



CALIFORNIA OCEAN PROTECTION COUNCIL

Staff Recommendation  
July 25, 2018

**Box Crab Pilot Project: Implementing Onboard Electronic Monitoring in Support of an Experimental Box Crab Fishery**

Paige Berube, Program Manager

**RECOMMENDED ACTION:** Authorization to disburse up to \$280,000 to Pacific States Marine Fisheries Commission to coordinate implementation of electronic monitoring systems on a suite of commercial fishing vessels participating in a box crab experimental gear permit research program to determine the potential for a targeted fishery and provide guidance for California’s potential broader application of electronic monitoring.

**LOCATION:** Central and Southern California

**STRATEGIC PLAN OBJECTIVES:** Sustainable Fisheries and Marine Ecosystems, and Science-Based Decision-Making

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**EXHIBITS**

Exhibit A: April 2018 California Department of Fish and Wildlife Memo: Designation of the Harvest of Non-Cancer Crabs as an Emerging Fishery

Exhibit B: June 2018 Fish and Game Commission Meeting PowerPoint presentation: Commercial Non-Cancer Crab Incidental Landing Limits

Exhibit C: June 2018 Fish and Game Commission Notice of Proposed Changes in Regulations for Non-Cancer Crabs

Exhibit D: Support Letters

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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), the Ocean Protection Council 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.
- 2) The proposed project is consistent with the Ocean Protection Council's grant program funding guidelines (Interim Standards and Protocols, August 2013).
- 3) 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 further recommends that the OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

"The California Ocean Protection Council hereby approves the disbursement of up to \$280,000 to Pacific States Marine Fisheries Commission to coordinate implementation of electronic monitoring systems on a suite of commercial fishing vessels participating in a box crab experimental gear permit research program to determine the potential for a targeted fishery and provide guidance for California's potential broader application of electronic monitoring.

This authorization is subject to the condition that prior to disbursement of funds, Pacific States Marine Fisheries Commission 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."

**PROJECT SUMMARY:**

**Overview:**

This project would support implementing electronic monitoring systems on a suite of commercial fishing vessels participating in a box crab experimental gear permit research program to determine the potential for a targeted fishery and provide guidance for California's potential broader application of electronic monitoring.

In April 2018, the California Department of Fish and Wildlife (CDFW) determined that the fishery for non-Cancer crab, which includes the brown box crab species (box crab), was an "emerging fishery" as defined by the Fish and Game Code Section 7090 of the Marine Life Management Act (MLMA) (Exhibit A). The Fish and Game Commission (FGC) is required to encourage, manage and regulate emerging fisheries (Fish and Game Code Section 7090). The FGC noticed a proposed regulation change at its June 2018 meeting to limit incidental harvesting of non-Cancer crabs in trap fisheries as the increase in incidental take of non-Cancer crabs, and particularly of box crab, spiked in the past few years (Exhibit B and C). Simultaneously, FGC directed CDFW to pursue development of an experimental gear permit for box crab specifically, allowing fishermen to target box crab while also requiring collaboration with the state on research. As part of the collaborative research that will be advanced through the experimental gear permit program, the state is exploring testing different electronic monitoring systems to gather important information regarding species biology, fishing dynamics and bycatch. This project will capitalize on this strategic opportunity to test the ability of electronic monitoring systems to meet both the immediate goal of data collection to inform fishery development and the ultimate goal of providing guidance on the use of electronic monitoring more broadly in the state.

OPC support of this project would fund the electronic monitoring tools, observers, data review and analysis from the electronic monitoring tools, as well as convening an advisory committee of participating fishermen, state agency staff, PSMFC staff and other experts. Two different electronic monitoring systems will be tested, one of which utilizes a camera system, and the other which utilizes a non-camera system that will be paired with human observers. The project will also support collaboration with a research lab to investigate the potential for development of a machine-learning algorithm for automated measurement of box crab size and sex from the video footage. Ultimately, through OPC support of this box crab pilot project, the state will gain a better understanding of (1) whether box crab is a viable and sustainable commercial fishery, and (2) guidance for the state's potential broader application of electronic monitoring as a fisheries management tool.

The goal of OPC's Sustainable Fisheries program is to enhance the sustainability of California's ocean fisheries to protect marine ecosystems, port communities, and coastal economies. Supporting the collaborative research and testing of electronic monitoring within an emerging box crab fishery is well aligned with OPC's Strategic Plan, particularly Objective 7.1 to promote sustainable fisheries in California's coastal communities. This project is also well-aligned with OPC's Sustainable Fisheries Program objectives to improve the efficiency of fisheries data collection, synthesis, and management to support transparent and adaptive decision-making, as well as to strengthen partnerships and collaboration among fishing constituent groups, state agencies, and others to maximize effectiveness of fisheries management approaches. This project is consistent with two previous fisheries resolutions in 2006 and 2013, which highlight the importance of advancing innovative approaches to sustainable fisheries, supporting cooperative research, as well as promoting economic opportunities in California fishing communities. Furthermore, this project is well aligned with the California Ocean Protection Act (COPA), particularly Sections 35510, 35515, and 35650. The Marine Life Management Act (MLMA) emphasizes the need for the state of California to support new fishing opportunities, either new species or gear types, to help strengthen fishing communities.

OPC financial support of this project will guide fisheries management consistent with the goals of COPA and the MLMA and improve monitoring and data gathering, and advance scientific understanding, to continually improve efforts to protect and manage marine fisheries in California.

**Background:**

Potentially underutilized species that might form the basis for new target fisheries are often lacking in the essential fisheries information necessary to develop appropriate management measures. Thus supporting their exploitation as a new fishing opportunity requires substantial commitment to information gathering on the part of both fishermen and managers. Data needs include elements of species biology, fishing dynamics, and bycatch. The high quality evidence required to demonstrate the impact of a new fishery on existing fisheries and/or sensitive species through bycatch has historically required human observers. In recent years, electronic monitoring systems for fisheries data collection have been implemented around the world for a wide variety of target species, gear types, and information needs and have been demonstrated in some cases to be more reliable than human observers. As most potentially high-volume marine resources are already the subjects of target fisheries,

most new fisheries will fit a low volume model. In these cases, the cost of human observers will likely be untenable to fishermen and present a roadblock to development of new opportunities. Electronic monitoring systems can represent substantial cost savings, and when incorporating a camera, can meet robust bycatch accounting needs while avoiding challenges with human observers including scheduling, training, weather, vessel safety, and manipulation. Data requirements for experimental fisheries will be higher than information collected on the typical at-sea logbook, requiring fishermen to slow fishing operations to take samples, make measurements, and fill out data sheets. Electronic monitoring systems have the potential to reduce this burden on fishermen while also providing managers with the assurance of data consistency and reliability.

**About the Grantee:**

The grantee, Pacific States Marine Fisheries Commission (PSMFC), is an interstate compact agency that partners with resource agencies and the fishing industry to support sustainable management of Pacific Ocean resources. The PSMFC supports California, Oregon, Washington, Idaho and Alaska. PSMFC has no regulatory or management authority. PSMFC's expertise includes coordinating research activities, monitoring fishing activities, and collecting data and maintaining fisheries databases. Specifically, PSMFC leads an electronic monitoring program, which they launched a program in 2012 to test electronic monitoring for tracking groundfish quotas and has since expanded testing to other fisheries. PSMFC has expertise in reviewing video imagery from electronic monitoring tools, and will review video imagery data for this project and provide that data to CDFW for additional analyses to determine whether box crab is a viable and sustainable target fishery. PSMFC will work closely with OPC, CDFW, FGC, and fishermen participating in the experimental permit program as well as other stakeholders throughout the course of the project.

**DETAILED PROJECT INFORMATION:**

The approval of experimental gear permits by FGC is anticipated for December 2018 with fishing initiating in early 2019. Permits will likely be granted for one year with the potential for four renewals. Two electronic monitoring systems with different capabilities and provided by different entities will be tested. Both systems provide vessel position data as well as time and location stamps for each trap deployment and retrieval with the use of unique radio frequency identification devices (RFID) tags fixed to each trap. This will provide high-resolution information on spatial distribution of traps and their soak times. The system utilizing a video camera, will meet a more comprehensive suite of data needs necessary for an experimental fishery. The other system, which does not utilize a video camera, may provide a more streamlined suite of data with an alternative data-sharing model that may be better suited to ongoing management of an established fishery.

The focus of the experimental gear permit research program will likely occur between Bodega Bay and San Diego, where fishermen have previously incidentally harvested box crab in commercial trap fisheries such as rock crab and Dungeness crab. The terms and conditions of the experimental gear permit research program will be set by CDFW and will include research requirements associated with bycatch accounting, and experiments to inform the estimate of the biomass of the box crab stock as well as life history information necessary to determine if developing a target fishery is warranted. CDFW

Invertebrate Management staff will provide in-kind staff time for their coordination with fishermen who are participating in the experimental gear permit research program to advance specific collaborative research objectives. CDFW staff will use electronic monitoring data to directly inform estimates of box crab biomass and subsequent catch and/or effort limits for the experimental permit period and potential future target fishery. Electronic monitoring data will also be used in conjunction with other research activities to provide information on box crab growth, mortality, movement, size at maturity, fecundity, reproductive seasonality, and the impact of the fishery on reproductive potential.

CDFW will also provide in-kind staff time to produce a detailed evaluation of tradeoffs between each of the three data collection systems (two electronic monitoring systems and human observers) by comparing data sets with attention to quantity, accuracy, efficiency, cost, and compatibility with industry needs. Analysis of other features including data transfer and storage requirements, and data sharing policies and procedures, will be developed to inform future state planning for the use of electronic monitoring. OPC funds will support convening an advisory committee of participating fishermen, state agency staff, PSMFC staff, and other experts to inform this evaluation and analysis.

PSMFC's deliverables will include analysis of electronic monitoring data through video footage review and providing data to the state for additional analyses. PSMFC will provide updates to OPC staff throughout the course of the project regarding the installation and testing of the two electronic monitoring systems, as well as overall coordination updates to include observer coverage, potential collaboration with research labs, and advisory committee participation.

In coordination with this project, CDFW staff will also provide in-kind staff time to inform: (1) a synthesis document developing recommendations for potential future use of electronic monitoring for California's experimental and established fisheries; and (2) synthesis document at the conclusion of the experimental gear permit program providing research findings and recommendations for the development of a new fishery and management measures with respect to box crab as potential sustainable target fishery.

**Project Timeline:** August 2018 - April 2022

The project will begin in August 2018, and fishing and research under the experimental permit program will likely start in early 2019. OPC-supported research components of the experimental permit program will be funded for a total of two years of fishing under the experimental gear permit research program, and the project will conclude with advisory meetings and summary reports by April 2022.

**PROJECT FINANCING:**

Staff recommends that the Ocean Protection Council (OPC) authorize encumbrance of up to \$280,000 to Pacific States Marine Fisheries Commission to coordinate implementation of electronic monitoring systems on a suite of commercial fishing vessels participating in a box crab experimental gear permit research program to determine the potential for a targeted fishery and provide guidance for California's potential broader application of electronic monitoring.

Ocean Protection Council	\$280,000
California Department of Fish and Wildlife	Staff time support
<b>TOTAL</b>	<b>\$280,000</b>

The anticipated source of funds will be from the Ocean Protection Council’s appropriation of the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84). Proposition 84 authorizes the use of funds for purposes consistent with Section 35650 of the Public Resources Code, establishing the California Ocean Protection Trust Fund (Pub. Res. Code § 75060(g)). Under Section 35650(b), Ocean Protection Trust Fund monies may be expended for projects authorized by the OPC that are identified as appropriate Trust Fund purposes, as specified. The project is consistent with the Trust Fund purposes as discussed in the following section.

**Leverage of OPC funds**

This project and funding from OPC would build on up to \$690,000 of previous funding from the OPC, approved in July 2015, supporting an interagency agreement with CDFW to develop and implement a marine landings database system. CDFW is transitioning from paper records to electronic landing tickets, as well as rebuilding the state’s fisheries databases to better manage the state’s established fisheries. This system, which will accept electronic fisheries landing tickets, is coming online now. Through the marine landings database system, and this box crab pilot project which supports testing of electronic monitoring tools, California is working to streamline and digitize its data collection and management processes in support of more adaptive and efficient fisheries management decisions.

**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:

- Improve the management of fisheries
- Foster sustainable fisheries
- 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

Furthermore, this project is well aligned with the California Ocean Protection Act (COPA), particularly Sections 35510, 35515, and 35650:

- *A goal of all state actions shall be to improve monitoring and data gathering, and advance scientific understanding, to continually improve efforts to protect, conserve, restore, and manage coastal waters and ecosystems (Section 35510).*
- *Identify scientific research and planning that is useful for the protection and conservation of coastal waters and ocean ecosystems, and coordinate and assist state agencies in addressing those needs. (Section 35515)*
- *(B)“...fishery research, monitoring, data collection and analysis to support adaptive management...”; (C)(iii) Collaborative research and demonstration projects between fishery participants, scientists, and other interested parties.” (Section 35650)*

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

This project implements Focal Area A: Science-Based Decision-Making and Focal Area C: Sustainable Fisheries and Marine Ecosystems.

**CONSISTENCY WITH THE OPC'S GRANT PROGRAM FUNDING GUIDELINES:**

The proposed project is consistent with the OPC's interim Grant Program Funding Guidelines for the California Environmental License Plate Fund, in the following respects:

Required Criteria

1. Directly relate to the ocean, coast, associated estuaries, or coastal-draining watersheds: *The box crab is a marine crustacean species found off the coast of California at a depth of 150-550 meters.*
2. Support of the public: *See Exhibit D.*
3. Greater-than-local interest: *The box crab range stretches from British Columbia to San Diego, including the entire California coast. In California, landings of box crab in recent years occurred around the Bodega Bay region, San Francisco, Santa Barbara, Los Angeles, and San Diego (Exhibit B).*

Additional Criteria

4. Improvements to management approaches or techniques: *Electronic monitoring may have the potential for broad application in California fisheries. It is being used effectively in five federally managed United States fisheries. The emerging box crab fishery provides a strategic opportunity to test the use of electronic monitoring for fisheries management in California.*
5. Resolution of more than one issue: *The electronic monitoring program addresses multiple issues. The first issue is determining the potential for a fishery targeting box crab. The second issue is testing electronic monitoring systems to inform potential broader application of electronic monitoring in California fisheries.*
6. Leverage: *CDFW is contributing in-kind staff time for collaborative research and data analysis.*
7. Timeliness: *This project is timely because it aligns with FGC and CDFW's priority of pursuing an experimental fishing permit research program for box crab as exemplified in the April 2018 memo and June 2018 notice (Exhibits A and C). This project also aligns with CDFW's transition from paper to electronic landing tickets, and supports further testing of electronic data processes to streamline and improve the efficiency of data collection and analysis for fisheries management decisions.*
8. Coordination: *OPC will coordinate with PSMFC and CDFW on the experimental permit program and with the FGC to ensure alignment with their rulemaking process. OPC may also coordinate with outside researchers, as relevant, on this project.*

**COMPLIANCE WITH 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 the OPC.