



CALIFORNIA SEA GRANT COLLEGE PROGRAM  
UNIVERSITY OF CALIFORNIA

29 September 2016

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

Via Electronic Submission: [COPCpublic@resources.ca.gov](mailto:COPCpublic@resources.ca.gov)

RE: Investment in Ocean Acidification and Hypoxia research

Dear Secretary Laird and members of the Ocean Protection Council

I am writing in support of the **proposal submitted by Dr. Tessa Hill (UC Davis)** and colleagues to obtain additional support from the California Ocean Protection Council for their research program that focuses on seagrass beds and their potential role as sinks for organic carbon and in mediating ocean acidification in coastal embayments. The California Sea Grant program was pleased to support their original research on this topic with a 2-year award (now being completed) to initiate such studies in Tomales Bay and Bodega Harbor. We feel they have made significant progress, but given the large inter-annual and spatial variability in atmospheric and oceanographic conditions along the California coast, there is no doubt that a longer time series of such studies in these two locales, and expansion to other locations in California, would prove very illuminating and valuable in assessing the scope of the impacts of such beds. I feel that the addition of a component to look at the impacts of natural vs. restored beds would also be important given the expanding use of seagrass restoration efforts within the state.

I wish them success with their application and hope OPC will be able to support it.

Very respectfully,

A handwritten signature in blue ink, appearing to read "Jim Eckman".

Jim Eckman  
Director, California Sea Grant



## San Francisco Bay National Estuarine Research Reserve

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October 7, 2016

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

**RE: Proposal by Dr. Tessa Hill and colleagues entitled, “Context and scale of seagrass effects on estuarine acidification in natural and restored seagrass beds”**

Dear Secretary Laird and members of the Ocean Protection Council,

On behalf of NOAA’s San Francisco Bay National Estuarine Research Reserve (NERR), I am pleased to express strong support for a proposal submitted to the Ocean Protection Council by Dr. Tessa Hill and colleagues: “Context and scale of seagrass effects on estuarine acidification in natural and restored seagrass beds.” The proposed work will provide critical information needed for guiding research and improving natural resource management in San Francisco Bay and nearby estuaries. The scientific team behind this proposal has a proven track record of excellence and I am excited about the opportunity for them to extend their work to address pressing issues facing the SF Bay NERR and other coastal decision-makers in the region.

A key question for us is whether and to what extent enhancement of seagrass beds could be used to ameliorate the emerging effects of ocean acidification. Seagrass restoration is already being used as a foundational component of the California State Coastal Conservancy’s San Francisco Bay Living Shorelines Project (<http://www.sfbaylivingshorelines.org/>), with the goal of providing valuable shoreline protection and ecosystem services in the face of accelerating sea-level rise. These projects also include manmade oyster reefs and one concern about their long-term viability is the risk of future impairment by acidified coastal waters. Understanding the role of seagrasses in mitigating local impacts of ocean acidification on oysters and other calcifying species will help guide site-based research and monitoring, and will aid restoration planners with issues such as site selection.

Another priority for the SF Bay NERR and our regional partners is enhancing the ability of coastal habitats to sequester and store carbon. The recently updated *Comprehensive Conservation and Management Plan for the San Francisco Estuary* ([www.sfestuary.org/ccmp](http://www.sfestuary.org/ccmp)) specifically identifies the need to develop processes for increasing carbon sequestration (CCMP Action 11), yet the relative importance of seagrasses for these efforts is not well understood. The research proposed by Dr. Hill and colleagues will address these gaps in understanding, and by doing so will provide much needed information for more informed conservation and restoration efforts going forward.

Sincerely,

Michael Vasey, Ph.D.

Director, San Francisco Bay National Estuarine Research Reserve, [mvasey@sfsu.edu](mailto:mvasey@sfsu.edu)



*San Francisco Bay National Estuarine Research Reserve is a partnership among National Oceanic and Atmospheric Administration, San Francisco State University, California Department of Parks and Recreation, Solano Land Trust and the San Francisco Bay Conservation and Development Commission.*



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October 7, 2016

John Laird, Secretary for Natural Resources  
Chair, California Ocean Protection Council  
1416 Ninth Street, Suite 1311  
Sacramento, CA 95814  
Via electronic submission to [COPCpublic@resources.ca.gov](mailto:COPCpublic@resources.ca.gov)

Dear Secretary Laird and Members of the Ocean Protection Council,

We write to express strong support for the suite of ocean acidification and hypoxia projects under consideration at the October 17<sup>th</sup> council meeting for funding from Proposition 84. These projects will help coordinate and facilitate research and action to address ocean acidification and hypoxia.

Our ocean absorbs approximately a third of the carbon dioxide produced by human activity, altering its chemistry and leading to ocean acidification (OA). In addition, many ocean areas become abnormally deficient in oxygen, a condition called hypoxia. OA and hypoxia affect our ocean in a range of ways that put ocean ecosystems and ocean-dependent industries at risk.

The West Coast Ocean Acidification and Hypoxia Science Panel (Panel) this year released a report concluding that OA and hypoxia will grow in intensity over time, particularly along the West Coast. The Panel outlined a number of recommendations to address these issues, and the California Legislature passed two bills (AB 2139, Williams, and SB 1363, Monning) that will implement several of the Panel's recommendations. The projects identified and recommended for funding here will help take the next step on furthering the Panel's recommendations.

The six recommended projects will advance these recommendations in several important areas, by improving our understanding of the role of seagrass in ameliorating OA, designing water quality criteria, providing improved modeling to understand and address the impacts of OA and hypoxia, and assessing the role and effectiveness of MPAs under ocean change. These investments will help inform effective policy and management of California's coasts and ocean in a time of global change.

We appreciate the remarkable work done to date by OPC, OST, the OST-SAT, other state agencies, the Legislature, and the Governor's office in recognizing the importance of this issue to the state, and in prioritizing it for action. The projects recommended for funding today will provide important

information to allow the state to continue to be a global leader in addressing the impending effects of climate change.

Very truly yours,

A handwritten signature in black ink, appearing to read "George H. Leonard". The signature is written in a cursive style with a large initial "G" and "L".

George H. Leonard  
Chief Scientist  
Ocean Conservancy