

5.3.17 Herring (*Clupea harengus*) in Division VIIa North of 52° 30'N (Irish Sea)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2016 should be no more than 4575 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) has been above $MSY B_{trigger}$ since 2006. Fishing mortality (F) has decreased since 2003 to the lowest in the time-series and is now around F_{MSY} . Recruitment (R) is relatively high and stable; estimated above the average of the time-series since 2006.

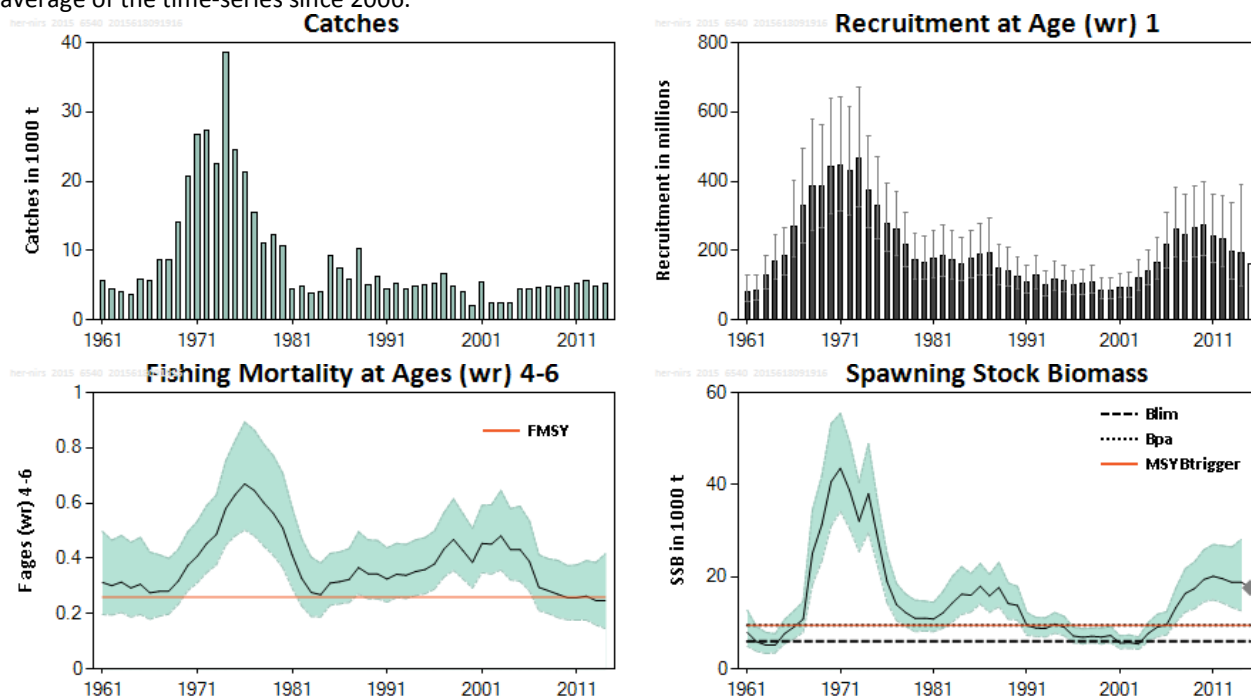


Figure 5.3.17.1 Herring in Division VIIa North of 52° 30'N. Commercial catch, and R, F, and SSB from the summary of stock assessment. Predicted R values are not shaded and predicted SSB is shown with a diamond shape.

Stock and exploitation status

Table 5.3.17.1 Herring in Division VIIa North of 52° 30'N. State of the stock, relative to reference points, of the stock and fishery.

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

Catch options

Table 5.3.17.2 Herring in Division VIIa North of 52° 30'N. The basis for the catch options.

Variable	Value	Source	Notes
F _{ages (wr) 4-6 (2015)}	0.25	ICES (2015a)	TAC constraint
SSB (2015)*	17634	ICES (2015a)	SSB in advice year, for autumn spawning stock
R _{age(wr) 1 (2015/2016)}	160 million	ICES (2015a)	GM 1998-2012
Catch (2015)	4854 tonnes	ICES (2015a)	Human consumption landings; discards are negligible.

* For autumn-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries between 01 January and spawning.

Table 5.3.17.3 Herring in Division VIIa North of 52° 30'N. The catch options. All weights are in tonnes.

Rationale	Catch (2016)	Basis	F (2016)	SSB (2016)*	%SSB change**	%TAC change***
MSY approach	4575	F _{MSY}	0.26	16083	-9	-6
Zero catch	0	F = 0	0	19447	+10	-100
Other options	4126	TAC -15% (F ₂₀₁₅ × 0.940)	0.2321	16413	-7	-15
	4854	Stable TAC (F ₂₀₁₅ × 1.13)	0.2776	15878	-10	0
	5582	TAC +15% (F ₂₀₁₅ × 1.32)	0.3247	15343	-13	+15

* For autumn-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries between 01 January and spawning.

** SSB 2016 relative to SSB 2015.

*** Catch 2016 relative to TAC 2015.

Basis of the advice

Table 5.3.17.4 Herring in Division VIIa North of 52° 30'N. The basis of the advice.

Advice basis	MSY approach
Management plan	There is no management plan for herring in this area. A management plan has been under review by the Pelagic Advisory Committee for Division VIIa (North).

Quality of the assessment

The interannual variation in herring migration patterns affects the selectivity of both the fishery and the acoustic survey. The assessment is performed on a mixed stock (including juveniles from the Celtic Sea), which affects the estimates of the younger ages. The acoustic survey data are uncertain and the timing of the survey is occasionally mismatched with the migration pattern of the spawning-stock biomass. Input data quality and sampling coverage is appropriate for this stock.

No catch information was included for in the assessment for 2014 due to inaccurate age information. This reduced the quality of the assessment, but a sensitivity analysis of the assessment model was conducted and it was found that the resulting estimates of population parameters are robust to this change.

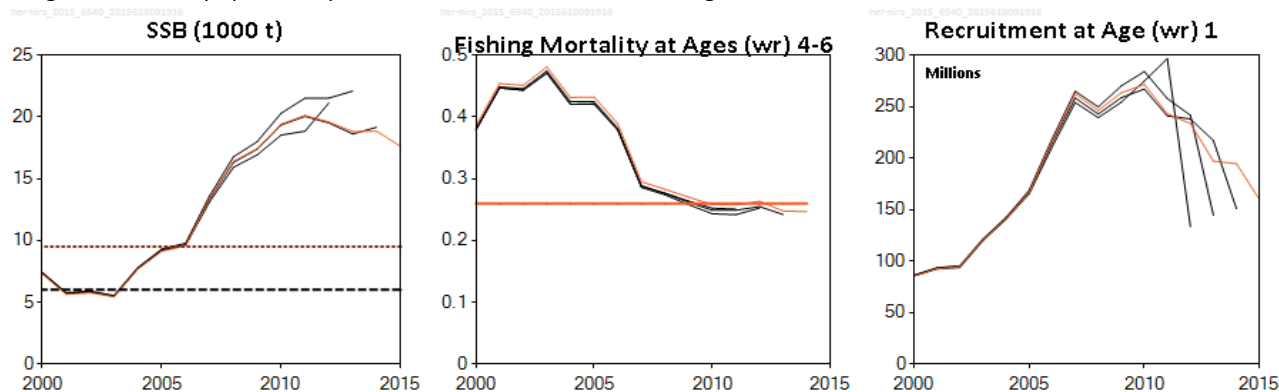


Figure 5.3.17.2 Herring in Division VIIa North of 52° 30'N. Historical assessment results (final-year SSB and R estimates included).

Issues relevant for the advice

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 5.3.17.5 Herring in Division VIIa North of 52° 30'N. Reference points, values and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	9500 t	Provisional based on B_{pa} .	ICES (2000; 2010)
	F_{MSY}	0.26	Based on stochastic simulations	ICES (2012)
Precautionary approach	B_{lim}	6000 t	Lowest observed SSB of ICA assessment	ICES (1998)
	B_{pa}	9500 t	$B_{pa} = B_{lim} \times 1.58$.	ICES (1998)
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB_{MGT}	Not applicable		
	F_{MGT}	Not applicable		

Basis of the assessment

Table 5.3.17.6 Herring in Division VIIa North of 52° 30'N. The basis of the assessment.

ICES stock data category	1 (ICES, 2015b)
Assessment type	Age-based analytical assessment (FLSAM; ICES, 2015a) that uses catches in the model and in the forecast.
Input data	Two survey indices (Northern Ireland Acoustic Surveys: AC(VIIaN)) and larvae survey NINEL); commercial catch-at-age data and annual maturity ogives, annual stock weights from AC(VIIaN).
Discards and bycatch	Discards are considered to be negligible.
Indicators	None
Other information	Benchmarked in WKPELA (ICES, 2012)
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 5.3.17.7 Herring in Division VIIa North of 52° 30'N. History of ICES advice, the agreed TAC, and ICES estimates of catch. All weights are in thousand tonnes.

Year	ICES Advice	Predicted catch corresponding to advice	Agreed TAC	ICES estimated catch
1987	TAC	4.3	4.5	5.8
1988	TAC (Revised advice in 1988)	10.5 (5.6)	10.5	10.2
1989	TAC	5.5	6.0	5.0
1990	Precautionary TAC	5.7	7.0	6.3
1991	TAC	5.6	6.0	4.4
1992	TAC	6.6	7.0	5.3
1993	TAC	4.9–7.4	7.0	4.4
1994	Precautionary TAC	5.3	7.0	4.8
1995	Precautionary TAC	5.1	7.0	5.1
1996	If required, precautionary TAC	5.0	7.0	5.3
1997	No advice given	-	9.0	6.6
1998	<i>Status quo</i> F	6.5	9.0	4.9
1999	F = Proposed $F_{pa} = 0.36$	4.9	6.6	4.1
2000	F = 90% F(98) = 0.31	3.9	5.4	2.0
2001	<i>Status quo</i> F = 0.26	5.1	6.9	5.5
2002	Average catch of 1996–2000	4.8	4.8	2.4
2003	2002 TAC	4.8	4.8	2.4
2004	Advice 2003 catch	4.8	4.8	2.5
2005	<i>Status quo</i> TAC	4.8	4.8	4.4
2006	<i>Status quo</i> TAC	4.8	4.8	4.4
2007	<i>Status quo</i> TAC	4.8	4.8	4.6
2008	<i>Recent catches</i>	4.4	4.8	4.9
2009	<i>Same advice as last year</i>	4.4	4.8	4.6
2010	Recent TAC	4.8	4.8	4.9
2011	No increase in catch	< 4.8	5.2	5.2
2012	No increase in catch	-	5.280	5.7
2013	MSY approach	< 5.1	4.993	4.8
2014	MSY approach	< 5.251	5.251	5.2
2015	MSY approach	< 4.854		
2016	MSY approach	≤ 4.575		

History of catch and landings

Table 5.3.17.8 Herring in Division VIIa North of 52° 30'N. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Landings		Discards
5.2 kt	99% pelagic trawlers	<1% gillnet	Negligible
	5.2 kt		

Table 5.3.17.9 Herring in Division VIIa North of 52° 30'N. History of commercial catch as estimated by ICES for each country participating in the fishery. All weights are in tonnes.

Year	Country			Total
	Ireland	UK	Unallocated	
1987	1200	3290	1333	5823
1988	2579	7593	-	10172
1989	1430	3532	-	4962
1990	1699	4613	-	6312
1991	80	4318	-	4398
1992	406	4864	-	5270
1993	0	4408	-	4408
1994	0	4828	-	4828
1995	0	5076	-	5076
1996	100	5180	22	5302
1997	0	6651	-	6651
1998	0	4905	-	4905
1999	0	4127	-	4127
2000	0	2002	-	2002
2001	862	4599	-	5461
2002	286	2107	-	2393
2003	0	2399	-	2399
2004	749	1782	-	2531
2005	1153	3234	-	4387
2006	581	3821	-	4402
2007	0	4629	-	4629
2008	0	4895	-	4895
2009	0	4594	-	4594
2010	0	4894	-	4894
2011	0	5202	-	5202
2012	18	5675	-	5693
2013	0	4828	-	4828
2014	119	5089	-	5208

Summary of the assessment

Table 5.3.17.10 Herring in Division VIIa North of 52° 30'N. Assessment summary with weights (in tonnes).

Year	Recruitment at Age (wr) 1 (thousands)	SSB** (tonnes)		Catches (tonnes)		Mean F at Ages (wr) 4-6		High		Low	
		High	Low	High	Low	High	Low	High	Low	High	Low
1961	80821638	128504140	50832114	7943	12762	4943	5710	0.313	0.497	0.197	
1962	85476777	130537889	55970565	5935	9168	3842	4343	0.301	0.466	0.195	
1963	127516366	183521958	88602061	5182	7945	3379	3947	0.315	0.483	0.205	
1964	169566422	245681878	117032529	5181	7632	3517	3593	0.293	0.458	0.188	
1965	183872893	265492853	127345201	7669	10716	5489	5923	0.307	0.476	0.198	
1966	269682333	400523612	181583703	9101	12617	6564	5666	0.276	0.422	0.18	
1967	331373030	493893705	222331413	10817	14655	7984	8721	0.281	0.413	0.191	
1968	385385727	579587545	256254918	25135	34511	18306	8660	0.282	0.4	0.198	
1969	386930357	562157197	266322484	31288	41859	23387	14141	0.318	0.432	0.234	
1970	441088141	638596705	304666069	40660	53251	31046	20622	0.375	0.496	0.284	
1971	448202313	641737615	313033408	43565	55471	34214	26807	0.408	0.534	0.312	
1972	431921872	614343809	303667915	38677	49186	30414	27350	0.455	0.592	0.349	
1973	466960523	671116485	324909513	32080	40433	25453	22600	0.486	0.629	0.376	
1974	374370040	530599299	264140807	38025	48900	29569	38640	0.581	0.753	0.448	
1975	331704569	469613268	234294746	28424	36208	22314	24500	0.631	0.827	0.482	
1976	278173417	395900264	195454403	18968	24951	14419	21250	0.67	0.893	0.503	
1977	261712015	370477206	184878254	13990	18563	10544	15410	0.646	0.865	0.482	
1978	217075392	308557410	152716234	12240	16256	9217	11080	0.602	0.813	0.445	
1979	172473693	250158801	118913165	11003	14947	8099	12338	0.564	0.772	0.411	
1980	166541532	239705892	115708804	11044	14744	8272	10613	0.51	0.709	0.367	
1981	177726299	259373711	121780412	10843	14481	8119	4377	0.413	0.582	0.292	
1982	184609858	274822304	124010312	12189	16800	8844	4855	0.328	0.472	0.228	
1983	174555845	259011153	117638730	14308	20082	10194	3933	0.277	0.405	0.19	
1984	162754791	237617425	111478029	16228	22220	11852	4066	0.269	0.383	0.189	
1985	176133939	256546496	120926089	16002	20717	12361	9187	0.311	0.418	0.231	
1986	189472656	278632670	128843066	17962	22882	14100	7440	0.316	0.423	0.236	
1987	194075008	292634246	128710529	15881	20551	12273	5823	0.324	0.435	0.241	
1988	147856871	215342874	101520213	17689	23124	13531	10172	0.367	0.496	0.271	
1989	142486138	207573672	97807682	14206	18673	10807	4949	0.344	0.467	0.254	
1990	125492340	181350336	86839251	13804	17922	10632	6312	0.344	0.465	0.254	
1991	109644654	158918314	75648614	9450	12259	7285	4398	0.325	0.438	0.242	
1992	128412113	186152591	88581472	8890	11168	7077	5270	0.343	0.454	0.259	
1993	99111425	142245028	69057419	8772	11100	6932	4409	0.339	0.45	0.255	
1994	118776636	169157244	83401035	9778	12262	7798	4828	0.352	0.467	0.266	
1995	112420322	158391263	79791830	9085	11415	7231	5076	0.36	0.475	0.272	
1996	100911583	142936364	71242526	7167	9056	5671	5301	0.38	0.5	0.289	
1997	104297221	147024247	73987186	6897	8731	5448	6651	0.434	0.565	0.333	
1998	109535064	156384532	76720697	7110	8861	5705	4905	0.468	0.616	0.356	
1999	84372770	121182288	58744264	6944	8880	5430	4127	0.428	0.561	0.326	
2000	85220731	122731706	59174383	7275	9235	5731	2002	0.386	0.508	0.293	
2001	92410880	132740211	64334467	5625	7200	4395	5461	0.454	0.592	0.349	
2002	94750273	137740230	65177865	5754	7382	4484	2393	0.452	0.594	0.343	
2003	120813100	172307233	84708023	5438	6942	4260	2399	0.481	0.646	0.359	
2004	141068378	201211687	98902243	7689	10021	5900	2531	0.432	0.58	0.322	
2005	166874949	238824440	116601335	9127	11882	7011	4387	0.432	0.589	0.318	
2006	216858425	311724293	150862726	9578	12411	7391	4402	0.389	0.536	0.282	
2007	262760960	383819166	179885029	13377	17584	10177	4629	0.295	0.413	0.211	
2008	246471094	360702356	168415867	16413	21778	12369	4895	0.283	0.399	0.201	
2009	263550426	384580189	180609478	17452	23271	13088	4594	0.27	0.393	0.186	

Year	Recruitment at Age (wr) 1 (thousands)	High	Low	SSB** (tonnes)	High	Low	Catches (tonnes)	Mean F at Ages (wr) 4-6	High	Low
2010	271848444	399083042	185178444	19438	25874	14603	4894	0.258	0.374	0.178
2011	243287707	362081716	163468371	20135	27019	15004	5202	0.258	0.376	0.177
2012	233748259	359508967	151980211	19602	26752	14364	5693	0.264	0.392	0.177
2013	197205182	337180475	115338481	18820	26459	13387	4828	0.248	0.385	0.159
2014	194658107	388465173	97542280	18854	28142	12632	5208	0.247	0.416	0.146
2015	159712936*			17633*						
Average	204449717	301087133	140325312	15133	19961	11427	8547	0.379	0.522	0.276

* Geometric mean recruitment 1998–2012 and SSB from assessment model.

** For autumn-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries between 01 January and spawning.

Sources and references

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