Modeling Eastern Oyster Growth, Condition, and Ecosystem Services with *EcoOyster*

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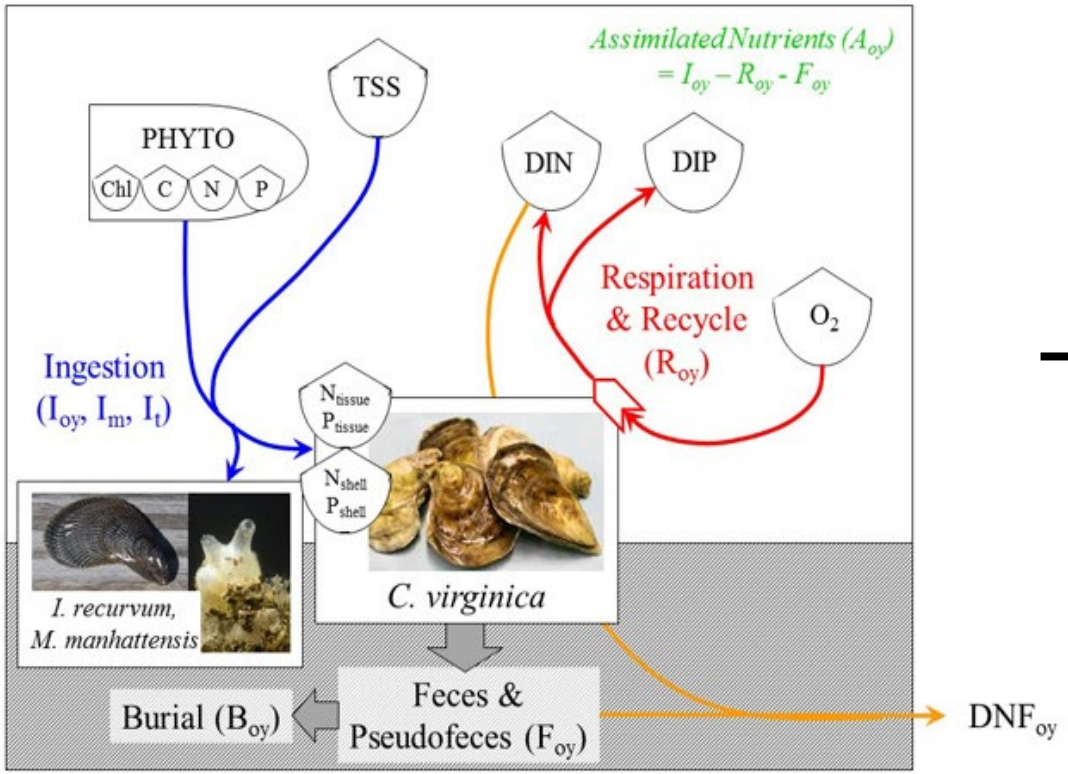
Virginia Institute of Marine Science

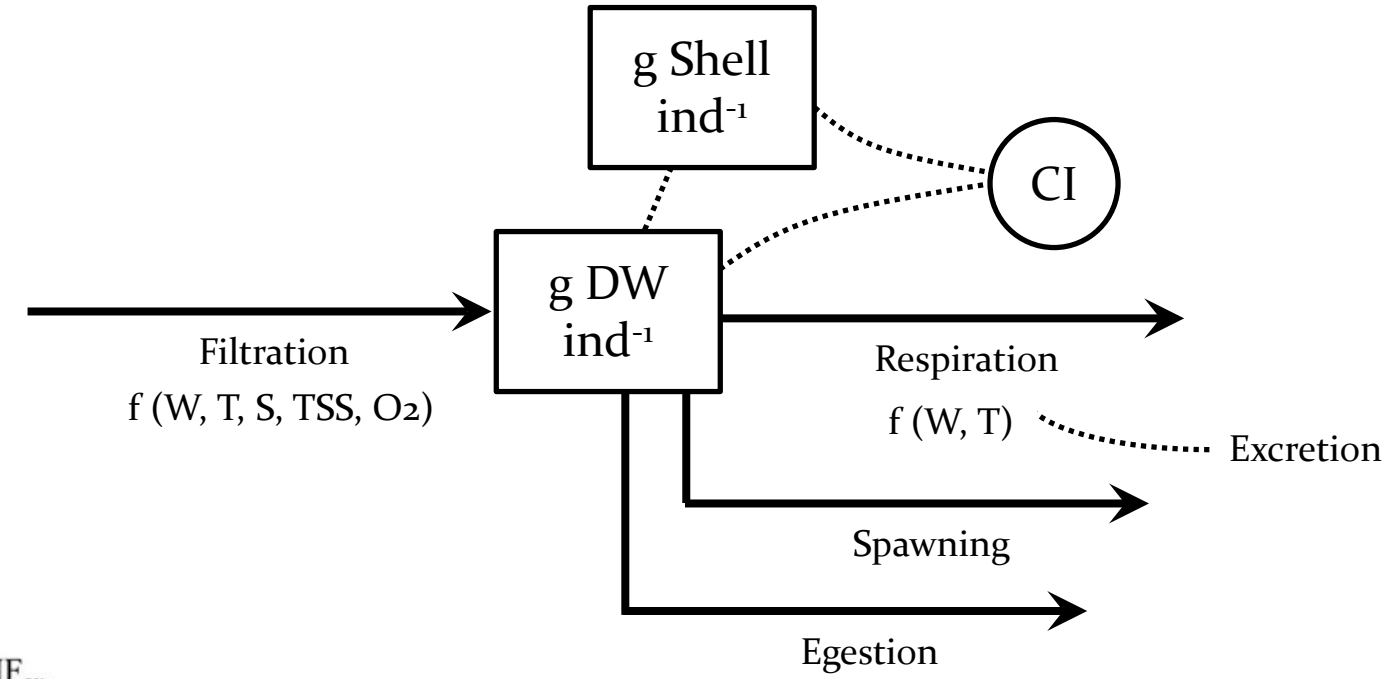
Sustainable Fisheries Summer Goal Team Meeting -
Winter 2022

VIMS | William & Mary
Virginia Institute of Marine Science

- NOAA OA Thresholds Project
- NOAA Regional Vulnerability Assessment Project

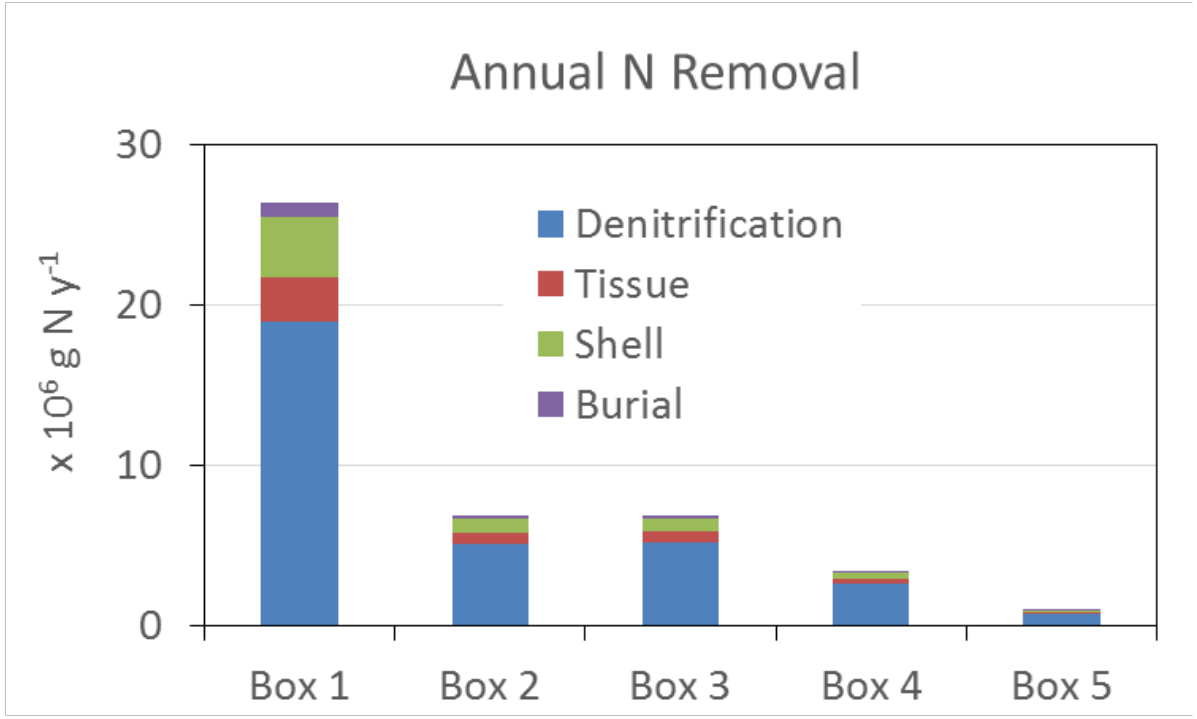
EcoOyster: A model of individual oyster growth …



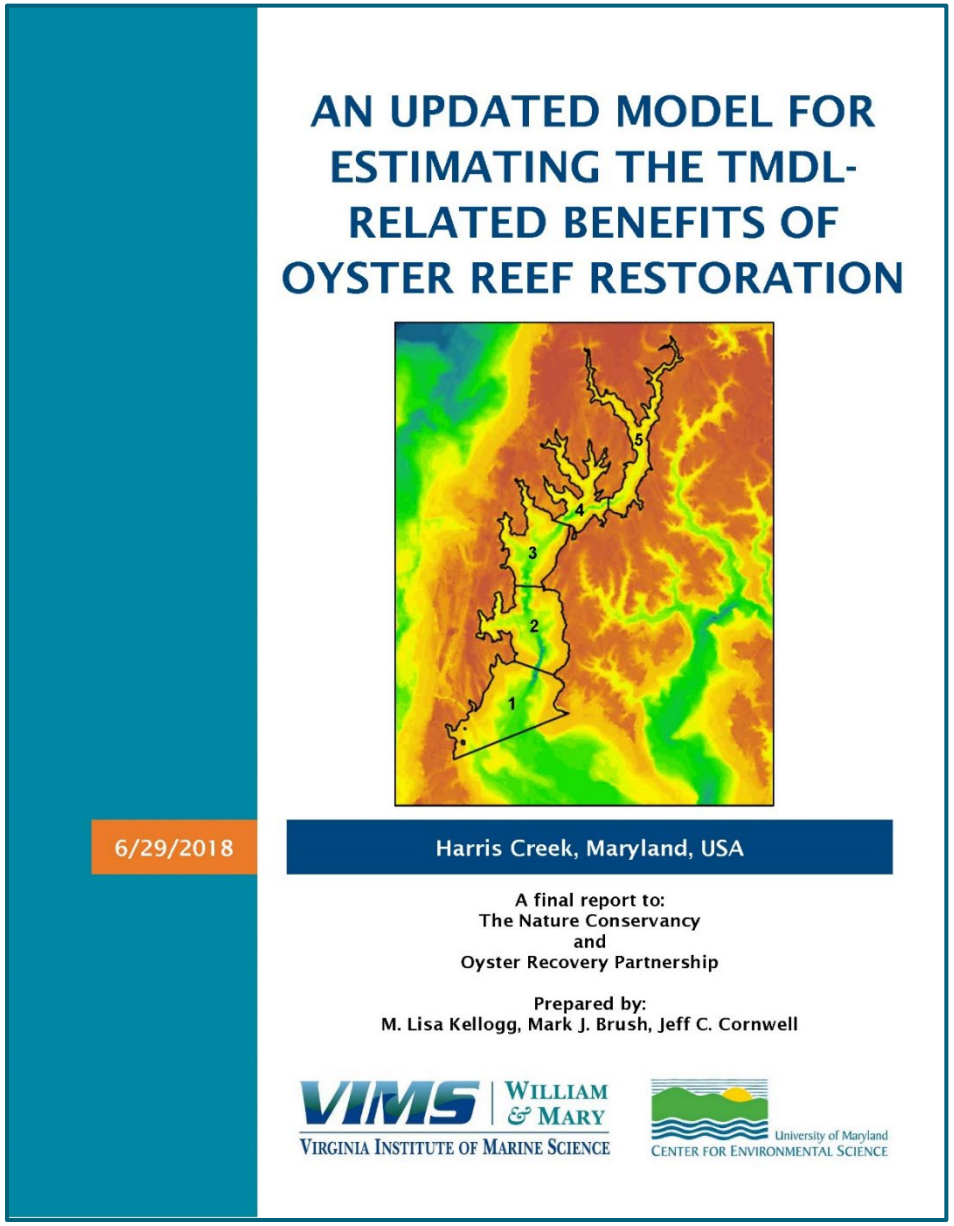


Kellogg et al. (2018); Brush & Kellogg (2018)

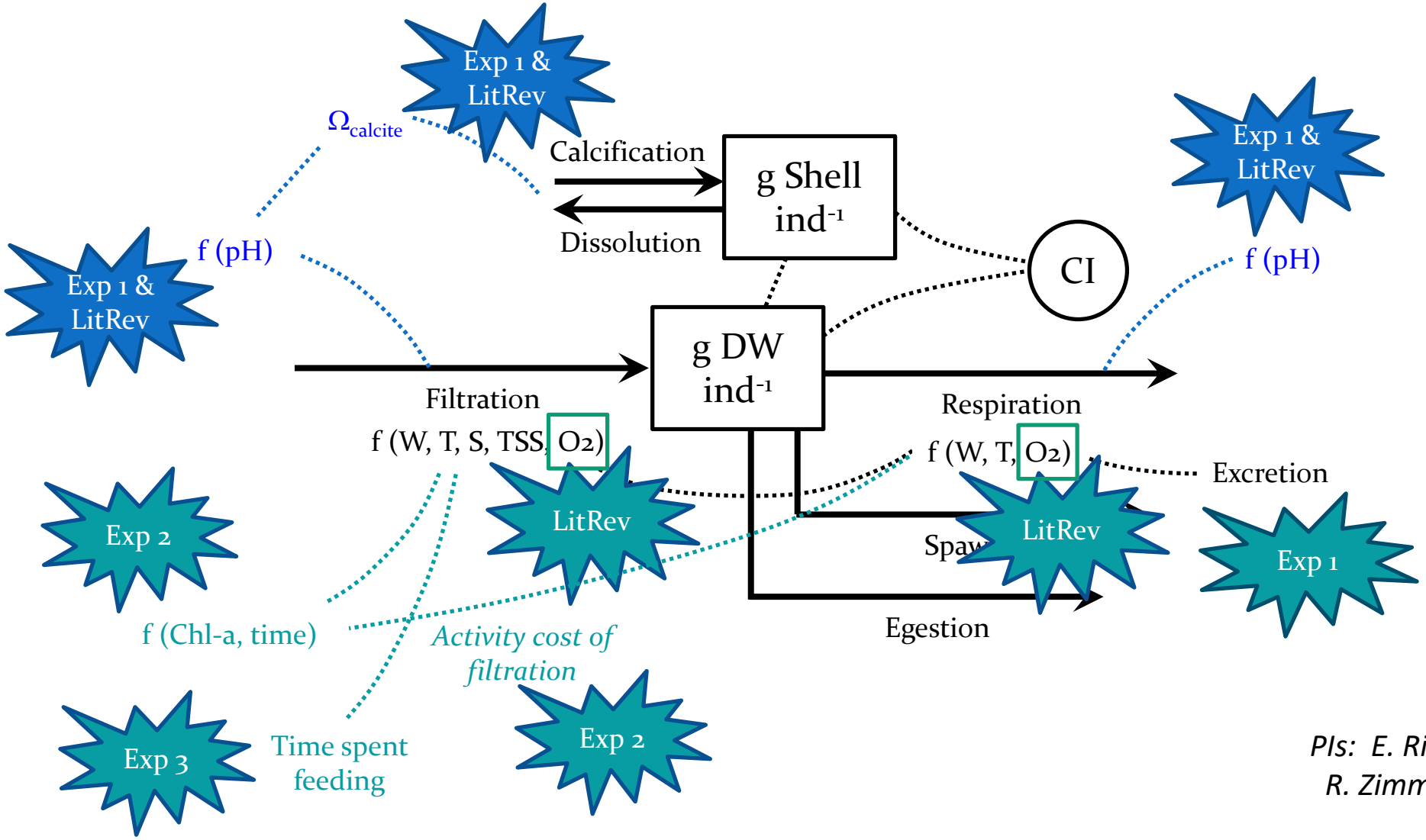
EcoOyster: … Coupled to an estuarine ecosystem model



Kellogg et al. (2018); Brush & Kellogg (2018)

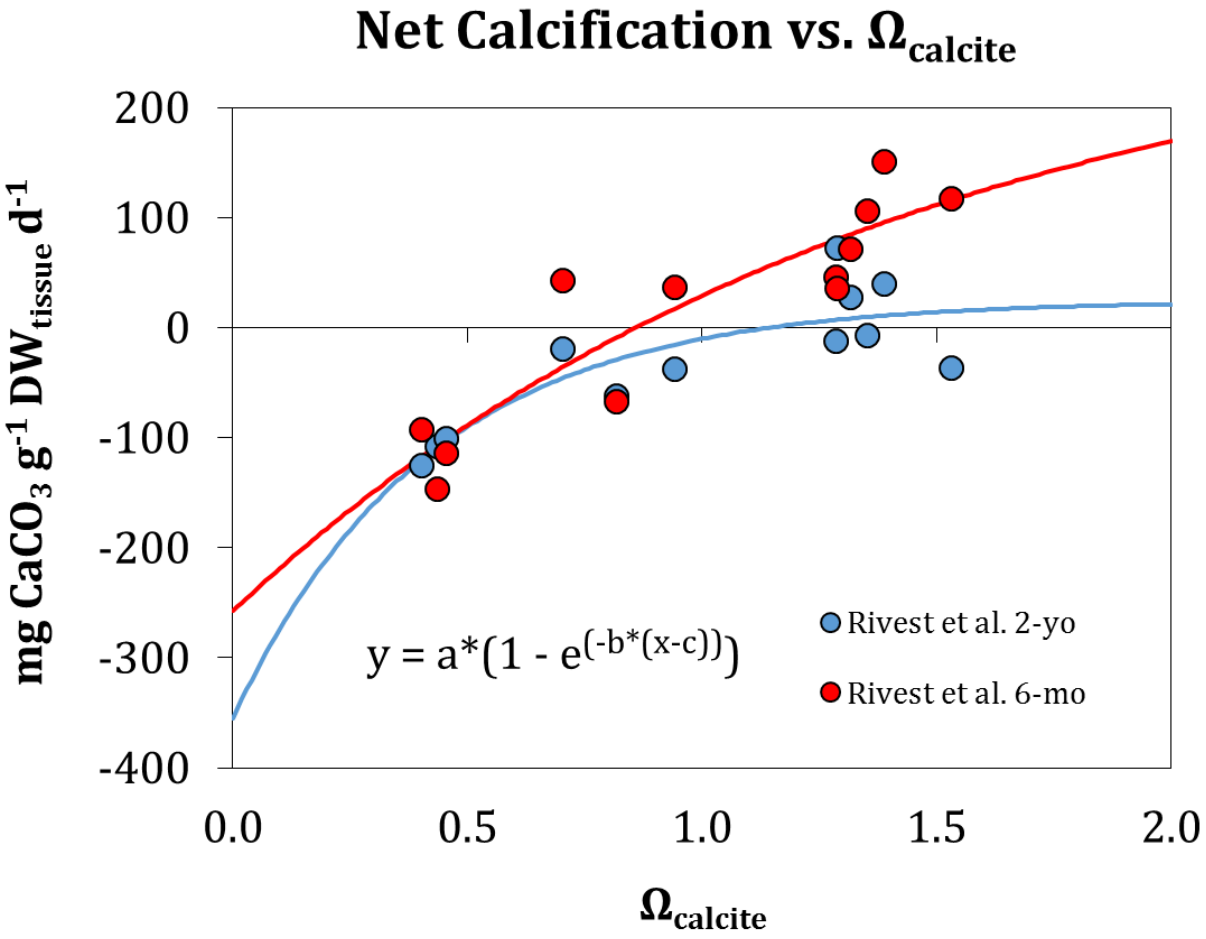


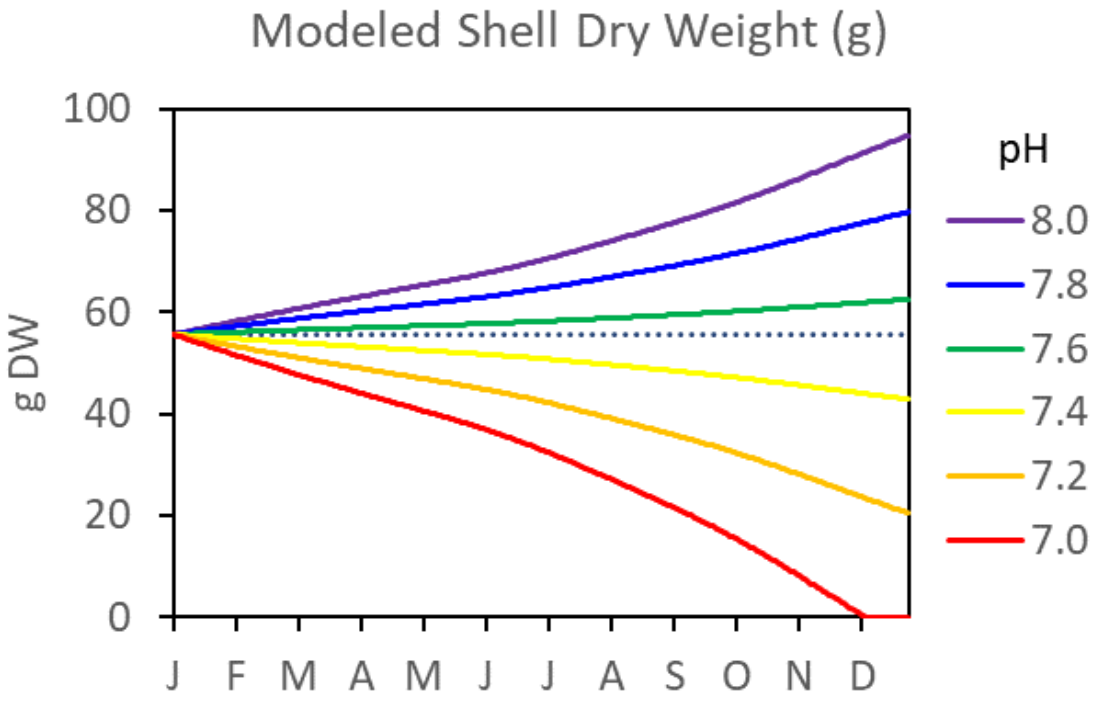
EcoOyster Expansion: NOAA OA Thresholds Project



PIs: E. Rivest, M. Brush, R. Zimmerman, V. Hill

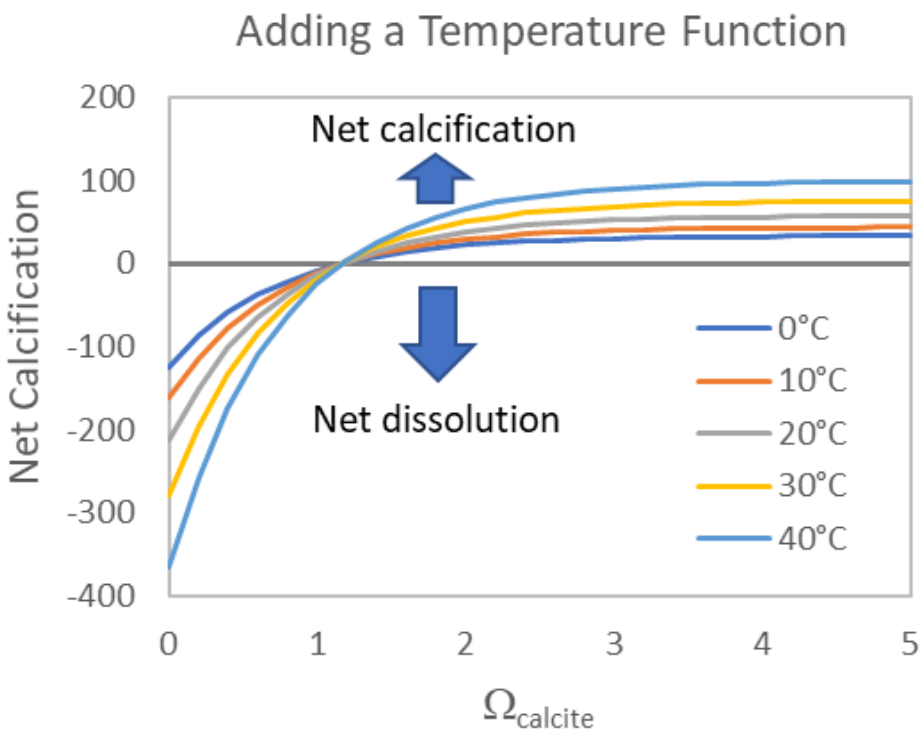
EcoOyster Expansion: Calcification



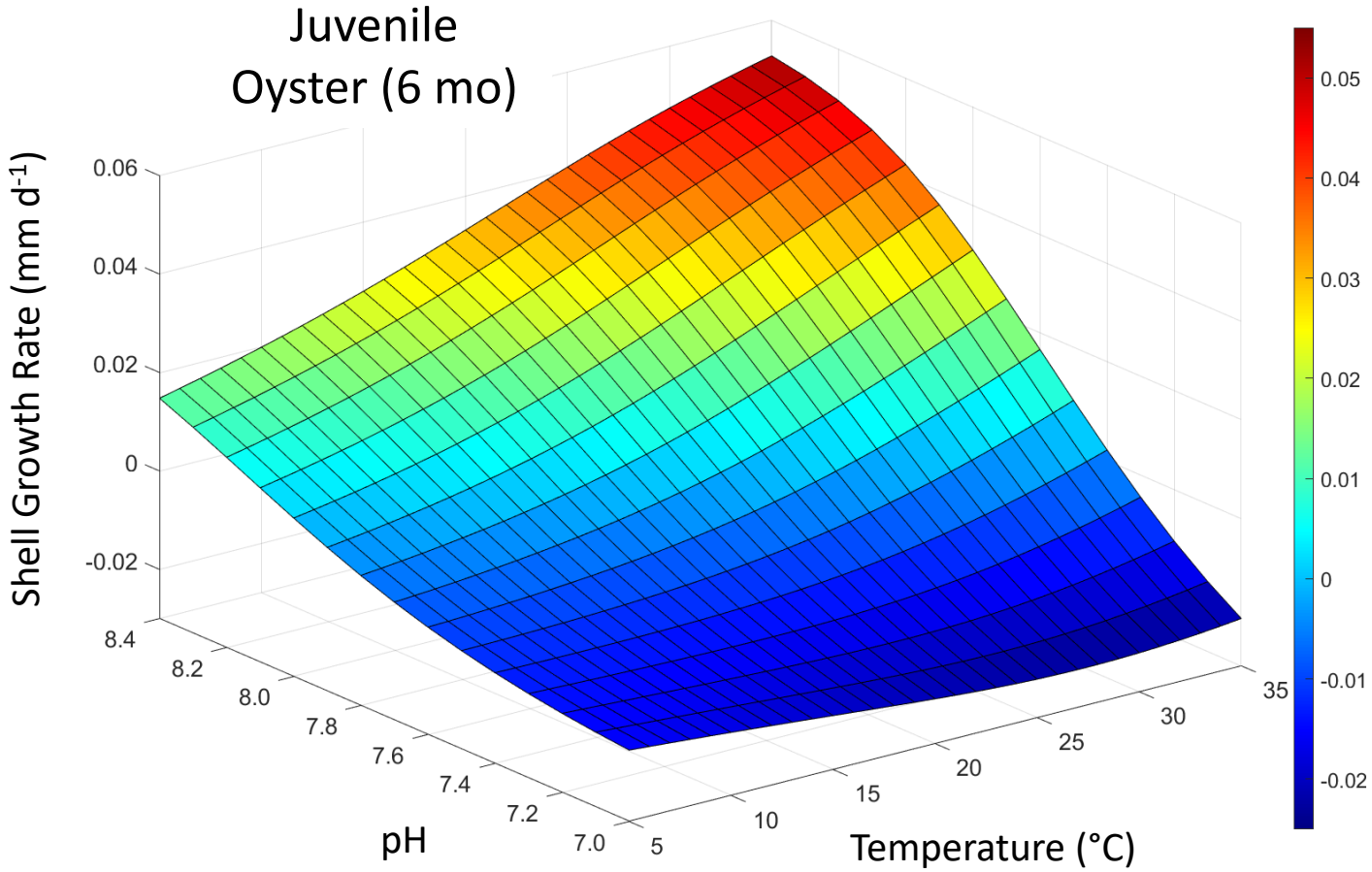


S. Blachman;
Rivest data

EcoOyster Expansion: Calcification

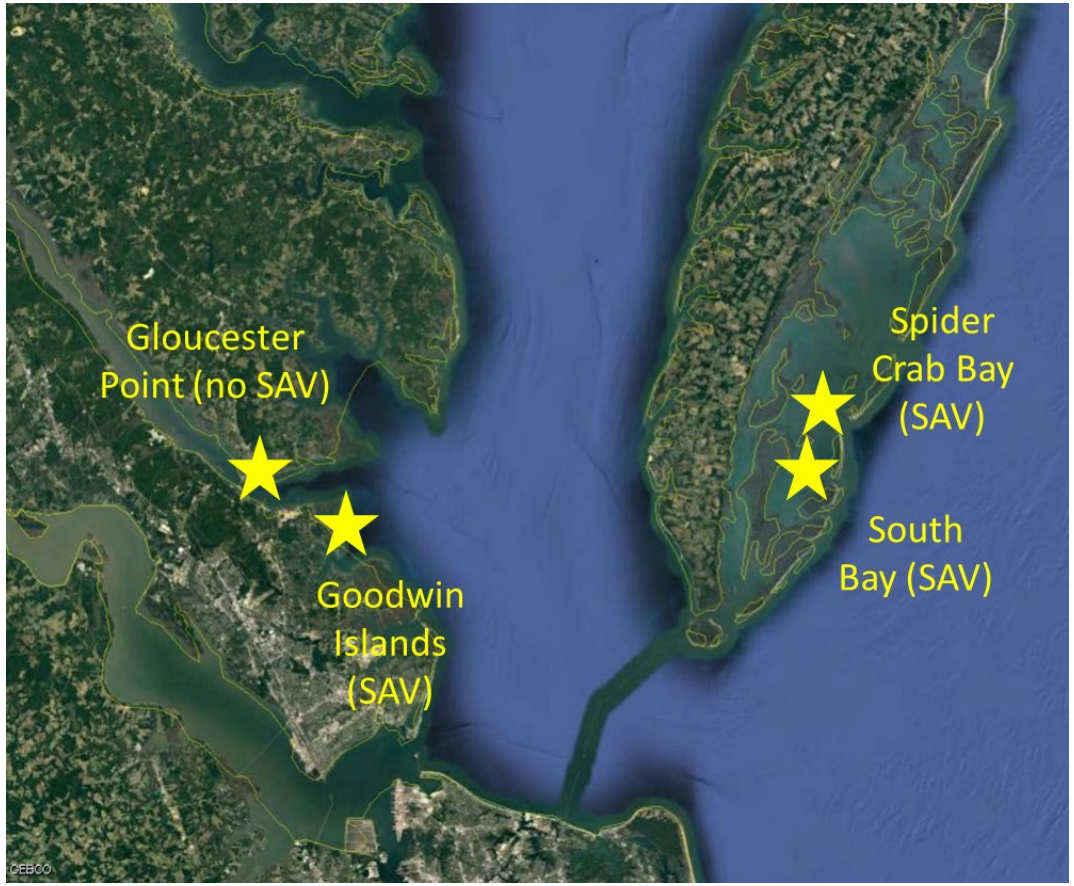


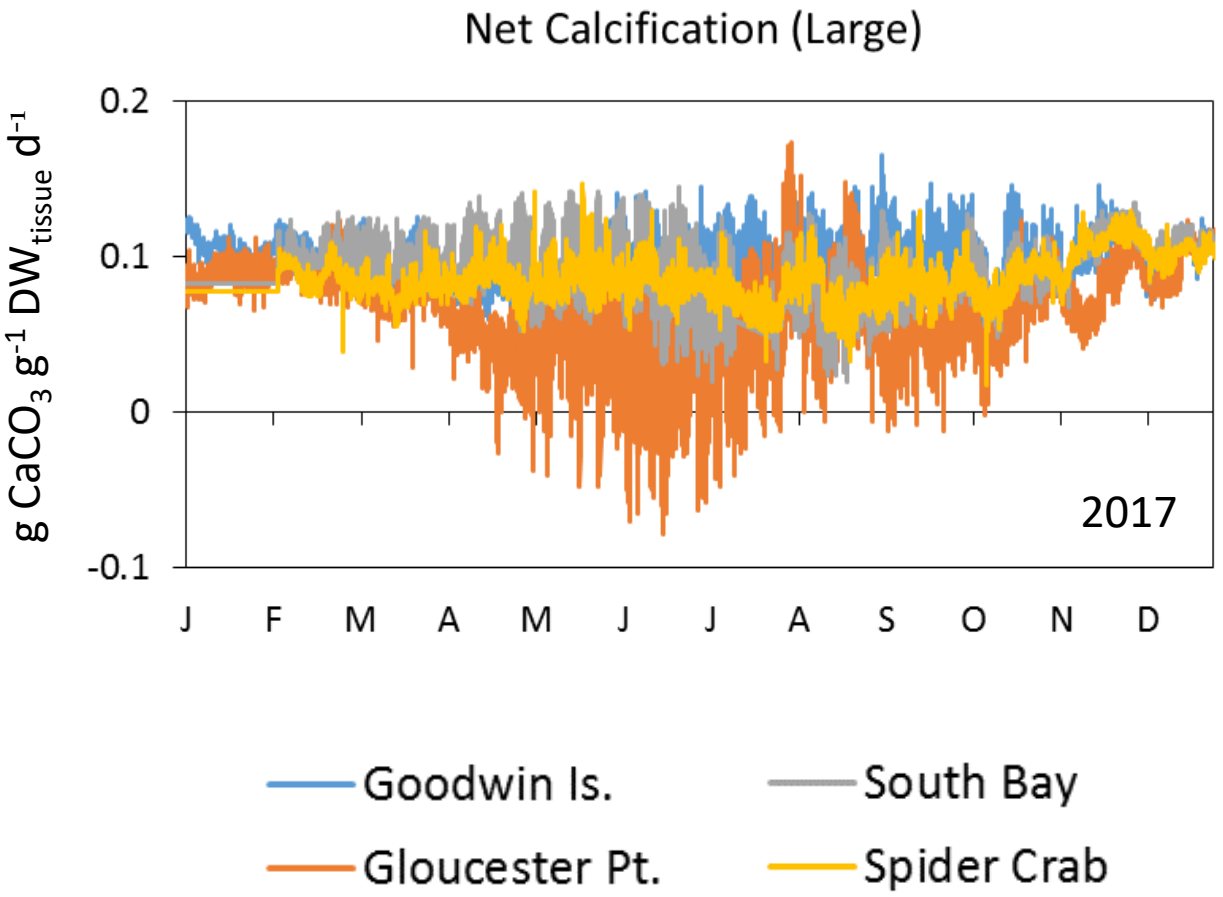
EcoOyster Simulation of Thresholds



S. Blachman

EcoOyster Application to Bay Time Series

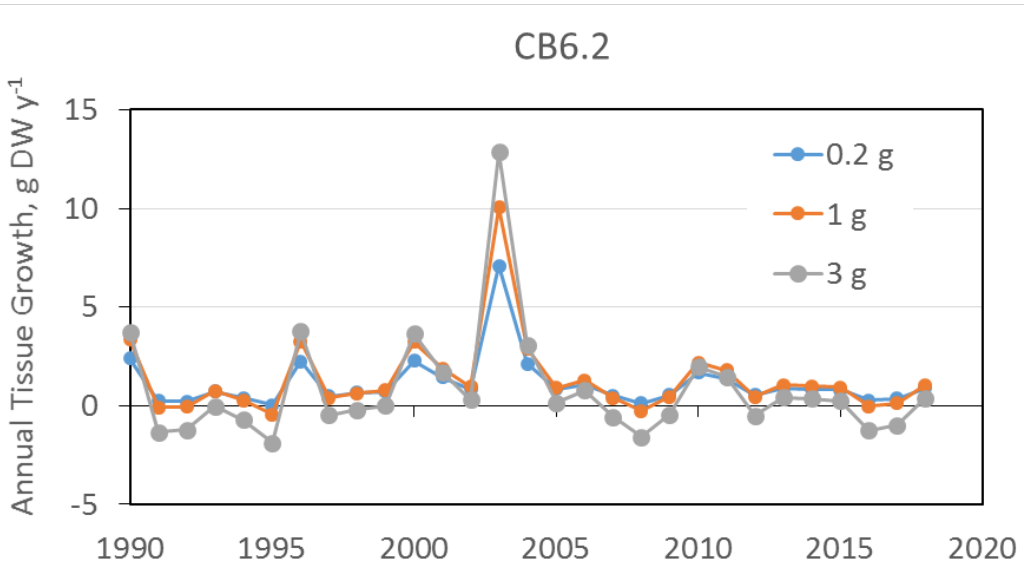


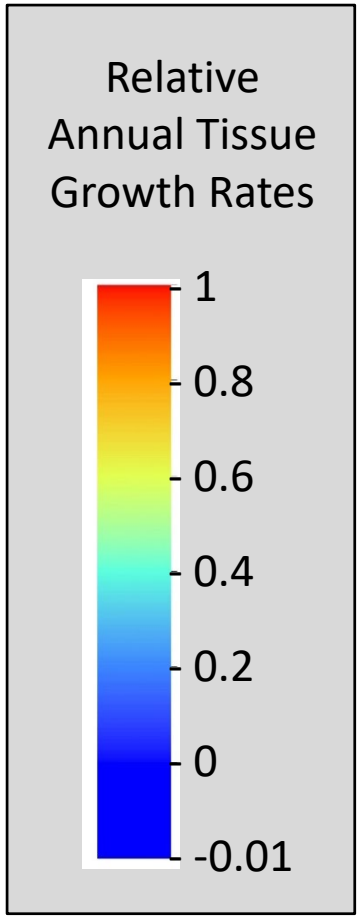


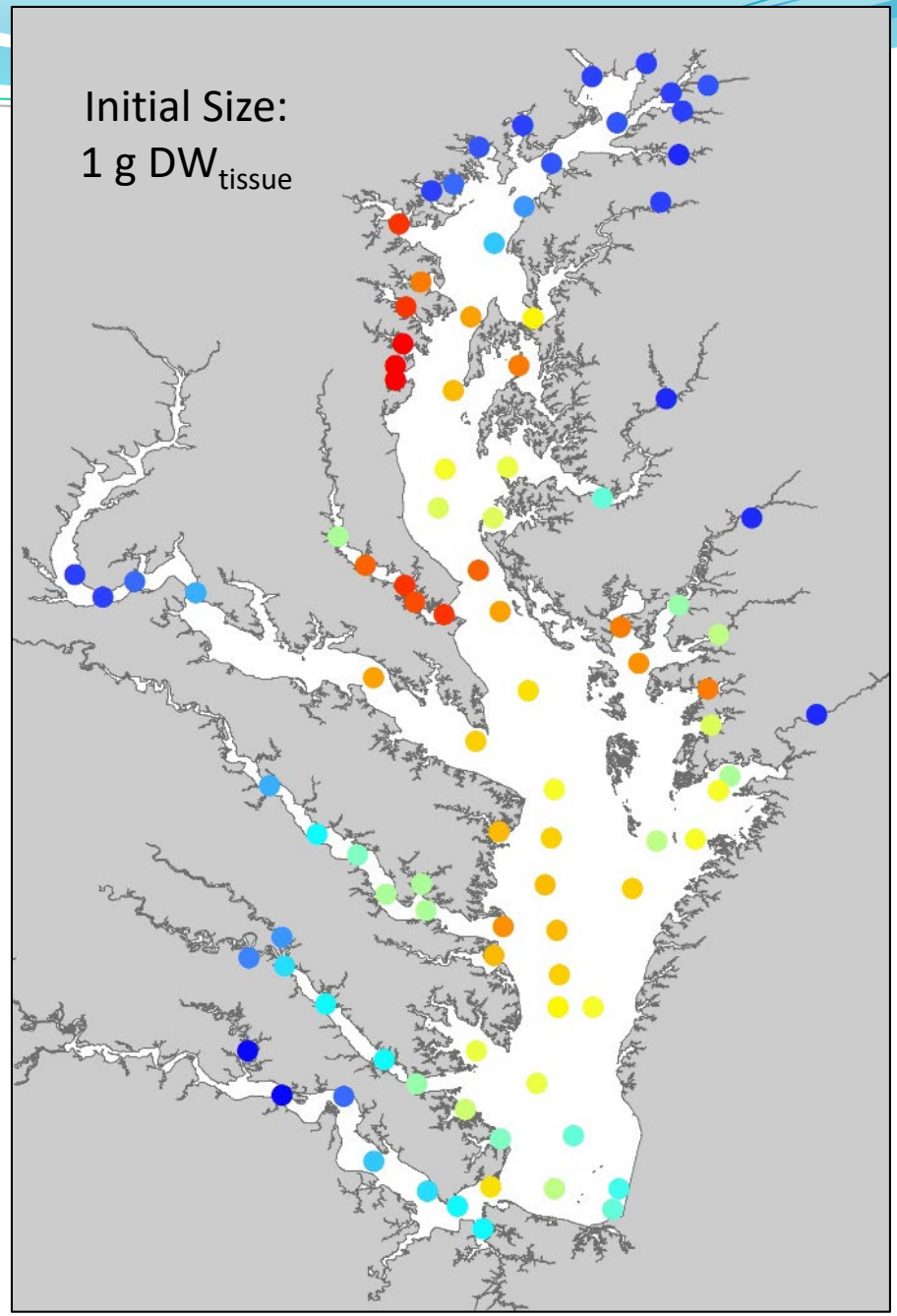
EcoOyster Application: Baywide Analysis

W&M Students: S. Chirico, M. Polito, & K. Sears

- 96 CBP monitoring stations
- *EcoOyster* forced with:
  - Annual average cycles
  - 1990-2018 time series

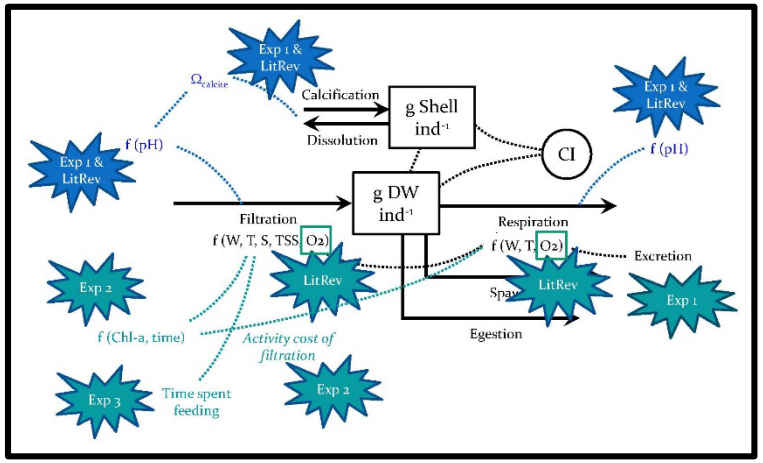


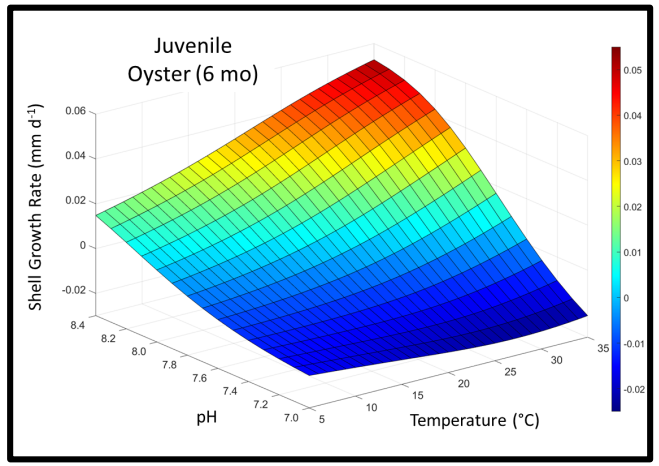


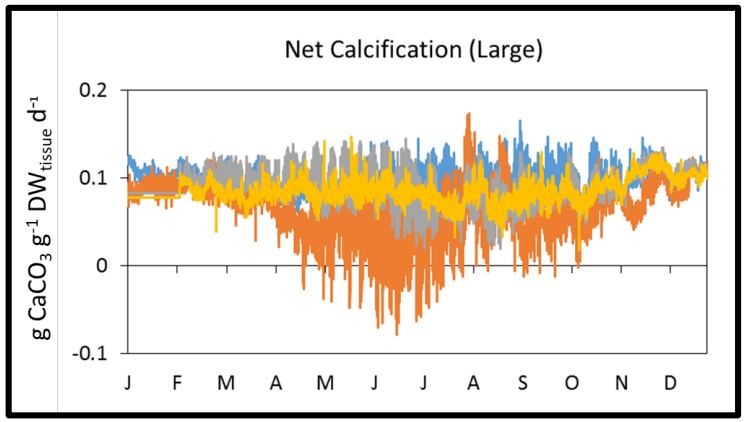


EcoOyster Ongoing and Future Directions

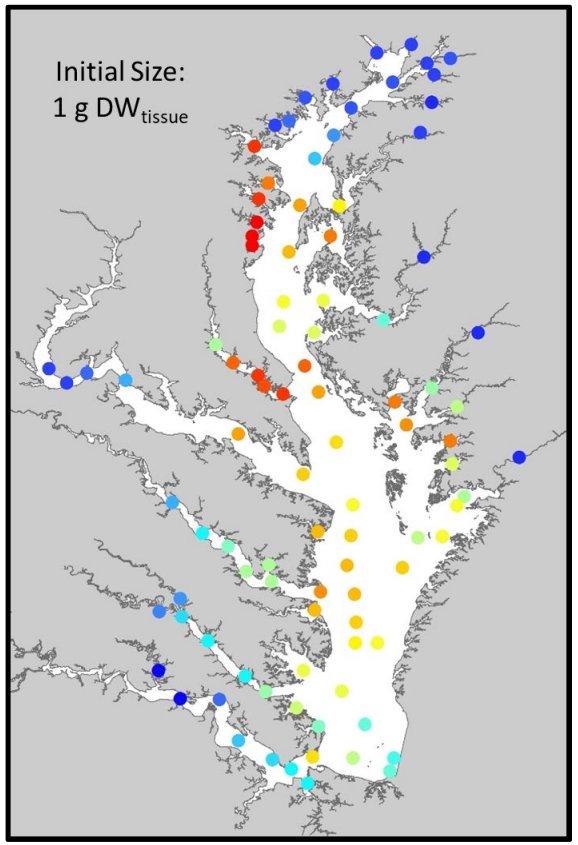
1. Simulation of Multiple Stressors and Identification of OA Thresholds





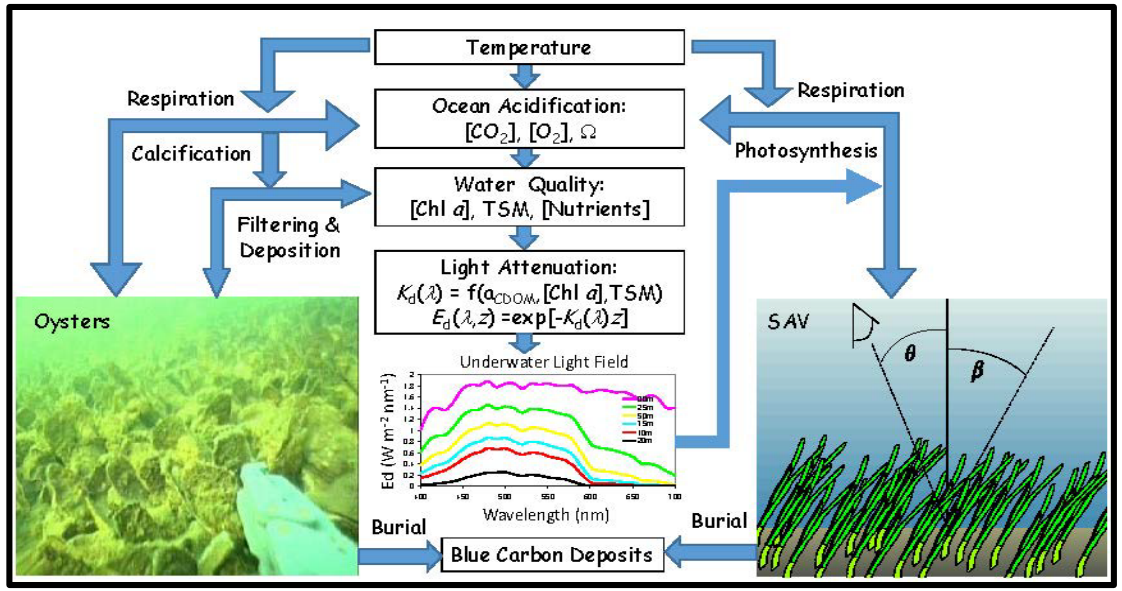


2. Calibration of Baywide Rates to Literature Data

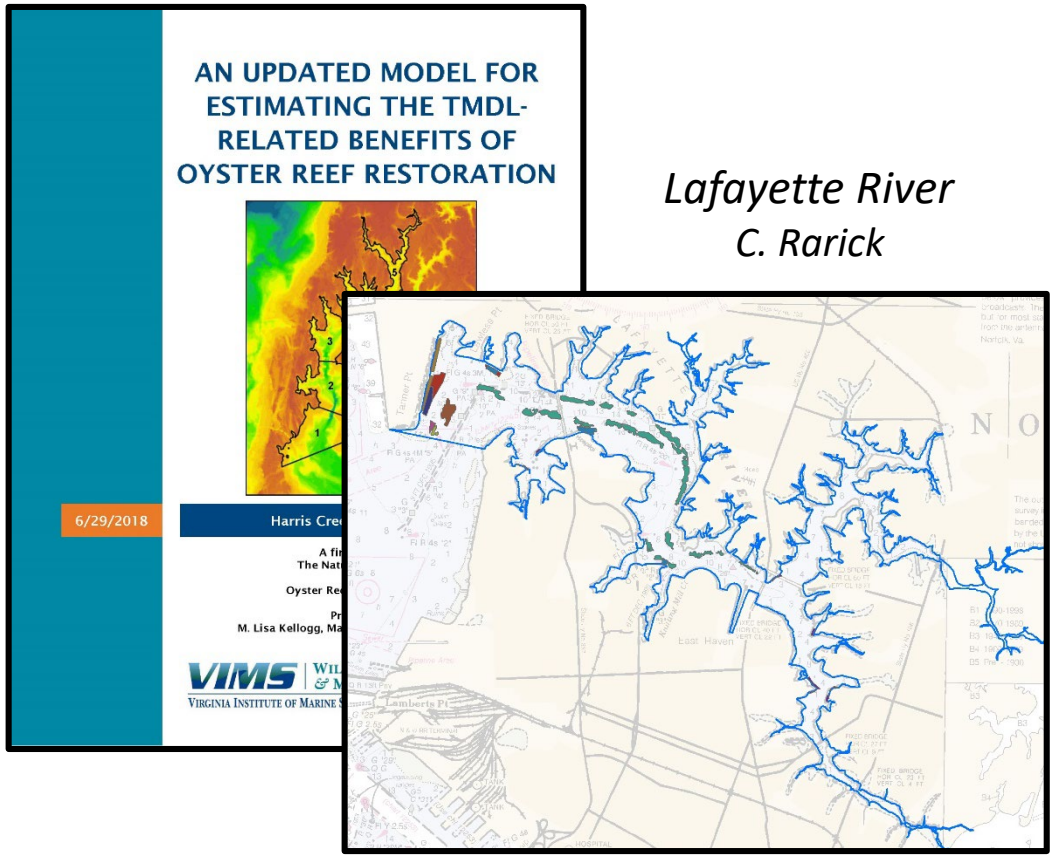


EcoOyster Ongoing and Future Directions

3. Coupling *EcoOyster* to the SAV Model *GrassLight*
   Potential for Co-Restoration?



4. Simulation of Tributary-Scale Restoration Benefits



Lafayette River
C. Rarick