Marine Aquaculture

Presentation to the North Central Coast Regional Stakeholder Group
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Marine Region
California Department of Fish and Game

Marine Life Protection Act

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

Shucked weight in pounds

Oyster Bottom Culture

Using Cultch

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

Approved to rear mussels
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

<table>
<thead>
<tr>
<th>Lease</th>
<th>Total Lease Acreage*</th>
<th>Acreage in Use (estimate)</th>
<th>Approved Species For Cultivation in Lease Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marin Oyster Company</td>
<td>30</td>
<td>6</td>
<td>Oysters, Manila Clam, and Blue Mussels</td>
</tr>
<tr>
<td>Charles Friend</td>
<td>62</td>
<td>50</td>
<td>Oysters, Manila Clam, and Blue Mussels</td>
</tr>
<tr>
<td>Cove Mussel Company</td>
<td>15</td>
<td>5</td>
<td>Bay Mussels, Pacific Oyster, and Clam</td>
</tr>
<tr>
<td>Hog Island Oyster Company</td>
<td>163</td>
<td>95</td>
<td>Oysters, Clams, and Bay Mussels</td>
</tr>
<tr>
<td>Point Reyes Oyster Company</td>
<td>92</td>
<td>158</td>
<td>Oysters, Clams, Scallops, Mussels, and Abalone</td>
</tr>
<tr>
<td>Tomales Bay Shellfish Farms Inc.</td>
<td>156</td>
<td>89</td>
<td>Oysters and Bay Mussels</td>
</tr>
<tr>
<td><strong>DRAKES ESTERO</strong></td>
<td><strong>1,000</strong></td>
<td><strong>60</strong></td>
<td>Oysters, Rock Scallops, and Manila clam</td>
</tr>
</tbody>
</table>

*Some multiple leases