

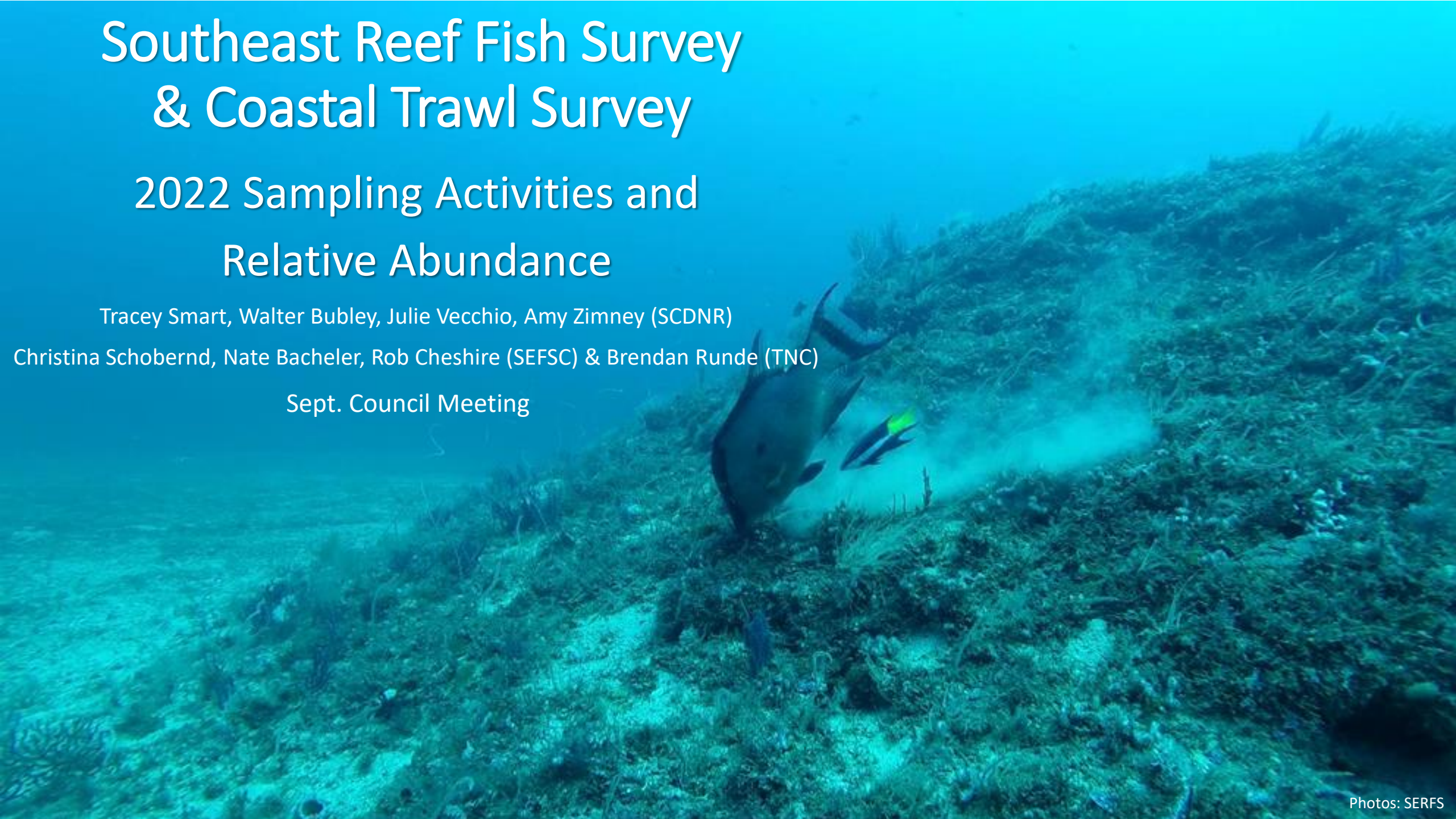
Southeast Reef Fish Survey & Coastal Trawl Survey

2022 Sampling Activities and Relative Abundance

Tracey Smart, Walter Bubley, Julie Vecchio, Amy Zimney (SCDNR)

Christina Schobernd, Nate Bacheler, Rob Cheshire (SEFSC) & Brendan Runde (TNC)

Sept. Council Meeting



Presentation Overview

SERFS

Design

2022 Activities

Abundance, Length & Distribution for Selected Spp.

SEAMAP-SA CTS

Design

2022 Activities

Abundance & Length for Selected Spp.

Southeast Reef Fish Survey (SERFS)

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

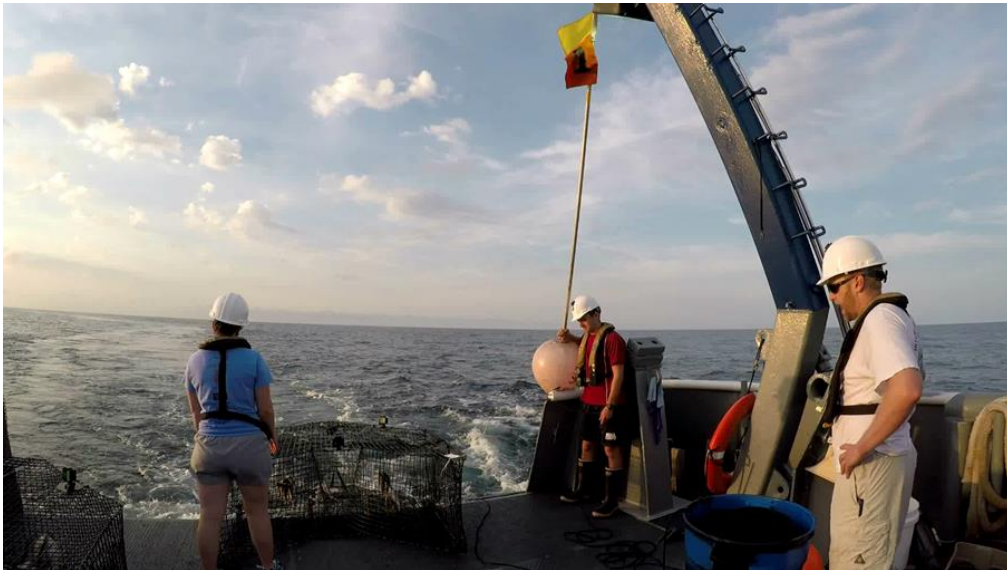
Historical Funding & Sampling:
MARMAP

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, live-bottom habitats
- Depths ~15-110 m
- Trap used consistently and standardized since 1990
- Baited with menhaden, soak time \approx 90 minutes
- Since 2011: all traps have 2 video cameras



CVT Universe

- $\approx 4,300$ trap sampling stations (NC– FL)
- $\approx 1,500$ randomly selected in 2022
- Sampling mid-April – mid-October

Sample and data processing & analyses

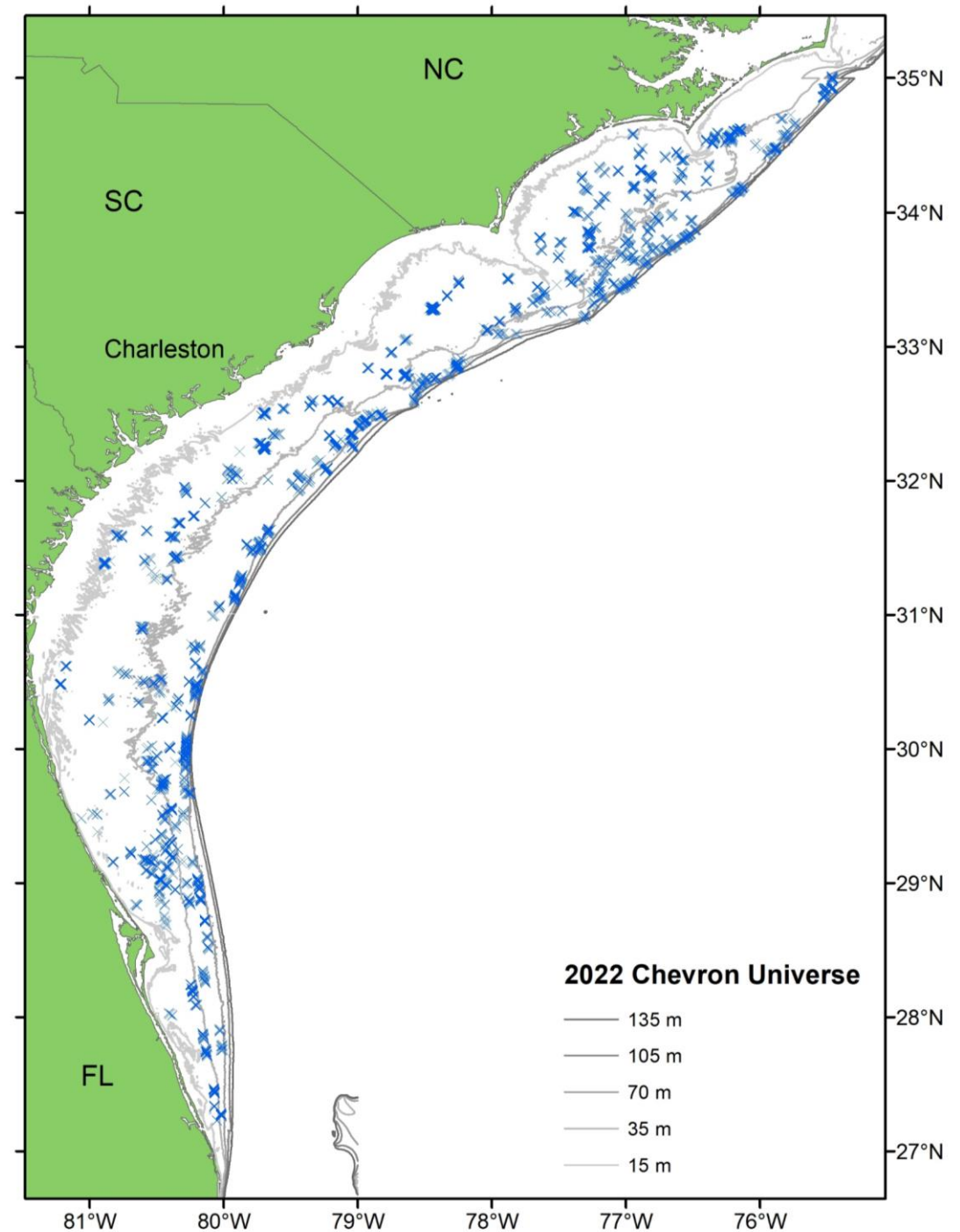
MARMAP/SEAMAP-SA (SCDNR):

- Trap indices
- Life history

SEFIS (SEFSC)

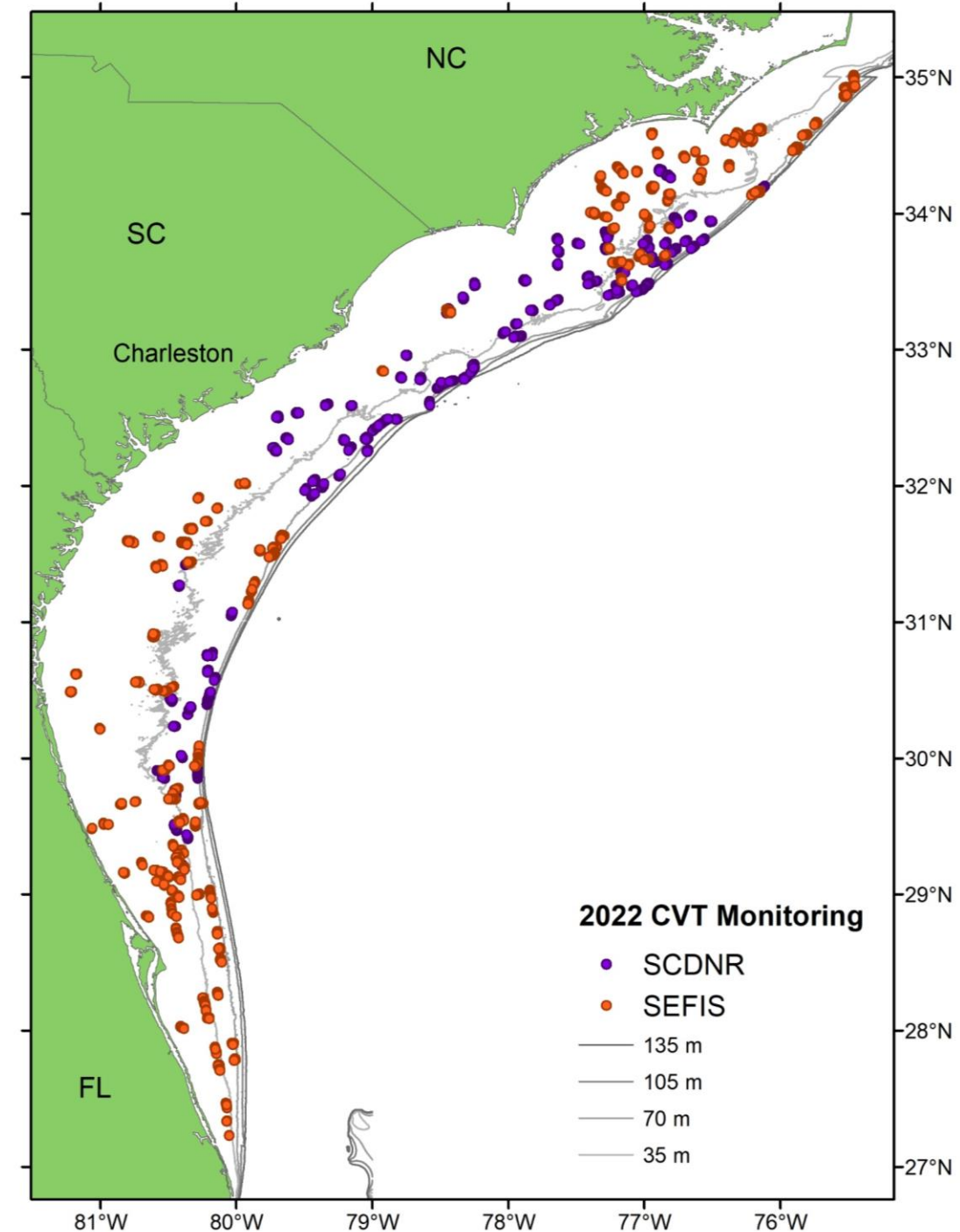
- Video indices

One combined database (SEAMAP.ORG)



2022 SERFS Activities

- **86** days at sea
- **1,945** gear deployments
 - 1,667** Chevron Video Traps
 - 278** CTD casts
- **CVTs = 28,814** fish (**59** species) collected, measured, weighed
- **9,102** fish (**25** species) retained for life history (age, repro., DNA)



Overview of SERFS Relative Abundance

- Chevron index (1990-2022)
- Video index (2011-2021)
- No sampling in 2020
- Standardized using Zero-Inflated Negative Binomial model (ZINB)

Most appropriate method, reduces uncertainty

Traps:

- Number of fish
- Trap soak time

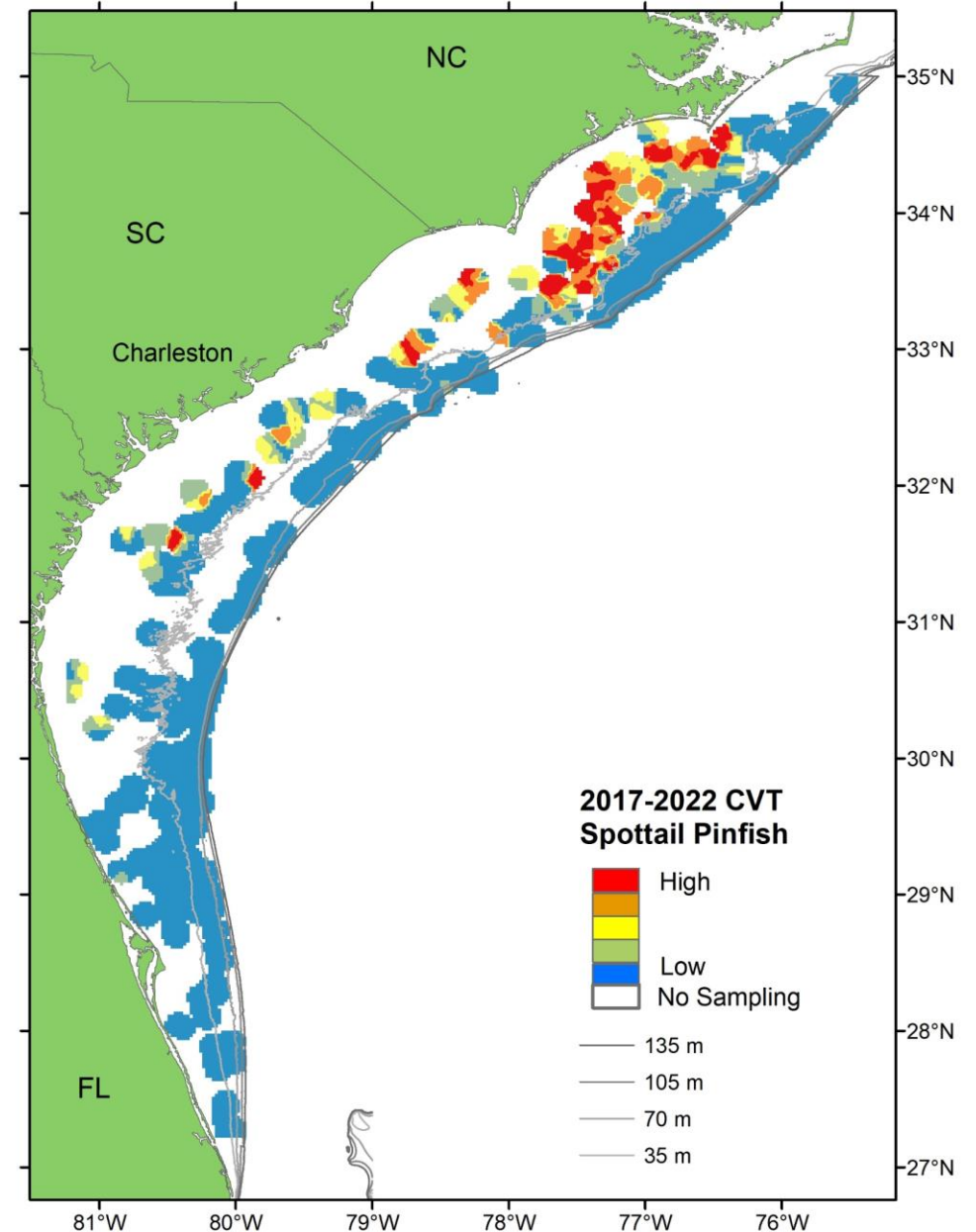
Videos:

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

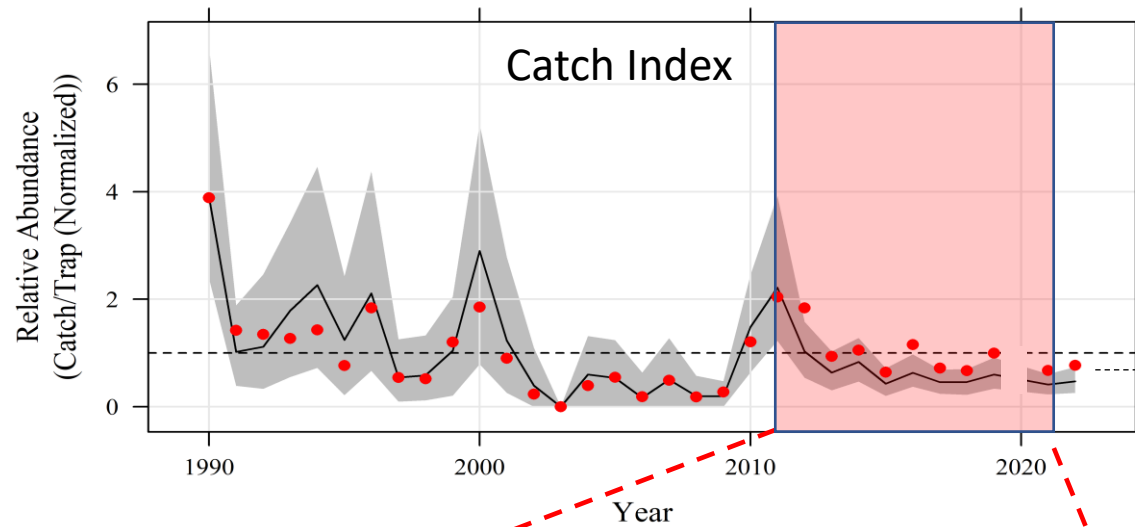


CVT Distributions- Example

- Based on catches only
- Nominal catch abundance in quintiles (5 bins)
 - # fish / trap hour
- 2017-2022 (no 2020)
- Cooler colors => lower nominal abundance
- Warmer colors => higher nominal abundance
- White => no sampling



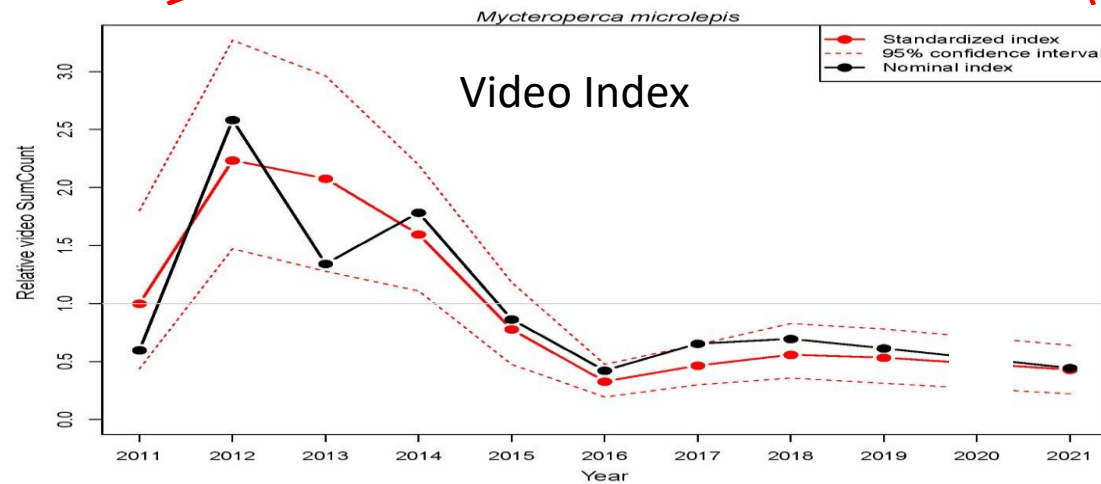
SERFS Indices- Example



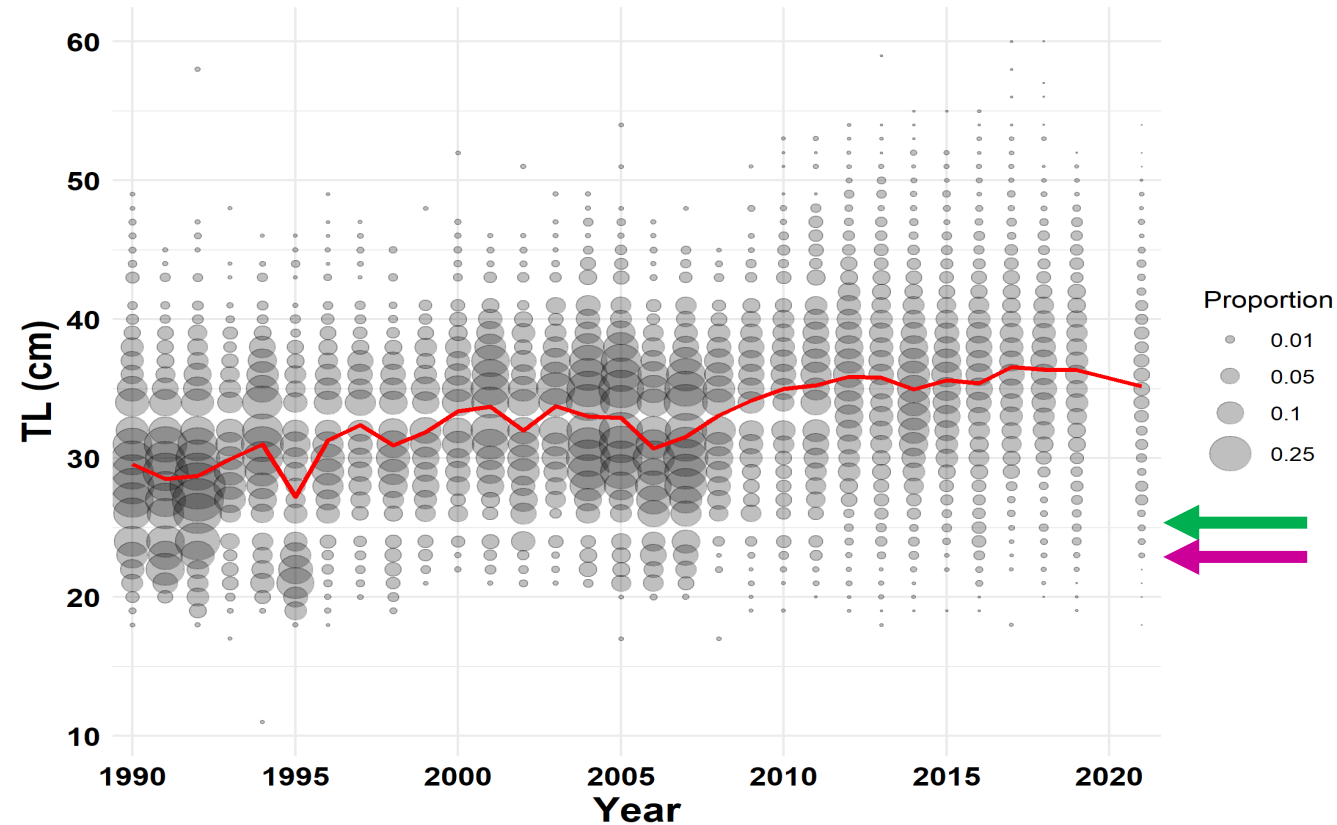
Normalized to long-term average
(dashed or solid line at 1)

e.g. 2 = twice long-term average, and 0.5 =
half long-term average

Gear	ZINB Index	95% C.I.	Nominal Values
Catch	Black Line	Gray Shading	Red Dots
Video	Red Line	Dotted Lines	Black Dots + Line



SERFS Length Compositions- Example



- Catch Only
- Maximum (Pinched) Total Length (cm)
- 1-cm 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 to cm

Relative Abundance Overview

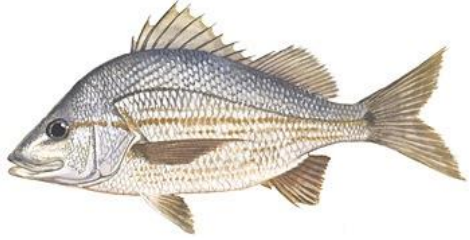
Caveats



- Not an update of stock status
- Trap: Constraints, stratification, units, and models may be different from those used in (SEDAR) stock assessments
- Video: Index for species that have been assessed through SEDAR, with video index model used in the assessment
- Not all species have been assessed or updated (SEDAR) and not all updated trends and analyses have been discussed in assessment framework

Selected Species

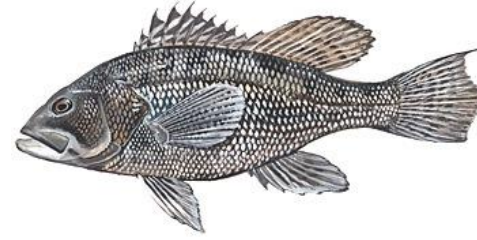
2022 CVT Catch Rankings



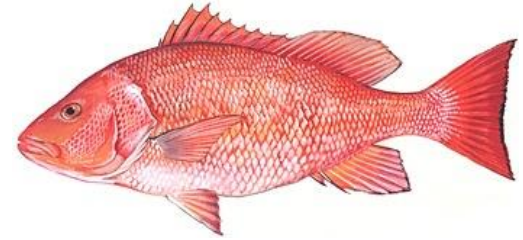
1. Tomtate



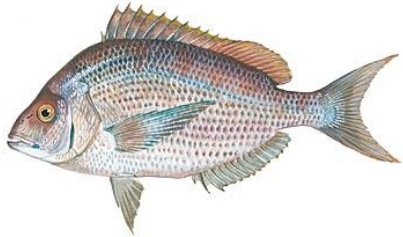
2. Vermilion Snapper



3. Black Sea Bass



4. Red Snapper



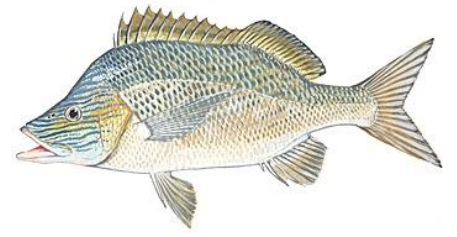
5. *Stenotomus* spp.



6. Gray Triggerfish



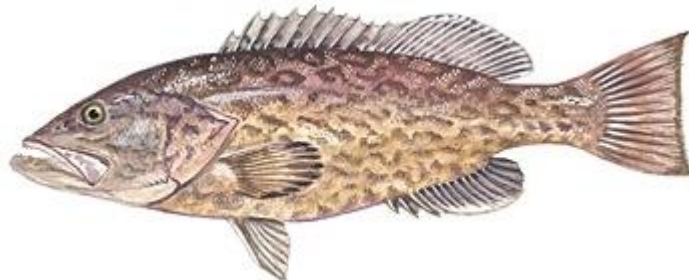
7. Red Porgy



8. White Grunt



18. Scamp

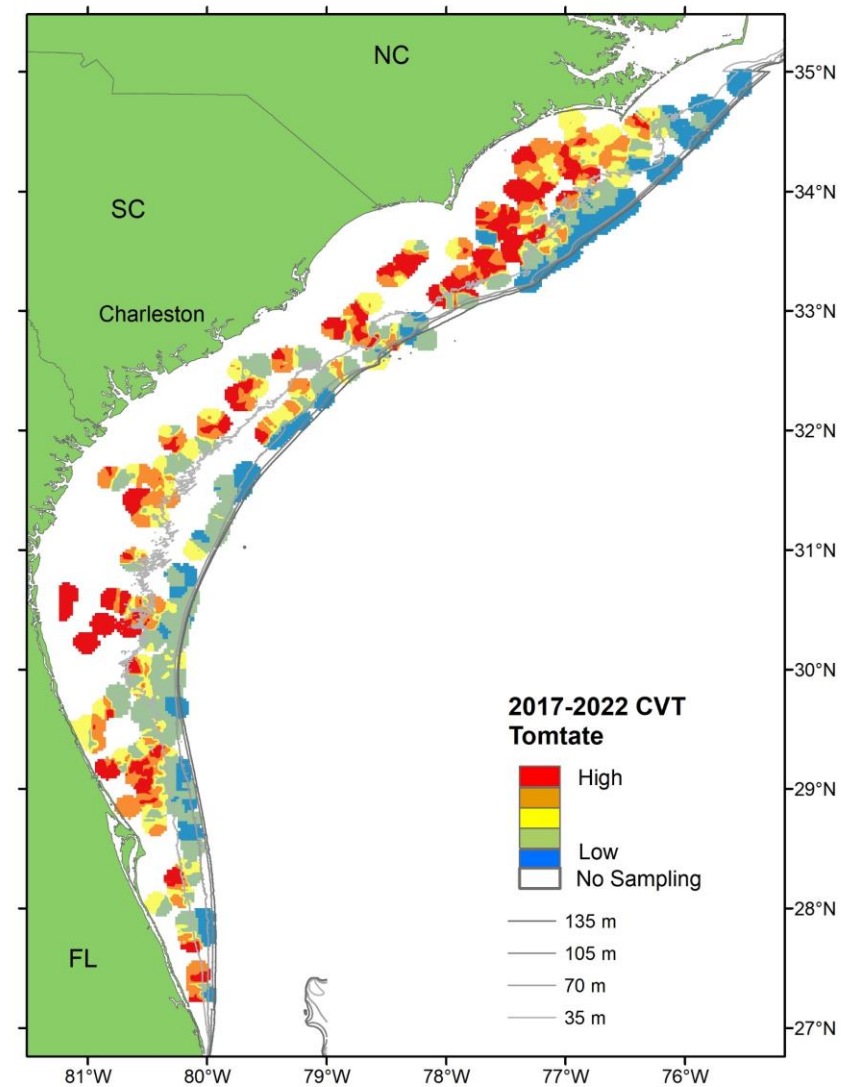
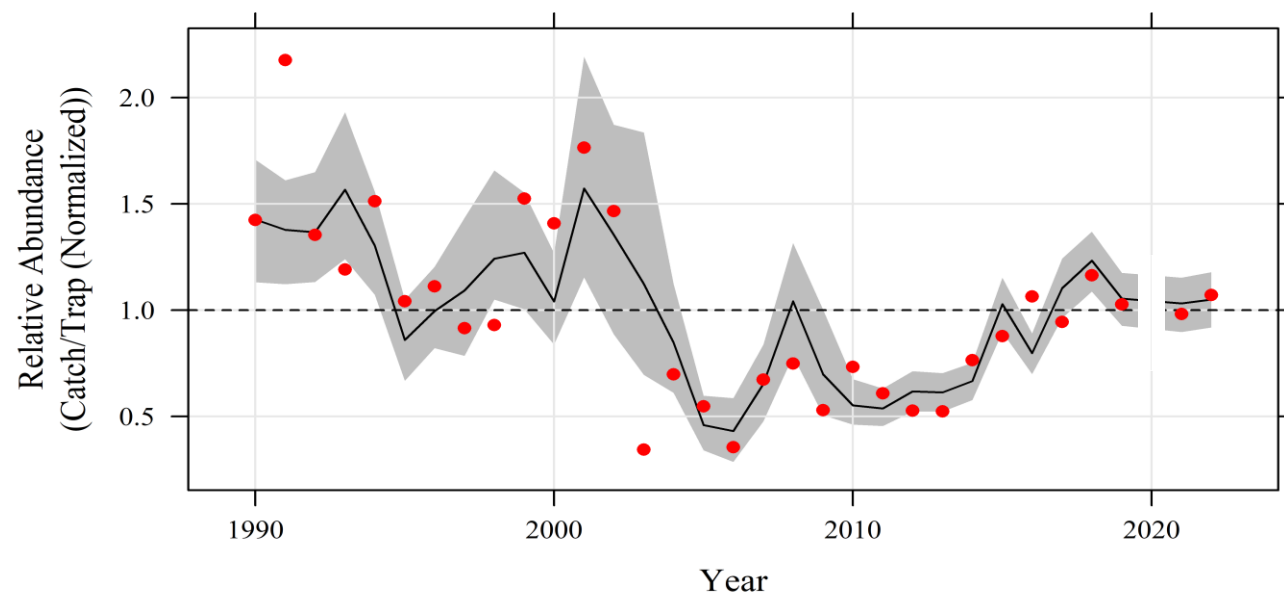


22. Gag

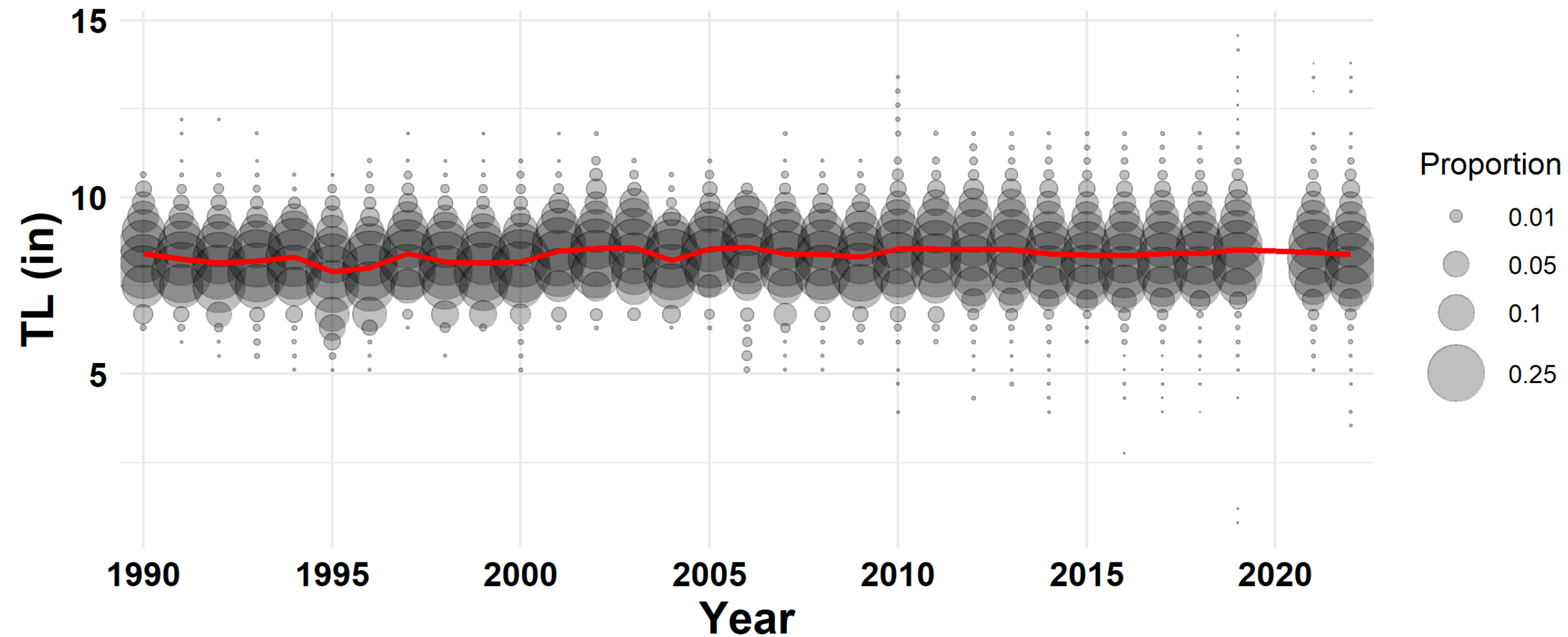


28. Red Grouper

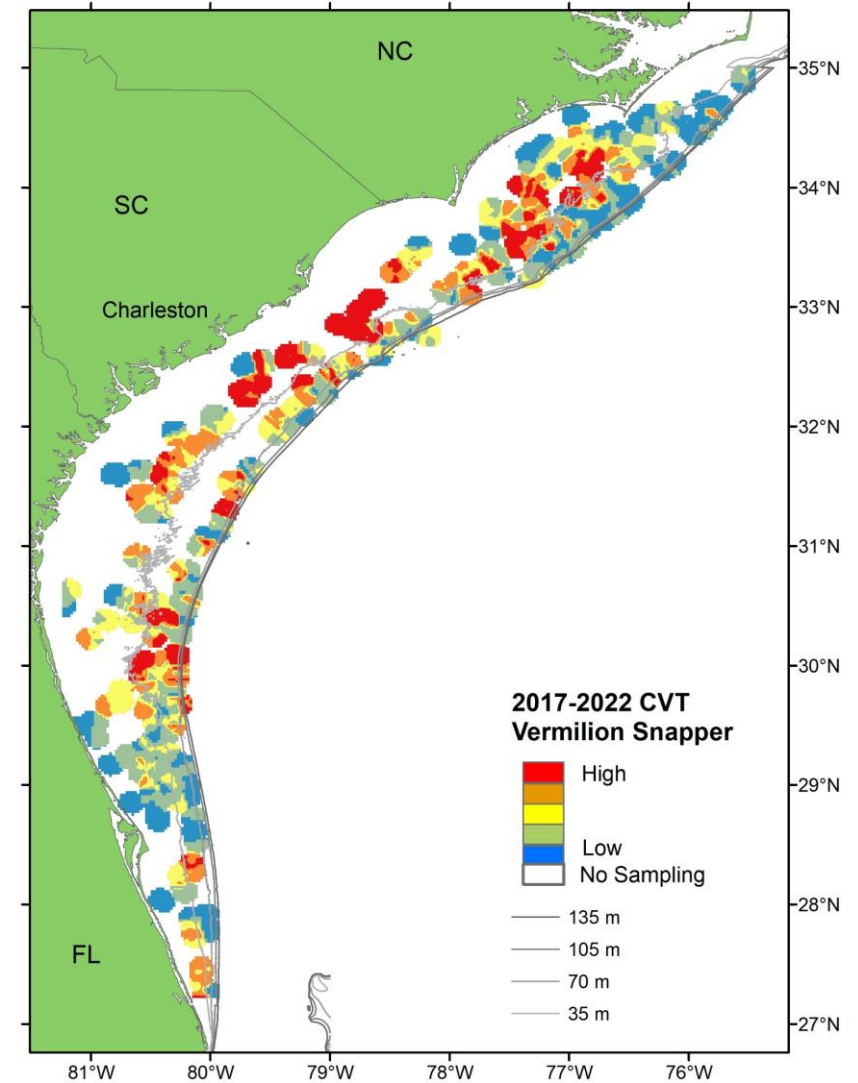
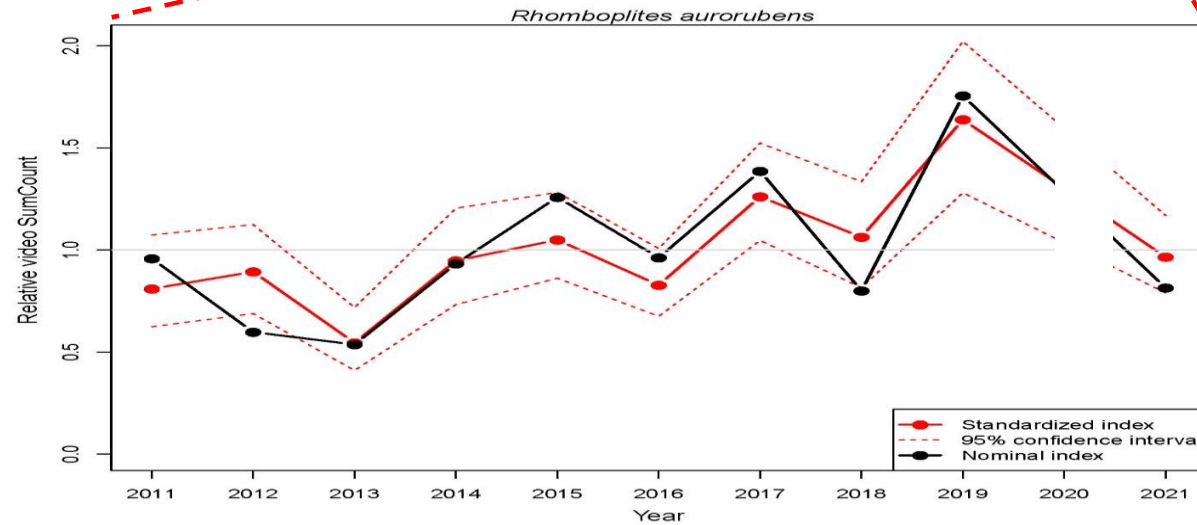
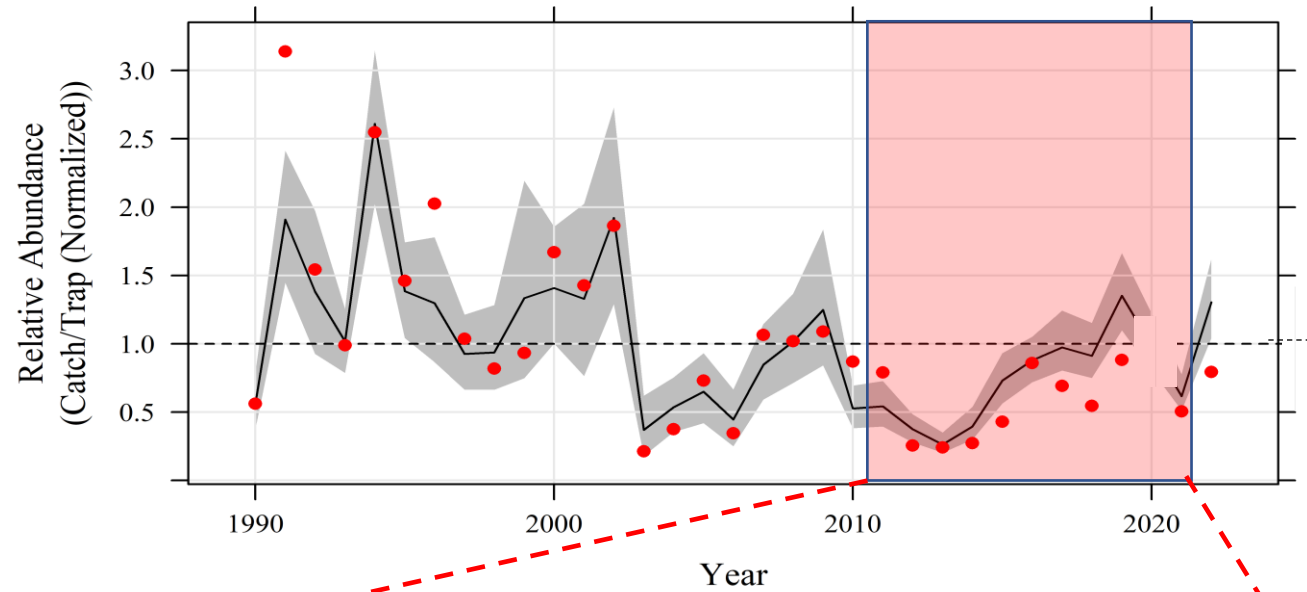
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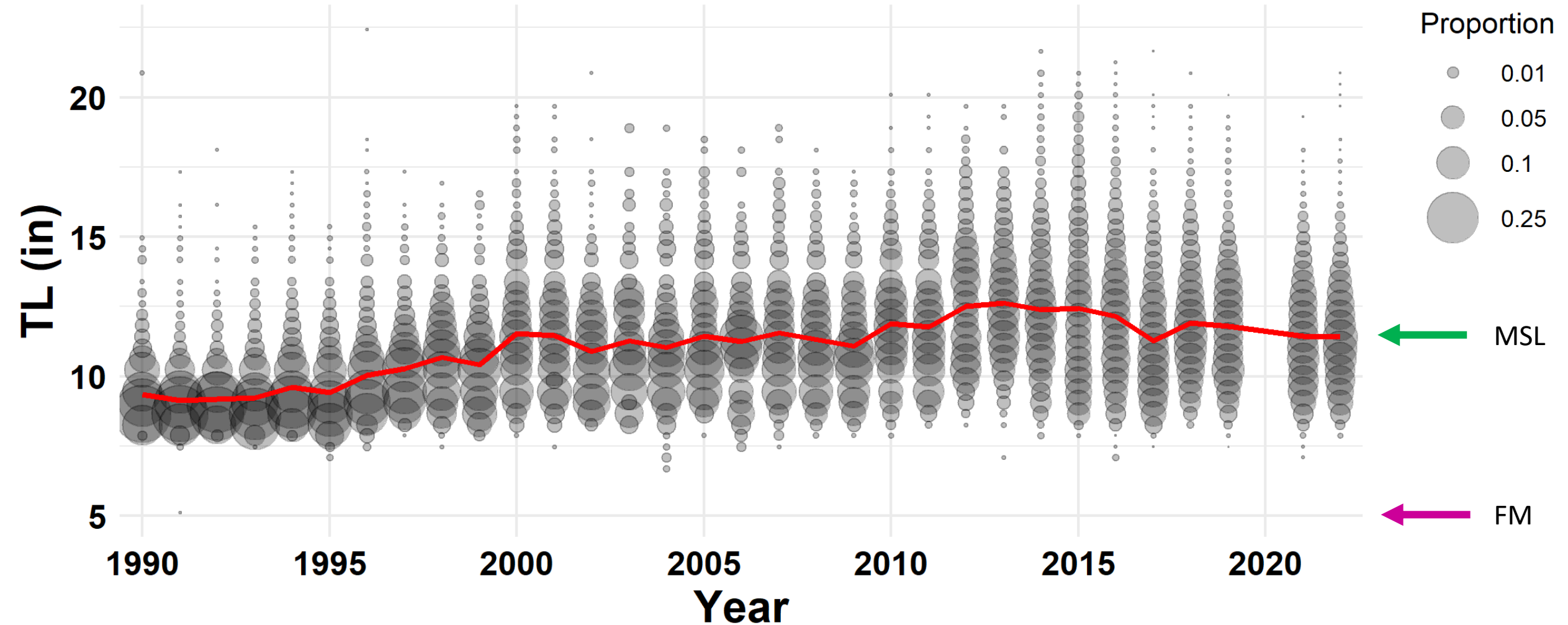
Tomtate



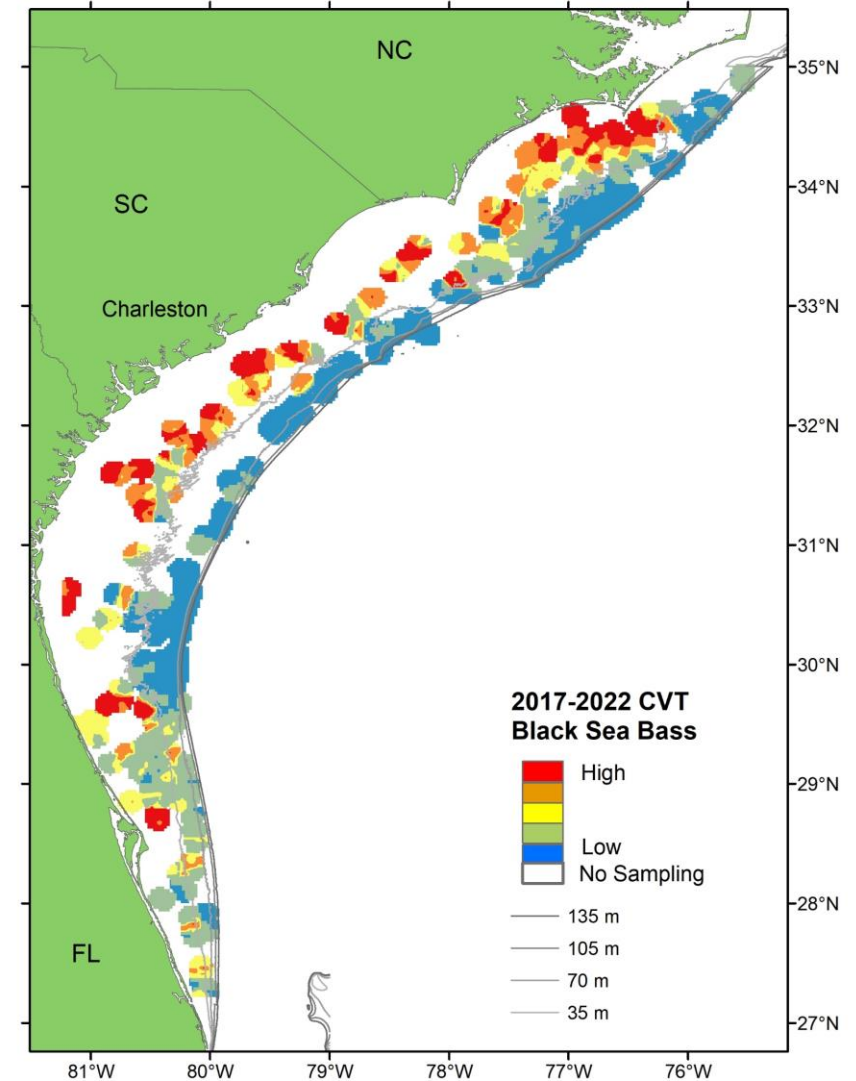
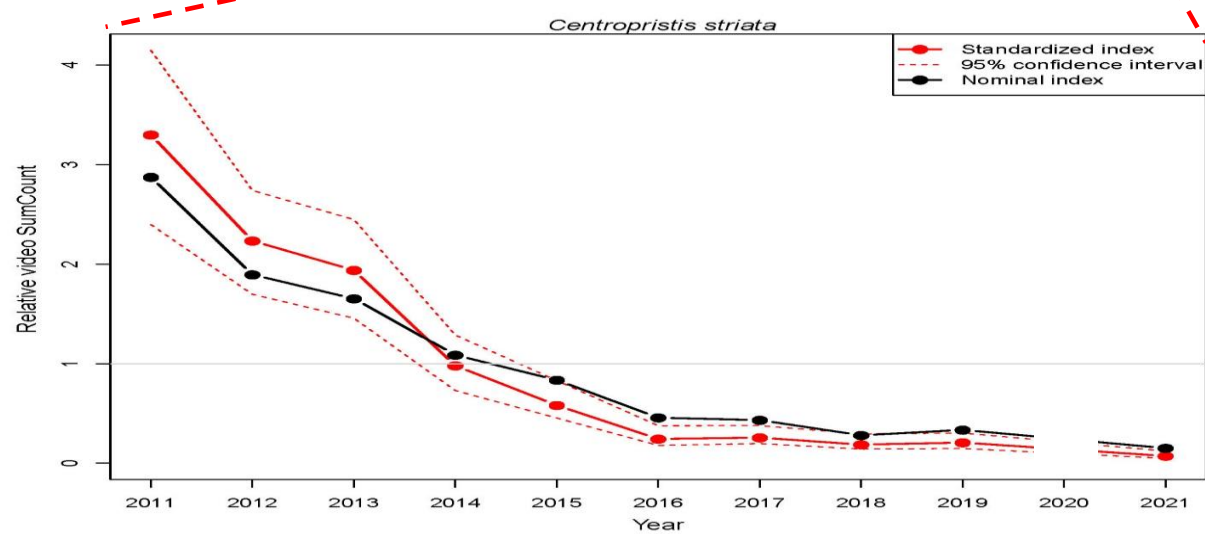
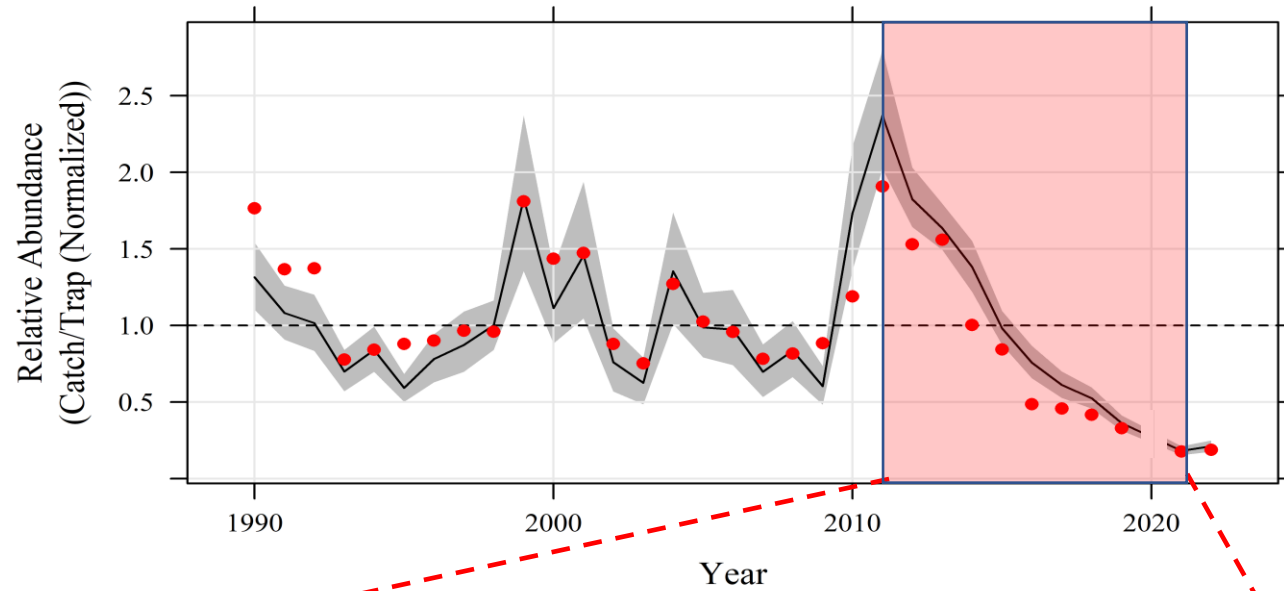
Vermilion Snapper



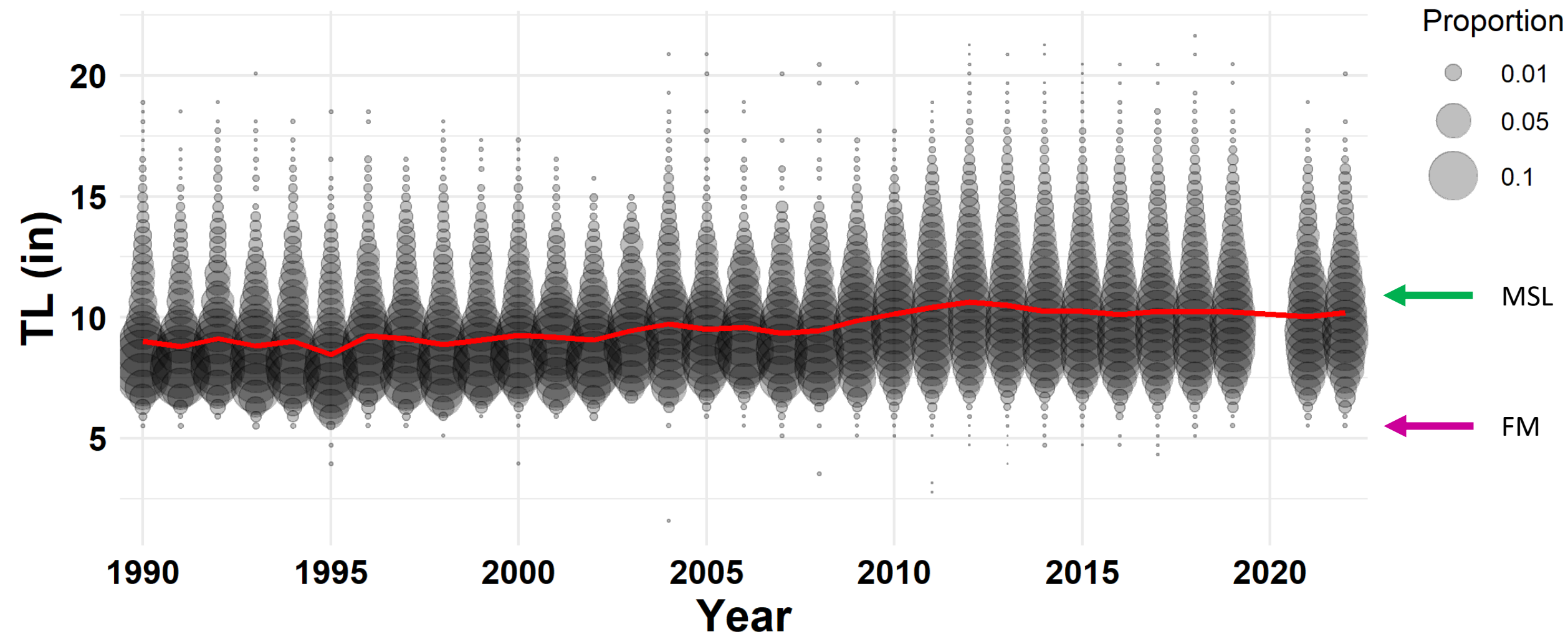
Vermilion Snapper



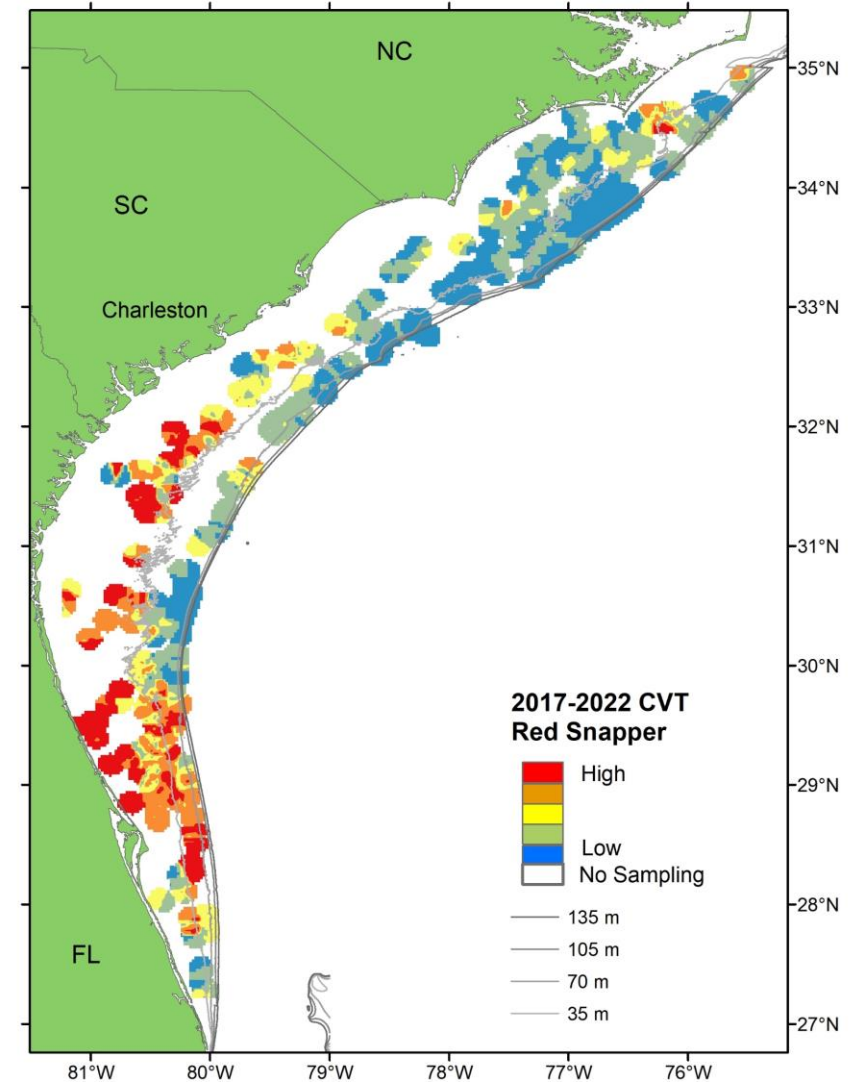
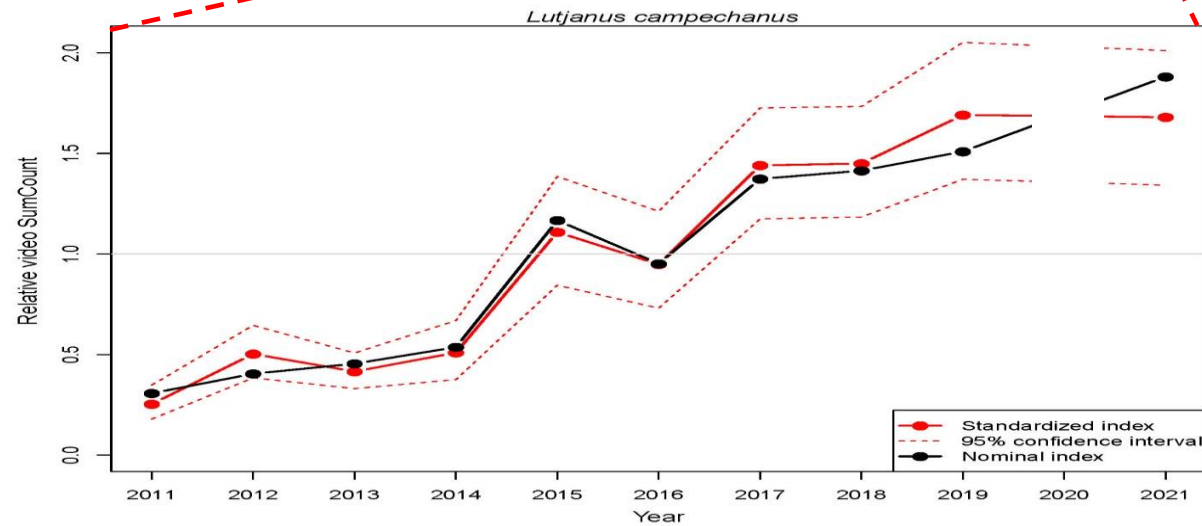
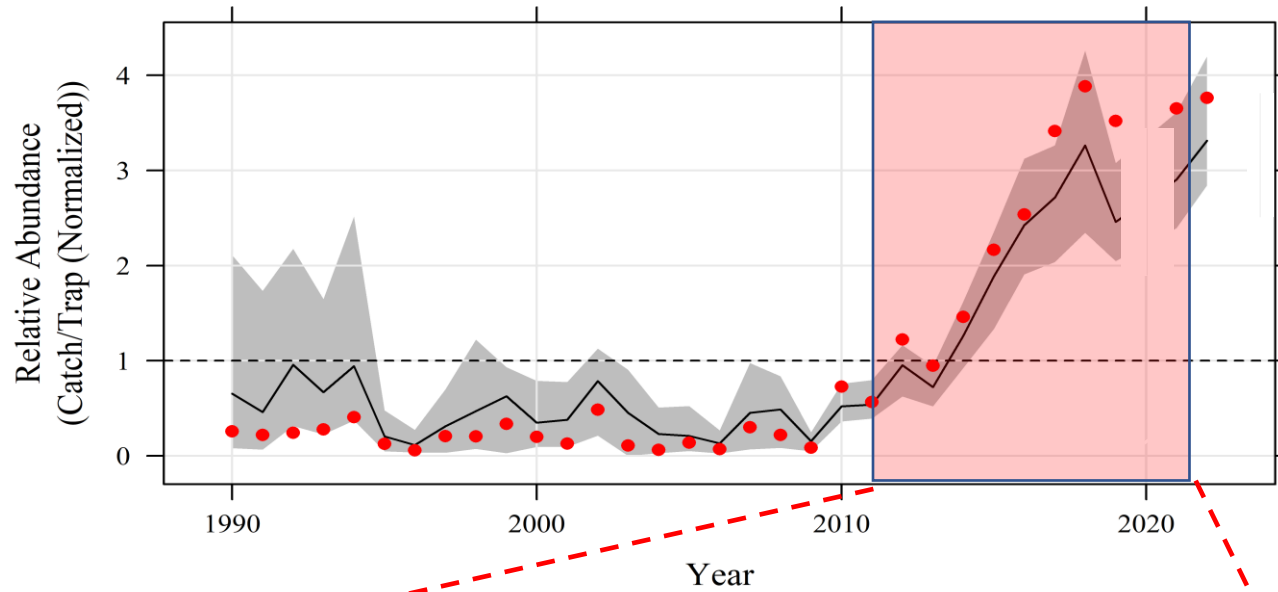
Black Sea Bass



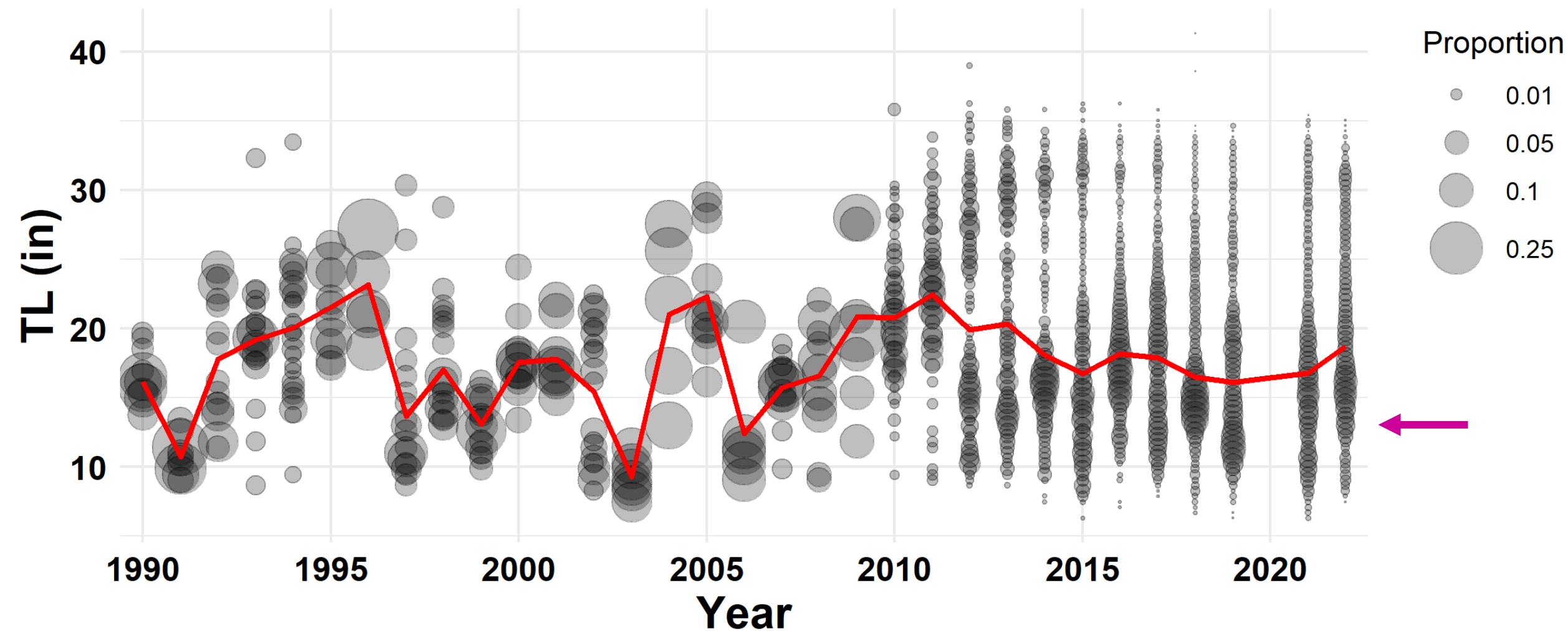
Black Sea Bass



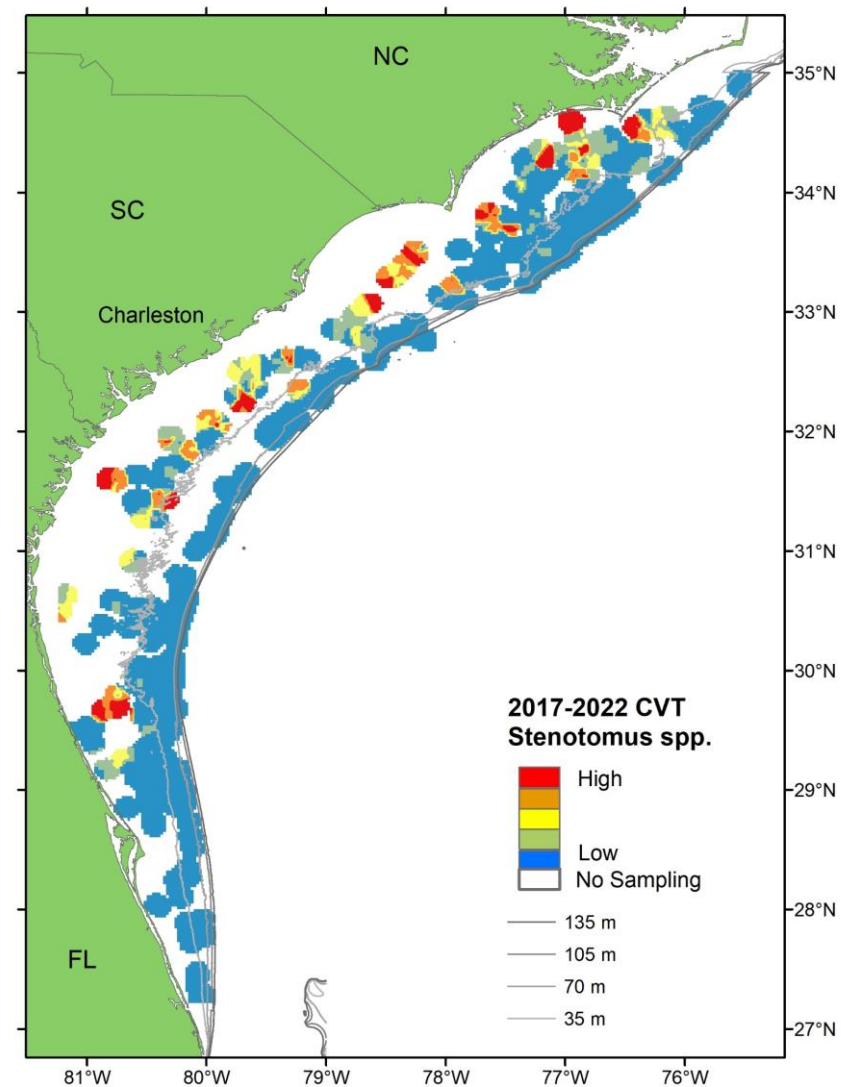
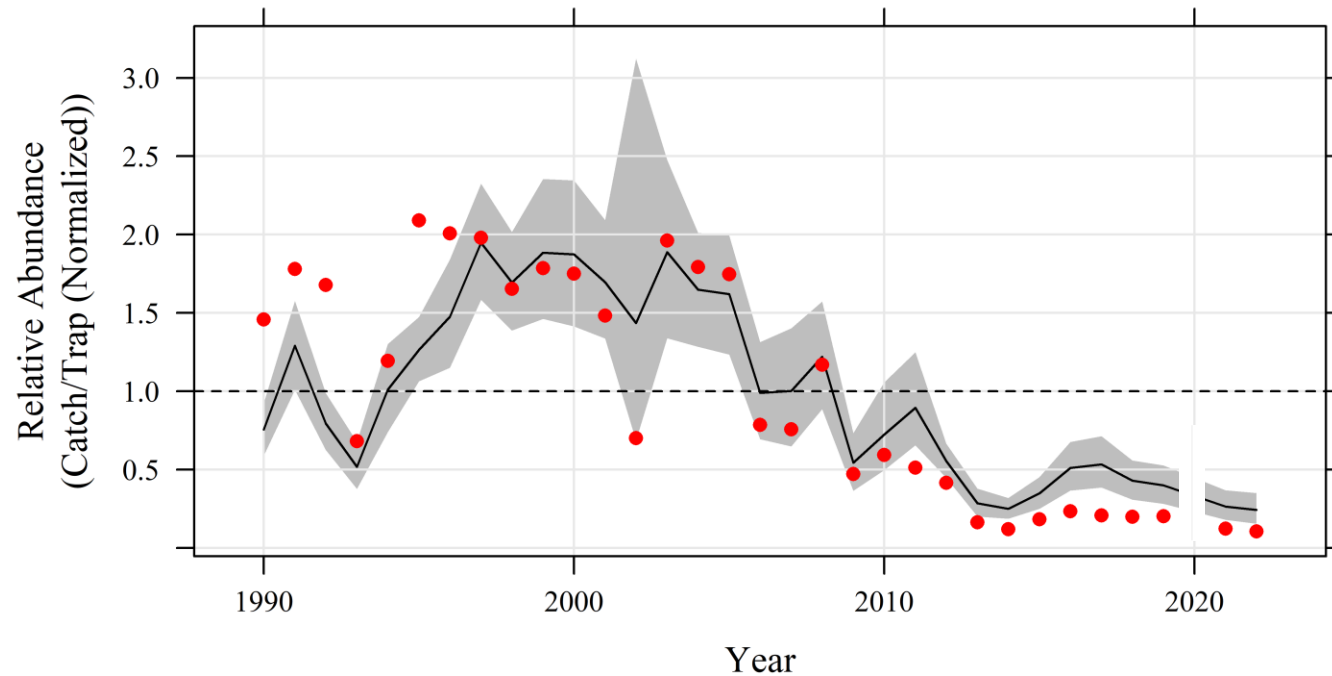
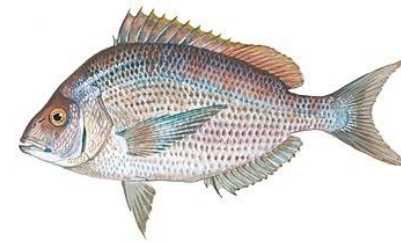
Red Snapper



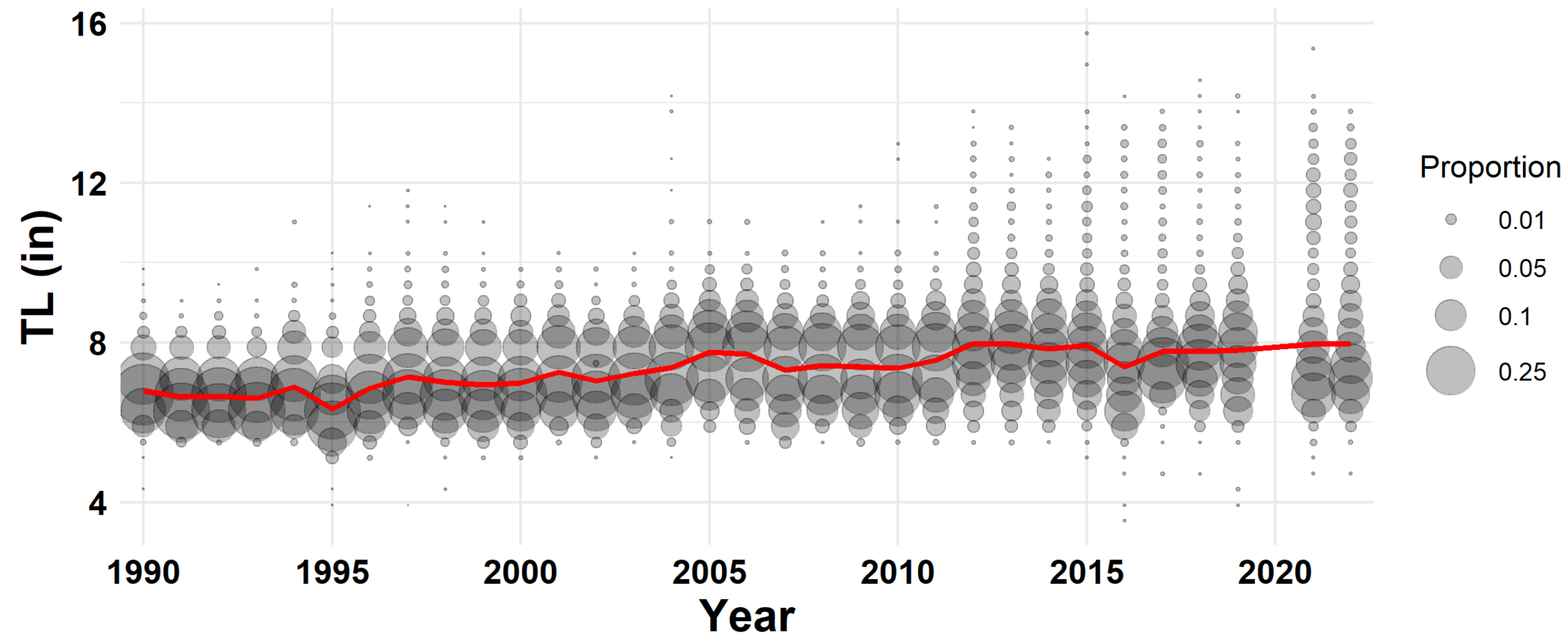
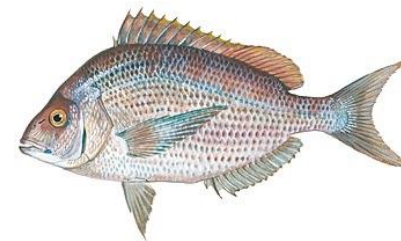
Red Snapper



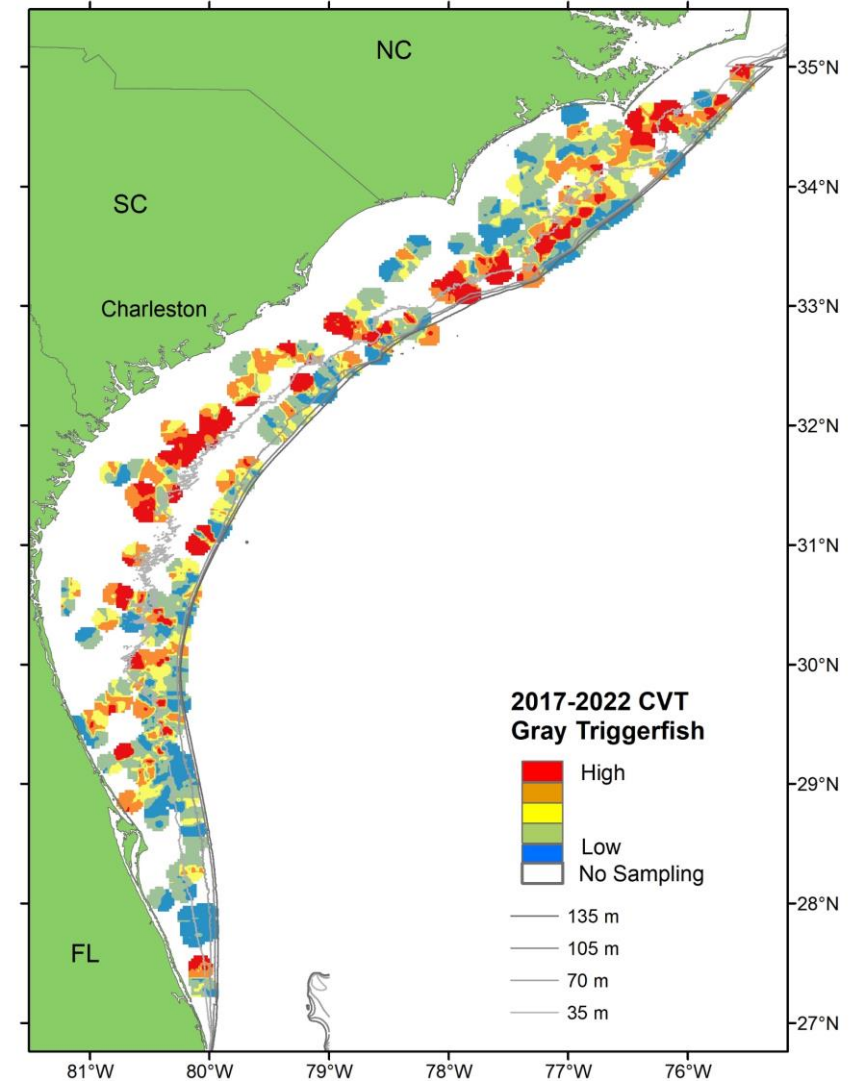
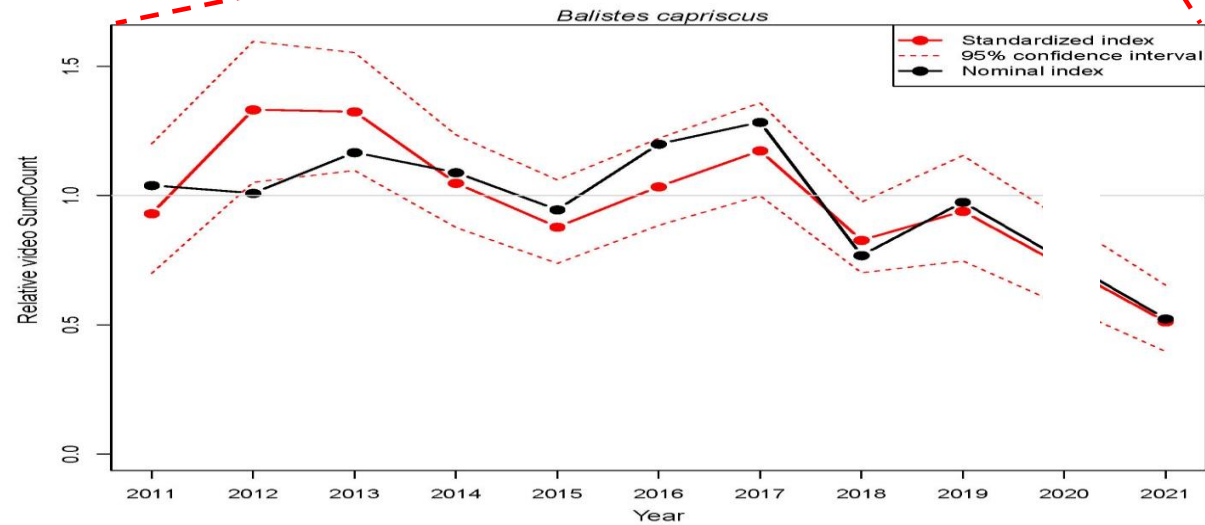
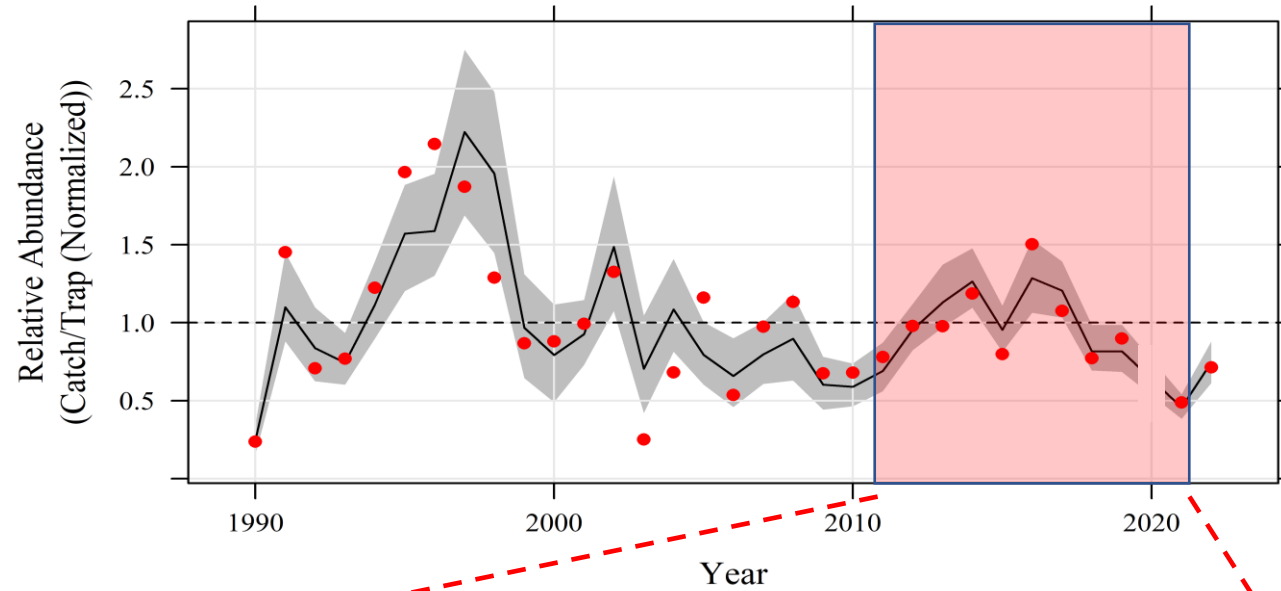
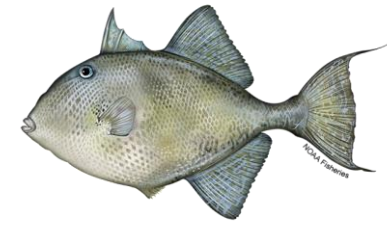
Stenotomus spp.



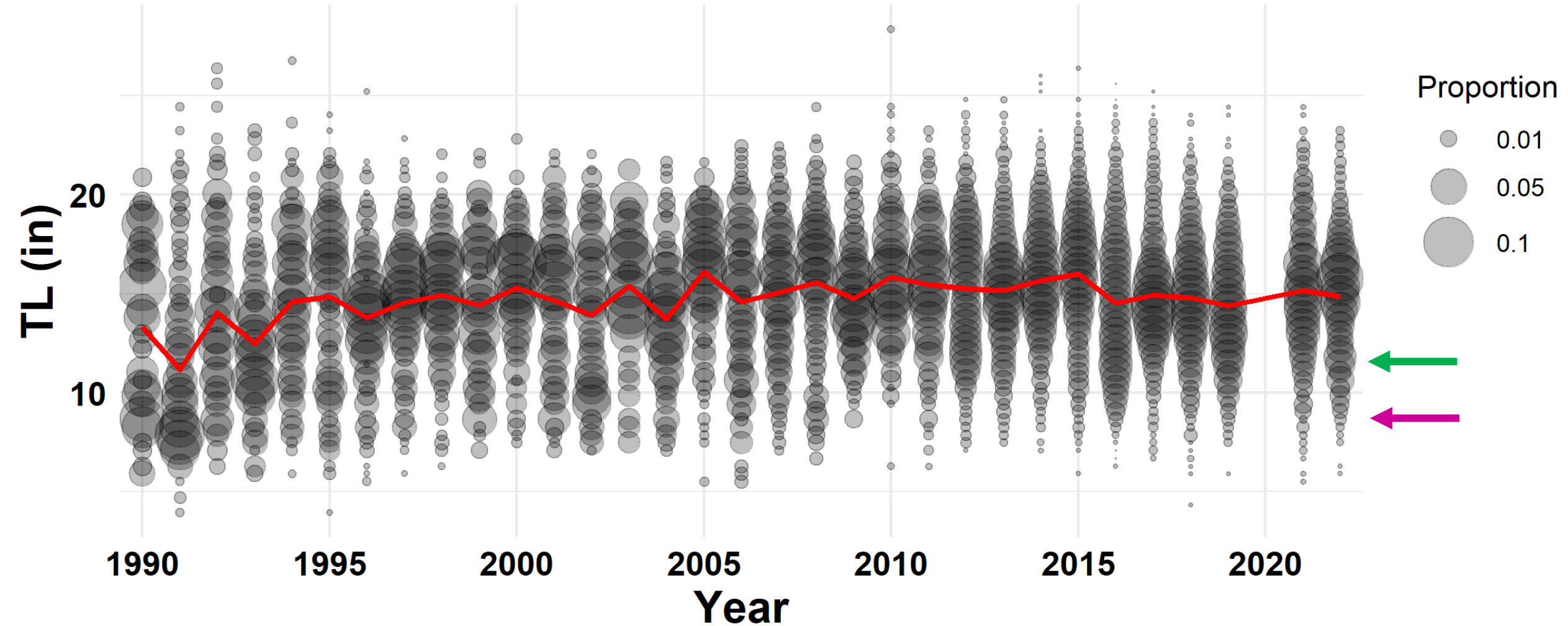
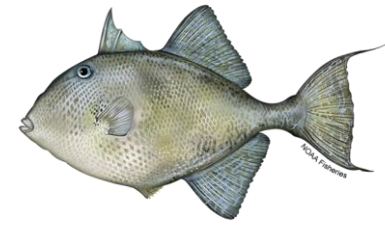
Stenotomus spp.



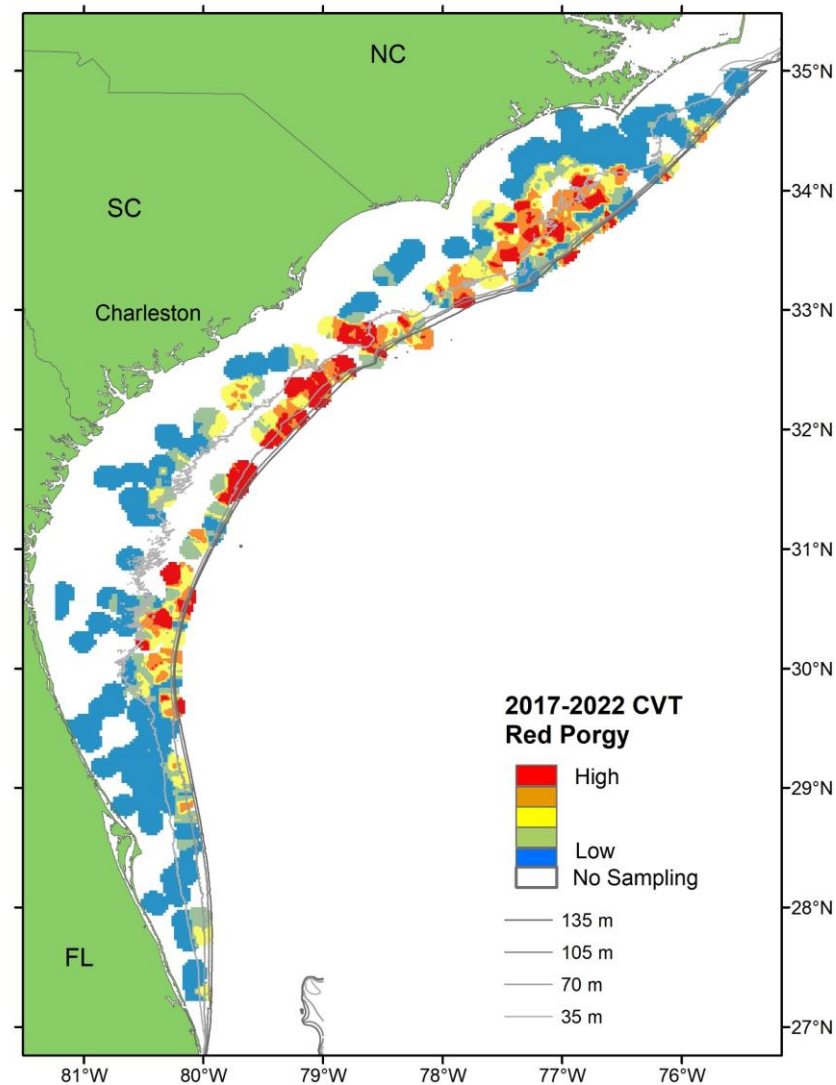
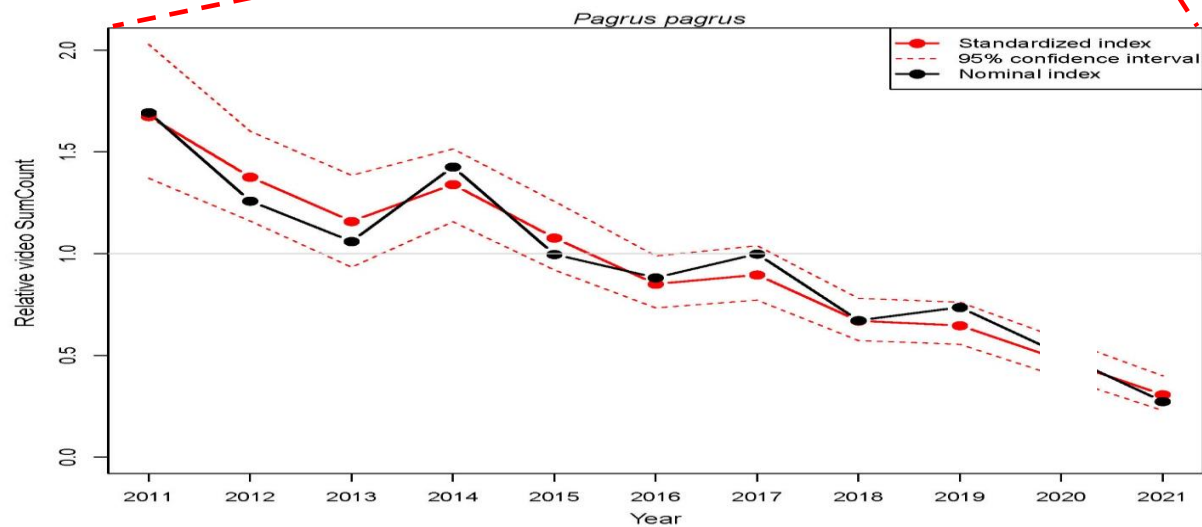
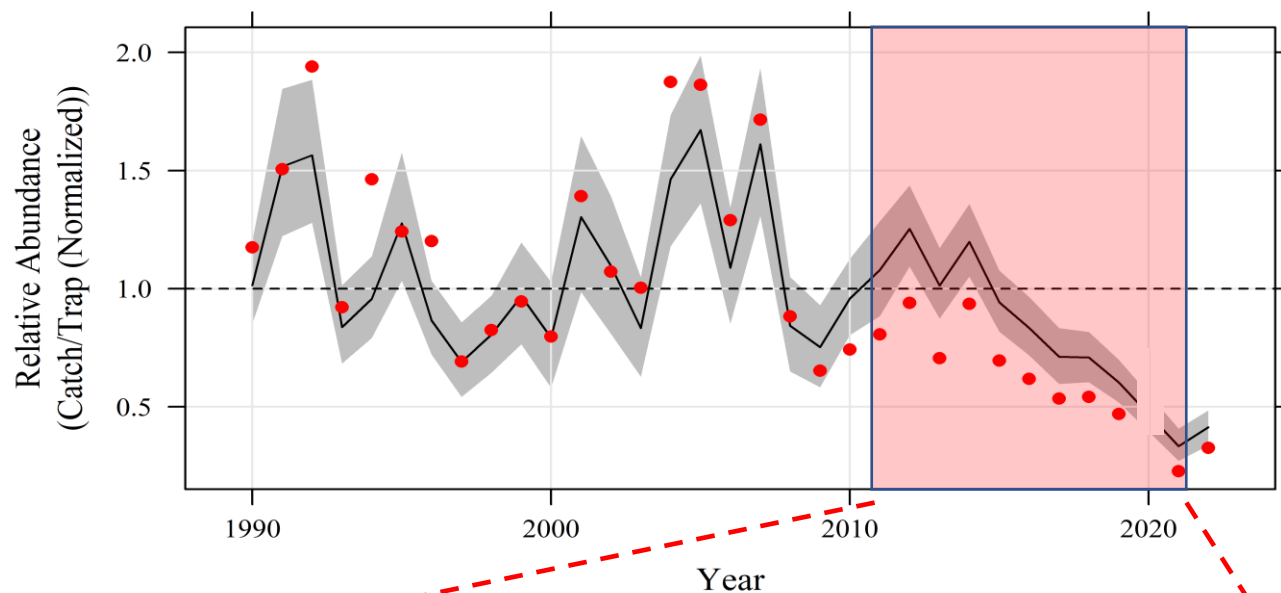
Gray Triggerfish



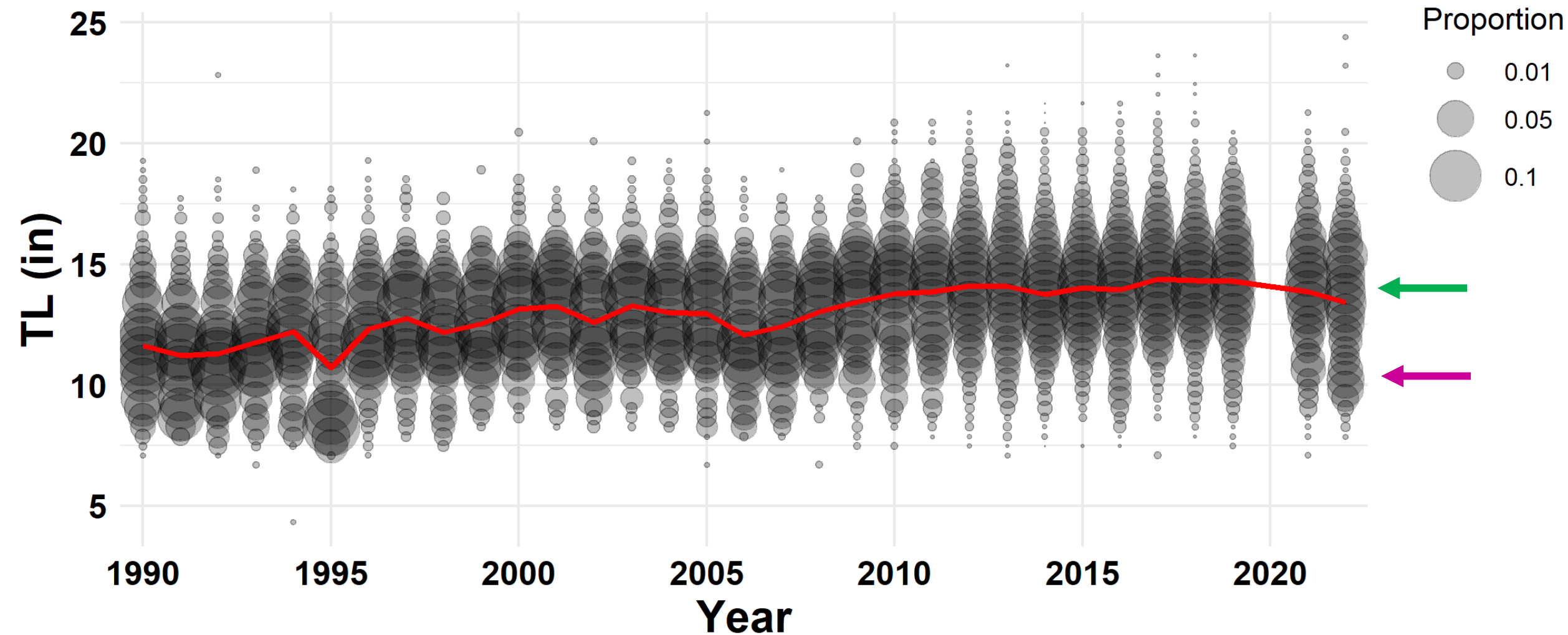
Gray Triggerfish



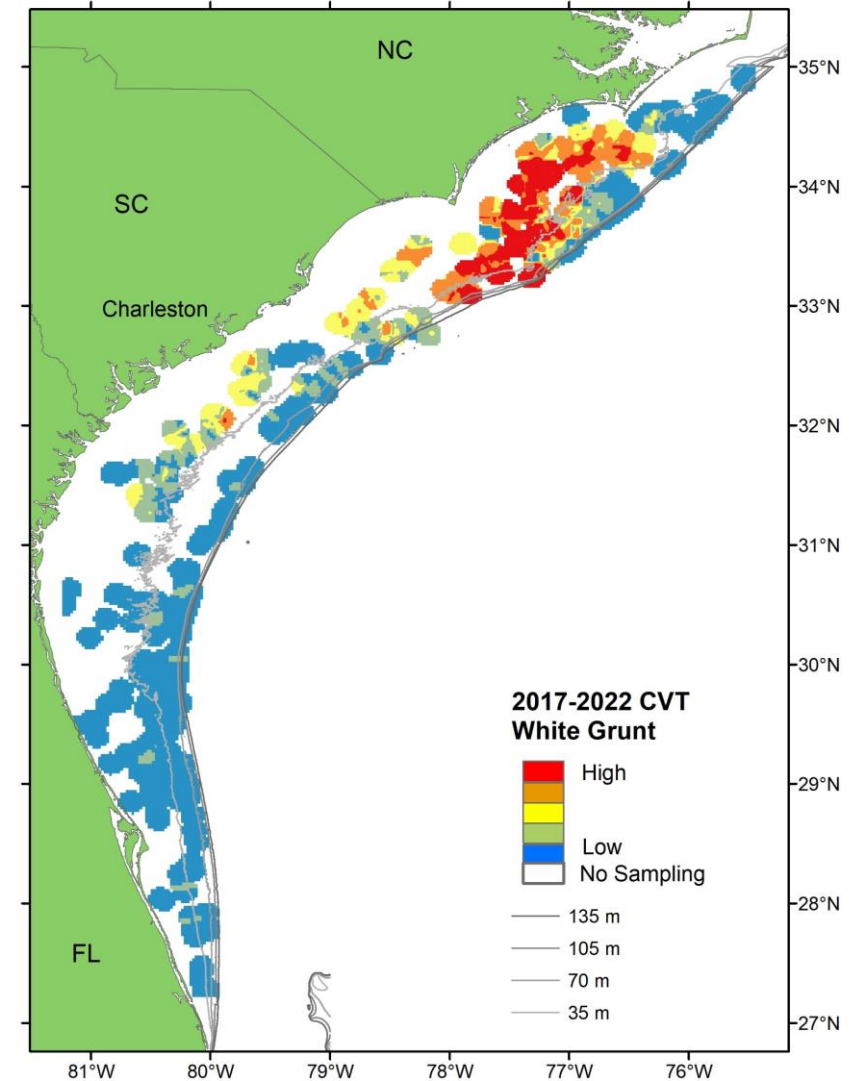
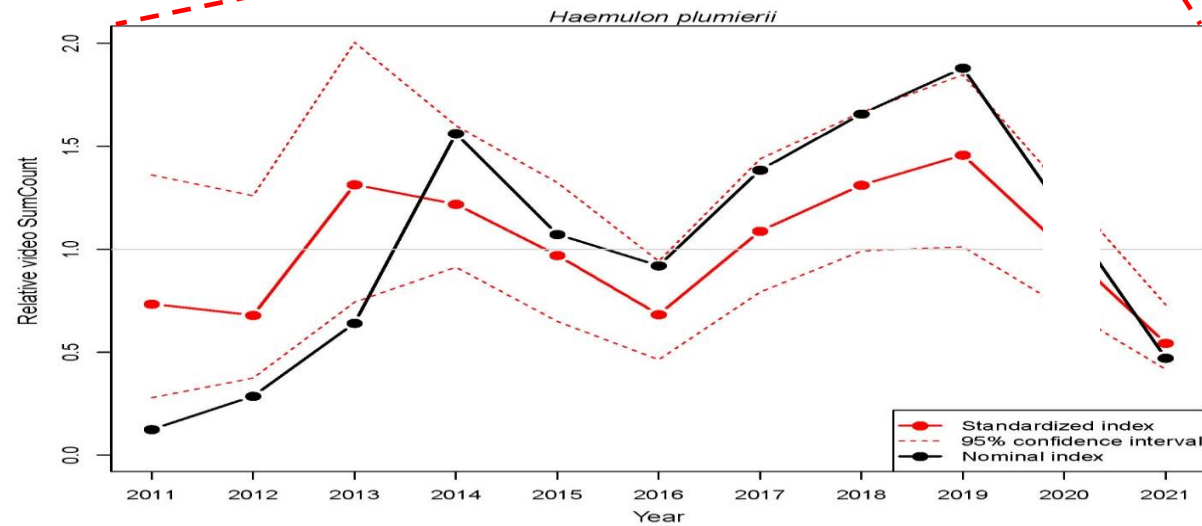
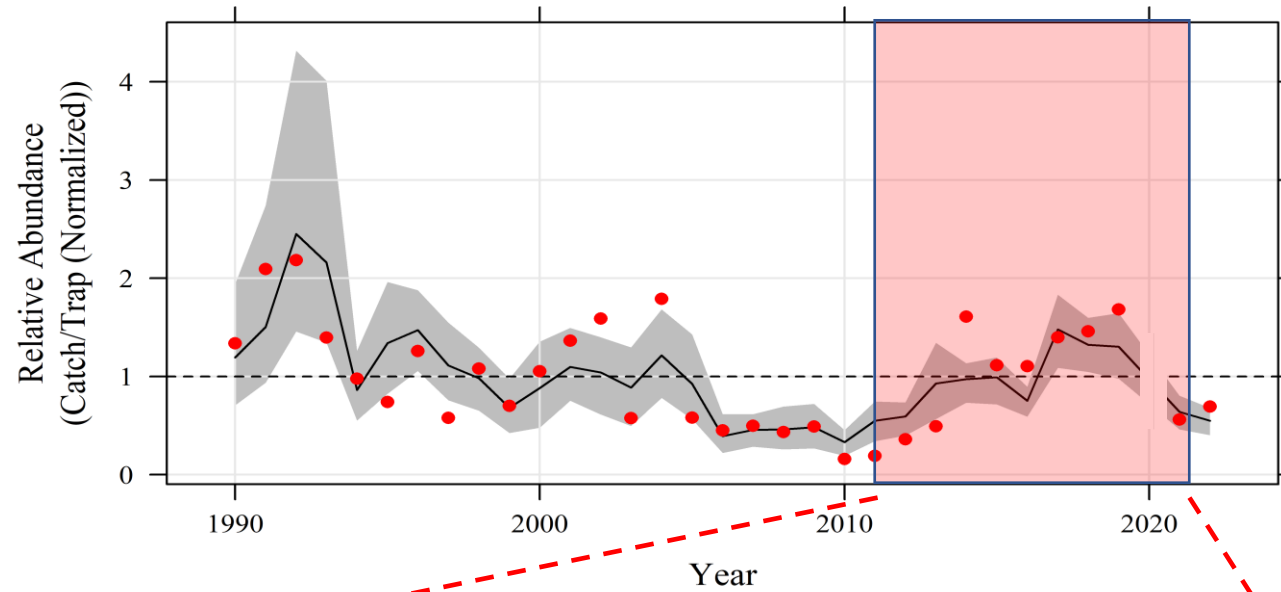
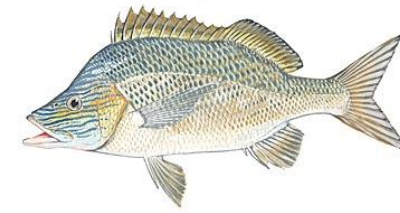
Red Porgy



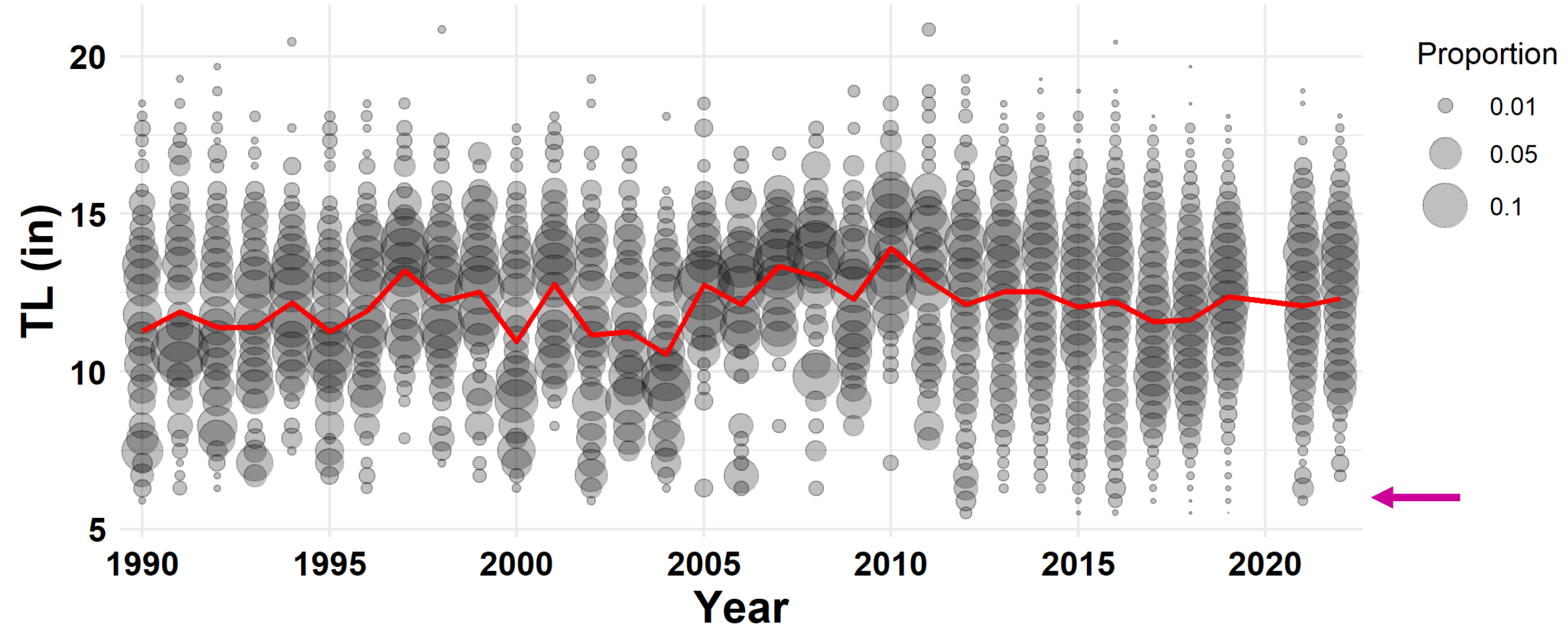
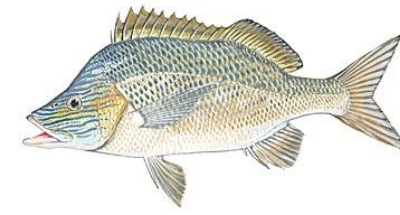
Red Porgy



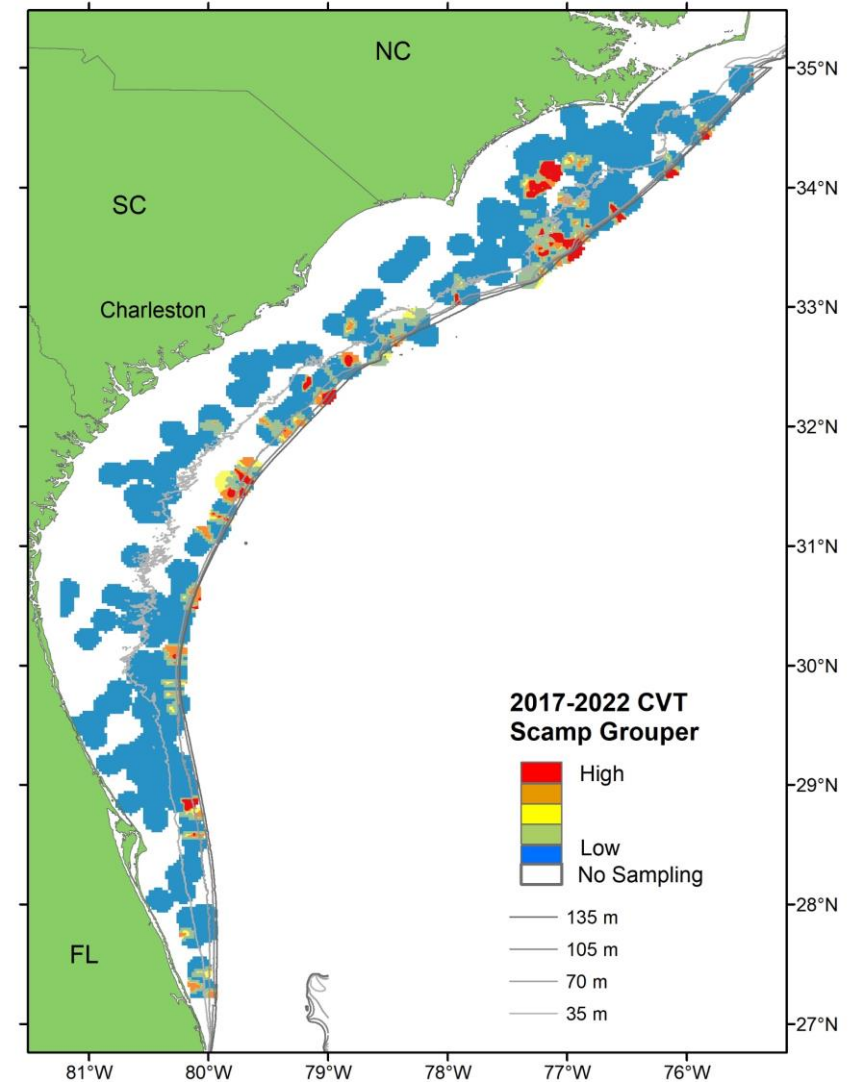
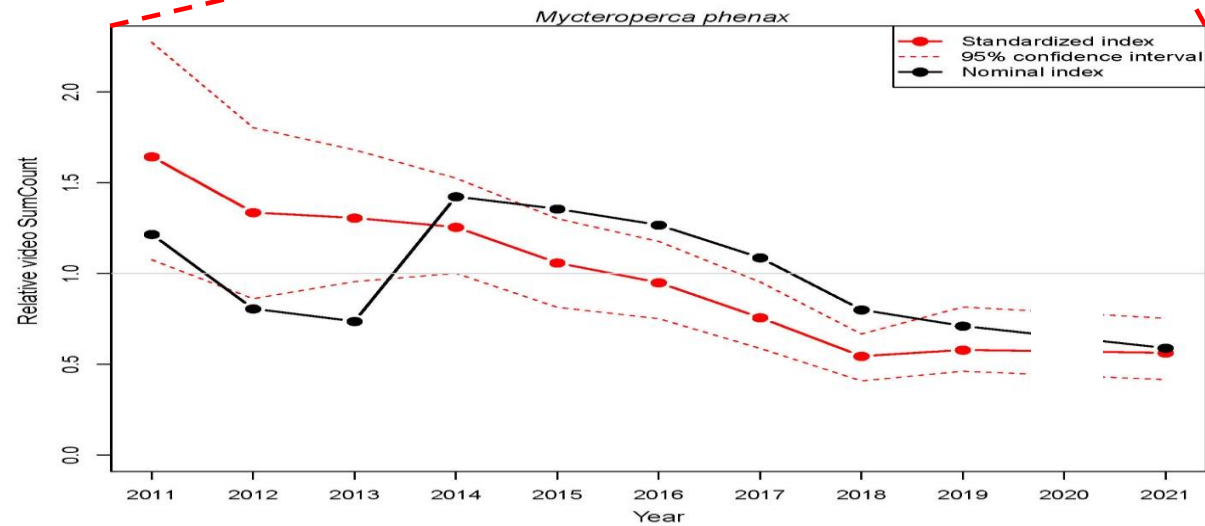
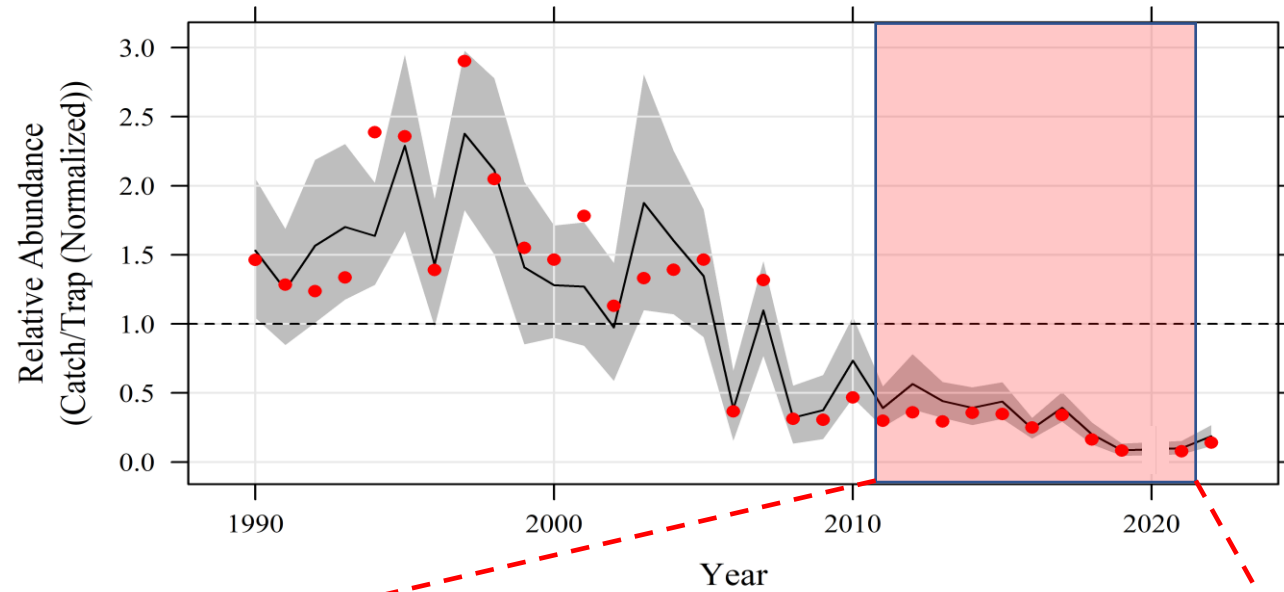
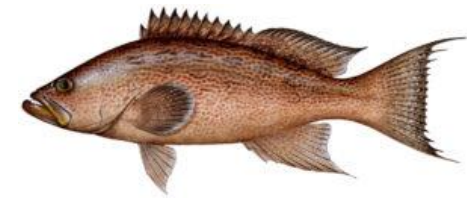
White Grunt



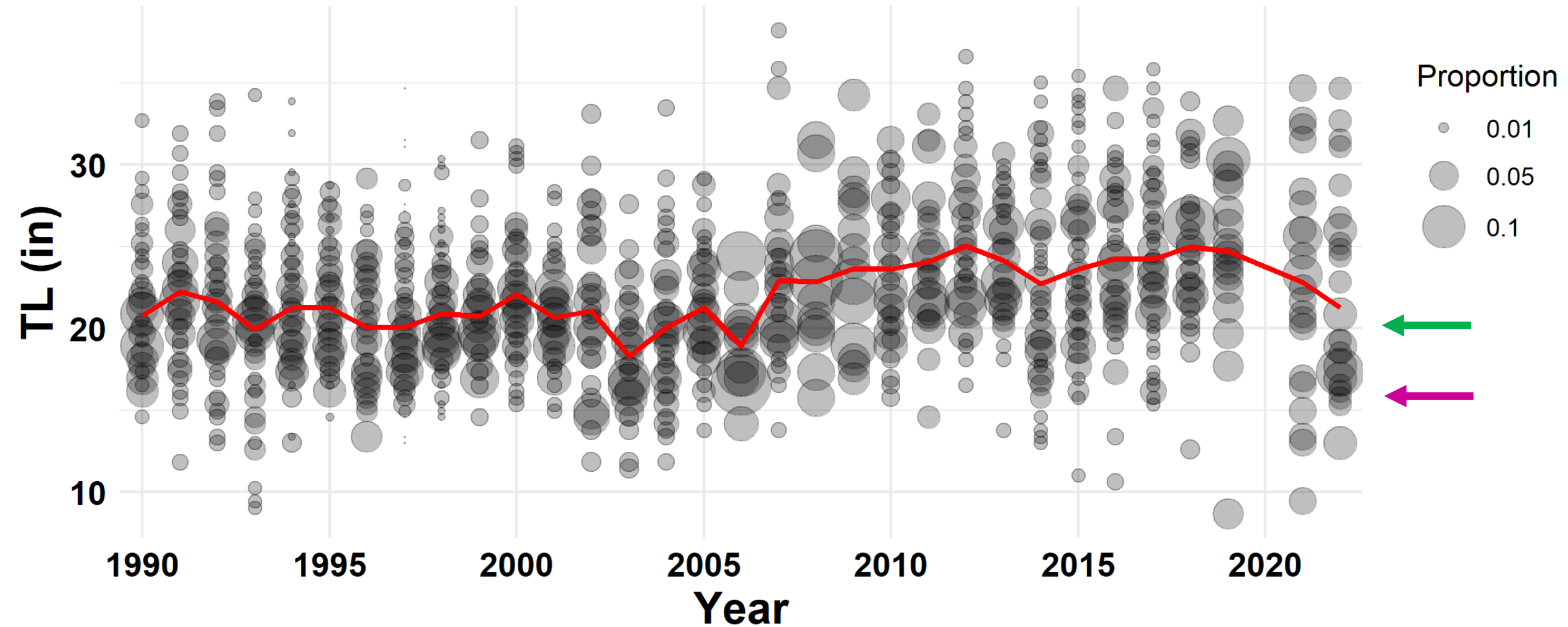
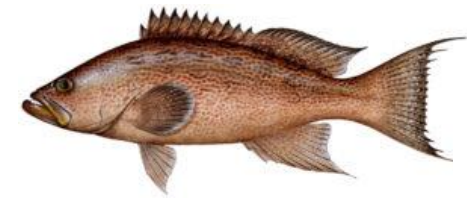
White Grunt



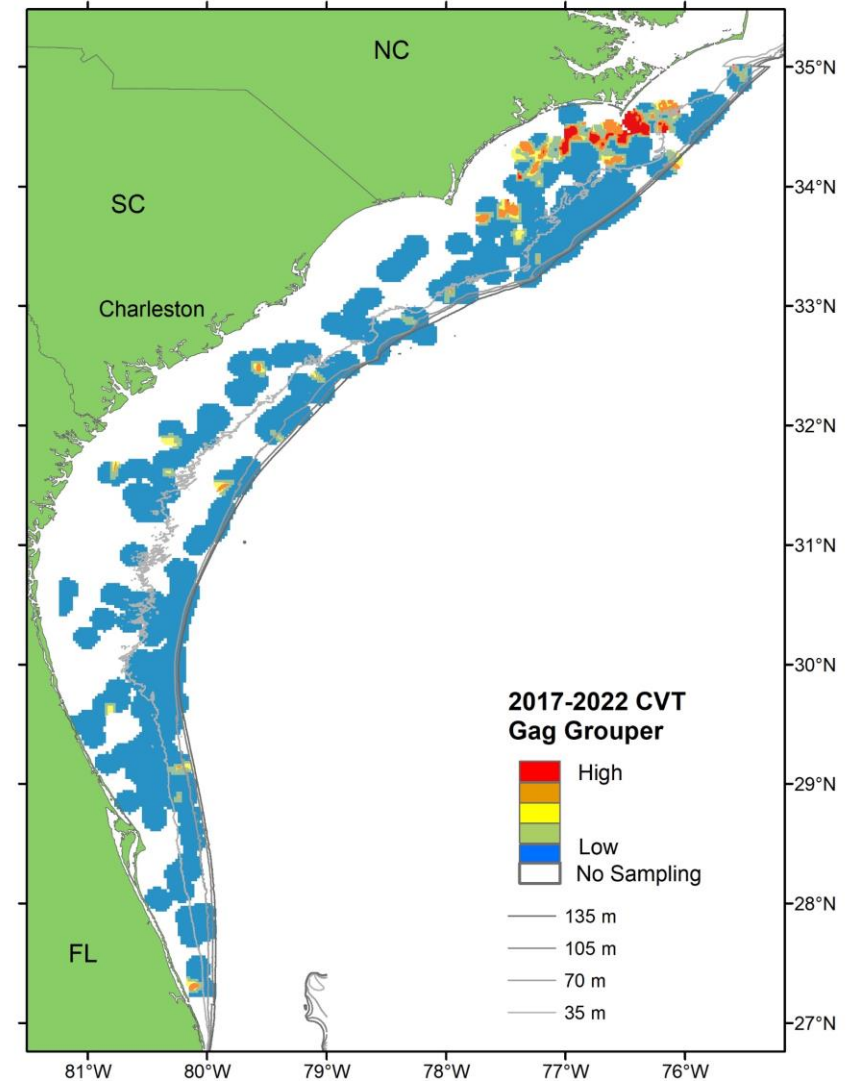
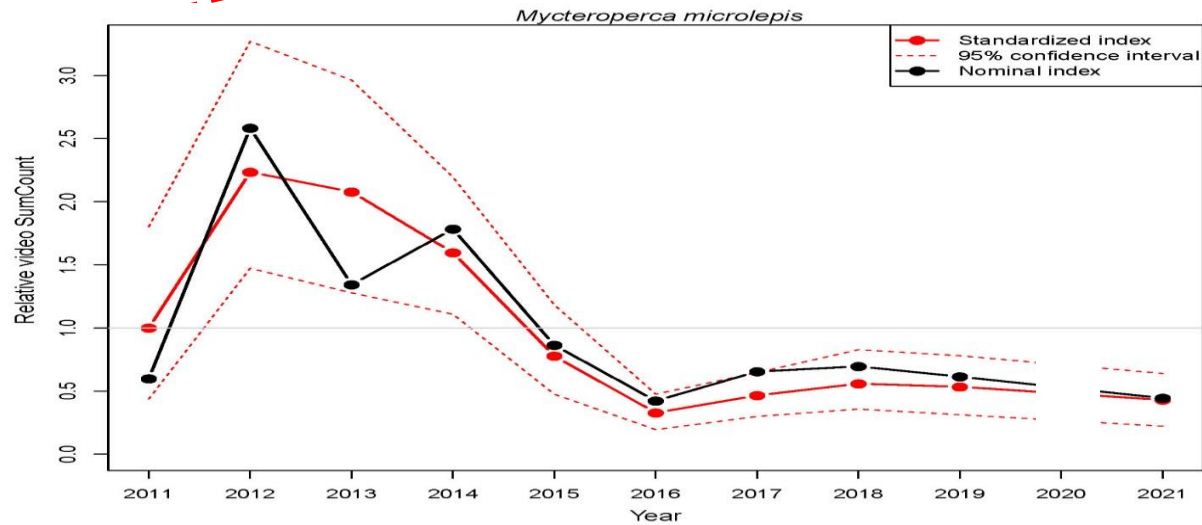
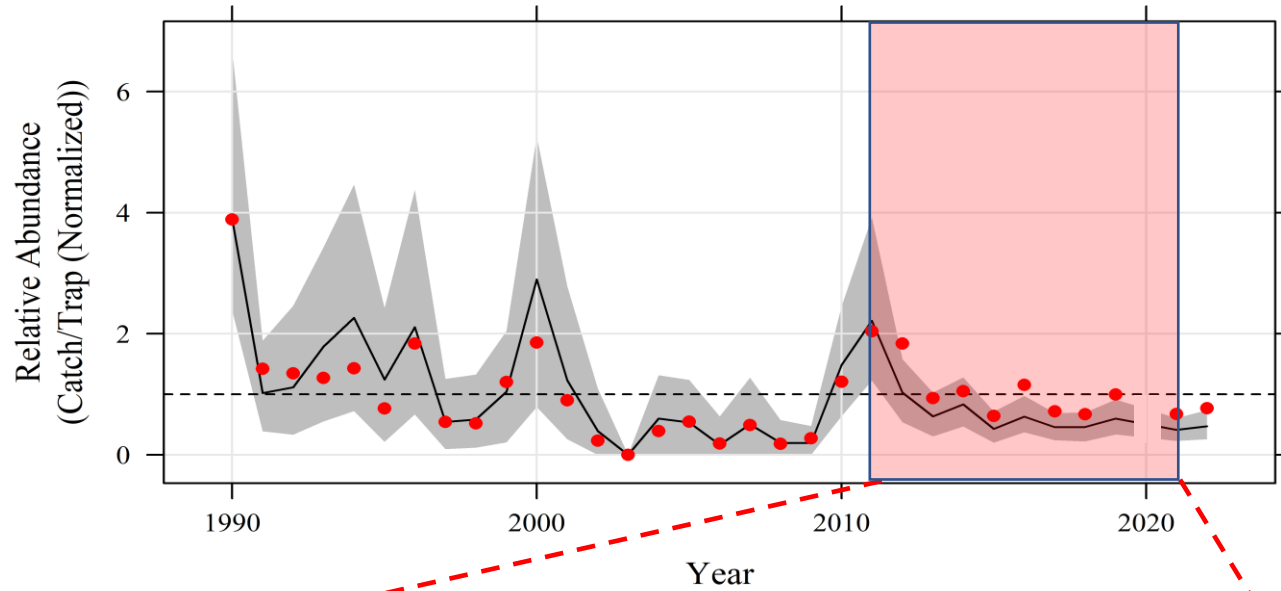
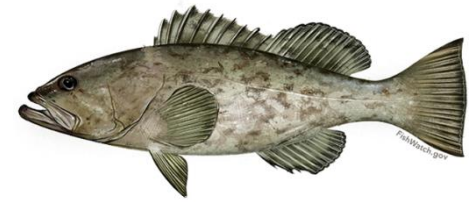
Scamp



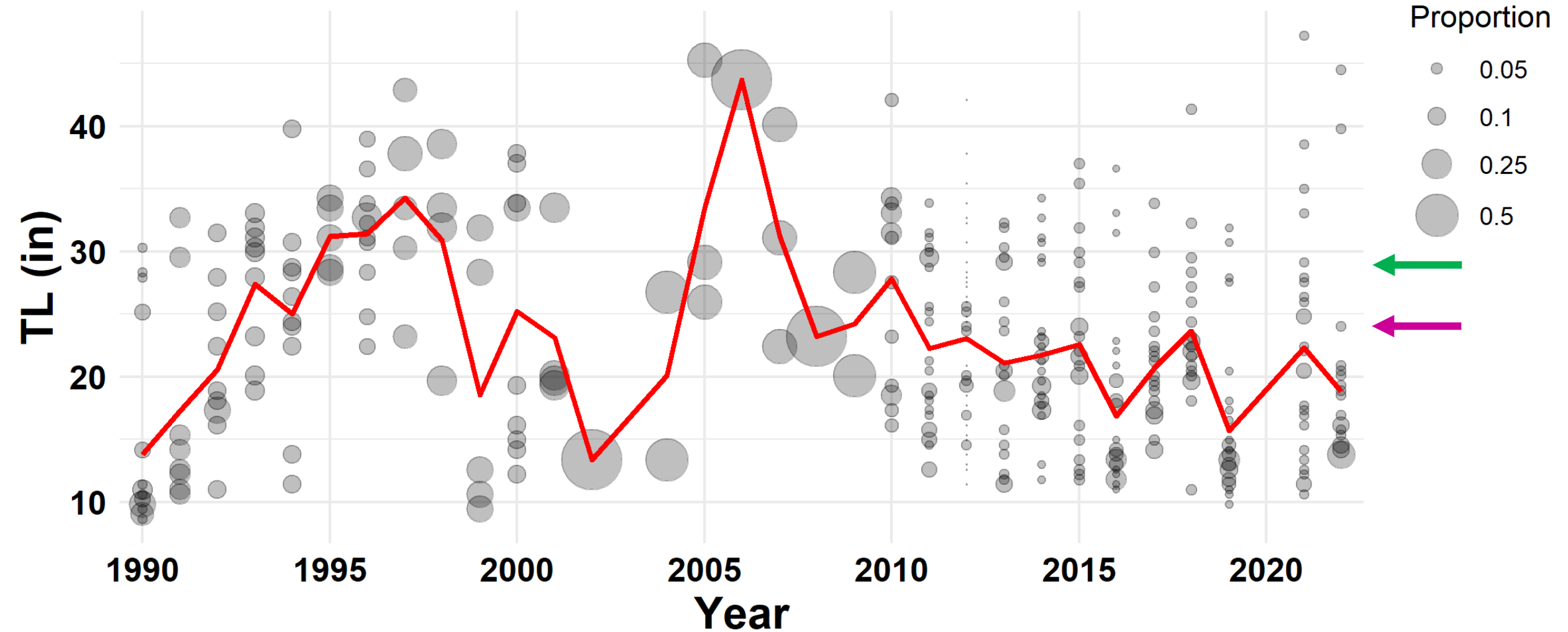
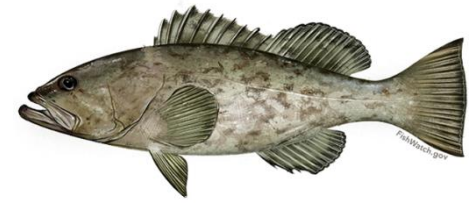
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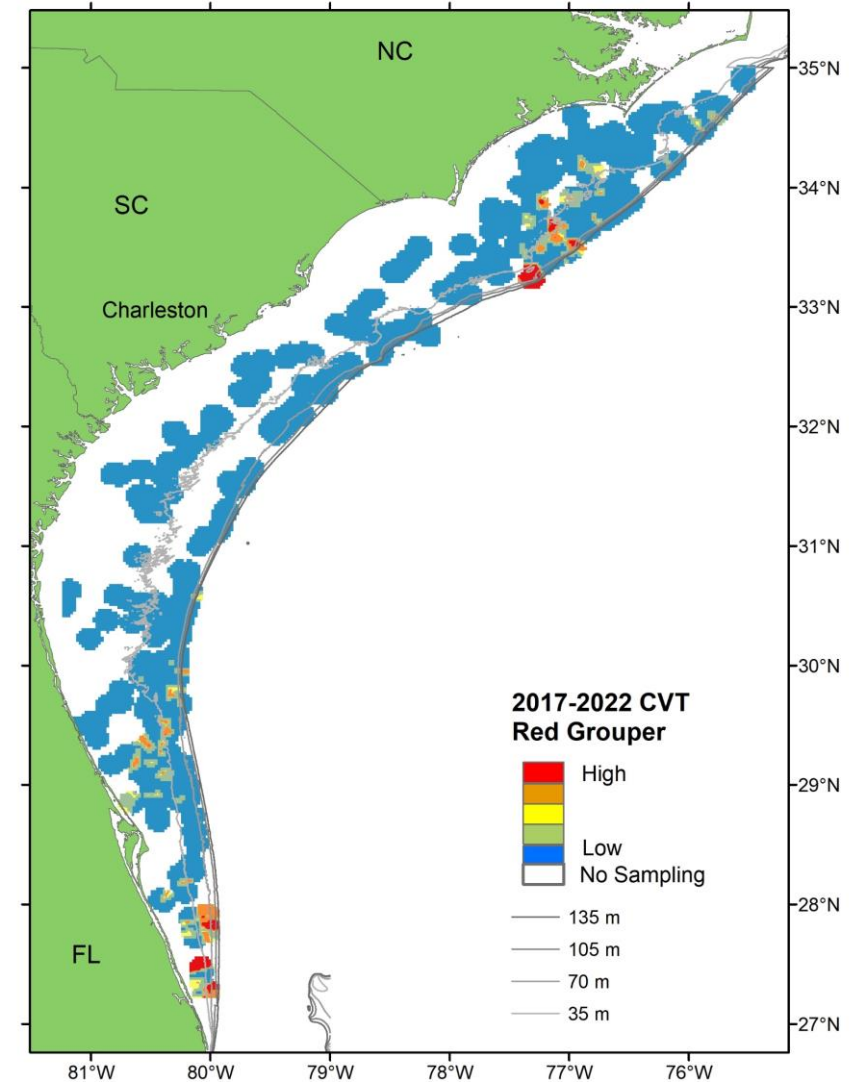
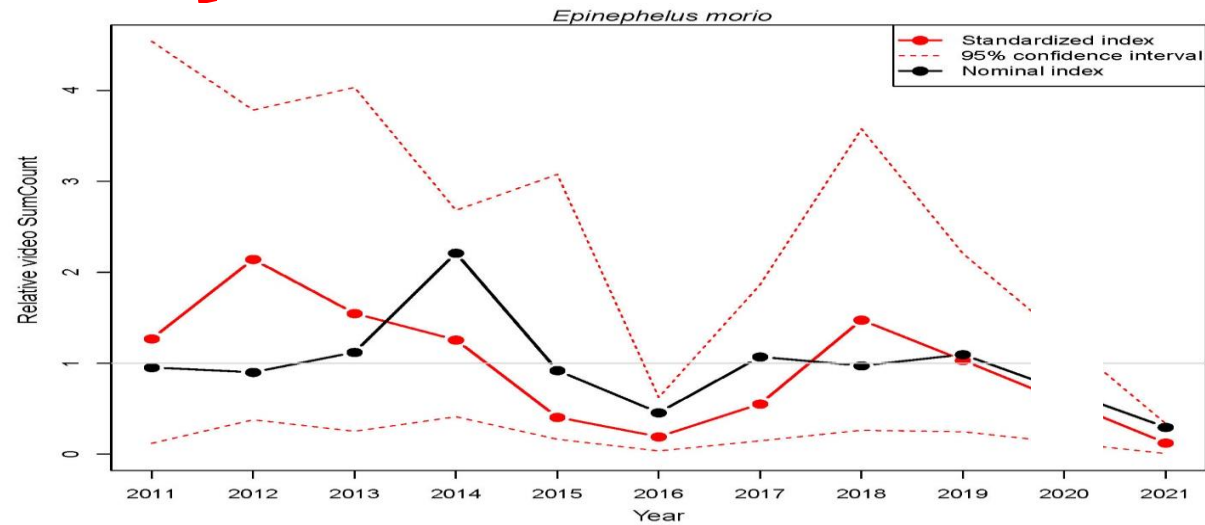
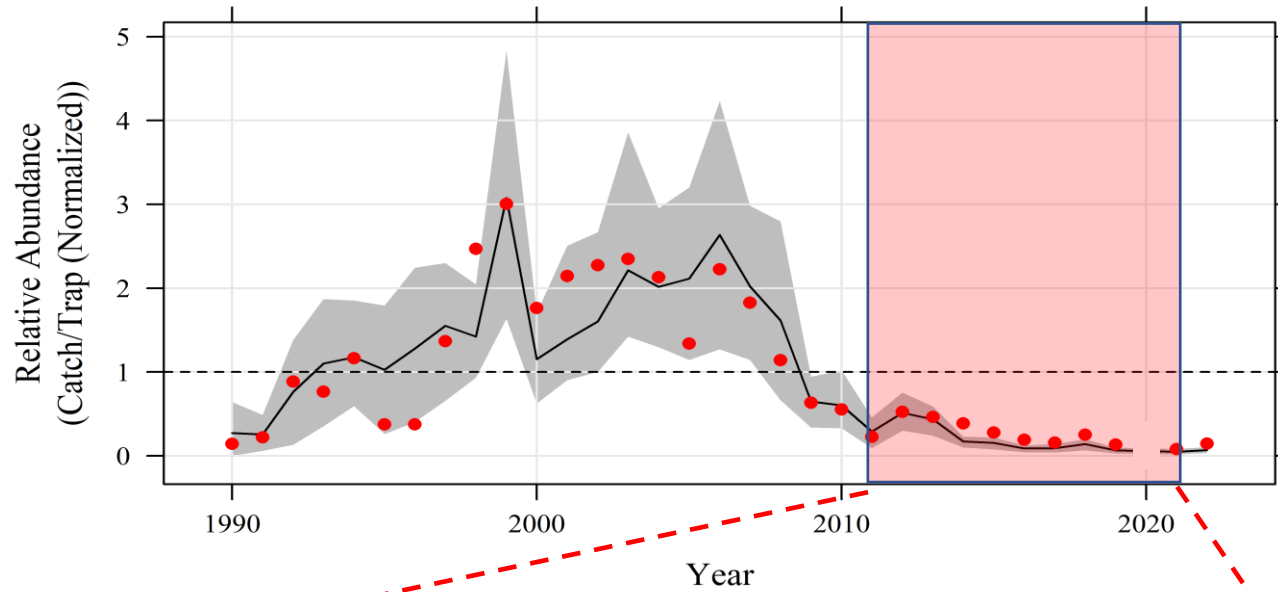
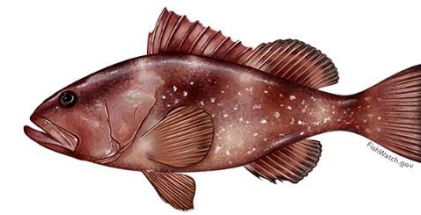
Gag



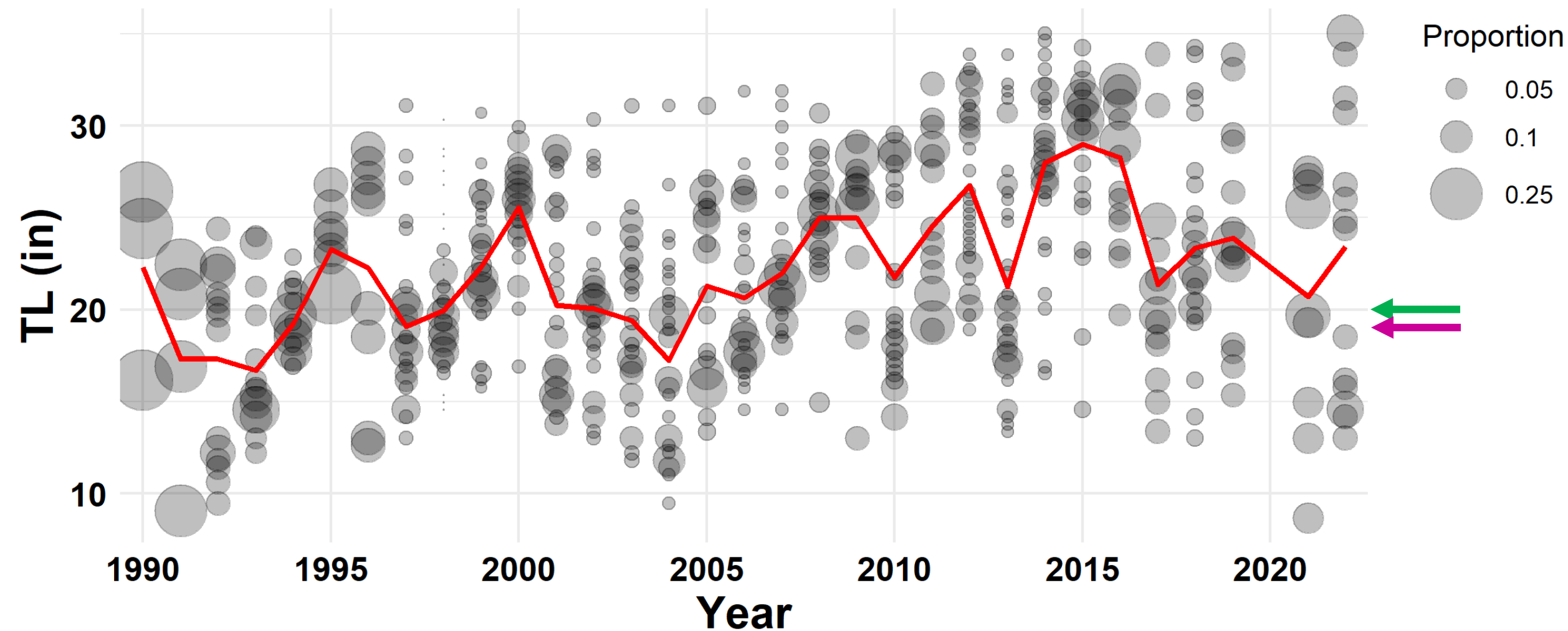
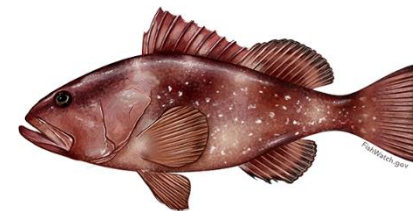
Gag



Red Grouper



Red Grouper



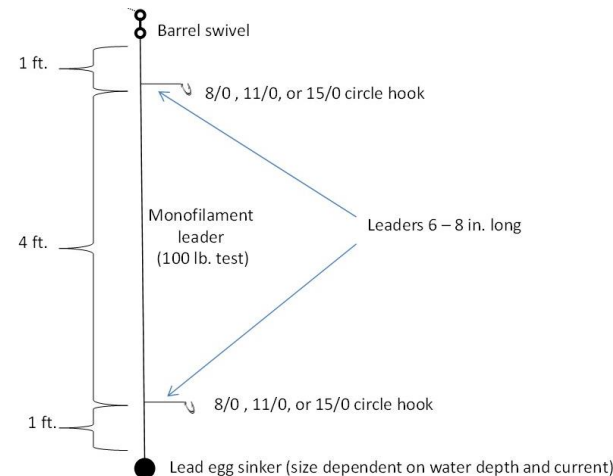
Other 2022 Reef Fish Activities (SCDNR)

Short Bottom Longline Expansion



MARFIN-funded

Gear Selectivity

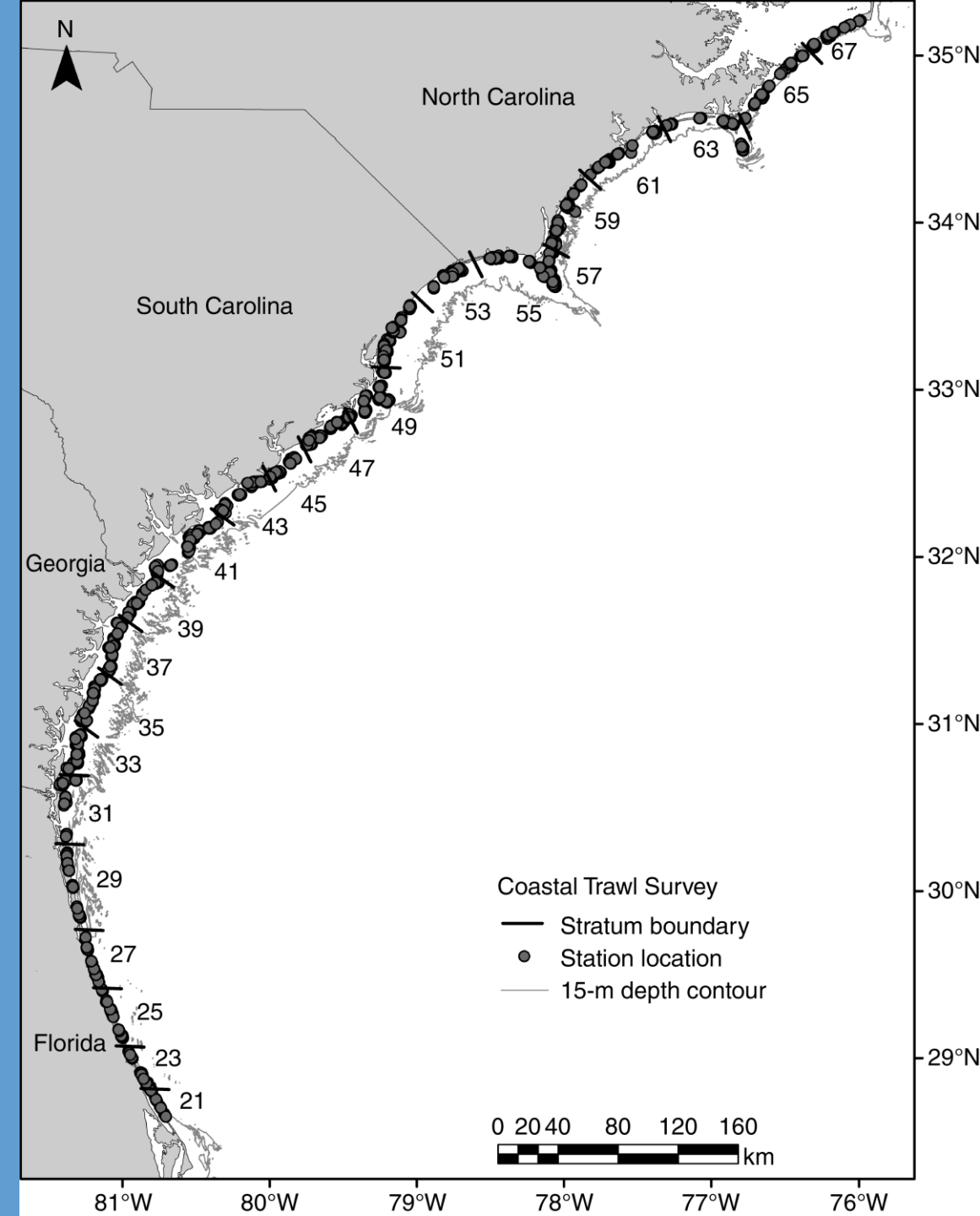


Juvenile Snapper-Grouper Survey



Coastal Trawl Survey

- Funded through SEAMAP-SA
- 1986-1989 experimental procedures
- 1990-present standardized procedures
- Stratified, random sampling design
 - 24 latitude-based strata
 - Fixed stations randomly selected each year
- 3 Seasons (Spring, Summer, Fall)
- Target stations 102 per season for 2022
 - Station allocation optimized to reduce variability

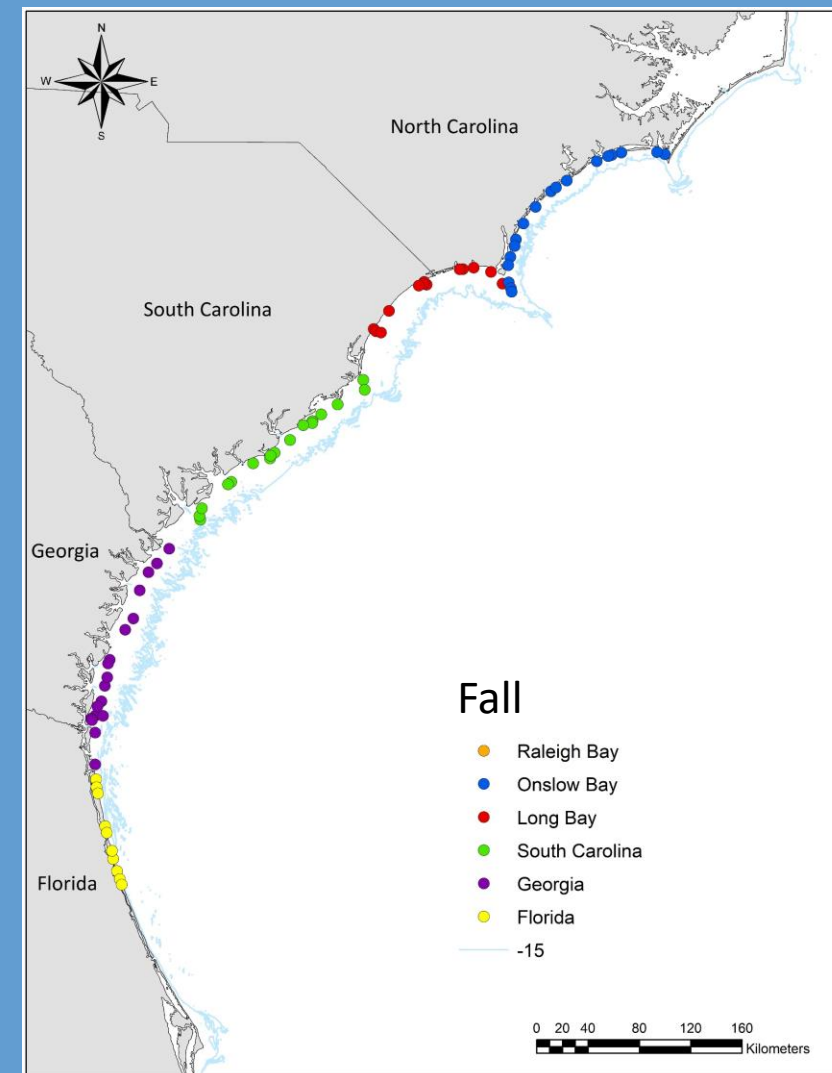
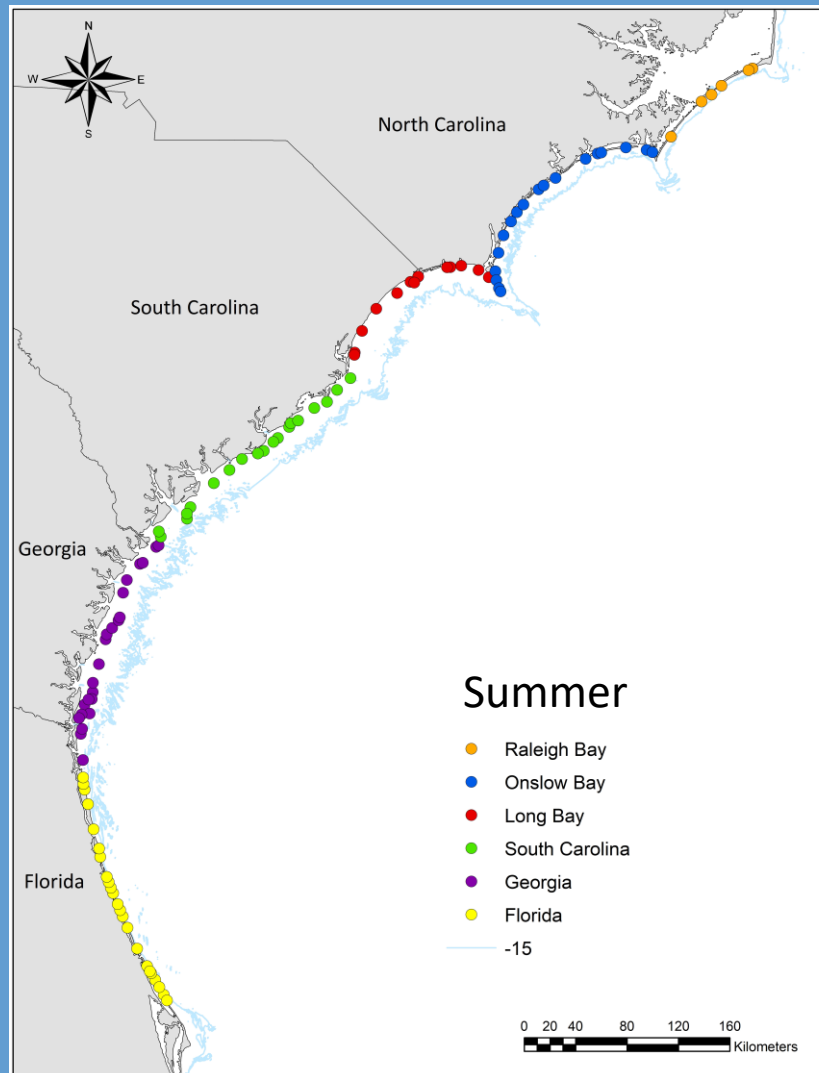
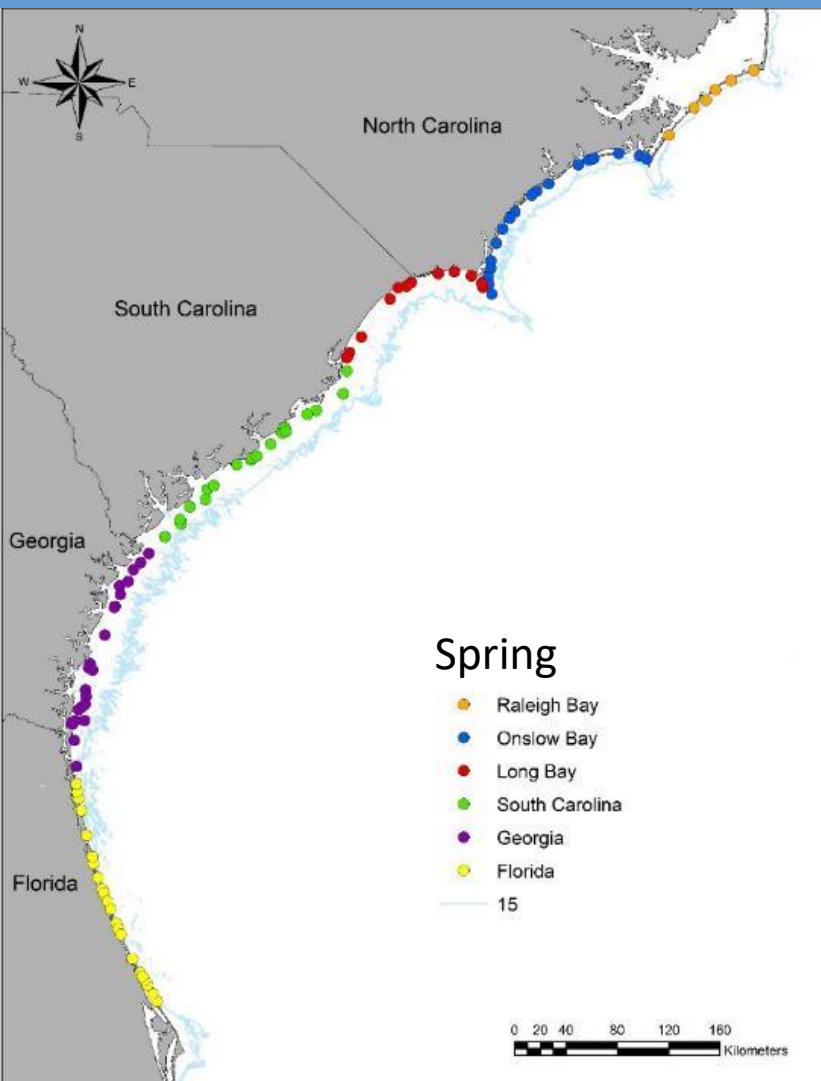


Coastal Trawl Survey

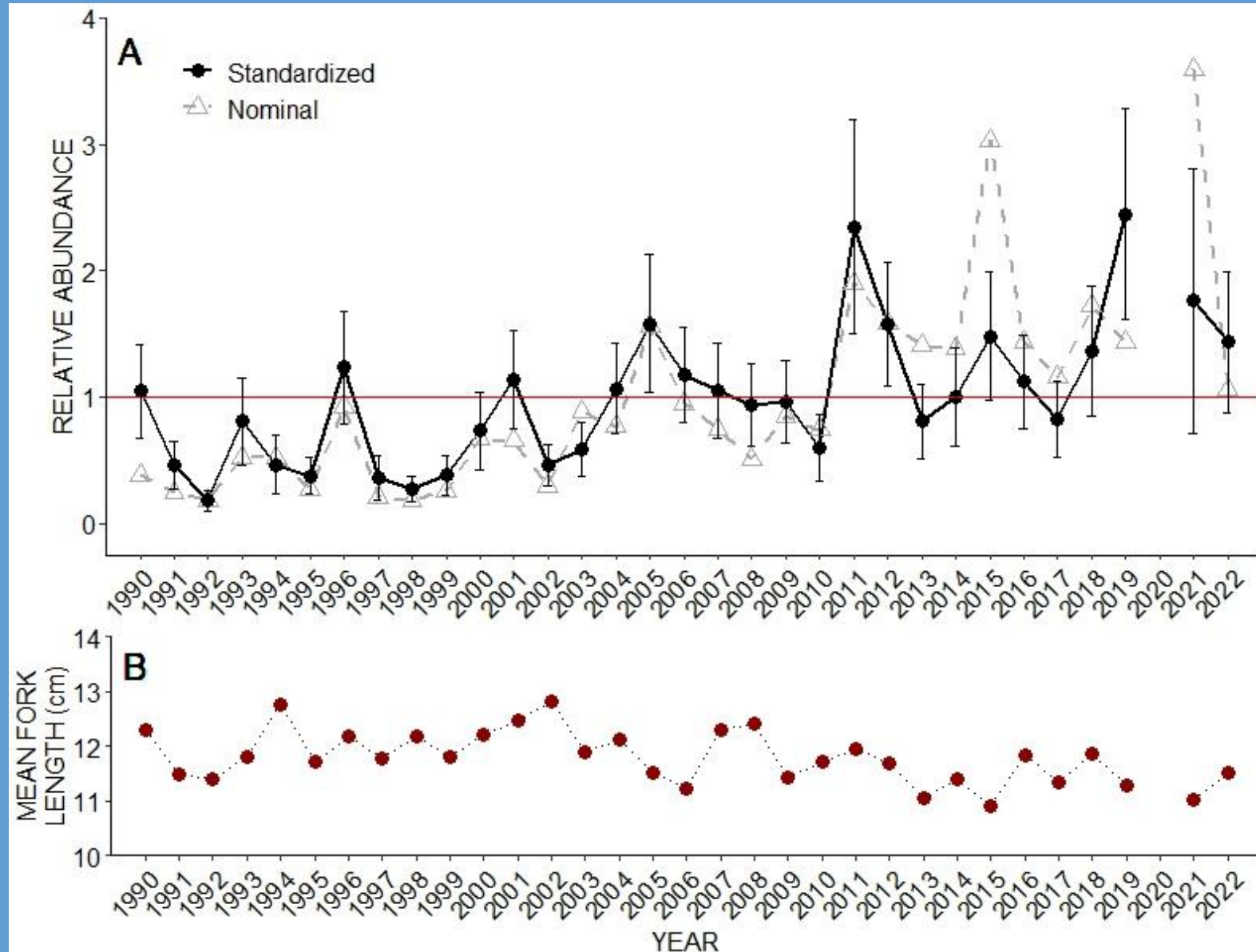
- 75' Mongoose-type Falcon nets
- Shallow-water, trawlable habitats
- 1990-2019 both nets sorted
- 2020 no sampling due to COVID-19
- 2021-2022 single net sorted
- Abundance = #/hectare sampled
- Index = delta-GLM standardization
 - Works well with the stratified design and commonly collected species
 - Caveat- not identical to assessments



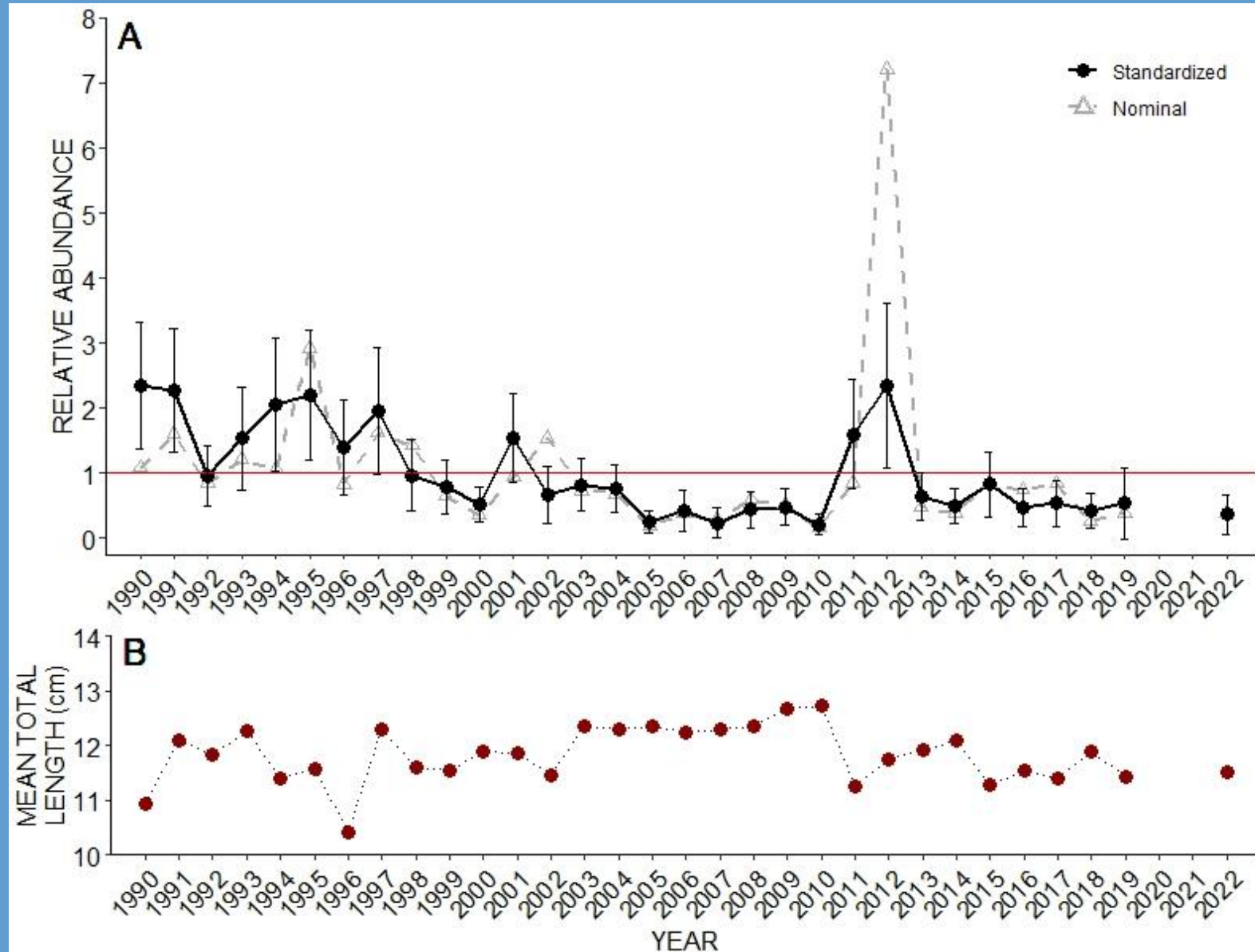
2022 CTS Activities



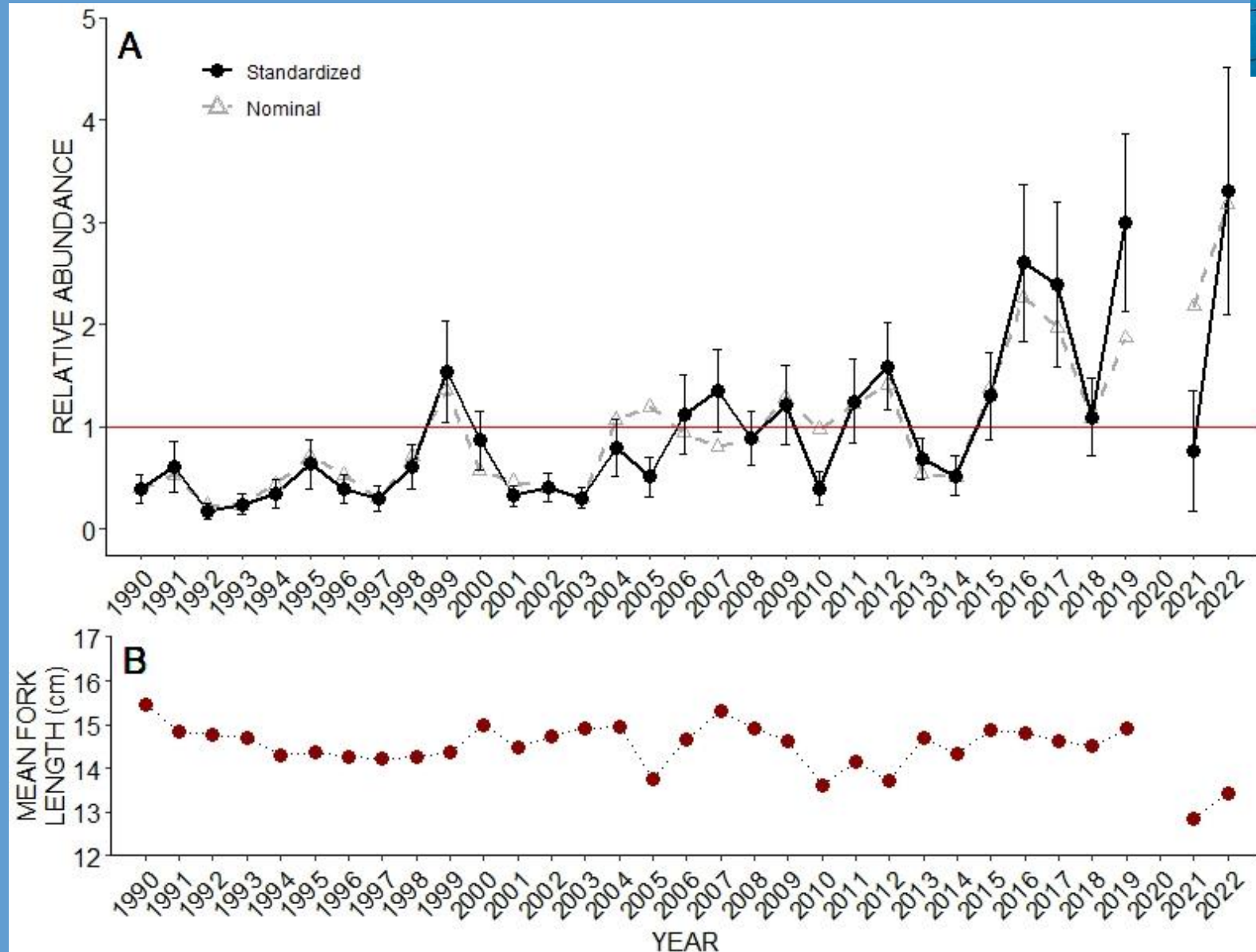
Penaeid Shrimp- Brown



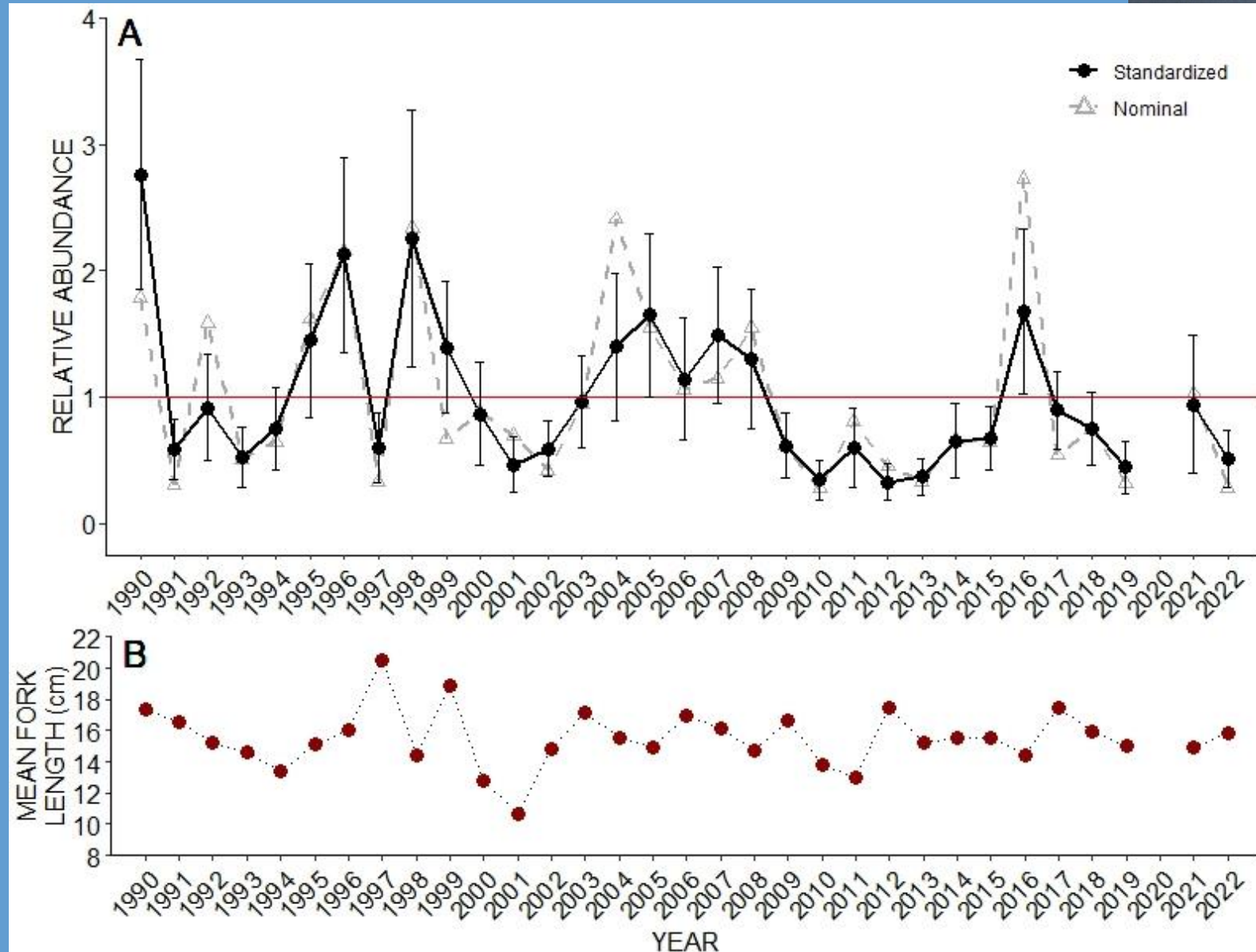
Penaeid Shrimp- Pink



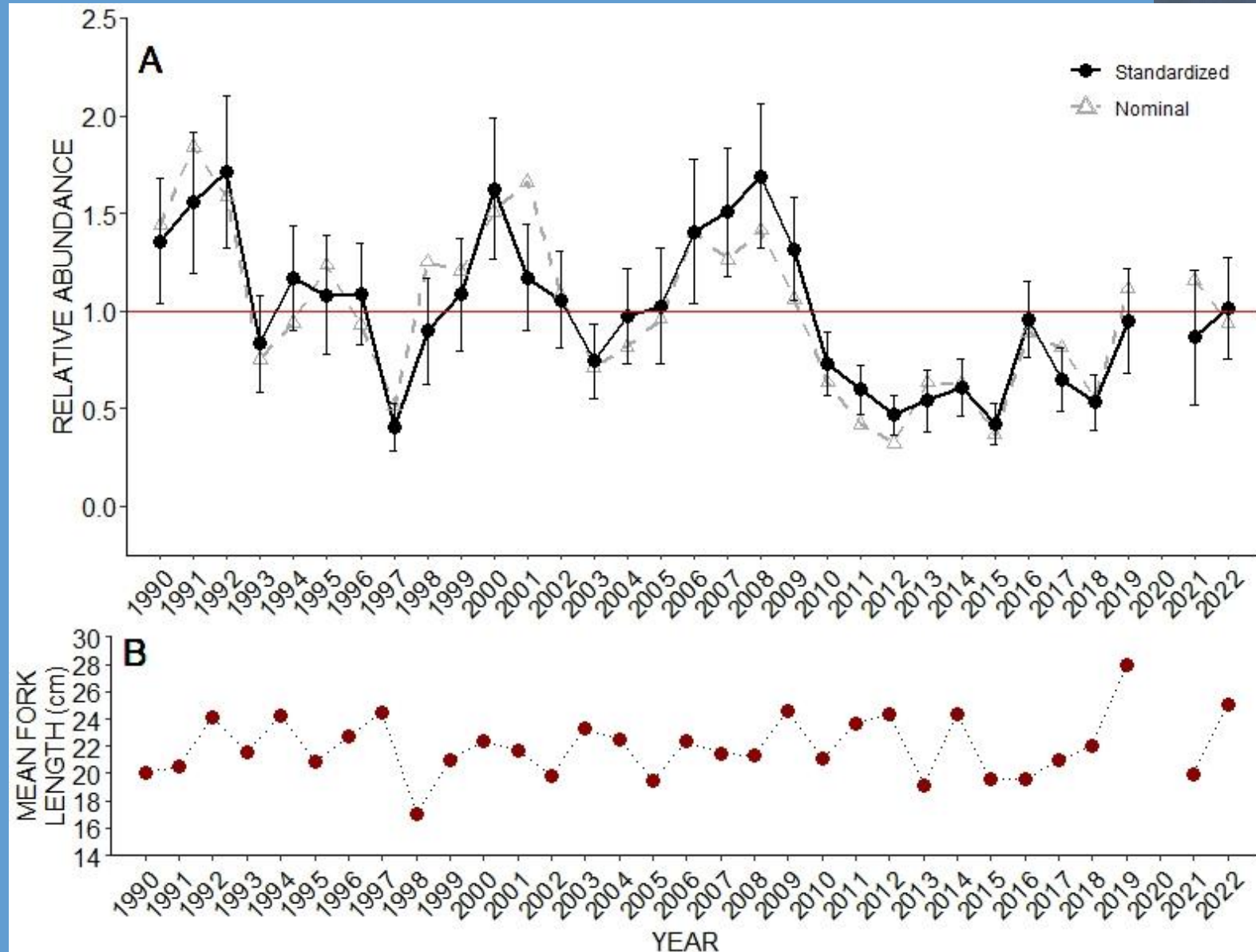
Penaeid Shrimp- White



King Mackerel (Age-0 +)



Spanish Mackerel (Age-0 +)



Future CTS Plans



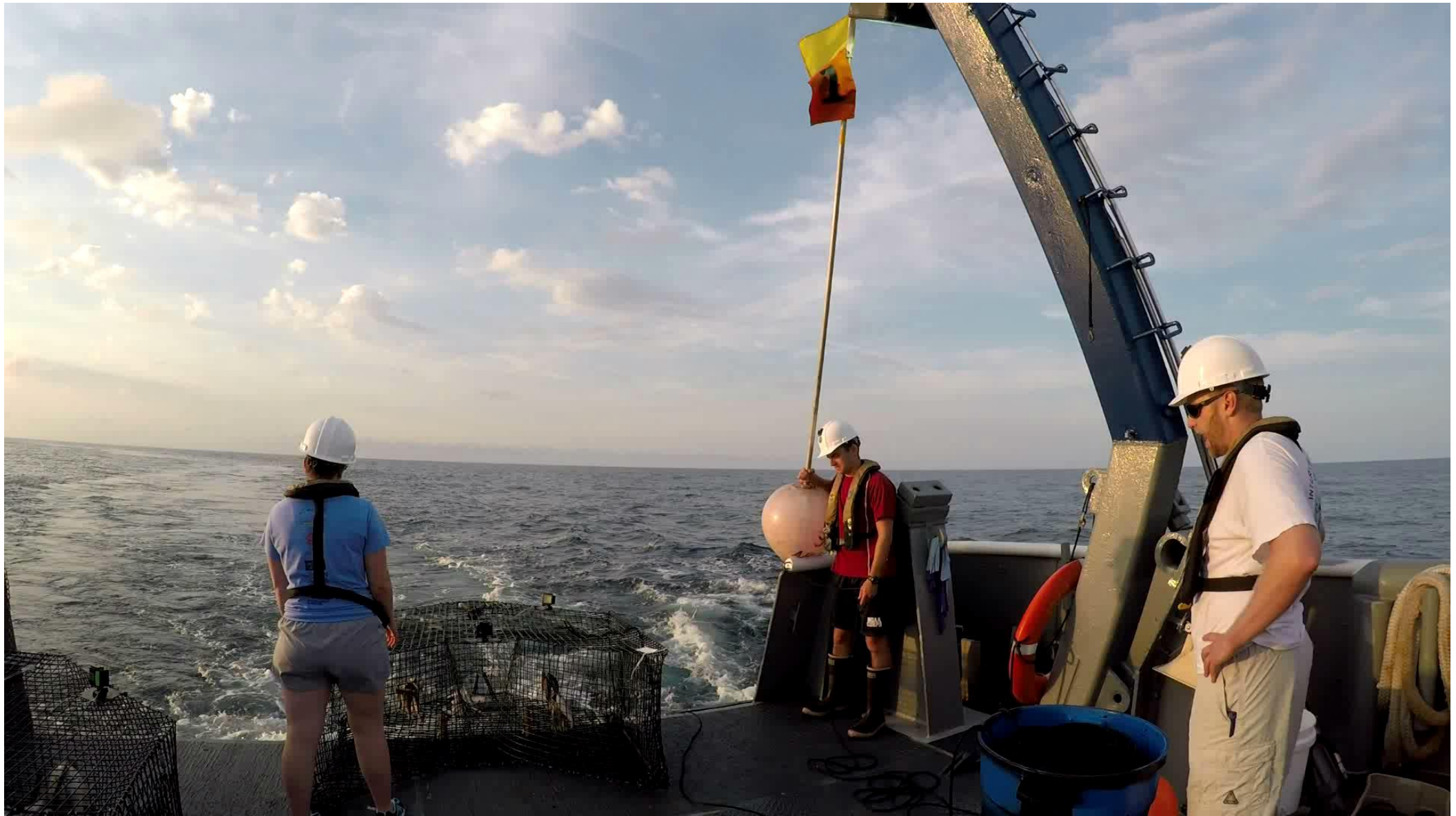


Acknowledgements:

MARMAP/SEAMAP-SA/SEFIS
Staff & Students
Research Vessel Crews
Past and Present

NOAA funding
SCDNR support





Questions?