

5.3.18 Herring (*Clupea harengus*) in Division VIIa South of 52° 30' N and VIIg,h,j,k (Irish Sea, Celtic Sea and Southwest of Ireland)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2016 should be no more than 23164 tonnes.

ICES advises, under precautionary considerations, that activities that have a negative impact on the spawning habitat of herring should not occur, unless the effects of these activities have been assessed and shown not to be detrimental.

Stock development over time

The spawning stock biomass (SSB) is above the MSY $B_{trigger}$, and it has been decreasing in recent years. The fishing mortality (F) is below F_{MSY} . Recruitment has been above average in recent years.

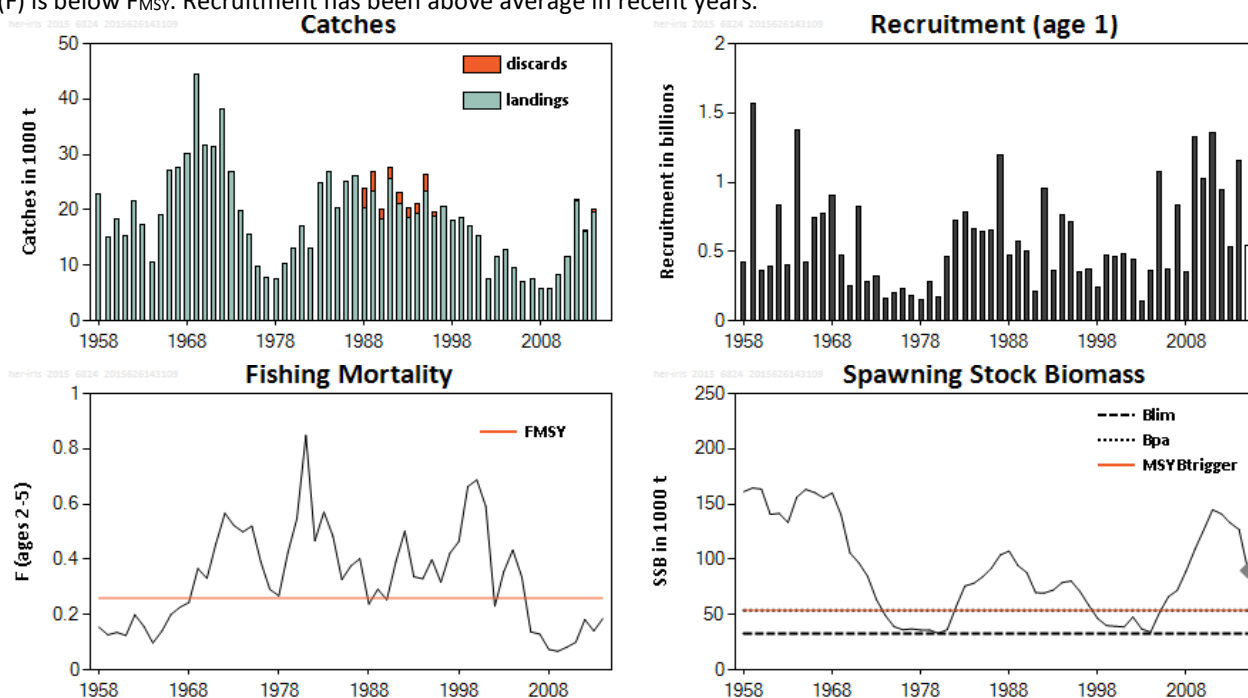


Figure 5.3.18.1 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. ICES estimated landings, catch and discards, and the recruitment, fishing mortality and spawning stock biomass from the summary of the stock assessment. Recruitment estimates are not shaded, and the estimated SSB value is designated by a grey diamond.

Stock and exploitation status

Table 5.3.18.1 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size				
		2012	2013	2014	2013	2014	2015		
Maximum Sustainable Yield	F_{MSY}	✓	✓	✓	$MSY B_{trigger}$	✓	✓	✓	Above trigger
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	B_{pa} , B_{lim}	✓	✓	✓	Full reproductive capacity
Management plan	F_{MGT}	-	-	-	SSB_{MGT}	-	-	-	Not applicable

Catch options

Table 5.3.18.2 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. The basis for the catch options.

Variable	Value	Source	Notes
F ages (wr) 2-5 (2015)	0.18	ICES (2015a)	Catch constraint (TAC plus carryover) = 17 752 t
Total catch (2015)	18.4 kt	ICES (2015a)	
Wanted catch (2015)*	17.8 kt	ICES (2015a)	TAC 2015 plus carryover
Unwanted catch (2015)*	0.6 kt	ICES (2015a)	2014 raised estimate (3.2%)
R age (wr) 1 (2015/2016)	541 million	ICES (2015a)	Stock-recruit relationship based on SSB ₂₀₁₃ from the assessment output (Figure 5.3.18.2)
SSB (2015)	117 kt	ICES (2015a)	

* "Wanted catch" is used to describe fish that would be landed in the absence of the EU landing obligation. The "unwanted catch" refers to the component that was previously discarded.

Table 5.3.18.3 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. The catch options. All weights are in tonnes.

Rationale	Catch (2016)	Basis	F (2016)	SSB (2016) *	% SSB change **	% TAC change ***
MSY approach	23164	F _{MSY}	0.26	92102	-16%	+48%
Zero catch	0	Zero catch	0	111364	-5%	-100%
Other options	20764	F _{mgt} in management plan agreed by Pelagic AC	0.23	99539	-15%	+33%
	20348	Long-term management plan agreed by Pelagic AC (30% TAC increase [^])	0.22	99787	-15%	+30%
	15652	TAC 2015	0.17	102250	-12%	0%
	16633	F ₂₀₁₅	0.18	101976	-13%	+6%

* For this autumn-spawning stock, the SSB is determined at spawning time and is influenced by fisheries between 1st April and spawning.

** SSB 2016 relative to SSB 2015.

*** Catch 2016 relative to TAC 2015.

[^] F=0.23 would lead to more than 30% TAC increase, therefore, the 30% inter-annual TAC constraint in the plan applies (ICES, 2012).

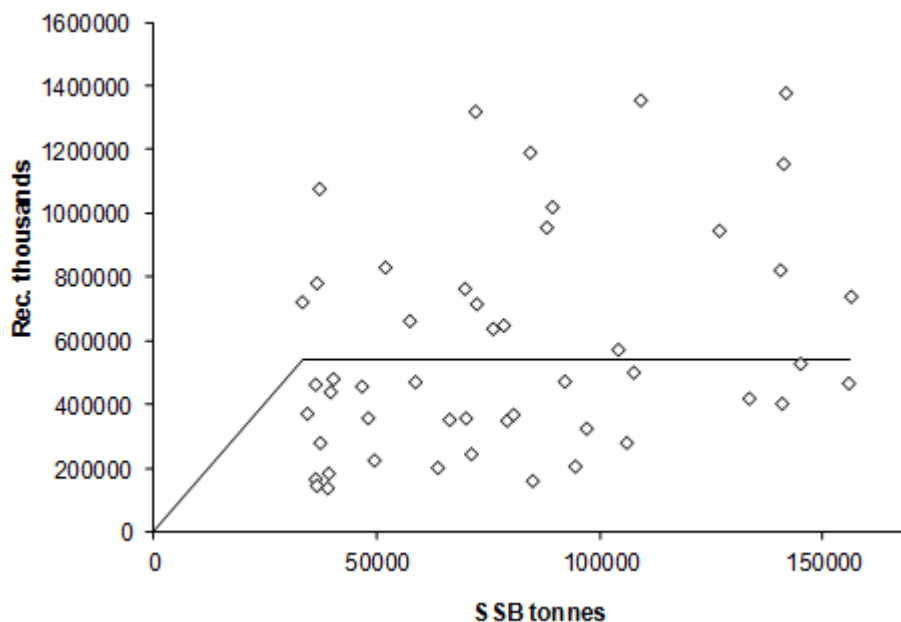


Figure 5.3.18.2 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. Stock-recruitment relationship from the benchmark assessment (ICES, 2015b). The plateau recruitment was estimated as 541 287 million, and the change point (set at B_{lim}) is 33 210 t.

Basis of the advice

Table 5.3.18.4 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. The basis of the advice.

Advice basis	MSY approach
Management plan	ICES evaluated the 2011 long-term management plan for Celtic Sea herring agreed by the Pelagic AC in 2011 as precautionary (ICES, 2012; 2015a). ICES was requested to provide advice based on the MSY approach and to include the management plan as a catch option.

Quality of the assessment

The stock was benchmarked in 2015 and the assessment model was changed. The benchmark resulted in a change in the perception of the stock (ICES, 2015a; 2015b). The new assessment presents less retrospective bias compared to previous assessments.

The assessment provides a quite precise estimate of stock biomass. Estimates of recruitment are more uncertain and this may be related to the lack of a fisheries independent recruitment estimator.

The 2014 survey estimates were not used in the assessment, on the recommendation of ICES WGIPS (ICES, 2015c), because the survey did not cover the entire stock due to timing of the migration patterns in 2014, and the precision of the abundance estimate was very poor. This is expected to lead to a small decrease in the accuracy of the estimate in 2015.

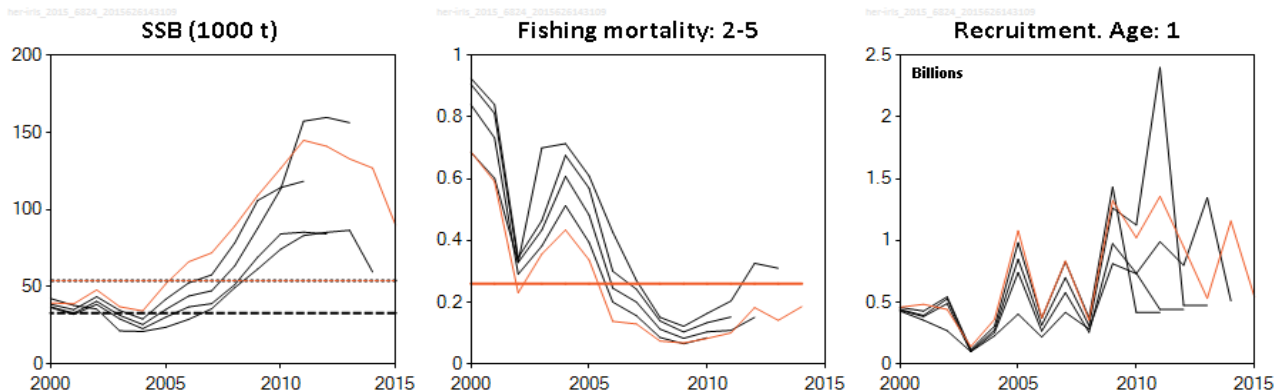


Figure 5.3.18.3 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. Historical assessment results (final-year recruitment estimates included). The stock was benchmarked (ICES, 2015b) after the 2014 assessment.

Issues relevant for the advice

The poor prices available for herring in 2014 meant that the quota was not fully taken and some quota has been carried over into 2015.

Evaluations conducted in 2015 by ICES (ICES, 2015b) show that the Pelagic Advisory Council’s proposed management plan is still precautionary after the 2015 benchmark. This long-term management plan was used by the European Commission for its TAC proposal for 2013-2015 and the Council of the European Union implemented it for setting the 2013-2015 TACs. It should be noted that the plan will not enter into law until it has been endorsed by all three European institutions, including the Parliament.

Future inter-species quota transfers (e.g. under Article 15 of EU, 2013) were not considered in this advice. If such transfers occur, they should be monitored closely to ensure that catches by species are reported correctly. ICES notes that there is a risk that, under a transfer system, exploitation on some stocks could be increased significantly. This is especially the case when a stock from which these transfers are taken (the donor stock) are much larger than the stocks that receive the transfer (the receiving stocks). When setting the TACs for fish stocks, any transfer should be accounted for to prevent that the resulting total fishing mortality for these stocks exceeds the intended one.

Reference points

Table 5.3.18.5 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. Reference points, values and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	54000 t	B_{pa}	ICES (2015a)
	F_{MSY}	0.26	Simulations using segmented regression stock recruit relationship	ICES (2015a)
Precautionary approach	B_{lim}	33000 t	B_{loss}	ICES (2015a)
	B_{pa}	54000 t	$B_{pa} = B_{lim} \times \exp(\sigma \times 1.645)$, with $\sigma = 0.3$ estimated from assessment uncertainty in the terminal year.	ICES (2015a)
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan agreed by Pelagic AC in 2011	SSB_{MGT}	61000 t		ICES (2012)
	F_{MGT}	0.23		ICES (2012)

Basis of the assessment

Table 5.3.18.6 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. The basis of the assessment.

ICES stock data category	1 (ICES, 2015d)
Assessment type	Age-based analytical assessment (ASAP; ICES, 2015a) that uses catches in the model and in the forecast.
Input data	Commercial catches (weights, ages and length frequencies from catch sampling); Acoustic survey index (CSHAS); annual weights in the stock; fixed maturity ogive; natural mortality assumed constant.
Discards and bycatch	Included in the assessment (covering 4% of the Irish landings raised to total catch)
Indicators	None
Other information	Benchmarked in WKWEST (ICES, 2015b), updated with corrected natural mortalities by ICES (2015a). Assessed on a seasonal basis, 1 April–31 March, to allow for the inclusion of the spawning cycle in the assessment period. This is an autumn/winter spawning stock. Age is given in winter rings, so for example: a 2-year-old fish is termed “1-winter ring”.
Working group	Herring Assessment Working Group for the Area South of 62°N (HAWG)

Information from stakeholders

There is no available information.

History of advice, catch and management

Table 5.3.18.7 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. History of ICES advice, the agreed TAC, official landings, and ICES estimates of discards and catch. All weights are in thousand tonnes.

Year	ICES Advice	Predicted catch corresponding to advice	Agreed TAC	Official landings	Discards	ICES estimated catch*
1987	Precautionary TAC	18	18	18	4.2	27.3
1988	TAC	13	18	17	2.4	19.2
1989	TAC	20	20	18	3.5	22.7
1990	TAC	15	17.5	17	2.5	20.2
1991	TAC (TAC excluding discards)	15 (12.5)	21	21	1.9	23.6
1992	TAC	27	21	19	2.1	23.0
1993	Precautionary TAC (including discards)	20–24	21	20	1.9	21.1
1994	Precautionary TAC (including discards)	20–24	21	19	1.7	19.1
1995	No specific advice		21	18	0.7	19.1
1996	TAC	9.8	16.5–21**	21	3	21.8
1997	If required, precautionary TAC	< 25	22	20.7	0.7	18.8
1998	Catches below 25	< 25	22	20.5	0	20.3
1999	F = 0.4	19	21	19.4	0	18.1
2000	F < 0.3	20	21	18.8	0	18.3
2001	F < 0.34	17.9	20	19	0	17.7
2002	F < 0.35	11	11	11.5	0	10.6
2003	Substantially less than recent catches	-	13	12	0	10.9
2004	60% of average catch 1997–2000	11	13	12		11.1
2005	60% of average catch 1997–2000	11	13	10		8.5
2006	Further reduction 60% avg. catch 2002–2004	6.7	11	9		8.5
2007	No fishing without rebuilding plan		9.4	9.6		8.3
2008	No targeted fishing without rebuilding plan		7.9	7.8		6.9
2009	No targeted fishing without rebuilding plan		5.9	6.2	***	5.8
2010	F _{mgt} = 0.19	10.15	10.15	9.6	***	8.4
2011	See scenarios		13.2	11.7	***	11.5
2012	MSY approach	< 26.9	21.1	21.6	+	21.6
2013	MSY approach	< 18.5	17.2	16.2	+	16.2
2014	MSY approach	< 35.942	22.3	18.8	0.6	19.6
2015	MSY approach	< 15.140	15.7			
2016	MSY approach	≤ 23.164				

* By calendar year.

** Revised in 1996 after the ACFM May meeting.

*** Increased risk of discarding.

+ Catch of less than 0.5 tonnes.

History of catch and landings

Table 5.3.18.8 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Commercial landings		Commercial discards
19574 t	100% pelagic trawlers	Driftnets (negligible)	644 t
	18930 t		

Table 5.3.18.9 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. History of commercial landings (in tonnes) as estimated by ICES by calendar (TAC) year for each country participating in the fishery. The designator, "na" when data were not available. These values may not correspond to the official statistics in all cases and cannot be used for management purposes.

Year	France	Germany	Ireland	Netherlands	U.K.	Unallocated	Discards**	Total
1988			16800				2400	19200
1989	+		16000	1900		1300	3500	22700
1990	+		15800	1000	200	700	2500	20200
1991	+	100	19400	1600		600	1900	23600
1992	500		18000	100	+	2300	2100	23000
1993			19000	1300	+	-1100	1900	21100
1994	+	200	17400	1300	+	-1500	1700	19100
1995	200	200	18000	100	+	-200	700	19000
1996	1000	0	18600	1000		-1800	3000	21800
1997	1300	0	18000	1400		-2600	700	18800
1998	+		19300	1200		-200	na	20300
1999		200	17900	1300	+	-1300	na	18100
2000	573	228	18038	44	1	-617	na	18267
2001	1359	219	17729			-1578	na	17729
2002	734		10550	257		-991	na	10550
2003	800		10875	692	14	-1506	na	10875
2004	801	41	11024			-801	na	11065
2005	821	150	8452	799		-1770	na	8452
2006			8530	518	5	-523	na	8530
2007	581	248	8268	463	63	-1355	na	8268
2008	503	191	6853	291		-985	na	6853
2009	364	135	5760			-499	na	5760
2010	636	278	8406	325		-1239	na	8406
2011	241		11503	7		-248	na	11503
2012	3	230	16132	3135		2104	161	21765
2013		450	14785	832			118	16185
2014	244	578	17287	821			644	19574

* The "+" designates catch of less than 0.5 tonnes.

** na = not applicable

Table 5.3.18.10 Herring in Division VIIa South of 52° 30' N and VIIg,h,j,k. History of commercial landings and discards (in tonnes) by assessment year (1 April–31 March) as estimated by ICES for each country participating in the fishery. These values may not correspond to the official statistics in all cases and cannot be used for management purposes.

Year	France	Germany	Ireland	Netherlands	U.K.	Unallocated	Discards**	Total
1988/1989			17000				3400	20400
1989/1990	+		15000	1900		2600	3600	23100
1990/1991	+		15000	1000	200	700	1700	18600
1991/1992	500	100	21400	1600		-100	2100	25600
1992/1993			18000	1300		-100	2000	21200
1993/1994			16600	1300	+	-1100	1800	18600
1994/1995	+	200	17400	1300	+	-1500	1900	19300
1995/1996	200	200	20000	100	+	-200	3000	23300
1996/1997	1000		17900	1000		-1800	750	18800
1997/1998	1300		19900	1400		-2100		20500
1998/1999	+		17700	1200		-700		18200
1999/2000		200	18300	1300	+	-1300		18500
2000/2001	573	228	16962	44	1	-617		17191
2001/2002			15236					15236
2002/2003	734		7465	257		-991		7465
2003/2004	800		11536	610	14	-1424		11536
2004/2005	801	41	12702			-801		12743
2005/2006	821	150	9494	799		-1770		9494
2006/2007			6944	518	5	-523		6944
2007/2008	379	248	7636	327		-954		7636
2008/2009	503	191	5872	150		-844		5872
2009/2010	364	135	5745			-499		5745
2010/2011	636	278	8370	325		-1239	na	8370
2011/2012	241		11470	7		-248	na	11470
2012/2013	3	230	16132	3135		2104	161*	21765
2013/2014		450	14785	832			118	16185
2014/2015	244	578	17287	821			644	19574

* Added in 2014 after report of 1% discarding

** The “+” designates catch of less than 0.5 tonnes.

*** na = not applicable

Summary of the assessment

Table 5.3.18.11. Herring in Division VIIa South of 52° 30' N and VIIg h j k. Assessment summary with weights (in tonnes) recruits (at age 0 in thousands). All weights are in tonnes.

Year	Recruitment	SSB**	Catch	Fishing Mortality
	at Age (wr) 1 (thousands)	(tonnes)	(tonnes)	at Ages (wr) 2-5
1958	423281	161334	22978	0.155
1959	1565890	164597	15086	0.127
1960	364794	163568	18283	0.136
1961	392084	140782	15372	0.125
1962	837339	141639	21552	0.200
1963	405494	133415	17349	0.158
1964	1380210	156244	10599	0.098
1965	421391	163262	19126	0.141
1966	741245	160541	27030	0.201
1967	774993	155728	27658	0.227
1968	907207	160102	30236	0.244
1969	469158	140401	44389	0.367
1970	254830	105959	31727	0.332
1971	824154	96944	31396	0.456
1972	282493	84860	38203	0.567
1973	327066	63617	26936	0.523
1974	163005	49390	19940	0.500
1975	204165	39137	15588	0.521
1976	227463	36451	9771	0.390
1977	186562	37232	7833	0.292
1978	148045	36164	7559	0.268
1979	282152	36191	10321	0.425
1980	168531	33219	13130	0.547
1981	465638	36507	17103	0.849
1982	724151	57321	13000	0.467
1983	783337	75991	24981	0.571
1984	664944	78369	26779	0.485
1985	640184	84309	20426	0.327
1986	650742	92047	25024	0.376
1987	1193220	104077	26200	0.403
1988	474983	107523	20447	0.239
1989	574641	94441	23254	0.292
1990	503264	88053	18404	0.254
1991	208551	69916	25562	0.391
1992	958184	69683	21127	0.503
1993	359652	72325	18618	0.337
1994	766083	79110	19300	0.330
1995	717939	80548	23305	0.399
1996	351797	71110	18816	0.318
1997	370511	58563	20496	0.422
1998	247178	46589	18041	0.465
1999	473462	40176	18485	0.663
2000	459347	39559	17191	0.688
2001	482831	38922	15269	0.591
2002	441827	47992	7465	0.231
2003	140515	37059	11536	0.356
2004	360061	34335	12743	0.434
2005	1079510	51842	9494	0.337
2006	373947	66214	6944	0.138

Year	Recruitment	SSB**	Catch	Fishing Mortality
	at Age (wr) 1 (thousands)	(tonnes)	(tonnes)	at Ages (wr) 2-5
2007	833003	72019	7636	0.130
2008	355107	89275	5872	0.074
2009	1322000	109082	5745	0.068
2010	1022150	126711	8370	0.083
2011	1357600	144935	11470	0.100
2012	948465	141113	21820	0.183
2013	530679	132941	16247	0.141
2014	1157860	126991	19574	0.186
2015	541000***	89937*		
Average	495281	89937	18576	0.330

* Geometric mean (1957–2014).

** The SSB is estimated for 1st of January.

*** Stock-recruit relationship based on SSB₂₀₁₃ from the assessment output (Figure 5.3.18.2).

Sources and references

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