GUIDING PRINCIPLES FOR SUSTAINABLE MARINE AQUACULTURE IN CALIFORNIA

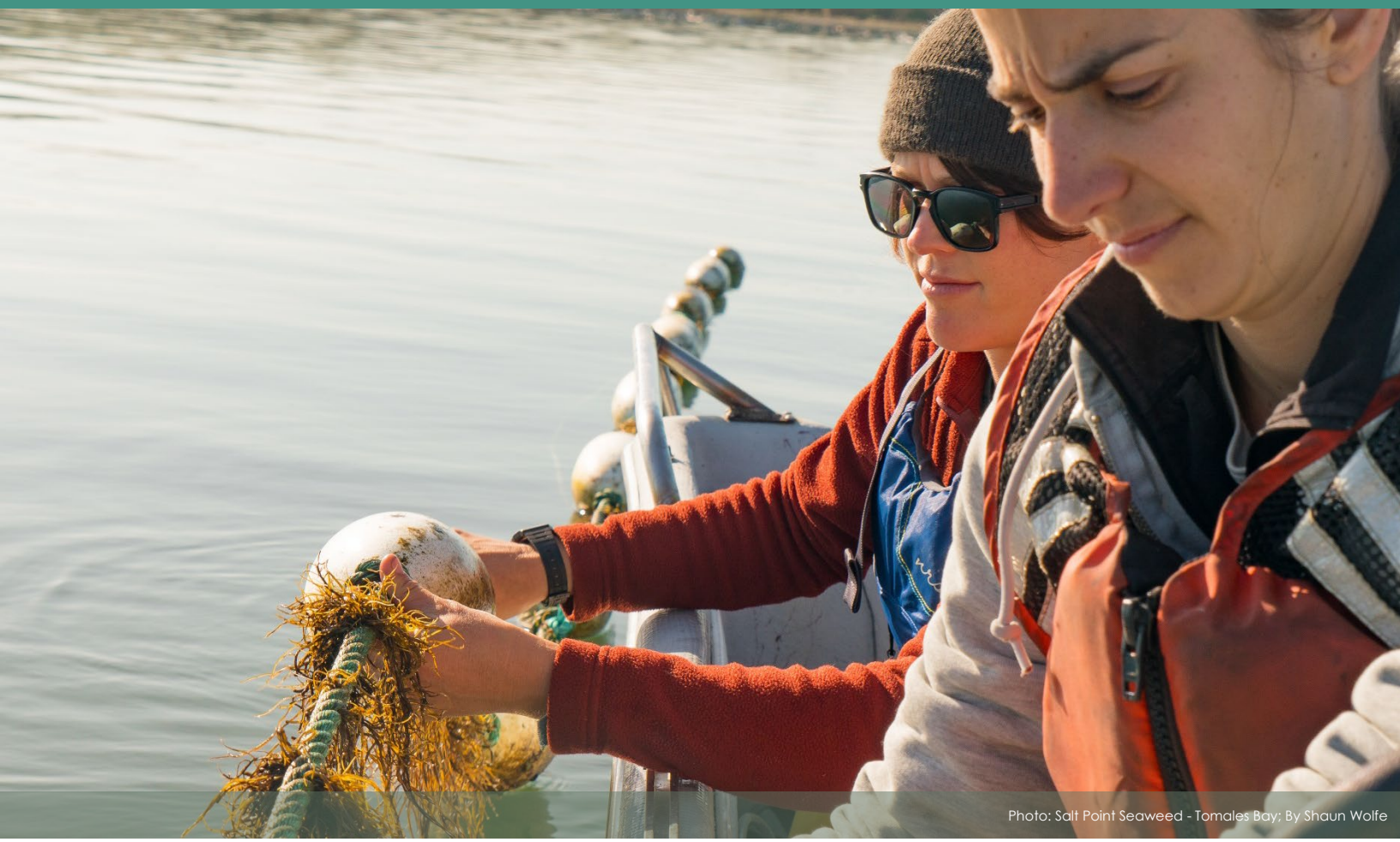

Photo: Salt Point Seaweed - Tomales Bay; By Shaun Wolfe

VISION

California has a tremendous opportunity to advance sustainable marine aquaculture in a way that serves as a model for other states around the nation. We envision a robust, sustainable commercial aquaculture industry that is informed by best available science; compatible with wild fisheries; guided by comprehensive planning and collaboration; causes minimal harm to the environment; provides local, safe and healthy food production; supports living wages and equitably grows the state's economy; partners with California Native American Tribes; and protects public access.

COLLABORATING AGENCIES

California Coastal Commission
California Department of Fish and Wildlife
California Department of Food and Agriculture
California Department of Public Health
California Fish and Game Commission
California Natural Resources Agency
California Ocean Protection Council
California State Coastal Conservancy
California State Lands Commission
State Water Resources Control Board

BACKGROUND

State law and the California Ocean Protection Council's *Strategic Plan to Protect California's Coast and Ocean* (Strategic Plan) encourage the development of sustainable[1] marine aquaculture that minimizes impacts to habitat, biodiversity, and wild fisheries and is consistent with local, state and federal statutes, policies and objectives. The Strategic Plan also calls for the development of a Statewide Aquaculture Action Plan (Action Plan) by 2023. The plan will create a comprehensive, consistent and science-based framework and policy for marine aquaculture in California, with a focus on marine algae and shellfish in state marine waters and land-based/recirculating tank operations for marine algae, shellfish, and finfish.

The Action Plan, which will be informed by best available science and a robust stakeholder engagement process, will identify areas of opportunity and avoidance, as well as minimum project criteria for minimizing detrimental environmental impacts, including best practices. It will also provide for community benefits such as equitable employment opportunities; enhanced local, safe, and healthy food production and security; and reduced reliance on imported seafood produced by unsustainable aquaculture operations.

The California Natural Resources Agency convened leadership from state resource management, public health, and food and agriculture agencies to collaborate on these Aquaculture Principles to increase coordinated and transparent decision-making in support of sustainable aquaculture in California.

GOALS

- The Aquaculture Principles will provide near-term guidance to agency staff to protect the environment, effectively manage public trust resources, enhance food supply, and promote sustainable commercial aquaculture in California. They will also inform the development of the Statewide Aquaculture Action Plan. The Principles are not intended to affect or modify the discretionary decision-making authority of any agency.
- The Principles will increase coordination among state agencies and improve clarity, consistency, transparency, efficiency and effectiveness in researching, planning, facilitating, permitting, managing, and fostering sustainable marine aquaculture in California.
- They also serve to improve awareness, information sharing, and collaboration with California Native American Tribes (Tribes), aquaculture producers, federal agencies, public and private organizations, the seafood industry, universities, and others.
- The Principles should be applied to projects in federal waters to ensure that California's coastal and ocean health is protected consistent with state law and the Strategic Plan.

[1] Furthermore, California Public Resources Code (Division 26.5, Chapter 2, Section 35550 (e)) defines "sustainable" and "sustainability" to mean both of the following: "(1) continuous replacement of resources, taking into account fluctuations in abundance and environmental variability," and "(2) securing the fullest possible range of present and long-term economic, social, and ecological benefits, while maintaining biological diversity." Fish and Game Code (Division 0.5, Chapter 2, Section 99.5) defines "sustainable," "sustainable use" and "sustainability" with regards to a marine fishery to mean both of the following: "(a) continuous replacement of resources, taking into account fluctuations in abundance and environmental variability," and "(b) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, maintaining biological diversity, and, in the case of fishery management based on maximum sustainable yield, taking in a fishery that does not exceed optimum yield."

MARINE AQUACULTURE PRINCIPLES

1. Develop and Utilize Best Available Science

- Establish a baseline of scientific understanding about the environmental and socioeconomic impacts and benefits of aquaculture, and opportunities for aquaculture in state marine waters and on land. Ensure this baseline is applied to planning and oversight of aquaculture development and activities.
- Identify critical information gaps in scientific understanding and prioritize and encourage funding for scientific research that will fill gaps, enhance best practices, and support management and oversight.
- Develop and use standardized, science-based approaches for siting, monitoring, and evaluating aquaculture operations, including approved species and culture methods, that minimize impacts to ecosystem health, public access, recreation, fishing and other existing uses or activities.
- Assess the impacts of climate-driven stressors on aquaculture siting and operations. Integrate this information into all project planning, design, implementation, evaluation, and management activities to support industry and protect ecosystem health.
- Maintain a centralized, organized, readily accessible, and consistently updated repository for distilled and synthesized scientific information related to aquaculture.

2. Ensure Aquaculture Sustainability

- Apply a precautionary approach to siting, operating, and managing aquaculture projects to ensure sustainability.
- In partnership with aquaculture producers, collaboratively develop, adopt, and require a common set of structural and management best practices, including antimicrobial stewardship, while preserving the effectiveness of antimicrobials. These should include tools, strategies, and metrics that support sustainable aquaculture and promote the health of aquatic species.
- Implement biosecurity practices to prevent disease and invasive species[2] introduction in aquaculture operations.

Photo: By The Cultured Abalone Farm

[2] According to the California Aquatic Invasive Species Management Plan of 2007, the term "Invasive Species" refers to species that establish and reproduce rapidly outside of their native range and may threaten the diversity or abundance of native species through competition for resources, predation, parasitism, hybridization with native populations, introduction of pathogens, or physical or chemical alteration of the invaded habitat. Through their impacts on natural ecosystems, agricultural and other developed lands, water delivery and flood protection systems, invasive species may also negatively affect human health and/or the economy.

3. Build Governance and Management Partnerships

- □ Develop state and local aquaculture administrative processes to reduce duplicative or overlapping information requirements, increase state and federal agency coordination and transparency, increase regulatory process certainty, and reduce the time and cost associated with securing needed permits and leases, to the extent possible.
- □ Establish an interagency working group (and identify a state entity as lead) to increase coordination and collaboration among state and federal agencies, advance state agency research priorities and application, facilitate information sharing, and support partnership opportunities for sustainable aquaculture.
- □ Create a mechanism to increase coordination and collaboration with the aquaculture industry that facilitates information exchange and ensures efficient and transparent decision-making.
- □ Partner with Tribes to ensure that aquaculture operations do not adversely impact tribal ancestral lands and waters. Identify opportunities for collaboration and co-management with Tribes and prioritize the use of Traditional Ecological Knowledges/Indigenous Knowledges in aquaculture planning and management.
- □ Enhance existing and develop new partnerships with universities and the private sector that advance sustainable aquaculture.
- □ Recommend opposition to proposed aquaculture projects in federal waters that are not consistent with state law and policy, including with respect to minimizing adverse impacts to state ocean and coastal resources.

4. Ensure Effective Aquaculture Planning

- □ Develop comprehensive planning, siting, and operation criteria that promote best practices, protect ecosystem health, minimize impacts to existing commercial and recreational uses, and maximize economic viability and sustainability of aquaculture operations, in consultation with scientists, resources managers, and industry.
- □ Promote restorative/multi-benefit aquaculture operations where appropriate, including those that leverage existing fisheries-related shoreside infrastructure at ports and harbors.
- □ Conduct planning and evaluation that avoids and minimizes the environmental harm of cultivated aquatic species, including uncontrolled spread of disease, non-native or invasive species.
- □ Facilitate and support robust early engagement with commercial and sportfishing and coastal communities and the public – particularly underserved and food insecure communities – to ensure public input informs aquaculture project development and implementation and to reduce potential detrimental impacts of aquaculture operations on California's fisheries and at-risk communities.

5. Develop and Implement Efficient and Effective Aquaculture Oversight

- □ Ensure full compliance with all existing local, state, public trust, and federal requirements for siting and operating aquaculture facilities, including routine monitoring, management and inspection of growing areas, harvesting, marketing, handling practices, and reporting.
- □ Identify and support capacity needs for training and certification of producers, veterinarians, and regulatory oversight staff – including developing a process to survey for introduced diseases. Capacity needs, which include field inspections, laboratory support and associated resources, are critical to successful shellfish industry operations, including potential expansion planning.[3]
- □ Secure sufficient state and local administrative capacity, funding for program administration, inspection and monitoring, and expertise to ensure oversight needs are met. Work together to secure an ongoing source of funding for state agencies' aquaculture planning, permitting, oversight, and coordination activities.
- □ Create and implement oversight processes that protect the health and safety of those who live, work, or recreate near aquaculture operations.
- □ Identify and recommend strategies to address oversight gaps as needed to ensure aquaculture is carried out sustainably, including recommending necessary regulatory and/or legislative changes.

6. Protect Public Health and Food Safety

- □ Integrate public health and safety regulations and requirements in aquaculture planning and oversight processes to maximize the safety of products intended for human consumption.
- □ Growing areas and facility siting should include addressing bacteriological water quality standards and risks from harmful algal blooms, nutrients and other pollutants, as well as from potential and actual pollution sources such as boating, wastewater outfalls, and watershed runoff that may impact the safety of harvested shellfish and algae. Public health-related criteria subject to evaluation should be certified by the California Department of Public Health.
- □ Obtain adequate ongoing resources for the continuation or expansion of the marine biotoxin monitoring program in bivalve shellfish, including surveillance, testing, and technical assistance. The program includes timely public safety notifications for commercial closures, public health advisories, and quarantines in response to marine biotoxins reaching public health threat levels, and timely growing area re-openings and lifting of advisories and quarantines based on hazard reduction.
- □ Make sure that aquaculture industries that process, handle, and distribute bivalve shellfish obtain a shellfish handling and marketing certificate from the California Department of Public Health.

[3] Only National Shellfish Sanitation Program-compliant laboratories, as evaluated by state shellfish laboratory evaluation officers, can support California Department of Public Health certification of bivalve aquaculture for human consumption.