Southeast Reef Fish Survey
Coastal Trawl Survey

2024 Sampling Activities and Relative Abundance Trends

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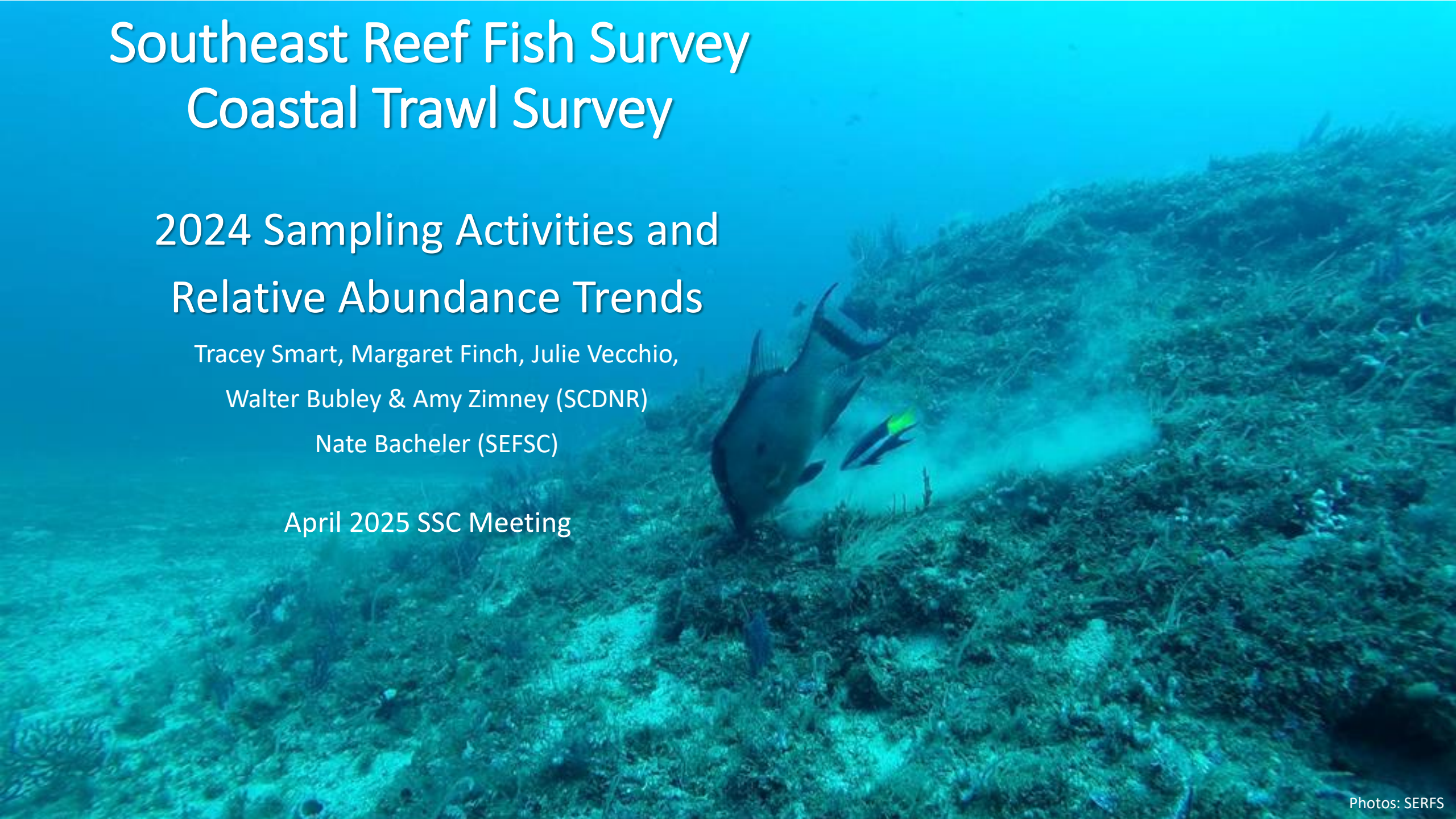
Nate Bacheler (SEFSC)

April 2025 SSC Meeting



Photos: SERFS

Presentation Overview

- SERFS then CTS
  - Survey Design
  - 2024 Activities
  - Abundance, Length & Distribution for Selected Spp.
  - 2025 Planned Activities

Photos: SERFS

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

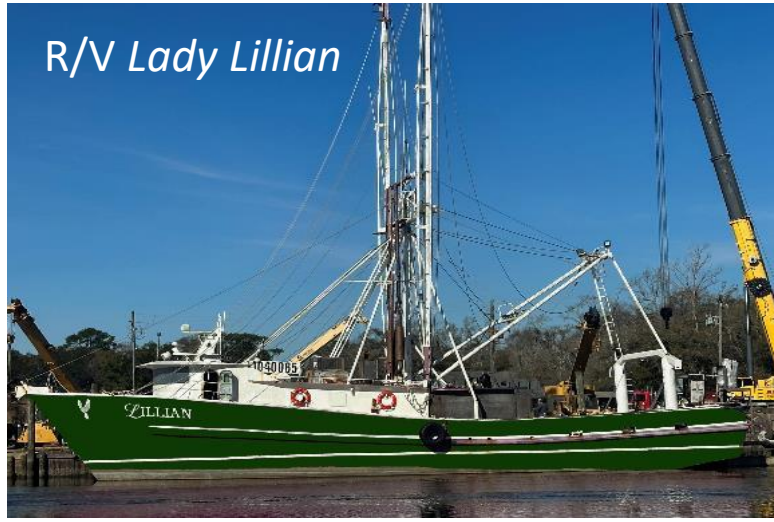
Southeast Reef Fish Survey (SERFS)

Current Funding & Sampling:

MARMAP + SEAMAP-SA + SEFIS

Historical Funding & Sampling:

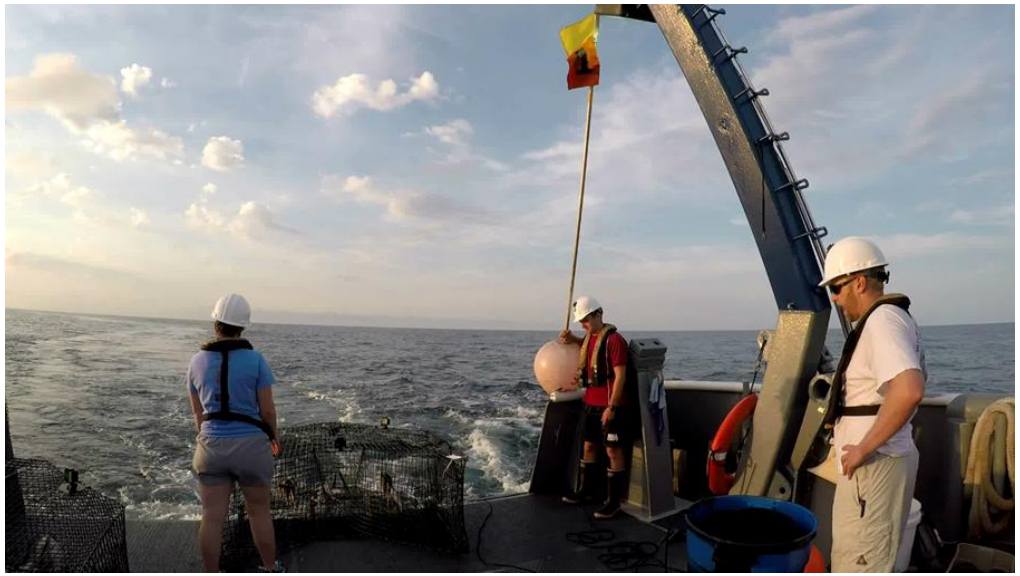
MARMAP

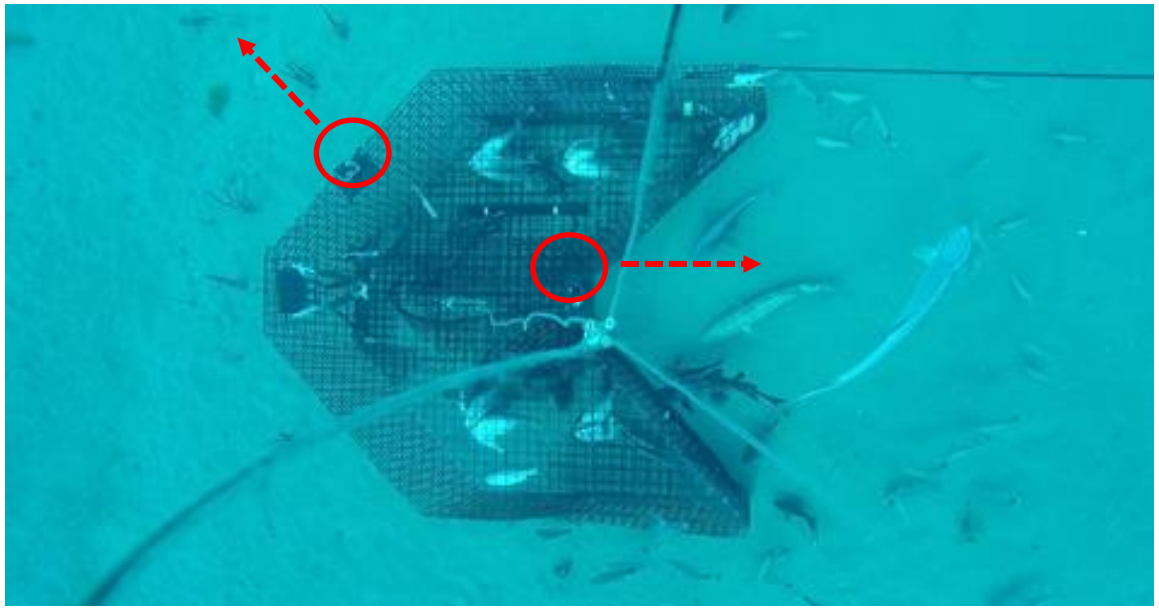


Marine Resources Monitoring, Assessment & Prediction Program (SCDNR)
Southeast Area Monitoring & Assessment Program - South Atlantic (SCDNR)
Southeast Fishery-Independent Survey (SEFSC)

Chevron Video Trap (CVT) Sampling

- Target low to medium relief, hard-bottom habitats
- Depths ~15-110 m
- April 15 - Oct. 14
- Trap used consistently and standardized since 1990
- Baited with menhaden, soak time ≈90 minutes
- Since 2011: all traps have at least 2 video cameras





CVT Universe

- ~ 4,300 trap sampling stations (NC-FL)
- Simple, random selection
- ~ 1,500 targeted in 2024

Sample and data processing & analyses

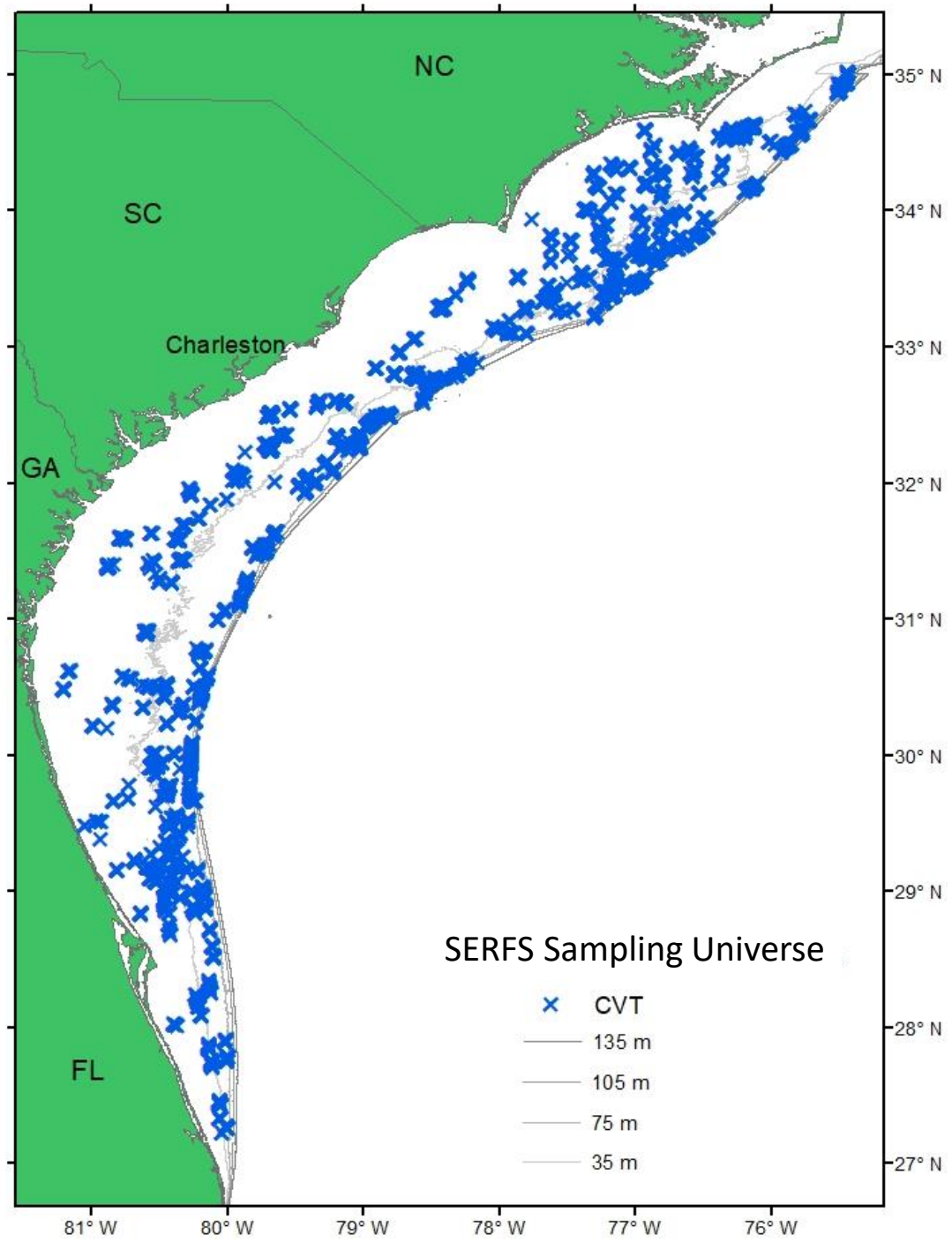
MARMAP/SEAMAP-SA (SCDNR):

- Catch indices
- Life history

SEFIS (SEFSC)

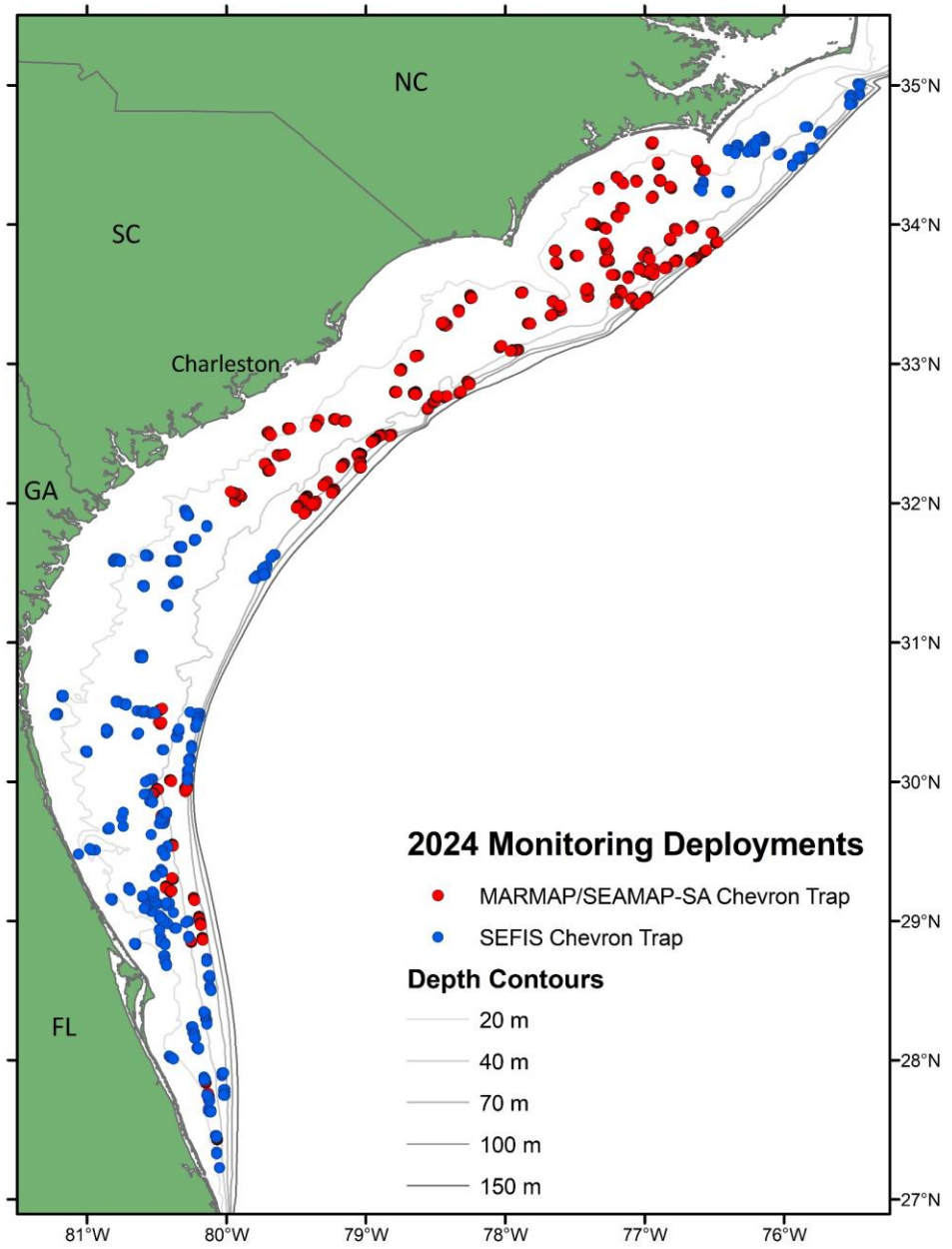
- Video indices

Publicly-available data SEAMAP.ORG



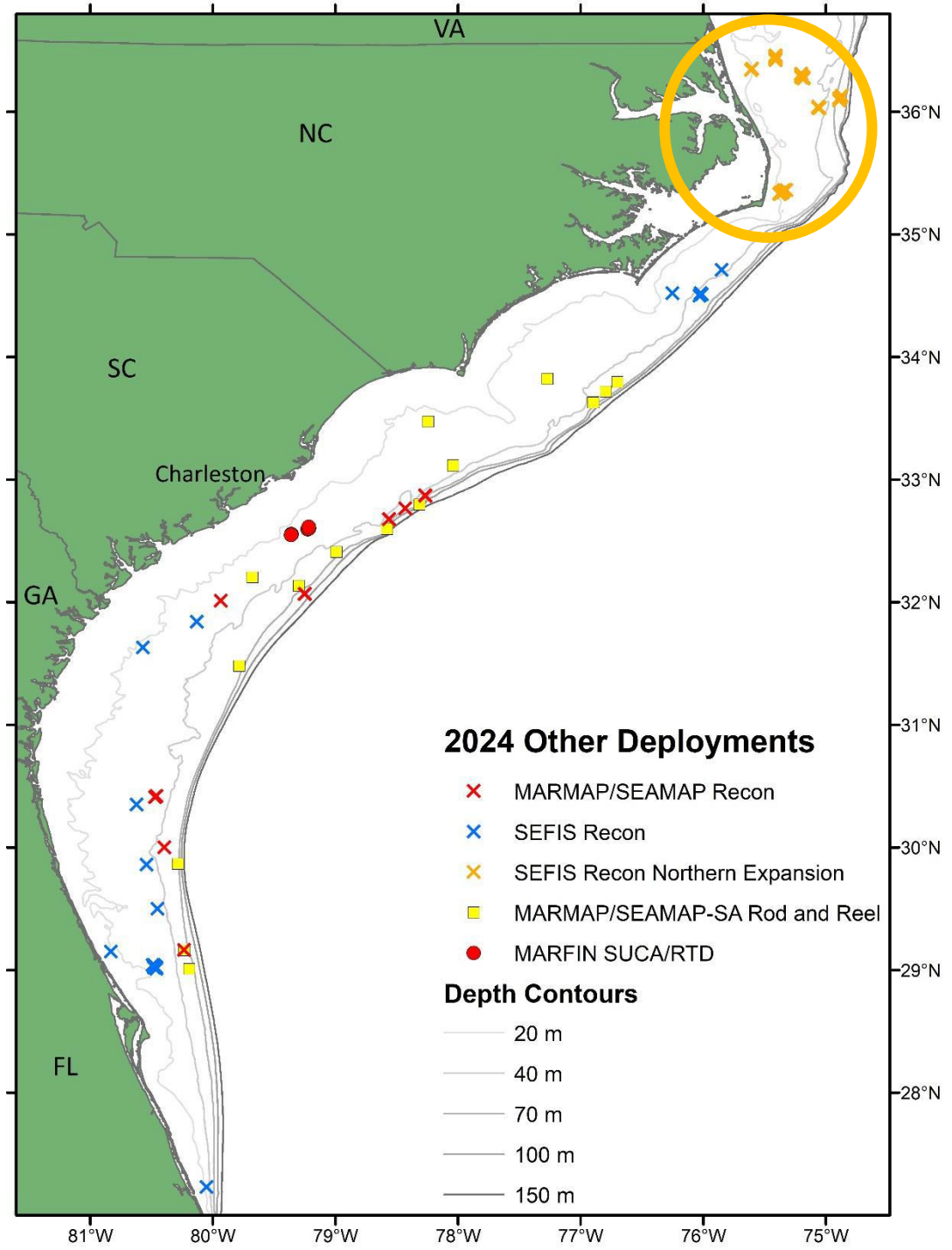
2024 SERFS Core Activities

- **79** days at sea (+ 20 mapping days)
  - **1,503** CVTs
  - **234** CTD casts
- **CVTs = 25,476** fish (**~80** species) collected, measured, weighed
- **5,984** fish (**~30** species) retained for life history (age, reproduction, DNA)



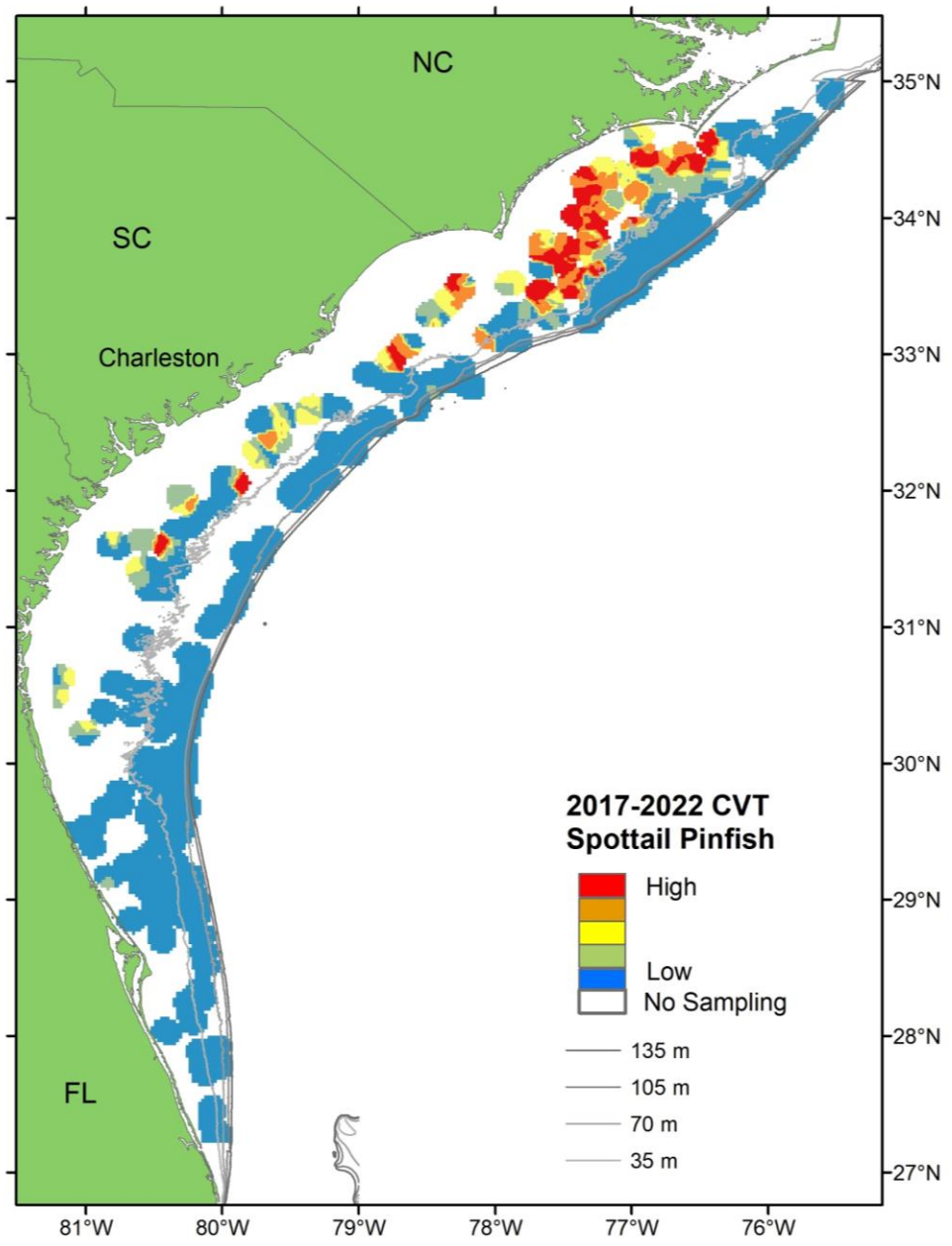
2024 SERFS Supplemental Activities

- **Northern Expansion**



SERFS Distributions- Example

- Only CVT catch
- Catch abundance in quintiles (5 bins)
  - # fish / trap hour
- 5 most recent years: 2019 & 2021-2024
- Cooler colors => lower nominal abundance
- Warmer colors => higher nominal abundance
- White => no sampling



CVT Relative Abundance

- Catch index (1990-2024)
- Video index (2011-2023)
- No sampling in 2020 (COVID-19)
- Standardized using Zero-Inflated Negative Binomial model (ZINB)

  Most appropriate method, reduces uncertainty

Catch:

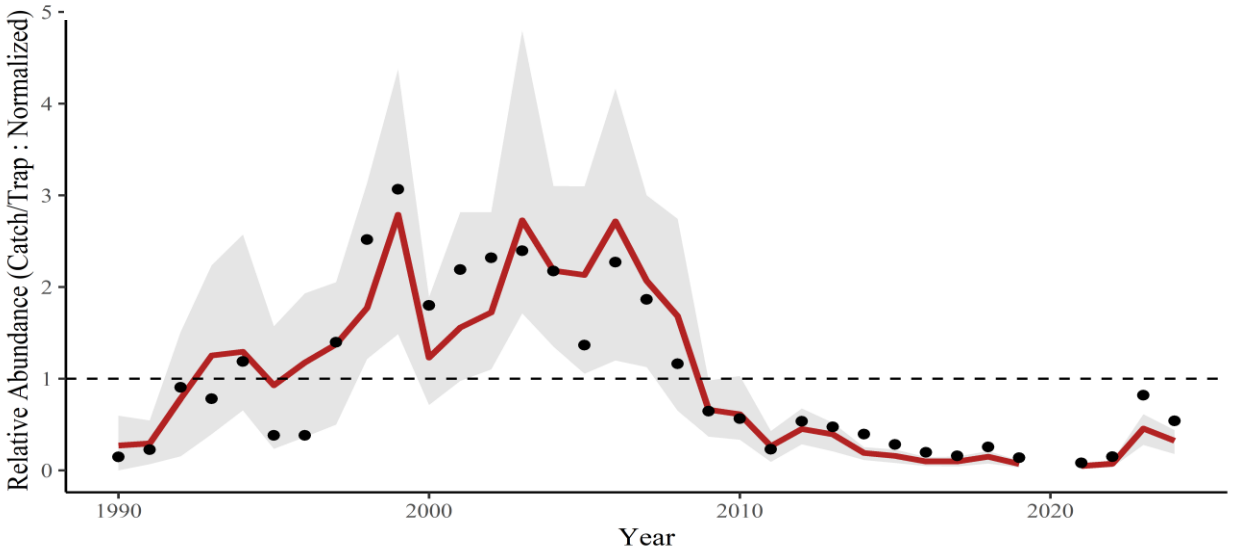
- Number of fish
- Trap soak time

Video:

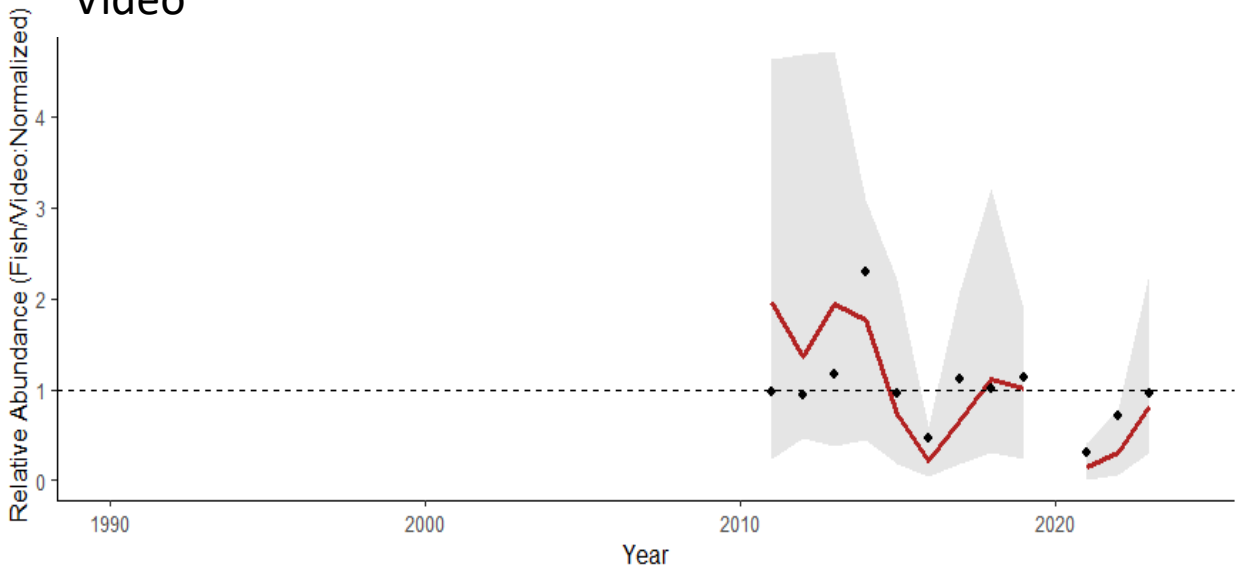
- SumCount
- 10 min after trap lands on bottom
- One snapshot every 30 s for 20 min

SERFS Indices- Example

Catch



Video

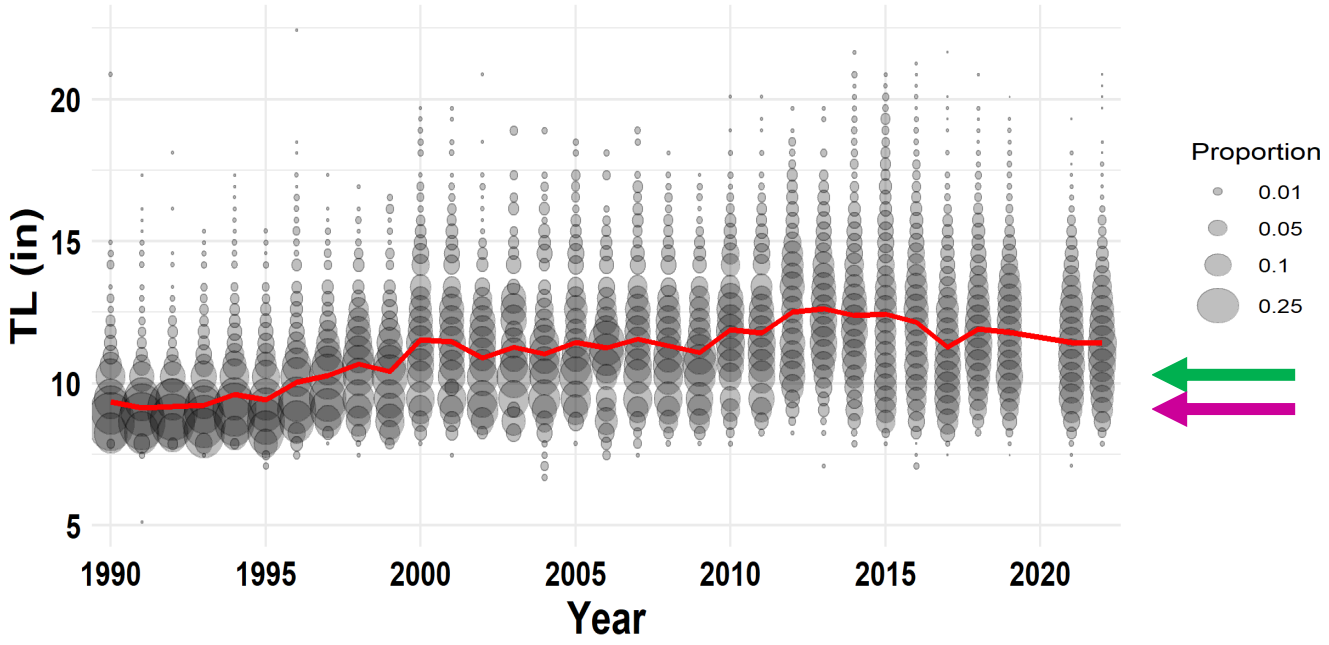


Normalized to long-term average (dashed or solid line at 1)

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

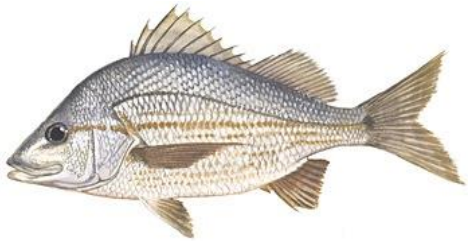
Gear	ZINB Index	95% C.I.	Nominal Values
CHV	Red Line	Gray Shading	Black Dots

SERFS Length Compositions- Example



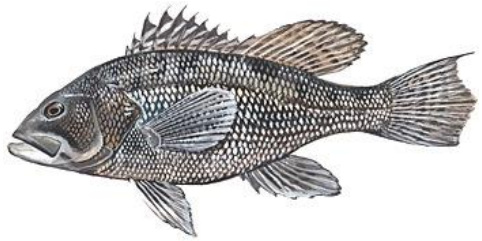
- Catch Only
- Maximum (Pinched) Total Length (in)
- 1-in Length Bins
- Bubble size = # fish in length bin / # fish measured in a year
- Red Line = Average TL
- Green Arrow = Commercial MSL
- Pink Arrow = TL at 50% Maturity, Female
- "Missing" length bins in some graphs are result of converting between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

Selected Species
2024 CVT Catch Rankings

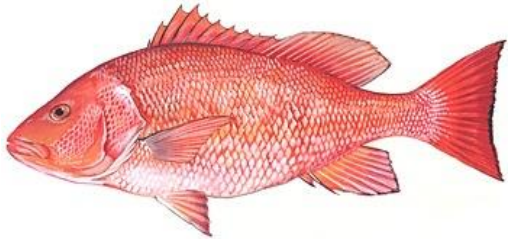


1. Tomtate*

2. Vermilion Snapper

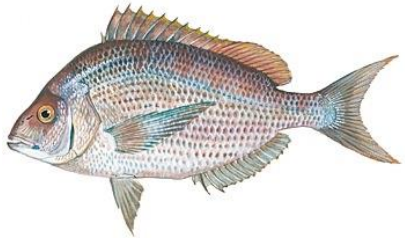


3. Black Sea Bass



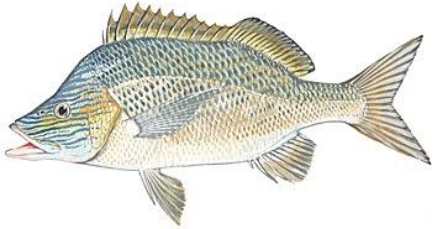
4. Red Snapper

5. Gray Triggerfish

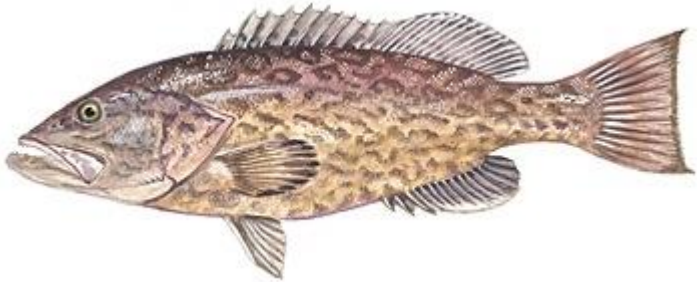


6. *Stenotomus* spp.*

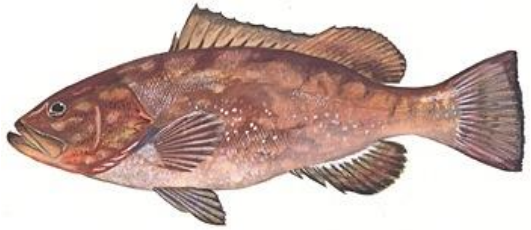
7. Red Porgy



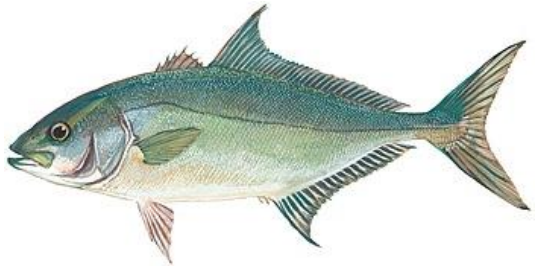
9. White Grunt



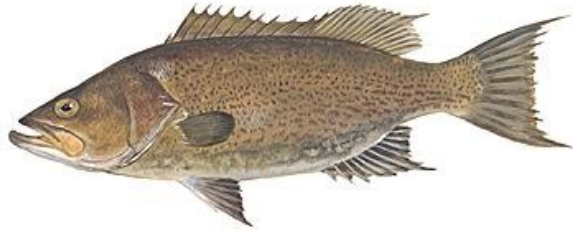
16. Gag



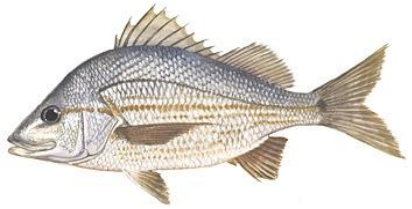
17. Red Grouper



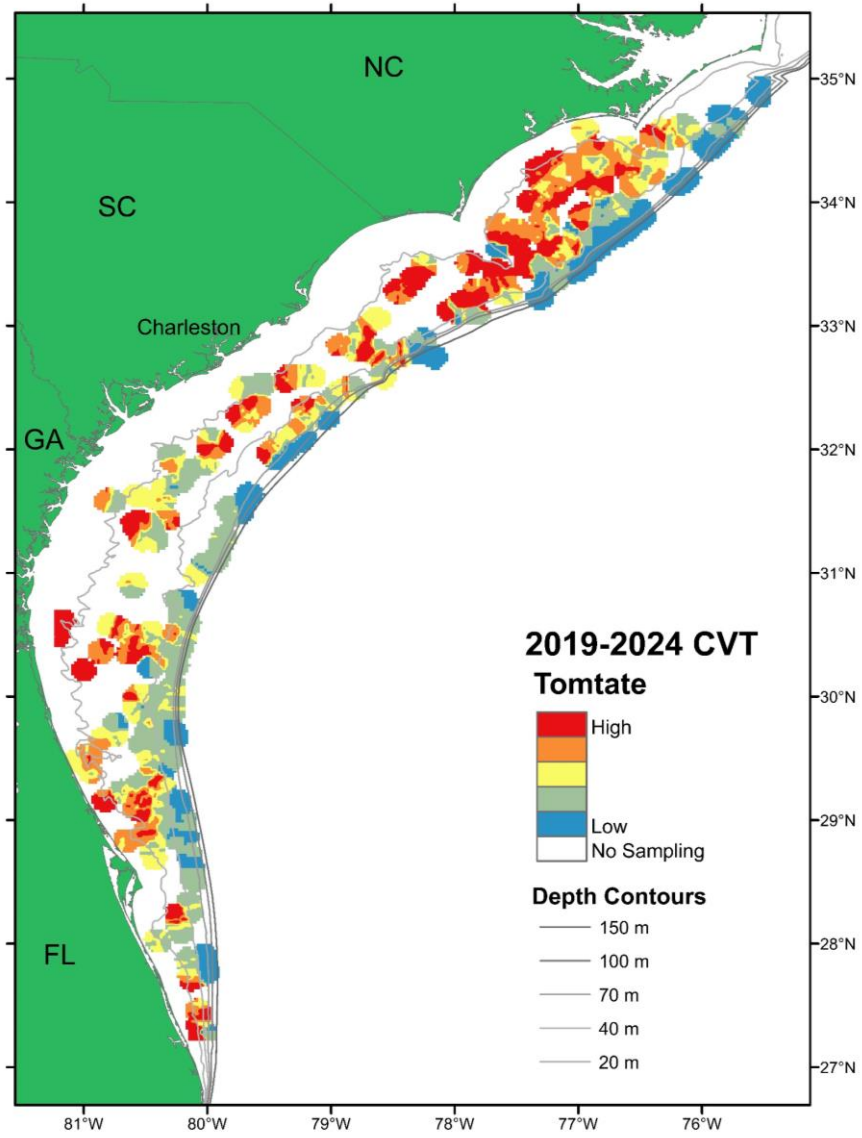
19. Almaco Jack



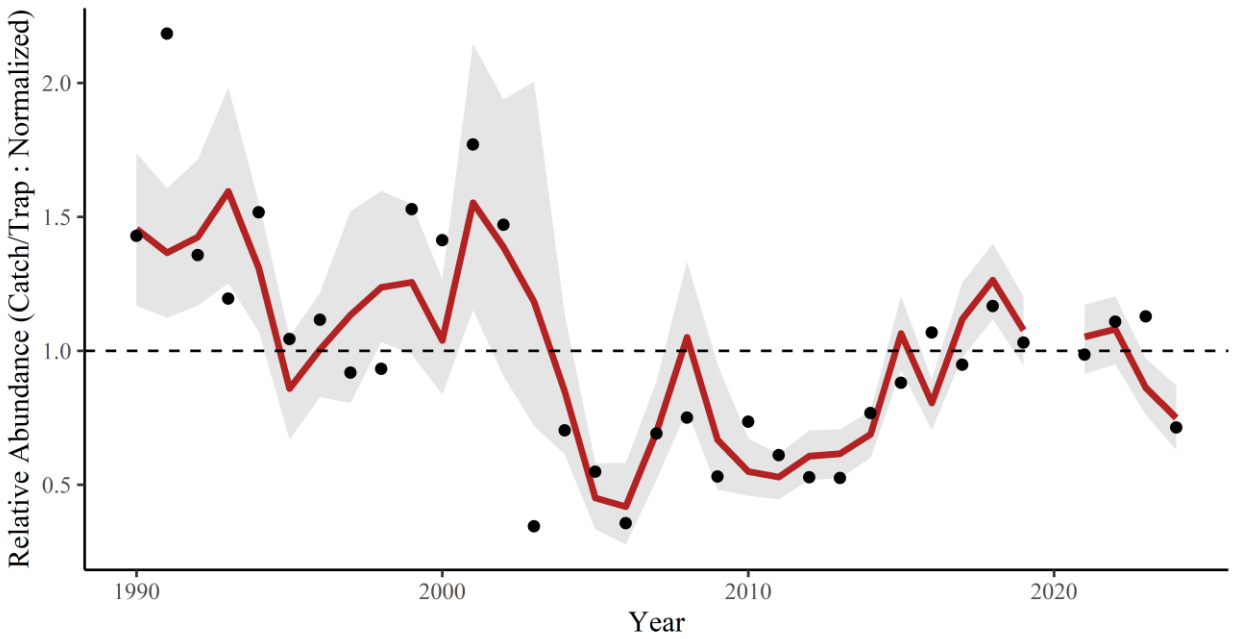
21. Scamp

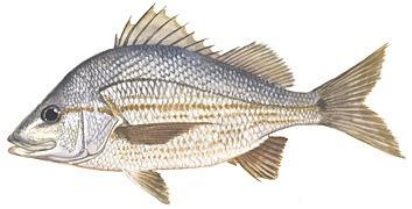


Tomtate



Catch





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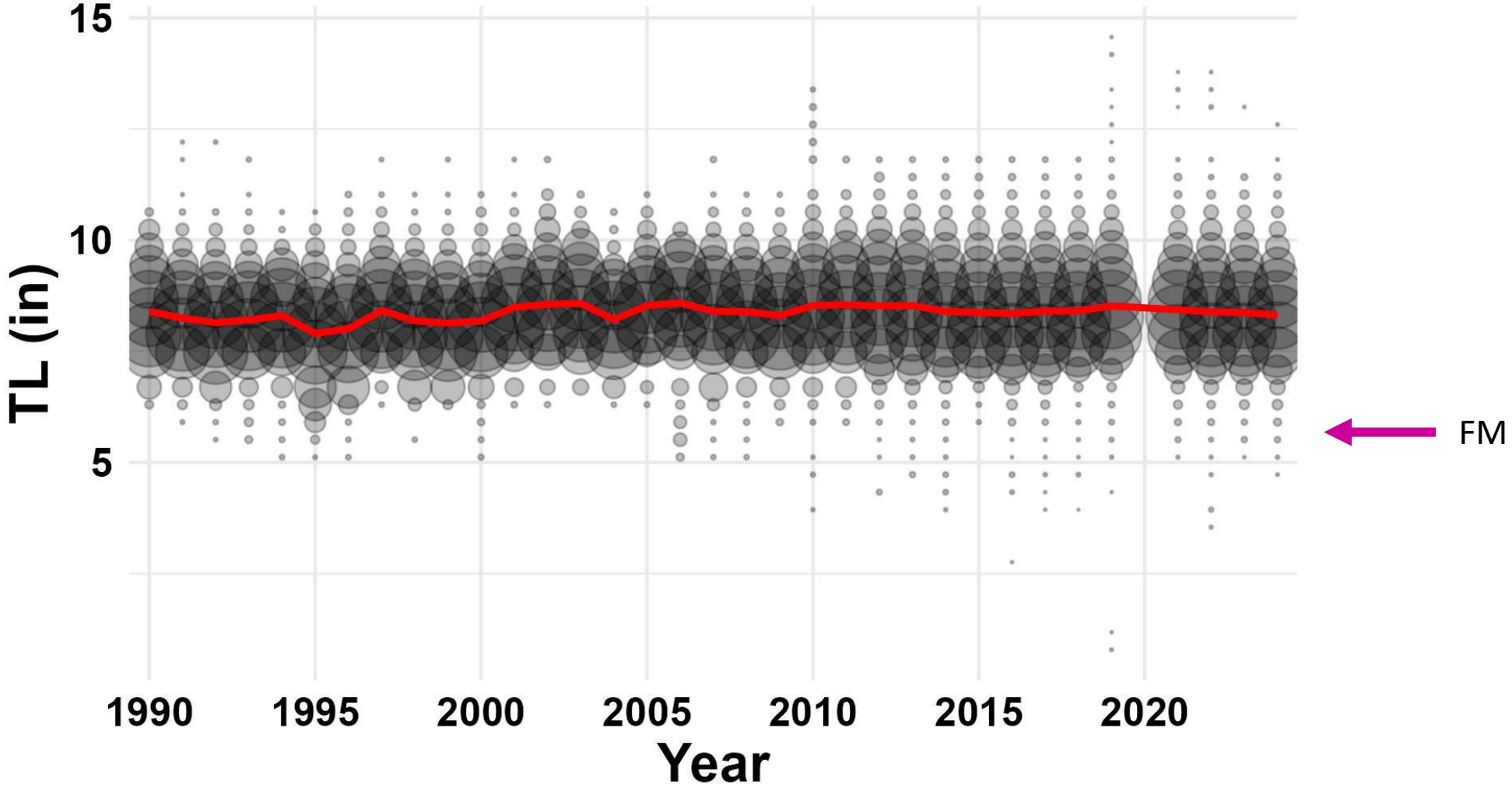

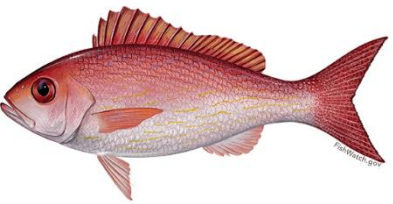

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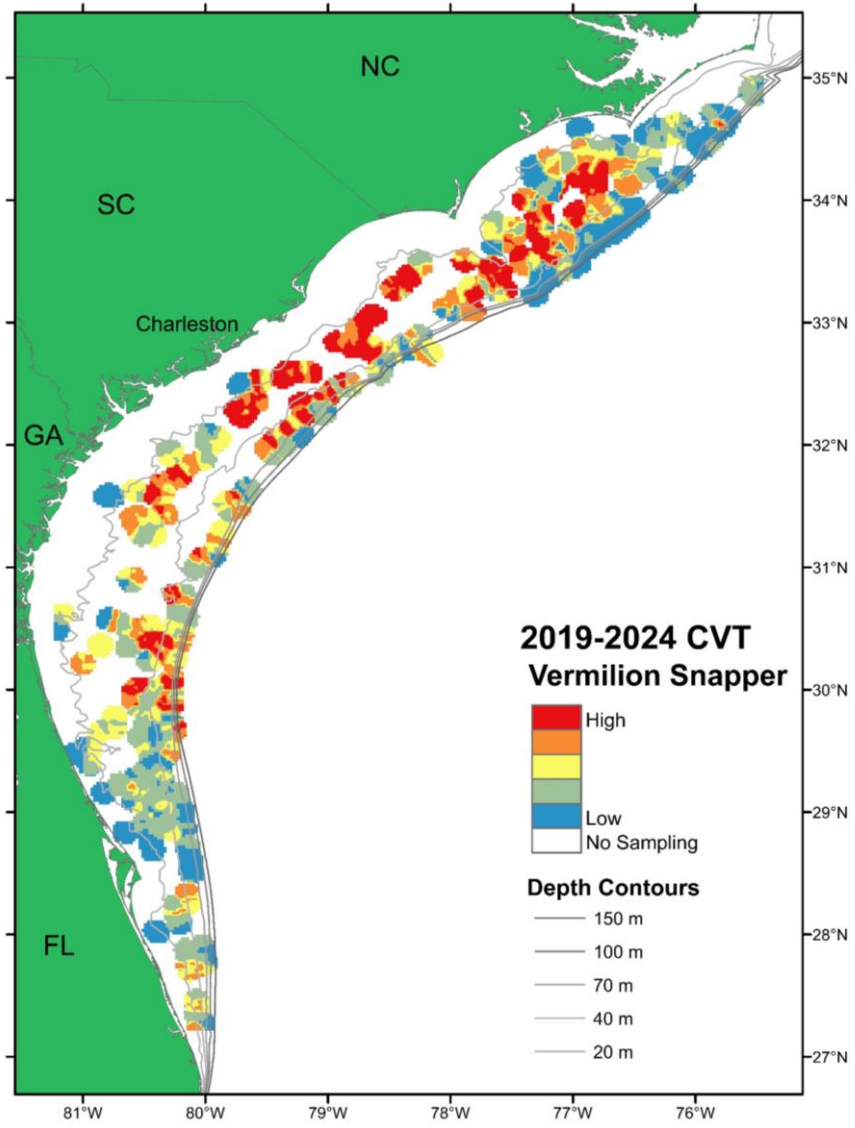

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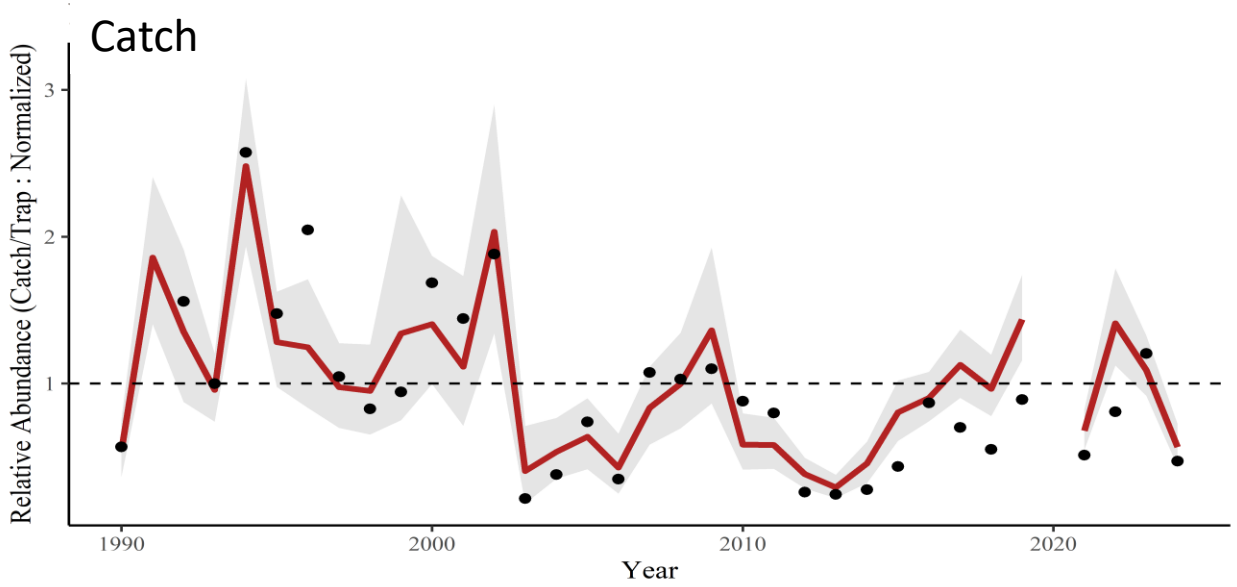
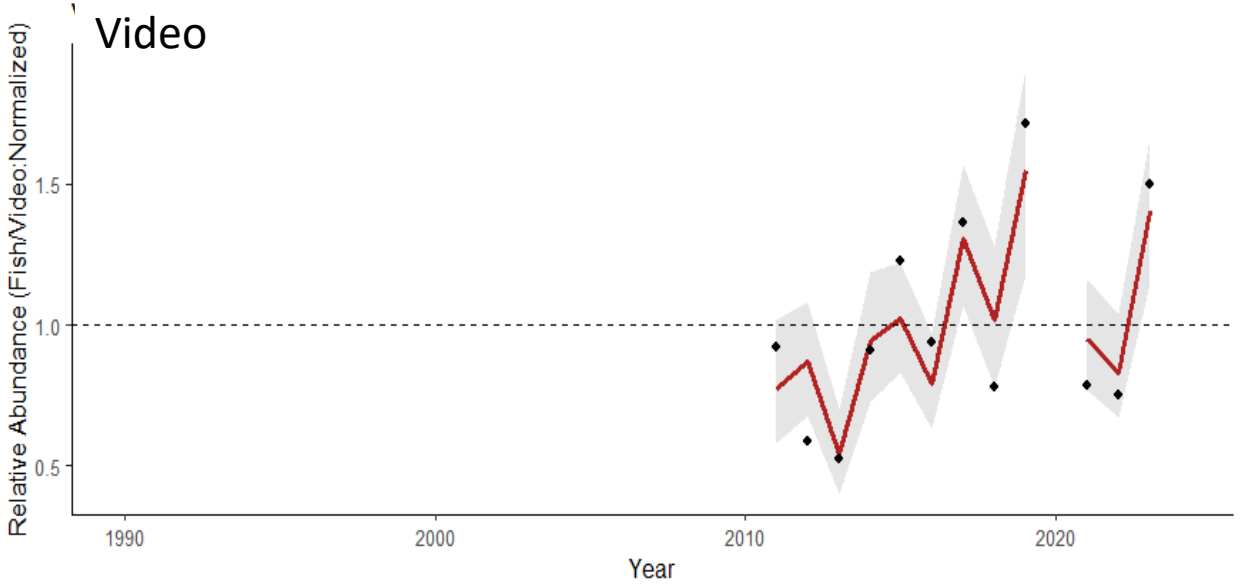
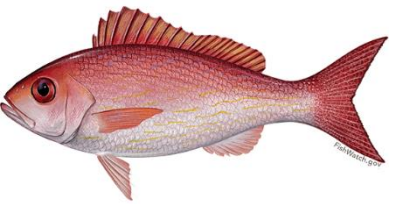


Video





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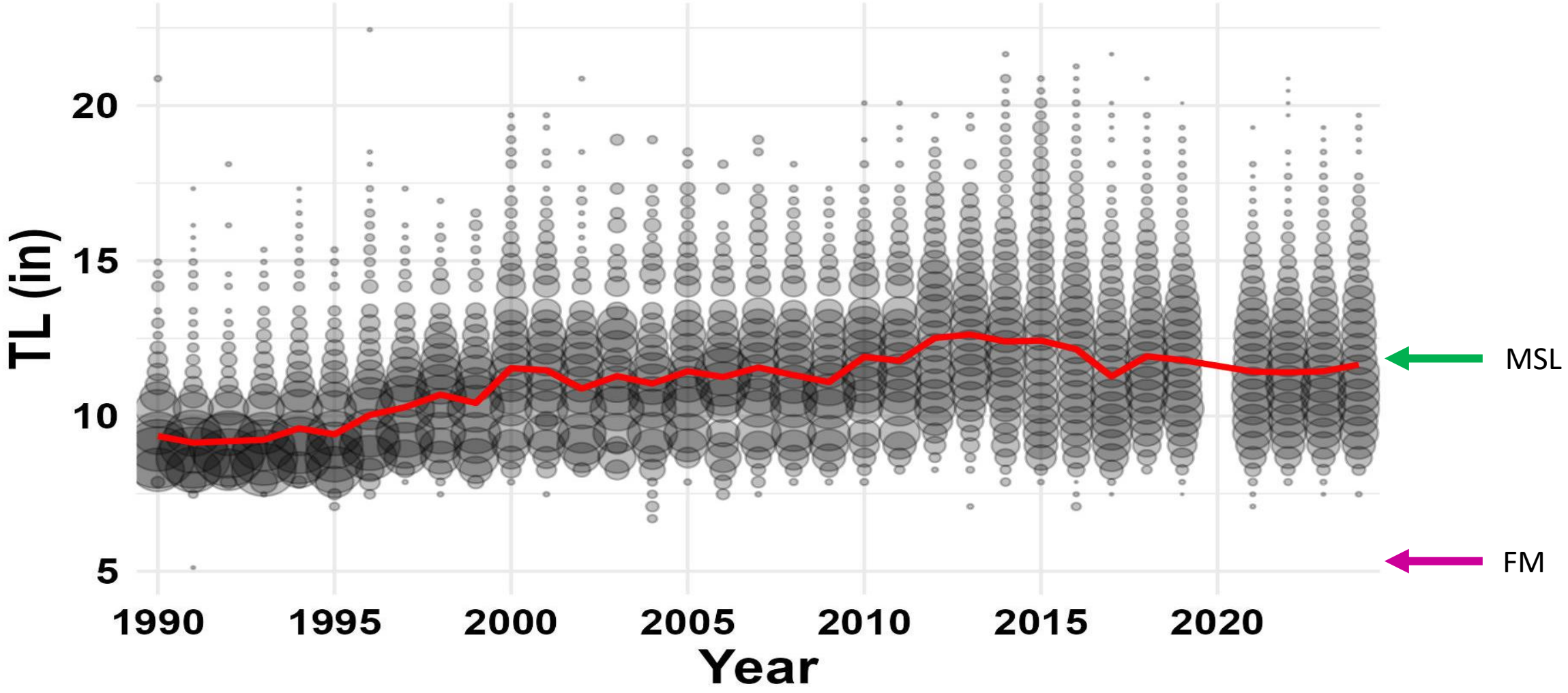

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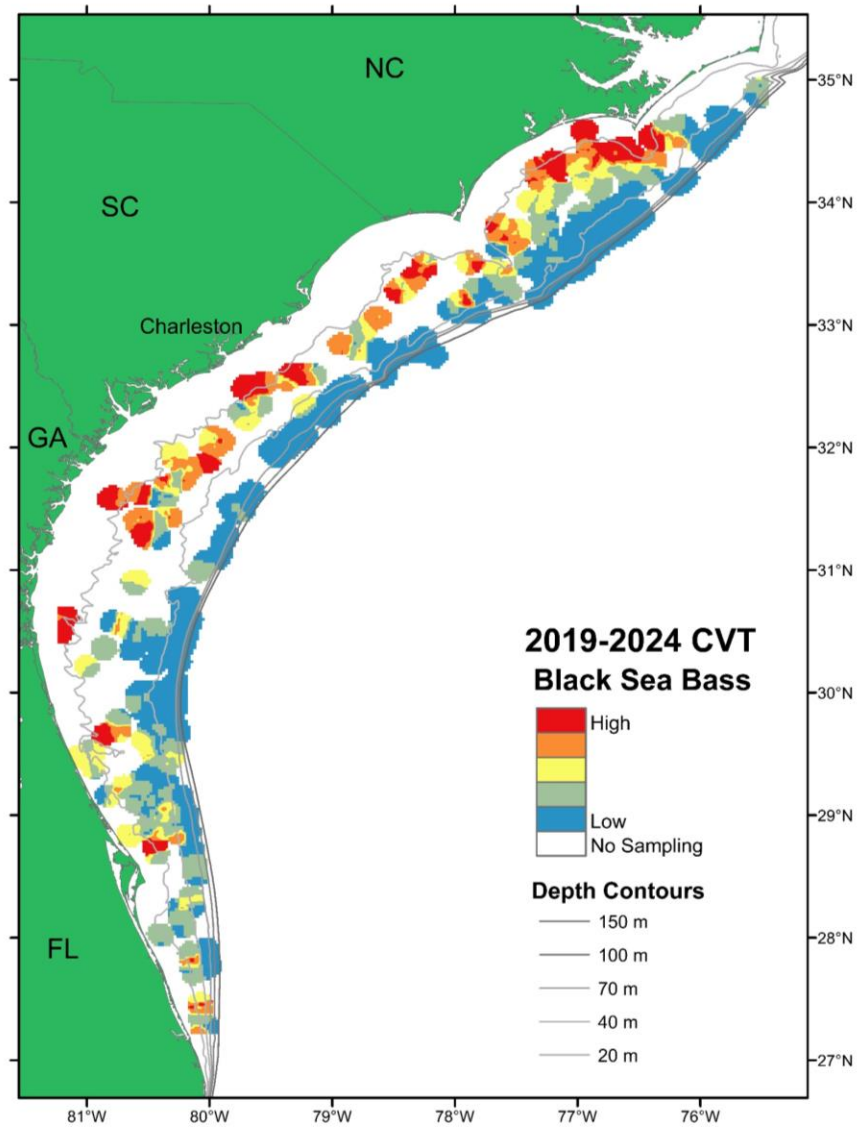

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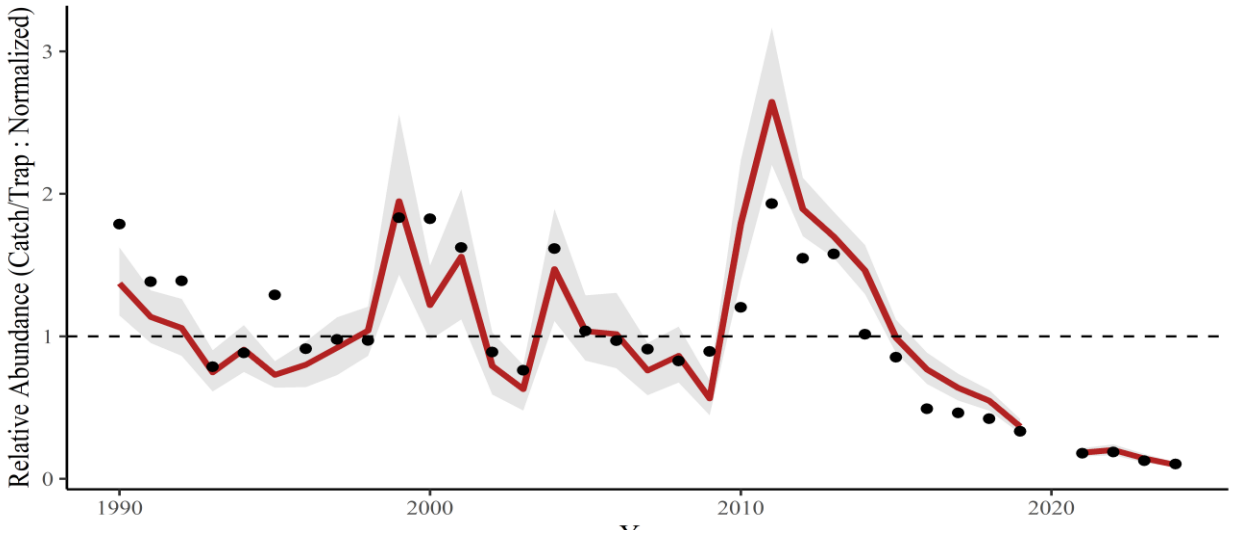

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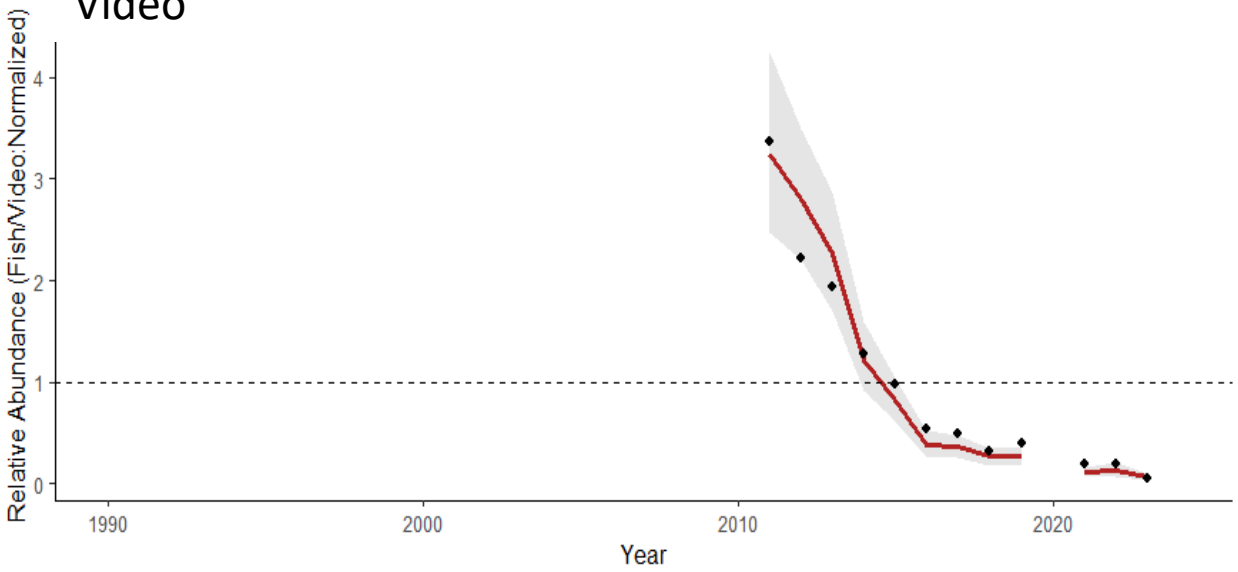

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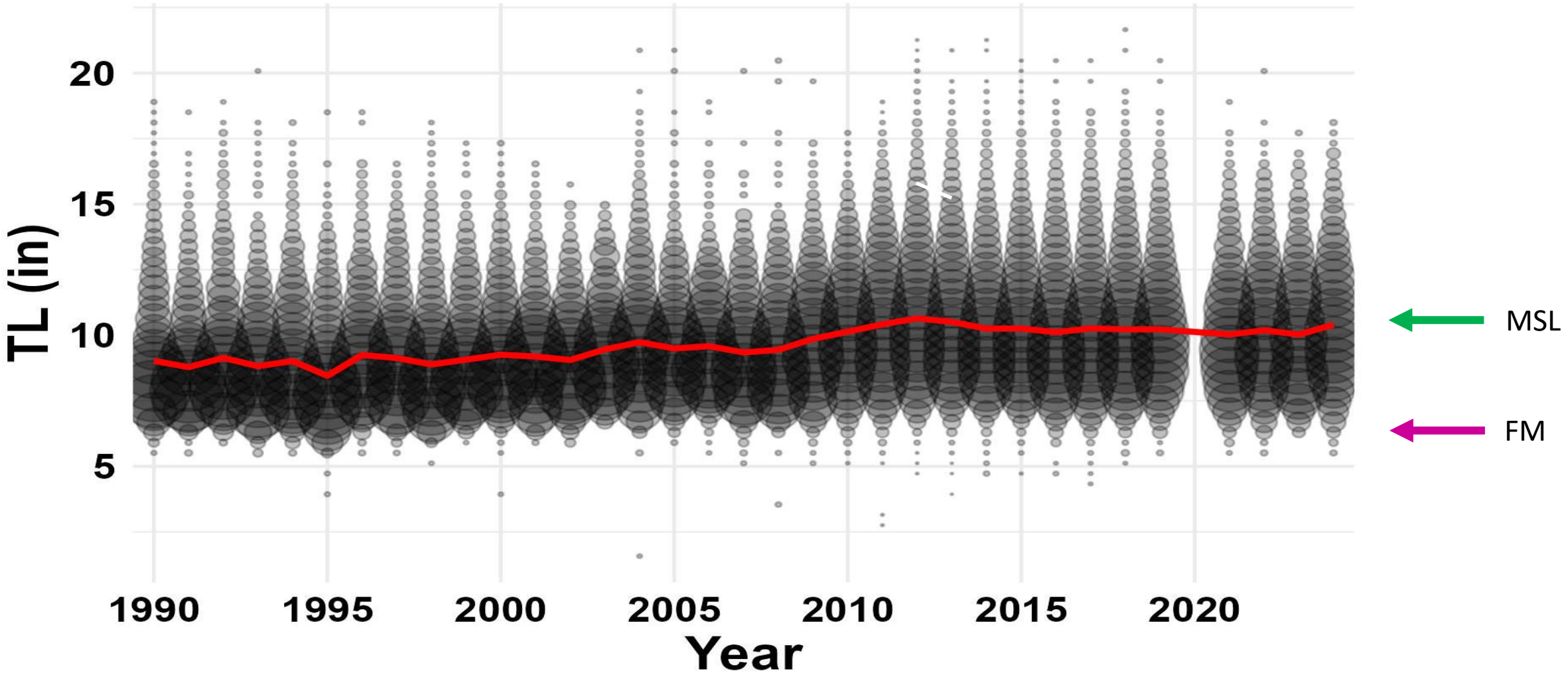

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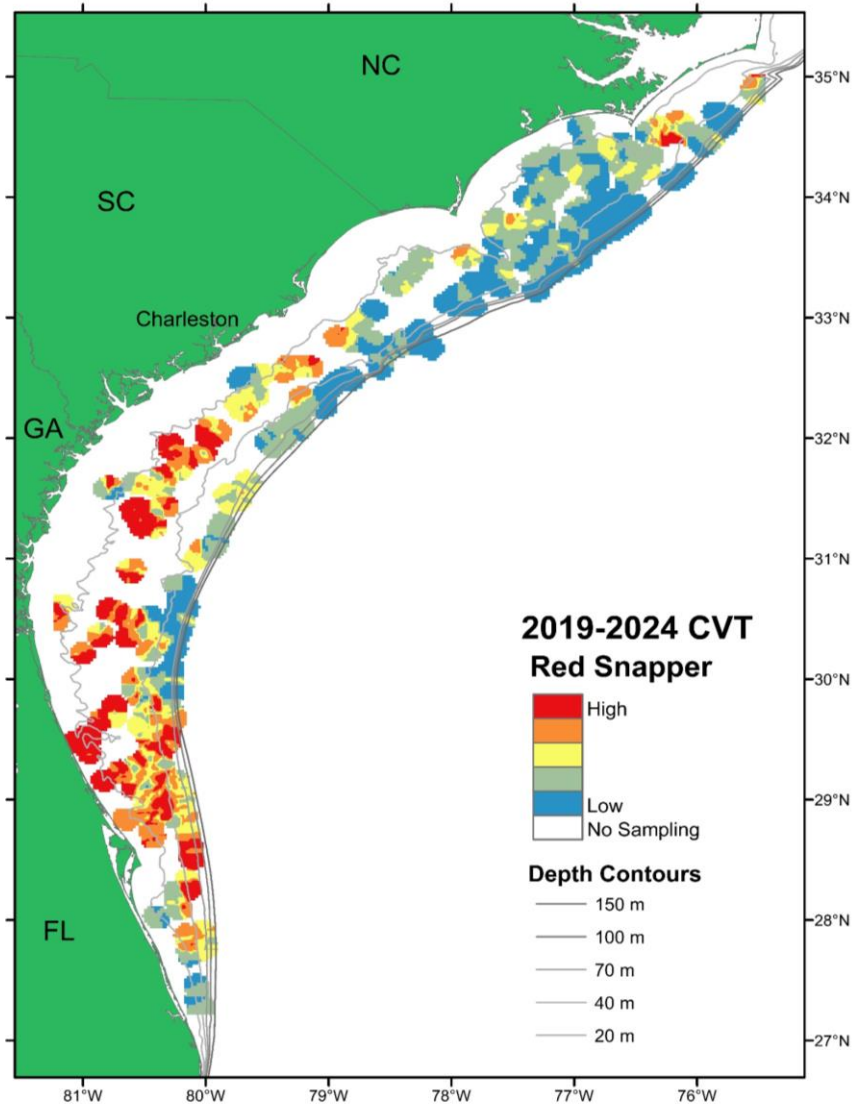

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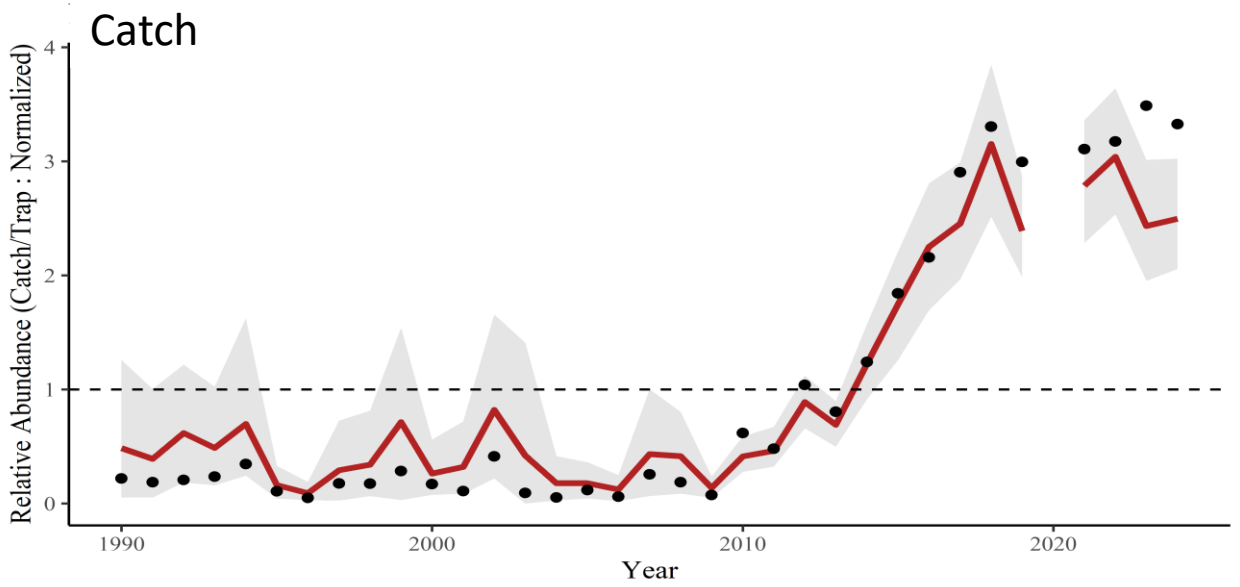

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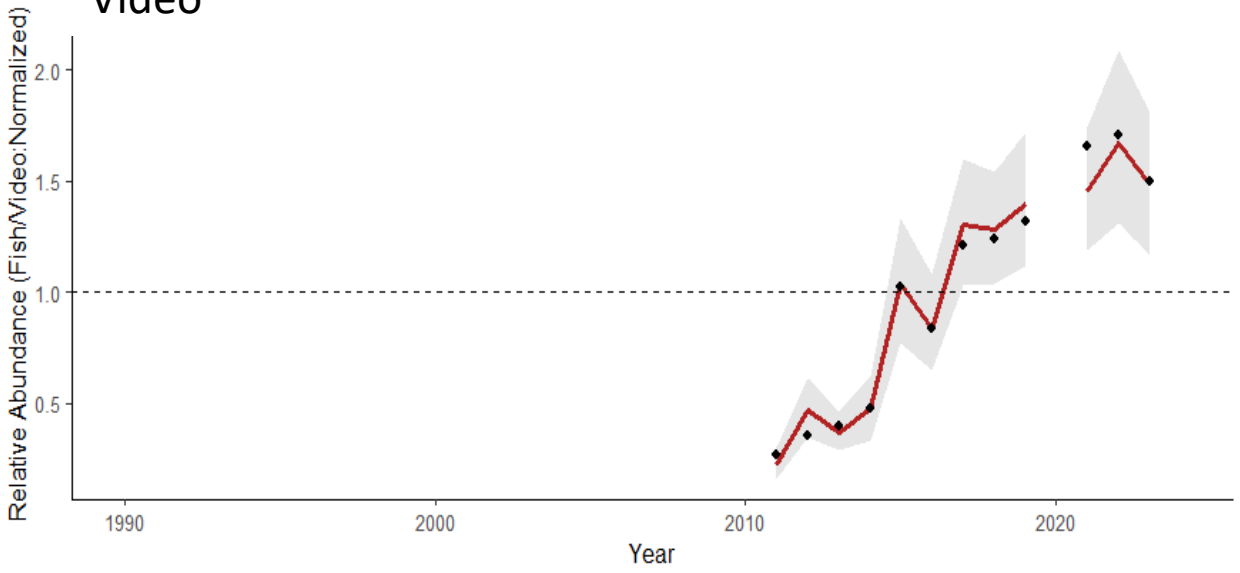
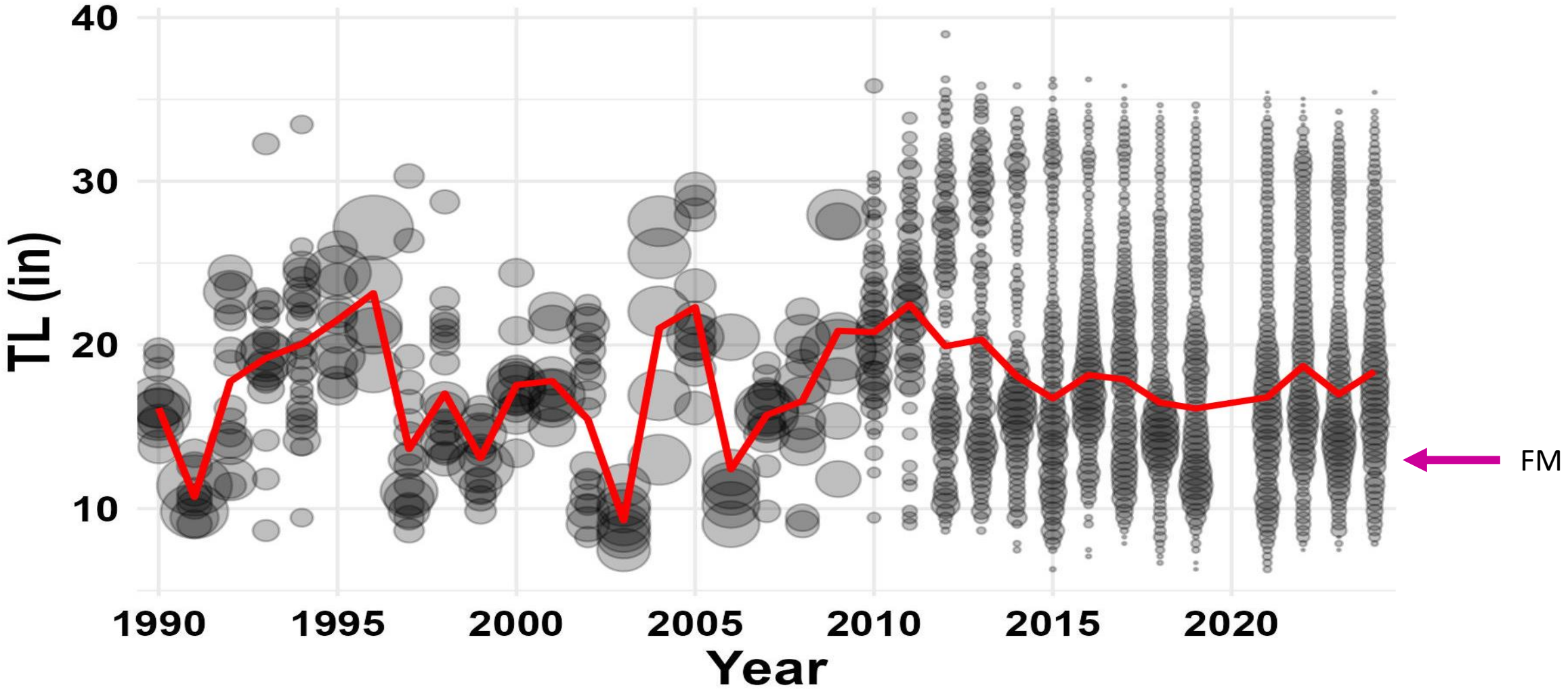
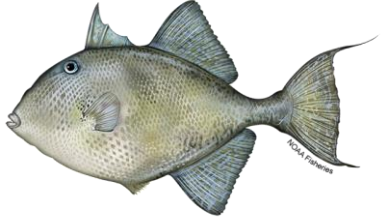
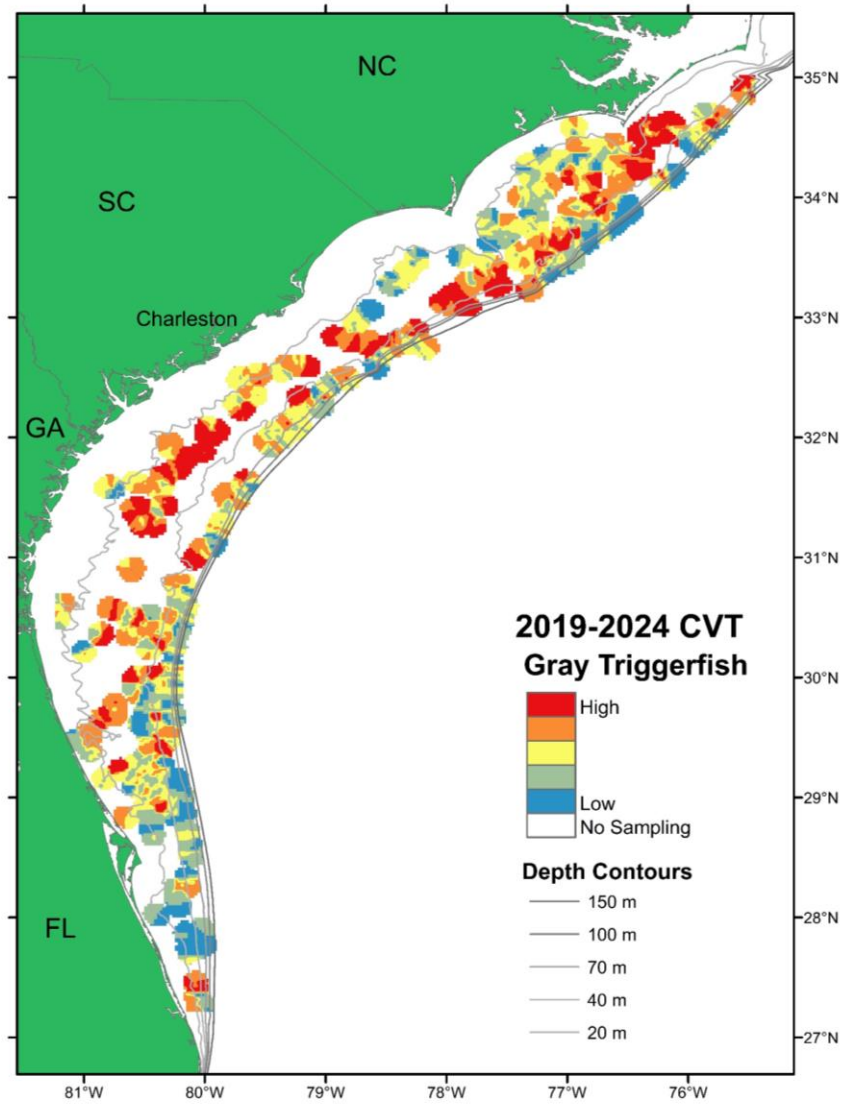


Red Snapper





Gray Triggerfish



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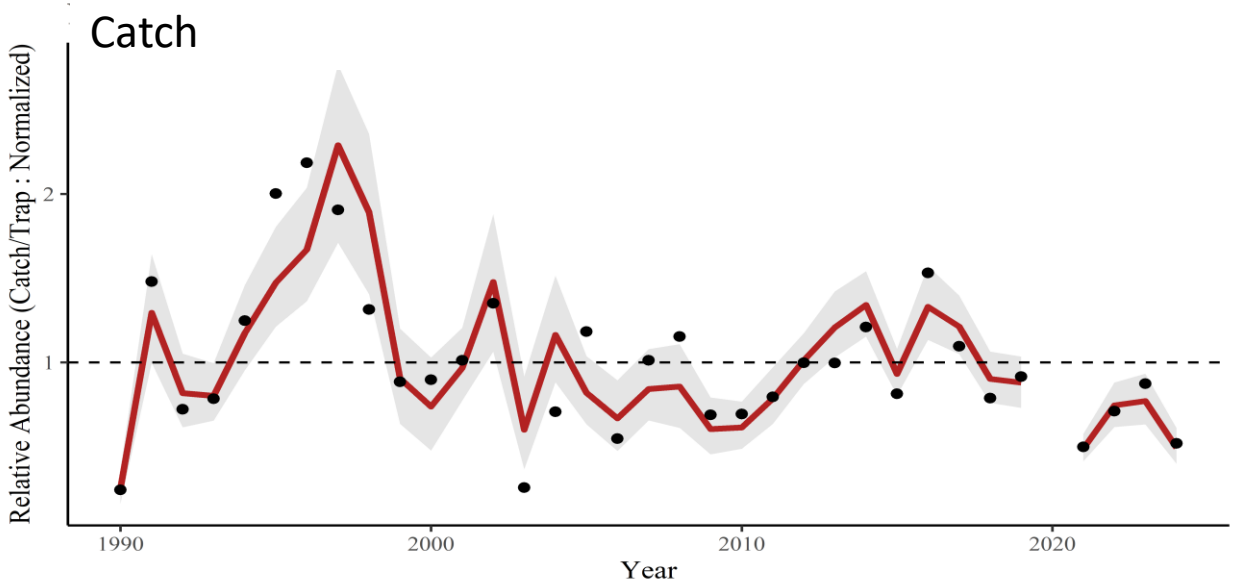

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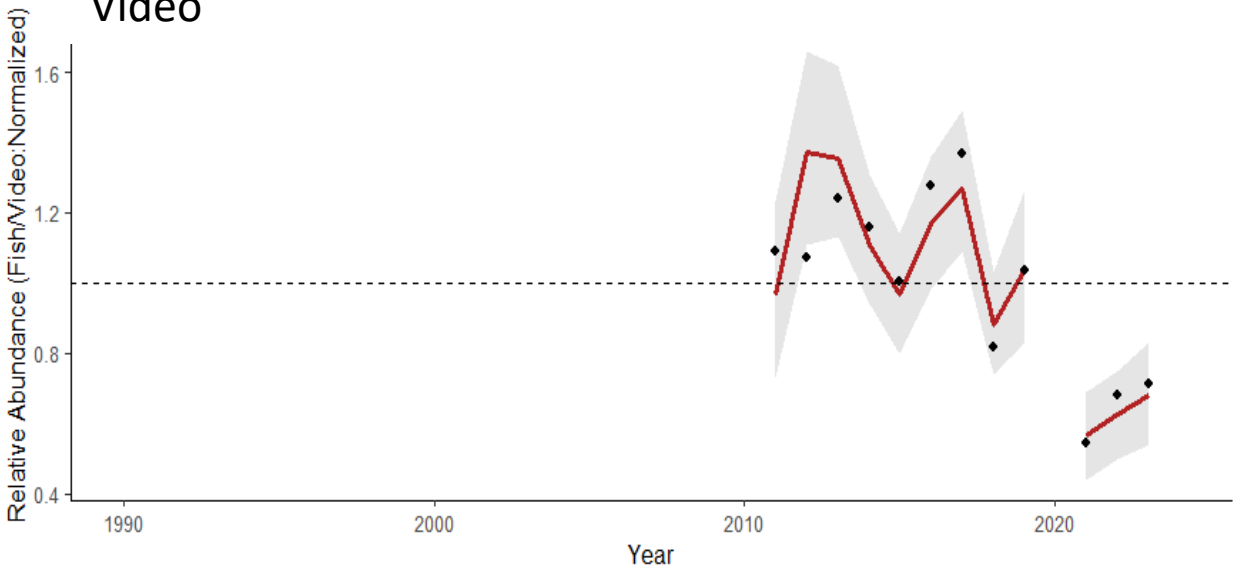

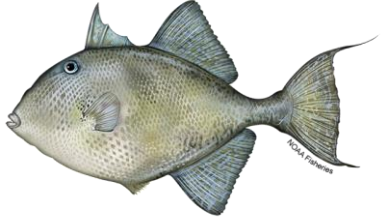

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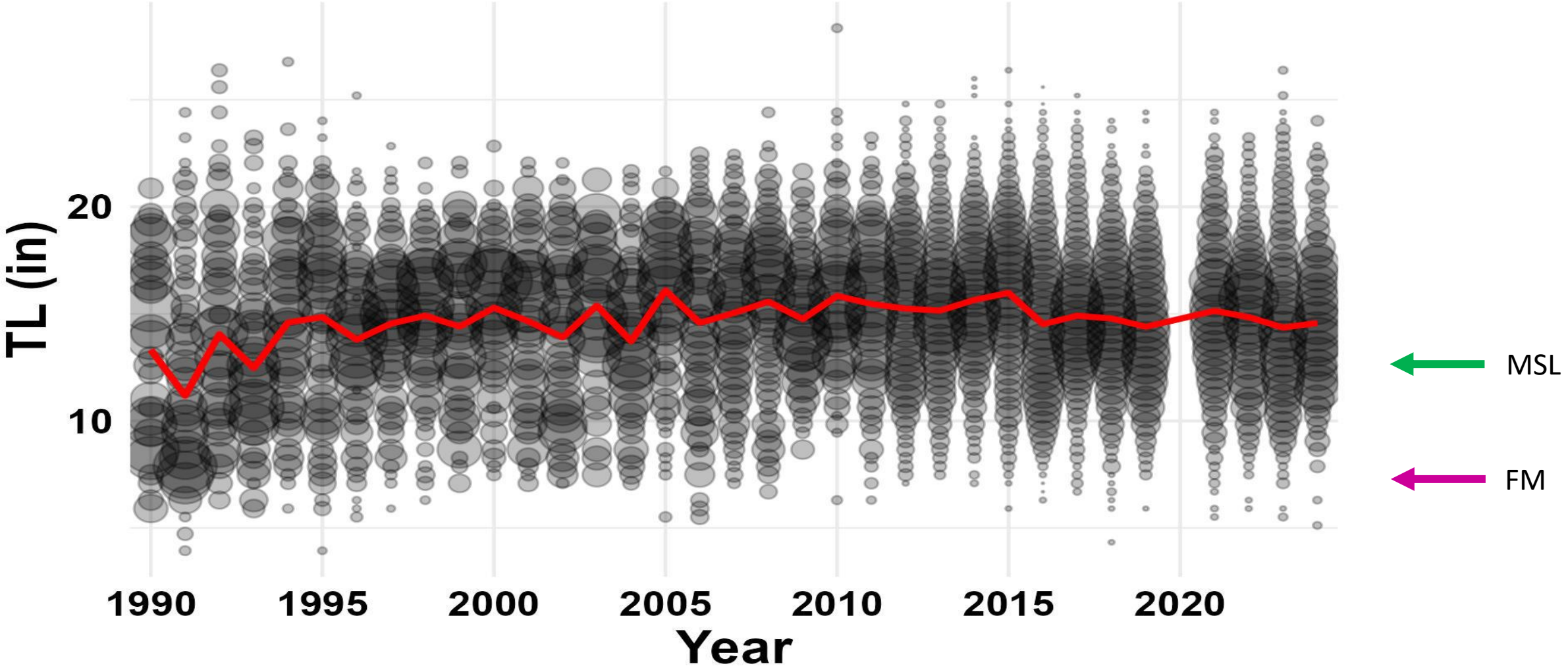
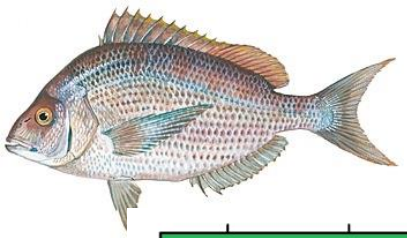
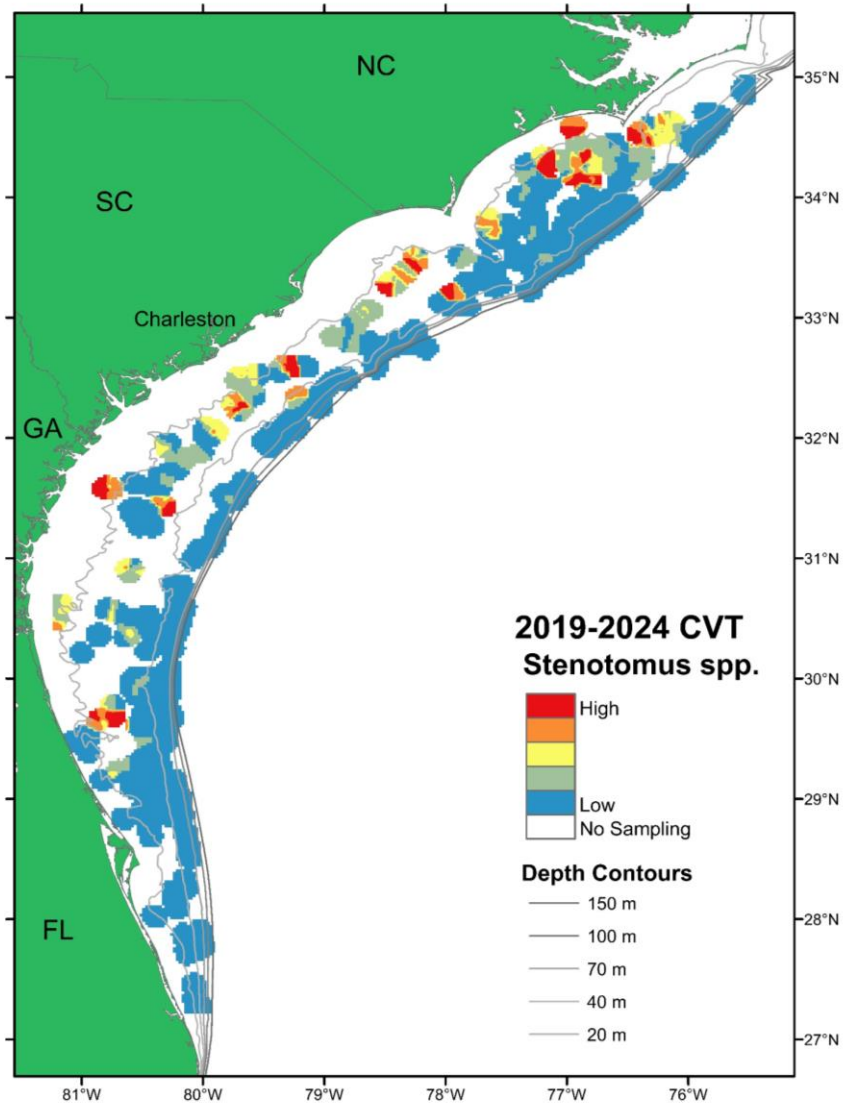
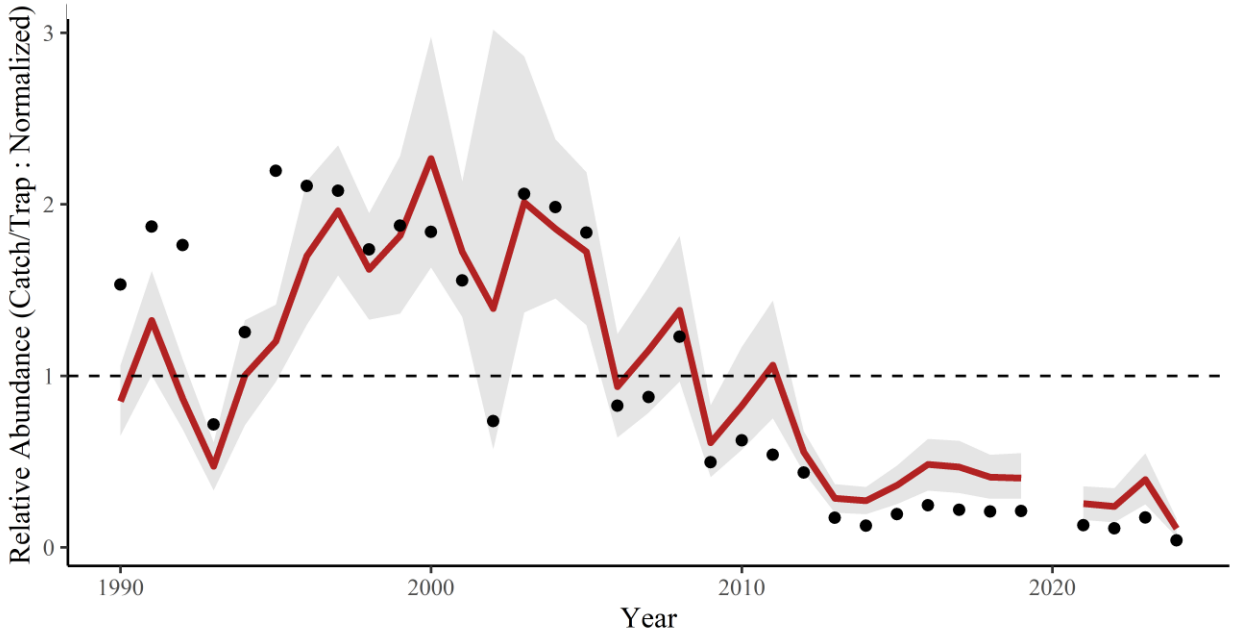


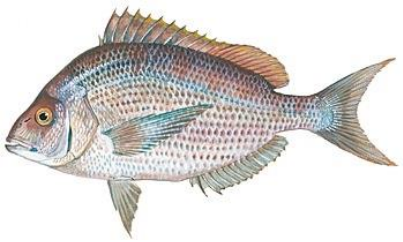


Stenotomus spp.

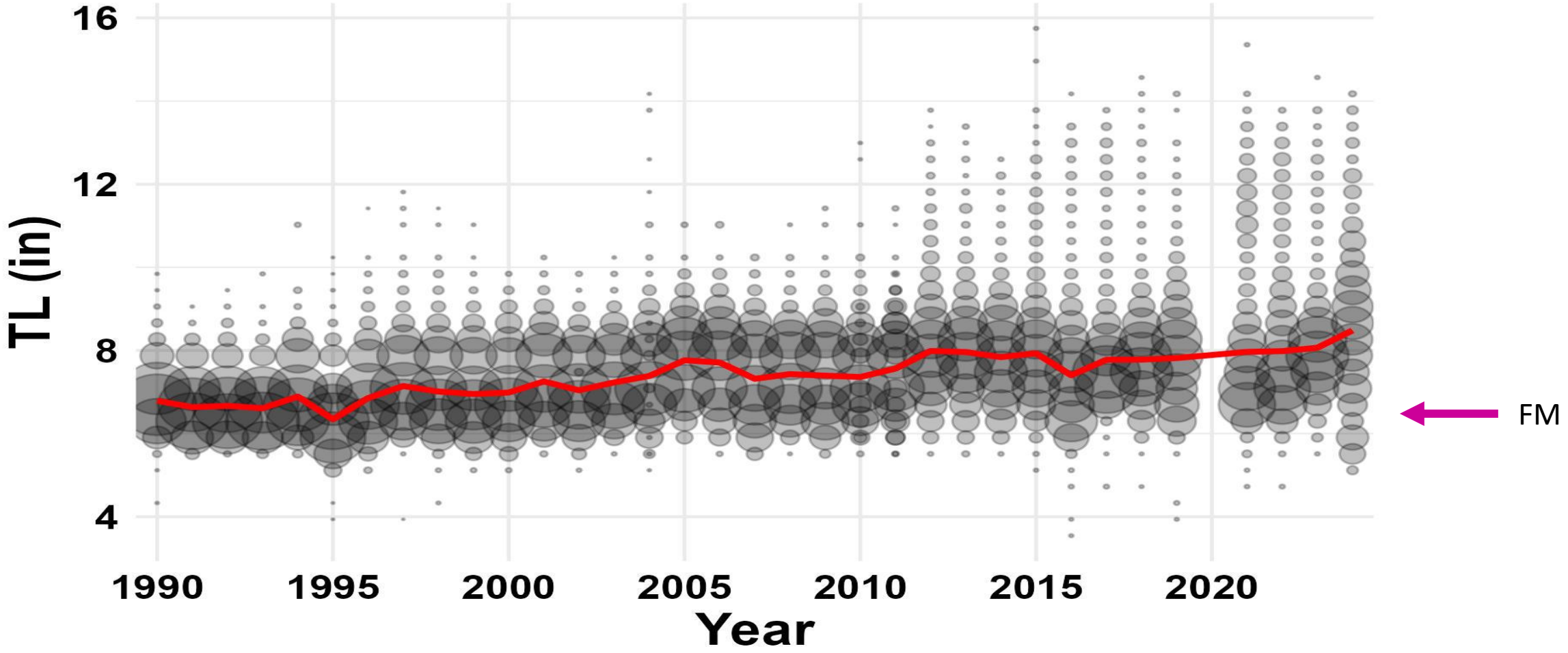


Catch





Stenotomus spp.



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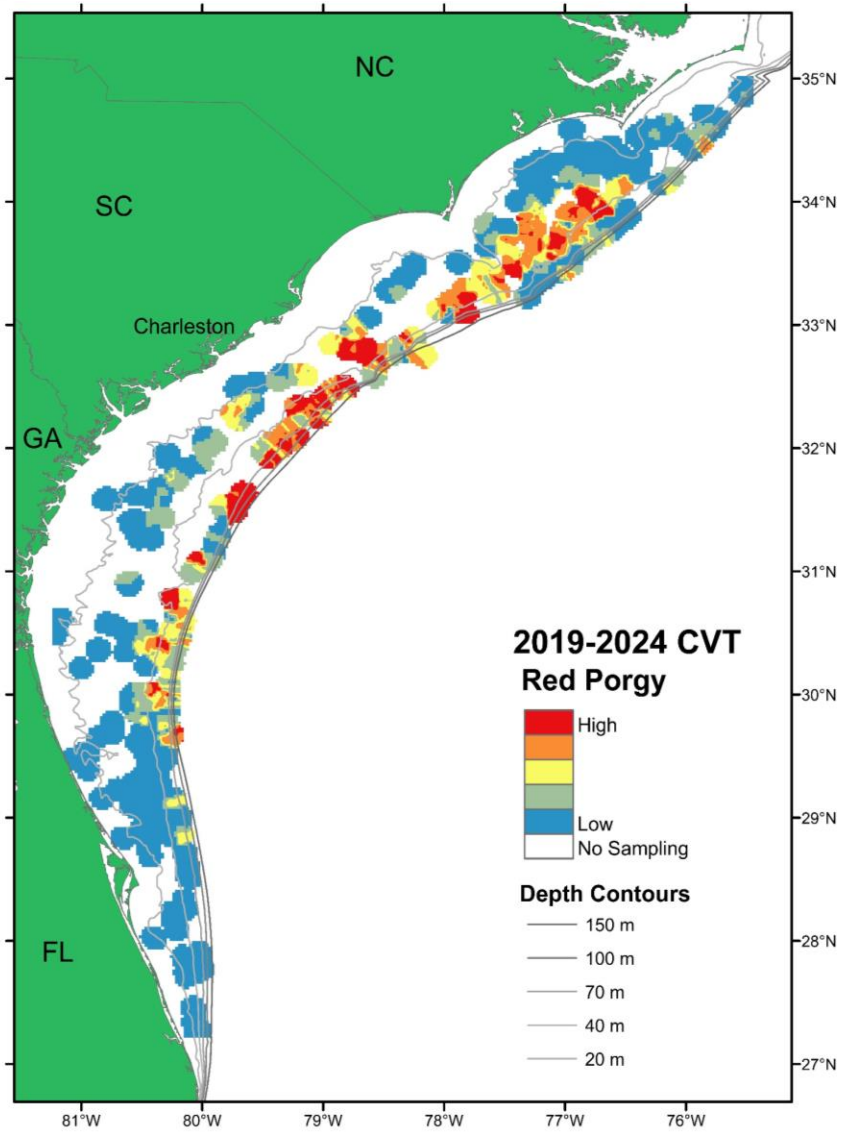

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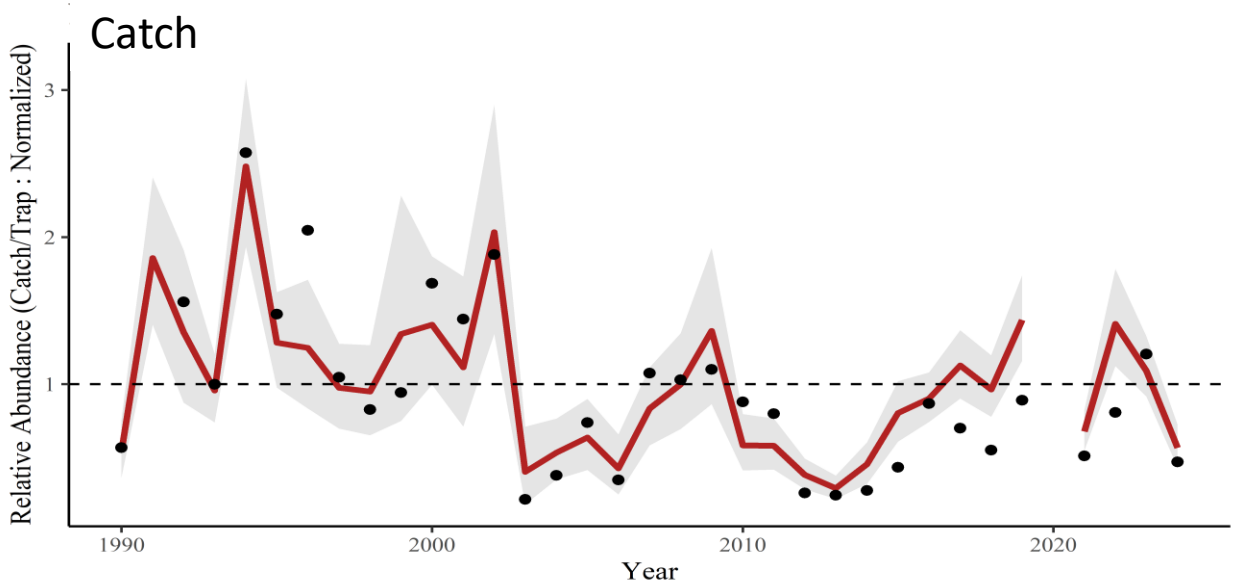

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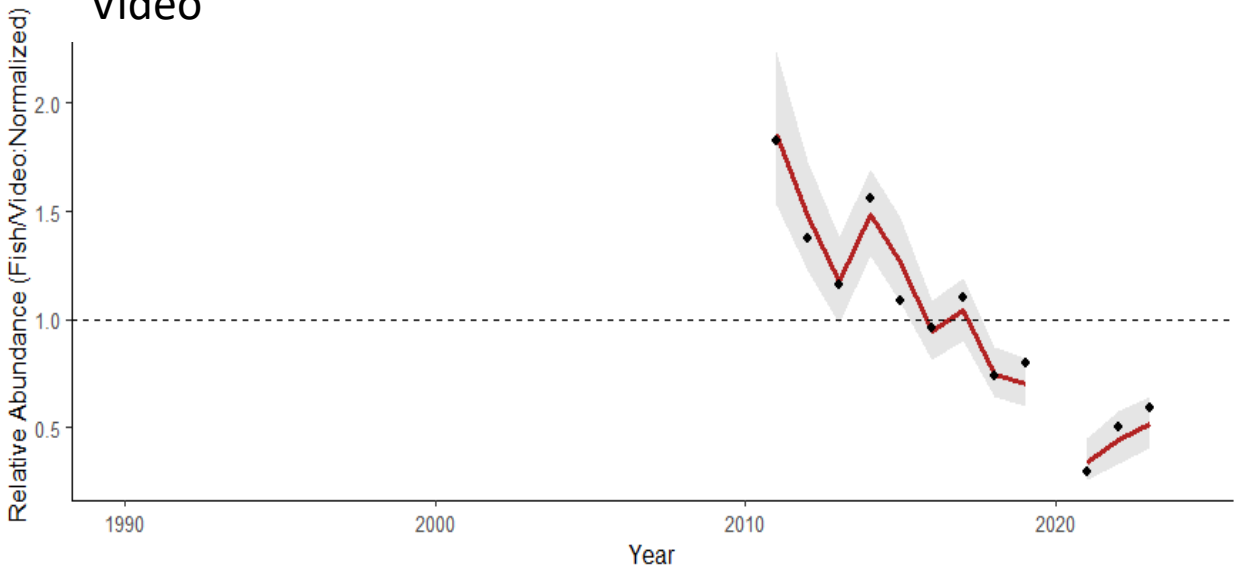

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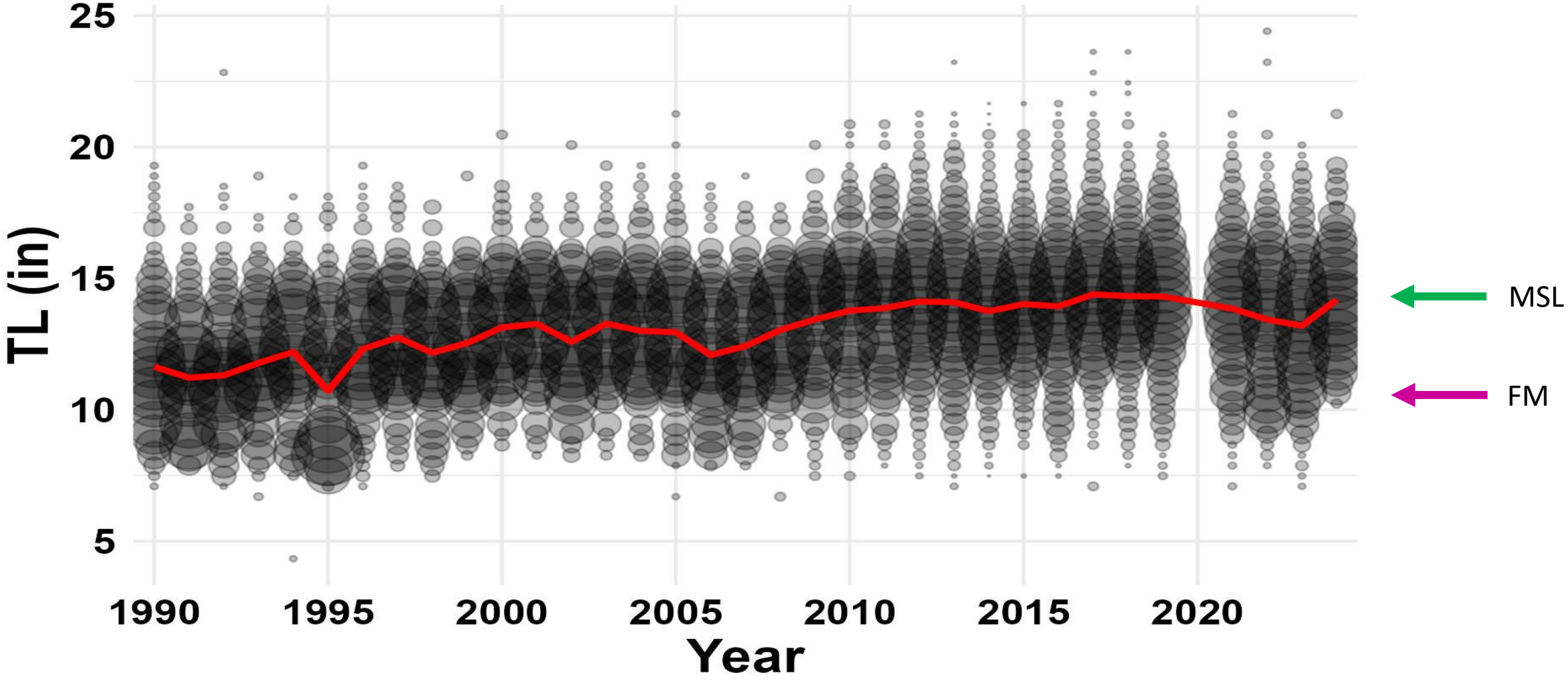
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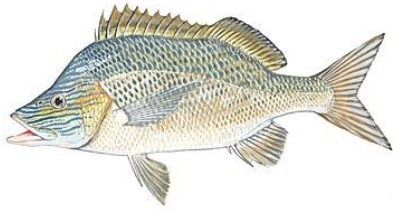

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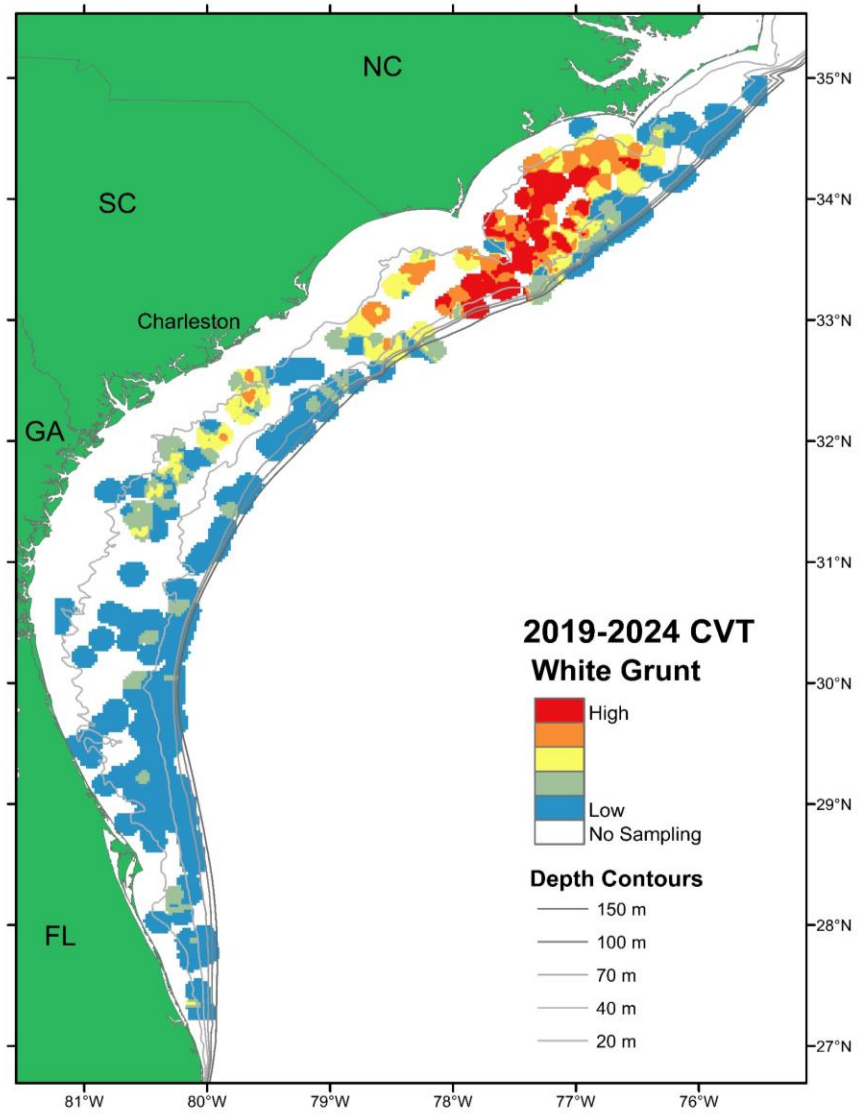

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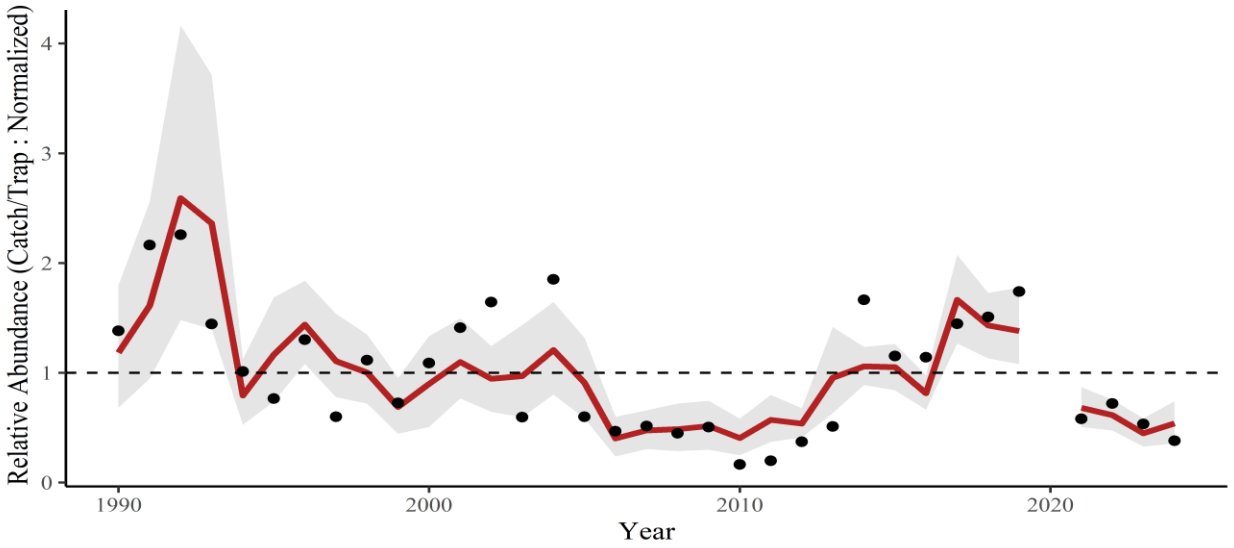

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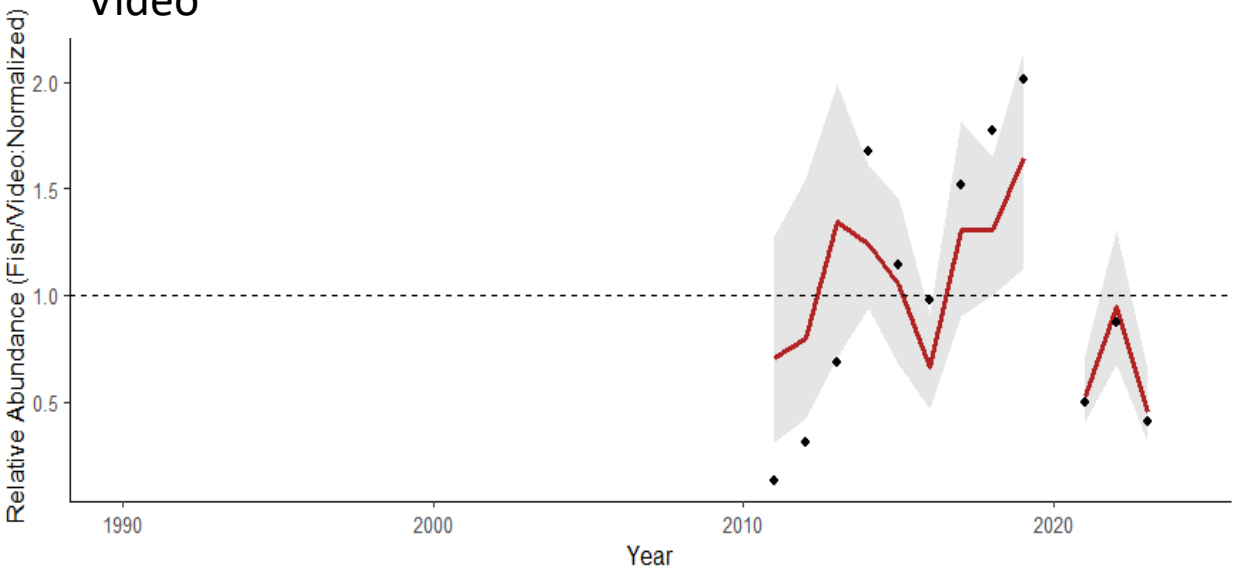
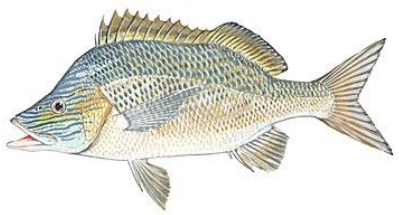
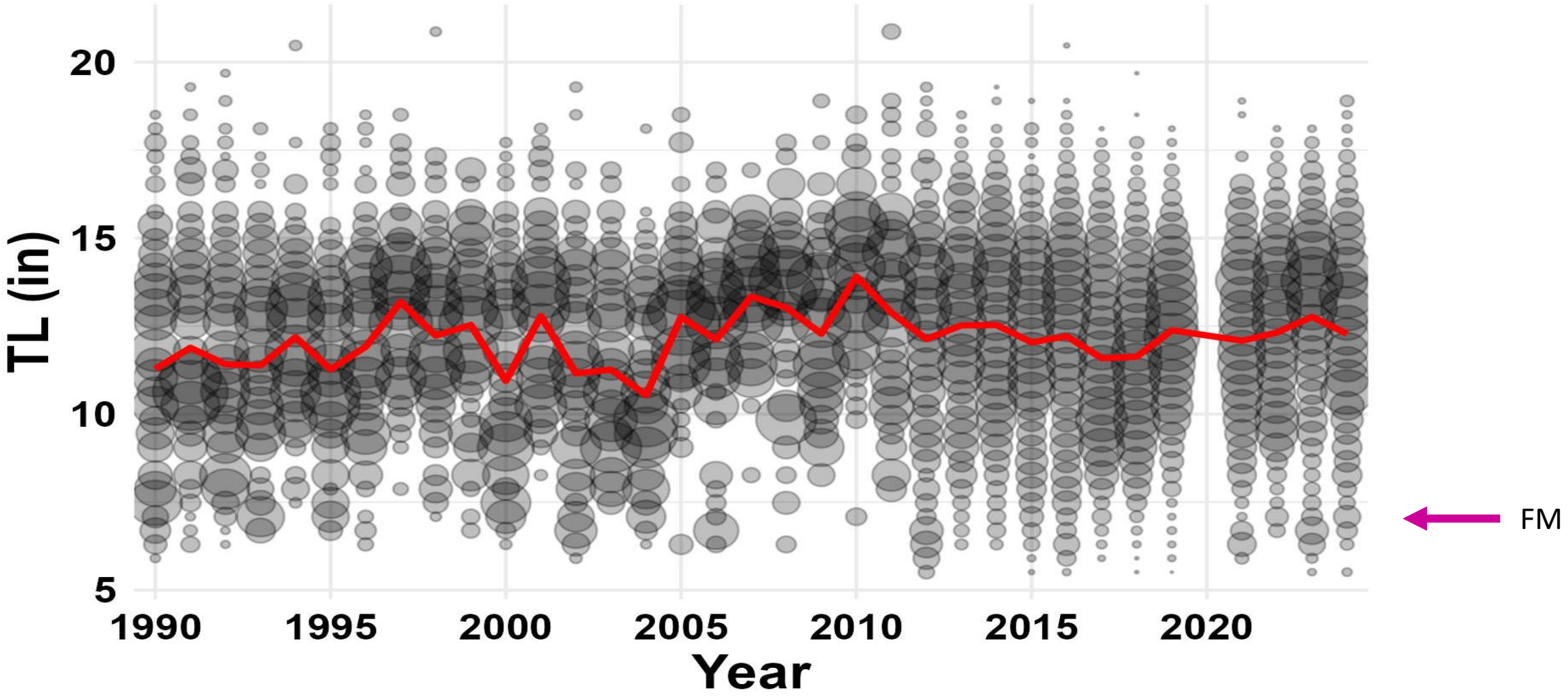
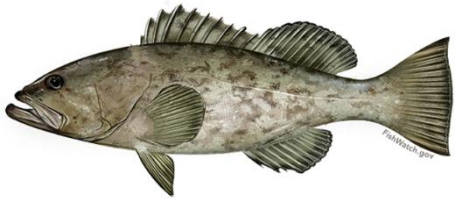




White Grunt





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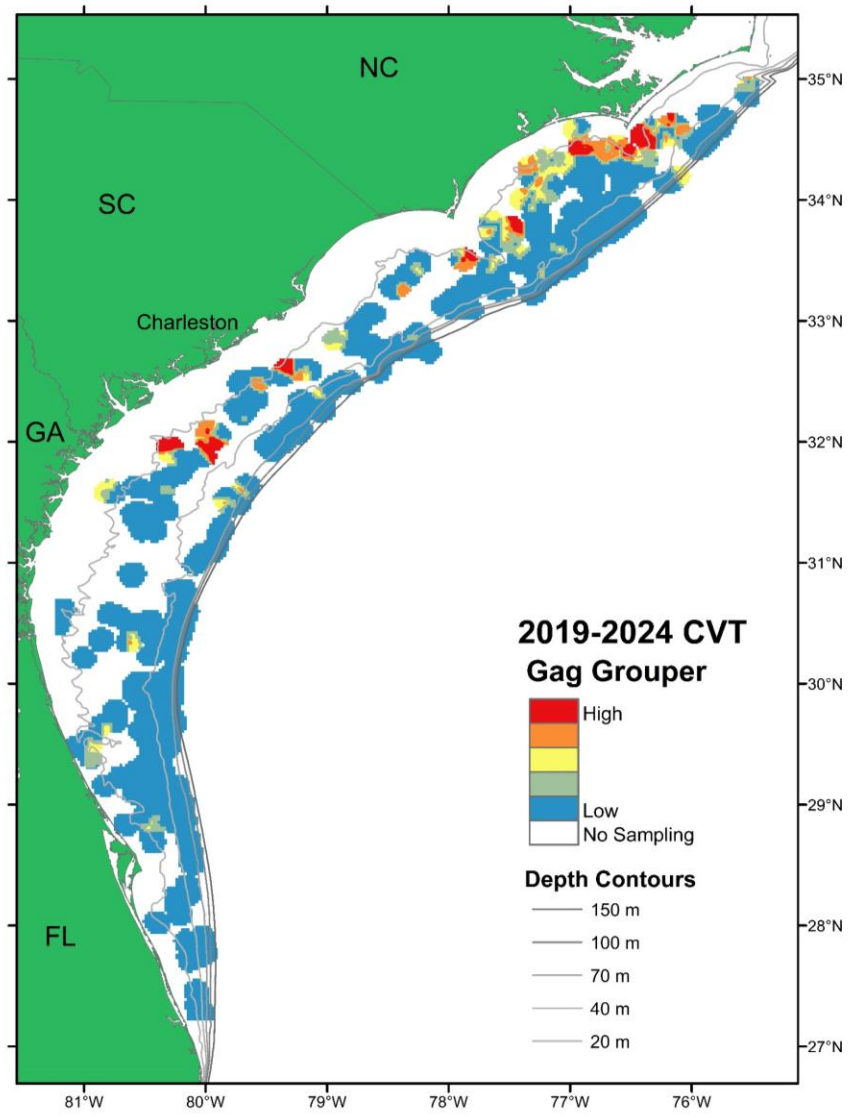

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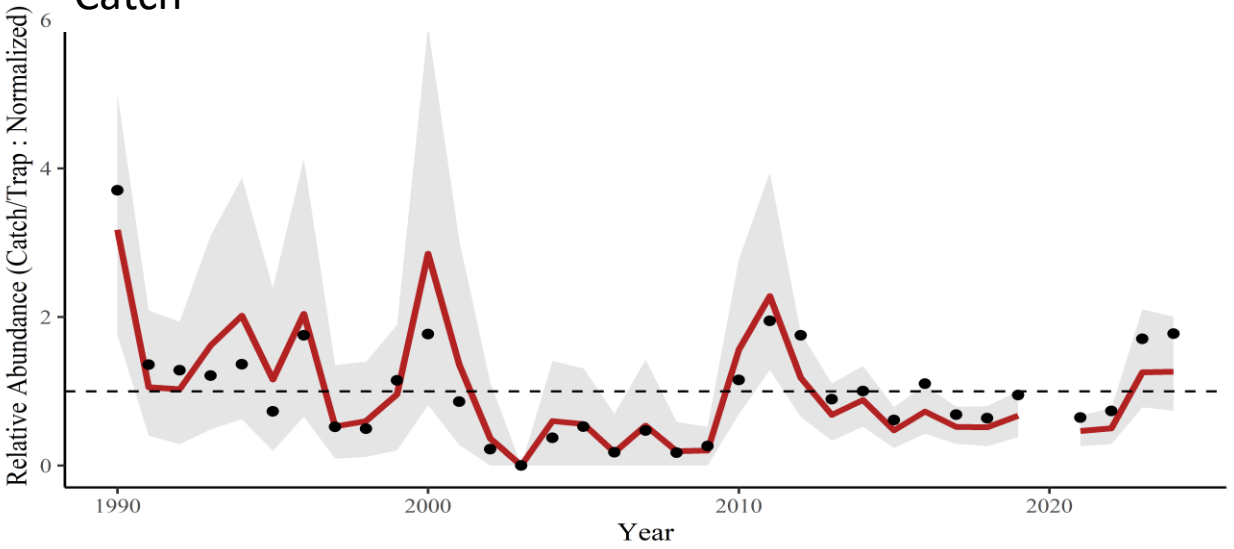

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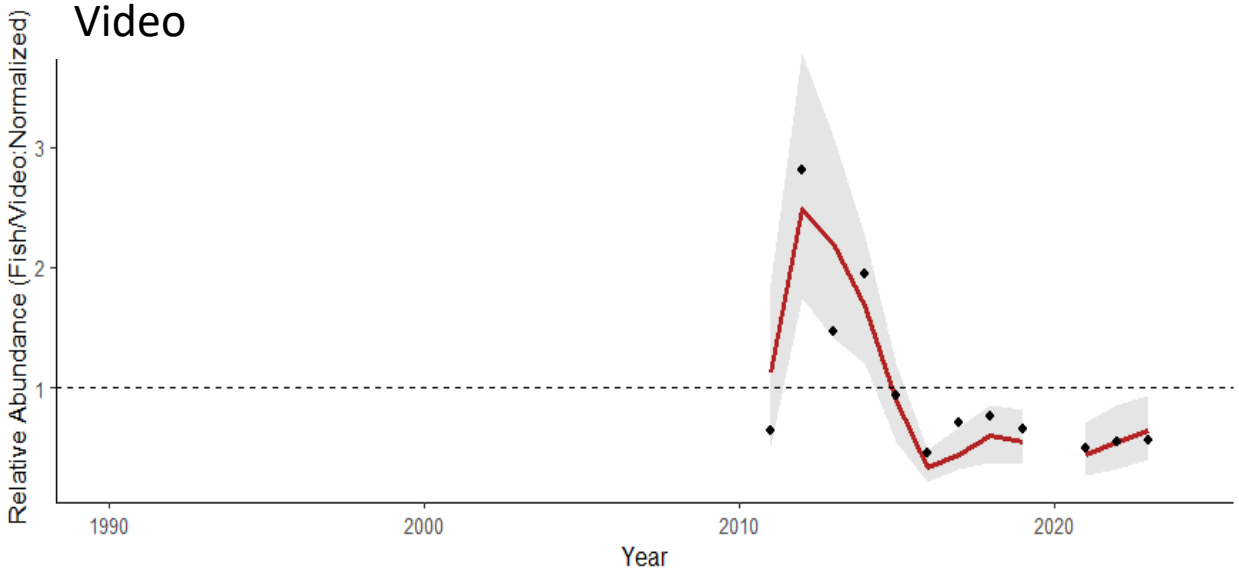

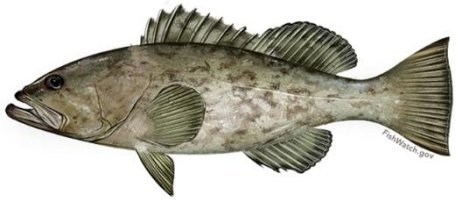

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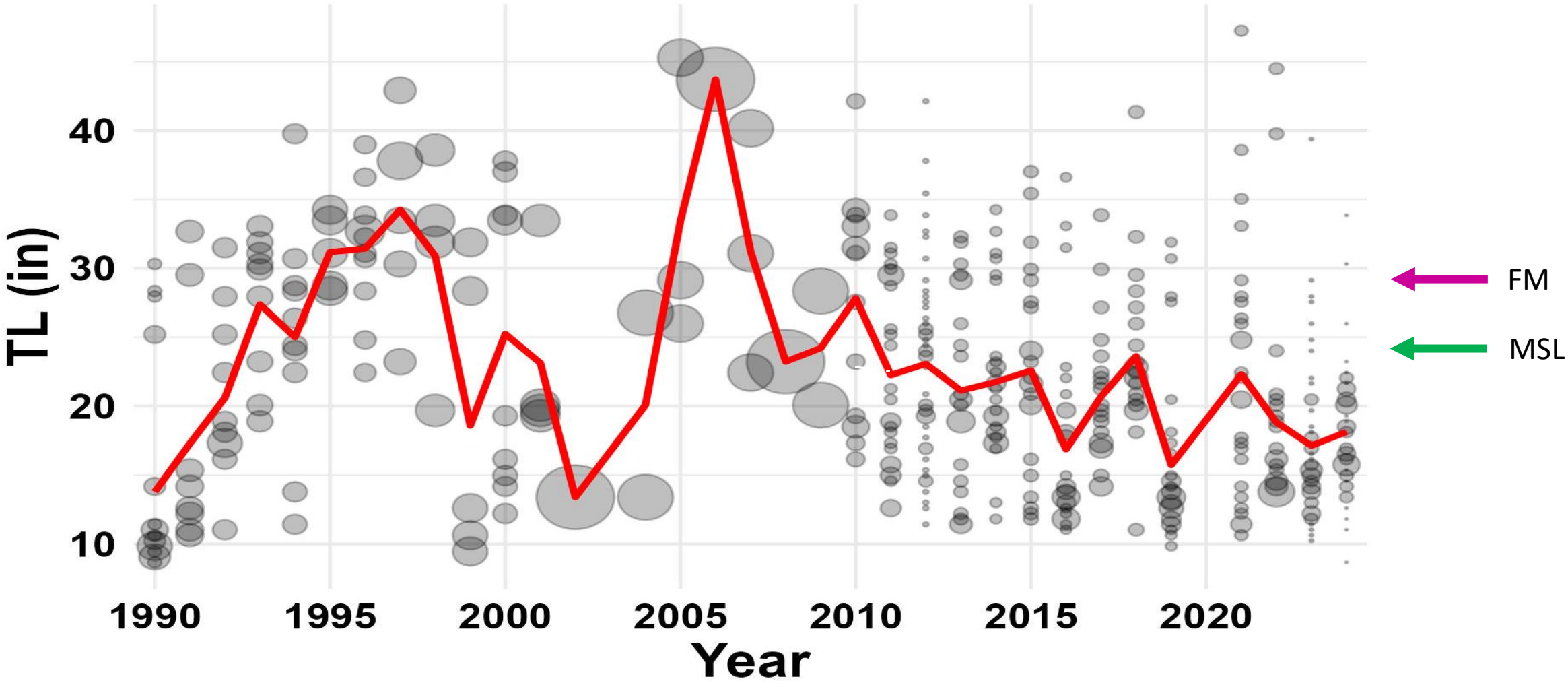
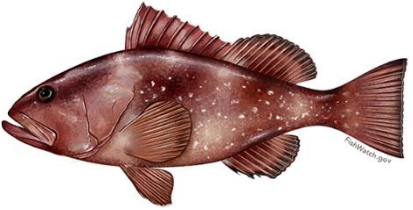
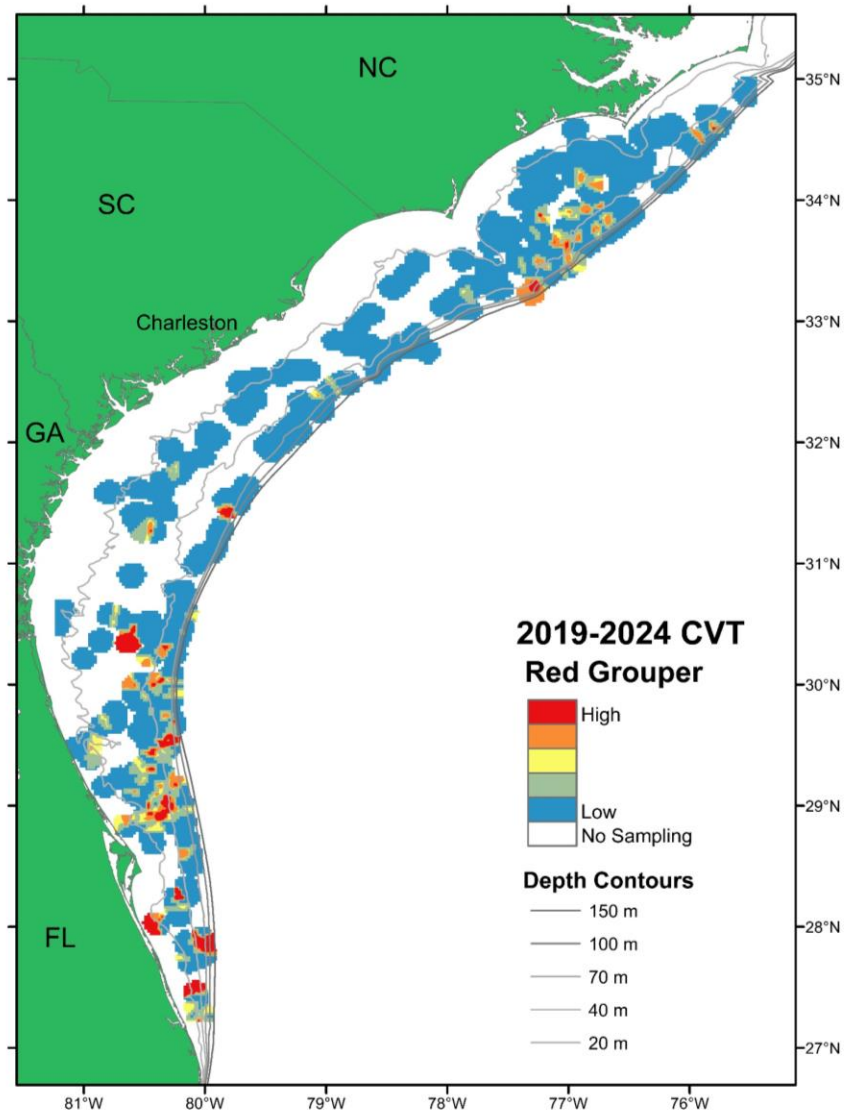




Red Grouper



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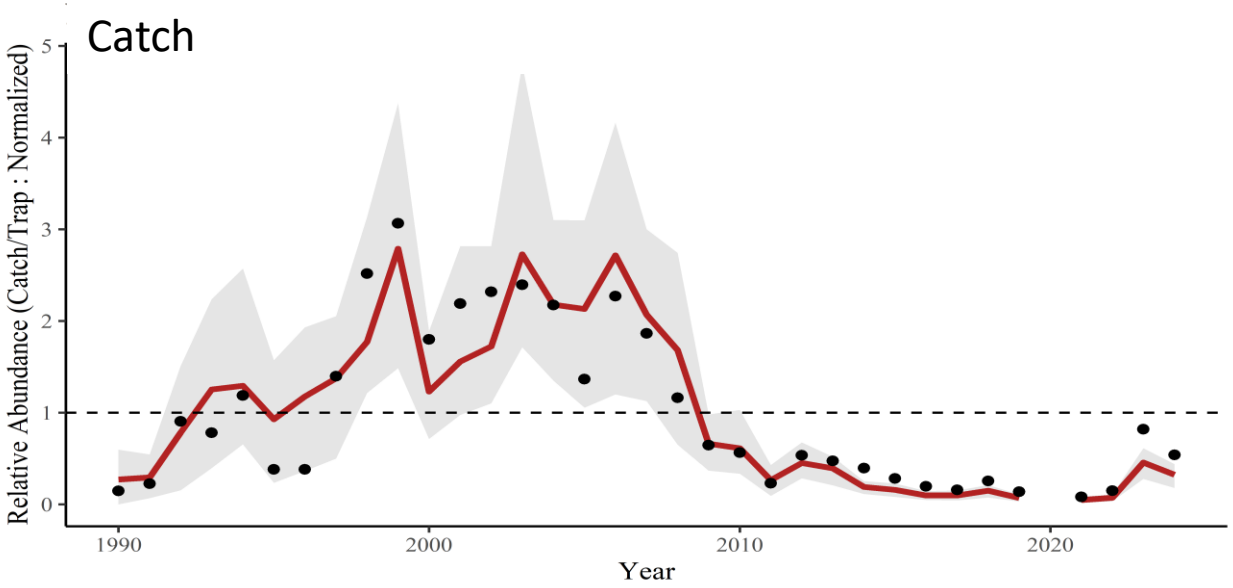

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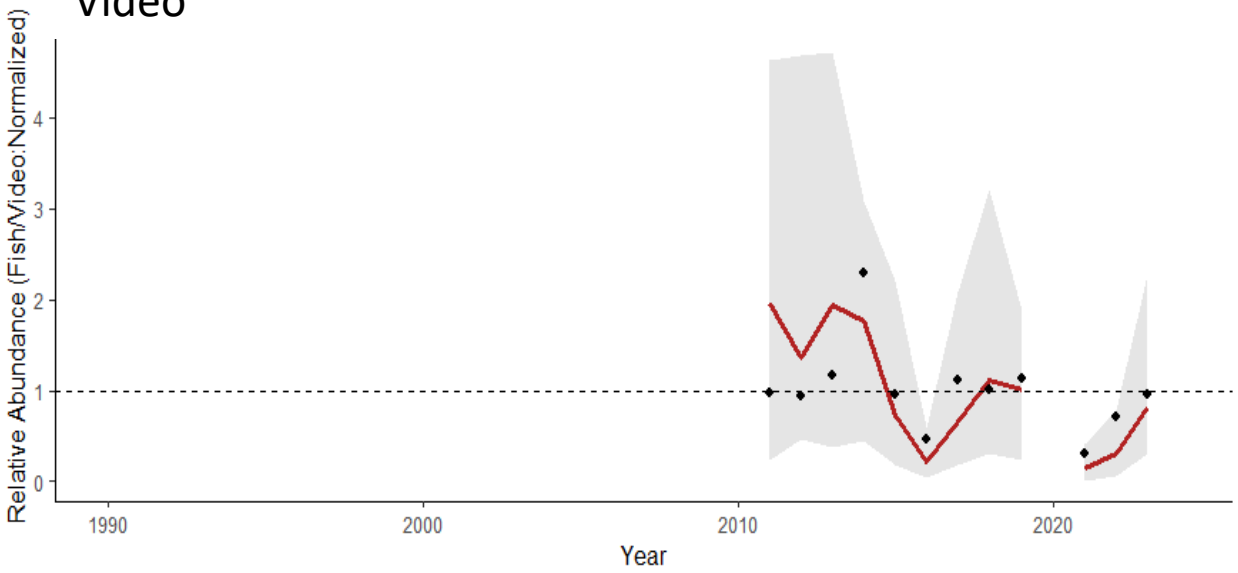
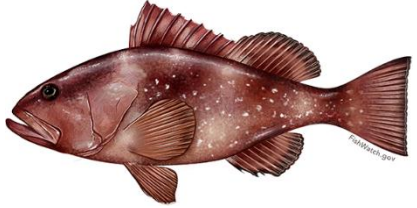
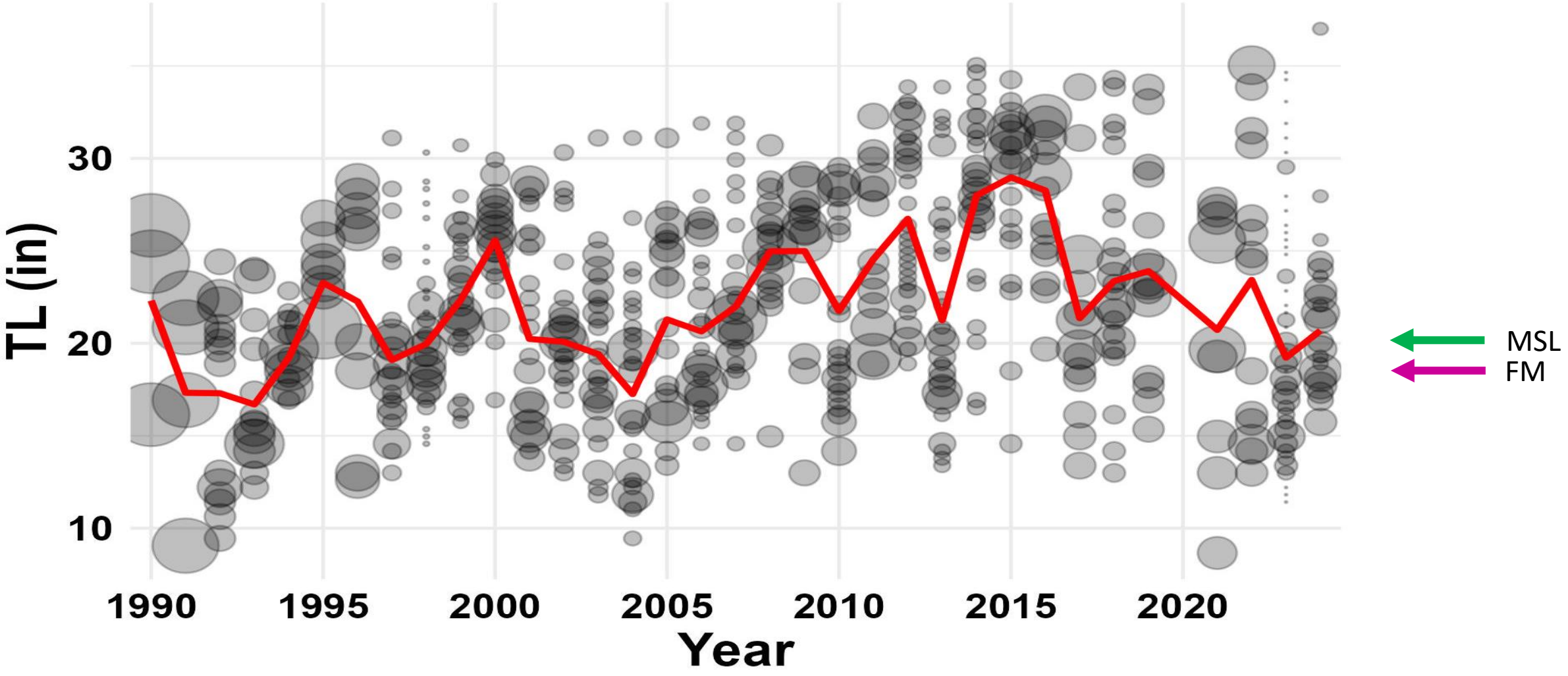
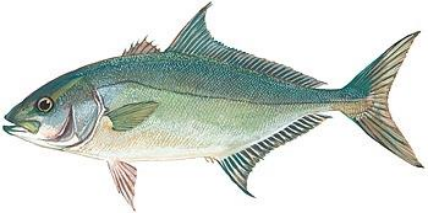


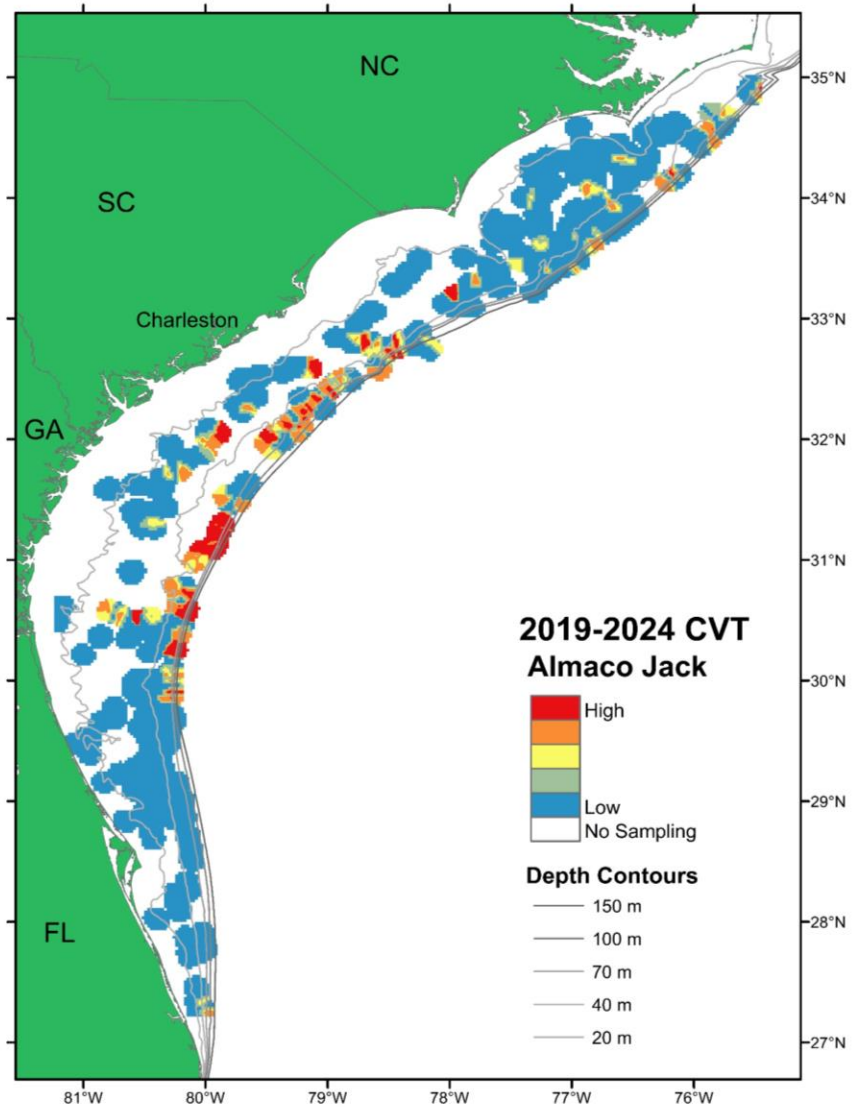


Red Grouper





Almaco Jack



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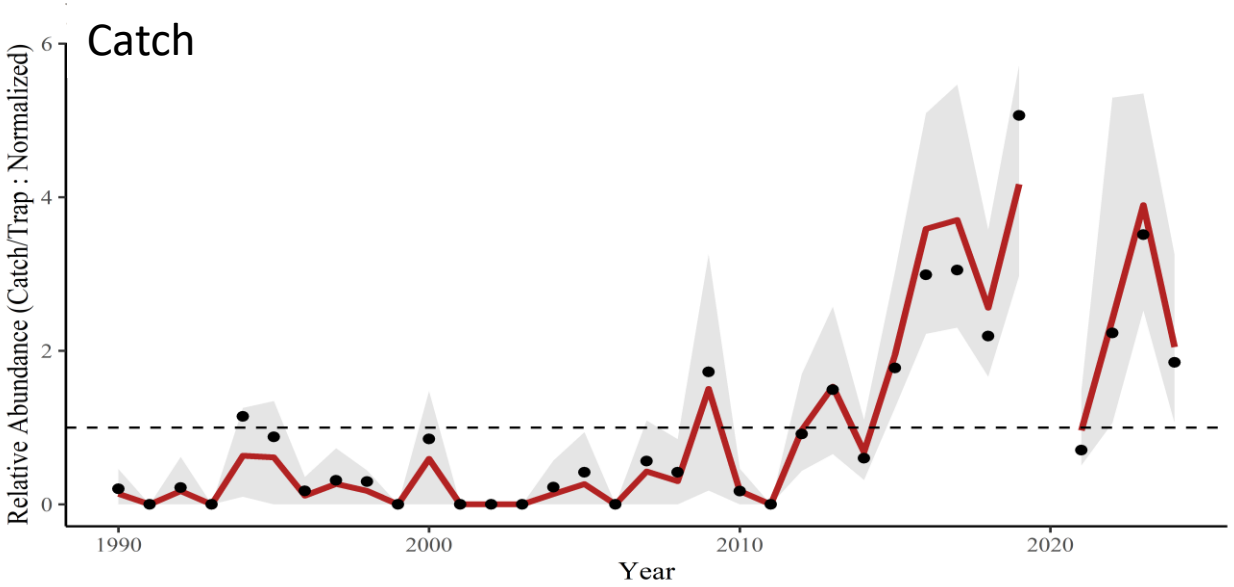

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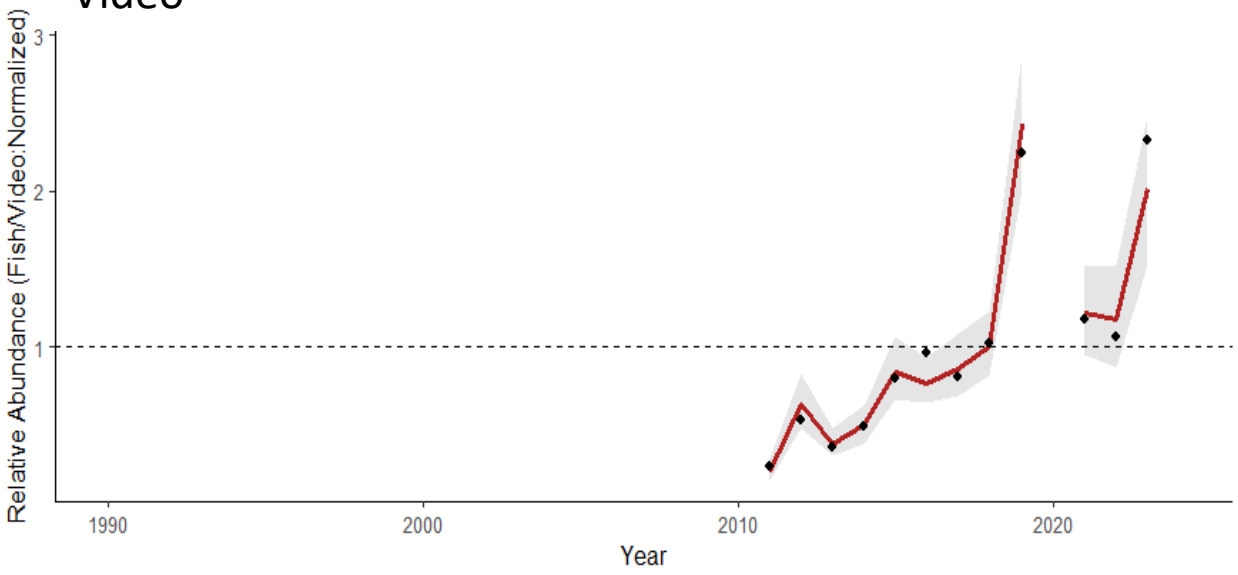

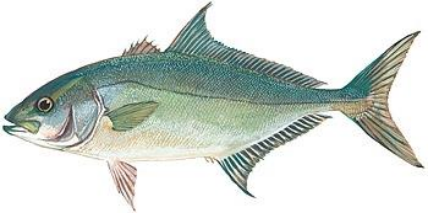

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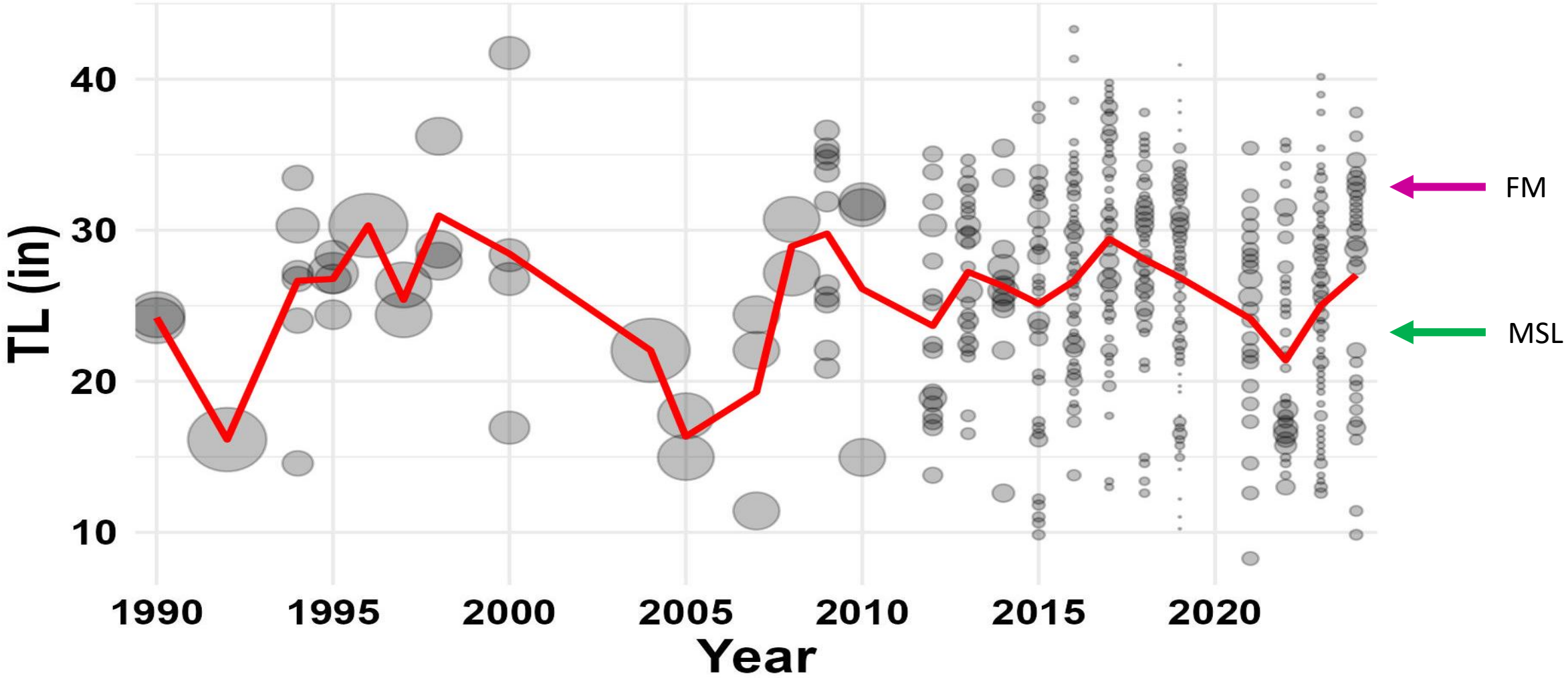

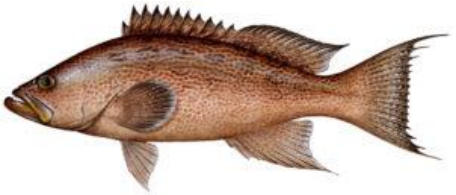

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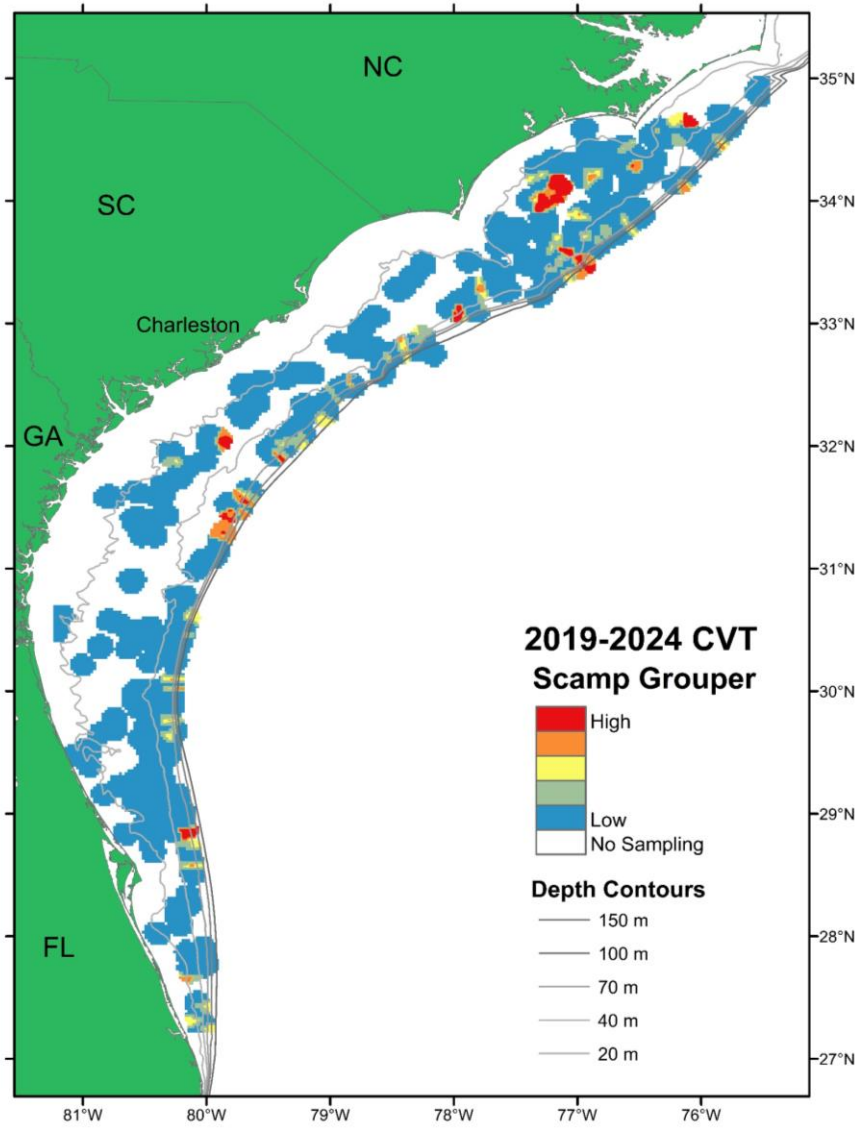

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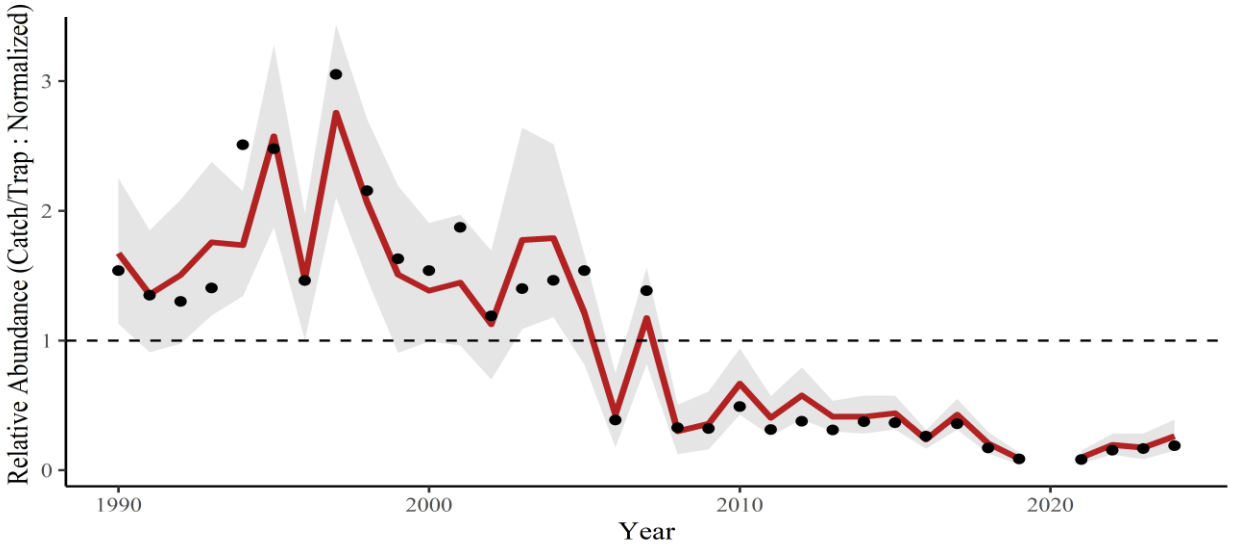

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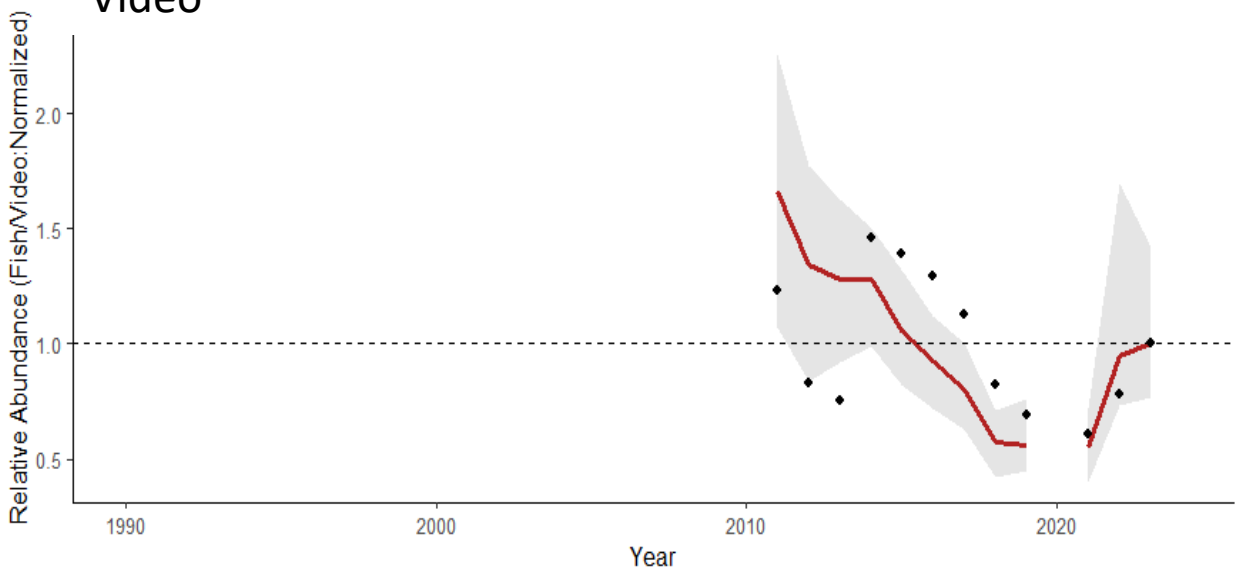

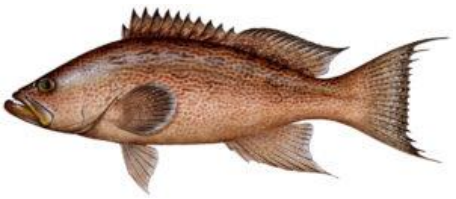

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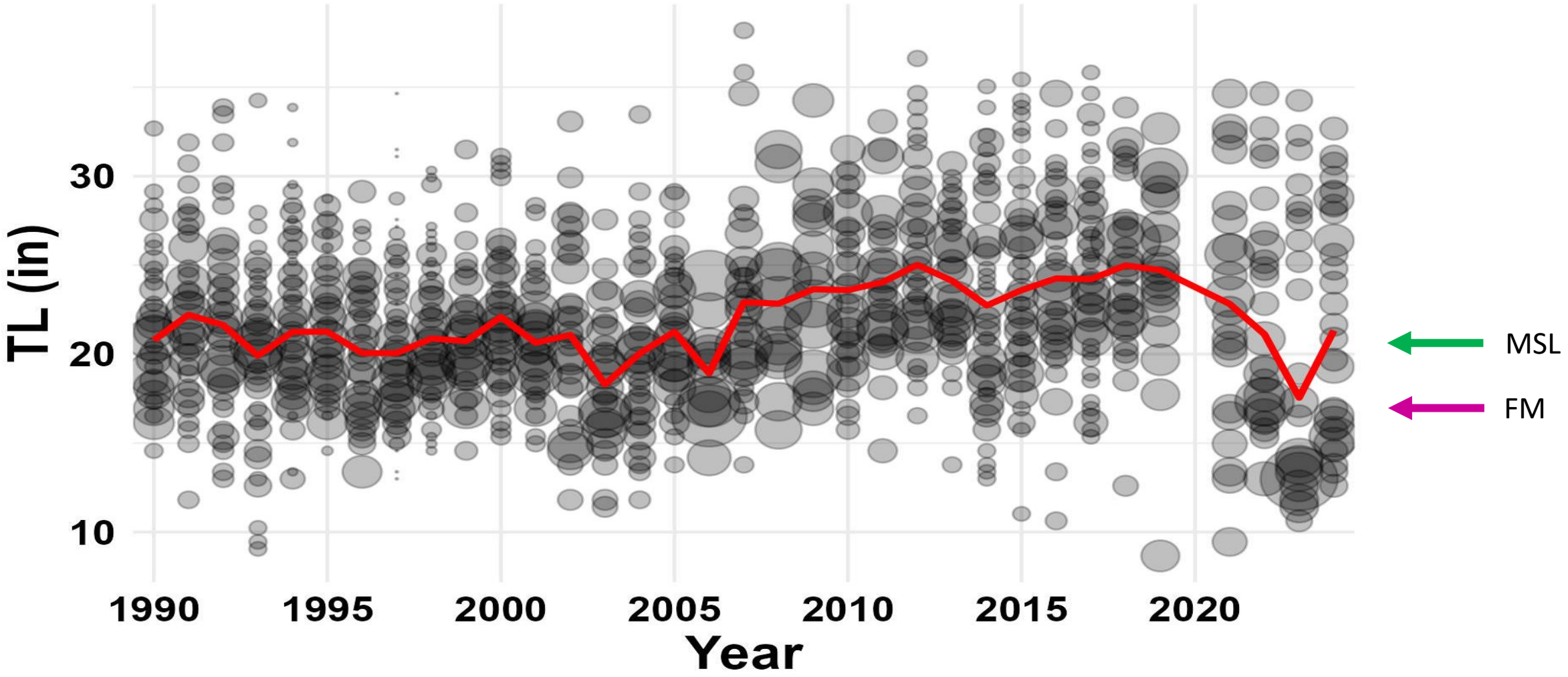
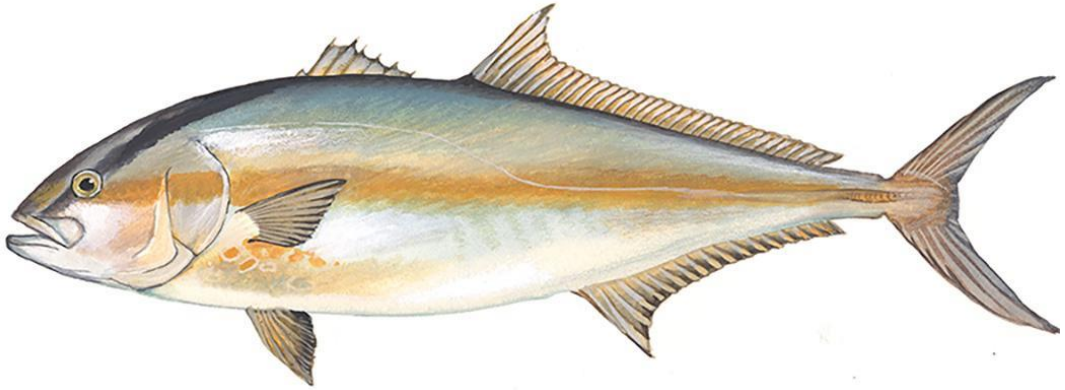


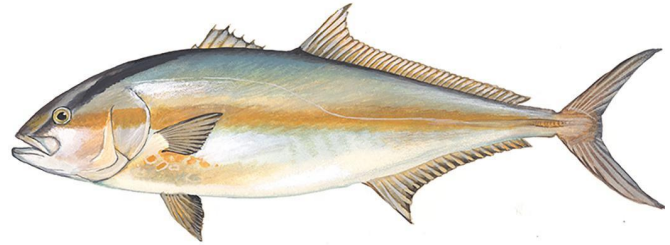
CVT Video Only Selected Species

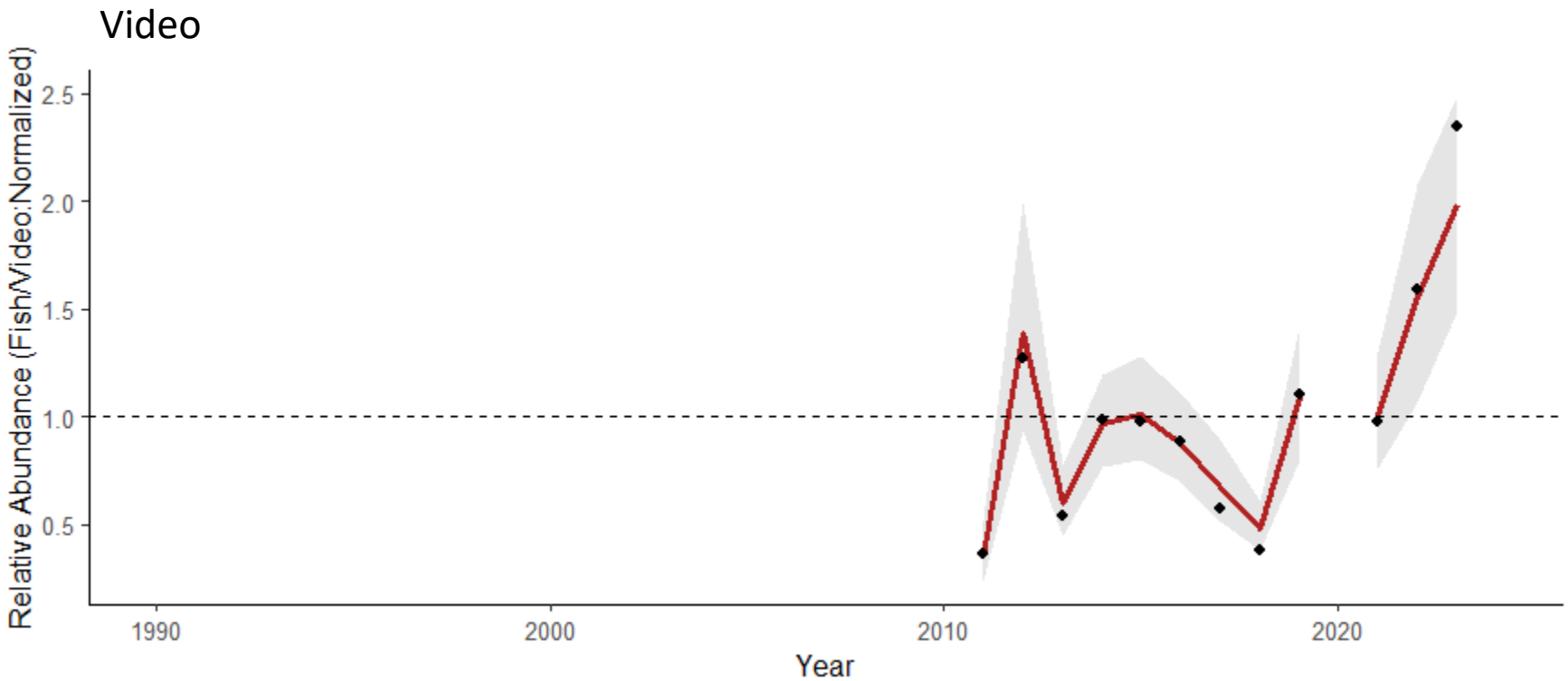


Greater Amberjack

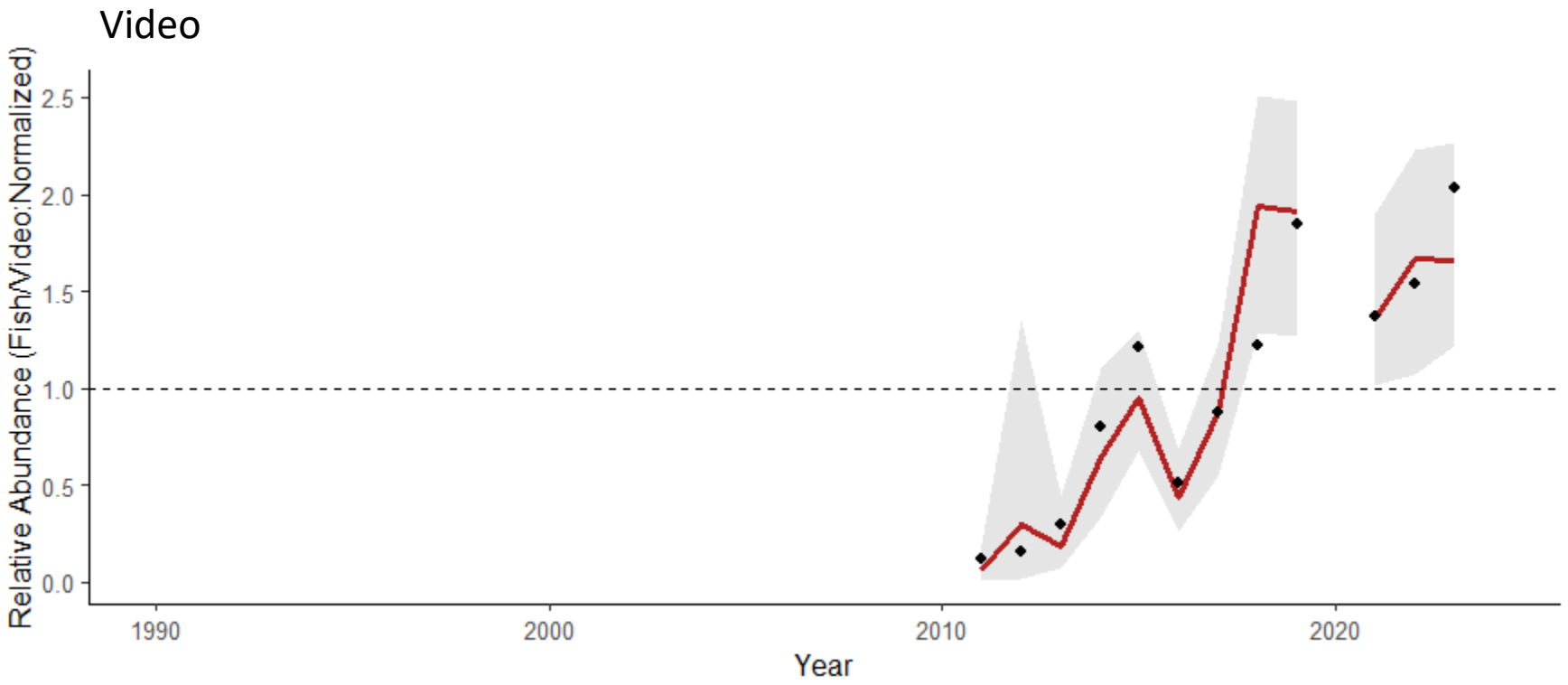
Mutton Snapper

Greater Amberjack





Mutton Snapper



Other Reef Fish Activities (SCDNR)

Black Sea Bass East Coast-wide Genetic Structure

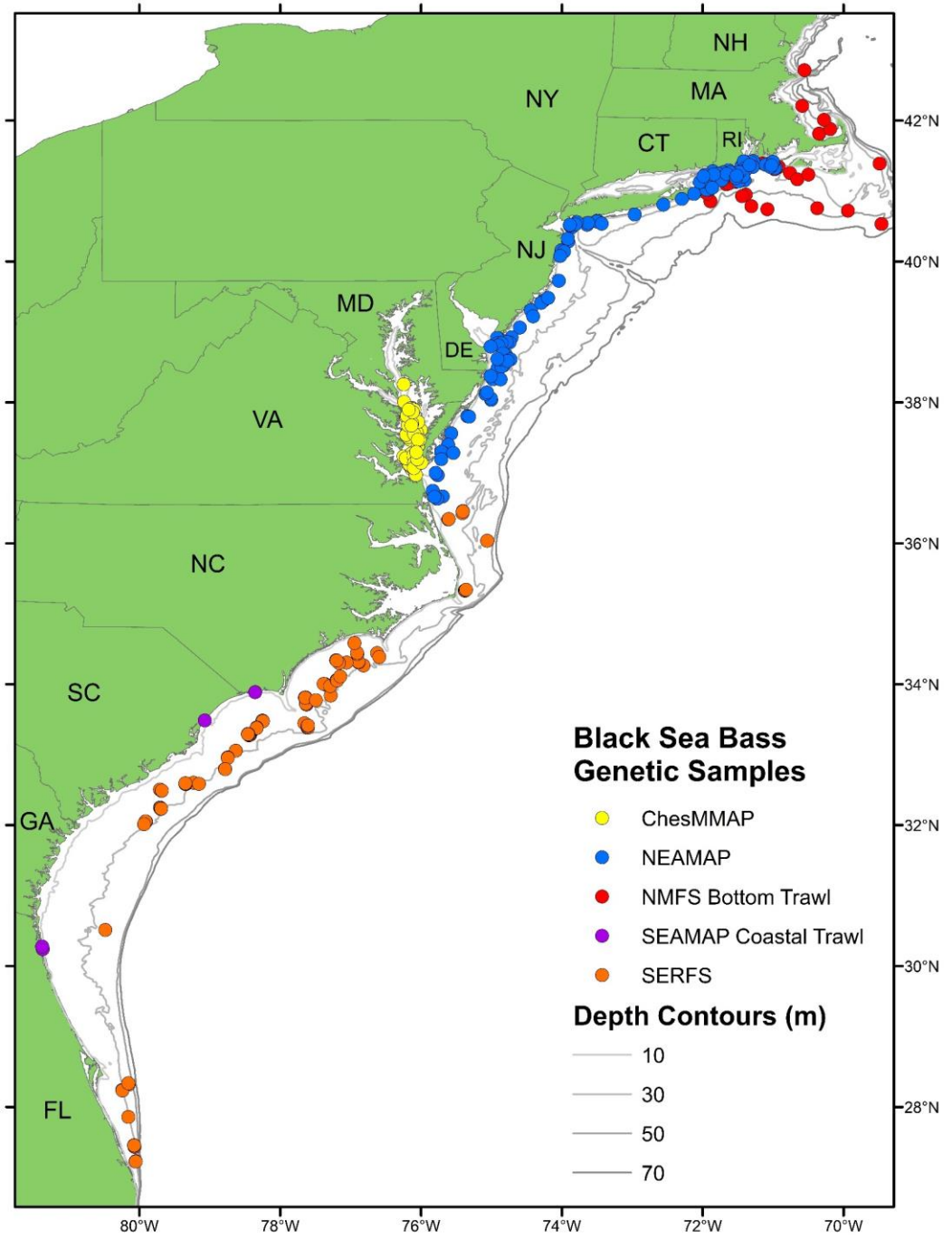
5 Coast-wide Fishery-Independent Surveys

Fin clips for genetic material FL – MA

Historical break at Hatteras?

Southern Stock north-ward movement?

Mixing?



2025 SERFS Plans

Sampling Season:

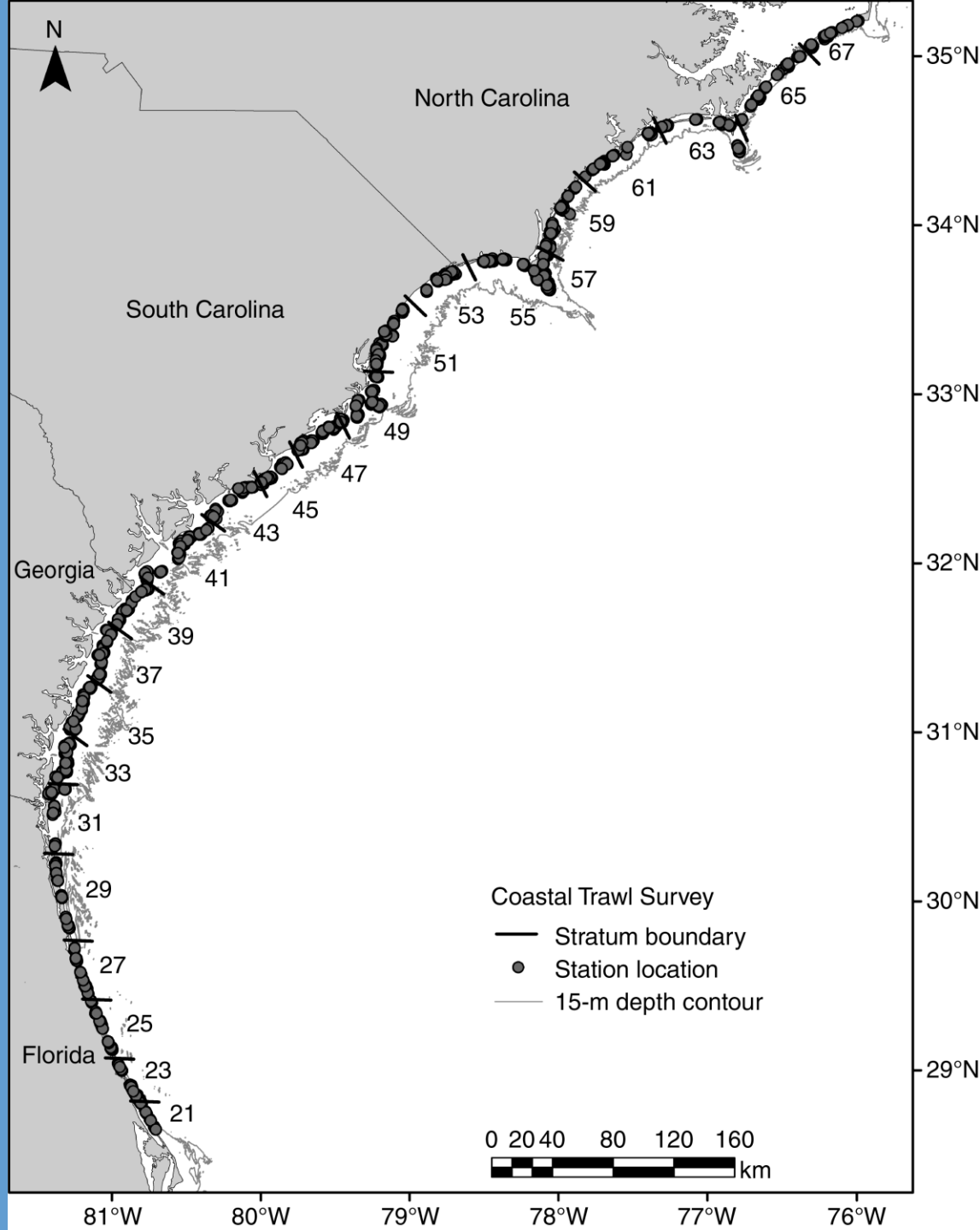
Mid-April –> Mid-October

4 vessels- Chevron Video Trap

Southern Expansion (w/ FWRI) camera pods

Coastal Trawl Survey

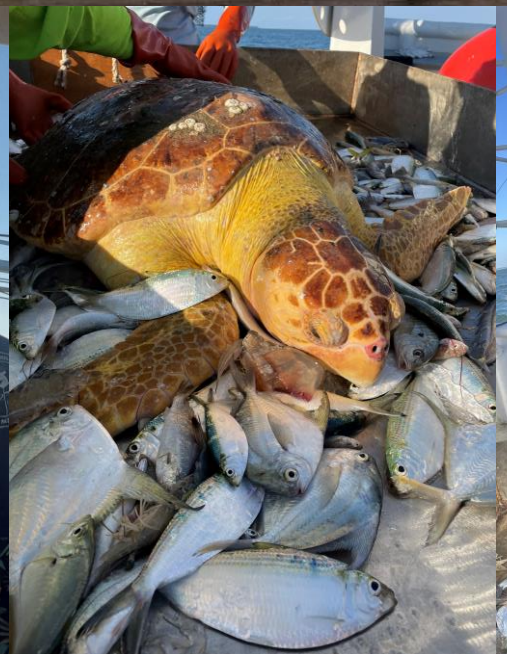
- Funded through SEAMAP-SA
- Stratified, random sampling design
  - 24 latitude-based strata
  - Fixed stations, annual random selection
  - Target stations 102 per season
- 2021: one net processed
- 2023: Spring, Summer, Fall to Spring, Fall
- 2024: Vessel and Gear Changes



Coastal Trawl Survey

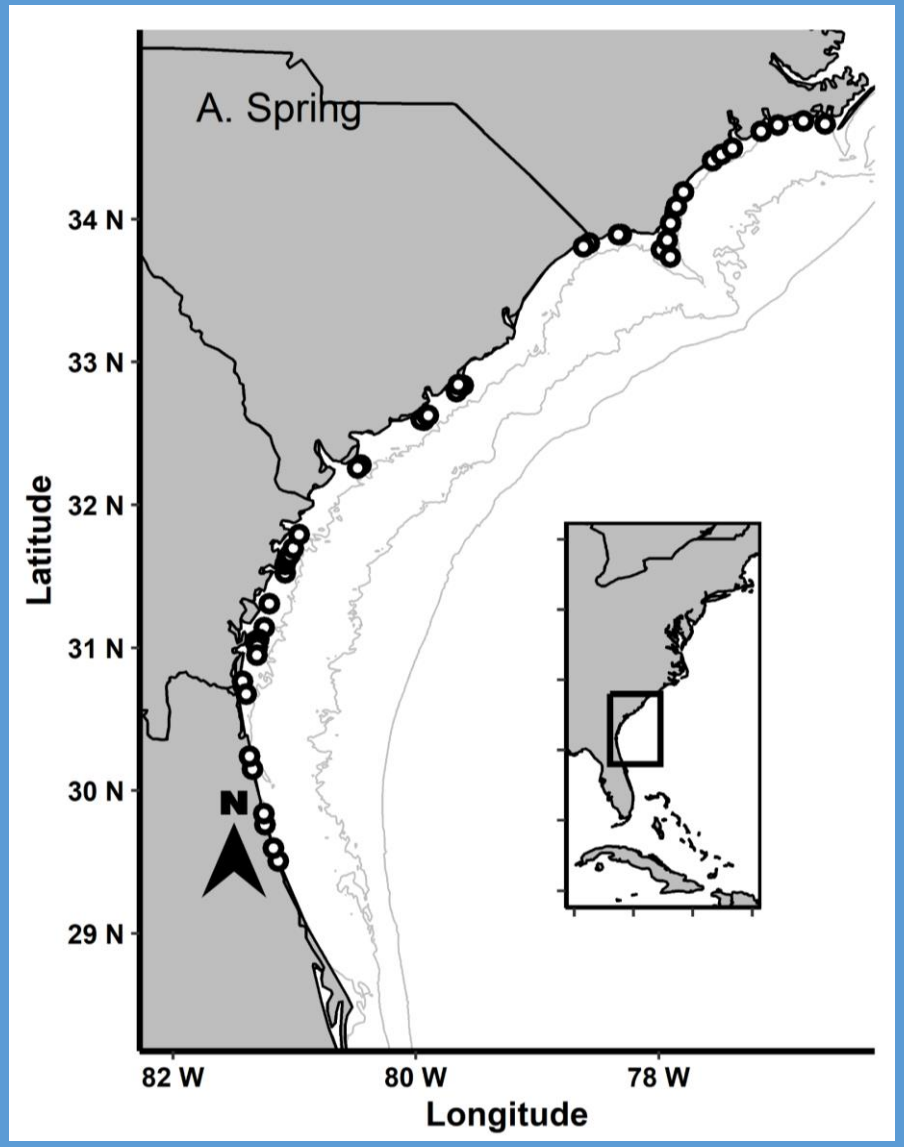
- 2024 Vessel and Gear Changes
- R/V Lady Lillian, stern trawler
- 60’ Webster Trawl (high rise, flat net)
- Same mesh sizes
- Net Geometry to correct effort
- DOY, not Season,
  for Index Calculations
- ZINB standardization

R/V *Lady Lillian*

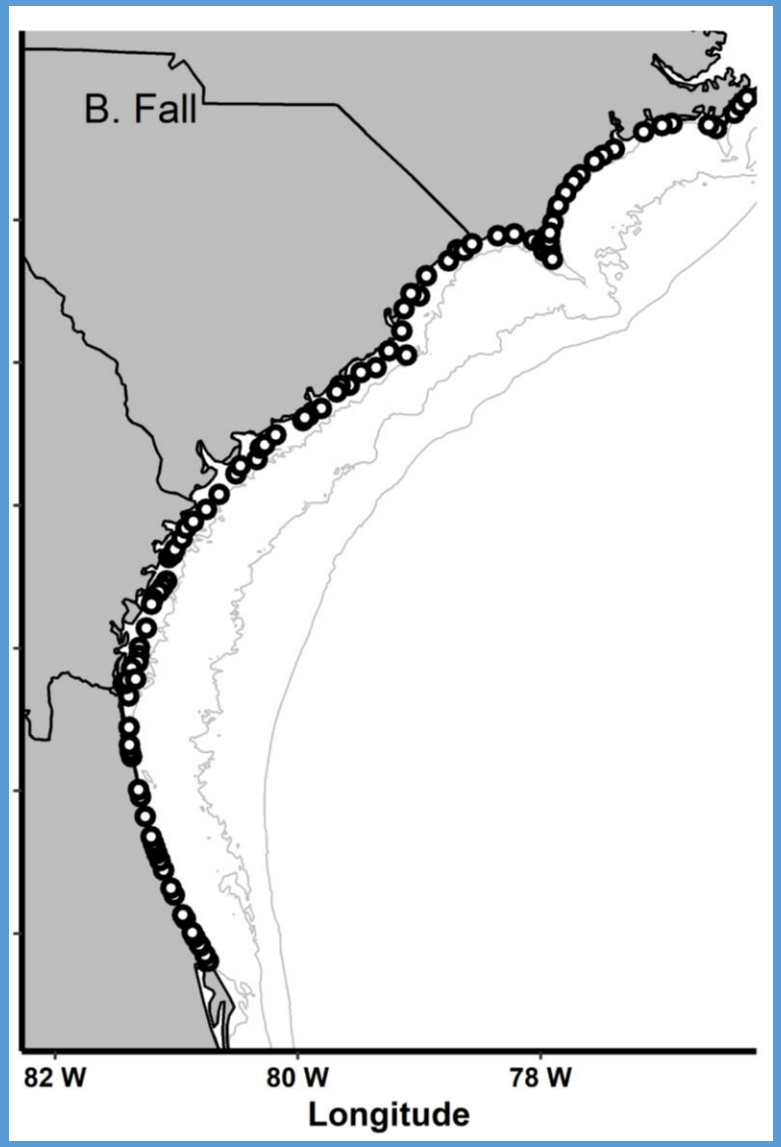


Coastal Trawl Sampling Effort 2024

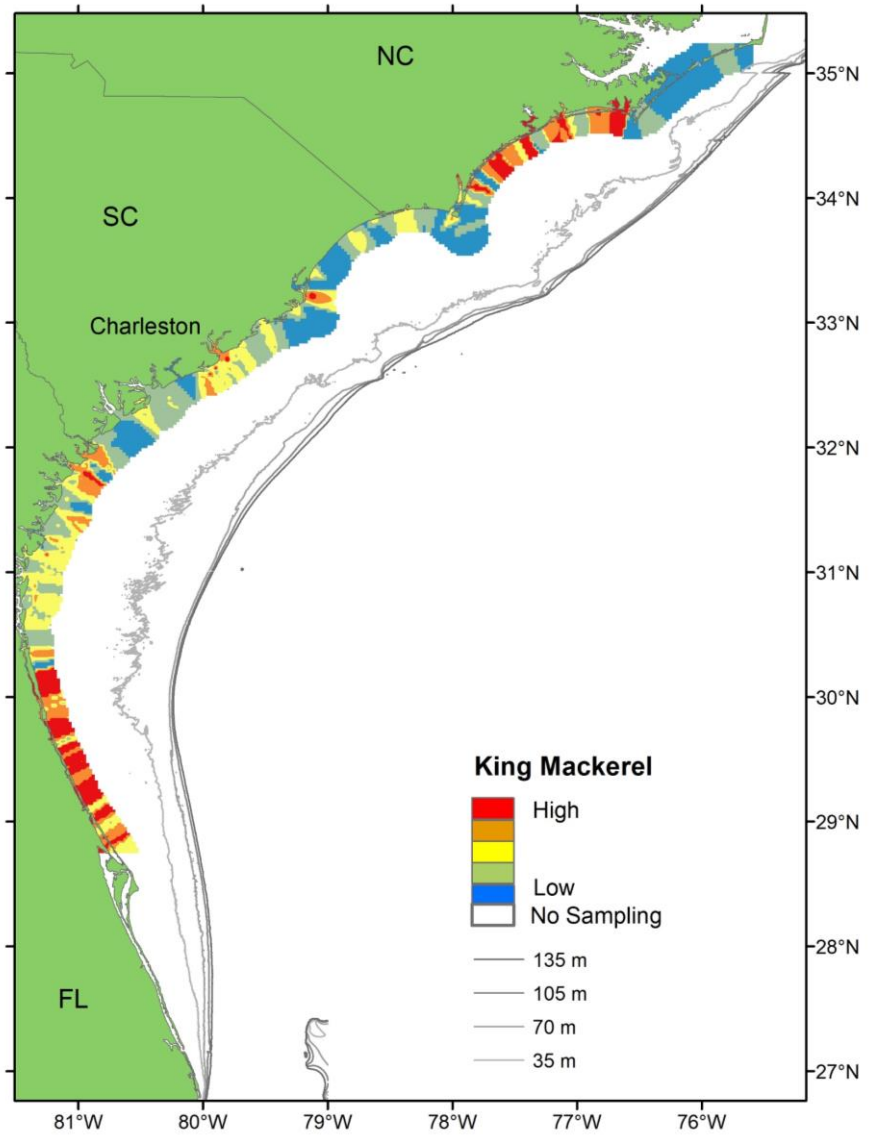
46 of 102 stations sampled in “Spring”

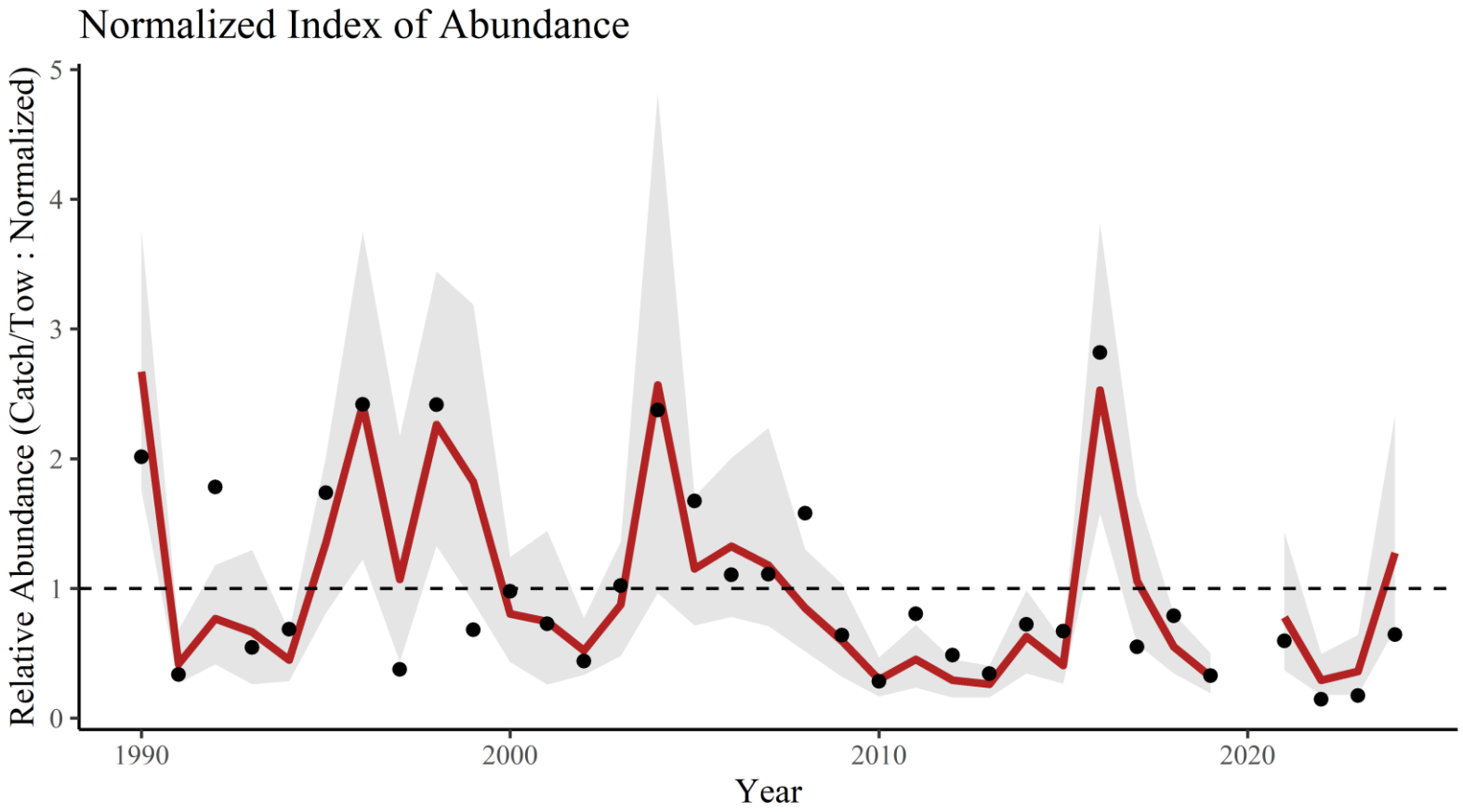


101 of 102 stations sampled in “Fall”

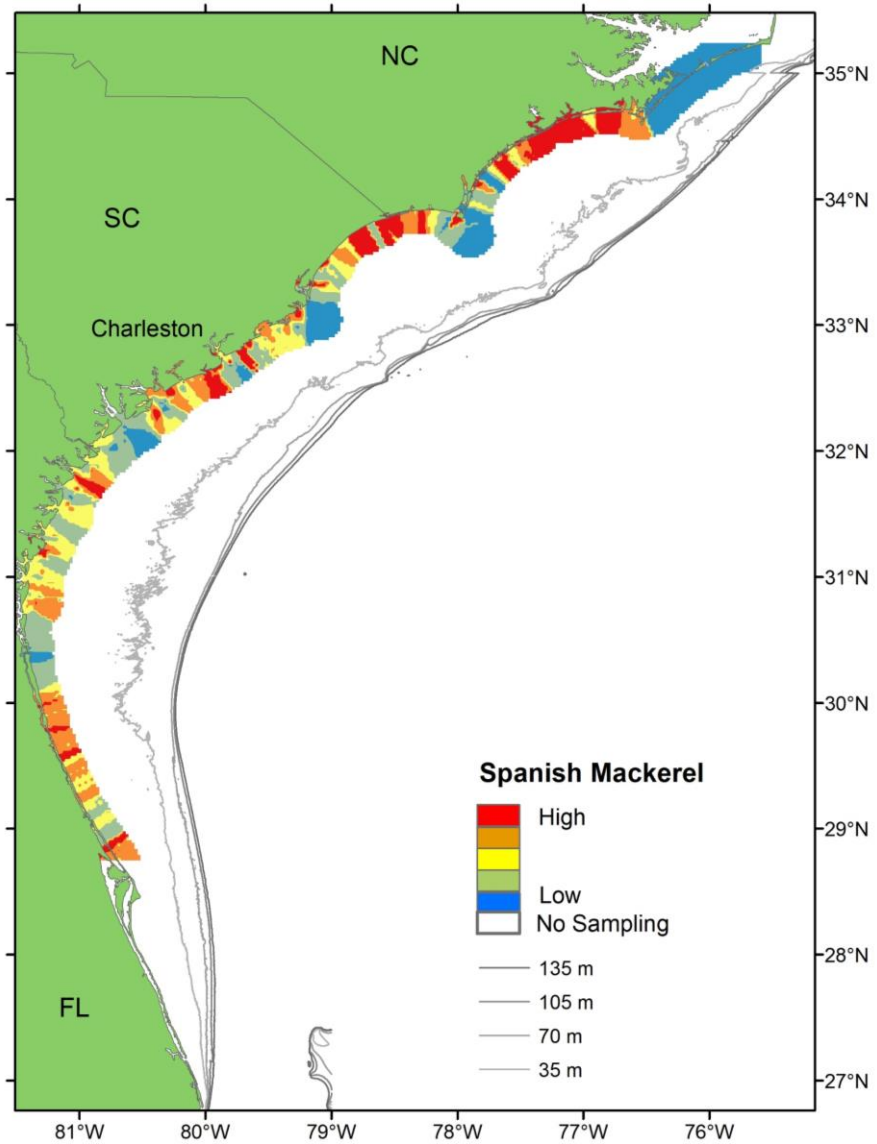


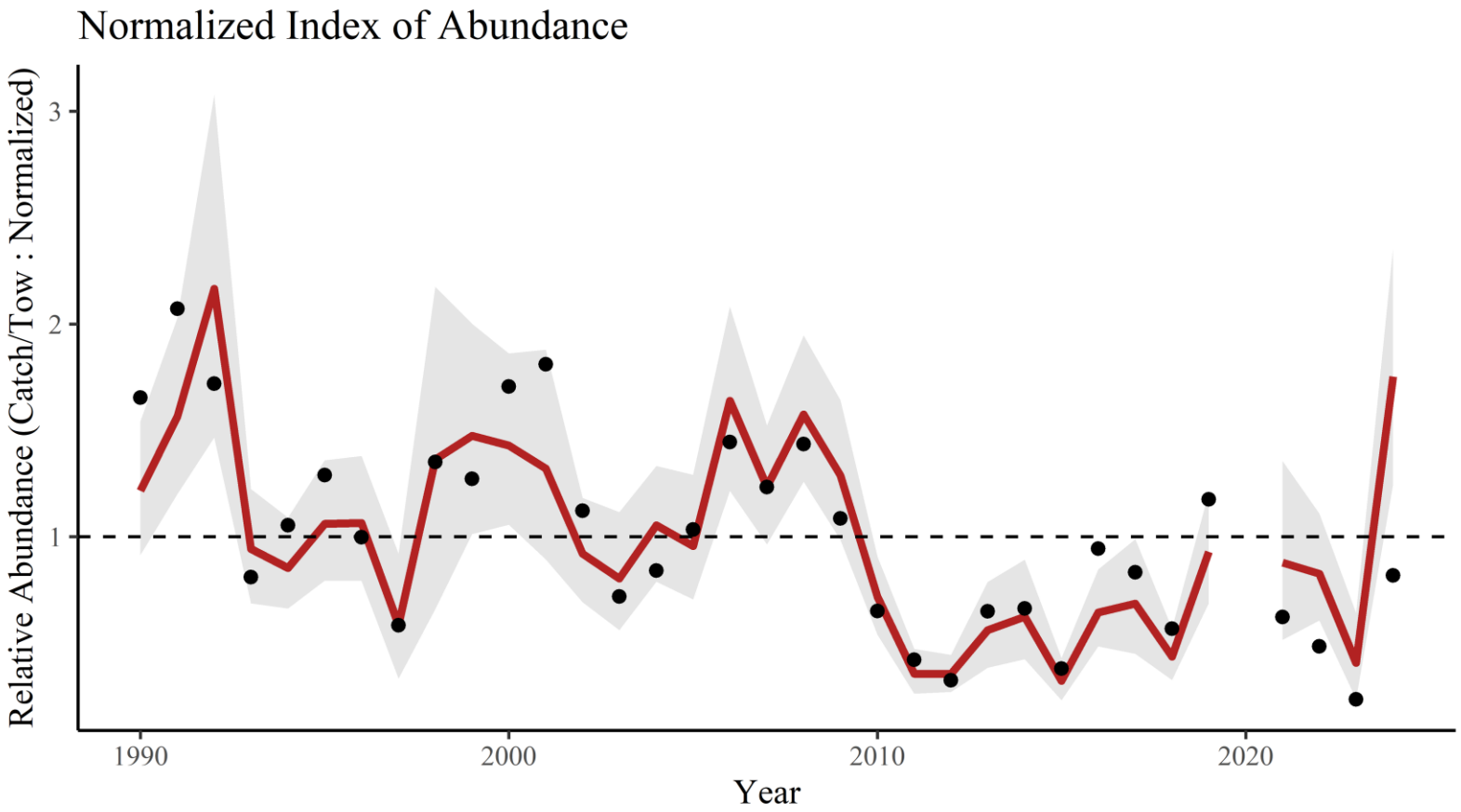
King Mackerel (Age-0 +)



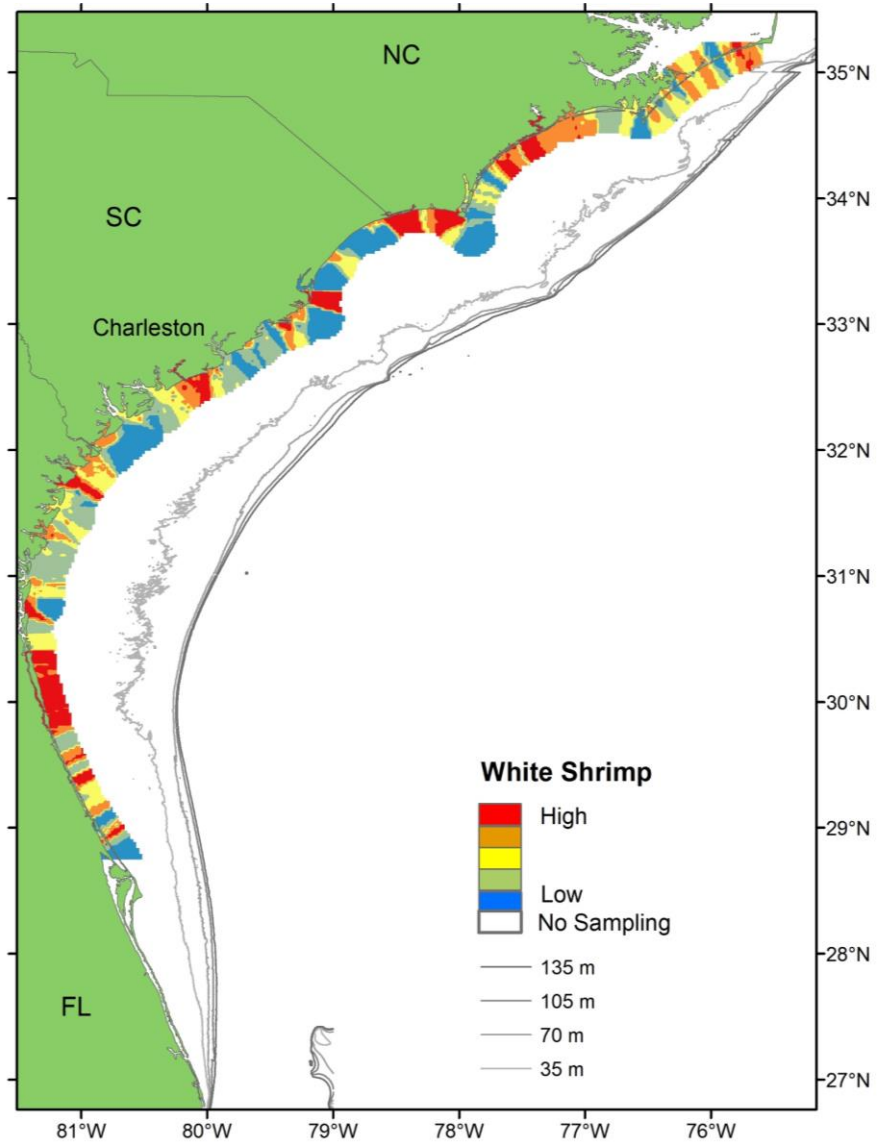


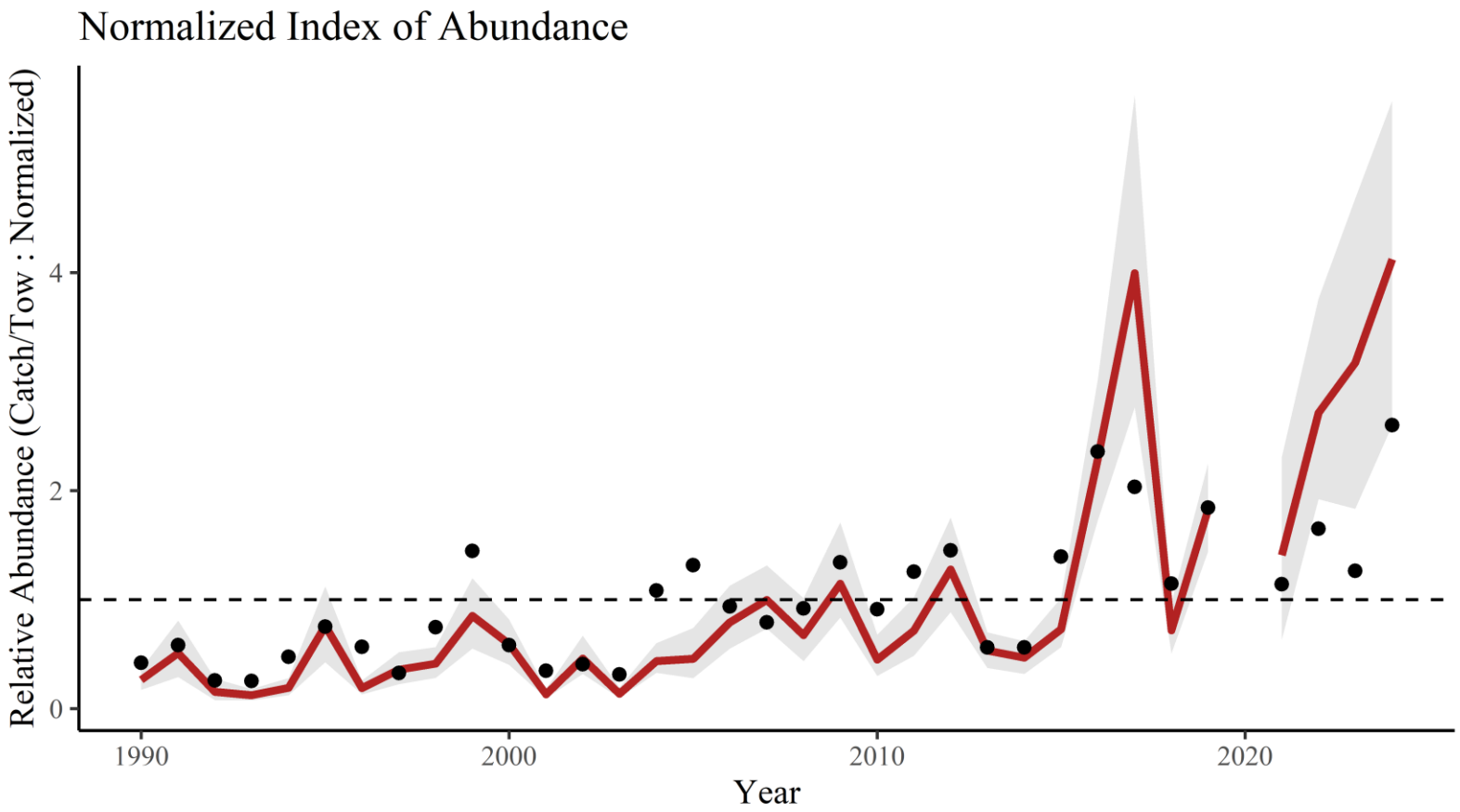
Spanish Mackerel (Age-0 +)



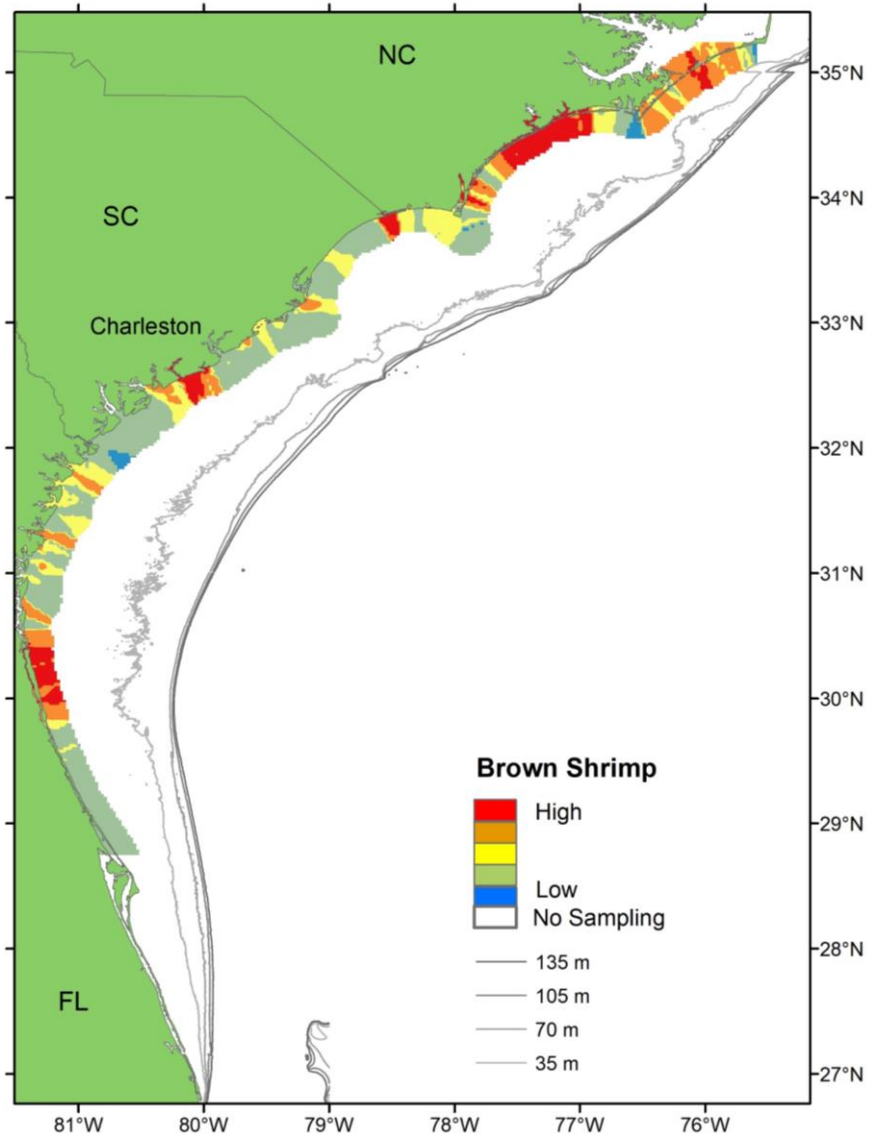


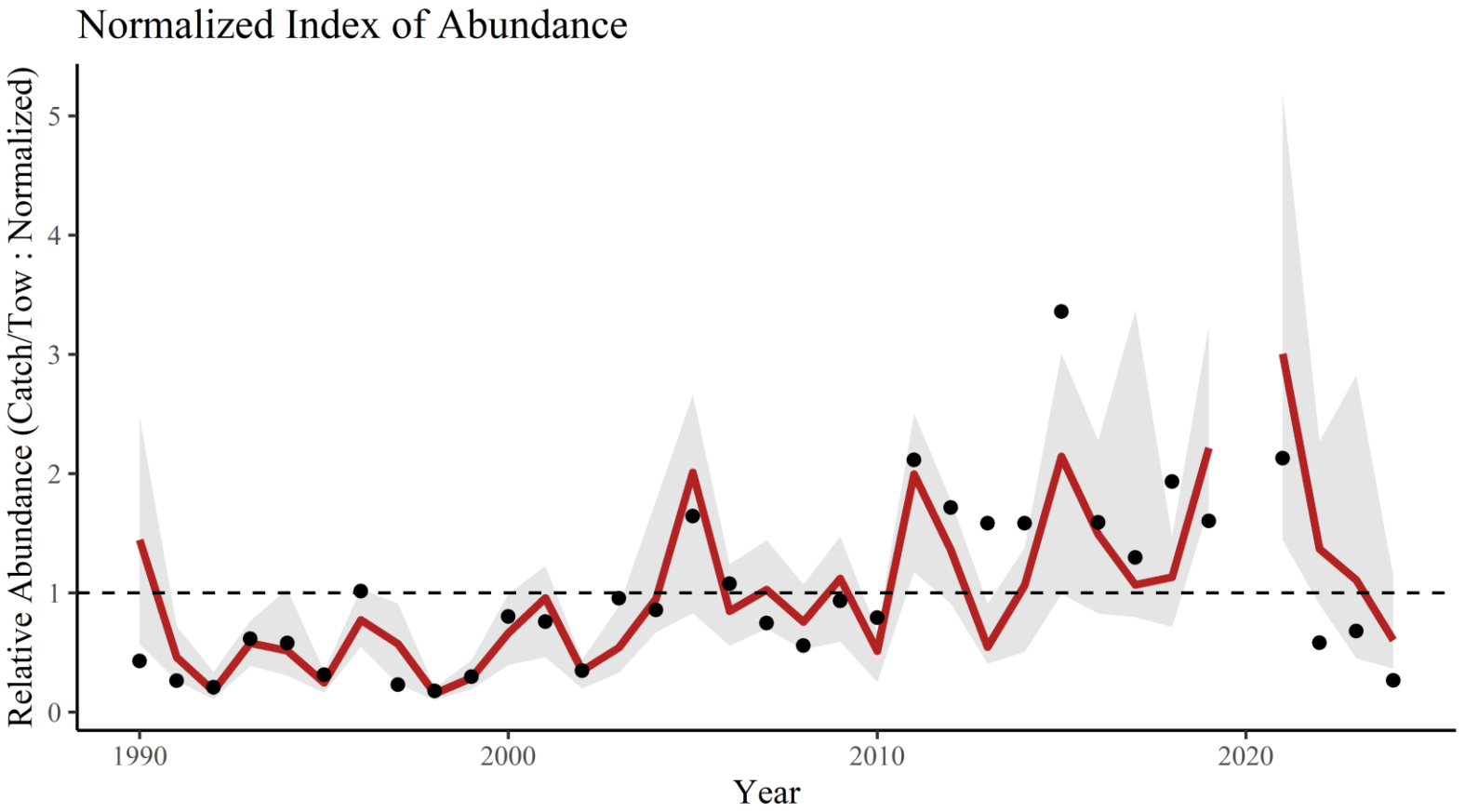
White Penaeid Shrimp



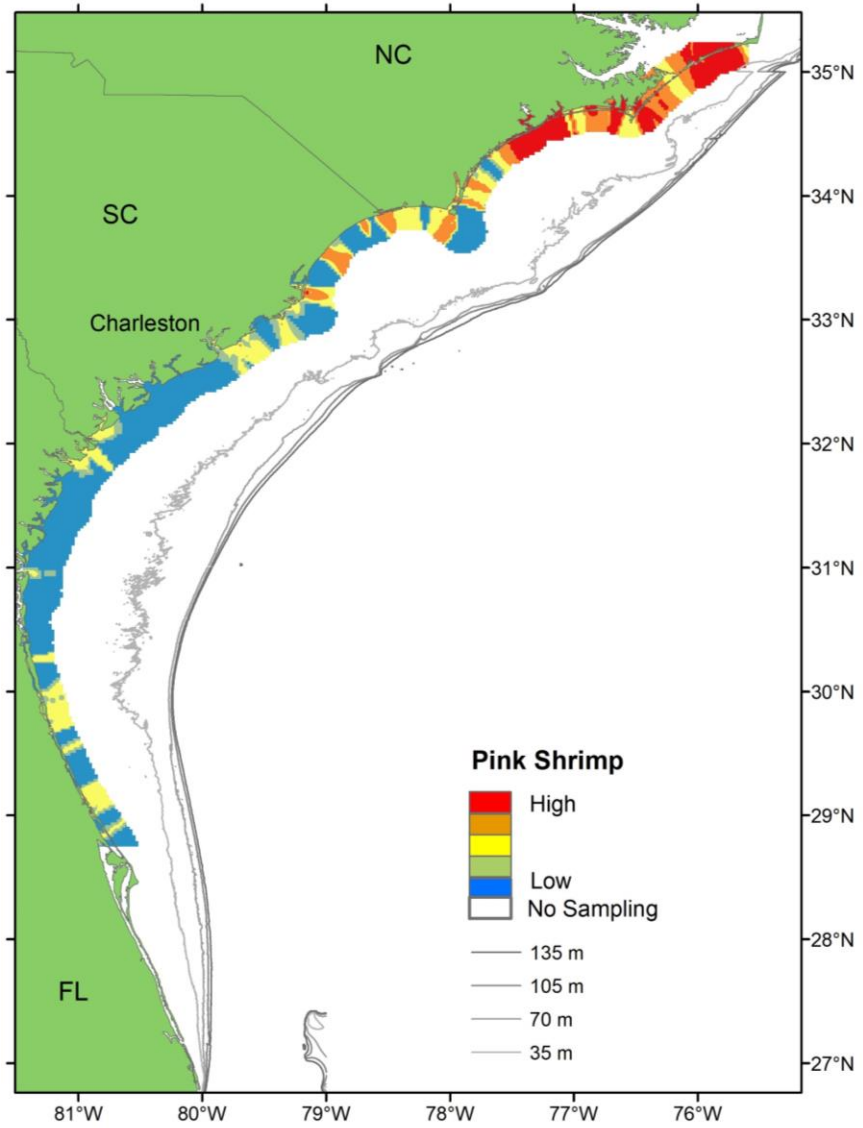


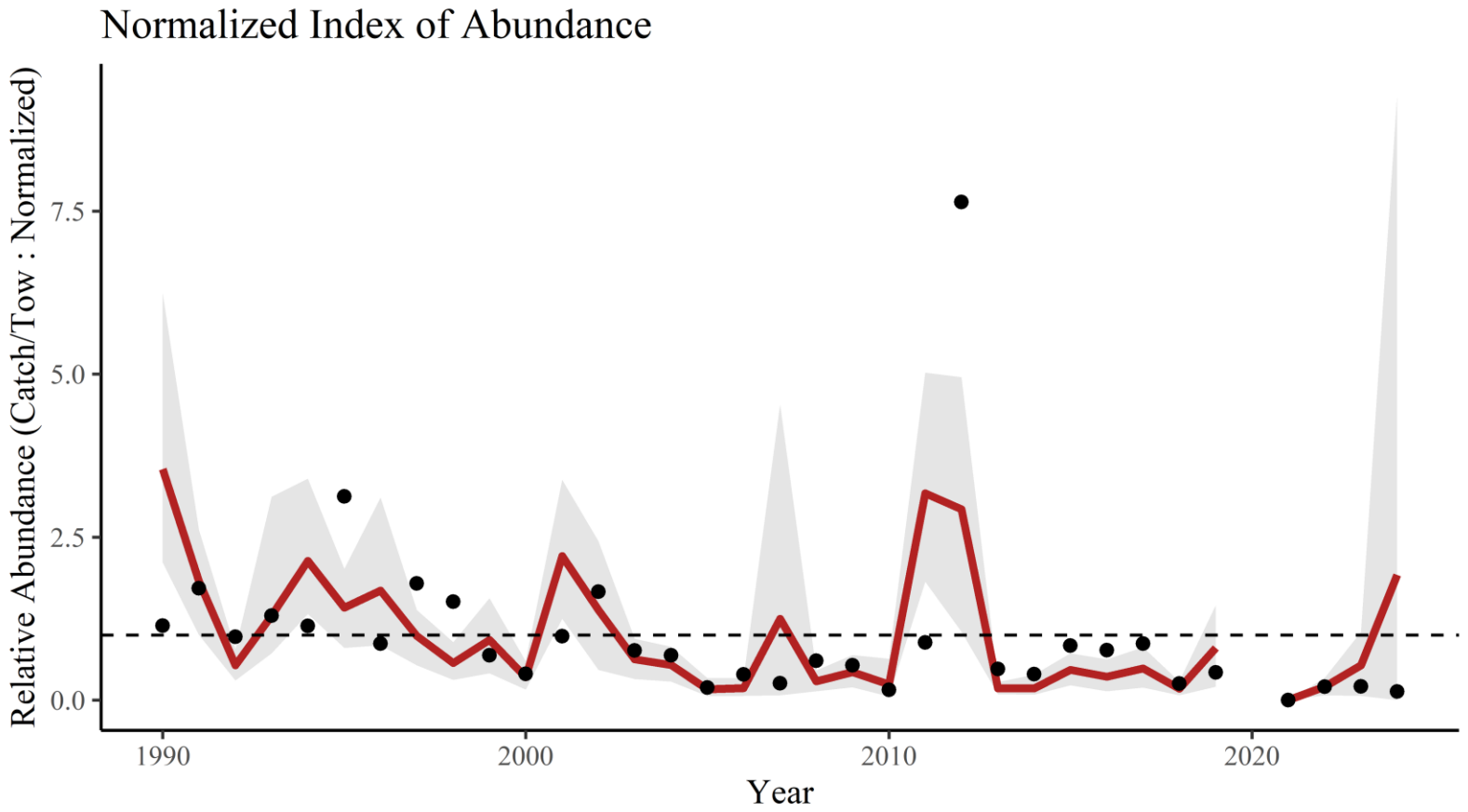
Brown Penaeid Shrimp

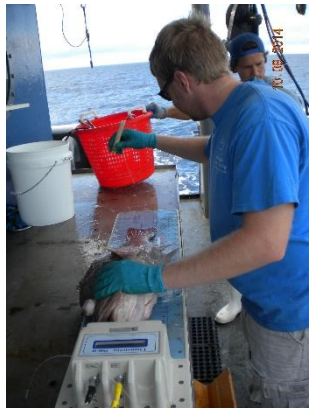




Pink Penaeid Shrimp







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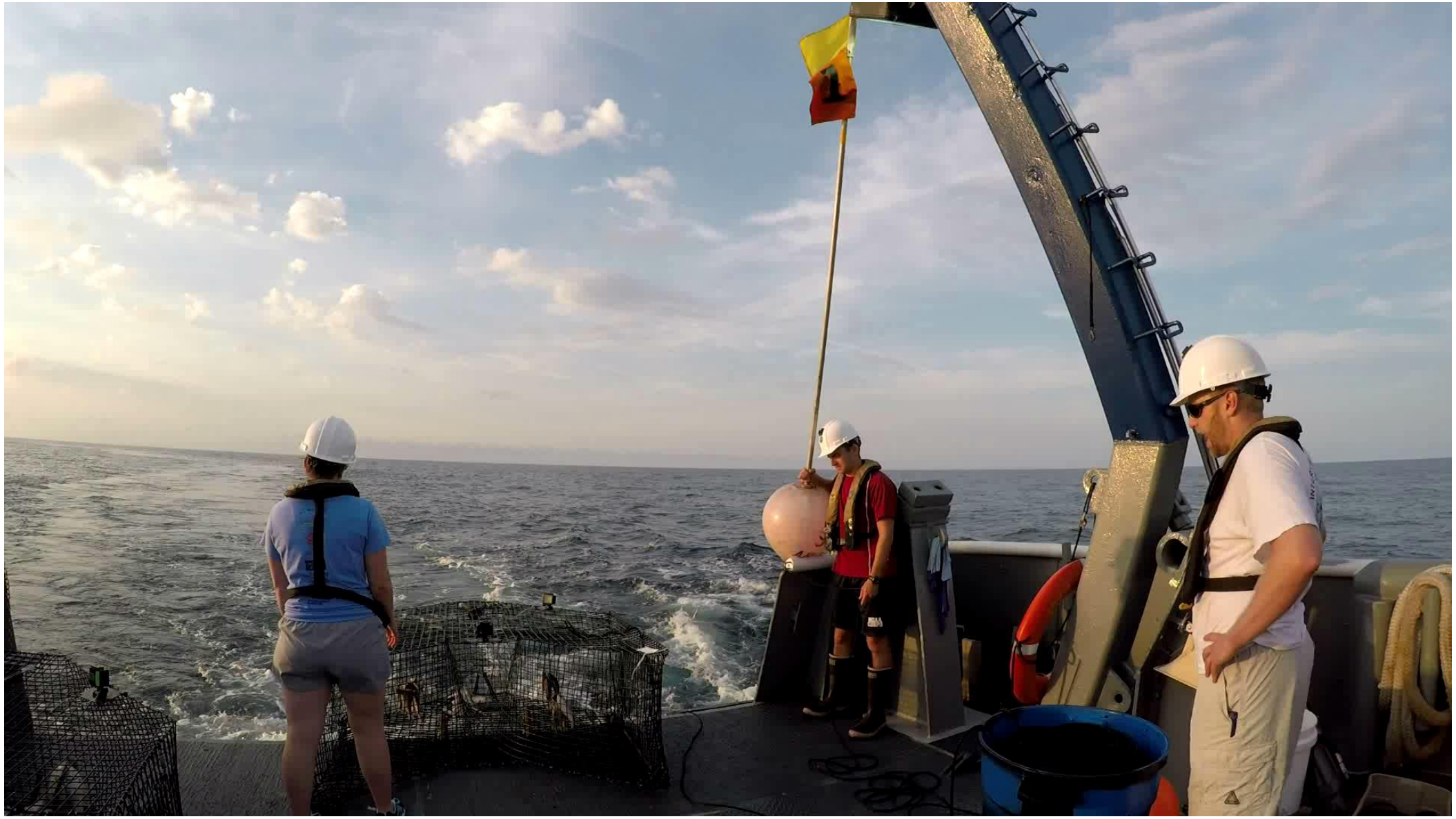

Questions?