

## Scope of Meeting Today

- Understand the intent of this rulemaking
- Best Management Practice (BMP) categories discussed
- Accountability, Enforceability, and Funding – necessity, challenges, and metrics: briefly discuss
- Understand the rulemaking process and opportunities for future engagement

## Background

### **State Code and Regulations**

The Legislature declared in Public Resources Code section 826 that it is in the interest of the people of California to encourage the practice of aquaculture. It is also the policy of the Fish and Game Commission (Commission) to encourage the conservation, maintenance, and utilization of the living resources of the ocean and state waters for the benefit of all citizens of the state, including the development of commercial aquaculture (Fish & Game Code section 1700). As recently as 2014, the Legislature resolved unanimously in both houses its support for access to additional acreage for shellfish farming and restoration, and an improved permitting process that is efficient and economical (Assembly Joint Resolution 43, Chesbro 2014).

(<http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=106688>)

State law authorizes the California Fish and Game Commission to lease State water bottoms or the water column to any person for aquaculture, if such a lease is in the public interest, determined in a public hearing that is conducted in a fair and transparent manner, with notice and comment, and in accordance with Commission procedures. State law provides authority to the Commission to adopt regulations governing terms of the leases. A comprehensive explanation of specific state laws and regulations pertaining to aquaculture leases and their administration can be found in the Department's Information Leaflet, "*Regulations Governing Leasing of State Water Bottoms for Aquaculture*" available online.

(<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=27450&inline>)

In particular, the administration of State Water Bottom Leases for aquaculture follows Fish & Game Code (FGCode) §15400 and Title 14 California Code of Regulations (CCR) §237. Although language in FGCode §15400 requires that a lessee of a marine *finfish* aquaculture site establish Best Management Practices, the same requirement is not explicitly delineated in code or regulations for *shellfish* aquaculture leases.

### **Aquaculture Lease Oversight**

There has been an increase in public attention focused on shellfish aquaculture practices and stewardship, particularly related to marine debris and certain other practices associated with aquaculture leases within state waters. Although FGCode §15409 requires leaseholders to return a lease site to its original condition upon lease *termination*, ensuring that leaseholders conform to certain environmental standards and operational practices during the course of operating the lease relies on the language and conditions contained in each individual lease agreement, which may vary in its content. Although the Commission adopted a new, standardized lease template for use on subsequent renewals, amendments, and new leases, some leases are midway through their terms and may not be subject to revision until the term expires.

For example, the species and methods approved by the Department and Commission for cultivation have traditionally been delineated within the terms of each lease, meaning that the Commission (as Lessor) must amend the lease in order to allow different species to be cultivated or culture method to be changed. This creates an excessive administrative burden to be able to adaptively manage leases, and may restrict the adoption of methods

or species that may be an improvement to public trust resources in addition to the benefits for a leaseholder. By the same logic, incorporating BMPs into lease language adds to this administrative slowness, especially when there is likelihood that practices may merit amending as technology improves, ocean conditions change, or new concerns arise.

### ***Best Management Practice Plans***

A more practical alternative to amending lease conditions as a means to adaptively manage public trust (and State administrative) resources may be to require best management practice (BMP) **Plans** from shellfish aquaculturists that are reviewed and approved by the Commission on a regular cycle (e.g.: every 5± years). There is precedent for this approach in the Commission's regulatory oversight of kelp harvests (e.g.: Kelp Harvest Plans, sections 165 and 165.5, Title 14, CCR) and in the aforementioned statutory language in Fish and Game Code [section 15400(b)(4)] that pertains to marine finfish leases that may be issued in the future.

Shellfish aquaculture BMPs focus attention on both sustaining acceptable operations and production levels, as well as promoting sound environmental practices that avoid impact to the marine environment. BMP categories may be broadly defined by regulation to ensure that proposed BMP Plans across the diversity of shellfish operations throughout the state address primary concerns. Such categories to be incorporated into these Plans might include: gear design/maintenance/operation, "good neighbor" policies, environmental stewardship, staff training & awareness, and biosecurity measures, among others. BMPs that are developed by leaseholders, and reviewed and approved by the Department of Fish and Wildlife and the Commission should ensure buy-in from the lease operators, and allow for more nimble and efficient oversight by the State. The open, public meetings of the Commission also provide a more transparent means to address public stakeholder concerns. Several growers with current leases in California have expressed a willingness to formalize BMPs that are beneficial and compatible with their lease operations. There are many existing examples of BMPs which have been incorporated into Environmental Codes of Practice or Third-Party Certification Standards. Some of these existing BMPs have been adopted by other states, countries, and grower organizations. These products have been helpful in informing this rulemaking approach, and constitute the core themes within the suggested categories for discussion in this meeting.

It is important to recognize that shellfish aquaculture is not practiced uniformly in all locations throughout California, for a variety of reasons. Although bays and estuaries have historically been and continue to be important locations for shellfish culture, offshore sites (in deeper water) show great potential as well. Consequently, the outreach to stakeholders for this potential rulemaking is not limited to one part of the State and will be continued until a broad range of considerations are heard and incorporated into a rulemaking proposal. At least one other public stakeholder meeting will be scheduled in Southern California at a future date and location that has not yet been determined, but will likely happen in Fall 2017, prior to formally starting the rulemaking process. (A brief presentation of the rulemaking process will be provided during the meeting, and is not included here.)

### ***Rulemaking Process to Date***

Commission and Department staffs have discussed regulatory approaches to requiring Best Management Practices (BMP's) on state water bottom leases for shellfish aquaculture since the matter was highlighted at the April 8<sup>th</sup>, 2015 Commission meeting. An internal working was formed soonafter with perspectives representing the legal, regulations, enforcement, and aquaculture disciplines included. Through changes in Commission and staff makeup (including the replacement of two commissioners and other staff leadership and legal counsel changes), progress in maintaining the discussion has been intermittent, but forward-moving.

Ultimately, a review of options was considered to incorporate a BMP requirement either: a) into the terms of each individual lease, or b) through a new regulation requiring the submittal of BMP's covering specific BMP categories

that would be subject to review and approval by the Commission. These options were presented by both Commission and Department staff at the February 10<sup>th</sup>, 2016 Commission meeting with a consensus from this working group that a rulemaking approach had numerous advantages, including:

- the speed and efficiency of implementation across shellfish operations (conversely, leases can only be changed when created, renewed, or amended, and must be processed with more involvement individually and across other agencies);
- the ability to set clear categories, standards or guidelines for shellfish aquaculture BMP's without being overly prescriptive;
- the ability to establish a requirement for periodic updates and reviews for all approved plans;
- a resulting flexibility to adaptively manage over time and by location throughout the State; and
- by way of the Commission's open meeting process, providing a mechanism for continued stakeholder input.

The Commission concurred and directed staff (at that Feb 2016 mtg) to continue along the path toward a rulemaking approach. In January 2017, a regulatory change concept was proposed and has been considered for the Commission's regulatory calendar. A formal rulemaking would be triggered by an Initial Statement of Reasons (ISOR) for a regulation change; a step that has not been started, and is to be informed by the outcomes of public stakeholder sessions such as this. In addition, Commission and Department staff recognizes a larger collection of lease oversight and administrative upgrades are necessary and are working to address them as needed. The immediate need for BMPs will be the focus of these meetings.

In addition to the internal working group's efforts, shellfish grower/leaseholders in Tomales Bay first convened a meeting of their own in early May 2016, inviting the State Aquaculture Coordinator to participate. They reviewed and discussed further revisions to a draft list of BMPs that were previously submitted to the Commission in April 2015. The growers expressed general support for the development of BMP requirements, and a commitment to abide by them, and refined their plans for cleanup efforts both within their leases and across all of Tomales Bay. They would continue to refine their lists of practices individually and collectively, and requested Department staff's help in keeping their efforts coordinated and proactive. A followup meeting of this group of Tomales Bay growers convened in December 2016, where, in addition to continued cleanup efforts, biosecurity and health management practices were discussed with the state's shellfish pathologist.

### **Categories**

In reviewing various management practices that have been proposed as "best", it is obvious that one list will never apply effectively to all shellfish growers throughout the state. It is also apparent that there are certain common themes that emerge from such lists. The primary goal of this meeting is to focus on these themes, which aim to result in certain outcomes coming from adherence to practices by growers. For instance, rather than require a BMP that says "all oyster bags must be made only this way", a desired outcome could "require the use of designs that eliminate or greatly reduce the incidence of the bag falling apart or getting away from its installed location". How it accomplishes the desired outcome is subject to the specific operational needs of the farm, the circumstances of the location, available design technology & innovations, and cost-benefit considerations. Growers would commit to the practices they will adopt in order to achieve the State's desired or required outcomes. How the grower accomplishes this is something that we should expect will evolve with innovations, technology, and better understanding – and the State be adaptive in its management.

The main question to address in this effort is:

"What does success look like, in terms of outcomes we'd all like to see from the adherence to best management practices, in light of what is practical and achievable within the business enterprises of commercial shellfish aquaculture, that are operated in public waters - held by the regulating agencies in the public trust?"

Below is a draft list of BMP categories prepared by Department of Fish and Wildlife staff for consideration by meeting attendees:

**DRAFT BMP Categories** – starting point for discussion

**Robust designs and siting**

meant to withstand elements and prevent litter  
continual improvements, reduce use of single-use materials (eg: zip-ties)

**Operational discipline**

winter conditions prep  
removal of unsuccessful/derelict gear and materials  
operational tidiness & discipline

**Training & staff oversight**

regular self-patrolling

**Biosecurity & disease/AIS prevention considerations**

fouling protocols

**Sensitive environments and protected species interactions**

entanglement avoidance  
eelgrass & wildlife buffers and interactions  
vessel & equipment use (boats & vehicles)

# SHELLFISH AQUACULTURE BEST MANAGEMENT PRACTICES

## LOCAL STAKEHOLDERS MEETING

17 JULY 2017  
MARSHALL CA



FISH & GAME COMMISSION

DEPARTMENT OF FISH AND WILDLIFE



# SHELLFISH HISTORY IN CALIFORNIA & TOMALES BAY

OYSTER CULTURE IN CALIFORNIA GOES BACK TO EARLY STATEHOOD (OYSTER ACT 1851)

STARTED IN TOMALES BAY 1907  
110 YEARS: LONGEST RUNNING CA REGION

HISTORY & LEGACY

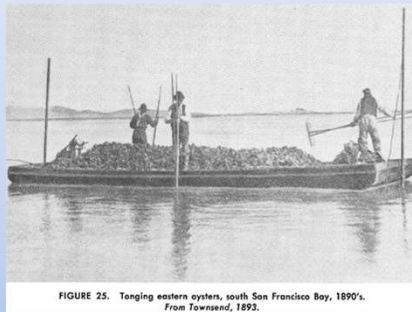
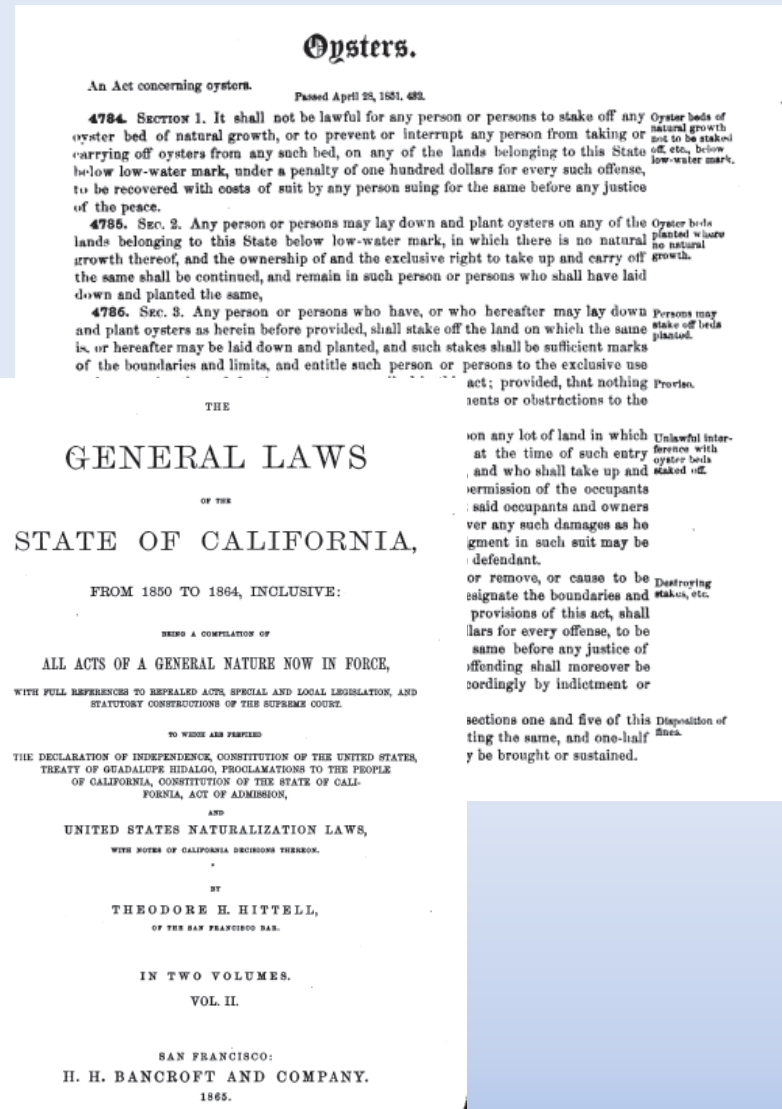


FIGURE 25. TONGING eastern oysters, south San Francisco Bay, 1890's. From Townsend, 1892.





# **CHANGE IS CONSTANT**

**TECHNOLOGY**

**MARKET & BUSINESS**

**OCEAN CONDITIONS**

**NEIGHBORS & SOCIETY**

**ANTICIPATE CHANGE**

**&**

**ADAPTIVELY MANAGE**



# **BEST MANAGEMENT PRACTICES**

**MANY REGULATORY ADVANTAGES:**

**OPERATIONS**

**FLEXIBILITY**

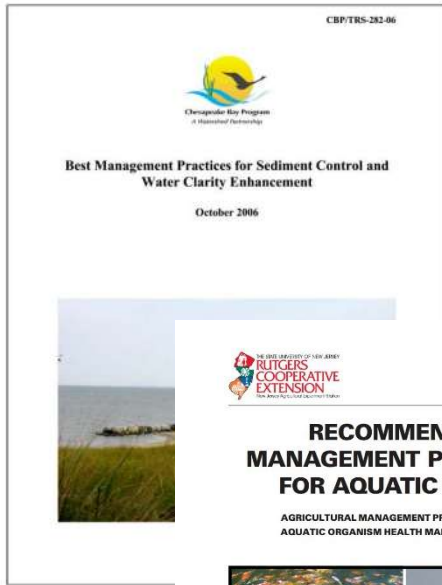
**GROWER BUY-IN**

**ADAPTABLE**

**PROPOSED BY MANY**

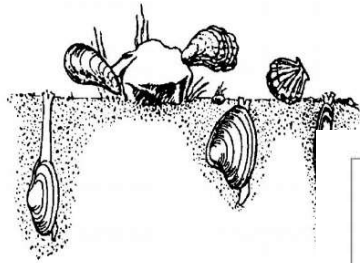
**ALL WITH INTERESTS & RESPONSIBILITIES**

**BEST MANAGEMENT PRACTICES FOR THE VIRGINIA SHELLFISH CULTURE INDUSTRY**



**Best Management Practices for the Shellfish Culture Industry in Southeastern Massachusetts**

(Version 09-04a)



**ASC Bivalve Standard**

Version 1.0 Jan 2012



**RECOMMENDED MANAGEMENT PRACTICES FOR AQUATIC FARMS**

AGRICULTURAL MANAGEMENT PRACTICES (AMPS)  
AQUATIC ORGANISM HEALTH MANAGEMENT PLAN

Developed by:  
Massachusetts shellfish growers  
in collaboration with  
the Eastern Massachusetts Aquaculture Center  
with support provided by the Massachusetts  
Department of Agricultural Resources and the  
USDA Risk Management Agency

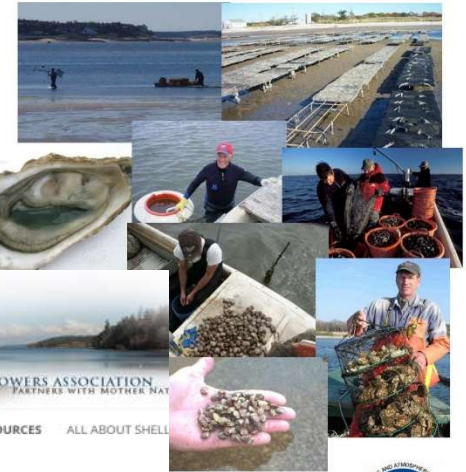
Compiled & Edited by:  
Dale F. Leavitt  
EMAC & Roger Williams University  
Bristol, RI 02809

**Aquaculture Facility Certification**

**Mollusk Farms**  
Best Aquaculture Practices  
Certification Standards, Guidelines



**Best Management Practices for the East Coast Shellfish Aquaculture Industry**



**Environmental Policy**



PACIFIC COAST SHELLFISH GROWERS ASSOCIATION

June 1991



PACIFIC COAST SHELLFISH GROWERS ASSOCIATION  
PARTNERS WITH MOTHER NATURE

HOME ABOUT PCSGA OUR GROWERS NEWS & EVENTS RESOURCES ALL ABOUT SHELLFISH

CULINARY GUIDE MEMBERS

**ENVIRONMENTAL POLICY**



**ECOSYSTEM SERVICES PHOTO CONTEST**

Submissions due 15th of every month



**Maine Aquaculture Association**

Code of Practice

# SHELLFISH AQUACULTURE BMPs MUST BALANCE

**SEAFOOD DEMAND**



**BUSINESS ENTERPRISE**



**PUBLIC TRUST TIDELANDS**



**WITH COMMITMENT**

# STANDARDIZED LEASE TEMPLATE AND REGULATORY COMPLIANCE

## SPECIFIC BMPs IN LEASES LESS FLEXIBLE WITH DRAWN-OUT IMPLEMENTATION

## REQUIREMENT TO ADHERE TO BMP PLANS REQ'D BY A NEW REGULATION WOULD HAVE COVERAGE IN LEASE REQUIREMENTS (INCorp. BY REFERENCE, LEASE SEC. 30) UPON PROMULGATION OF NEW REGULATION

RECORDING REQUESTED BY AND )  
WHEN RECORDED MAIL TO: )  
State of California )  
Fish and Game State )  
1416 Ninth Street, 13<sup>th</sup> Floor )  
Sacramento, CA 95814 )

Space Above Line for Recorder's Use Only

### LEASE GRANTING THE EXCLUSIVE PRIVILEGE OF CONDUCTING AQUACULTURE AT STATE WATER BOTTOM NO. M-000-00

THIS LEASE GRANTING THE EXCLUSIVE PRIVILEGE OF CONDUCTING AQUACULTURE AT STATE WATER BOTTOM NO. M-000-00 ("Lease") is made and entered into as of [DATE], by and between [NAME], ("Tenant") and the California Fish and Game Commission ("State") with reference to the following facts:

#### RECITALS

Tenant wishes to lease a State Water Bottom for the purpose of propagating, cultivating, maintaining and harvesting aquatic plants and/or animals in marine waters of the state.

Fish and Game Code section 15400 authorizes the State to lease to any person the exclusive privilege to conduct aquaculture in any designated State Water Bottom if it determines that such lease is in the public interest.

[New lease]: On [DATE] the State awarded the lease for State Water Bottom No. M-000-00 to Tenant.

[Renewal]: On [DATE(s)] the State authorized renewal of the Lease for State Water Bottom No. M-000-00 to Tenant.

[Other]: On [DATE] [Note here any other significant events concerning the lease, e.g. amendment, assignment or designation of successor-in-interest.]

#### TERMS AND CONDITIONS

1. **LEASE.** The State hereby grants to Tenant the exclusive privilege to conduct aquaculture upon State Water Bottom No. M-000-00, subject to the terms and conditions of this Lease.

2. **DESCRIPTION.** This Lease covers that area comprising approximately 000.00 acres designated as State Water Bottom No. M-000-00 and shown on the Map and Description attached as **Exhibit A**, which is made a part of this Lease by this reference.

**Proposed best practices for Tomales Bay Oyster Farmers**

1. Each grower must use  
Collected and abandoned  
Unique bag colors  
Unique wire colors
2. Have staff positions  
Rotate all staff in
3. Growers must strive
4. Replace litter-making  
If copper wire is
5. Prohibit the use of pesticides  
Birds peck and collect  
Use crab buoys
6. Prohibit the current  
All bags must be
7. Prohibit tools from lease  
areas surrounding the  
Fencepost drivers  
Gloves  
Water bottles  
PVC pipes
8. If an idea does not work  
No messes left behind
9. At a minimum, monitor  
Twice a month  
Walk shoreline  
areas
10. Update leases so that  
funds for ongoing, shoreline  
repair – generally make  
circumstances.

Submitted at Fish & Game Commission mtg, Santa Rosa CA – by John Finger  
Apr 2015

**PROPOSED BEST PRACTICES FOR  
TOMALES BAY SHELLFISH FARMERS**

1. Regularly educate staff  
litter.
2. Growers must strive to ensure  
debris are minimized.
3. Avoid the use of single-use  
principles of reduction, long  
life span, preferable
4. Strive to phase out the use of  
buoys/floats properly in
5. When tossing out loose  
bags are either heavy enough  
prevent drifting/movement  
tossed out.
6. Avoid leaving tools, loose  
surrounding areas for loss  
staged on leases shall be  
burial.
7. If a culture method is used  
promptly removed.
8. At a minimum, leases are  
gear on a monthly basis  
storm events.
9. Growers will participate  
shoreline and wetlands,  
shellfish gear collected  
volume.
10. Growers will work with  
bay wide clean up efforts  
at all times.
11. A review of lease escrow  
adequate funds are available  
the right to perform the  
decrease the balance in

PROPOSED BEST PRACTICES FOR TOMALES BAY SHELLFISH FARMERS  
Once adopted, the below list of  
and legally binding for all aquaculture  
and Game Commission shall in  
compliance with the BMPs. The  
annual basis (at a minimum) to  
potential improvements.<sup>1</sup> Ideal  
winter storm season. The final  
basis, as technology improves (

1. Growers<sup>2</sup> shall implement  
shall include regular staff  
environmental stewards  
marine debris elimination  
and agencies regarding
2. All staff shall be trained  
near growing leases on
3. Staff and contractors shall
4. Leases and surrounding  
Following high winds a  
possible or within two weeks
5. Growers shall organize  
the bay shoreline and waste  
debris collected, including  
documented, with the grower
6. Growers will aim to work  
coordinate quarterly bay  
non-shellfish items) at least
7. A monthly grower self-  
BMP compliance. This

<sup>1</sup> The Department of Fish and Game  
<sup>2</sup> The term "Growers" is defined as  
<sup>3</sup> The term "Staff" is defined to include  
personnel, owners, and operators  
<sup>4</sup> For intertidal leases, patrols shall  
mud is promptly collected.

Environmental Action Commission  
415-663-9312



**Proposed Best Management Practices (BMPs) for Tomales Bay Shellfish Farmers**

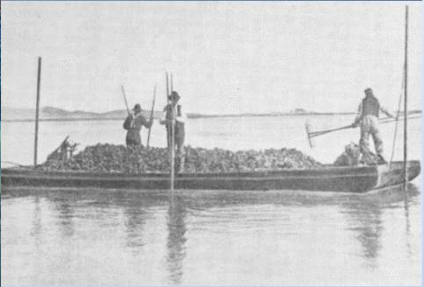
Submitted by Richard James for the 20 July, 2017 MRC meeting in Santa Rosa  
7 July, 2017

**These BMPs shall be an integral part of each lease. The practices shall be mandatory practices meant to ensure Tomales Bay and the ocean in general is kept free of lost plastic and other debris from aquaculture operations.**

**To have the intended effect of reducing litter in Tomales Bay attributed to aquaculture, it is imperative that these practices be adequately and regularly enforced.**

1. Growers shall uniquely and clearly identify all of their gear with company name and phone number. Possible means of uniquely marking gear include: unique colors of bags, wires, PVC pipes, rope, and "branding info into gear."
2. Growers shall train all employees in concepts of Leave No Trace, see <http://LNT.org>, or similar training about environmental stewardship.
3. Growers shall continually improve gear and methods in a quest for zero loss of gear.
4. Growers shall replace single use items (i.e. zip-ties, copper wires) with more durable items such as stainless halibut clips.
5. Growers shall NOT use floats that are easily degraded by ultraviolet rays or pecked by birds in search of food.
6. Growers shall securely tie large groups of non-floating bags together when deploying bags for future securing to anchor lines to ensure they do not drift.
7. Growers shall remove tools each day after working on lease areas, including: fencepost drivers, gloves, water bottles, PVC pipes, wires, and ropes.
8. Growers shall promptly (within 60 days) remove culture structures and other items comprising a method that did not work as desired or is no longer used.
9. Growers shall patrol lease areas and the shores of Tomales Bay on a bi-monthly basis, twice monthly during windy or heavy surf times. Patrols must occur at both high and low tides to ensure gear buried in the mud is promptly collected.
10. Growers shall uniquely and clearly identify all of their boats and barges. Boats should be clearly identifiable with binoculars from a distance of 1 mile. Unique color, large letter and/or number or combinations of these may work.

# DIFFERENT METHODS PAST - NOW - FUTURE



# **BMP PLANS – TODAY’S GOAL**

## **SPECIFIC BMPs**

## **CORE ELEMENTS**

## **RECOMMENDATIONS**

What core elements of shellfish aquaculture best management practices should comprise BMP Plans ?

commercial shellfish aquaculture = business enterprises,  
operated in public waters - held in the public trust  
by the regulating agencies

# PROCESS JUST BEGINNING

20 JULY 2017 (SANTA ROSA)

MARINE RESOURCES COMMITTEE (F&G COMMISSION SUB-CMTE)

LATE-SUMMER (SOCAL – TBD)

PUBLIC STAKEHOLDERS MEETING

INITIAL STATEMENT OF REASONS (ISOR)

= BEGINNING OF FORMAL PROCESS

WRITTEN COMMENTS





**RANDY LOVELL**

**STATE AQUACULTURE COORDINATOR**

**CA DEPT FISH AND WILDLIFE**

**916-445-2008**

**[RANDY.LOVELL@WILDLIFE.CA.GOV](mailto:RANDY.LOVELL@WILDLIFE.CA.GOV)**

**[AQUACULTUREMATTERS.CA.GOV](http://AQUACULTUREMATTERS.CA.GOV)**



# SHELLFISH AQUACULTURE BEST MANAGEMENT PRACTICES

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Kirsten Ramey

CDFW Marine Region Aquaculture Coordinator

July 17, 2017



# OVERVIEW

- Why do we need Best Management Practices (BMPs)?
- What are the goals and considerations for developing BMPs?
- What are the core elements that should be included?

# **NEED FOR BEST MANAGEMENT PRACTICES**

1. Minimize pollution and/or environmental impacts
2. Guidance for sustainable shellfish production while safeguarding the environment
3. Adaptive management within acceptable bounds
4. Multiple uses of state waters

# GOAL AND CONSIDERATIONS

- GOAL: Limit the risk of undesirable ecology effects to an acceptable level while allowing for sustainable shellfish production
- CONSIDERATIONS:
  - What specific ecological impacts are we guarding against?
  - What is an acceptable level of impact? What is the end result we are trying to achieve?
  - Should the standard set objectives that are not achievable with current practice and technology?
- BMPs versus Performance Standards
  - “Do things this way” versus achieve the following environmental objective

# BEST MANAGEMENT PRACTICES – CORE ELEMENTS (CATEGORIES)

- Site selection and access
- Materials, operations, and maintenance
  - Robust designs
  - Operational discipline
- Maintenance of environmental quality
  - Habitat
  - Water quality
  - Species
- Disease prevention and management
  - Biosecurity