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DRAFT
Statewide Marine Aquaculture Action Plan

California Ocean Protection Council

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Executive Summary

The State of California supports the sustainable development of marine aquaculture to meet growing demand for healthy, low-impact protein, drive economic activity, support California Native American tribal priorities, and provide ecosystem benefits. As global seafood demand continues to rise and wild-caught harvests cannot sustainably increase to meet market needs, aquaculture now supplies nearly one third of the world's seafood harvest.[1] Despite the state's long coastline and high demand for seafood[2], California's marine aquaculture industry remains small. The State has a responsibility to ensure that aquaculture development provides economic and food security benefits, and protects tribal cultural resources, native species, and ecosystems. California is committed to responsibly facilitating development in its aquaculture sector in alignment with these ecological, economic, and cultural goals.

California's Guiding Principles for Sustainable Marine Aquaculture (Guiding Principles) outline a vision that marine aquaculture in California will be a sustainable and robust industry pa by best available science; compatible with wild fisheries; guided by comprehensive planning, permitting, and collaboration; minimally harmful to the environment; supportive of living wages and equitable economic growth; in partnership with California Native American tribes; and protective of public access.

California's Statewide Marine Aquaculture Action Plan (Action Plan) is the integral next step in implementing California's vision, and includes three primary goals to achieve that vision, as described below. The Action Plan presents actions needed to further develop and refine a consistent, comprehensive management and regulatory framework for marine aquaculture in

1 FAO, 2024
2 Love et al., 2021

California, reflects the priorities outlined in the Guiding Principles, and outlines timelines for implementation. This Action Plan is intended to be a living document which will be updated as necessary to reflect best available science and state priorities. The three goals of this Action Plan are:

- Goal 1: Improve California's aquaculture governance framework through increased interagency coordination and transparency.
- Goal 2: Maximize environmental sustainability and continue to protect and enhance public health.
- Goal 3: Facilitate sustainable development of marine aquaculture in state waters.

Background

California's Need for a Marine Aquaculture Action Plan

California's Aquaculture Development Act[3] of 1979 established the State's policy to encourage aquaculture as a means to augment food supplies, expand employment and economic opportunities, increase native fish stocks, enhance commercial and recreational fishing, and protect and better utilize land and water resources. Additionally, Fish and Game Code promotes the conservation, maintenance and use of ocean and state waters for the benefit of Californians and supports the development of fisheries, including commercial aquaculture.[4] To fulfill these mandates, the state must efficiently and effectively regulate and administrate aquaculture operations[5] while ensuring that aquaculture development is balanced with strong protections for California's valuable coastal and marine ecosystems.

To increase coordinated and transparent decision making for aquaculture governance in California, the Ocean Protection Council (OPC) established a state interagency Aquaculture Leadership Team (Leadership Team) in 2021. The Leadership Team consists of state agencies with policy or regulatory oversight of aquaculture activities including the California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), California Fish and Game Commission (CFGC), State Lands Commission (SLC), California State Coastal Conservancy (SCC), California State Water Resources Control Board and Regional Water Quality Control Boards

3 PRC Sec. 825 et seq.
4 FGC Section 1700
5 Assembly Joint Resolution 43 (2014 Chesbro); FGC Sections 15100, 15702; Government Code 65920 et seq.

(Water Boards), California Department of Public Health (CDPH), and the California Department of Food and Agriculture (CDFA). In June 2021, the Leadership Team published the Guiding Principles for Sustainable Marine Aquaculture as its first action to promote interagency coordination and transparency. The Statewide Marine Aquaculture Action Plan (Action Plan), as called for in Target 4.1.6 of OPC's 2026-2030 Strategic Plan, is the Leadership Team's next step to establish aquaculture as a sustainable and viable industry in this state.

> The purpose of this Action Plan is to increase coordination among state agencies and improve consistency, transparency, and efficiency in planning, facilitating, permitting, managing, and fostering sustainable marine aquaculture in California. This Action Plan outlines the State's approach to improving aquaculture governance, regulation, and oversight; protecting the environment and public health; and establishing a foundation for the sustainable development of marine aquaculture. The pace of Action Plan implementation will depend on political will, agency capacity, and the availability of resources and funding.

The State has drafted this Action Plan as a foundation for discussion between resource managers, the academic community, California Native American tribes, industry participants, fishermen, and members of the public.

Definitions for the Purpose of This Action Plan and Scope of This Action Plan

Marine aquaculture is the form of agriculture devoted to the propagation, cultivation, maintenance, and harvesting of marine algae and shellfish in marine waters, estuaries, bays, and submerged tidelands extending out to three nautical miles, and marine algae, shellfish, and finfish in land-based systems along the coast. Land-based systems include recirculating tank operations and systems with ocean water inflows and outflows or other open connections to marine environments.

The focus of this Action Plan is the governance, environmental sustainability, and development of **commercial marine aquaculture**; aquaculture intended for harvest for sale.

The terms **permits** and **permitting** include all types of entitlements, such as leases, permits, and licenses, and apply both to new projects and changes to existing projects.

Adaptive management improves the management of biological resources over time by using new information gathered through monitoring, evaluation, and other credible sources as they become available, and adjusts management strategies and practices to assist in meeting conservation and management goals. Under adaptive management, program actions are viewed as tools for learning to inform future actions.[6]

Aquaculture and California's Marine Environment

California's coastal and marine ecosystems contain a wide variety of habitats, including estuaries, rocky shores, seagrass beds, and kelp forests. These unique places are home to thousands of species of seaweed, invertebrates, fish, seabirds, and mammals. Our state's coastline supports a thriving economy, provides significant recreational opportunities, and holds profound cultural significance for tribes, who have stewarded California's coasts and oceans since time immemorial and remain deeply connected to their ancestral lands and waters. Shellfish and seaweed aquaculture can be managed in ways that offer benefits to the state, and its residents, including: the advancement of a blue economy through increased food security[7,8], community resilience, and industry transitions[7,9], as well as ecosystem benefits such as providing habitat for other organisms[7,8,10,11], nutrient assimilation[12,13], water quality improvements[7,8,11,14], enhanced benthic community diversity and production[15], and carbon sequestration[8].

It is vital for the State to minimize the potential adverse impacts[16] of aquaculture including: disease and parasite transmission and genetic pollution to wild populations[17]; conflicts with other marine industries such as wild capture fisheries[18]; damage to marine habitats[18], such as eelgrass and native oyster beds; conflicts with tribal cultural and ancestral resources and traditional practices; generation of marine debris, pollution[17], and excess nutrients[18]; and

6 FGC Code Section 13.5 & 90.1
7 Alleway et al. 2019
8 Van der Schatte Olivier et al. 2020
9 Gentry et al. 2020
10 Powers et al 2007; Tallman et al. 2011
11 Fricke et al. 2025
12 Higgins et al. 2011
13 Rose et al. 2015
14 Schroder et al. 2014
15 National Research Council 2010; Kraufvelin and Diaz 2015
16 Pillay 2008
17 Martinez-Porchas and Martinez-Cordova 2012

introduction of invasive species[18]. Therefore, California is committed to supporting aquaculture development by using science-based approaches that maintain a robust level of environmental protection and ensure the environmental sustainability of marine aquaculture operations. This must incorporate meaningful engagement with tribes to ensure aquaculture operations do not adversely impact tribal natural and cultural resources.

Other Types of Marine Aquaculture

While the focus of this Action Plan is commercial marine aquaculture, the State acknowledges that other types of marine aquaculture, including activities focused on restoration, are occurring in California and that not all aquaculture projects fit solely with one definition. Many aquaculture projects, such as those led by tribes, have multiple goals in addition to commercial profit including food sovereignty, preservation of cultural lifeways, and ecosystem and/or species restoration; many tribes view these goals as inherently intertwined. Restorative aquaculture, conservation aquaculture, and regenerative aquaculture have been discussed by academics and conservation organizations across the globe. Moving forward, the State will work to increase collaboration with tribes, aquaculture practitioners, the conservation and research communities, and other partners to build shared understanding of these other types of marine aquaculture and evaluate how the State's aquaculture governance framework can better support such efforts.

Overview of California's Regulatory and Management Landscape

The regulation of marine aquaculture in California is accomplished by multiple local, state, and federal agencies. Within state government, the California Department of Fish and Wildlife (CDFW) and the California Fish and Game Commission (CFGC) are the principal agencies responsible for the management, protection, and conservation of California's fish and wildlife resources. Fish and Game Code provides CDFW and CFGC the authority to regulate marine aquaculture in four ways:

- Registration of aquaculture facilities and species cultured within the state;
- Leasing of state water bottoms and water column for the purpose of aquaculture;

- Permitting of various aquaculture-related activities, including stocking, broodstock collection, and importation; and

- Detection, control, and eradication of disease in aquaculture facilities.

Fish and Game Code also establishes the Aquaculture Development Committee[18] (ADC), which is convened by the state aquaculture coordinator[19] to advise the Director of CDFW on all matters pertaining to aquaculture. The ADC consists of at least 12 members of the aquaculture industry, as well as representatives from CDFW and other state agencies, the University of California, and the Legislature.

While CDFW and CFGC are primarily responsible for marine aquaculture oversight, other agencies serve important roles as well:

- California Coastal Commission (CCC) protects coastal resources and uses through the issuance of Coastal Development Permits and by implementing the federal consistency provisions of the Coastal Zone Management Act;

- California State Lands Commission (SLC) determines the boundaries of state-owned tidelands and ensures that proposed projects do not interfere with other Public Trust consistent activities;

- California Department of Public Health (CDPH) monitors and enforces safety standards for shellfish to be sold for human consumption;

- California's Water Boards (Water Boards) protect water quality through setting standards and issuance of authorizations to discharge waste.

A full description of the roles of these and other state and federal agencies with jurisdiction over marine aquaculture in California can be found in the appendix.

Aquaculture Action Plan Goals

The goals of the Action Plan encompass three general themes: improving the current regulatory and governance landscape, minimizing threats to public health and the marine environment, and laying a foundation for the sustainable development of marine aquaculture in California. Within each of these goals there are specific actions the State will take to reach the goal; many

18 FGC Section 15700-15703
19 FGC Section 15100

actions are “cross-cutting” across multiple goals. Actions are categorized by time for completion: near-term (1 to 3 years), mid-term (3 to 5 years), and long-term (5 to 10 years). Although all members of the Aquaculture Leadership Team will coordinate to implement the Action Plan, participatory agencies have been included for each action to identify key partners for specific outcomes. The pace of Action Plan implementation will depend on political will, agency capacity, and the availability of resources and funding.

These goals and actions were developed through the input of the State’s Aquaculture Leadership Team and multiple engagement efforts with the aquaculture industry, tribes, the public, scientists, and other partners, which highlighted the need to: improve California’s existing aquaculture management and regulatory framework; develop consistent, coherent permitting and oversight processes; protect public health and the coastal marine environment; and establish the framework necessary for the sustainable development of commercial marine aquaculture in California.

Overarching Action: To foster accountability and transparency in aquaculture governance, OPC staff, in close partnership with the Aquaculture Leadership Team, will provide a high-level progress report to the Council every three years to summarize advancement towards accomplishing the actions of this Action Plan and identify additional priorities, as needed.

The goals of the Action Plan are:

- Goal 1: Improve California’s aquaculture governance framework through increased interagency coordination and transparency.
- Goal 2: Maximize environmental sustainability and continue to protect and enhance public health.
- Goal 3: Facilitate sustainable development of marine aquaculture in state waters.

Goal 1: Improve California’s aquaculture governance framework through increased interagency coordination and transparency.

Currently, California’s aquaculture governance landscape is complex, with regulatory processes spread across local, state, and federal agencies. This multi-agency approach ensures robust oversight and protection of the State’s marine environment and public health and allows for public input to ensure public trust resources are responsibly managed. However, the permitting process for aquaculture projects is complicated; it involves separate applications, individual data

requirements, and environmental reviews[20] that can be difficult, time-consuming, and costly for industry participants to navigate. These requirements have limited the economic sustainability of aquaculture operations in the state. The actions in this goal will enhance interagency coordination, improve regulatory efficiency, and result in a more consistent and comprehensive marine aquaculture governance framework. Effective governance and interagency coordination are vital to the success of this Action Plan. Ultimately, the implementation of this Action Plan will help safeguard the marine environment and ensure protection of public trust resources while reducing barriers for the aquaculture industry.

Actions

- 1.1 Utilize the Aquaculture Leadership Team to assist with the execution of this Action Plan, and coordinate with tribes, the Aquaculture Development Committee, and other partners throughout implementation (Participatory Agencies: OPC, CDFW, CFGC, CCC, SLC, SCC, Water Boards, CDPH. Near-Term and Ongoing).

- 1.2 Utilize and improve coordination mechanisms for agency staff with regional expertise to review aquaculture permit applications, and provide coordinated, efficient feedback to aquaculture practitioners before and during the application process (Participatory Agencies: CDFW, CFGC, CCC, SLC, SCC, Water Boards, CDPH. Near-Term and Ongoing).

- 1.3 Identify and pursue strategies to enable state agencies to recover costs for CEQA evaluation and improve capacity and efficiency in their respective CEQA roles (Participatory Agencies: CDFW, CFGC, SLC. Mid-Term).

- 1.4 Develop a consolidated aquaculture permit application process that clearly identifies timelines for review alongside a centralized portal for permit application, reporting, and compliance (Participatory Agencies: CDFW, CFGC, CCC, Water Boards, CDPH. Mid-Term).

- 1.5 Publish a standardized aquaculture monitoring framework that outlines monitoring methods and compliance requirements for aquaculture practitioners (Participatory Agencies: CDFW, CFGC, CCC, CDPH. Mid-Term).

20 An overview of the California Environmental Quality Act (CEQA) can be found in the appendix

Goal 2: Maximize environmental sustainability and continue to protect and enhance public health.

California's marine ecosystems support a rich diversity of marine life and provide critical benefits to coastal communities. To maximize environmental sustainability and protect public health, the State must ensure that aquaculture operations minimize impacts to ecologically and culturally sensitive habitats and produce safe seafood. It is essential that aquaculture operations comply with regulatory standards, adhere to stringent siting criteria, and employ best management practices to avoid adverse effects on sensitive habitats and tribal cultural resources, and reduce risks such as entanglement, marine debris, and contamination from pollutants. Consolidating and clarifying these criteria and standards will provide clarity for the aquaculture industry while upholding the State's high environmental standards. The State will adaptively manage aquaculture by revising and revisiting these standards and criteria through a science-based, iterative approach to enable flexibility and responsiveness in decision-making as new information, technologies, and ecological conditions emerge.

Actions

- 2.1 Develop aquaculture siting guidance that provides direction on types of areas to avoid to minimize risks to the environment, seafood safety, and cultural resources and considers types of areas where operations could provide ecosystem, economic, and community benefits (Participatory Agencies: OPC, CDFW, CFGC, CCC, SLC, Water Boards, CDPH. Near-Term).

- 2.2 Build on existing scientific knowledge and frameworks from other states to identify desired outcomes and enforceable best management practices to minimize environmental impacts, in collaboration with aquaculture operators, scientists, and other partners (Participatory Agencies: OPC, CDFW, CFGC, CCC. Near-Term).

- 2.3 Support the removal of legacy aquaculture debris from previously abandoned aquaculture sites and enforce requirements[21] for aquaculture leaseholders to remove all structures and restore sites to original condition when a lease ends (Participatory Agencies: OPC, CDFW, CFGC, CCC, SLC. Near-Term and Ongoing).

- 2.4 Prioritize development of local/regional programmatic environmental impact reports by synthesizing and analyzing existing information and addressing knowledge gaps to enable decision-making for present and future projects, identify significant

21 FGC Section 15409 and lease conditions

environmental impacts, and outline potential mitigation strategies (Participatory Agencies: CDFW, CFGC, CCC. Mid-term).

- 2.5 Building on the guidance developed in 2.1, develop tools to inform aquaculture siting by conducting local/regional spatial analyses in parallel with 2.4 to identify avoidance areas and potential opportunity areas (Participatory Agencies: OPC, CDFW, CFGC, CCC, SLC, CDPH. Mid-Term).

- 2.6 Establish a shared data platform for aquaculture monitoring and compliance to improve oversight efficiency, increase transparency, and inform adaptive management (Participatory Agencies: CDFW, CFGC, CCC, CDPH. Mid-Term).

- 2.7 Identify areas where existing and future aquaculture farms experience degraded water quality, and address local threats to water quality, including land-based sources of pollution (Participatory Agencies: OPC, Water Boards, CPDH. Mid-Term).

- 2.8 Safeguard public health by exploring expansion of lab facilities and staff capacity necessary to complete mandated product and water quality testing for aquaculture operations (Participatory Agencies: OPC, CDFW, Water Boards, CDPH. Long-Term).

Goal 3: Facilitate sustainable development of marine aquaculture in state waters.

To facilitate the sustainable development and adaptation of marine aquaculture in California's biologically diverse and sensitive marine environments, the State will increase transparency for the aquaculture industry, integrate scientific research into regulatory processes, and explore new pilot aquaculture opportunities. Central to this effort is updating, expanding, and maintaining CDFWs online State Aquaculture Guide (Guide)[22]. The State will consolidate permitting, compliance, and monitoring requirements into this single, user-friendly website and add clear, step-by-step pathways and story maps. The Guide will include a consolidated aquaculture permit application (Action 1.4) with clear application guidelines and examples of successful permit applications, case studies, a centralized permit portal (Action 1.4), detailed information on agency jurisdictions, a framework and data platform for monitoring and compliance (Actions 1.5 and 2.6), environmental guidance (Actions 2.2 and 2.4), and siting guidance and tools (Actions 2.1 and 2.5). The Guide will be expanded and updated as new information and resources become available. By developing this Guide and improving direct communication with aquaculture operators, tribes, and other partners, the State will reduce

22 https://wildlife.ca.gov/Aquaculture

regulatory ambiguity, reduce barriers to entry, and enable more equitable participation in California's blue economy.

The State will develop an Aquaculture Science Plan to identify and provide guidance to address critical knowledge gaps. The Science Plan and resulting research will help aquaculture developers and regulators keep pace with rapidly developing technological advancements, evolving ecological understanding, and a changing socioeconomic landscape. The Science Plan will align research directly with regulatory and policy development and enable adaptive management of aquaculture. The State will partner with interested academic institutions, research networks, and tribes to develop the Science Plan and invest in studies that fill knowledge gaps, such as research on naturalization of cultured species, biodegradable cultivation equipment, and the socioeconomic impacts of aquaculture on coastal communities, to inform aquaculture practices across the state.

To lower barriers to entry and promote innovation in marine aquaculture, the State will investigate the development of a Pilot-Scale Aquaculture Permit Program. The program would be informed by limited-purpose aquaculture permitting and experimental lease approaches in other states (e.g. Maine Limited-Purpose Leases, Rhode Island Commercial Viability Permits, Mississippi's Off-Bottom Aquaculture Training Program, and South Carolina Experimental Permits[23]). The program could provide a simplified, low-cost pathway for researchers, entrepreneurs, and small-scale operators to trial new species, gear types, or sustainable farming practices in a controlled, real-world setting. By limiting the size, duration, and scope of activities, the program could minimize environmental risk and ease regulatory workload. Data generated from experimental sites could be used to inform future decision-making by both practitioners and regulators. Exploring this process would complement the actions of Goal 2 while allowing for more equitable industry participation and increased access to local seafood.

Actions

- 3.1 Expand and regularly update a web-based State Aquaculture Guide to serve as a public resource and one-stop-shop for information on permitting, monitoring, compliance, and siting (Participatory Agencies: CDFW, Water Boards. Near-Term and Ongoing).

- 3.2 Develop a State Aquaculture Science Plan that identifies existing ecological and socioeconomic information and outlines additional science needs to inform aquaculture

23 This program began in 1999, and the last permit was issued in 2014

governance; fund at least 3 research projects to inform knowledge gaps and support innovation (Participatory Agencies: OPC, CDFW, CFGC, CCC, Water Boards. Near-Term).

- 3.3 Evaluate the development of a Pilot-Scale Aquaculture Permit Program informed by frameworks from other states (Participatory Agencies: OPC, CFGC, CDFW, CCC, Water Boards. Long-Term).

Conclusion

California envisions a marine aquaculture landscape built upon a sustainable and robust commercial industry that is informed by best-available science; is compatible with wild fisheries; is guided by comprehensive planning, permitting, and collaboration; prioritizes partnership with tribes; and causes minimal harm to the environment. This Action Plan is an integral step in realizing California's vision. Through the actions nested within its three goals, the Action Plan provides a roadmap for redesigning the State's aquaculture governance framework. This Action Plan is meant to be a living document that is periodically revisited and updated. This iterative process will pave the way for recommendations and actions driven by the best-available science and ultimately result in a consistent, comprehensive management and regulatory framework for marine aquaculture in California.

Appendix

Table of Actions

Goal 1: Improve California's aquaculture governance framework through increased interagency coordination and transparency.

Action	Participatory Agencies	Time for Completion
1.1 Utilize the Aquaculture Leadership Team to assist with the execution of this Action Plan, and coordinate with tribes, the Aquaculture Development Committee, and other partners throughout implementation.	OPC, CDFW, CFGC, CCC, SLC, SCC, Water Boards, CDPH	Near-Term and Ongoing
1.2 Utilize and improve coordination mechanisms for agency staff with regional expertise to review aquaculture permit applications, and provide coordinated, efficient feedback to aquaculture practitioners before and during the application process.	CDFW, CFGC, CCC, SLC, SCC, Water Boards, CDPH	Near-Term and Ongoing
1.3 Identify and pursue strategies to enable state agencies to recover costs for CEQA evaluation and improve capacity and efficiency in their respective CEQA roles.	CDFW, CFGC, SLC	Mid-Term
1.4 Develop a consolidated aquaculture permit application process that clearly identifies timelines for review alongside a centralized portal for permit application, reporting, and compliance.	CDFW, CFGC, CCC, Water Boards, CDPH	Mid-Term
1.5 Publish a standardized aquaculture monitoring framework that outlines monitoring methods and compliance requirements for aquaculture practitioners.	CDFW, CFGC, CCC, CDPH	Mid-Term

Goal 2: Maximize environmental sustainability and continue to protect and enhance public health.

Action	Participatory Agencies	Time for Completion
2.1 Develop aquaculture siting guidance that provides direction on types of areas to avoid to minimize risks to the environment, seafood safety, and cultural resources and considers types of areas where operations could provide ecosystem, economic, and community benefits.	OPC, CDFW, CFGC, CCC, SLC, Water Boards, CDPH	Near-Term
2.2 Build on existing scientific knowledge and frameworks from other states to identify desired outcomes and enforceable best management practices to minimize environmental impacts, in collaboration with aquaculture operators, scientists, and other partners.	OPC, CDFW, CFGC, CCC	Near-Term
2.3 Support the removal of legacy aquaculture debris from previously abandoned aquaculture sites and enforce requirements for aquaculture leaseholders to remove all structures and restore sites to original condition when a lease ends.	OPC, CDFW, CFGC, CCC, SLC	Near-Term and Ongoing
2.4 Prioritize development of local/regional programmatic environmental impact reports by synthesizing and analyzing existing information and addressing knowledge gaps to enable decision-making for present and future projects, identify significant environmental impacts, and outline potential mitigation strategies.	CDFW, CGFC, CCC	Mid-Term
2.5 Building on the guidance developed in 2.1, develop tools to inform aquaculture siting by conducting local/regional spatial analyses in parallel with 2.4 to identify avoidance areas and potential opportunity areas.	OPC, CDFW, CFGC, CCC, SLC, CDPH	Mid-Term

2.6 Establish a shared data platform for aquaculture monitoring and compliance to improve oversight efficiency, increase transparency, and inform adaptive management.	CDFW, CFGC, CCC, CDPH	Mid-Term
2.7 Identify areas where existing and future aquaculture farms experience degraded water quality, and address local threats to water quality, including land-based sources of pollution.	OPC, Water Boards, CDPH	Mid-Term
2.8 Safeguard public health by exploring expansion of lab facilities and staff capacity necessary to complete mandated product and water quality testing for aquaculture operations.	OPC, CDFW, Water Boards, CDPH	Long-Term

Goal 3: Facilitate sustainable development of marine aquaculture in state waters.

Action	Participatory Agencies	Time for Completion
3.1 Expand and regularly update a web-based State Aquaculture Guide to serve as a public resource and one-stop-shop for information on permitting, monitoring, compliance, and siting.	CDFW, Water Boards	Near-Term and Ongoing
3.2 Develop a State Aquaculture Science Plan that identifies existing ecological and socioeconomic information and outlines additional science needs to inform aquaculture governance; fund at least 3 research projects to inform knowledge gaps and support innovation.	OPC, CDFW, CFGC, CCC, Water Boards	Near-Term
3.3 Evaluate the development of a Pilot-Scale Aquaculture Permit Program informed by frameworks from other states.	OPC, CFGC, CDFW, Water Boards	Long-Term

Overview of State and Federal Agency Roles in Aquaculture

California Department of Fish and Wildlife (CDFW)

CDFW, in partnership with the California Fish and Game Commission (CFGC), is one of the State's principal agencies responsible for the management, protection, and conservation of California's fish and wildlife resources. Under Fish and Game Code (FGC), CDFW's aquaculture-related authorities include:

- Registration of aquaculture facilities and species cultured in the state;
- Providing biological and technical review as a trustee agency for CFGC decisions on leasing of state water bottoms and water column for the purpose of aquaculture, and management of issued leases;
- Permitting of various aquaculture-related activities, including stocking, wild broodstock collection, and importation; and
- Detection, control, and eradication of disease in aquaculture facilities.

FGC also establishes a state aquaculture coordinator[24] within CDFW whose duties include promoting understanding of aquaculture to public agencies and the public, informing the aquaculture industry on regulatory compliance, and advising aquaculture operators on projects. The state aquaculture coordinator also coordinates with the Aquaculture Development Committee[25] (ADC) and the Aquaculture Disease Committee[26] (Disease Committee). These committees are comprised of a mixture of state agency, industry, and academic representatives.

The ADC advises the Director of CDFW on all matters pertaining to aquaculture and coordinates activities among public entities. The ADC consists of at least 12 members of the aquaculture industry, as well as representatives from CDFW and other state agencies, the University of California, and the Legislature. The Disease Committee may recommend regulations to the CFGC designed to safeguard wild and cultured organisms from diseases and parasites and helps state regulators to develop appropriate responses to individual disease outbreaks.

Under the California Environmental Quality Act (CEQA), CDFW serves as the trustee agency for the State's fish, wildlife, and plant resources. CDFW provides the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities that may affect natural resources held in trust for Californians.

24 FGC Section 15100
25 FGC Section 15700-15703
26 FGC Section 15502-15503

California Fish and Game Commission (CFGC)

Although CFGC staff work in close partnership with CDFW, CFGC is an independent body appointed by the Governor and subject to confirmation by the California State Senate. CFGC holds final decision-making authority for the establishment of regulations governing fish and wildlife conservation and the leasing of state tidelands and submerged lands for commercial aquaculture. CFGC decisions on new, amended, or renewed state water bottom leases are informed by CDFW's biological and technical reviews. Prior to approving a lease, CFGC must coordinate with the California State Lands Commission (SLC) to confirm site availability and consistency with other public trust uses for the duration of the lease.

CFGC considers only commercial aquaculture leases on state tidelands and submerged lands that have not been legislatively granted to local jurisdictions. Lease decisions, which require a majority vote of the Commission following public hearings, require that CFGC determines if the lease is in the public interest in alignment with CFGC's approved Criteria and Framework for Evaluating if a New State Water Bottom Lease is in the Public Interest. CFGC is not authorized to issue leases for research-only operations, for privately-owned tidelands, or for tidelands in areas granted by the legislature[27] to local entities for management (such as most of Humboldt Bay and San Diego Bay).

California Coastal Commission (CCC)

The CCC implements the California Coastal Act of 1976[28], which provides long-term protection of California's coastline for the benefit of current and future generations. Under the California Coastal Act, aquaculture facilities in the coastal zone must obtain a Coastal Development Permit (CDP) from the CCC, or a local government with a certified Local Coastal Program (LCP). Applicants for projects that involve development within both the CCC's jurisdiction and an area covered by an LCP may require multiple approvals, though the permitting process can be simplified through a consolidated CDP review by the CCC for the entirety of the project. The Coastal Act recognizes marine aquaculture as a coastal-dependent use which should be encouraged to augment food supplies, and states that "oceanfront land that is suitable for coastal dependent aquaculture shall be protected for that use". The CCC's adopted Coastal Development Permit Application Guidance for Marine Aquaculture and Restoration provides applicants with information needed to more efficiently and effectively navigate the CDP application process. Under its federal consistency authority pursuant to the federal Coastal Zone

27 More information on state granted lands can be found at https://www.slc.ca.gov/granted_lands/
28 PRC Sec. 30000 et seq.

Management Act (CZMA), the CCC also reviews aquaculture activities occurring in federal waters between three and 200 nautical miles offshore that would have reasonably foreseeable effects on coastal uses or resources within California's coastal zone. More details about the CCC's CZMA authority and review processes can be found on the CCC website[29].

California State Lands Commission (SLC)

SLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The SLC also has oversight authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions[30]. All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. These lands are held for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

Operationally, this means that SLC issues leases for all uses of state tidal and submerged lands except commercial aquaculture. As described above, SLC additionally provides Public Trust Doctrine[31] oversight over local government entities that have been granted day-to-day management authority of tidal and submerged lands by the legislature, particularly to ensure consistency with the Public Trust Doctrine.

California Department of Public Heath (CDPH)

CDPH regulates the growing, harvesting, processing, and marketing of bivalve shellfish (including oysters, mussels, clams, and scallops) intended for sale for human consumption. CDPH participates in the National Sanitation Shellfish Program. This program is the federal and state cooperative program recognized for the sanitary control of shellfish by the US Food & Drug Administration and the Interstate Shellfish Sanitation Conference. The purpose of the program

29 https://www.coastal.ca.gov/fedcd/fedcndx.html
30 PRC Sec. 6009, subd. (c), 6301, 6306
31 Overview of the Public Trust Doctrine: www.slc.ca.gov/public-engagement/#ptdoctrine

is to promote and improve the sanitation of shellfish moving in interstate commerce through federal and state cooperation and uniformity of state shellfish programs. Within CDPH, the shellfish sanitation program is divided into two main components: Pre-harvest (administered under the Environmental Management Branch) and Post-harvest (administered under the Food and Drug Branch).

A shellfish growing area certificate is required for the cultivation and harvesting of oysters, clams, mussels, or scallops for sale for human consumption[32], except when the final scallop product form is the adductor muscle only[33]. The certificate is also required for wet storage or depuration source water to use a natural marine source. CDPH reviews the application to assure that the applicant has legal authority to use the proposed growing area. The certificate is only issued after a sanitary survey evaluation of the growing area demonstrates that it meets standards. The evaluation includes the analysis of water samples, and an assessment of the watershed and pollution sources. To maintain a certificate, an applicant must submit ongoing water and biotoxin samples. A shellfish handling and marketing certification is required for all facilities and equipment used for handling, shucking, storing, packaging and shipping of shellfish after harvest[34].

California State Water Resources Control Board and Regional Water Quality Control Boards (Water Boards)

California's Water Boards have the authority to regulate marine aquaculture and restoration activities through the Porter-Cologne Water Quality Control Act and the Clean Water Act. A detailed discussion of this authority is provided on pages 3-46 to 3-48 of the Final Environmental Impact Report released in 2017 for the Coast Seafoods Permit Renewal and Expansion Project. The State Water Resources Control Board is responsible for setting statewide policy and standards, and coordinates and supports the efforts of the regional Water Boards. The nine Regional Water Quality Control Boards each represent a different area in California. Therefore, the location of an aquaculture or restoration project will determine which one is most appropriate to approach with questions or requests for application materials. A jurisdictional map of the nine Water Boards is available on the State Water Resources Control Board website[35].

32 CCR Title 17, Section 7706
33 NSSP Guide for the Control of Molluscan Shellfish: 2023 Revision: https://www.fda.gov/media/181370/download?attachment
34 CCR Title 17, Section 7711
35 http://www.waterboards.ca.gov/waterboards_map.html

U.S. Army Corps of Engineers (USACE)

The USACE has permitting authority over activities involving the placement of structures and materials in the marine and intertidal areas of the United States[36]. As part of its review process, USACE consults with NOAA Fisheries and/or the U.S. Fish and Wildlife Service regarding potential impacts to federally threatened or endangered species, and other federal resource protection statues. When this consultation results in the transmittal of conservation recommendations, USACE may memorialize those recommendations as permit conditions. In addition, because it is typically the sole federal permitting agency involved in reviewing marine aquaculture and restoration projects, USACE is typically the lead agency under the National Environmental Policy Act (NEPA). For new marine restoration projects and in-water aquaculture facilities and operations, this often means that USACE is responsible for the development of an environmental review document that meets the requirements of NEPA. When a similar document is required to be prepared under the California Environmental Quality Act (CEQA), a joint report may be developed.

U.S. Coast Guard (USCG)

The USCG District 11 assesses impacts to navigation and issues Private Aids to Navigation (PATON) permits for aids such as buoys lights, or day beacons necessary to mark structures and any hazards to navigation, or to facilitate operation navigation. Once a PATON permit is issued, the USCG Auxiliary conducts inspections on the condition, operational state, and position of aids on a 3-to-5-year cycle, depending on the class of the aid. The USCG Navigation Center also conducts Automatic Identification System analysis and modeling in support of Navigation Safety Risk Assessments (NRSAs) at the request of, or in response to, a permitting agency that is considering a project proposal from an applicant that will occur on or near the navigable waters of the U.S.

These resources give an overview of the current aquaculture permitting process in California:

- NOAA Fisheries: Guide to Leasing, Permitting, and Authorizing Commercial Aquaculture Operations off the California Coast
- California Aquaculture: Stakeholder Views and Recommendations for Moving Marine Aquaculture Projects Forward, Page 45 and 46.

36 Rivers and Harbors Act of 1899, Section 10; Clean Water Act, Section 404

Aquaculture and the California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA)[37] requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent possible. No single agency is responsible for complying with CEQA. To navigate the CEQA process, state agencies must often engage legal counsel and professional consultants.

For marine aquaculture in California, the CEQA process is triggered by when a public agency is taking discretionary action, such as approving a new lease or request to amend an existing lease. In these cases, the agency responsible for issuing state water bottom leases, CFGC, assumes the role of lead agency in the CEQA process. CDFW also provides support in the form of subject matter expertise to CFGC. SLC and local districts may also act as the CEQA lead in aquaculture permitting, according to the jurisdictions laid out in the previous section. Further information on CEQA can be found at the Governor's Office of Land Use and Climate Innovation website[38].

Overview of Current Marine Aquaculture Operations in the State

Commercial marine aquaculture of shellfish and seaweed occurs throughout the state of California in both coastal waters and private land-based facilities. Operators are restricted to growing the species that are approved on their lease. Additionally, each aquaculture facility must register the species they plan to culture in an annual aquaculture registration with CDFW. While a thorough overview of existing state commercial marine aquaculture operations can be found in CDFW's Aquaculture Information Report (AIR) from May 2020, a brief summary of California marine aquaculture operations is included here for context.

Land-Based Facilities and Leases on Public Tidelands

Although most operations are within coastal waters, there are three active land-based facilities growing shellfish and/or seaweed for commercial sale and consumption. After the publication of the AIR, a long-standing land-based operation in Cayucos closed in early 2020. A total of 5,740 acres of California public tidelands are leased for marine aquaculture, by the CFGC via a state water bottom lease, and local jurisdictions on tidelands previously granted or privately owned by other entities. Typically, only a portion of the lease is actively used for aquaculture due to limitations in suitable growing areas, presence of sensitive habitats such as eelgrass, or other

37 PRC Sec. 21000 and seq.; CCCR Title 14 Sec. 1500 and seq.
38 https://lci.ca.gov/ceqa/

considerations. The operational footprint for all tideland leases combined is estimated at approximately 9% of the total acreage leased within the state.

CFGC manages 17 active state water bottom leases for marine aquaculture totaling 907 acres, of which approximately 185 acres are actively used. At the time of AIR publication, CFGC had received and was considering three applications for additional state water bottom leases in California state waters. One applicant has since retracted their state water bottom lease application; CFGC is currently considering two state water bottom lease applications as of the publication of this Action Plan. Existing leases range in size from 5 to 156 acres, with a median size of 25 acres. State water bottom leases managed by CFGC are located within Tomales Bay, Morro Bay and the Santa Barbara Channel. The greatest number of state water bottom leases are held in Tomales Bay with a total of 12 leases, operated by seven different businesses. Out of a total of 520 acres leased in Tomales Bay, only 152 acres are actively used. In Morro Bay, two operators occupy three leases in the area, utilizing 8 of their total leased acreage of 290. Two leases in Santa Barbara run by two operators account for 97 acres of leased tidelands, of which only 25 acres are actively used.

Leases on State Granted Lands

According to the May 2020 AIR published by CDFW, marine aquaculture operations on submerged tidelands under private or local jurisdictional control (i.e. state granted lands), used an estimated 307 acres out of 4,833 acres under non-state lease or other permitted entitlement. The City of Monterey manages a small 2-acre lease operated by a commercial abalone farm. Until its closure in 2024, a private utility in Carlsbad leased land in Aqua Hedionda Lagoon to a shellfish operation. The San Diego Unified Port District, through a special blue-tech business incubator program, leases less than one acre to multiple start-up trial projects, and has conducted planning efforts to explore greatly-expanded aquaculture development opportunities in and around San Diego Bay on granted tidelands and in support of water bottom leases subject to state jurisdiction, comprising a potential combined total of 1,295 additional acres. More information on aquaculture operations in San Diego Bay can be found in the Port of San Diego's Shellfish and Aquaculture Program Discussion Draft. The majority of marine aquaculture on granted lands occurs in Humboldt Bay, and is managed by the Humboldt Bay Harbor, Recreation, and Conservation District, the City of Arcata, and the City of Eureka. It consists of 4,825 acres leased or owned, with only 300 acres permitted for actual production. The Humboldt Bay Harbor, Recreation, and Conservation District has also secured regulatory approvals for additional shellfish culture at specific sites in Humboldt Bay through the Humboldt Bay Mariculture Pre-Permitting Project.

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