

COASTAL CONSERVANCY

Staff Recommendation
June 20, 2013

SAN DIEGO BAY NATIVE OYSTER RESTORATION PLAN

Project No. 13-019-01
Project Manager: Megan Cooper

RECOMMENDED ACTION: Authorization to accept grant funding from the National Oceanic and Atmospheric Administration and disburse up to \$85,000 to the Southwest Wetlands Interpretive Association to develop a conceptual restoration plan for a native oyster restoration project in San Diego Bay.

LOCATION: Nearshore areas of San Diego Bay, County of San Diego

PROGRAM CATEGORY: Marine Resource Protection and Climate Change

EXHIBITS

Exhibit 1: [Project Location and Site Maps](#)

Exhibit 2: [Photos of Project Elements](#)

Exhibit 3: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31113 and 31220 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the acceptance of grant funding in the amount of \$85, 000 (eighty-five thousand dollars) from the National Oceanic and Atmospheric Administration Coastal and Marine Habitat Restoration National and Regional Partnership Grant Program (the NOAA Grant Funds) and the disbursement of up to the full amount of the NOAA Grant Funds to the Southwest Wetlands Interpretive Association (SWIA) to prepare a conceptual restoration plan for a native oyster restoration project in San Diego Bay. Prior to the disbursement of any funds, SWIA shall submit for the review and written approval of the Conservancy’s Executive Officer a work program, budget, schedule, and the names of any contractors to be employed in carrying out the work.”

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed project is consistent with the current Conservancy Project Selection Criteria and Guidelines.
 2. The proposed authorization is consistent with the purposes and objectives of Chapter 5.5 of Division 21 of the Public Resources Code, regarding restoration of fish and wildlife habitat within coastal and marine waters, and with Section 31113 of the Public Resources Code, concerning impacts of climate change on coastal resources.
 3. The Southwest Wetlands Interpretive Association is a nonprofit organization existing under Section 501(c)(3) of the United States Internal Revenue Code and whose purposes are consistent with Division 21 of the Public Resources Code.”
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PROJECT SUMMARY:

Staff recommends that the Conservancy authorize the disbursement of up to \$85,000 to the Southwest Wetlands Interpretive Association (“SWIA”) for the San Diego Bay Native Oyster Restoration Project (“Project”). The Project will develop a plan to restore native Olympia oyster (*Ostrea lurida*) populations in San Diego Bay using natural structures as habitat that will also serve to buffer and protect adjacent shorelines from sea level rise and erosion. The grantee will conduct baseline monitoring, identify restoration sites, and develop a design plan to restore native oyster in San Diego Bay (Exhibit 1).

Background:

A large percentage of the San Diego Bay (the “Bay”) shoreline has been stabilized with hardened structures such as riprap, breakwaters, seawalls, and bulkheads to create dry lands for development and to prevent or minimize coastal erosion in the estuarine environment. Ironically, hardened structures often increase the rate of coastal erosion. They remove the ability of the shoreline to carry out natural processes, and provide little habitat for estuarine species. This has become an increasing concern, with the most current climate change predictions estimating a potential five feet of sea level rise over the next 100 years and increased storm surge frequency and intensity that is projected to cause increased erosion and scouring of wetland and subtidal mudflat areas.

The abundance of native shellfish, including oysters, has been declining around the world because of anthropogenic activities that alter water quality, over-harvesting, dredging, pollution, and filling and draining of wetlands. Historically, Olympia oysters were an abundant and ecologically important part of California’s estuaries and an important fishery. They have long been recognized as an especially important component of a healthy and resilient estuarine ecosystem because of the myriad ecosystem benefits they provide. Oysters are foundation species that act as “ecosystem engineers” to support diverse communities of invertebrates, fishes, waterfowl and marine mammals. Historic documents indicate the presence of oyster beds in several Southern California estuaries, including the Bay, which supported artisanal-scale harvesting and small-scale fishery operations for at least a few decades.

This multi-objective project will integrate subtidal habitat restoration of Olympia oyster beds with protection of adjacent shorelines from wave-induced erosion. Creating stronger, more resilient estuarine habitat is a crucial objective in light of sea level rise and other projected climate changes. Projects that use natural habitat elements to protect shorelines from erosion while also providing critical habitat for wildlife are commonly referred to as “Living Shorelines” projects. While not a new concept, Living Shorelines projects are new to the Bay. In general, Living Shorelines projects utilize bank stabilization and habitat restoration techniques to reinforce the shoreline, minimize coastal erosion, and maintain coastal processes while protecting, restoring, enhancing, and creating natural habitat for fish and aquatic plants and wildlife. The Coastal Conservancy is experimenting with Living Shorelines in San Francisco Bay the approach has been implemented on the East and Gulf Coasts.

Project Description:

Building on successful techniques tested on the East Coast for two decades, and on the recent San Francisco Bay Living Shorelines Project funded by the Conservancy, the Project will complete baseline studies, prepare a study plan, and create a conceptual design for native oyster restoration in the Bay.

The three tasks that will be completed with this funding are described below.

Preliminary Physical and Biological Studies

In order to identify sites that could successfully support Olympia oyster and that could slow erosion of adjacent shorelines, the grantee will conduct oyster recruitment studies and collect data on hydrology and water quality at potential project locations in the Bay. Key elements of the Project will be to understand the physical processes (e.g. wave conditions, sediment dynamics, and anticipated sea level rise) of potential restoration sites, and to measure natural recruitment of native oyster larvae to these potential sites. These studies will be utilized to identify final study sites for pilot oyster reef installation and to develop an integrated physical and ecological basis of reef design. Oyster recruitment studies will involve placing small settlement plates at potential restoration sites, while preliminary hydrology investigations will include measuring sediment dynamics, wave transmission and erosion potential, water quality, and tidal flow dynamics. Hydrology and water quality data will be collected through a combination of field investigations using standard hand-held probes and/or deployed loggers and compilation of existing data.

Conceptual Oyster Bed Design

SWIA will develop the conceptual restoration design utilizing information gained from preliminary field investigations, and drawing on study designs developed for other systems, in particular the designs for the San Francisco Bay Living Shorelines. The conceptual restoration design will address the multiple objectives and scientific questions described above, and will consist of conceptual plans and schematic graphics to illustrate the location and configuration of treatments plots at the chosen restoration sites.

Study Plan

The study plan will clearly lay out a scientifically-based study design for installation and monitoring to examine performance of the restoration sites. Elements of the study plan may include:

- Results of preliminary physical and biological studies
- Identification of study and reference sites and site selection criteria for oyster bed restoration
- Conceptual reef design and configuration for specific restoration sites
- A pre- and post-construction physical and biological monitoring program
- A proposed schedule for Project work elements
- Cost estimates for the next Project phase

Project Team

The Project was developed in partnership with the Port of San Diego and will be a collaborative effort between the Port, the Conservancy, SWIA and scientists at California State University Fullerton (CSUF). SWIA is a 501(c)(3) nonprofit organization dedicated to the acquisition, preservation and restoration of wetlands. Since 1979, SWIA has managed approximately \$30 million of projects in the Tijuana Estuary and South San Diego Bay. SWIA works in collaborative partnerships with federal, state, and local agencies and is a cooperating association with California State Parks and the U.S. Fish and Wildlife Service. Danielle Zacherl and her lab at CSUF have managed several successful oyster restoration projects and Dr. Zacherl is considered an expert on Olympia oyster. The Port of San Diego manages several million dollars in grants each year and was recently the Conservancy's partner on the highly successful South San Diego Bay Wetlands Restoration Project. The proposed Project is consistent with the Port's goal to protect the Bay and its natural resources.

Site Description:

San Diego Bay is the third largest of the three large, protected natural bays on California's coastline after San Francisco Bay and Humboldt Bay. It is 19 square miles with 34 miles of highly urbanized waterfront. The land adjacent to the Bay includes the City of San Diego and four other cities, including National City, Chula Vista, Imperial Beach and Coronado. Only 18 percent of the original Bay floor remains undisturbed by dredge or fill, while 90 percent of the salt marshes, 50 percent of the mudflats, and 40 percent of the shallow subtidal habitat, which would include native oysters, have been filled or dredged for development. San Diego Bay is an active commercial, recreational and military port.

While Living Shoreline research is ongoing in many other estuarine systems, research has only recently begun in San Diego Bay, which offers distinctively different challenges from those of San Francisco Bay. Physical and biological differences between San Francisco and San Diego Bays create unique challenges that complicate information portability between the two bays and drive the need for local applied investigations and pilot demonstration projects.

Project History:

This Project was designed to address objectives from multiple existing plans. The Natural Resources Agency's "Climate Change Adaptation Strategy" has recommended the use of Living Shorelines as an adaptation method to reduce the need for engineered hard shoreline protection

devices and to provide habitat functions and values. The “State Coastal Conservancy Climate Change Policy”, adopted by the Conservancy at its meeting on June 4, 2009, also recommends implementation of Living Shorelines projects because of the ability of these projects to reduce erosion and trap sediment, allowing for buffering of tidal wetlands and migration of habitats (“estuary rollover”). Many of the key objectives of the “San Diego Bay Integrated Natural Resources Management Plan” (INRMP) revolve around improving the ecological values of the shoreline interface area, while maintaining the intended protection of the economically and ecologically valuable adjacent areas. One of the core initiatives of the INRMP is “sustainability by design”, which seeks to maintain the Port’s and the Navy’s assets and the natural resources of San Diego Bay in the face of anticipated climate change and sea level rise. These objectives further the INRMP’s overarching goals of protecting existing coastal wetlands and expanding these resources where possible.

This Project was inspired by the San Francisco Bay Living Shorelines project, which the Conservancy first funded in August 2010. It will build upon lessons learned from the San Francisco Bay project and other native oyster restoration programs underway in Newport Bay and Alamitos Bay, which the Conservancy funded in November 2011.

PROJECT FINANCING

Coastal Conservancy (NOAA funds)	\$ 85,000
<u>Port of San Diego</u>	<u>\$116,000</u>
 Total Project Costs	 \$201,000

The anticipated source of Conservancy funds is a grant awarded to the Conservancy in 2010 from the National Oceanic and Atmospheric Administration (NOAA) Coastal and Marine Habitat Restoration National and Regional Partnership Grant Program. NOAA has recently authorized the use of \$85,000 of these funds for the proposed Project.

The funds from this grant program may be used to implement qualified restoration projects that specifically protect and enhance NOAA trust resources. Restoration projects funded through this program should “contribute to the return of degraded or altered marine, estuarine, coastal and freshwater . . . fish habitats to a close approximation of their condition prior to disturbance” and are expected to have “strong on-the-ground habitat restoration components that provide educational and social benefits for communities, in addition to long-term ecological habitat improvements for NOAA trust resources.” The Project will develop a plan to restore native oyster beds. Oyster beds provide important habitat for many NOAA trust resources, and restoring shellfish beds is a major NOAA initiative. Implementation of the plan developed through this Project will result in on-the-ground restoration and community outreach components. The Port of San Diego will be providing a cash match of approximately \$116,000 to complete the Project.

Staff anticipates that implementation of future phases of the Project will be funded through a combination of Conservancy funds, Port of San Diego funds, and other state and federal grants, all subject to subsequent approvals.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

This Project will be undertaken pursuant to Chapter 5.5 of Division 21 of the Public Resources Code (Section 31220) regarding coastal and marine habitat restoration. Section 31220(a) authorizes the Conservancy to award grants for coastal and marine habitat restoration projects that meet one or more criteria of Section 31220(b). Consistent with Section 31220(b)(2), SWIA will plan for the restoration of native oyster beds in San Diego Bay by re-establishing populations that existed before they were impacted by over-harvesting, dredging, pollution, and filling and draining of the Bay and adjoining wetlands. Native oyster beds provide habitat for fish and wildlife in coastal and marine waters.

Consistent with Section 31220(a), staff has consulted with the State Water Resources Control Board and the San Diego Regional Water Quality Control Board in the development of the project to ensure consistency with Chapter 3 (commencing with Section 30915) of Division 20.4 of the Public Resources Code. Finally, as required by Section 31220(c), the Project plan will incorporate a monitoring and evaluation component.

The Project will also be undertaken pursuant to Section 31113. This section states that the Conservancy is authorized to address the impacts and potential impacts of climate change on resources within its jurisdiction. Pursuant to this authorization, the Conservancy may award grants that reduce address extreme weather events, sea level rise, storm surge, beach and bluff erosion, flooding, and other coastal hazards that threaten coastal communities, infrastructure, and natural resources. Section 31113 (b) provides that the Conservancy shall prioritize projects that reduce hazards to harbors and ports and preserve and enhancing coastal wetlands and natural lands. The Project is a multi-objective project that will address climate change through increasing shoreline protection in an active port with valuable coastal wetlands, at the same time as increasing subtidal habitat values.

CONSISTENCY WITH CONSERVANCY'S STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

Consistent with **Goal 5, Objective A** of the Conservancy's 2013-2018 Strategic Plan, the proposed project will plan for the restoration of native oyster habitat.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA & GUIDELINES:

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines, last updated on November 10, 2011, in the following respects:

Required Criteria

1. **Promotion of the Conservancy’s statutory programs and purposes:** See the “Consistency with Conservancy’s Enabling Legislation” section above.
2. **Consistency with purposes of the funding source:** See the “Project Financing” section above.
3. **Support of the public:** The Project is supported by the Port of San Diego, Assemblymember Toni Atkins, the San Diego Bay National Wildlife Refuge, and the U.S. Navy (see Exhibit 3).
4. **Location:** The proposed planning area for the Project will be the nearshore coastal areas of San Diego Bay, County of San Diego, within the coastal zone and the Conservancy’s jurisdiction.
5. **Need:** The need for projects that develop adaptation strategies for climate change in urbanized estuaries is described in the Project Summary section above. The Conservancy’s funding is needed because the Port of San Diego does not have sufficient funding to complete the planning portion of the project. Without the baseline studies, conceptual designs, and study plan, the success of the Project would be compromised and the ability to obtain funding to undertake implementation of the Project would be hindered.
6. **Greater-than-local interest:** The project will restore native oysters, an Environmentally Sensitive Habitat Area recognized by the Coastal Commission as a resource of statewide importance and a NOAA Trust Resource of nationwide importance. Greater coverage of oysters in San Diego Bay will improve water quality and increase the food base for migratory birds and commercially and recreationally important fish.
7. **Sea level rise vulnerability:** Oysters occupy a wide range of tidal heights and the oyster populations can easily adapt and shift inland as wetlands migrate inland due to sea level rise. However, if there is an overall net loss of wetland area due to sea level rise, we can expect a net loss in oyster habitat as well.

Additional Criteria

9. **Resolution of more than one issue:** Living Shorelines projects are designed to restore valuable shallow subtidal habitat while also providing shoreline protection.
10. **Leverage:** The project will benefit from a 58 percent cash match from the Port of San Diego.
12. **Innovation:** The Project will investigate innovative techniques for restoring valuable shallow subtidal habitat while also providing shoreline protection.
13. **Readiness:** The grantee is ready to start the project immediately.
14. **Realization of prior Conservancy goals:** See “Project History” above.”
16. **Cooperation:** The Conservancy, the Port of San Diego, the California State University at Fullerton, and the grantee (a non-profit organization) are working in collaboration to complete the Project.

17. **Vulnerability from climate change impacts other than sea level rise:** Oysters are adapted to a broad range of salinity, depth, and water temperature, and so are naturally buffered against many of the environmental shifts that might be associated with predicted climate change. In addition, oyster beds will help slow shoreline erosion as sea levels rise by stabilizing sediments and capturing sediments from the water column.
18. **Minimization of greenhouse gas emissions:** The project will have negligible contributions to greenhouse gas emissions because it is primarily a planning project that will include some field studies. Project participants will be encouraged to carpool whenever possible.

CONSISTENCY WITH LOCAL COASTAL PROGRAM POLICIES:

The Unified Port of San Diego's "Port Master Plan" has been certified by the Coastal Commission and serves as the local planning document for the Port's tidelands. However, Port tidelands cover only a portion of the Bay. The Project will fall partially within and partially outside the jurisdiction of the Port Master Plan because it will assess all areas of San Diego Bay to determine the best available sites for native oyster restoration and will not be restricted to Port tidelands.

Although some areas of the Project are outside the jurisdiction of the Port Master Plan, the Project is consistent with the goal of the Port Master Plan to "protect, preserve, and enhance natural resources, including natural plant and animal life in the bay as a desirable amenity, an ecological necessity, and a valuable and usable resource", because the project focuses on restoration of native oyster habitats, a valuable ecological resource. The Project is also consistent with the Port Master Plan goal to "encourage the protection and restoration of functional areas which have a high ecological value" because the restoration of native oyster habitat will restore important ecological functionality that has been lost due to human impacts. The Project will benefit Port tidelands by addressing these goals throughout the Bay.

COMPLIANCE WITH CEQA:

The proposed project is statutorily exempt from the provisions of CEQA pursuant to 14 California Code of Regulations Section 15262, since it involves only feasibility or planning studies for possible future actions which have not yet been approved, adopted, or funded, and since the Project plan will consider environmental factors. In addition, this project is categorically exempt pursuant to 14 California Code of Regulations Section 15306, since it consists of basic data collection, research, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.

Staff will file a Notice of Exemption upon approval of the proposed project.