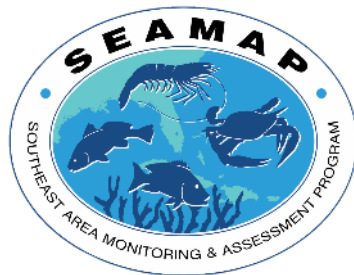


# SCDNR Updates for Regional Fishery-independent Surveys

## 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

Data Products 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



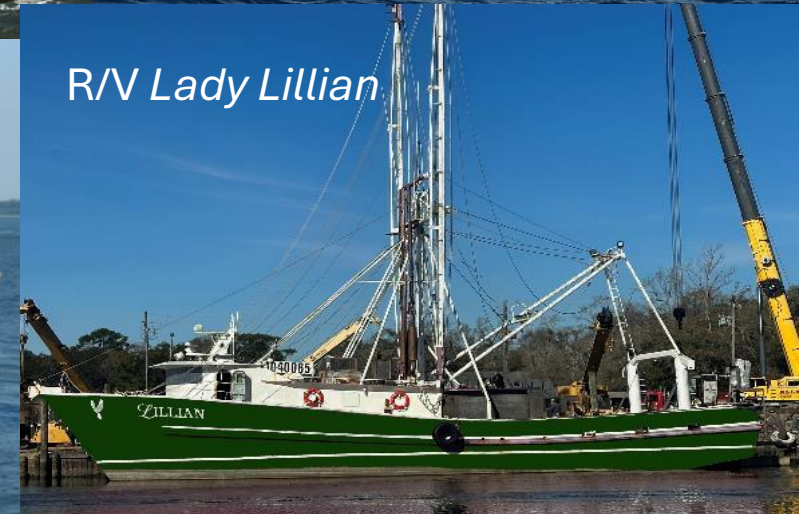
*R/V Savannah*



*NOAA Ship Pisces*



*R/V Palmetto*

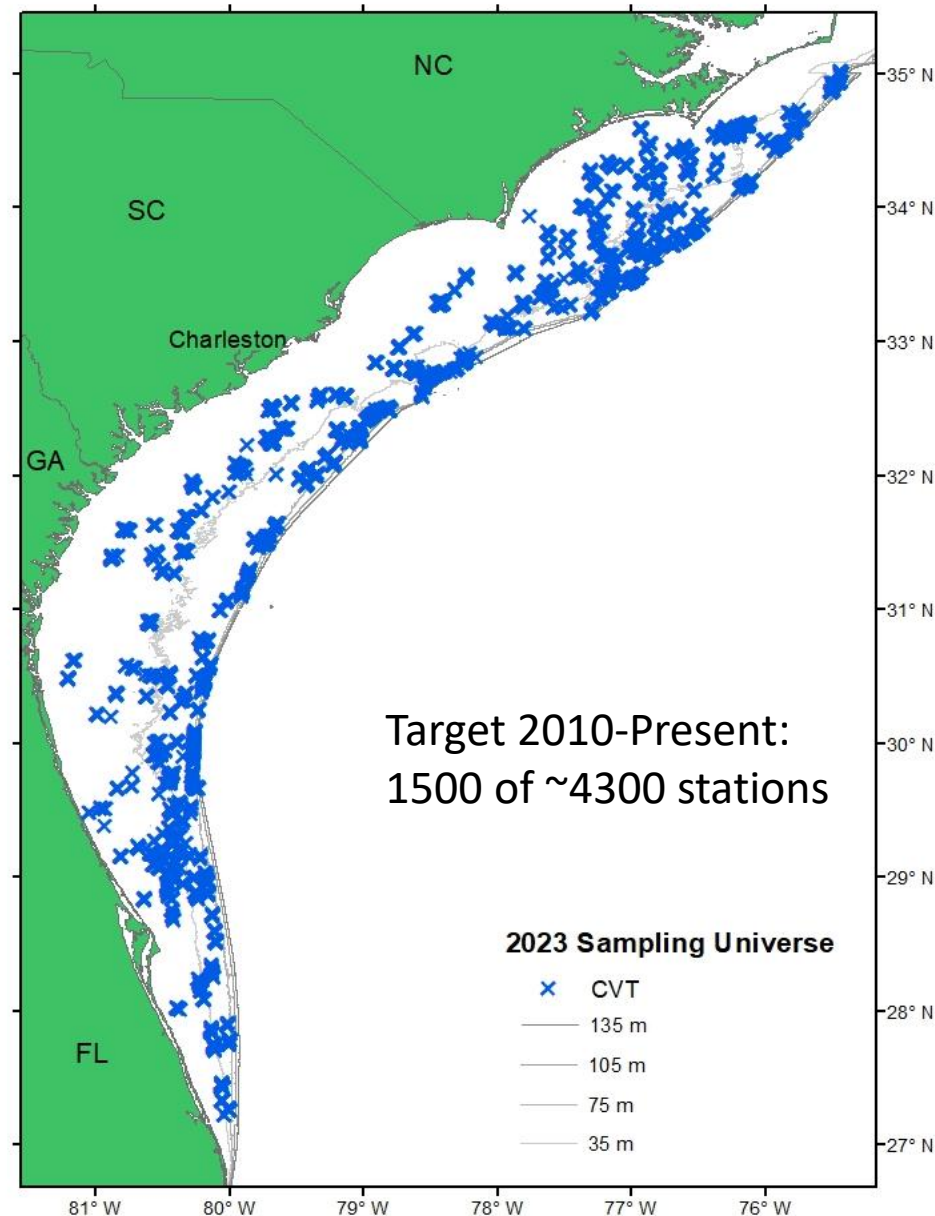
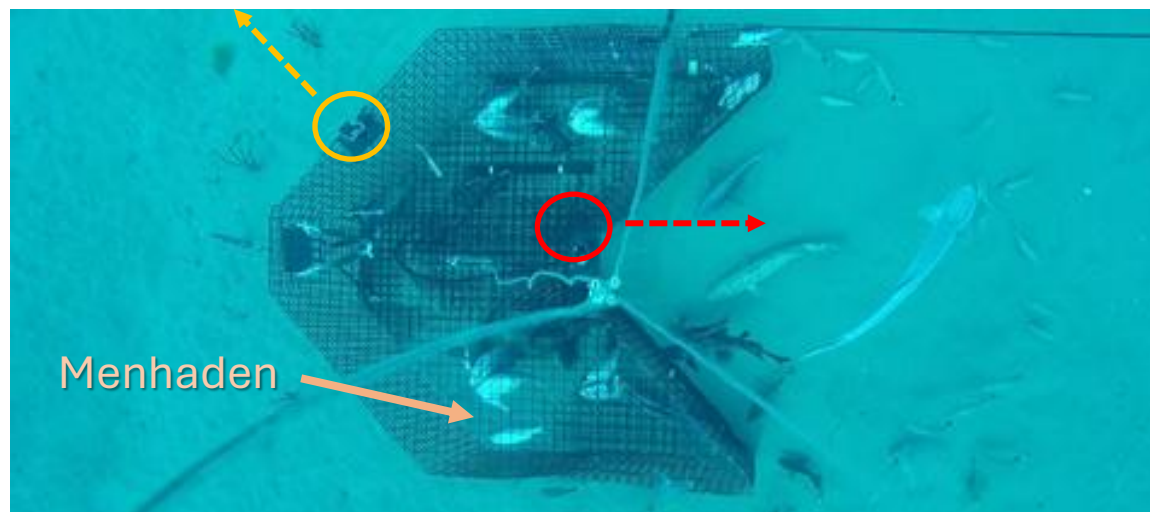


*R/V Lady Lillian*

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

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





# 2025 SERFS Sampling

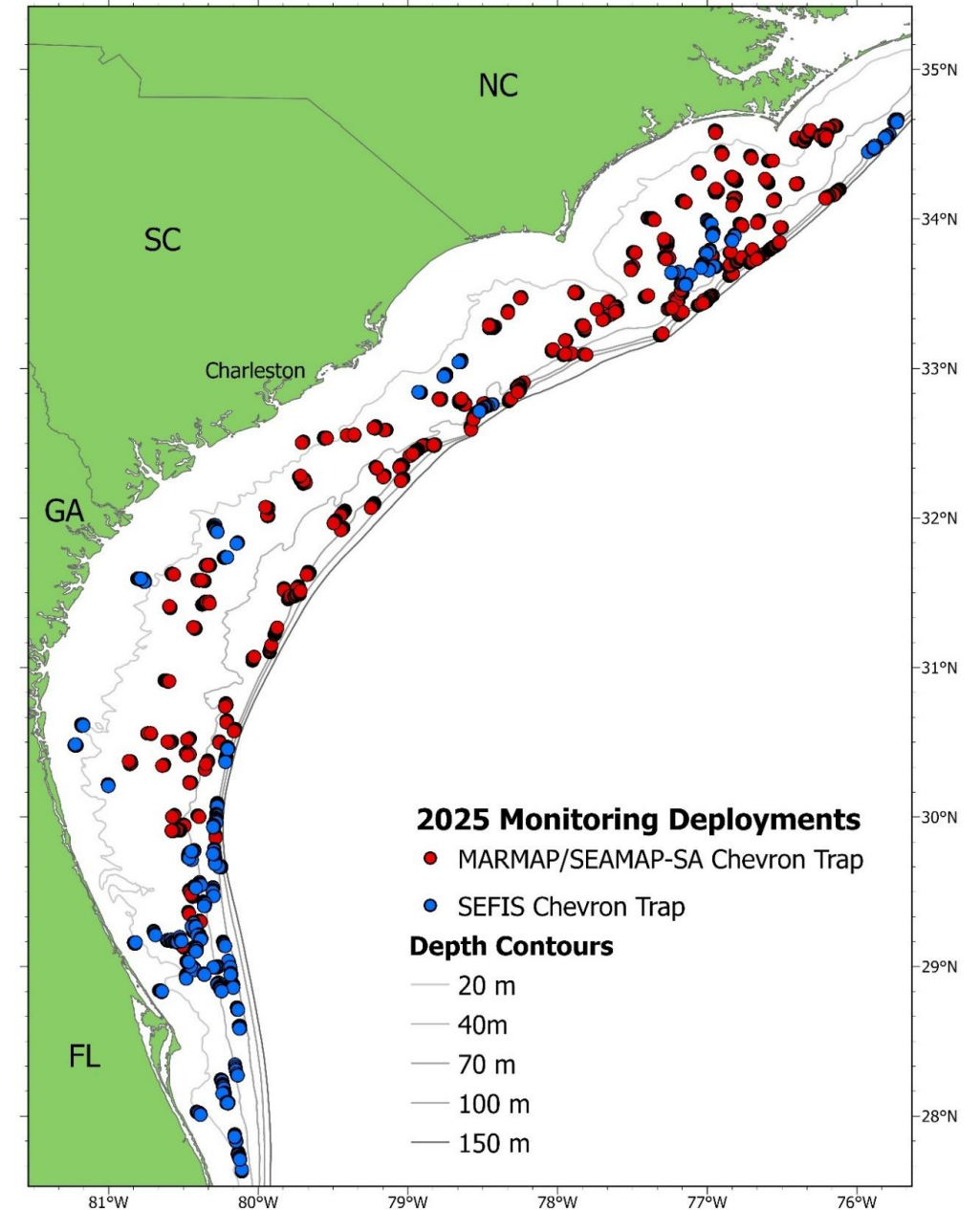
85 Days at sea

1,518 Stations sampled (100% completion)

38 Potential stations investigated

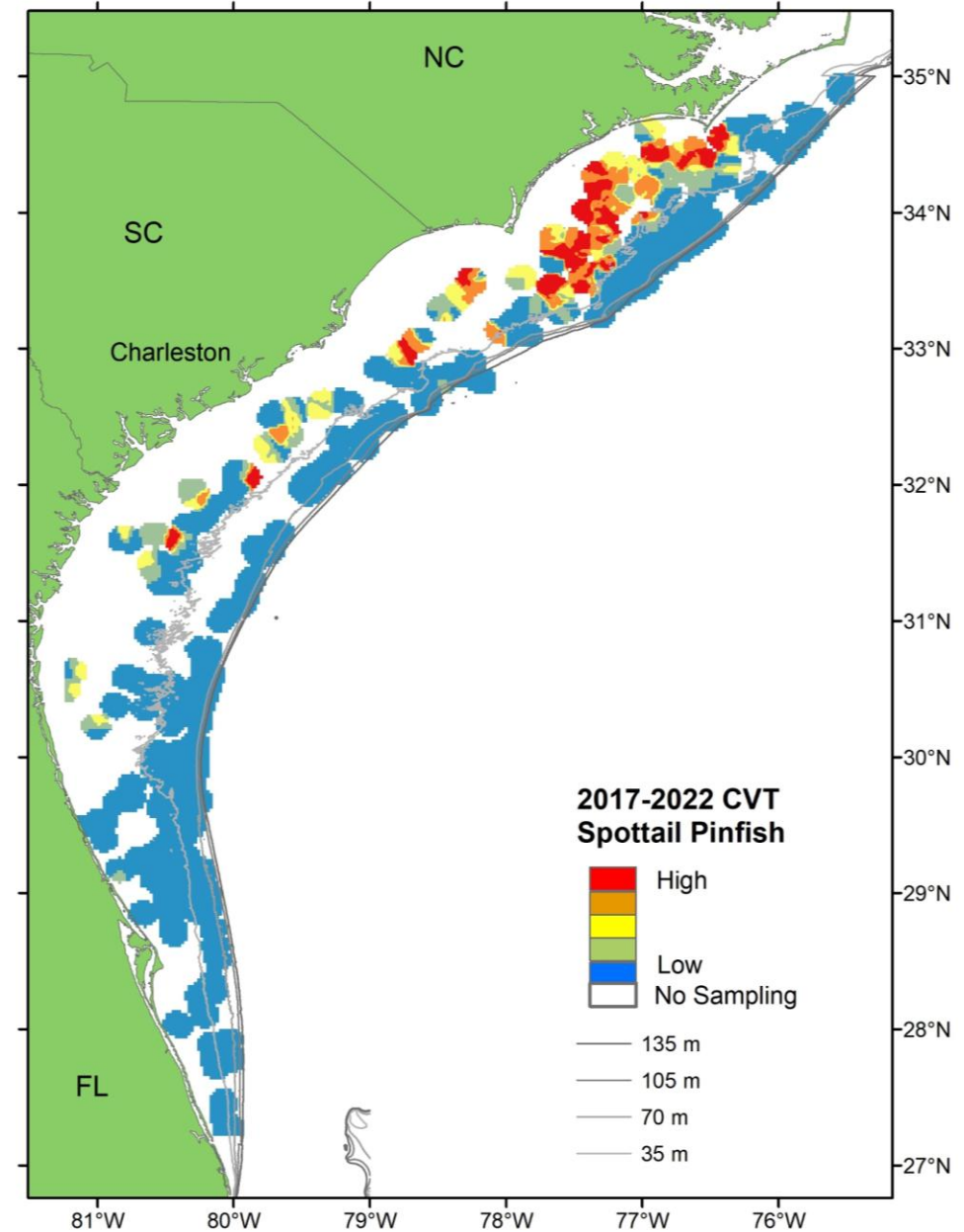
60 Species counted, weighed & measured

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

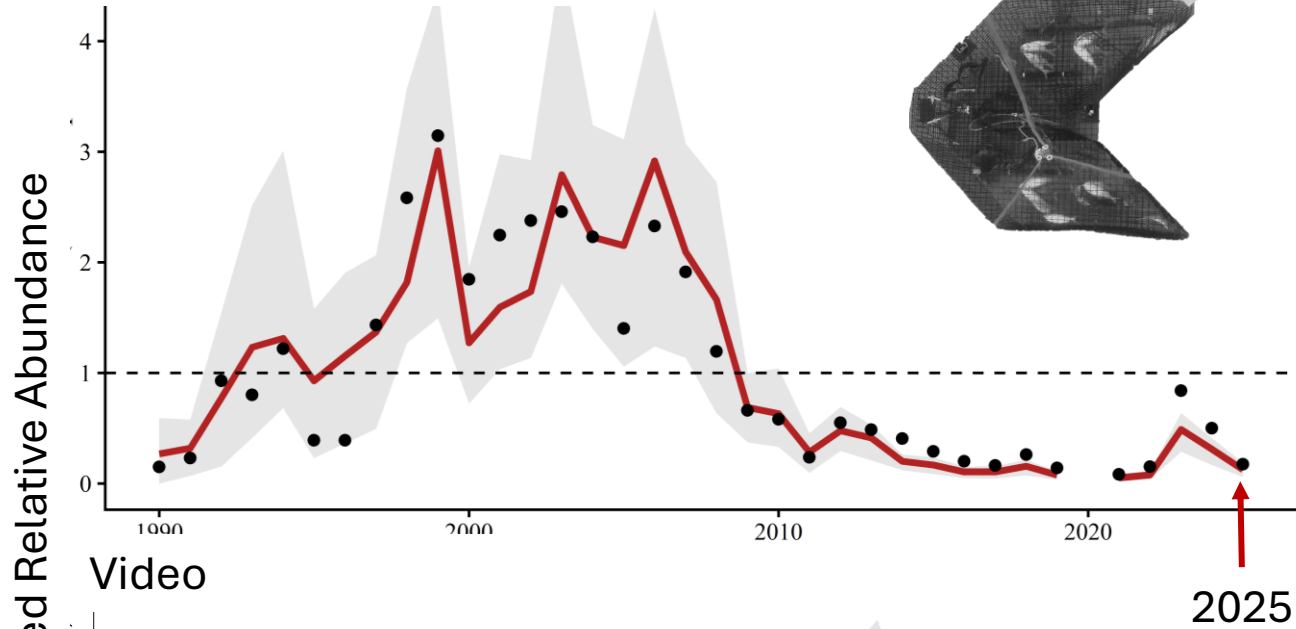
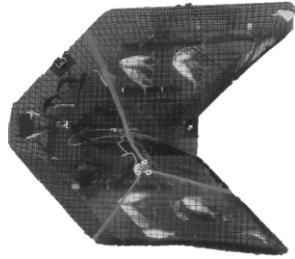
Video:

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



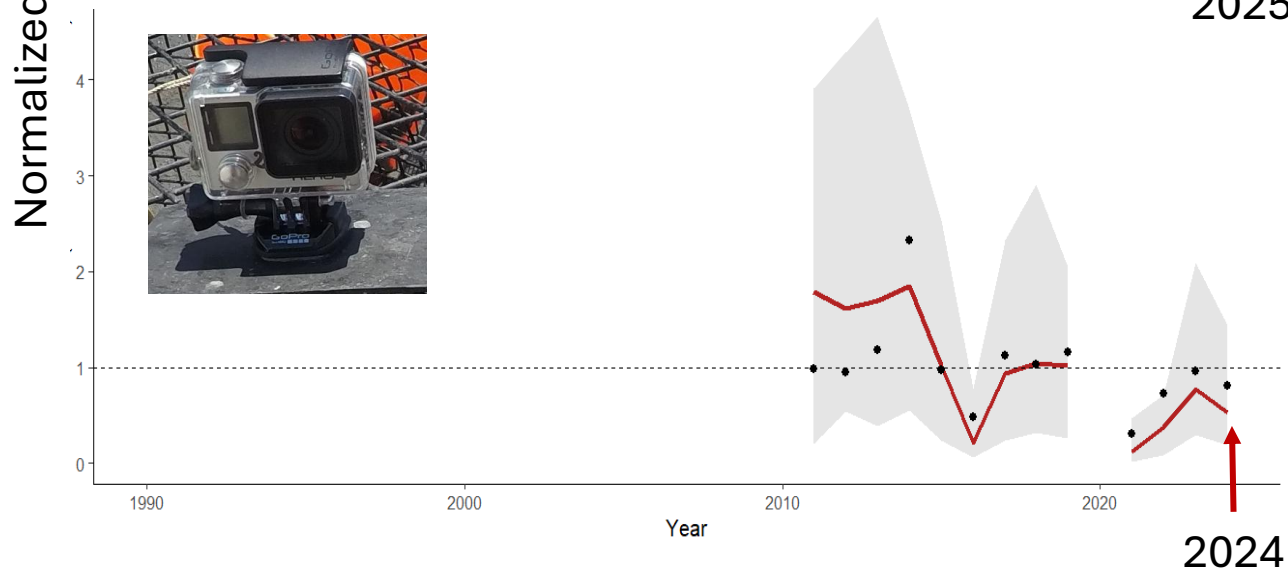
# Indices- Example

Catch



<b>Red Line</b>	Index Time Series
Gray Shading	95 % Confidence Interval (“error”)
Black Dots •	Nominal Values (“basic counts”)

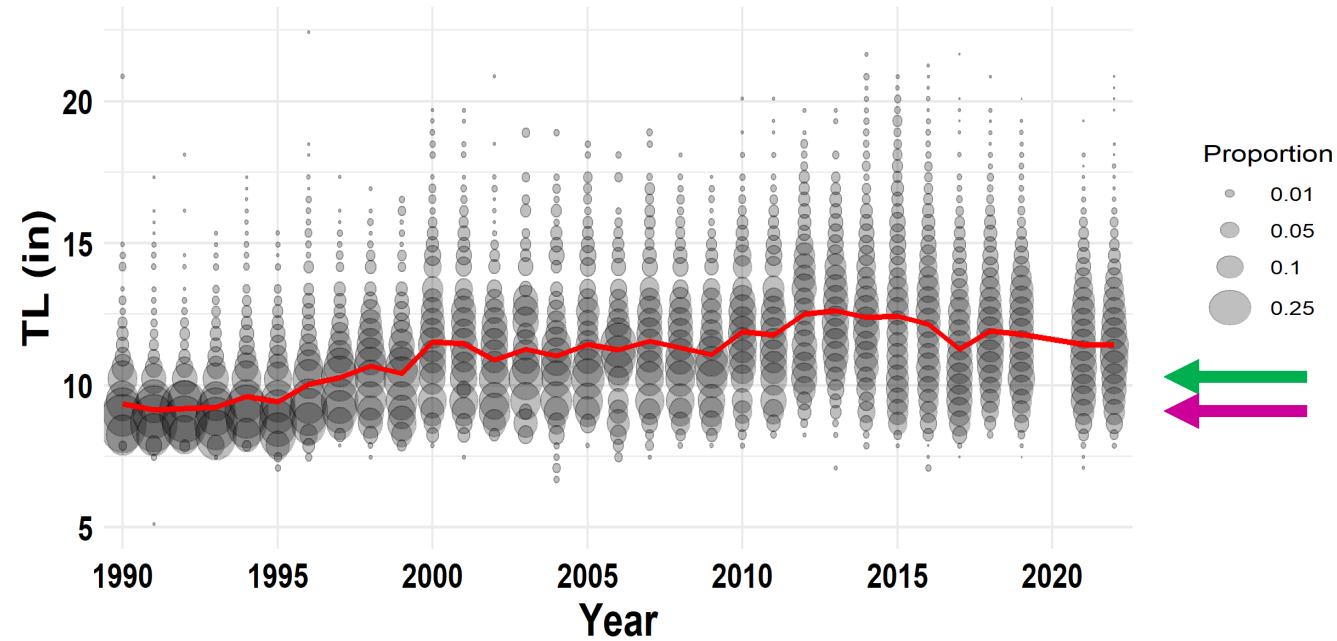
Video



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

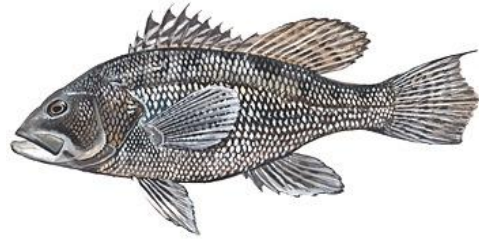


- Catch Only
- Maximum (Pinched) Total Length (in)
- 1-in Length Bins
- Bubble size = # fish in length bin / # fish measured in a year
- Red Line = Average TL
- Green Arrow = Commercial MSL
- Pink Arrow = TL at 50% Maturity, Female

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



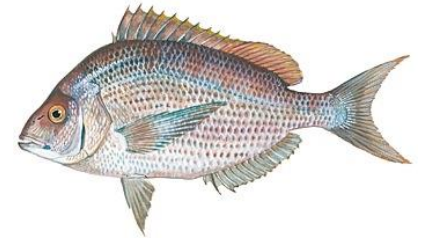
1. Tomtate\*



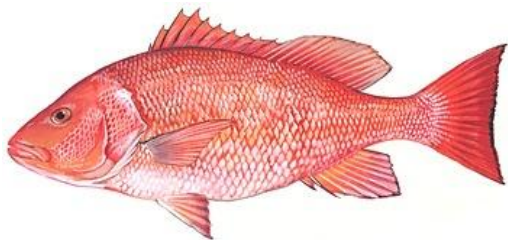
2. Black Sea Bass



3. Vermilion Snapper



4. *Stenotomus* spp.\*



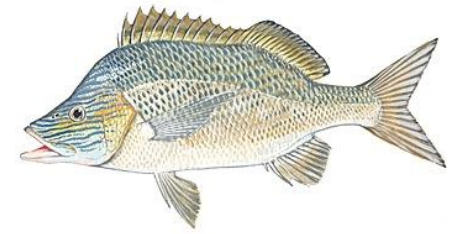
5. Red Snapper



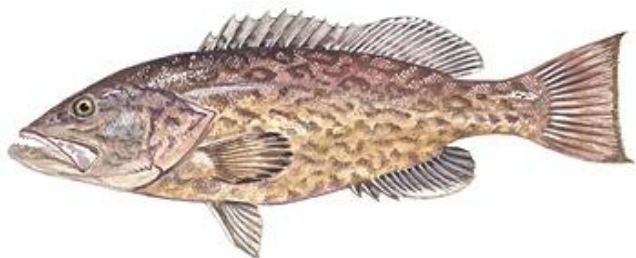
6. Gray Triggerfish



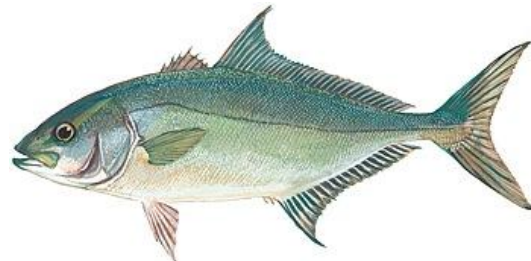
9. Red Porgy



10. White Grunt



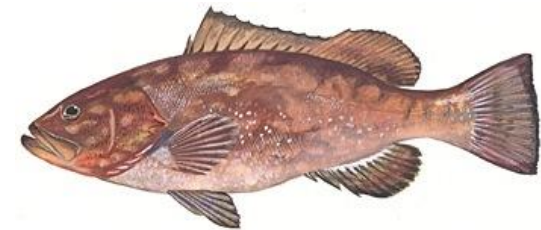
14. Gag



15. Almaco Jack

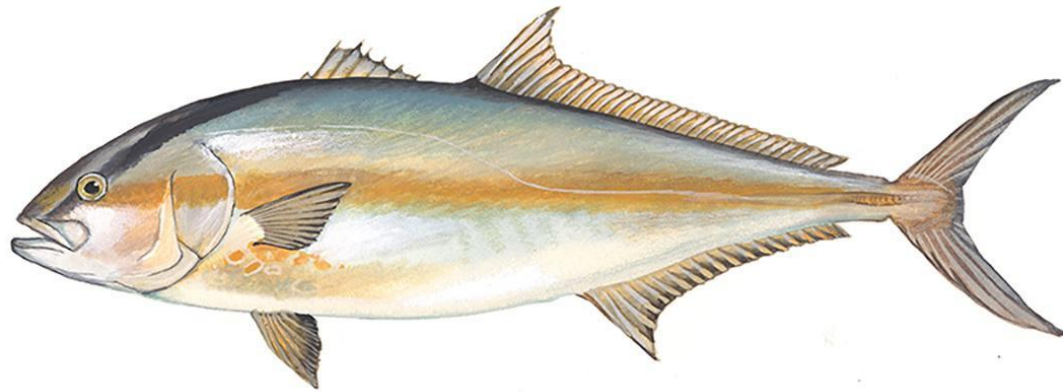


16. Scamp

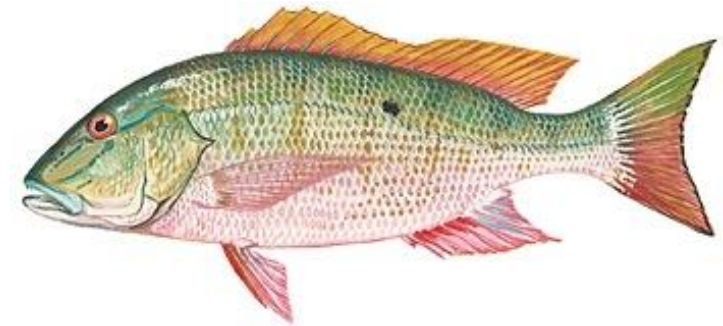


20. Red Grouper

# CVT Video Only Selected Species



Greater Amberjack



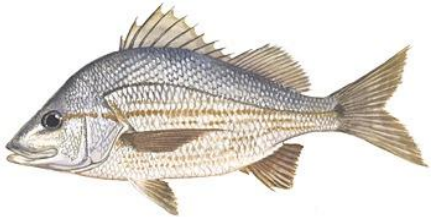
Mutton Snapper

# CVT Video Only Selected Species

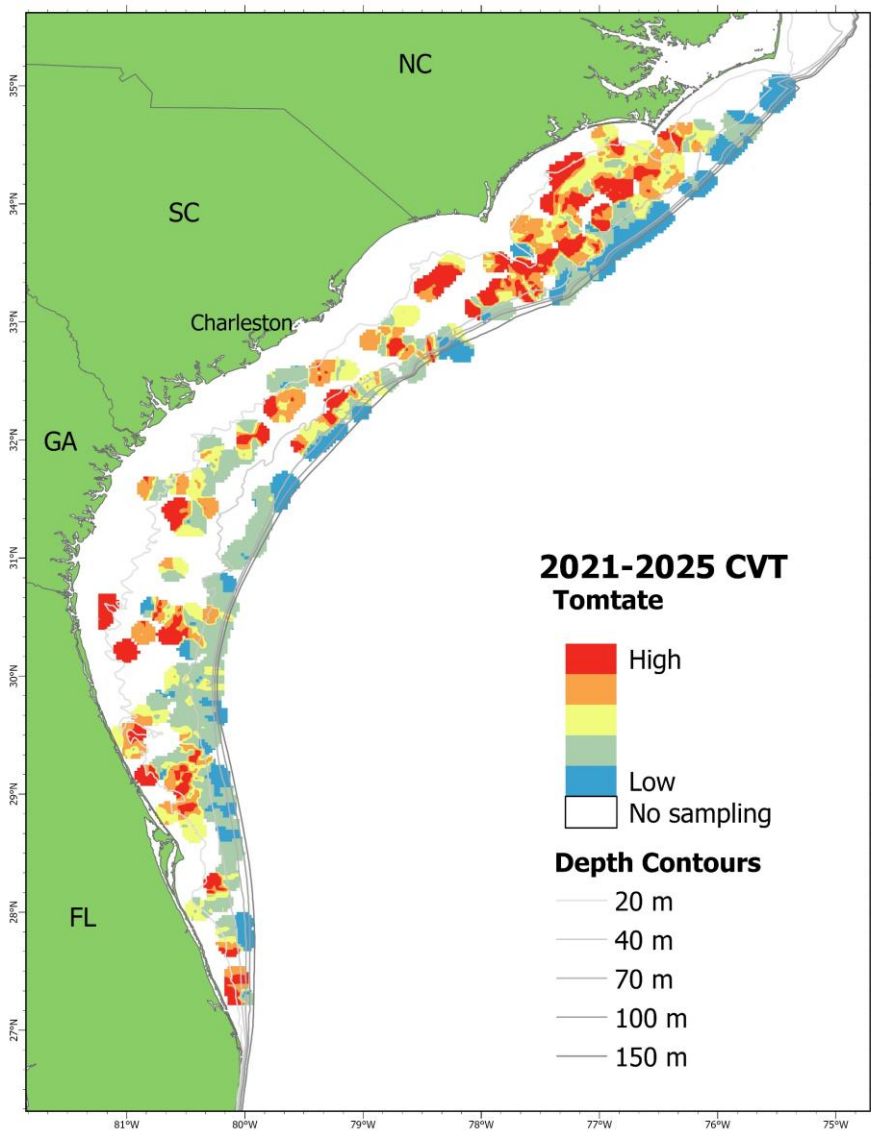


Cobia?

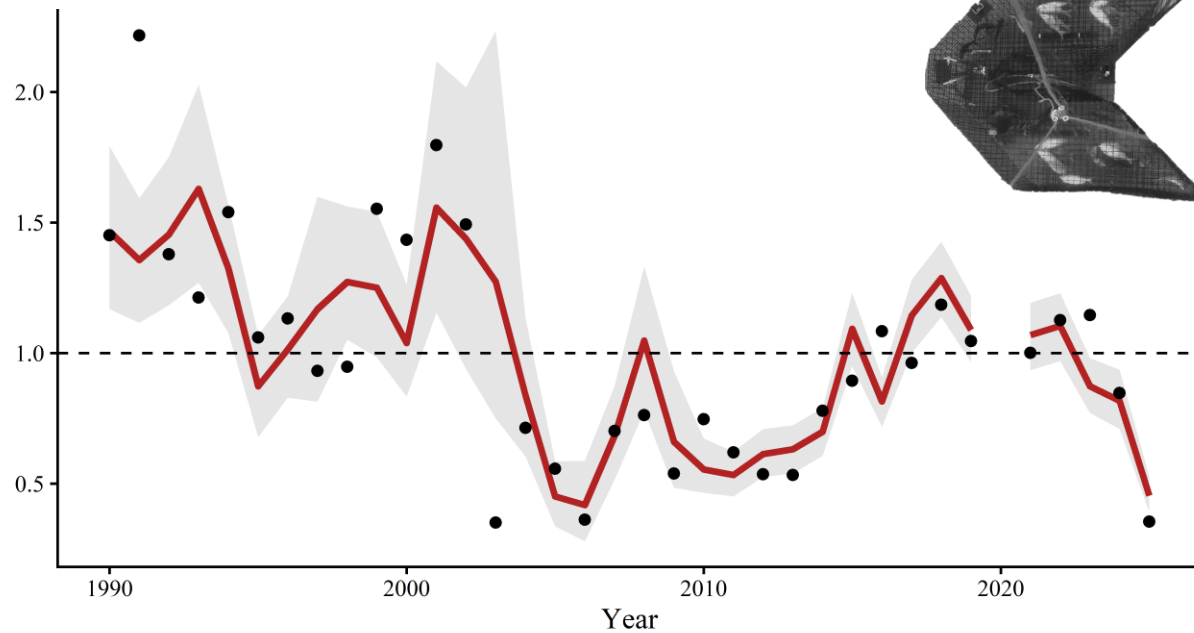
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# Tomtate

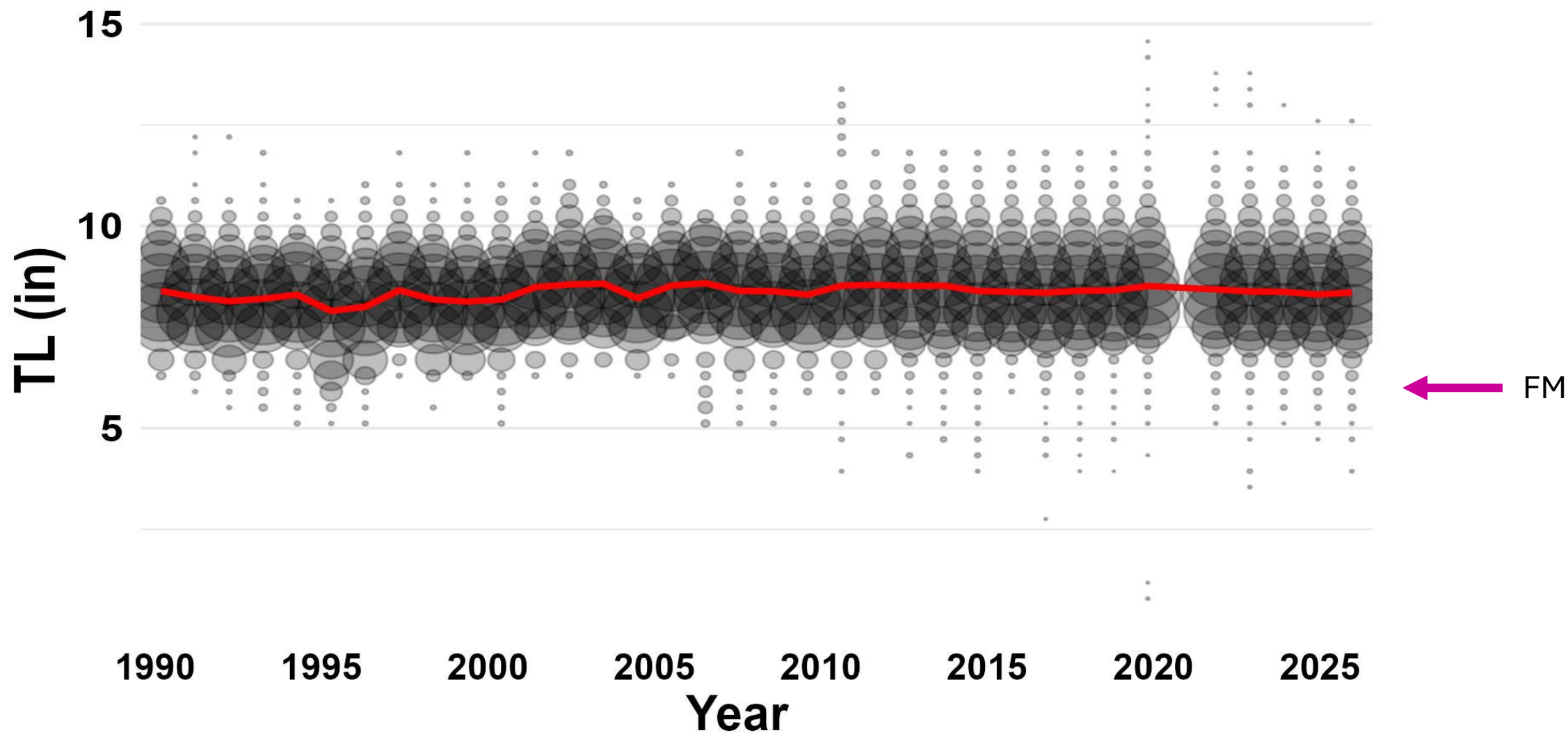


Normalized Relative Abundance



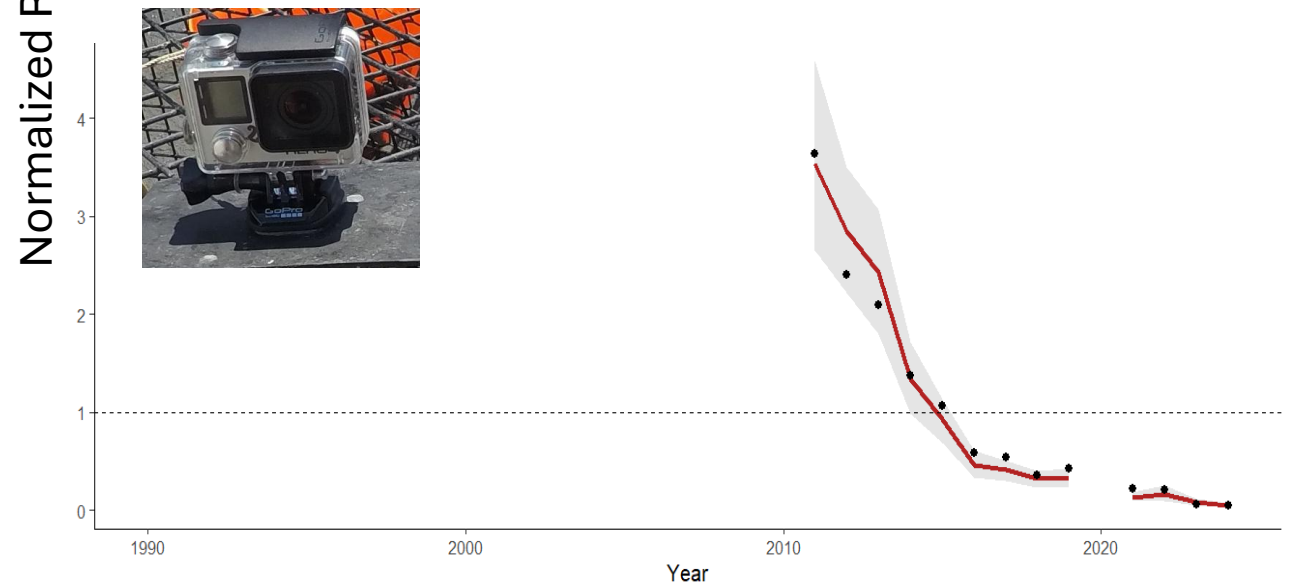
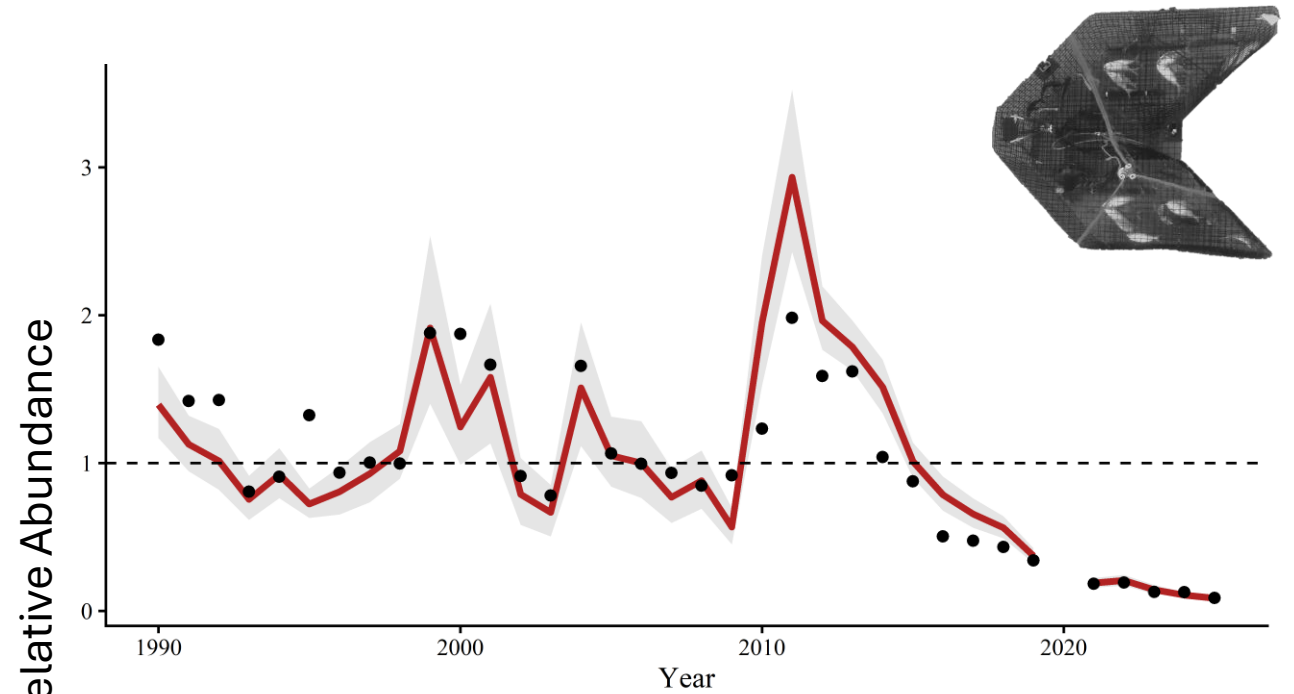
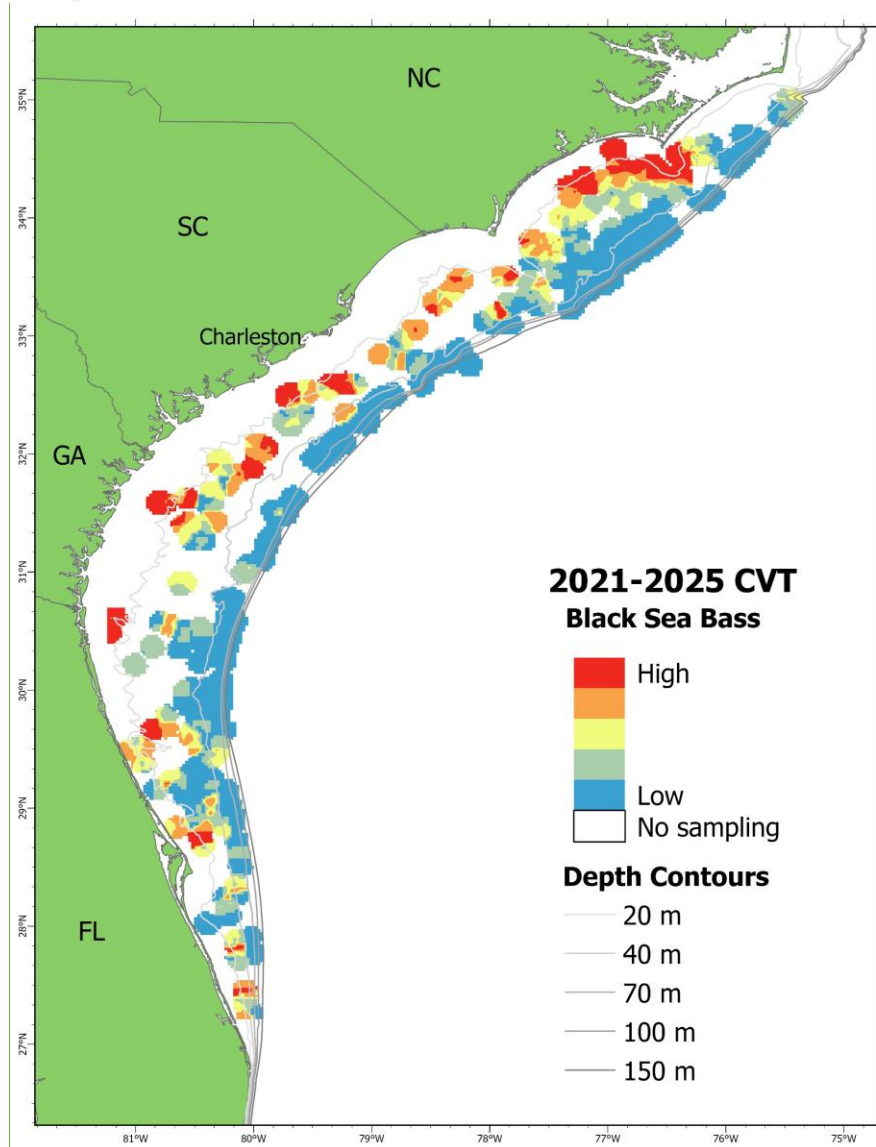


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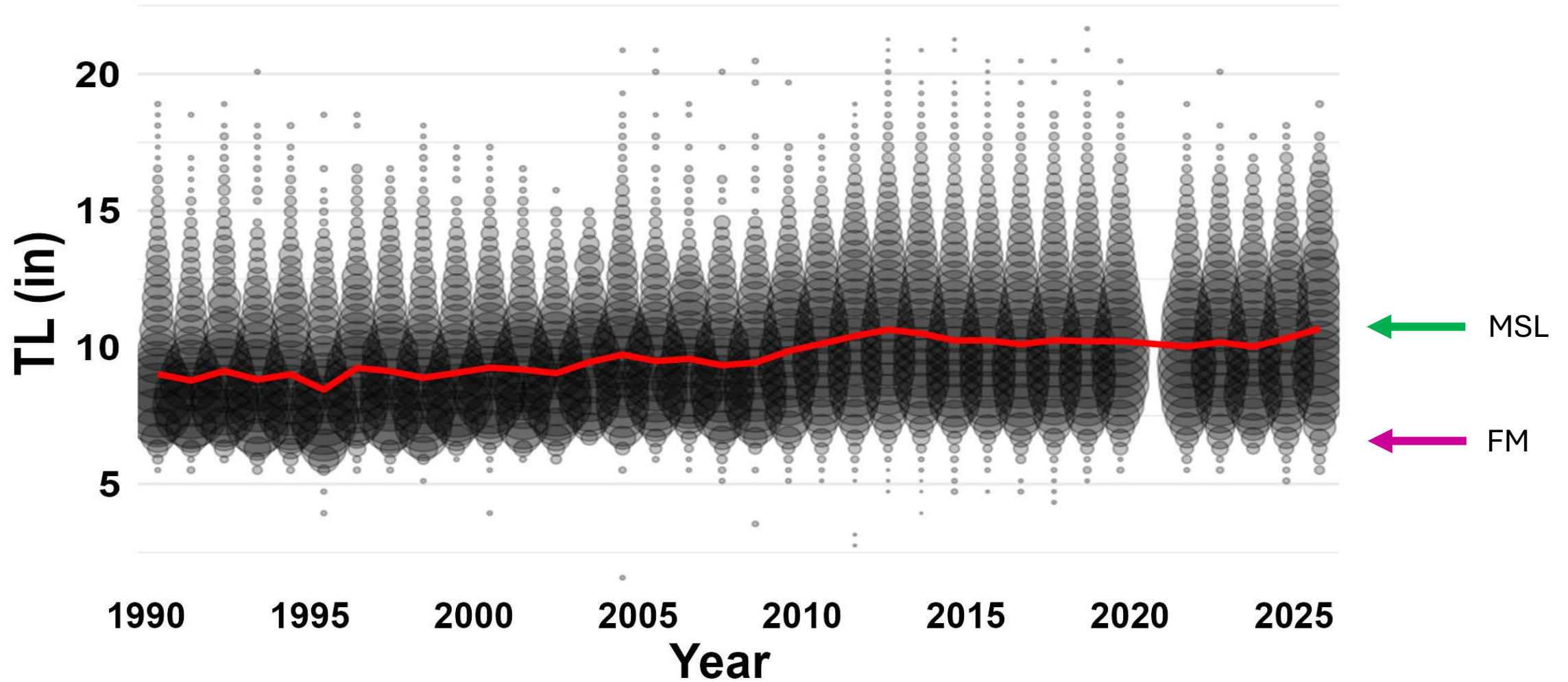


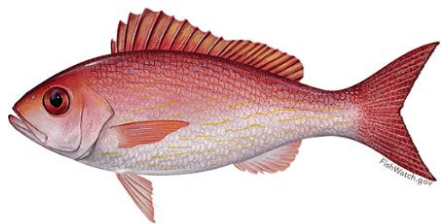
# Black Sea Bass



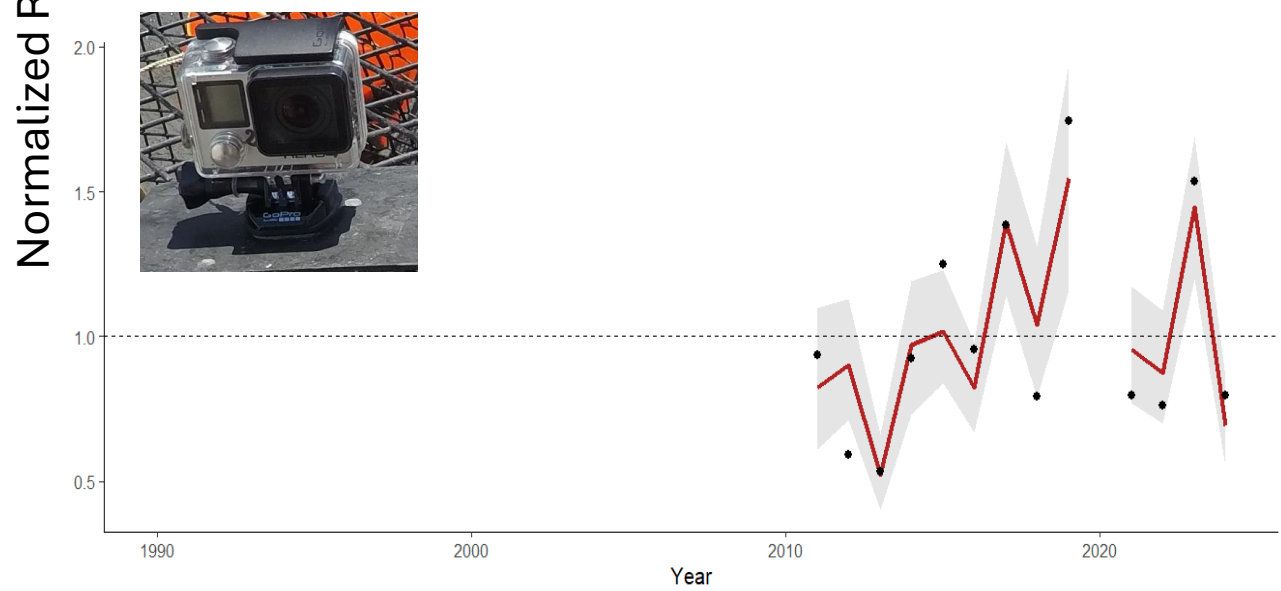
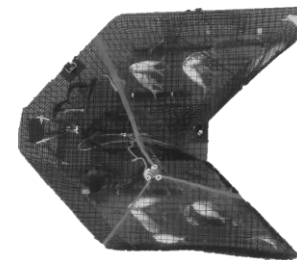
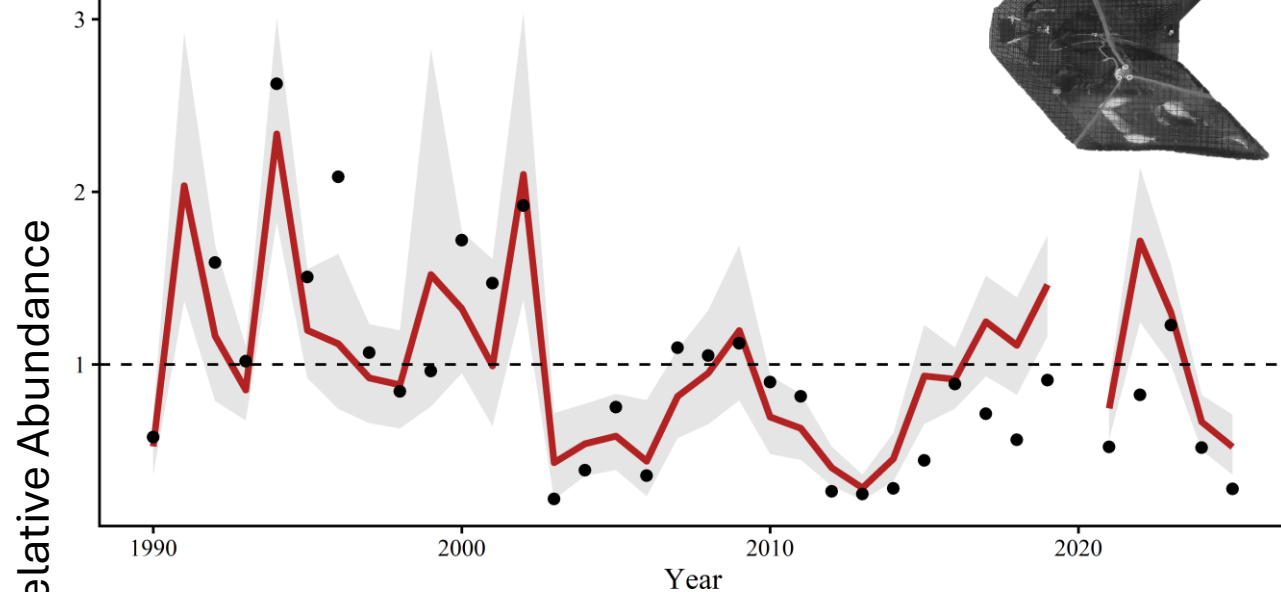
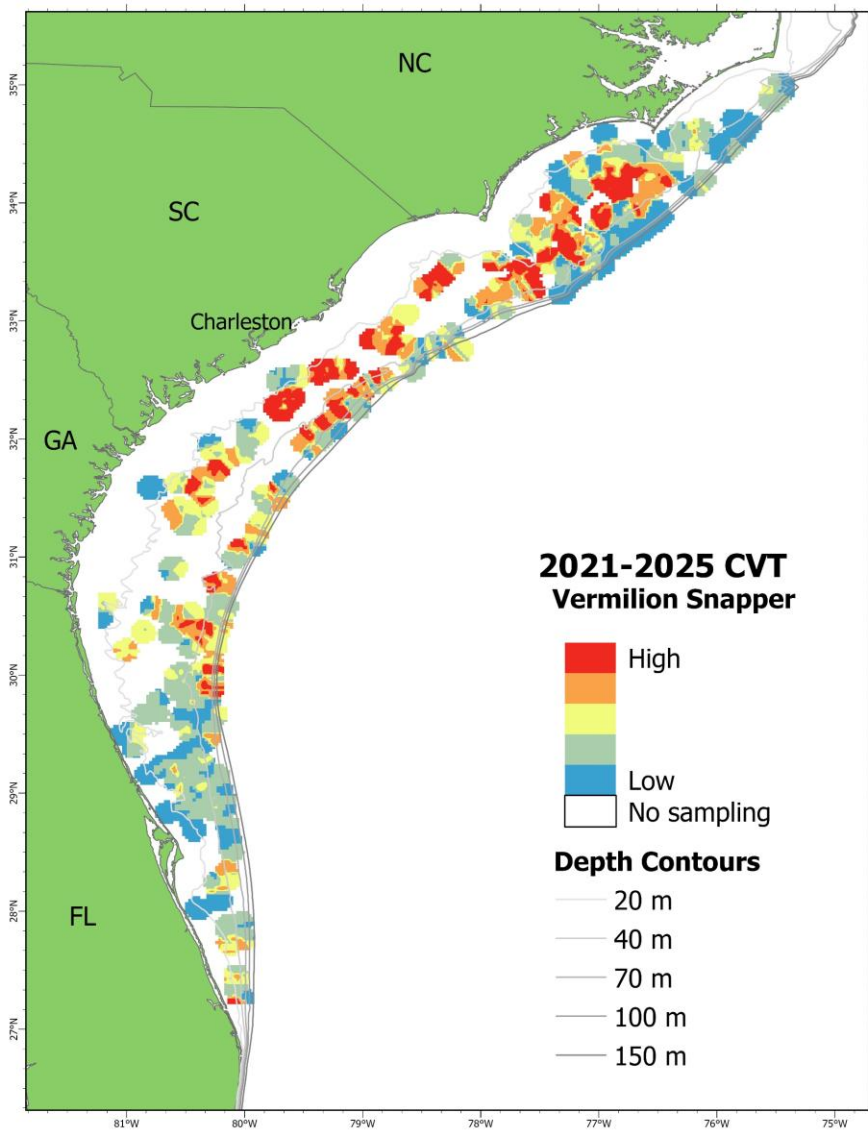


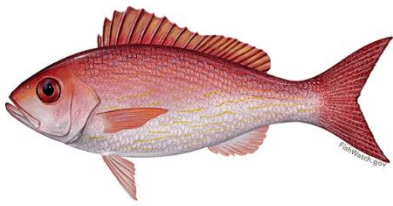
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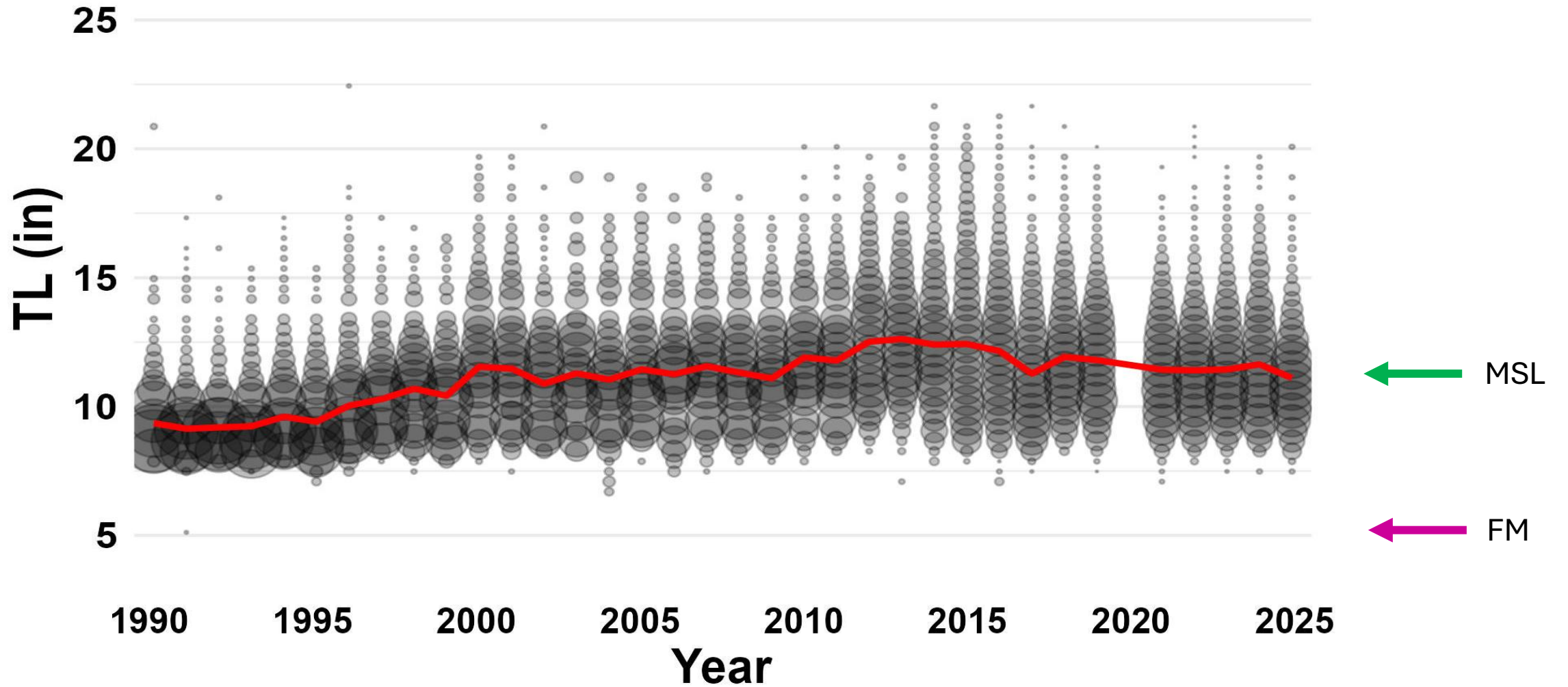


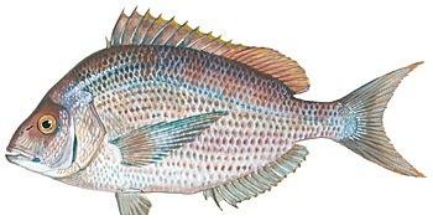
# Vermilion Snapper



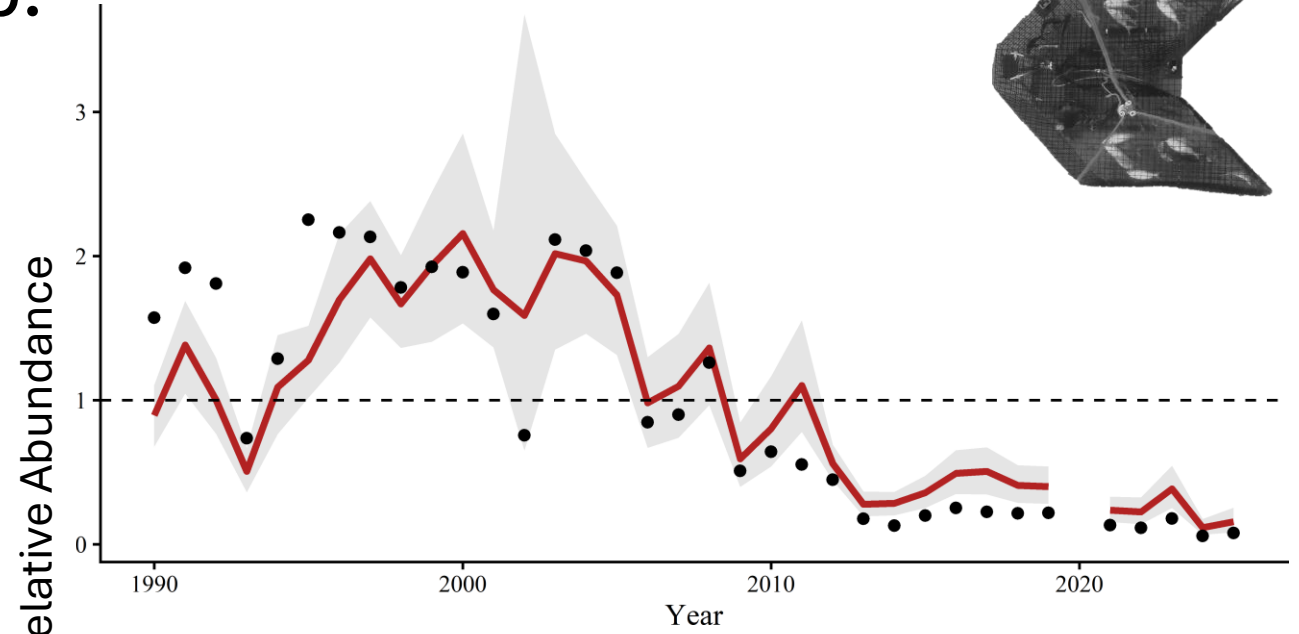
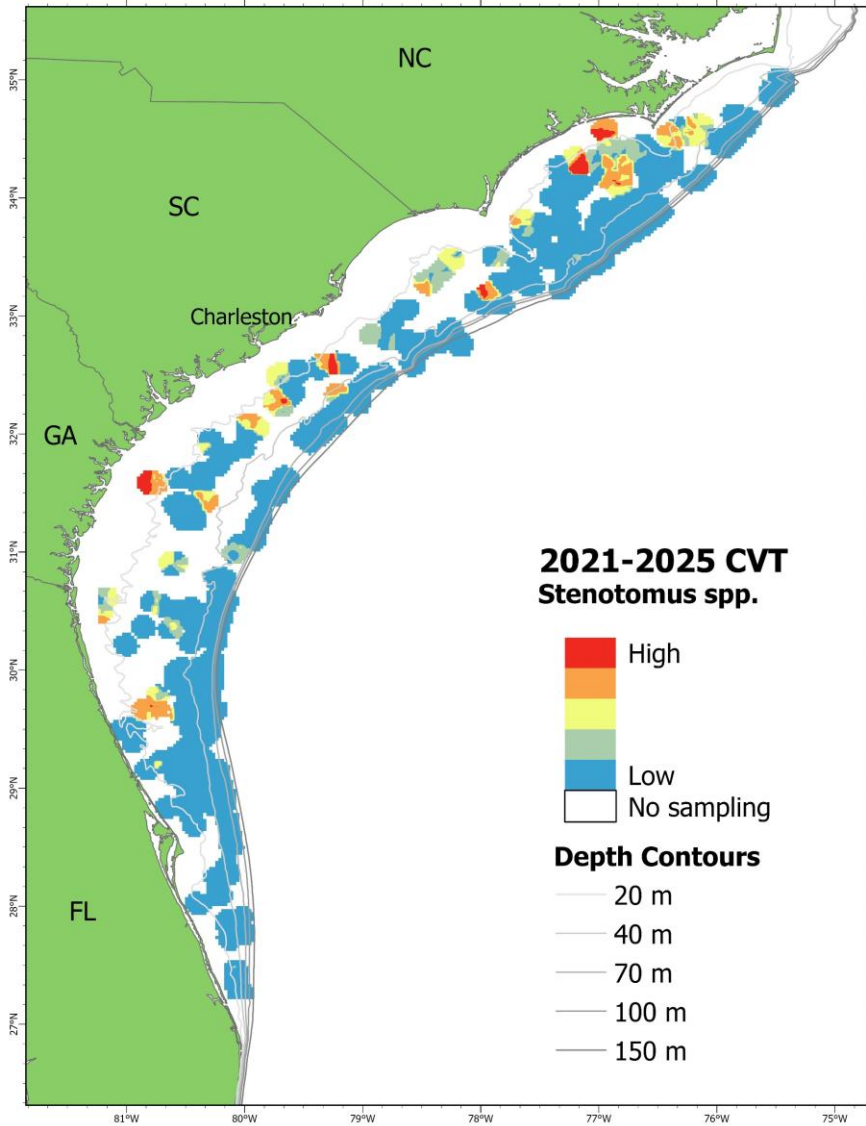
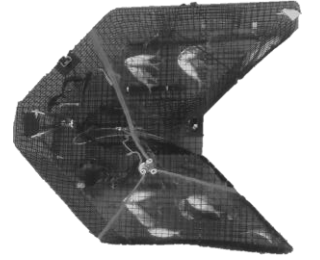


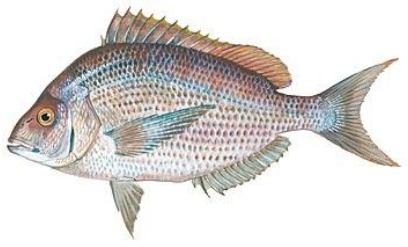
# Vermilion Snapper



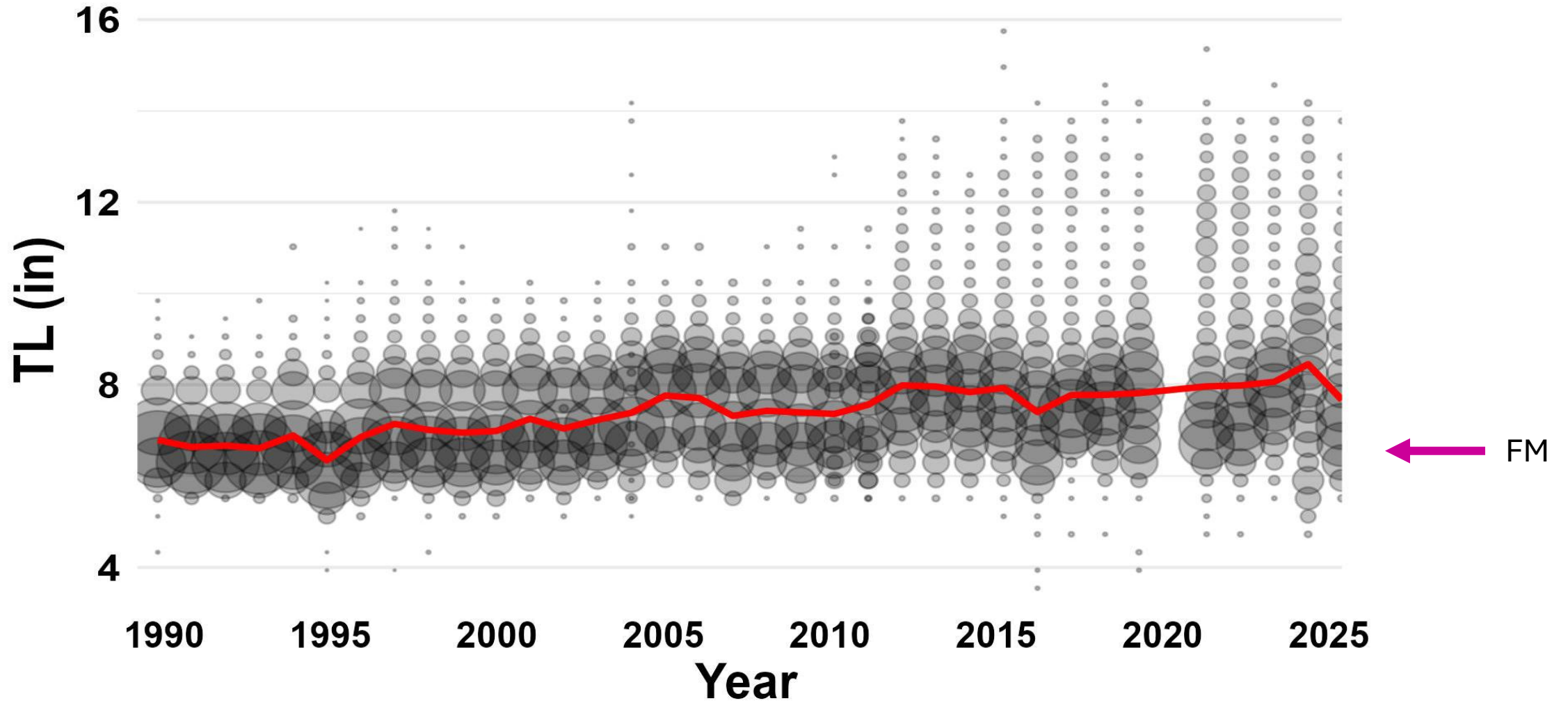


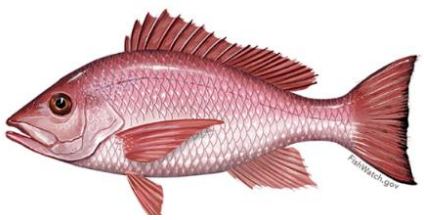
# *Stenotomus* spp.



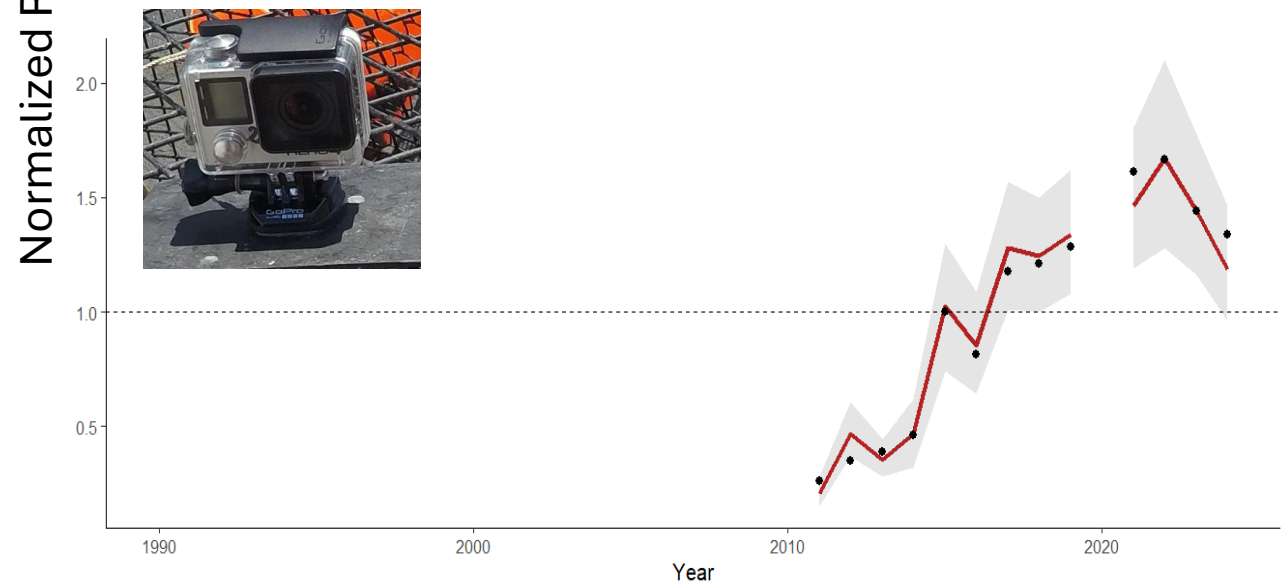
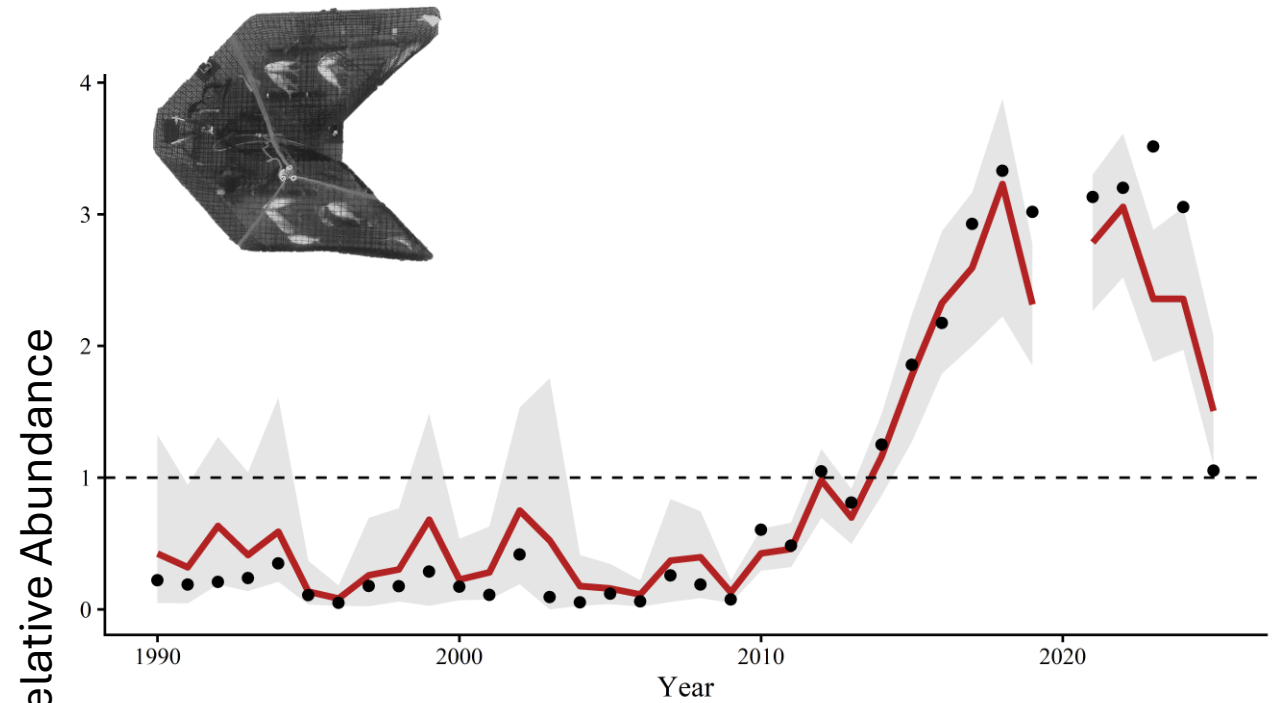
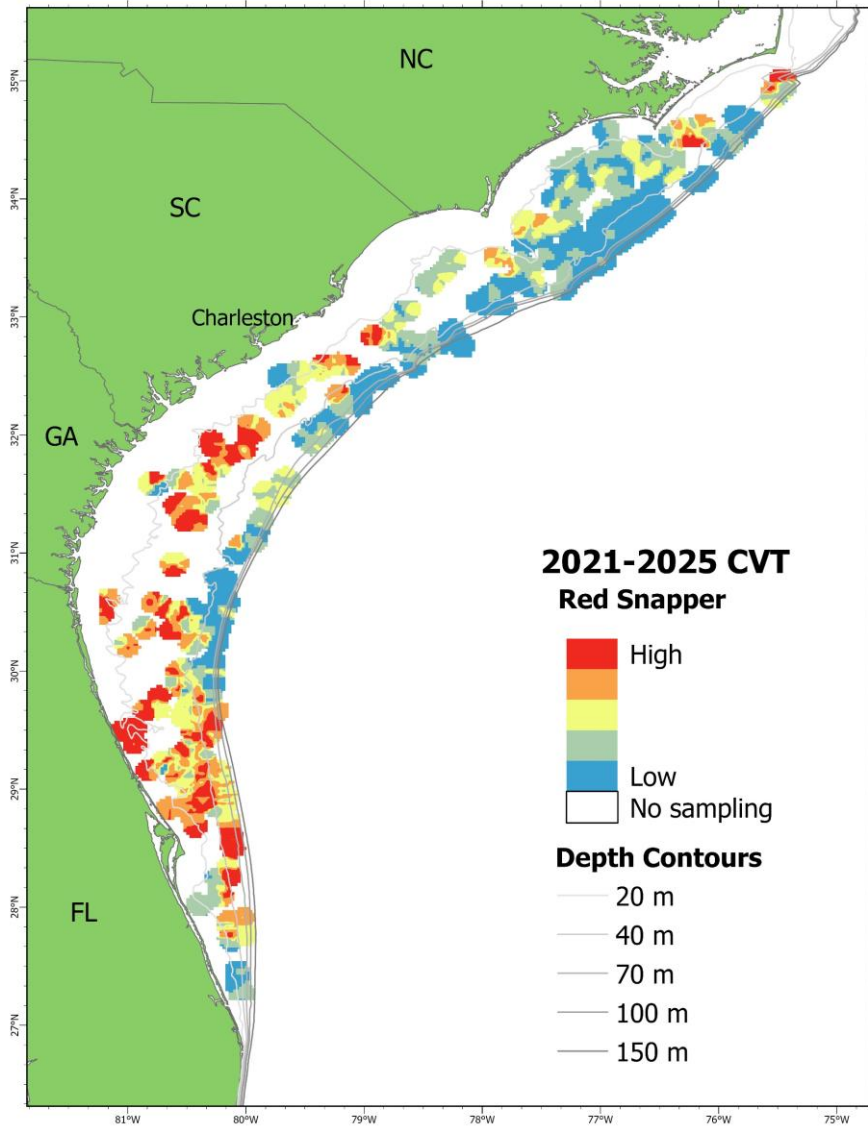


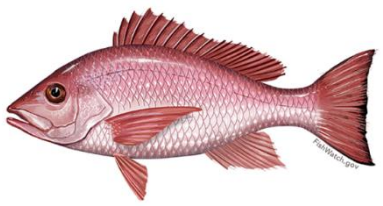
# *Stenotomus* spp.



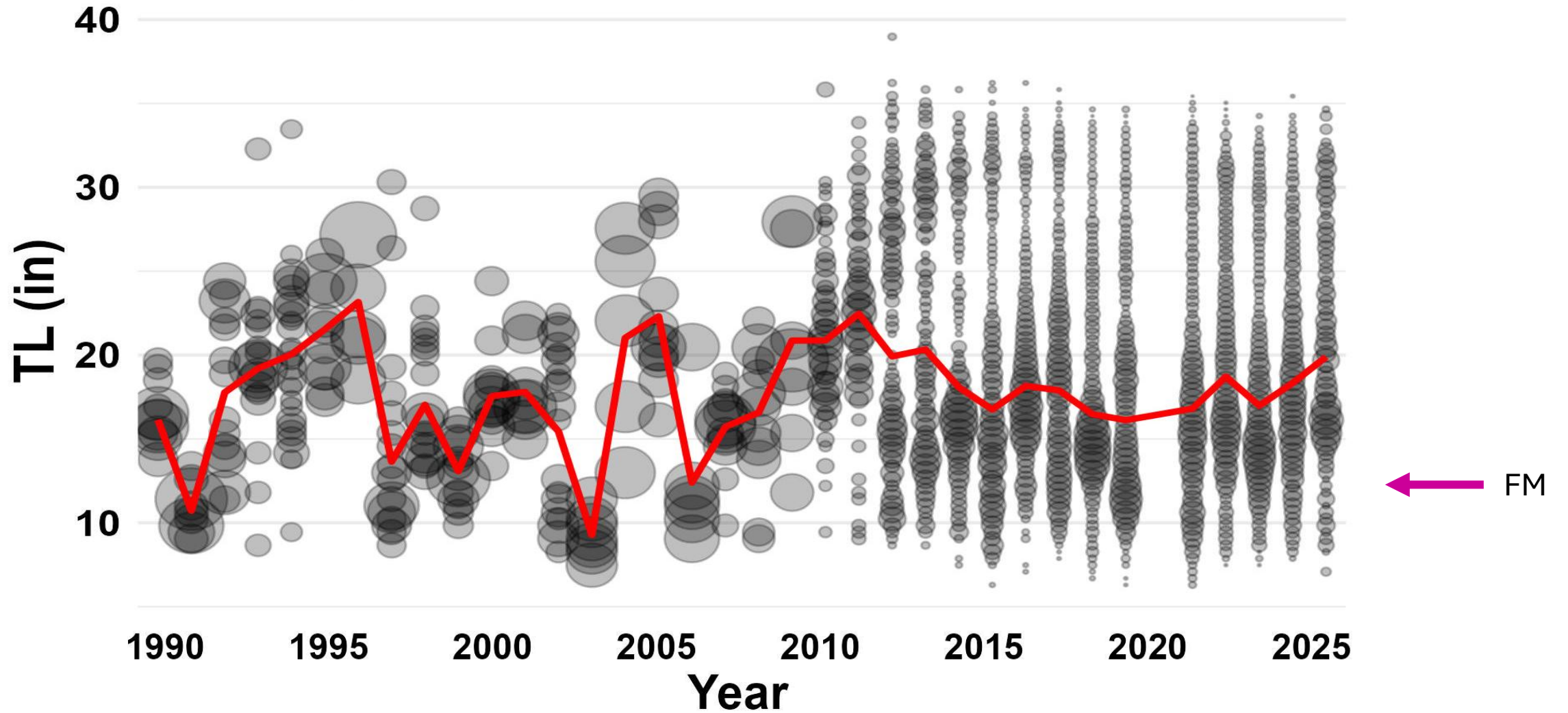


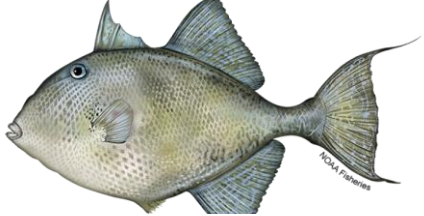
# Red Snapper



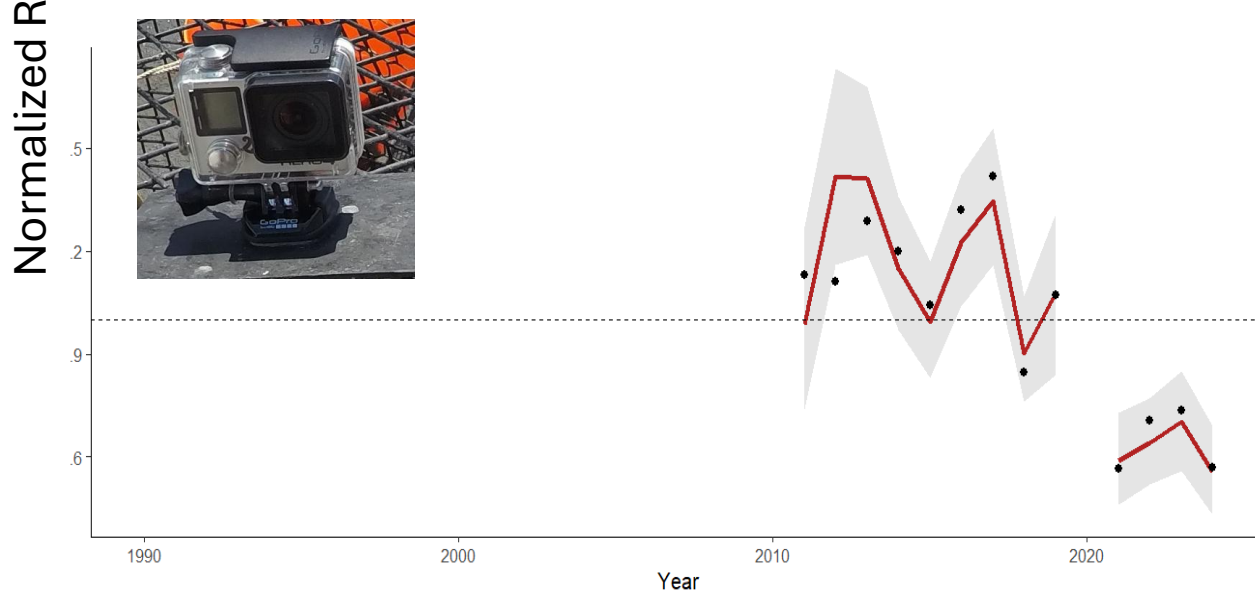
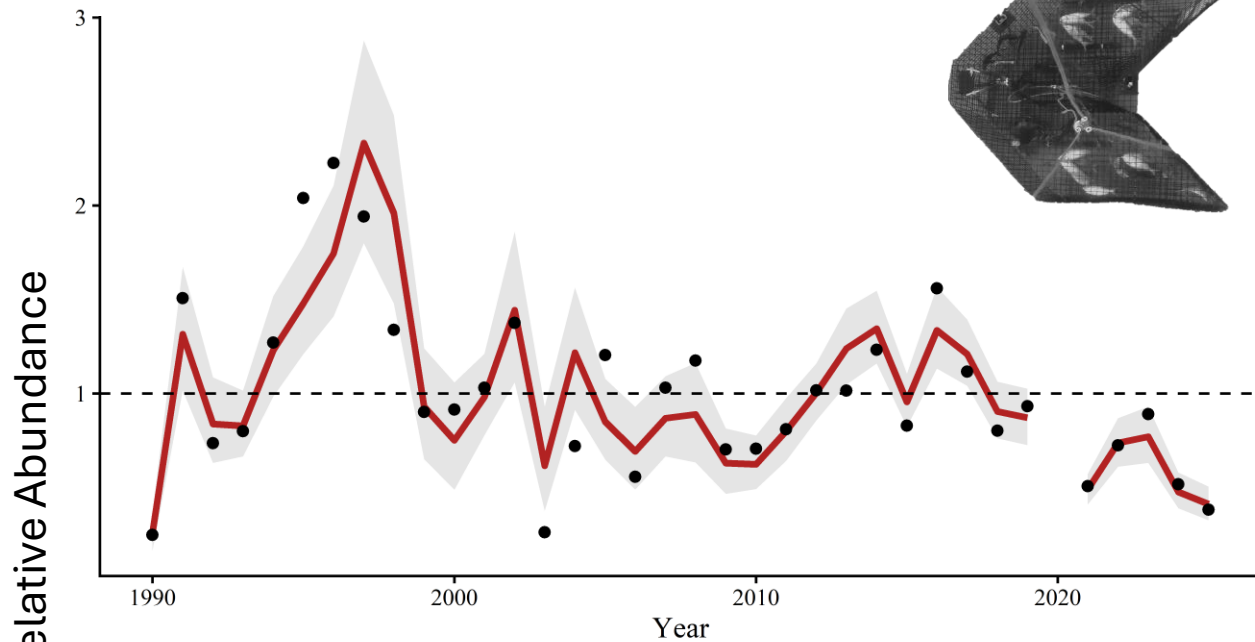
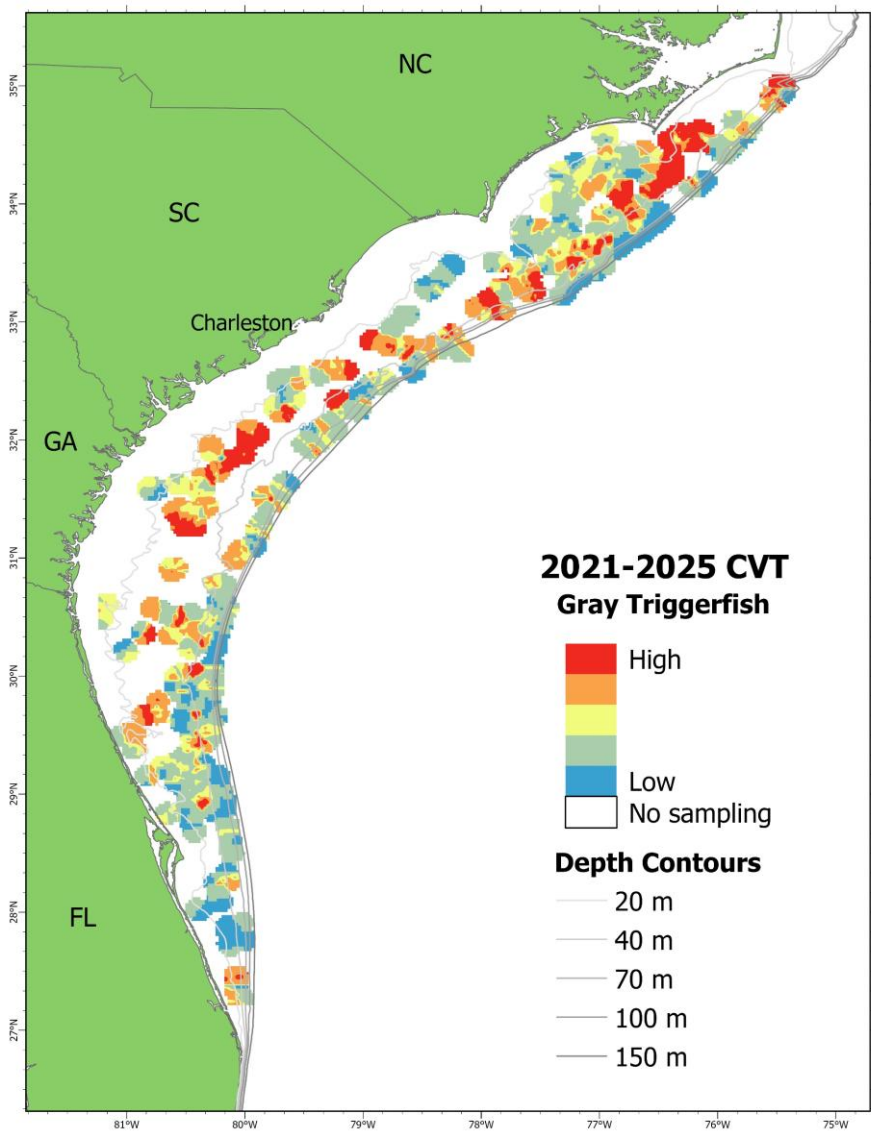


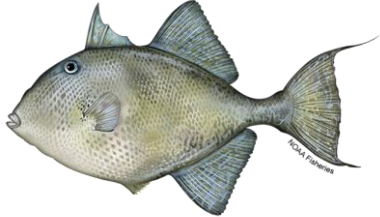
# Red Snapper



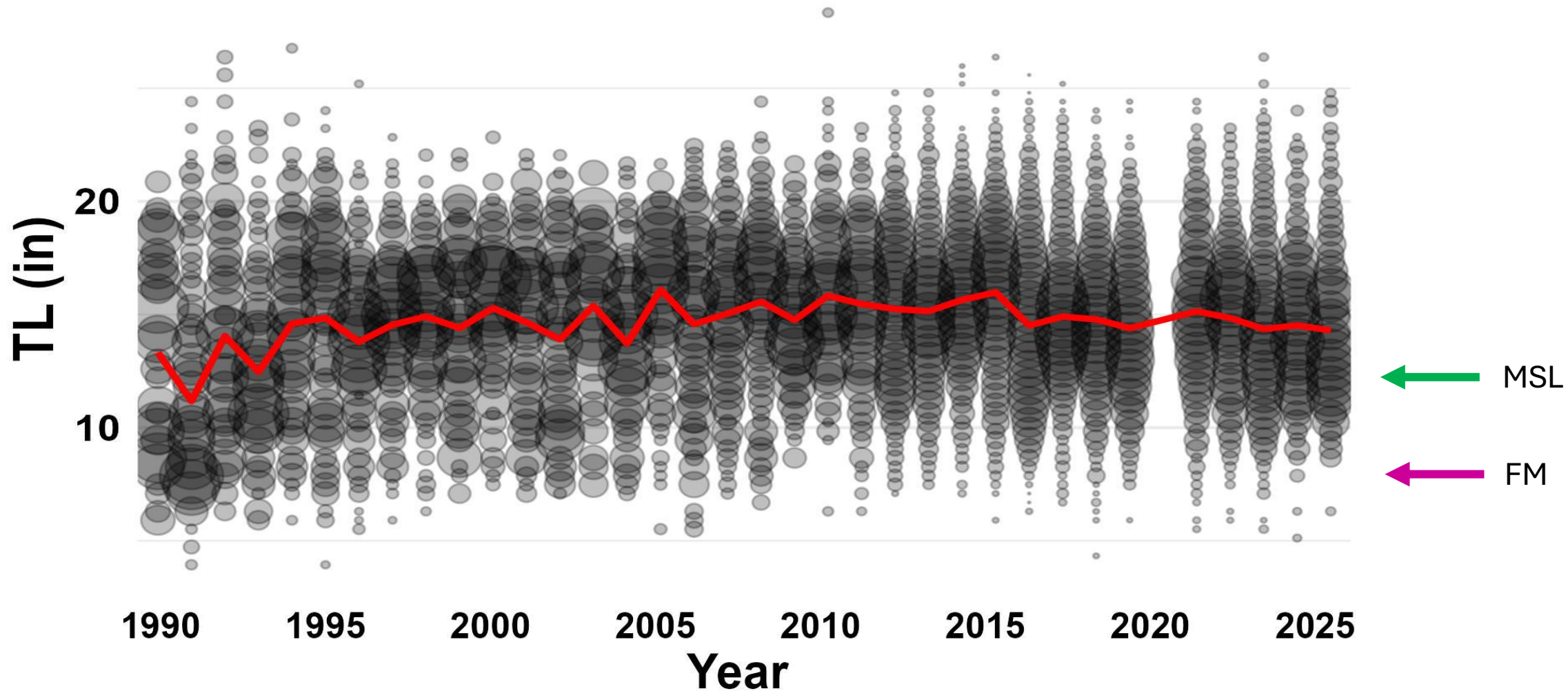


# Gray Triggerfish



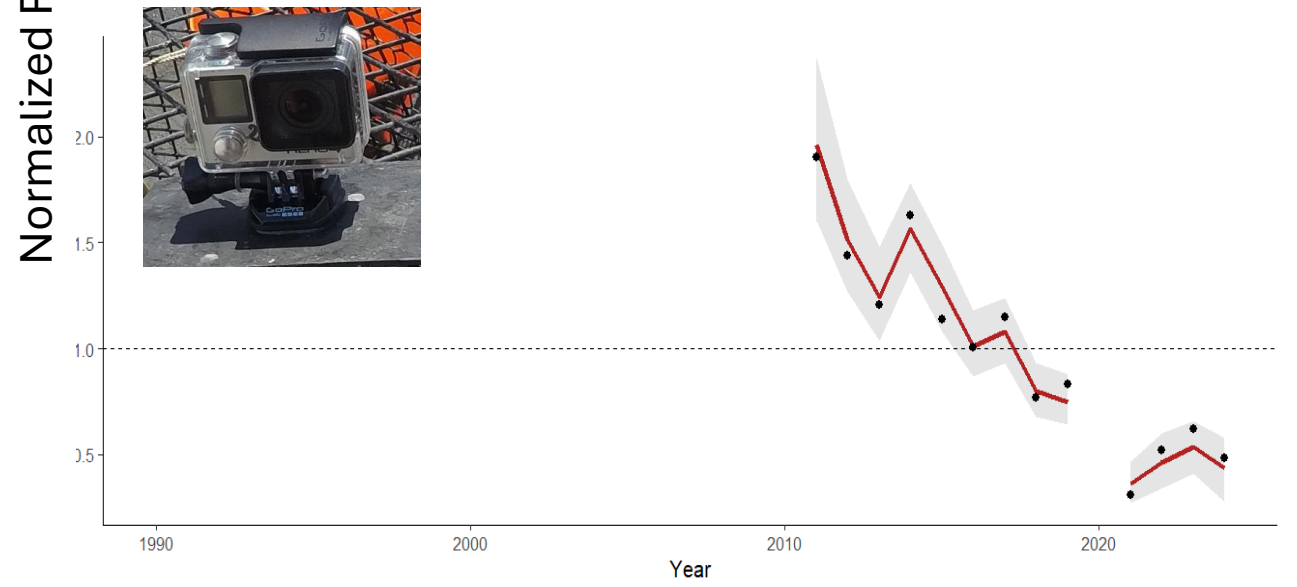
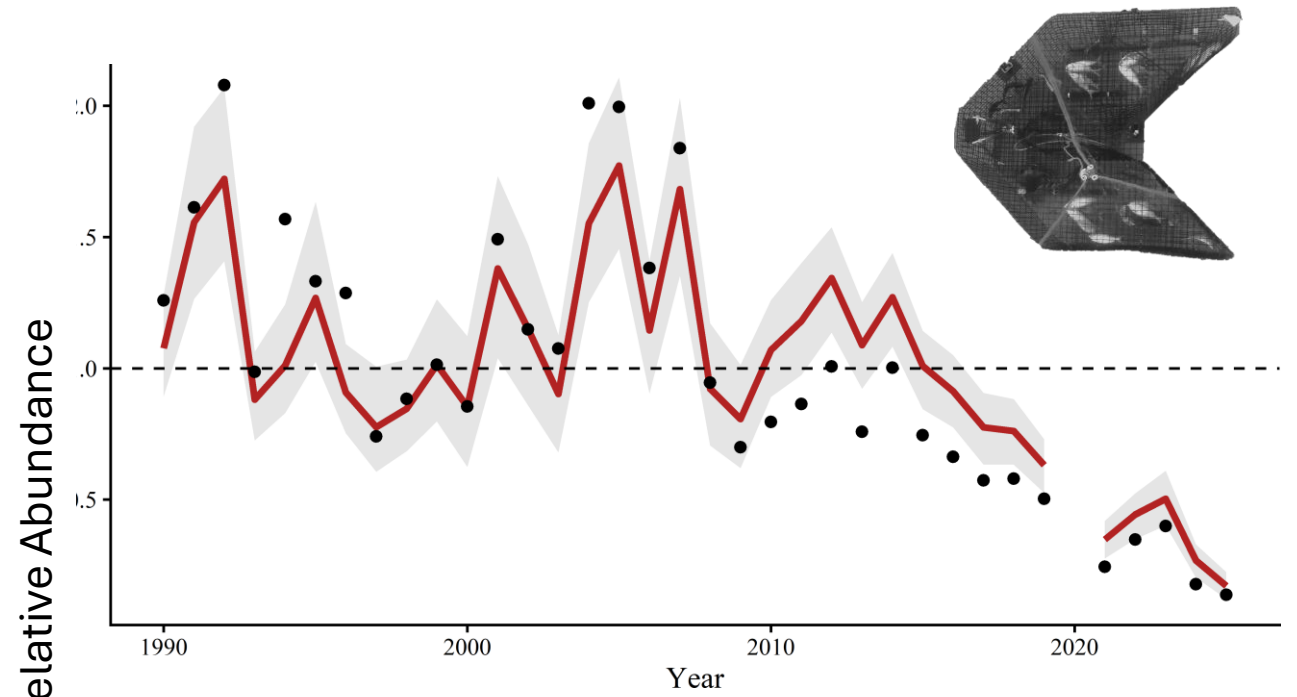
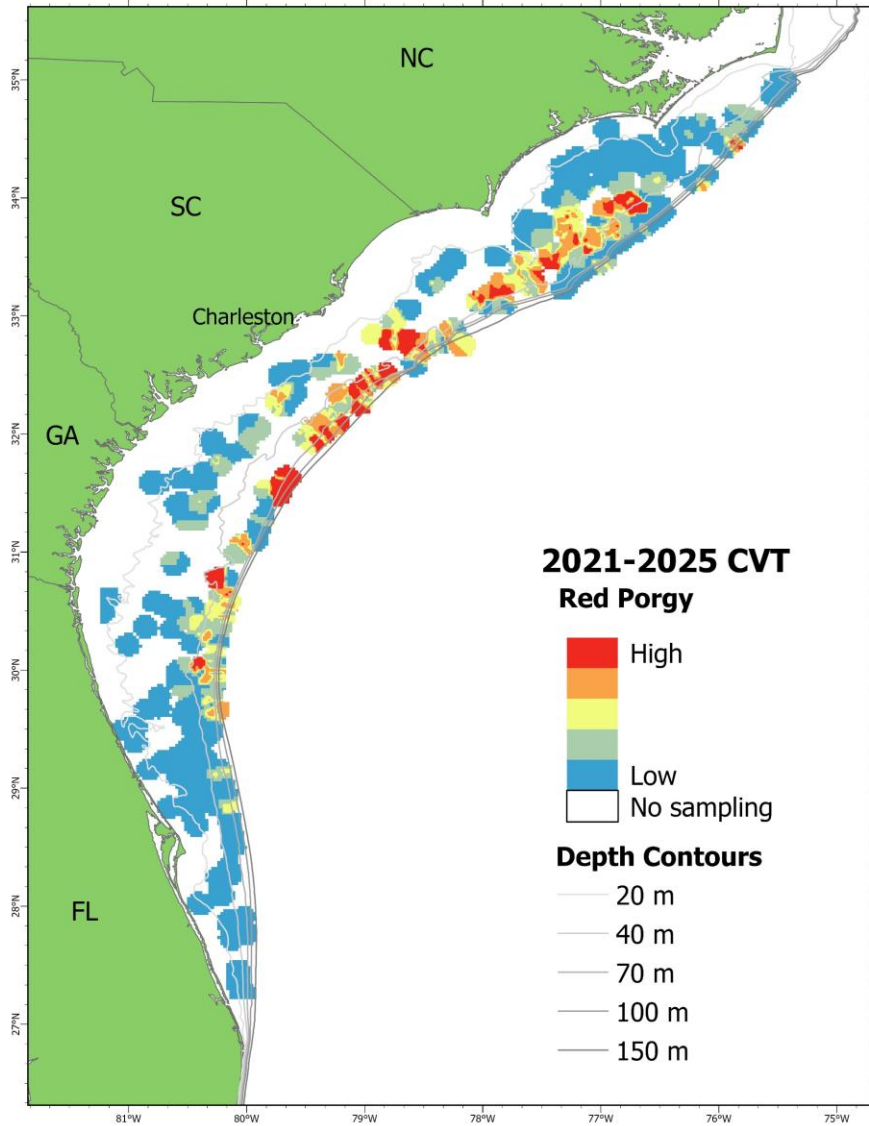


# Gray Triggerfish



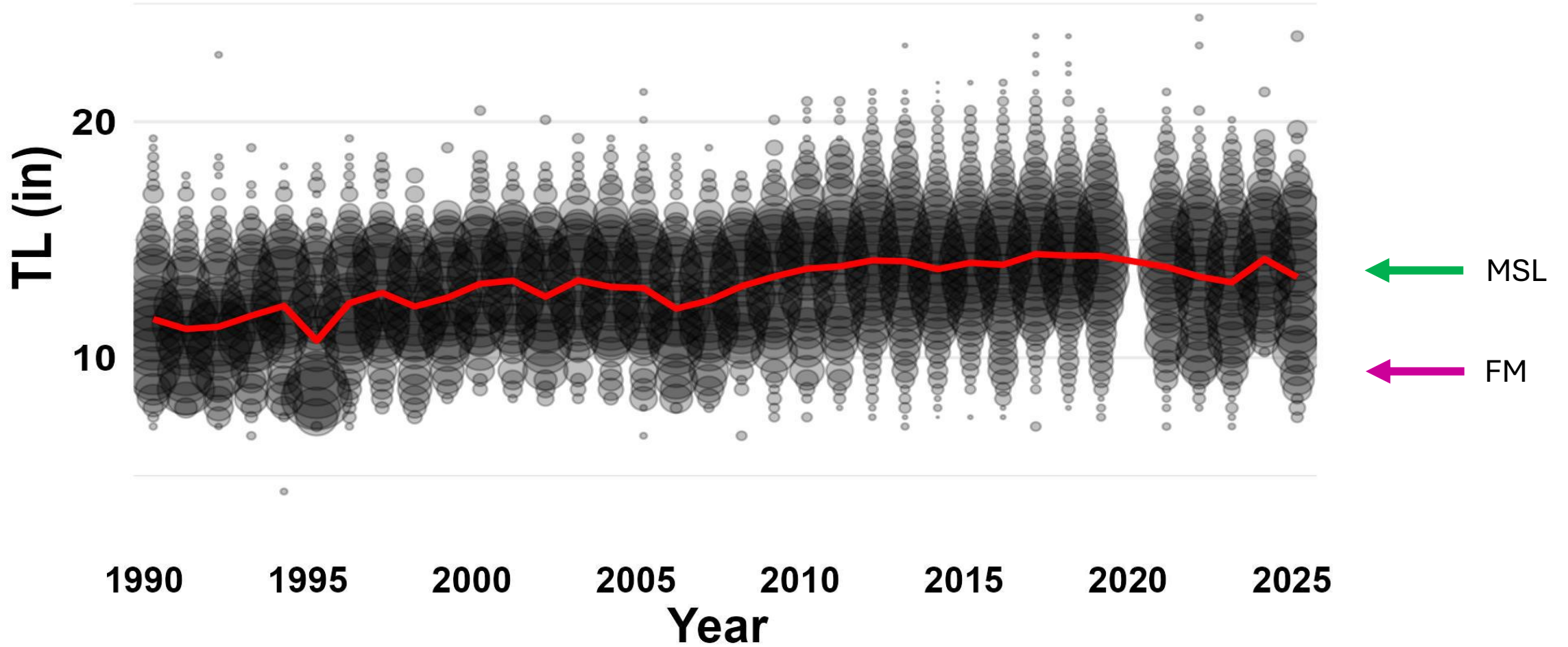


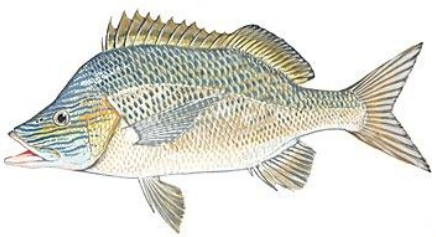
# Red Porgy



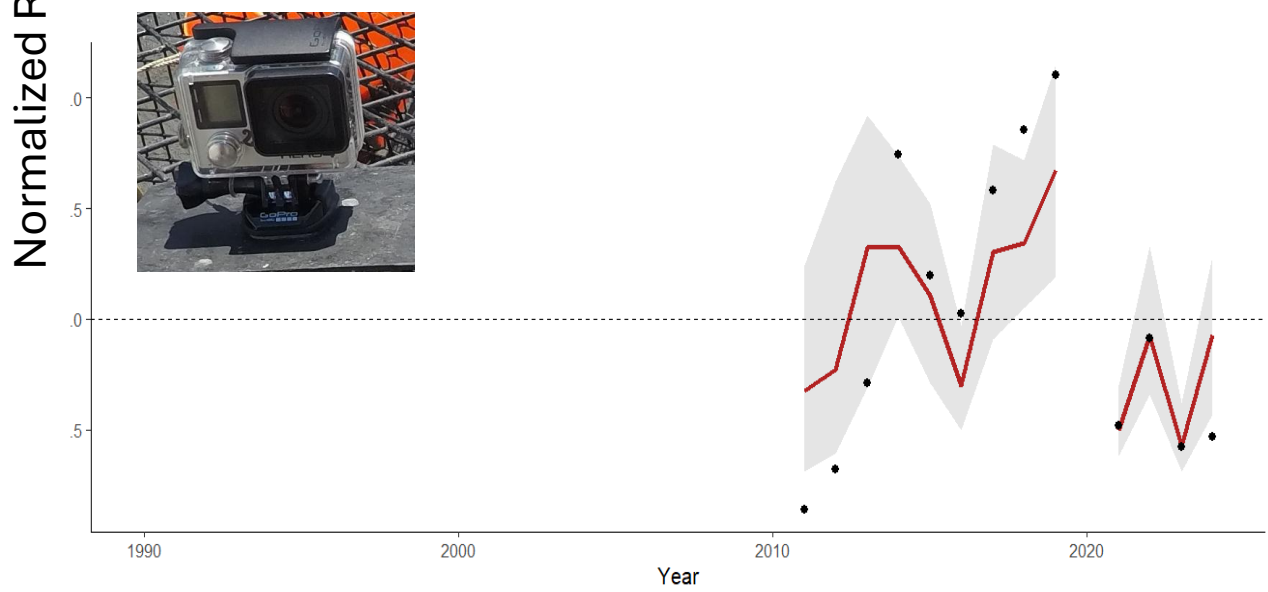
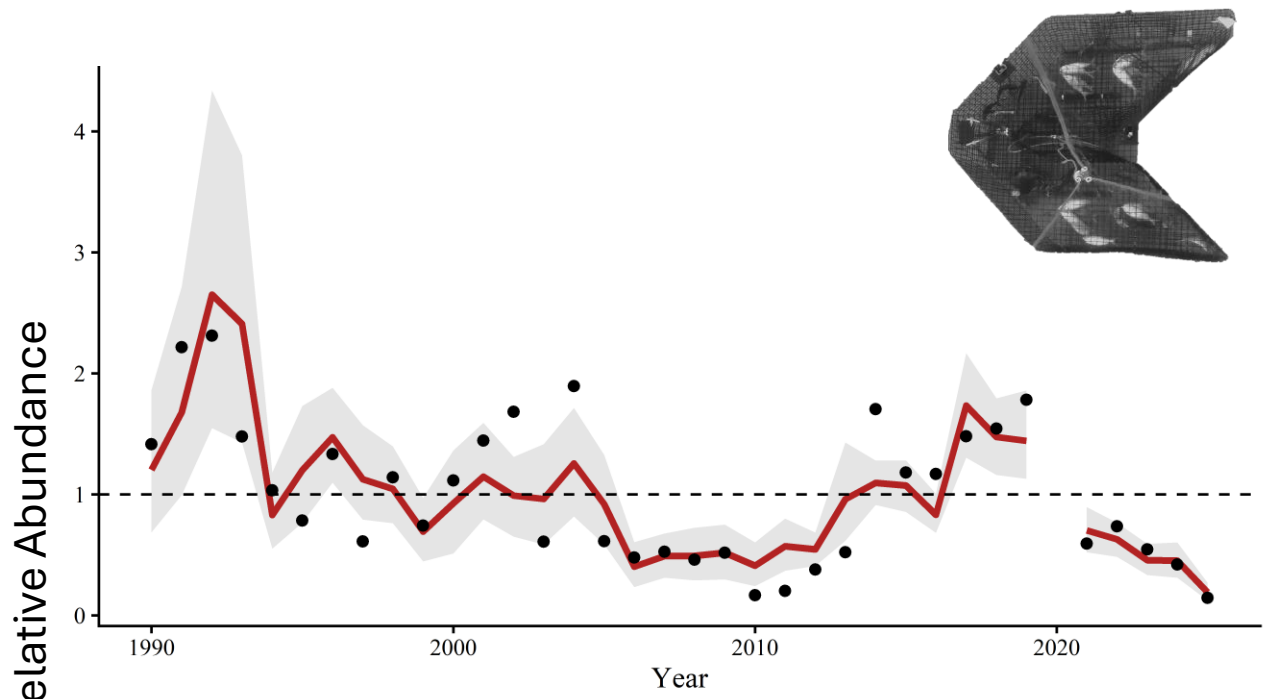
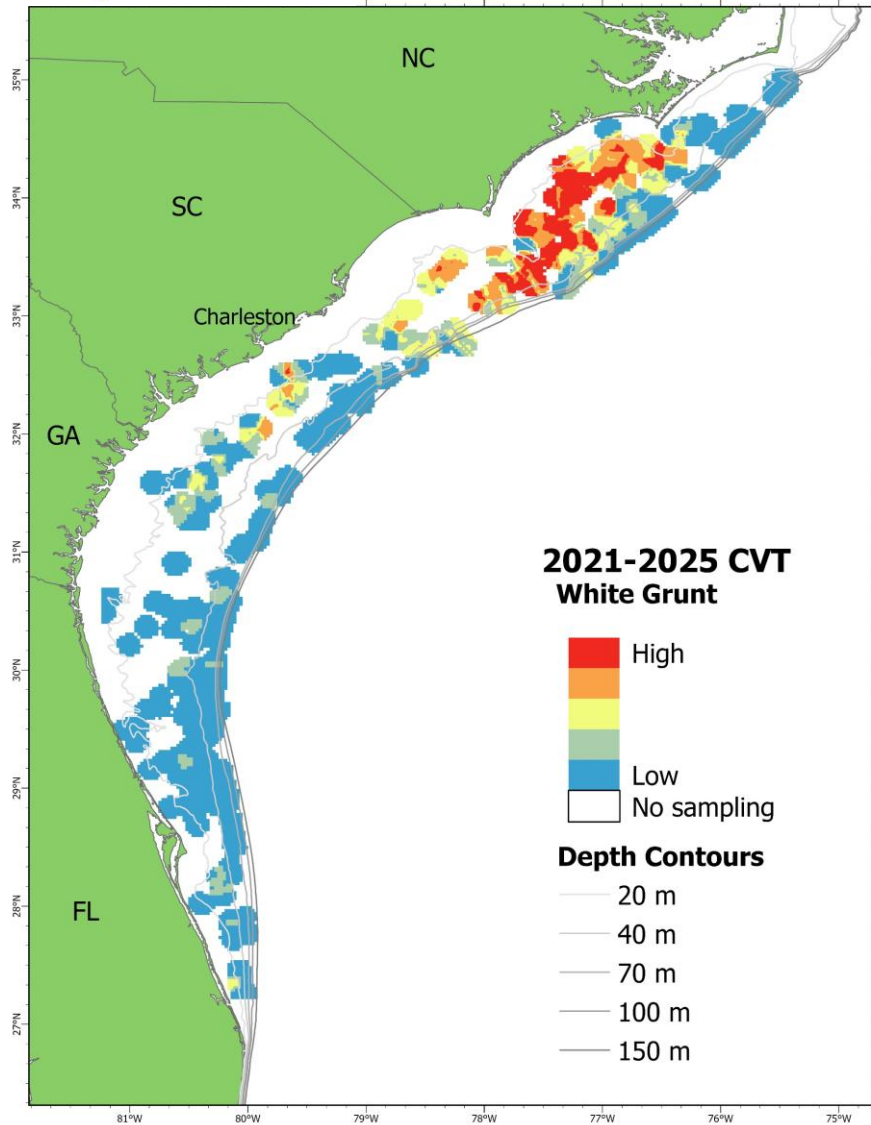


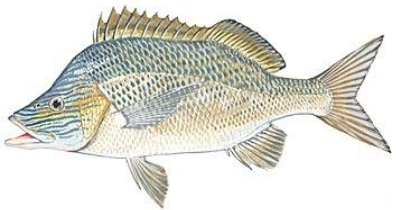
# Red Porgy



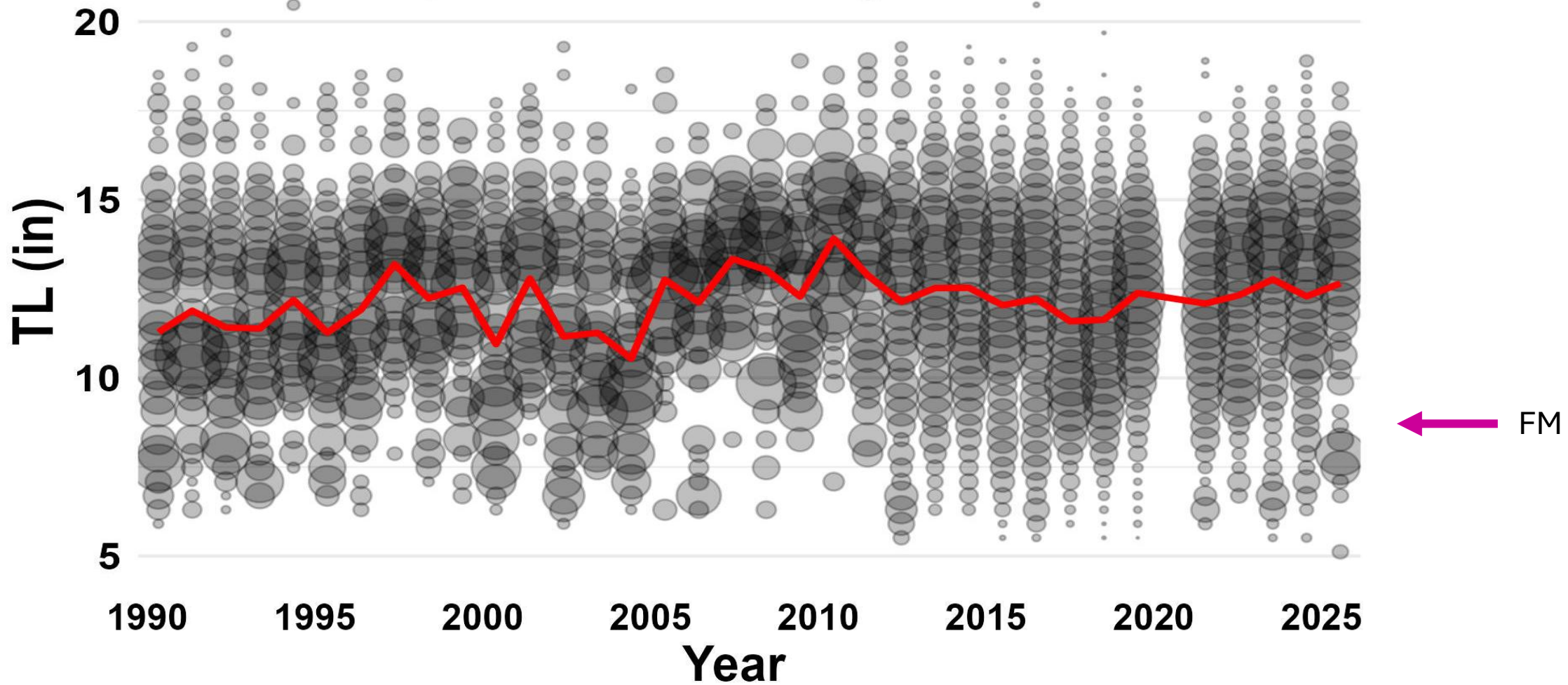


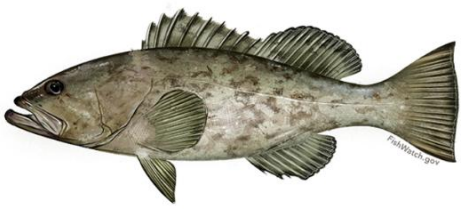
# White Grunt



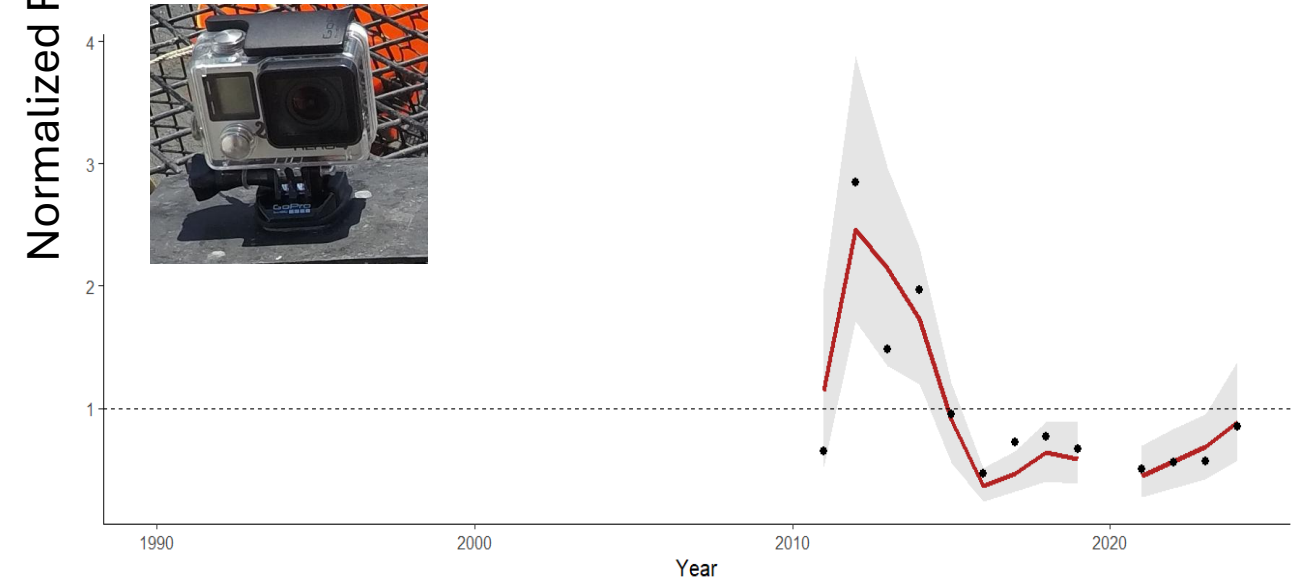
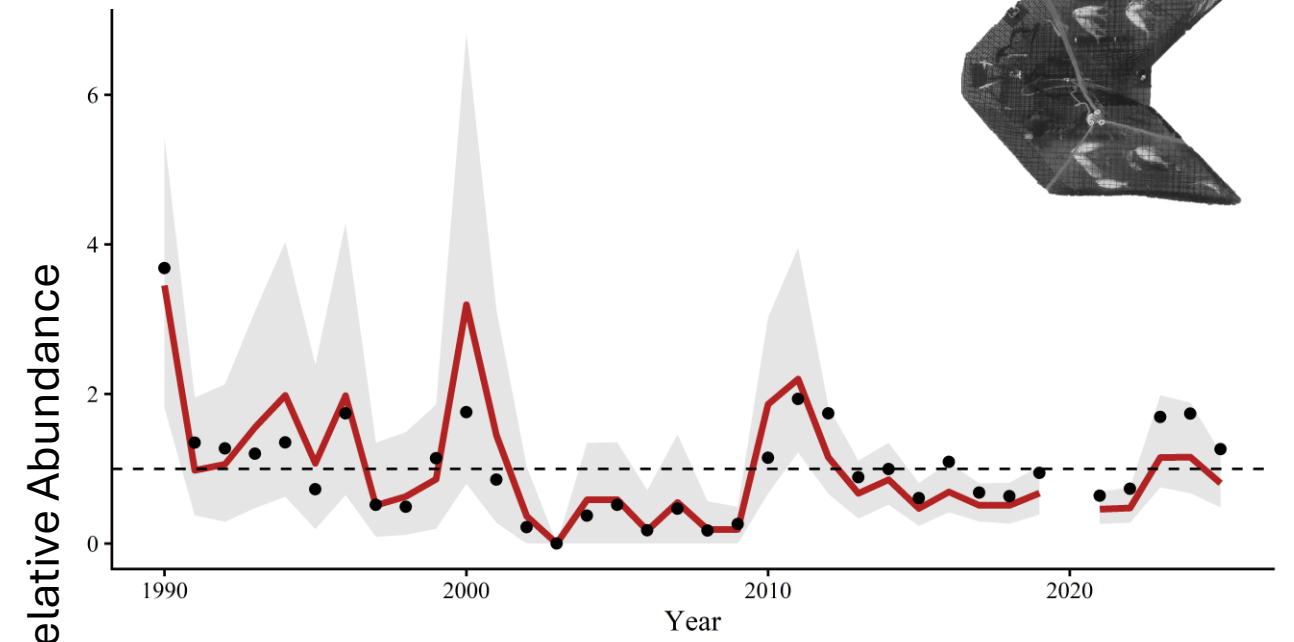
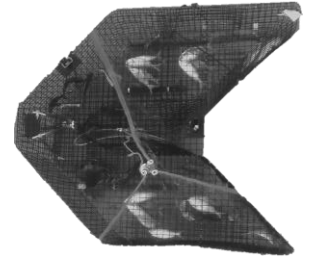
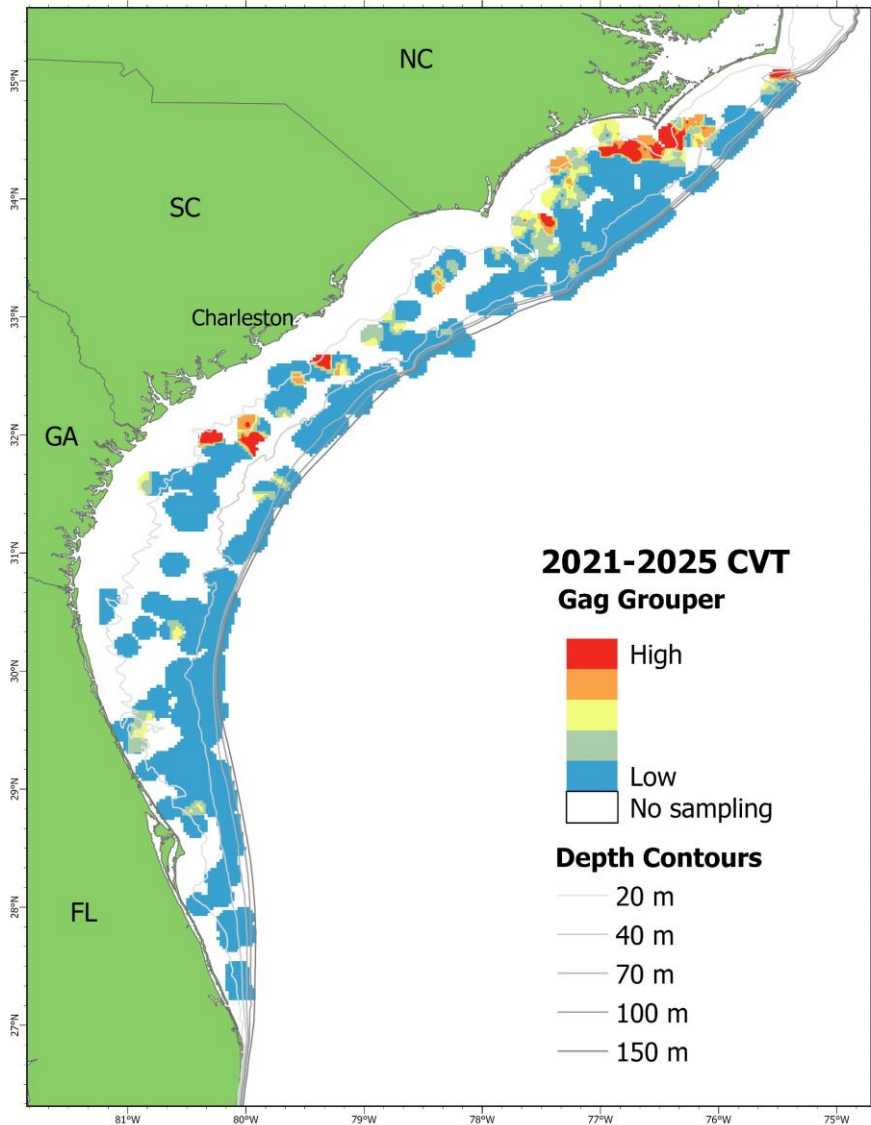


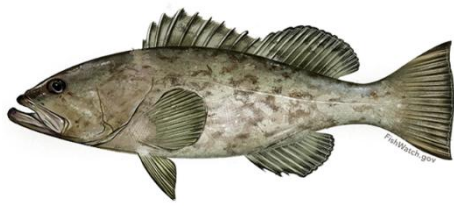
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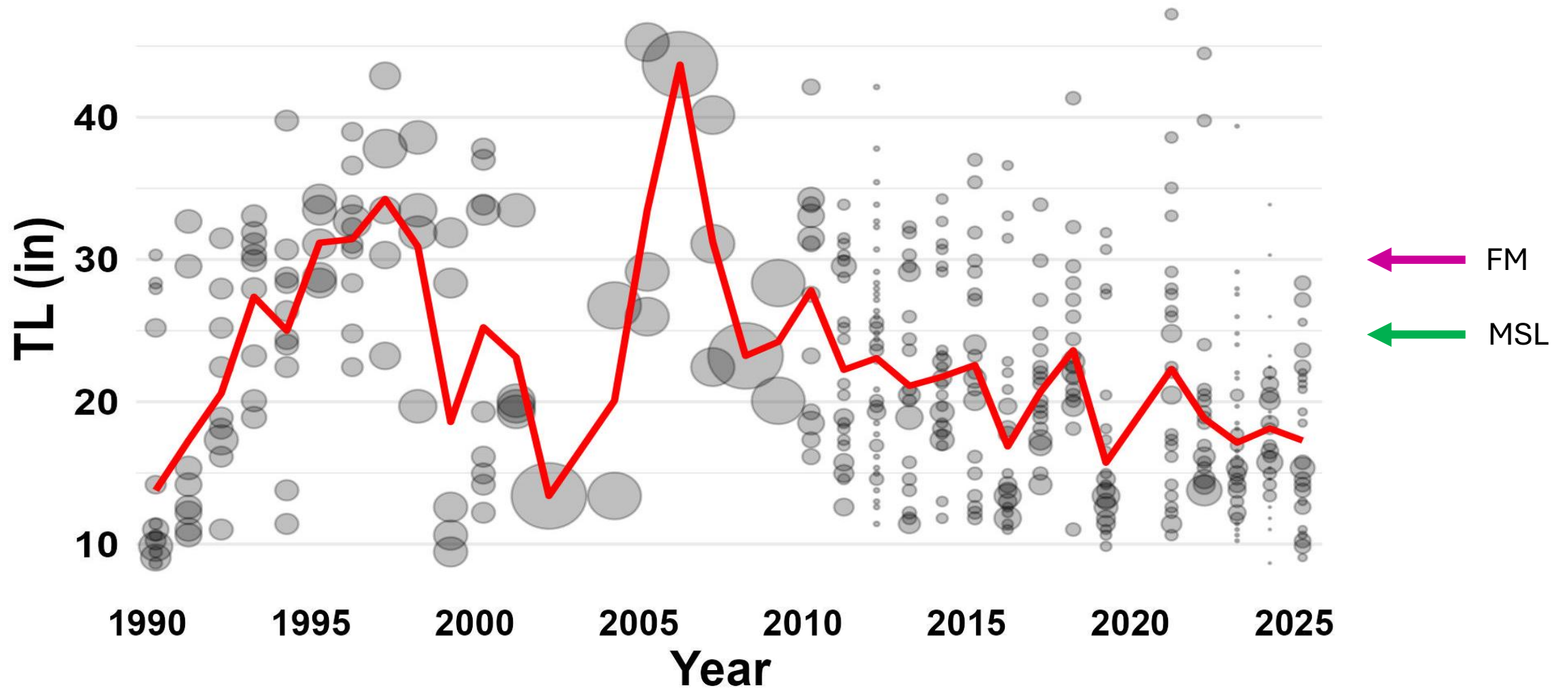


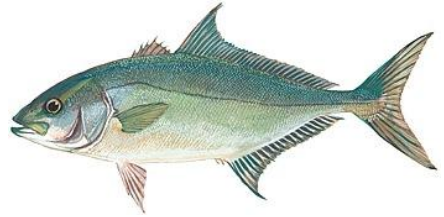
# Gag Grouper



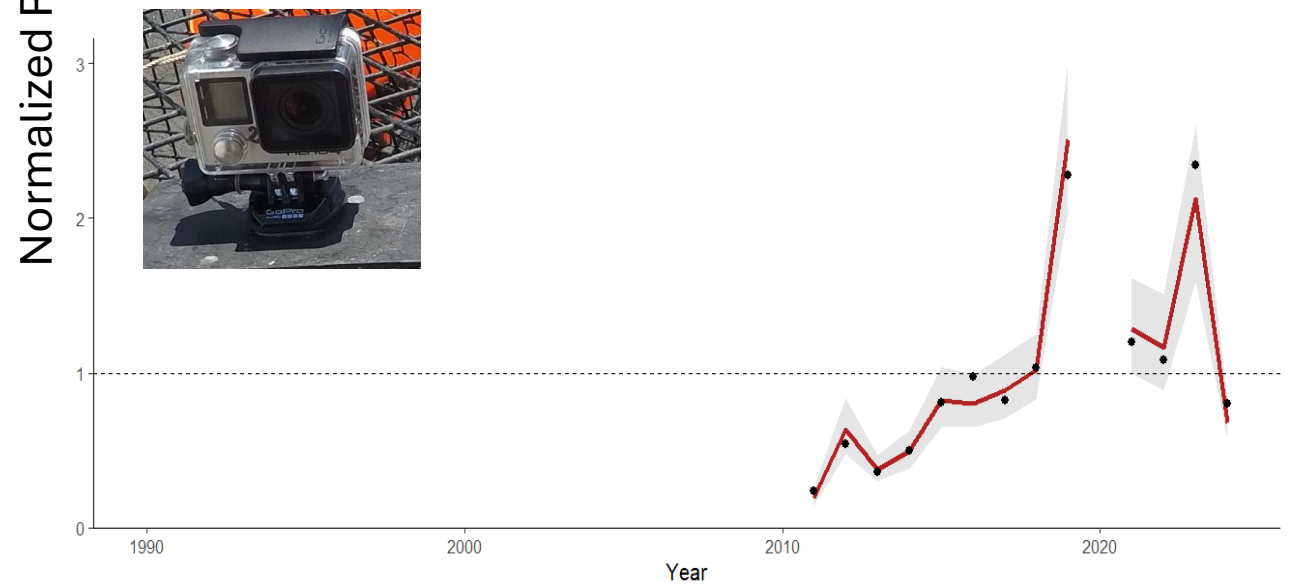
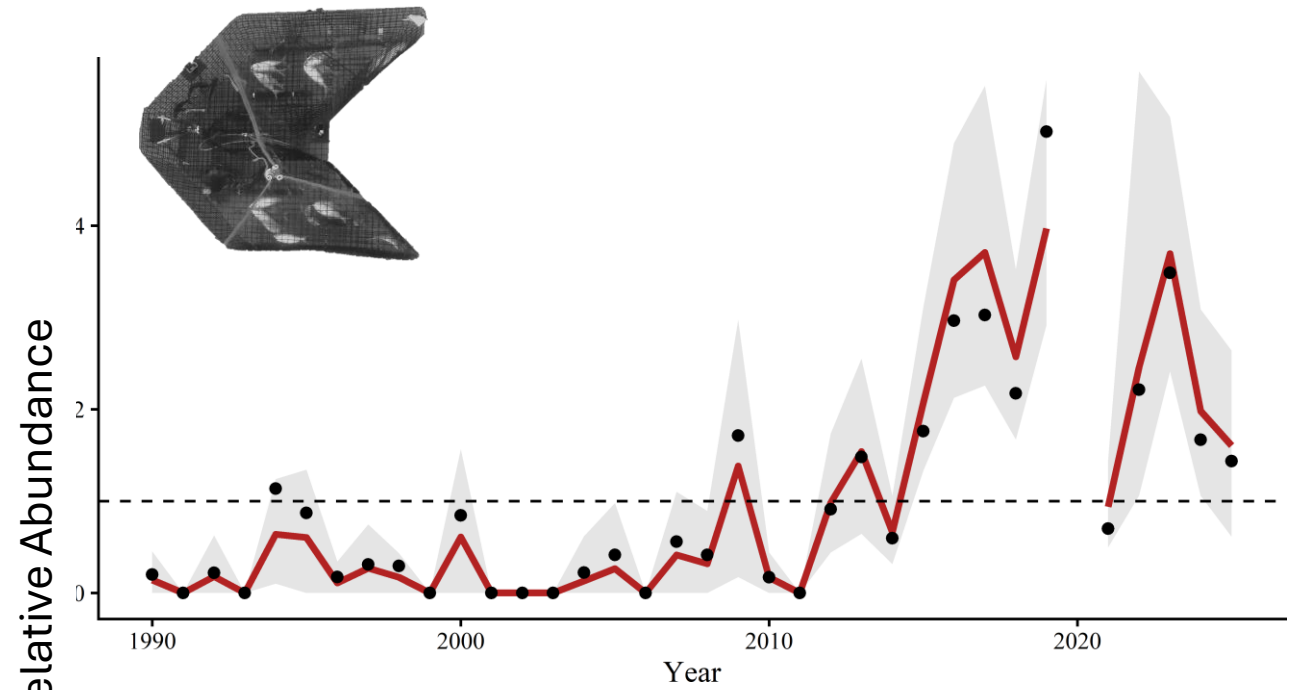
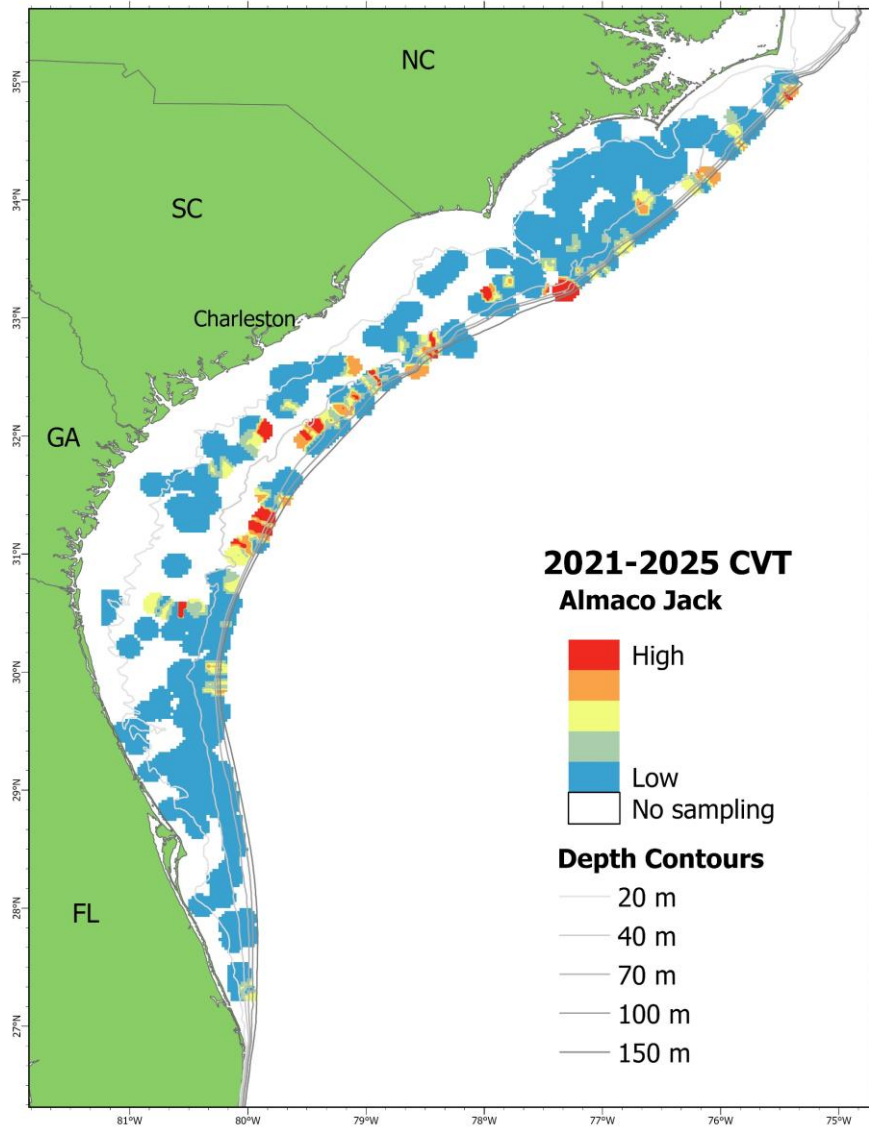


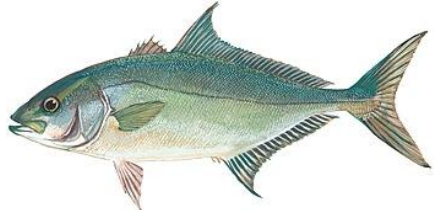
# Gag Grouper



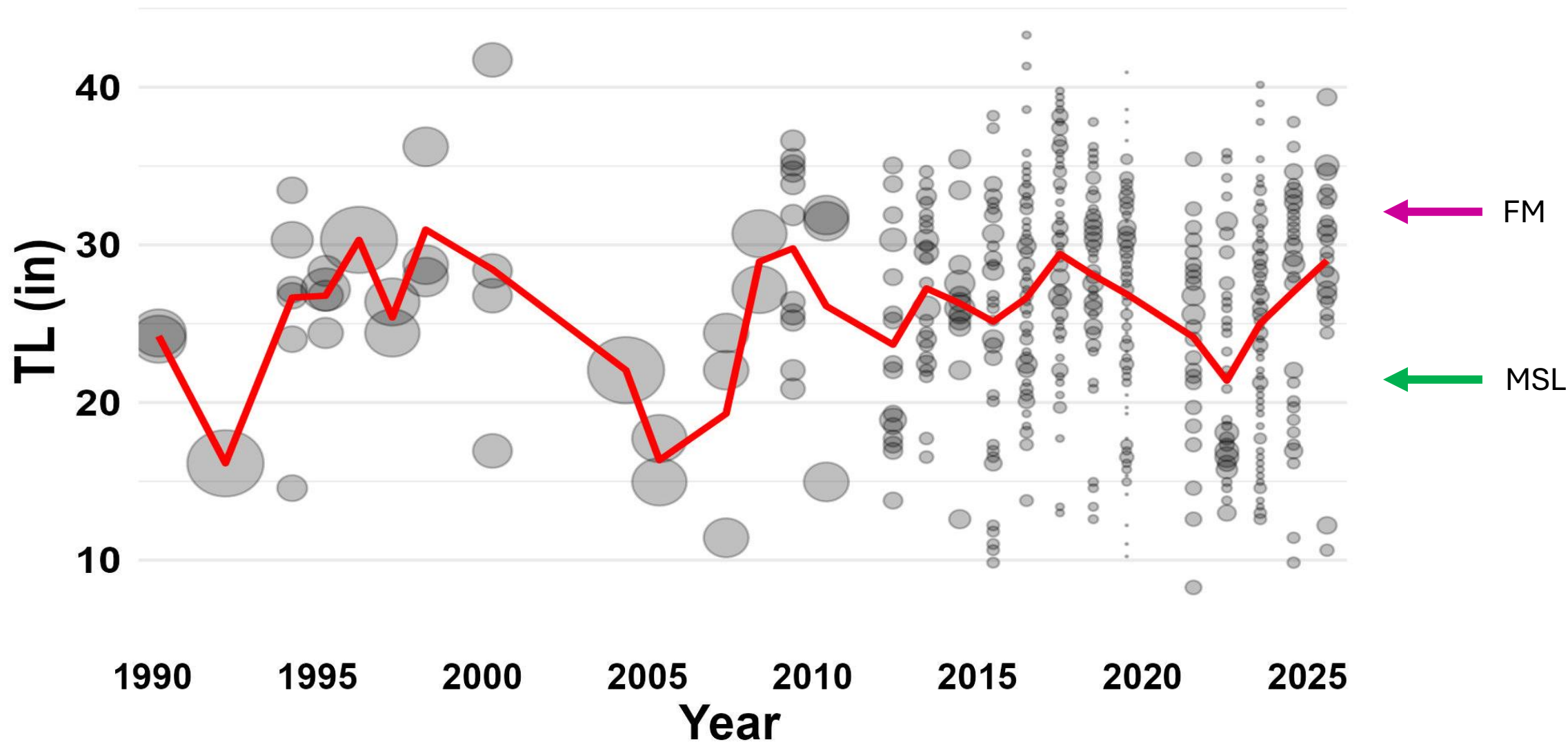


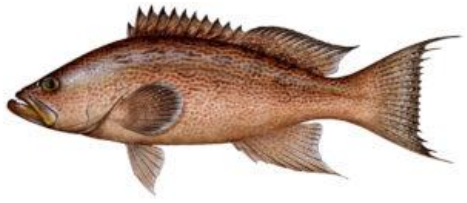
# Almaco Jack



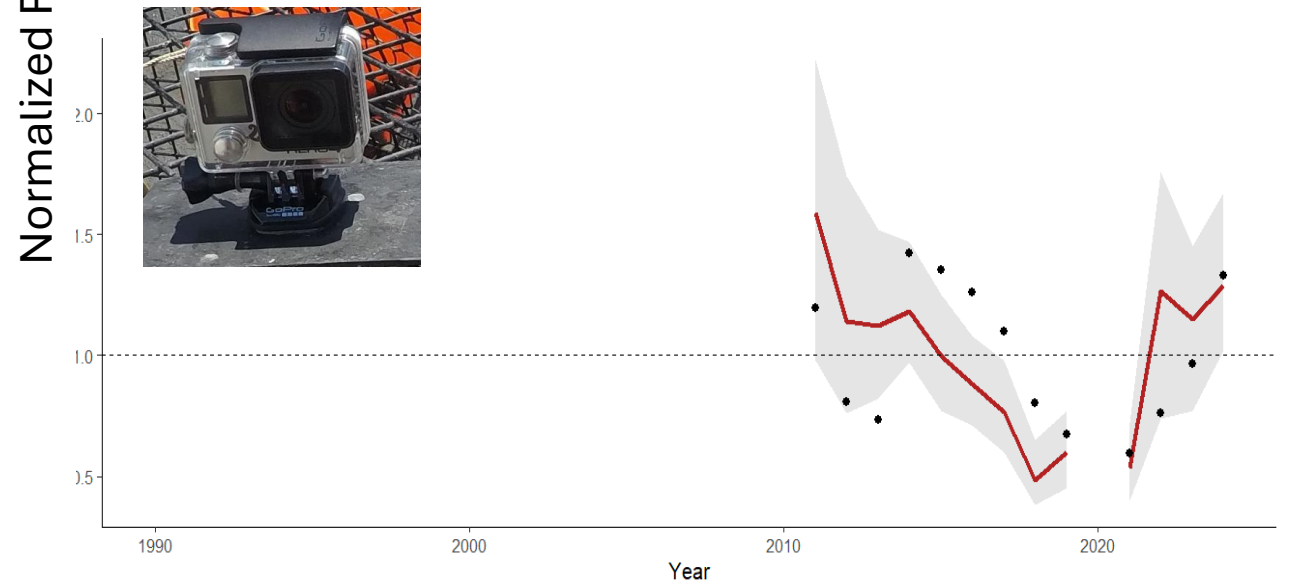
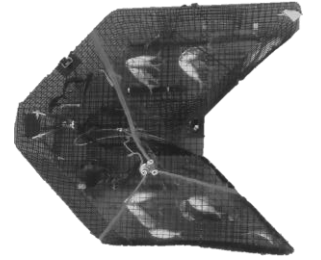
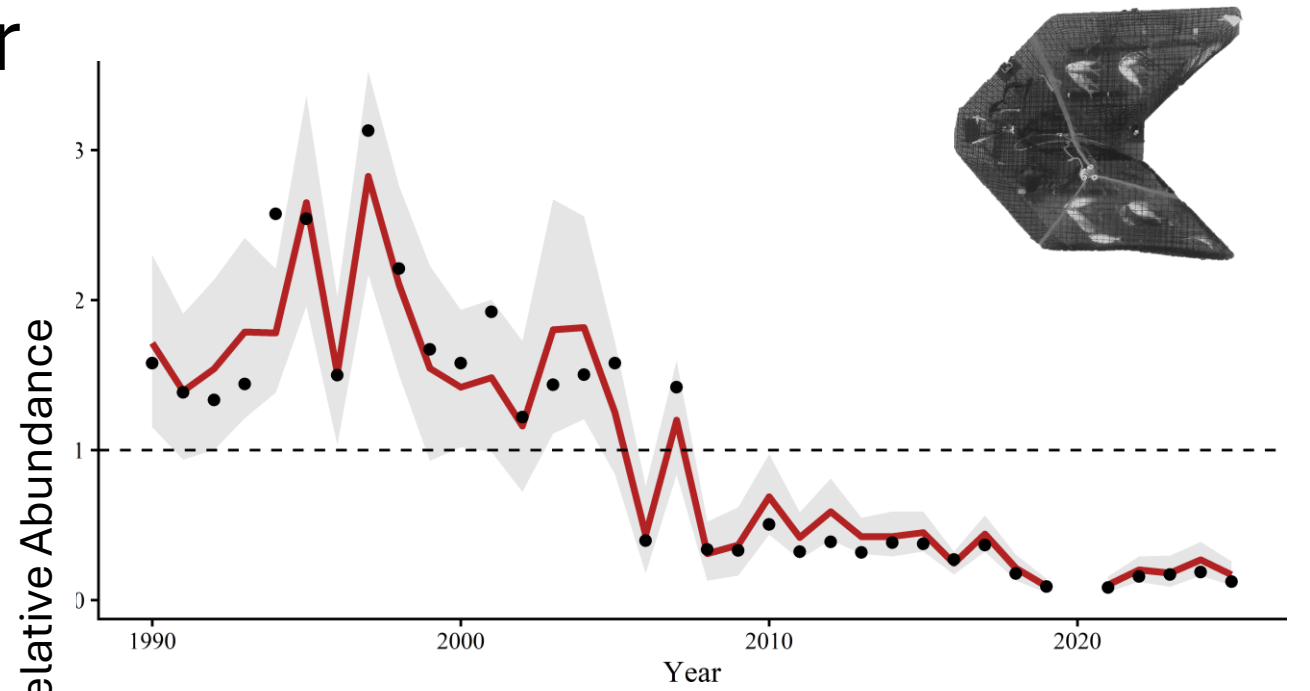
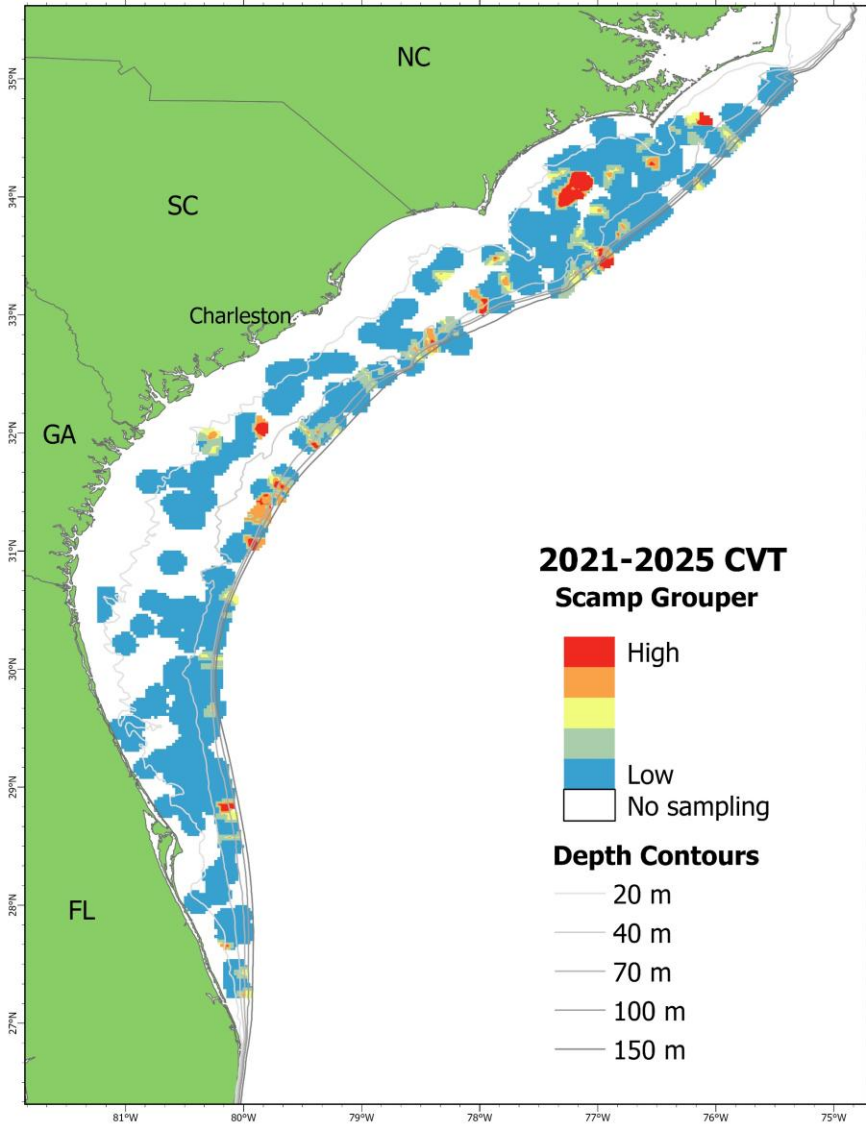


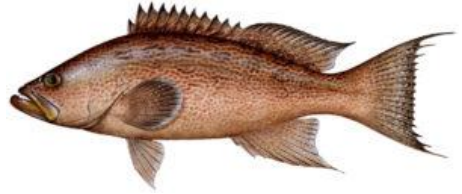
# Almaco Jack



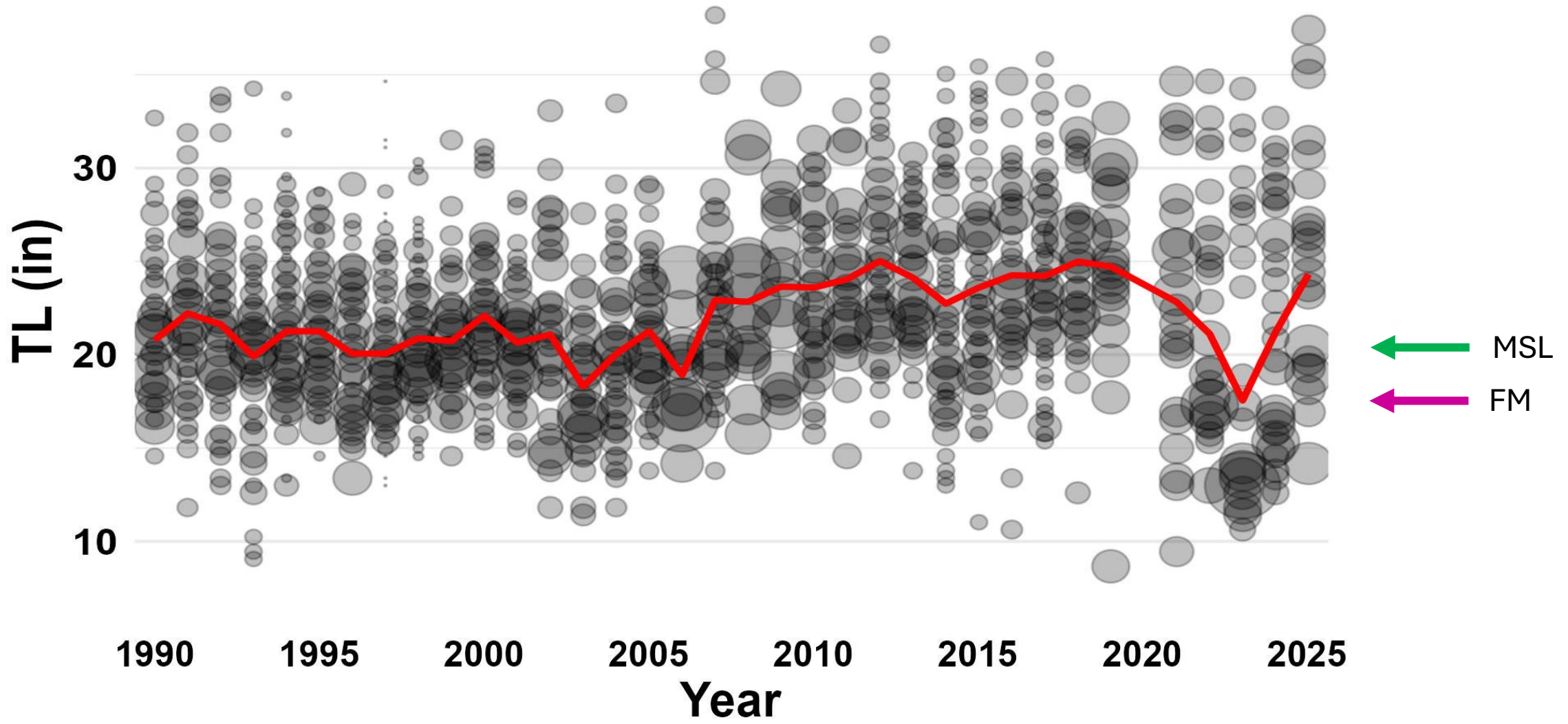


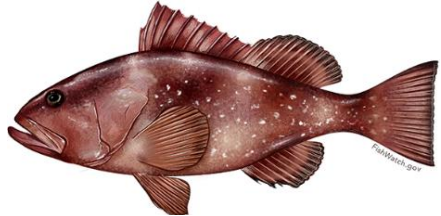
# Scamp Grouper



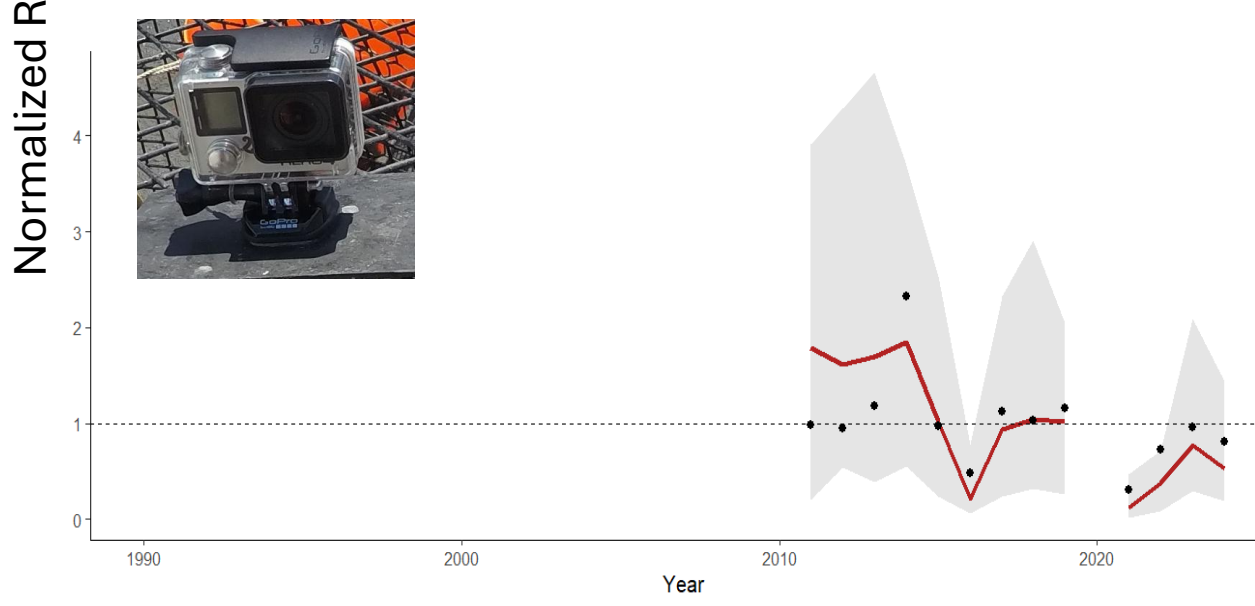
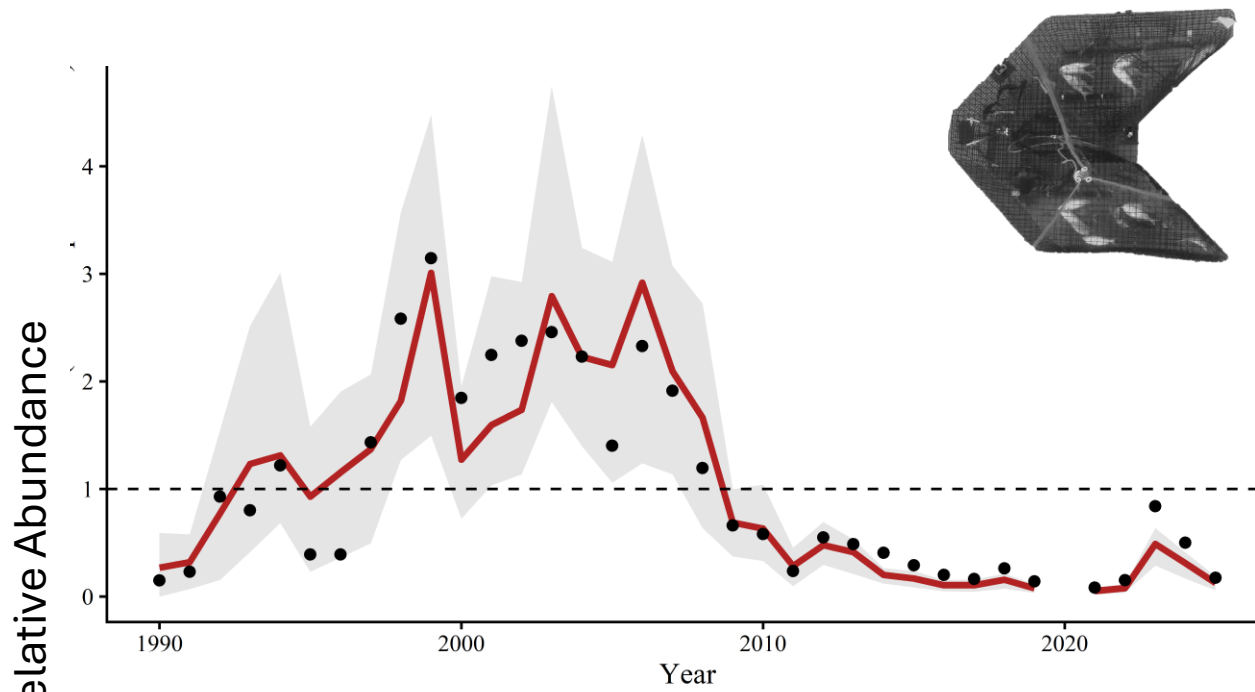
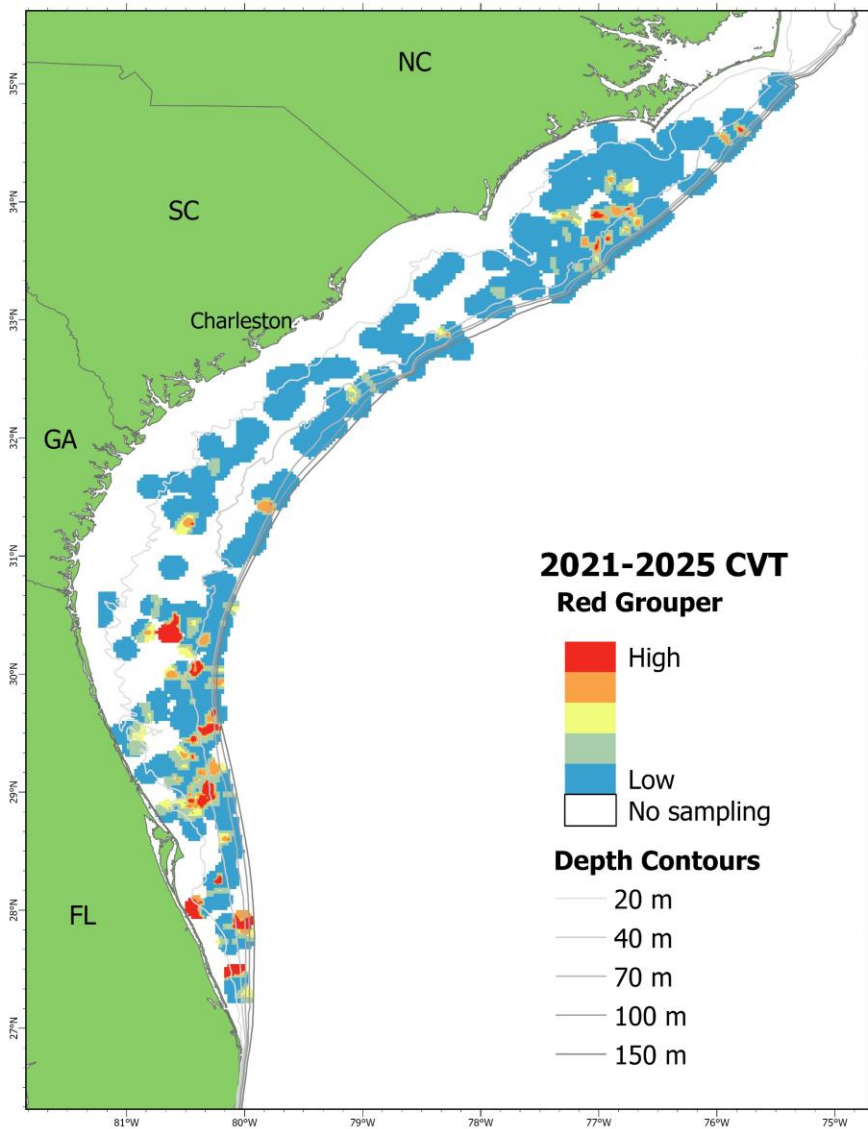


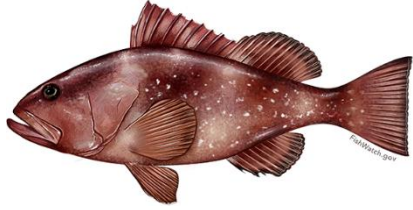
# Scamp Grouper



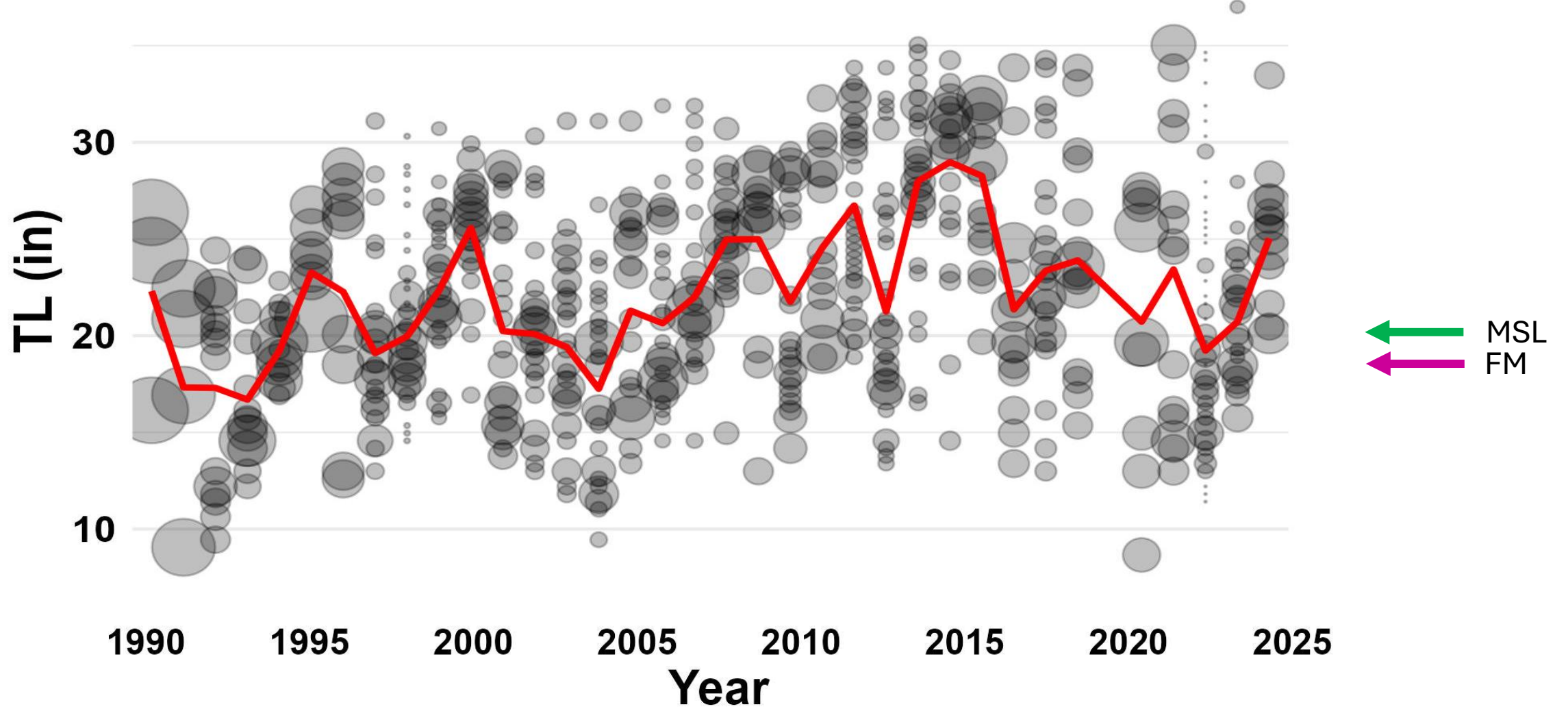


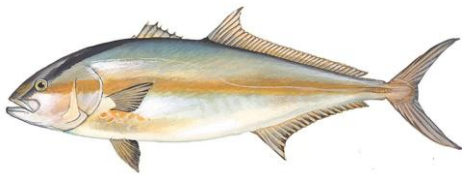
# Red Grouper



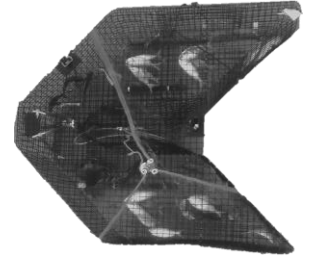


# Red Grouper

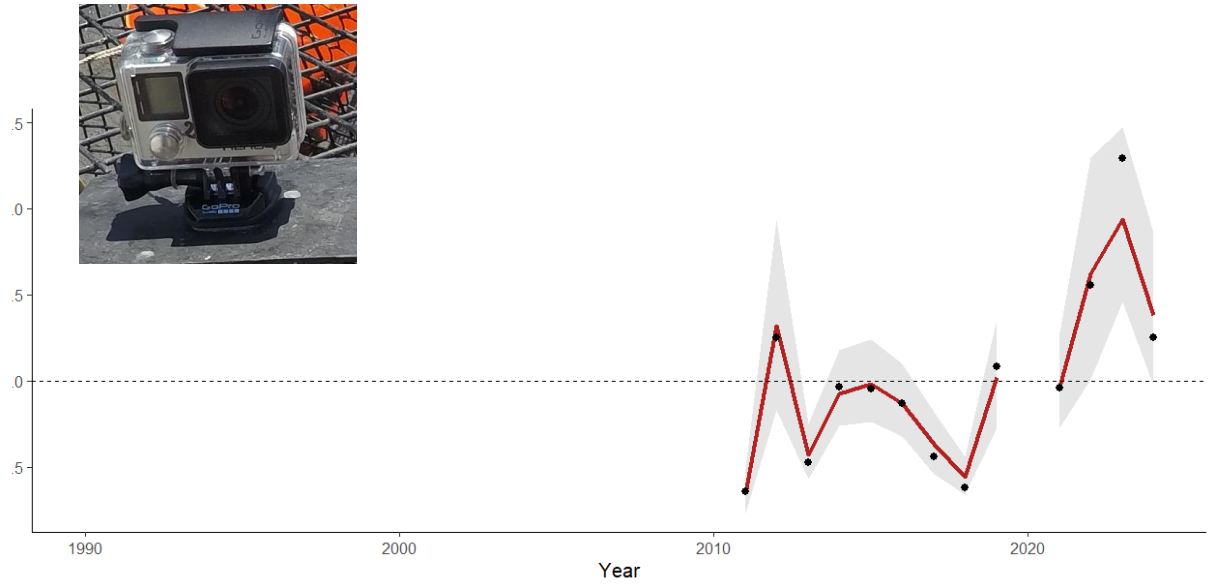


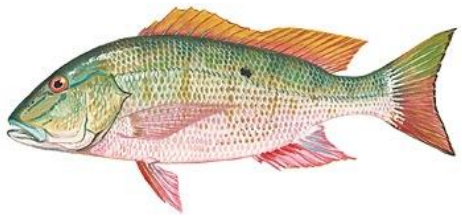


# Greater Amberjack

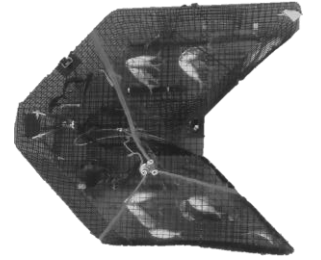


Normalized Relative Abundance

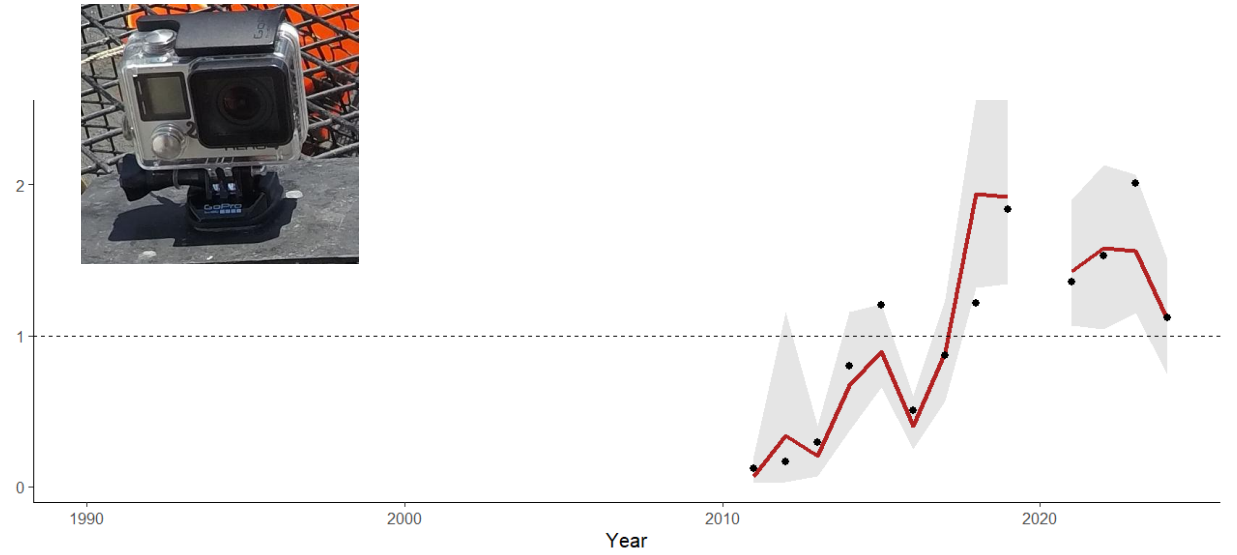


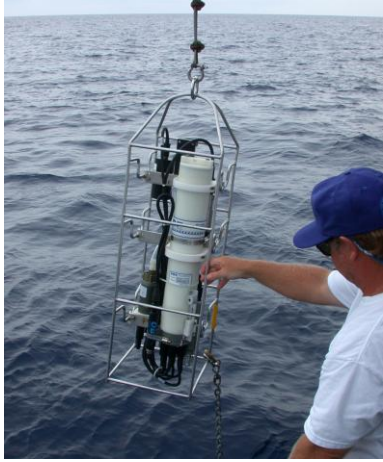


# Mutton Snapper



Normalized Relative Abundance





# Bottom Temperature

Generalized Additive Model to standardize for:

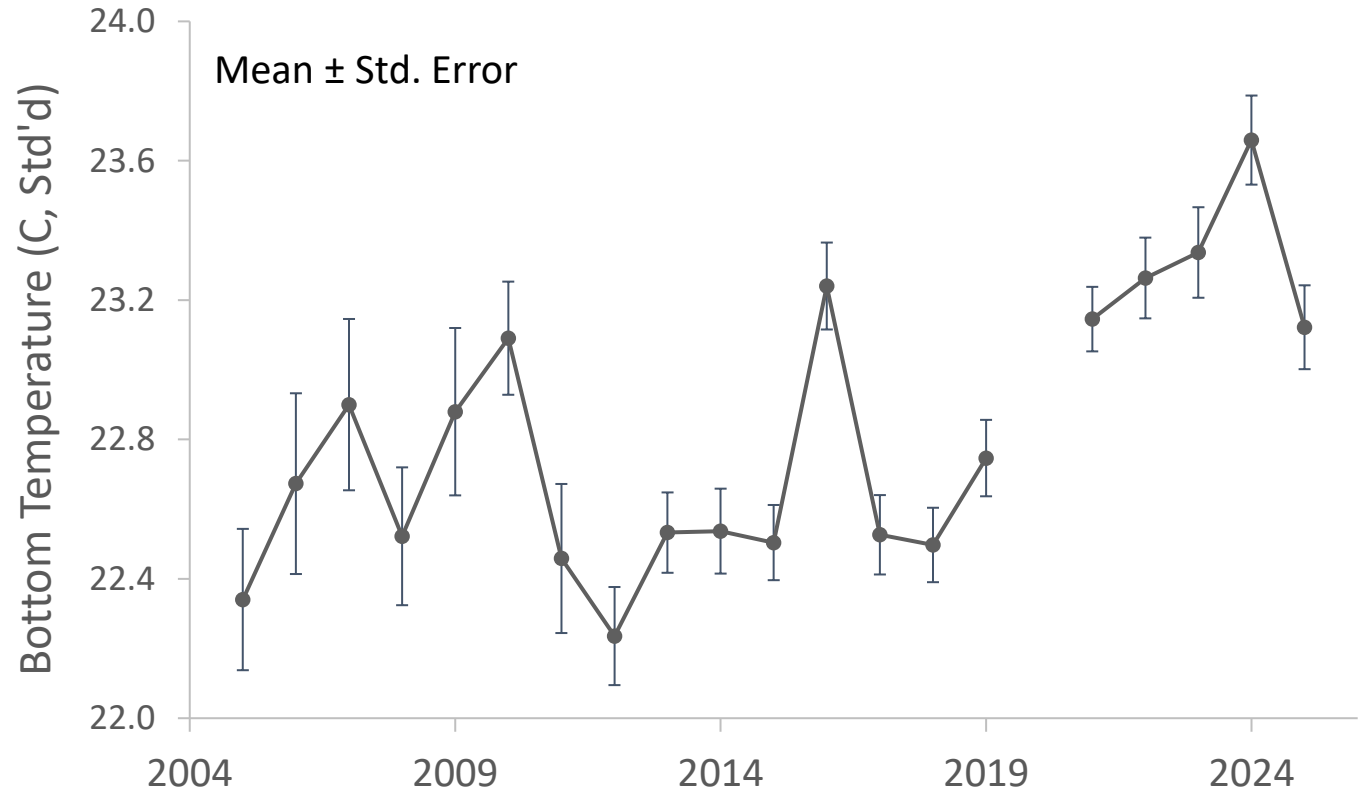
Location

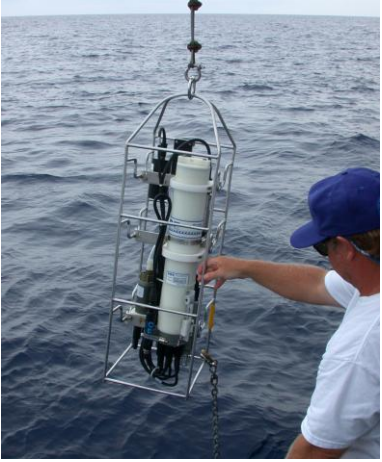
Depth

Day of Year

(similar to Craig et al. 2021)

2005-2025 included all 4 states

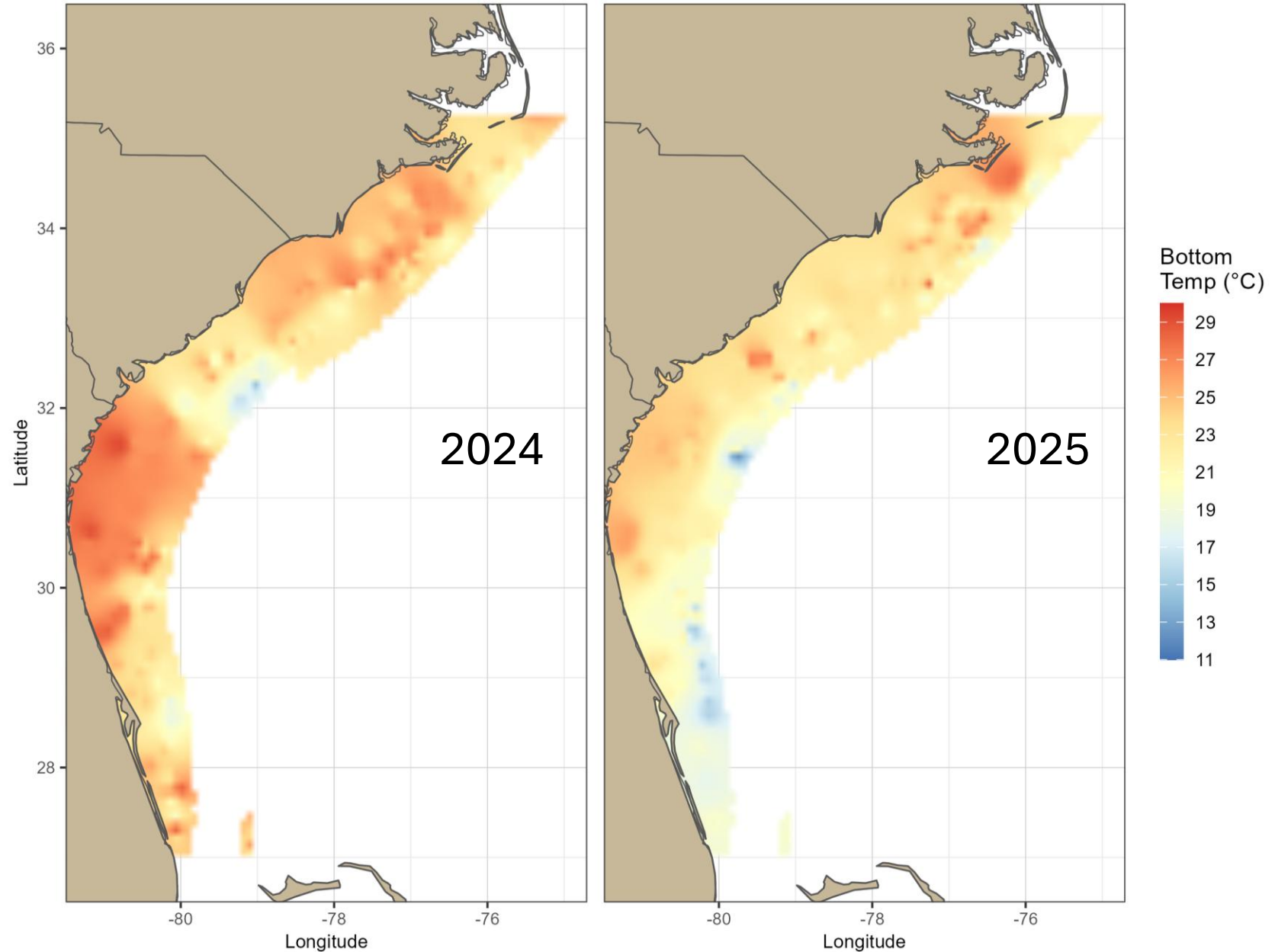




# Bottom Temperature

2025

- Warmer than <2019
- Cooler than 2021-2024
  - Broad cool bottom temps on shelf

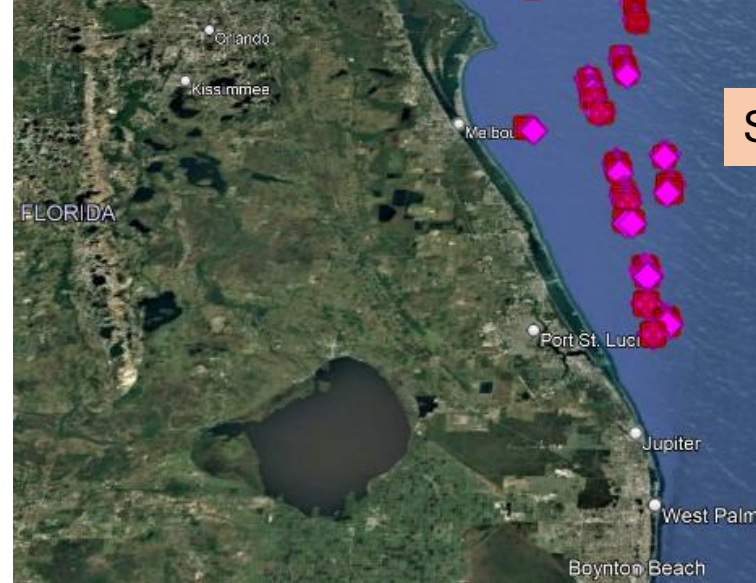


2026 SERFS &  
Related  
Activities

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# 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**

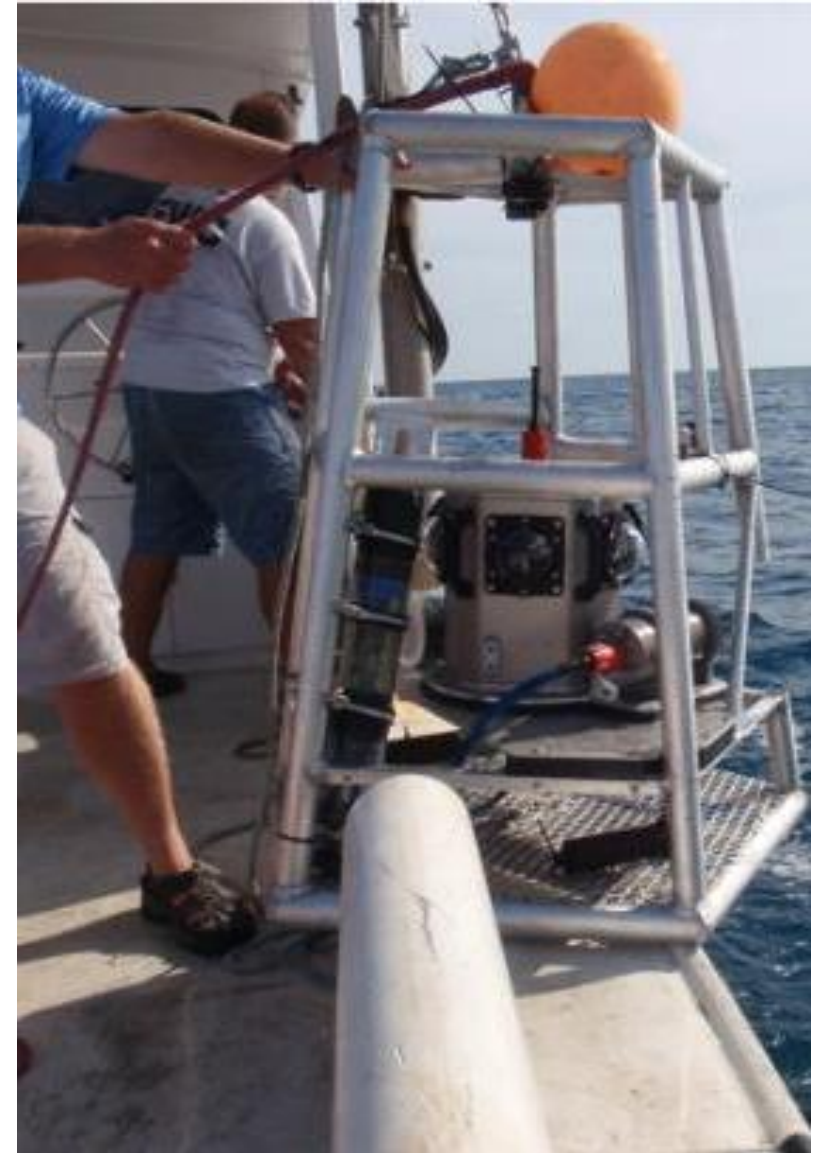
**FWC, NOAA, SCDNR**

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

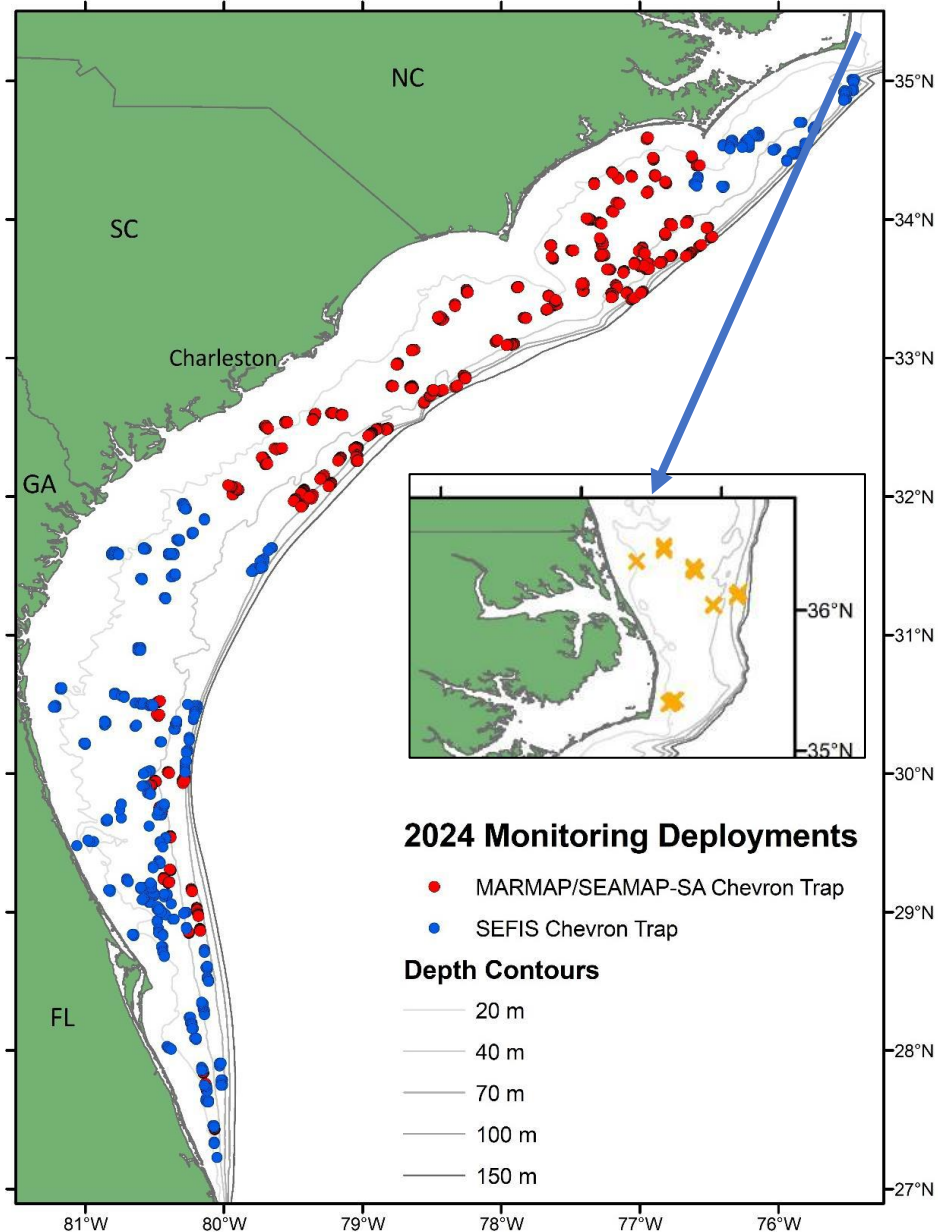
**Stereo cameras**

**Side scan sonar**

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

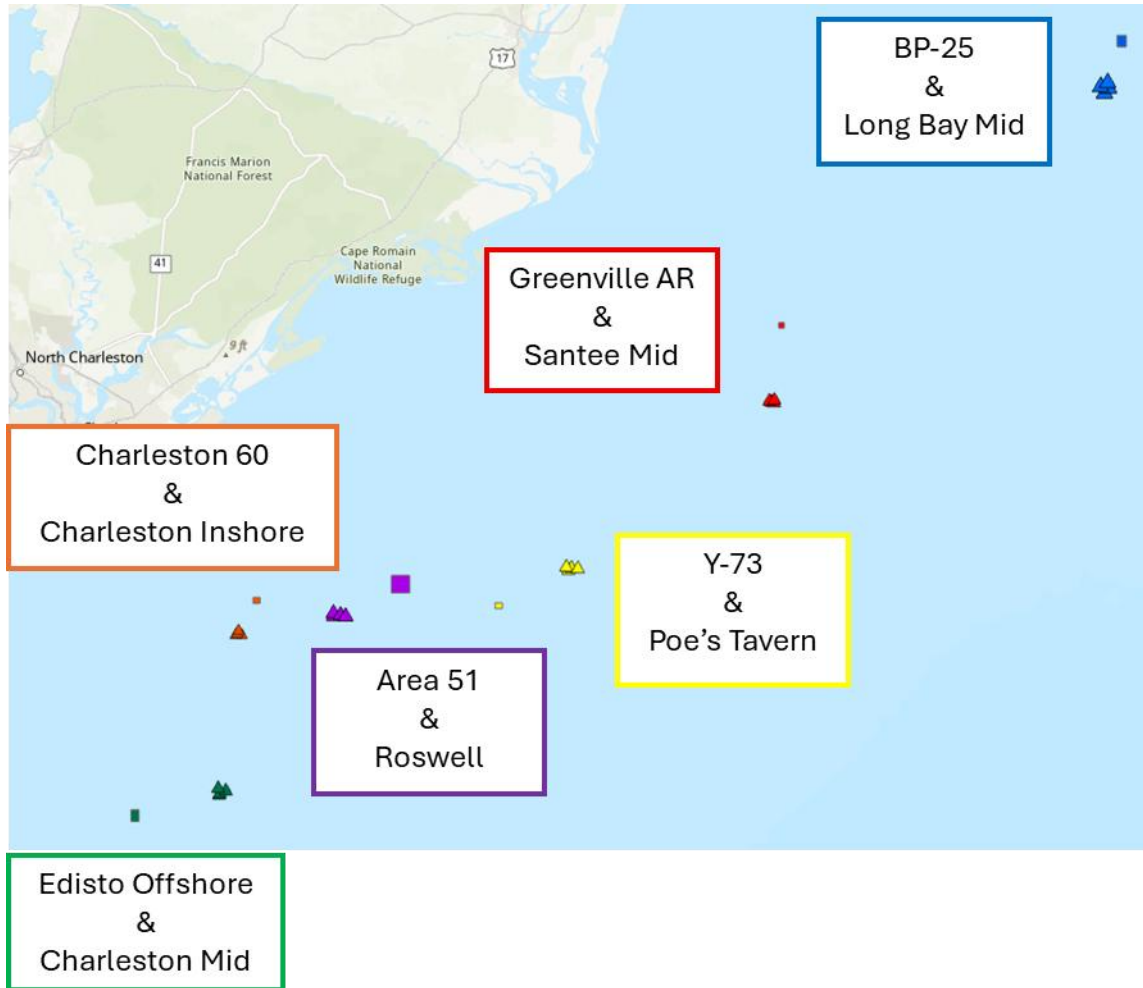


# SERFS Northern Expansion 2026 Revisit



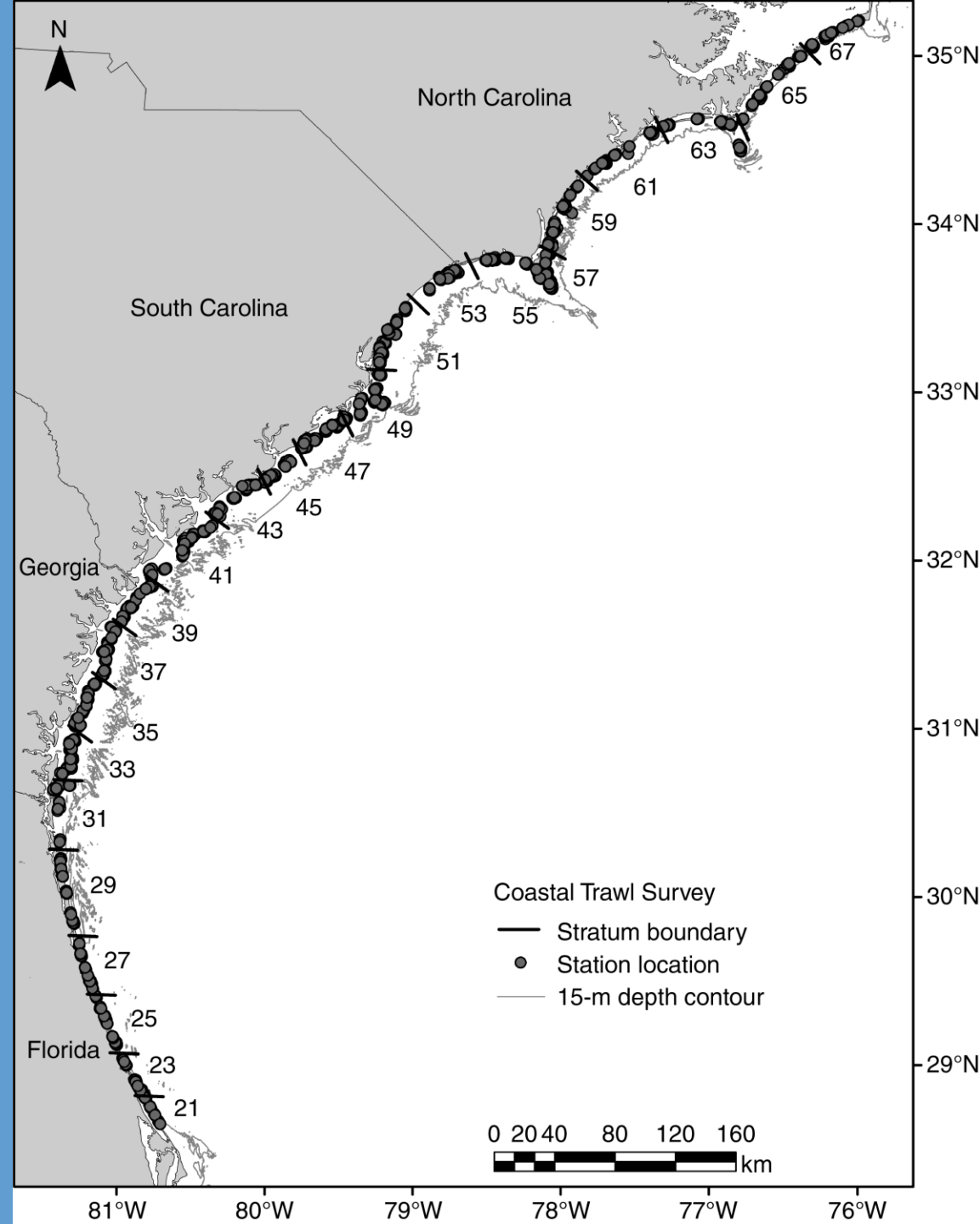
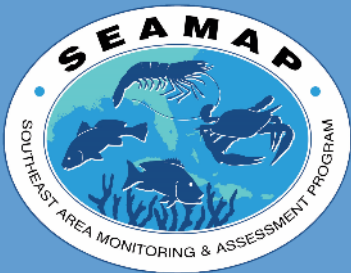
- New stations and mapping 2024
  - Random selection for sampling
- Additional mapping
- Additional reconnaissance CVTs

# State Wildlife Grant: Artificial & Natural Reefs



# Coastal Trawl Survey Design

- Soft bottom & hard pavements, 4-10 m
- Stratified, random sampling design
  - 24 latitude-based strata
  - Station pool
  - 2025 target 102 per season
- 2021: Reduced 2 to 1 Net Processed
  - <https://doi.org/10.3354/meps15110>
- 2023: Spring, Summer, Fall to Spring, Fall



# Coastal Trawl Survey Design

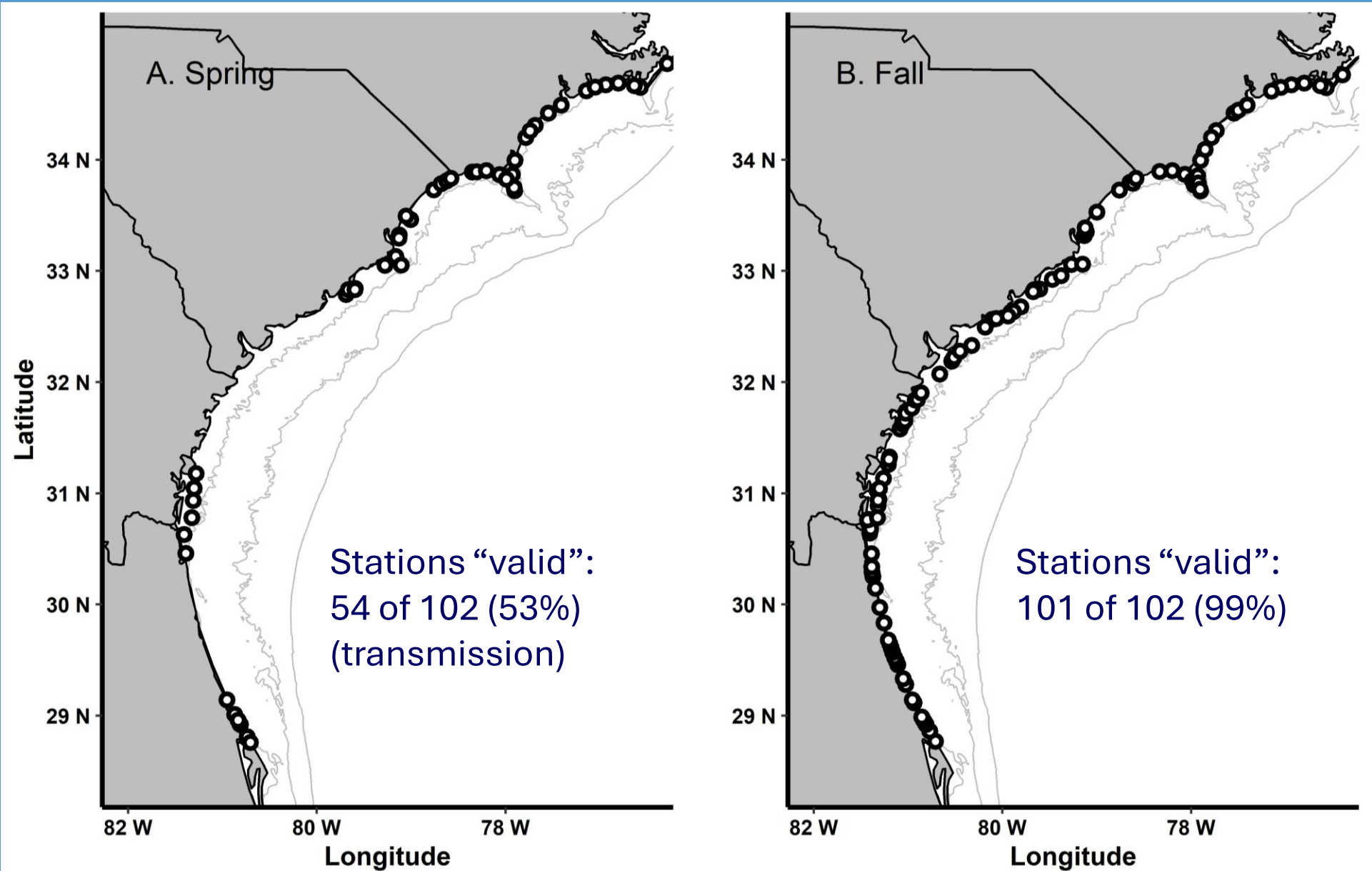
## 2024: Vessel and Gear Changes

- 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

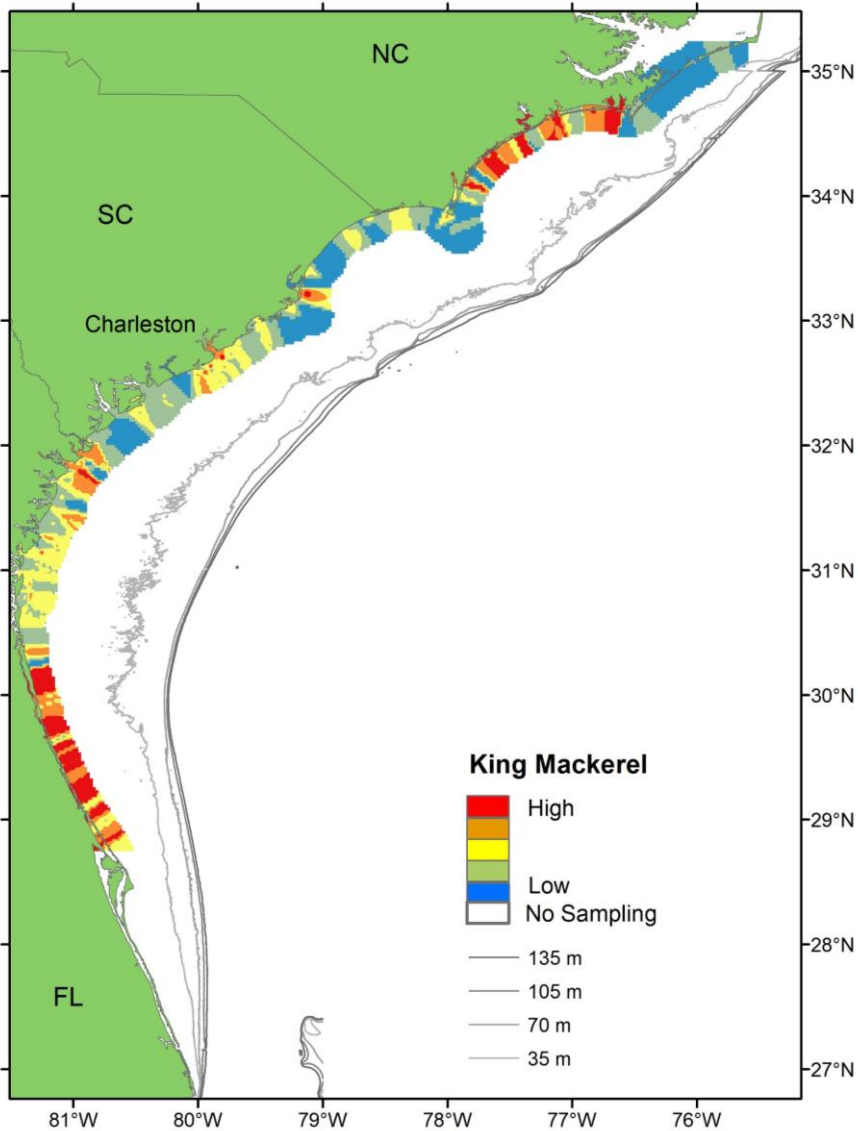
R/V *Lady Lillian*



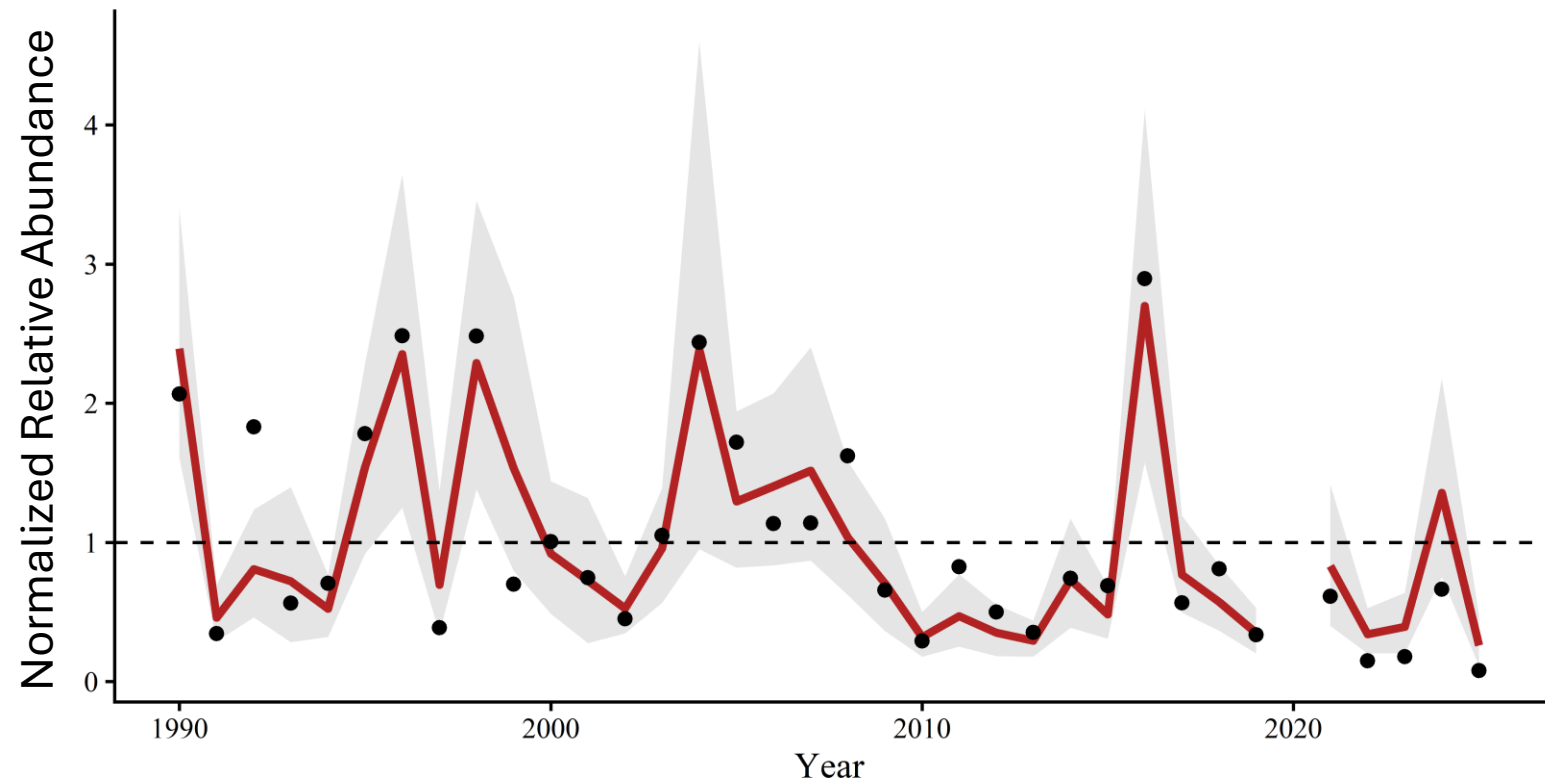
# 2025 Coastal Trawl Sampling



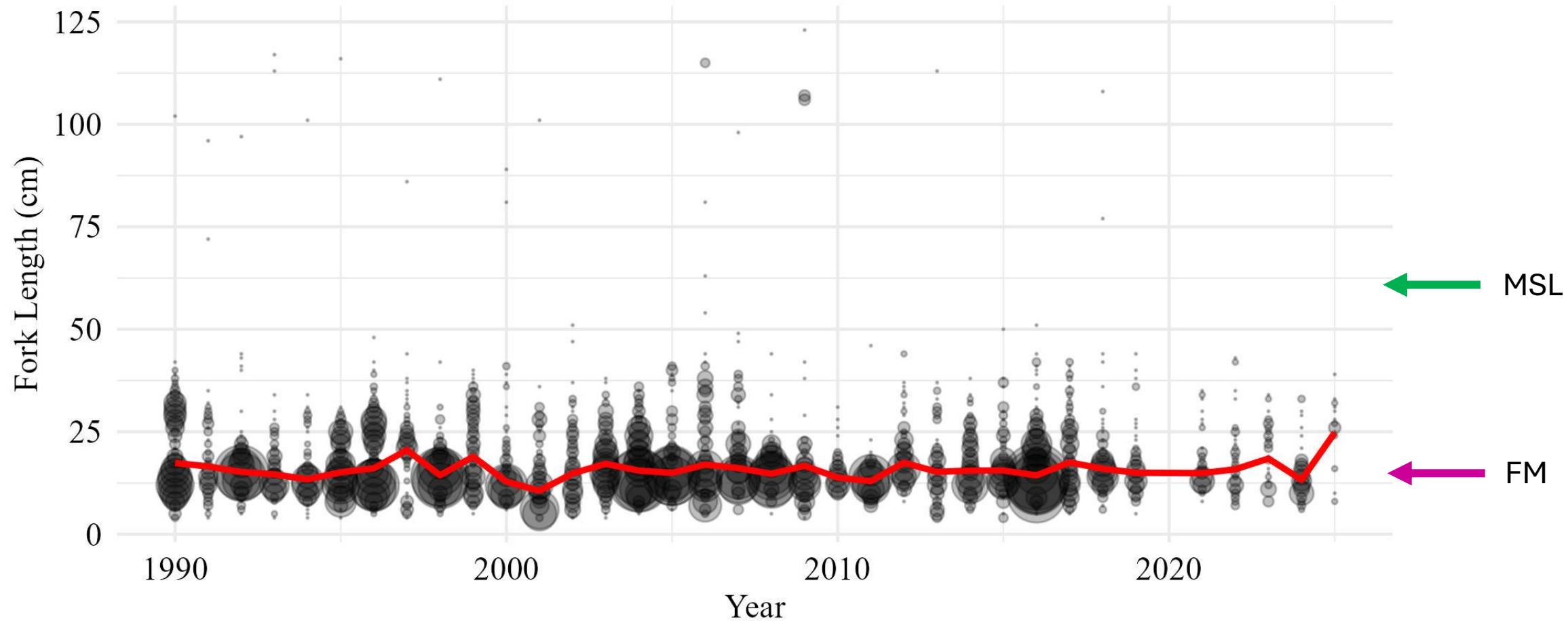
# King Mackerel (Age-0 +)



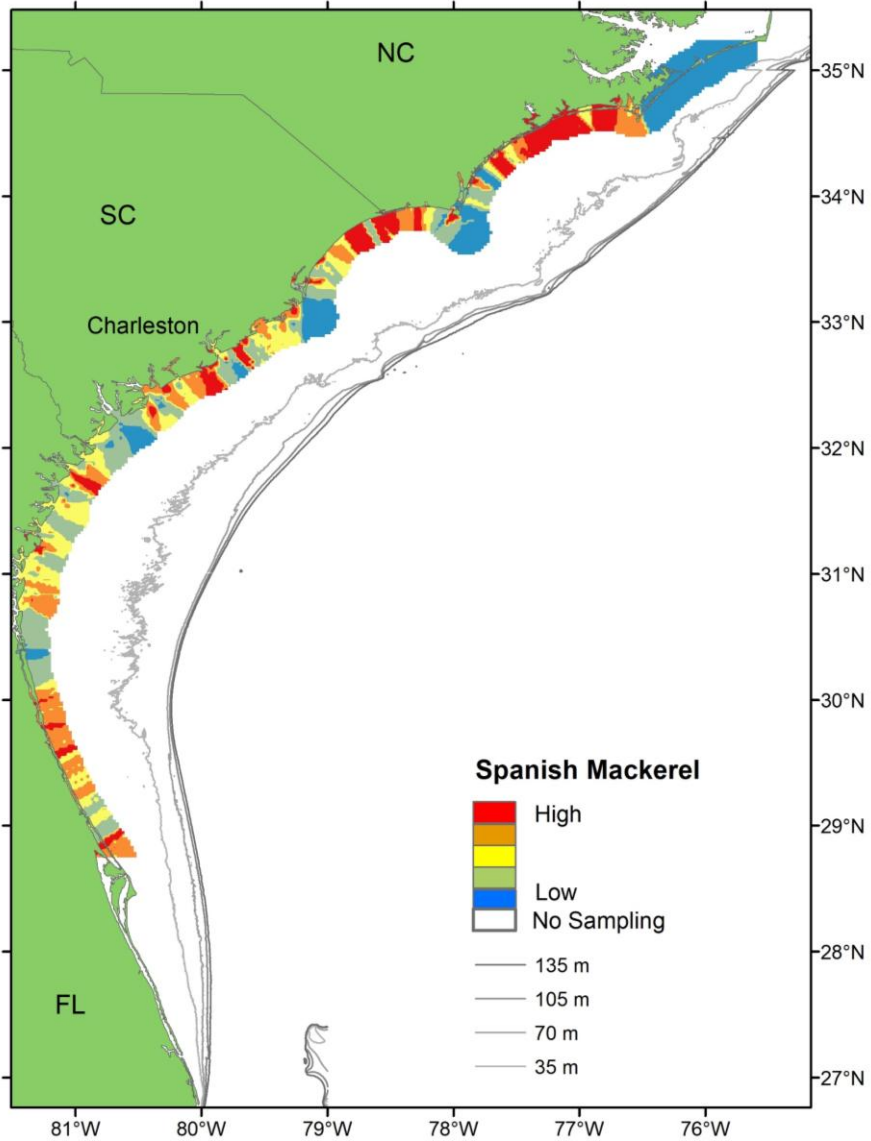
## Trawl Catch



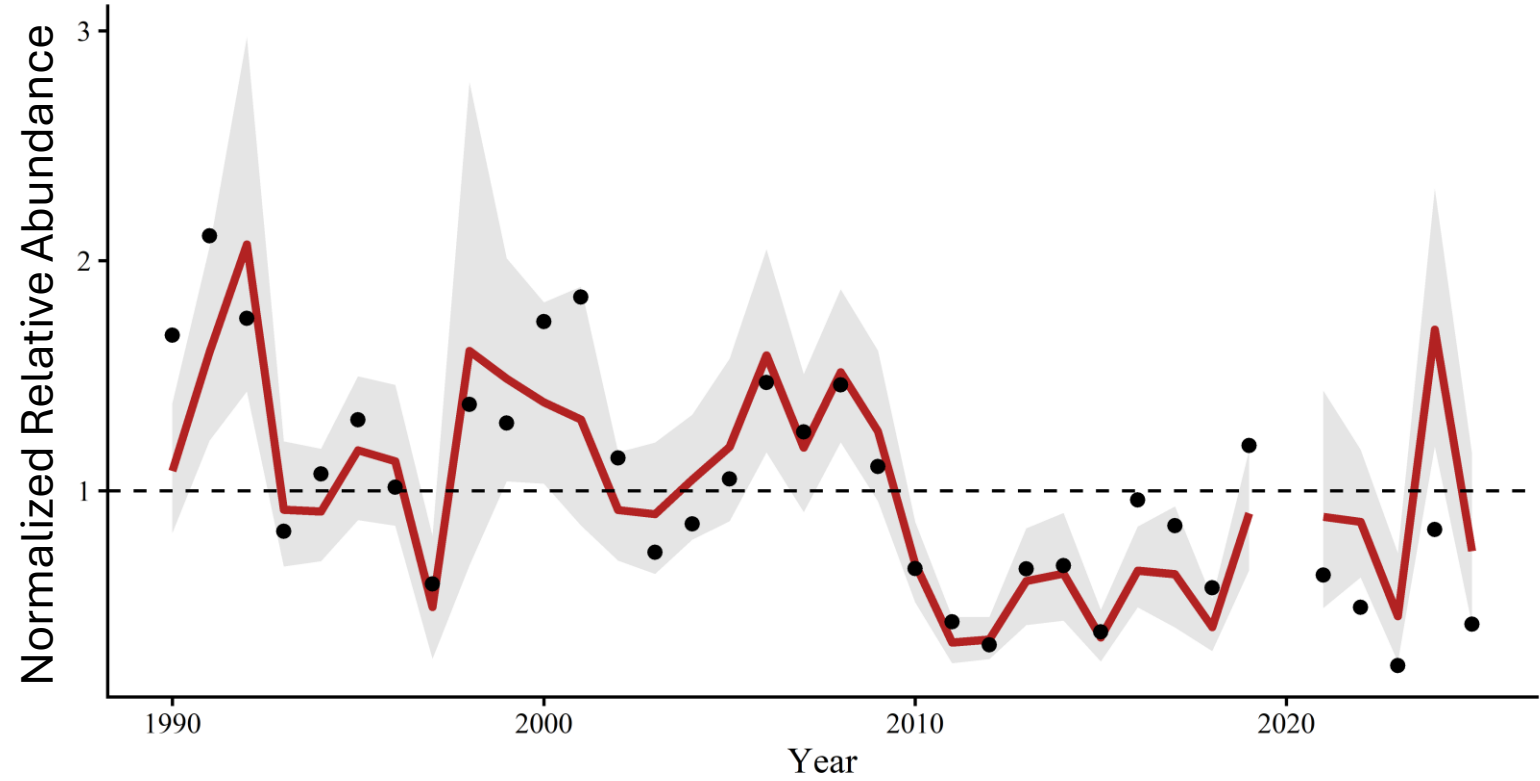
# King Mackerel (Age-0 +)



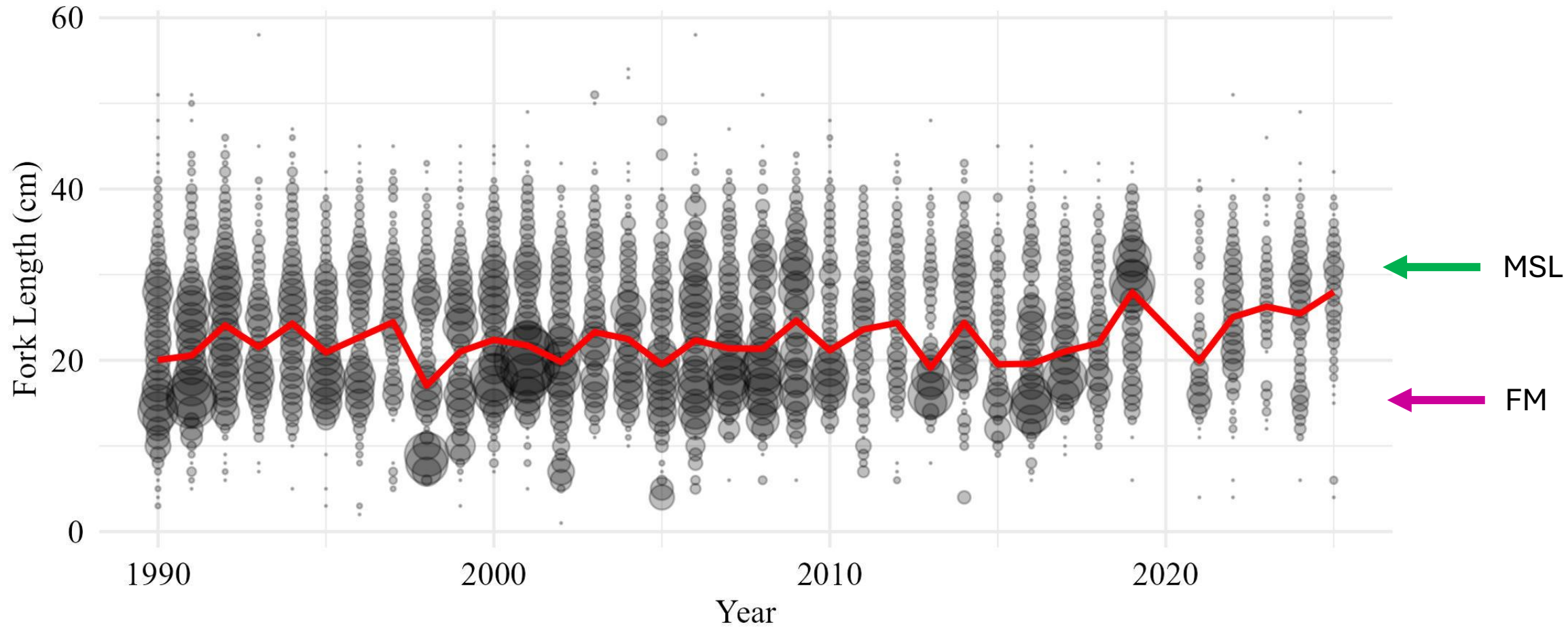
# Spanish Mackerel (Age-0 +)



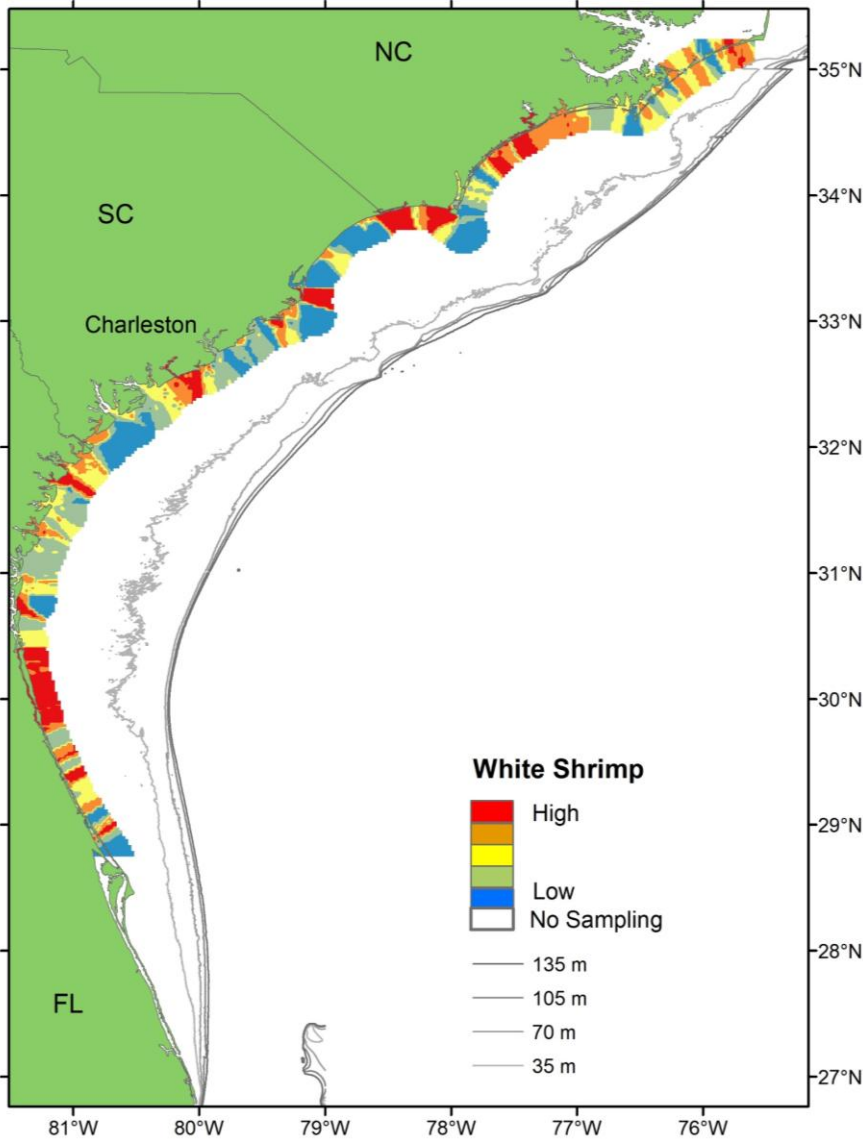
## Trawl Catch



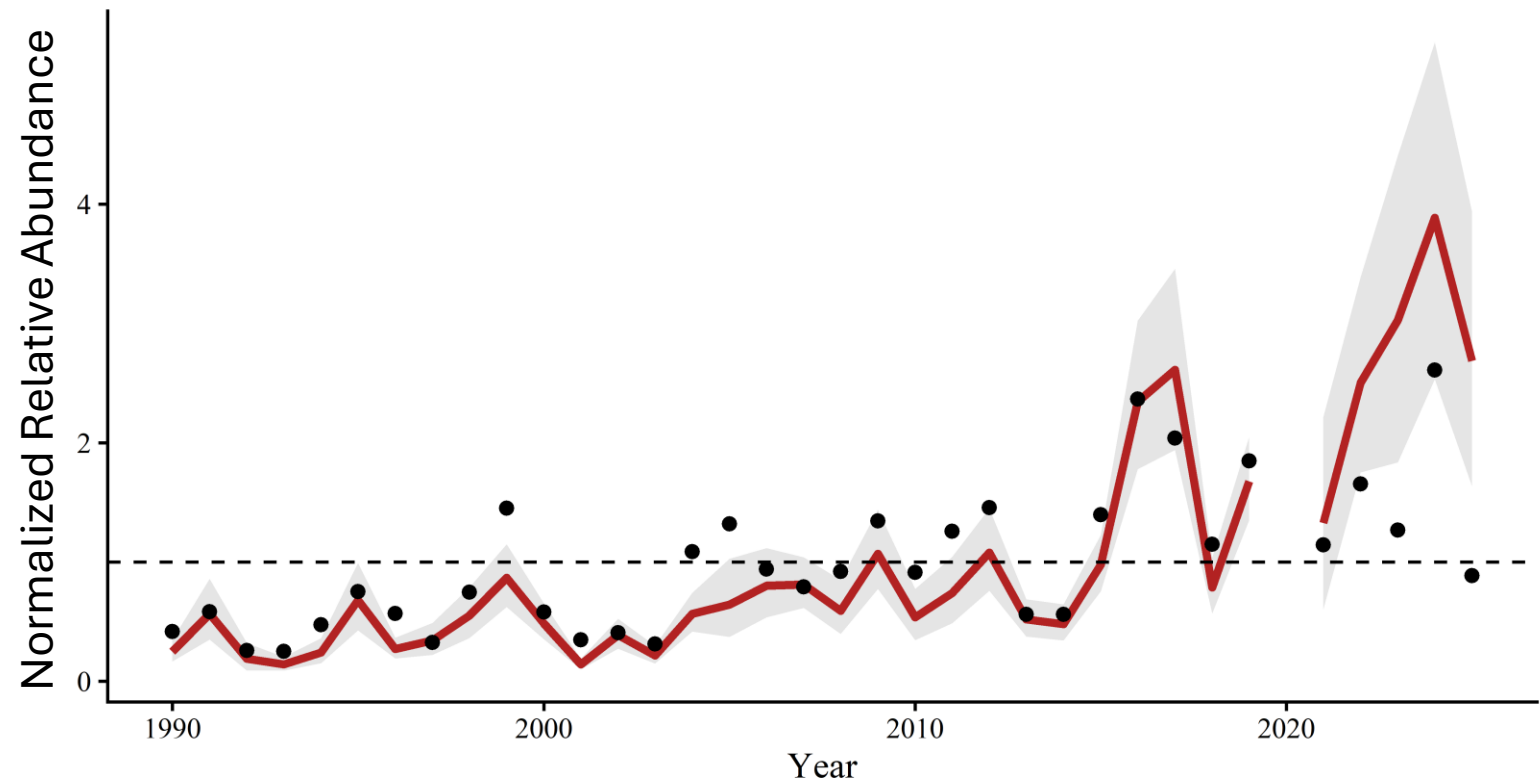
# Spanish Mackerel (Age-0 +)



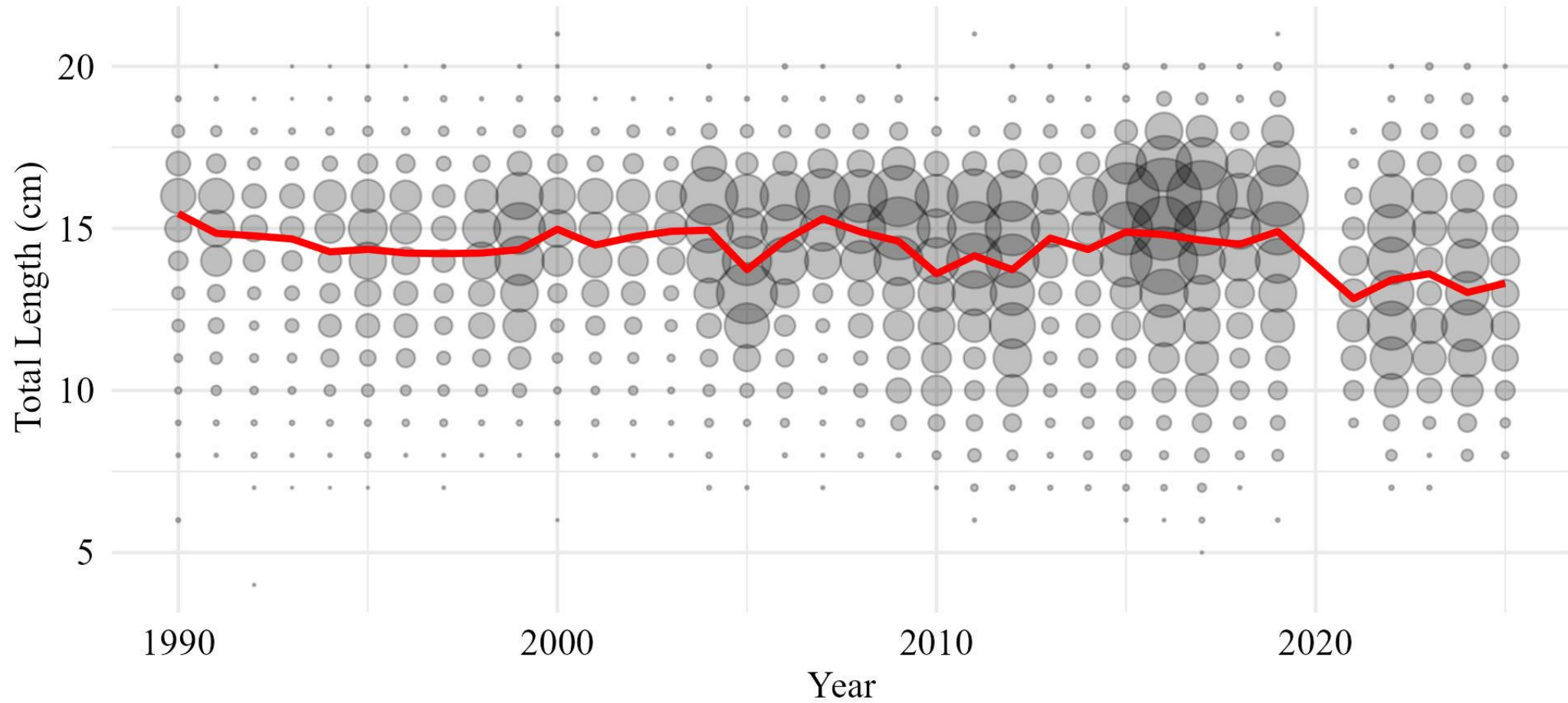
# White Penaeid Shrimp



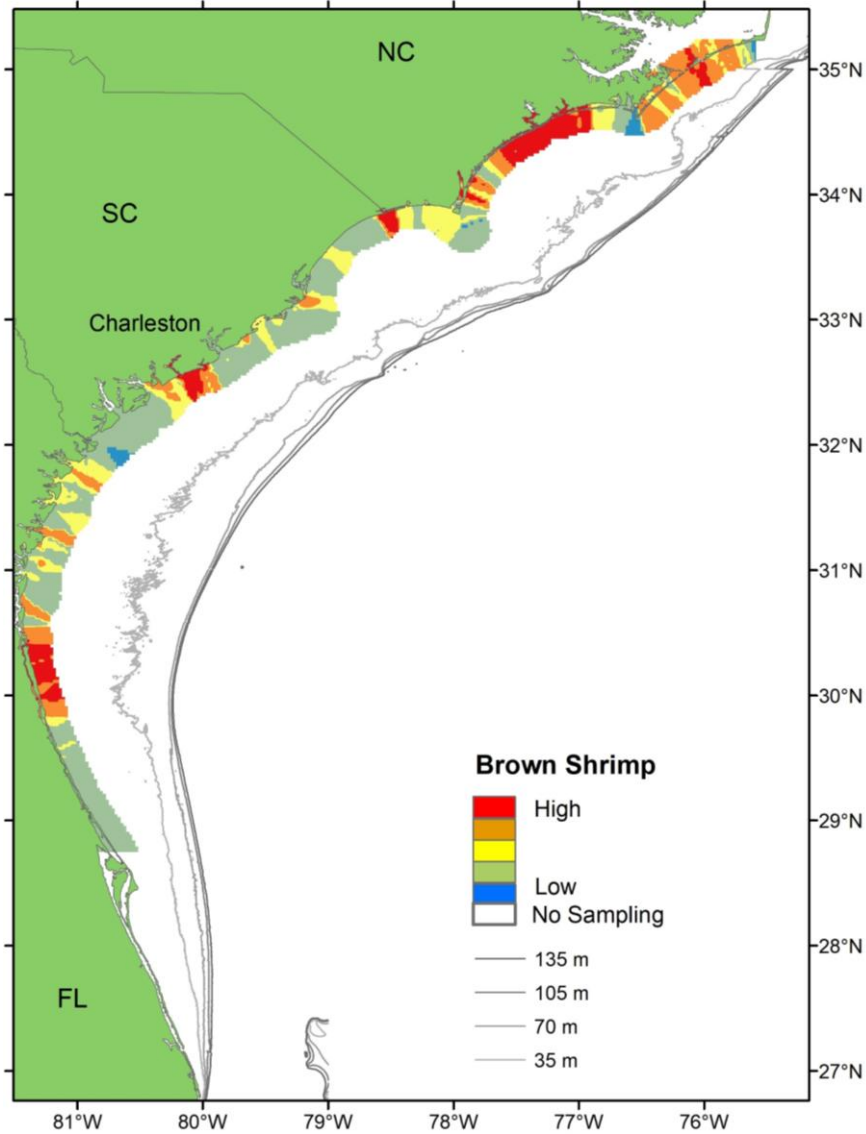
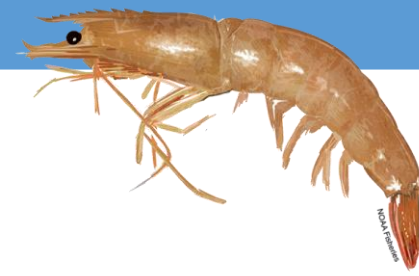
## Trawl Catch



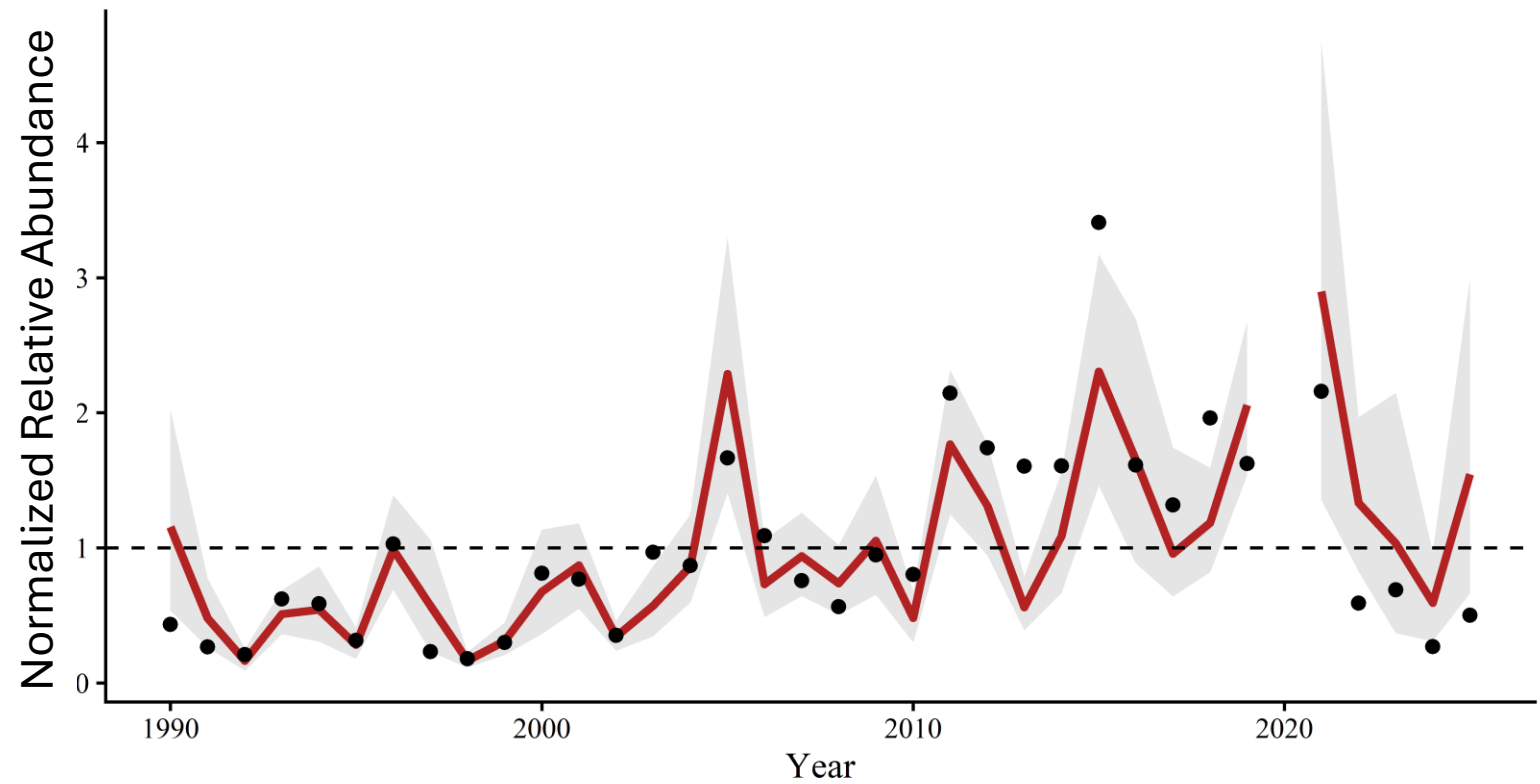
# White Penaeid Shrimp



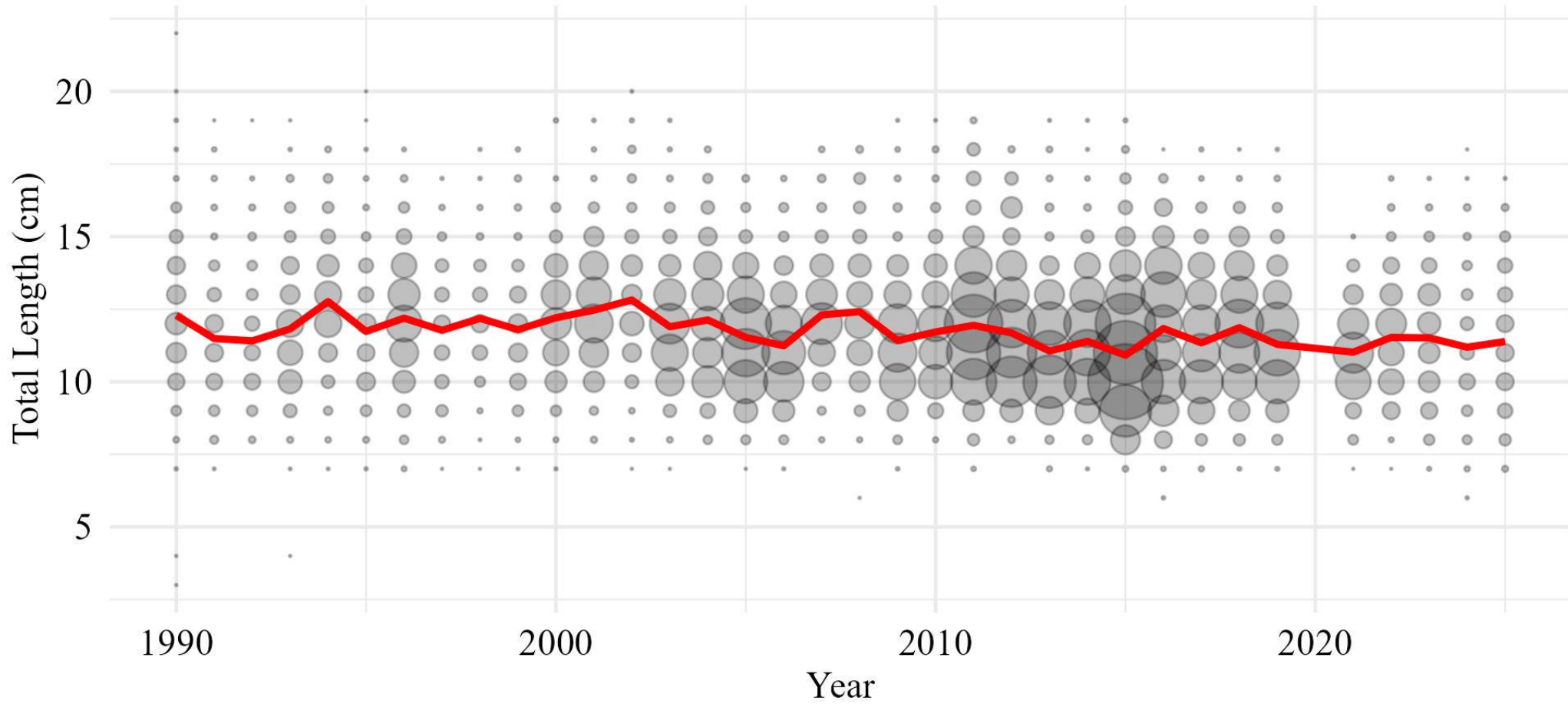
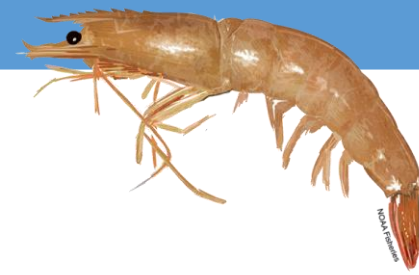
# Brown Penaeid Shrimp



## Trawl Catch

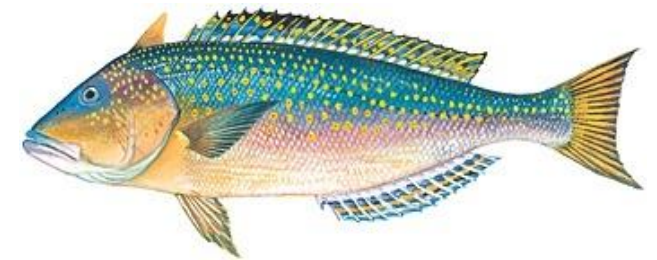
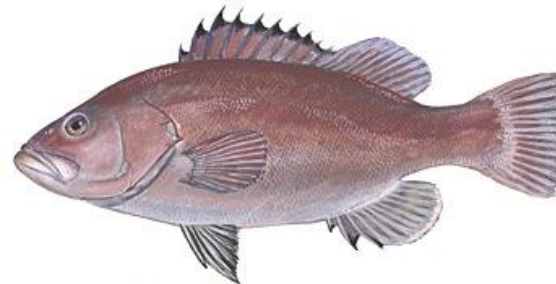


# Brown Penaeid Shrimp



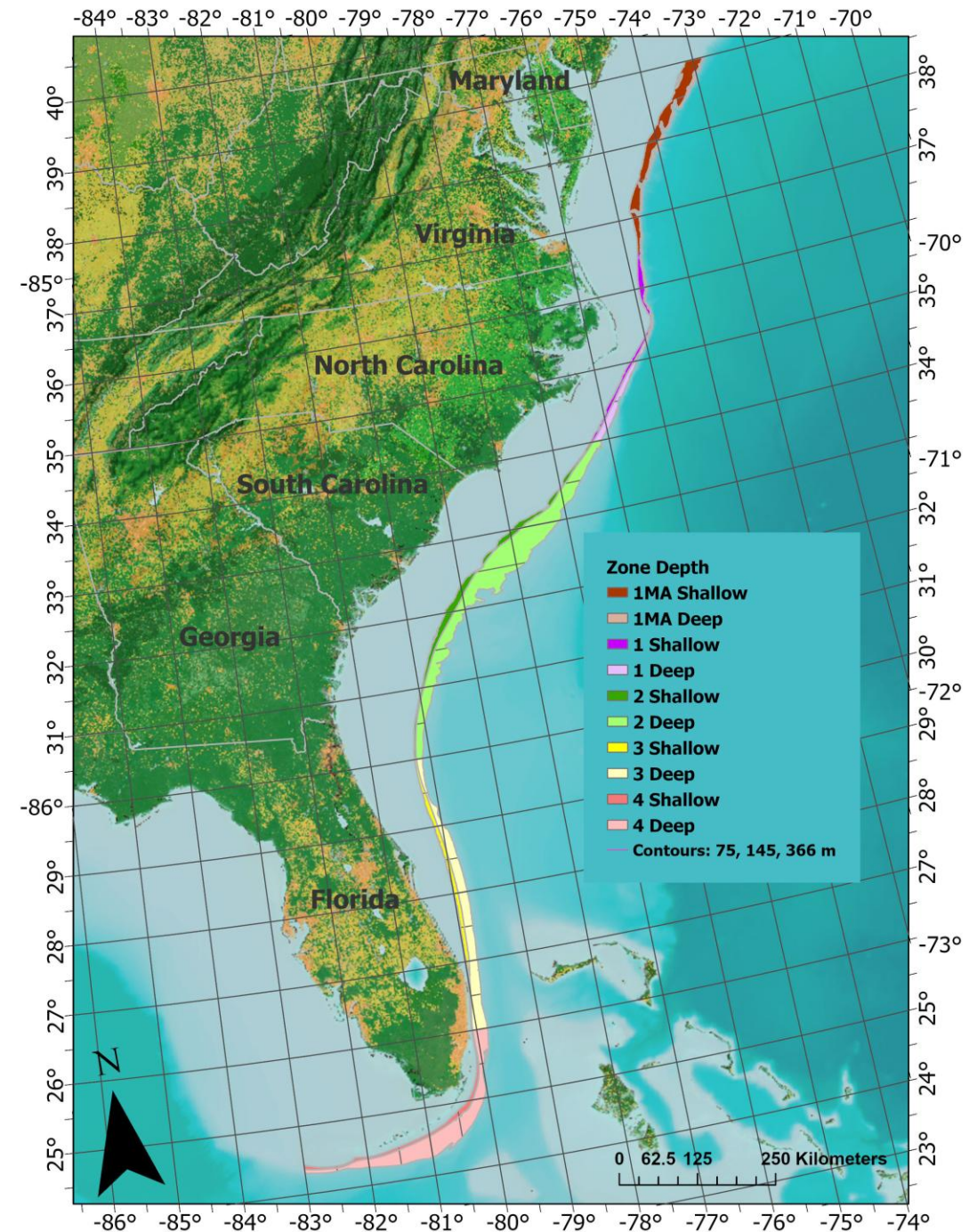
# South Atlantic Deepwater Longline Survey (SADLS)

- 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 fishers each year
- Standardized methods and gear
  - 3-mile mainline with 150 hooks per mile
- Focal Species
  - Blueline Tilefish, Golden Tilefish, and Snowy Grouper



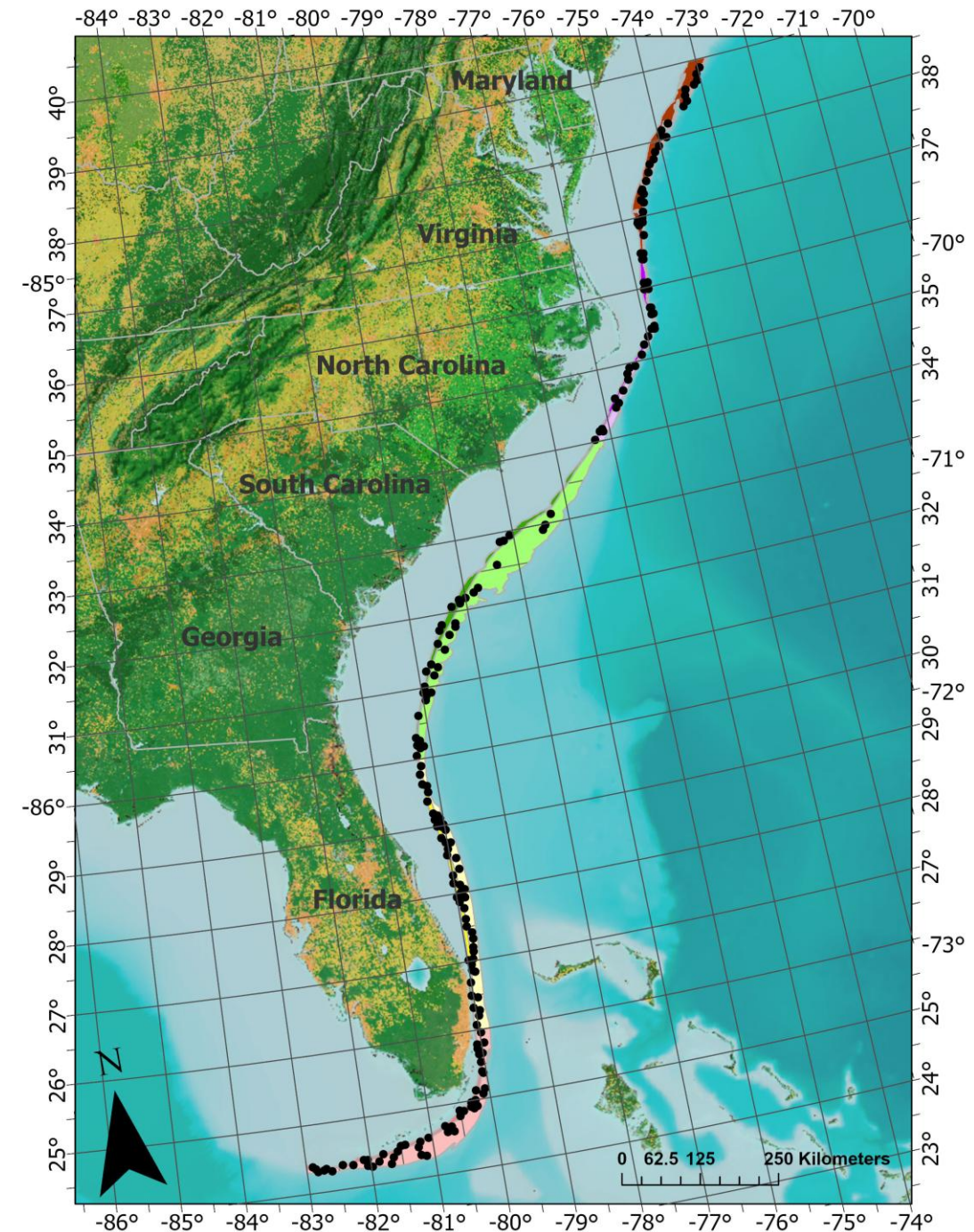
# SADLS Design

- 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

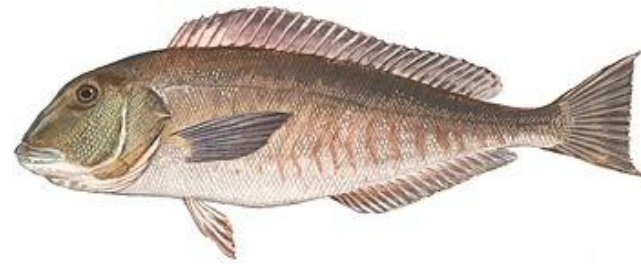


# SADLS 2025 Sampling

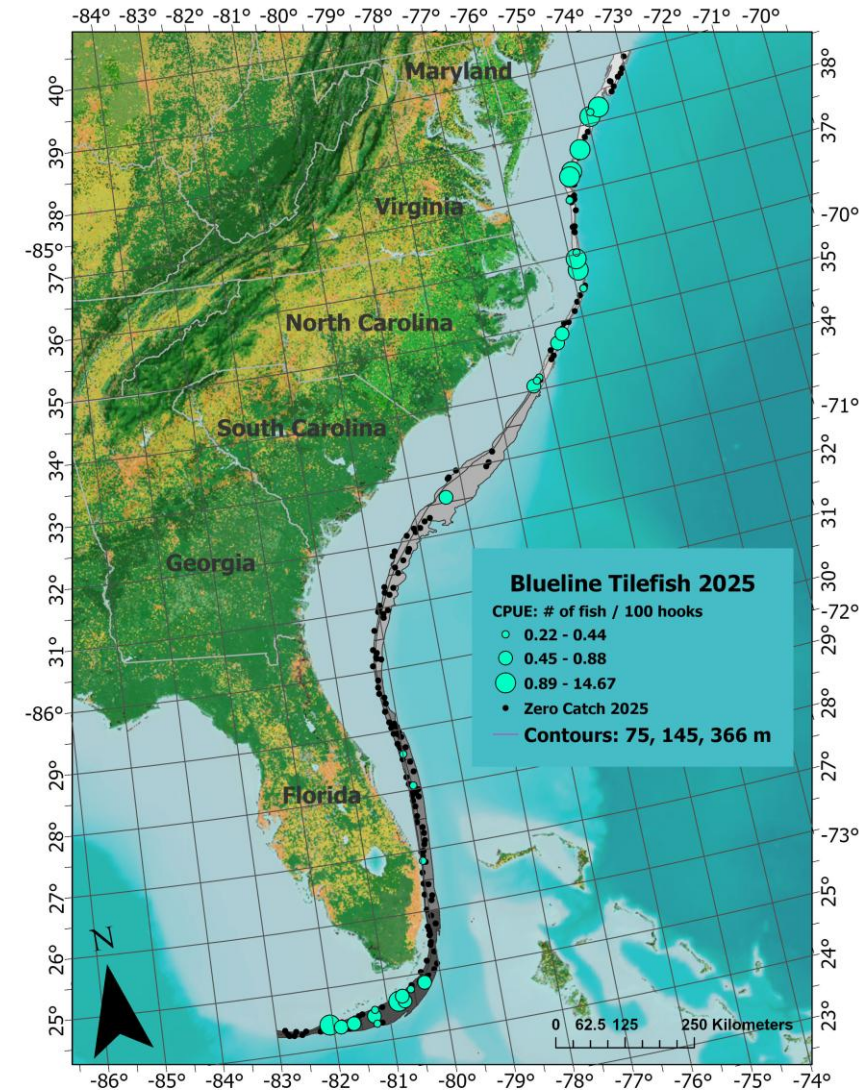
- Started August 25, 2025
- 50 sea days
- 194 of 204 stations completed
  - 30 stations in Mid-Atl (all)
  - 164 stations in S-Atl
    - 10 stations not sampled
- 3,097 individual fish caught
  - 87 species
- 886 individual fish worked up for life history
  - 20 species



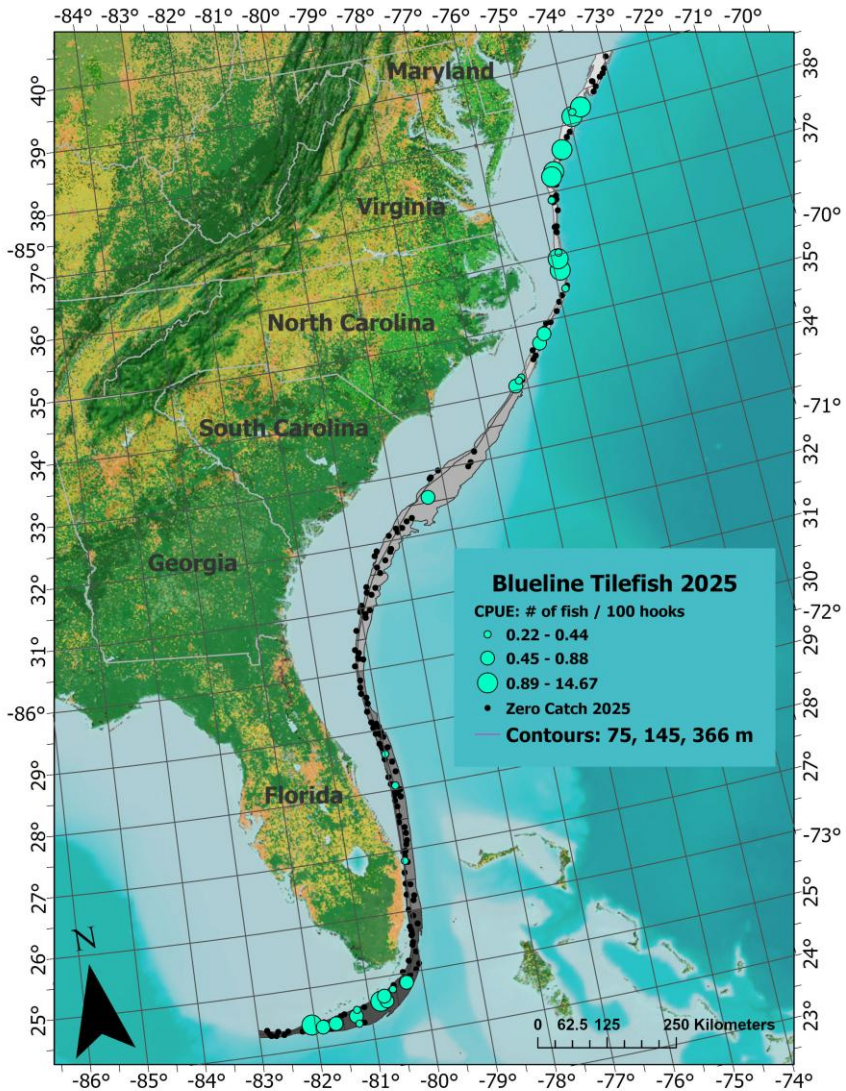
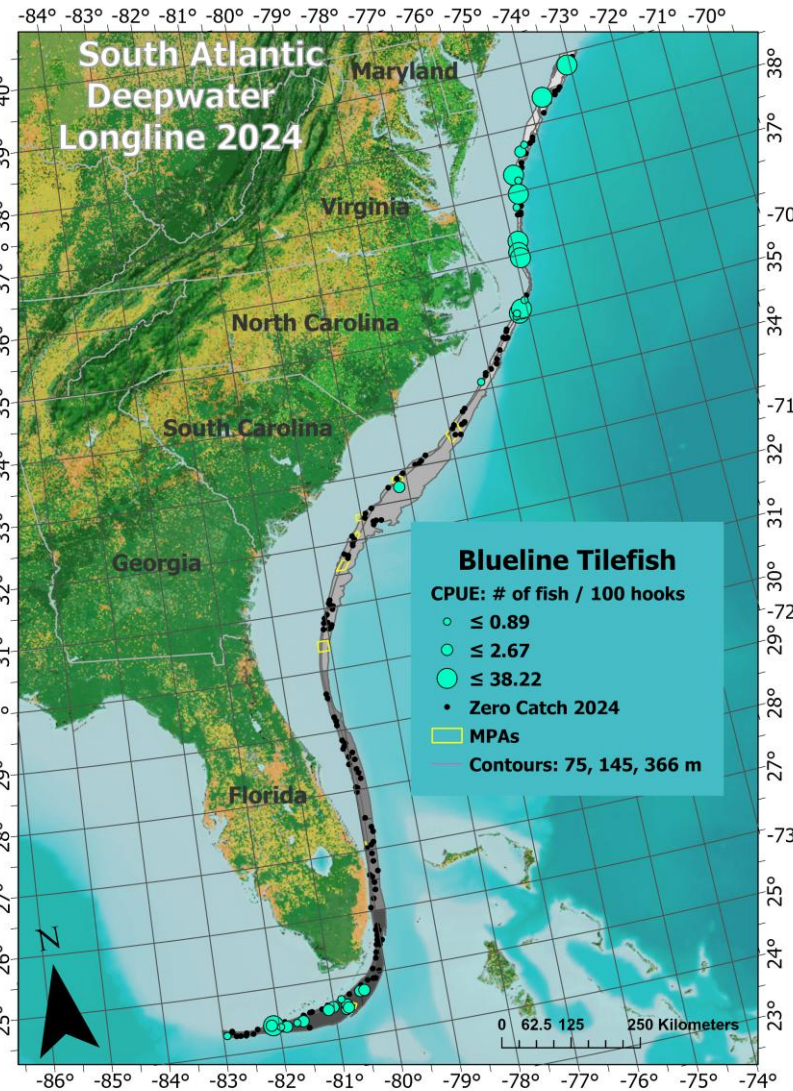
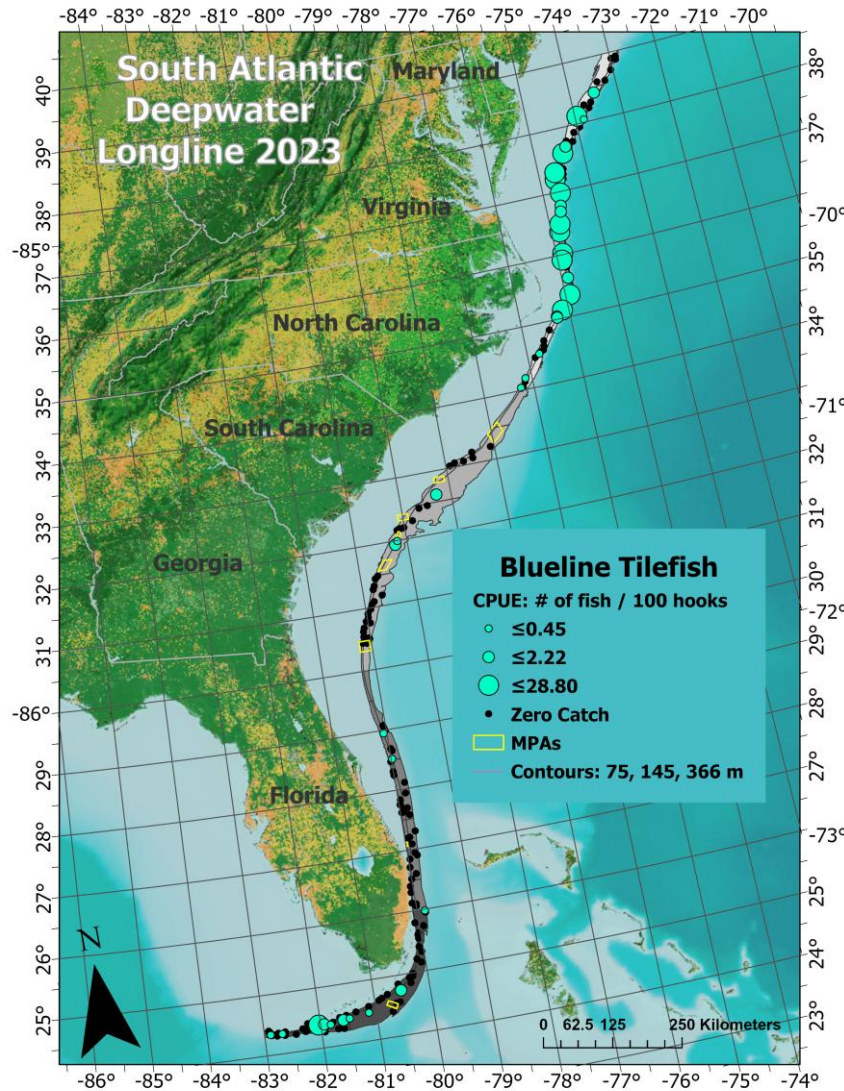
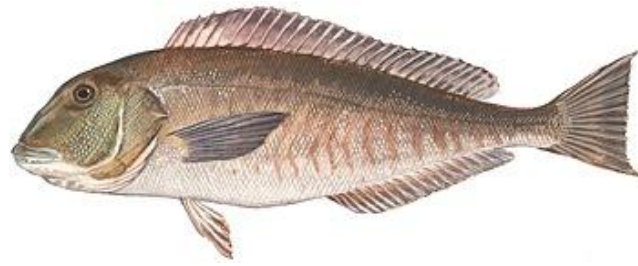
# Blueline Tilefish



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



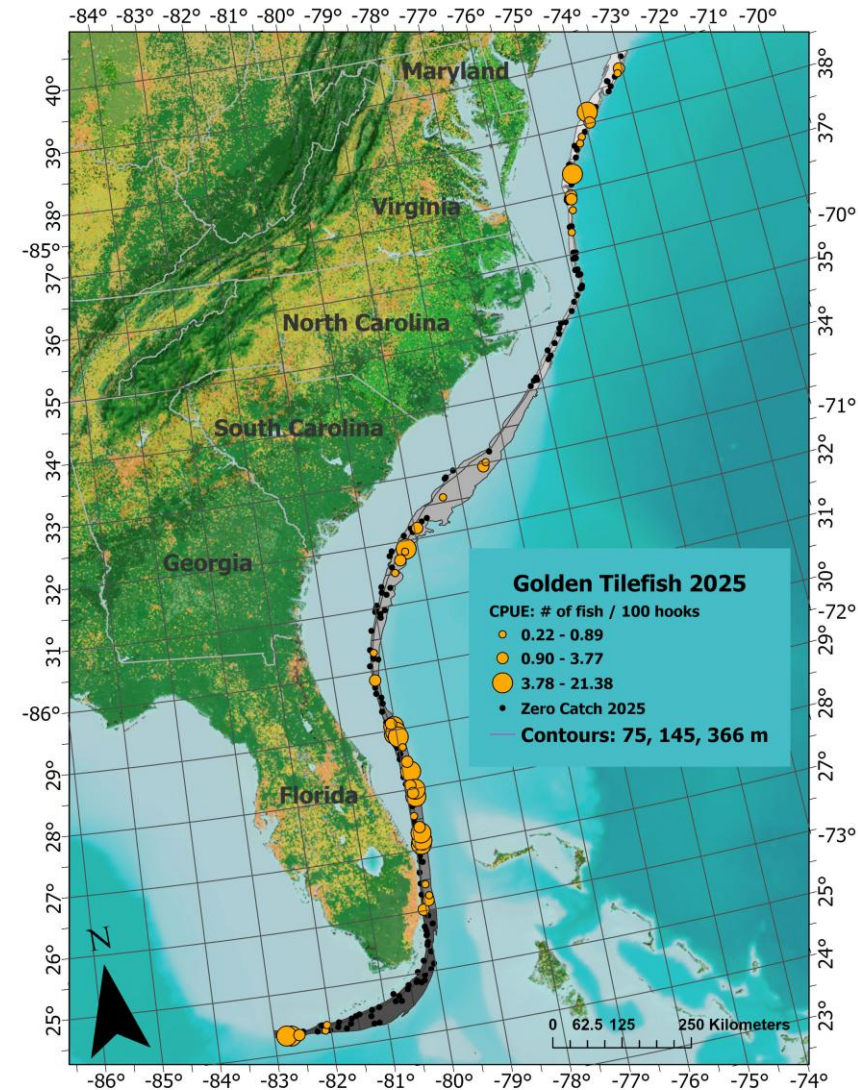
# Blueline Tilefish



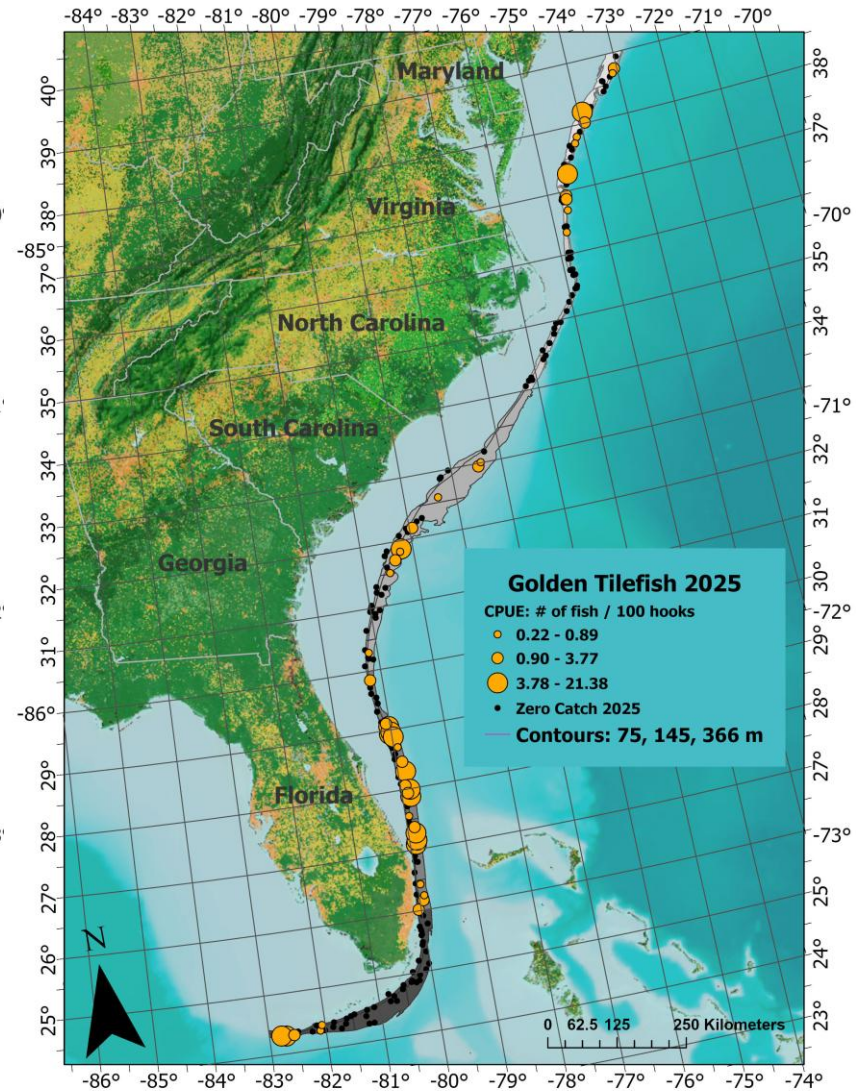
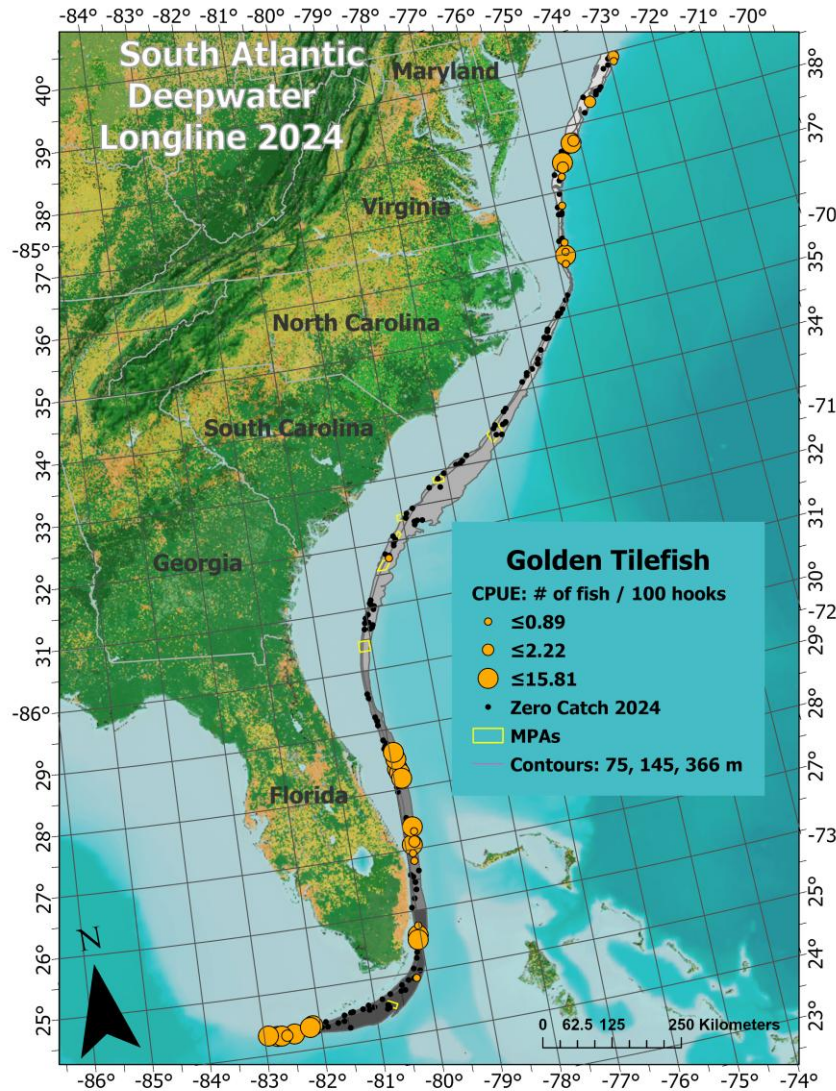
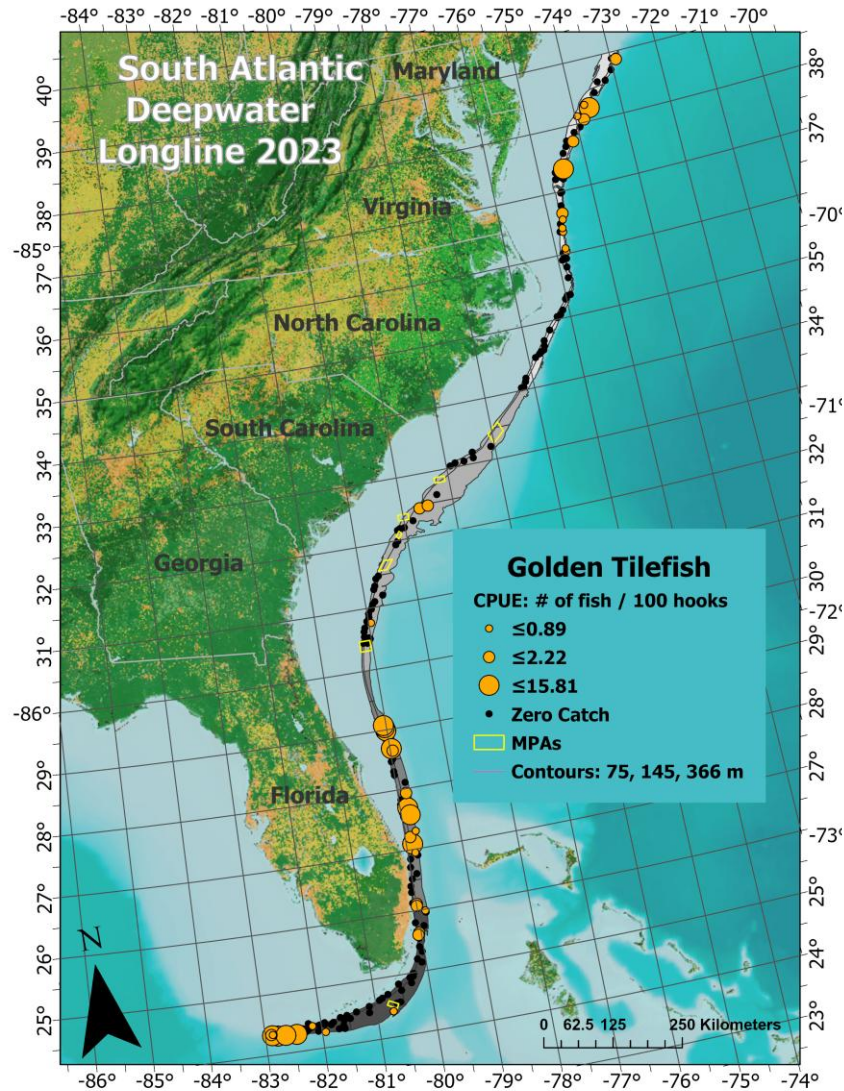
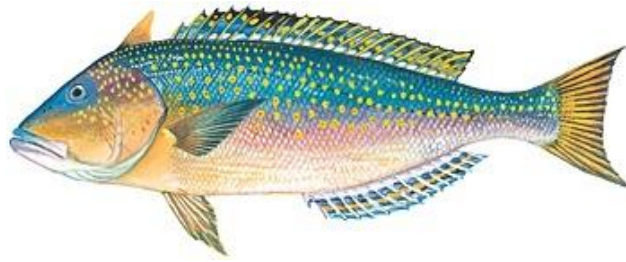
# Golden Tilefish



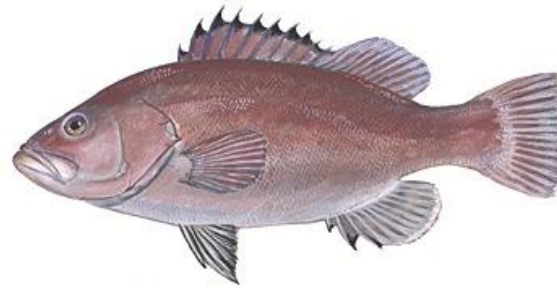
- 757 total fish caught
- Length range
  - 27 – 150 cm
- 545 total fish worked up for life history



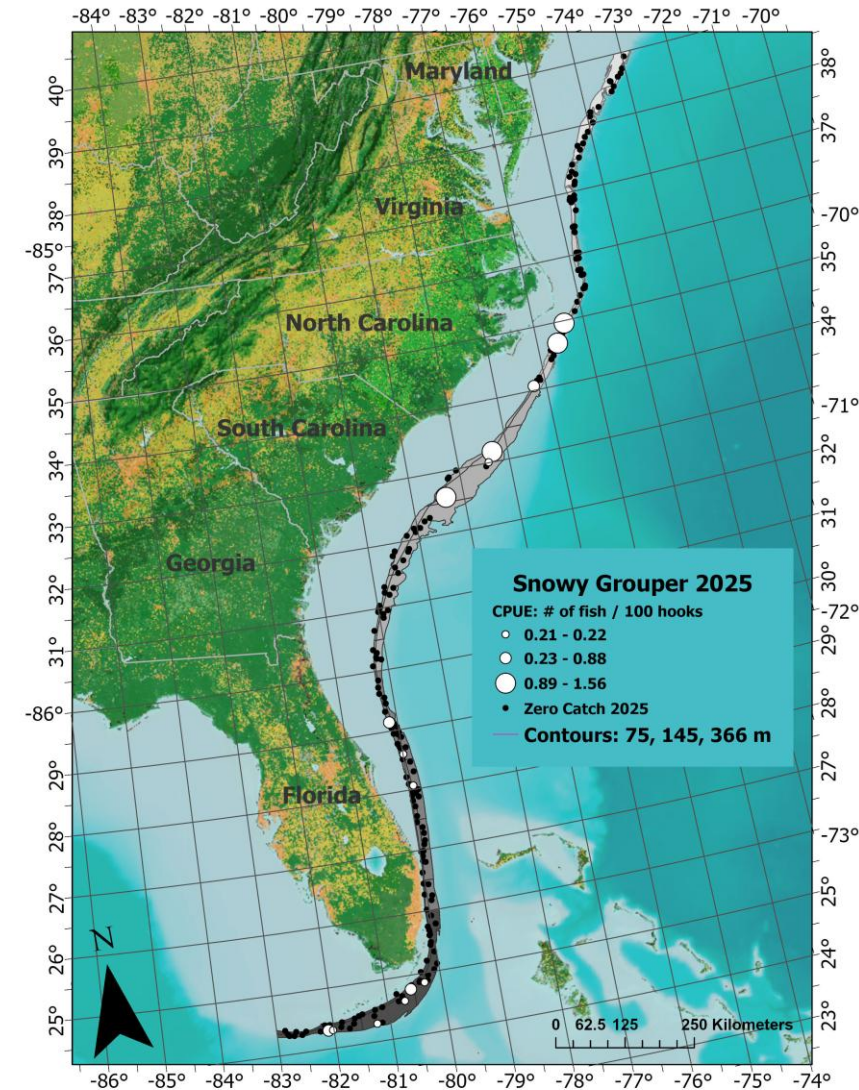
# Golden Tilefish



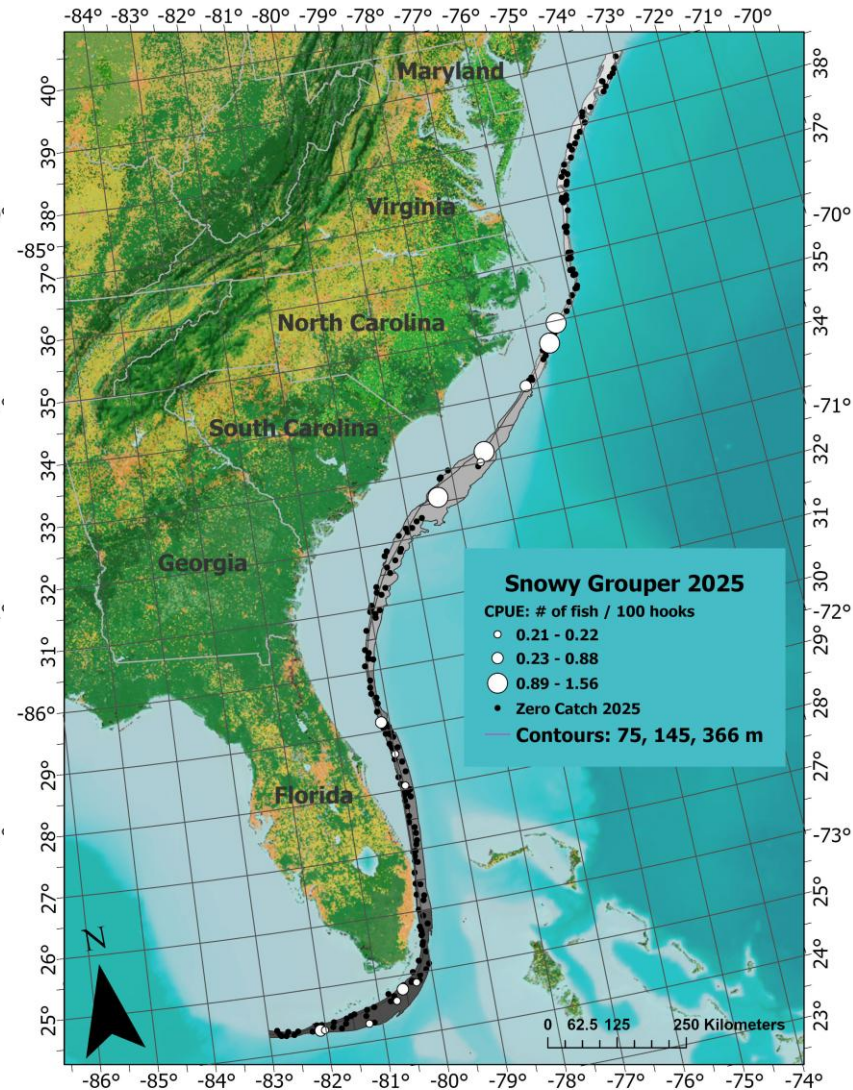
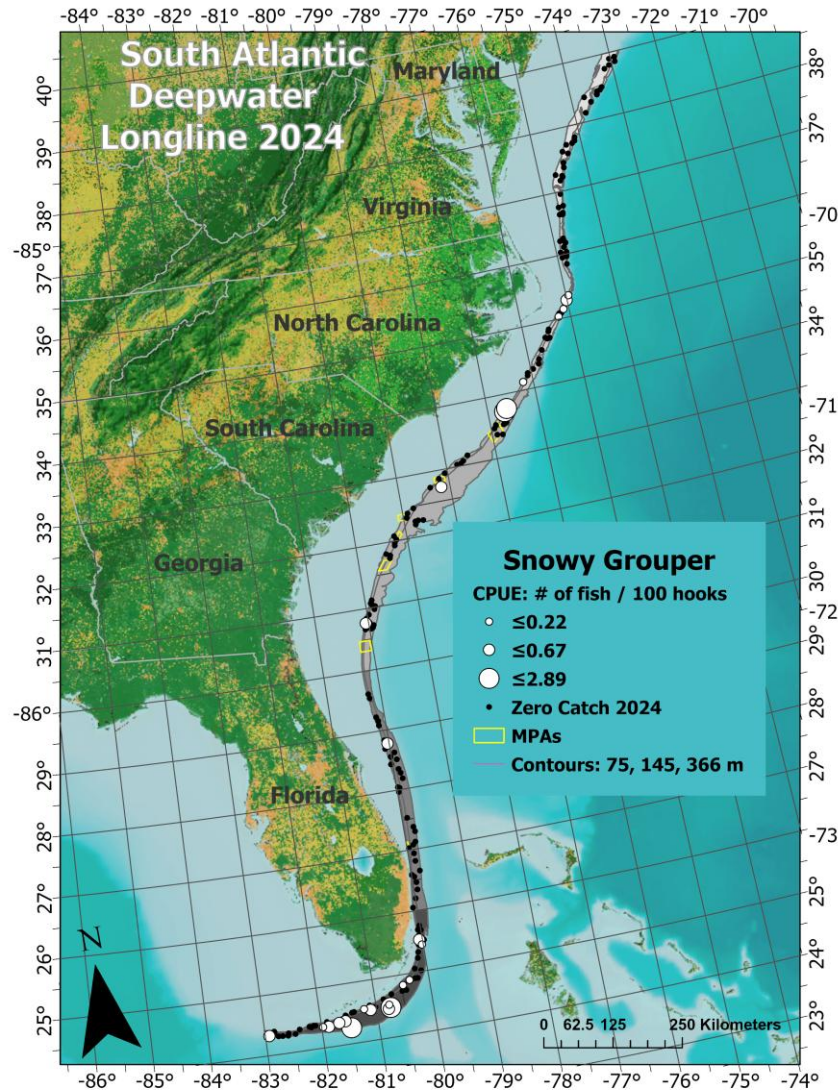
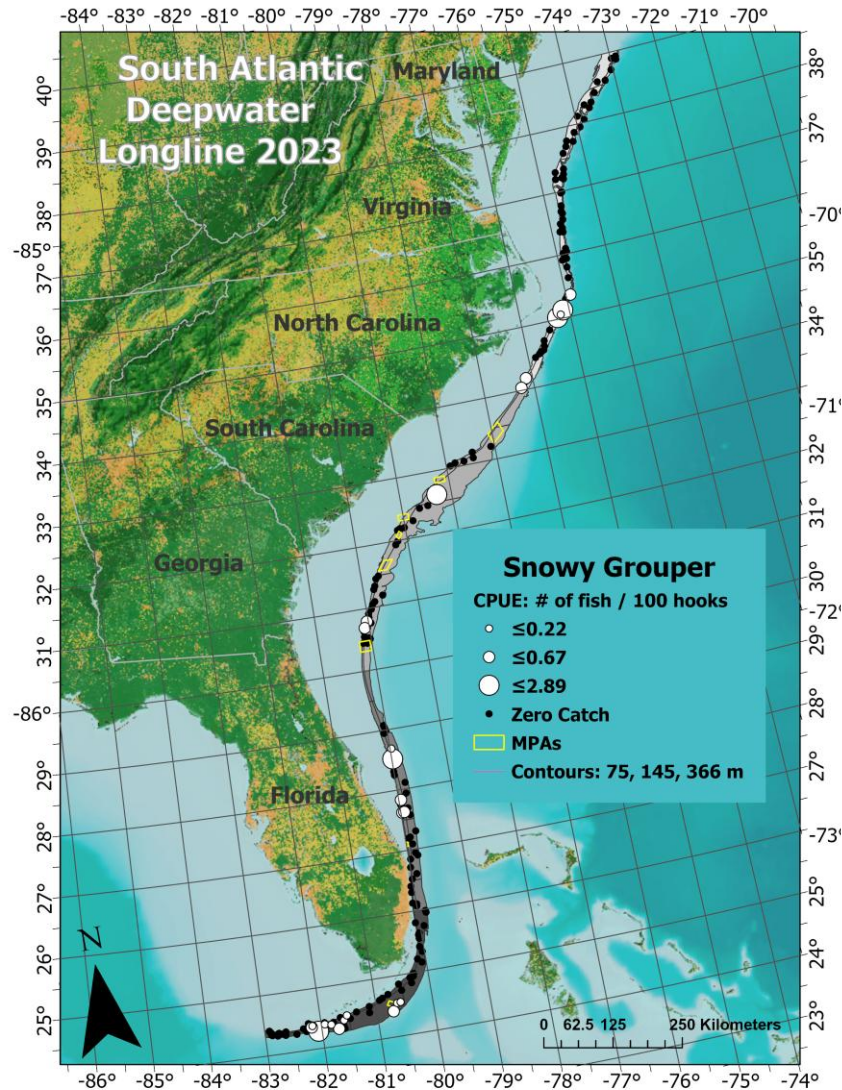
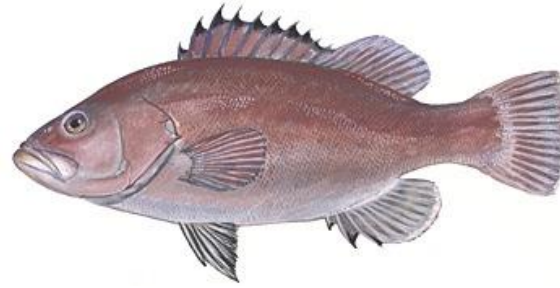
# Snowy Grouper



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



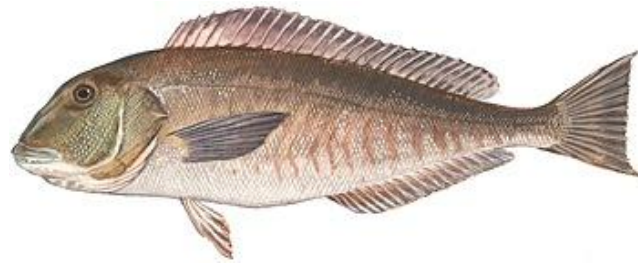
# Snowy Grouper



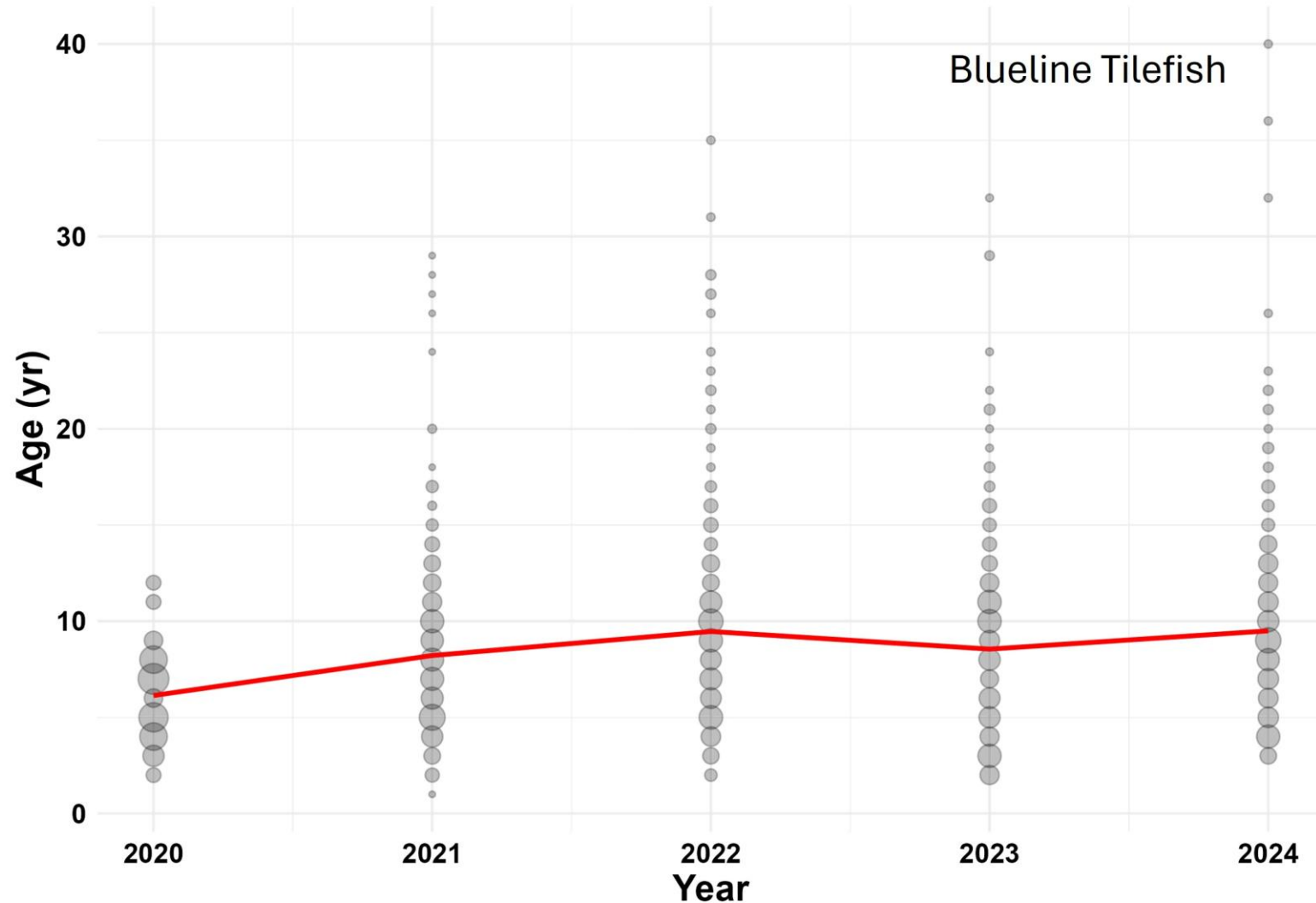
# Life History Summary

- 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

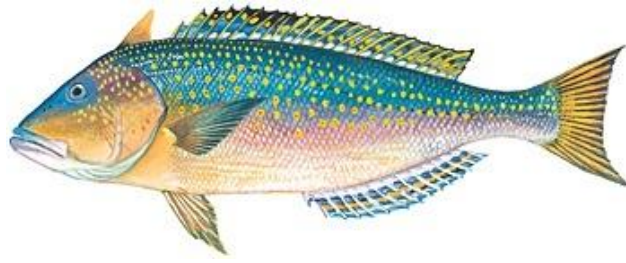
# Blueline Tilefish



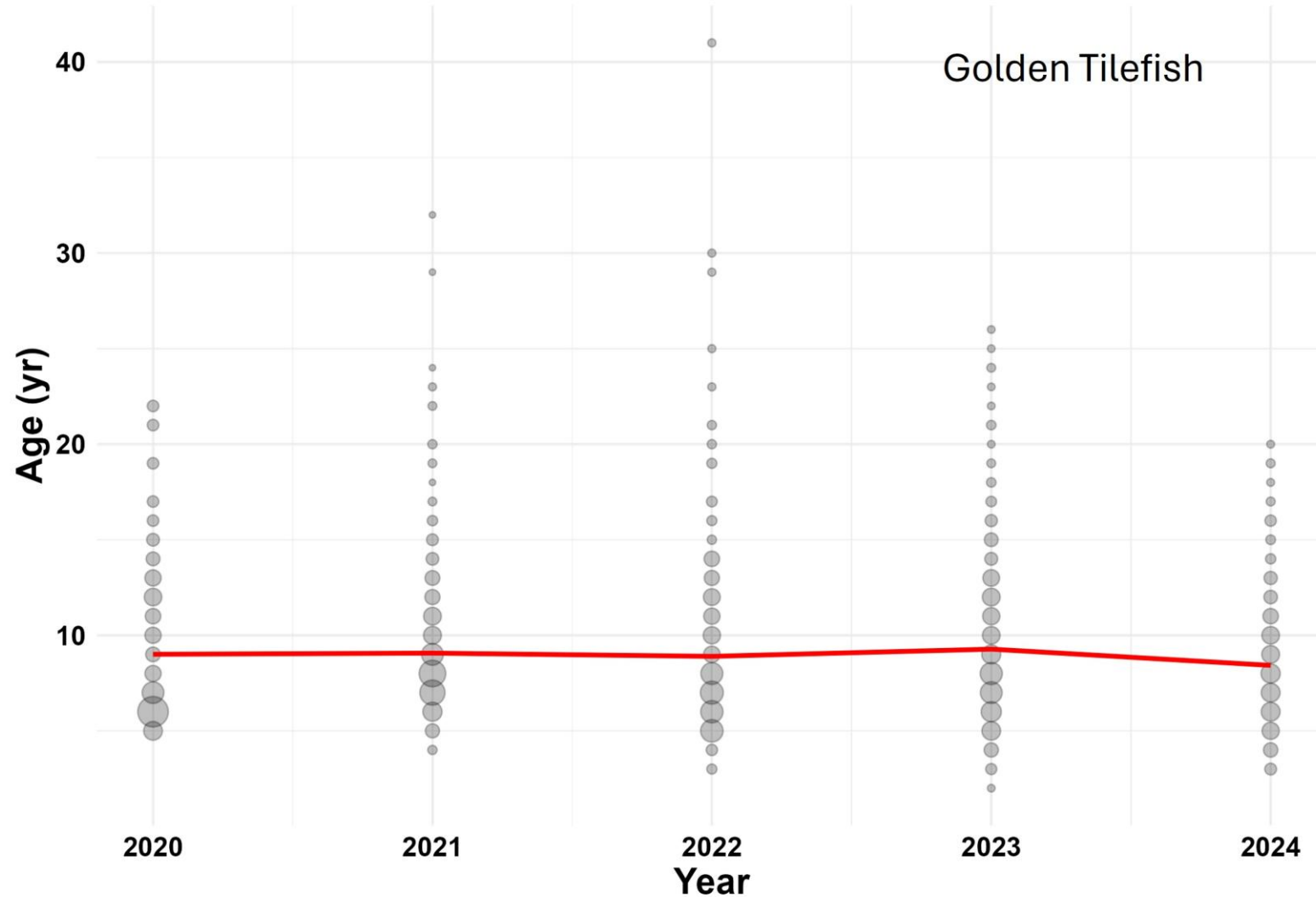
- 1,389 total fish aged
  - 756 from 2020-2022
- Length range
  - 32 – 94 cm
- Age range
  - 1-35 years



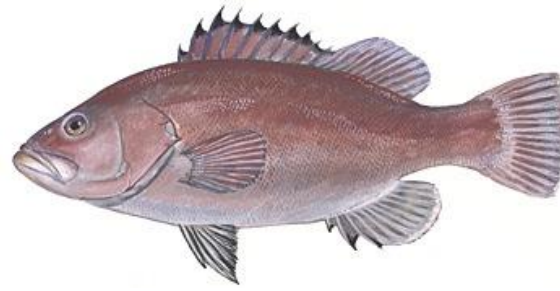
# Golden Tilefish



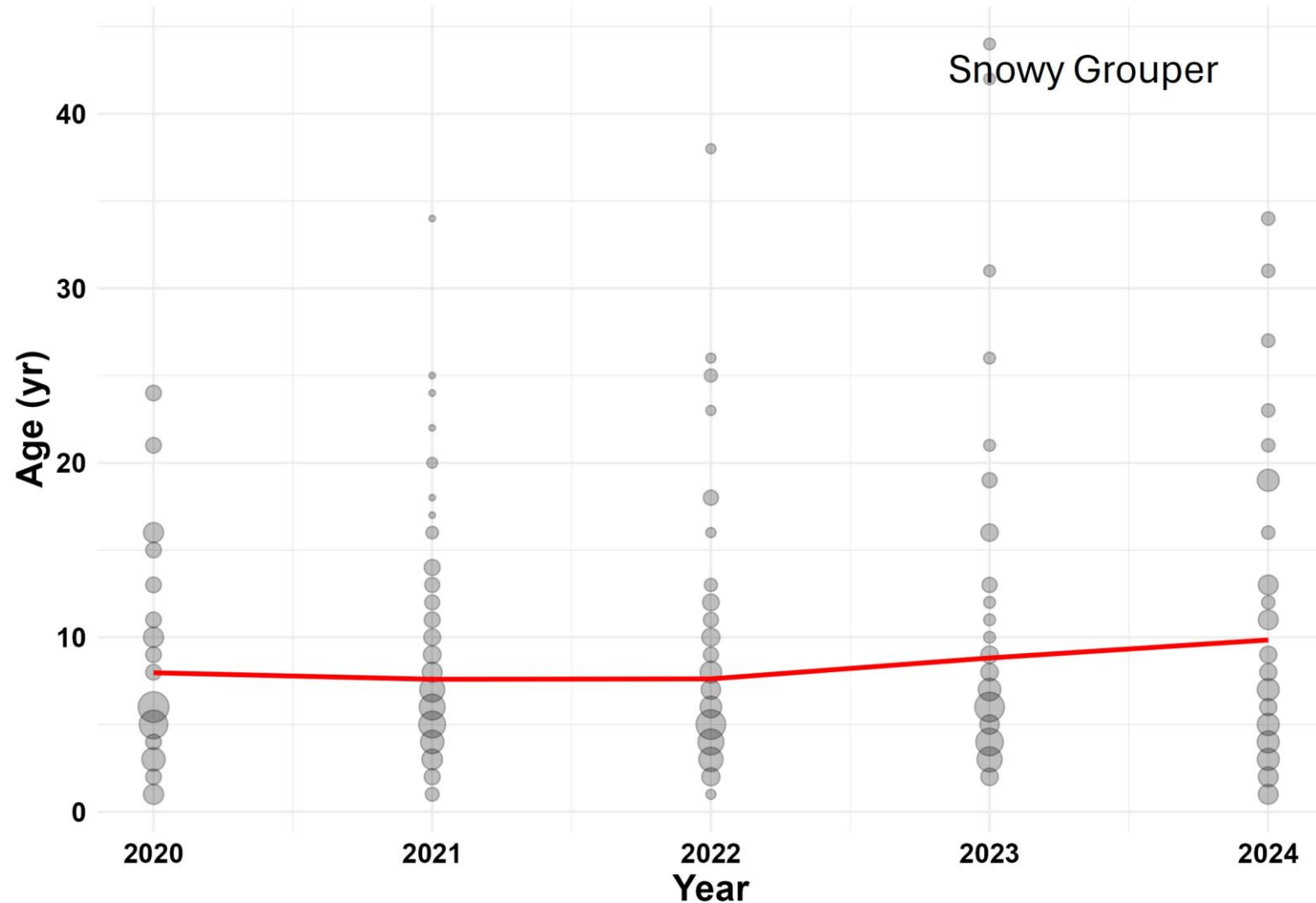
- 2,028 total fish aged
- Length range
  - 30 – 126 cm
- Age range
  - 2-41 years



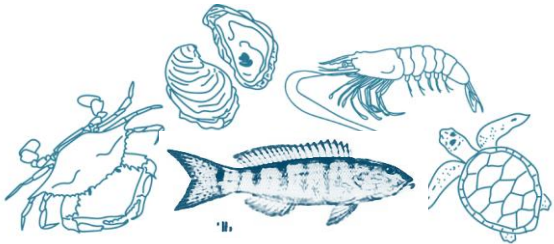
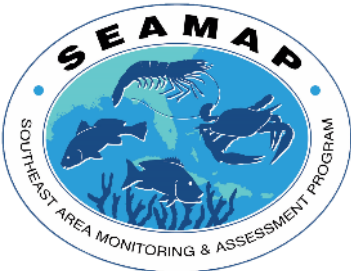
# Snowy Grouper



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



# Questions?



SCDNR Marine Resources Division  
salty since 1972



# Questions?



## R/V Lady Lillian Ops

# Questions?



## R/V Lady Lillian Ops



Questions?

# Questions?



R/V Lady Lillian Ops