OFFSHORE FISH FARMING IN MADEIRA ISLAND

Pedro Diniz
MARISMAR, AQUICULTURA MARINHA LDA
MADEIRA ISLAND (PORTUGAL)

Small Island located off the Coast of Africa

Vulcanic (no continental platform)

Oceanic (oligotrophic waters)
AQUACULTURE DEVELOPMENT IN MADEIRA

1996 - Pilot Off-shore Fish-farm Project

2002 - R&D Centre / Hatchery

2004 - 1st Off-shore Fish-farm: Ilhapeixe

2006 - 2nd Off-shore Fish-farm: Aquabaía

2017 - 3rd Off-shore Fish-farm: MARISMAR
PILOT OFF-SHORE FISH-FARM
Location
PILOT OFF-SHORE FISH-FARM

Equipment tested

• 1 Farm ocean cage

• 4 HDPE (high-density polyethylene) cages
CURRENT FISH-FARMS IN MADEIRA

MARISMAR

AQUABAÍA

ILHAPEIXE
PRODUCED SPECIES:
Sea bream, *Sparus aurata*
SEA-BREAM PRODUCTION SALES IN MADEIRA AND OUTSIDE MADEIRA

(Fontes: DRPescas, INE)
PRODUCTION PHASES IN MADEIRA

- Hatchery
- Growth
- Harvest
- Commercialization
MARISMAR’S PRODUCTION

• Seabream juveniles (6 batches per year)
  – Origen: France, Spain and local (Centro de Maricultura da Calheta)
  – Weight: 4g
  – Number of fish: 300 000
  – Biomass: 1 200 kg

• Growth: 12 months (until 330g)

• Production per cage:
  – Weight: >200g (grades: 200-300; 300-400; 400-600; >600)
  – Number: 270 000
  – Biomass: 90 000 kg

• Annual production: 500 000 kg

• Client: PINGO DOCE (supermarket chain)
MARISMAR’S OPERATIONS

1. HATCHERY AND BATCH INSPECTION

2. FISH RECEPTION

3. FEEDING

4. FISH TRANSFER

5. HARVESTING

6. PACKAGING
1. HATCHERY AND BATCH INSPECTION
MARISMAR’S PROJECT – OPERATIONS

1. HATCHERY AND BATCH INSPECTION

2. FISH RECEPTION
MARISMAR’S PROJECT – OPERATIONS

1. HATCHERY AND BATCH INSPECTION

2. FISH RECEPTION

3. FEEDING
MARISMAR’S PROJECT – OPERATIONS

1. HATCHERY AND BATCH INSPECTION

2. FISH RECEPTION

3. FEEDING

4. FISH TRANSFER
MARISMAR’S PROJECT – OPERATIONS

1. HATCHERY AND BATCH INSPECTION

2. FISH RECEPTION

3. FEEDING

4. FISH TRANSFER

5. HARVESTING
MARISMAR’S PROJECT – OPERATIONS

1. HATCHERY AND BATCH INSPECTION
2. FISH RECEPTION
3. FEEDING
4. FISH TRANSFER
5. HARVESTING
6. PACKAGING
LOTE: 20180614.003.02.09
TOTAL 200/300: 468.0
TOTAL 300/400: 3246.0
TOTAL 400/600: 2880.0
TOTAL DE VOLUMES: 1104
TOTAL LÍQUIDO: 6624.0
TOTAL BRUTO: 9384.0

ETIQUETA

MARISMAN - Aquicultura Marinha, Lda
Rua do Caldeirante 28, 9000-105 Funchal

DOURADA AQUICULTURA / SEA BREAM AQUACULTURE

NOME CIENTÍFICO: Sparus aurata
MÉTODO DE PRODUÇÃO: Aquicultura
ORDEM: PORTUGAL (NADIRIA)
INGREDIENTES: Dourada (PEXEX)

Conservar sob 0°C

LOTE: 20180614.003.02.09
Peso Líquido: 6.000 kg
DATA DE PRODUÇÃO: 14.06.2018
### Stock Status Report

<table>
<thead>
<tr>
<th>Container</th>
<th>Species</th>
<th>Batch</th>
<th>Number of Individuals</th>
<th>Mean Weight (g)</th>
<th>Biomass (ton)</th>
<th>SFR (%)</th>
<th>FCR</th>
<th>Density (kg/m²)</th>
<th>Mortalities (%)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>J01</td>
<td>Bream</td>
<td>SON1018</td>
<td>305,774</td>
<td>4.5</td>
<td>1.5</td>
<td>?</td>
<td></td>
<td>1.3</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>J02</td>
<td>Bream</td>
<td>FMD0278-1</td>
<td>249,050</td>
<td>38.7</td>
<td>9.6</td>
<td>?</td>
<td>5.02%</td>
<td>1.38</td>
<td>9.5</td>
<td>15.6%</td>
</tr>
<tr>
<td>J03</td>
<td>Bream</td>
<td>FMD0718-2</td>
<td>264,253</td>
<td>34.9</td>
<td>9.2</td>
<td>?</td>
<td>2.17%</td>
<td>1.26</td>
<td>10.3</td>
<td>15.3%</td>
</tr>
<tr>
<td>J04</td>
<td>Bream</td>
<td>FMD1018</td>
<td>289,589</td>
<td>7.1</td>
<td>2.0</td>
<td>1.0</td>
<td>3.68%</td>
<td>0.74</td>
<td>2.3</td>
<td>8.0%</td>
</tr>
<tr>
<td>J05</td>
<td>Bream</td>
<td>FMD-0017-1</td>
<td>129,278</td>
<td>374</td>
<td>48.4</td>
<td>?</td>
<td>0.00%</td>
<td>1.49</td>
<td>9.5</td>
<td>15.6%</td>
</tr>
<tr>
<td>J07</td>
<td>Bream</td>
<td>FMD-0117-2</td>
<td>261,147</td>
<td>272</td>
<td>68.4</td>
<td>?</td>
<td>1.13%</td>
<td>1.52</td>
<td>13.4</td>
<td>19.2%</td>
</tr>
<tr>
<td>J08</td>
<td>Bream</td>
<td>FMD-0117-1</td>
<td>260,856</td>
<td>315</td>
<td>64.6</td>
<td>?</td>
<td>1.03%</td>
<td>1.41</td>
<td>16.7</td>
<td>13.0%</td>
</tr>
<tr>
<td>J09</td>
<td>Bream</td>
<td>MMD0718</td>
<td>282,830</td>
<td>42.3</td>
<td>11.9</td>
<td>?</td>
<td>2.09%</td>
<td>2.29</td>
<td>2.3</td>
<td>2.2%</td>
</tr>
<tr>
<td>J10</td>
<td>Bream</td>
<td>SCR0418</td>
<td>259,718</td>
<td>59.7</td>
<td>8.9</td>
<td>?</td>
<td>1.02%</td>
<td>1.26</td>
<td>5.1</td>
<td>6.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>2,327,301</td>
<td>113</td>
<td>262</td>
<td>1.0</td>
<td>1.38%</td>
<td>5.1</td>
<td>11.6%</td>
<td></td>
</tr>
</tbody>
</table>
MARISMAR’S SEA INFRASTRUCTURE

• Location: Arco da Calheta, Madeira Island

• Cages (10)
  – 4 with 12,7m diameter
  – 6 with 25,5m diameter

• Depth in the cages (in the net)
  – Min: 3m;
  – Max: 10m+10m;

• Depth of the seabed (under the cages): 40 a 45 m
Cage model: Oceanflex 602
Number of bases: 24
Inside ring: 60m
Outer ring: 63.5m
Base pipe: 316 SDR 17
Handrail Pipe: 125 SDR 11
MARISMAR OFFSHORE PRODUCTION SITE UNDER ROUGH WEATHER
FUTURE OF AQUACULTURE IN MADEIRA

• Marismar will double production capacity from 500 to 1000 ton/year in 2019 (10 to 20 cages)

• One new off shore fish-farm under licensing procedure – production due to start in 2019?

• Project of a commercial hatchery – construction beginning in 2019?

• Total production expected in a few years: approx. 3000 ton
THANK YOU!

pedro.diniz@marismar.pt

Marismar, Aquicultura Marinha, Lda (PORTUGAL)