

CALIFORNIA OCEAN PROTECTION COUNCIL

Staff Recommendation
October 17, 2016

Inventory of Ocean Acidification and Hypoxia Hotspots

Jenn Phillips, Program Manager

RECOMMENDED ACTION: Authorization to disburse up to \$75,000 to California Ocean Science Trust to conduct an inventory of ocean acidification and hypoxia (OAH) “hotspots” to target vulnerable species and ecosystems for management and policy action.

LOCATION: Statewide

STRATEGIC PLAN OBJECTIVE(S): Climate change and science-based decision-making

EXHIBITS

Exhibit A: Support Letters

FINDINGS AND RESOLUTION:

Staff recommends that the Ocean Protection Council (OPC) adopt the following findings: “Based on the accompanying staff report and attached exhibit(s), the Ocean Protection Council hereby finds that:

- 1) The proposed projects are consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act.
- 2) The proposed projects are consistent with the Ocean Protection Council's grant program funding guidelines (Interim Standards and Protocols, August 2013).
- 3) The proposed project is not a ‘legal project’ that triggers the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section 21068 and Title 14 of the California Code of Regulations, section 15378.”

Staff further recommends that the OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

“The California Ocean Protection Council hereby approves the disbursement of up to \$75,000 to California Ocean Science Trust to conduct an inventory of ocean acidification and hypoxia (OAH) “hotspots” to target vulnerable species and ecosystems for management and policy action.

This authorization is subject to the condition that prior to disbursement of funds, California Ocean Science Trust shall submit for the review and approval of the Executive Director of the OPC detailed work plans, schedules, staff requirements, budgets, and the names of any contractors intended to be used to complete the projects, as well as discrete deliverables that can be produced in intervals to ensure the projects are on target for successful completion. All projects will be developed under a shared understanding of process, management and delivery.”

PROJECT SUMMARY:

The overarching goal of this project is to conduct an inventory of ocean acidification and hypoxia (OAH) “hotspots” to target vulnerable species and ecosystems for management and policy action.

Background

Ocean acidification and hypoxia (OAH) along the coast of California (and West Coast at large) are being driven by a confluence of conditions that will create increasingly severe impacts over the foreseeable future. To help managers target when and where species and ecosystems are vulnerable, the West Coast Ocean Acidification and Hypoxia Science Panel in its “Major Findings, Recommendations, and Actions”¹ called for a series of inventories to identify ocean acidification and hypoxia (OAH) “hotspots” along our coast. Hotspots are locations where physical oceanographic changes are anticipated to be most severe and/or locations that are particularly vulnerable as a result of a range of factors including sensitive habitats and species. In particular, the Panel calls for an inventory of:

- areas where local pollutant inputs are likely to exacerbate OA (Action 1.1);
- locations where conservation or restoration of aquatic vegetated habitats can be successfully applied to mitigate OA (Action 2.2); and
- where protected areas and areas vulnerable to OAH may be co-located (Action 5.1).

Focusing on these OAH hotspots, managers can then identify risks to key ecosystem services highly valued by communities along our coast (such as water quality, shellfish aquaculture, recreational and commercial fisheries, and recreation and tourism, among others), and focus management actions to efficiently and effectively address OAH impacts.

Objectives

- A strong body of work among the NGO, academic, research and policy communities has been initiated to identify and map these areas, but current efforts are dispersed across

¹ <http://westcoastoah.org/wp-content/uploads/2016/04/OAH-Panel-Key-Findings-Recommendations-and-Actions-4.4.16-FINAL.pdf>

multiple groups and institutions. What is needed now is a synthesis to visualize data and information in a user-friendly way, ensure it is useable by state decision-makers, and identify key gaps in data and information that inhibit action.

- In this project, Ocean Science Trust will work with the scientific community and other practitioners to:
 - draw together existing data and information, including physical oceanographic, ecological and management data and information; and
 - engage OPC, managers, and other potential end-users to produce a robust inventory and map of OAH hotspots.

Overarching Goal

- The goal of this work will be to visualize the spatial dimensions of OAH hotspots along our coast, and overlay that on species and ecosystems of management concern in order to assist decision-makers and managers in identifying priority areas and/or species for management intervention.
- Initial seed money was already provided to Ocean Science Trust to develop a scope document that describes the process needed to develop the data inventory and visualize this in a map-based format. These initial steps will also ensure that the inventory and visualization effort is grounded in management needs.
- This additional grant will allow Ocean Science Trust to execute the process – and gather data and information from multiple partners and institutions to produce the inventory and visualize the results.

Deliverables

- A comprehensive inventory of OAH hotspots, visualized in a user-friendly web-based format that can be updated and revised as new information and data becomes available.
- A publication in a peer-reviewed journal that describes the methods, results, and conclusions of this effort, including discussion of the risks to species and ecosystems from OAH and potential ramifications for important ecosystem services.

Further, AB 2139 (Williams) references the West Coast Ocean Acidification and Hypoxia Science Panel report action items, and asks the OPC to work on these action items as well as to report back to the Council annually on what has been done to address ocean acidification. The proposed work will address AB 2139 by developing a comprehensive inventory of areas in California vulnerable to ocean acidification and hypoxia.

Project Timeline: January 1, 2017 through June 30, 2018

PROJECT FINANCING:

Staff recommends that the Ocean Protection Council (OPC) authorize disbursement of up to \$75,000 to California Ocean Science Trust to conduct an inventory of ocean acidification and hypoxia (OAH) “hotspots” to target vulnerable species and ecosystems for management and policy action.

Ocean Protection Council	\$75,000
Ocean Protection Council (previously allocated from grant C0100300 authorized by the Council in June 2013)	\$25,000
TOTAL	\$100,000

The anticipated source of funds will be from the Ocean Protection Council’s appropriation of the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84). Proposition 84 authorizes the use of funds for purposes consistent with Section 35650 of the Public Resources Code, establishing the California Ocean Protection Trust Fund (Pub. Res. Code § 75060(g)). Under Section 35650(b), Ocean Protection Trust Fund monies may be expended for projects authorized by the OPC that are identified as appropriate Trust Fund purposes, as specified. The project is consistent with the Trust Fund purposes as discussed in the following section.

Leverage of OPC Funds

This project builds on an existing OPC grant to California Ocean Science Trust (OST). As part of that grant, OST has initiated the scoping and first steps of this comprehensive inventory of OAH hotspots.

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:

The proposed project is consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, because it is consistent with trust-fund allowable projects, defined in Public Resources Code Section 35650(b)(2) as projects which:

- Improve management, conservation, and protection of coastal waters and ocean ecosystems
- Provide monitoring and scientific data to improve state efforts to protect and conserve ocean resources
- Provide funding for adaptive management, planning, coordination, monitoring,

research, and other necessary activities to minimize the adverse impacts of climate change on California's ocean ecosystem, including, but not limited to, the effects of sea level rise, changes in ocean productivity, and ocean acidification on coastal and ocean habitat, wildlife, fisheries, chemistry, and other key attributes of ocean ecosystems and to increase the state's understanding of the ocean's role in carbon sequestration. Adaptive management strategies, planning, research, monitoring, or other activities shall be designed to improve the management of coastal and ocean resources or aid the state to adapt to climate change impacts.

This proposed project will provide the scientific foundation for managers and state agencies to protect and conserve ocean resources. By understanding the severity of ocean acidification at local and regional scales and targeting areas that are particularly vulnerable to ocean acidification, we will be able to make important policy and management decisions and adjustments surrounding local acidification reduction strategies that are backed by robust science.

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:

This project will implement Focal Area A: Science-based decision-making and Focal Area B: Climate Change. This project will leverage the scientific community to support management and policy direction. It will also improve our understanding of how ocean acidification plays out across California's ocean and coastal ecosystems, deepen our understanding of how nutrient runoff from the land may add to local ocean acidification in different areas along the California coast, and link these hotspots with areas that are protected and/or rich in aquatic vegetated habitat. While the dominant cause of ocean acidification is atmospheric carbon dioxide emissions, the pace and magnitude of OAH on the West Coast requires that we explore and employ regional and local strategies. These strategies must be acted upon quickly and draw upon a holistic understanding of the severity of OAH across the West Coast; this project will help us prioritize locations for management action depending on the suite of factors at play in a given location.

CONSISTENCY WITH PROPOSITION 84 (The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006; Public Resources Code §75060(g))

This project is consistent with the purposes outlined in Proposition 84, specifically it includes the development of scientific data needed to adaptively manage the state's marine resources and reserves, including the development of marine habitat maps. This project will fund a comprehensive inventory for OAH that will serve as a one-stop shop for maps on OAH vulnerability and severity alongside potential management tools to help us adapt to and

mitigate OAH on a local and regional scale.

CONSISTENCY WITH THE OPC'S GRANT PROGRAM FUNDING GUIDELINES:

The proposed project is consistent with the OPC's Grant Program Funding Guidelines for Proposition 84 funds, in the following respects:

Required Criteria

1. Directly relate to the ocean, coast, associated estuaries, or coastal-draining watersheds: *This project will look at OAH in the nearshore environments and state waters.*
2. Support of the public: *See Exhibit A.*
3. Greater-than-local interest: *This will be a comprehensive inventory that spans the entire state.*

Additional Criteria

4. Improvements to management approaches or techniques: *An inventory of OAH hotspots due to physical oceanographic conditions, nutrient loading, and other drivers, overlaid with inventories of aquatic vegetated habitat and marine protected areas will help managers be even more targeted and thoughtful about how to approach areas up and down the coast with respect to OAH.*
5. Resolution of more than one issue: *The proposed project will provide better understanding across the land sea interface of how land-based discharges exacerbate acidification due to atmospheric climate change and hypoxia.*
6. Leverage: *See the "Project Financing" section above.*
7. Timeliness or Urgency: *This project will overlap and build on the work California Ocean Science Trust is completing under an existing grant from OPC. This work should be funded now given the urgency of identifying local solutions to ocean acidification most immediately in hotspot and vulnerable areas, and given the Panel's recommendations which must be addressed expeditiously.*
8. Coordination: *It is anticipated that California Ocean Science Trust will work with a diversity of partners (such as NOAA, several NGOs and the academic community) that have worked on smaller scale or individual inventories related to ocean acidification.*

COMPLIANCE WITH CEQA:

The proposed project is not a 'legal project' that triggers the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section 21068 and Title 14 of the California Code of Regulations, section 15378.