Item 4a

Staff Recommendation
June 15, 2021

Competitive Call for Monitoring, Research, and Synthesis Projects that Support Improved Understanding of Chemical and Ecological Sensitivity and Adaptation to Ocean Acidification and Hypoxia

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RECOMMENDED ACTION: Staff recommends that the Ocean Protection Council (OPC) authorize the disbursement of up to $2,000,000 to California Sea Grant (CASG) to jointly fund and administer statewide ocean acidification and hypoxia research and monitoring projects that directly support the OPC's and CASG's Strategic Plans and priorities, and will ultimately will provide state resource management agencies and local jurisdictions with data necessary to protect marine biodiversity and water quality, advance coastal adaptation efforts, and support climate-ready fisheries. CASG will contribute $400,000 to this competitive call. Individual projects recommended for approval will be brought to the December 2021 Council Meeting.

LOCATION: Statewide

STRATEGIC PLAN OBJECTIVE(S):
1.2: Minimize Causes and Impacts of Ocean Acidification and Hypoxia
1.3: Improve Understanding of Climate Impacts on California's Coast and Ocean

EXHIBITS:
Exhibit A: Letters of Support
Exhibit B: Enhancing California's Ocean Acidification and Hypoxia Monitoring Network

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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), OPC 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 OPC's Proposition 68 Grant Guidelines, adopted May 2019; and

3) The proposed projects are not 'legal projects' that trigger the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section, section 15378."

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

> "OPC hereby approves the disbursement of up to $2,000,000 to California Sea Grant, subject to the condition that projects selected through this review process will be presented to the council for final concurrence on the grant awards."

EXECUTIVE SUMMARY:

California is a leader in ocean acidification and hypoxia monitoring and research. The state 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 ocean acidification and hypoxia exposure. The need to coordinate between programs and connect chemical and biological monitoring to develop decision-relevant science was identified by the Ocean Acidification and Hypoxia Task Force (Task Force) as the primary recommendation in their report "Enhancing California's Ocean Acidification and Hypoxia Monitoring Network" (Exhibit B). The Task Force also identified a need to fill spatial and temporal data gaps and ensure collected data are accessible, comparable, and include the appropriate parameters. Using funds from Proposition 68, this project seeks to initiate a competitive grant solicitation to be administered by California Sea Grant, that addresses the above through monitoring, research, and/or synthesis, thus improving our understanding of ocean acidification and hypoxia status and trends across the California coast and providing critical data to inform management decisions that protect marine ecosystems in the face of a changing climate.

PROJECT SUMMARY:

A consequence of increased global carbon dioxide emissions and nutrient loading, ocean acidification and hypoxia trigger a wide range of marine ecosystem impacts and often co-occur, thus presenting a collective management challenge for the West Coast region. The impacts of ocean acidification disproportionately affect sensitive species, mainly calcifying marine organisms, many of which support important commercial fisheries, though additional evidence indicates that such impacts may extend throughout food webs. Similarly, low dissolved oxygen or hypoxic events are increasing in frequency and extent across the West Coast threatening the resilience and stability of marine ecosystems. High temperatures can also cause or exacerbate hypoxia, as can high nutrient loadings, the latter of which occurs independent of greenhouse gas emissions. Further investigation is needed to understand interactions between such covariates.

The state of knowledge about ocean acidification and its interaction with hypoxia is rapidly evolving but is still nascent and thus able to inform only a limited suite of management options to date. This project seeks to provide rigorous, managerially relevant research and/or monitoring on current and projected impacts of ocean acidification and hypoxia. As

scientific understanding of ocean acidification and hypoxia grows, so will the options available for devising effective, fiscally prudent management strategies. This competitive solicitation is designed to enhance that scientific understanding.

OPC was established to maintain healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations. Through this commitment, OPC plays a leading role in supporting decision-relevant research that directly informs policy and management. By leveraging relationships with local, state, and federal agencies, OPC can coordinate with partners to increase support on overlapping priorities. The goal of this project is to initiate a competitive grant solicitation using funds from Proposition 68 to be administered by California Sea Grant. This solicitation is largely focused on the nexus between water quality and OAH, therefore OPC and California Sea Grant will consult with the California State Water Resources Control Board (SWRCB) throughout the solicitation process. At a minimum, both OPC and SWRCB scientists will serve and/or consult on proposal review as appropriate.

The intent of the planned solicitation is to meet OPC's Strategic Plan Objective 1.2 to minimize causes and impacts to ocean acidification and hypoxia and Objective 1.3 to improve understanding of climate impacts on California's coast and ocean. The solicitation will also be aligned with the recommendations made by the California Ocean Acidification and Hypoxia (OAH) Science Task Force report "Enhancing California's Ocean Acidification and Hypoxia Monitoring Network" (Exhibit B), a joint effort led by the OPC and Ocean Science Trust (OST). California Sea Grant will contribute NOAA Sea Grant funds and administer the solicitation which will be focused on projects of up to 3 years in duration that enhance our understanding of ocean acidification and hypoxia (OAH) biological, economic, and social vulnerability and impacts through enhanced monitoring, research, and synthesis. California Sea Grant will also lead grant administration on behalf of OPC.

Monitoring projects must enhance connection between chemical and biological monitoring, improve OAH models as decision-support tools, and/or strengthen continuity, quality, and/or integration of OAH monitoring programs across the California coast and address spatial and temporal disparities. Examples of ideal monitoring projects include but is not limited to those that apply appropriate methods to monitor OAH and/or biological indicators through space, time, and with depth particularly in regions that represent critical spatial gaps, or utilize moorings along a natural gradient of variable pH or aragonite saturation depths to understand spatially explicit impacts of OA on calcifying organisms. Outcomes should directly support the management of marine resources.

Research projects must make a direct connection between research findings and interpretation of long-term monitoring efforts or other management-relevant applications. Such projects must meet also meet one or more of the following priorities; quantify sensitivity and adaptive capacity of key species under realistic dynamic OA exposure regimes, within the context of key multi-stressors (e.g., hypoxia, ocean warming) and/or utilize OA and other relevant environmental exposure gradients to assess ecological sensitivity and resilience and identify and test predicted ecological impacts using field studies or an ecosystem modeling framework. Examples of ideal research projects include

but is not limited to lab trials conducted in conjunction with field experiments and/or ongoing monitoring efforts with the aim of understanding species to ecosystem-level responses to OAH and its many covariates (temperature, salinity, dissolved oxygen) or a project that utilizes a natural gradient in OAH to test how species respond or have been responding and the ecosystem-level consequences of variable exposure.

Synthesis projects must support the development of shareable information products synthesizing OAH data from ongoing and past efforts and/or support the development of a centralized data portal for submitting and accessing OAH chemical and biological data with associated metadata. Examples of ideal synthesis projects include syntheses of data products across multiple monitoring programs, including cross-validation of various methods utilized within and/or across programs and model-data comparisons deemed necessary for management-driven model advancement beyond water quality management, in an effort to move towards high trophic levels and eventually fishery and management OAH resilience strategies.

Proposal Review Process and Grant Administration Process
Proposals will undergo a structured and competitive review process led by California Sea Grant. An outside technical panel of scientific experts in the field will be assembled as part of the competitive review. OPC staff will be involved in all stages of the review process, including the technical review and final decision-making. OPC will engage SWRCB staff as appropriate. At its discretion, the OPC may request additional review by likely user groups of the research findings or suggest coordination of complementary proposals. Projects selected through this review process will be brought back to the Council for final consideration of grant awards. California Sea Grant will provide all post-award grant administration, including reporting and financial accounting on the grants selected for funding.

Project Tasks
In July 2021, OPC and California Sea Grant will partner to jointly release a request for proposals (RFP) for decision-relevant ocean acidification and hypoxia research and monitoring projects. California Sea Grant will provide match funds up to $400,000 to this effort. OPC staff has tentatively committed $2,000,000; the disbursement of this OPC funding to California Sea Grant to fund and administer projects is subject to the condition that projects selected through this review process will be presented to the Council for final concurrence on the grant awards.

Site Description
This project will occur at a statewide scale. Individual projects will be selected to ensure that scientific efforts are conducted across the state (i.e. North Coast, Central Coast, and South Coast). Priority will be given to the projects that fill spatial data gaps.

About the Grantee
The National Sea Grant College Program network consists of 34 university-based programs funded primarily by the National Oceanic and Atmospheric Administration (NOAA) and dedicated to providing integrated research, communication, education,

extension and legal programs to coastal communities to inform the responsible use and management of ocean and coastal resources. The California Sea Grant Program is the largest of the 34 Sea Grant programs and works along the entire state's coastline and coastal watersheds. It is administered by the Scripps Institution of Oceanography at the University of California, San Diego.

California Sea Grant is a unique partnership that leverages resources across stakeholder groups. Sea Grant has an established, highly respected process for evaluating, prioritizing, and administering research grants related to coastal and ocean resources, and has a proven track record of supporting state research efforts (see California Sea Grant Strategic Plan 2018-2023). California Sea Grant is experienced at managing large contracts and grants, is familiar with the state's scientific community, and has successfully managed many other solicitation and award efforts on behalf of OPC (see Kelp Recovery Research Program).

Proposed Priorities for California Sea Grant
California Sea Grant's Strategic Plan prioritizes opportunities that benefit society through building and maintaining 1) Healthy Coastal Ecosystems, 2) Sustainable Fisheries and Aquaculture, and 3) Resilient Coastal Communities and Economies. Specifically, the planned solicitation will meet California Sea Grant's Strategic Plan Healthy Coastal Ecosystem Goal 2: Support research to understand the drivers and impacts of environmental change and anthropogenic impacts and stressors on coastal and marine species, ecosystems, and environments, such as sea-level rise, rising temperatures, ocean acidification, and increasing hypoxia..

Project Timeline

- June 2021: Grant awarded
- July 2021: Release RFP
- August 2021: OPC Webinars/Office Hours
- August 2021: Letters of Intent due
- September 2021: Full Proposals due
- December 2021: Selected projects brought to December Council Meeting for consideration of funding
- February 2022: Selected projects can start work

PROJECT FINANCING:

Staff recommends that OPC authorize encumbrance of up to $2,000,000 to California Sea Grant to fund and administer scientific research projects that directly support the OPC's Strategic Plan and priorities.

Ocean Protection Council	$2,000,000
California Sea Grant	Up to $400,000*
TOTAL	**Up to $2,400,000**

*Additional Sea Grant funding is at the discretion of Sea Grant and dependent on funding availability and the outcomes of the competitive review process.

The source of funds for all staff-recommended projects is the OPC's appropriation pursuant to the California Drought, Water, Parks, Climate, Coastal Protection and Outdoor Access for All Act of 2018 - Proposition 68 (Public Resources Code §80000 et. seq.) Funds appropriated to OPC derived from Chapter 10 (commencing with §80130) may be used "for projects that plan, develop, and implement climate adaptation and resiliency projects. Eligible projects shall improve a community's ability to adapt to the unavoidable impacts of climate change, improve and protect coastal and rural economies, agricultural viability, wildlife corridors, or habitat, develop future recreational opportunities, or enhance drought tolerance, landscape resilience, and water retention". Section 80133 identifies specific purposes for Chapter 10, which includes "projects that assist coastal communities, including those reliant on commercial fisheries, with adaptation to climate change, including projects that address ocean acidification, sea level rise, or habitat restoration and protection, including, but not limited to, the protection of coastal habitat associated with the Pacific Flyway". The proposed projects are an appropriate use of Proposition 68 funds because they each will improve coastal resiliency and adaptation to climate change.

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) as projects which: Eliminate or reduce threats to coastal and ocean ecosystems, habitats, and species; Improve the management of fisheries Foster sustainable fisheries; improve coastal water quality; Allow for increased public access to, and enjoyment of, ocean and coastal resources, of those resources; 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; Protect, conserve, and restore coastal waters and ocean ecosystems; address coastal water contamination from biological pathogens; 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

Research funded through and with California Sea Grant will meet these directives because the projects chosen will directly focus on collecting and disseminating information and conducting research across a suite of priorities that will inform current data and knowledge gaps for managers.

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:

This project supports Objectives 1.2: and 1.3 of OPC's Strategic Plan. Specifically, this project contributes to two key action items under both objectives:

- Work with partners and make targeted investments to support the development of an ocean acidification and hypoxia monitoring and observation system optimized to deliver decision-relevant information that serves user needs by 2023 (Objective 1.2)
- Advance the science on ocean acidification and hypoxia vulnerability and identify risks to California's biological resources, communities, and economies, within the context of other ongoing environmental changes (Objective1.2)
- Invest in long-term climate monitoring, modeling, and mapping of data, at both the statewide and regional scales, to better reduce or mitigate climate change impacts. (Objective 1.3)

Additionally, the priorities of this project are aligned with recommendations from the California OAH Science Task Force report "Enhancing California's Ocean Acidification and Hypoxia Monitoring Network" (Exhibit A).

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (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. If it were determined to be a 'legal project' under CEQA, the proposed project is categorically exempt from review under CEQA pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves information collection, consisting of data collection, research, and resource evaluation activities that will not result in a serious or major disturbance to an environmental resource. Staff will file a Notice of Exemption upon approval by OPC.