The Southern California Bight Regional Marine Monitoring Program: A Collaborative Monitoring Program Assessing Human Impacts on Coastal Marine Habitats

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What is the Bight Program?

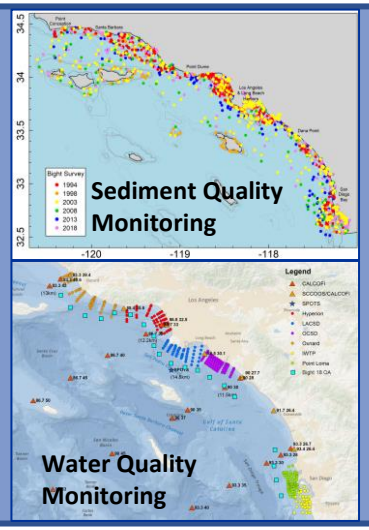
- Integrated, coordinated monitoring answering basic questions about environmental status and trends not captured any other way
- Started in 1994 and recurring every 5 years with over 100 participating agencies
- Five-year planning cycle keeps program fresh and focused on current management needs

Value of the Bight Program

- *Provides the consensus assessments no single agency could alone*
- *Standardizes methods and quality assurance allowing for comparison across programs*
- *Focuses on current management needs & documents success of management actions*
- *Opportunity to try new things outside of permit requirements, e.g., examining extent and magnitude of new stressors, developing new assessment tools, and exploring new habitats*

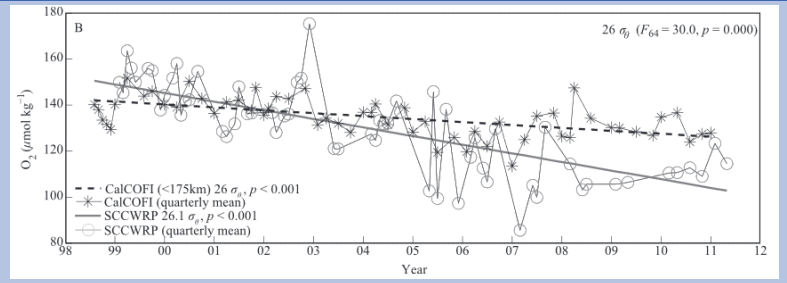
Collaborative Sediment and Water Quality Monitoring

- Assess human impacts on Bight coastal habitats using multiple lines of evidence:
- ***Sediment Quality:*** Toxicity, Sediment Chemistry, Benthic Infauna, Trawl Caught Fish and Invertebrates.
- ***Water Quality:*** nutrients, chlorophyll harmful algal blooms, dissolved oxygen, acidification (pH, total alkalinity, aragonite saturation state), beach water quality, contaminant bioaccumulation

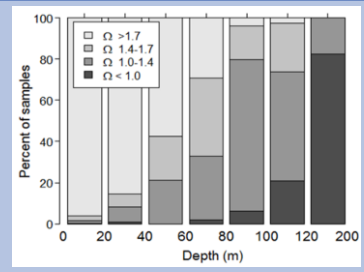


Tracking the Effects of Climate Change

- Monitoring to understand the trends, drivers and implications of deoxygenation and acidification

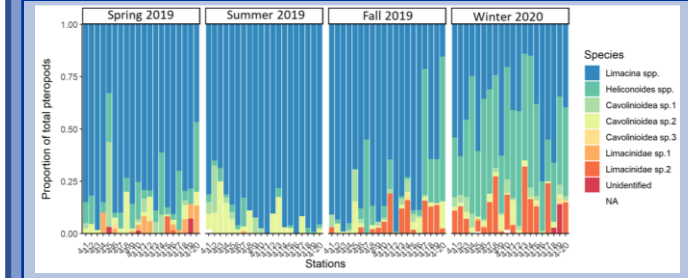


Mean dissolved oxygen in Bight nearshore (SCCWRP) and offshore (CALCOFI) waters has declined over time (Booth et al. 2014)

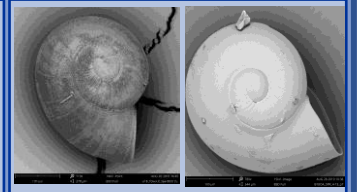


Aragonite saturation states in Bight coastal waters are below thresholds for larval oyster growth (1.7) and pteropod dissolution (1.4) and are frequently corrosive below 120 m (>1) (McLaughlin et al. 2018)

- Developing new indicators and metrics to assess impacts

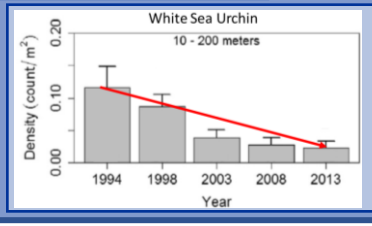


Pteropods are considered a "canary in the coal mine" for OA. Multiple Pteropod species are found region- wide (OA stations on Water Quality map at left)



Pteropod shell showing dissolution (left) and one without (right)

- DNA methods to track species distribution changes
- Examine trends in species impacts related to regional impacts of climate change



White Sea Urchin density has decreased over time, possibly related to increasingly acidified waters. Sato et al. 2017

Looking Ahead: Planning for Bight 2023 starts now!

- Standardization of climate change indicators and metrics across monitoring programs is needed for managerially relevant datasets.
- Join the planning process for the next Bight Program to help standardize methods, indicators and metrics to monitor changes in ocean condition across spatial and temporal scales.