

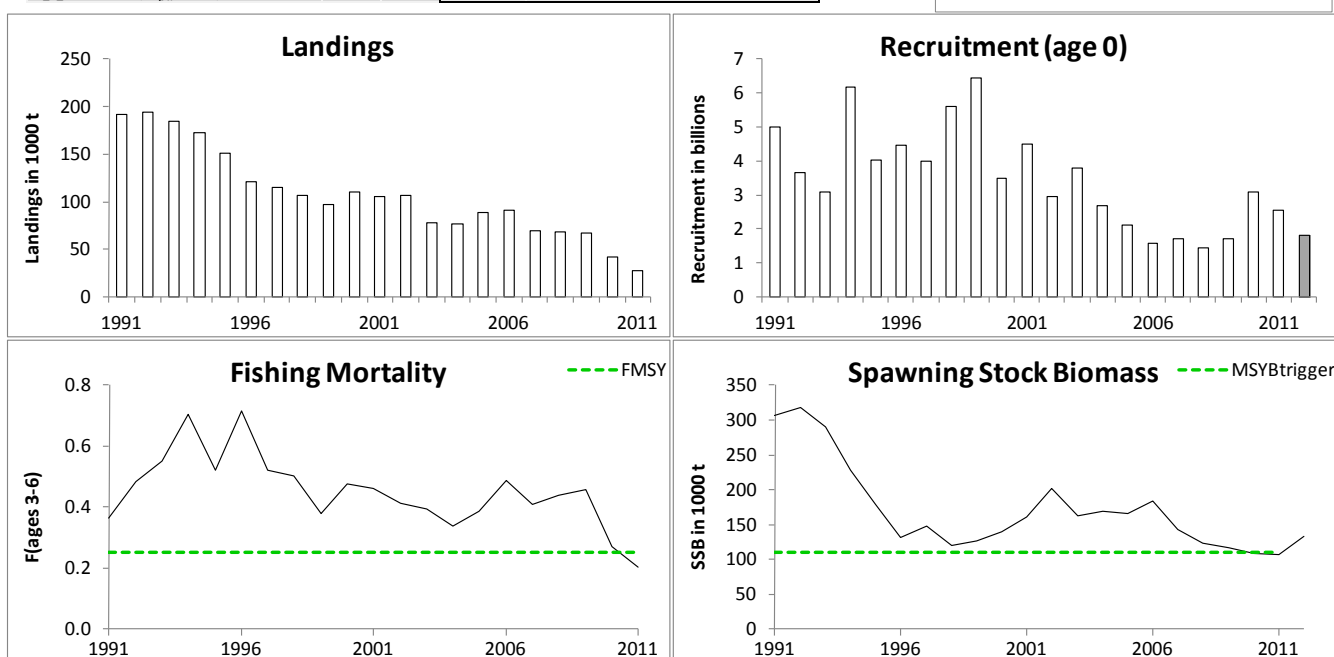
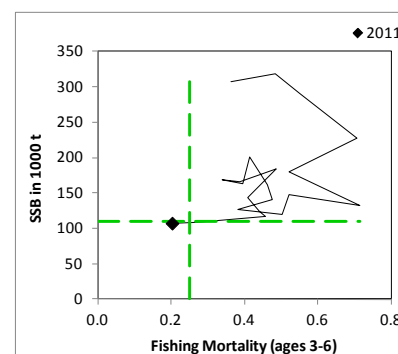
**ECOREGION** North Sea  
**STOCK** Herring in Division IIIa and Subdivisions 22–24 (western Baltic spring spawners)

**Advice for 2013**

ICES advises on the basis of the MSY framework that catches in 2013 should be no more than 51 900 t. ICES recommends eliminating the *optional* transfer to Subarea IV.

**Stock status**

F (Fishing Mortality)				
	2009	2010	2011	
MSY ( $F_{MSY}$ )	✗	✗	✓	Appropriate
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?	?	Undefined
SSB (Spawning-Stock Biomass)				
	2010	2011	2012	
MSY ( $B_{trigger}$ )	✗	✗	✓	Above trigger
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	?	?	Undefined



**Figure 6.4.15.1** Herring in Division IIIa and Subdivisions 22–24 (western Baltic spring spawners). Summary of stock assessment (predicted values are shown in grey). Top right: SSB and F for the time-series used in the assessment.

Catches have declined since the early 1990s and SSB has decreased in recent years, reaching the lowest in the time-series in 2011 at MSY  $B_{trigger}$ . Fishing mortality has decreased in the last two years and was below  $F_{MSY}$  in 2011. The 2010 and 2011 year classes are estimated to be stronger than year classes during the low recruitment phase in the mid-2000s.

**Management plans**

No specific management objectives are known to ICES.

## Biology

In summer herring in Division IIIa and Subdivisions 22–24 (western Baltic spring spawners, WBSS) migrate from the western Baltic into the more saline waters of Division IIIa and the eastern parts of Division IVa in search of food. In these areas they mix with North Sea autumn-spawning (NSAS) herring. In recent years mixing also has been detected between WBSS and central Baltic herring in Subdivisions 24–26. Herring is considered to have a major impact on other fish stocks as a predator, and as prey for other species including commercial fish species, seabirds, and marine mammals.

### Environmental influence on the stock

The reasons for the reduction in recruitment during the period 2004–2009 in WBSS are currently unknown. There are no indications of systematic changes in growth or age-at-maturity, and reduced recruitment is probably due to increased mortality at the egg or the larval stage. Further investigation of the causes of the poor recruitment will require specific research projects.

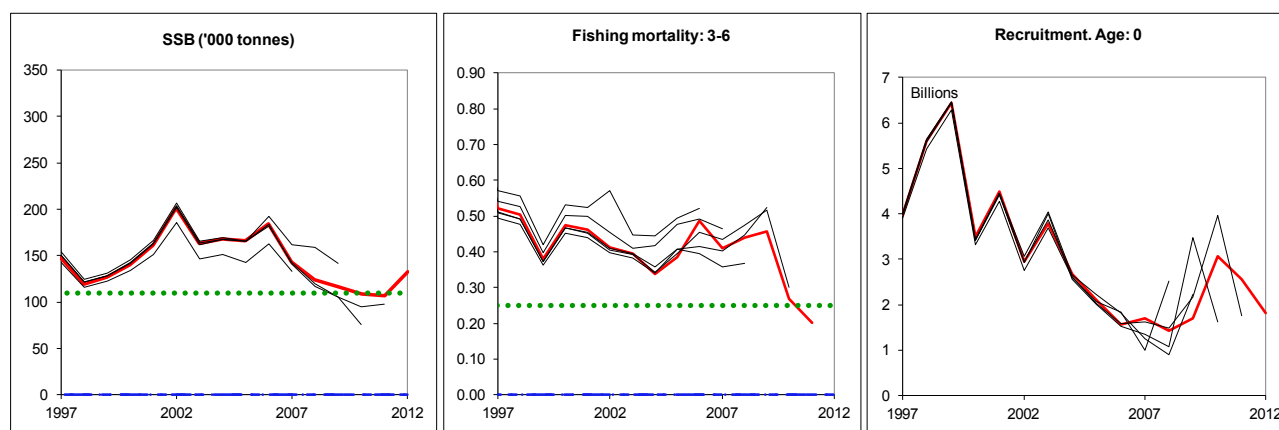
### The fisheries

Area where WBSS are being caught	Fleet	Fishery	WBSS 2011 catch	NSAS 2011 catch
Division IIIa	C	Directed herring fisheries with purse-seiners and trawlers.	10 816 t	6 608 t
	D	Bycatches of herring caught in the small-mesh fisheries.	818 t	1 780 t
Subdivisions 22–24	F	All herring fisheries in Subdivisions 22–24.	15 830 t	-
Division IVa East	A	Directed herring fisheries with purse-seiners and trawlers.	308 t	-

Misreporting by the C-fleet in Division IIIa is assumed to have stopped since 2009 due to new national regulations. Discards are considered to be low.

### Quality considerations

The main causes for uncertainty are: lack of a firm basis to predict the fraction of NSAS in the catches in the Kattegat and Skagerrak, and the distribution of the fishery between years. The 2011 advice assumed a 50% transfer of the C-fleet quota from Division IIIa to the North Sea. With an actual transfer of 42%, forecasts are considered relatively precise; however, the inherent uncertainty in predictions could be avoided by eliminating the optional transfer of quotas between Division IIIa and Subarea IV.



**Figure 6.4.15.2** Herring in Division IIIa and Subdivisions 22–24 (western Baltic spring spawners). Historical assessment results (final-year predicted SSB, recruitment equal to the most recent 5-year geometric mean).

### Scientific basis

<b>Assessment type</b>	Age-based analytical assessment (ICA).
<b>Input data</b>	Two acoustic and one larval survey indices (HERAS, GerAS (BIAS), N20). Catch statistics and corrections for historical area misreporting. Otolith microstructure and morphometric methods to calculate the proportion of NSAS in the catches.
<b>Discards and bycatch</b>	Discards are not included in the assessment and are considered to be low.
<b>Indicators</b>	None.
<b>Other information</b>	The last benchmark took place in 2008, and the next one is planned for 2013.
<b>Working group report</b>	<a href="#">HAWG</a>

**ECOREGION** North Sea  
**STOCK** Herring in Division IIIa and Subdivisions 22–24 (western Baltic spring spawners)

**Reference points**

	Type	Value	Technical basis
MSY approach	MSY $B_{\text{trigger}}$	110 000 t	Based on management plan development and the lowest observed SSB in the 2008 assessment.
	$F_{\text{MSY}}$	0.25	Management plan evaluations (ICES, 2008).
Precautionary approach	$B_{\text{lim}}$	Not defined	
	$B_{\text{pa}}$	Not defined	
	$F_{\text{lim}}$	Not defined	
	$F_{\text{pa}}$	Not defined	

*Unchanged since 2010.*

Until 2011 fishing mortality rates were considerably higher than  $F_{\text{MSY}}$ . Therefore, the MSY  $B_{\text{trigger}}$  of 110 000 t (based on the lowest SSB in the assessment conducted in 2008) is likely to underestimate the true lower limit of SSB when the stock is fished at  $F_{\text{MSY}}$ .

4 **Outlook for 2013**

Basis for western Baltic spring-spawning herring (WBSS):  $F(2012) = 0.21$  [catch constraint];  $R10-12 = GM(2006-2010) = 1817$  million;  $SSB(2012) = 132$ ; catch (2012) = 41<sup>a)</sup>. Catches are for all herring in Division IIIa and Subdivisions 22–24. See further in Section 6.4.16 on North Sea autumn-spawning herring (NSAS).

Rationale	Catch options and results for WBSS herring only: Division IIIa, Subdivisions 22–24, and Division IVaE <sup>1)</sup>									Catch options for WBSS and NSAS herring in: Division IIIa and Subdivisions 22–24 <sup>1)</sup>							
	Catch 2013	Basis	F 2013	22–24			IIIa		IVaE	SSB 2013 <sup>3)</sup>	SSB 2014 <sup>3)</sup>	% SSB change <sup>4)</sup>	Catch 2013	22–24			% TAC change <sup>5)</sup>
				Fleet F	Fleet C	Fleet D	Fleet A <sup>2)</sup>	Fleet F						Fleet C	Fleet D		
MSY framework	51.9	$F_{MSY}$	0.25	25.8	24.4	1.4	0.3	168	180	7%	63.3	25.8	34.3	3.6	-12%		
Zero catch	0	$F = 0$	0	0	0	0	0	172	230	34%	0	0	0	0	-100%		
<i>Other options</i>	50.6	$F_{2012} * 1.14$	0.24	25	23.6	1.4	0.3	168	181	8%	61.7	25	33.2	3.4	-15%		
	59.5	$F_{2012} * 1.36$	0.29	29.4	27.8	1.6	0.3	167	173	4%	72.6	29.4	39.1	4.1	0%		
	68.5	$F_{2012} * 1.6$	0.34	33.8	32	1.9	0.3	166	165	-1%	83.5	33.8	45	4.7	15%		

Weights in '000 t.

<sup>a)</sup> Assuming a utilization in 2012 of the WBSS part of the TAC/bycatch ceiling of 100% (F-fleet), 58% (C-fleet), and 41% (D-fleet).

<sup>1)</sup> The ratio of herring catches between different fleets and areas in 2013 is based on a fifty-fifty allocation of fishing opportunities between Division IIIa and Subdivisions 22–24, and the ratio between the different herring stocks in Division IIIa is based on the 2009–2011 catch proportions. The later proportions cannot be predicted and may therefore deviate significantly from the assumed ratio.

<sup>2)</sup> As for the intermediate year, 2012, a catch of 308 t of WBSS herring taken in the transfer area in Division IV East is assumed. The amount of this catch is highly variable since it is dependent on the geographical distribution of the stock components in Division IVa East.

<sup>3)</sup> For spring-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries between 1st January and spawning time.

<sup>4)</sup> SSB (2014) relative to SSB (2013).

<sup>5)</sup> Catches (2013) relative to TAC 2012 (Subdivisions 22–24 + Division IIIa + Division IIIa bycatch ceiling = 20.9 kt + 45 kt + 6.7 kt = 72.6 kt).

To derive the total herring catch for Division IIIa (right hand side of the table), predicted catches of NSAS (as advised in Section 6.4.16) have to be added to the advised maximum catches of WBSS in the area. The total catch by fleet is only compatible with the advice for WBSS if the values given for NSAS are treated as maximum catches. Thus the resulting catch options were also used as constraints for catch options for the NSAS herring (Section 6.4.16). Note that the right hand side of the table is for illustrative purposes only and is not part of ICES advice; the ratio of TACs between areas is not fixed and there are several options for TACs compatible with the removal of WBSS advised by ICES.

Explanation on fleet coding:

Area	Fleet	Description
North Sea	A	Directed herring fisheries with purse-seiners and trawlers. Bycatches in industrial fisheries by Norway are included.
	B	Bycatches of herring taken under EU regulations.
Division IIIa	C	Directed herring fisheries with purse-seiners and trawlers.
	D	Bycatches of herring caught in the small-mesh fisheries.
Subdivisions 22–24	F	All herring fisheries in Subdivisions 22–24.

### ***MSY approach***

Following the ICES MSY framework implies a fishing mortality  $F_{MSY}$  of 0.25. There is no need to reduce  $F$  as  $SSB_{2013}$  is estimated to be above  $MSY B_{trigger}$ . This results in catches of no more than 51 900 t in 2013 from the whole distribution area. This is expected to lead to an  $SSB$  above 180 000 t in 2014.

### **Additional considerations**

Recruitment of WBSS herring has been historically low between 2004 and 2009, but the two latest year classes 2010 and 2011 are estimated to be more abundant though still below average. Management measures have reduced  $F$  in 2011, and  $F$  is expected to remain below the target  $F_{MSY}$  with the agreed 2012 quota provided that a similar proportion of the Division IIIa TAC is taken in Subarea IV in 2012, as in 2011.

The stock is above the  $MSY B_{trigger}$  in 2012, and with the present management measures, the  $SSB$  is expected to remain above the  $MSY B_{trigger}$  in 2013.

ICES notes that the present flexibility in taking a proportion of the Division IIIa TAC in the North Sea introduces significant uncertainties in the forecasts. The advice forecast is based on the assumption that the 2013 TAC for Division IIIa will be caught in the area without transfer options. To protect mature fish, catches of WBSS herring in the North Sea should not be allowed to increase.

### ***Management considerations***

In 2011, management regulations allowed 50% of the TAC for Division IIIa to be caught in the North Sea. The forecast for 2013 for both WBSS and NSAS herring is based on the assumption that in 2012 the same proportion (42%) of the TAC is actually transferred to the North Sea. The actual quantity may be more or less, and this adds to the uncertainty of the assessment. The forecasts for 2013 assumed that in 2013 no transfer will be allowed. Other calculations could be made if such management measures are considered.

In 2009, national regulation and control initiatives stopped misreporting of catches taken in the North Sea into Division IIIa, which before 2009 amounted to more than 30% of the reported Division IIIa catches. This resulted in a continued increase in fishing mortality in 2009 and a decrease in  $SSB$ . However, the reduction of the TAC in 2010 resulted in an important decline in landings and fishing mortality.  $SSB$  is changing to an increasing trend due to the improved 2010 year class now entering the spawning stock.

The quota for the C-fleet and the bycatch quota for the D-fleet (see above) are set for the NSAS and the WBSS stocks together. ICES recommends that the TAC setting between Subarea IV and Division IIIa be based on the status of the weaker stock, which is now the WBSS.

### ***Information from the fishing industry***

Area misreporting from the North Sea to the Skagerrak is no longer an issue for the Danish and the Swedish parts of the C-fleet.

### ***Comparison with previous assessment and advice***

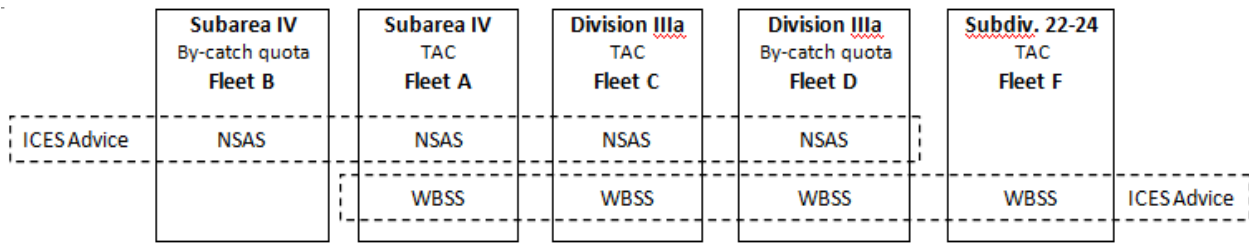
Compared to the 2011 advice the update assessment this year shows a decline of 12% in the estimated 2010 fishing mortality and a 14% increase for the  $SSB$  in 2010. There is, however, a 22% decline in the 2010 recruitment, highlighting the uncertainty in the estimates of this parameter.

Last year's advice was based on the target  $F_{MSY} = 0.25$  and an estimate of the  $SSB$  in 2012 being above the candidate  $MSY B_{trigger}$  of 110 000 t. This year's advice continues to be based on the target  $F_{MSY} = 0.25$ , and the estimate of  $SSB$  in 2013 is above the  $MSY B_{trigger}$  of 110 000 t.

### **Assessment and management area**

Catch options for the whole stock of WBSS are partitioned into catches by area. In the mixing area in Division IIIa, catches of WBSS herring in Division IIIa also imply catches of North Sea autumn-spawning (NSAS) herring which constitute part of the total catch in that area.

ICES advises on catch options by fleet for the entire distribution of the two herring stocks separately. However, the fisheries are managed by areas covering the geographical distribution of the stocks (see the following text diagram).



The calculation of the intermediate year (2012) catch and the catch options for 2013 are based on:

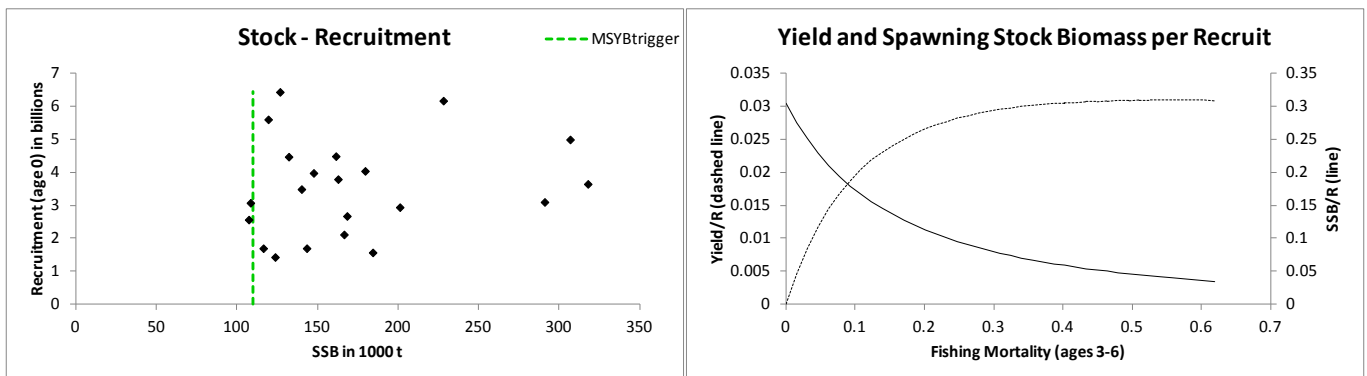
1. the 2009–2011 patterns of the proportion of the two stocks in catches of the different fleets; and
2. a fifty-fifty allocation of fishing opportunities between Division IIIa and Subdivisions 22–24 plus the 2011 catch of WBSS taken by the A-fleet in Division IVa East.

For the intermediate year (2012) ICES assumes a transfer of 42% of the Division IIIa quotas to be taken in the North Sea. Short-term predictions are based on an expected catch in 2012 of 41 000 t of the western Baltic spring-spawning stock, including a catch of 300 t of WBSS in Division IVa East. To make catch options by fleet for 2013 it is assumed that each fleet will take its full share of the total TAC and that TACs are set proportional to the utilised part of the TACs for 2012. The average proportions of WBSS in the 2009–2011 catches were 71% in the C-fleet, 40% in the D-fleet, and 100% in the F-fleet.

Additionally, it is assumed that a catch of 300 t of WBSS will be caught by the A-fleet in Division IVa East in 2012 and 2013. These catches of WBSS herring are taken in the North Sea under the North Sea TAC in the transfer area in Division IVa East during the Quarter 2 and Quarter 3 summer feeding period. It is likely that the 2013 TAC for NSAS will increase; therefore a larger proportion of WBSS may be taken outside the management areas. To protect mature adults, catches of WBSS herring in the North Sea should not be allowed to increase.

## Sources

- ICES. 2007. Report of the Herring Assessment Working Group for the Area South of 62°N, 13–22 March 2007, ICES Headquarters. ICES CM 2007/ACFM:11.
- ICES. 2008. Report of the Workshop on Herring Management Plans (WKHMP) 4–8 February, ICES Headquarters. ICES 2008/ACOM:27.
- ICES. 2010. Report of the Herring Assessment Working Group for the Area South of 62°N, 15–23 March 2010, ICES Headquarters. ICES CM 2012/ACOM:06.
- ICES. 2011. Report of the Herring Assessment Working Group for the Area South of 62°N, 16–24 March 2011, ICES Headquarters. ICES CM 2011/ACOM:06.
- ICES. 2012. Report of the Herring Assessment Working Group for the Area South of 62°N, 13–22 March 2012. ICES CM 2012/ACOM:06.



**Figure 6.4.15.3** Herring in Division IIIa and Subdivisions 22–24 (Western Baltic spring spawners). Stock recruitment and Yield- and SSB-per-Recruit plots.

**Table 6.4.15.1** Herring in Division IIIa and Subdivisions 22–24 (western Baltic spring spawners). ICES advice, management, and catches.

Year	ICES Advice	Pred. catch corresp. to advice	Agreed TAC IIIa <sup>2</sup>	ICES catch of Stock			
				22–24	IIIa	IV	Total
1987	Reduction in F	224	218	102	59	14	175
1988	No increase in F	196	218	99	129	23	251
1989	TAC	174	218	95	71	20	186
1990	TAC	131	185	78	118	8	204
1991	TAC	180	155	70	112	10	192
1992	TAC	180	174	85	101	9	195
1993	Increased yield from reduction in F; reduction in juvenile catches	188	210	81	95	10	186
1994	TAC	130–180	191	66	92	14	172
1995	If required, TAC not exceeding recent catches	168–192	183	74	80	10	164
1996	If required, TAC not exceeding recent catches	164–171	163	58	71	1	130
1997	IIIa: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	66–85 <sup>1</sup>	100	68	55	1	124
1998	Should be managed in accordance with NSAS	-	97	51	53	8	112
1999	IIIa: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	-	99	50	43	5	98
2000	IIIa: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	~60 for Subdivisions 22–24	101	54	57	7	118
2001	IIIa: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	~50 for Subdivisions 22–24	101	64	42	6	112
2002	IIIa: managed together with autumn spawners 22–24: if required, TAC not exceeding recent catches	~50 for Subdivisions 22–24	101	53	47	7	107
2003	Reduce F	<80	101	40	36	2	78
2004	Separate management regime. Reduce F	<92	91	42	24	7	77
2005	Separate management regime. <i>Status quo</i> F	95	120	44	38	7	89
2006	Separate management regime. <i>Status quo</i> F	95	102 <sup>3</sup> /47.5*	42	36	11	89
2007	Separate management regime. <i>Status quo</i> F	99	69 <sup>3</sup> /49.5*	40	28	1	68
2008	Separate management regime. Reduce F 20% towards F <sub>0.1</sub>	71	51.7 <sup>3</sup> /45*	43	25	0	68
2009	Separate management regime. Reduce F to F = 0.25	< 32.8	37.7 <sup>3</sup> /27.2*	31	32	4	67
2010	Separate management regime. Reduce F to F = 0.25	< 39.8	33.9 <sup>3</sup> /22.7*	18	24	1	42
2011	MSY transition in 1–5 years and no increase in catches of WBSS herring in the North Sea	26.5 – 53.6	30 <sup>3</sup> /15.8*	16	12	0.3	28
2012	F <sub>MSY</sub> = 0.25 and no increase in catches of WBSS herring in the North Sea	<42.7	45 <sup>3</sup> /20.9*				
2013	F <sub>MSY</sub> = 0.25 and no <i>optional</i> transfer of catch options to the North Sea	<51.9					

Weights in '000 t.

<sup>1</sup> Catch in Subdivisions 22–24.

<sup>2</sup> Including mixed clupeoid TAC and bycatch ceiling in small-mesh fishery.

<sup>3</sup> Human consumption in Division IIIa, not including industrial bycatch or mixed clupeoids, but including North Sea autumn-spawner catch in fleet C, with an optional 50% transfer from Division IIIa to Subarea IV in 2011 and 2012.

\* Separate TAC for Subdivisions 22–24.

**Table 6.4.15.2** Herring in Subdivisions 22–24 and Division IIIa (spring and autumn spawners). ICES landings (thousand tonnes) by area and country.

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 <sup>2</sup>	1999 <sup>2</sup>
<b>Skagerrak</b>											
Denmark	47.4	62.3	58.7	64.7	87.8	44.9	43.7	28.7	14.3	10.3	10.1
Faroe Islands											
Germany											
Lithuania											
Norway	1.6	5.6	8.1	13.9	24.2	17.7	16.7	9.4	8.8	8.0	7.4
Sweden	47.9	56.5	54.7	88.0	56.4	66.4	48.5	32.7	32.9	46.9	36.4
<b>Total</b>	<b>96.9</b>	<b>124.4</b>	<b>121.5</b>	<b>166.6</b>	<b>168.4</b>	<b>129.0</b>	<b>108.9</b>	<b>70.8</b>	<b>56.0</b>	<b>65.2</b>	<b>53.9</b>
<b>Kattegat</b>											
Denmark	57.1	32.2	29.7	33.5	28.7	23.6	16.9	17.2	8.8	23.7	17.9
Sweden	37.9	45.2	36.7	26.4	16.7	15.4	30.8	27.0	18.0	29.9	14.6
<b>Total</b>	<b>95.0</b>	<b>77.4</b>	<b>66.4</b>	<b>59.9</b>	<b>45.4</b>	<b>39.0</b>	<b>47.7</b>	<b>44.2</b>	<b>26.8</b>	<b>53.6</b>	<b>32.5</b>
<b>Sub. Div. 22+24</b>											
Denmark	21.7	13.6	25.2	26.9	38.0	39.5	36.8	34.4	30.5	30.1	32.5
Germany	56.4	45.5	15.8	15.6	11.1	11.4	13.4	7.3	12.8	9.0	9.8
Poland	8.5	9.7	5.6	15.5	11.8	6.3	7.3	6.0	6.9	6.5	5.3
Sweden	6.3	8.1	19.3	22.3	16.2	7.4	15.8	9.0	14.5	4.3	2.6
<b>Total</b>	<b>92.9</b>	<b>76.9</b>	<b>65.9</b>	<b>80.3</b>	<b>77.1</b>	<b>64.6</b>	<b>73.3</b>	<b>56.7</b>	<b>64.7</b>	<b>49.9</b>	<b>50.2</b>
<b>Sub. Div. 23</b>											
Denmark	1.5	1.1	1.7	2.9	3.3	1.5	0.9	0.7	2.2	0.4	0.5
Sweden	0.1	0.1	2.3	1.7	0.7	0.3	0.2	0.3	0.1	0.3	0.1
<b>Total</b>	<b>1.6</b>	<b>1.2</b>	<b>4.0</b>	<b>4.6</b>	<b>4.0</b>	<b>1.8</b>	<b>1.1</b>	<b>1.0</b>	<b>2.3</b>	<b>0.7</b>	<b>0.6</b>
<b>Grand Total</b>	<b>286.4</b>	<b>279.9</b>	<b>257.8</b>	<b>311.4</b>	<b>294.9</b>	<b>234.4</b>	<b>231.0</b>	<b>172.7</b>	<b>149.8</b>	<b>169.4</b>	<b>137.2</b>

Year	2000	2001 <sup>5</sup>	2002 <sup>4</sup>	2003	2004	2005	2006 <sup>1,3</sup>	2007	2008	2009	2010	2011 <sup>1</sup>
<b>Skagerrak</b>												
Denmark	16.0	16.2	26.0	15.5	11.8	14.8	5.2	3.6	3.9	12.7	5.3	3.6
Faroe Islands						0.4			0.0	0.6	0.4	
Germany				0.7	0.5	0.8	0.6	0.5	1.6	0.3	0.1	0.1
Lithuania											0.4	
Norway	9.7							3.5	4.0	3.3	3.3	0.1
Sweden	45.8	30.8	26.4	25.8	21.8	32.5	26.0	19.4	16.5	12.9	17.4	9.5
<b>Total</b>	<b>71.5</b>	<b>47.0</b>	<b>52.3</b>	<b>42.0</b>	<b>34.1</b>	<b>48.5</b>	<b>31.8</b>	<b>26.9</b>	<b>26.0</b>	<b>29.7</b>	<b>27.0</b>	<b>13.2</b>
<b>Kattegat</b>												
Denmark	18.9	18.8	18.6	16.0	7.6	11.1	8.6	9.2	7.0	4.9	7.6	5.2
Sweden	17.3	16.2	7.2	10.2	9.6	10.0	10.8	11.2	5.2	3.6	2.7	1.7
Germany										0.6	0.0	
<b>Total</b>	<b>36.2</b>	<b>35.0</b>	<b>25.9</b>	<b>26.2</b>	<b>17.2</b>	<b>21.1</b>	<b>19.4</b>	<b>20.3</b>	<b>12.2</b>	<b>9.1</b>	<b>10.3</b>	<b>6.8</b>
<b>Sub. Div. 22+24</b>												
Denmark	32.6	28.3	13.1	6.1	7.3	5.3	1.4	2.8	3.1	2.1	0.8	3.1
Germany	9.3	11.4	22.4	18.8	18.5	21.0	22.9	24.6	<b>22.8</b>	16.0	12.2	8.2
Poland	6.6	9.3		4.4	5.5	6.3	5.5	2.9	5.5	5.2	1.8	1.8
Sweden	4.8	13.9	10.7	9.4	9.9	9.2	9.6	7.2	7.0	4.1	2.0	2.2
<b>Total</b>	<b>53.3</b>	<b>62.9</b>	<b>46.2</b>	<b>38.7</b>	<b>41.2</b>	<b>41.8</b>	<b>39.4</b>	<b>37.6</b>	<b>38.5</b>	<b>27.4</b>	<b>16.8</b>	<b>15.3</b>
<b>Sub. Div. 23</b>												
Denmark	0.9	0.6	4.6	2.3	0.1	1.8	1.8	2.9	5.3	2.8	0.1 <sup>6</sup>	0.03
Sweden	0.1	0.2		0.2	0.3	0.4	0.7		0.3	0.8	0.9	0.5
<b>Total</b>	<b>1.0</b>	<b>0.8</b>	<b>4.6</b>	<b>2.6</b>	<b>0.4</b>	<b>2.2</b>	<b>2.5</b>	<b>2.9</b>	<b>5.7</b>	<b>3.6</b>	<b>1.0</b>	<b>0.6</b>
<b>Grand Total</b>	<b>162.0</b>	<b>145.7</b>	<b>128.9</b>	<b>109.5</b>	<b>92.8</b>	<b>113.6</b>	<b>93.0</b>	<b>87.7</b>	<b>82.3</b>	<b>69.9</b>	<b>55.2</b>	<b>35.9</b>

<sup>1</sup> Preliminary data.

<sup>2</sup> Revised data for 1998 and 1999

**Bold**= German revised data for 2008 (in HAWG 2010)

<sup>3</sup> 2000 tonnes of Danish landings are missing, see text section 3.1.2 (HAWG 2007)

<sup>4</sup> The Danish national management regime for herring and sprat fishery in Subdivision 22 was changed in 2002

<sup>5</sup> The total landings in Skagerrak have been updated for 1995-2001 due to Norwegian misreportings into Skagerrak.

<sup>6</sup> Official reported catches: 3,103 tonnes, see text section 3.2.1 (HAWG 2011)



**Table 6.4.15.3** Herring in Subdivisions 22–24 and Division IIIa (spring spawners). Summary of the assessment.

Year	Recruitment Age 0 thousands	SSB tonnes	Landings tonnes	Mean F Ages 3–6
1991	4990766	306843	191573	0.3626
1992	3644301	317845	194411	0.4843
1993	3097516	290995	185010	0.5516
1994	6167290	228122	172438	0.7052
1995	4038064	179570	150831	0.5216
1996	4469355	132151	121266	0.7148
1997	3976489	147601	115588	0.5219
1998	5599813	119440	107032	0.5035
1999	6432009	126726	97240	0.3804
2000	3487574	140102	109914	0.4753
2001	4486001	161426	105803	0.4617
2002	2940297	201125	106191	0.4129
2003	3789452	162782	78309	0.3947
2004	2672576	168338	76815	0.3387
2005	2112904	166503	88406	0.3864
2006	1568541	184317	90549	0.4862
2007	1697020	143326	68997	0.4094
2008	1429294	123711	68484	0.4400
2009	1695931	116377	67262	0.4565
2010	3072854	108427	42214	0.2695
2011	2563268	107342	27772	0.2021
2012*	1817402	132290		
Average	3443124	171153	107910	0.4514

\* Recruitment is the geometric mean 2006–2010. SSB is predicted.