King and Spanish Mackerel Abundance Trends in the SEAMAP-SA Coastal Trawl Survey

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SEAMAP-SA Coastal Trawl Survey

Long-term, fishery-independent annual monitoring

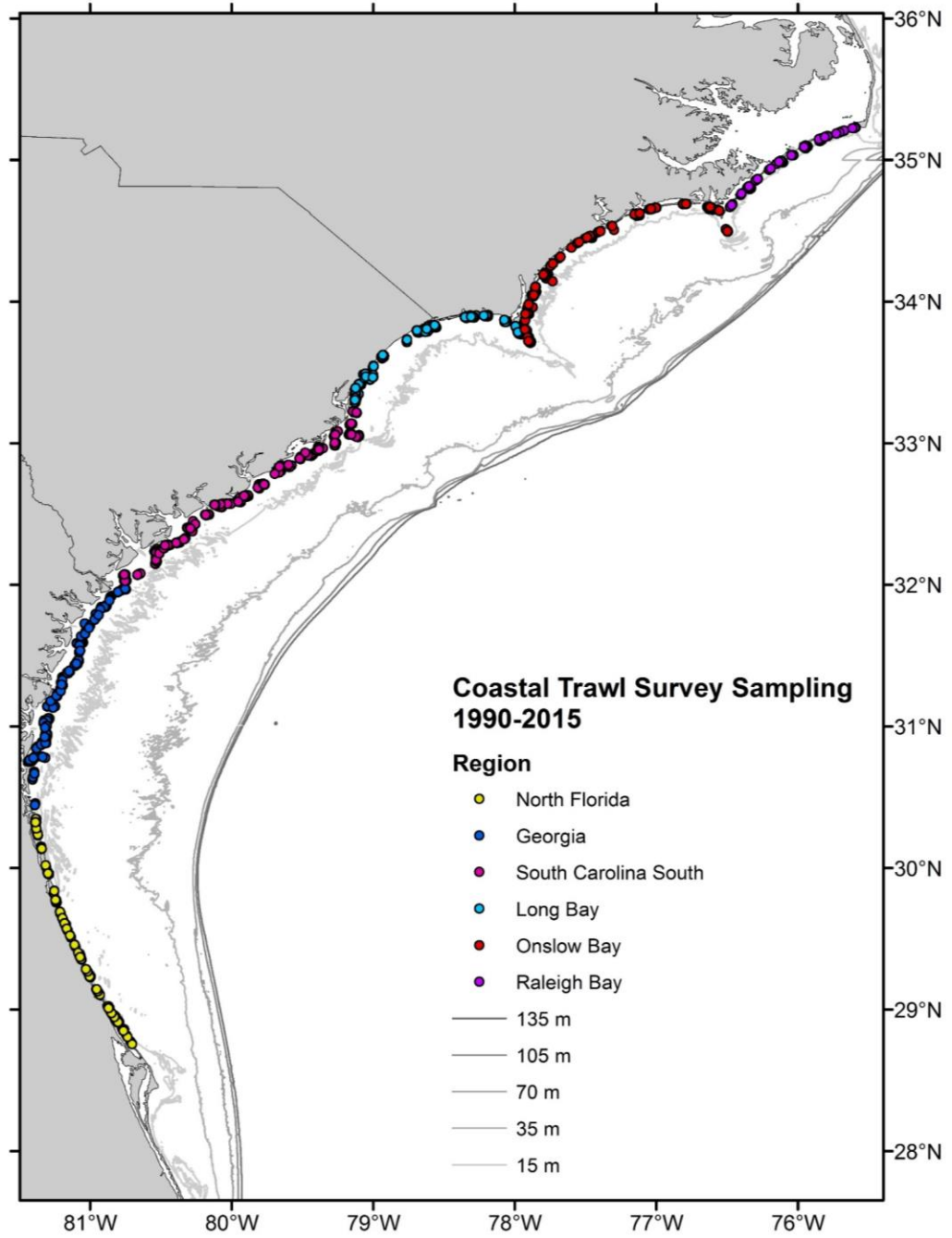
Nearshore, shallow-water, “trawlable” habitats

Paired 75’ Falcon Nets

3 Seasons: Spring, Summer, Fall

6 Regions from Cape Canaveral to Cape Hatteras

Stratified, random sampling within each region



SEAMAP-SA Coastal Trawl Survey

All net contents are sorted and identified

Aggregate weights measured for all species

For all priority species:
- Numbers estimated and length frequency determined

For life history priority species:
- Individual lengths and weights measured
- Ageing structures (otoliths) collected
- Reproductive tissues (gonads) collected

King and Spanish Mackerel are life history priority species:
- King ages range 0-1 yr, mostly immature
- Spanish ages range 0-2 yr, mostly immature

CTS Data Use in SEDAR

KING MACKEREL

SEDARs 5, 16, and 38

- Life history
- Juvenile (age-0 and/or 1) index of abundance
  - Delta-GLM standardization

SPANISH MACKEREL

SEDARs 17 and 28

- Life history
- Age-0 or young of the year index of abundance (Summer and Fall)
  - Delta-GLM standardization
- Age-1 index of abundance (Spring)
  - Delta-GLM standardization

Delta-GLM Standardization

2 generalized linear models are developed, then combined

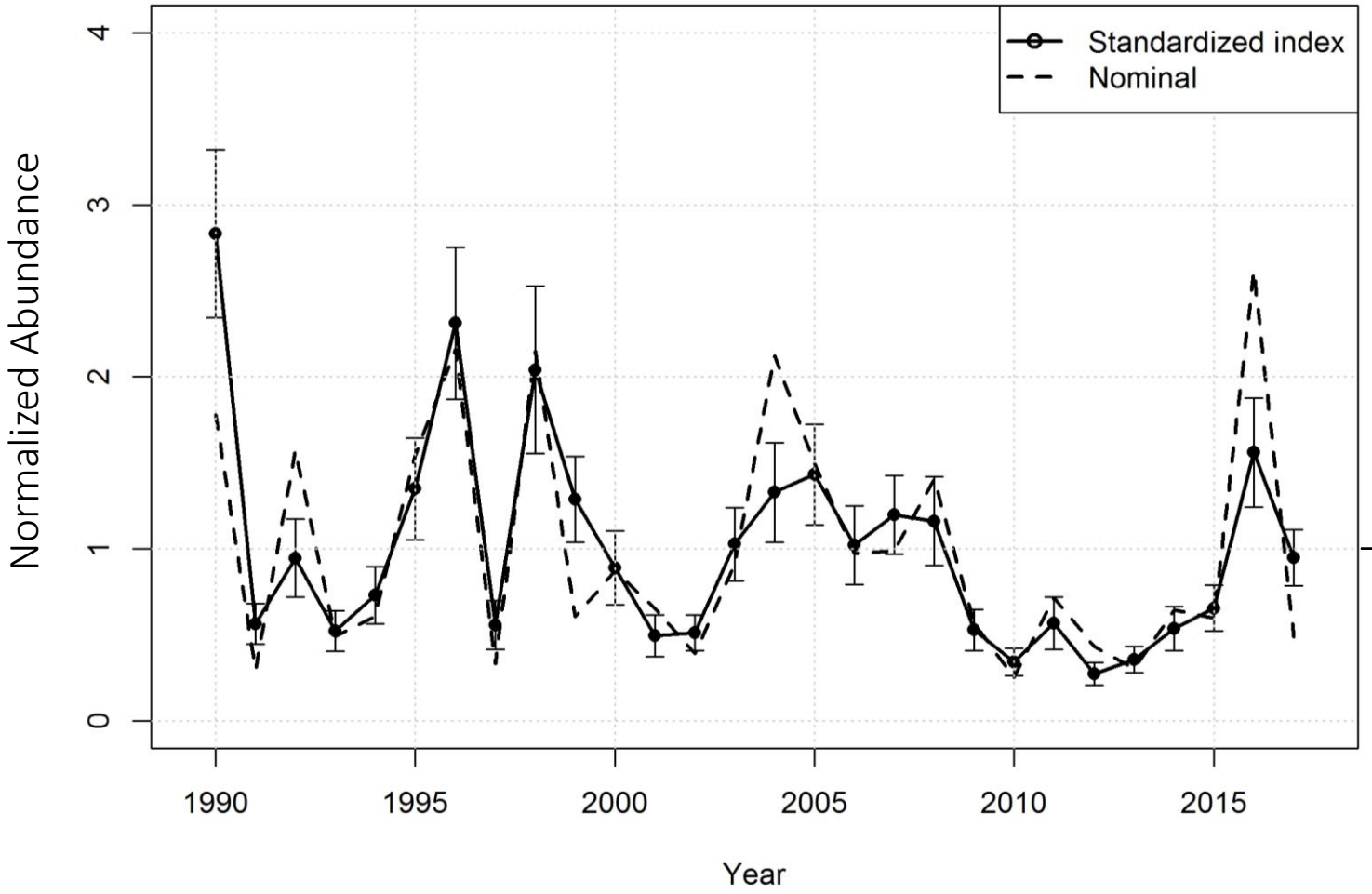
1. presence/absence
2. abundance, if present

Models include factors that can vary among tows:

- Year
- Season
- Region
- Bottom water temperature
- Depth

Modelling “corrects” for variability in abundance related to above factors

King Mackerel Juvenile Abundance



___Long-term average

King Mackerel Juvenile Abundance

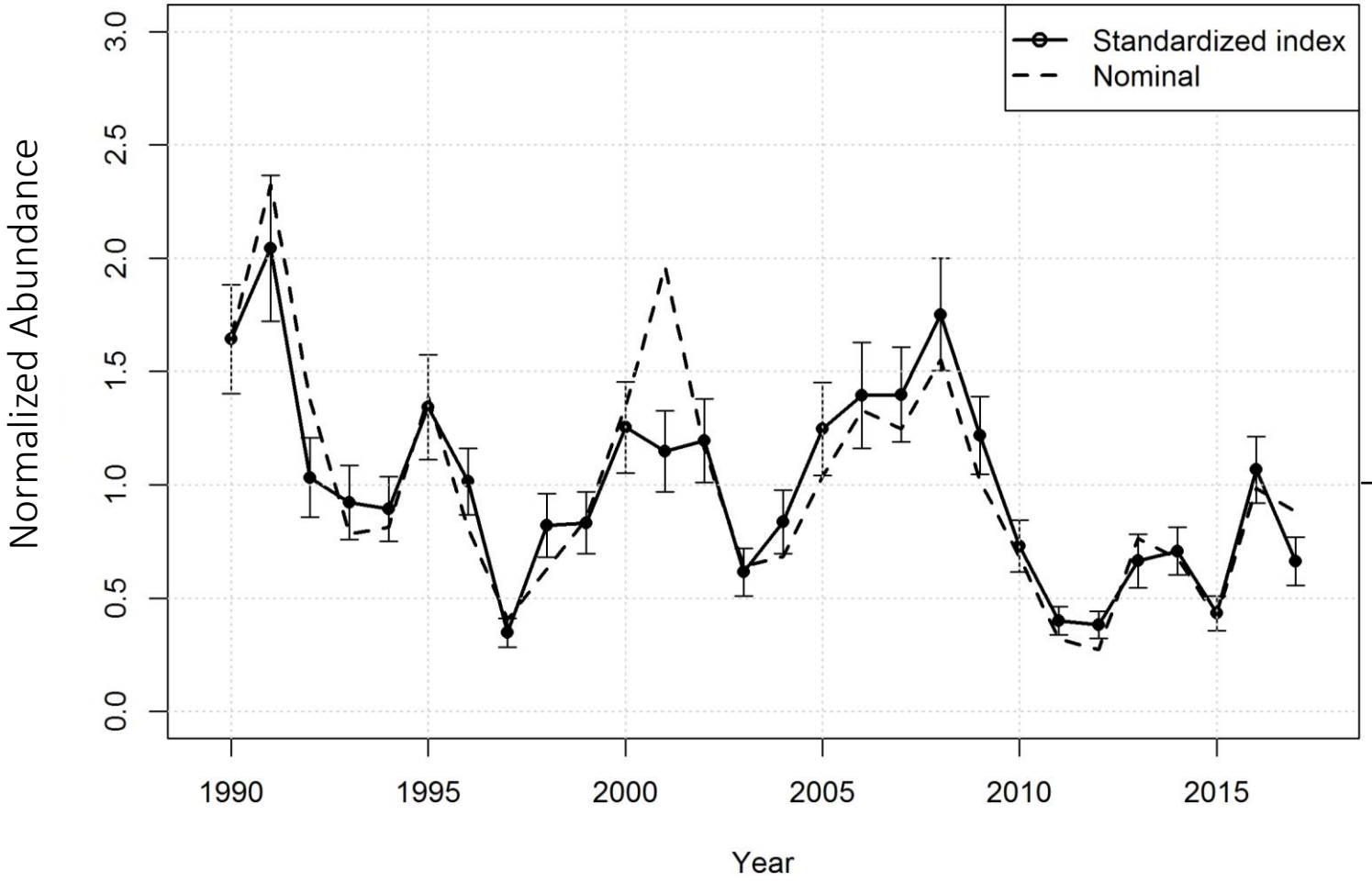
Factors that affect presence / absence:

- Year
- Region
- Season
- Depth
- Temperature

Factors that affect abundance if present:

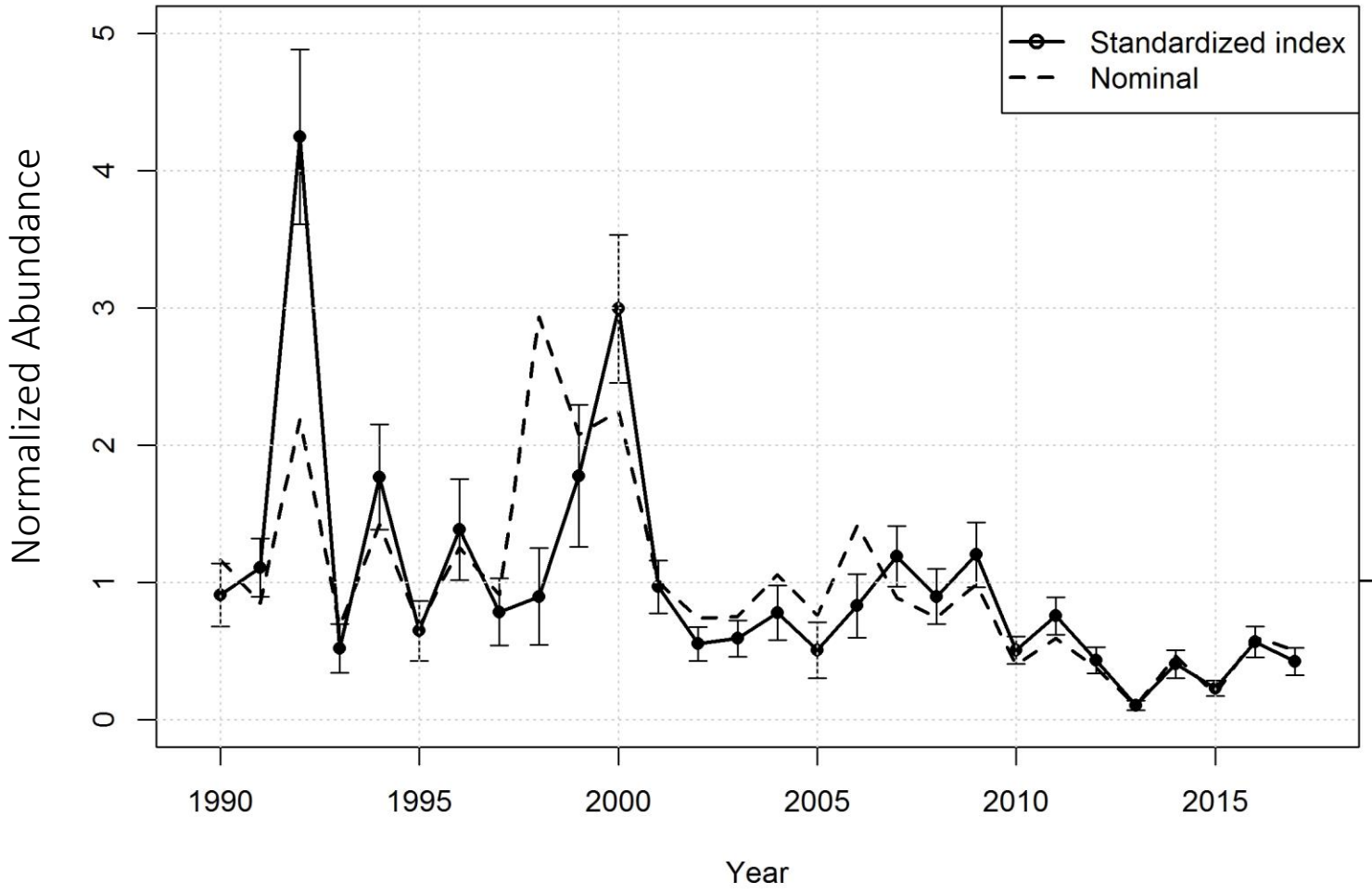
- Year
- Region
- Season

Spanish Mackerel Age 0 Abundance



__Long-term average

Spanish Mackerel Age 1 Abundance



Long-term average

Spanish Mackerel Juvenile Abundance

AGE-0

Factors that affect presence / absence:

- Year
- Region
- Depth
- Temperature

Factors that affect abundance if present:

- Year
- Season

AGE-1

Factors that affect presence / absence:

- Year
- Region
- Depth
- Temperature

Factors that affect abundance if present:

- Year
- Region
- Depth
- Temperature

General Trends

King Mackerel juvenile abundance increased last 5 years
(last 2 at or higher than long-term average)

Spanish Mackerel juvenile abundance lower than long-term average last 5 years

Do these trends indicate spawning effort? Recruitment?
What have others seen on the water?

Thank you
R/V Lady Lisa crews past and present
SEAMAP-SA CTS crews past and present
Funded by SEAMAP-SA

Questions?

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Future Work

Julia Reynolds, College of Charleston M.S.

King Mackerel size distributions suggest splitting into age 0 and age 1 index

Age 0: Summer* and Fall

Age 1: Spring and Summer*

*Summer is often a mix of year classes and so season-specific length cut-offs used