

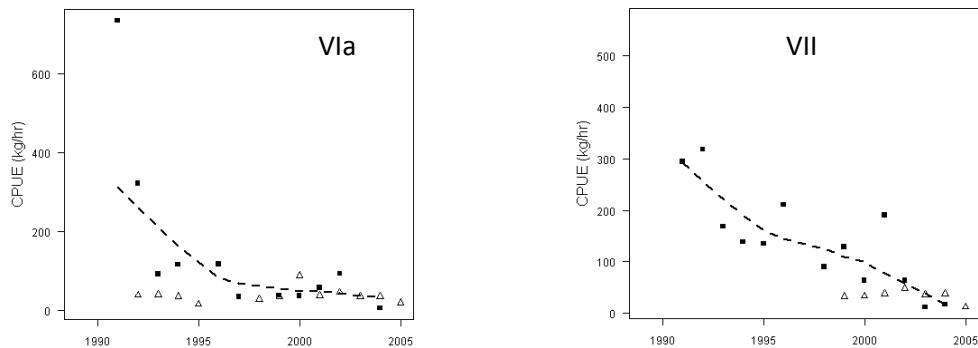
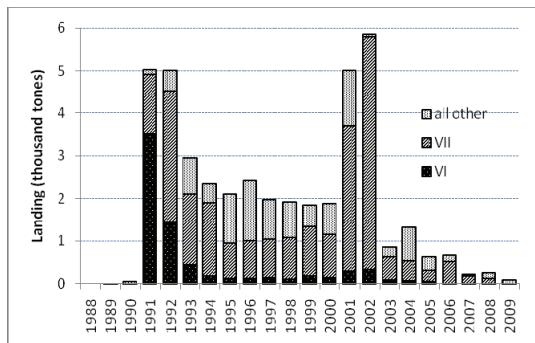
**ECOREGION**      **Widely distributed and migratory stocks**  
**STOCK**            **Orange roughy (*Hoplostethus atlanticus*) in the Northeast Atlantic**

**Advice summary for 2011**

No directed fisheries for this species and measures to minimize bycatch should be taken.

**Stock status**

Fishing mortality	2007	2008	2009
$F_{MSY}$	Unknown	Unknown	Unknown
$F_{PA}/F_{lim}$	Unknown	Unknown	Unknown
Spawning Stock Biomass (SSB)	2008	2009	2010
MSY B <sub>trigger</sub>	Unknown	Unknown	Unknown
B <sub>PA</sub> /B <sub>lim</sub>	Unknown	Unknown	Unknown



**Figure 9.4.14.1** Orange roughy in the Northeast Atlantic. Top panel: ICES estimates of international catch of orange roughy in Subareas VI, VII and all other ICES Subareas. Bottom panel: French 2006 cpue series for 400-600 kW power vessels (open triangles) and for 1400-1600 kW vessels (solid squares) in Subareas VIa (left) and VII (right). The line is a smooth curve through the latter series.

Landings and available abundance indices have declined to low levels in Subareas VI, VII, and other.

**Management plans**

No specific management objectives are known to ICES.

In light of the EU policy paper on fisheries management (17 May 2010, [COM\(2010\) 241](#)) this assessment unit is classified under category 10.

## Biology

Orange roughy form discrete spawning aggregations around bathymetric features, which are susceptible to sequential depletion. It is not known if individual aggregations are reproductively distinct. There are juvenile areas on the flat grounds.

## The fisheries

In ICES Subarea VI, a targeted French trawl fishery began in 1989 centred on spawning aggregations around the Hebrides Terrace Seamount. Landings in this area peaked at 3500 t in 1991, and 5300 t were removed from the stock by the end of 1993. The cumulative catch of orange roughy in Subarea VI in 2009 was 7185 t. In ICES Subarea VII, a targeted French orange roughy fishery first developed in 1991, with initial landings increased to over 3000 t in 1992. An Irish fishery commenced in 2001 and landings peaked with over 5000 t in 2002. The total accumulated catch in Subarea VII is 24 581 t.

In both Subareas there have been two fisheries for orange roughy: a single targeted peak fishery that has been occurring on distinct topographical features and a mixed trawl flat fishery that occurs along the continental slope and has orange roughy as a bycatch. The proportion of catches taken in mixed, flat ground fisheries is low. Catches have declined to very low levels in recent years.

Small fisheries have existed in Divisions Va and Vb and Subareas VIII and X, and to a greater extent in Subarea XII. Cumulative landings in all these areas have been 10 598 t.

## Effects of the fisheries on the ecosystem

Directed trawl fisheries for orange roughy have been associated with seamounts and other bathymetric features. In ICES Divisions VI and VII there has been a spatial overlap of historic orange roughy fisheries with vulnerable habitats such as cold water corals. The direct impact of this fishery on vulnerable habitats has not been evaluated. However, in other areas of the world, such fisheries have been demonstrated to have considerable impact. There are currently no directed fisheries targeting orange roughy in Subareas VI and VII. The spatial resolution of catch data for orange roughy in other areas currently available to the working group is not sufficient to assess the spatial overlap with vulnerable habitats.

## Quality considerations

Cpue information available does not cover the entire time series of the fishery. Provisional biomass estimates were derived from an acoustic survey in Subarea VII in 2006. However, the precision of these estimates was low. Data from deepwater trawl surveys are only used for qualitative assessment as the surveys do not cover the entire area of the stock.

## Scientific basis

<b>Assessment type</b>	Catch trend assessment
<b>Input data</b>	Information on landings by Division or Subarea and sporadic cpue information available. Length frequencies and cpue from Scottish and Irish deepwater surveys are available
<b>Discards and by-catch</b>	There is currently no known orange roughy discard practices.
<b>Indicators</b>	-
<b>Other information</b>	-
<b>Working group report</b>	<a href="#">WGDEEP</a>

**ECOREGION STOCK** **Widely distributed and migratory stocks  
Orange roughy (*Hoplostethus atlanticus*) in the Northeast Atlantic**

**Reference points**

No reference points have been defined for this stock.

**Outlook for 2011**

No reliable assessment can be presented for this stock and fishing possibilities cannot be projected.

The new survey data available do not change the perception of the stock. Therefore, the advice for the fishery given in 2008 is still appropriate: “*Due to its very low productivity, orange roughy can only sustain very low rates of exploitation. Currently, it is not possible to manage a sustainable fishery for this species. ICES recommends no directed fisheries for this species. Bycatches in mixed fisheries should be as low as possible.*”

**Additional considerations**

Orange roughy catches in Subarea VI increased rapidly and subsequently dropped (Figure 9.4.14.1-upper panel). Orange roughy cpue in Subarea VI (Figure 9.4.14.1-lower panel) has shown a strong declining trend since early 1990s. It is presumed that the aggregations were fished out.

Orange roughy fisheries in Subarea VII have exhibited a similar pattern to that in VI (Figure 9.4.14.1). High catches have not been sustained by individual fleets and have dropped to low levels, suggesting sequential depletion. Orange roughy cpue in Subarea VII (Figure 9.4.14.1) has shown a strong declining trend since the early 1990s.

Orange roughy are known to reach very old ages (highest estimated age of an individual is 187 years), and experience in other areas (e.g. South Pacific) has shown that this species is especially vulnerable to exploitation.

Due to stringent management restrictions including a zero TAC and protection areas, the fishery for orange roughy in Subareas VI and VII has practically ceased. A zero TAC without allowing a bycatch can potentially lead to discarding if existing fisheries overlap with the distribution of orange roughy. A preliminary examination of French observer data does not suggest that bycatch and discarding of orange roughy is currently significant. In order to protect the species, careful monitoring of the spatial overlap of existing fisheries with the distribution of orange roughy, coupled with the collection of fisheries dependant and independent data (observer programme and surveys) is required.

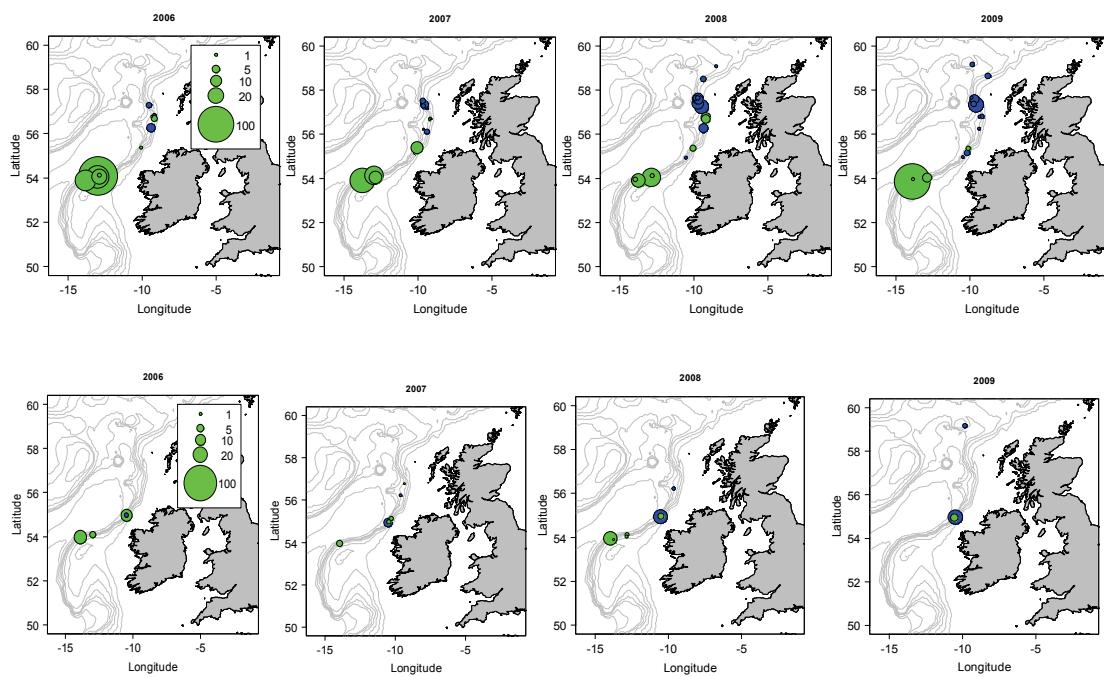
Length frequency data and cpues of the Scottish and Irish deepwater surveys give evidence of the occurrence of juveniles along flat grounds of the continental slope in Subareas VI and VII. There are no discard data to indicate whether these are taken in current fisheries.

**Assessment and management area**

Orange roughy management area in the Northeast Atlantic corresponds to ICES assessment area in the Northeast Atlantic.

**Sources**

ICES. 2010. Report of the Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources, 7–13 April 2010, ICES Headquarters, Copenhagen. ICES CM 2010/ACOM:17.



**Figure 9.4.14.2** Orange roughy in the Northeast Atlantic. Cpue of orange roughy ( $\leq 23\text{cm}$ ) (upper panel) and cpue of orange roughy ( $> 23\text{cm}$ ) (lower panel), 2006-2009. Combined Irish (green) and Scottish (blue) Deepwater survey data.

**Table 9.4.14.1** Orange roughy in the Northeast Atlantic. ICES advice, management, and landings.

Year	ICES advice	Predicted catch corresp. to advice	TAC EU Subarea I - V, VIII - XII and XIV	TAC EU Subarea VI	TAC EU Subarea VII	Total TAC EU I-XII and XIV	ICES Landings
2003	Exploitation strictly limited and populations closely monitored. No direct fishery in Subarea VI	-	-	0.088	1.349	1.437	0.9
2004	Biennal	-	-	0.088	1.349	1.437	1.3
2005	No fishery unless accompanied by programmes to collect data	0	0.102	0.088	1.148	1.338	0.7
2006	Biennal	0	0.102	0.088	1.148	1.338	0.7
2007	No direct fishery, bycatch in mixed fishery as low as possible	0	0.044	0.051	0.193	0.288	0.2
2008	Biennal	0	0.03	0.034	0.13	0.194	0.2
2009	No direct fishery, bycatch in mixed fishery as low as possible	0	0.015	0.017	0.065	0.097	0.08
2010	Biennal	0	0	0	0	0	
2011	No directed fisheries and measures to minimize bycatch	0					

Weights in '000 t.

**Table 9.4.14.2a** Orange roughy in the Northeast Atlantic. Working Group estimates of catch by country and area (tonnes).

Year	Va		Vb		VI		VII		VIII		IX	
	Iceland	Total	Faroës	France	Faroës	France	Iceland	Spain	E & W	Scandinavia and Spain and E & W	Spain	Total
1988	-	<b>0</b>	-	<b>0</b>	-	-	-	<b>0</b>	-	-	-	-
1989	-	<b>0</b>	-	<b>0</b>	-	5	-	-	-	-	<b>3</b>	0
1990	-	<b>0</b>	-	22	22	-	15	-	-	-	<b>2</b>	0
1991	65	<b>65</b>	-	48	<b>48</b>	-	3502	-	1406	-	<b>1406</b>	0
1992	382	<b>382</b>	1	12	<b>13</b>	-	1422	-	3101	-	<b>3101</b>	83
1993	717	<b>717</b>	36	1	<b>37</b>	-	429	-	1668	-	<b>1668</b>	68
1994	158	<b>158</b>	170	+	<b>170</b>	-	179	-	1722	-	<b>1722</b>	31
1995	64	<b>64</b>	419	1	<b>420</b>	40	74	-	116	-	<b>831</b>	7
1996	40	<b>40</b>	77	2	<b>79</b>	0	116	-	116	-	<b>879</b>	22
1997	79	<b>79</b>	17	1	<b>18</b>	29	116	1	-	-	<b>893</b>	1
1998	28	<b>28</b>	-	3	<b>3</b>	-	100	-	2	<b>102</b>	<b>963</b>	6
1999	14	<b>14</b>	4	1	<b>5</b>	-	175	-	0	<b>1</b>	<b>176</b>	1157
2000	68	<b>68</b>	155	0	<b>155</b>	-	136	-	2	<b>-</b>	<b>138</b>	1019
2001	19	<b>19</b>	1	4	<b>5</b>	-	159	-	11	<b>110</b>	<b>-</b>	<b>280</b>
2002	10	<b>10</b>	1	0	<b>1</b>	n/a	152	-	41	<b>130</b>	-	<b>323</b>
2003	0	<b>0</b>	2	3	<b>5</b>	-	79	-	2	-	<b>81</b>	369
2004	28	<b>28</b>	7	7	-	54	-	-	2	-	<b>56</b>	279
2005	9	<b>9</b>	3	10	<b>13</b>	-	41	-	6	-	<b>47</b>	165
2006	2	<b>2</b>	0	0	<b>0</b>	-	32	1	33	<b>33</b>	<b>451</b>	37
2007	0	<b>0</b>	0	1	<b>1</b>	-	12	-	<b>12</b>	<b>145</b>	-	28
2008	4	<b>4</b>	0	<1	<1	-	5	-	<b>5</b>	<b>118</b>	-	118
2009*	<1	<1	<1	2	<b>2</b>	-	2	-	2	<b>15</b>	-	<b>15</b>
												3

\* Preliminary

**Table 9.4.14.2b** Orange roughy in the Northeast Atlantic. ICES estimates of catch by country and area (tonnes).

Year	X						XII						<b>TOTAL</b>				
	Faroes	France	Norway	E & W	Portugal	Ireland	Total	Faroes	France	Iceland	Spain	E & W	Ireland	New Zealand	Russia	Total	
1998	-	-	-	-	-	-	<b>0</b>	-	-	-	-	-	-	-	<b>0</b>	<b>0</b>	
1989	-	-	-	-	-	-	<b>0</b>	-	0	-	-	-	-	-	<b>0</b>	<b>8</b>	
1990	-	-	-	-	-	-	<b>0</b>	-	0	-	-	-	-	-	<b>0</b>	<b>39</b>	
1991	-	-	-	-	-	-	<b>0</b>	-	0	-	-	-	-	-	<b>0</b>	<b>5021</b>	
1992	-	-	-	-	-	-	<b>0</b>	-	8	-	-	-	-	-	<b>8</b>	<b>5009</b>	
1993	-	-	1	-	-	-	<b>1</b>	24	8	-	-	-	-	-	<b>32</b>	<b>2952</b>	
1994	-	-	-	-	-	-	<b>0</b>	89	4	-	-	-	-	-	<b>93</b>	<b>2353</b>	
1995	-	-	-	-	-	-	<b>0</b>	580	96	-	-	-	-	-	<b>676</b>	<b>2114</b>	
1996	470	1	-	-	-	-	<b>471</b>	779	36	3	-	-	-	-	<b>818</b>	<b>2425</b>	
1997	6	-	-	-	-	-	<b>6</b>	802	6	-	-	-	-	-	<b>808</b>	<b>1974</b>	
1998	177	-	-	-	-	-	<b>177</b>	570	59	-	-	-	-	-	<b>629</b>	<b>1923</b>	
1999	-	10	-	-	-	-	<b>10</b>	345	43	-	43	-	-	-	<b>431</b>	<b>1837</b>	
2000	-	3	-	28	157	-	<b>188</b>	224	21	-	-	2	-	12	<b>259</b>	<b>1880</b>	
2001	84	-	-	28	343	-	<b>455</b>	345	14	-	-	2	-	450	-	<b>811</b>	<b>5002</b>
2002	30	-	-	-	-	-	<b>30</b>	+	6	-	-	-	-	0	-	<b>6</b>	<b>5855</b>
2003	-	1	-	-	-	-	<b>1</b>	-	64	-	-	-	136	0	-	<b>200</b>	<b>859</b>
2004	384	-	-	-	-	19	<b>403</b>	176	131	-	-	-	-	0	-	<b>307</b>	<b>1311</b>
2005	128	2	-	-	-	-	<b>130</b>	158	36	-	-	-	-	0	-	<b>193</b>	<b>676</b>
2006	8	-	-	-	-	-	<b>8</b>	81	15	-	-	-	-	-	-	<b>96</b>	<b>671</b>
2007	0	-	-	-	-	-	<b>0</b>	20	-	-	-	-	-	-	-	<b>20</b>	<b>198</b>
2008	37	-	-	-	-	-	<b>37</b>	71	-	-	-	-	-	-	<b>71</b>	<b>243</b>	
2009*	26	-	-	-	-	-	<b>26</b>	34	-	-	-	-	-	-	<b>34</b>	<b>82</b>	

\*Preliminary