Item 4a

Informational Item
June 19, 2020

Update from Ocean Acidification and Hypoxia (OAH) Science Task Force

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SUMMARY: Through the passage of Assembly Bill 2139 (Williams) in 2016, the California Ocean Acidification and Hypoxia Science Task Force (Task Force) was established to ensure that Ocean Protection Council (OPC) decision-making and further action on the issue of OAH continue to be supported by the best available science. The Task Force is made up of eight interdisciplinary scientists and is convened and managed by the California Ocean Science Trust on behalf of OPC.

Recognizing that a firm scientific foundation is necessary for developing and assessing effectiveness of the State's OAH management strategy, OPC charged its Task Force with conducting a gaps analysis to determine how California's OAH monitoring efforts could be best enhanced to improve decision-making. California hosts a wealth of monitoring programs, however the myriad of different programs responsible for monitoring lead to inevitable disparities and unevenness that impede the ability to share, compare, and leverage OAH monitoring data. The Task Force focused primarily on monitoring needs for managing OA in accordance with the State of California OA Action Plan (Action Plan). Mirroring the Action Plan, monitoring needs for hypoxia were considered as it intersected with OA to reflect the frequent co-occurrence of these stressors.

The purpose of this informational item is to provide a summary of the Task Force's report and recommendations, which can guide next steps in OPC's investments and policy action to address the impacts of OAH on coastal and marine ecosystems, and advance Objective 1.2 (Minimize Causes and Impacts of Ocean Acidification and Hypoxia) of OPC's 2020 – 2025 Strategic Plan to Protect California's Coast and Ocean.

EXHIBITS:
Exhibit A: *Enhancing California's Ocean Acidification and Hypoxia Monitoring Network; Recommendations to the Ocean Protection Council from the California Ocean Acidification and Hypoxia Science Task Force*

TASK FORCE REPORT:

The goal of the gaps analysis is to help managers decide how to optimally direct limited monitoring resources. The report includes the process the Task Force took in evaluating and developing recommendations. The Task Force reached consensus on three priority monitoring recommendations and three additional key gaps in scientific knowledge and understanding that, if addressed, would further expand the capacity of OAH monitoring programs to generate managerially relevant, actionable, insightful data.

RECOMMENDATIONS:

The Task Force developed three primary monitoring recommendations:

- **Better connect chemical and biological monitoring**
  California hosts a wealth of ocean monitoring programs, but poor coordination between chemical and biological monitoring efforts limits managers' understanding of how marine life is affected by changing OAH exposure. Moreover, the lack of coordination limits ability to develop ecosystem-relevant OAH water quality criteria, which are critical elements of the OPC's 2020-2025 Strategic Plan and the Action Plan. Laboratory studies provide some of the necessary information, but criteria development may require additional field confirmation, which depends on having co-located chemical and biological measurements over a wide array of OAH exposure conditions.

- **Support continued improvement of OAH models as decision-support tools via additional monitoring data collection and model validation**
  Many key management decisions in the Action Plan will be based on the use of coupled physical-biogeochemical models that are validated with observations. They include identifying areas vulnerable to future OAH change, assessing the effectiveness of reducing local nutrient/carbon inputs, and determining the best locations to invest in habitat restoration efforts. OPC has invested heavily in the development of these models, and additional monitoring data on OAH parameters will help support ongoing model improvements.

- **Strengthen continuity of OAH monitoring programs across California's coastal environments**
  Several acidification chemistry monitoring programs of California's coastal waters struggle for consistent funding. This is problematic because OPC and the broader scientific community presently rely on this monitoring data to assess spatial and temporal receiving water and ecological trends. Moreover, monitoring efforts are uneven across the state, with areas north of Monterey Bay not nearly as well-covered as more southerly areas. To overcome these two fundamental weaknesses, several existing OAH programs should be prioritized for support, and additional resources should be invested to develop spatially and temporally representative data sets statewide.

This report includes actionable items for each recommendation, with emphasis on leveraged, cost-effective enhancements to the State's existing monitoring activities. The

Task Force also identified several gaps in scientific knowledge that, if addressed, would further expand the capacity of OAH monitoring programs to generate relevant managerial information.

NEXT STEPS:

- OPC staff will address Task Force recommendations through a Proposition 68 request for proposals developed to competitively solicit projects from the scientific community. Discretionary projects will be considered on a case by case basis.