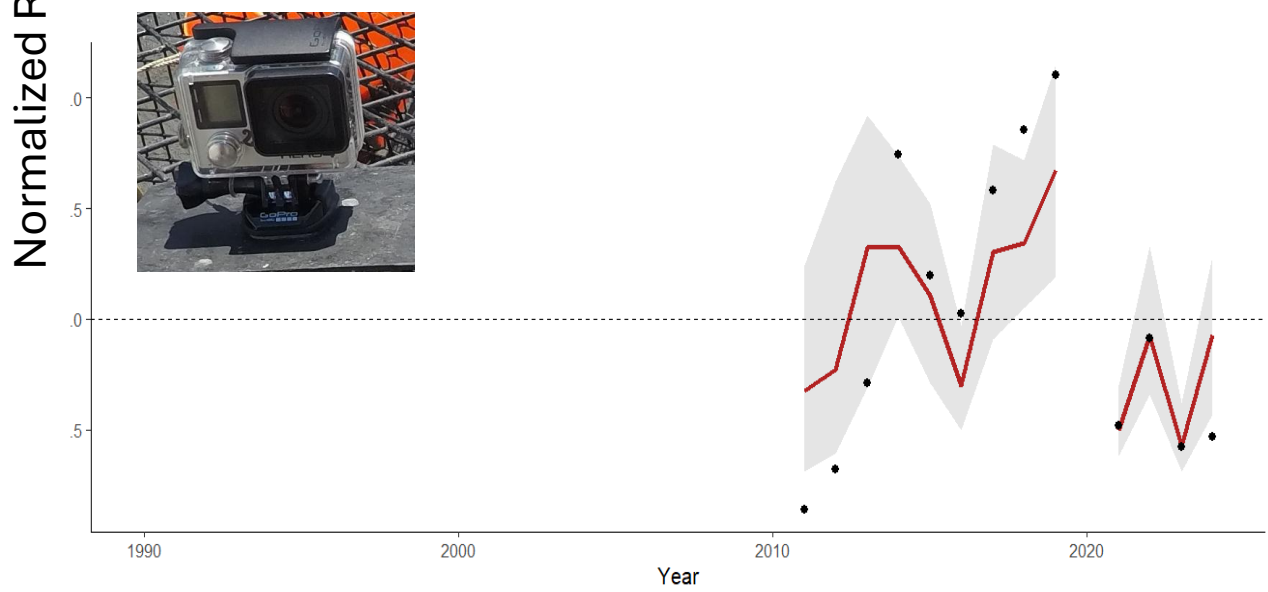
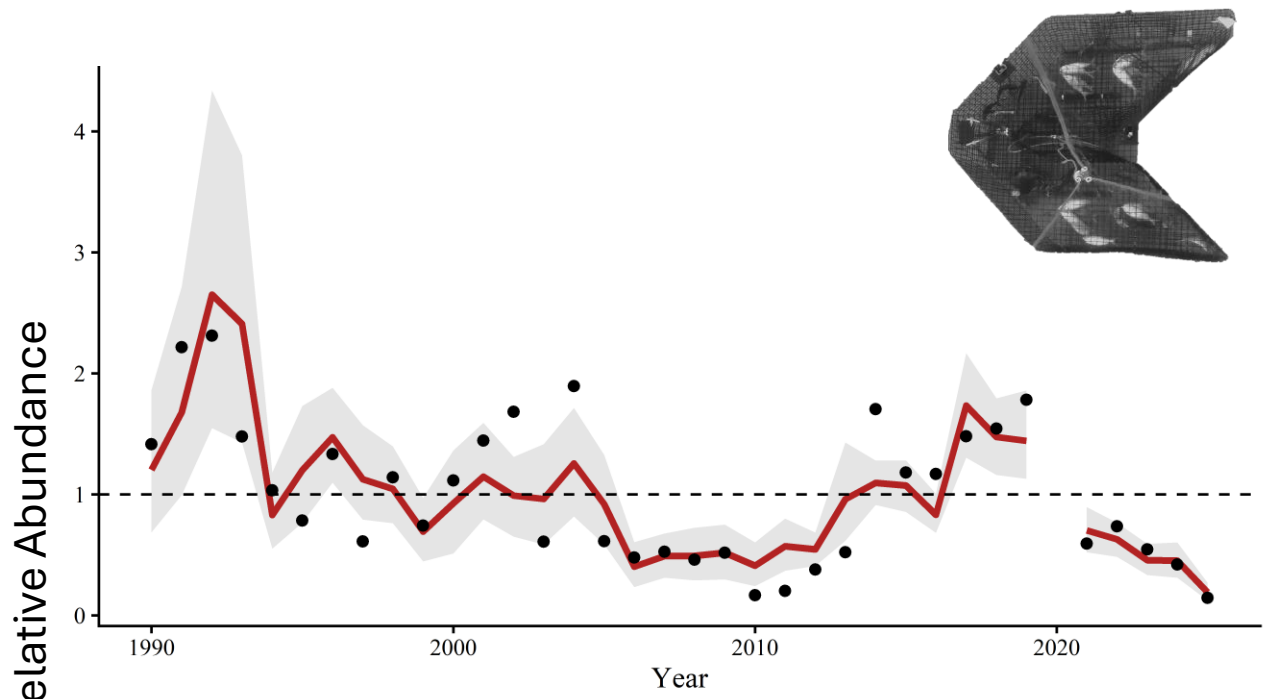
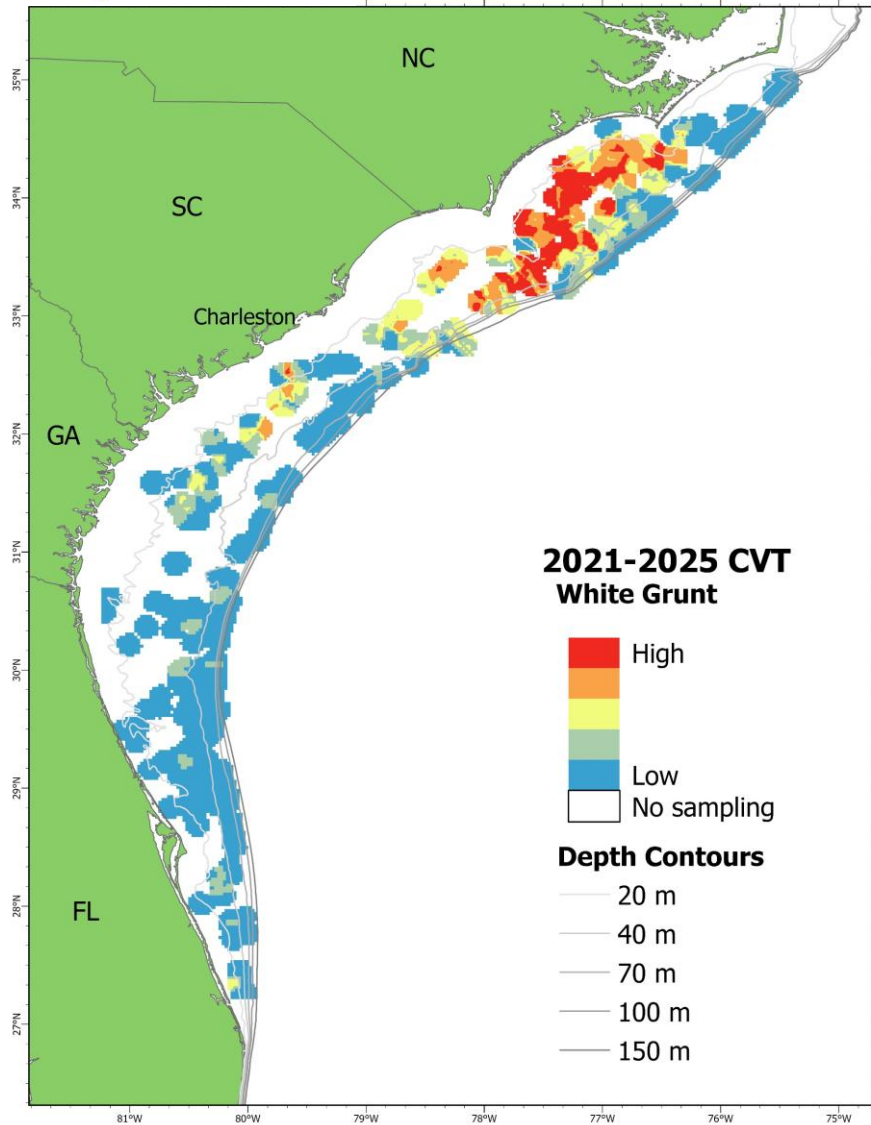


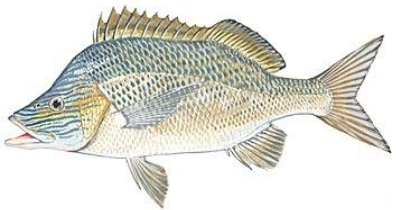
Red Porgy



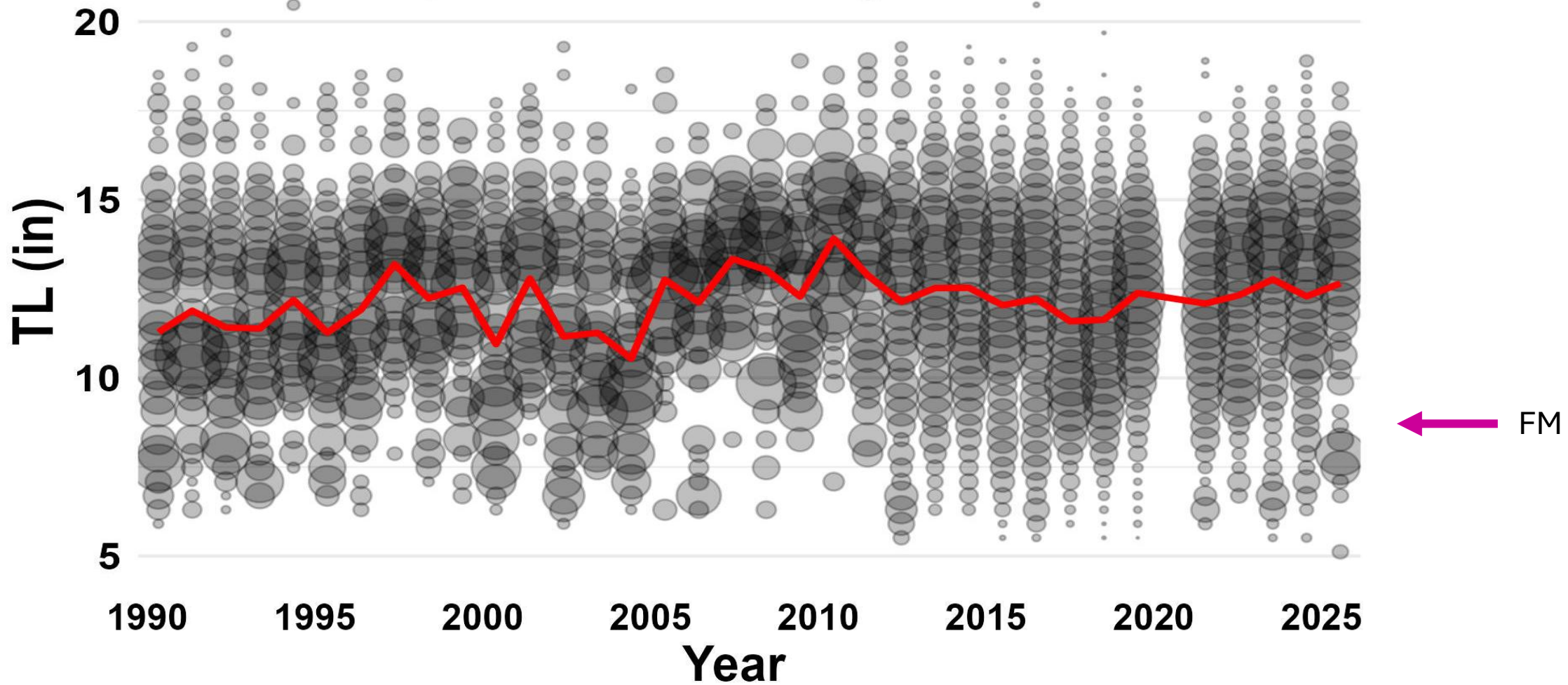


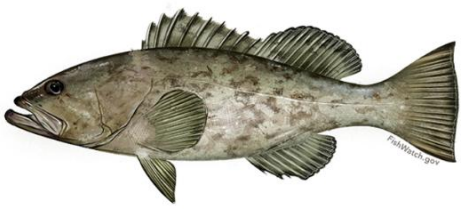
White Grunt



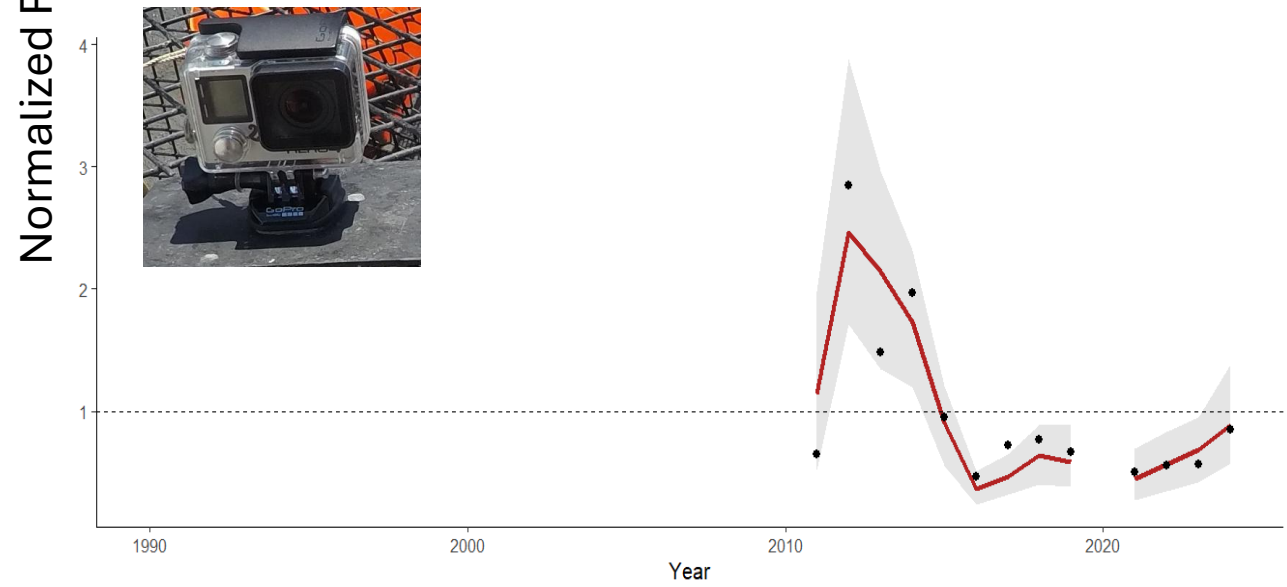
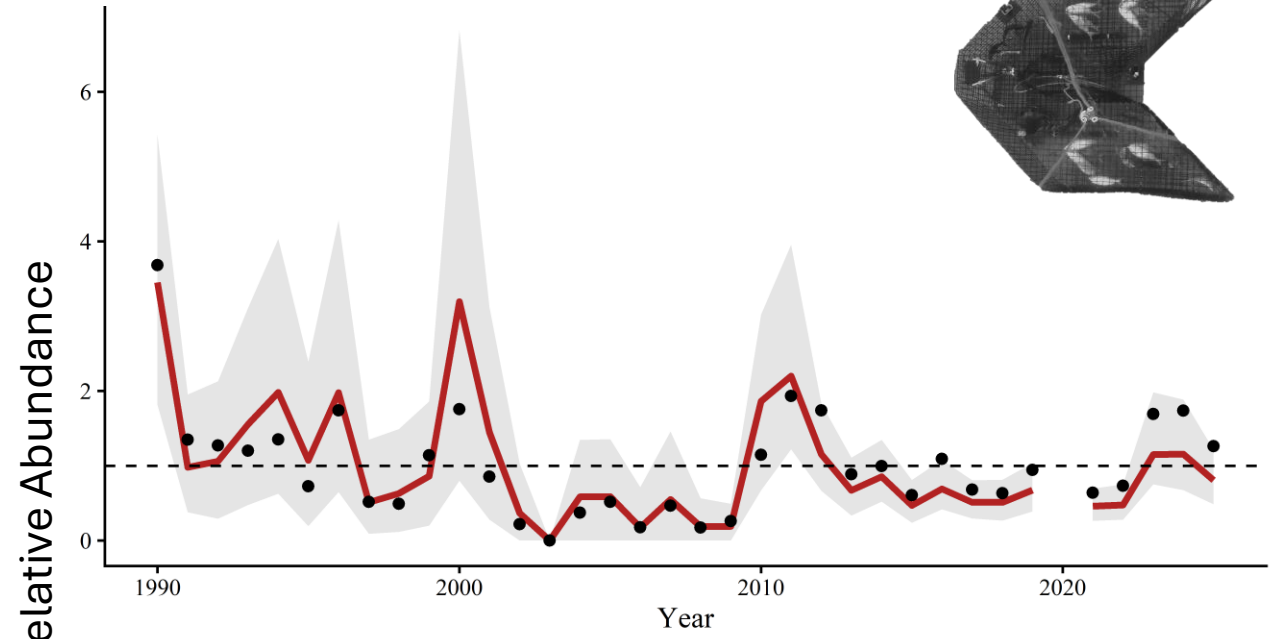
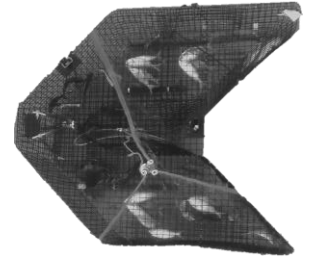
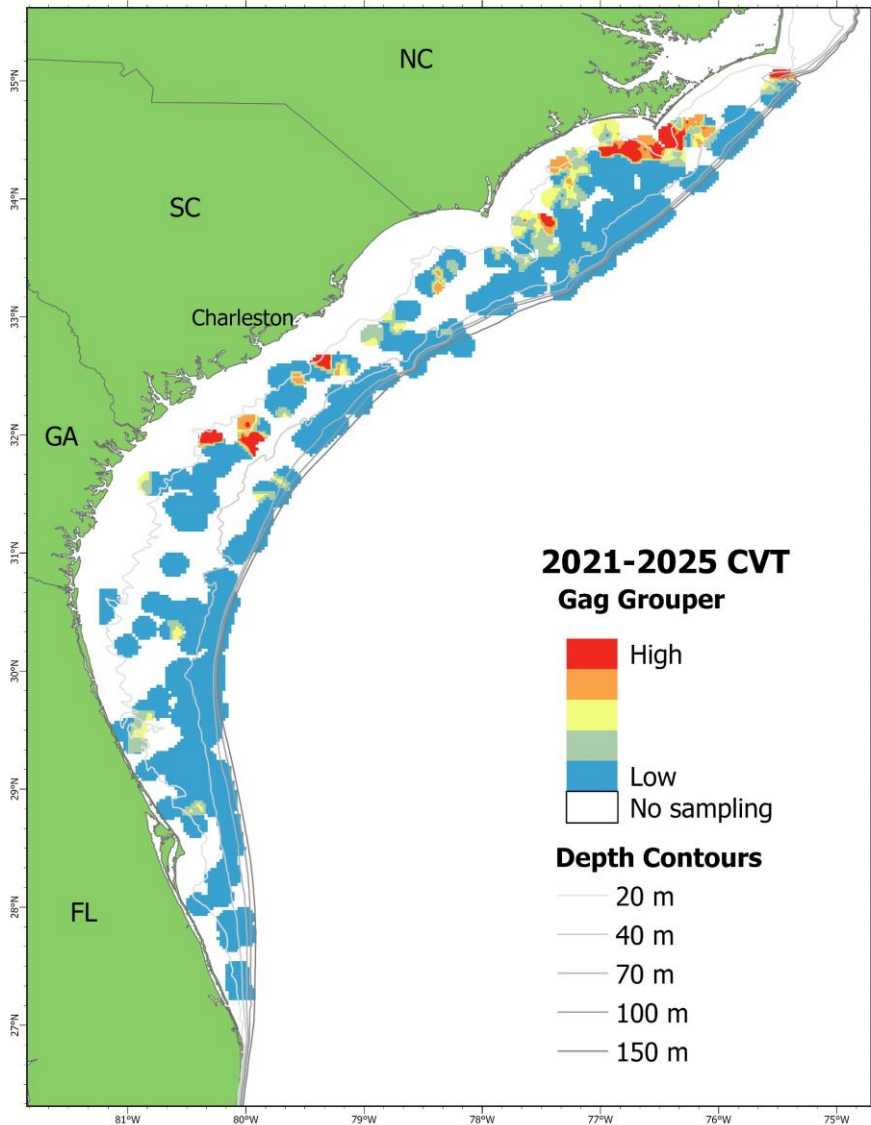


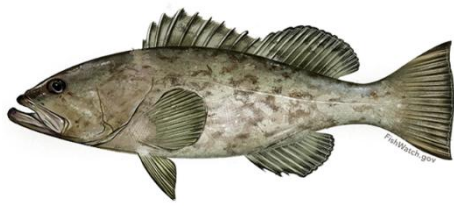
White Grunt



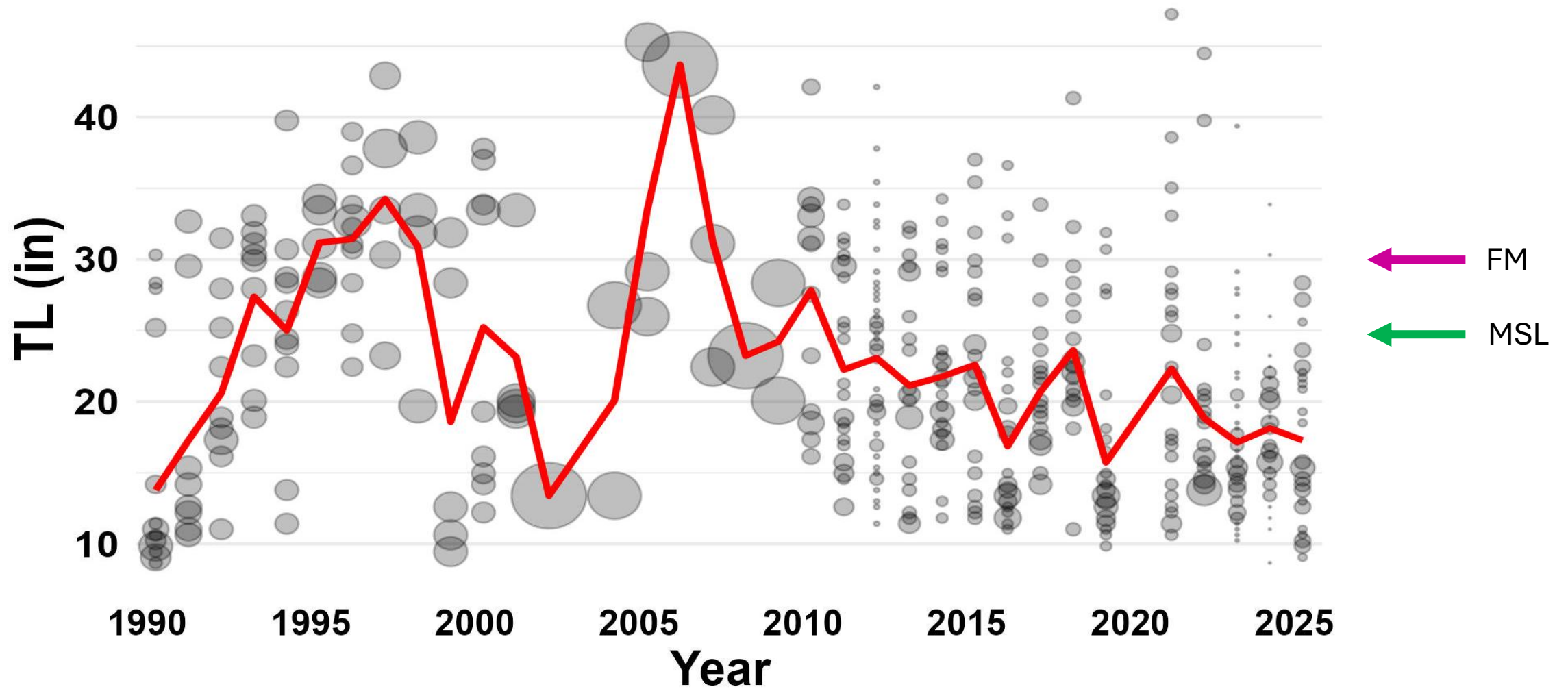


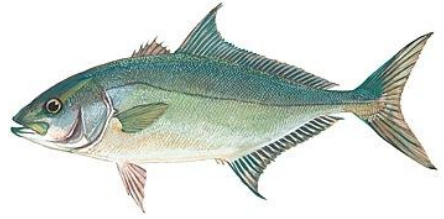
Gag Grouper



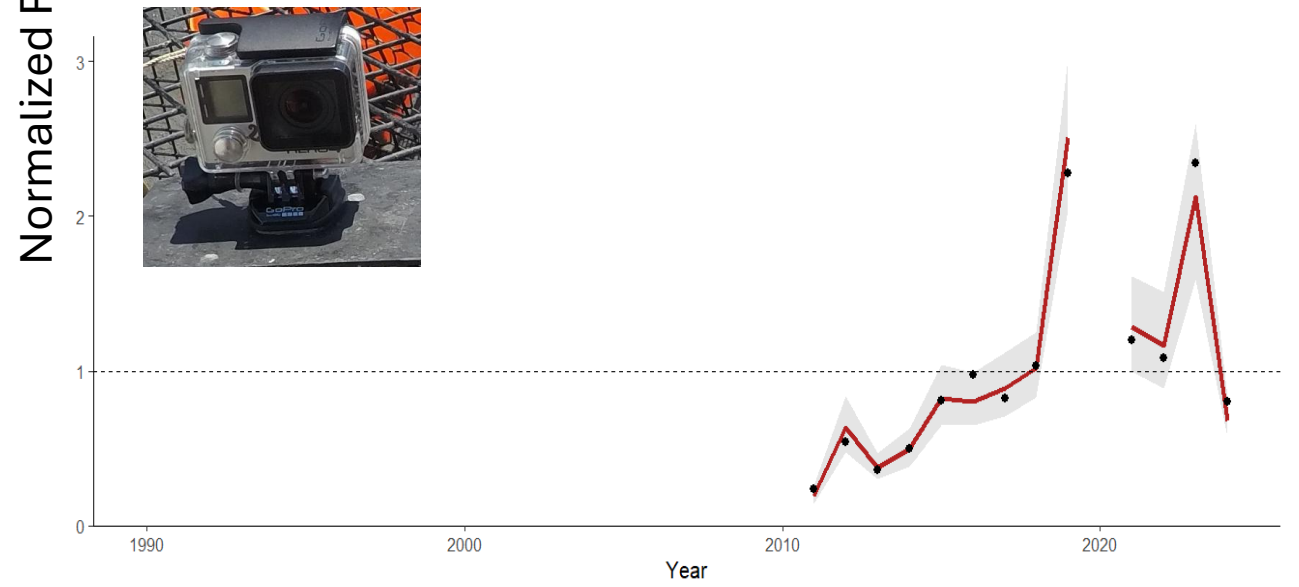
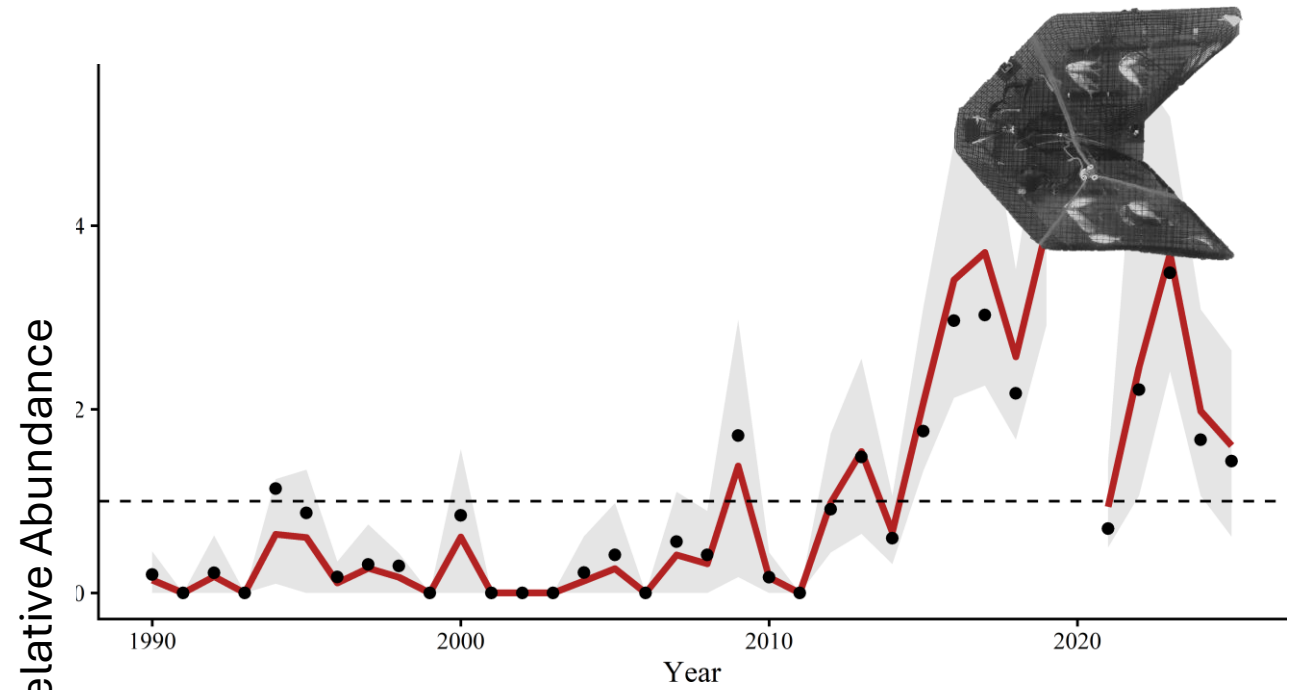
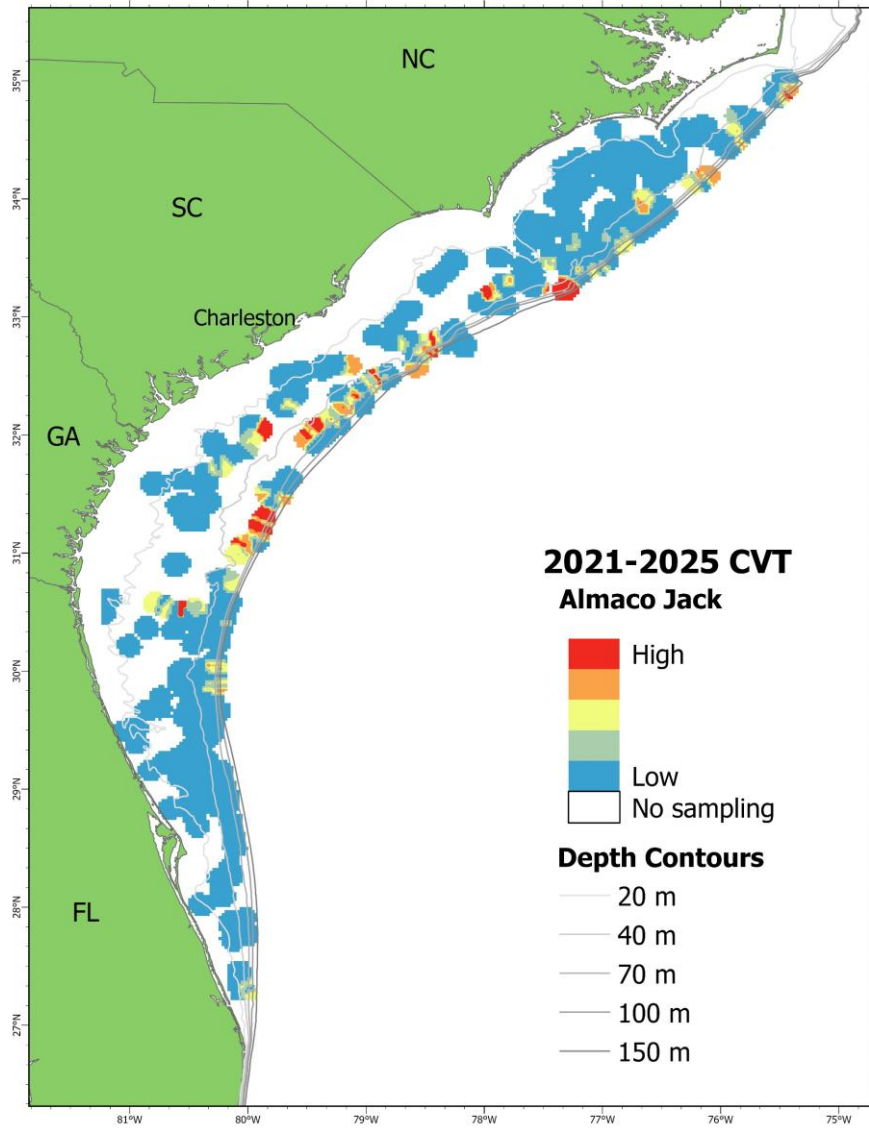


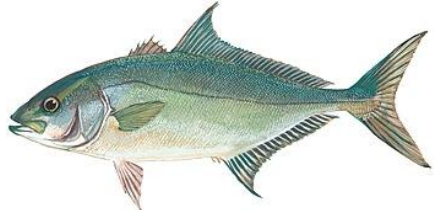
Gag Grouper



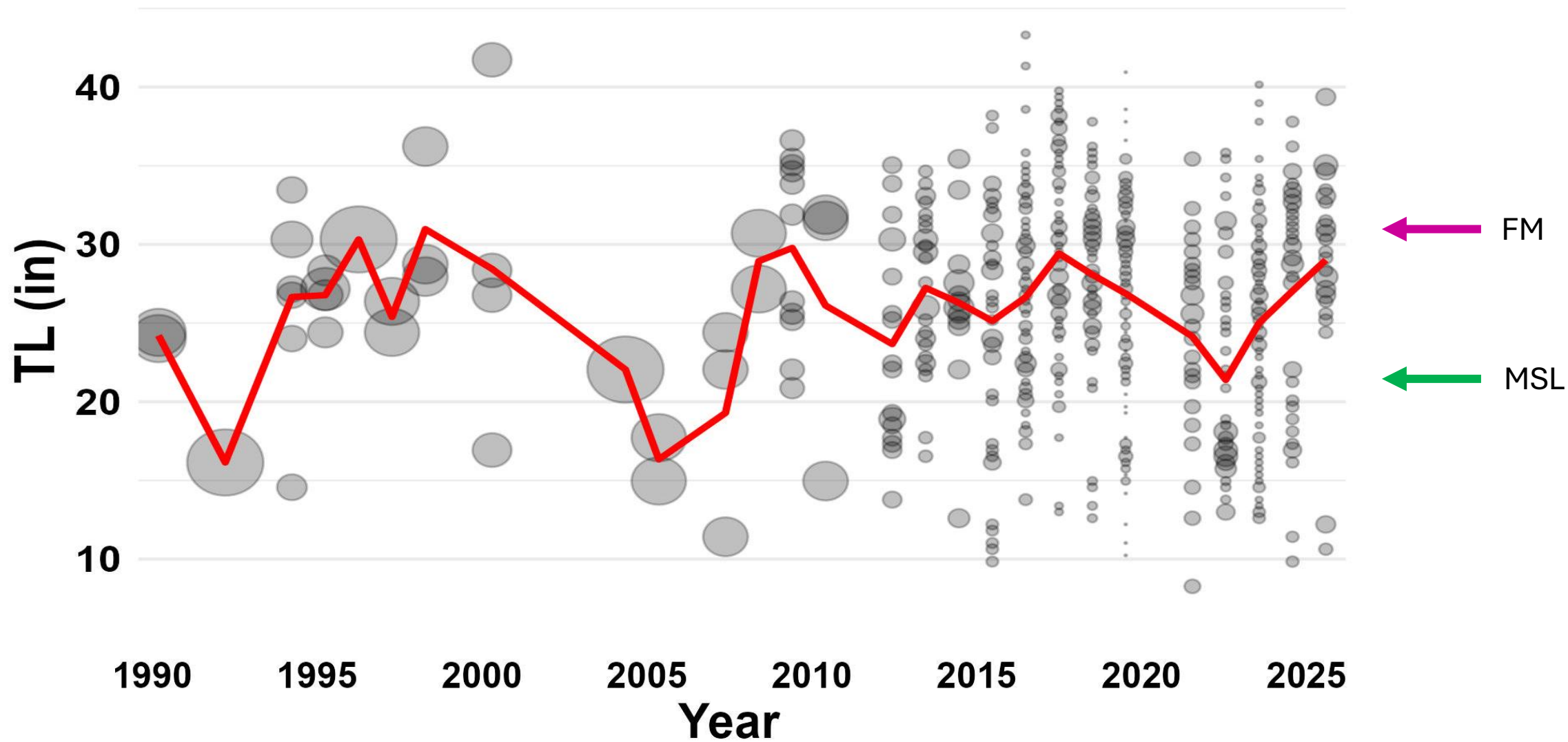


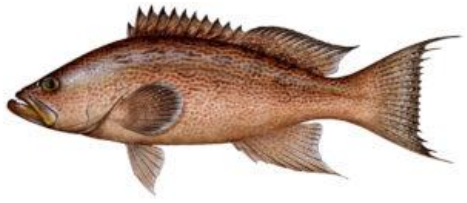
Almaco Jack



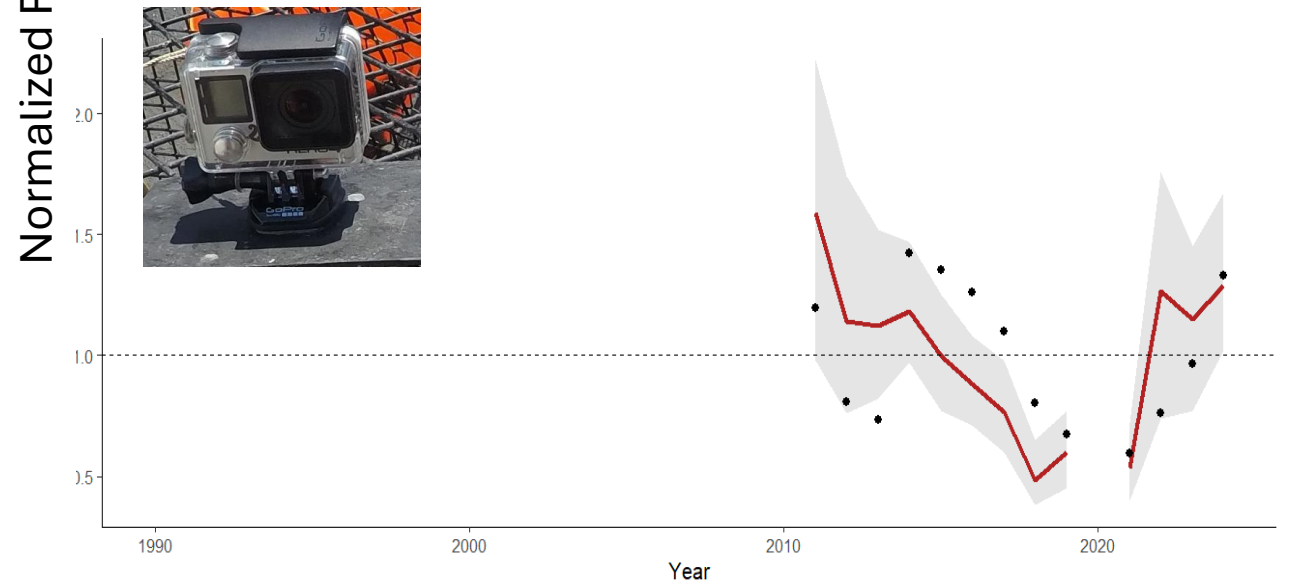
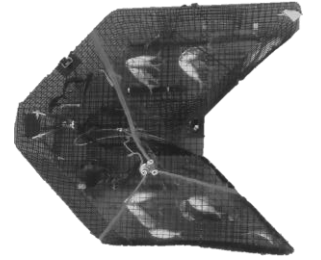
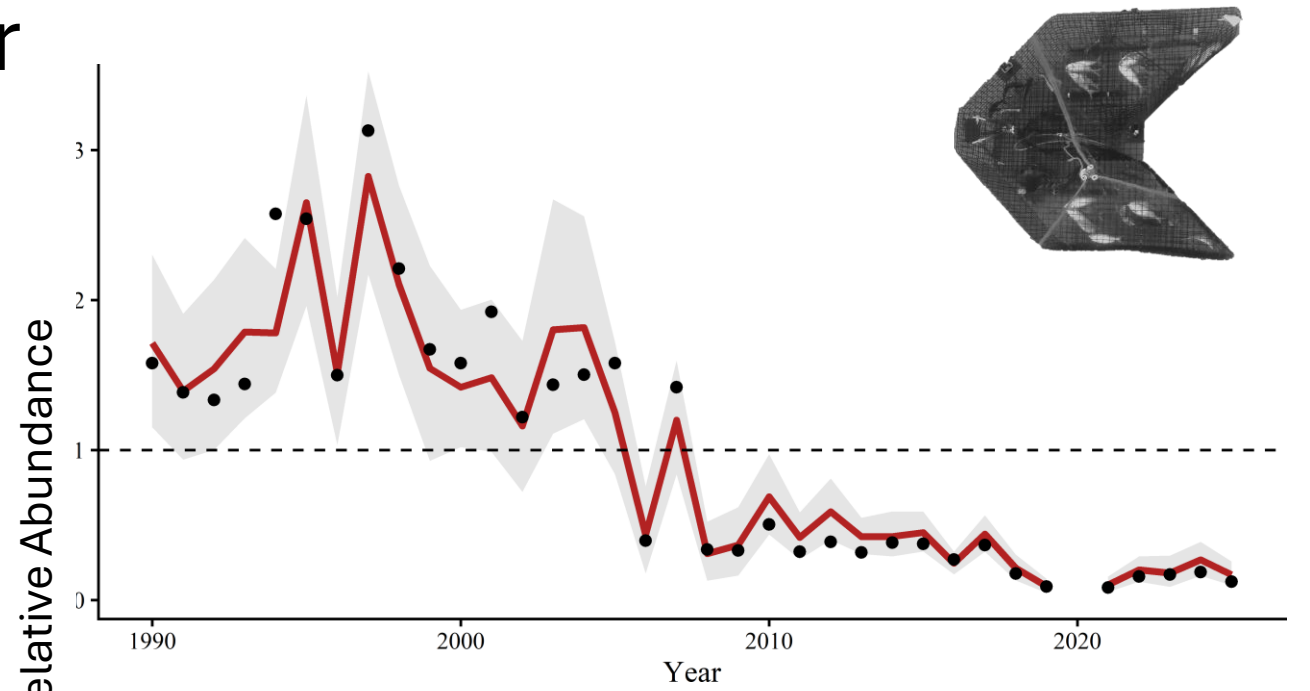
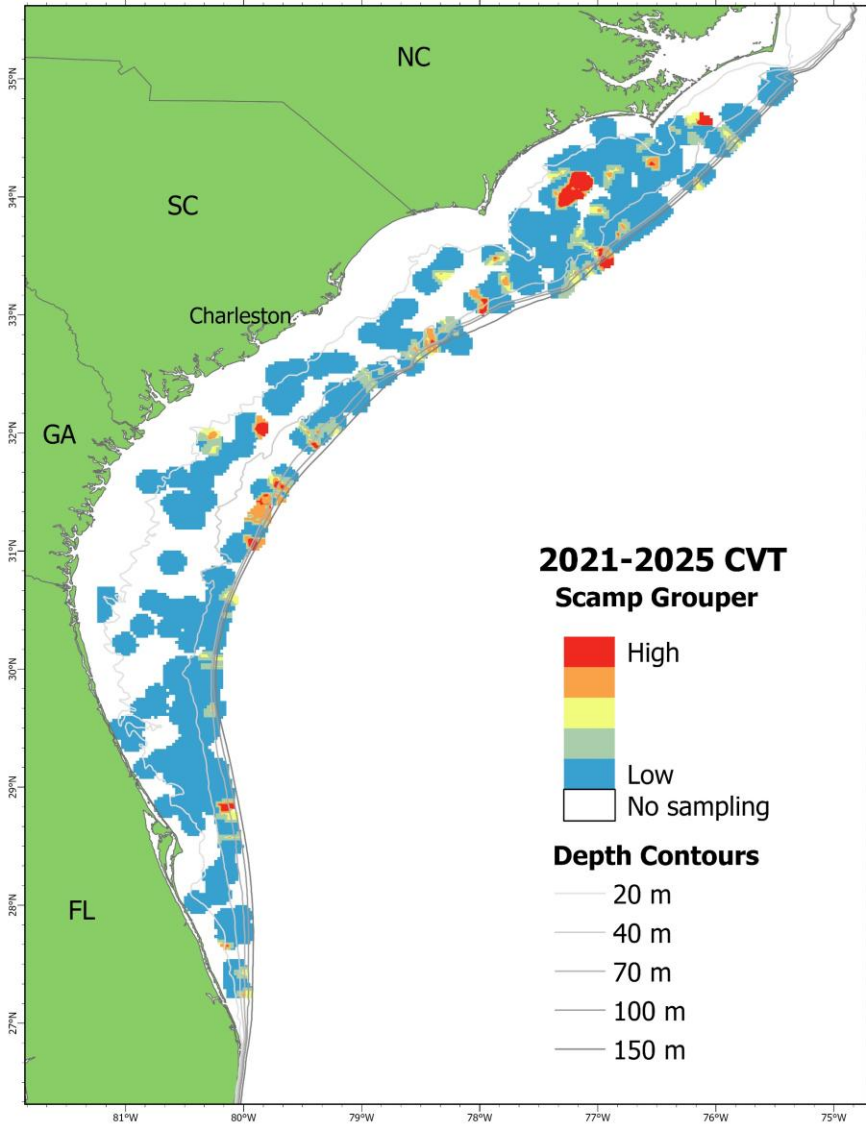


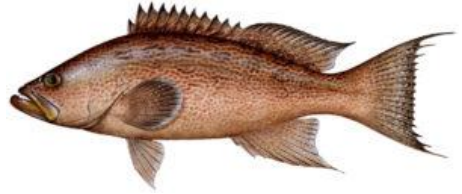
Almaco Jack



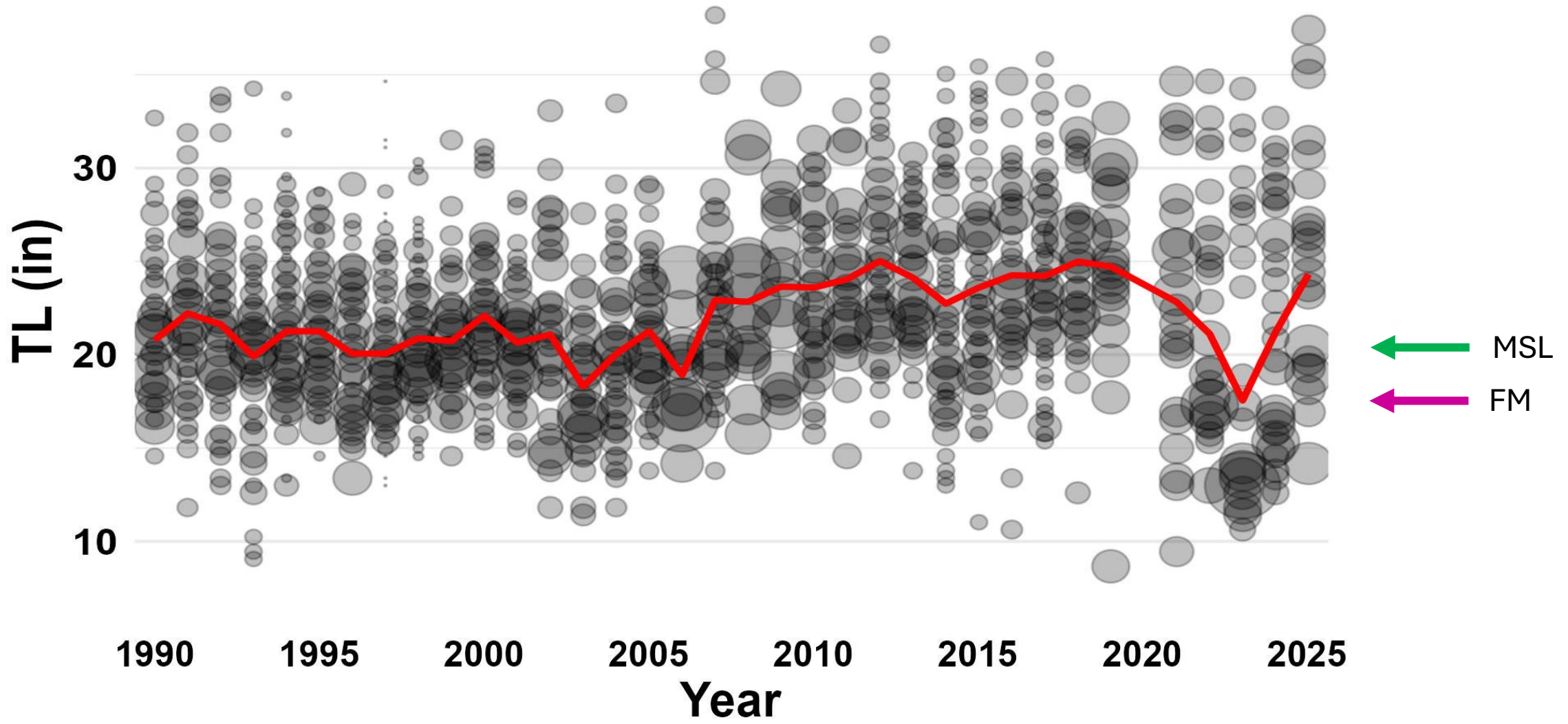


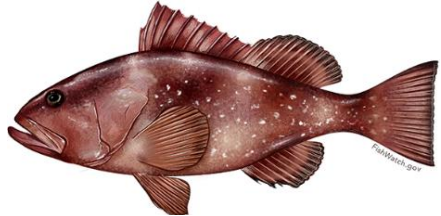
Scamp Grouper



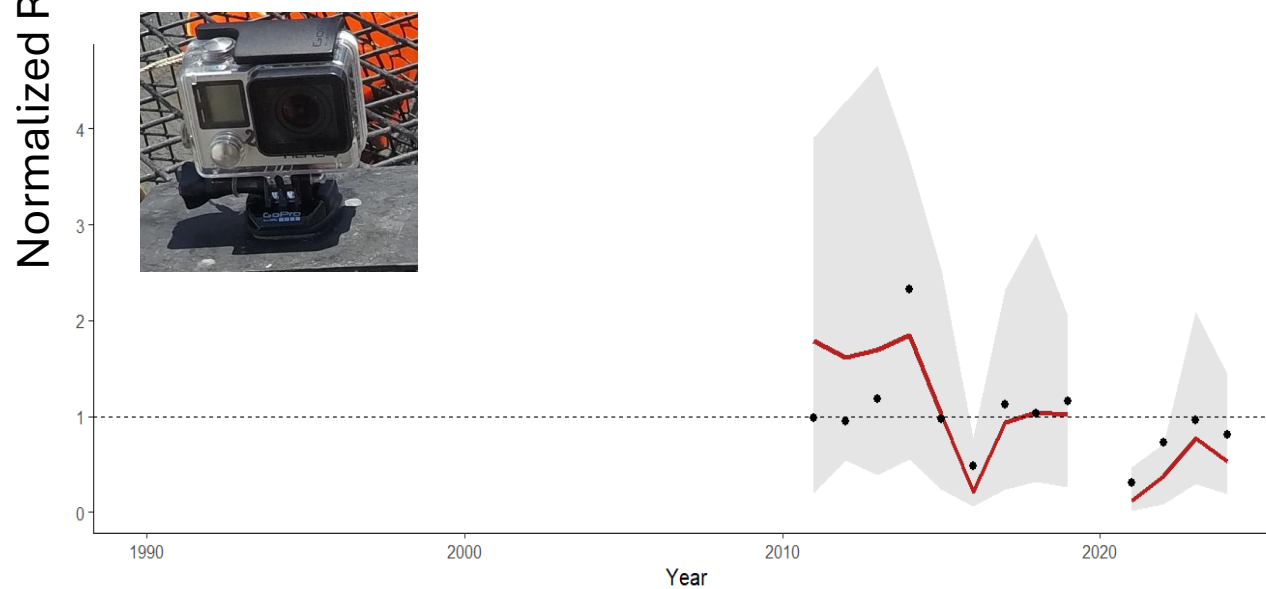
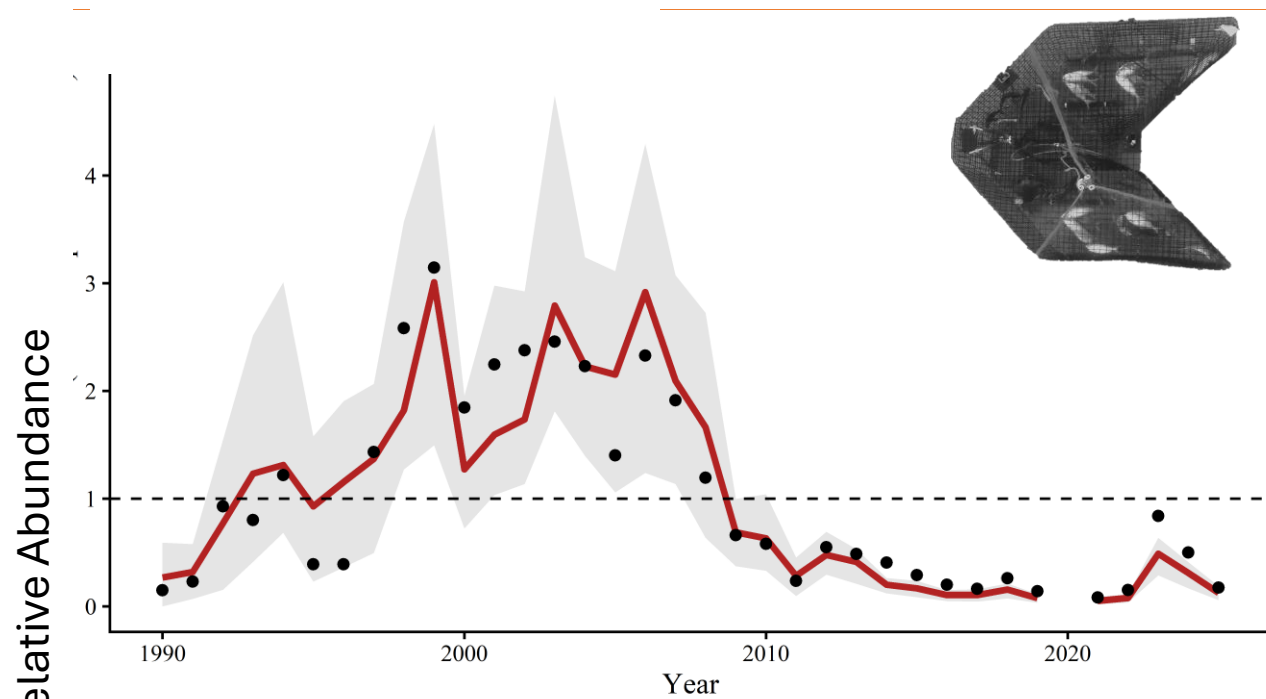
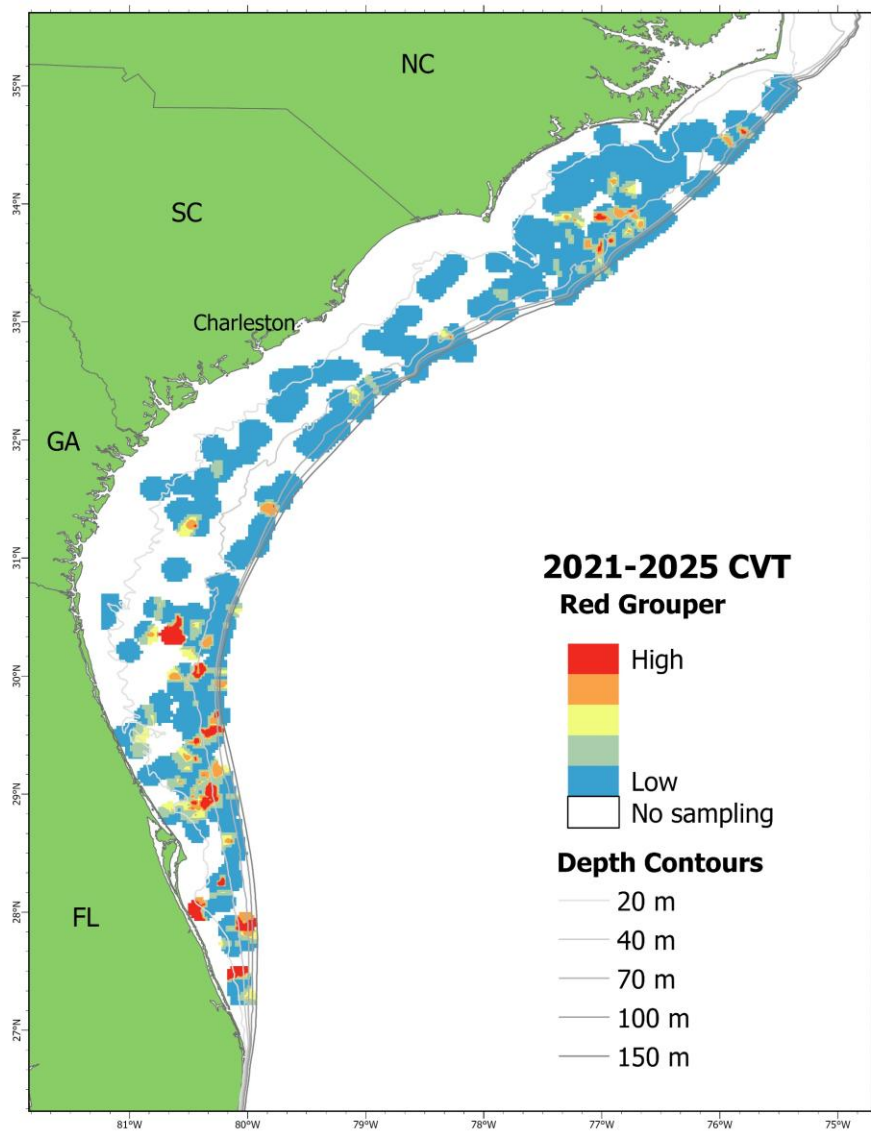


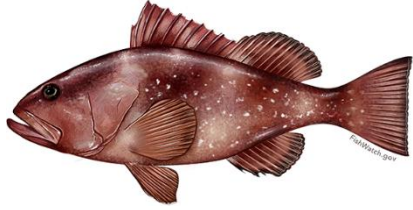
Scamp Grouper



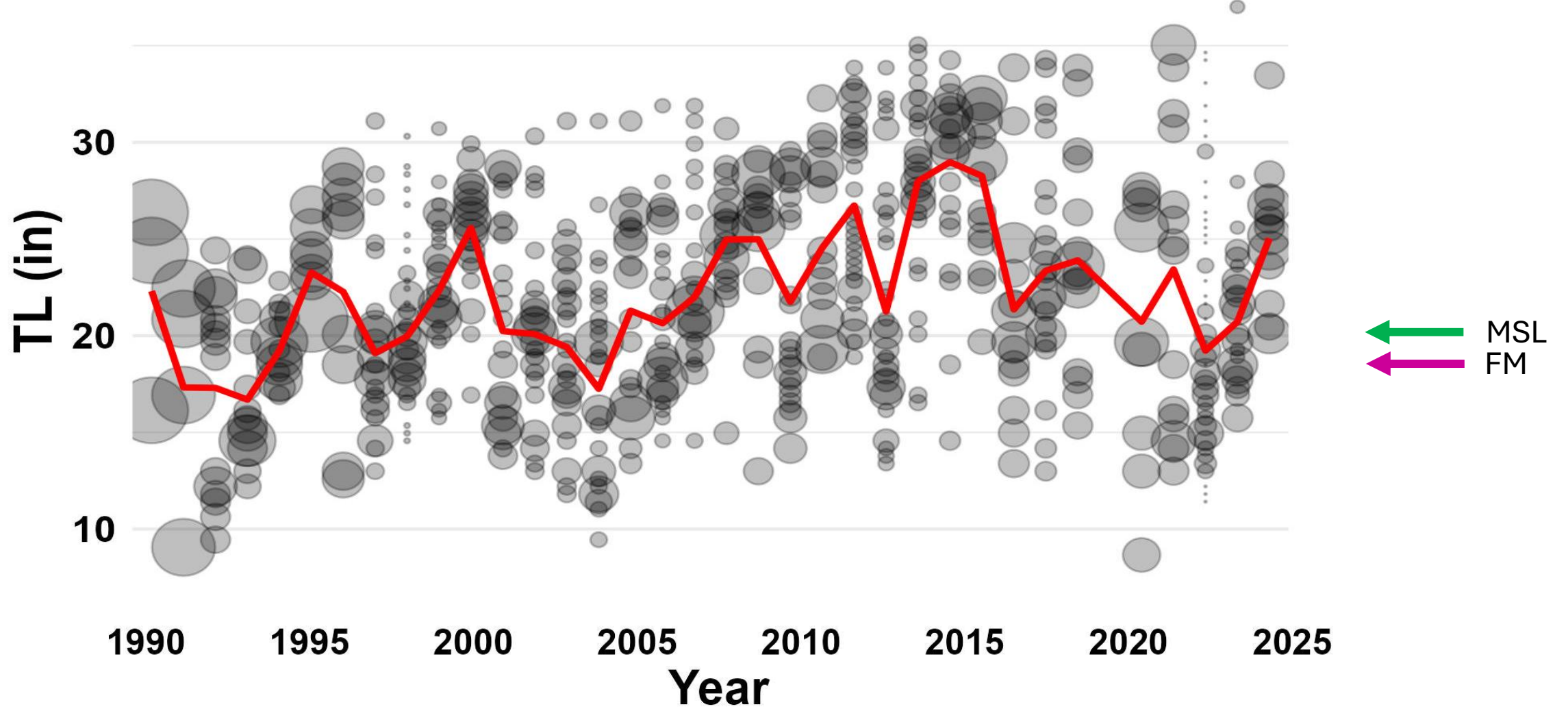


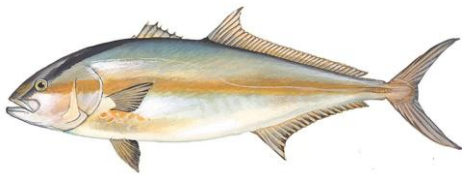
Red Grouper



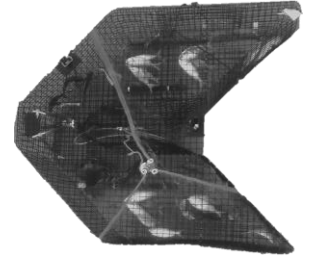


Red Grouper

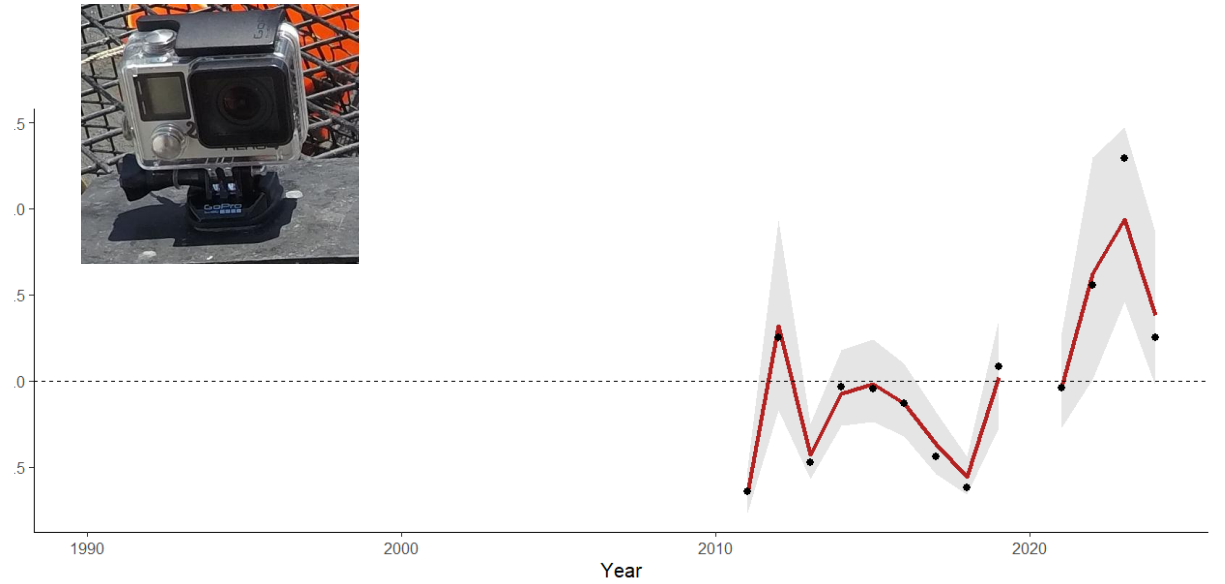


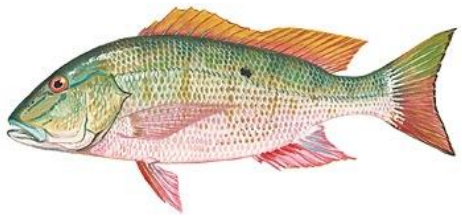


Greater Amberjack

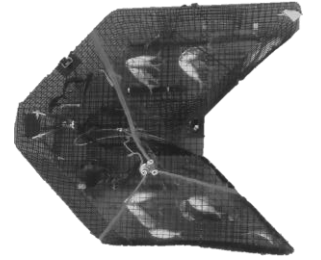


Normalized Relative Abundance

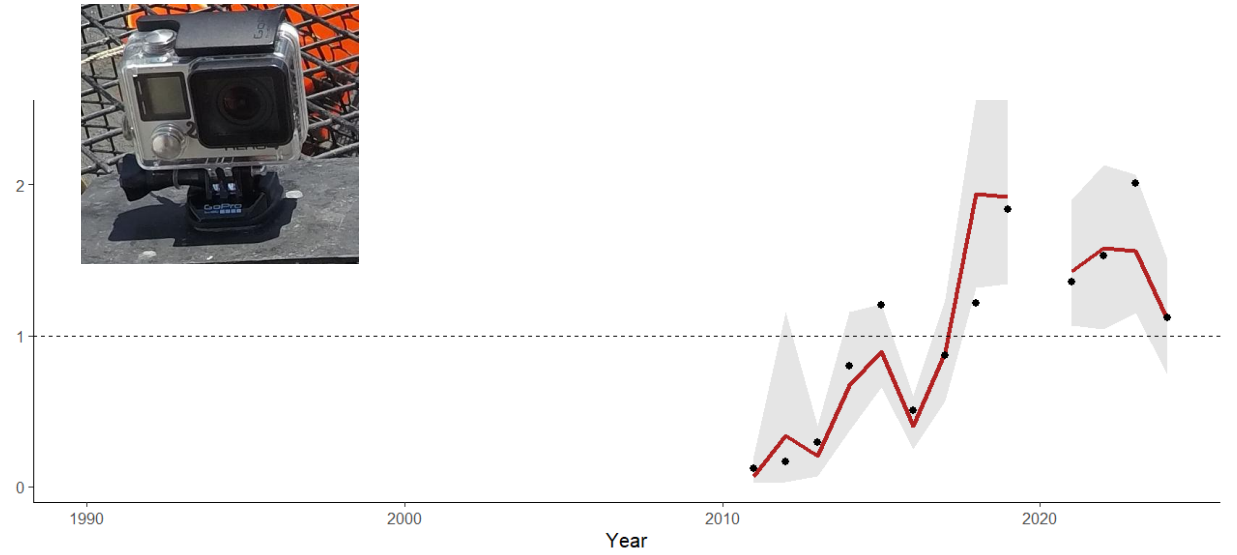


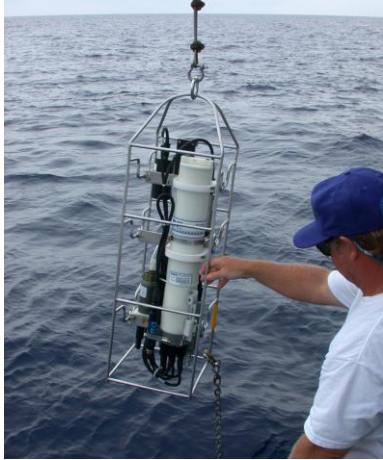


Mutton Snapper



Normalized Relative Abundance





Bottom Temperature

Generalized Additive Model to
standardize for:

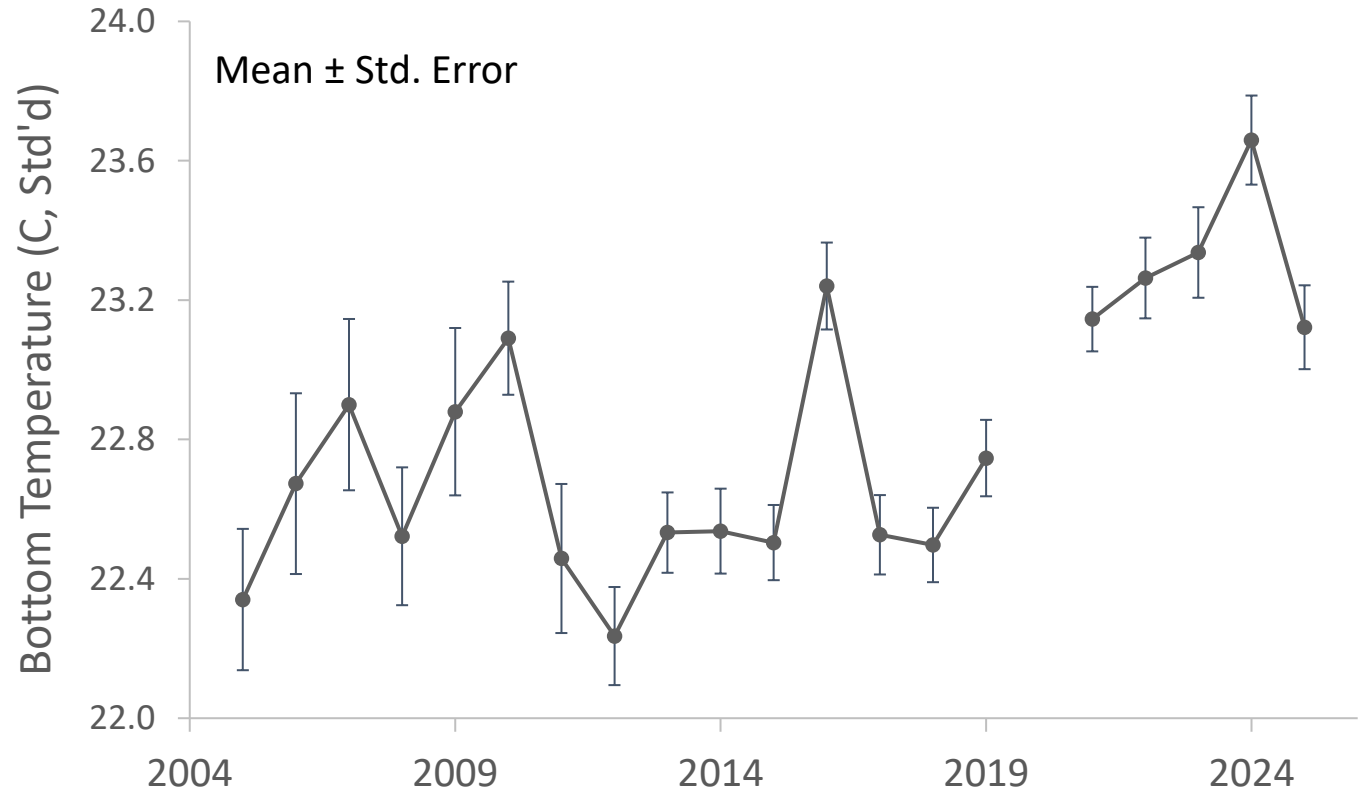
Location

Depth

Day of Year

(Craig et al. 2022)

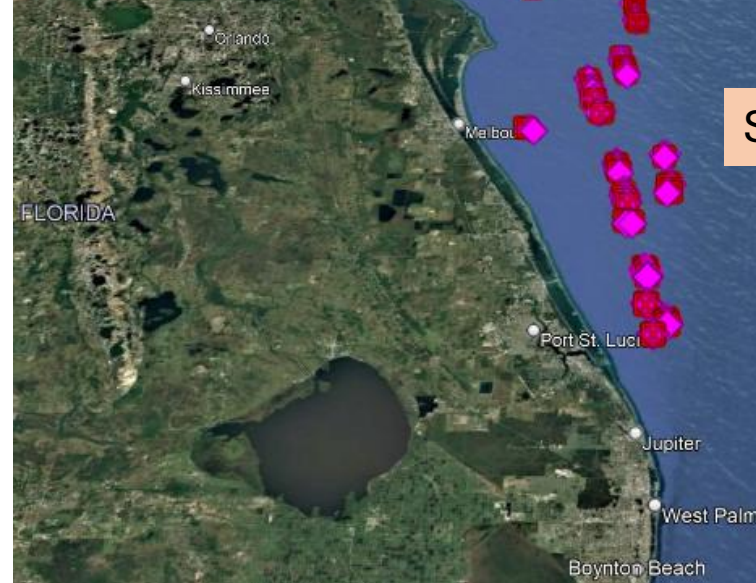
2005-2025 included all 4 states



2026 SERFS &
Related
Activities



SERFS Southern Expansion



SERFS Base Footprint



Currents!

Tiny Shelf

Hogfish

More Currents!

Mutton Snapper

Corals

Special Permit

Black Grouper

Yellowtail

More Currents!

SERFS Southern Expansion 2026

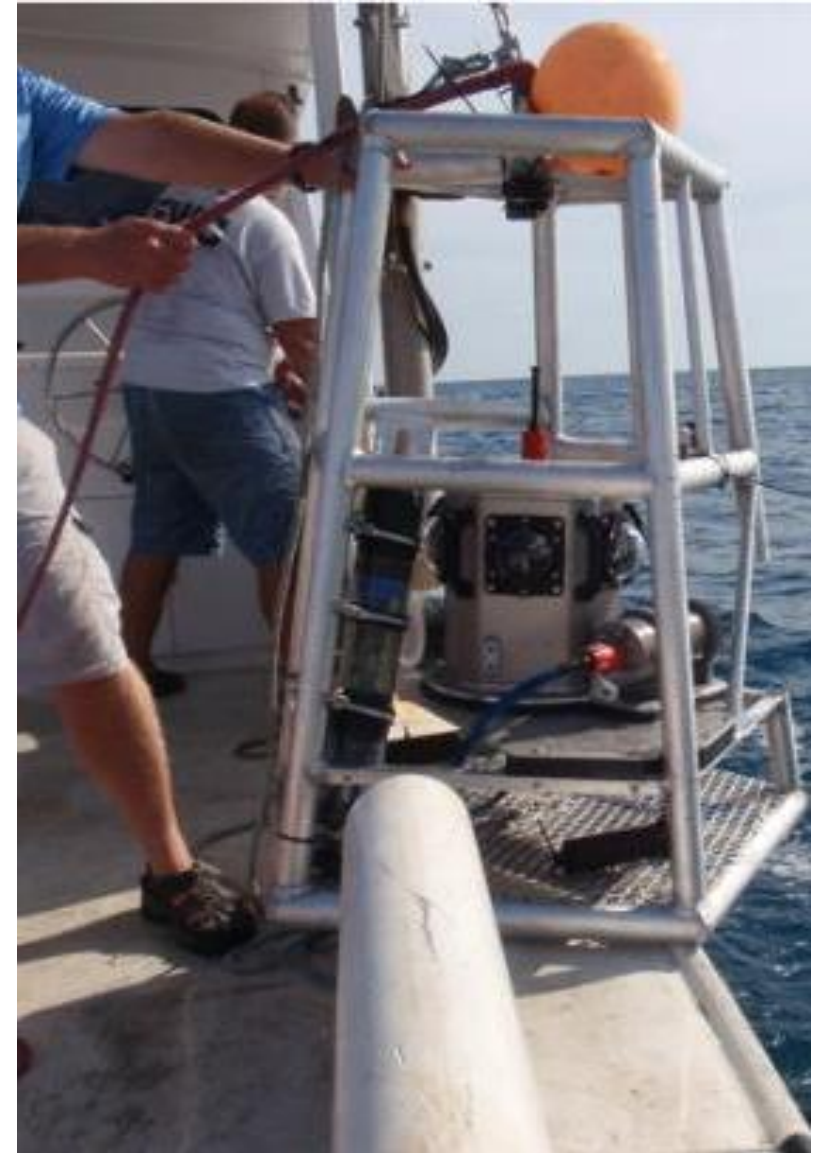
FWC, NOAA, SCDNR

**Camera Pods to reduce
footprint, “trapability”
limitations, current impacts**

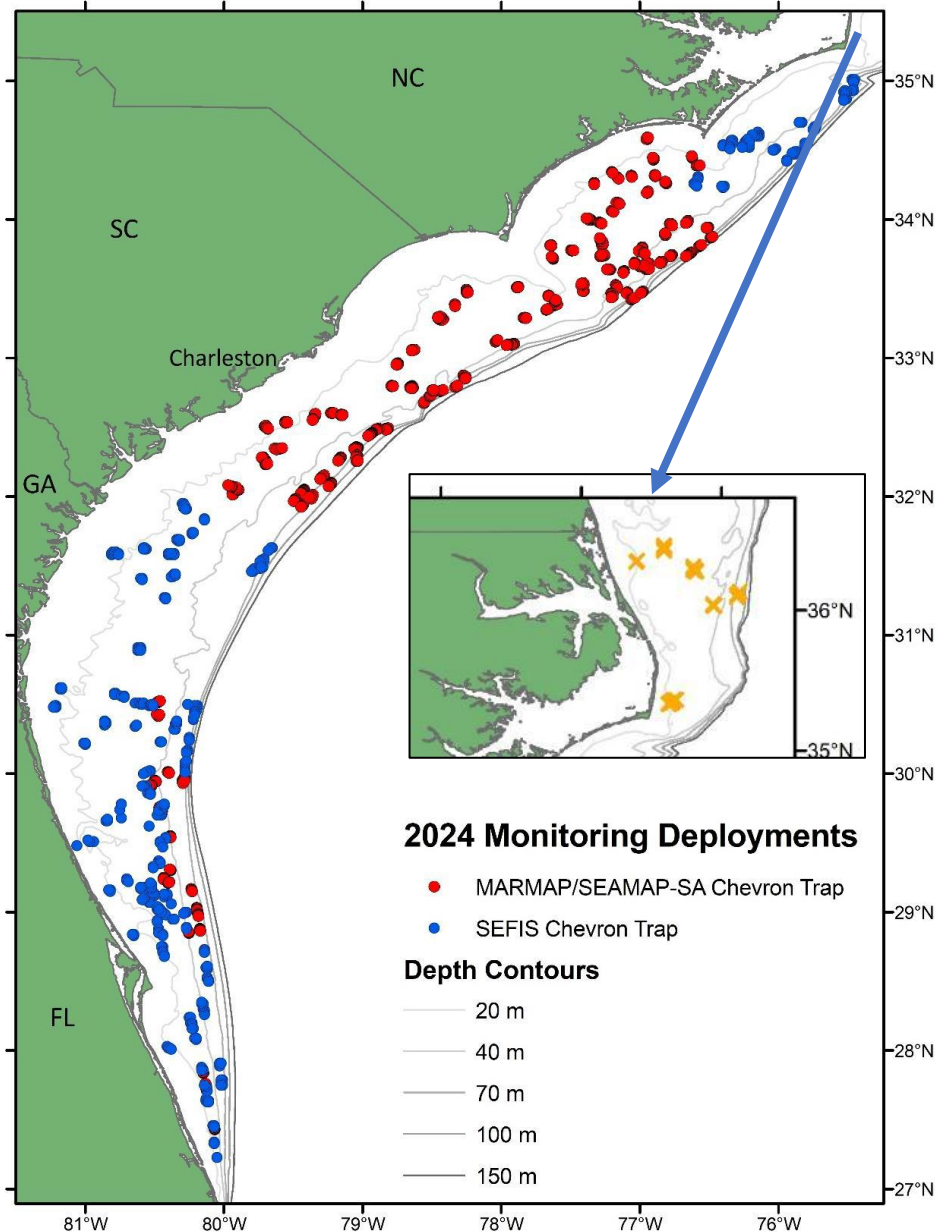
Stereo cameras

Side scan sonar

**Species composition,
counts, lengths & habitat**

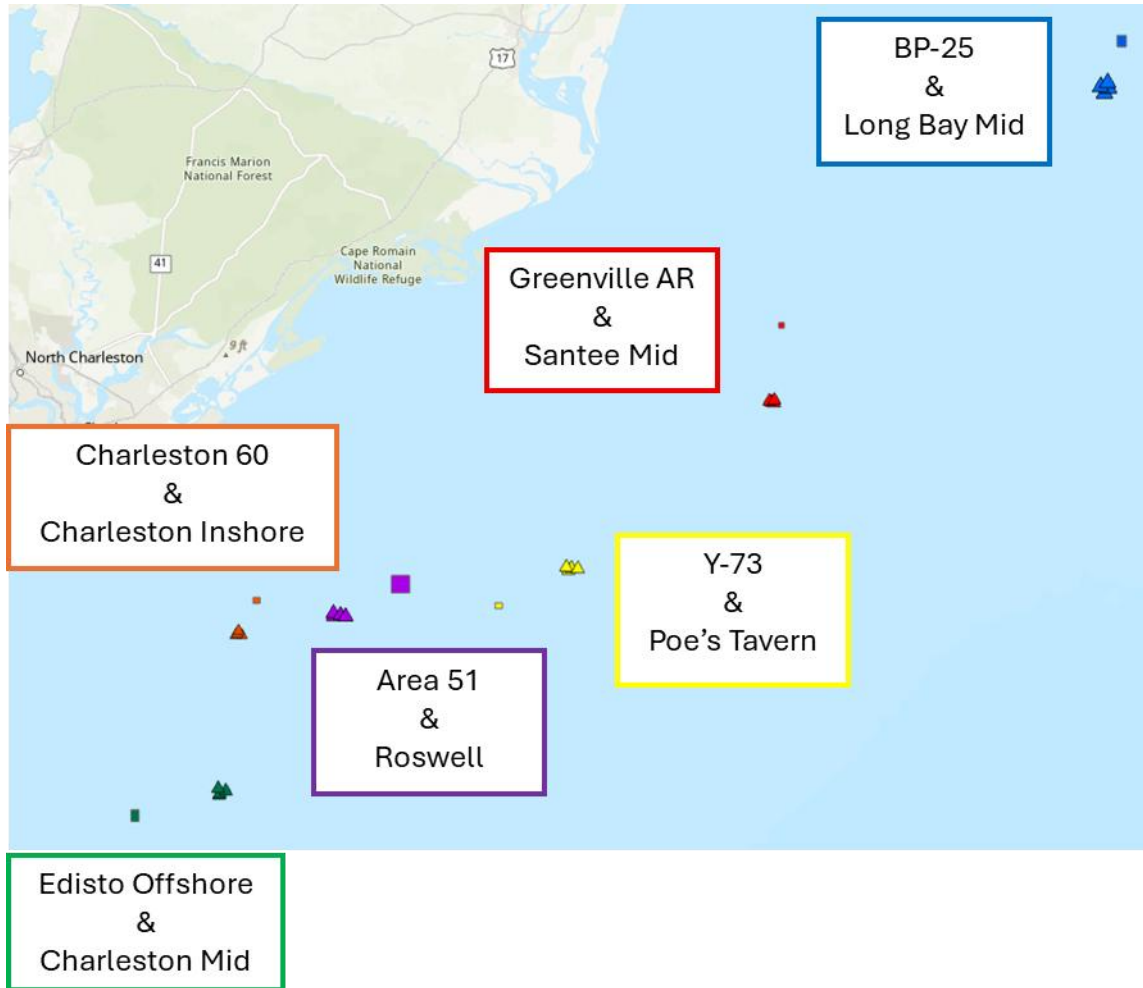


SERFS Northern Expansion 2026 Revisit



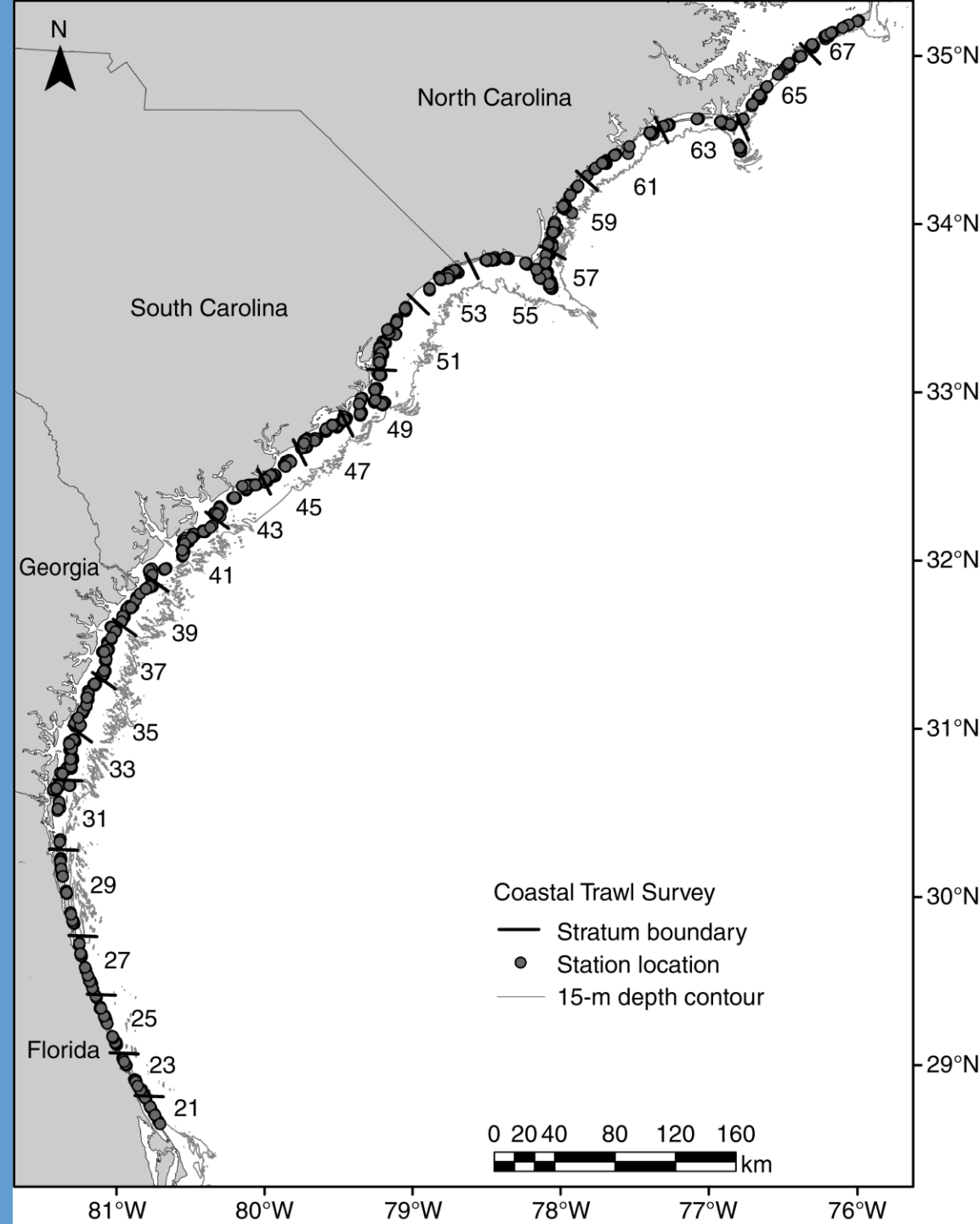
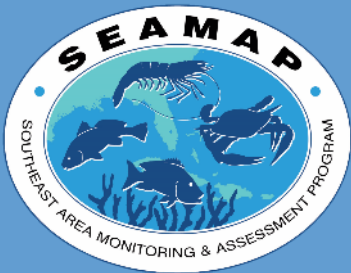
- New stations and mapping 2024
 - Random selection for sampling
- Additional mapping
- Additional reconnaissance CVTs

State Wildlife Grant: Artificial & Natural Reefs



Coastal Trawl Survey Design

- Stratified, random sampling design
 - 24 latitude-based strata
 - Station pool
 - Target stations 102 per season
- 2021: Reduced 2 to 1 Net Processed
 - <https://doi.org/10.3354/meps15110>
- 2023: Spring, Summer, Fall to Spring, Fall
- 2024: Vessel and Gear Changes



Coastal Trawl Survey Design

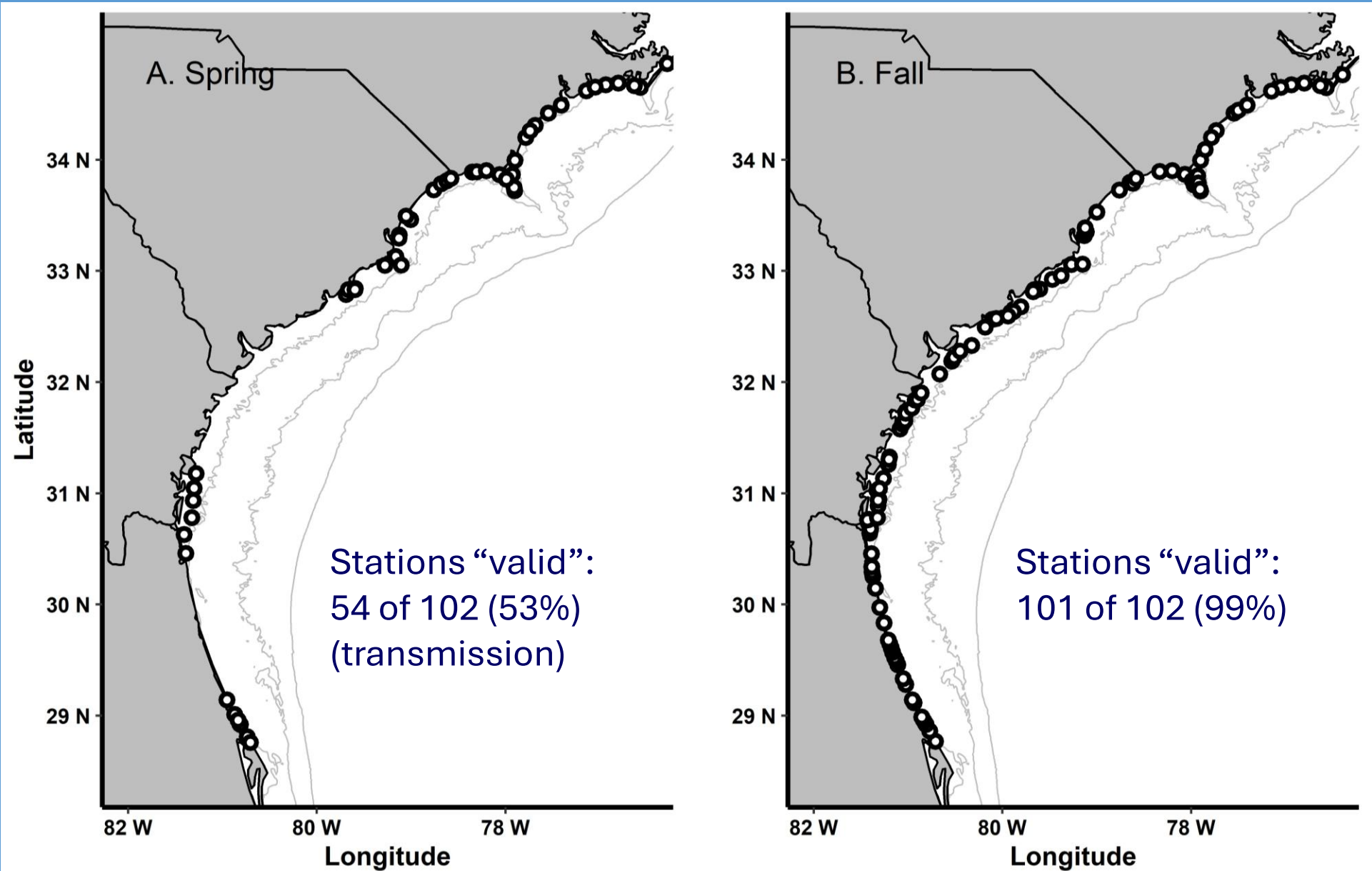
2024: Vessel and Gear Changes

- R/V Lady Lillian, stern trawler
- 60' Webster Trawl (high rise, flat net)
- Same mesh sizes
 - Selectivity checked
- Net Geometry to correct effort
- ZINB standardization
 - DOY not Season

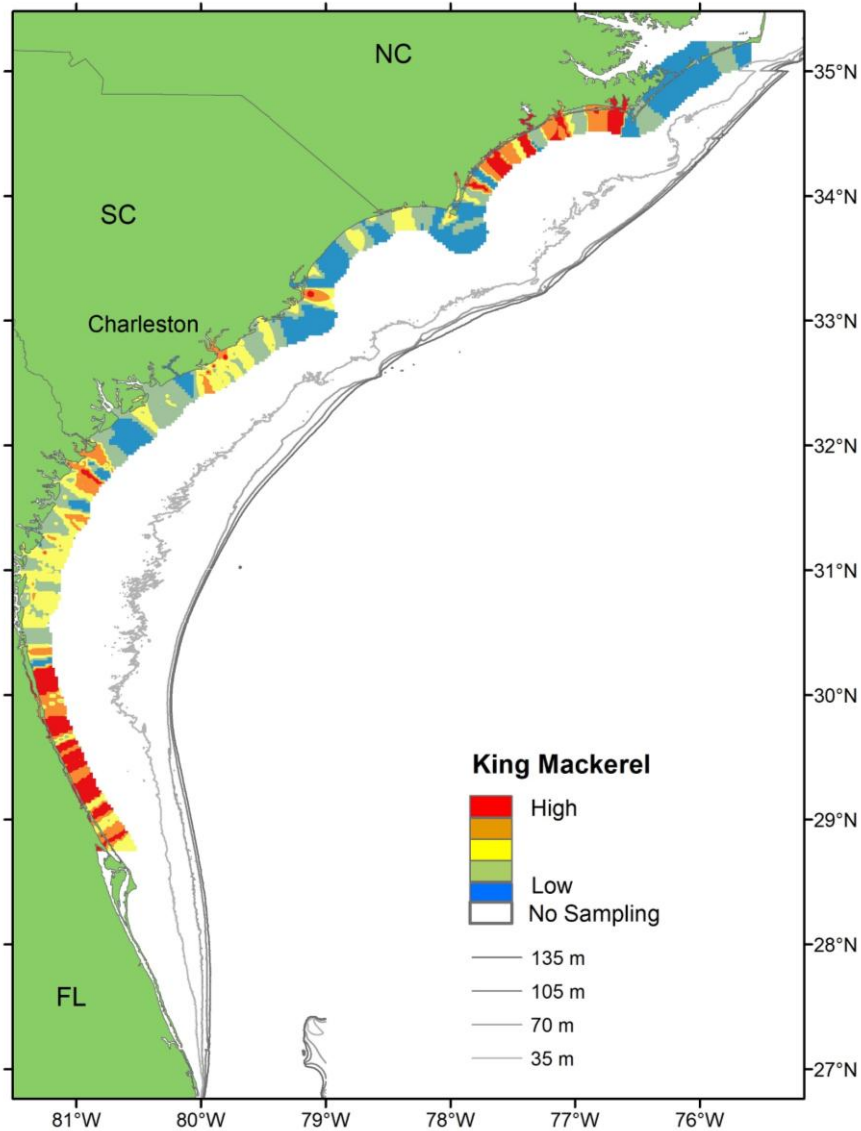
R/V *Lady Lillian*



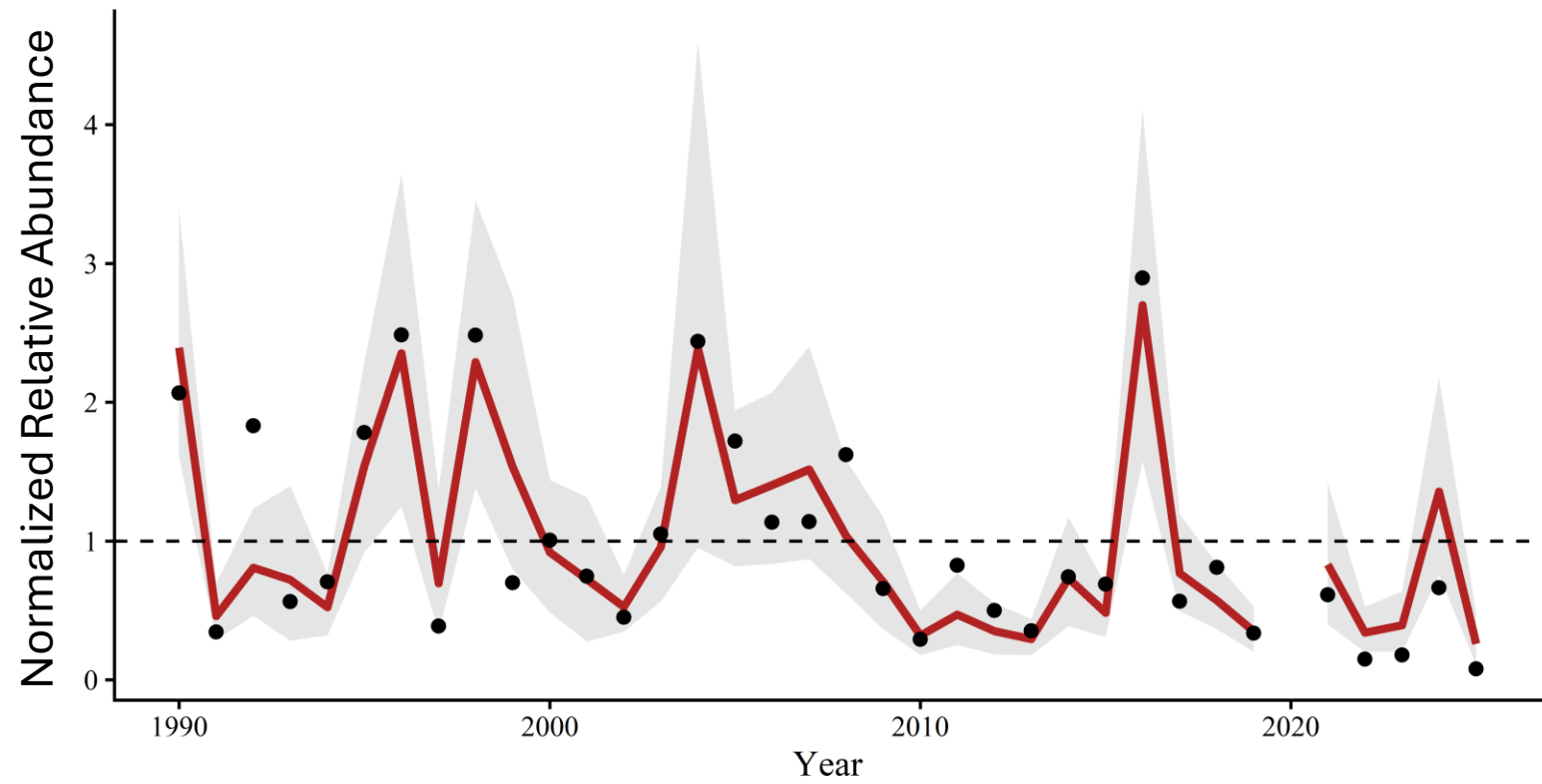
2025 Coastal Trawl Sampling



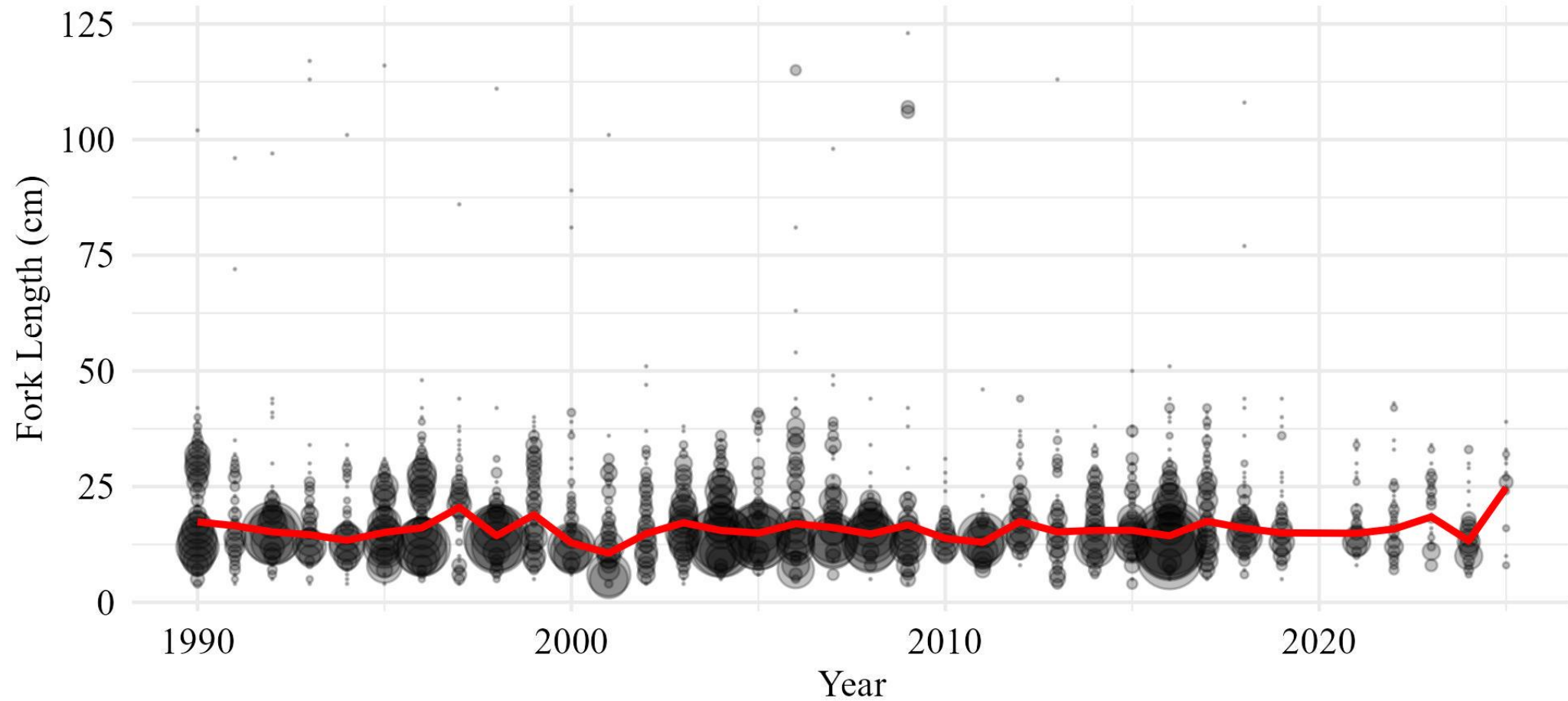
King Mackerel (Age-0 +)



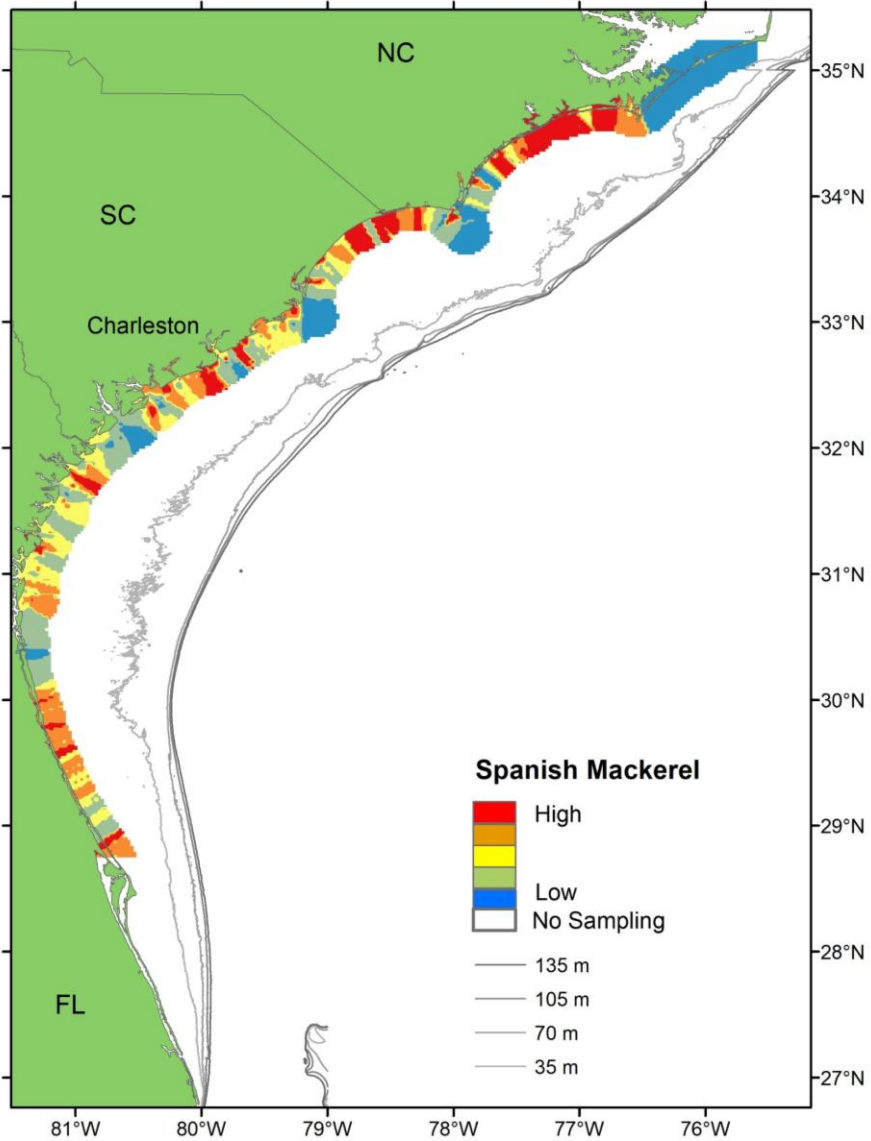
Trawl Catch



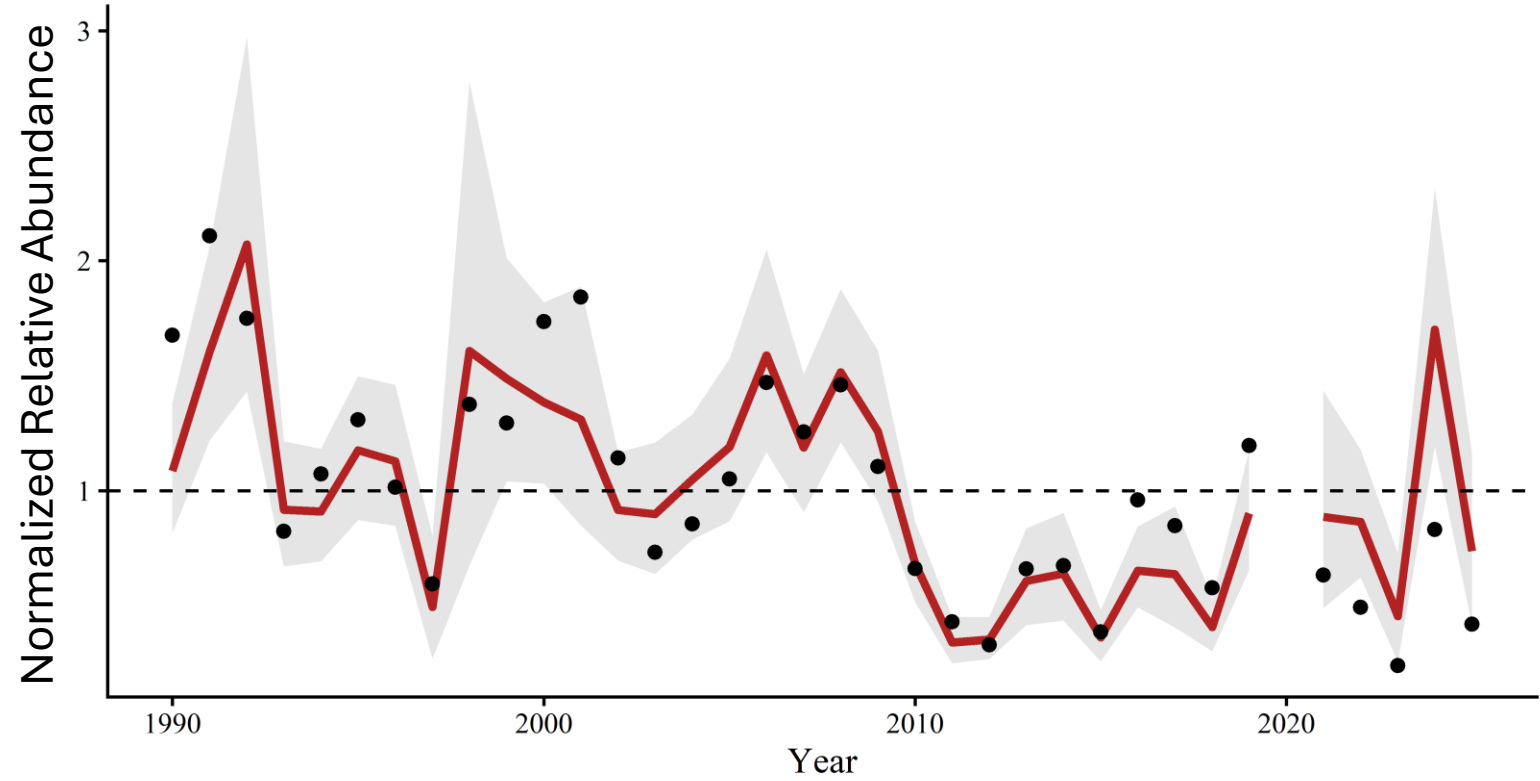
King Mackerel (Age-0 +)



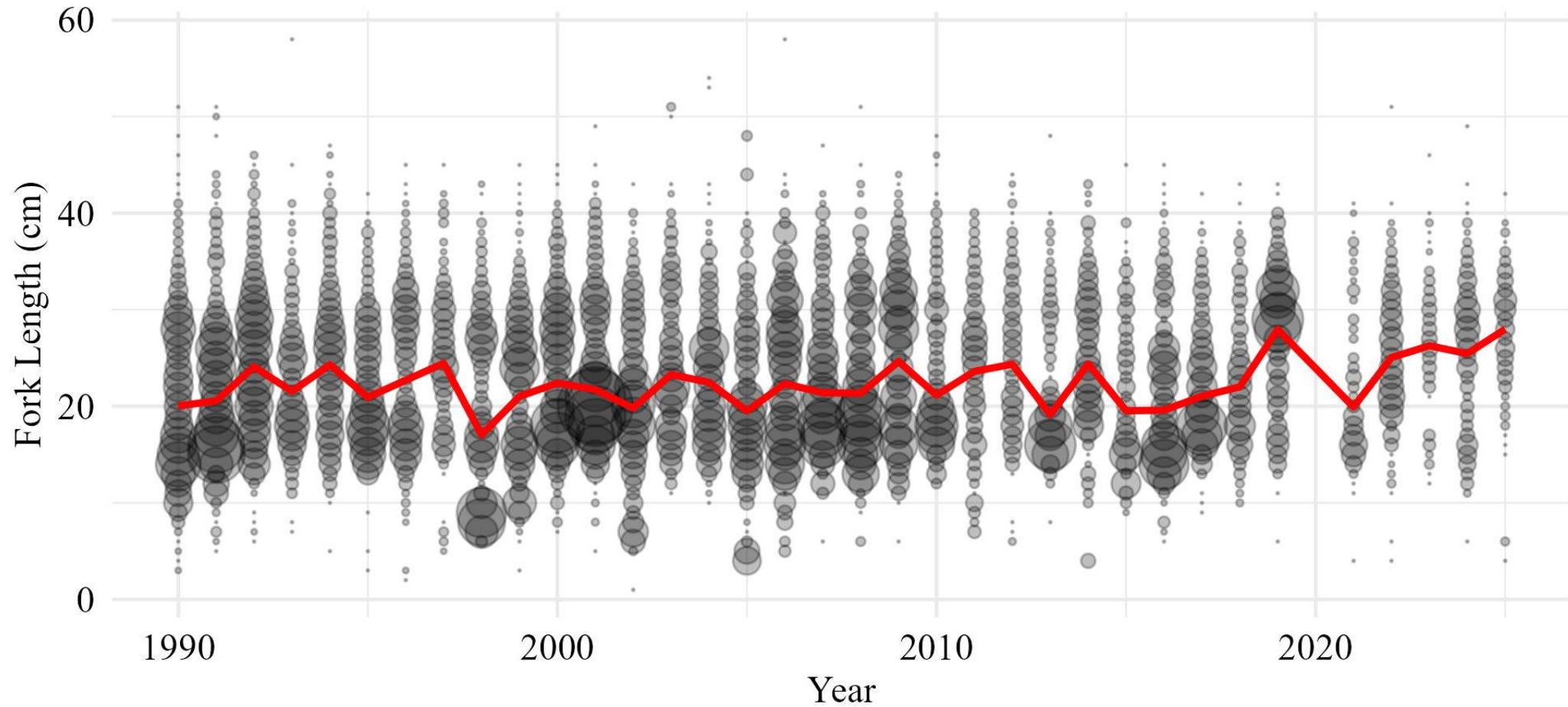
Spanish Mackerel (Age-0 +)



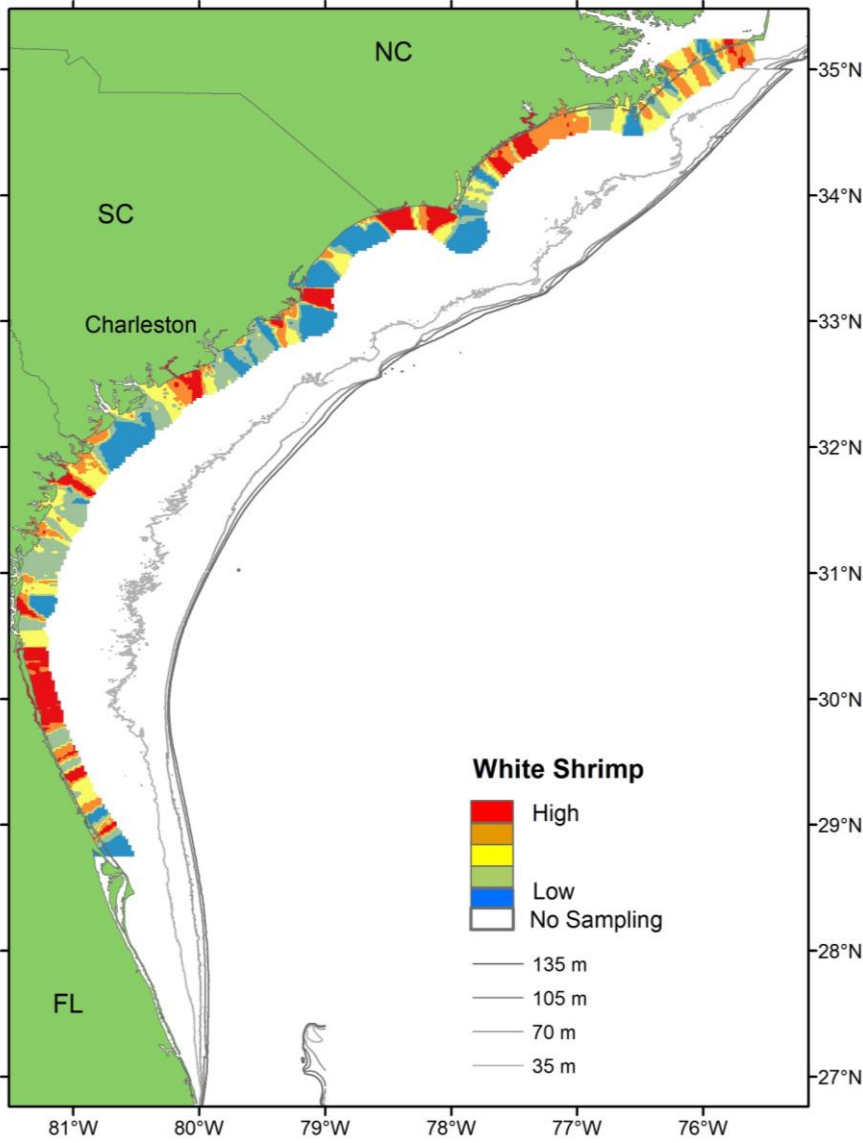
Trawl Catch



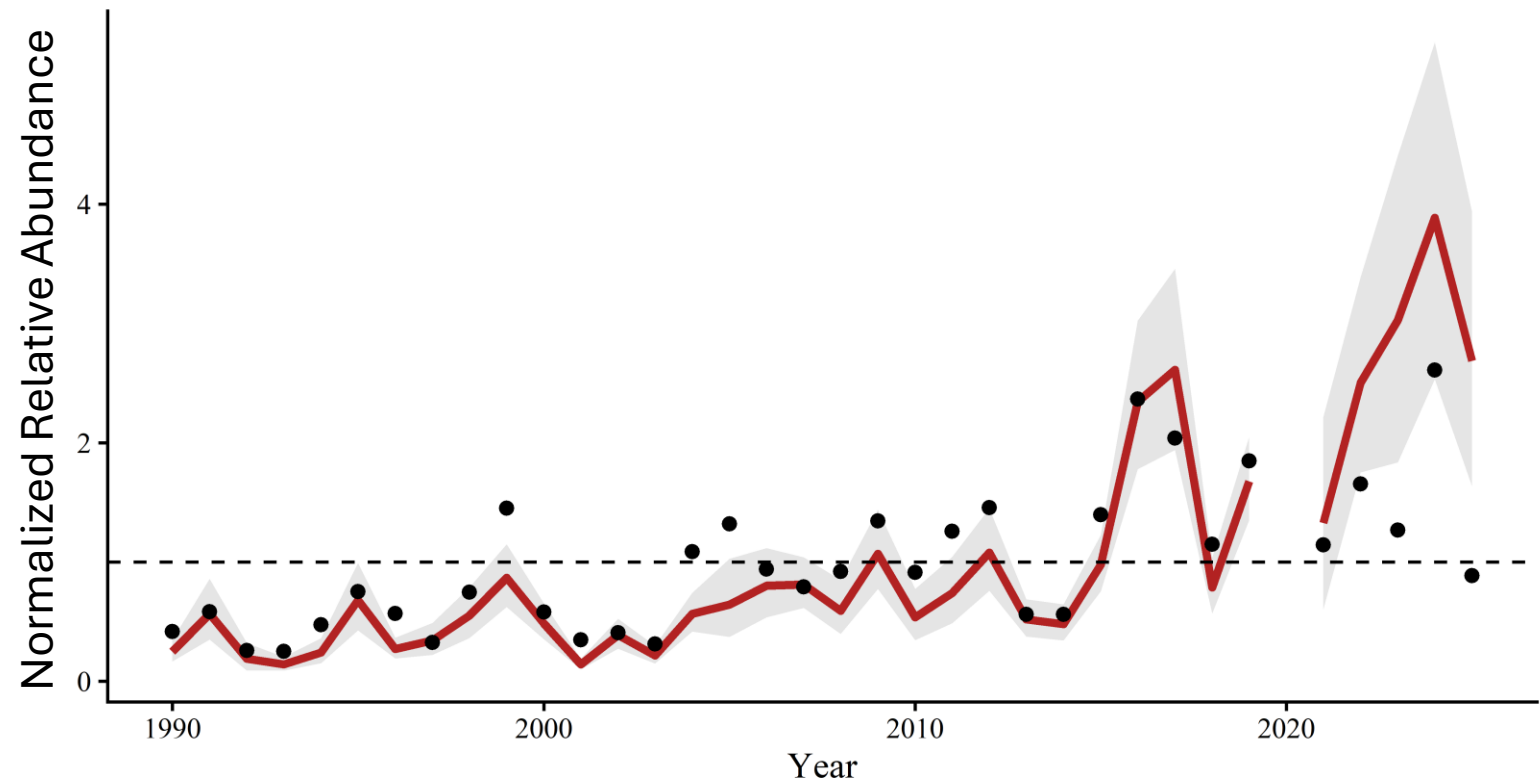
Spanish Mackerel (Age-0 +)



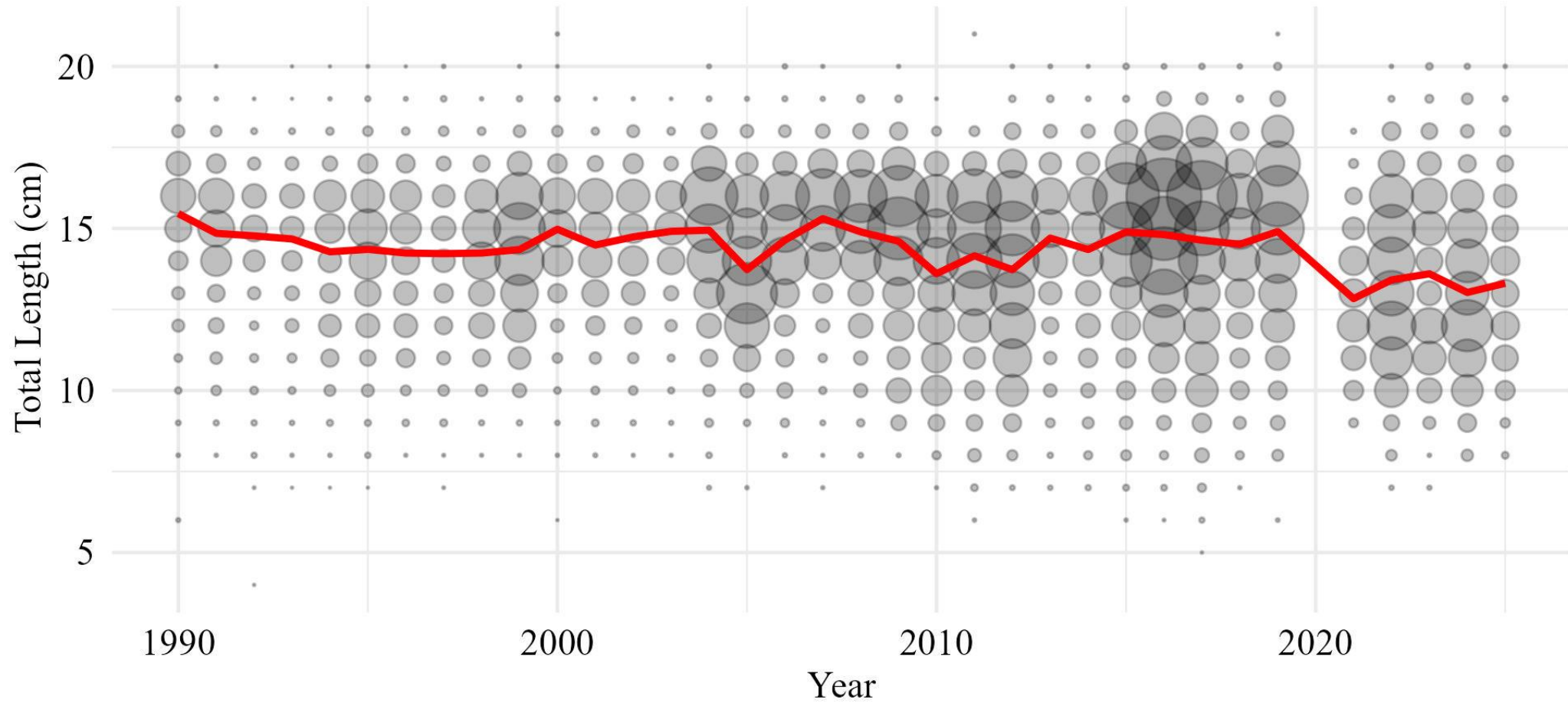
White Penaeid Shrimp



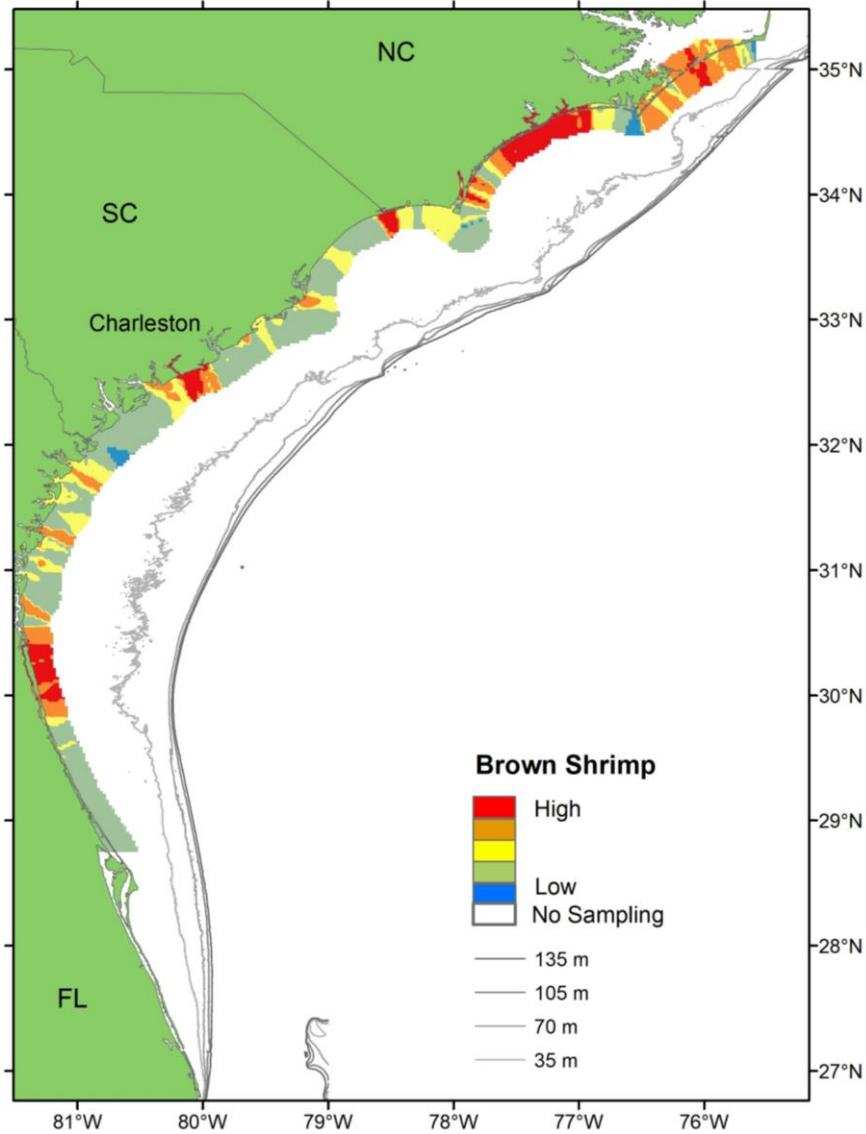
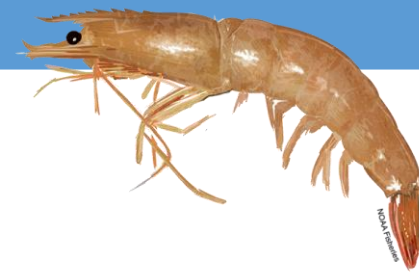
Trawl Catch



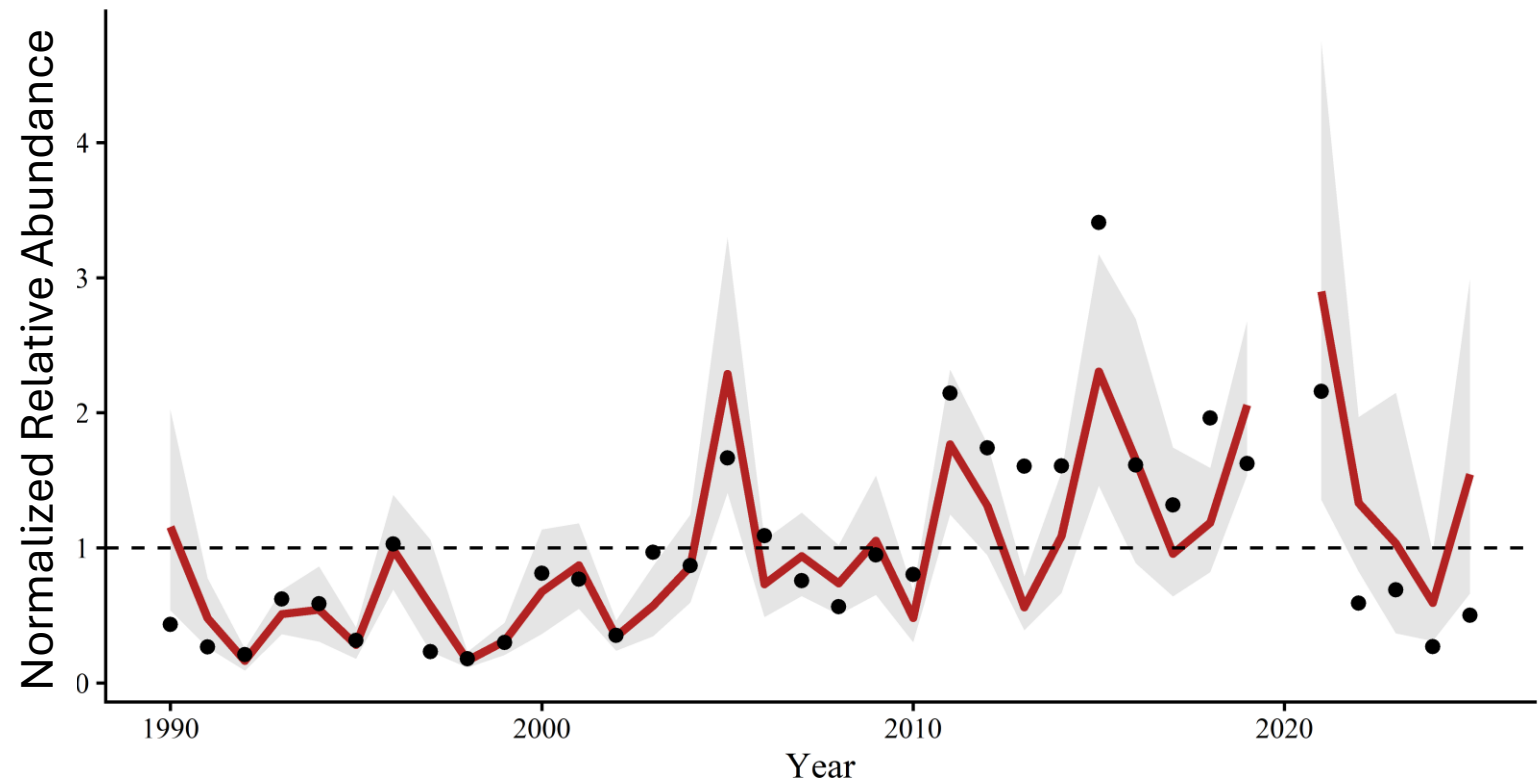
White Penaeid Shrimp



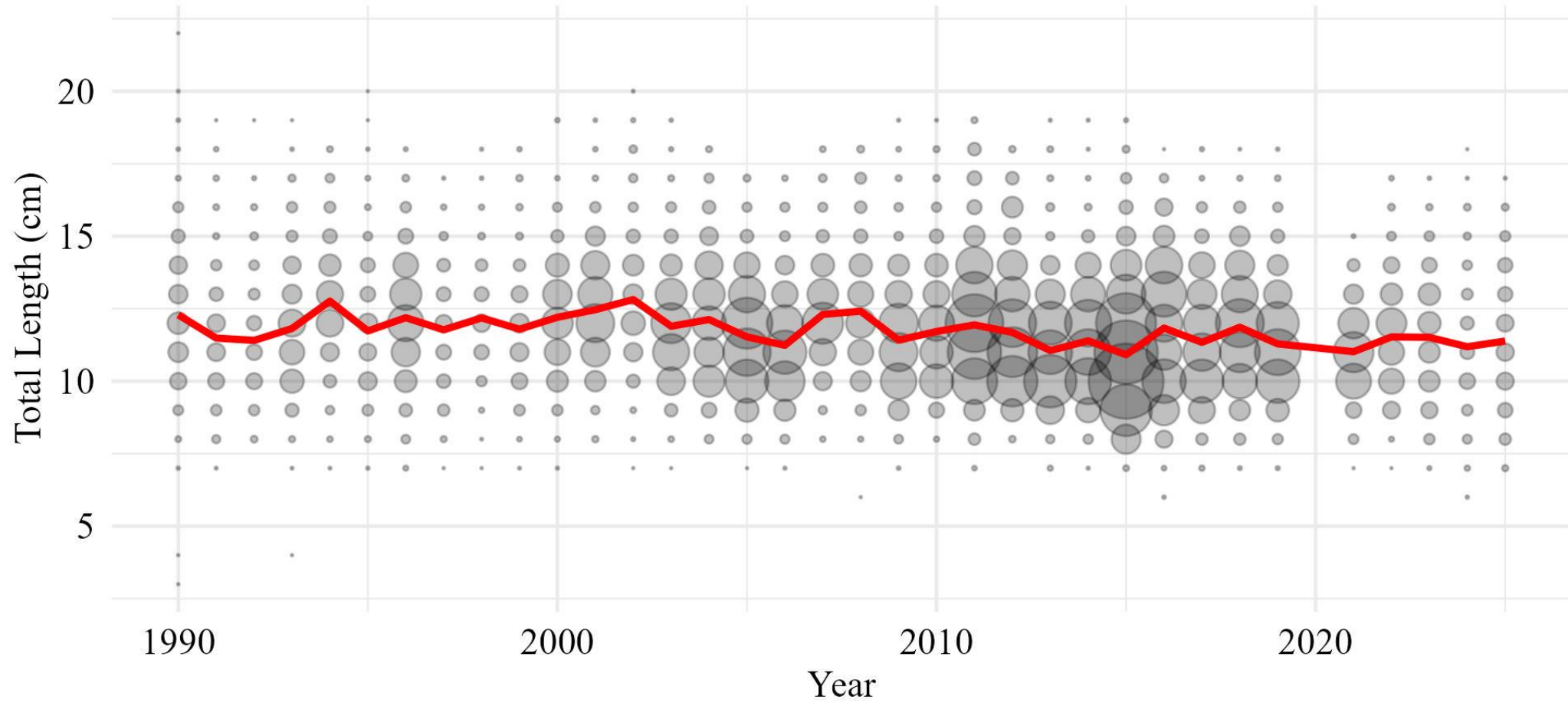
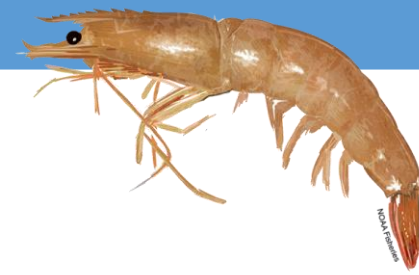
Brown Penaeid Shrimp



Trawl Catch

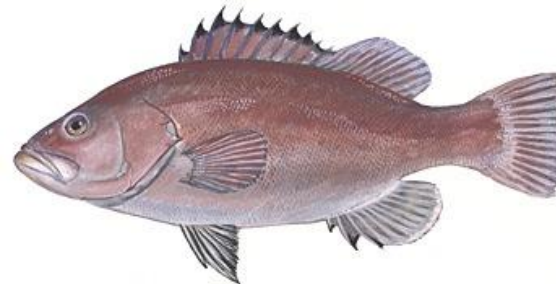


Brown Penaeid Shrimp



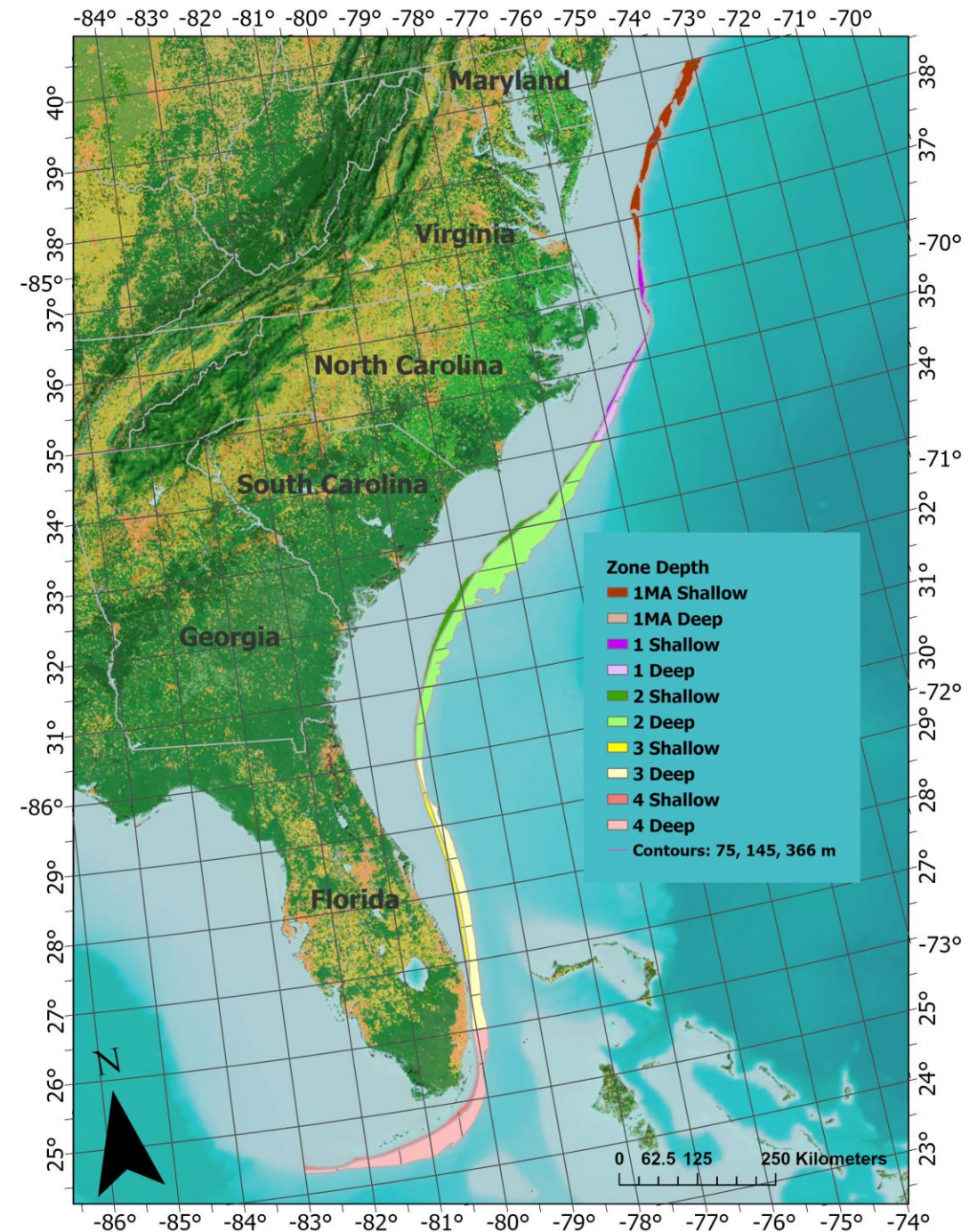
South Atlantic Deepwater Longline Survey (SADLS)

- Cooperative longline survey
 - Objective: Support stock assessments and management of deepwater species
 - Indices of abundance
 - Age and length compositions
 - Life history information
 - 2020-2025
 - NMFS, SCDNR, and industry participants
 - 4 cooperating fishermen each year
- Standardized methods and gear
 - 3-mile mainline with 150 hooks per mile
- Focal Species
 - Blueline Tilefish, Golden Tilefish, and Snowy Grouper



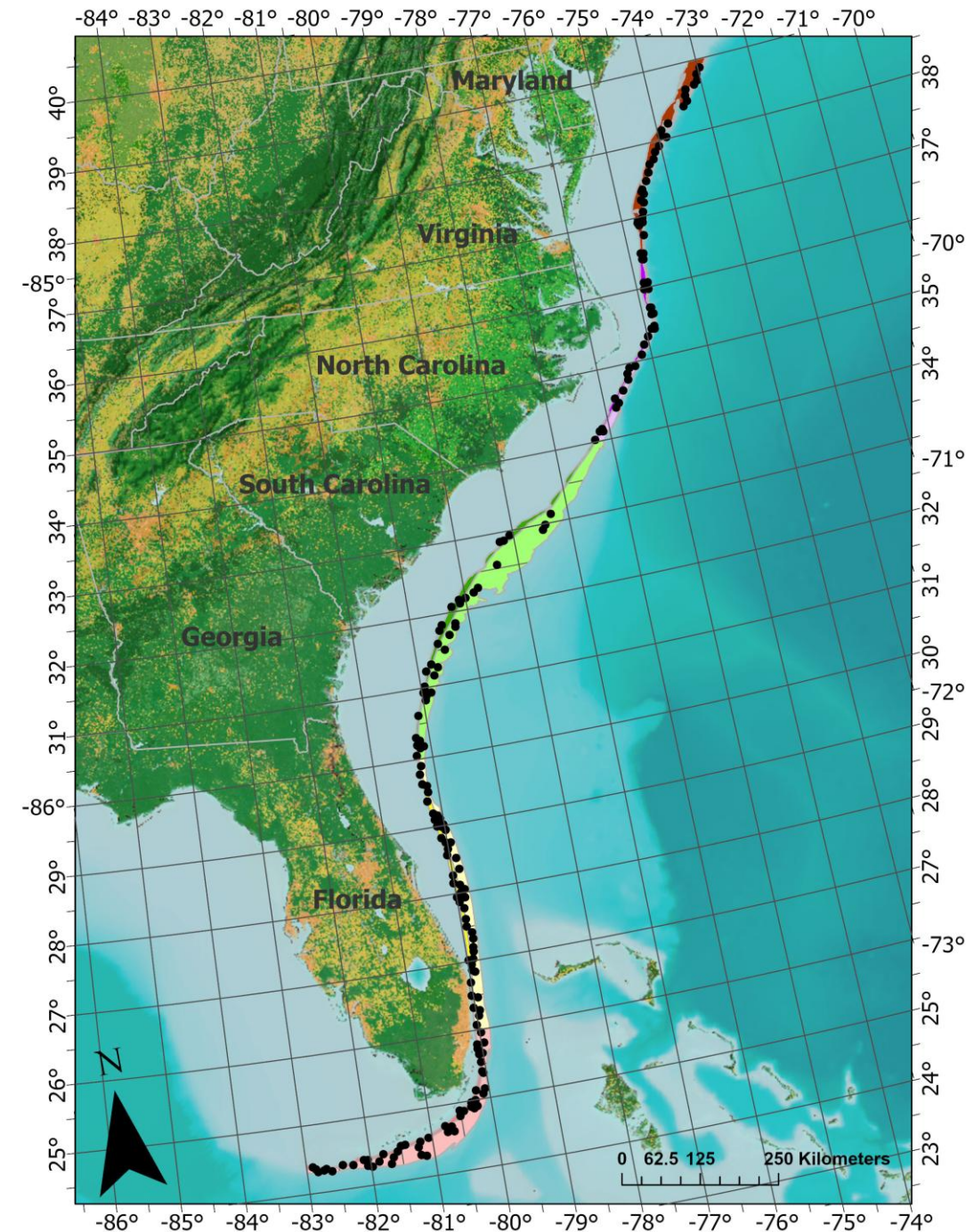
SADLS Design

- 4 Zones
 - NC-DE (Includes Mid-Atlantic stations)
 - GA-NC
 - Central and North FL
 - South FL and FL Keys
- Strata (34 total)
 - Latitude/longitude (1°) – 17 total
 - Depth – 2 total
 - Shallow: 75-145m
 - Deep: 146-366m
- Equal allocation – 6 per stratum:
- 204 stations per year

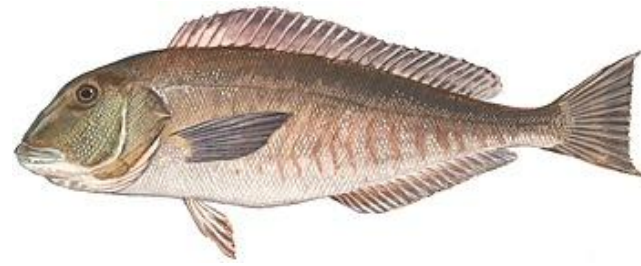


SADLS 2025 Sampling

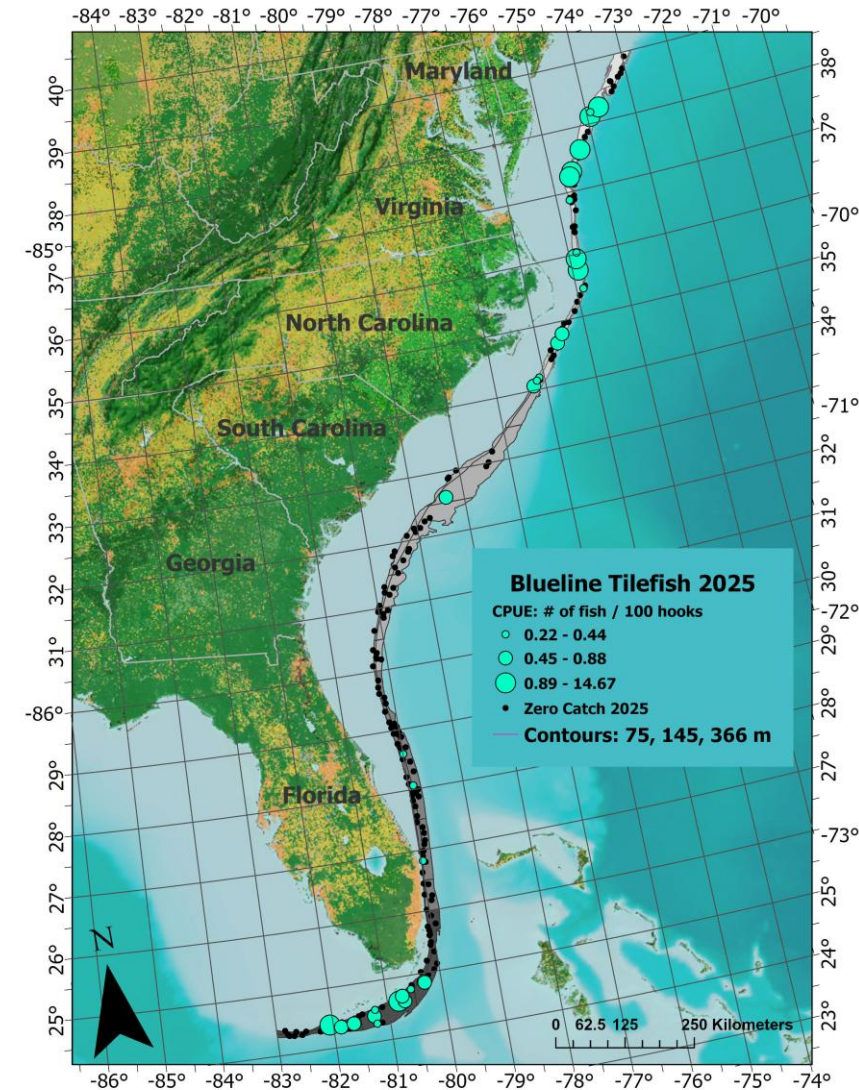
- Started August 25, 2025
- 50 sea days
- 194 of 204 stations completed
 - 30 stations in Mid-Atl (all)
 - 164 stations in S-Atl
 - 10 stations not sampled
- 3,097 individual fish caught
 - 87 species
- 886 individual fish worked up for life history
 - 20 species



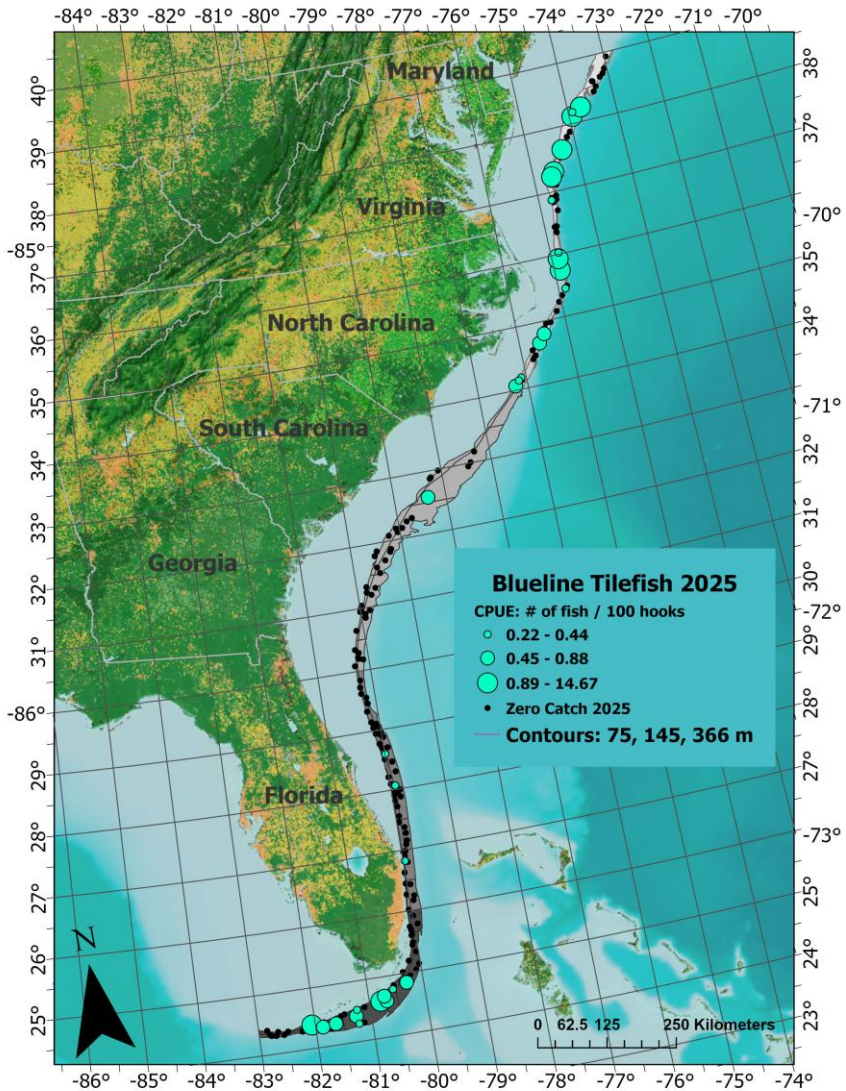
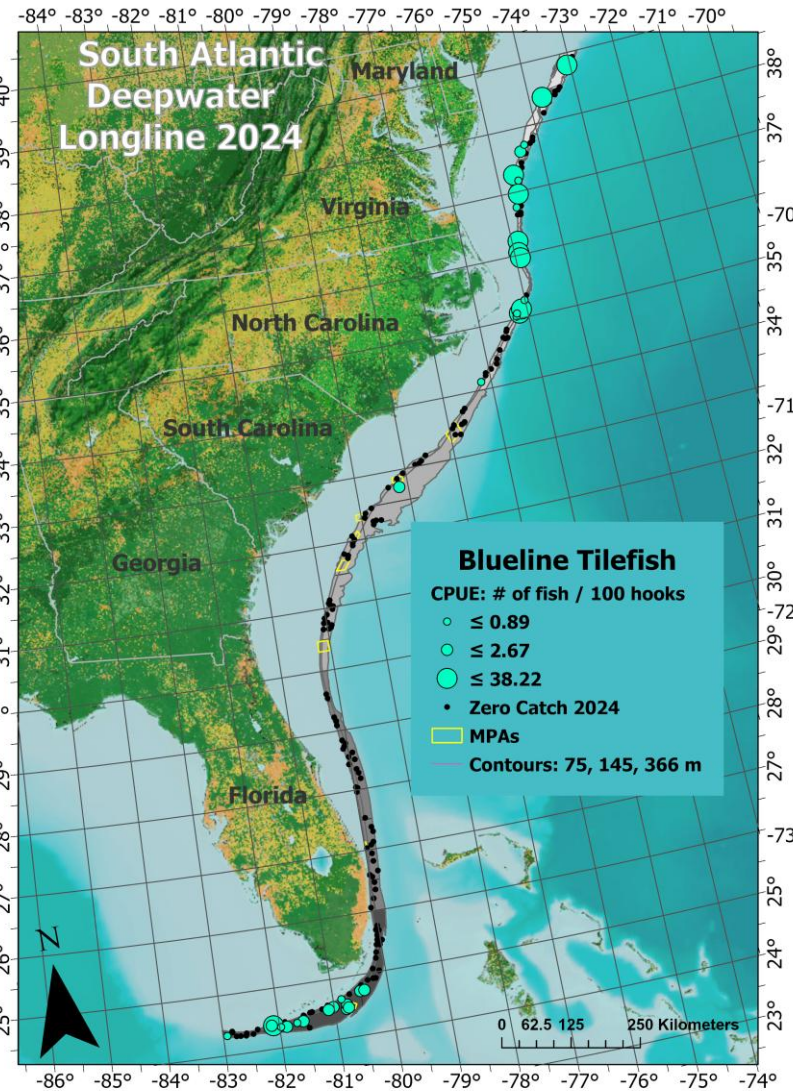
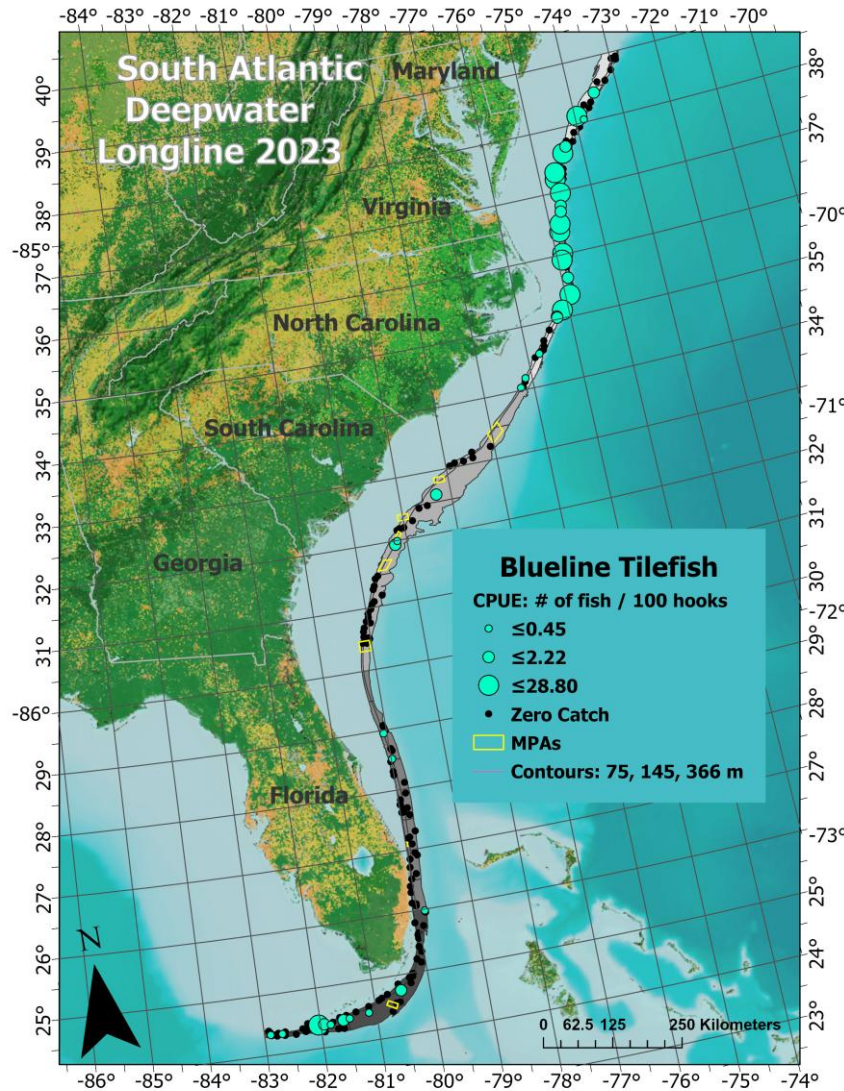
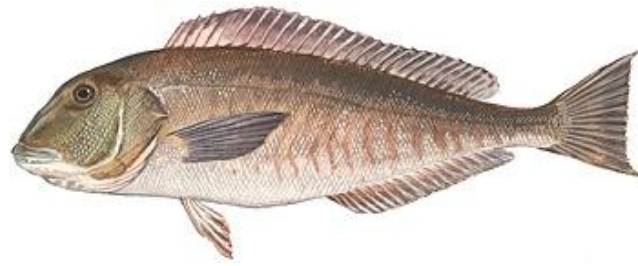
Blueline Tilefish



- 240 total fish caught
- Length range
 - 39 – 97 cm
- 176 total fish worked up for life history



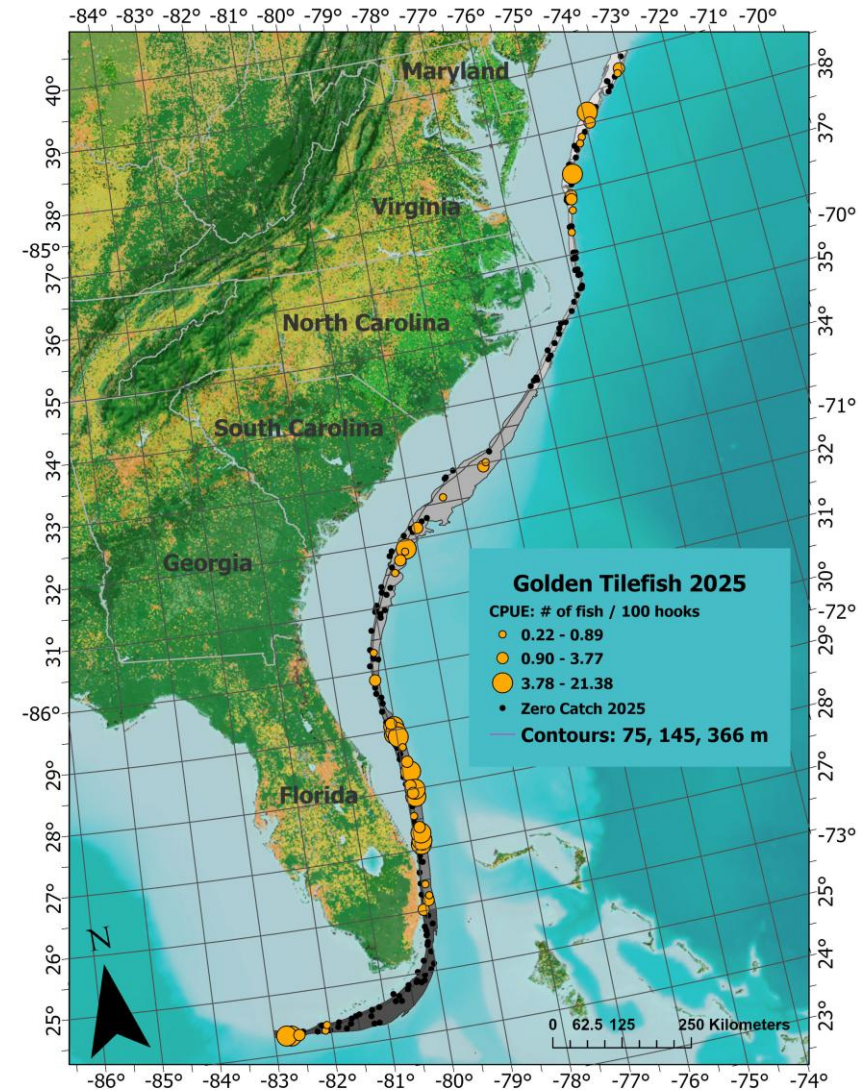
Blueline Tilefish



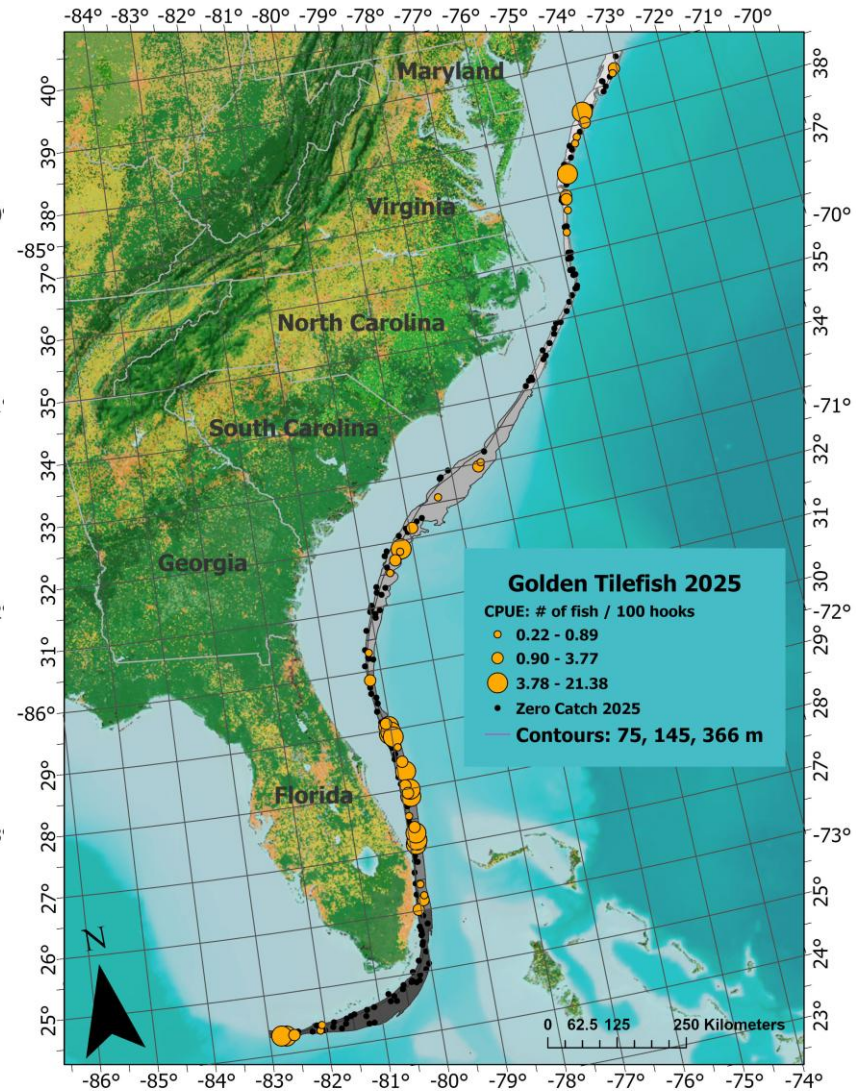
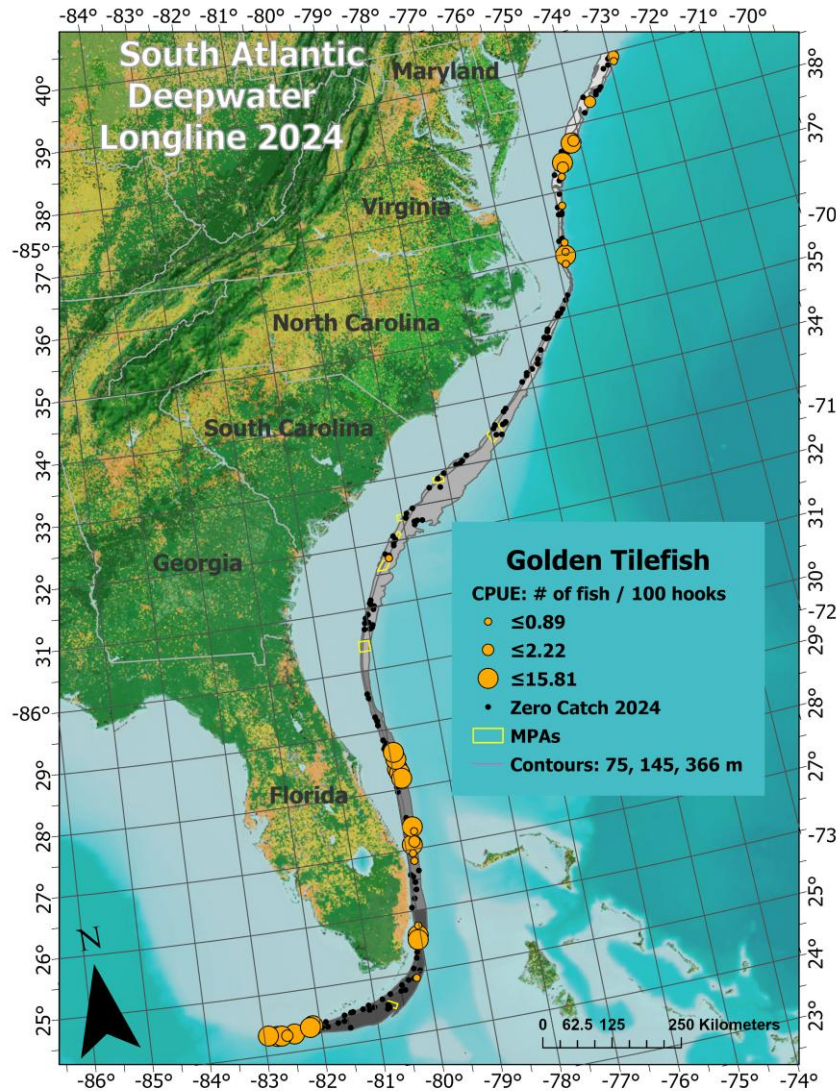
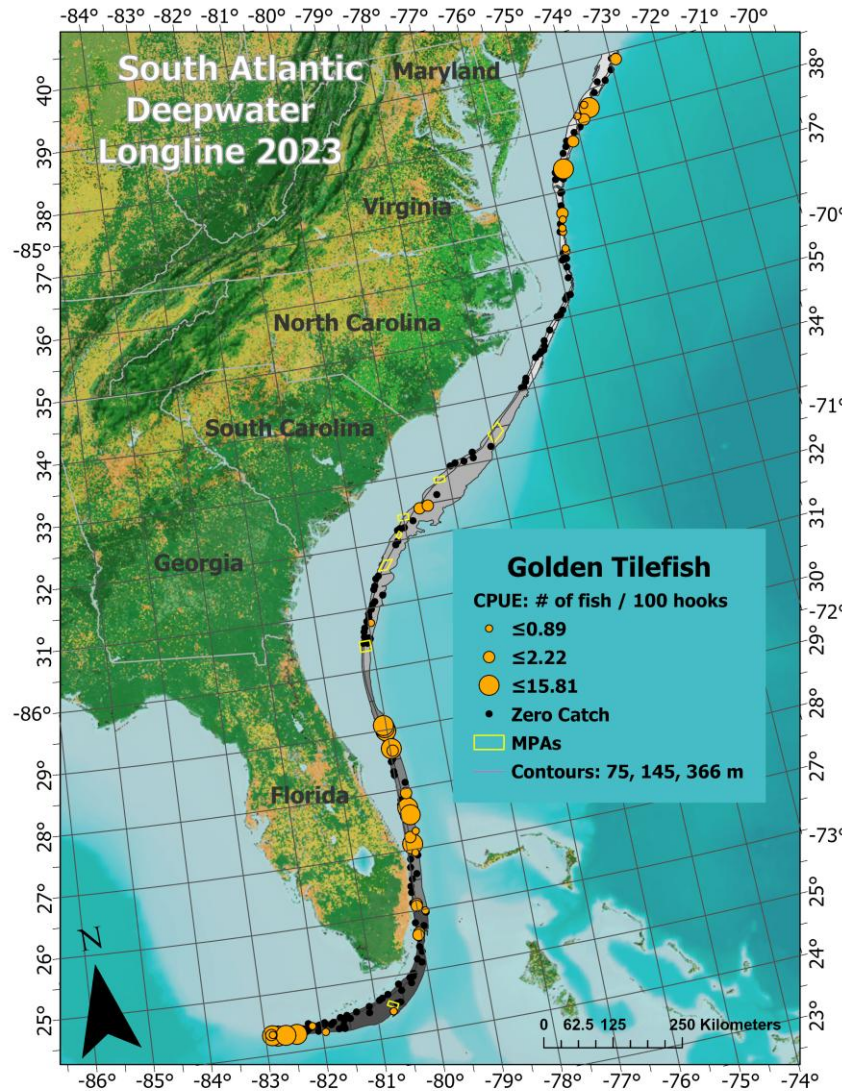
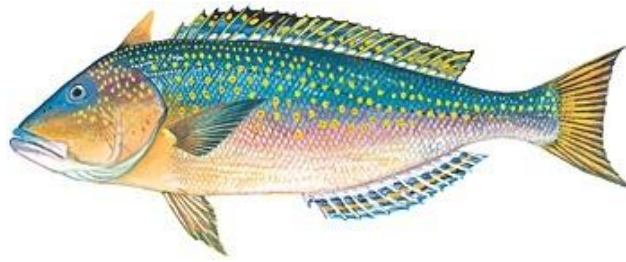
Golden Tilefish



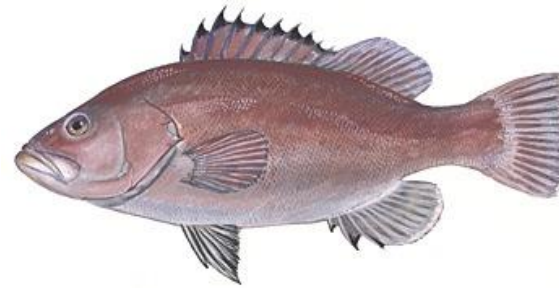
- 757 total fish caught
- Length range
 - 27 – 150 cm
- 545 total fish worked up for life history



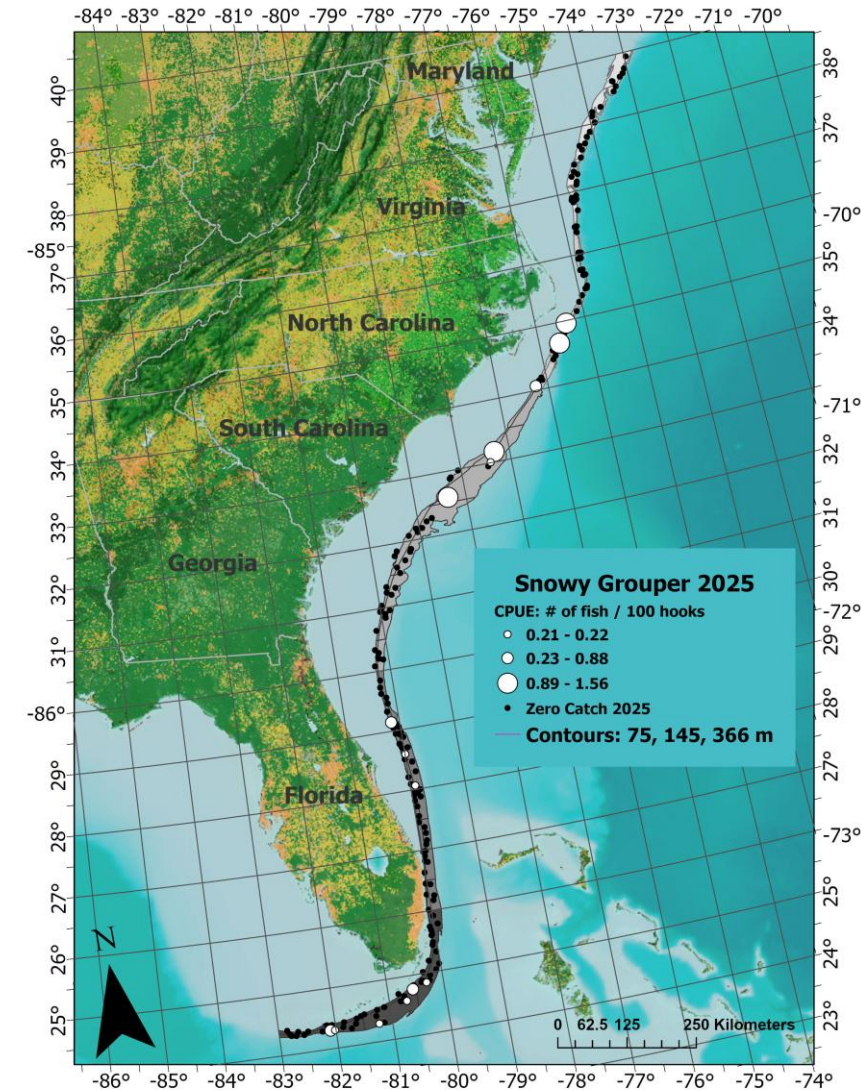
Golden Tilefish



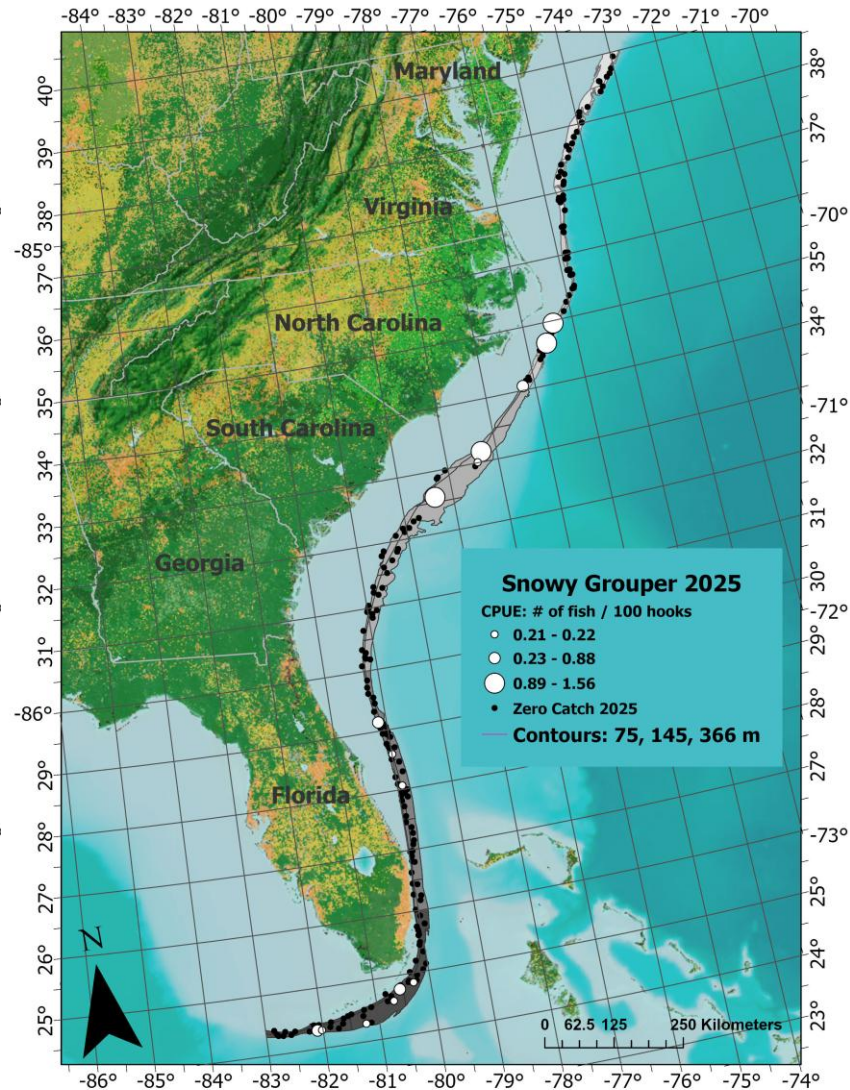
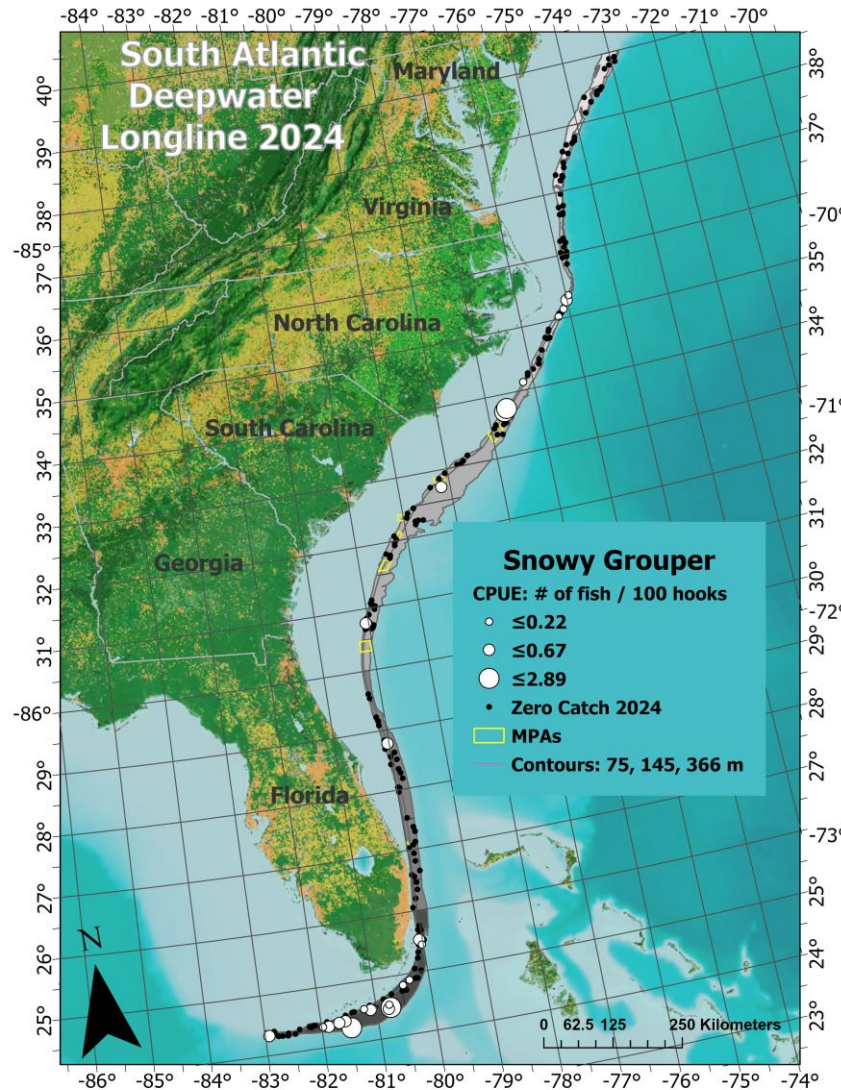
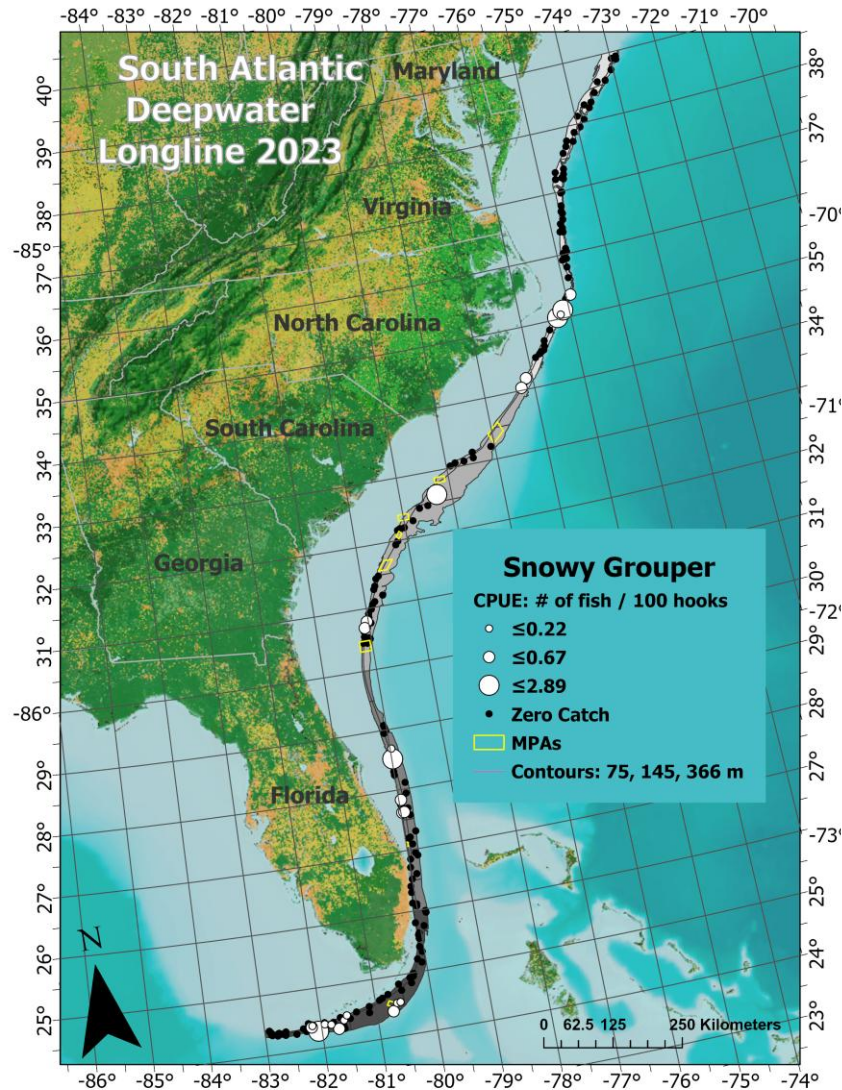
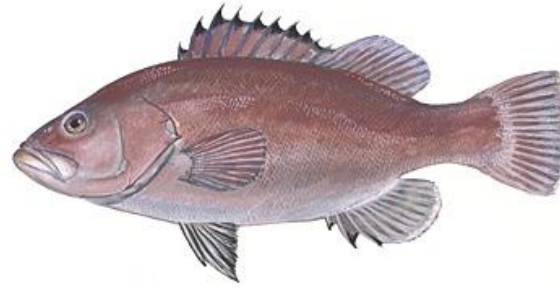
Snowy Grouper



- 38 total fish caught
- Length range
 - 30 – 110 cm
- 38 total fish worked up for life history



Snowy Grouper



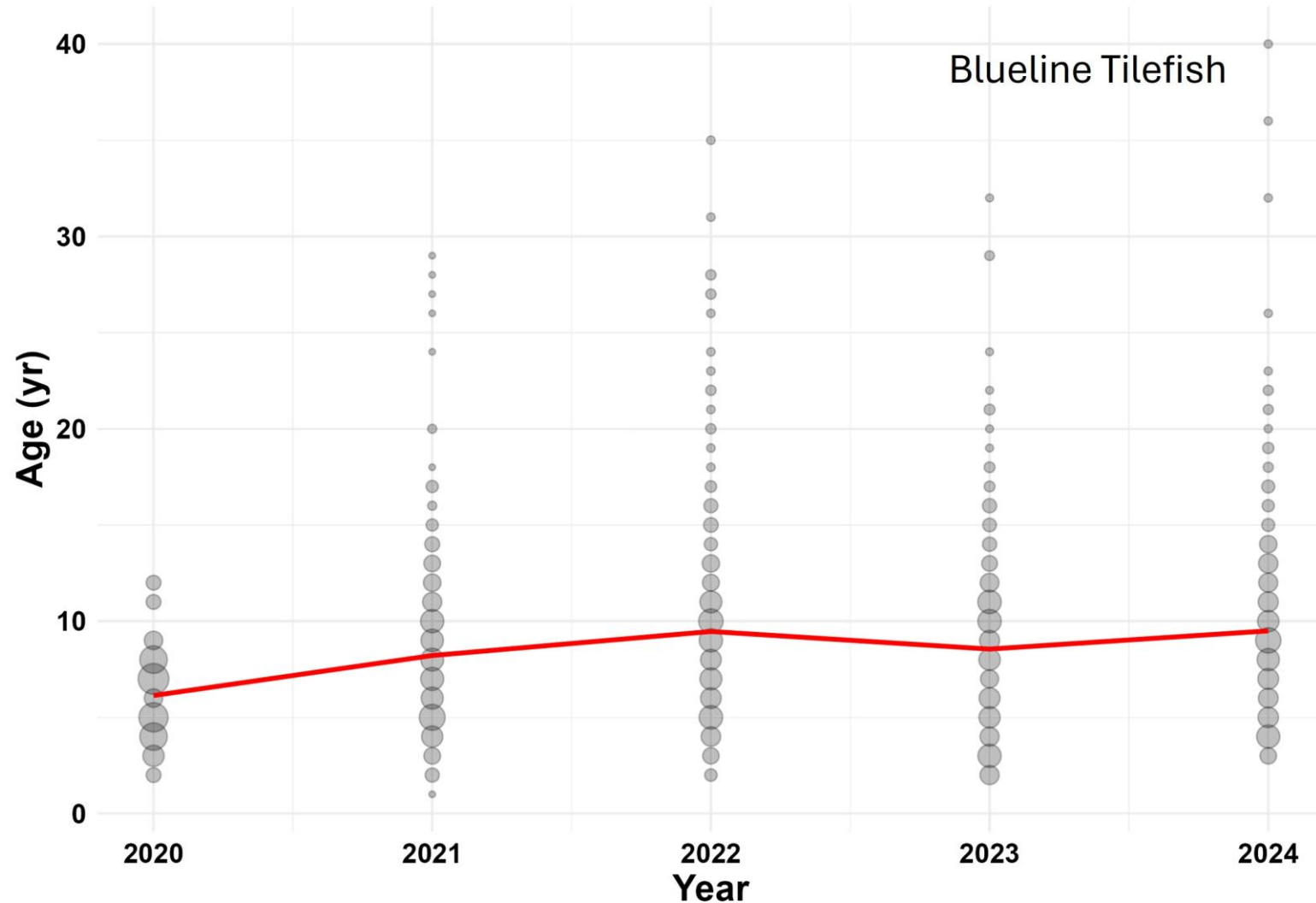
Life History Summary

- South Atlantic Fishery Management Council funded
 - Age estimates for all fish (2020-2024)
 - Except Blueline Tilefish from Zone 1 (2023-2025)
 - Funded by Mid-Atlantic Fishery Management Council
 - 3,508 individual fish
 - 12 species
 - Ages utilized in:
 - SEDAR-89 Golden Tilefish
 - SEDAR-90 Red Snapper
 - SEDAR-92 Blueline Tilefish

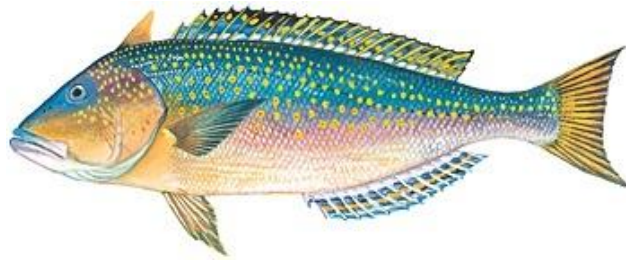
Blueline Tilefish



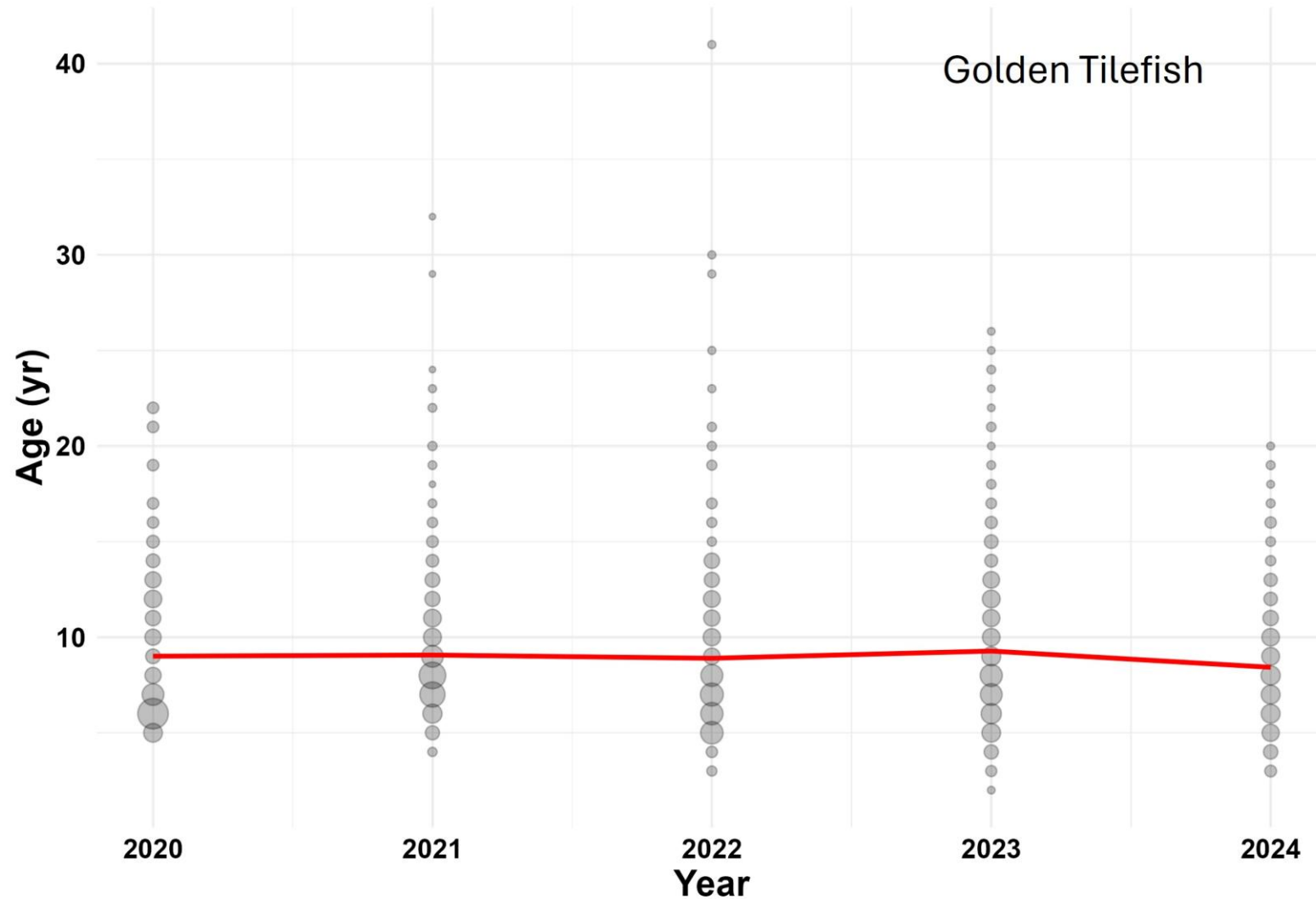
- 1,389 total fish aged
 - 756 from 2020-2022
- Length range
 - 32 – 94 cm
- Age range
 - 1-35 years



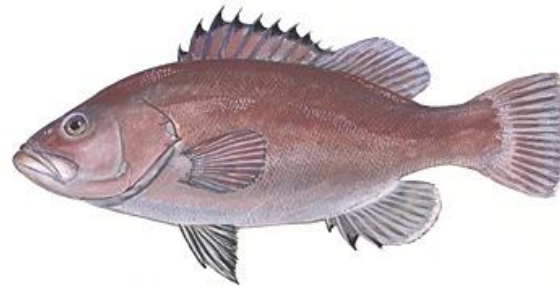
Golden Tilefish



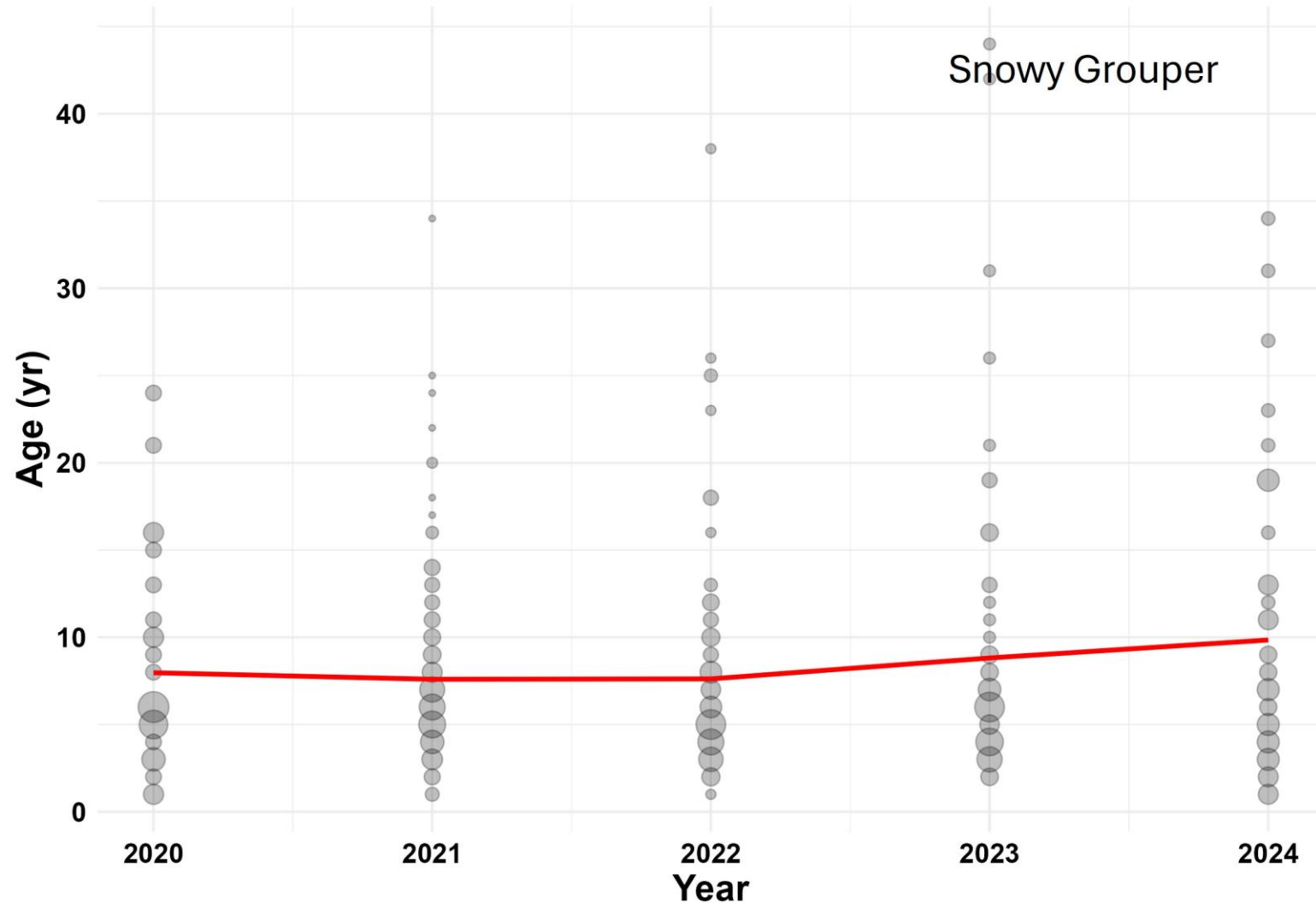
- 2,028 total fish aged
- Length range
 - 30 – 126 cm
- Age range
 - 2-41 years



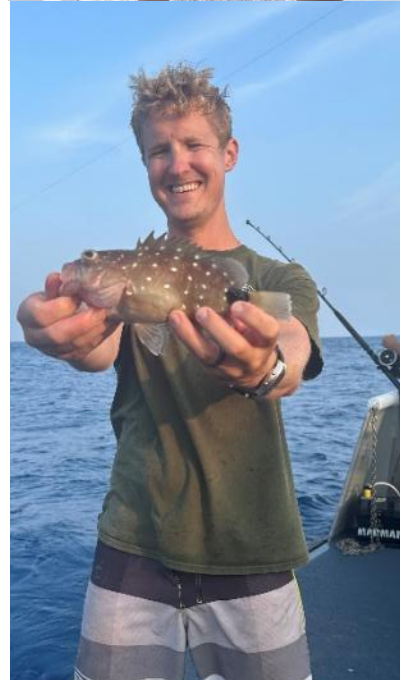
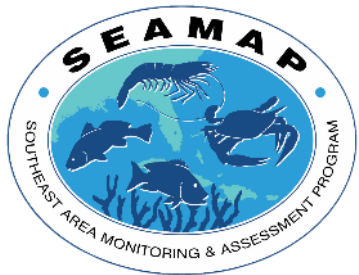
Snowy Grouper



- 400 total fish aged
- Length range
 - 21 – 127 cm
- Age range
 - 1-44 years



Questions?



Questions?



R/V Lady Lillian Ops

Questions?



R/V Lady Lillian Ops



Questions?

Questions?



R/V Lady Lillian Ops