A. General

A.1. Stock definition

ICES assumes since the end of the 1970s three different stocks for assessment and management purposes: Anglerfish in Division IIa (Norwegian Sea), Division IIIa (Kattegat and Skagerrak), Subarea IV (North Sea), and Subarea VI (West of Scotland and Rockall) (*Lophius piscatorius* and *L. budegassa*); Anglerfish in Divisions VIIb-k and VIIIa,b,d (*L. piscatorius* and *L. budegassa*); and Anglerfish in Divisions VIIIc and IXa (*L. piscatorius* and *L. budegassa*). These stock definitions apply for both anglerfish species White anglerfish (*L. piscatorius*) and Black anglerfish (*L. budegassa*). In Divisions VIIb-k and VIIIa,b,d, the two species are assessed separately but advised as a single stock since the EU gives a unique TAC for both species.

A.2. Fishery

Anglerfish are an important component of mixed fisheries taking hake, megrim, sole, cod, plaice, and Nephrops. A trawl fishery by Spanish and French vessels developed in the Celtic Sea and Bay of Biscay in the 1970s, and overall annual landings may have attained 35 - 40 000 t by the early 1980s. Landings decreased between 1981 and 1993 and since 2000, landings show an increasing trend. France and Spain together still report more than 75% of the total landings of both species combined. The remainder is taken by the UK and Ireland (around 10% each) and Belgium (less than 5%). Otter-trawls (the main gear used by French, Spanish, and Irish vessels) currently take about 80% of the total landings of *L. piscatorius*, while around 60% of UK landings are by beam trawlers and gillnetters. Over 95% of total international landings of *L. budegassa* are taken by otter trawlers. There has been an expansion of the French gillnet fishery since the early 90’s in the Celtic Sea and in the north of the Bay of Biscay, mainly by vessels landing in Spain and fishing in medium to deep waters. Otter-trawling in medium and deep water in ICES Subarea VII appears to have declined, although the increasing use of twin trawls by French vessels may have increased significantly the overall efficiency of the French fleet.
A.3. Ecosystem aspects

*Lophius piscatorius* is a North Eastern Atlantic species, with a distribution area from Norway (Barents Sea) to the Straits of Gibraltar (and including the Mediterranean and the Black Sea). *Lophius budegassa* has a more southern distribution from the British islands and Ireland to Senegal (including the Mediterranean and the Black Sea). Though the Working Group assesses two different stocks for each species (VIIIc, IXa stock and VIIb-k, VIIIabd), the boundaries are not based on biological criteria. Recent studies were carried out in genetic and morphometric analysis (GESSAN, 2002; Duarte *et al.*, 2004; Fariña *et al.*, 2004).

The spawning of the *Lophius* species is very particular, with eggs extruded in a buoyant, gelatinous ribbon that may measure more than 10 m (Afonso-Dias and Hislop, 1996; Hislop *et al.*, 2001; Quincoces *et al.*, 2002). This particular spawning results in a highly clumped distribution of eggs and newly emerged larvae (Hislop *et al.*, 2001) and favourable or unfavourable ecosystem conditions can therefore have important impacts on the recruitment.

B. Data

The particularity of the data gathering processes for anglerfish species is that, except in Spain, anglerfishes are sold without any species distinction. The overall catch per species is estimated from the species ratio observed in the biological sampling.

Biological sampling is carried out by the countries contributing most catches, but assumptions about species proportion have to be made for countries reporting raw tonnages for species combined. The amount of tonnage with no biological sampling for species composition has been much reduced since the early 2000’s and in 2007 these represented less than 8% of the total *Lophius* landings. In some countries however, anglerfish are landed as tails only and conversion factors have to be used to estimate total length, which still may introduce errors.

Data are supplied from databases maintained by national Government Departments and research institutions. The figures used in assessment are considered as the best available data at the Working Group time of the year. From year to year, and before the Working Group, small revisions of data could occur. In that case, revised data are explained and incorporated into the historical data series for assessment.

Data are supplied on electronic files to a stock coordinator nominated by the ICES Hake Monk and Megrim (formerly Southern Self Demersal Stocks) Working Group, who compiles the international landings, discards and catch at age data, and maintains the time series of such data with the amendments proposed by countries.

B.1. Commercial catch

Landings data are supplied from databases maintained by national Government Departments and research institutions. Countries providing landings data by quarter and ICES Division are Spain, France, Ireland United Kingdom and Belgium.
The derivation used to compute the landings by fishery units and by species is given in the following table.

**Anglerfish in Divisions VIIb-k and VIIIa,b,d - Derivation of the 2008 length compositions, by fishery unit for L. piscatorius and L. budegassa, in Divisions VIIb-k and in VIIIa,b,d.**

<table>
<thead>
<tr>
<th>ICES Division</th>
<th>Fishery unit</th>
<th>Country</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>FU 3 Fixed nets</td>
<td>FR Q</td>
<td>FR.03.08</td>
<td>total International length distribution</td>
</tr>
<tr>
<td></td>
<td>EW Y</td>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>FU 4 Medium and deep waters</td>
<td>FR Q</td>
<td>FR.04.08</td>
<td></td>
</tr>
<tr>
<td>non-Nephrops</td>
<td>SP Q</td>
<td>Q</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EW Q</td>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>VIIb-k</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FU 5 gadoid fleets</td>
<td>EW Q</td>
<td>EW.05.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FR Q</td>
<td>Q</td>
<td>FR.05.08</td>
</tr>
<tr>
<td>FU 6 beam-trawl</td>
<td>BEL Q</td>
<td>Q</td>
<td>total International LD</td>
</tr>
<tr>
<td></td>
<td>EW Q</td>
<td>Q</td>
<td>EW.06.08</td>
</tr>
<tr>
<td>FU 8 Nephrops</td>
<td>FR Q</td>
<td>Q</td>
<td>FR.08.08</td>
</tr>
<tr>
<td>VIIIa,b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FU 9 Nephrops</td>
<td>FR Q</td>
<td>FR.09.08</td>
<td></td>
</tr>
<tr>
<td>FU 10 artisanal</td>
<td>FR Q</td>
<td>FR.10.08</td>
<td></td>
</tr>
<tr>
<td>bottom-trawl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FU 14 medium and deep waters</td>
<td>FR Q</td>
<td>FR.14.08</td>
<td></td>
</tr>
<tr>
<td>non Nephrops</td>
<td>SP Q</td>
<td>Q</td>
<td>SP.14.08</td>
</tr>
</tbody>
</table>

No discards assumed

**Discards:** preliminary information is available but not used due to uncertainties in adequacy of raising methodologies used.

**B.2. Biological**

In 2007, WGHMM rejected the XSA age based assessments of both species because of data quality (increased discards not incorporated) and ageing problems clearly identified. Therefore there is no age based data used to assess the stocks. Only length distributions of landings and survey indices are used.

**B.3. Surveys**

For the first three surveys presented, a full description can be found on the ICES DATRAS website: http://datras.ices.dk/Home/Descriptions.aspx.
The French FR-EVHOE survey

This survey covers the largest proportion of the area of stock distribution. It started in 1997.

Map of Survey Stations completed by the EVHOE Survey in 2008.
The Spanish Porcupine Groundfish Survey (SP-PGFS)
This survey was initiated in 2001 and covers the Porcupine Bank.

Map of area covered by the Porcupine Groundfish Survey.
The Irish Groundfish Survey (IR-IGFS)

This survey was initiated in 2003 and covers areas around Ireland.

Map of Survey Stations completed by the Irish Groundfish Survey in 2008. Valid = red circles; Invalid = crosses; Intercalibration = blue squares; intercalibration and additional stations not valid for IBTS survey indices = green triangles.
**The English Fisheries Science Partnership survey.**

This survey covers Areas VIIe and VIIf and started in 2003.


A full description of the survey can be found in Section 1.4 of the WGHMM2008 report.

**B.4. Commercial CPUE**

Effort and LPUE data are available for four Spanish trawl fleets (SP-VIGO7, SP-CORUTR7, SP-BAKON7 and SP_BAKON8). The French data for the FR-FU04 and FR-FU14 are also provided. Finally UK provides effort and LPUE data for EW-FU06.

**B.5. Other relevant data**

**C. Historical Stock Development**

In 2007, the Working Group found that the input data showed deficiencies especially as discards were known to be increasing and that ageing problem had become more obvious, consequently the WG rejected an analytical assessment. The assessments of the two species (WG 2009) are based on the analysis of LPUEs, surveys indices and length distributions.

Indicators point to the stocks being stable.

**D. Short-Term Projection: NOT USED**
E. Medium-Term Projections: NOT USED

F. Long-Term Projections: NOT USED

G. Biological Reference Points

There are precautionary reference points defined for these stocks. However, considering the underestimation of growth that is now obvious for both species, the reference points from earlier assessments are no longer valid. Reference points will have to be redefined based on an approved analytical assessment.

H. Other Issues

The analytical assessment was rejected in 2007 and advice was based on analysis of LPUEs, length frequencies of landings and survey data. In 2008, no new advice was delivered as the information available was considered too weak to provide any advice. The advice given for 2008 was also applicable for 2009.

I. References


