

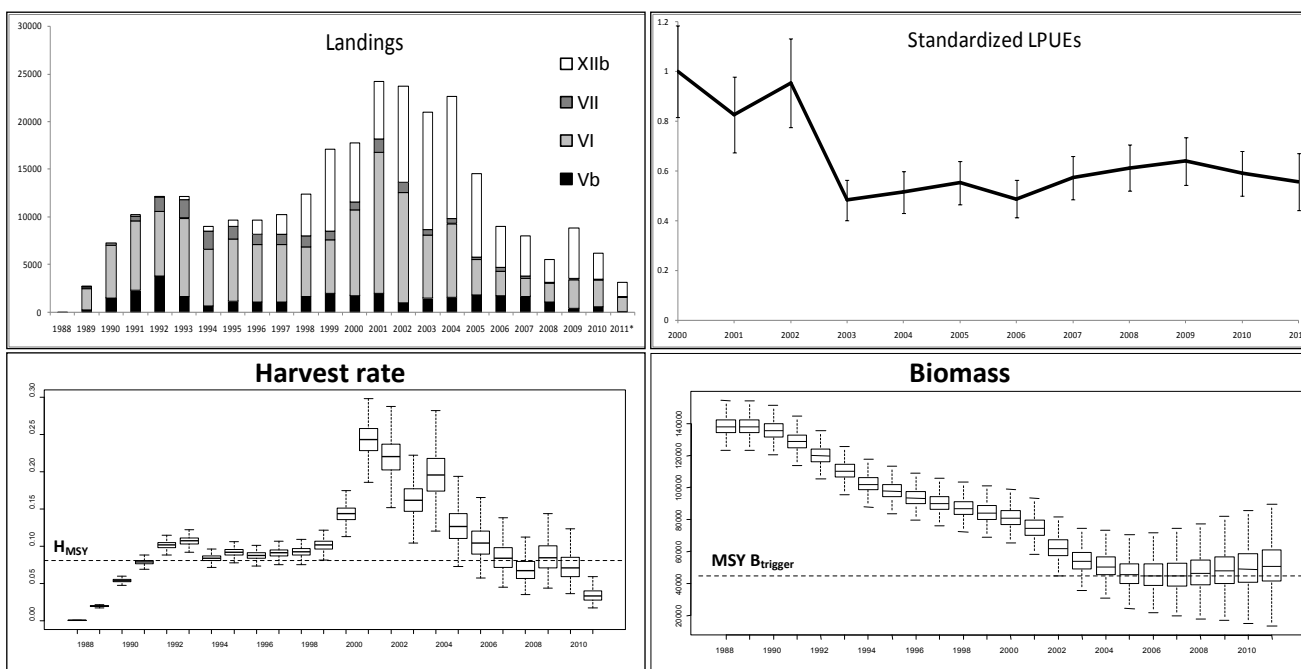
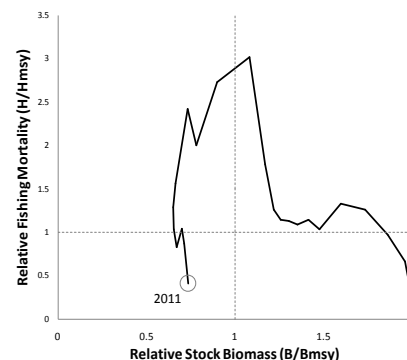
**ECOREGION**      **Widely distributed and migratory stocks**  
**STOCK**            **Roundnose grenadier (*Coryphaenoides rupestris*) in Subareas VI and VII, and Divisions Vb and XIIb**

**Advice for 2013 and 2014**

ICES advises that based on the MSY approach catches should be no more than 6000 t (4500 t for Division Vb and Subareas VI and VII, and 1500 t (the 2011 catch) for Division XIIb).

**Stock status**

$F_{\text{proxy}}$ (Harvest Rate)		
		<b>2009–2011</b>
<b>MSY (<math>H_{\text{MSY}}</math>)</b>	✓	Below target
<b>Precautionary approach (<math>F_{\text{pa}}, F_{\text{lim}}</math>)</b>	?	Unknown
Stock Biomass		
		<b>2009–2011</b>
<b>MSY (<math>B_{\text{trigger}}</math>)</b>	✓	Above target
<b>Precautionary approach (<math>B_{\text{pa}}, B_{\text{lim}}</math>)</b>	?	Unknown



**Figure 9.4.15.2.1** Roundnose grenadier in Subareas VI and VII, and Divisions Vb and XIIb. Top: (left) Landings (tonnes), and (right) Landings per unit effort of the French reference fleet based on tally-book data. Below: (left) Harvest rate estimates (boxes are one standard deviation, whiskers are 95% confidence interval), and (right) biomass estimates in Division Vb and Subareas VI and VII. Top right: relative biomass and harvest rate for the time-series used in the assessment..

Total biomass for Division Vb and Subareas VI and VII is estimated to have been below  $B_{\text{MSY}}$  since 2002, decreasing until 2006. The stock is currently above MSY  $B_{\text{trigger}}$ . The harvest rate is below target ( $H_{\text{MSY}}$ ).

**Management plans**

No specific management objectives are known to ICES.

## Biology

Age analyses suggest that roundnose grenadier may have a longevity of around 70 years and a slow growth. This species shows low productivity and can only sustain low rates of exploitation.

## The fisheries

Roundnose grenadier is caught in a mixed fishery catching also black scabbardfish and blue ling. The period before the expansion of the fishery corresponds to the years 1990–1996. Landings in recent years have been below TACs both in Division Vb, Subareas VI, VII, and Division XIIb. Length distributions of French and Spanish landings decreased towards smaller fish. Discards accounted for about 30% of the catch in weight and 50% in number for the French fleets. Discards for the Spanish fleets are 10–18% of the landings in weight. In 2011, French discards have been reduced to 12% of the catch due to fishing activity in shallower waters and avoidance strategy. Spanish discards rate were uncertain but composed at least 5% of the catch.

<b>Catch distribution</b>	Total landings (2011 provisional) were 3100 t (6220 t in 2010). 100% deep-water trawl, discard estimates > 500 t.
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## Effects of the fisheries on the ecosystem

Deep-water bottom trawls impact the ocean floor, causing potential damage to deep-water coral communities. This is mitigated by closed areas to protect vulnerable marine ecosystems (VMEs). As this fishery is part of a mixed fisheries, effort on roundnose grenadier also impacts other commercial and non-commercial deep-water species.

## Quality considerations

The abundance index used in the assessment only goes back to 2000. There are no abundance indices for Hatton Bank (Division XIIb and Subdivision VIb<sub>1</sub>). The current assessment method does not use catches from Division XIIb. Exploratory assessments were carried out using these data but are not yet considered to be reliable for advice.

Fishing activity in Division XIIb contributes to around half of the catches for this stock. The actual level of catch has been considered uncertain for several years because of problems with species reporting and misreporting to/from other areas. As this issue strongly impacts the quality of the assessment, it is necessary that substantial efforts are made to increase the monitoring of the fishery operating in Division XIIb.

Discard data are available back to 1996. Discards have not been included in the assessment as it was considered that selection patterns in earlier years may have been different.

The multi-year catch curve (MYCC) assessment that was included in the benchmark method for this stock has not been carried out since 2005 due to lack of age data.

## Scientific basis

<b>Assessment type</b>	Bayesian surplus production model.
<b>Input data</b>	Landings (1988–current year), <i>l</i> <sub>pue</sub> (2000–current year).
<b>Discards and bycatch</b>	Not included in the assessment.
<b>Indicators</b>	Mean length in catches.
<b>Other information</b>	This assessment unit was benchmarked in 2010 ( <a href="#">WKDEEP 2010</a> ).
<b>Working group report</b>	<a href="#">WGDEEP</a>

**ECOREGION**      **Widely distributed and migratory stocks**  
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**Reference points**

	<i>Type</i>	<i>Value</i>	<i>Technical basis</i>
MSY Approach	MSY $B_{\text{trigger}}$	44 900 t	$B_{\text{loss}}$ (2012 assessment).
	$B_{\text{MSY}}^*$	69 100 t	Half of carrying capacity $K$ , estimated from the surplus production model.
	$H_{\text{MSY}}^*$	0.08	Half of the intrinsic growth rate $r$ , estimated from the surplus production model.
Precautionary Approach	$B_{\text{lim}}$	Not defined.	
	$B_{\text{pa}}$	Not defined.	
	$F_{\text{lim}}$	Not defined.	
	$F_{\text{pa}}$	Not defined.	

(Unchanged since 2012)

\* Estimates of  $B_{\text{MSY}}$  and  $H_{\text{MSY}}$  apply to Division Vb and Subareas VI and VII only.

**Outlook for 2013 and 2014****For Division Vb and Subareas VI and VII only**

Basis: landings(2012) = TAC(2012)<sub>VB,VI,VII</sub> = 2546 t.

Rationale	Landings (2013–2014)	Total biomass		Harvest rate		% biomass change *	% TAC change *
		(2013)	(2014)	(2013)	(2014)		
MSY approach	4500	54145	55003	0.08	0.08	8%	77%
Precautionary approach	2546	56099	58977	0.05	0.04	16%	0%
Zero catch	0	58645	64141	0	0	26%	–100%
Other options	1000	57645	62114	0.02	0.02	22%	–61%
	2000	56645	60085	0.04	0.03	18%	–21%
	3000	55645	58054	0.05	0.05	14%	18%
	4000	54645	56021	0.07	0.07	10%	57%
	5000	53645	53986	0.09	0.09	6%	96%
	6000	52645	51948	0.11	0.12	2%	136%
	7000	51645	49909	0.14	0.14	–2%	175%
	8000	50645	47867	0.16	0.17	–6%	214%

\* Change by 2014 and relative to 2012 value.

***MSY approach***

Following the ICES MSY framework implies fishing at a harvest rate of 0.08, resulting in landings of no more than 4500 tonnes in 2013 and 2014 for Division Vb and Subareas VI and VII.

***Precautionary approach***

Catches in Division XIIb have been declining in recent years. Following the precautionary approach ICES advises that catch should be no higher than that in 2011. This equates to a catch of no more than 1500 tonnes in 2013 and 2014 for Division XIIb.

## Additional considerations

IFREMER has established a partnership with two French fishing organizations, PMA and Euronor, to update lpue series from tally-book data containing details of 31 000 hauls since 2000. These data are currently used in the assessment of this stock.

### *Comparison with previous assessment and advice*

The basis for the assessment, formerly based on trend analysis, is now an analytic assessment for Division Vb and Subareas VI and VII. The basis for the advice this year is the MSY approach and the precautionary approach for Division XIIb.

### Source

ICES. 2012. Report of the Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP), 29 March–05 April 2012, ICES Headquarters, Copenhagen. ICES CM 2012/ACOM:17.

**Table 9.4.15.2.1** Roundnose grenadier in Subareas VI and VII, and Divisions Vb and XIIb. ICES advice, management, and landings.

Year	ICES Advice	Predicted catch corresp. to advice	TAC EU Division Vb, and Subareas VI, VII	TAC EU Subareas VII, IX, X, XII, XIV	ICES landings Subareas VI and VII, and Divisions Vb and XIIb
2003	Significant reduction in effort	-	5.106		21.0
2004	Biennial	-	5.106		22.7
2005	50% reduction in effort in relation to 2000–2002 levels	-	5.253	7.190	14.6
2006	Biennial	-	5.253	7.190	9.0
2007	Constrain catches to 50% level before the expansion period, 1990–1996	< 6	4.6	6.114	8.0
2008	Biennial	< 6	4.6	6.114	5.5
2009	Constrain catches to 50% level before the expansion period, 1990–1996	< 6	3.91	5.197	8.9
2010	Biennial	< 6	3.324	5.197	6.2
2011	Less than 6000 t and a further reduction in catches from recent levels should be considered	< 6	2.924	4.573	3.1
2012	No new advice, same as 2011	< 6	2.546	3.979	
2013	Based on MSY approach catches should be <6000 t	< 6			
2014	No new advice, same as 2013	< 6			

Weights in thousand tonnes.

**Table 9.4.15.2.2** Roundnose grenadier in **Subareas VI and VII, and Division Vb**. ICES estimates of landings (tonnes) by country and subarea.

Year	Vb								VI												VII						
	Faroes	France	Norway	Germany	Russia/USSR	UK (E+W)	UK (Scot)	TOTAL	Estonia	Faroes	France	Germany	Ireland	Lithuania	Norway	Poland	Russia	Spain	UK (E+W)	UK (Scot)	TOTAL	Faroes	France	Ireland	Spain	UK (Scot)	TOTAL
1988				1				1		27		4							1		32						0
1989	20	181		5	52			258		2	2211	3								2	2218		222				222
1990	75	1470		4				1549		29	5484	2									5515		215				215
1991	22	2281	7	1				2311			7297	7									7304		489				489
1992	551	3259	1	6				3817		99	6422	142			5				2	112	6782		1556				1556
1993	339	1328		14				1681		263	7940	1								1	8205		1916				1916
1994	286	381		1				668			5898	15	14							11	5938		1922				1922
1995	405	818						1223			6329	2	59							82	6472		1295				1295
1996	93	983		2				1078			5888									156	6044		1051				1051
1997	53	1059						1112		15	5795		4							218	6032		1033	5			1038
1998	50	1617						1667		13	5170				21			3			5207		1146		11		1157
1999	104	1861	2			29		1996			5637	3	1				1				5642		892		4		896
2000	48	1699		1		43		1791			7478		41		1			1002	1	433	8956		859				859
2001	84	1932						2016	680	11	5897	6	31	137	32	58	3	6942	21	955	####		938	416			1354
2002	176	774				81		1031	821		7209		12	1817		932			6	741	####	1	449	605		3	1058
2003	490	1032				10		1532	52	32	4924		11	939		452	3			185	6598		373	213		1	587
2004	508	985	0	0	6	0	76	1575	26	12	4574	0	8	961	0	13	72	1991	0	72	7729	0	248	320	0	0	568
2005	903	884	1	0	1	0	48	1837	80	24	2897	0	17	92	1	0	71	467	0	44	3694	0	191	55	0	0	246
2006	900	875	0	0	0	0	0	1775	34	25	1931	0	5	112	0	0	0	393	0	15	2515	0	248	138	0	0	386
2007	838	862	0	0	0	0	0	1700	0	10	1552	0	2	31	0	0	0	252	0	4	1851	0	207	20	0	0	227
2008	665	447	0	0	0	0	0	1112	0	6	1433	0	0	23	0	0	16	458	0	27	1963	0	27	0	0	0	27
2009	322	122	0	0	0	0	2	446	0	6	1090	0	0	0	0	0	0	1900	0	15	3012	0	59	0	0	0	59
2010	229	381	0	0	0	0	1	611	0	13	1271	0	0	0	2	0	0	1498	1	23	2809	0	41	0	0	0	41
2011*	57	37	0	0	0	0	0	94	0	3	1196	0	0	0	0	0	0	295	0	8	1502	0	82	0	0	0	82

\*Preliminary.

**Table 9.4.15.2.3** Roundnose grenadier in **Division XIIb**. ICES estimates of landings (tonnes) by country and subarea.

Year	XIIb												
	Estonia	Faroes	France**	Germany	Iceland	Ireland	Lithuania	Spain	USSR/Russia	UK (E+W)	UK (Scotl.)	Norway	TOTAL
1988													0
1989			0						52				52
1990			0										0
1991			14						158				172
1992			13										13
1993		263	26	39									328
1994		457	20	9									486
1995		359	285										644
1996		136	179		77			1136					1528
1997		138	111					1800					2049
1998		19	116					4262					4397
1999		29	287					8251	6				8573
2000		6	374	9				5791		9	6		6195
2001		2	159			3		5922			7	1	6094
2002			14				18	10045		1	2		10080
2003			539			1	31	11663			1		12235
2004		8	1693				120	10880	91		4		12796
2005	20	5	508				13	7804	81		350		8782
2006	27	1	85				6	4242					4361
2007	140	2	0				8	4108					4258
2008		0	0				3	2416	13				2432
2009								5335					5335
2010			1					2758					2759
2011*								1465					1465

\*Preliminary.

\*\* French landings reported in former ICES Subarea XII allocated to Division XIIb.