

# Southeast Reef Fish Survey & Coastal Trawl Survey

## Relative Abundance Trends through 2023 CVTs and Trawl

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# Presentation Overview

## SERFS

- Survey Design

- Trap and Video Abundance Indices through 2023 for Selected Species

- Length & Distribution from Trap Catches for Selected Species

## CTS

- Survey Design

- Trawl Abundance Indices through 2023 for Selected Species

# Relative Abundance Overview

## Caveats



- Not an update of stock status
- Constraints, stratification, units, and models may be different from those used in (SEDAR) stock assessments
- May not have been reviewed in a SEDAR or other assessment framework



# Southeast Reef Fish Survey (SERFS)

Current Funding & Sampling:  
MARMAP + SEAMAP-SA + SEFIS

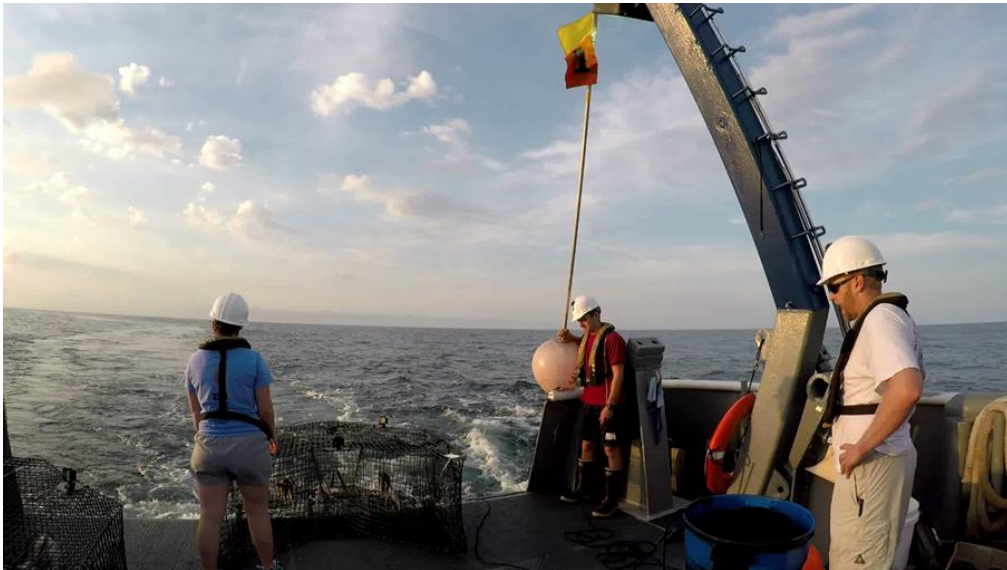
Historical Funding & Sampling:  
MARMAP

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



# Chevron Video Trap (CVT) Sampling

- Target low to medium relief, hard-bottom habitats
- Depths ~15-110 m
- April - October
- Trap used consistently and standardized since 1990
- Baited with menhaden, soak time  $\approx$ 90 minutes
- Since 2011: all traps have 2 video cameras



# CVT Sampling (cont'd)

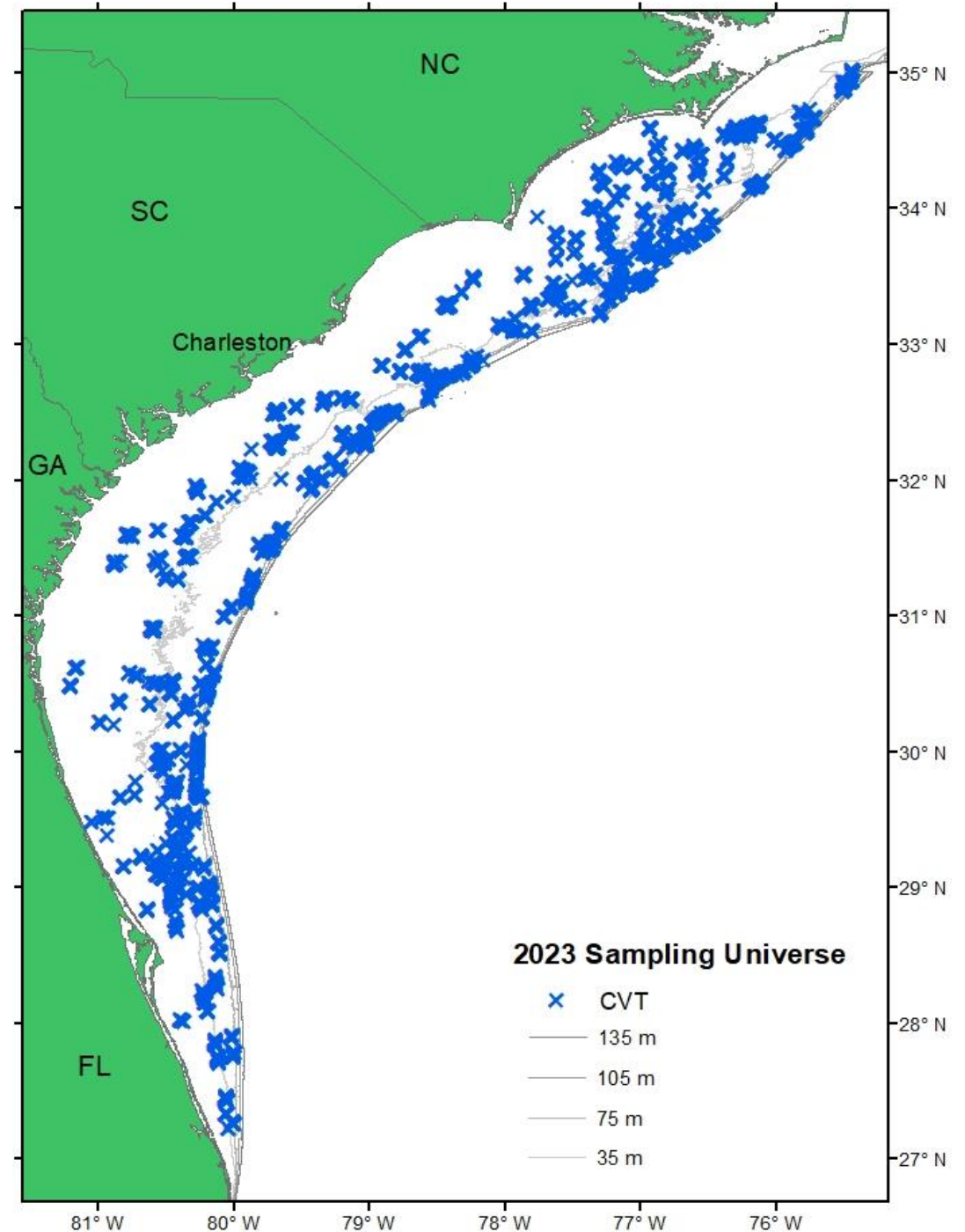
FL - NC

Simple, random selection from universe

Common-Sense distribution of effort

CVT Universe

- ~ 4,300 trap sampling stations
- Simple, random selection
- ~ 1,500 targeted in 2023



# CVT Sampling (cont'd)

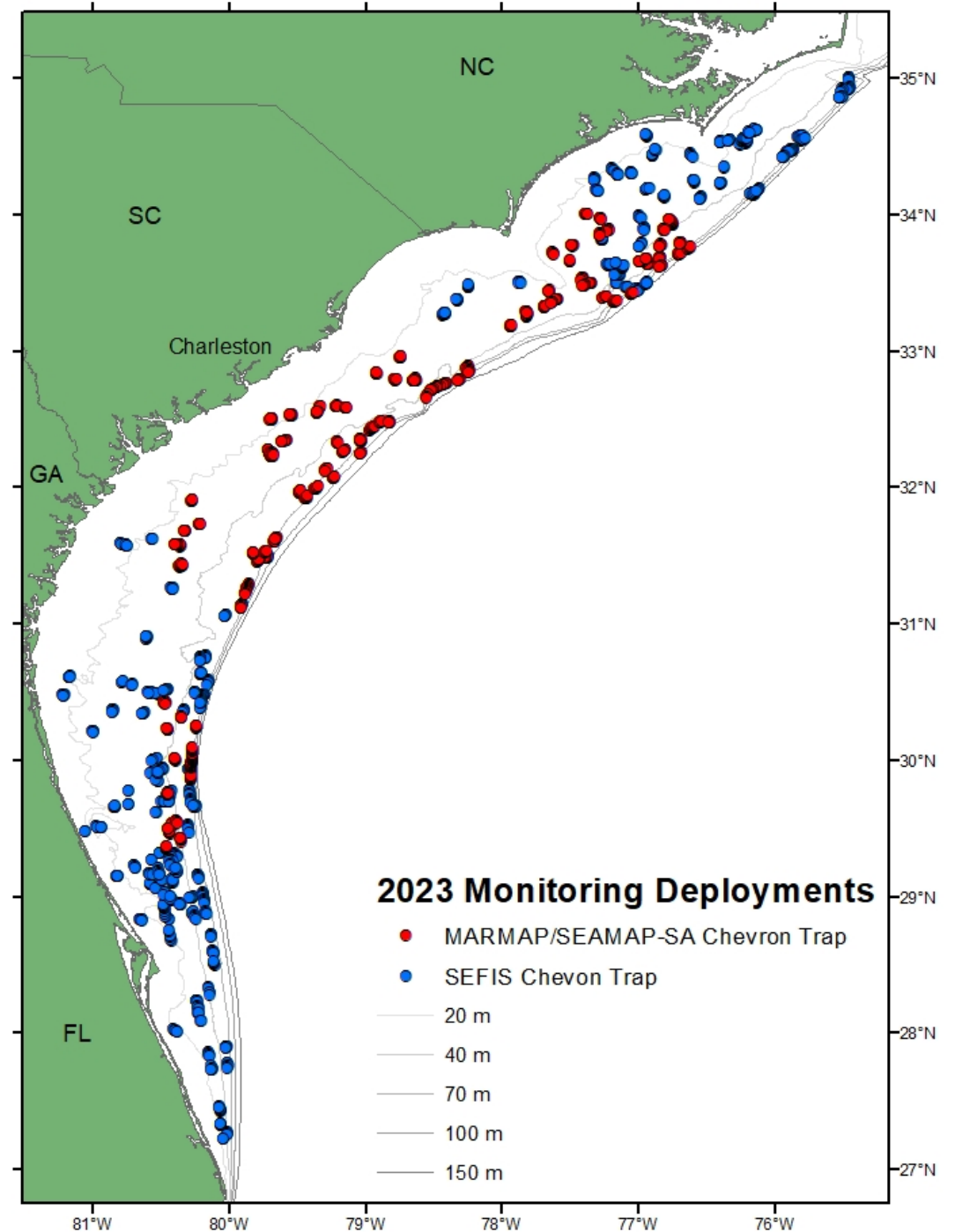
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CVT Universe

- ~ 4,300 trap sampling stations
- Simple, random selection
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# Overview of CVT Relative Abundance

- Catch index (1990-2023)
- Video index (2011-2023)
- No sampling in 2020 (COVID-19)
- Standardized using Zero-Inflated Negative Binomial model (ZINB)

Most appropriate method, reduces uncertainty

## Catch:

- Number of fish
- Trap soak time

## Video:

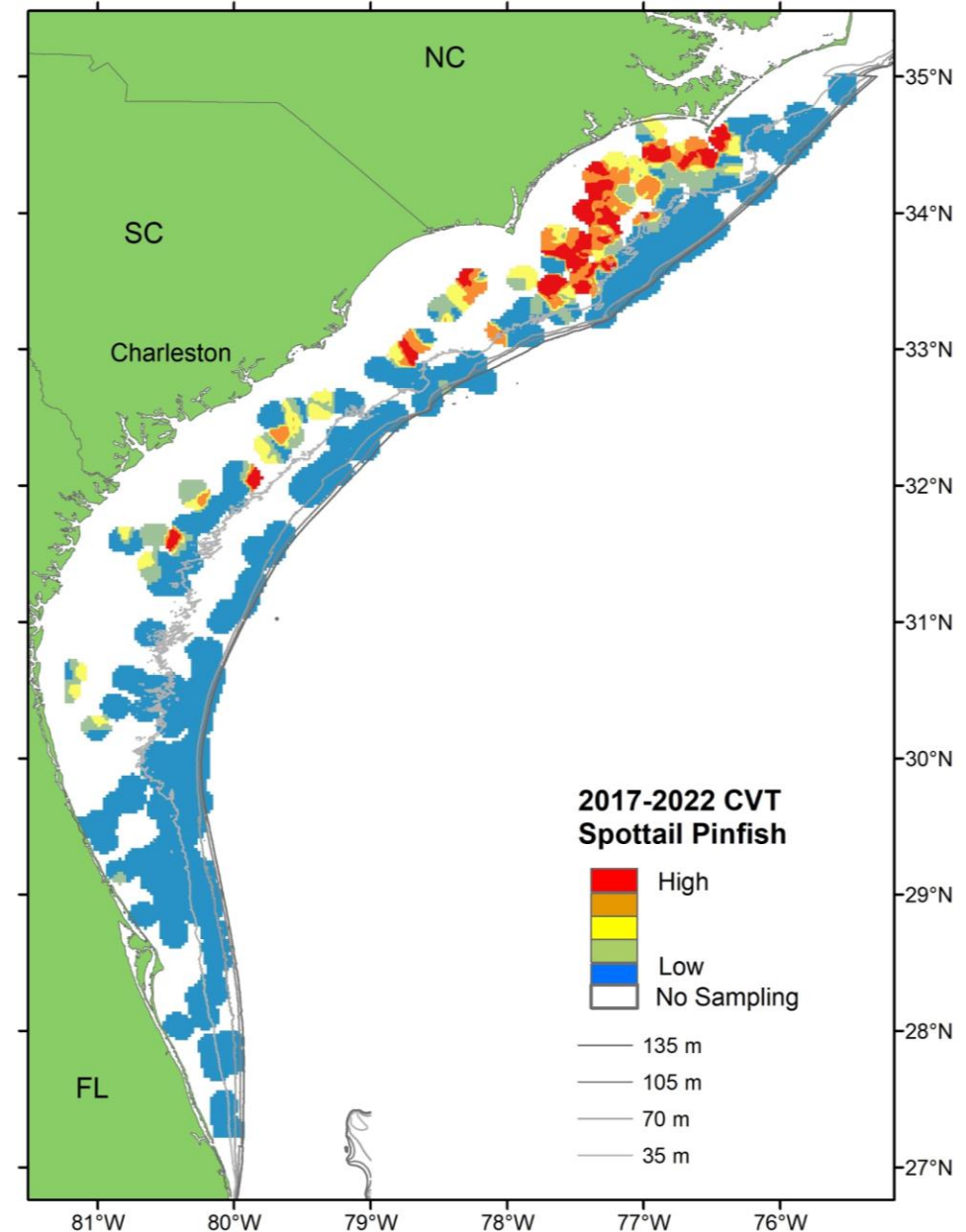
- SumCount
- 10 min after trap lands on bottom
- One snapshot every 30 s for 20 min



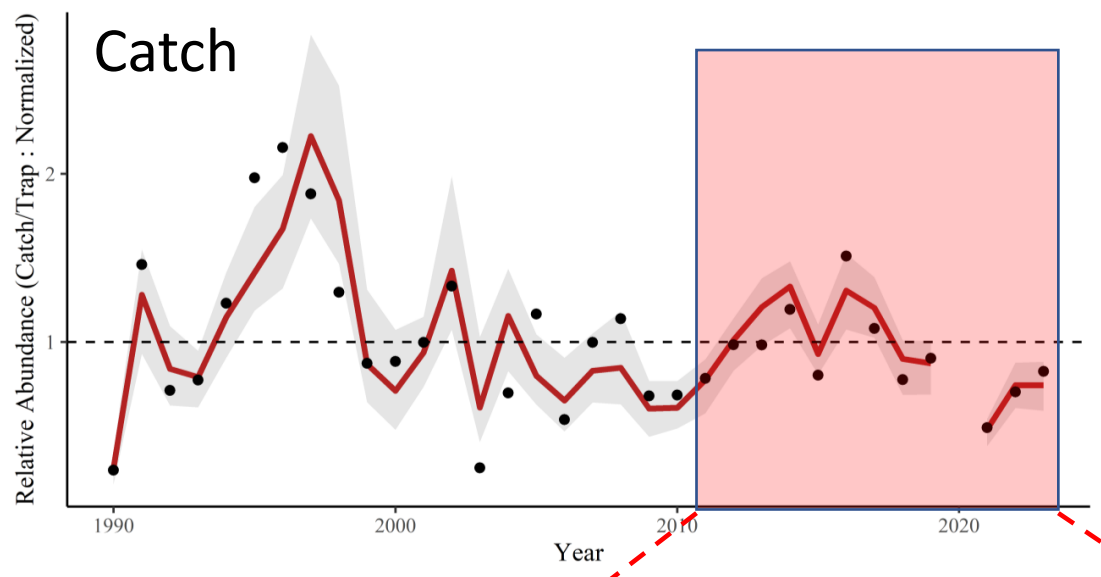


# SERFS Distributions- Example

- Only CVT catch
- Catch abundance in quintiles (5 bins)
  - # fish / trap hour
- 5 most recent years: 2018-2019 & 2021-2023
- Cooler colors => lower nominal abundance
- Warmer colors => higher nominal abundance
- White => no sampling



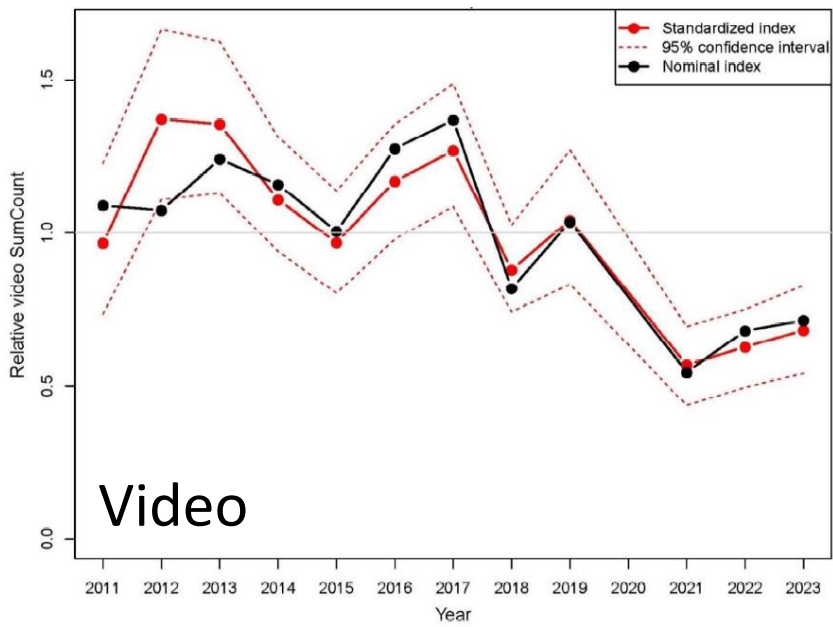
# SERFS Indices- Example



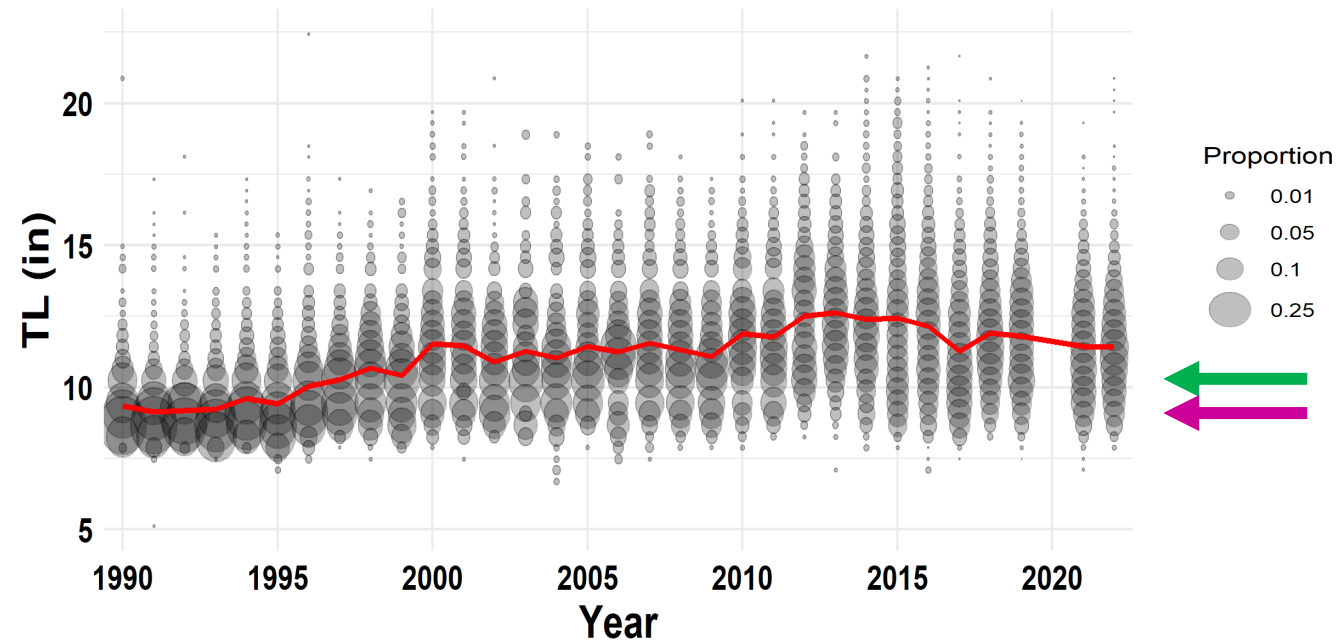
Normalized to long-term average  
(dashed or solid line at 1)

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

Gear	ZINB Index	95% C.I.	Nominal Values
CHV	Red Line	Gray Shading	Black Dots



# SERFS Length Compositions- Example

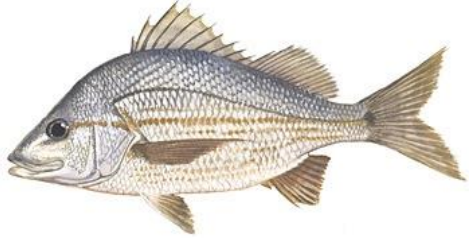


- Catch Only
- Maximum (Pinched) Total Length (in)
- 1-in Length Bins
- Bubble size = # fish in length bin / # fish measured in a year
- Red Line = Average TL
- Green Arrow = Commercial MSL
- Pink Arrow = TL at 50% Maturity, Female
- "Missing" length bins in some graphs are result of converting between FL & TL and rounding



# Selected Species

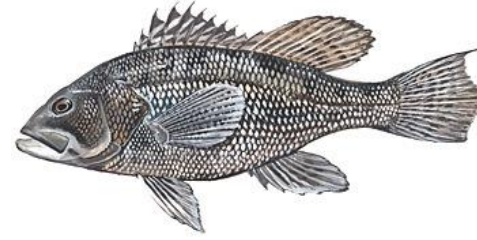
## 2023 CVT Catch Rankings



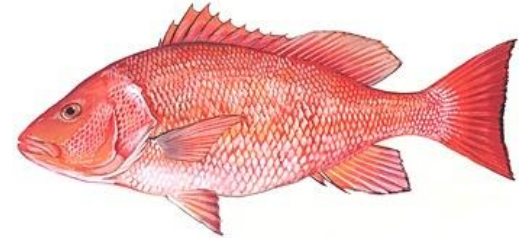
1. Tomtate\*



2. Vermilion Snapper



3. Black Sea Bass



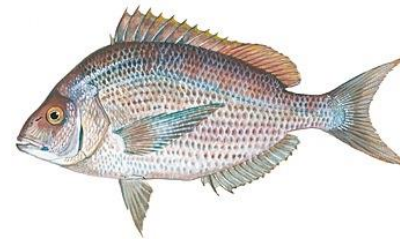
4. Red Snapper



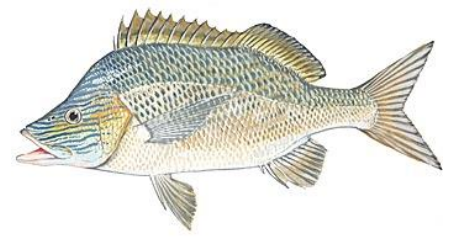
5. Gray Triggerfish



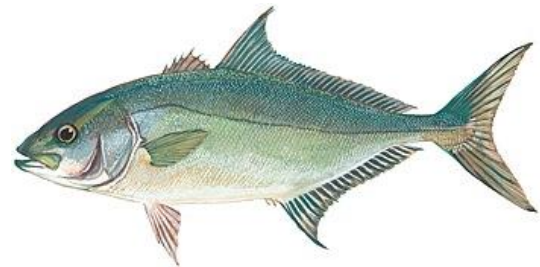
6. Red Porgy



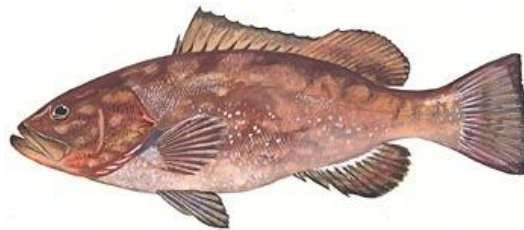
7. *Stenotomus* spp.\*



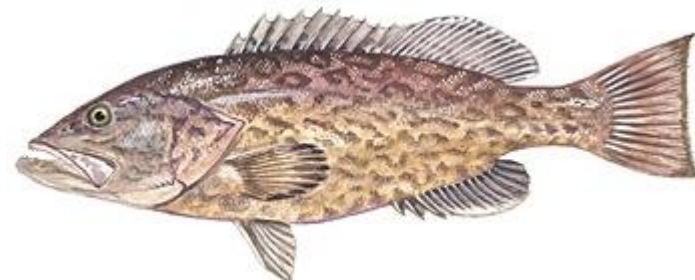
8. White Grunt



16. Almaco Jack



17. Red Grouper



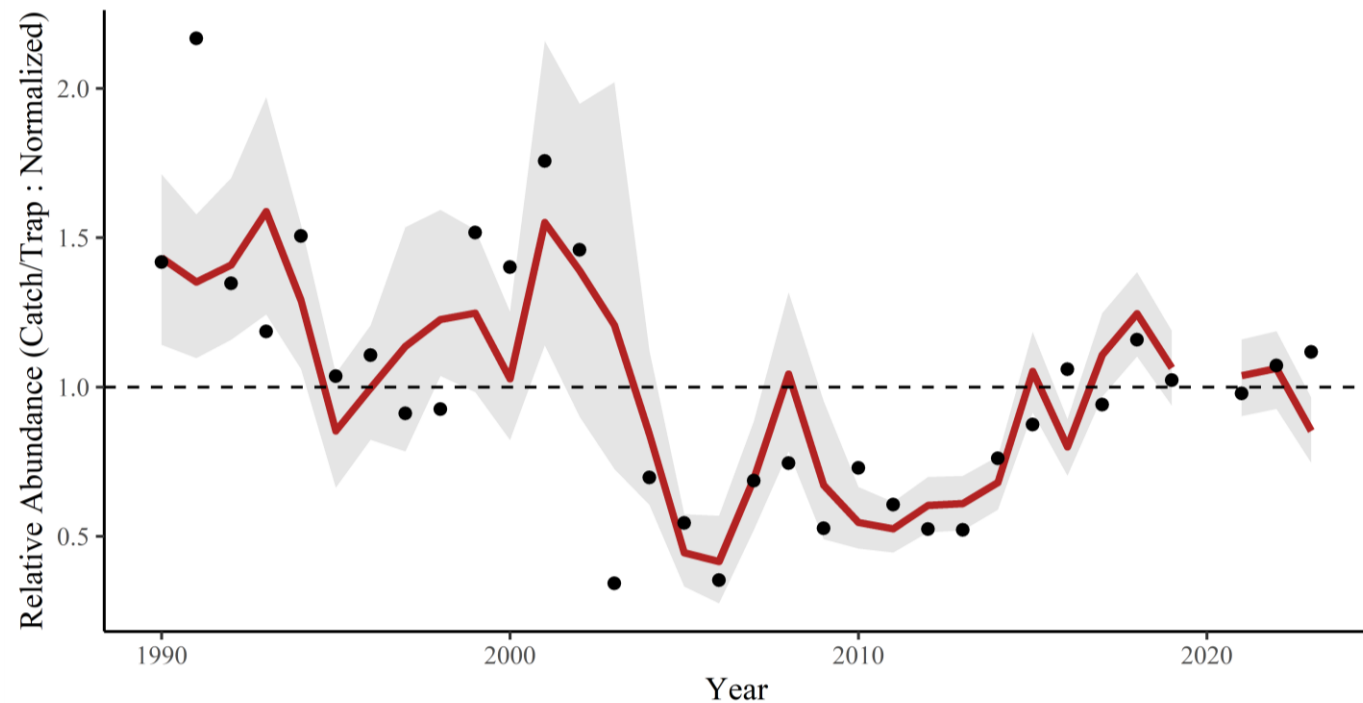
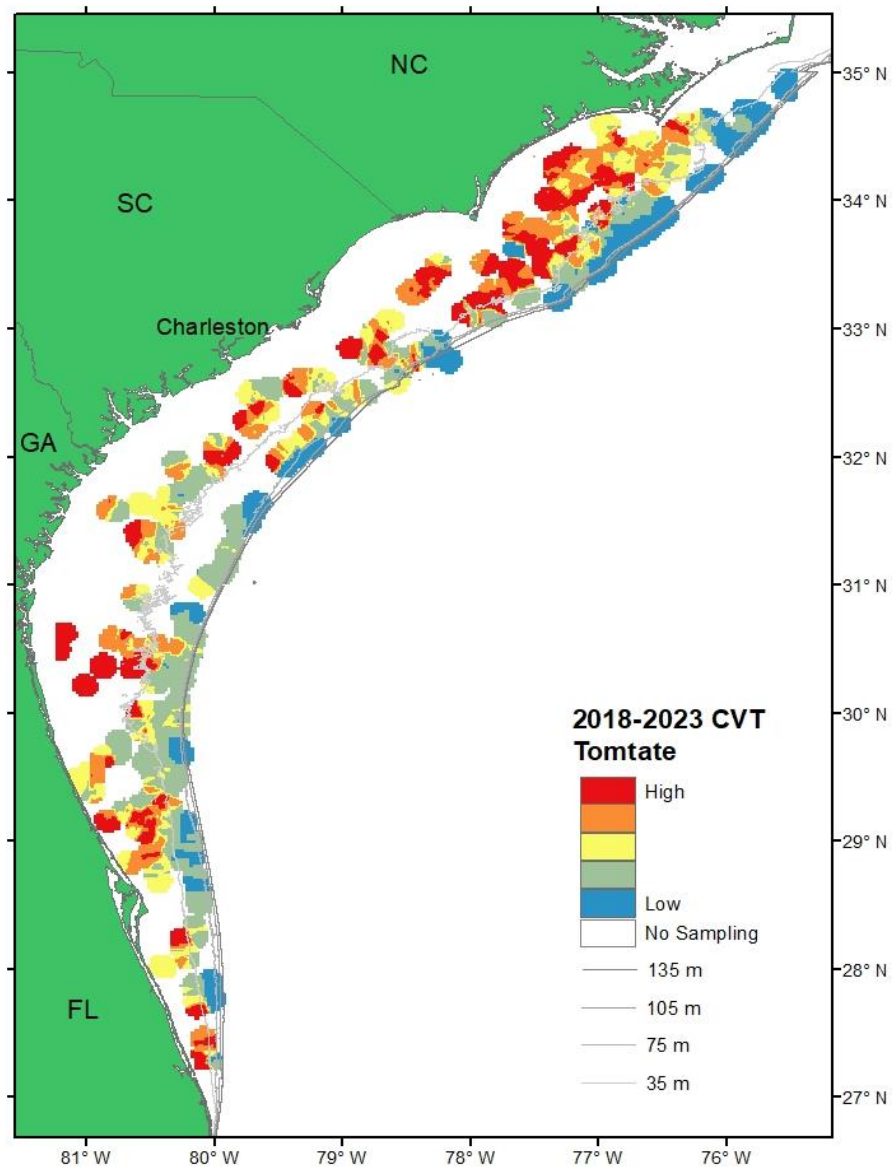
21. Gag



23. Scamp

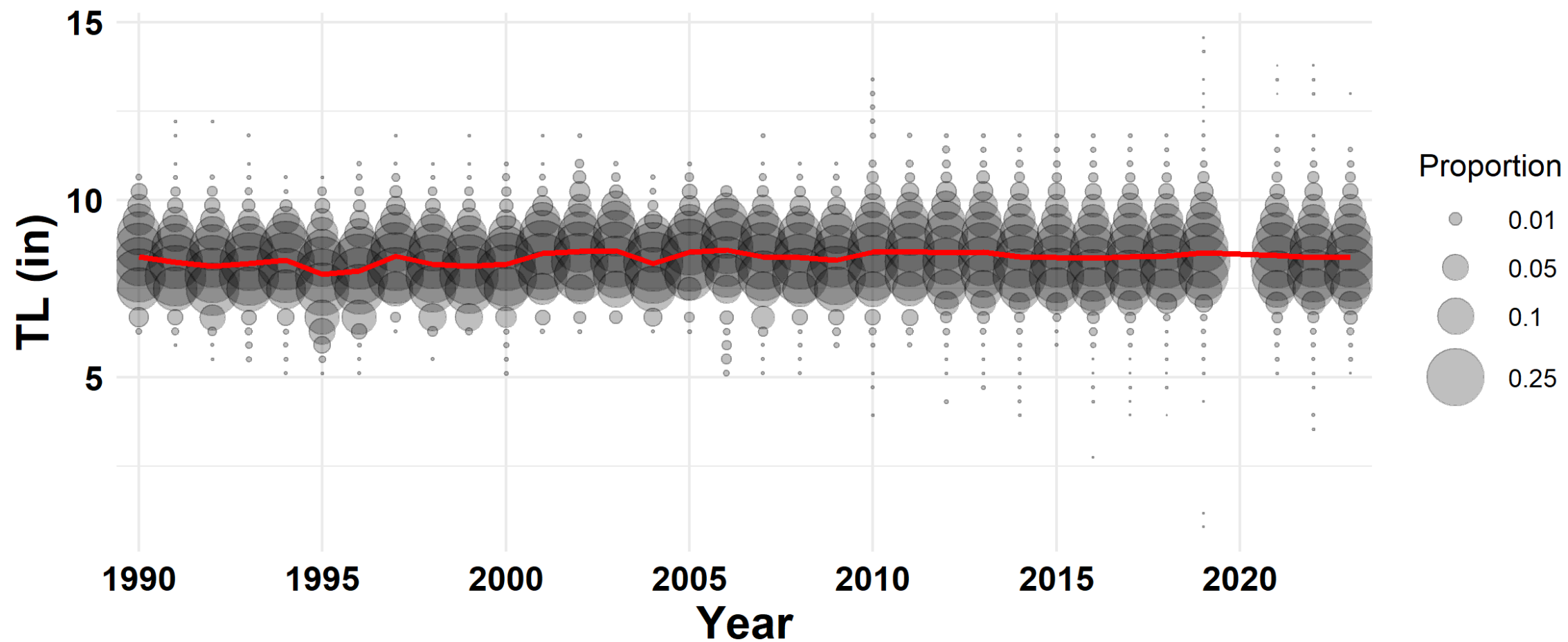


# Tomtate

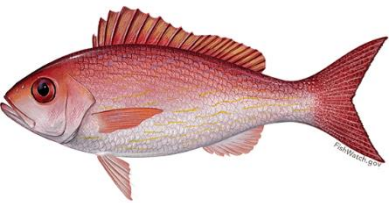




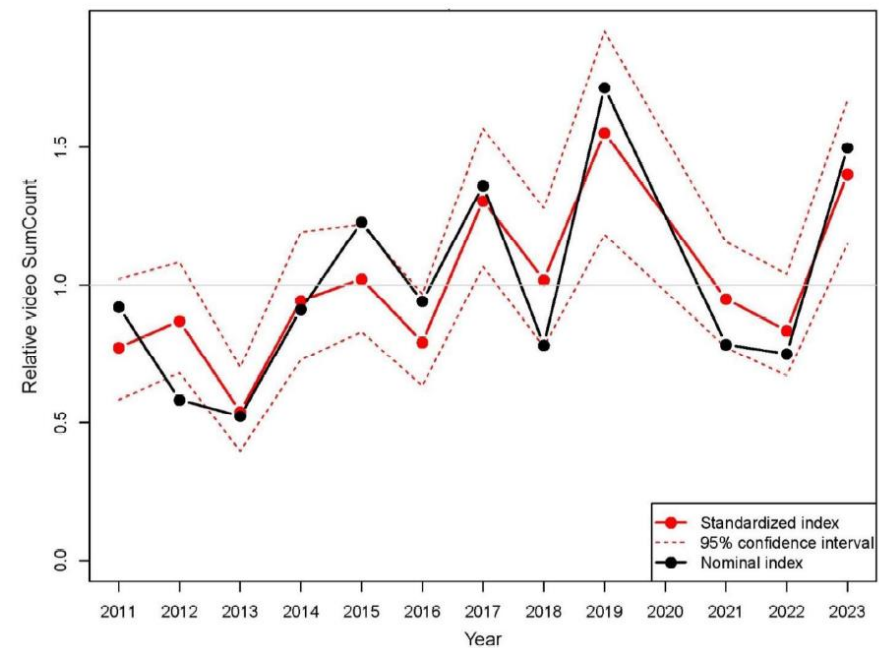
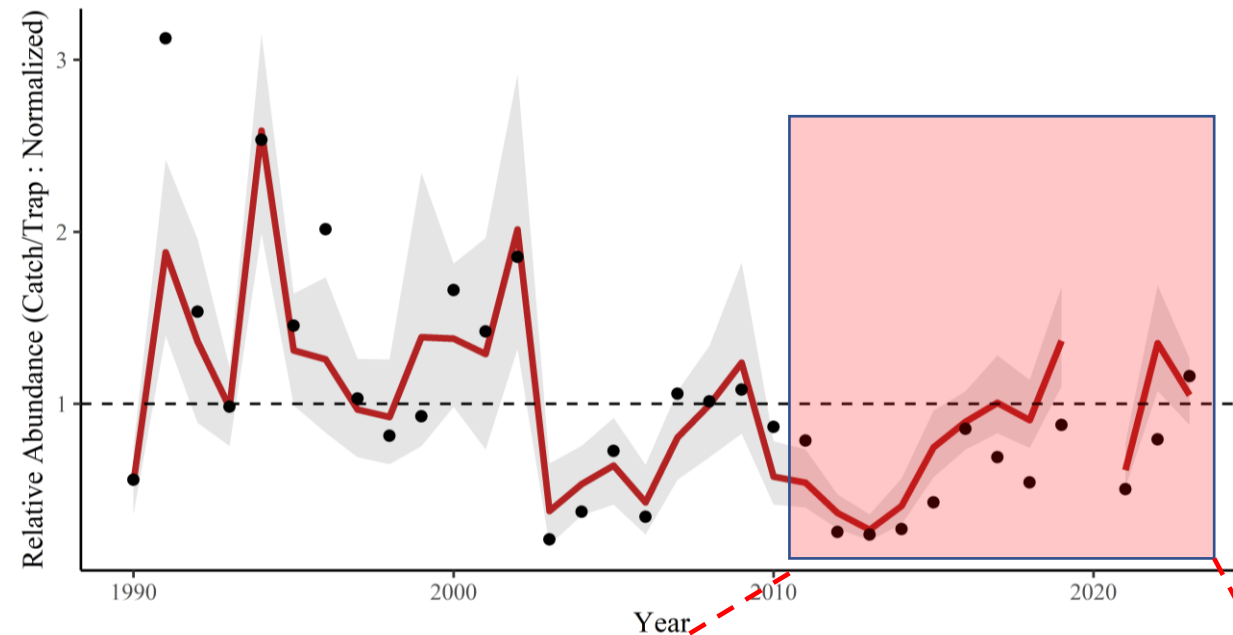
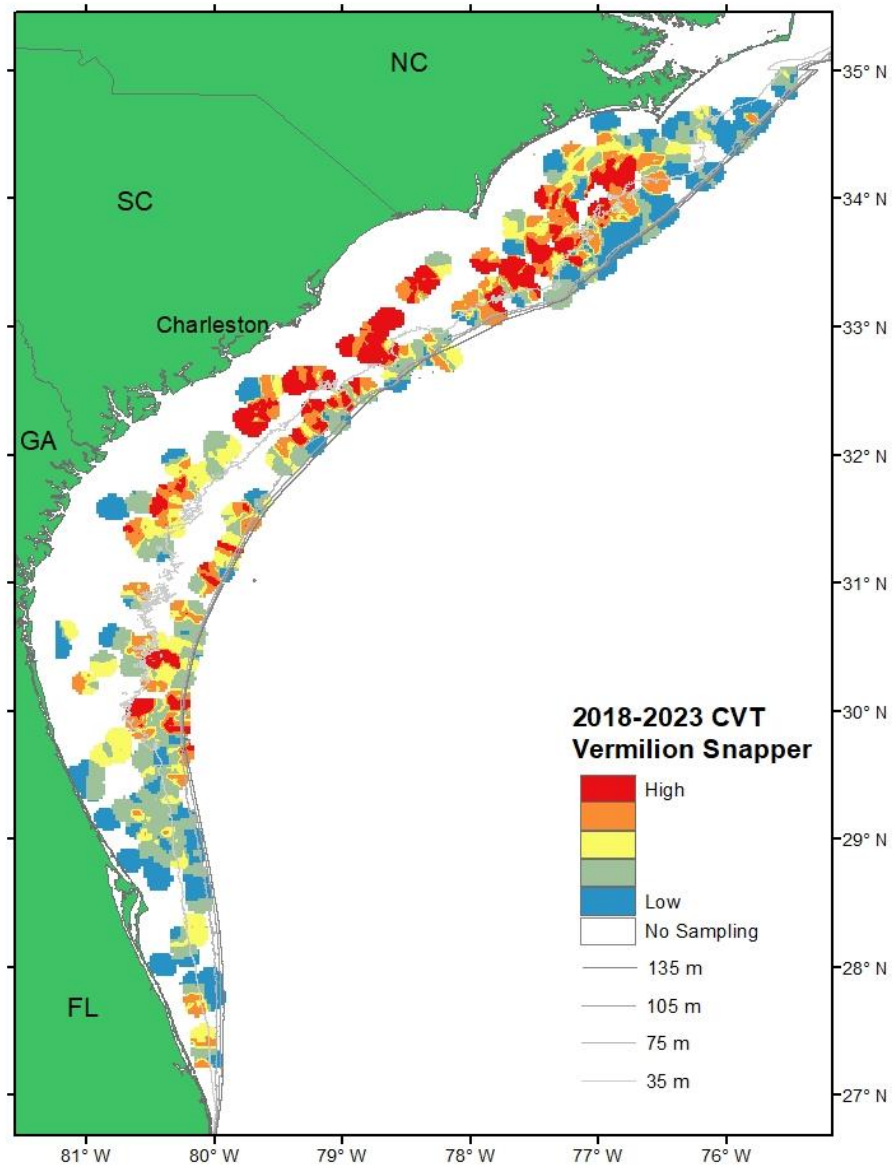
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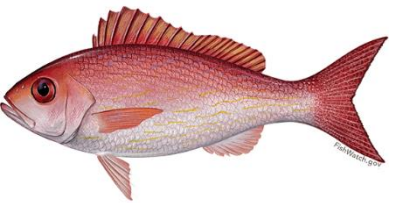




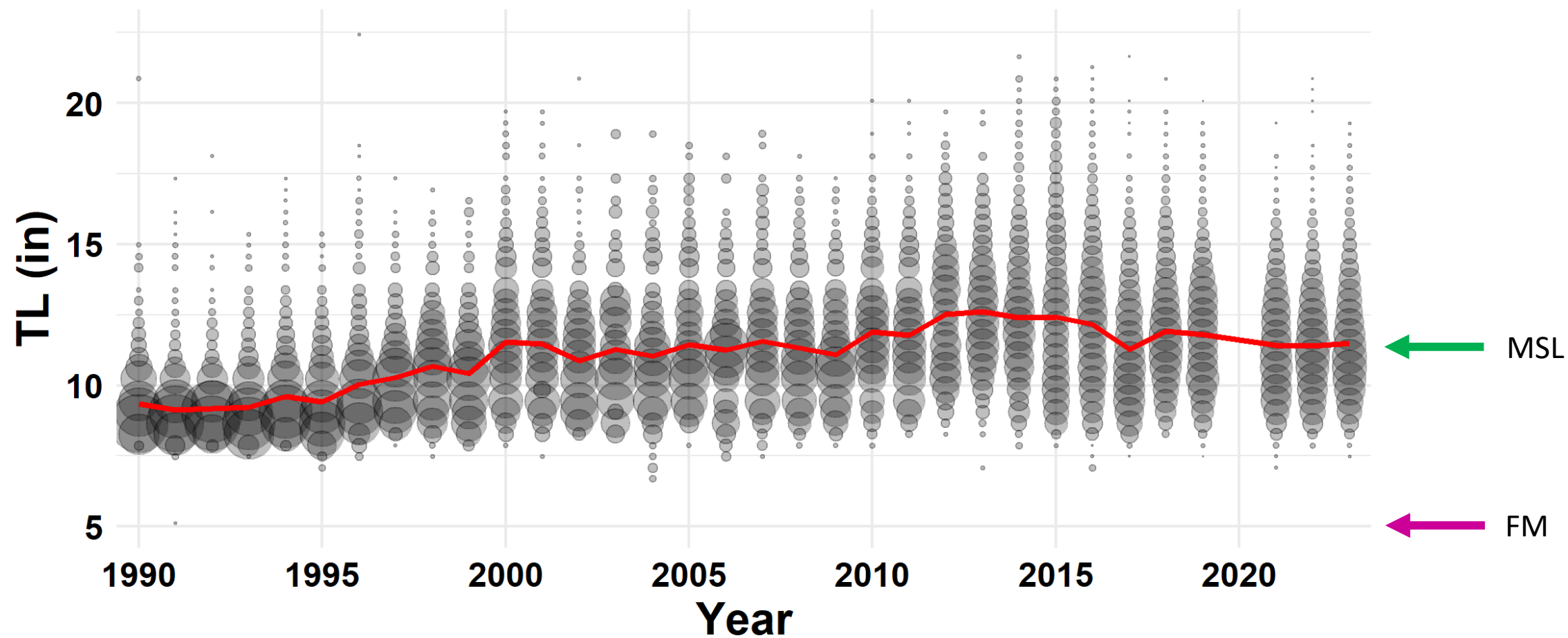


# Vermilion Snapper



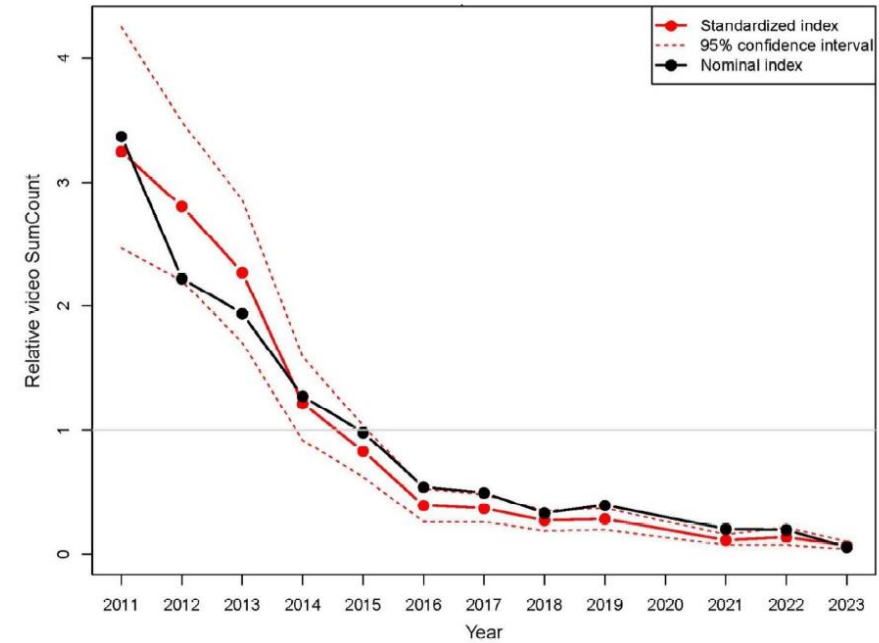
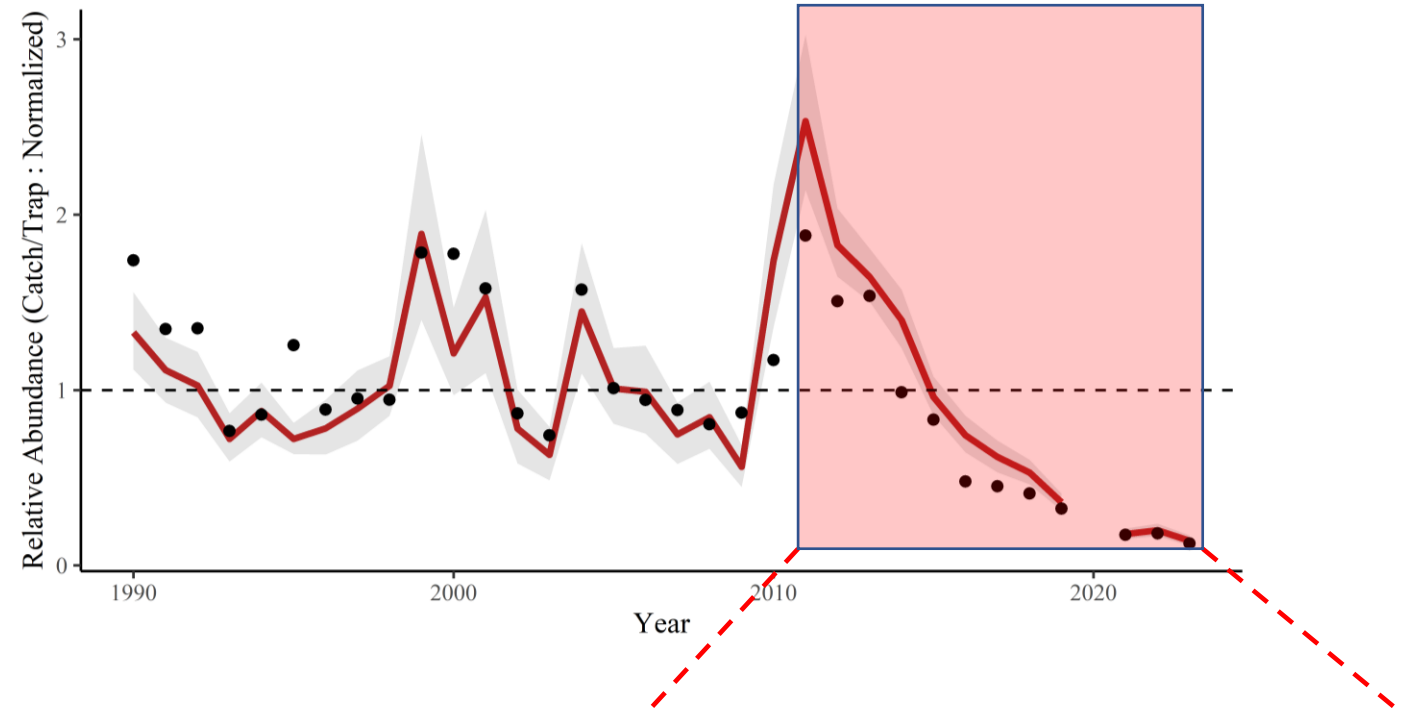
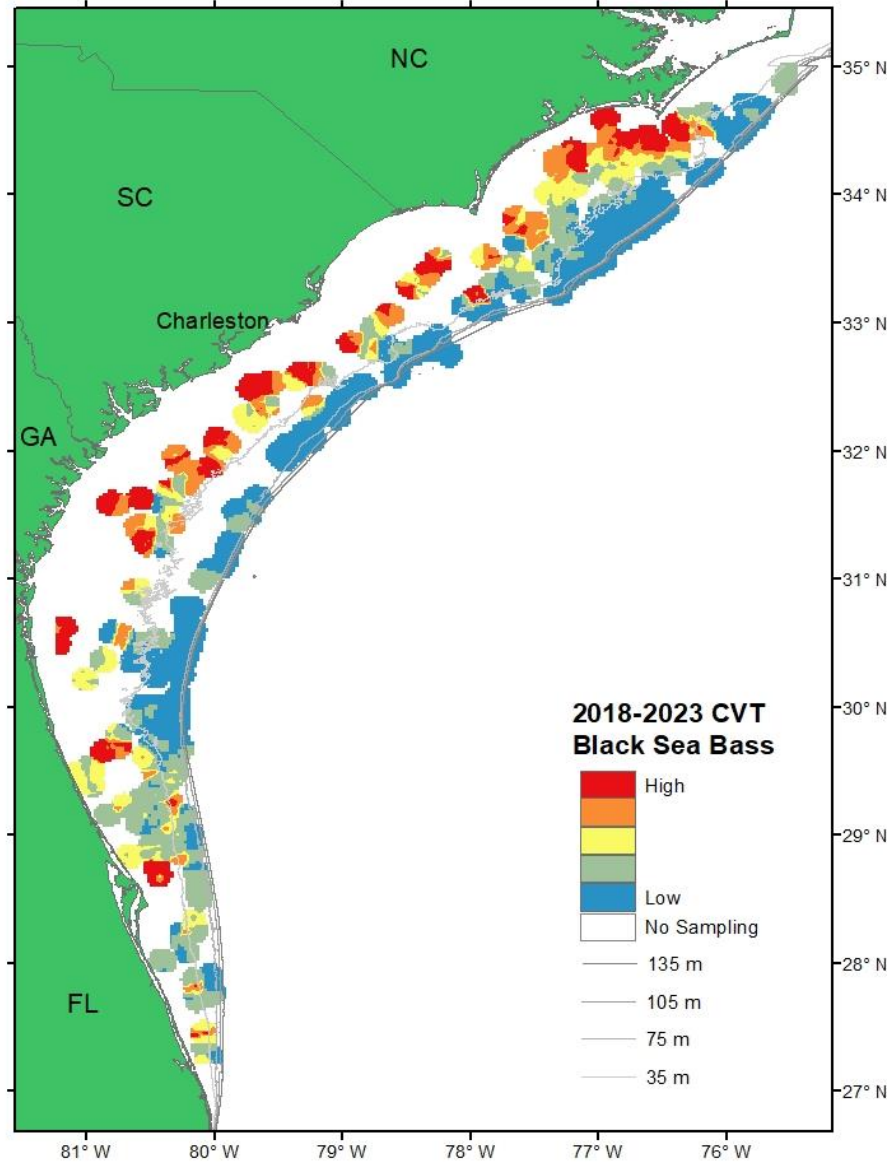


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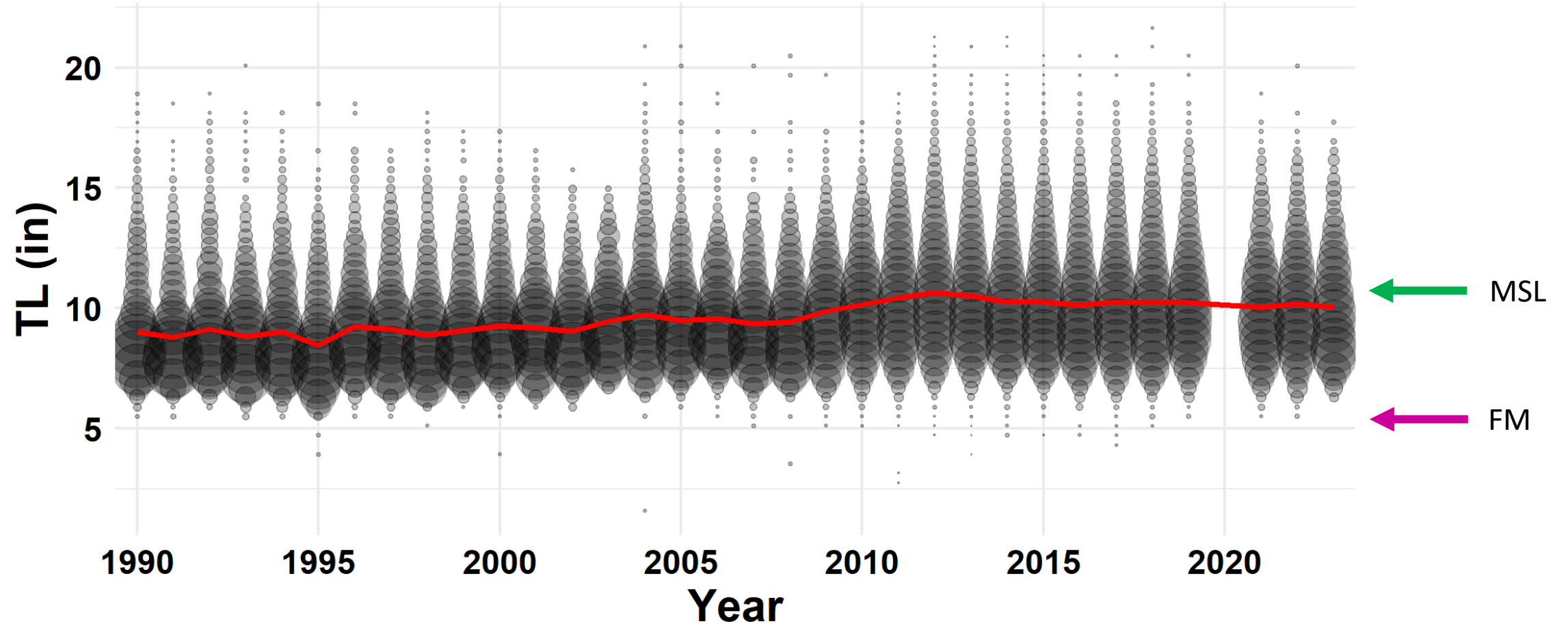
# Black Sea Bass





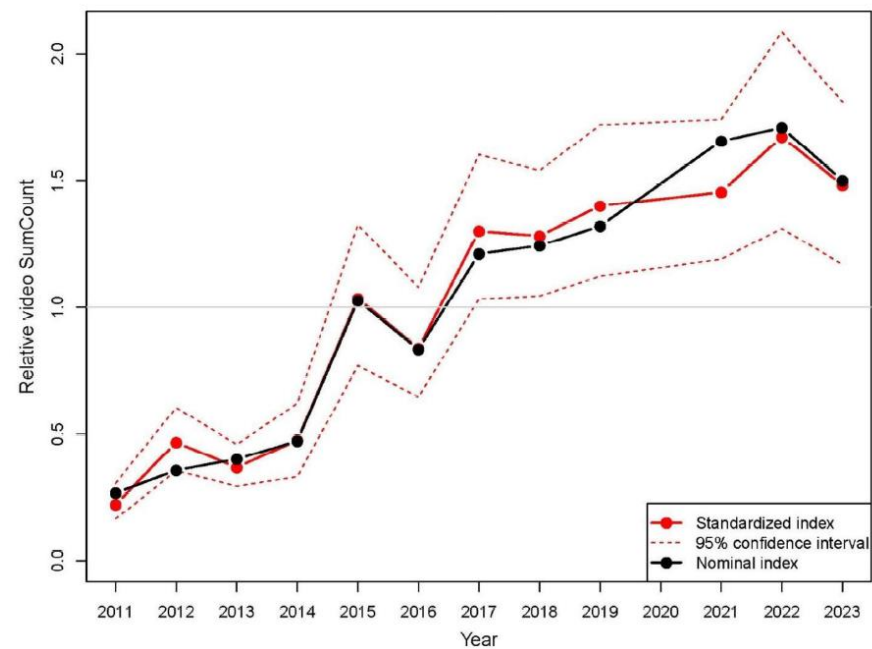
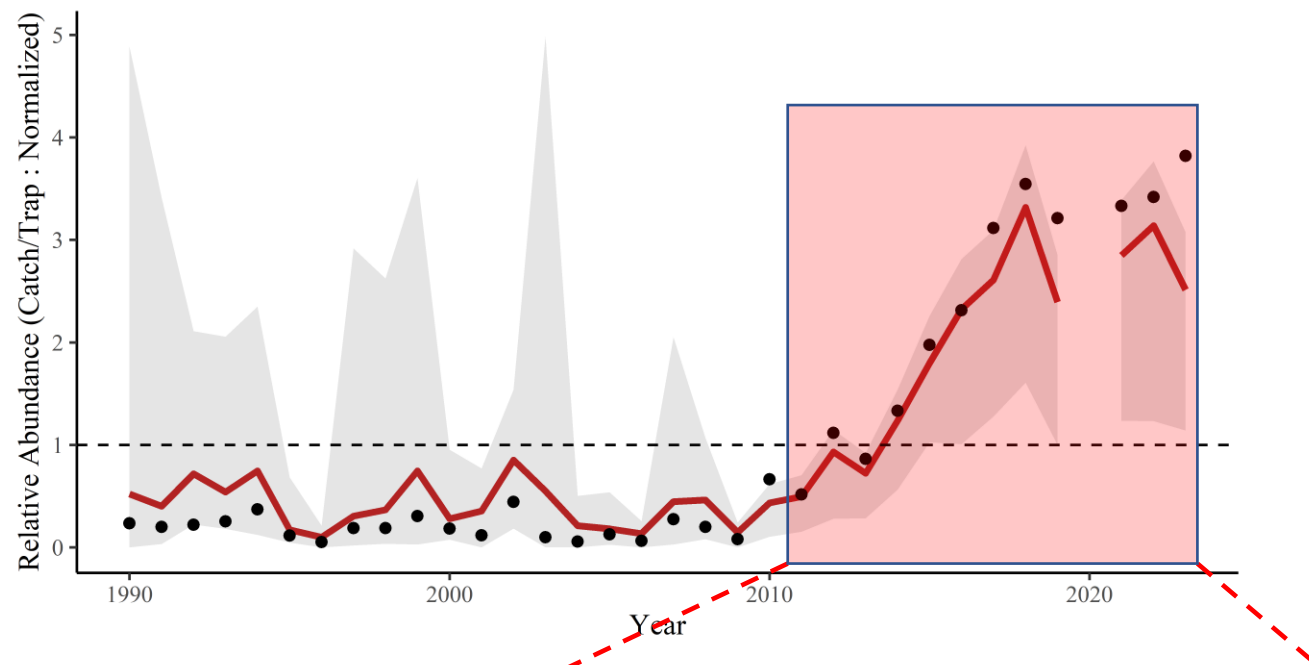
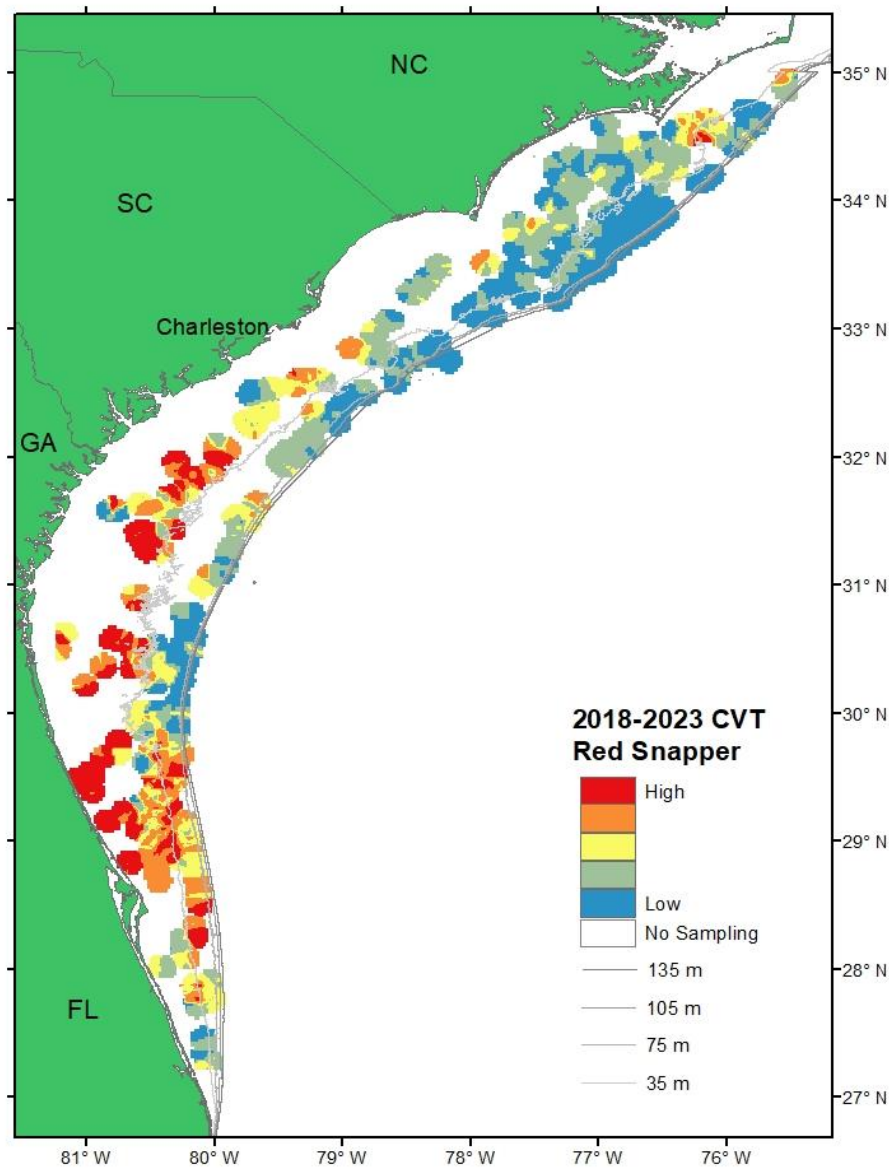


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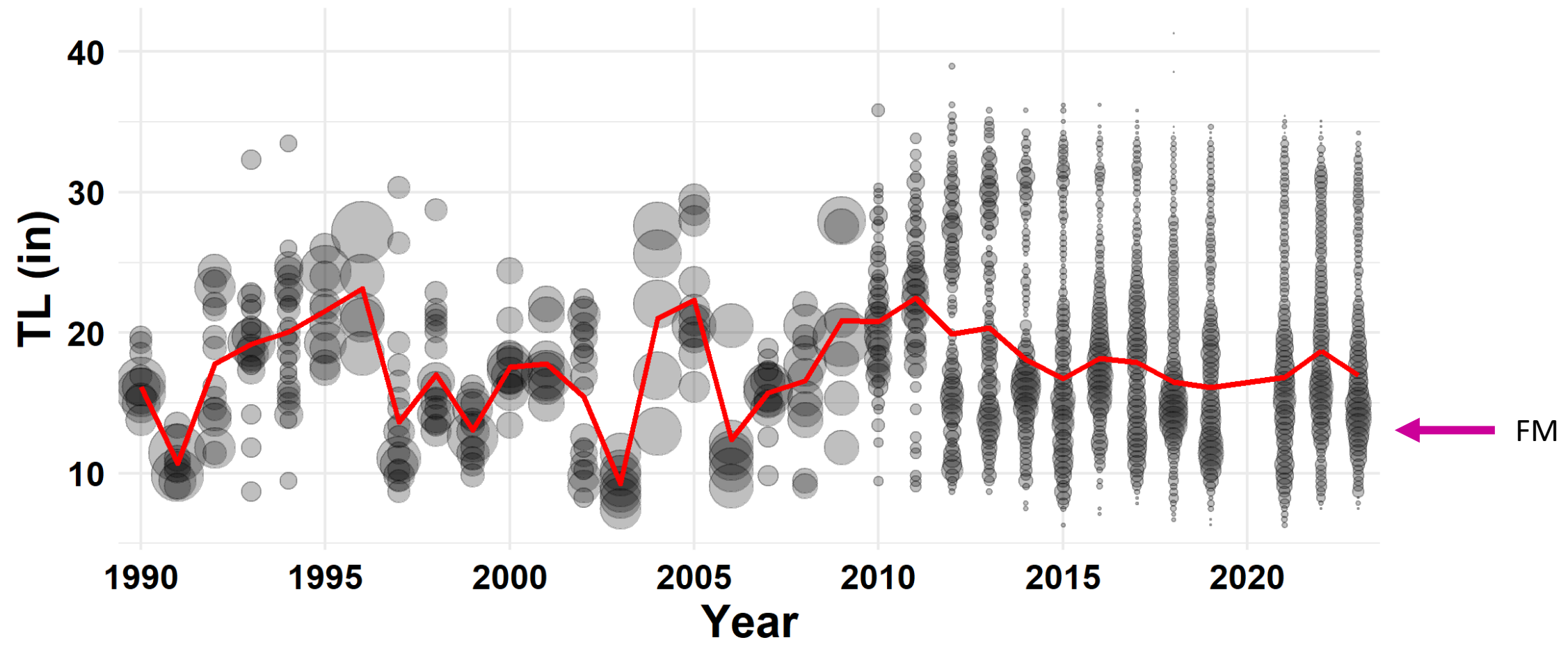


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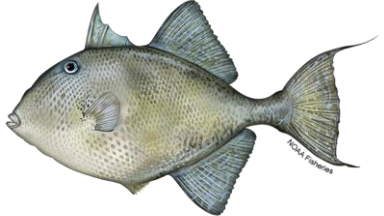




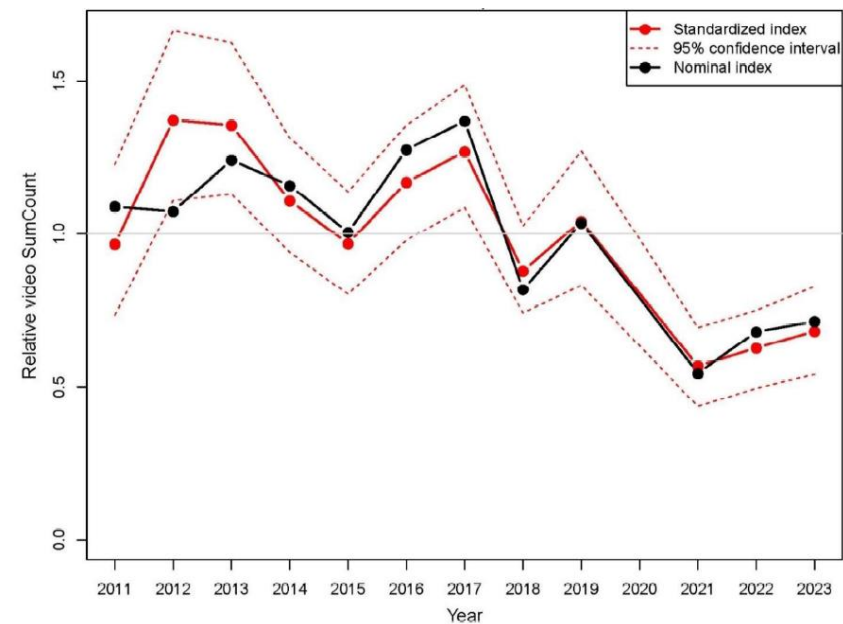
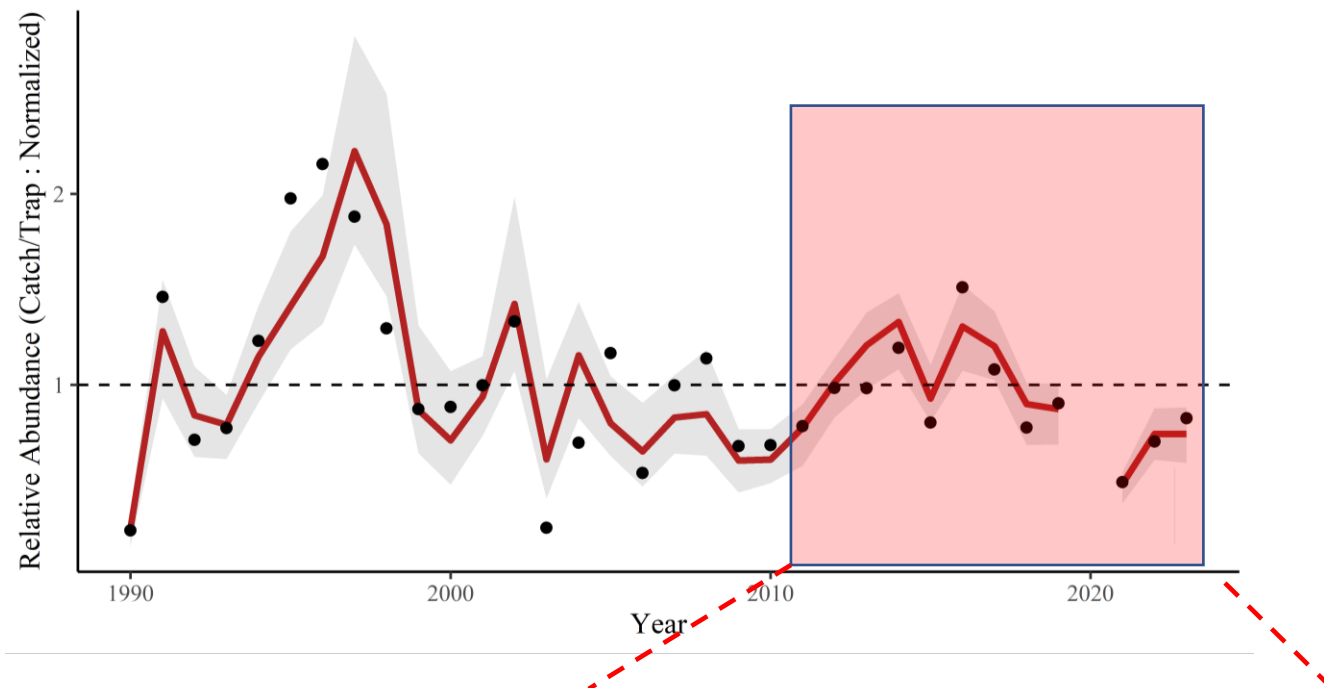
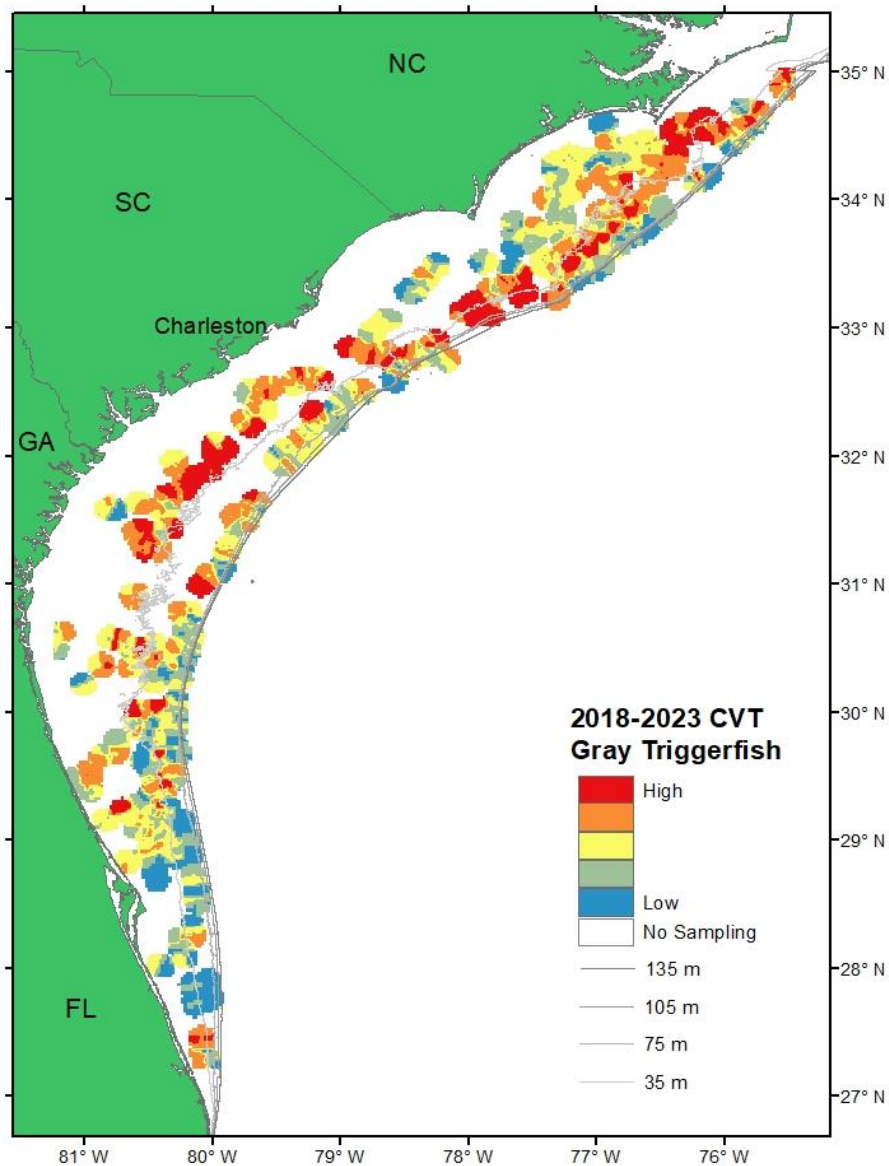
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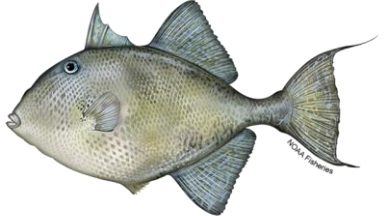




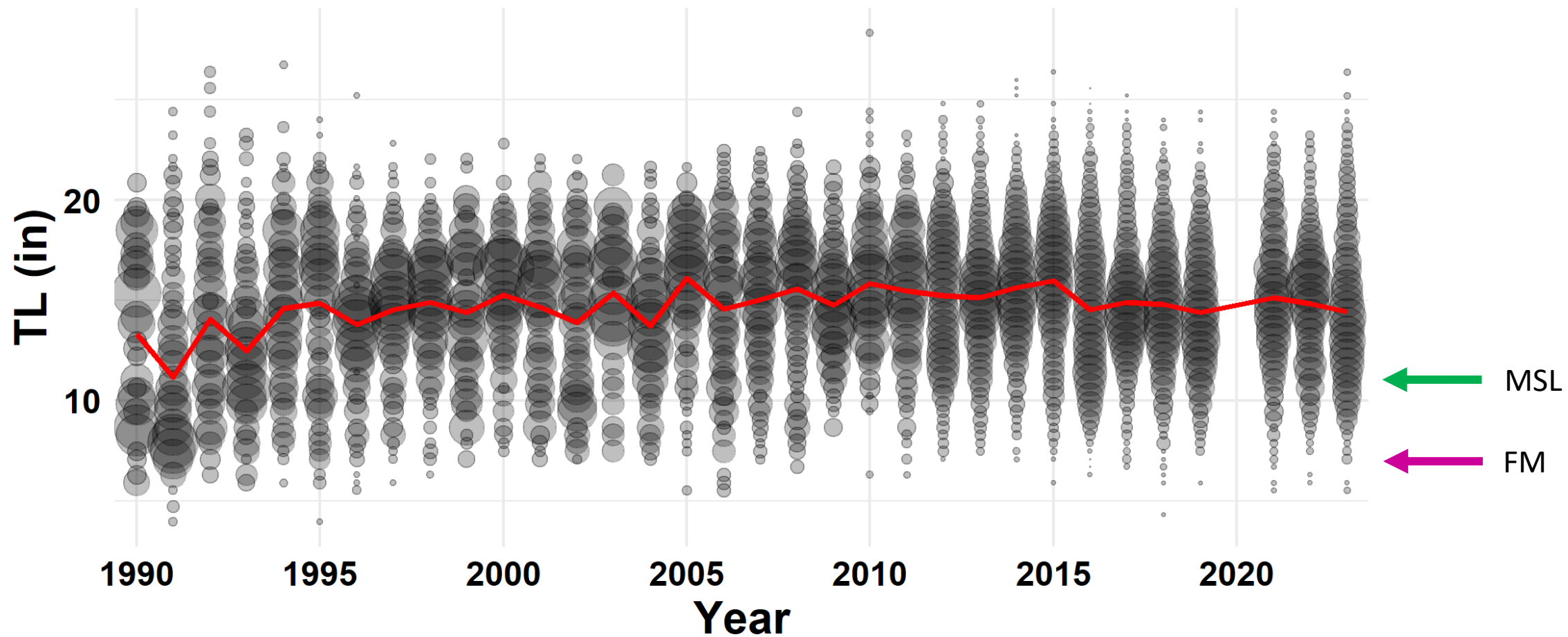


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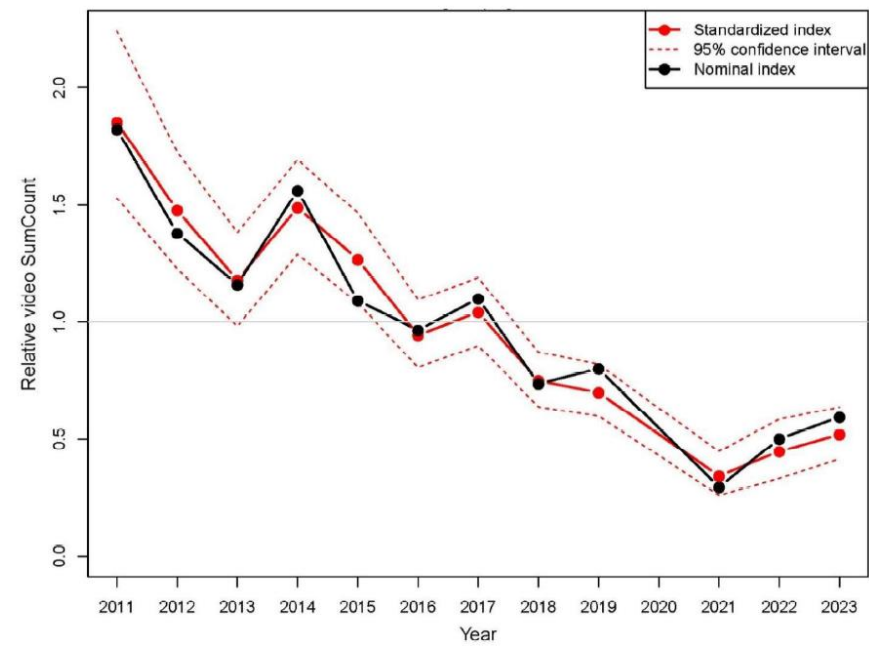
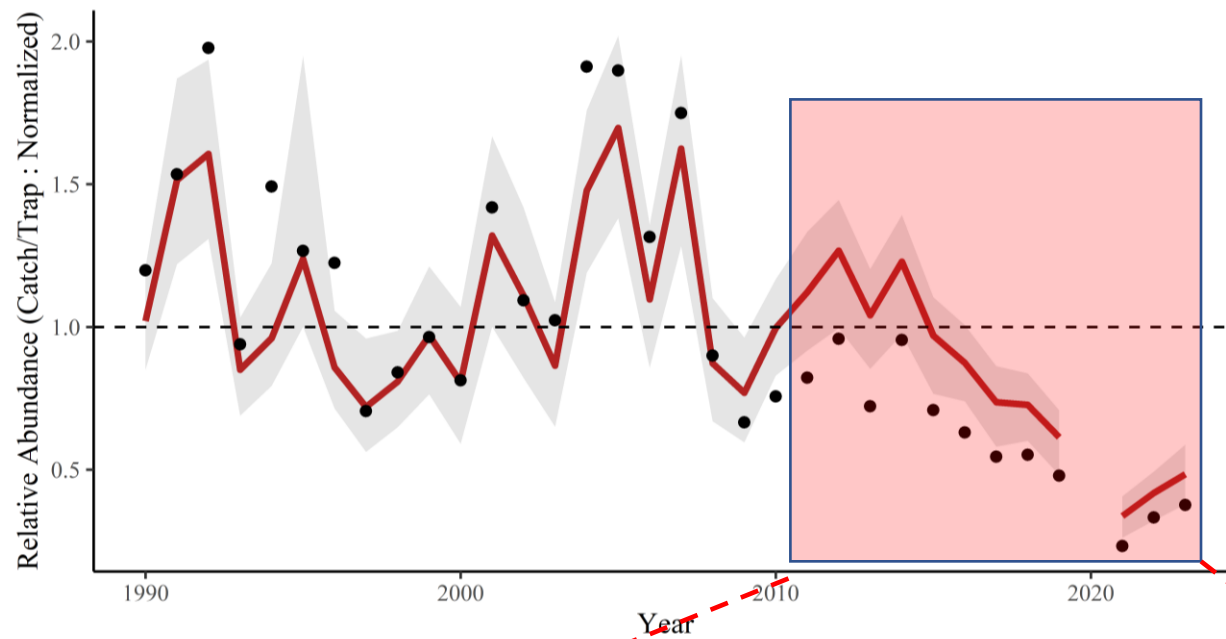
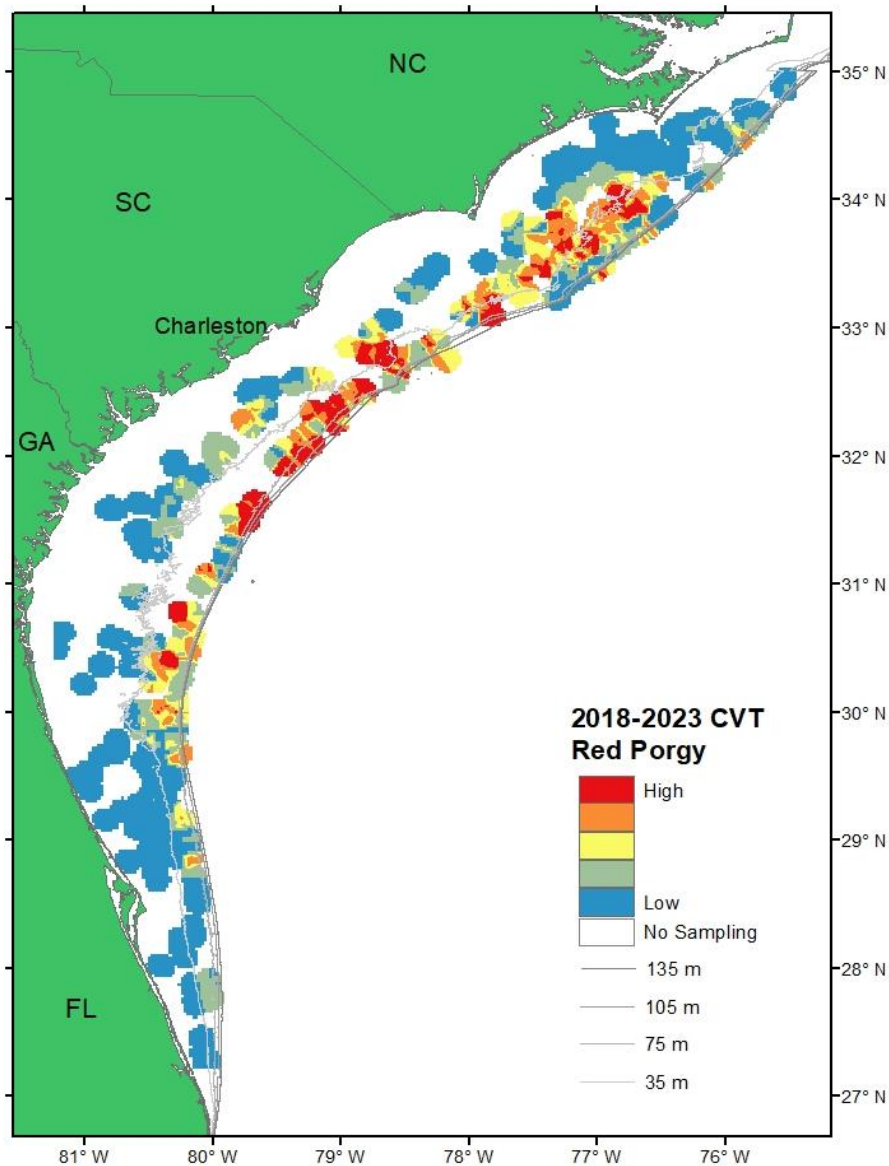


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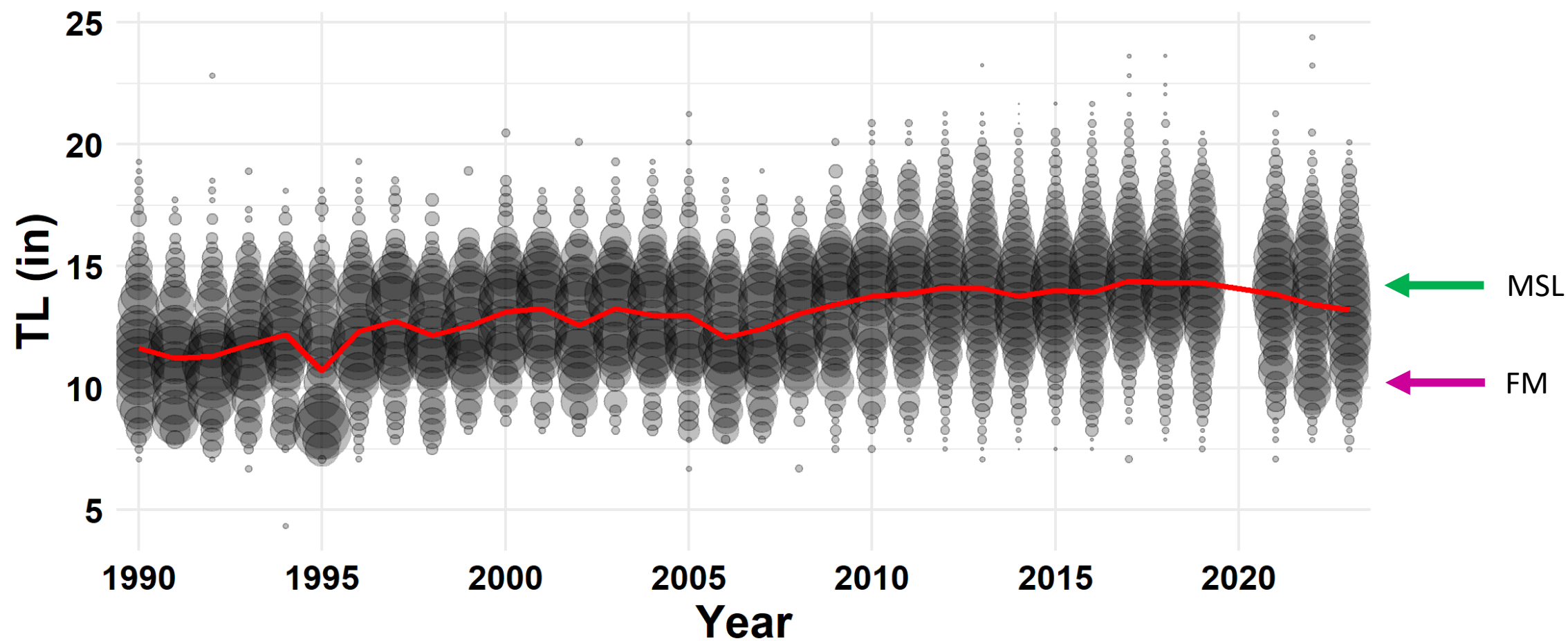
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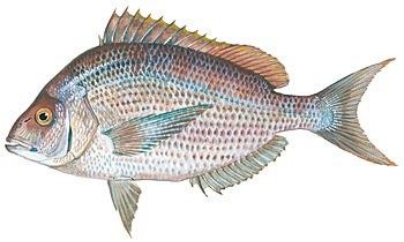




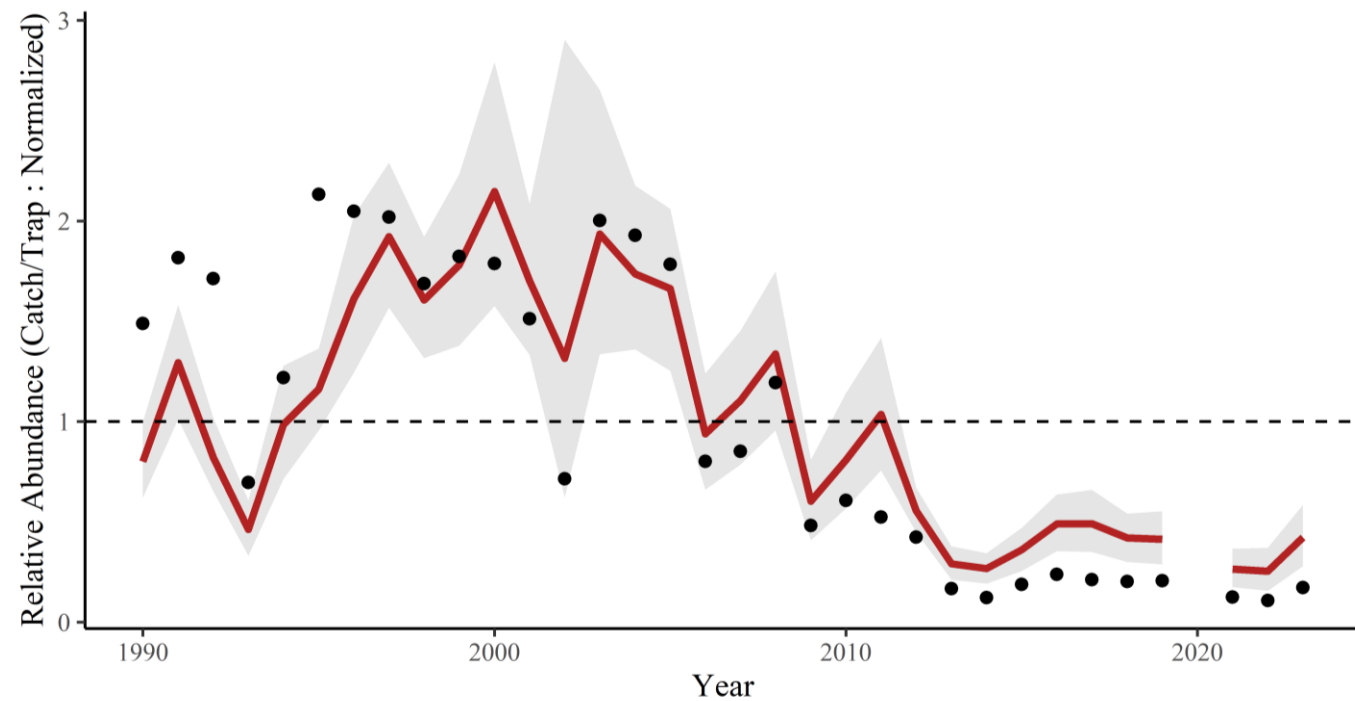
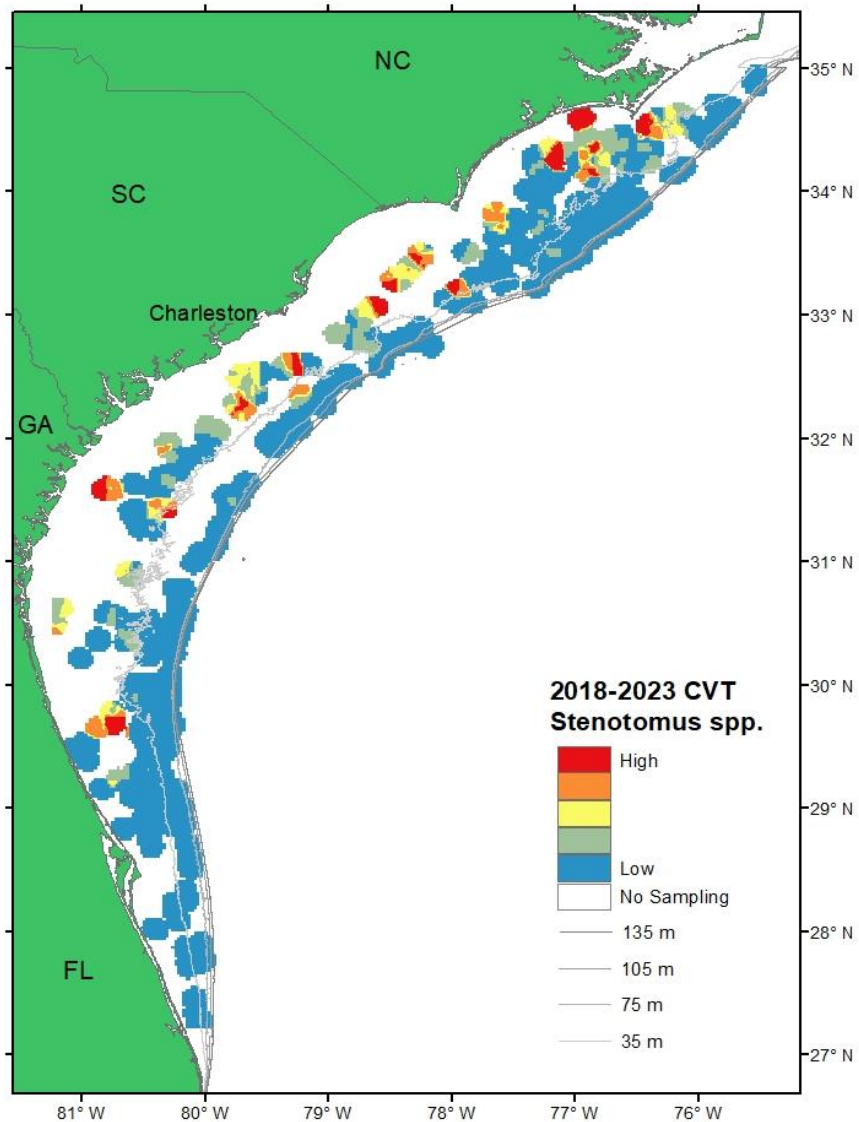


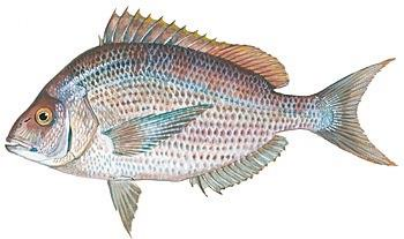
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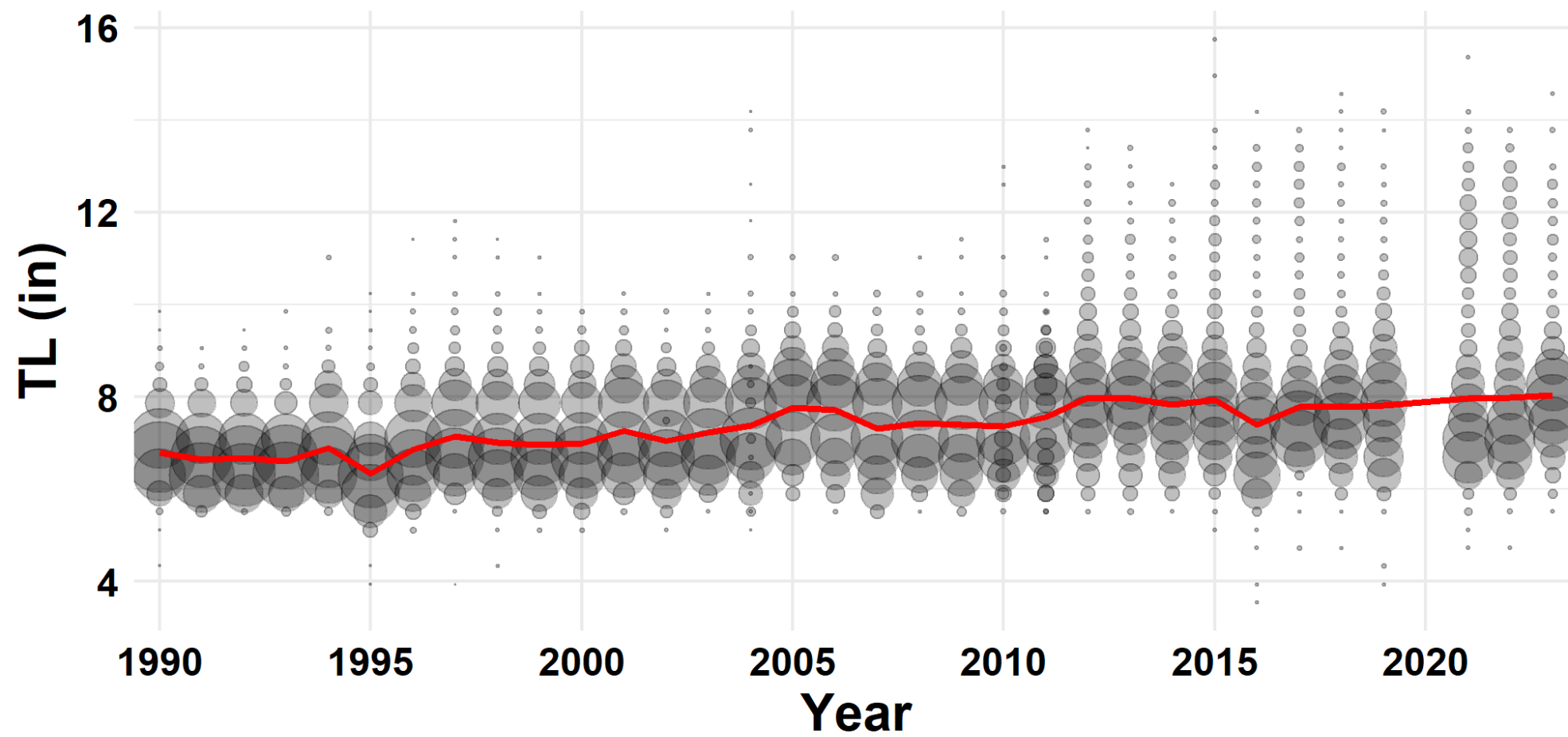


# *Stenotomus* spp.

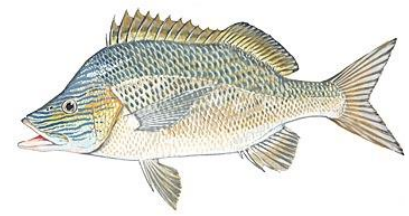




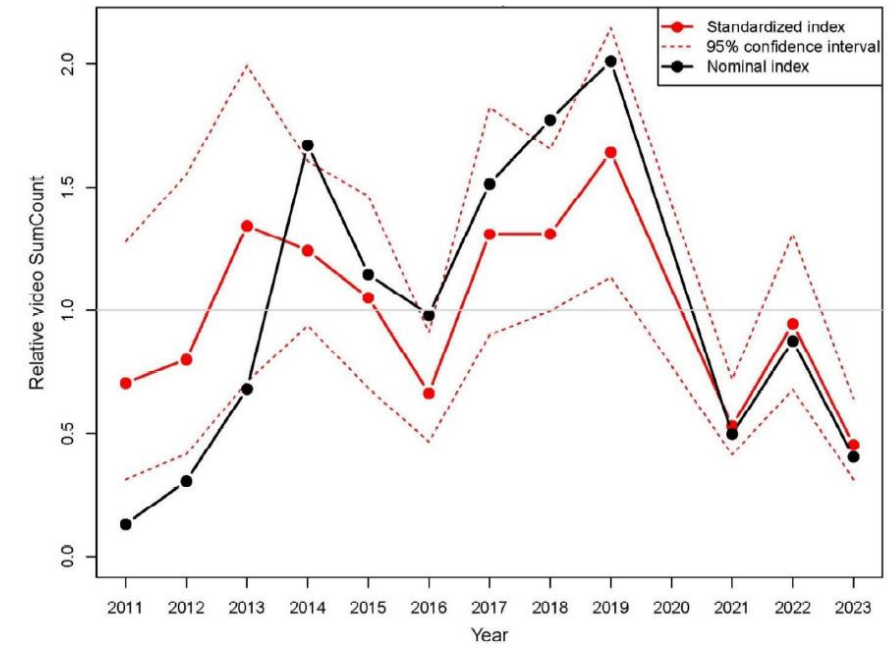
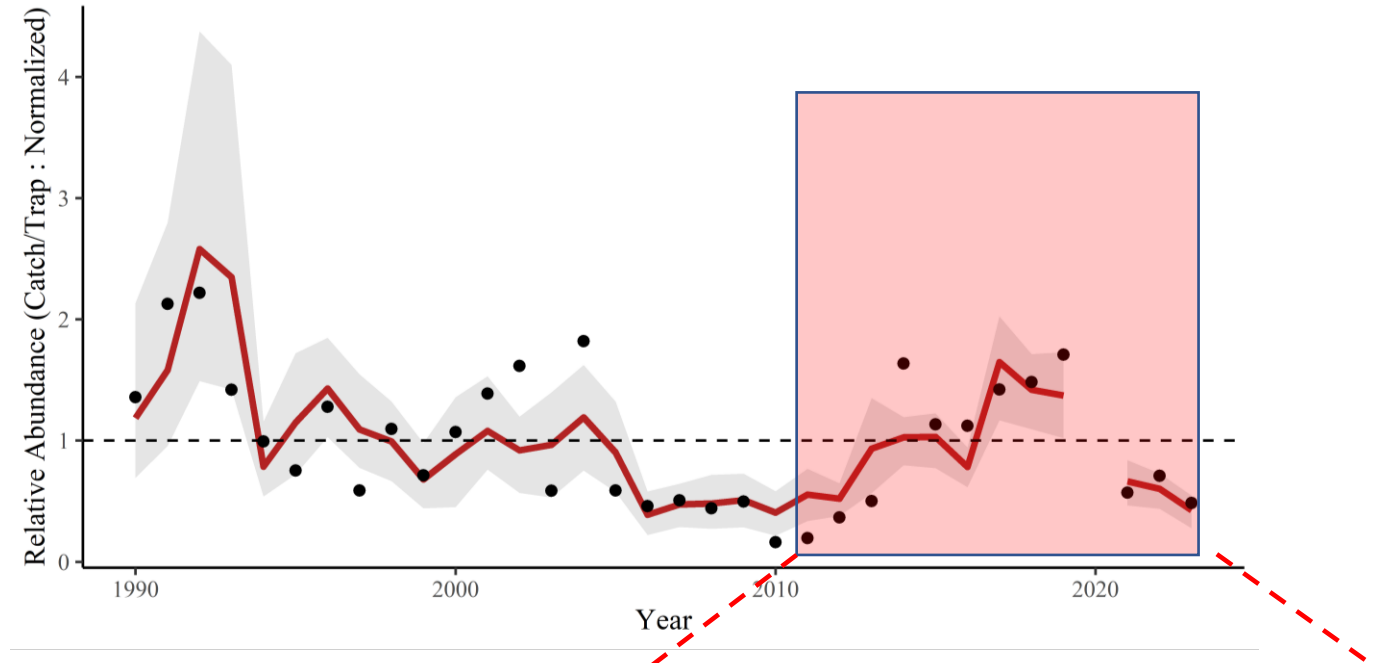
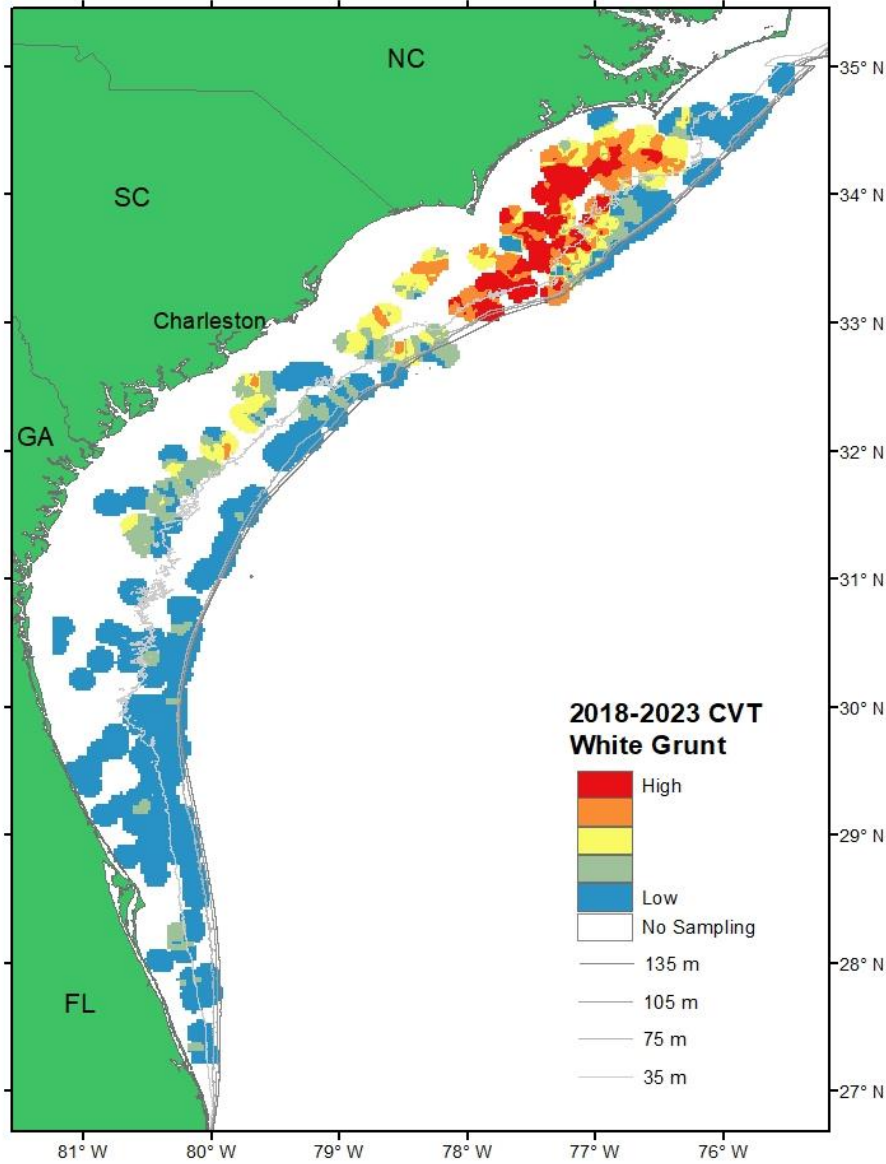
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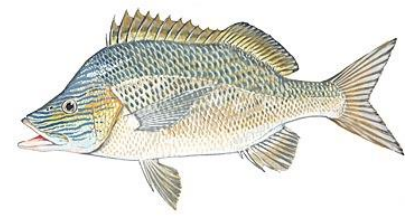




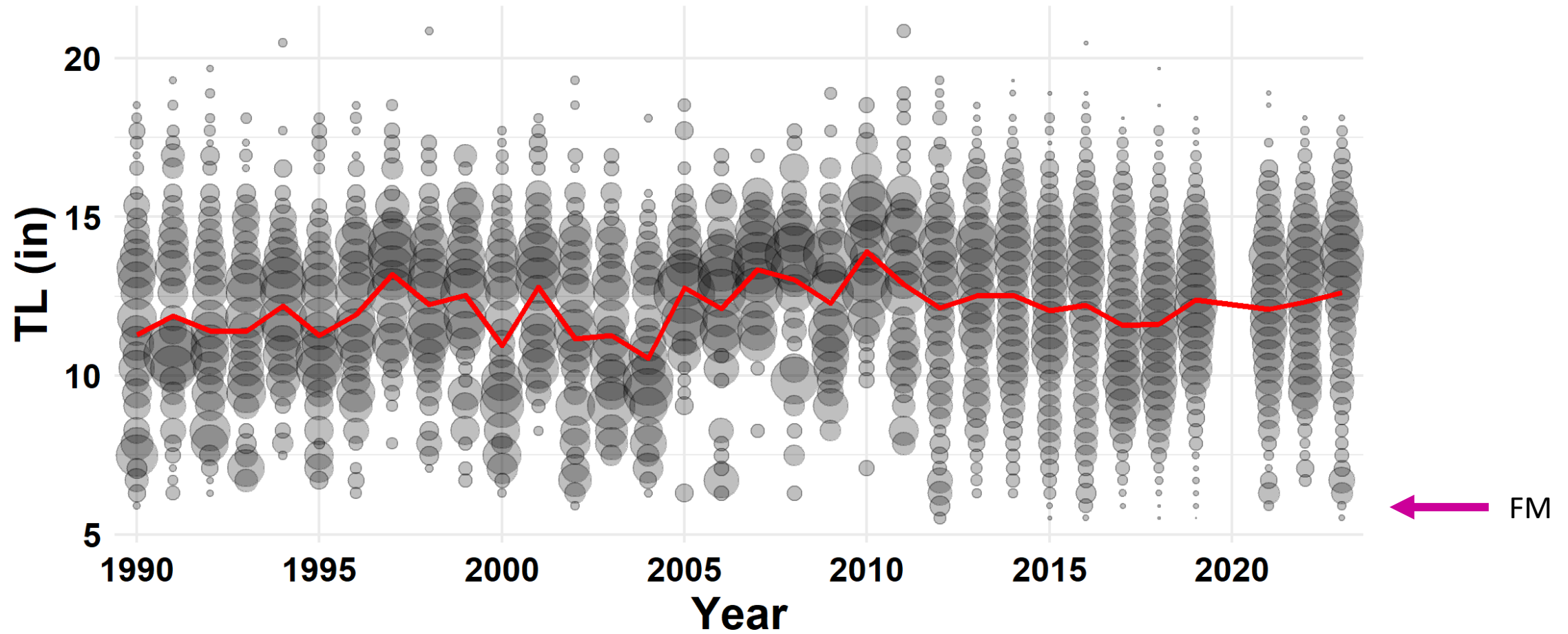


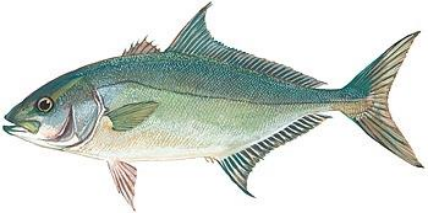
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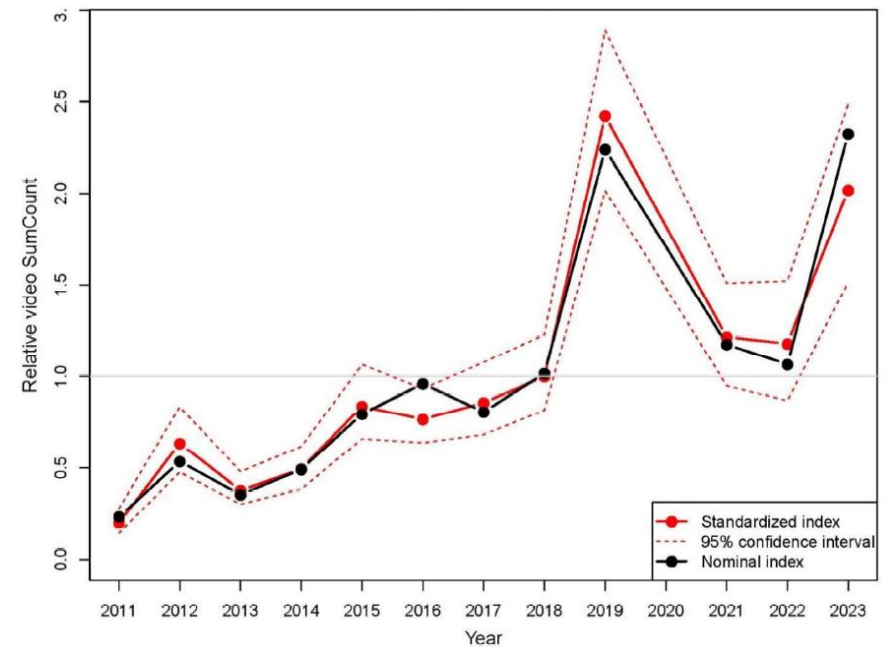
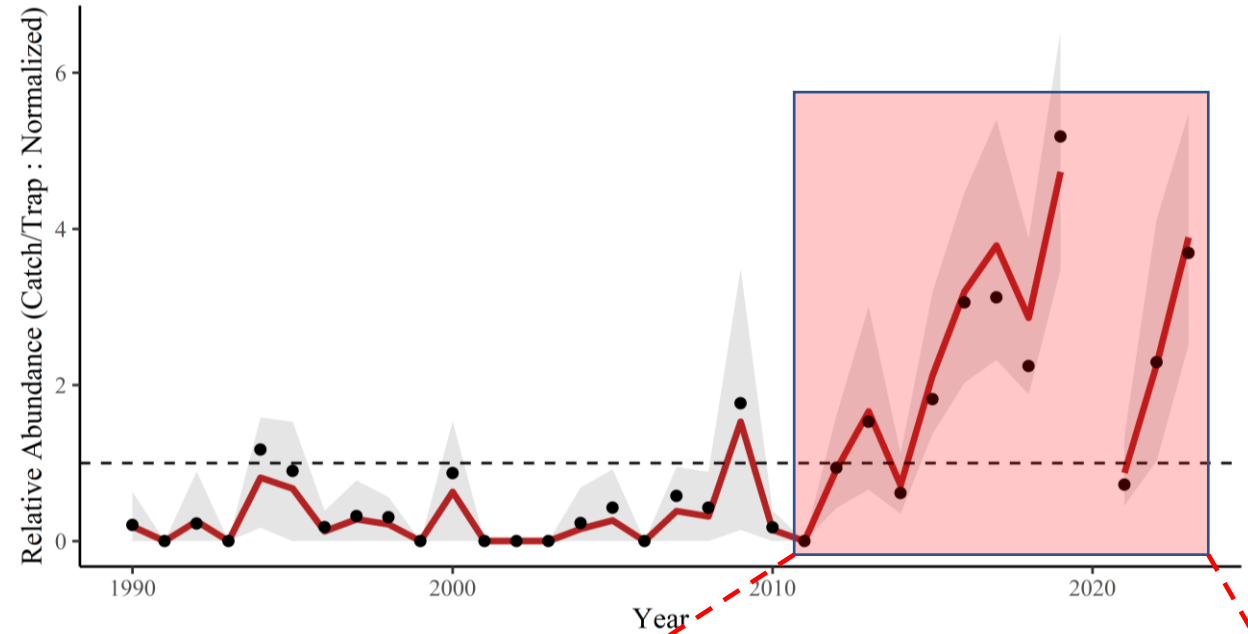
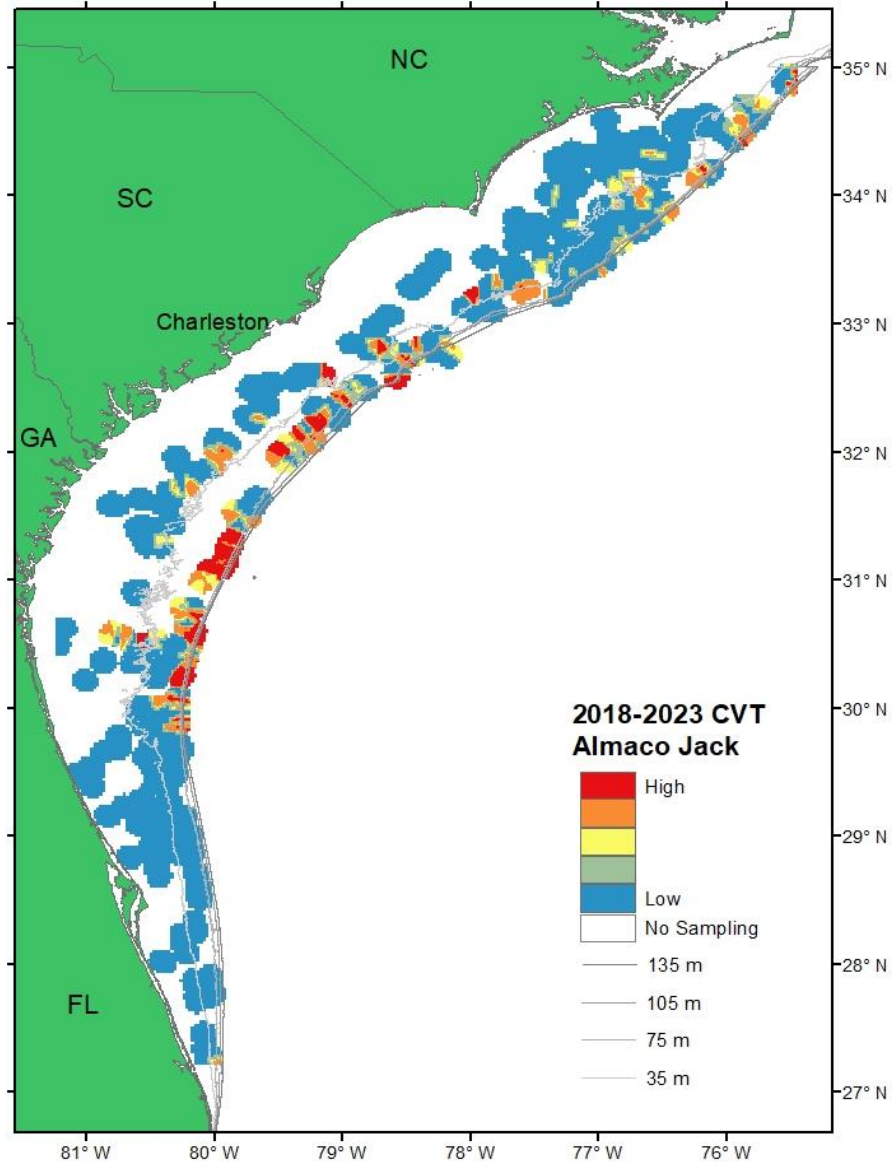


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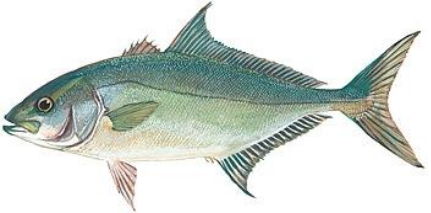




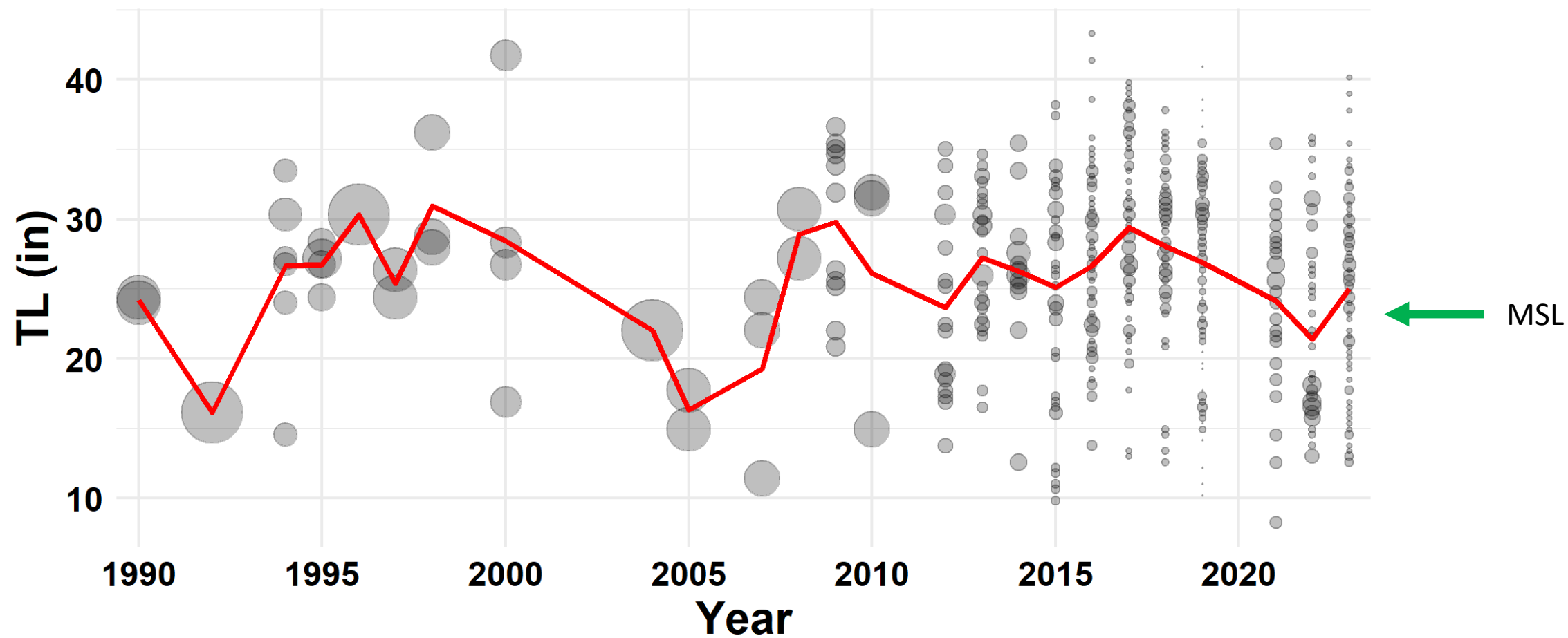
# Almaco Jack

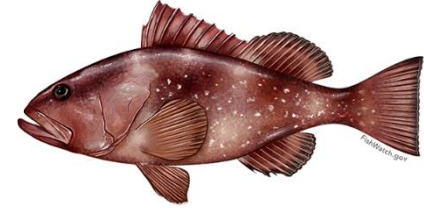




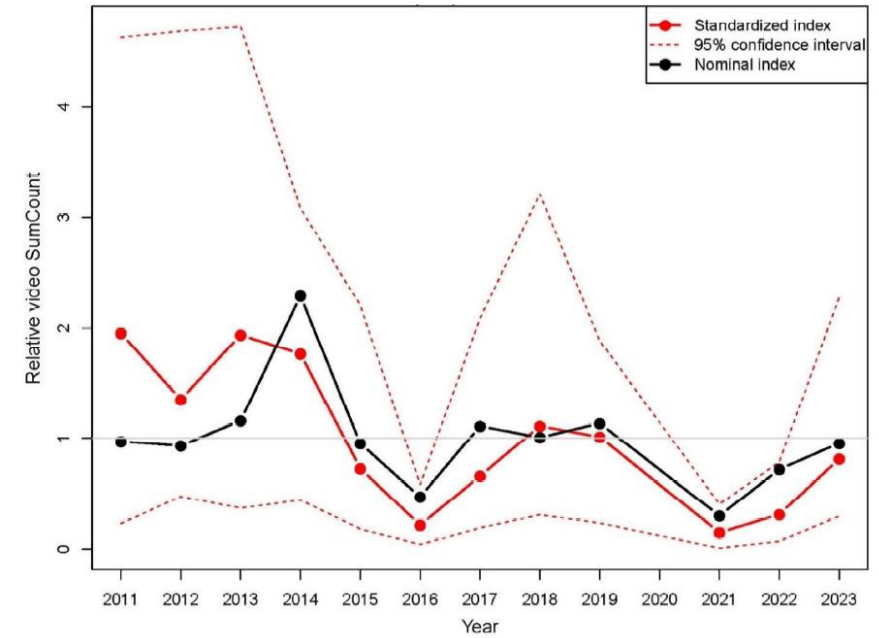
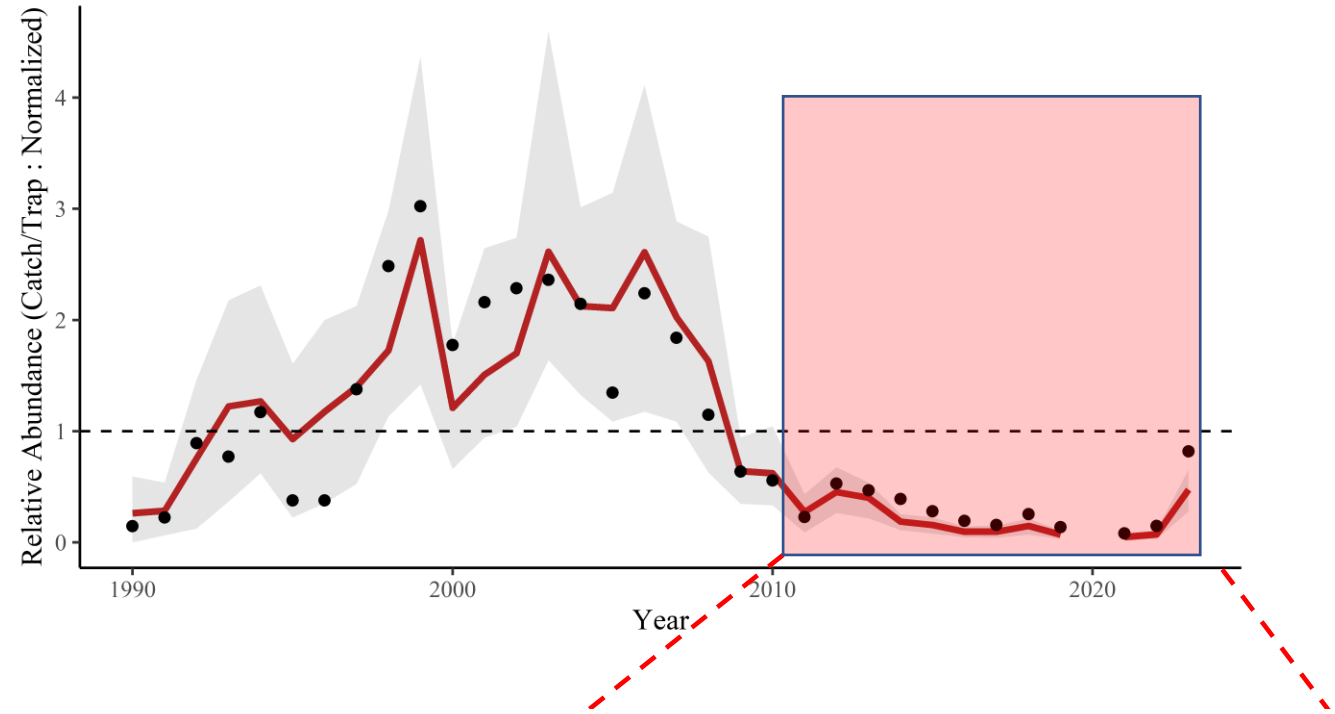
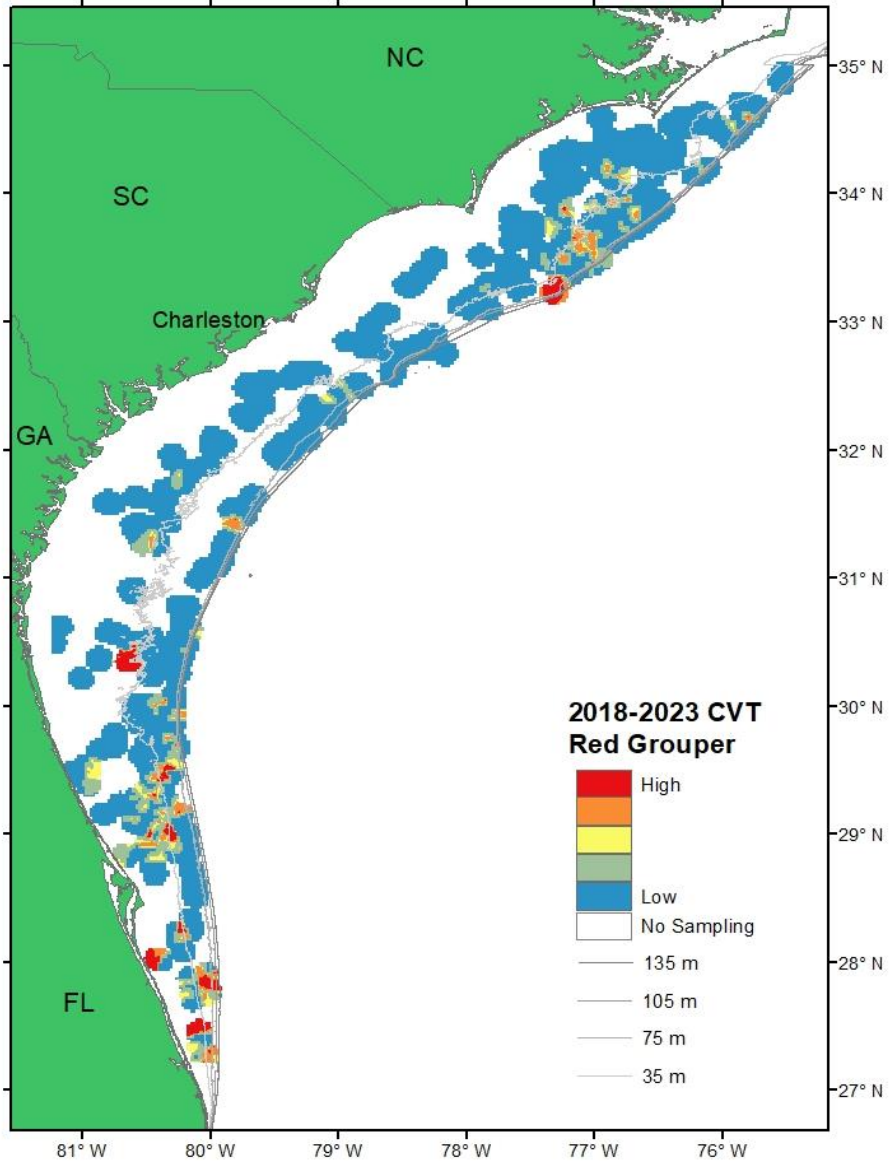


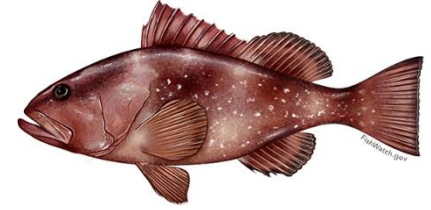
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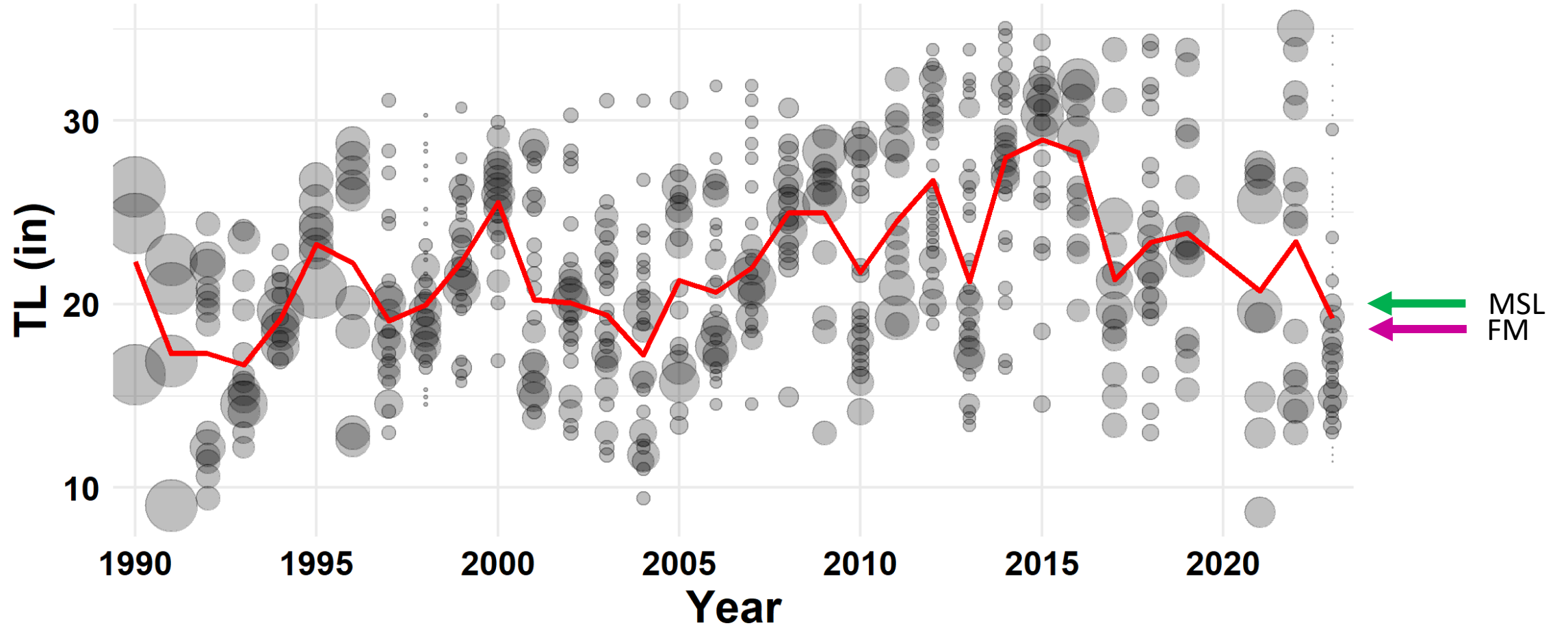


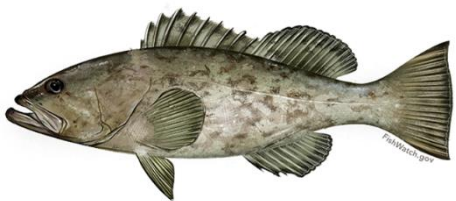
# Red Grouper



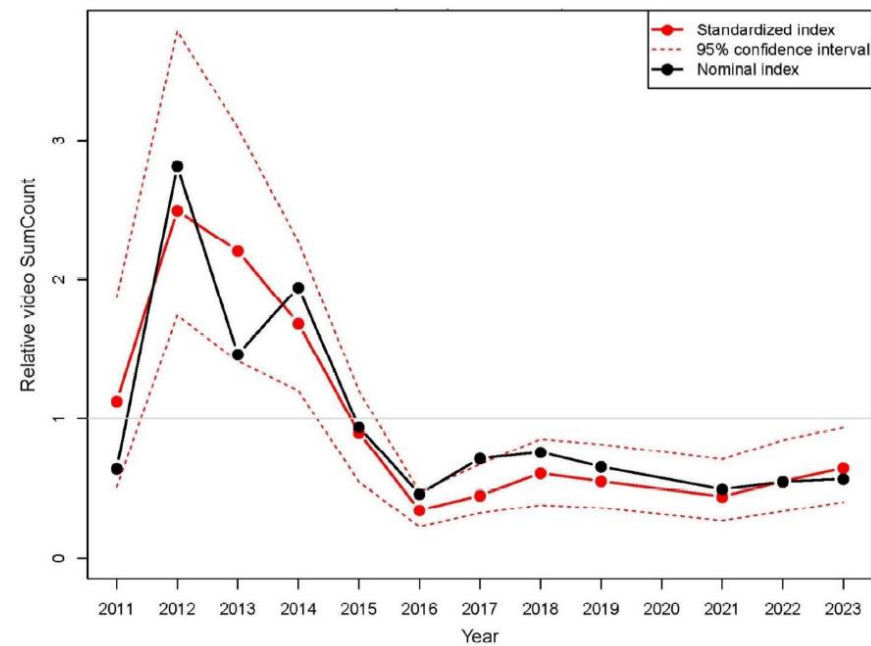
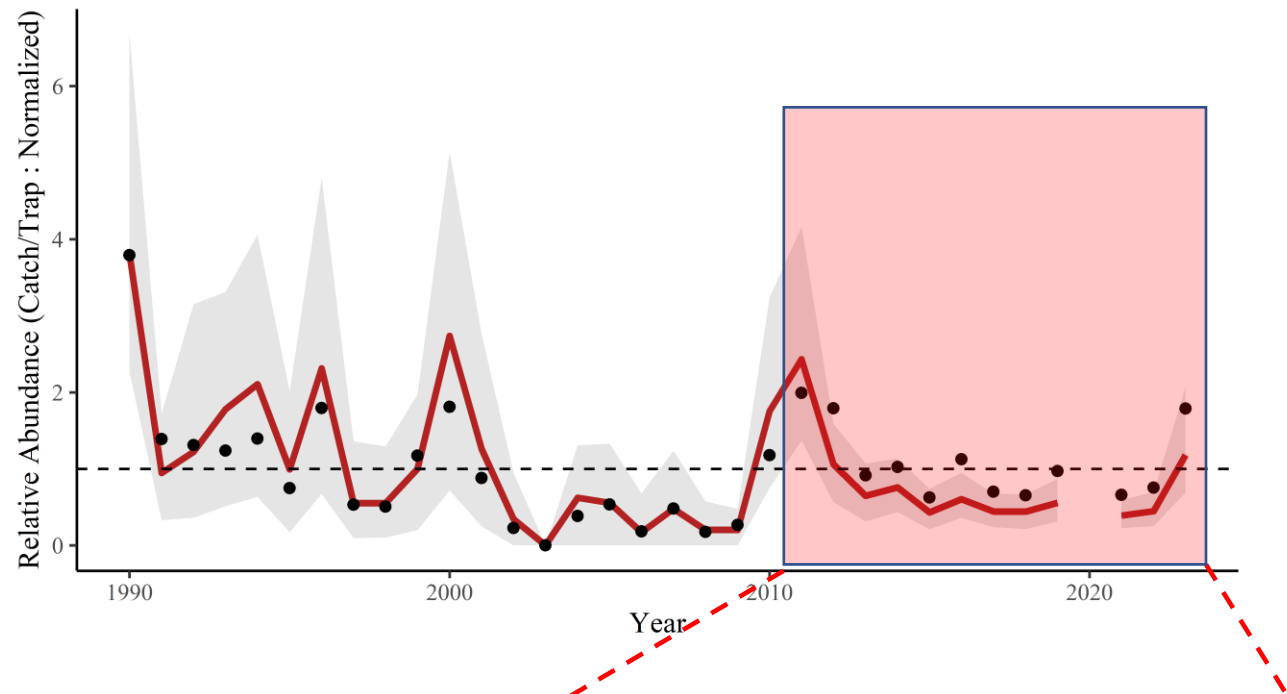
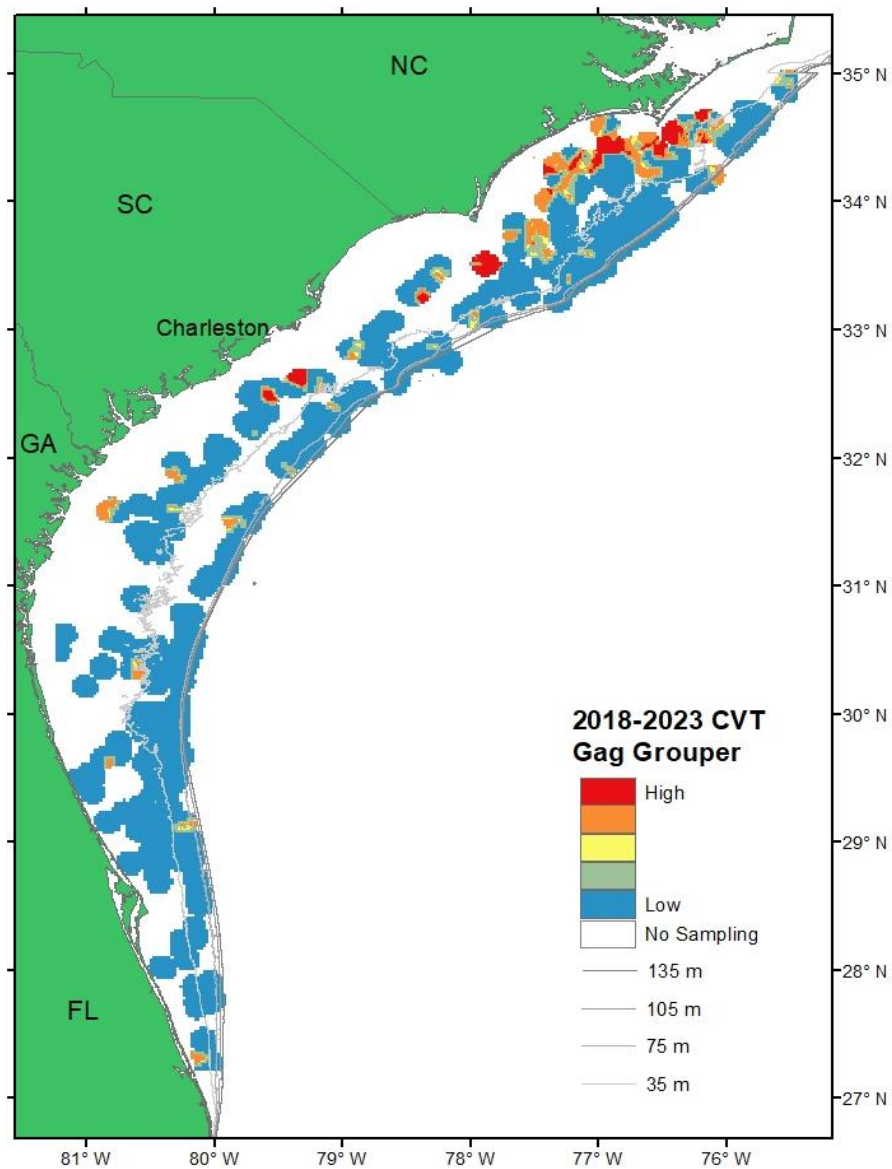


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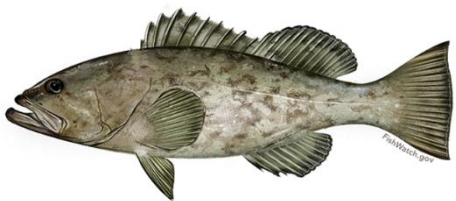




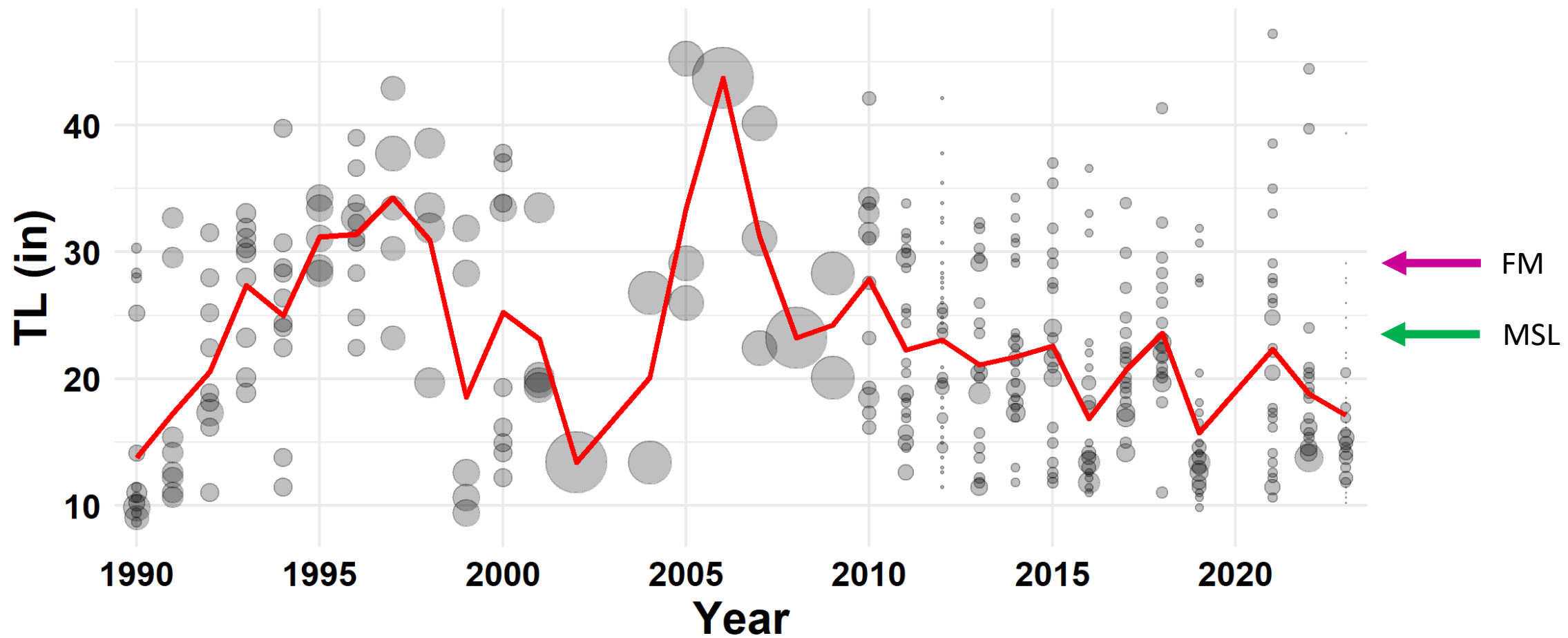
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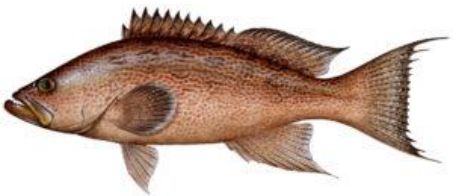




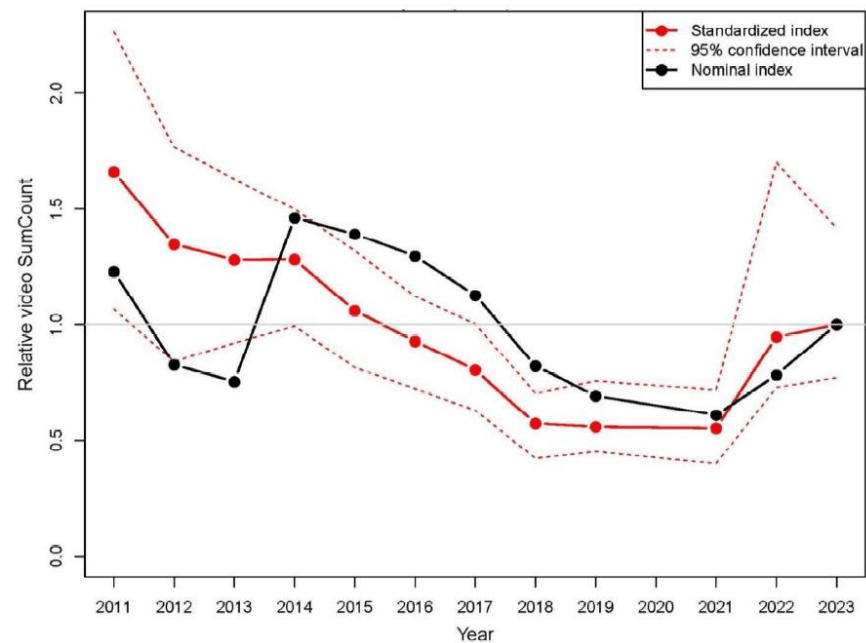
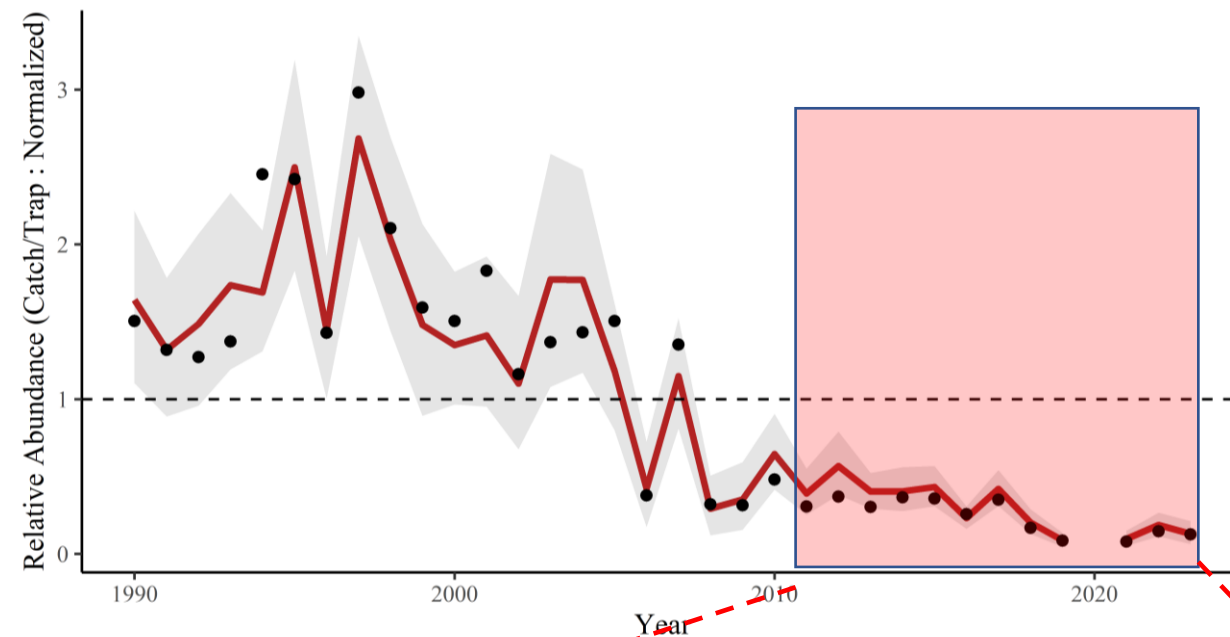
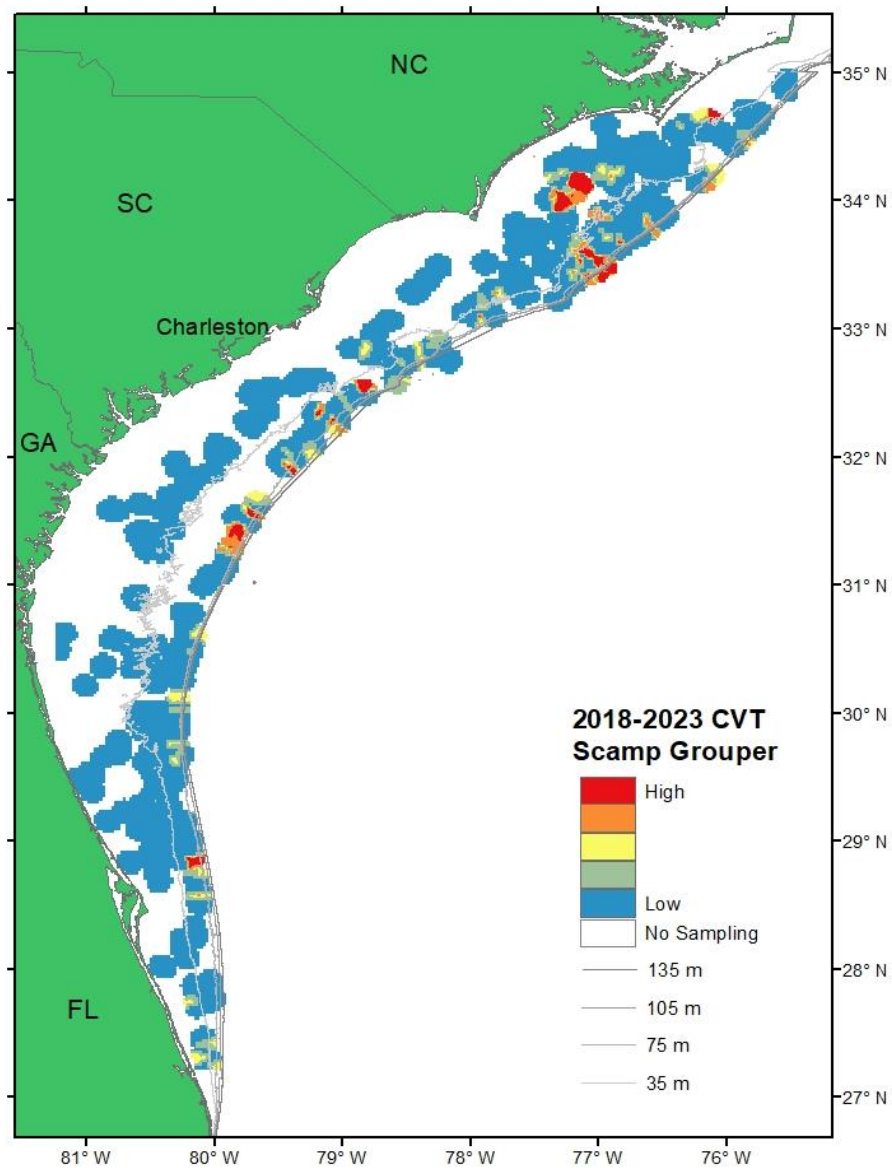


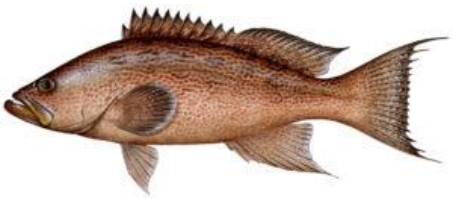
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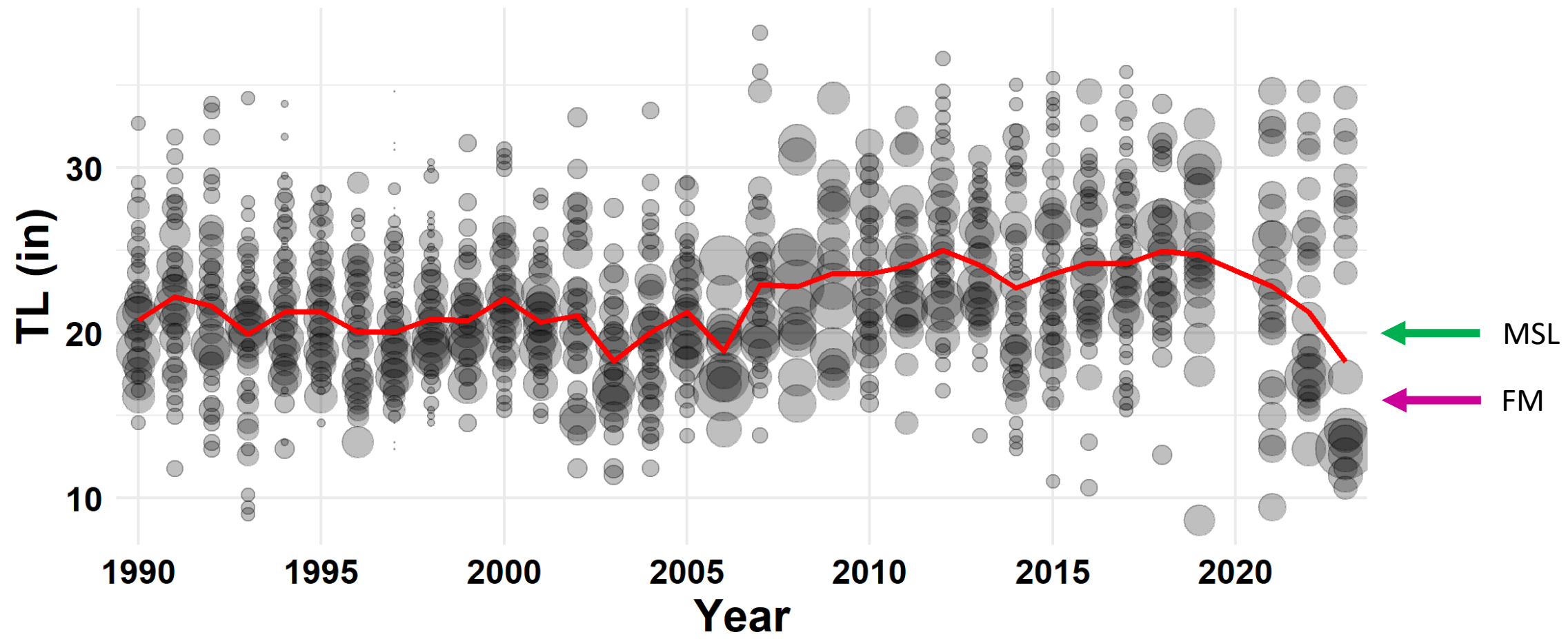


# Scamp





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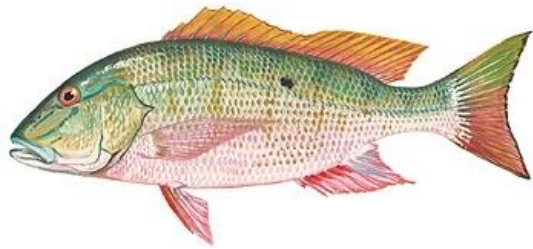


# **Selected Species**

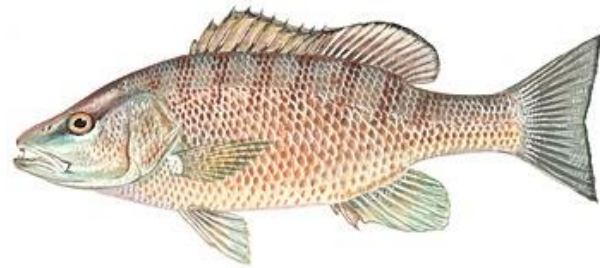
## **2023 CVT Video Only Indices**



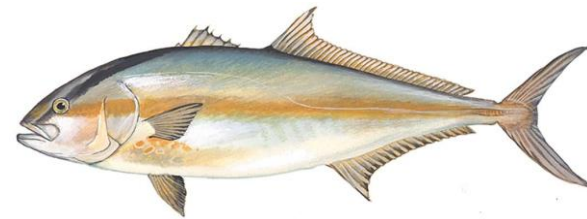
**Hogfish**



**Mutton Snapper**



**Gray Snapper**

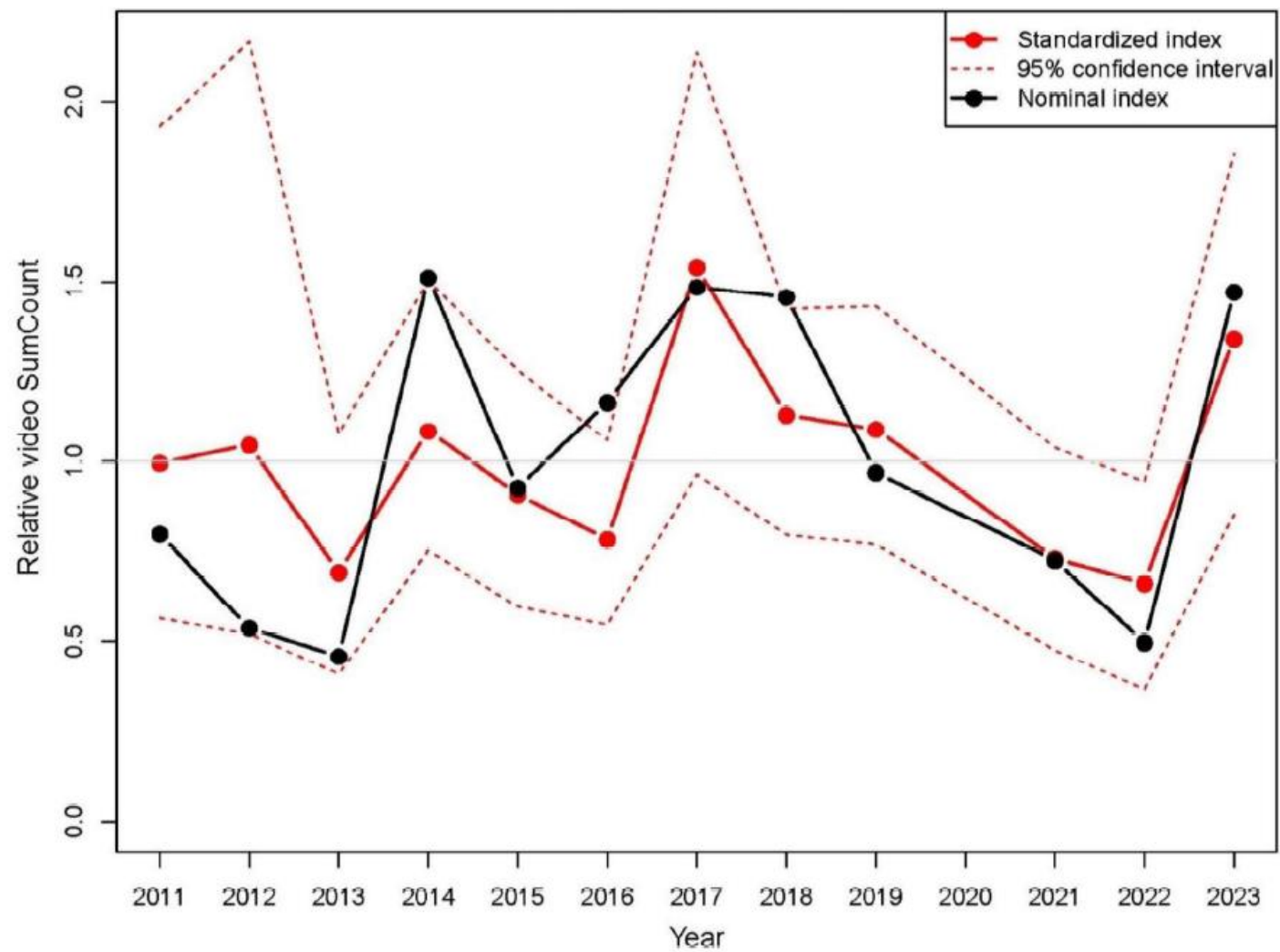


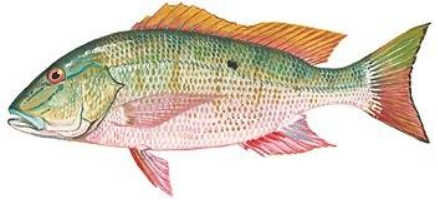
**Greater Amberjack**



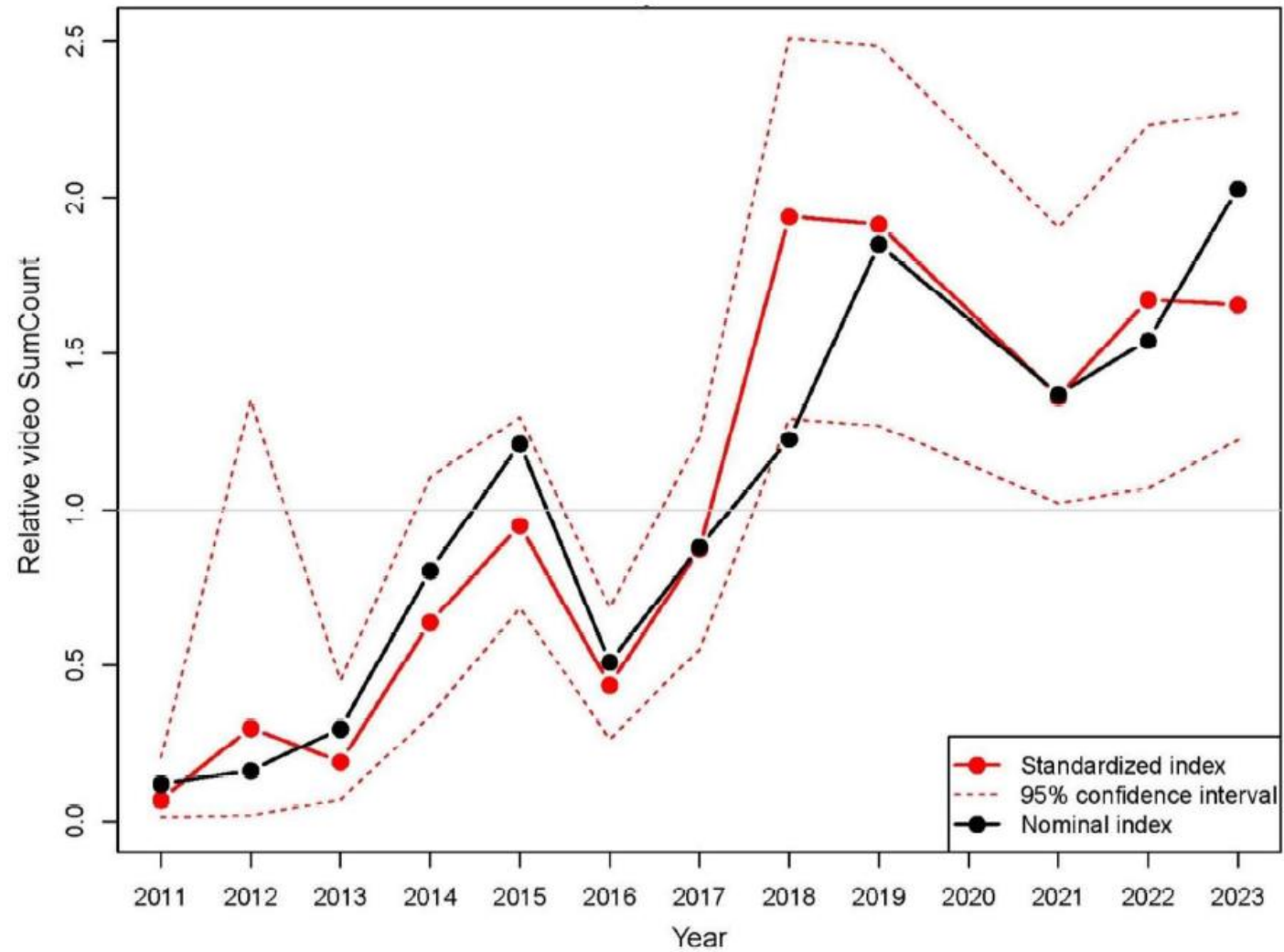


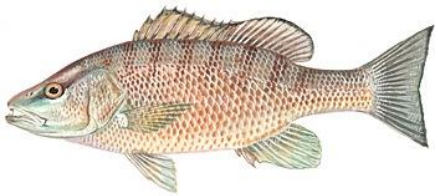
# Hogfish



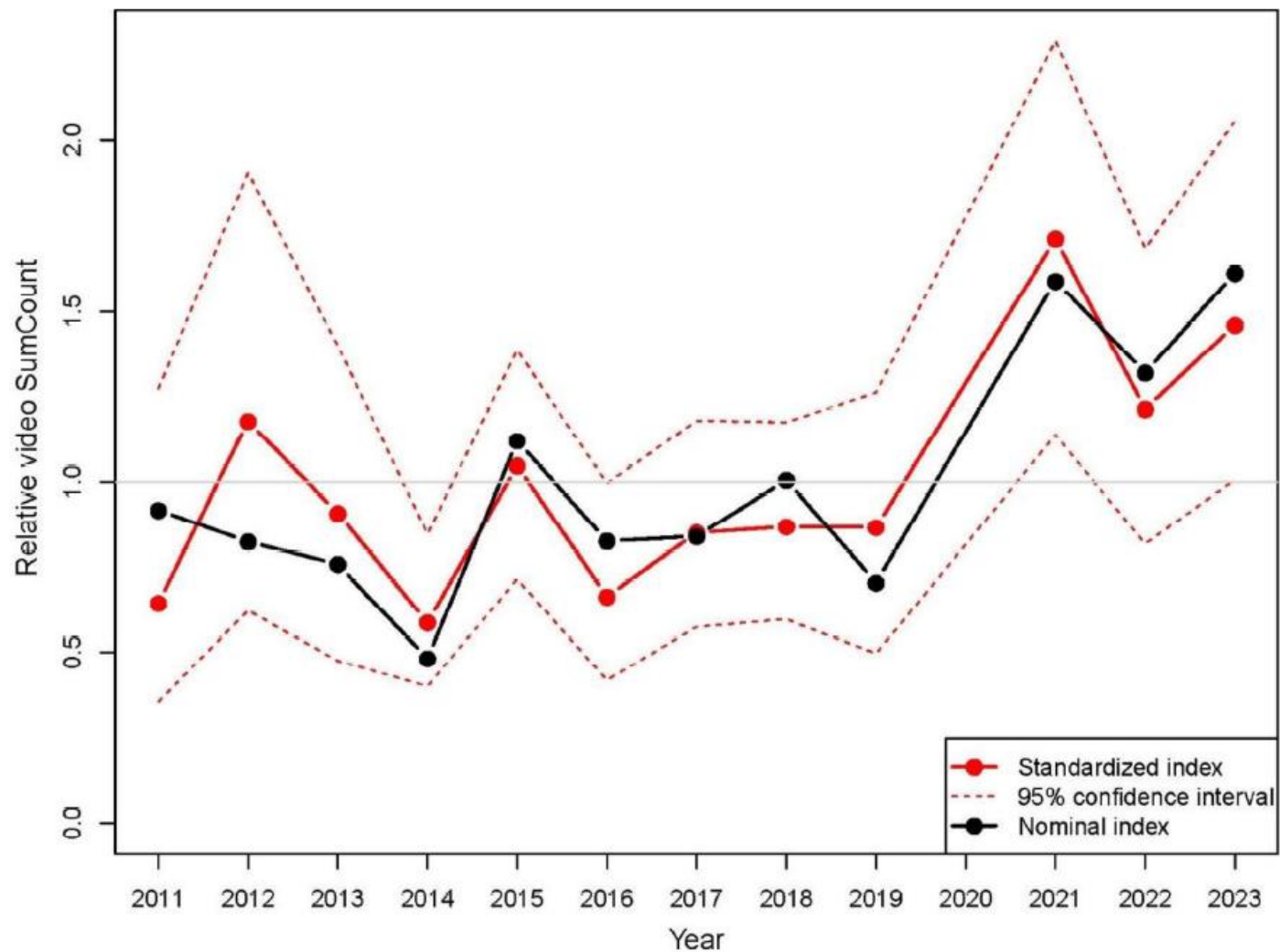


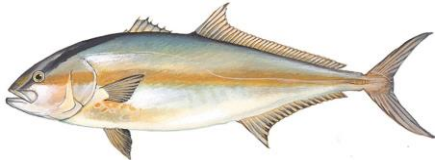
# Mutton Snapper



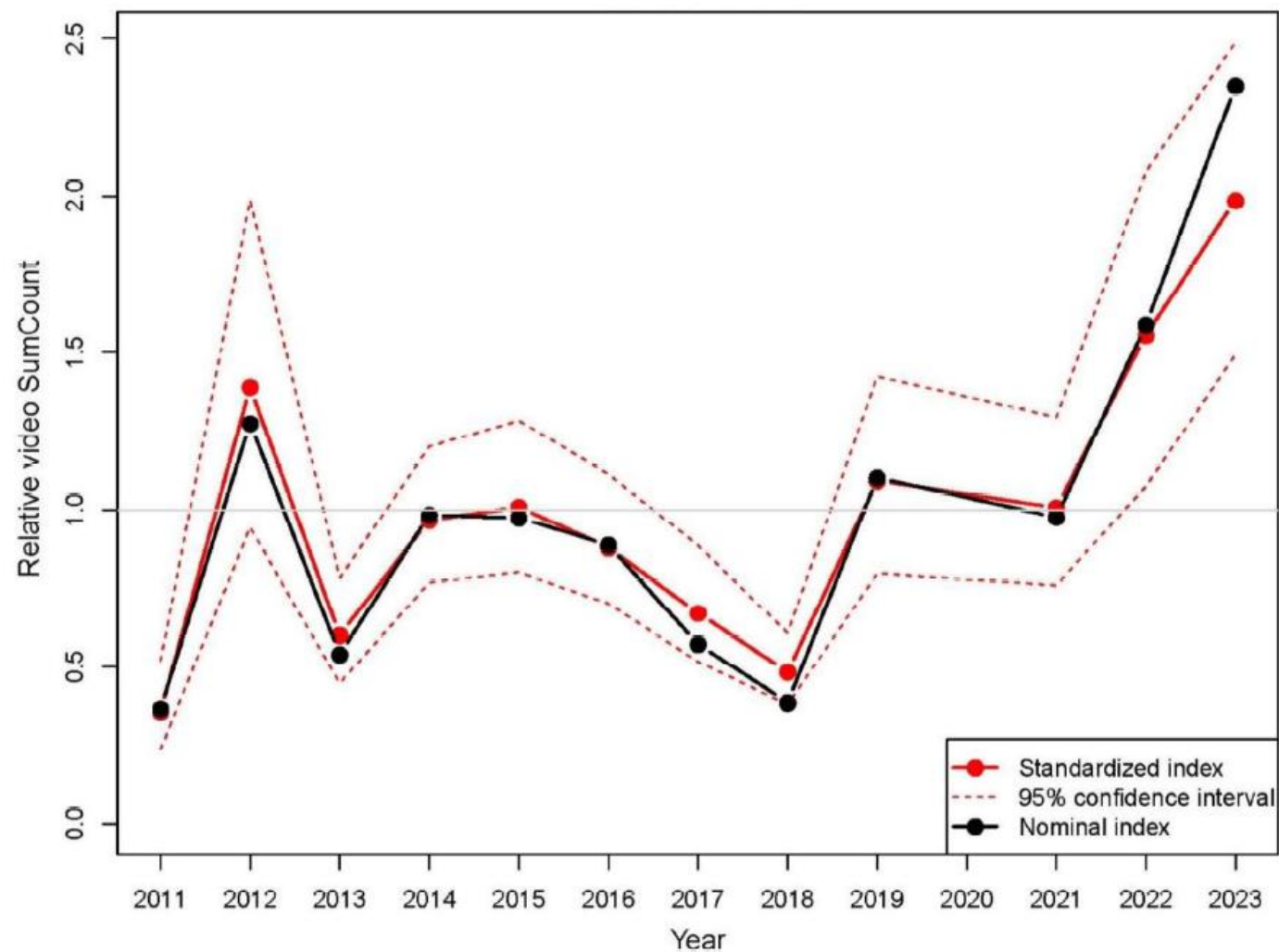


# Gray Snapper





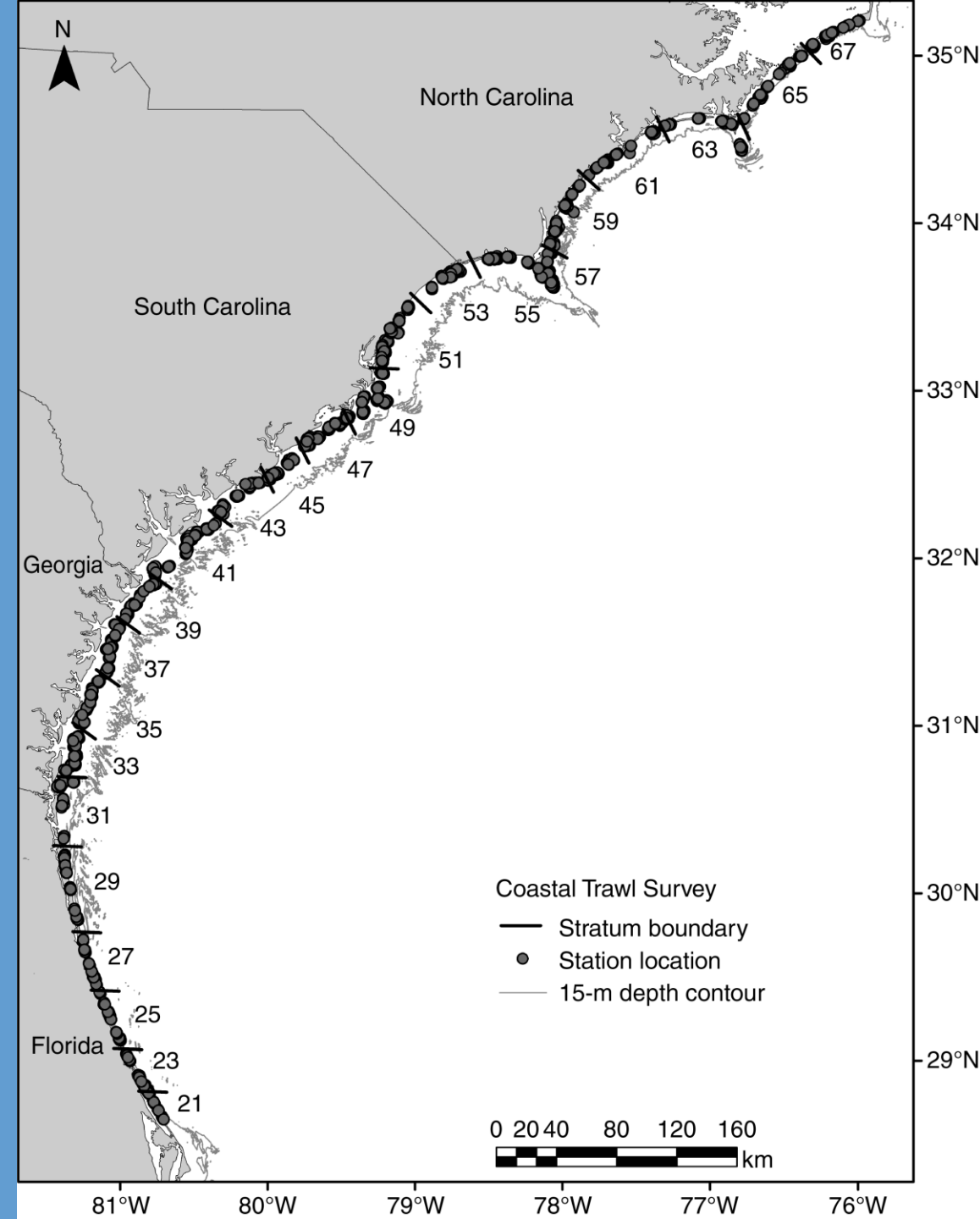
# Greater Amberjack





# Coastal Trawl Survey

- Funded through SEAMAP-SA
- 1990-2023 std'd procedures
- Stratified, random sampling design
  - 24 latitude-based strata
  - Fixed stations, annual random selection
- 3 Seasons (Spring, Summer, Fall) 1990-2022
- 2 Seasons (Spring, Fall) 2023-present
- Target 102 stations per season for 2023
  - Station allocation optimized to reduce variability

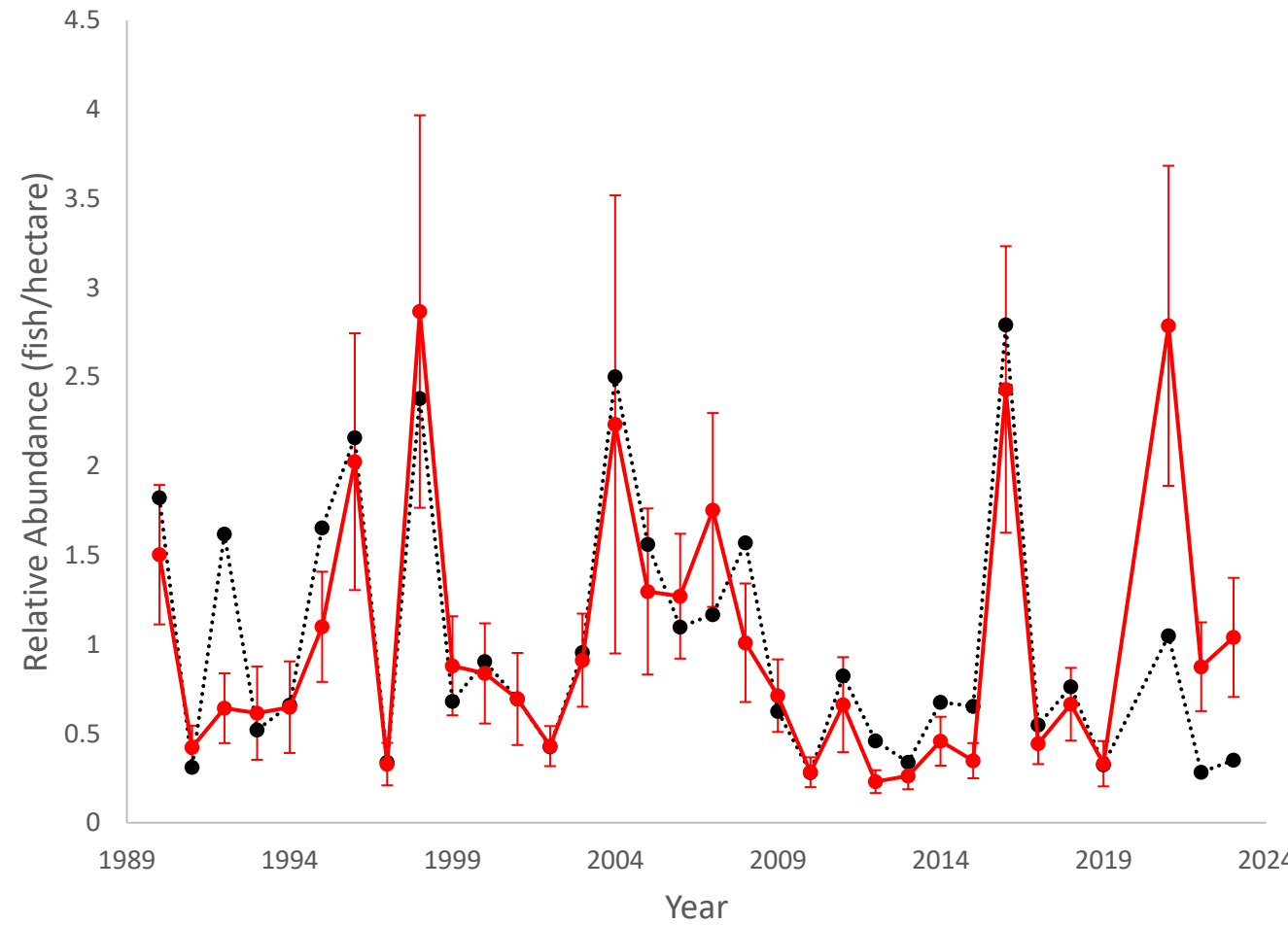
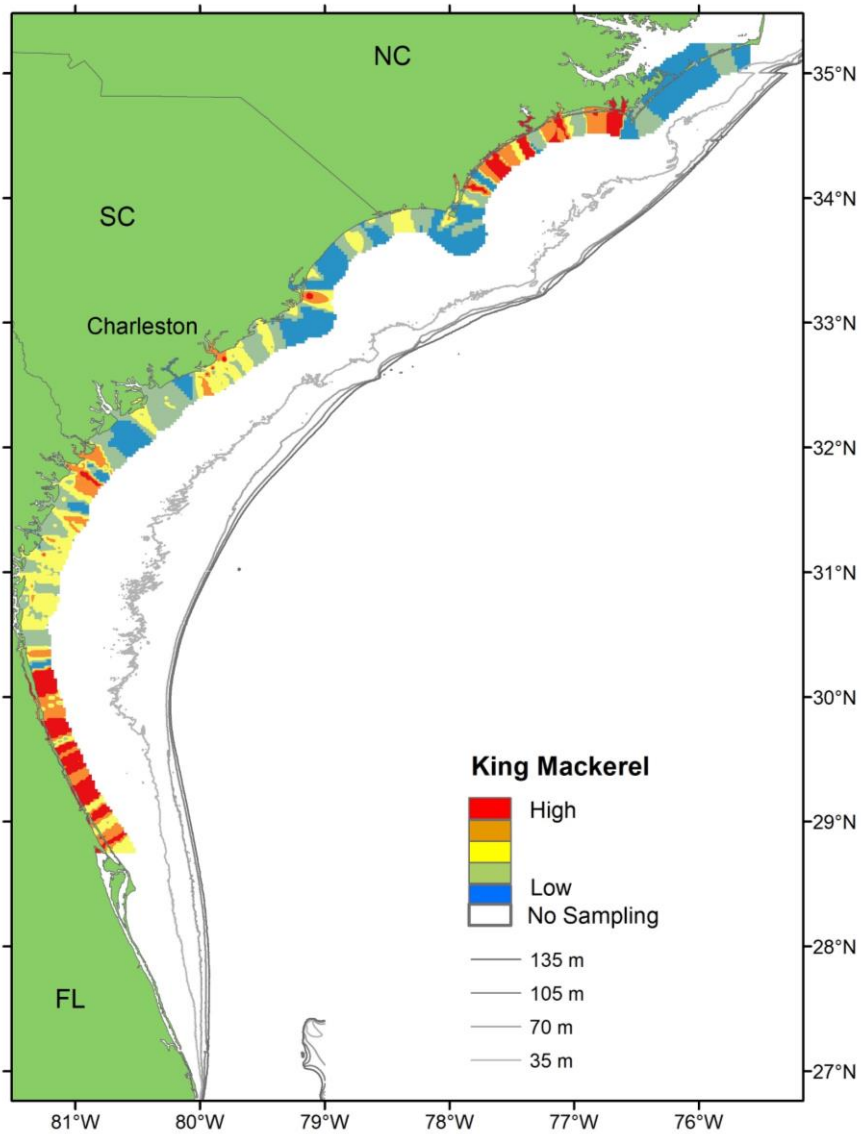


# Coastal Trawl Survey

- 75' Mongoose-type Falcon nets
- Shallow-water, trawlable habitats
- 2020 no sampling due to COVID-19
- 2021 partial sampling due to COVID-19
- Abundance = #/hectare sampled

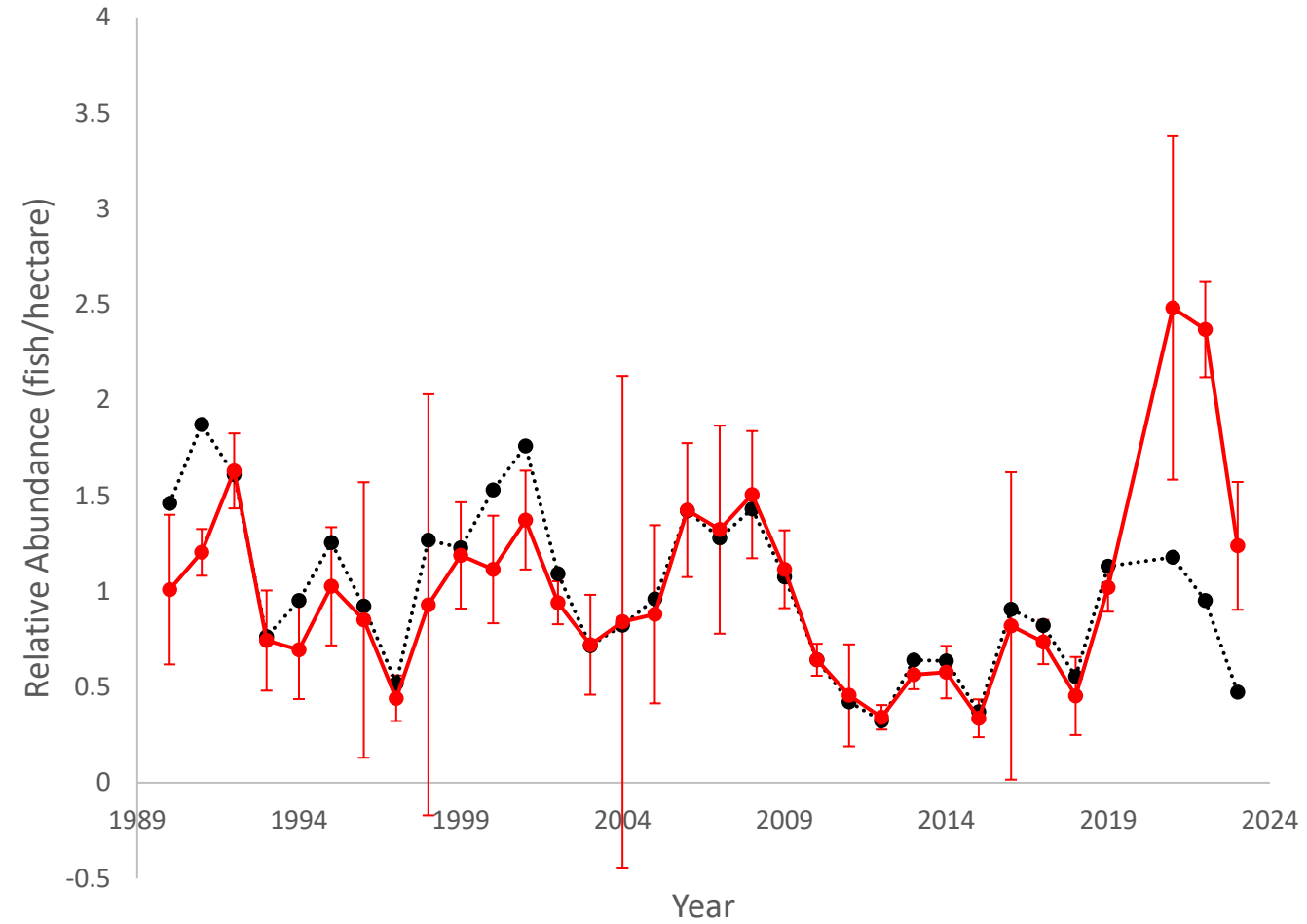
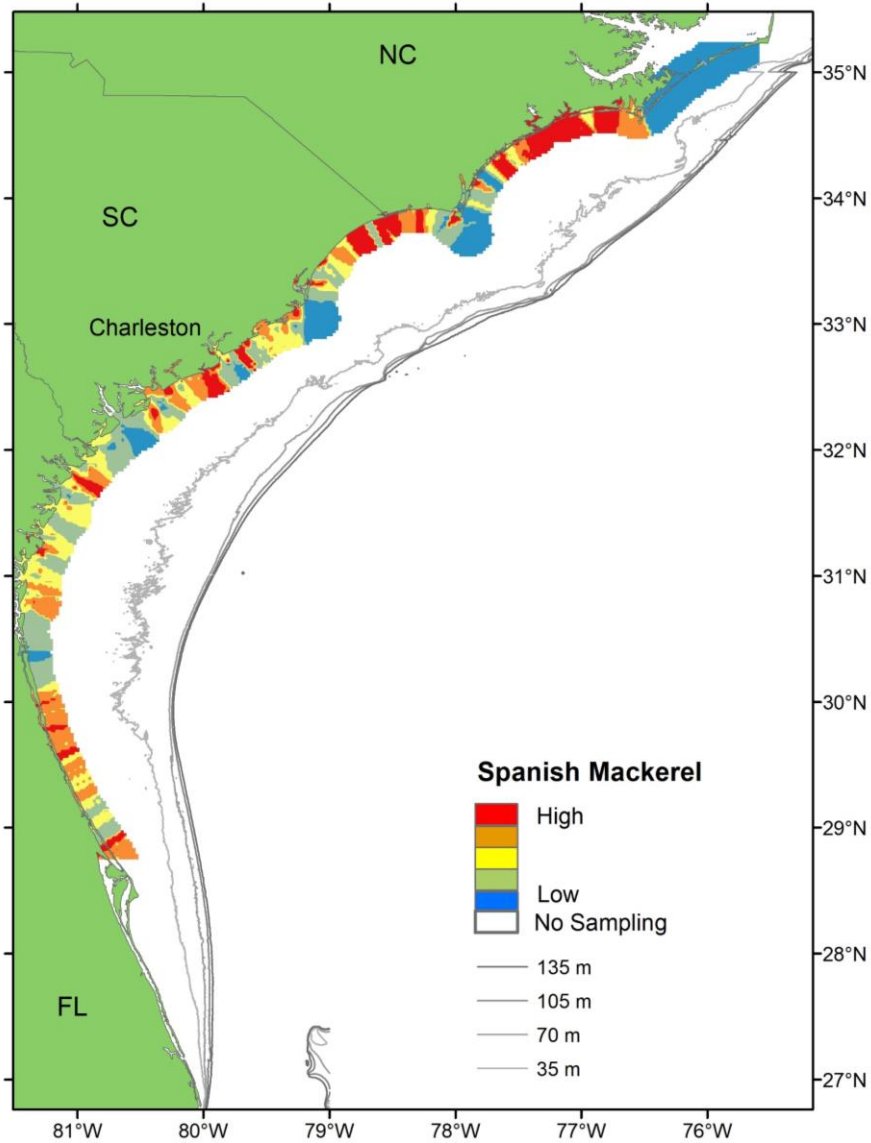


# King Mackerel (Age-0 +)



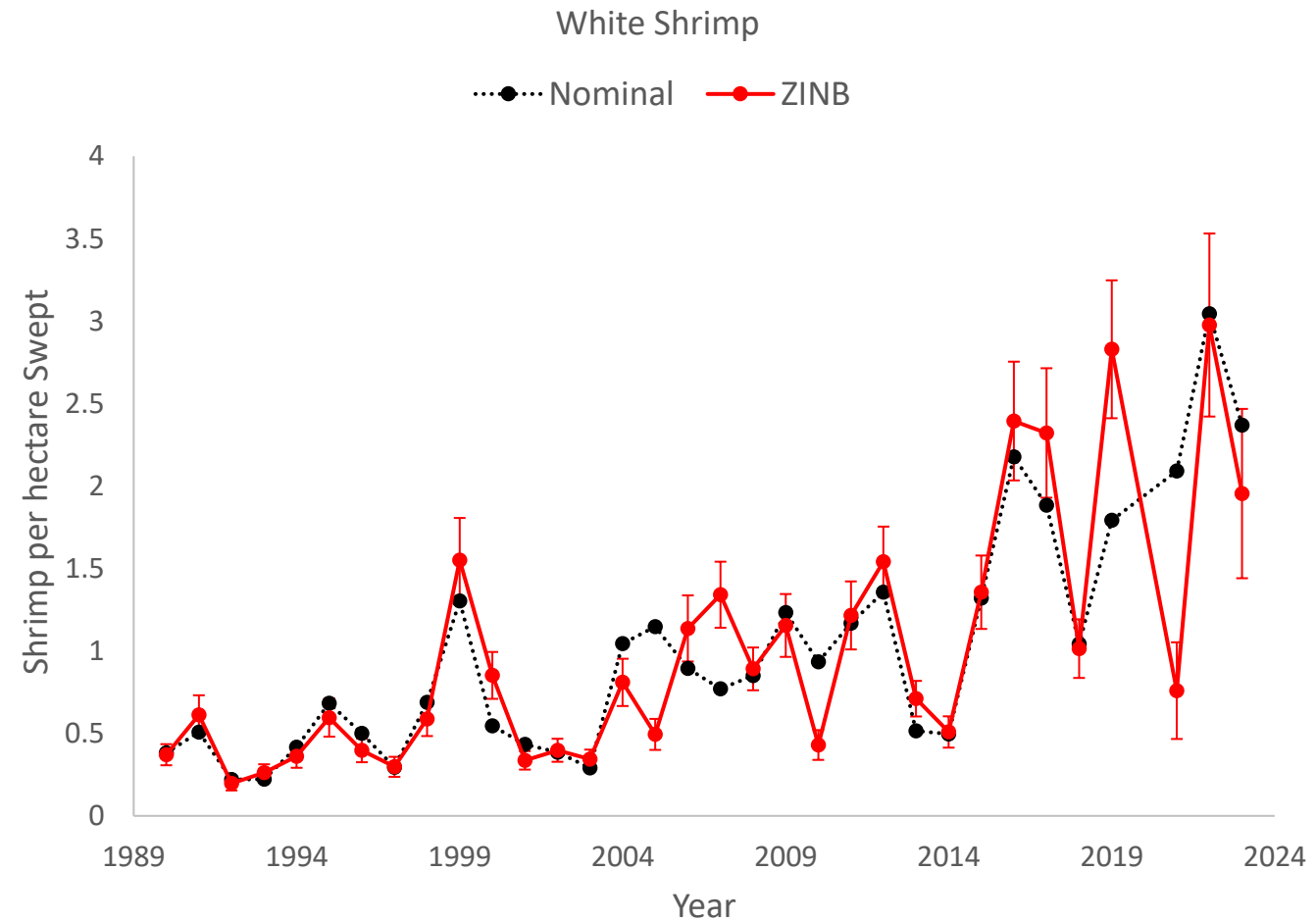
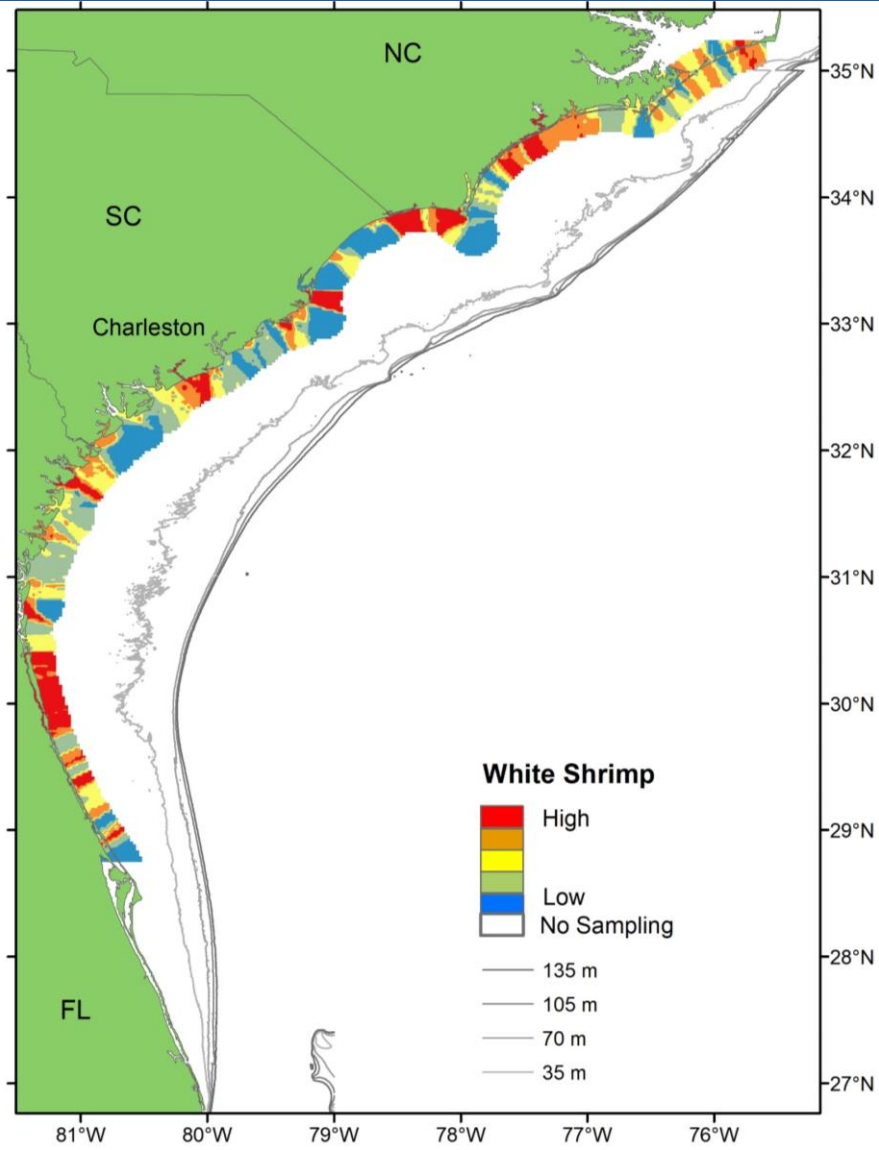


# Spanish Mackerel (Age-0 +)

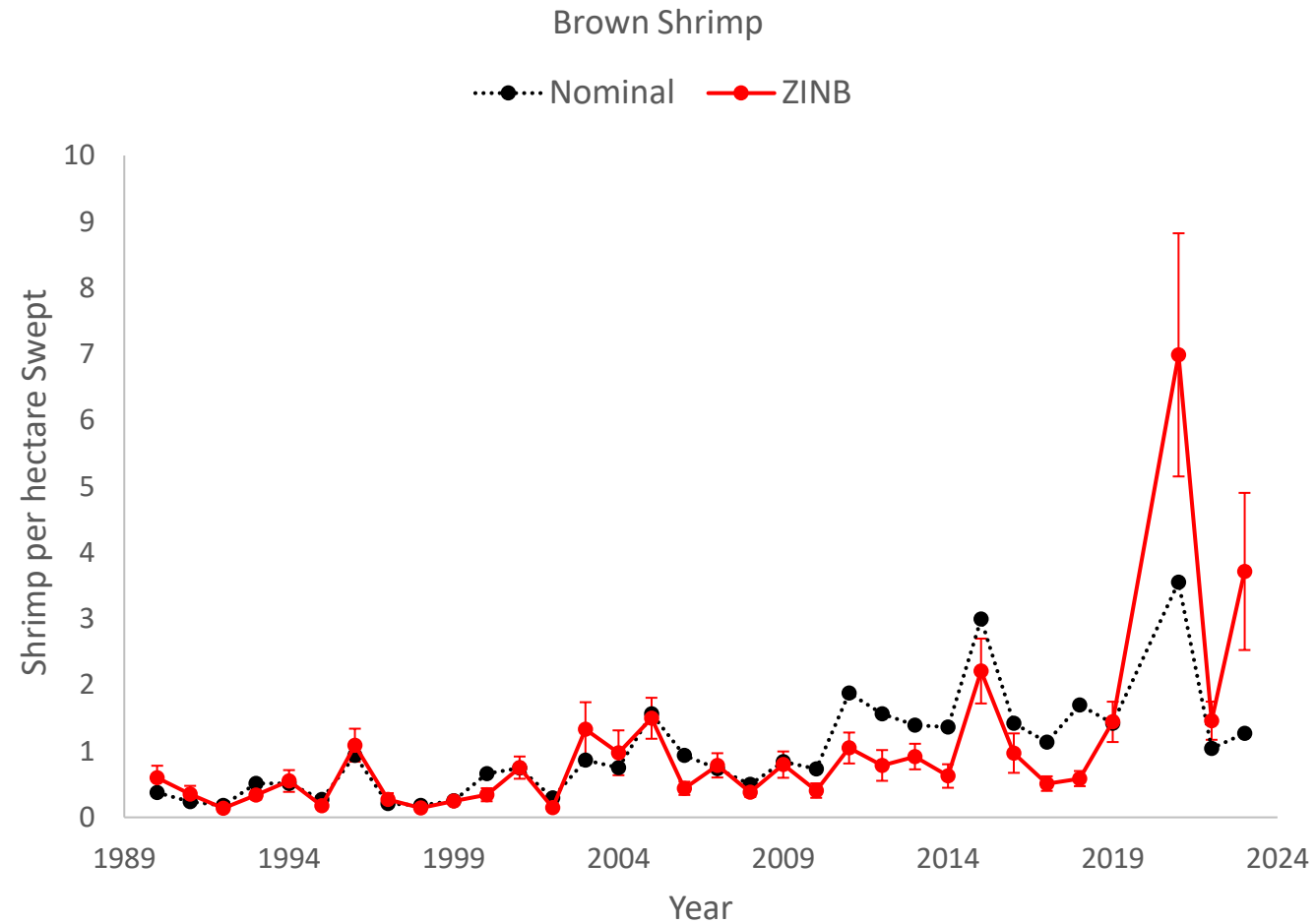
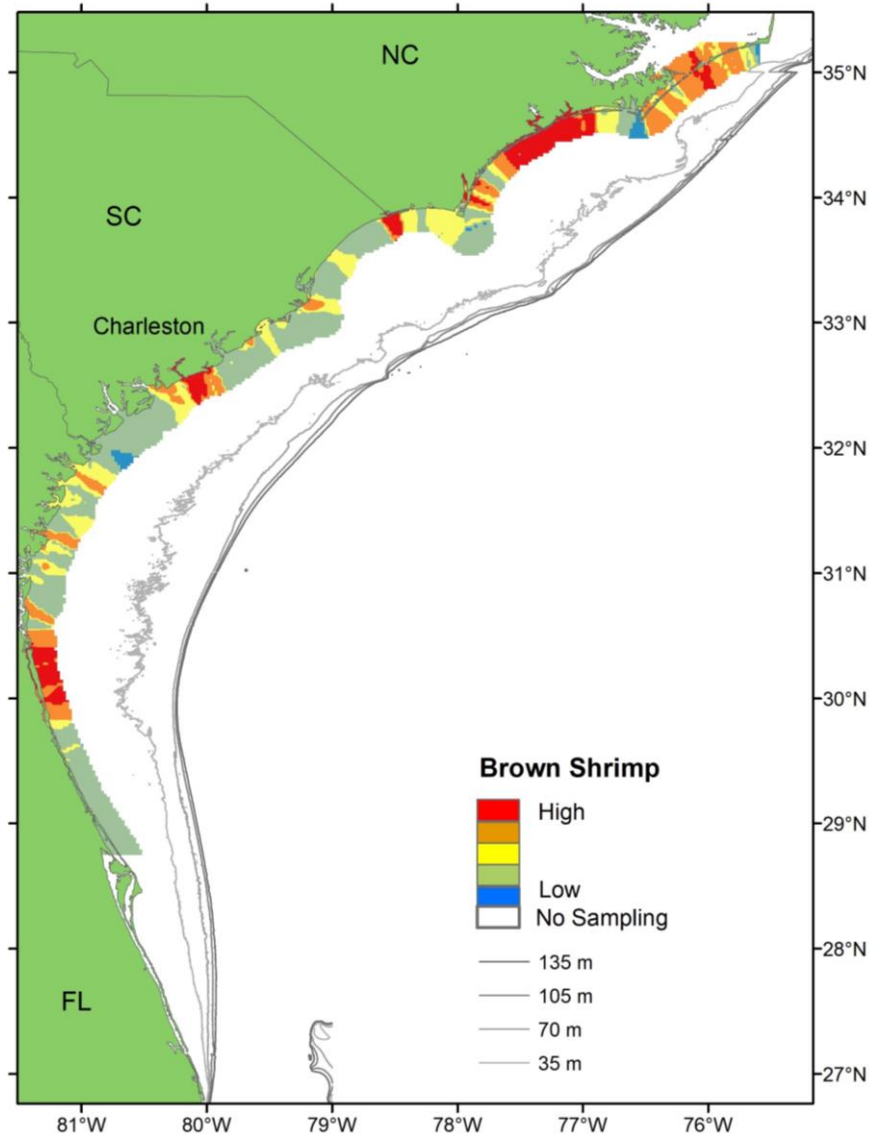




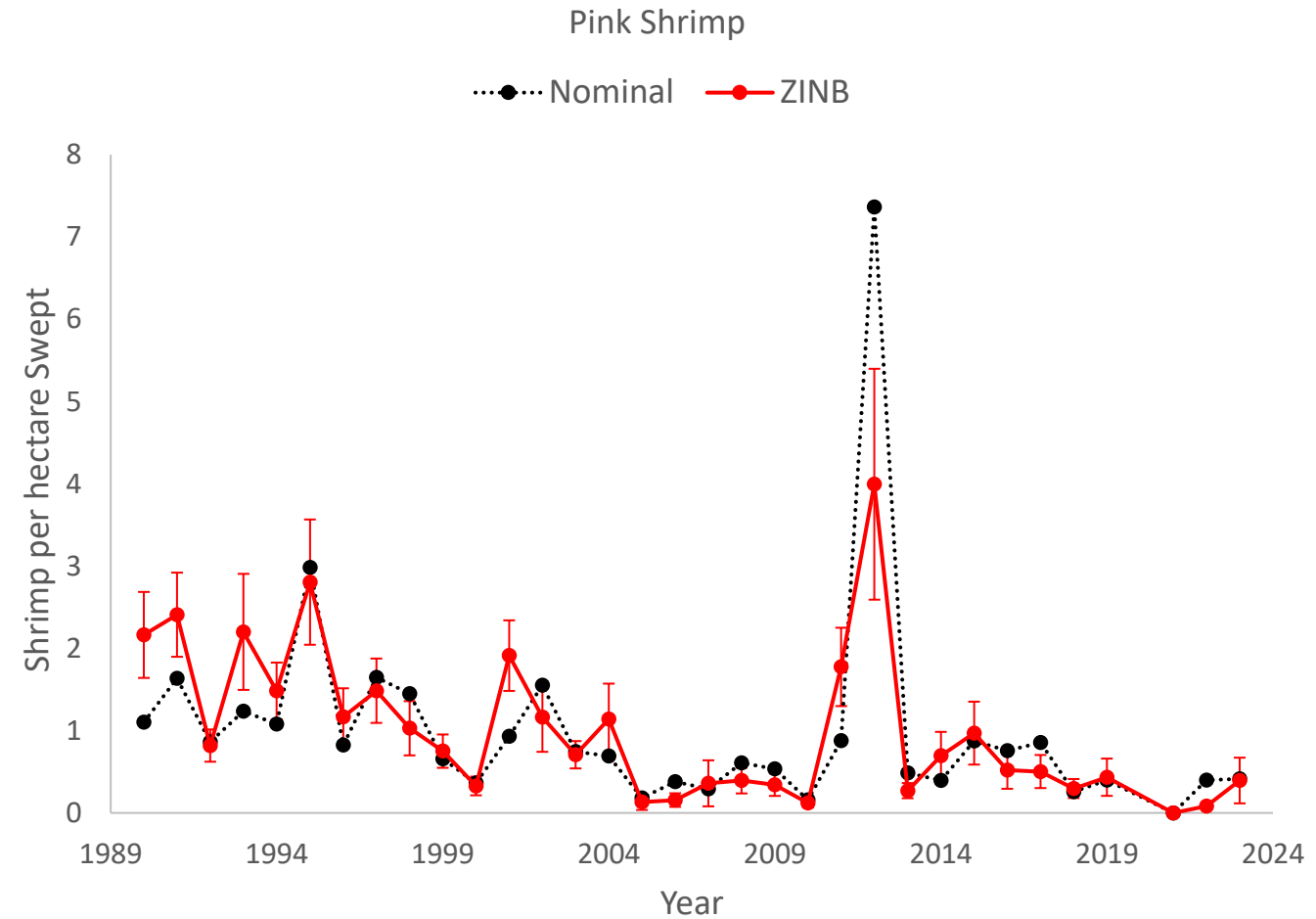
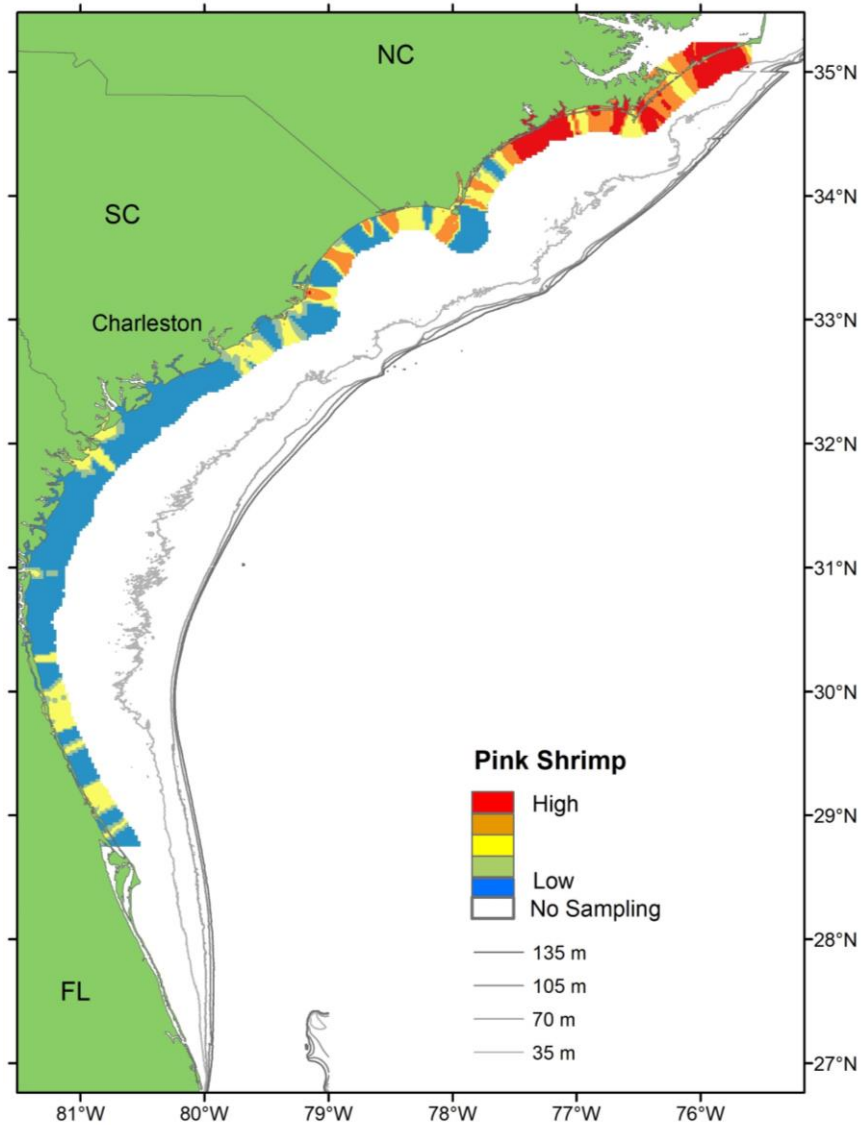
# White Penaeid Shrimp



# Brown Penaeid Shrimp



# Pink Penaeid Shrimp





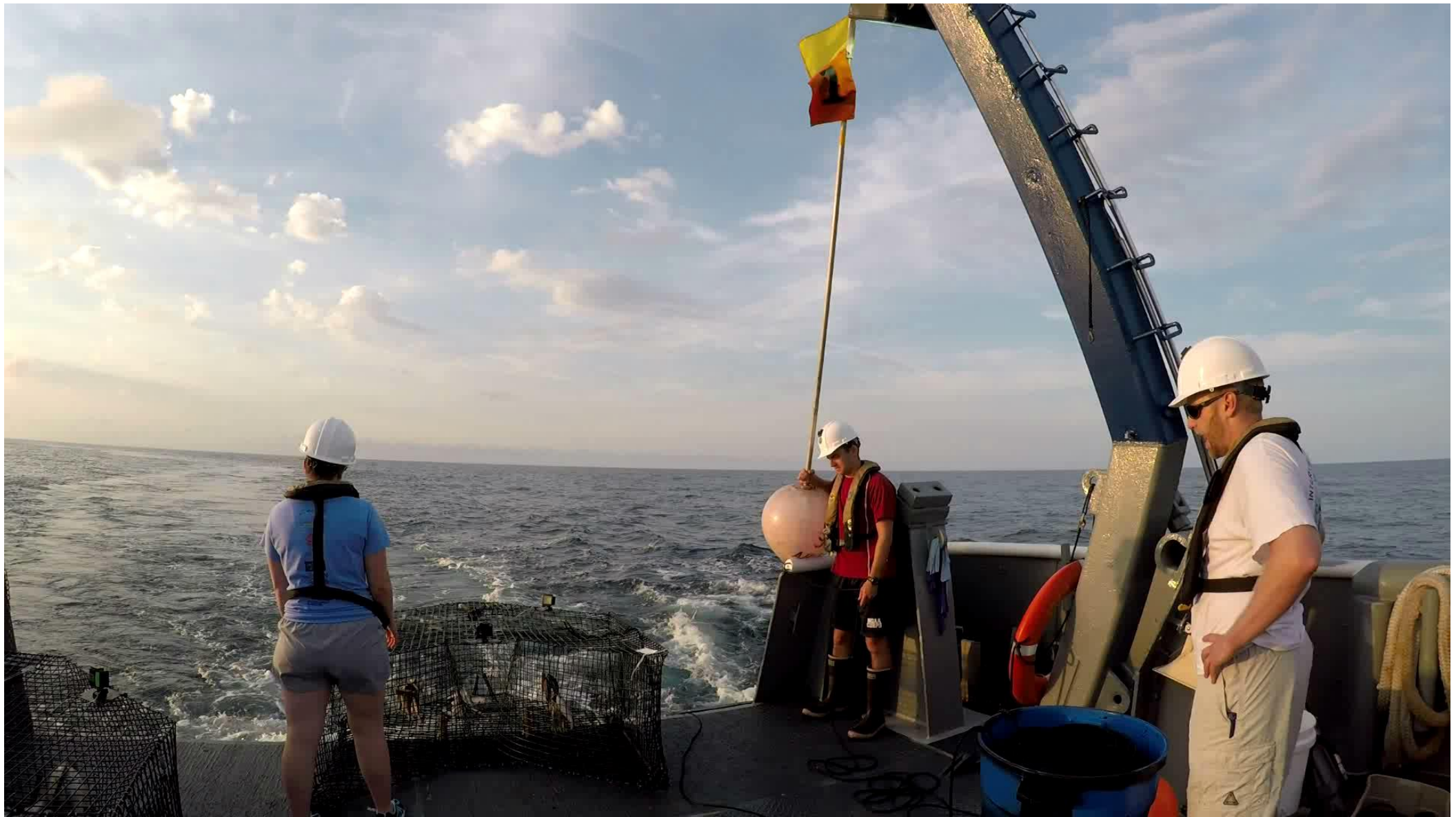
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*Past and Present*

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Questions?