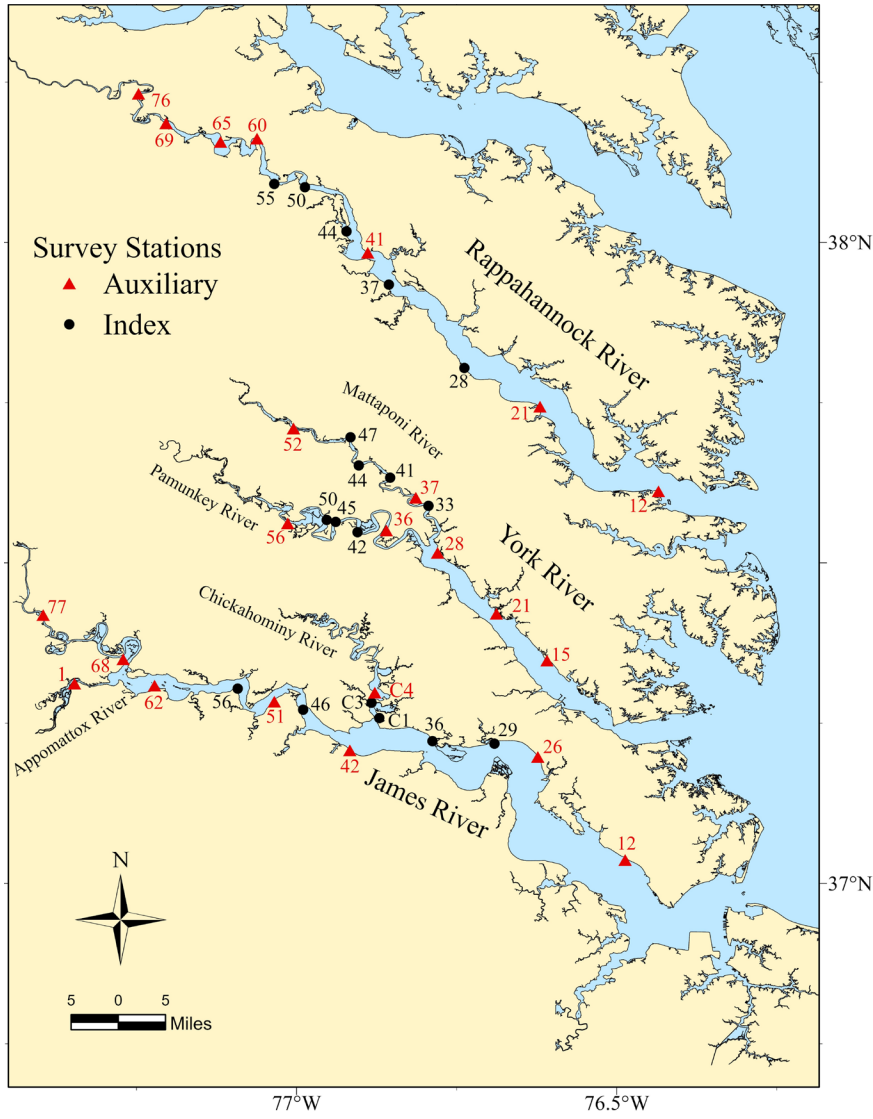
Striped Bass Surveys - VIMS

- Striped Bass Seine Survey (Fabrizio & Tuckey) (1967-1973, 1980-present)
- Juvenile Finfish Trawl Survey (Fabrizio & Tuckey) (1988 – present)
- Chesapeake Bay Multispecies Monitoring & Assessment Program (Latour) (ChesMMAP; 2002 - present)
- Striped Bass Program (Latour) (1991 – present)

Striped Bass Seine Survey

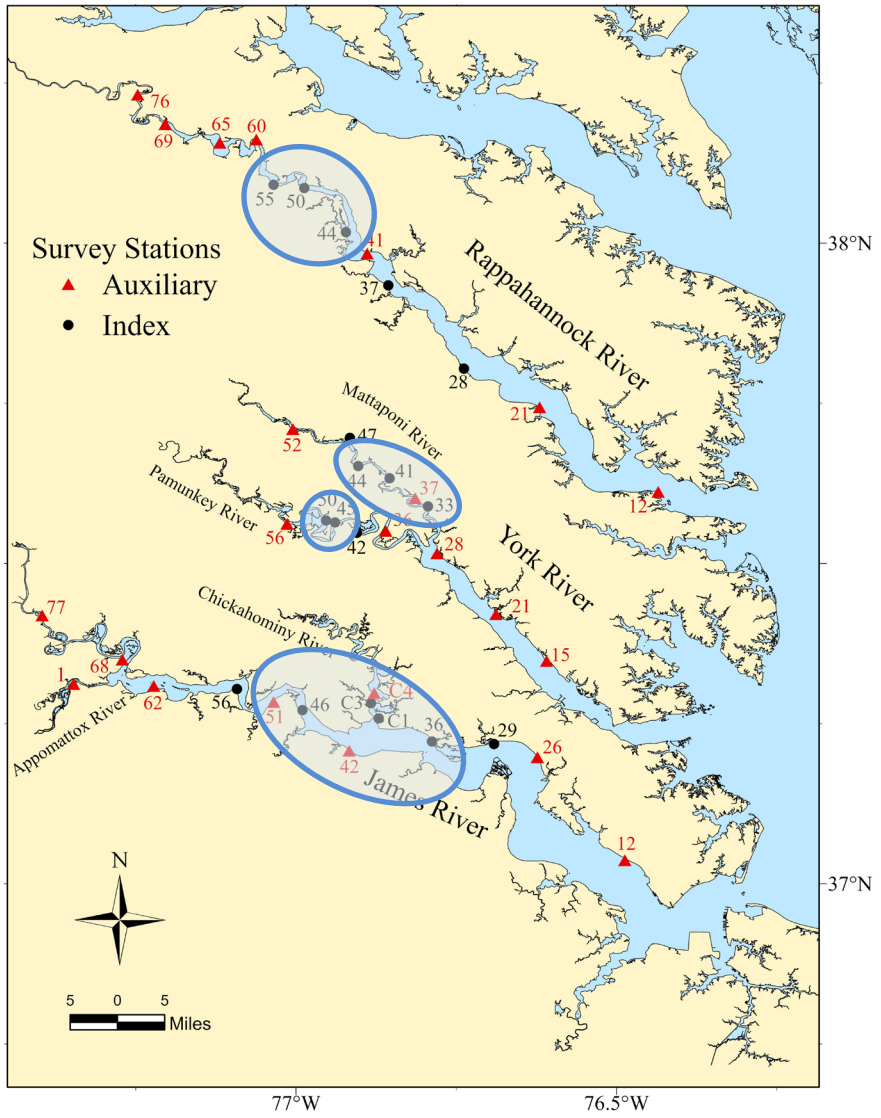
- Sampling occurs June/July – September
- Site recon in early June (~45 mm size)
- 39 stations (sampled 5 times)
  - James, including Chickahominy
  - York, Mattaponi, Pamunkey
  - Rappahannock
- 30.5-m beach seine (6.4 mm mesh)
- Salinity, Temperature, DO, pH

Jack Buchanan, Seine Survey Chief Scientist



Striped Bass Seine Survey

- Site locations bracket changes in river flow & year class strength
- New sites added in the Appomattox & Chickahominy
- Core nursery areas tend to be at central upstream sites
- Sites tend to be characterized by low to moderate salinities
  - Overall average: 0.3 to 4.5



Striped Bass Seine Survey Index

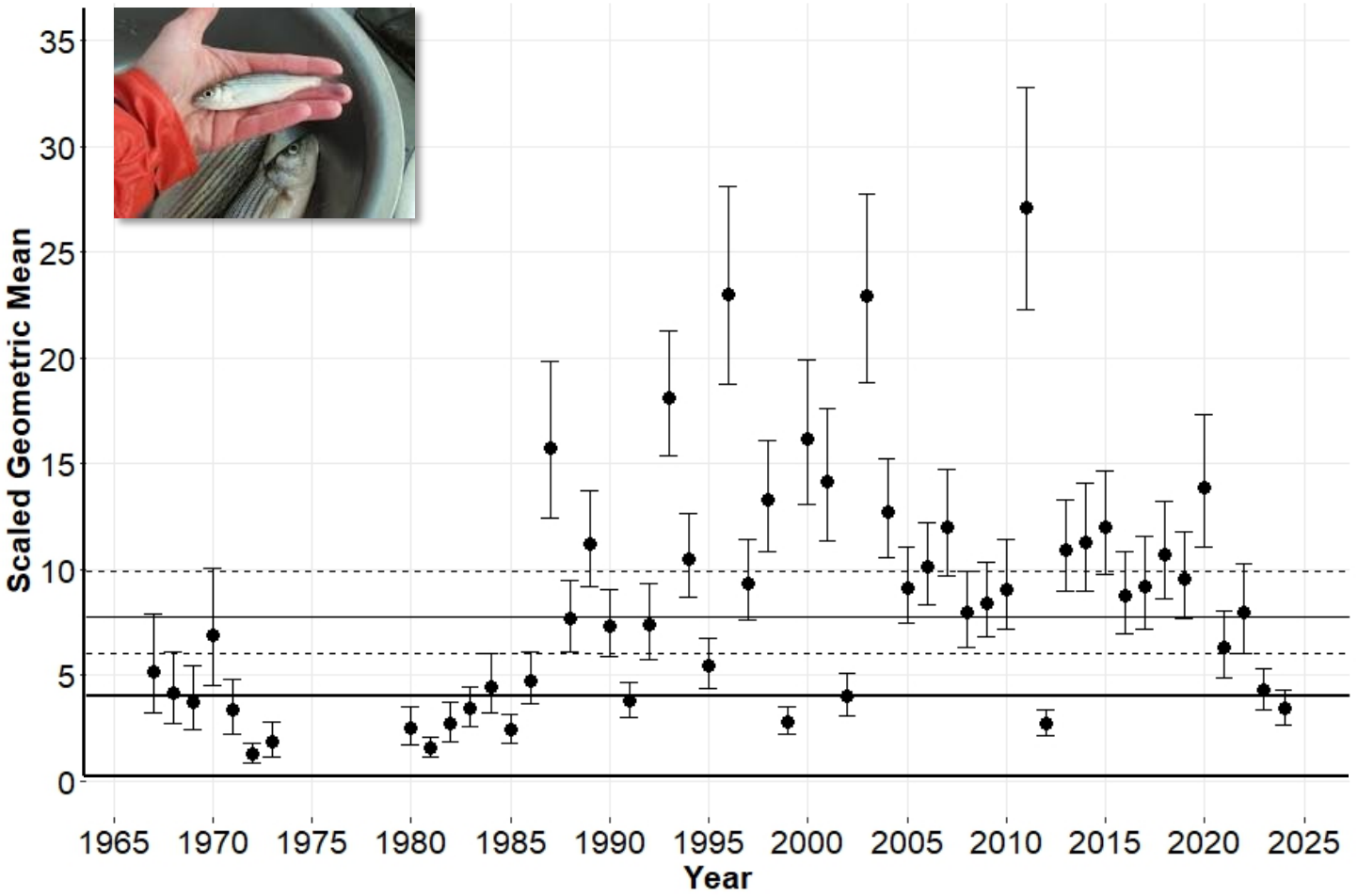
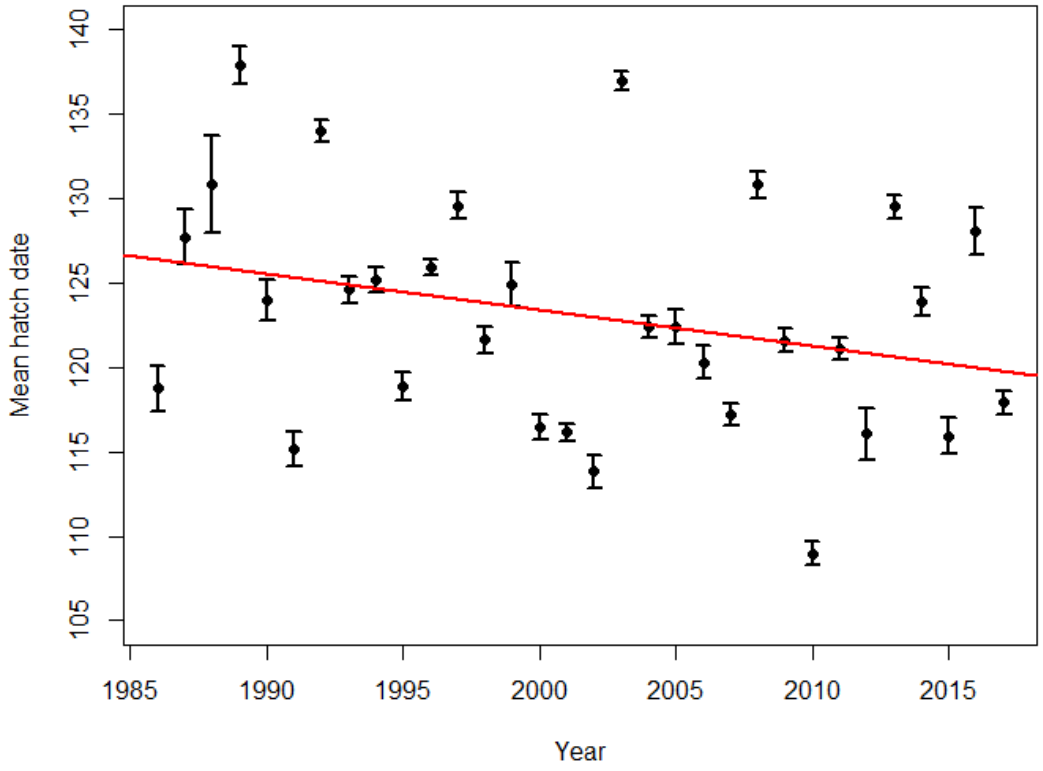


Figure 2. Scaled geometric mean of young-of-the-year Striped Bass in the primary nursery areas of Virginia (index stations) by year. Vertical bars are 95% confidence intervals as estimated by ± 2 standard errors of the mean. Horizontal lines indicate the arithmetic mean (thin solid), confidence intervals (dashed) and 1st quartile (thick solid) during the reference period from 1980-2009 (ASMFC 2010).

Juvenile Striped Bass Research

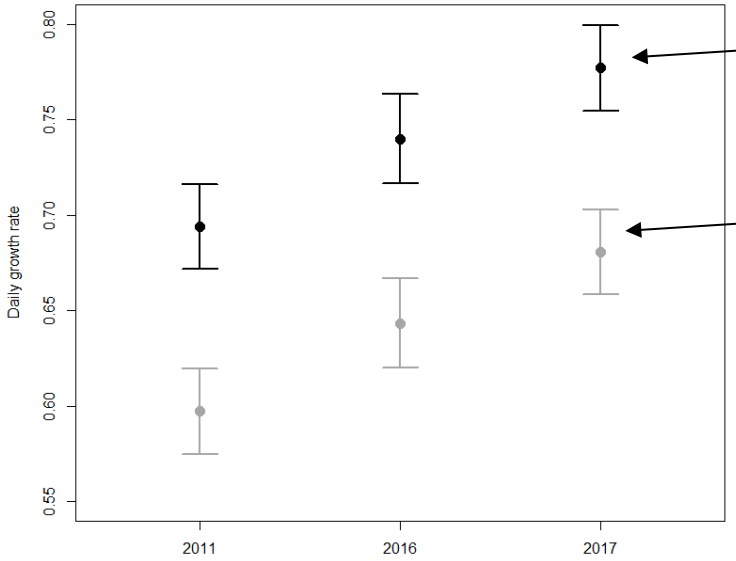
- A shift in hatch-date distributions in recent years (1996 – 2017) compared with historic years (pre-1995)



O. Phillips MS Thesis 2020

Juvenile Striped Bass Growth & Condition

Mean daily growth rates

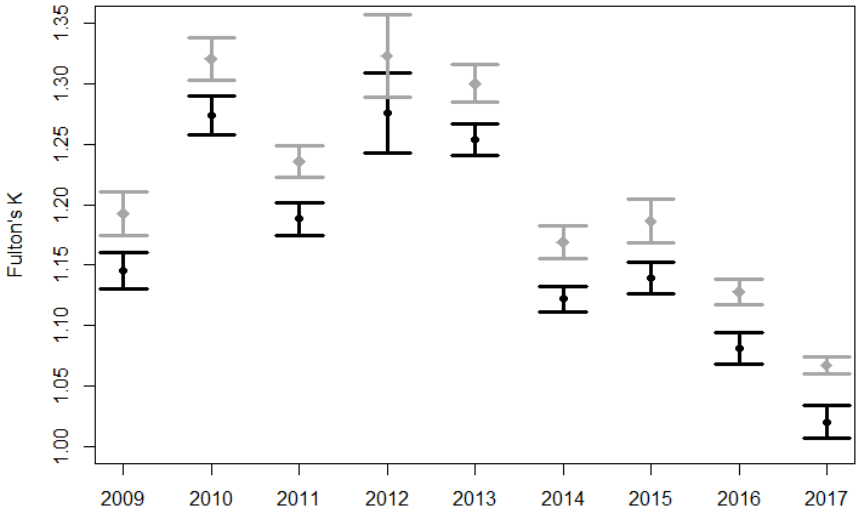


James River

Rappahannock River

2011 had the highest index of abundance suggesting density-dependent growth

Mean condition



O. Phillips MS Thesis 2020

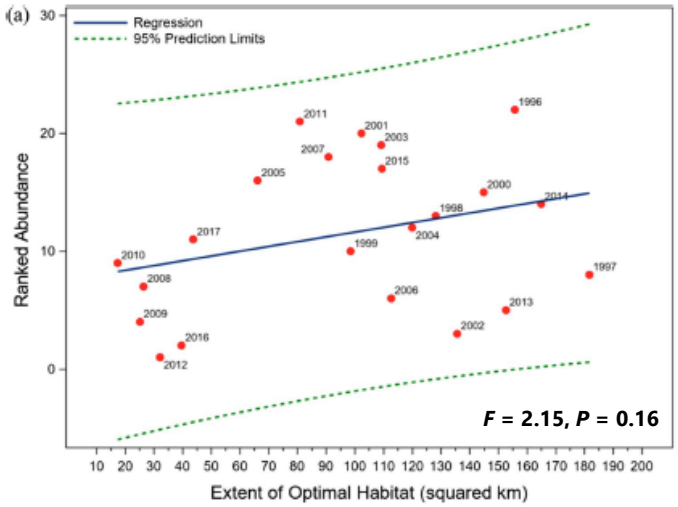
Juvenile Striped Bass Habitat Suitability

- Surface dissolved oxygen, and two current speed metrics explained 78% of the variation in abundance of age-0 SB in the VIMS and MDDNR seine surveys.
- Habitat suitability for age-0 striped bass varied throughout the summer and among years (1996 – 2017).
- Potomac, Nanticoke, and Pocomoke rivers consistently supported equivalent or higher suitable habitat compared with the mean from all of CB.

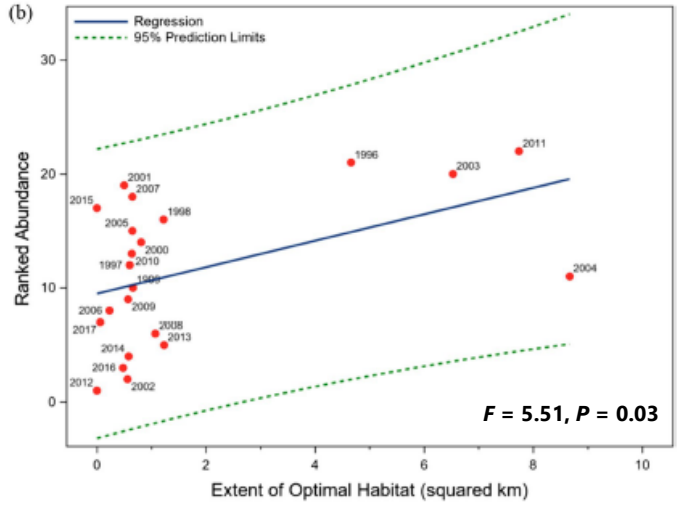
Dixon et al. 2024. Spatiotemporal variation in habitat suitability within a major producing area for age-0 Atlantic striped bass, *Morone saxatilis*

Juvenile Striped Bass Habitat Suitability

Early summer



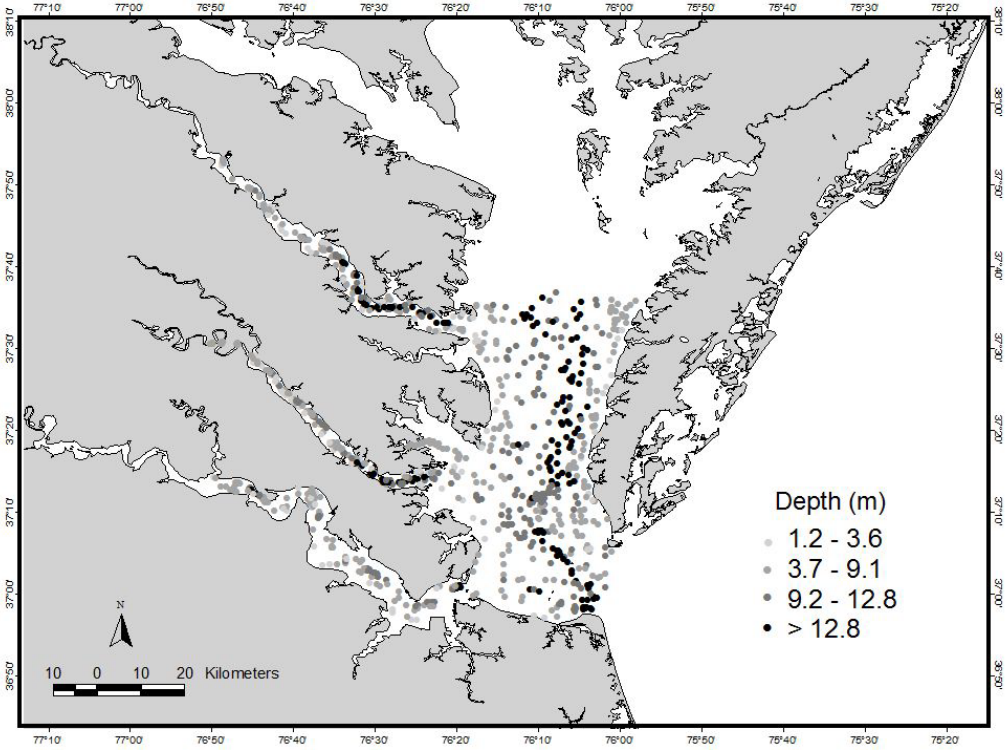
Late summer



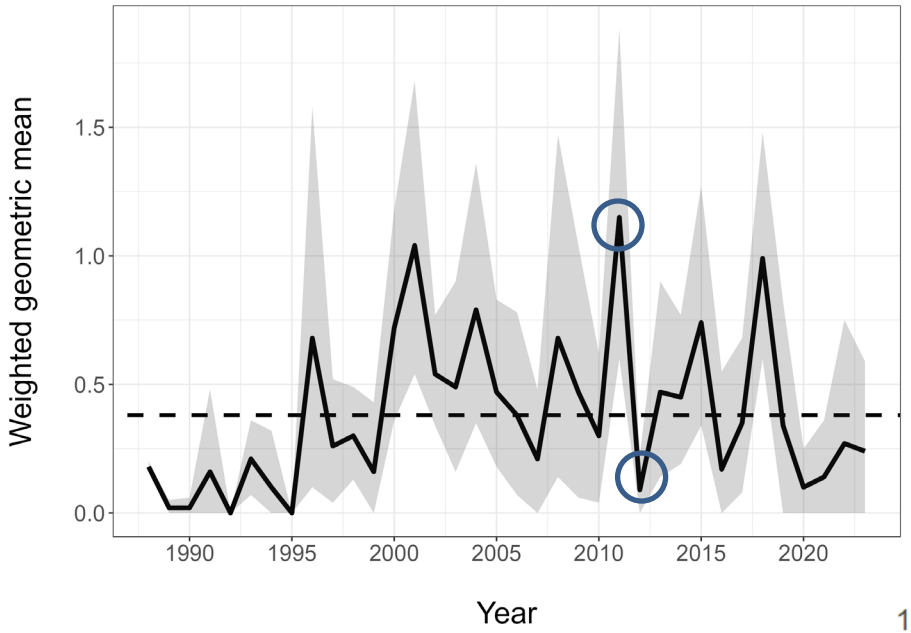
Dixon et al. 2024

Juvenile Finfish Trawl Survey

- Monthly sampling, stratified-random design
- 22 stations per river (James, York, Rappahannock)
- 45 stations in the Bay, not trawled in January or March
- 5-minute tows with 6.4-m Box trawl
  (12.8 mm mesh, 6.4 mm liner)
- Salinity, temperature, DO, Chl, pH, & turbidity recorded after each tow

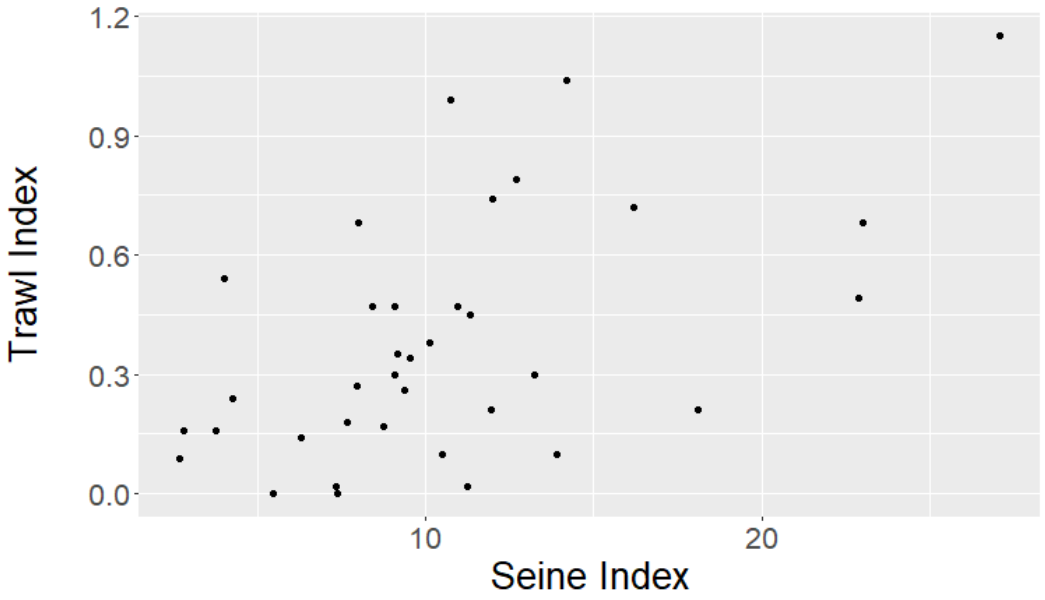


Juvenile Finfish Trawl Survey Index



Index months August – November. Concordance between the two juvenile SB surveys – strong 2011 year class and weak 2012 year class.

Seine & Trawl indices significantly correlated (*P* value < 0.001, Spearman's rho = 0.53)



Juvenile Striped Bass Condition Varies

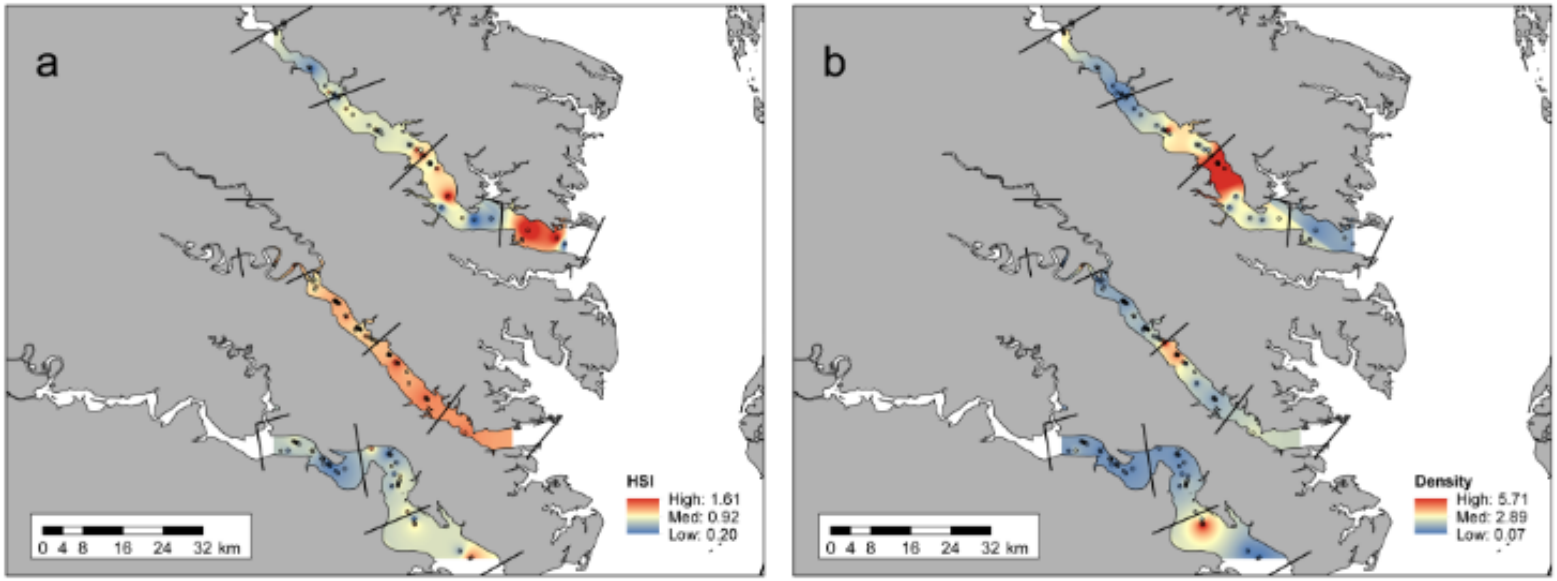
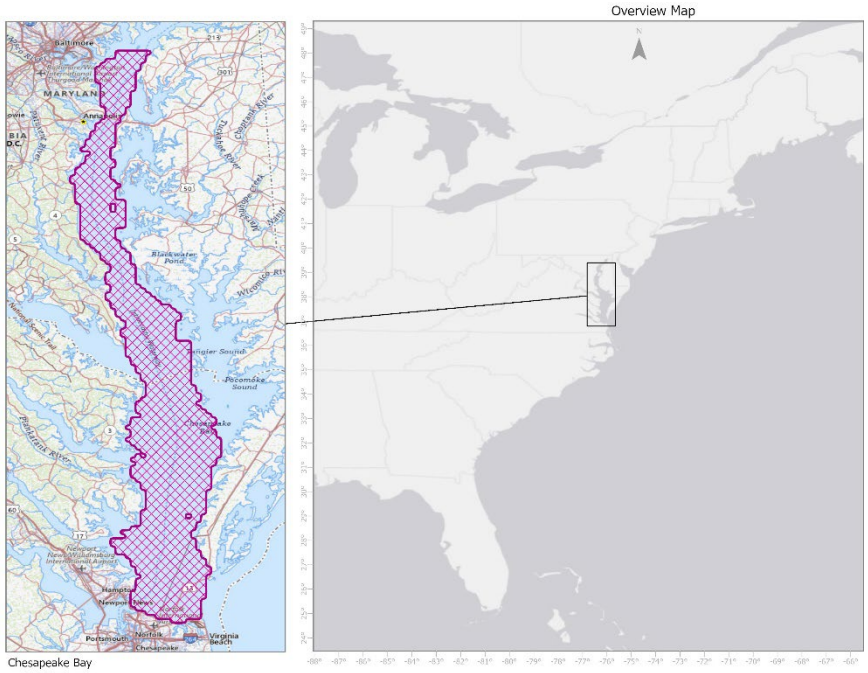


Fig. 4 Geographic patterns in log-transformed, time-adjusted hepatosomatic index (HSI) values (**a**) and density (individuals per 100 m^2; **b**) of juvenile striped bass from sampled sites (circles) between November and March (2010–2013). Red denotes high mean condition or density values, and blue denotes low mean values. Images were interpolated over neighborhood distances determined by the 'best' spatial weight matrices (Table 4). Juvenile striped bass were not collected from the Chesapeake Bay, Mobjack Bay, or the coastal lagoon during the time period examined

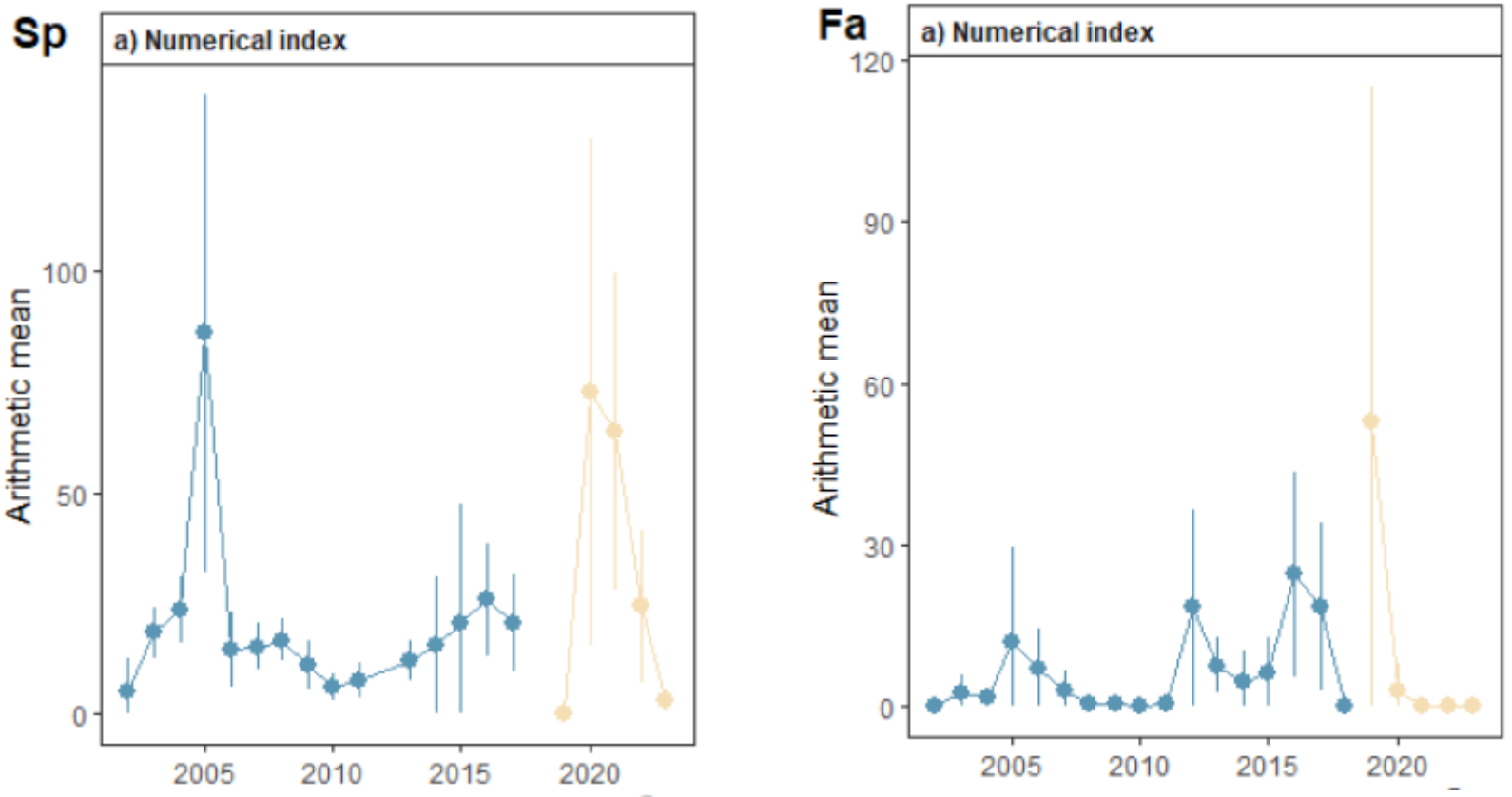
Schloesser and Fabrizio 2019. Nursery habitat quality assessed by the condition of juvenile fishes: Not all estuarine areas are equal

Chesapeake Bay Multispecies Monitoring & Assessment Program (ChesMMAP)

- Sampling occurs in March, June, September, and November
- Mainstem Chesapeake Bay
- Bottom trawl
- Catch is sorted
    - Striped bass
        - Length, weight, age (otolith, subsample scales)
        - Stomach contents
        - Mycobacteriosis (2003-2016: processed, 2024-ongoing: samples collected)
- Salinity, temperature, DO



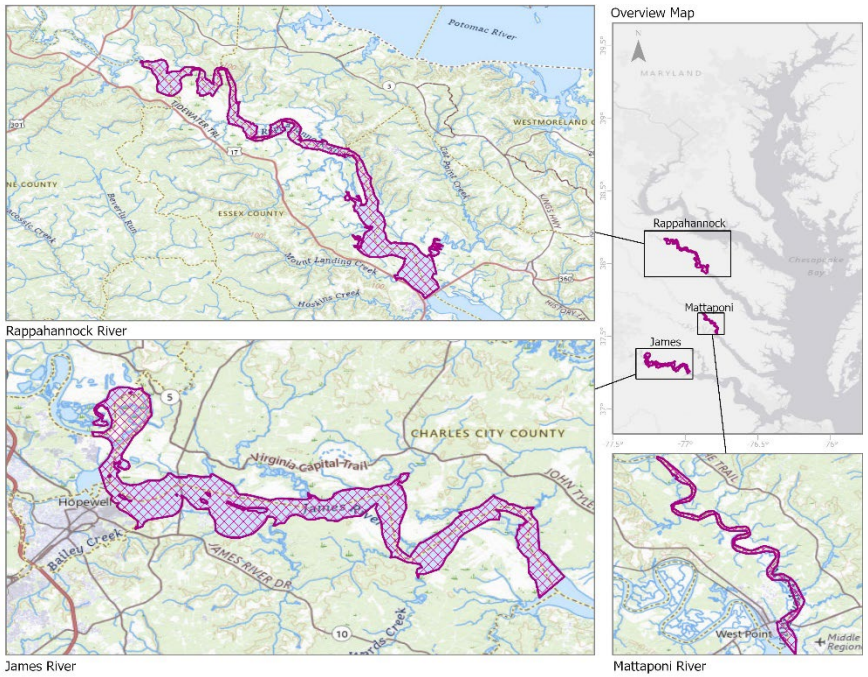
ChesMMAP Striped Bass index



Nominal indices of abundance for striped bass, by number, for all ages combined; Sp = spring (March) only and Fa = fall (November) only. The calibrated *R/V Bay Eagle* data are blue, while the *R/V Virginia* data are light yellow.

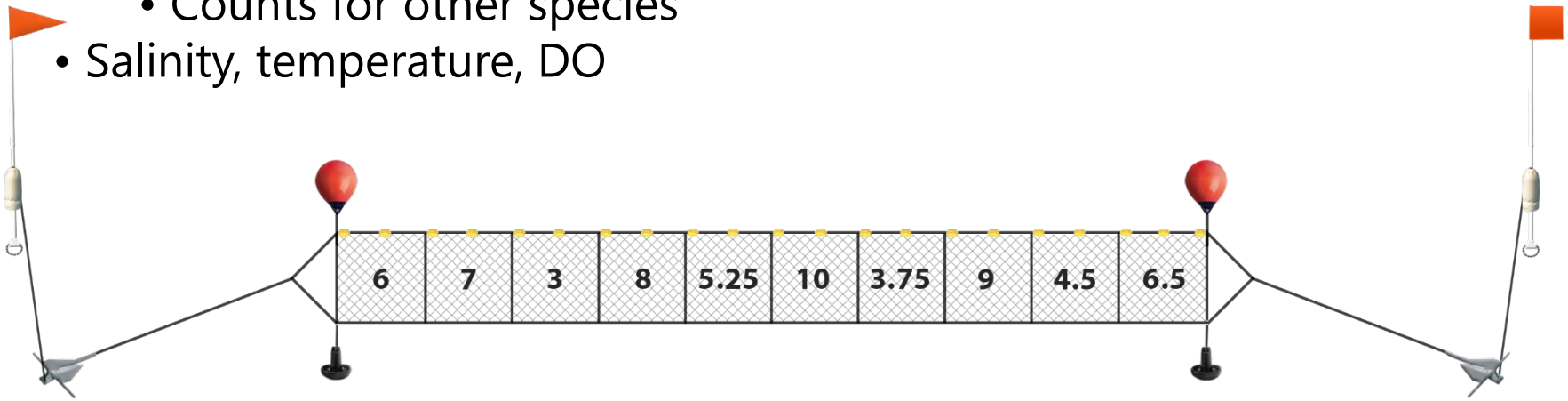
Striped Bass Tagging

- 1991-2017
  - Rappahannock River
  - Pound nets
    - fixed trap, non-size selective
    - historically used by commercial fishermen
    - Supplemented by multi-panel gill nets in the James and York rivers
    - 90.14 m x 3.05 m
  - 2018-present
    - Sampling occurs March – May
    - Electrofishing
    - James, Rappahannock, and Mattaponi rivers

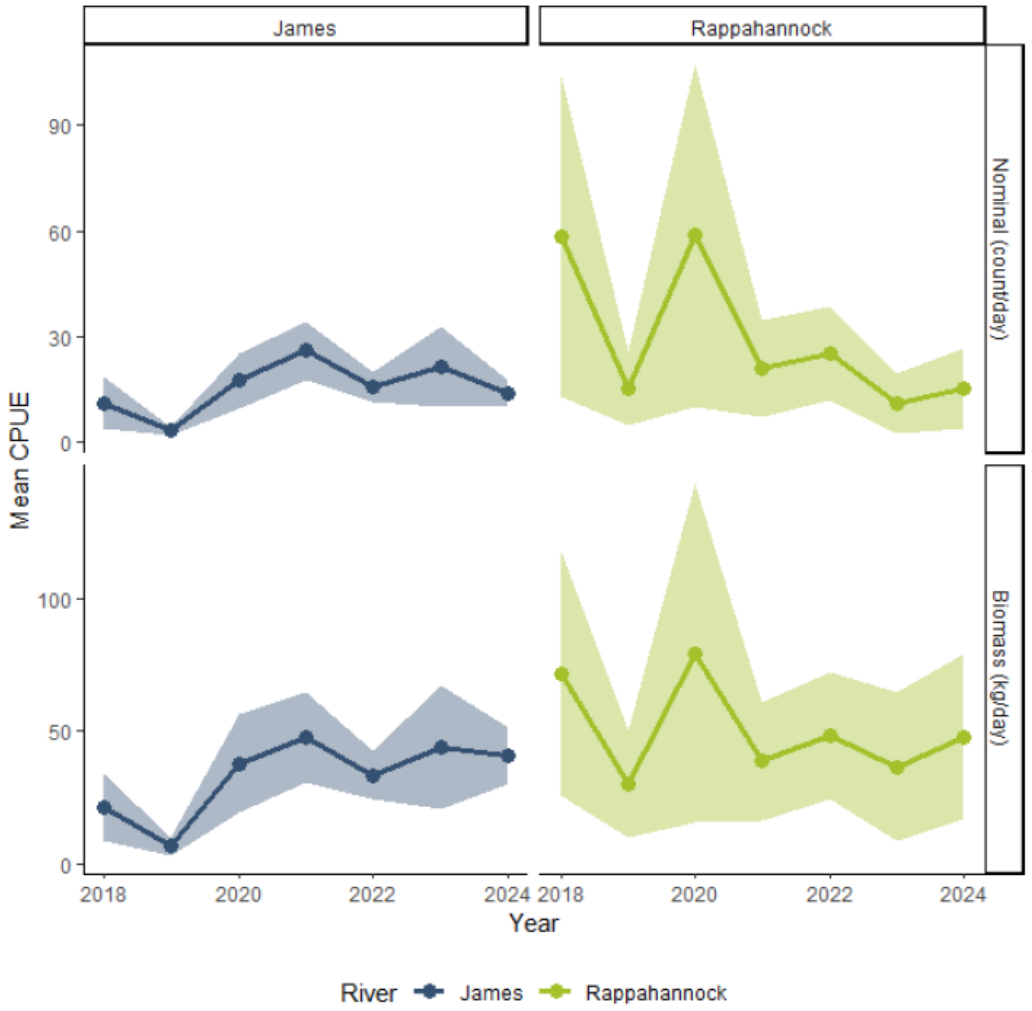


Striped Bass Gill Net Survey

- Sampling occurs weekly from mid-February-May
- Rappahannock and James rivers
- Multi-panel gill net
  - 10 panels, 7.62-25.40 cm
  - 90.14 m x 3.05 m
- Gear fished for ~24 hrs
- Catch is sorted
  - Striped bass
    - Length, weight, age (otolith, subsample scales)
  - Counts for other species
- Salinity, temperature, DO



Striped Bass Gill Net Survey



Catch per unit effort (CPUE, per 24 hours) by river, in count and biomass, with lower (LCL) and upper (UCL) confidence limits, 2018 - 2024. Note that sampling in 2020 was curtailed in late March due to COVID-19 restrictions.