

SHELLFISH AQUACULTURE BEST MANAGEMENT PRACTICES

MARINE RESOURCES COMMITTEE UPDATE

17 JULY 2018
SAN CLEMENTE CA



FISH & GAME COMMISSION

DEPARTMENT OF FISH AND WILDLIFE



SHELLFISH AQUACULTURE BMPs MUST BALANCE

SEAFOOD DEMAND	BUSINESS ENTERPRISE	PUBLIC TRUST TIDELANDS
		
		

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SHELLFISH AQUACULTURE BMPs MUST BALANCE

SEAFOOD DEMAND	BUSINESS ENTERPRISE	PUBLIC TRUST TIDELANDS
		
	 	

WITH COMMITMENT

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CHANGE IS CONSTANT:


METHODS & TECHNOLOGY	MARKET & BUSINESS
OCEAN CONDITIONS	NEIGHBORS & SOCIETY




ANTICIPATE CHANGE & ADAPTIVELY MANAGE

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BEST MANAGEMENT PRACTICES
PUBLIC INPUT
LESSONS FROM OTHERS
SCIENTIFIC REVIEW





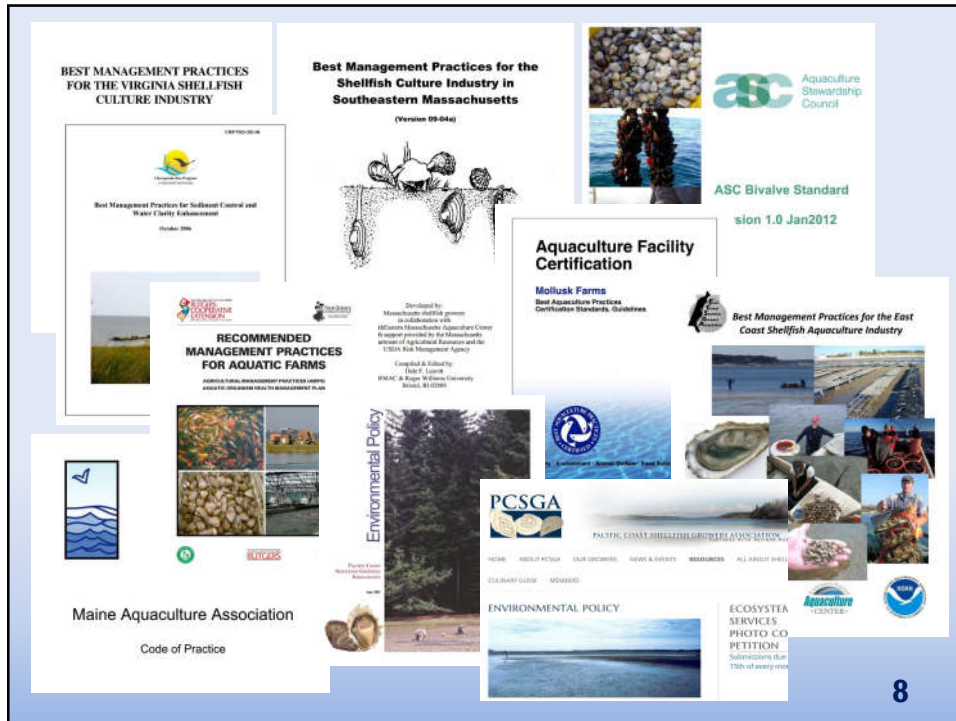
COASTAL FUND
UC SANTA BARBARA
ASSOCIATED STUDENTS

UCSB student team funded and focused on this topic

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This slide features a collage of documents related to shellfish aquaculture Best Management Practices (BMPs). At the top left is the cover of "BEST MANAGEMENT PRACTICES FOR THE VIRGINIA SHELLFISH CULTURE INDUSTRY". To its right is the cover of "Best Management Practices for the Shellfish Culture Industry in Southeastern Massachusetts (Version 09-04a)", which includes an illustration of various shellfish. Below these are two other documents: "Best Management Practices for Sediment Control and Water Clarity Enhancement" and "RECOMMENDED MANAGEMENT PRACTICES FOR AQUATIC FARMS". A central graphic shows a grid of four images: a bird, a field, a farm, and a shellfish farm. At the bottom left is the "Maine Aquaculture Association Code of Practice" logo. The slide is numbered "6" in the bottom right corner.

This slide features a collage of documents related to shellfish aquaculture Best Management Practices (BMPs). It includes the same documents as slide 6, but adds "ASC Bivalve Standard version 1.0 Jan2012" and "Aquaculture Facility Certification Mollusk Farms Best Aquaculture Practices Certification Standards, Guidelines". The "ASC Bivalve Standard" document features a photograph of bivalves in a field. The "Aquaculture Facility Certification" document features a circular logo and the text "Sustainability, Environment, Responsibility, Trust, Equity, Feasibility". The slide is numbered "7" in the bottom right corner.



BEST MANAGEMENT PRACTICES FUNDAMENTAL GOALS

- **LOCATE, DESIGN, AND OPERATE FARMS APPROPRIATELY**
- **MAINTAIN HEALTHY ECOSYSTEMS:**
 - WILDLIFE, HABITAT, WATER QUALITY, AND SUBSTRATE
- **REDUCE OCEAN LITTER / MARINE DEBRIS / POLLUTION**
- **PREVENT DISEASE, INVASIVE SPECIES SPREAD (BIOSECURITY)**
- **BE A GOOD NEIGHBOR & COMMUNITY CITIZEN**

BEST MANAGEMENT PRACTICES EMERGENT THEMES

- **LOCATE, DESIGN, AND OPERATE FARMS APPROPRIATELY**
 - SITING CONSIDERATIONS (HUMAN HEALTH, WILDLIFE, ENVIRONMENT, USER CONFLICTS)
 - GEAR DESIGN & INSTALLATION (PROVEN? TESTED? COMPLIANT? EXPERIMENTAL?)
 - MATERIALS, FASTENERS, DURABILITY, DISPOSAL
 - MAINTENANCE & OPERATIONAL PREPARATIONS, PRACTICES, RESPONSES
 - VESSEL & VEHICLE USE (WATER-LAND-AIR), FOOT TRAFFIC
 - WORKER SAFETY
 - NAVIGATIONAL HAZARDS
 - PUBLIC ACCESS (NAVIGATION, FISHING, RECREATION, COMMERCE)

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BEST MANAGEMENT PRACTICES EMERGENT THEMES

- **MAINTAIN HEALTHY ECOSYSTEMS**
 - WATER QUALITY
 - SUBSTRATE & BENTHIC IMPACTS
 - WILDLIFE INTERACTIONS (BIRDS, WHALES, TURTLES, OTHER MAMMALS)
 - CARRYING CAPACITY
 - ECOSYSTEM SERVICES (NUTRIENT CYCLING, CARBON SEQUESTRATION, HABITAT, ETC)



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BEST MANAGEMENT PRACTICES EMERGENT THEMES

- **REDUCE OCEAN LITTER / MARINE DEBRIS / POLLUTION**

PRACTICES TO REDUCE OCEAN LITTER TIED TO:

FUNDAMENTAL SYSTEM DESIGN

OPERATIONAL PRACTICES – ROUTINE AND BEFORE/AFTER STORMS

COMPANY STANDARDS AND WORKER TRAINING



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BEST MANAGEMENT PRACTICES EMERGENT THEMES

- **PREVENT DISEASE, INVASIVE SPECIES SPREAD (BIOSECURITY)**

CONTROL MOVEMENTS OF STOCKS

SEED AND BROODSTOCK SOURCING

DISEASE RESPONSE MEASURES

BIOFOULING RESPONSE MEASURES

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BEST MANAGEMENT PRACTICES EMERGENT THEMES

- **BE A GOOD NEIGHBOR & CITIZEN OF COMMUNITY**

PUBLIC'S RECREATIONAL & COMMERCIAL PURSUITS RESPECTED
GROWERS' BUSINESS ASSETS PROTECTED
COMMUNITY-BASED AND GROWER-INITIATED CLEAN-UP PARTICIPATION
COMPLIANT WITH REGULATORY REQUIREMENTS

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BEST MANAGEMENT PRACTICES EXISTING MANAGEMENT FRAMEWORK

MANY CONCERNS ADDRESSED BY EXISTING CODE & REGULATIONS

FISH & GAME CODE
TITLE 14 REGULATIONS
CEQA
CA COASTAL ACT
CLEAN WATER ACT - WATER BOARDS
RIVERS & HARBORS ACT - US ARMY CORPS OF ENGINEERS
ESA, MMPA, M-S ACT - NOAA PROTECTED RESOURCES DIVISION
US COAST GUARD
CA DEPT OF PUBLIC HEALTH & NATIONAL SHELLFISH SANITATION PROGRAM

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BEST MANAGEMENT PRACTICES EXISTING MANAGEMENT FRAMEWORK

MANY CONCERNS ADDRESSED BY EXISTING CODE & REGULATIONS

- SITING** - LEASE APPLICATION PROCESS (CEQA + F&G COMMISSION HEARINGS) F&G COMMISSION
- SENSITIVE HABITAT PROTECTIONS** - CEQA + NEPA PROCESSES, USACE CONSULTATION W/ NOAA
- MIN. NAVIGATIONAL HAZARDS** - US COAST GUARD PERMIT: PRIVATE AIDS TO NAVIGATION + F&G CODE
- REASONABLE PUBLIC ACCESS** - F&G CODE SEC. 15411 + 15413; COASTAL ACT (CCC)
- WATER QUALITY** - CLEAN WATER ACT (USACE + WATER BOARDS)
- SUBSTRATE QUALITY & BENTHIC IMPACTS** - CLEAN WATER ACT (USACE)
- PREVENT DISEASE, AND SPREAD OF INVASIVE SPECIES** - TITLE 14 REGULATIONS (DFW)
- SPILL PREVENTION AND RESPONSE** - LEASE TERMS & CEQA (FGC)

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BEST MANAGEMENT PRACTICES REVISED MANAGEMENT FRAMEWORK

REMAINING THEMES FOR POSSIBLE BMP CATEGORIES

- REDUCE OCEAN LITTER / MARINE DEBRIS** - INFLUENCED BY MANY PRACTICES THEMES
- WILDLIFE INTERACTIONS** - INTERTIDAL VS. OFFSHORE: BEST PRACTICES VARY;
BIRDS, WHALES, SEALS, TURTLES, LISTED SPECIES
- GEAR DESIGN & INSTALLATION** - LEASE TERMS (FGC) + COASTAL ACT (CCC)
+ FLEXIBILITY TO INNOVATE, ADAPTIVELY MANAGE
- MAINTENANCE & OPERATIONAL PREPARATIONS, PRACTICES, RESPONSES**
ROUTINE, PRE- & POST-STORMS,
- VESSEL & VEHICLE USE (WATER-LAND-AIR); FOOT TRAFFIC**
- COMPANY STANDARDS AND WORKER TRAINING**
- CLEAN-UP PARTICIPATION** - COMMUNITY-BASED AND GROWER INITIATED

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ROUTE TO RULEMAKING

REMAINING QUESTIONS FOR EFFECTIVE REGULATION:

- Enforceability and commitment (buy-in by growers and agency staff)?
- CEQA question – regular cycle of BMP plan approval - exempt?
- Effective and efficient complement to lease and permit requirements?
- Right themes?

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