ECOREGION Widely distributed and migratory stocks
STOCK Porbeagle (*Lamna nasus*) in the Northeast Atlantic

Advice summary for 2011-2012

<table>
<thead>
<tr>
<th>Management Objective (s)</th>
<th>Landings in 2011 and 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition to an MSY approach with caution at low stock size</td>
<td>Zero catches</td>
</tr>
<tr>
<td>Cautiously avoid impaired recruitment (Precautionary Approach)</td>
<td>Zero catches</td>
</tr>
<tr>
<td>Cautiously avoid impaired recruitment and achieve other objective(s) of a management plan (e.g., catch stability)</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Stock status

<table>
<thead>
<tr>
<th>Fishing mortality</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F_{MSY}$</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>$F_{FPA/F_{lim}}$</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spawning Stock Biomass (SSB)</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>$B_{MSY}$</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>$B_{FPA}/B_{lim}$</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

**Figure 9.4.7.1** Porbeagle in the Northeast Atlantic. ICES estimates of landings for 1971–2009 (top, black lines indicate 2008-2010 TAC) and longer term trend in landings (1926–1970) for those fleets reporting catches (below).

The fisheries in the Northern part of the stock area have ceased and have not resumed. Before quotas were put in place, if porbeagle were present in sufficient numbers to support a fishery, a fishery would have developed. The fact that no fishery has developed recently can be considered as a sign that the stock had not recovered from its previous low numbers. In the absence of any quantitative data to demonstrate stock recovery, and in regard of this species’ low reproductive capacity, the stock is probably still depleted.

Management plans

No specific management plan has been either proposed or agreed.

In light of the EU policy paper on fisheries management (17 May 2010, COM(2010) 241) this stock is classified under category 6. This implies a TAC=0 in 2011.
Biology

Porbeagle is a highly migratory and schooling species. The NE Atlantic stock extends from Norway, Iceland and the Barents Sea to Northwest Africa. The limited studies conducted on this population and historical catch records indicate that porbeagle segregate by sex and size. French catches and two recent studies using a limited number of archival satellite tags indicate that porbeagle moves along the shelf edge of the Celtic Sea and of the Bay of Biscay as well as within the Celtic Sea. The Saint Georges Channel is likely a nursery area.

Environmental influence on the stock

The porbeagle are among the most cold tolerant of pelagic shark species, they could have evolved their thermoregulation to feed on abundant cold-water prey in the absence of non-thermoregulating competitors.

The fisheries

Porbeagle has been exploited commercially since the early 1800s, principally by Scandinavian fishers; however, the “boom” period for this fishery in the NE Atlantic began in the 1930s. By the 1950s, this fishery had extended to the Orkney-Shetland area and the Faroes then to the waters off Ireland and offshore banks. After this, the catches began to decline to below 2000 t annually, and in 1961 a fleet of Norwegian longliners extended their fishing for porbeagle to Northwest Atlantic waters. In recent years, the last longliner targeted fishery is a seasonal fishery of a fleet composed of about five boats which are based in Yeu Island (France).

| Catch by fleet | Total catch (2009) 290 t where 89 % are landings of the French directed fishery, no discards. |

Quality considerations

The assessments (and subsequent projections) conducted at the joint ICCAT/ICES meeting are exploratory assessments, using several assumptions (carrying capacity for the SSB model, F in the historic period in the ASP model). It must be noted that there was a lack of cpue data for the peak of the fishery, catch data are considered underestimates (not all nations have reported catch data throughout the time period), the cpue index for the French fleet may not be reflective of stock abundance because this fishery actively seeks porbeagle. Consequently, the model outputs should be considered highly uncertain (ICCAT report).

There are no fishery independent survey data. A dedicated long-line survey covering the main parts of the stock area could usefully be initiated.

The assessment of the state of the stock is consequently mainly based on the observation that the Northern fisheries have ceased and have not resumed.

Scientific basis

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Catch based trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input data</td>
<td>International catch.</td>
</tr>
<tr>
<td>Discards and by-catch</td>
<td>French and Spanish longliner cpue series</td>
</tr>
<tr>
<td>Indicators</td>
<td>Not considered to be an issue</td>
</tr>
<tr>
<td>Other information</td>
<td>ICCAT/ICES joint meeting in 2009</td>
</tr>
<tr>
<td>Working group report</td>
<td>WGEF</td>
</tr>
</tbody>
</table>
9.4.7 Supporting Information October 2010

ECOREGION   Widely distributed and migratory stocks
STOCK        Porbeagle in the Northeast Atlantic

Reference points

No reference points have been defined for this stock.

Outlook for 2011-2012

Exploratory assessments conducted in 2009 and 2010 were not considered a basis for advice.

MSY approach

There is no assessment available to alter the perception of the depleted nature of the stock. Therefore there is no non-zero catch option that is compatible with the ICES MSY framework.

PA approach

ICES reiterates the precautionary advice it gave in 2008, for 2009 and for 2010 that “given the state of the stock, no targeted fishing for porbeagle should be permitted and bycatch should be limited and landings of porbeagle should not be allowed.”

Policy paper

In light of the EU policy paper on fisheries management (17 May 2010, COM(2010) 241) this stock is classified under category 6. This implies a TAC=0 in 2011.

Additional considerations

The exploratory assessments carried out in 2009 (ICCAT/ICES, 2009) indicated that current biomass is below $B_{\text{MSY}}$ and that recent fishing mortality is near or possibly above $F_{\text{MSY}}$. However, the lack of cpue data for the peak of the fishery adds considerable uncertainty in identifying the current status relative to virgin biomass.

The model projections indicated that sustained reductions in fishing mortality would be required to initiate stock recovery. Recovery of the stock to $B_{\text{MSY}}$ under zero fishing mortality would take 15–34 years. Model outputs suggested that catches of 200 t or less resulted in high probabilities of recovery to BMSY within 25–50 years under nearly all model scenarios.

Stock assessments carried out by the ICCAT/ICES meeting suffered heavily from the lack of cpue data for the peak of the fishery. A study of these historic data is strongly encouraged to improve our present knowledge of the dynamic of the stock.

Further ecological studies on porbeagle, as highlighted in the scientific recommendations of ICCAT (2009) would help further develop management for this species. Such work could usefully build on recent and ongoing tagging projects.

Further studies on porbeagle bycatch and post-release survivorship of any discarded porbeagle are required.

Comparison with previous assessment and advice

The basis for advice is the same as that of the previous advice.

Sources


Figure 9.4.7.2  Porbeagle in the Northeast Atlantic. Temporal trends in standardized cpue for the French target longline fishery for porbeagle (1972–2007) and Spanish longline fisheries in the NE Atlantic (1986–2007).

Table 9.4.7.1  Porbeagle in the Northeast Atlantic. ICES advice, management and landings and catches.

<table>
<thead>
<tr>
<th>Year</th>
<th>ICES Advice</th>
<th>Predicted catch corr. to advice</th>
<th>Agreed TAC</th>
<th>Official Landings</th>
<th>ICES Catch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>690</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>482</td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>629</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>862</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>1047</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>827</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>628</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>633</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>612</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>498</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>563</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>535</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>596</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>537</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>No advice</td>
<td>NA</td>
<td>NA</td>
<td>553</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>No fishery</td>
<td>NA</td>
<td>NA</td>
<td>343</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>No target fishery</td>
<td>NA</td>
<td>289</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>No target fishery</td>
<td>NA</td>
<td>431</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>No landings</td>
<td>0</td>
<td>581</td>
<td>NA</td>
<td>313</td>
</tr>
<tr>
<td>2009</td>
<td>No landings</td>
<td>0</td>
<td>436</td>
<td>NA</td>
<td>288</td>
</tr>
<tr>
<td>2010</td>
<td>Zero catches</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Zero catches</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Zero catches</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Weights in ‘000t
## Table 9.4.7.2

Porbeagle in the Northeast Atlantic. Working Group estimates of porbeagle landings data (tonnes) by country (1926–1970). Data derived from ICCAT, ICES and national data. Data are considered an underestimate.

<table>
<thead>
<tr>
<th>Year</th>
<th>Denmark</th>
<th>Norway</th>
<th>Spain</th>
<th>UK (Scot)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926</td>
<td>279</td>
<td></td>
<td></td>
<td></td>
<td>279</td>
</tr>
<tr>
<td>1927</td>
<td>457</td>
<td></td>
<td></td>
<td></td>
<td>457</td>
</tr>
<tr>
<td>1928</td>
<td>611</td>
<td></td>
<td></td>
<td></td>
<td>611</td>
</tr>
<tr>
<td>1929</td>
<td>832</td>
<td></td>
<td></td>
<td></td>
<td>832</td>
</tr>
<tr>
<td>1930</td>
<td>1505</td>
<td></td>
<td></td>
<td></td>
<td>1505</td>
</tr>
<tr>
<td>1931</td>
<td>1106</td>
<td></td>
<td></td>
<td></td>
<td>1106</td>
</tr>
<tr>
<td>1932</td>
<td>1603</td>
<td></td>
<td></td>
<td></td>
<td>1603</td>
</tr>
<tr>
<td>1933</td>
<td>3884</td>
<td></td>
<td></td>
<td></td>
<td>3884</td>
</tr>
<tr>
<td>1934</td>
<td>3626</td>
<td></td>
<td></td>
<td></td>
<td>3626</td>
</tr>
<tr>
<td>1935</td>
<td>1993</td>
<td></td>
<td></td>
<td></td>
<td>1993</td>
</tr>
<tr>
<td>1936</td>
<td>2459</td>
<td></td>
<td></td>
<td></td>
<td>2459</td>
</tr>
<tr>
<td>1937</td>
<td>2805</td>
<td></td>
<td></td>
<td></td>
<td>2805</td>
</tr>
<tr>
<td>1938</td>
<td>2733</td>
<td></td>
<td></td>
<td></td>
<td>2733</td>
</tr>
<tr>
<td>1939</td>
<td>2213</td>
<td></td>
<td></td>
<td></td>
<td>2213</td>
</tr>
<tr>
<td>1940</td>
<td>104</td>
<td></td>
<td></td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>1941</td>
<td>283</td>
<td></td>
<td></td>
<td></td>
<td>283</td>
</tr>
<tr>
<td>1942</td>
<td>288</td>
<td></td>
<td></td>
<td></td>
<td>288</td>
</tr>
<tr>
<td>1943</td>
<td>351</td>
<td></td>
<td></td>
<td></td>
<td>351</td>
</tr>
<tr>
<td>1944</td>
<td>321</td>
<td></td>
<td></td>
<td></td>
<td>321</td>
</tr>
<tr>
<td>1945</td>
<td>927</td>
<td></td>
<td></td>
<td></td>
<td>927</td>
</tr>
<tr>
<td>1946</td>
<td>1088</td>
<td></td>
<td></td>
<td></td>
<td>1088</td>
</tr>
<tr>
<td>1947</td>
<td>2824</td>
<td></td>
<td></td>
<td></td>
<td>2824</td>
</tr>
<tr>
<td>1948</td>
<td>1914</td>
<td></td>
<td></td>
<td></td>
<td>1914</td>
</tr>
<tr>
<td>1949</td>
<td>1251</td>
<td></td>
<td></td>
<td></td>
<td>1251</td>
</tr>
<tr>
<td>1950</td>
<td>1900</td>
<td>1358</td>
<td>4</td>
<td></td>
<td>3262</td>
</tr>
<tr>
<td>1951</td>
<td>1600</td>
<td>778</td>
<td>3</td>
<td></td>
<td>2381</td>
</tr>
<tr>
<td>1952</td>
<td>1600</td>
<td>606</td>
<td>3</td>
<td></td>
<td>2209</td>
</tr>
<tr>
<td>1953</td>
<td>1100</td>
<td>712</td>
<td>4</td>
<td></td>
<td>1816</td>
</tr>
<tr>
<td>1954</td>
<td>651</td>
<td>594</td>
<td>1</td>
<td></td>
<td>1246</td>
</tr>
<tr>
<td>1955</td>
<td>578</td>
<td>897</td>
<td>2</td>
<td></td>
<td>1477</td>
</tr>
<tr>
<td>1956</td>
<td>446</td>
<td>871</td>
<td>1</td>
<td></td>
<td>1318</td>
</tr>
<tr>
<td>1957</td>
<td>561</td>
<td>1097</td>
<td>3</td>
<td></td>
<td>1661</td>
</tr>
<tr>
<td>1958</td>
<td>653</td>
<td>1080</td>
<td>3</td>
<td>7</td>
<td>1743</td>
</tr>
<tr>
<td>1959</td>
<td>562</td>
<td>1183</td>
<td>3</td>
<td>9</td>
<td>1757</td>
</tr>
<tr>
<td>1960</td>
<td>362</td>
<td>1929</td>
<td>2</td>
<td>10</td>
<td>2303</td>
</tr>
<tr>
<td>1961</td>
<td>425</td>
<td>1053</td>
<td>5</td>
<td>9</td>
<td>1492</td>
</tr>
<tr>
<td>1962</td>
<td>304</td>
<td>444</td>
<td>7</td>
<td>20</td>
<td>775</td>
</tr>
<tr>
<td>1963</td>
<td>173</td>
<td>121</td>
<td>3</td>
<td>17</td>
<td>314</td>
</tr>
<tr>
<td>1964</td>
<td>216</td>
<td>89</td>
<td>6</td>
<td>5</td>
<td>316</td>
</tr>
<tr>
<td>1965</td>
<td>165</td>
<td>204</td>
<td>4</td>
<td>8</td>
<td>381</td>
</tr>
<tr>
<td>1966</td>
<td>131</td>
<td>218</td>
<td>9</td>
<td>6</td>
<td>364</td>
</tr>
<tr>
<td>1967</td>
<td>144</td>
<td>305</td>
<td>8</td>
<td>7</td>
<td>464</td>
</tr>
<tr>
<td>1968</td>
<td>111</td>
<td>677</td>
<td>11</td>
<td>7</td>
<td>806</td>
</tr>
<tr>
<td>1969</td>
<td>100</td>
<td>909</td>
<td>11</td>
<td>3</td>
<td>1023</td>
</tr>
</tbody>
</table>
Table 9.4.7.2  Continued

<table>
<thead>
<tr>
<th>Year</th>
<th>Denmark</th>
<th>Faeroes</th>
<th>France</th>
<th>Germany</th>
<th>Iceland</th>
<th>Iceland</th>
<th>Netherlands</th>
<th>Norway</th>
<th>Portugal</th>
<th>Spain (Basque)</th>
<th>Sweden</th>
<th>UK (E, W, Nl)</th>
<th>UK (Scot)</th>
<th>Japan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>124</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>269</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>408</td>
</tr>
<tr>
<td>1971</td>
<td>311</td>
<td>1</td>
<td>550</td>
<td></td>
<td></td>
<td></td>
<td>111</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>991</td>
</tr>
<tr>
<td>1972</td>
<td>523</td>
<td></td>
<td>910</td>
<td></td>
<td></td>
<td></td>
<td>293</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1755</td>
</tr>
<tr>
<td>1973</td>
<td>158</td>
<td>5</td>
<td>545</td>
<td>6</td>
<td>2</td>
<td></td>
<td>230</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>985</td>
</tr>
<tr>
<td>1974</td>
<td>170</td>
<td></td>
<td>380</td>
<td>3</td>
<td>2</td>
<td></td>
<td>165</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>744</td>
</tr>
<tr>
<td>1975</td>
<td>265</td>
<td></td>
<td>455</td>
<td>4</td>
<td>4</td>
<td></td>
<td>304</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1063</td>
</tr>
<tr>
<td>1976</td>
<td>233</td>
<td>1</td>
<td>655</td>
<td></td>
<td>3</td>
<td></td>
<td>259</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1185</td>
</tr>
<tr>
<td>1977</td>
<td>289</td>
<td>5</td>
<td>450</td>
<td></td>
<td>3</td>
<td></td>
<td>77</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>834</td>
</tr>
<tr>
<td>1978</td>
<td>112</td>
<td>9</td>
<td>550</td>
<td></td>
<td></td>
<td></td>
<td>76</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>763</td>
</tr>
<tr>
<td>1979</td>
<td>72</td>
<td>25</td>
<td>650</td>
<td></td>
<td>1</td>
<td></td>
<td>106</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>864</td>
</tr>
<tr>
<td>1980</td>
<td>176</td>
<td>8</td>
<td>640</td>
<td></td>
<td>1</td>
<td></td>
<td>84</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>932</td>
</tr>
<tr>
<td>1981</td>
<td>158</td>
<td>6</td>
<td>500</td>
<td></td>
<td>1</td>
<td></td>
<td>93</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>777</td>
</tr>
<tr>
<td>1982</td>
<td>84</td>
<td>17</td>
<td>480</td>
<td></td>
<td>1</td>
<td></td>
<td>33</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>636</td>
</tr>
<tr>
<td>1983</td>
<td>45</td>
<td>12</td>
<td>490</td>
<td></td>
<td>1</td>
<td></td>
<td>33</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>616</td>
</tr>
<tr>
<td>1984</td>
<td>38</td>
<td>14</td>
<td>300</td>
<td></td>
<td>1</td>
<td></td>
<td>97</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>484</td>
</tr>
<tr>
<td>1985</td>
<td>72</td>
<td>12</td>
<td>196</td>
<td></td>
<td>1</td>
<td></td>
<td>80</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>406</td>
</tr>
<tr>
<td>1986</td>
<td>114</td>
<td>12</td>
<td>208</td>
<td></td>
<td>1</td>
<td></td>
<td>24</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>399</td>
</tr>
<tr>
<td>1987</td>
<td>56</td>
<td>33</td>
<td>233</td>
<td></td>
<td>1</td>
<td></td>
<td>25</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>389</td>
</tr>
<tr>
<td>1988</td>
<td>33</td>
<td>14</td>
<td>341</td>
<td></td>
<td>1</td>
<td></td>
<td>12</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>471</td>
</tr>
<tr>
<td>1989</td>
<td>33</td>
<td>14</td>
<td>327</td>
<td></td>
<td>1</td>
<td></td>
<td>27</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>462</td>
</tr>
<tr>
<td>1990</td>
<td>46</td>
<td>14</td>
<td>546</td>
<td></td>
<td>1</td>
<td></td>
<td>45</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>690</td>
</tr>
<tr>
<td>1991</td>
<td>85</td>
<td>7</td>
<td>306</td>
<td></td>
<td></td>
<td></td>
<td>35</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>482</td>
</tr>
<tr>
<td>1992</td>
<td>80</td>
<td>20</td>
<td>466</td>
<td></td>
<td>1</td>
<td></td>
<td>43</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>629</td>
</tr>
<tr>
<td>1993</td>
<td>91</td>
<td>76</td>
<td>642</td>
<td>1</td>
<td>3</td>
<td></td>
<td>24</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>862</td>
</tr>
<tr>
<td>1994</td>
<td>93</td>
<td>48</td>
<td>824</td>
<td>4</td>
<td></td>
<td></td>
<td>26</td>
<td>1</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1047</td>
</tr>
<tr>
<td>1995</td>
<td>86</td>
<td>44</td>
<td>644</td>
<td>5</td>
<td></td>
<td></td>
<td>28</td>
<td>1</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>827</td>
</tr>
<tr>
<td>1996</td>
<td>72</td>
<td>8</td>
<td>450</td>
<td>3</td>
<td></td>
<td></td>
<td>31</td>
<td>1</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>628</td>
</tr>
<tr>
<td>1997</td>
<td>69</td>
<td>9</td>
<td>495</td>
<td>2</td>
<td></td>
<td></td>
<td>19</td>
<td>1</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>633</td>
</tr>
<tr>
<td>1998</td>
<td>85</td>
<td>7</td>
<td>435</td>
<td>2</td>
<td>3</td>
<td></td>
<td>28</td>
<td>1</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>612</td>
</tr>
<tr>
<td>1999</td>
<td>107</td>
<td>10</td>
<td>273</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>34</td>
<td>0</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>498</td>
</tr>
<tr>
<td>2000</td>
<td>73</td>
<td>13</td>
<td>361</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>23</td>
<td>15</td>
<td>11</td>
<td>38</td>
<td>1</td>
<td>7</td>
<td></td>
<td>563</td>
</tr>
<tr>
<td>2001</td>
<td>76</td>
<td>8</td>
<td>339</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>17</td>
<td>4</td>
<td>23</td>
<td>45</td>
<td>1</td>
<td>10</td>
<td>1</td>
<td></td>
<td>535</td>
</tr>
<tr>
<td>2002</td>
<td>42</td>
<td>10</td>
<td>439</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>14</td>
<td>11</td>
<td>49</td>
<td>16</td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td>596</td>
</tr>
<tr>
<td>2003</td>
<td>21</td>
<td>14</td>
<td>394</td>
<td>5</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>19</td>
<td>4</td>
<td>23</td>
<td>22</td>
<td>25</td>
<td></td>
<td></td>
<td>537</td>
</tr>
<tr>
<td>2004</td>
<td>20</td>
<td>5</td>
<td>374</td>
<td>6</td>
<td>1</td>
<td>18</td>
<td>24</td>
<td>57</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>24</td>
<td></td>
<td></td>
<td>553</td>
</tr>
<tr>
<td>2005</td>
<td>4</td>
<td>19</td>
<td>246</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>0</td>
<td>24</td>
<td></td>
<td>343</td>
</tr>
<tr>
<td>2006</td>
<td>3</td>
<td>21</td>
<td>185</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>27</td>
<td>6</td>
<td>26</td>
<td>5</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>289</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>13</td>
<td>347</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>10</td>
<td>2</td>
<td>6</td>
<td>16</td>
<td>1</td>
<td>26</td>
<td></td>
<td></td>
<td>431</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
<td>11</td>
<td>221</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>32</td>
<td>13</td>
<td>0</td>
<td>12</td>
<td></td>
<td>313</td>
</tr>
<tr>
<td>2009</td>
<td>4</td>
<td>4</td>
<td>256</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>10</td>
<td></td>
<td>288</td>
</tr>
</tbody>
</table>
### Table 9.4.7.3
Porbeagle in the Northeast Atlantic. Average probabilities across the 5 most credible BSP model runs for the northeast Atlantic porbeagle population (ICCAT, 2009).

<table>
<thead>
<tr>
<th>Total catch in tons</th>
<th>Probability of some increase within 10 years</th>
<th>Probability of stock rebuilding to BMSY within:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20 years</td>
</tr>
<tr>
<td>0</td>
<td>1.00</td>
<td>0.478</td>
</tr>
<tr>
<td>100</td>
<td>1.00</td>
<td>0.414</td>
</tr>
<tr>
<td>200</td>
<td>0.98</td>
<td>0.368</td>
</tr>
<tr>
<td>300</td>
<td>0.89</td>
<td>0.326</td>
</tr>
<tr>
<td>400</td>
<td>0.72</td>
<td>0.286</td>
</tr>
</tbody>
</table>

### Table 9.4.7.4
Porbeagle in the Northeast Atlantic. Fishing mortality, yield, biomass and SSB relative to that achieved at the effort level corresponding to the F0.1 level for a flat-topped selection pattern with maximum selection at age 3.

<table>
<thead>
<tr>
<th>Selection Pattern</th>
<th>Age Max Selection</th>
<th>Maximum Landing Length</th>
<th>F</th>
<th>Yield</th>
<th>Biomass</th>
<th>SSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domed</td>
<td>5</td>
<td>No</td>
<td>211%</td>
<td>68%</td>
<td>202%</td>
<td>120%</td>
</tr>
<tr>
<td>Flat</td>
<td>13</td>
<td>No</td>
<td>211%</td>
<td>79%</td>
<td>280%</td>
<td>176%</td>
</tr>
<tr>
<td>Domed</td>
<td>13</td>
<td>No</td>
<td>279%</td>
<td>68%</td>
<td>295%</td>
<td>178%</td>
</tr>
<tr>
<td>Flat</td>
<td>5</td>
<td>Yes</td>
<td>150%</td>
<td>84%</td>
<td>134%</td>
<td>105%</td>
</tr>
<tr>
<td>Domed</td>
<td>5</td>
<td>Yes</td>
<td>217%</td>
<td>67%</td>
<td>206%</td>
<td>120%</td>
</tr>
<tr>
<td>Flat</td>
<td>13</td>
<td>Yes</td>
<td>698%</td>
<td>35%</td>
<td>377%</td>
<td>191%</td>
</tr>
<tr>
<td>Domed</td>
<td>13</td>
<td>Yes</td>
<td>698%</td>
<td>35%</td>
<td>377%</td>
<td>191%</td>
</tr>
</tbody>
</table>