INDUSTRIAL FISHERIES IN THE BALTIC SEA

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25 May 2011
The Baltic Sea

Sprat

Herring
World fish meal market use
(2010 projection)

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquaculture</td>
<td>56</td>
</tr>
<tr>
<td>Pigs</td>
<td>20</td>
</tr>
<tr>
<td>Poultry</td>
<td>12</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
</tr>
</tbody>
</table>
Industrial Fisheries

Landings

Direct Human Consumption
- Fresh
- Marinated, preserved, fish oil, etc

Animal Feed production
- Fresh
- Meal and Oil

Trimmings
Fish meals production

Samples from industrial landings in Denmark taken in the Baltic

<table>
<thead>
<tr>
<th>Country</th>
<th>Subdivisions</th>
<th>Gear (Trawl)</th>
<th>Herring</th>
<th>Sprat</th>
<th>Sandeel</th>
<th>Cod</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>22-23</td>
<td>Industrial</td>
<td>10.8%</td>
<td>86.9%</td>
<td>&lt;0.05%</td>
<td>&lt;0.05%</td>
<td>2.2%</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Industrial</td>
<td>9.8%</td>
<td>90.0%</td>
<td>0.1%</td>
<td>0.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sand eel</td>
<td></td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>24</td>
<td>Herring</td>
<td>7.5%</td>
<td>92.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Industrial</td>
<td>19.6%</td>
<td>80.4%</td>
<td>&lt;0.05%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
<td>Herring</td>
<td>68.7%</td>
<td>31.3%</td>
<td>0.1%</td>
<td>&lt;0.05%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Industrial</td>
<td>8.8%</td>
<td>91.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fishing vessels

No of fishing vessels (> 24 m)
2004-2008
(include vessels fishing outside the Baltic)

- Denmark
- Germany
- Estonia
- Latvia
- Lithuania
- Poland
- Finland
- Sweden
Landings of pelagic fish from the Baltic Sea

Landings of pelagic fish

Thousands

Tons

Sweden
Russian Federation
Poland
Lithuania
Latvia
Germany
Finland
Estonia
Denmark
Landings of industrial fish to Denmark, 2010

Landings (t) of Industrial Fish 2010 to Denmark (excl. North Sea harbours) by Baltic State vessels

Thousands

- Denmark
- Sweden
- Germany
- Poland
- Finland
- Lithuania
- Latvia

Skagen
Nexø
Kattegat
# Usage of production of pelagic species (tons) for the Baltic EU Countries - excluding Denmark

<table>
<thead>
<tr>
<th>USAGE</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human consumption</td>
<td>296,077</td>
<td>273,107</td>
<td>318,179</td>
<td>336,398</td>
<td>308,654</td>
</tr>
<tr>
<td>Industrial uses (including animal feed)</td>
<td>179,075</td>
<td>197,956</td>
<td>178,895</td>
<td>162,763</td>
<td>173,033</td>
</tr>
<tr>
<td>Unknown uses (including withdrawals)</td>
<td>33,294</td>
<td>33,047</td>
<td>32,846</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>
## Technical measures
Minimum mesh size and by-catch

<table>
<thead>
<tr>
<th>TARGET SPECIES</th>
<th>MESH SIZE RANGE (mm stretched mesh)</th>
<th>SUBDIVISIONS</th>
<th>MINIMUM PERCENTAGE OF TARGET SPECIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;16</td>
<td>16 -31</td>
<td>16-104</td>
</tr>
<tr>
<td></td>
<td>22-32</td>
<td>22-27</td>
<td>28-32</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

Cod < 3%
**TACs 2011**  
Baltic herring and sprat

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>AREA</th>
<th>TOTAL TAC 2011</th>
<th>CHANGE 2011 OVER 2010¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herring</td>
<td>Subdivisions 30-31 (Bothnian Sea - Bothnian Bay)</td>
<td>104.369</td>
<td>1%</td>
</tr>
<tr>
<td>Herring</td>
<td>Subdivisions 22-24 (Western Baltic)</td>
<td>15.884</td>
<td>-30%</td>
</tr>
<tr>
<td>Herring</td>
<td>Subdivisions 25-27, 28.2, 29, 32 (Baltic Proper)</td>
<td>107.420</td>
<td>-15%</td>
</tr>
<tr>
<td>Herring</td>
<td>Subdivision 28-1 (Gulf of Riga)</td>
<td>36.400</td>
<td>0%</td>
</tr>
<tr>
<td>Sprat</td>
<td>Subdivisions 22-32 (Baltic Sea)</td>
<td>288.766</td>
<td>-24%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Subdivisions 22-32 (Baltic Sea)</strong></td>
<td><strong>552.839</strong></td>
<td><strong>-17%</strong></td>
</tr>
</tbody>
</table>
Sprat
Herring in the Bothnian Sea

![Graphs showing data on herring landings, recruitment, fishing mortality, and spawning stock biomass over time.](image-url)
Baltic Sprat and Herring in the Bothnian Sea

• Sprat
  – 2008 year class strong
  – 2009 year class slightly below average.
  – MSY target in biomass terms is not meaningful
    (Because of the interaction with the cod stock)

• Herring in the Bothnian Sea
  – SSB increase
Central Baltic Herring
Dioxins and Dioxin-like PCB’s

- Baltic Sea fish (fat-rich salmon, herring and sprat), exhibit high concentrations of dioxins and dioxin-like PCBs
- Fish meal and fish oil products adhere to Commission legislation limiting the amount of dioxins and dioxin-like PCBs found in such products.
KEY FINDINGS

• Baltic pelagic fisheries well documented.
• Little discards in the pelagic fisheries.
• IUU fishing not been documented as a major problem.

• Fleets decreasing in number
KEY FINDINGS

Trends stocks

• Trends in abundance vary between stocks and are not in all cases dominated by changes in the fisheries.
KEY FINDINGS

Exploitation pressure

• In general, Baltic herring and sprat are exploited at approximately or slightly above MSY.

• The industrial fisheries has major influence on the sprat stock and on the herring stock in the Bothnian Sea.

• The sprat abundance varies in response to environment, cod predation and fisheries pressure.
KEY FINDINGS
Markets

• Market for fish meal/oil and animal feed will dictate a significant component of the fishing mortality for sprat and Bothnian Sea herring.

• Human consumption market for sprat small in Denmark, Finland or Sweden.

• Market for human consumption for sprat in Eastern European countries.
Thank you for your attention