

7.3.30 Norway lobster (*Nephrops norvegicus*) in divisions 8.a–b, FUs 23–24 (Bay of Biscay North and Central)

ICES stock advice

ICES advises that when the MSY approach is applied, and assuming that discard rates and fishery selection patterns do not change from the average of 2013–2015, catches in 2017 should be no more than 6376 tonnes. This implies landings of no more than 4160 tonnes.

Stock development over time

An abundance estimate from an underwater TV (UWTV) survey is available for 2016. Harvest rates in recent years are estimated to be below the F_{MSY} proxy.

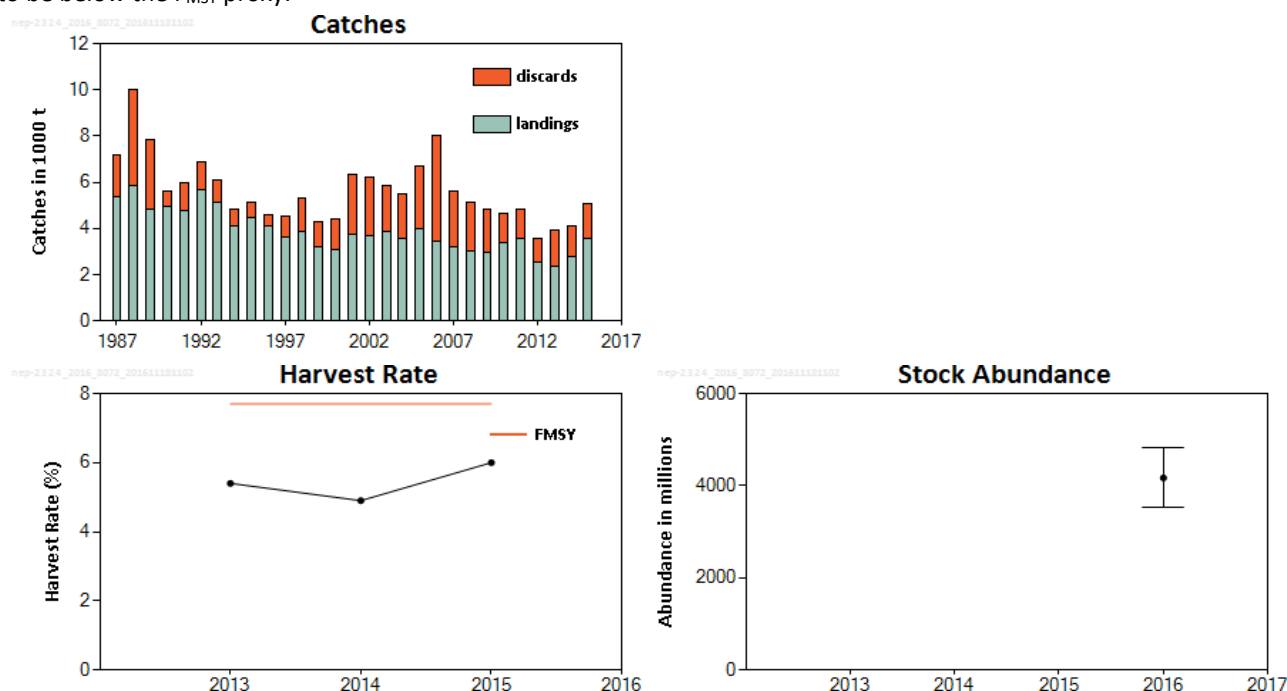


Figure 7.3.30.1 Norway lobster in divisions 8.a–b; FUs 23–24. Upper left: Catches. Lower left: Harvest rate (fishing mortality proxy, calculated as the ratio of the removals (i.e. landings plus dead discards) in each year and the estimated stock abundance in 2016). Lower right: stock abundance (from UWTV survey; number in millions with 95% confidence interval). The orange line in the harvest rate plot represents the E_{MSY} harvest rate.

Stock and exploitation status

Table 7.3.30.1 Norway lobster in divisions 8.a–b; FUs 23–24. State of the stock and fishery relative to reference points.

Table A10.12 – Norway lobster in divisions G1a, B, F, G, E5, E4: state of the stock and fishery relative to reference points									
		Fishing pressure				Stock size			
		2013	2014	2015		2014	2015	2016	
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Appropriate	$MSY_{B_{trigger}}$?	?	Undefined
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	Below possible reference points	B_{pa} , B_{lim}	?	?	Undefined
Management plan	F_{MGT}	-	-	-	Not applicable	SSB_{MGT}	-	-	Not applicable
Qualitative evaluation	-	-	-	-		-	➡	➡	Stable

Catch options

Table 7.3.30.2 Norway lobster in divisions 8.a–b; FUs 23–24. The basis for the catch options.

Variable	Value	Source	Notes
Stock abundance	4168 million individuals	ICES (2016a)	UWTV survey 2016
Mean weight in landings	23.32 g	ICES (2016a)	Average 2013–2015
Mean weight in discards	10.88 g	ICES (2016a)	Average 2013–2015
Discard rate	53.3%	ICES (2016a)	Average 2013–2015 (by number). Calculated as discards divided by landings + discards.
Discard survival rate	30%	ICES (2016a)	Only applies in scenarios where discarding is allowed.
Dead discard rate	44.4%	ICES (2016a)	Average 2013–2015 (by number). Calculated as dead discards divided by dead removals (landings + dead discards). Only applies in scenarios where discarding is allowed.

Table 7.3.30.3 Norway lobster in divisions 8.a–b; FUs 23–24. The catch options assuming zero discards. All weights are in tonnes.

Rationale	Basis	Total catches	Wanted catches*	Unwanted catches*	Harvest rate**
MSY approach	MSY approach (F_{MSY} harvest rate)	5356	3495	1861	7.7%
Other options	$F_{status\ quo}$ (average of harvest rates in 2013–2015)	3756	2451	1305	5.4%

* “Wanted” and “unwanted” catch are used to describe *Nephrops* that would be landed and discarded in the absence of the EU landing obligation, based on the average estimated discard rates for 2013–2015.

** Applied to total catch.

Table 7.3.30.4 Norway lobster in divisions 8.a–b; FUs 23–24. The catch options assuming the discard rate corresponds to the 2013–2015 average. All weights are in tonnes.

Rationale	Basis	Total catches	Dead removals	Landings	Dead discards	Surviving discards	Harvest rate*
		L+DD+SD	L+DD	L	DD	SD	for L+DD
MSY approach	MSY approach (F_{MSY} harvest rate)	6376	5711	4160	1551	665	7.7%
Other options	$F_{status\ quo}$ (average of harvest rates in 2013–2015)	4471	4005	2918	1088	466	5.4%

* Applied to dead removals.

All harvest rates are calculated in numbers and refer to the dead removals. The difference in catch weights between catch options with the same harvest rates is related to the fact that, in the scenario allowing for discarding, a proportion of the discards is assumed to survive.

Basis of the advice

Table 7.3.30.5 Norway lobster in Division 8.a–b; FUs 23–24. The basis of the advice.

Advice basis	MSY approach
Management plan	There is no management plan for Norway lobster in this area.

Quality of the assessment

In the past, ICES advice for *Nephrops* in FUs 23–24 has been based on the precautionary approach (ICES category 3 advice). Underwater TV (UWTV) surveys were initiated for this stock in 2014 and 2015, and are considered to be exploratory. In October 2016 ICES benchmarked this assessment using the 2016 UWTV survey, which provides an abundance estimate for the FUs with high precision. The stock is now in category 1.

Harvest rates for recent years (2013-2015) were calculated using the removals in each year and the estimated stock abundance from the 2016 survey. Therefore, they should be interpreted as approximate harvest rates, based on the expectation that the stock abundance will not change strongly between years. The available information from the 2014 and 2015 UWTV surveys indicates similar abundances to 2016.

Poor fits in the length–frequency models normally used for calculating F_{MSY} for category 1 *Nephrops* stocks, prevented their being applied to FUs 23–24. The underlying cause of the misfits requires further investigation but is believed to be linked to uncertainty in mortality, growth, and selection patterns.

The level of catch sampling is good for this stock.

Issues relevant for the advice

An F_{MSY} proxy was provided for this stock as part of the response to the EU request to provide a framework for the classification of stock status relative to MSY proxies for selected category 3 and category 4 stocks (ICES, 2016b). With the availability of UWTV surveys, ICES has now been able to assess the stock as a category 1 stock. The MSY reference point proxies provided earlier for this stock have therefore been replaced by MSY reference points. The advice document on MSY proxies (ICES, 2016b) has been updated accordingly.

The F_{MSY} reference point (harvest rate of 7.7%) is based on the average realised harvest rates of functional units with an observed history of sustainable exploitation, while also taking into account the low harvest rates applied to the FUs 23–24 stock in the recent past.

Length distribution analysis showed that an improvement of the selection pattern is needed to maximize yield from this stock.

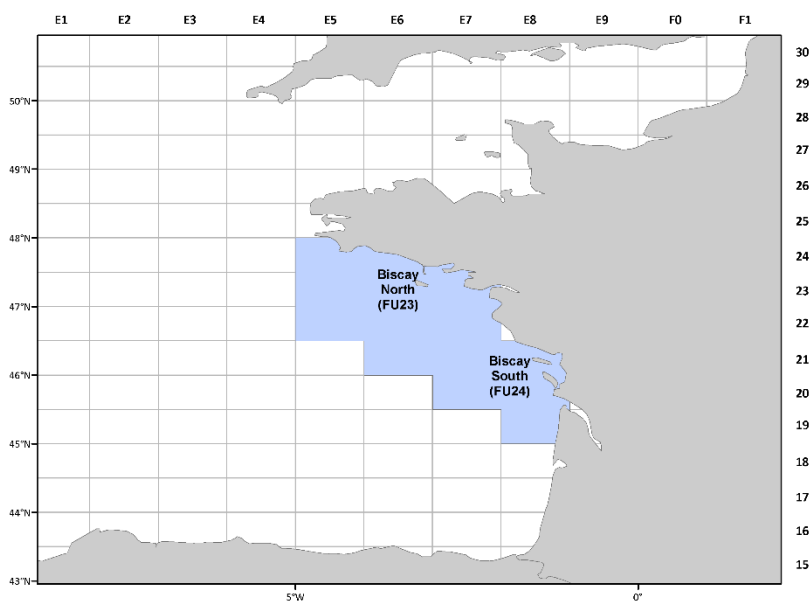


Figure 7.3.30.2 Norway lobster in divisions 8.a–b; FUs 23–24. The functional units (FUs) 23 and 24 constitute a single stock of *Nephrops*.

Reference points

Table 7.3.30.6 Norway lobster in divisions 8.a–b; FUs 23–24. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	Not defined		ICES (2016a)
	F_{MSY}	7.7% harvest rate	F_{MSY} based on the average realised harvest rates of functional units with an observed history of sustainable exploitation, while also taking into account the low harvest rates applied to the FUs 23–24 stock in the recent past.	ICES (2016c)
Precautionary approach	B_{lim}	Not defined		
	B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB_{MGT}	Not defined		
	F_{MGT}	Not defined		

Basis of the assessment

Table 7.3.30.7 Norway lobster in divisions 8.a–b; FUs 23–24. The basis of the assessment.

ICES stock data category	1 (ICES, 2016d)
Assessment type	Underwater TV survey
Input data	One survey index (UWTV-FU23-24); commercial catches (international landings, length frequencies from French DCF sampling); fixed maturity parameters from sampling onboard; fixed natural mortalities. Discard survival rate of 30% (Charuau <i>et al.</i> , 1982).
Discards and bycatch	Included in the assessment for the entire time-series (>50% of catches in number).
Indicators	Length–frequency distributions by sex.
Other information	The latest benchmark (based on the UWTV survey) was performed in October 2016 (ICES, 2016a).
Working group	Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE)

Information from stakeholders

There is no available information.

History of the advice, catch, and management

Table 7.3.30.8 Norway lobster in divisions 8.a–b; FUs 23–24. History of ICES advice, the agreed TAC, and ICES estimates of landings. All weights are in thousand tonnes.

Year	ICES advice	Predicted landings corresponding to the advice	Catch advice*	Agreed TAC	ICES estimated landings	ICES estimated total discards
2003	50% reduction of current exploitation rate	2.2		3.0	3.9	1.977
2004	20% reduction of current exploitation rate	3.3		3.15	3.6	1.932
2005	20% reduction of current exploitation rate	3.1		3.1	4.0	2.698
2006	Maintain recent catch	3.5		4.0	3.4	4.544
2007	Maintain recent catch	3.6		4.32	3.2	2.411
2008	Maintain recent catch	3.6		4.32	3.0	2.123
2009	Maintain recent landings (average 2005-2007)	3.4		4.1	3.0	1.833
2010	No new advice, same as for 2009	3.4		3.9	3.4	1.275
2011	See scenarios			3.9	3.6	1.263
2012	Reduce catch			3.9	2.5	1.013
2013	Decrease landings by 5% (19% increase, followed by 20% PA reduction)	< 3.20		3.9	2.4	1.521
2014	Same advice as 2013	< 3.20		3.9	2.8	1.326
2015	Increase landings by no more than 14%	< 3.214		3.9	3.6	1.492
2016	Same advice as 2015	< 3.214		3.9		
2017	MSY approach	≤ 4.160	≤ 6.376			

* This corresponds to all catch (landings and all discards, including the discards that survive).

History of catch and landings

Table 7.3.30.9 Norway lobster in divisions 8.a–b; FUs 23–24. Official catch distribution by fleet in 2015 as estimated by ICES. Discards split into dead and alive, assuming 30% discard survival.

Total catch	Landings	Dead discards	Live discards
5061 t	100% bottom trawl	1044 t	448 t
	3569 t		

Table 7.3.30.10 Norway lobster in divisions 8.a–b; FUs 23–24. History of commercial catch and landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes.

Year	Removals (tonnes)*	Landings (tonnes)	Total discards (tonnes)
1987	6634	5397	1767
1988	8772	5875	4138
1989	6940	4835	3007
1990	5423	4972	644
1991	5603	4754	1213
1992	6532	5681	1217
1993	5791	5109	974
1994	4594	4092	717
1995	4933	4452	687
1996	4460	4118	487
1997	4249	3610	914
1998	4882	3865	1453
1999	3974	3209	1092
2000	4005	3069	1337
2001	5569	3730	2628
2002	5454	3679	2535
2003	5270	3886	1977
2004	4923	3571	1932
2005	5880	3991	2698
2006	6627	3447	4544
2007	4864	3176	2411
2008	4517	3030	2123
2009	4270	2987	1833
2010	4290	3398	1275
2011	4443	3559	1263
2012	3229	2520	1013
2013	3444	2380	1521
2014	3735	2807	1326
2015	4614	3569	1492

* Removals are calculated as landings plus dead discards, assuming 30% survival rate of discards.

Summary of the assessment

Table 7.3.30.11 Norway lobster in divisions 8.a–b; FUs 23–24. Assessment summary.

Year	Landings in number	Total discards in number	Removals* in number	UWTV abundance estimates	95% Conf. intervals	Harvest rate	Mean weight in landings	Mean weight in discards	Discard rate	Dead discard rate
	millions	millions	millions	millions	millions	%	grammes	grammes	%	%
2013	114.9	154.9	223.3			5.4**	20.7	9.8	57%	49%
2014	121.6	117.9	204.1			4.9**	23.1	11.2	49%	40%
2015	138.9	156.4	248.4			6.0**	25.7	11.7	53%	44%
2016				4168	640					

* Removals are calculated as landings plus dead discards, assuming 30% survival rate of discards.

** Harvest rate calculated as the ratio of the removals in each year and the estimated stock abundance in 2016.

Sources and references

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