Manna Fish Farms, Gulf of Mexico Finfish Farm Operations

Presenter: Kelly Lucas
Agent, University of Southern Mississippi,
Thad Cochran Marine Aquaculture Center
Overview

• Team introductions
• Applicant introduction, Manna Fish Farms
• Timeline
• Site requirements and species information
• Site screening
• Draft site plan and cage information
• Production plan and feed usage
• Next Steps
Introductions

• Donna Lanzetta, CEO and founder of Manna Fish Farms
• Mike Meeker, COO Manna Fish Farms, and inventor Storm Safe Submersible Cage
• Reg Blaylock & Anand Devappa Hiroji, University of Southern Mississippi
• Stephanie Showalter Otts & Kristina Alexander, University of Mississippi, MS-AL Sea Grant & Sea Grant Law Center
• Michael Chambers, University of New Hampshire & NH Sea Grant
• Ken Riley, James Morris Jr., Lisa C. Wickliffe, & Jon Jossart - NOAA, National Centers for Coastal Ocean Science
• Dan Warren, P&C Scientific, LLC
Manna Fish Farms

- Committed to:
  - Sustainability
  - Transparency
  - Best Aquaculture Practices
- Permitting Finfish Farms
  - Gulf of Mexico, off Pensacola FL
  - Northeast, off Eastern Long Island NY
- Learn more:
  - www.mannafishfarms.com
  - Social Media:
    - https://twitter.com/mannafishfarms
    - https://www.facebook.com/mannafishfarms/
Timeline of Past Events

GSMFC Grant, “Permitting a finfish aquaculture operation in the Gulf of Mexico” June, 2018

USM & Manna Fish Farms, MOA Aug., 2018

Farm area of interest and growing criteria identified Summer, 2018

Site Screening Analysis Fall, 2018

Pre-Application Checklist Nov., 2018

Baseline Environmental Survey Spring, 2019

Final Judgement Gulf Fishermen’s Association et al., V. NMFS et al. Nov., 2018

Interagency Briefing Dec., 2018

Department of Defense Military Aviation and Installation Assurance Siting Clearinghouse Feb., 2019
Timeline (Milestones Pending)

• Finalize 120 Acres of the 724 acres surveyed (Summer, 2019)
• Effluent Modeling (Summer, 2019)
• Structural Modeling (Summer, 2019)
• EPA, National Pollutants Discharge Elimination System Permit Application (Summer, 2019)
• USACE, Section 10 Permit Application (Summer, 2019)
• USCG, CG-2554 Authorization, Private Aids to Navigation Application (Summer, 2019)
Manna Fish Farms Offshore Demonstration Project

- Commercial-scale aquaculture demonstration project
- **Area of interest:** Mississippi, Alabama, Florida panhandle
- **Depth requirements:** 50 – 55 meters
- **Preferred Ports:** Pascagoula/Gulfport, MS or Pensacola, FL (Minimize farm to port distance and user conflicts)
- **Sea water temperature:** 6 – 30 °C
- **Current Speed:** > 0.15 m/s
- **Species:** *Red drum* (*Sciaenops ocellatus*)
  - Almaco jack (*Seriola rivoliana*)
  - Striped bass (*Morone saxatilis*) *and others.*
Data Considered

- Bathymetry
- Military
- Unexploded Ordnance
- Shipping Lanes
- AIS Vessel Traffic
- Shrimp Vessel Activity
- Submarine Cables
- Artificial Reefs
- Lightering Zones
- Oil & Gas Platforms
- Oil & Gas Well
- Oil & Gas Active Leases
- Oil & Gas Pipelines
- Shipwrecks and obstructions
- Deep Sea Coral

Siting Model

- Oil & Gas
- Vessel Traffic
- Commercial Fishing
- Cables & Wrecks
- Sensitive Habitat

Legend:
- 1 – More Compatible
- 0 – Less Compatible
Suitability Model Methodology

**Grid cells far from submarine cable are assigned higher weights than those nearby.**

**Grid cells far from submarine cable are assigned higher weights than those nearby.**

**For demonstration purposes only.**
Navigation and Other Factors

Habitat Concerns

Site A
Site B
Site C
Site D
Site E
Sites (50-m depth)

- Site A
- Site B
- Site C
- Site D
- Site E
Vessel Traffic Assessment

Site A
Site B
Site C
Site D
Preferred Site E

No Tug & Tow Traffic
Habitat Concerns

Preferred Site and Alternatives

Legend
- Artificial Reefs
- Site E
- Fish Haven
- Fish Haven 1 km Distance
- Site A
- Site B
- Site C
- Site D
- Bryde's whale BIA

Bathymetry (m)
- 50 m
- 100 m

Scale: 1:400,000
Map intended for planning purposes only; Not intended for navigational purposes
NOS National Centers for Coastal Ocean Science
Coastal Aquaculture Siting and Sustainability

Map Coordinate System: NAD 1983 UTM Zone 16N
Map Projection: Transverse Mercator
Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community
Shrimp trawl effort (sum 2004-2013) and preferred site

Preliminary Results
Baseline Environmental Survey

Results of multibeam survey completed April 2019

- Surveyed 0.5 km beyond area of interest
- 2-m resolution
- Depths confirmed 48-70m
- Minimal slope across site
- Small ridge detected
- Sand substrate

Side-scan and sub-bottom survey May 2019
Storm Safe Submersible
Storm Safe Cage Site Plan

- 18 Cages
- 9000m³/cage
- 6 cages per circular array
- Each array (14 Acres)
- Final design and mooring decisions will be guided by information from the Baseline Environmental Survey.
# Production Timeline

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>No. of Cages Stocked</th>
<th>Cages/fish production stage</th>
<th>Production (lbs/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 0 - 1</td>
<td>2</td>
<td>2</td>
<td>936,000</td>
</tr>
<tr>
<td>Years 2 - 3</td>
<td>4</td>
<td>2</td>
<td>1,870,000</td>
</tr>
<tr>
<td>Years 3 - 4</td>
<td>12</td>
<td>4</td>
<td>5,620,000</td>
</tr>
<tr>
<td>Years 4-5</td>
<td>18</td>
<td>6</td>
<td>8,426,900</td>
</tr>
</tbody>
</table>
## Feed Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Slow sinking pellet with estimated 44% protein and 13% lipid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanism</td>
<td>Feeding by vessel in the beginning moving to feed buoy or barge</td>
</tr>
<tr>
<td>Feed Frequency</td>
<td>Will vary by species and biomass. Feed calculations were calculated at a feed conversion rate (FCR) 1.7.</td>
</tr>
<tr>
<td>Stock (9000m³ cage)</td>
<td>Weight of fingerlings at stocking = 50g</td>
</tr>
<tr>
<td></td>
<td>Total weight at initial stocking cage = 10,045kg</td>
</tr>
<tr>
<td></td>
<td>Target harvest density = 25kg/m³</td>
</tr>
<tr>
<td>Amount (9000m³ cage)</td>
<td>Daily feeding amount at initial biomass = 503 kg</td>
</tr>
<tr>
<td></td>
<td>Daily feeding amount at max biomass = 4,500 kg</td>
</tr>
</tbody>
</table>
Next Steps

• Submit Baseline environmental survey data
  • Finalize farm site
  • Structural modeling
    • Discuss mooring, materials and structure with NOAA Protected Resources

• Provide Feed and effluent characteristics to the EPA for discharge models

• Submit for EPA, NPDES Permit
  • Best Management Practices Plan
  • Environmental Monitoring Plan (Includes baseline sampling)
  • Emergency Response Plan
  • Quality Assurance Plan

• Submit for USACE, Section 10 Permit and CG 2554 Authorization

• Operations Plan

• Health Management Plan
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