# SEDAR 68

## Index Working Group- South Atlantic

April 2020

# Objectives

- Describe, review and recommend indices of abundance for the stock assessment

- <u>Not considering</u>:
    - **MRIP (low sample size, not provided)**
    - **Headboat at sea observer data (low sample sizes)**
    - **SA ROV**

- <u>Considering</u>:
    - **Southeast Regional Headboat Survey (SHRS) logbook index**
    - **Coastal logbook commercial index (handline)**
    - **SERFS trap index**
    - **MARMAP short bottom longline (low sample sizes)**
    - **SERFS Video index**
    - **SC Charterboat logbook (low sample size, limited spatially)**
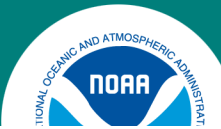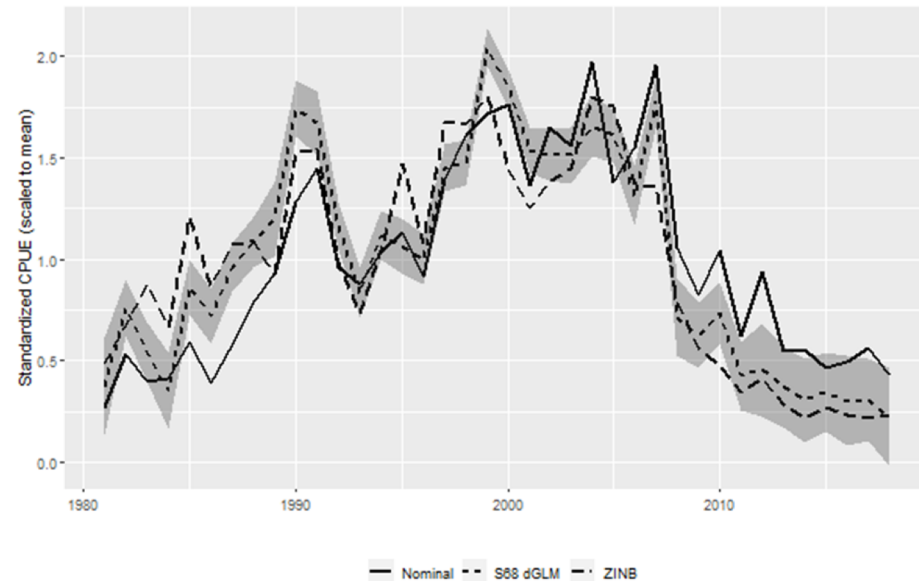
# Headboot logbook Index

### Description

- 1981-2018, NC to FL, May-Dec
- Delta-GLM
- Covariates chosen by stepwise AIC
- CPUE~ year + area + season + vessel size+ percent full

### Pros

- Longest time series
- Covers large portion of geographic range
- Large sample size
- Vessel census
- Dockside validation

### Cons

- Fishery dependent (i.e., potentially affected by regulations, targeting, hyperdepletion, hyperstability)
- Does not include area North of NC
- Effective effort is difficult to identify
- Effects of management regulations on subsetting method



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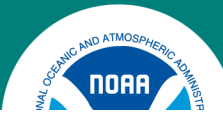
# Commercial logbook Index

## Description

- 1993-2018, NC to FL, May-Nov
- Delta-GLM
- Covariates chosen by stepwise AIC
- CPUE~year+area+season+crew size + days at sea

## Pros

- Complete census
- Covers the entire management area

## Cons

- Fishery dependent (i.e., potentially affected by regulations, targeting, hyperdepletion, hyperstability)
- Effective effort is difficult to identify
- Effects of management regulations on subsetting method
- No information on discard rates
- Potential shifts in species targeted; fishermen more skillfull than general recreational fishermen at targeting focal species

**Scamp and yellowmouth grouper - Commercial Handline**
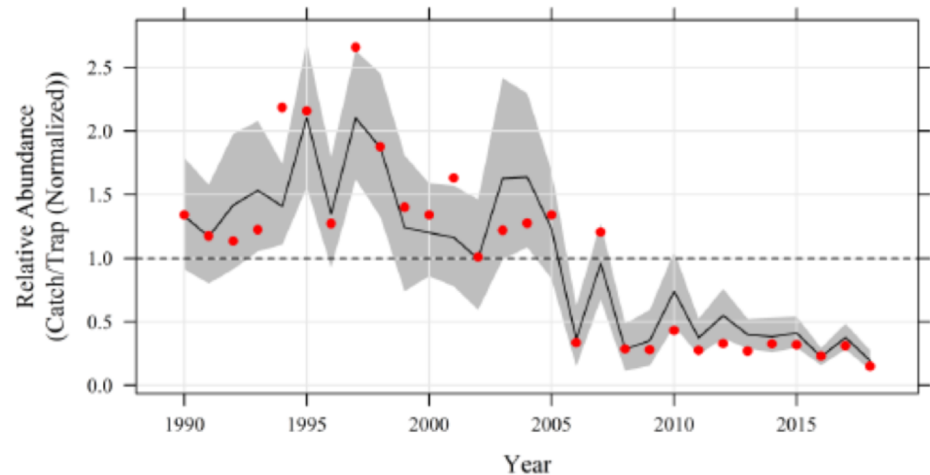


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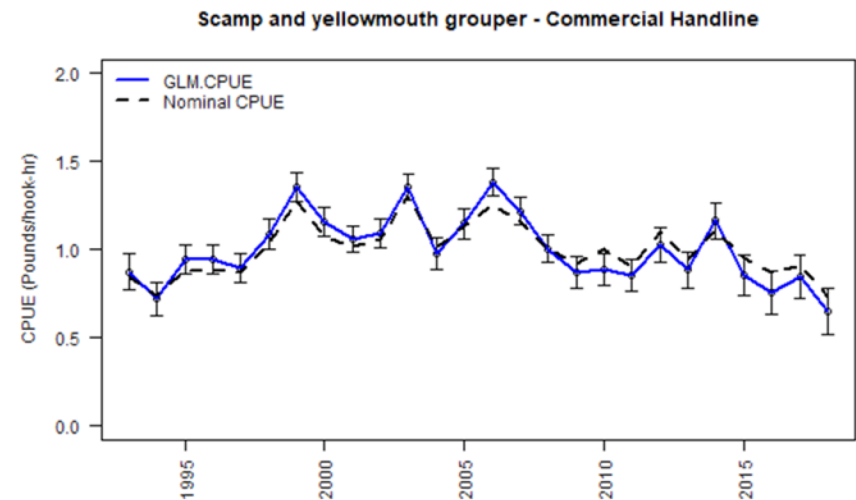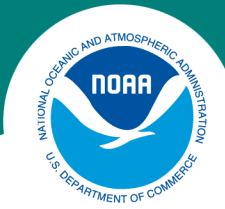
# SERFS chevron trap index

### Description

- 1990-2018
- Zero Inflated Negative Binomial (ZINB)
- Covariates chosen by Bayesian BIC
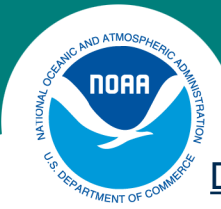- Catch ~ depth + latitude + bottom temp + day of year

### Pros

- Fishery independent random hard bottom survey
- Adequate regional coverage
- Standardized sampling techniques

### Cons

- Low proportion positive

# MARMAP Short Bottom Longline

### Description

- 1999-2018 (no sampling in 2012), NC & SC, May-Sep
- ZIP
- Covariates chosen by Bayesian BIC
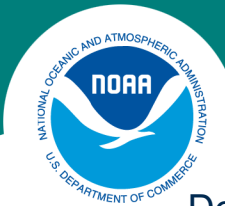- CPUE~ year + depth + latitude + temperature

### Pros

- Fishery independent random hard bottom survey
- Sampling depths range from 65-227m
- Serves as corroborative evidence with the other indices

### Cons

- Low sample sizes
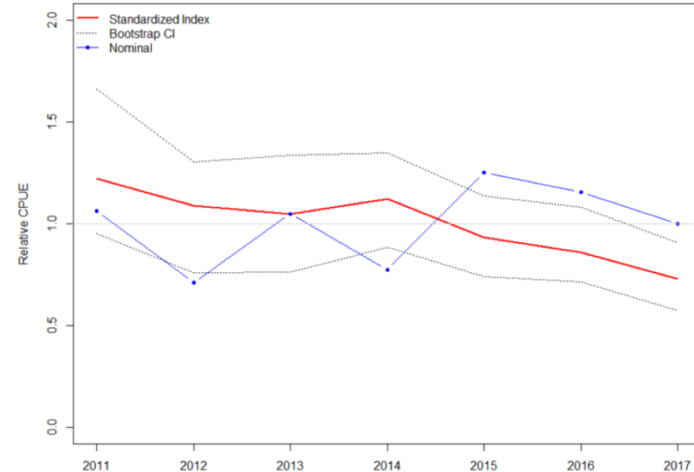- Limited spatial coverage
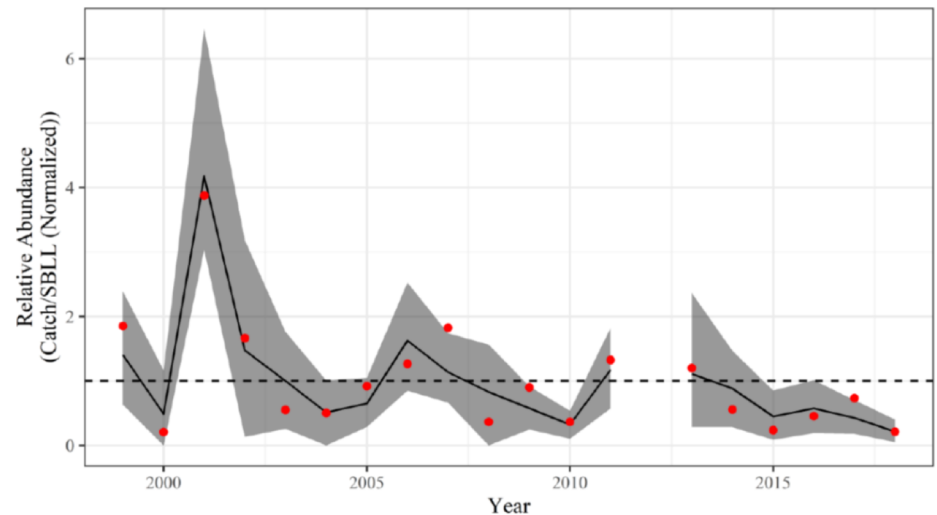
# SERFS Video Index

### Description

- 2010-2017, NC to FL
- ZINB
- Covariates chosen by stepwise AIC
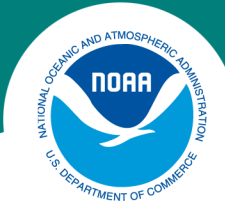- $SumCount$ = y + cd + bd + d + t + lat | y + wc + sc + bd + d + t + lat + temp

### Pros

- Fishery independent random hard bottom survey
- Adequate regional coverage
- Consistent sampling technique

### Cons

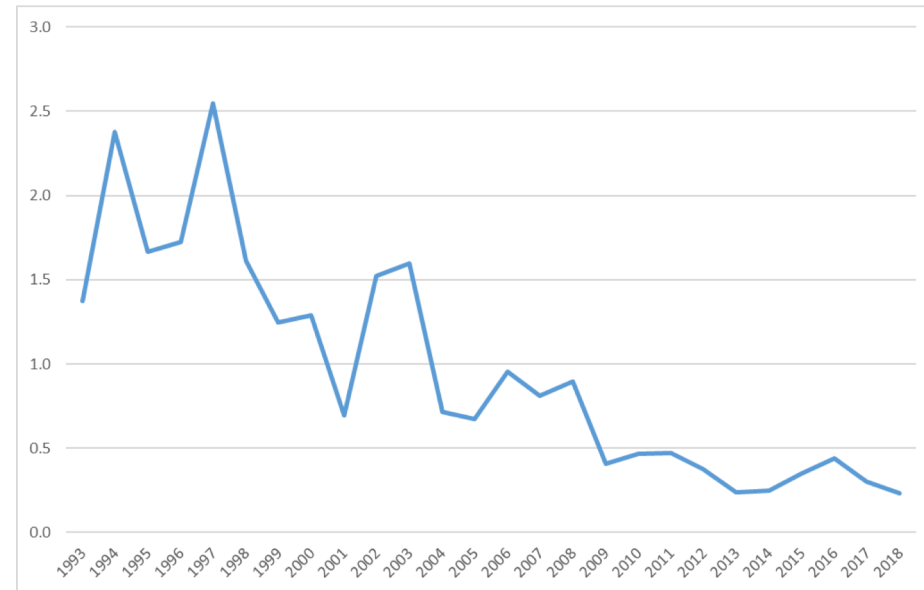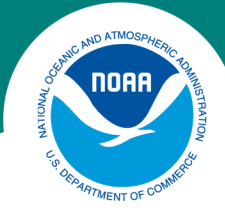- No size information
- Short time series



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# SC Charterboat logbook index

## Description

- 1993-2018, SC only

- Nominal Index provided

- 1% proportion positive

- Serves as corroborative evidence with the other indices

# SA indices

| | Headboat logbook | Commercial Handline | MARMAP/ SERFS Trap | MARMAP/ SERFS Video | MARMAP SBLL | SC Charterboat logbook |
|---|---|---|---|---|---|---|
| Headboat logbook | 1 | | | | | |
| Commercial Handline | 0.66 | 1 | | | | |
| MARMAP/ SERFS Trap | 0.68 | 0.23 | 1 | | | |
| MARMAP/ SERFS Video | 0.64 | 0.46 | 0.35 | 1 | | |
| MARMAP SBLL | 0.36 | 0.34 | 0.24 | 0.87 | 1 | |
| SC Charterboat logbook | 0.57 | 0.16 | 0.80 | 0.35 | 0.23 | 1 |
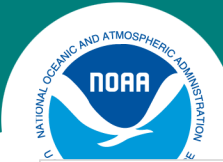
# SA indices
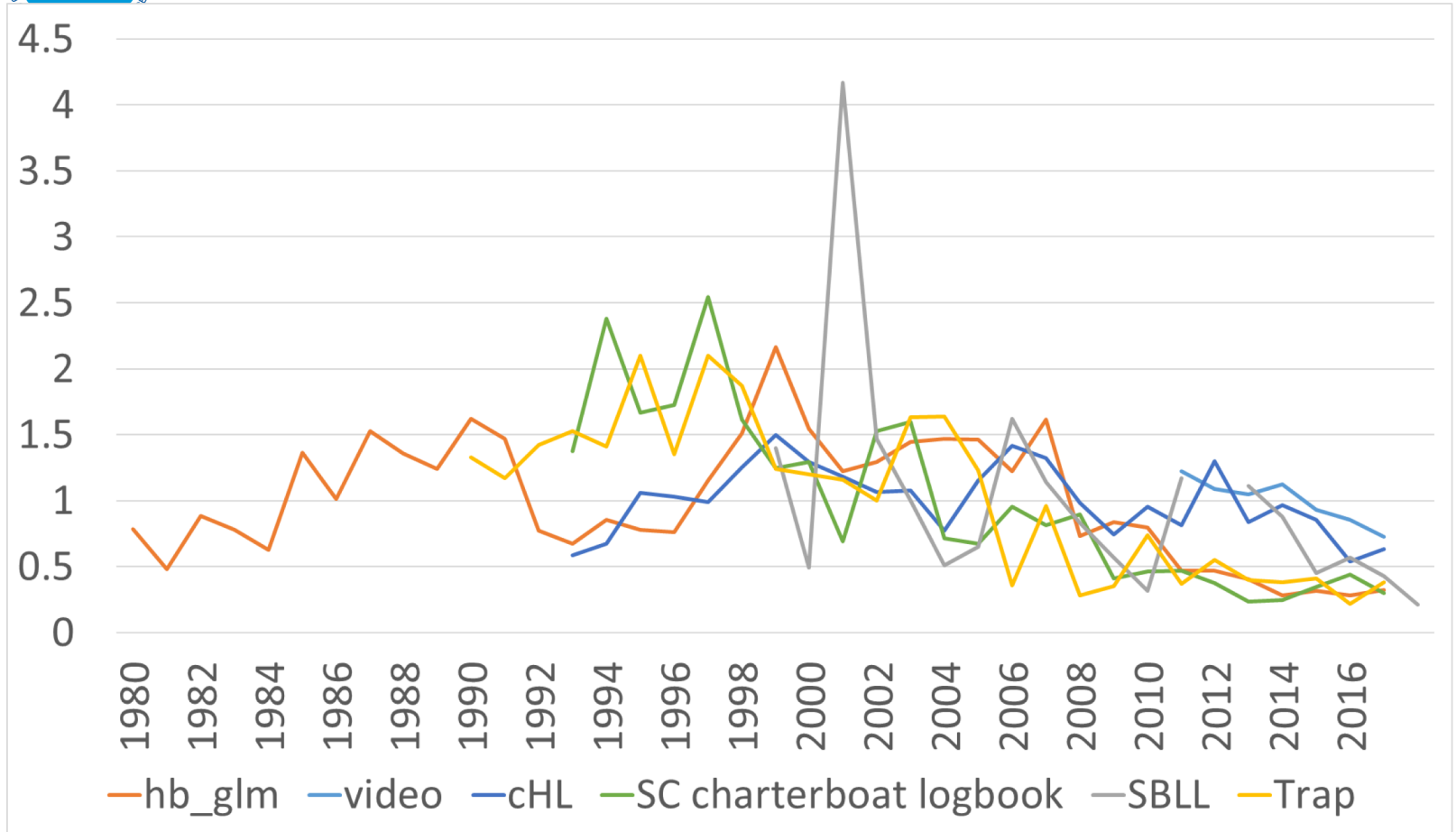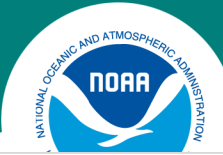
# SA indices

# Discussion Summary

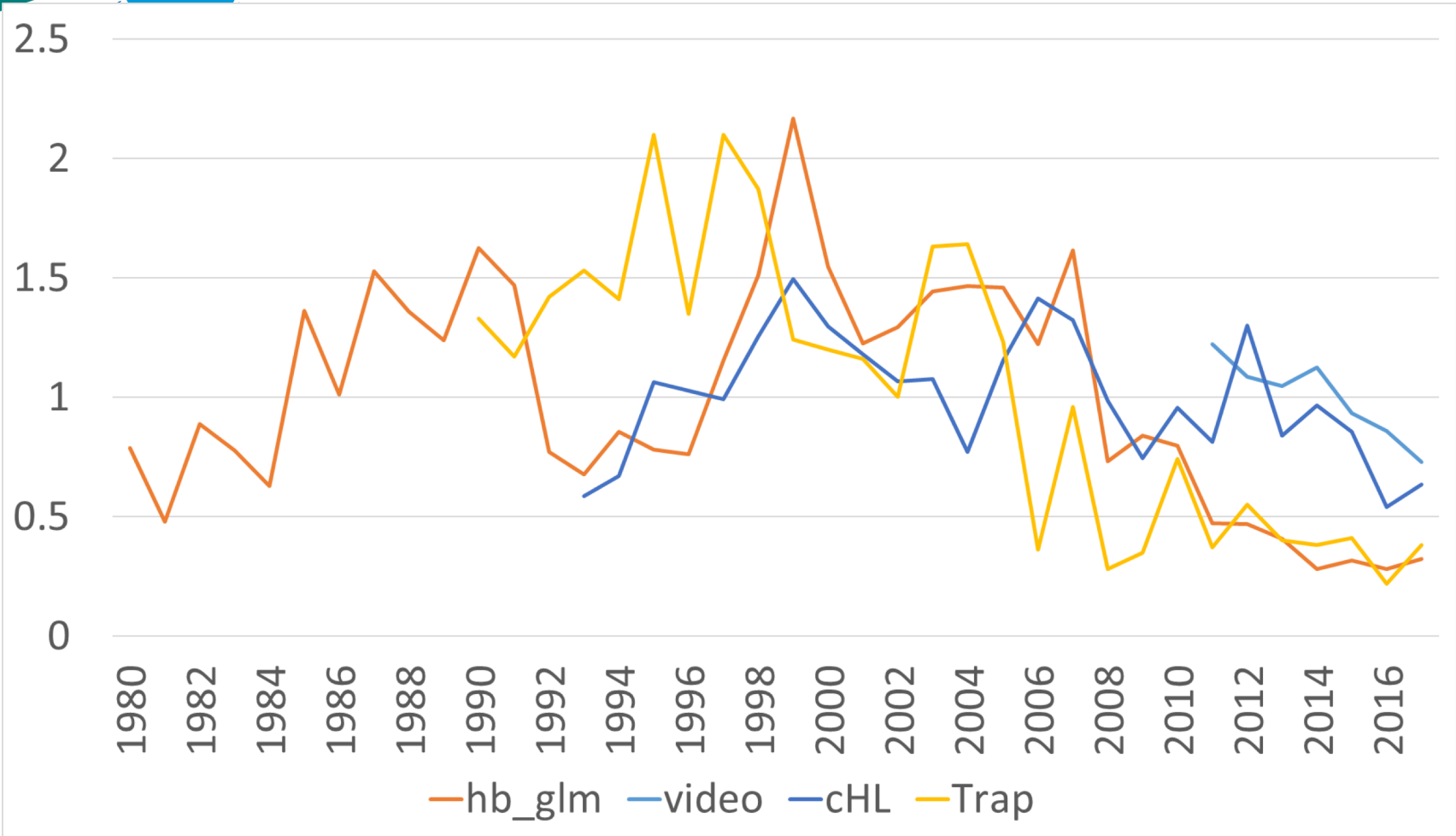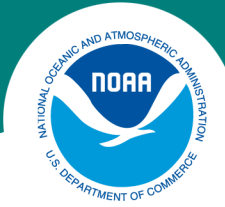- Do the traps and videos have similar selectivity? If yes should these indices be combined?

- Discussed changes in management regulations and how these changes may influence the subsetting procedure for the dependent indices.

- All indices are positively correlated

# Tasks
# (since last IWG meeting)

- Recommendation from IWG was to truncate the headboat logbook and commercial logbook indices to end in 2009 when major management changes began

  - Reasoning: management changes starting in 2010 influenced the subsetting method for these data (Stephens & MacCall)

  - Task completed
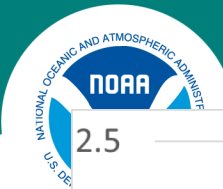
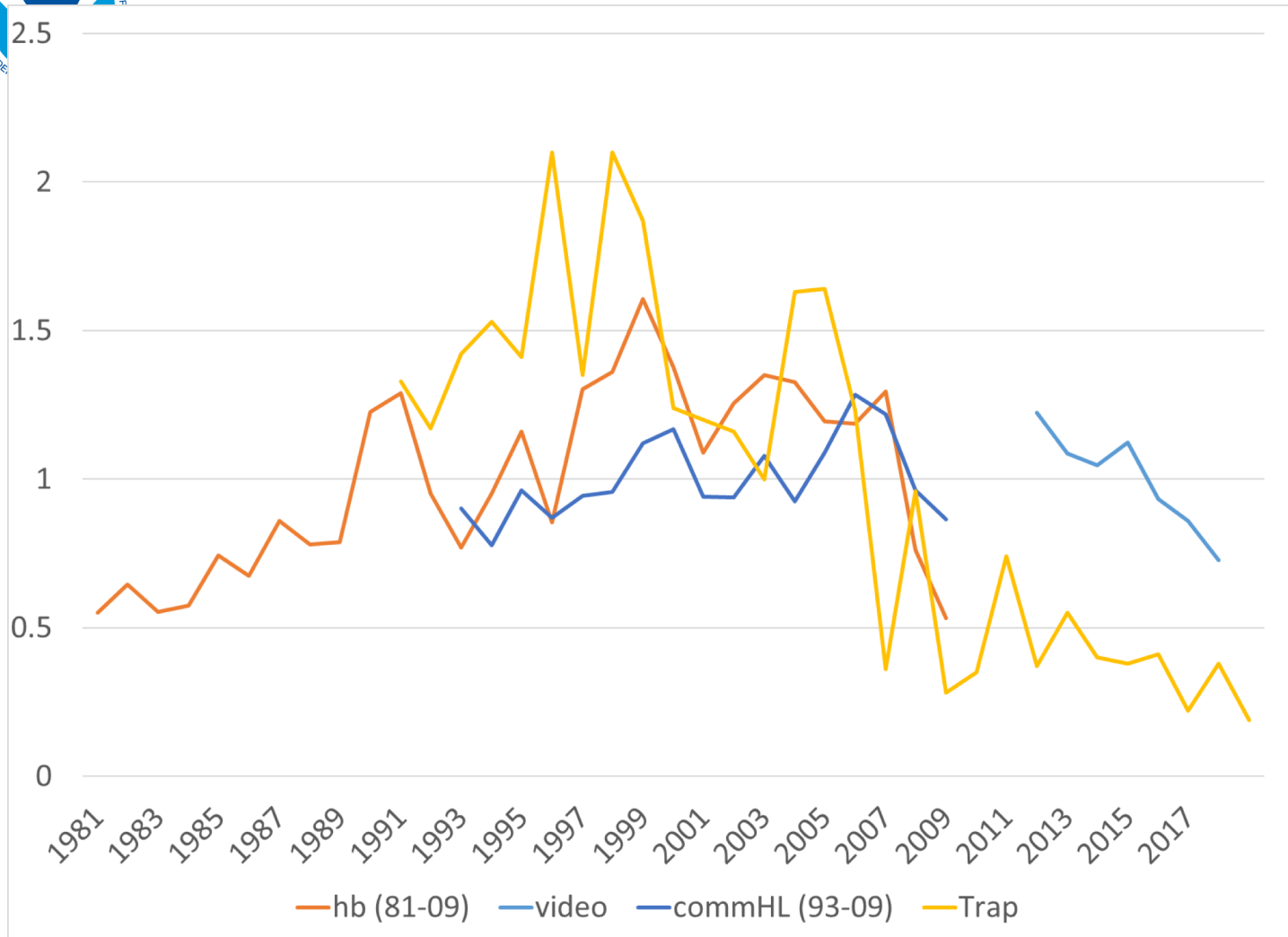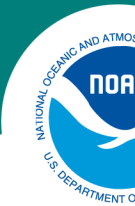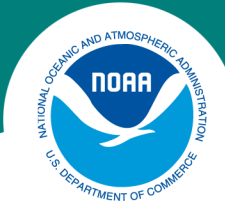# South Atlantic updated indices

# Index Working Group Recommendation:

| Fishery Type | Data Source | Area | Yrs | Units | Standardization Method | Issues | Use |
|---|---|---|---|---|---|---|---|
| Recreational | Headboat logbook | NC-FL | 1981-2009 | N kept/ angler*hour | Delta-GLM | Fishery dependent, self reported | Yes |
| Commercial | Commercial logbook handline | NC-FL | 1993-2009 | lb kept/ | Delta-GLM | Fishery dependent, self reported | Yes |
| | | | | hook-hour | | | |
| Independent | MARMAP/SERFS: | NC-FL | 1990-2018 | N caught | Zero inflated negative binomial | Expanded spatial coverage through time | Yes |
| | chevron trap | | | | | | |
| Independent | MARMAP/SERFS: | NC-FL | 2010-2017 | N observed | Zero inflated negative binomial | Ages/sizes unknown | Yes |
| | video survey | | | | | | |
| Independent | ROV South Atlantic | | | | | Few samples, imperfect survey design around MPA, not suitable for a standardized index, individuals possibly being double counted | No |
| Independent | MARMAP: blackfish trap | Mostly SC | 1981-1987 | | | Few samples | No |
| Independent | MARMAP: Florida trap | Mostly SC | 1981-1987 | | | Few samples | No |
| Independent | MARMAP: Short-bottom longline | Mostly SC | 1993-2018 | | Zero inflated poisson | Few samples, missing year, limited spatial coverage, few trips and fish. Serves as additional corroborative evidence with the other indices. | No |
| Recreational | Headboat-at-sea-observer | NC-FL | 2005-2017 | N caught ?20"/ | | Low sample size. | No |
| | | | | angler | | | |
| Recreational | SCDNR charterboat logbook | SC | 1993-2018 | N caught/angler-hr | Nominal | Limited geographic coverage; low sample size (1% proportion positive), Serves as additional corroborative evidence with the other indices. | No |

# Current tasks

- Further discuss and recommend selectivity for video index