



June 14, 2021

Wade Crowfoot, Secretary for Natural Resources  
Chair, California Ocean Protection Council  
California Resources Agency  
1416 Ninth Street, Suite 1311  
Sacramento, CA 95814

VIA ELECTRONIC MAIL: [COPCpublic@resources.ca.gov](mailto:COPCpublic@resources.ca.gov)

**Re: SUPPORT Item 4a & 4b: OPC Investments in Understanding of Ocean Acidification and Hypoxia Vulnerability and Impacts**

Dear Chair Crowfoot and Ocean Protection Council Members:

The California Coastkeeper Alliance (CCKA) represents local California Waterkeeper organizations working to protect and enhance clean and abundant waters throughout the state for the benefit of California communities and ecosystems. On behalf of local California Waterkeepers, we strongly urge OPC funding to better understand California's vulnerability to ocean acidification and hypoxia.

Global carbon emissions are driving changes not only to the Earth's climate, but also to the chemistry of the world's oceans. The oceans are acidifying because they are absorbing a significant share of the carbon dioxide released primarily by the burning of fossil fuels and changing land uses. Ocean acidification and hypoxia (OAH) is accelerating rapidly, with enormous implications for the health and productivity of California's marine ecosystems and the communities and industries that depend on them. From corroding shells and skeletons of marine organisms to disrupting normal fish behaviors, OAH has the potential to alter marine food webs and ecosystems and the benefits they deliver to society, including California's \$45 billion ocean-based economy. The U.S. West Coast is exposed to some of the lowest and most variable pH waters, and it is likely to be among the first places to experience the biological and economic effects of OAH. In California, several top coastal fisheries are at risk, including West Coast Dungeness crab, market squid, and shellfish mariculture species (e.g., oysters, mussels). OAH is a complex but actionable threat, which requires a sustained, multipronged approach to both mitigate acidification at a local and statewide scale and manage the resulting disruptions.

The state of OA knowledge and its interaction with hypoxia is rapidly evolving but is still limited and in need of additional research and monitoring so that California can make appropriate management strategies. This OPC funding is intended to further carryout 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. CCKA supports OPC funding for OAH research and monitoring (4a & 4b) because California regulatory agencies need the best available science and data to make informed and legally defensible policy and permitting decisions to protect our marine life from climate change.

While CCKA supports the OPC's funding for Items 4a and 4b, we urge the state to not delay in taking actions necessary to mitigate and adapt to OAH. We know enough about how OAH is occurring to take no-regrets actions now to curb the impacts of OAH on our marine environment.

Nutrient pollution is one of the greatest consequences of human-accelerated global change on coastal oceans. Emerging studies suggest that terrestrial, anthropogenic nutrients affect primary productivity, increase nearshore algal blooms, and contribute to OAH. California's urban wastewater has historically been treated solely as waste – used once, treated, and then disposed of through offshore dumping. As a result, approximately 12 billion gallons of treated water are wastefully discharged into the ocean or

California estuaries each day, contributing to nutrient pollution that exacerbates harmful algal blooms and ocean acidification hot spots. California can better manage and treat its wastewater to prevent unnecessary pollution.

Water discharges from stormwater and agricultural operations in California pose a significant threat to water quality by transporting pollutants – ranging from toxic pesticides, sediment, nitrate, and salts – pathogens, and heavy metals from cultivated fields into surface and groundwater. These pollutants flow from inland waters to the coast, leading to harmful algal blooms, and, in turn, exacerbating localized hypoxia and acidification. Increased sediment pollution due to the destruction of natural riparian zones by intensive farming also eventually makes its way to California's coastline, smothering the marine plants that sequester carbon and provide nursery habitat for valuable fish species. California must develop policies that protect our waterways from pollution while supporting our thriving agricultural economy.

CCKA supports OPC funding for OAH research and monitoring, but California must start to act now to mitigate and adapt to OAH impacts caused by land-based sources of pollution. In parallel with additional statewide research and monitoring, the state needs to begin developing an OAH water quality objective to protect coastal waters from water quality inputs. Additionally, the state can do the following as no-regrets strategies to improve coastal water quality and mitigate the impacts of OAH:

- Recycle 100% of the wastewater that could be put to a beneficial use by 2040 to prevent nutrient pollution, which exacerbates toxic algal blooms and creates ocean acidification hot spots.
- Require nitrate removal at wastewater treatment facilities.
- Hold stormwater dischargers accountable for achieving their permitted water quality standards, and prevent regulatory agencies from deeming stormwater polluters in compliance when they are not in compliance legal discharge limits.
- Establish enforceable timelines and milestones for agricultural operations to prevent nutrient runoff from irrigated agriculture and CAFOs (both Dairies and Non-Dairy CAFOs).
- Develop State Water Quality Protected Areas for California's the 124 Marine Protected Areas (MPAs) and improve regulations for California's 34 Areas of Biological Significance (ASBS).
- Establish a permanent, statewide beneficial reuse program to use high-quality sediment for wetland restoration, to retain nursery habitats for valuable fish species.

Sincerely,



Sean Bothwell  
Executive Director  
California Coastkeeper Alliance



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June 12, 2021

Wade Crowfoot, Secretary for Natural Resources  
Chair, Ocean Protection Council  
California Natural Resources Agency  
1416 9th Street, Suite 1311  
Sacramento, CA 95814

Regarding: Consideration of Authorization to Disburse Funds to Improve Understanding of Ocean Acidification and Hypoxia Vulnerability and Impacts

Dear Chair Crowfoot and Members of the Ocean Protection Council:

As co-chairs of the California Ocean Acidification and Hypoxia Science Task Force we are writing to provide our endorsement for Items 4a and 4b.

Those proposed investments follow from a set of recommendations provided by the Task Force, which is convened by the Ocean Science Trust at the behest of the OPC. The Task Force brings together ocean science leaders to advise the State on matters related to acidification and hypoxia.

The Council staff have accurately and appropriately translated our recommendations into actions that will improve acidification management in California. In particular, item 4b provides an incredibly cost-effective leveraging of the state's existing ocean monitoring programs to realize a coordinated, state-wide network to track the potential progression of ocean acidification and its effects on the ecosystem. No state currently has such a system. The information gained from this network will directly inform the status and trends of the California's coasts and oceans, provide evidence-based assessments of threats to fisheries and ecosystems, and identify hotspots of vulnerability as well as resilience to ocean climate change. If enacted, this network will be a model for how other states and the nation can implement proactive and effective ocean acidification and hypoxia monitoring programs. We applaud the OPC's continued leadership in readying California for the changes ahead with the best available science.

Sincerely,

Francis Chan, PhD  
Director  
Cooperative Institute for Marine Resources

Stephen B. Weisberg, PhD  
Executive Director  
Southern California Coastal Water Research  
Project Authority

# Eelgrass Advocates

San Diego Audubon

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14 JUNE 2021

## California Ocean Protection Council

1416 Ninth Street, Suite 1311  
Sacramento, CA 95814

Dear Council Chair,

My name is Sree Kandhadai and I am a part of the [San Diego Audubon Advocacy Program](#). Our team has chosen to focus on eelgrass advocacy as we are passionate about protecting marine ecosystems such as seagrass beds. I am a sophomore in high school this year and have been volunteering with the San Diego Audubon since I was eight. An avid birdwatcher, I have often visited San Diego's biodiverse lagoons, including some that support significant eelgrass populations. I write in the hope of protecting such places from both present and future threats, specifically sea level rise.

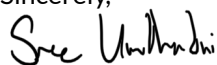
We are thrilled to hear of your goal to protect 15,000 acres of seagrass beds and to create an additional 1,000 acres by 2025. We just wanted to highlight a couple of relevant areas where the OPC can make a meaningful difference.

A recent report by the Pacific States Marine Fisheries Commission has recommended standardizing methods of eelgrass restoration and monitoring. This would ease comparisons of the success of different restoration projects and would allow the scientific community to better understand next steps. Another recommendation is to consolidate and publish data on previous restoration efforts. I believe the OPC is well-positioned to communicate this science widely and bring different efforts together to provide California with the best picture of the dynamic eelgrass beds along our coast.

We also wanted to mention that as eelgrass requires shallow waters to photosynthesize, sea level rise can harm eelgrass beds. Considering this, we request the OPC to fund efforts to research sea level rise impacts on seagrass and plan for any necessary mitigation.

Thank you for all of your work in protecting our waters and for making ocean acidification amelioration a key priority.

Sincerely,



**Sree Kandhadai**

On behalf of the eelgrass advocates: Lance Dawson, Damian Herlevic,  
Padma Jagannathan, Deanna Roldan