



Staff Recommendation  
November 13, 2019

## Monitoring and assessment of California's estuarine MPAs

Michael Esgro, OPC Marine Ecosystems Program Manager

**RECOMMENDED ACTION:** Staff recommends that OPC approve the disbursement of \$1,037,219 to San Jose State University Research Foundation for the assessment and monitoring of California's estuary marine protected areas (MPAs).

**LOCATION:** Statewide

**STRATEGIC PLAN OBJECTIVE(S):** This project implements the following objectives within OPC's 2012-2017 Strategic Plan:

Objective 8.1: Support effective implementation of MPAs consistent with the Marine Life Protection Act (MLPA) through strategic partnerships.

Objective 8.2: Coordinate MLPA implementation with other ocean management agencies to improve management effectiveness.

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### EXHIBITS:

Exhibit A: Letters of Support

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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 project is consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act; and
- 2) The proposed project is not a 'legal project' that triggers 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 \$1,037,219 to the San Jose State University Research Foundation to implement the monitoring and assessment of California’s estuary marine protected areas (MPAs).

This authorization is subject to the condition that prior to disbursement of funds, San Jose State University Research Foundation 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.”

### **EXECUTIVE SUMMARY:**

Compared to other habitats within California’s marine protected area (MPA) network, estuaries are relatively understudied, and resource managers currently do not have reliable monitoring data with which to assess estuary MPA performance. This is concerning given the ecological and economic benefits conferred by estuary habitats, as well as increasing anthropogenic threats to estuaries such as overdevelopment, pollution, and sea level rise. To address this data gap, scientists at Moss Landing Marine Laboratories will organize a statewide consortium of estuarine researchers in California to 1) develop a consensus-based set of estuary monitoring questions and associated indicators, grounded in California’s MPA Monitoring Action Plan, 2) develop standardized data collection protocols and monitoring tools to assess those indicators, 3) pilot test protocols and tools through focused field data collection at a subset of California’s estuary MPAs, 4) complete a baseline assessment of select estuary MPA and control sites using existing and newly collected data, and 5) develop an approach for long-term, coordinated, statewide estuary monitoring into the future. This project will provide the state with critical information to inform adaptive management of California’s estuary MPAs, helping to ensure a successful management review of the entire MPA network in 2022 and contributing to broader state priorities such as sustainable fisheries and climate resilience.

## PROJECT SUMMARY:

### Background

In 2012, California completed the implementation of a science-based and stakeholder-driven marine protected area (MPA) network that spans the state's entire 1,100-mile coastline and protects 16% of state waters. The network consists of 124 individual MPAs that have varying levels of protection, including some reserves that prohibit all "take" within their boundaries; it is the largest network of its kind in North America and one of the largest in the world. 23 of California's 124 MPAs were designated specifically to protect estuary habitat.

The design of California's MPA network was driven by goals identified in the Marine Life Protection Act (MLPA), which focus on protecting, conserving, and restoring marine ecosystems. The MLPA also requires "monitoring, research, and evaluation at selected sites to facilitate adaptive management of MPAs and ensure that the system meets [its] goals" (Fish and Game Code Title 14 §2853 (c)(3))<sup>1</sup>. Led by the MPA Statewide Leadership Team, a standing advisory body made up of representatives from agencies, departments, boards, commissions, organizations, and tribes with significant regulatory authority, mandate, or interest in the state's MPA network, California has developed a comprehensive MPA management program that is rooted in the goals of the MLPA and includes research and monitoring as a key focal area.

Phase 1 of MPA monitoring began at or near the time of MPA implementation in each of four study regions. In 2008, OPC approved a total of \$16 million for comprehensive monitoring in each study region, to be disbursed in the order that MPAs were implemented (\$4 million each for the Central Coast, North Central Coast, South Coast, and North Coast study regions, in that order). During baseline monitoring, the California Ocean Science Trust developed a report for OPC and CDFW containing a comprehensive list of monitoring programs within California's 23 estuarine MPAs<sup>2</sup>. This report identified 176 estuary monitoring projects being conducted across the state. However, most of these programs were limited to certain estuaries (e.g. Elkhorn Slough and Humboldt Bay), specific programs (e.g. National Estuarine Research Reserve or San Onofre Nuclear Generating Station Mitigation Monitoring Program), or specific metrics (e.g. dissolved oxygen, pH, and eelgrass). The report identified the lack of a consistent, statewide approach to estuary MPA monitoring as a critical knowledge gap. It recommended the establishment of "a network of researchers across the state to coordinate [estuary] monitoring efforts."

Phase 2 of MPA monitoring, referred to as long-term monitoring, builds on the knowledge, capacity, and unique considerations developed during baseline monitoring, and takes a statewide rather than a regional approach. Long-term MPA monitoring is guided by the

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<sup>1</sup>[http://leginfo.ca.gov/faces/codes\\_displayText.xhtml?lawCode=FGC&division=3.&title=&part=&chapter=10.5.&article=](http://leginfo.ca.gov/faces/codes_displayText.xhtml?lawCode=FGC&division=3.&title=&part=&chapter=10.5.&article=)

<sup>2</sup> <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=161751&inline>

state’s MPA Monitoring Action Plan<sup>3</sup>, which outlines a priority list of metrics, habitats, sites, and species to target for monitoring as the state seeks to understand how the MPA network is meeting the goals of the MLPA. The Action Plan underwent a simultaneous peer review and public comment process during summer 2018 and was formally adopted by OPC and the California Fish and Game Commission in fall 2018. Regarding estuaries, the Action Plan identifies a need “to further standardize metrics and develop coordinated, cost-effective, and repeatable methods across California estuaries to track key indicator species and habitats over time.”

At its May 2019 meeting, OPC approved \$9,500,000 worth of long-term MPA monitoring projects<sup>4</sup> based on priorities outlined in the Action Plan. Four of those projects focused on important coastal and marine habitat types: rocky intertidal, sandy beach/surf zone, kelp forest/shallow rocky reef (0-30 meters depth), and deep rocky reef (> 30 meters depth). The project recommended here will allow for the inclusion of California’s estuary MPAs in the state’s long-term MPA monitoring program.

Improved estuary monitoring and assessment is a key state need. California’s nearly 500,000 acres of estuaries support highly productive, highly diverse communities (e.g. eelgrass beds, salt marshes, and tidal mudflats). Estuaries provide critical habitat for important species such as sea otters, migratory birds, and a variety of fishes and invertebrates. Many California species depend on the sheltered, nutrient-rich waters of estuaries for reproduction and development, which is why estuaries are often referred to as “nurseries of the sea.” These habitats also provide essential ecosystem services, such as the buffering of storm surge and the filtration of pollutants. Estuaries are critical to California’s blue economy, providing abundant natural resources, places for recreation (e.g. boating, hiking, fishing), and opportunities for scientific study. However, California’s estuaries are also among the state’s most threatened habitats. They are sensitive places, particularly vulnerable to coastal development, pollution, and sea level rise. They are generally highly modified, particularly in Southern California, and many of California’s 23 estuary MPAs are considered impacted by human activity. A consistent, statewide approach to monitoring the health of California’s estuary MPAs will help resource managers ensure that these habitats continue to provide ecological and economic benefits to Californians for generations to come.

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<sup>3</sup> <https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Management/Monitoring/Action-Plan>

<sup>4</sup>

[http://www.opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20190523/Item3a\\_MPA\\_Longterm\\_Monitoring\\_Projects\\_FINAL.pdf](http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20190523/Item3a_MPA_Longterm_Monitoring_Projects_FINAL.pdf)

## Project Tasks

This project will accomplish the following tasks:

First, the lead investigators will establish an estuarine technical advisory committee (TAC), composed of estuarine researchers, managers, and policymakers with specific expertise in California estuaries. The TAC will identify key monitoring questions of management relevance, grounded in the Action Plan, and will develop measurable indicators for these questions.

Second, the lead investigators will engage the TAC to develop standardized data collection protocols and monitoring tools to assess indicators of estuary health (e.g. measurement of abiotic factors, fish and crab surveys, habitat condition surveys, eDNA sampling).

Third, the lead investigators will pilot test indicators and protocols through focused field data collection at a subset of California’s estuary MPAs and associated reference sites (15 sites total statewide). Data collection will be conducted in 2020 and 2021, and will be stratified across a variety of estuary types, e.g. lagoons vs. perennially open systems.

Fourth, the lead investigators will evaluate ecological and socioeconomic conditions of estuary MPAs using currently available baseline data, as well as data collected during the 2020 and 2021 field seasons. Data analysis will focus on: the use of estuary habitats by species targeted for monitoring in the Action Plan, including important fisheries species; current condition of various estuary habitat types; changes in estuary condition over time; impacts to estuaries from human use (including fishing pressure and land use stressors); and predicted resilience of estuary habitats to sea level rise.

Fifth, the lead investigators will develop a “blueprint” for ongoing, coordinated estuary monitoring into the future. This blueprint will synthesize the work of the TAC and the 2020-2021 field work, and will recommend: key indicators that should be routinely collected to document changes in estuary habitat condition and fisheries support; studies needed to increase understanding of California estuary health; studies needed to increase understanding of long-term sea level rise resiliency; and data collection protocols necessary to demonstrate estuary MPA effectiveness in the context of the Marine Life Protection Act. The blueprint will also quantify expected costs of estuary monitoring to the state and will identify opportunities to leverage existing data collection efforts and strengthen local partnerships (e.g. Friends of the Estuary, National Estuarine Research Reserves, National Estuary Program).

## Site Description

This project is statewide in scope and will encompass the three coastal regions identified in the Action Plan:

- North: California/Oregon border to San Francisco Bay, including the Farallon Islands
- Central: San Francisco Bay to Point Conception
- South: Point Conception to the U.S./Mexico border, including the Channel Islands

## About the Grantee

This collaborative project will be led by the Central Coast Wetlands Group, a research consortium dedicated to coordinating the advancement of wetland science and management in California. Researchers with the Central Coast Wetlands Group bring decades of experience in estuary research and restoration as well as water quality and land use planning efforts. Other collaborators on this project include Sonoma State University, Coastal Oceanography Group at UC Davis, CSU Long Beach, UC Los Angeles, Southern California Coastal Water Research Project, Bay Area Regional Water Quality Control Board, and the Nature Conservancy.

## Project Timeline

November 2019: grant awarded

November 2019 – January 2020: establish technical advisory committee; host regular meetings and workshops throughout project duration

January 2020 – June 2021: identify and implement priority data collection protocols to answer statewide estuary management questions

January 2020 – June 2021: evaluate ecological and socioeconomic conditions of estuary MPAs using available baseline data

June 2021 – June 2022: develop estuary monitoring blueprint

## PROJECT FINANCING:

Staff recommends that the Ocean Protection Council (OPC) authorize encumbrance of up to \$1,037,219 to San Jose State University Research Foundation to conduct the project summarized above.

Ocean Protection Council	\$1,037,219
<b>TOTAL</b>	<b>\$1,037,219</b>

The anticipated source of funds will be from the FY 19/20 General Fund appropriation for MPA monitoring. As directed by the MPA Statewide Leadership Team Work Plan, OPC has worked with the California Department of Fish and Wildlife and other partners statewide to implement a partnership-based monitoring program to assess MPA network performance. In 2015, the California state legislature allocated a \$2.5 million annual General Fund appropriation to the Secretary for Natural Resources to support the MPA Monitoring Program. Through a collaborative process between the Leadership Team and the Secretary, the initial spending of this appropriation to support MPA monitoring was approved by the Secretary in early 2016. This initial spending focused on: maintaining required scientific tools to conduct monitoring and increasing scientific capacity within the state; continuing ongoing monitoring statewide in subtidal and intertidal habitats; and ensuring the completion of the first five-year management reviews for all regions. Since the initial spending in FY15/16, subsequent spending has focused on creating a long-term monitoring program for the state to ensure the state is well prepared for the upcoming management review of the MPA network in 2022. The project summarized above is consistent with the goals of the state's MPA monitoring program.

#### **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:

(A) Eliminate or reduce threats to coastal and ocean ecosystems, habitats, and species: *This project will help to identify emerging threats to estuaries (e.g. coastal development, pollution, sea level rise) and ensure that existing protections for estuary MPAs are being effectively implemented.*

(B) Improve the management of fisheries: *Improved understanding of the effectiveness of estuary MPAs at protecting recreationally and commercially important species, particularly given the role of estuaries as nursery habitat, will directly inform fisheries management in California.*

(C) Foster sustainable fisheries: *Expected ecological benefits from estuary MPAs include benefits to fished populations, for example by providing nursery habitat for commercially and recreationally important fish species.*

(D) Improve coastal water quality: *This project will create water quality assessment tools to strengthen the nexus between water quality protection and estuary MPA protection.*

(E) Allow for increased public access to, and enjoyment of, ocean and coastal resources, of those resources: *Increased understanding of California's estuary MPAs will help ensure continued access by the public for recreation, education, and scientific study.*

(F) Improve management, conservation, and protection of coastal waters and ocean ecosystems: *Information from this project will directly inform the adaptive management of California's estuary MPAs.*



(G) Provide monitoring and scientific data to improve state efforts to protect and conserve ocean resources: *This is a long-term monitoring project that will generate scientific data to directly inform the adaptive management of California's estuary MPAs.*

(H) Protect, conserve, and restore coastal waters and ocean ecosystems: *Worldwide, MPAs have been shown to protect, conserve, and restore some species and habitats. An improved understanding of estuary MPA health in California will help resource managers maximize those benefits in increasingly threatened habitat.*

(I) Address coastal water contamination from biological pathogens: *Improved understanding of estuary MPA health will assist managers in strengthening the nexus between MPA protection and water quality.*

(J) 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: *Information from this project will directly inform the adaptive management of California's estuary MPAs, as well as improving the state's understanding of potential climate change impacts to estuaries, such as sea level rise.*

By directly engaging OPC, the California Department of Fish and Wildlife, and the California Fish and Game Commission, as well as the MPA Statewide Leadership Team, the researchers leading this project will promote the coordination of state programs and activities that protect ocean resources.

### **CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:**

This project implements the following objectives within OPC's 2012-2017 Strategic Plan:  
Objective 8.1: Support effective implementation of MPAs consistent with the Marine Life Protection Act (MLPA) through strategic partnerships.

Objective 8.2: Coordinate MLPA implementation with other ocean management agencies to improve management effectiveness.

### **COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA):**

The proposed project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves only 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 the OPC.