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

Karen McLaughlin, Program Coordinator, Southern California Coastal Water Research Project, karenm@sccwrp.org

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:
  - Water Quality: nutrients, chlorophyll harmful algal blooms, dissolved oxygen, acidification (pH, total alkalinity, aragonite saturation state), beach water quality, contaminant bioaccumulation
  - Sediment Quality: Toxicity, Sediment Chemistry, Benthic Infauna, Trawl Caught Fish and Invertebrates.

Looking Ahead: Planning for Bight 2023 starts now!

- 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.

Tracking the Effects of Climate Change

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

Value of the Bight Program

- Developing new indicators and metrics to assess impacts
  - DNA methods to track species distribution changes
  - Examine trends in species impacts related to regional impacts of climate change

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)

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

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)