



Marine Life Protection Act



Marine Aquaculture

Presentation to the North Central Coast Regional Stakeholder Group

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Marine Region

California Department of Fish and Game

Registered Marine Aquaculturists

- > 230 registered aquaculturists in California
 - 39 aquaculturists approved for marine species
 - 36 approved for bivalve shellfish or abalone
 - 6 are approved to rear marine algae
 - 3 are approved to rear marine fish
 - 2 are approved to rear shrimp

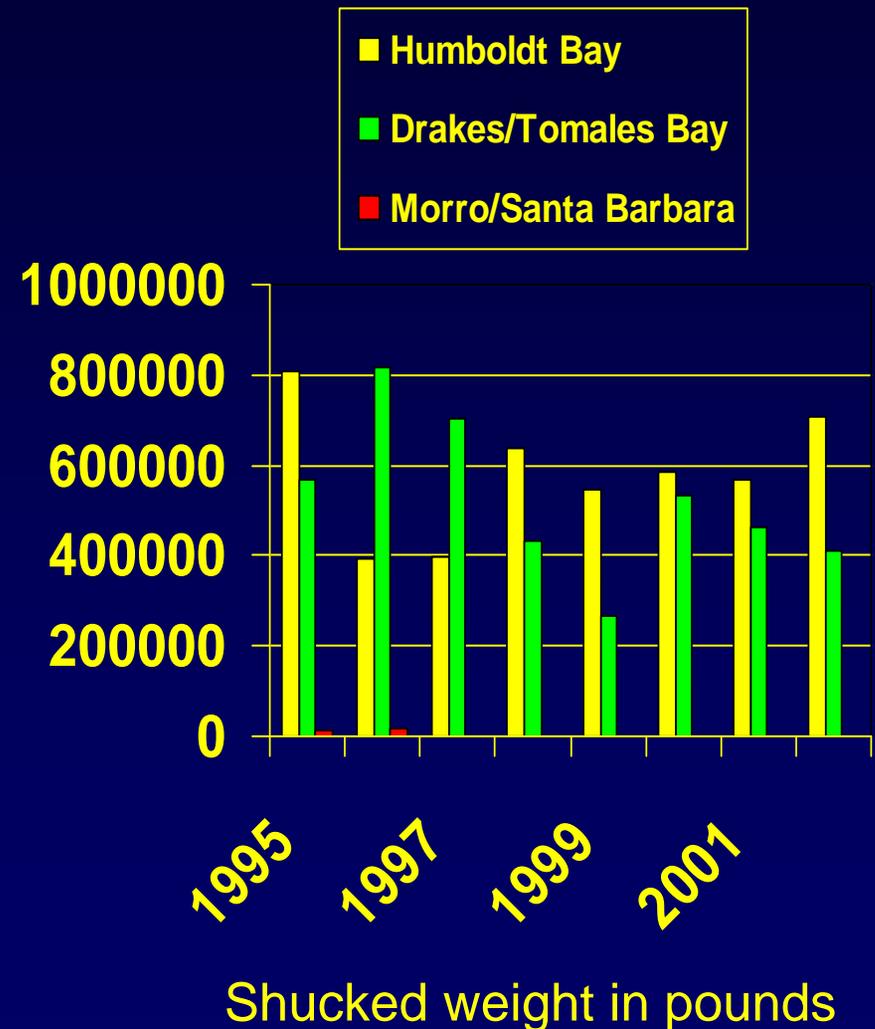
Oyster Culture

- 14 aquaculturists actively growing oysters for retail or wholesale markets
- One raises shellfish seed for domestic and foreign aquaculturists
- Species Cultured
 - Pacific oyster (non-native)
Most sold as shucked product
 - European flat (non-native)
Sold live/whole
 - Kumamoto (non-native)
Sold shucked & live/whole
 - Olympia or native oyster
 - Sold shucked & live/whole



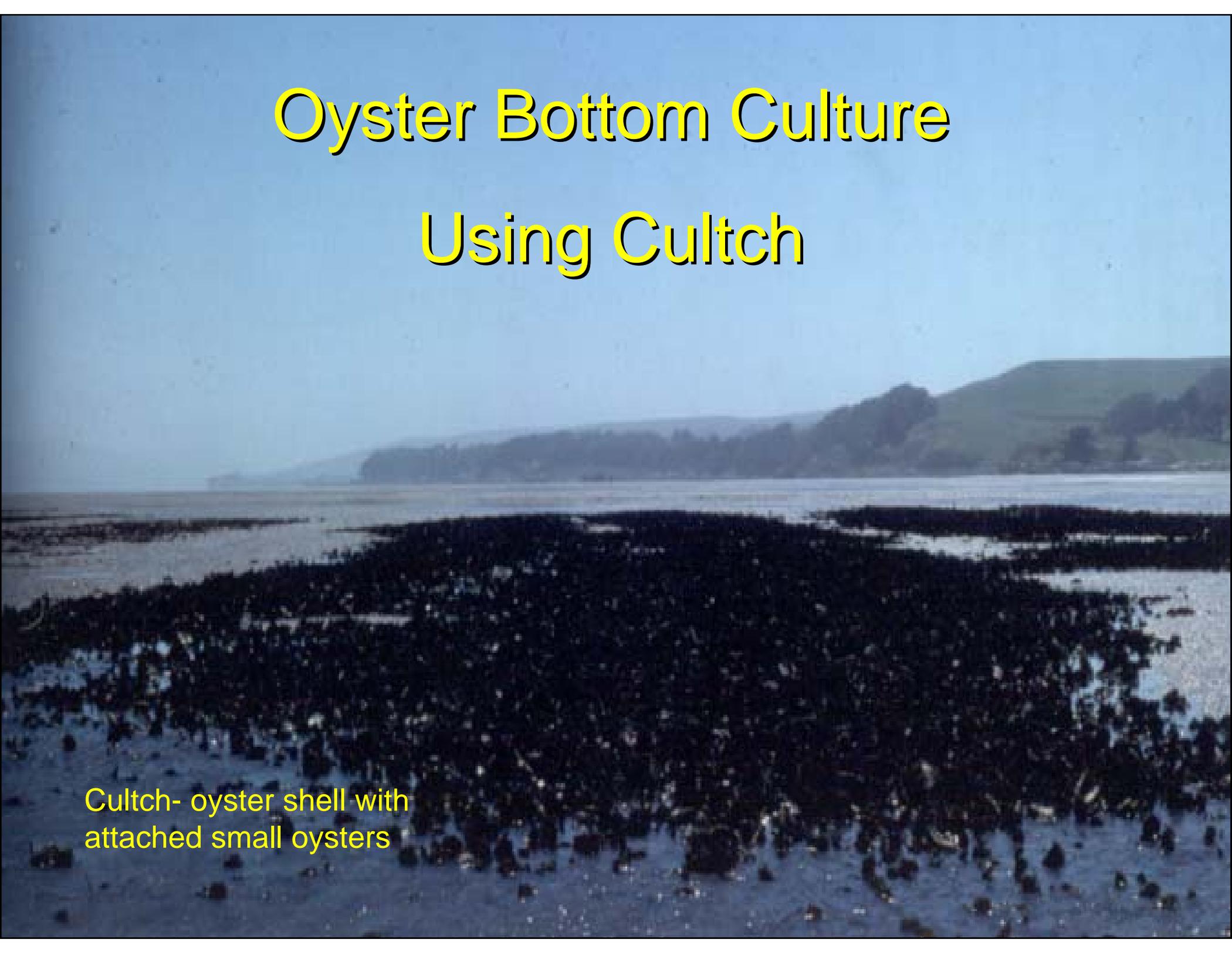
California Oyster Production by Area

- Humboldt Bay leading oyster producing area
- Economic and disease impacts resulted in production decline in Drakes/Tomales Bay area
- Morro/Santa Barbara area production bottomed-out with death of a long-time oyster grower



Oyster Bottom Culture Using Cultch

Cultch- oyster shell with
attached small oysters



Off-Bottom Culture Using Cultch- Longline on Stakes



Off-Bottom Culture Using Single Oysters- Rack and Bag



Off-Bottom Culture Using Single Seed- Floating Bags on Longlines



Mussel Culture

- 17 aquaculturists approved to rear mussels
- 11 actively rearing or harvesting mussels
- One harvests wild mussels from offshore oil platforms
- Mussels cultured in Tomales Bay



Clam Culture

- 17 aquaculturists approved to rear clams
- About half actively rearing clams
- Clams cultured in Drakes Estero and Tomales Bay

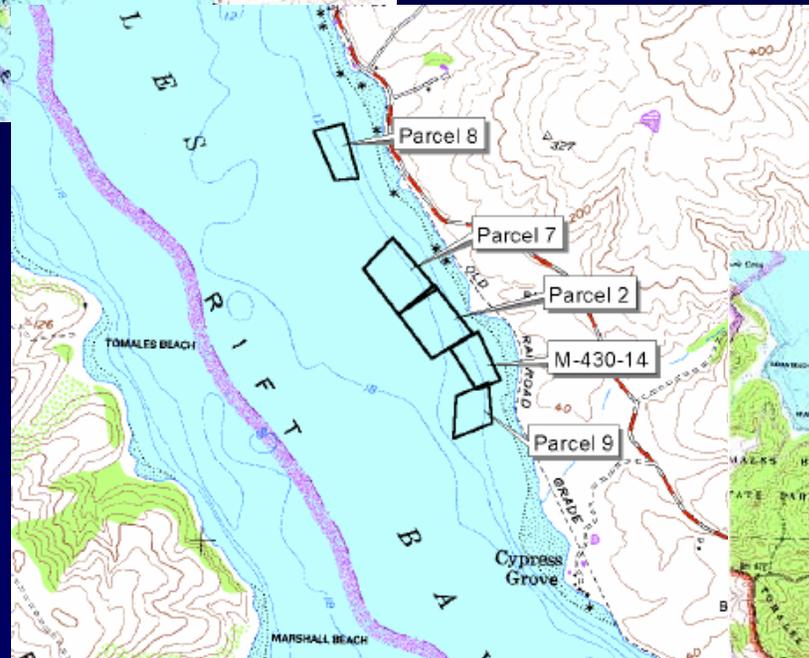
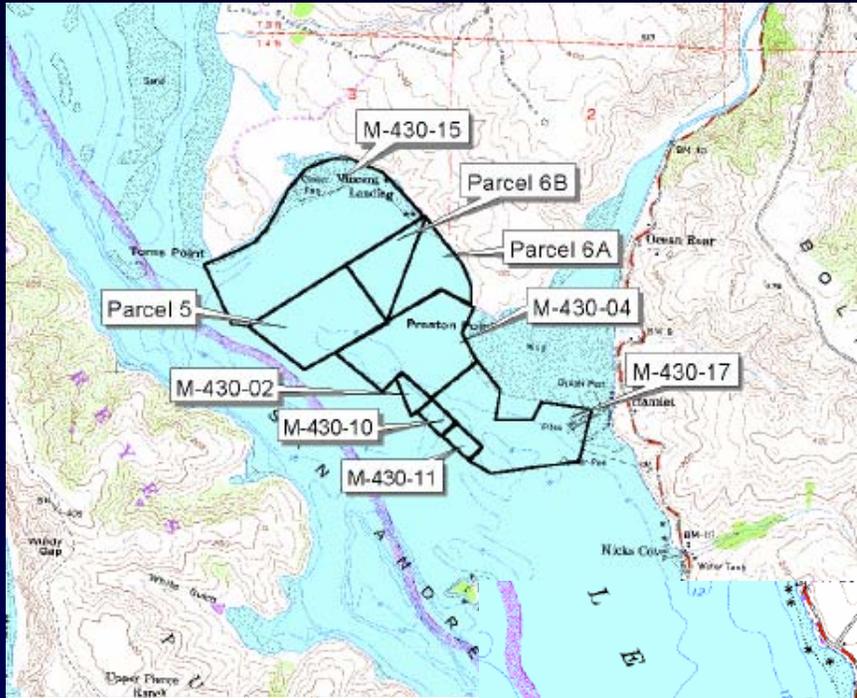


Bivalve Shellfish Culture

- Industry Issues

- Biggest issue is water quality
 - Seasonal closures
 - Growing area classification
- Disease – summer mortality syndrome
- Environmental impacts
 - Eelgrass

Tomales Bay Aquaculture Leases



Abalone Culture

- 17 aquaculturists approved to grow abalone
- 12 actively rearing abalone
- 6 rearing abalone on a commercial scale
- 1 aquaculturist in Half Moon Bay



Abalone Culture - Industry Issues

- Disease
 - Withering syndrome - affects wild and cultured abalone
 - Sabellid polychaete - non-native parasite
- Commercial fishery closure in 1997 resulted in high market demand and good price to growers

Finfish Culture

- No marine finfish are being produced on a commercial scale
- A few land-based commercial aquaculture facilities are currently in the research and development phase
- The Ocean Resources Hatchery Enhancement Program (ORHEP) evaluating feasibility of stock enhancement using white seabass and California halibut

Aquaculture Leases in the Region

Lessee	Total Lease Acreage*	Acreage in Use (estimate)	Approved Species For Cultivation in Lease Agreement
TOMALES BAY			
Marin Oyster Company	30	6	Oysters, Manila Clam, and Blue Mussels
Charles Friend	62	10	Oysters, Manila Clam, and Blue Mussels
Cove Mussel Company	10	5	Bay Mussels, Pacific Oyster, and Clam
Hog Island Oyster Company	163	55	Oysters, Clams, and Bay Mussels
Point Reyes Oyster Company	92	~16	Oysters, Clams, Scallops, Mussels, and Abalone
Tomales Bay Shellfish Farms Inc.	156	60	Oysters and Bay Mussels
DRAKES ESTERO			
Drakes Bay Oyster Company (formerly Johnson Oyster Company)	1, 060		Oysters, Rock Scallops, and Manila clam

*Some multiple leases