

ECOREGION Celtic Sea and West of Scotland
STOCK *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn)

Advice for 2015

New data (catch and survey) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014. This corresponds to landings of no more than 2500 tonnes. Considering that no discard ban is in place for 2015, and assuming that discard rates do not change from the average of the last two years (2012–2013) the resulting catch would be no more than 3366 tonnes.

In order to ensure the stock in this functional unit is exploited sustainably, management should be implemented at the functional unit level.

Stock status

Fishing pressure				
	2011	2012	2013	
MSY (F_{MSY})	?	?	?	Not defined
Precautionary approach (F_{pa} , F_{lim})	?	?	?	Undefined
Qualitative evaluation	?	?	✓	Below possible reference points
Stock size				
	2013–2014			
MSY ($B_{trigger}$)	?			Not defined
Precautionary approach (B_{pa} , B_{lim})	?			Not defined
Qualitative evaluation	↗			Increasing

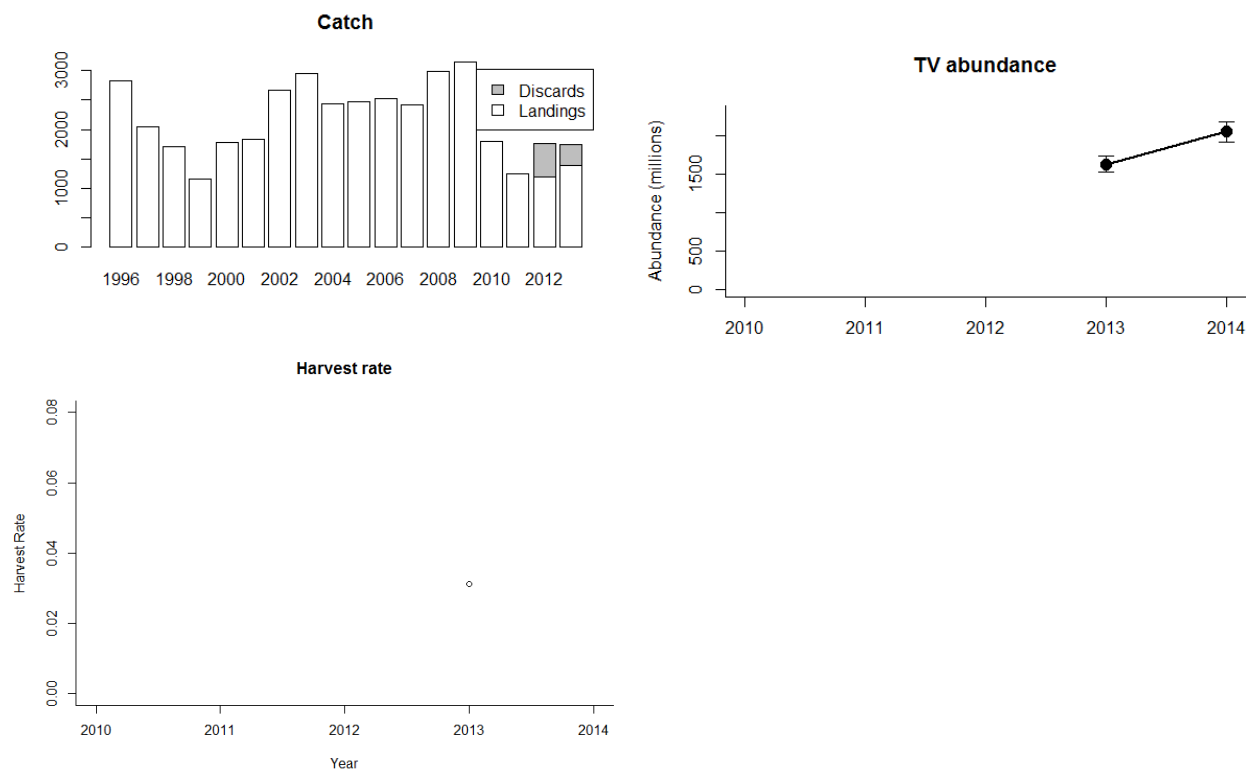


Figure 5.4.21.6.1 *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn). Trends in catch (tonnes), discard estimates are available since 2012 only. UWTV survey abundance (in millions; SSB proxy), and harvest rate (fishing mortality proxy).

The UWTV abundance has increased between 2013 and 2014. The harvest rate (removals/UWTV abundance) for *Nephrops* is below any potential F_{MSY} proxies.

Biology

This area can be characterized as an area of relatively low *Nephrops* density (0.2 individuals m^{-2}). The stock is connected to other stocks in the wider Celtic Sea through larval exchange, but there is also evidence of strong larval retention over the ground.

The fisheries

France and Ireland are the main countries involved in the FUs 20–21 *Nephrops* fishery. The fishery is almost exclusively an otter trawl fishery with most vessels using twin rigs. Economically whiting, monkfish, cod, and megrim, and to a lesser degree haddock, tend to be the most important species retained with *Nephrops*. The Irish fishery is more mixed (~50% *Nephrops* by weight) in the northern part of the area whereas further south *Nephrops* dominate the landings (>75% by weight). The French fishery is generally more mixed throughout the area.

Catch distribution	Total catch (2013) = 1.7 kt, where 1.4 kt were estimated landings (100% otter trawl) and 0.3 kt discards.
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Effects of the fisheries on the ecosystem

The *Nephrops* fishery in the Celtic Sea has bycatches of whiting, monkfish, cod, and megrim. Typically around 50% of the total catch by weight is discarded.

Quality considerations

A dedicated annual UWTV was initiated by Ireland in recent years. The 2014 survey was the first survey to achieve full coverage of the entire stock area (the 2013 survey achieved ~60% coverage). The full distribution of the stock was confirmed using VMS-linked logbook information for Ireland and France in 2014. Sampling of landings and discards remains very low due to the remote nature of the area and the tendency of trips to migrate between FUs in the Celtic Sea. Discards of *Nephrops* are thought to be extensive, but observations are insufficient to provide a reliable time-series. Discard estimates are only available for the last two years.

Scientific basis

Stock data category	4 (ICES, 2014a).
Assessment type	UWTV and trends of the size structure of catches.
Input data	One survey index (UWTV-FU 2021), commercial catches (international landings (Ireland, France, and UK), length frequencies from Irish and French catch and discard sampling); maturity data (from commercial catch sampling and during surveys), fixed natural mortality. Discard survival rate.
Discards and bycatch	Included in the assessment since 2012, with data series from the majority of the fleet covering ~95% of the landings.
Indicators	Trends based on lpue information and mean sizes in the catches (commercial index: French trawlers – threshold 10%, Irish trawlers – threshold 30%). Two bottom trawl surveys (IGFS-WIBTS-Q4 and EVHOE-WIBTS-Q4).
Other information	This stock was benchmarked in 2014 (WKCELT).
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE).

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Reference points

No reference points have been defined for this stock. Fishing mortality reference points have not been estimated due to the short time-series of landings and discards length distribution for this stock.

Outlook for 2015

Basis: Absolute survey abundance index (2015) = 2051 million (2014 index); Mean individual weight in landings (2012–2013) = 34.69 g; Dead discard rate (by number, 2012–2013) = 35.7%; Mean individual weight in discards (2012–2013) = 16.24 g.

Basis	Total catches*	Landings	Dead discards**	Surviving discards**	Harvest rate
	L+DD+SD	L	DD	SD	for L+DD
Same advice as for 2013–2014	3366	2500	650	217	5.5%
F ₂₀₁₃	1929	1432	372	124	3.1%
F 10-year average landings	2907	2159	561	187	4.7%
Lowest harvest ratio in Subarea VII (FU 16)	3080	2287	594	198	5.0%

* Total catches are the landings including dead and surviving discards

** Total discard rate is assumed to be 43.4% of the catches (in number, last two years' average, 2012–2013), discard survival is assumed to be 25%.

ICES approach to data-limited stocks

For this stock, landings and effort have been declining. Average landings for the last 10 years of 2159 t correspond to a harvest rate of 4.7% (based on the 2014 abundance estimate). This is below the minimum harvest ratio used by ICES for any *Nephrops* stock (5.0%, which is applied in the Porcupine Bank FU 16). The average density is low (~0.2 individuals m⁻²) but around twice that observed in the Porcupine Bank.

The previous advice given by ICES of landings of 2500 t would imply a harvest rate of 5.5%. This is below the range of MSY harvest rates used for stocks with similar density (Fladen (FU 7) and Moray Firth (FU 9), where harvest ratios of 10.3% and 11.8% are used, respectively). Until stock-specific F_{MSY} reference points can be defined the advice given previously equates to a conservative harvest ratio (5.5%). Considering that no discard ban is in place in 2015, this results in landings of no more than 2500 t. Assuming that discard rates do not change from the average of the last two years (2012–2013), the resulting catch would be no more than 3366 tonnes.

Additional considerations

General considerations for *Nephrops* in Division VII can be found at the beginning of Section 5.3.21.

Advice considerations

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level (see Section 5.3.21).

Changes in fishing techniques and fishing patterns

The French trawlers showed an overall decline in effort and landings during the two decades, mainly explained by decommissioning schemes associated to constraints linked to fuel prices. Irish effort increased up to 2009 but has subsequently declined. Since 2012 Irish vessels have increasingly been switching to quad rig gears; these are expected to significantly increase catch rates by around 50%.

Data and methods

An UWTV survey series commenced in 2012, but only in 2013 and 2014 was coverage sufficient to provide estimates of total abundance (Doyle *et al.*, 2014). A short-term average (2012–2013) for the mean weight in landings and discards (rather than a three-year average) was used because sampling data prior to that were insufficient to be representative.

Uncertainties in assessment and forecast

General comments on uncertainties in the assessment and forecast using the information from the UWTV surveys are discussed in the introduction of Section 5.3.21.

The main uncertainties in FUs 20–21 relate to the mean weight in the landings, discards, and discard rates, which are known to be variable, and which are estimated using only very recent sampling data.

Fishing mortality reference points have not been estimated due to the short time-series of landings and discards length distribution for this stock. It may be possible to estimate these in the near future with a longer series of reliable sampling data, as recommended by ICES (ICES, 2014b).

Comparison of the basis of previous assessment and advice

Last year the assessment was based on the *Nephrops* data-limited approach as implemented in 2012. The same landings advice is considered appropriate for 2015. This year better UWTV survey and sampling data are available. A standard UWTV approach is possible although stock-specific harvest ratios reference points have not yet been estimated.

Sources

- Doyle, J., Lordan, C., Hehir, I., Fitzgerald, R., O'Connor, S., Keith, M., and Sheridan, M. 2014. The Labadie, Jones and Cockburn Banks *Nephrops* Grounds (FU20–21) 2014 UWTV Survey Report and catch options for 2015. Marine Institute UWTV Survey report.
- ICES. 2014a. Advice basis. In Report of the ICES Advisory Committee, 2014. ICES Advice 2014, Book 1, Section 1.2.
- ICES. 2014b. Report of the Benchmark Workshop on Celtic Sea Stocks (WKCELT), 3–7 February 2014, ICES Headquarters, Copenhagen, Denmark. ICES CM 2014\ACOM:42. 194 pp.
- ICES. 2014c. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 13–22 May 2014, Copenhagen, Denmark. ICES CM 2014/ACOM:12.

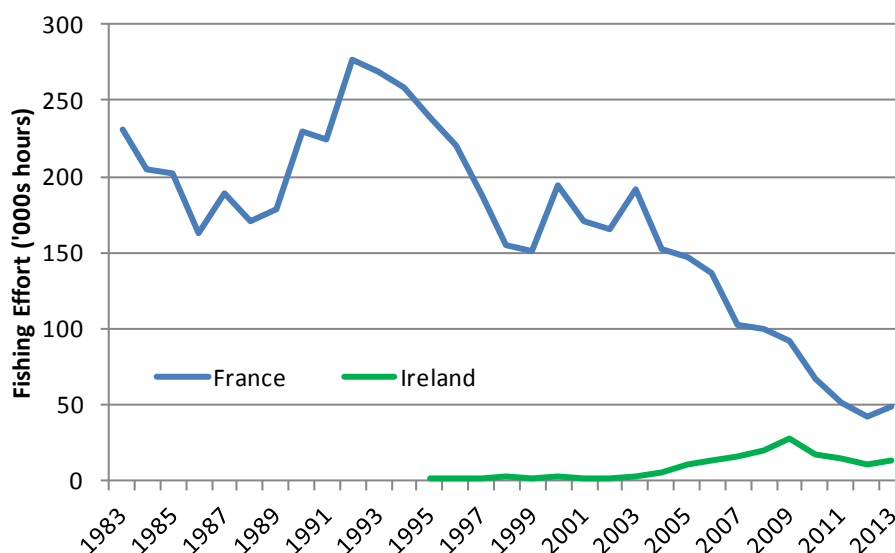


Figure 5.4.21.6.2 *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn). *Nephrops* directed fishing effort for Ireland in FUs 20–21 and for France in FUs 20–22.

Table 5.4.21.6.1 *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn). ICES advice, management, landings, and discards.

Year	ICES advice ¹⁾	Predicted landings corresp. to advice (FUs 20–21) ¹⁾	ICES landings FUs 20–22	ICES landings FUs 20–21	ICES discards FUs 20–21
1987			3.4		
1988			3.2		
1989			4		
1990			4.3		
1991			3.3		
1992		~3.8	4.2		
1993		3.8	4.8		
1994		3.8	4.9		
1995		3.8	5.2		
1996		3.8	4.6		
1997		3.8	4		
1998		3.8	3.8		
1999		3.8	2.9	1.2	
2000		3.8	4.7	1.8	
2001		3.8	4.8	1.8	
2002		3.8	4.7	2.7	
2003		3.8	5.0	3.0	
2004	Adjust TAC in line with landings of most recent 10 years	4.6	4.3	2.4	
2005	Adjust TAC in line with landings of most recent 10 years	4.6	4.9	2.5	
2006	Recent average landings 2000–2002	4.6	4.3	2.5	
2007	No increase in effort	-	5.3	2.4	
2008	No increase in effort	< 5.3	6.4	3.0	
2009	No increase in effort	< 5.3	5.8	3.1	
2010	No new advice, same as for 2009	< 5.3	4.9	1.8	
2011	See scenarios; MSY reduce catch or PA < 5.3	-	2.9	1.2	
2012	Reduce catch	-		1.2	0.6
2013	Average landings (last 10 yrs)	< 2.5		1.4	0.3
2014	No new advice, same as for 2013	< 2.5			
2015	Same as for 2013	< 2.5			

Weights in thousand tonnes.

¹⁾ Advice prior to 2013 applies to FUs 20–22.

Table 5.4.21.6.2 *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn). Landings (t) by country as used by ICES.

Year	France	Rep. of Ireland	UK	Total
1995	na	117	na	na
1996	2721	101	na	2822
1997	1957	81	na	2038
1998	1583	130	na	1713
1999	1051	83	18	1152
2000	1661	107	10	1778
2001	1750	69	14	1833
2002	2559	104	11	2674
2003	2796	148	9	2953
2004	2140	299	4	2443
2005	2008	455	6	2469
2006	2066	450	7	2523
2007	1816	600	3	2419
2008	2036	937	7	2980
2009	1930	1202	13	3145
2010	975	756	62	1793
2011	566	637	34	1237
2012	453	708	28	1189
2013	486	844	57	1387

Table 5.4.21.6.3 *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn). Summary of UWTV results; number of stations, mean density observed, standard deviation, absolute abundance estimates with 95% confidence intervals, estimated area of the stock, and coefficient of variation on the abundance.

Year	Number of stations	Mean density adjusted (burrows m ⁻²)	Standard deviation (burrows m ⁻²)	Absolute abundance estimate (million burrows)	95%CI on abundance (million burrows)	Domain area (km ²)	CVs
2006	9	0.44	0.31	nr			
2012	54	0.57	0.25	nr			
2013	55	0.16	0.11	942	60	5701	3%
2013*				1624	103	9835	
2014	98	0.19	0.14	2051	131	9835	3%

* The 2013 survey achieved partial coverage ~60% of the total area. The abundance has been scaled up to the entire area since densities in the unsurveyed part of the ground were not significantly different in 2014.

nr = no reliable abundance estimate could be calculated because survey coverage was partial.

Table 5.4.21.6.4 *Nephrops* in FU 20 (Labadie) and FU 21 (Jones and Cockburn). Landings, discards, and removals in number, UWTV survey abundance estimates, 95% confidence intervals, harvest ratio, and total weight and mean weights of landings and discards.

Year	Landings in numbers (millions)	Discards in numbers (millions)	Removals in numbers (millions) 25% discard survival	Propor. removals retained	Adjusted survey (millions)	95% conf. intervals (millions)	Harvest ratio	FUs 20–21 landings (t)	FUs 20–21 discards (t)	Mean weight in landings (g)	Mean weight in discards (g)
2012	38.8	37.1	66.7	0.58				1 189	566	30.6	15.2
2013	35.8	20.1	50.9	0.70	1624	103	3.1%	1 387	347	38.8	17.2
2014					2051	131					
			Avg. 2011–13	0.643					Avg. 2012–13	34.69	16.24