An Overview of English Aquaculture

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## European Aquaculture

### Finfish production volumes 2008

<table>
<thead>
<tr>
<th>Region</th>
<th>Production Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>European</td>
<td>1,718,383</td>
</tr>
<tr>
<td>Norway</td>
<td>870,450</td>
</tr>
<tr>
<td>UK</td>
<td>161,367</td>
</tr>
<tr>
<td>Scot salmon</td>
<td>140,000</td>
</tr>
<tr>
<td>English finfish</td>
<td>7,500</td>
</tr>
</tbody>
</table>
# UK Aquaculture

## Scotland v England v Wales

<table>
<thead>
<tr>
<th>Aquaculture Type</th>
<th>Scotland Business</th>
<th>Scotland Site</th>
<th>England Business</th>
<th>England Site</th>
<th>Wales Business</th>
<th>Wales Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon</td>
<td>72</td>
<td>391</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Trout</td>
<td>54</td>
<td>101</td>
<td>130</td>
<td>202</td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td>Coarse/Ornamental</td>
<td>10</td>
<td>12</td>
<td>115</td>
<td>183</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Recirc</td>
<td>1</td>
<td>1</td>
<td>16</td>
<td>16</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Shellfish</td>
<td>176</td>
<td>339</td>
<td>87</td>
<td>111</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>313</strong></td>
<td><strong>844</strong></td>
<td><strong>335</strong></td>
<td><strong>519</strong></td>
<td><strong>48</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

## English Aquaculture

- Value of Restocking / Coarse / Ornamental underestimated
- Road miles = closer to markets
- More diversification (e.g. Exotic species, Polychaetes)
- English owned, smaller businesses

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Figures taken from FHI database 2009
A Brief History of Fish Farming in England

- First evidence in monasteries & royal estates.
- Common carp possibly introduced by Romans ??
- First attributable record of carp in England in 1496
- Prior to 20th C a few brown trout hatcheries for restocking rivers for angling
- First “table trout” farm opened in Lincolnshire in 1950
- Trout farming developed rapidly in 1960’s and 70’s
- Now approx 200 trout farms in England
Trout farming in England

• Production primarily in freshwater

• Production dominated by rainbow trout for food (4095t) and for restocking (3000t)

• Some brown trout produced for restocking (359t)

• Specialist production sectors
  – Fry and fingerlings
  – Restocking
  – Table trout
Trout Farming in England

• Production units vary in size from large 1000 tonne producers to <1 tonne.

• Earth ponds, raceways, tanks & cages.

• All SME’s, mainly owner/operator, turnover of<£1m

• Some consolidation in recent years to fewer, larger farms.

• Estimated first sale value £19 Million
Trout Farm Distribution

- Wide geographic distribution
- Areas dictated by availability of water of required quality
- Suitable sites limited
- Numbers steady but declining
- Investment ?
Salmon farming in England

- Very small in comparison to Scotland
- No on-growing units
- Either Environment Agency farms re-stocking rivers (benefit to angling)
- Or smolt production units for Scotland. (£6 Million pounds)
Coarse and Ornamental Aquaculture

- Approx 185 fish farms
- Generally produced in extensive systems
- Some specialist hatcheries producing fry for on growing
- Little food production, Common carp for the table (10 t).
- Increase in agricultural farm reservoirs
Coarse and Ornamental Aquaculture

- Farming of coarse and ornamental species increasing
- Primarily carp and koi, but also goldfish, tench, barbel, roach and other native species (7.1 million)
- Estimated value £10,000,000
New and Exotic Species

- Recent interest in warm water species in land based recirculation systems
- Controlled environment, highly technical, increased set up costs.
- Lower environmental footprint (minimal discharge, no escapees, bio-secure, no predator problems)
- Systems for the intensive production of species such as bass, turbot, tilapia, striped bass, barramundi, catfish & prawns.
Recirculation systems
Shellfish culture

Shellfish Harvesting Areas

Farms (E&W) 89 Businesses
114 Farm ‘sites’
247 employees

Industry Strategy

Site selection – CZM

Water quality
### Weight and value of cultivated shellfish production in England

<table>
<thead>
<tr>
<th>Species</th>
<th>Tonnes</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mussels</td>
<td>3,800</td>
<td>(26,113)</td>
</tr>
<tr>
<td>Pacific oysters</td>
<td>811</td>
<td>(1,169)</td>
</tr>
<tr>
<td>Native oysters</td>
<td>54</td>
<td>(77)</td>
</tr>
<tr>
<td>Scallops and Queens</td>
<td>None</td>
<td>(55)</td>
</tr>
<tr>
<td>Clams</td>
<td>13</td>
<td>(22)</td>
</tr>
<tr>
<td>Cockles</td>
<td>12</td>
<td>(10)</td>
</tr>
<tr>
<td><strong>Total ~ tonnes</strong></td>
<td>4690</td>
<td>(27,500)</td>
</tr>
<tr>
<td><strong>Estimated value ~ £ million</strong></td>
<td>7.0</td>
<td>(22.7)</td>
</tr>
</tbody>
</table>
Pacific & Native oysters

- Seed from hatcheries / On-grow inter-tidally in bags
- Some on-bottom cultivation / *Natural recruitment*

- Part grown stock / managed fisheries
- On-bottom cultivation
- *Bonamia*
Clams & Mussels

- Seed hatcheries / Cultivation under netting /
- *Alien species / Natural recruitment*

- Seed from wild beds
- Relayed in Fishery Order areas
- Some rafts / long-lines
- *Demand for seed*
Hatcheries

- Sea-salter (Walney and Reculver) – Pacific oyster and clam seed

- National Lobster Hatchery –
  - Juvenile lobsters for stock enhancement
Other Sectors

- Aquaponics - Demonstration – Hobby –

- Water Cress Industry £60m

- UK announces world’s largest algal bio-fuel project. Carbon Trust launches £26m project to develop transport fuels made from algae by 2020

- Pharmaceuticals

- Sea baits - Ragworm

- Tropical Ornamental – Clownfish
## English Aquaculture 2009
### Production & Values

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Farm gate</th>
</tr>
</thead>
<tbody>
<tr>
<td>7095t</td>
<td>£17,028,000</td>
</tr>
<tr>
<td>359t</td>
<td>£  1,795,000</td>
</tr>
<tr>
<td>6.033m</td>
<td>£  6,033,000</td>
</tr>
<tr>
<td>0.700m</td>
<td>Env gain</td>
</tr>
<tr>
<td>10t</td>
<td>£       25,000</td>
</tr>
<tr>
<td>7.000m</td>
<td>£10,000,000</td>
</tr>
<tr>
<td>112t</td>
<td>£  246,000</td>
</tr>
<tr>
<td>7t</td>
<td>£         5,500</td>
</tr>
<tr>
<td>1.2t</td>
<td>£         7,500</td>
</tr>
<tr>
<td>54t</td>
<td></td>
</tr>
<tr>
<td>811t</td>
<td></td>
</tr>
<tr>
<td>3800t</td>
<td>£  7,000,000</td>
</tr>
<tr>
<td>13t</td>
<td></td>
</tr>
<tr>
<td>12t</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£42,140,000</strong></td>
</tr>
</tbody>
</table>

**Finfish = 800 FTE**  **Shellfish = 135 FTE + 64 PTE**
What’s over the Horizon?
and how will England Deliver serious volumes?

Wind-farms (Rounds 1, 2 & 3) by 2030 = 25,000 km$^2$
20% = 5,000 km$^2$ Off-shore shellfish,

Offshore finfish & IMTA
What’s over the Horizon?

Oil and Gas rig Decommissioning - use of platforms?

Farmers barns?
- 200,000 agricultural holdings
- 30,000 intensive livestock rearing operations

Fish follows poultry (but 15 years behind!)
What’s over the Horizon?

Aquaculture follows horticulture?
- Low water use (recirculation; RAS)
- Fingerling and spat production: sanitary control
- Grow out production: microbial ecology control
- Energy, climate and air control

BLUEHOUSE FARMING
What’s over the Horizon?

Large Scale re-circulation farms (500 to 10,000 tonnes)
• 1 ha = 1000 tonnes

Increase in number of water storage ponds
• Fenland areas (abstraction in summer)

Moving existing trout farms over to recirculation?
• Danish model trout farms

WE CAN FIND WAYS FORWARD

Thank You