

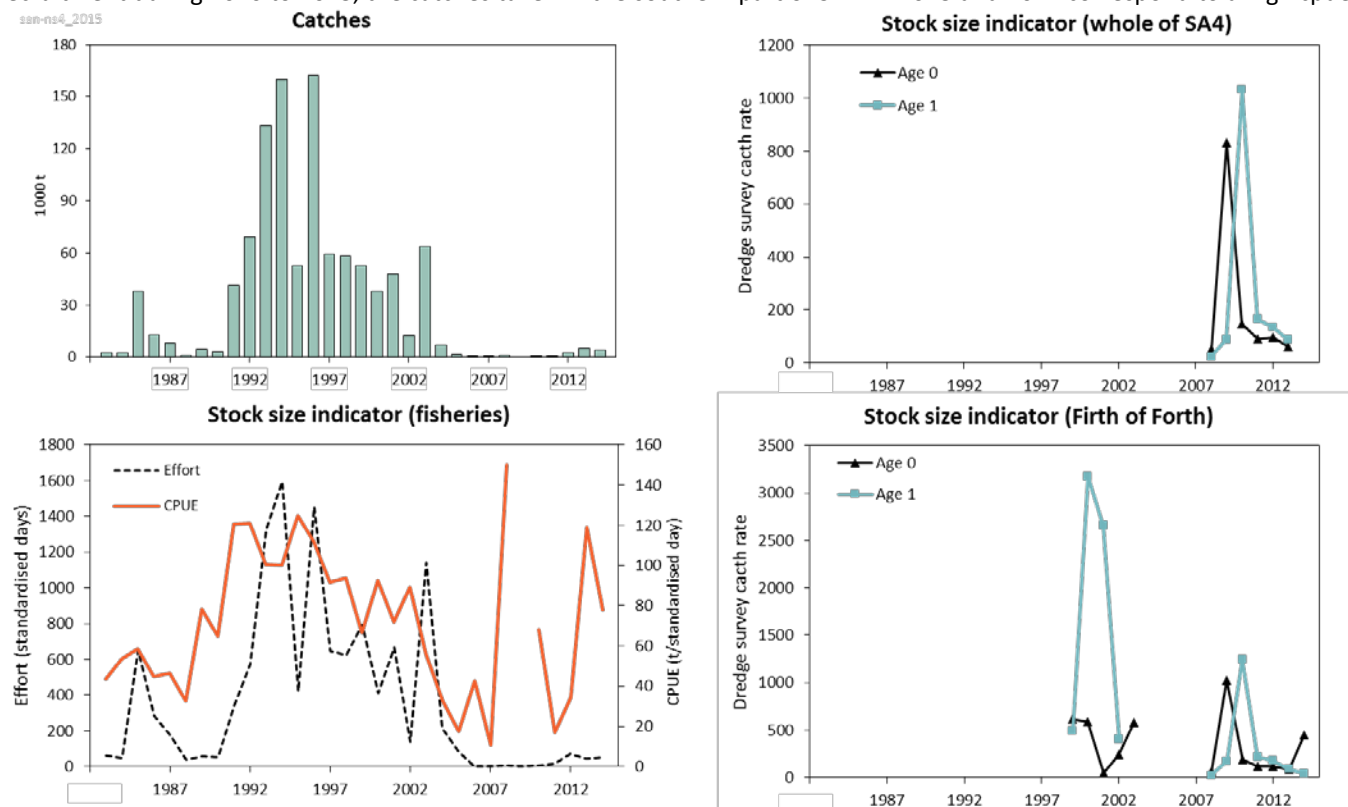
### 6.3.40 Sandeel (*Ammodytes* spp.) in Divisions IVa and IVb, SA 4 (North and Central North Sea)

#### ICES stock advice

ICES advises a monitoring TAC in 2015, with catches not exceeding 5000 t and with an associated sampling protocol in the fishery.

#### Stock development over time

Survey data indicate that the 2014 year class in sandeel area 4 (SA 4) is the strongest since 2009. Despite indications of low recruitment during 2010 to 2013, the catches taken in the southern part of SA 4 in 2013 and 2014 correspond to a high cpue.



**Figure 6.3.40.1** Sandeel in the North Sea (SA 4). Top left: Landings. Bottom left: Effort (days fishing per standard 200 GT vessel) and catch per unit effort (tonnes per standard fishing day). Right: Catch indices from the dredge survey (number per hour) in the entire SA 4 (top, not updated in 2014 due to bad weather) and in the Firth of Forth only (bottom).

#### Stock and exploitation status

**Table 6.3.40.1** Sandeel in the North Sea (SA 4). 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	?	?
Precautionary approach	$F_{pa}, F_{lim}$	?	?	?	$B_{pa}, B_{lim}$	?	?
Management plan	$F_{MGT}$	?	?	?	$SSB_{MGT}$	?	?
Qualitative evaluation		➔	➔	➔		➔	➔
				Very low			Stable

### Catch options

No analytical assessment or short-term forecast is available for this stock. The ICES framework for category 3 stocks was applied based on a combined abundance index for the ages 0 and 1 from the dredge survey of the Firth of Forth (ICES, 2012). This index is estimated to have increased by more than 20% between 2010–2013 (four-year average) and 2014. This implies an increase in catches of at most 20% in relation to the last three-year average catch, corresponding to catches of no more than 4825 tonnes in 2015. The exploitation on the stock is considered to be very low; therefore, no additional precautionary buffer was applied.

**Table 6.3.40.2** Sandeel in the North Sea (SA 4). For stocks in ICES categories 3–6, one catch option is possible. This is highlighted in bold.

Indicator (2014)		0.69
Indicator average (2010, 2011, 2012, 2013)		0.44
Indicator ratio		1.57
Average catch (2012, 2013, 2014)		4021 tonnes
Average catch × indicator ratio		6313 tonnes
Uncertainty cap applied	yes	<b>4825 tonnes</b>
Precautionary buffer applied	no	

A traditional age-based, analytical assessment is not available for sandeel in this area; however, with a continued commercial sampling, sufficient samples should be available to investigate an age-based assessment at the next benchmark. In order to present an analytical assessment in the future, data on biological characteristics of the catch composition and catch and effort data are required. A catch of around 5000 t, with an associated sampling protocol in the fishery, should provide sufficient samples. This is very close to the catch calculated from the trend in the survey index. ICES advises a monitoring TAC in 2015 with catches not exceeding 5000 t.

### Basis of the advice

**Table 6.3.40.3** Sandeel in the North Sea (SA 4). The basis of the advice.

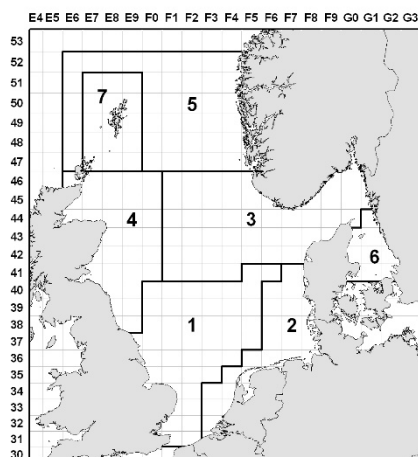
Advice basis	Monitoring TAC with a sampling protocol in the fishery.
Management plan	There is no management plan for sandeel in this area.

### Quality of the assessment

Prior to the establishment of the dedicated Scottish dredge survey in 2008, dredge sampling intensity was low in SA 4. The Scottish dredge survey generally covers the northwestern parts of SA 4. Hence, no dredge sampling is available for the eastern parts of SA 4. As commercial fishing effort has been very low in recent years, there is insufficient information in the commercial catch to be able to provide an analytical assessment similar to those for SAs 1–3. In 2014, bad weather meant that the survey was only conducted inside the Firth of Forth.

### Issues relevant for the advice

In 2012 and 2014, monitoring TACs of 5000 t were implemented for this stock, resulting in 21 and 18 samples, respectively, which is the highest number of samples since 2005, but below the target of 30 samples. ICES emphasizes the importance of obtaining sufficient sampling from the monitoring fishery.



**Figure 6.3.40.2** Sandeel in the North Sea (SA 4). Sandeel are largely sedentary after settlement and form a complex of local (sub-) stocks in the North Sea. To avoid local depletion, ICES advice for sandeel is provided separately for seven areas in Division IIIa and Subarea IV. Advice for sandeel in the North Sea (SA 4) specifically applies to sandeel in rectangles 38–40 E7–E9 and 41–46 E6–F0.

### Reference points

No reference points are defined for this stock.

### Basis of the assessment

**Table 6.3.40.4** Sandeel in the North Sea (SA 4). The basis of the assessment.

ICES stock data category	3.2.0 (ICES, 2015a).
Assessment type	Survey trends-based assessment (ICES, 2015b).
Input data	One survey index available in January (dredge survey). Total international catch and fishing effort.
Discards and bycatch	Discarding is considered to be negligible.
Indicators	None.
Other information	Last benchmark in 2010 ( <a href="#">ICES, 2010</a> ).
Working group	Herring Assessment Working Group ( <a href="#">HAWG</a> ).

### Information from stakeholders

Fishing industry representatives reported that the work to improve temporal and spatial coverage of the sampling scheme conducted in 2014 will be continued in 2015.

### History of advice, catch, and management

**Table 6.3.40.5** Sandeel in the North Sea (SA 4). History of ICES advice, the agreed TAC, and ICES estimates of catch. All weights are in thousand tonnes.

Year	ICES advice	Catch corresponding to advice	TAC	ICES catch SA 4	Total ICES catch (SAs 1–7)
2005 *	Exploitation to be kept below level of 2003. Adjustment to be made conditional on the abundance of the 2004 year class.	-	661 **	1.49	177
2006 *	The fishery should remain closed until information is available which assures that the stock can be rebuilt to $B_{pa}$ by 2007.	-	300 **	0.09	293
2007 *	The fishery should remain closed until information is available which assures that the stock can be rebuilt to $B_{pa}$ by 2008.	-	173 **	0.01	230
2008 *	The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to $B_{pa}$ by 2009.	-	375 **	1.20	348
2009 *	The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to $B_{pa}$ by 2010.	-	377 **	0	353
2010 *	The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to $B_{pa}$ by 2011.	-	377 **	0.10	414
2011	A TAC at 5 000–10 000 tonnes will impose a low risk of overfishing sandeel in this area.	5–10	10	0.27	438
2012	Catches for monitoring purposes should not exceed 5 000 t.	< 5	5	2.5	102
2013	Catch of 2012 reduced by 20% as a precautionary buffer.	< 2.041	4	5.2	278
2014	Catches for monitoring purposes should not exceed 5 000 t (with associated sampling protocol).	< 5	5	4.3 ***	262 ***
2015	Catches for monitoring purposes should not exceed 5 000 t (with associated sampling protocol).	< 5			

\* Advice for Subarea IV, excluding the Shetland area.

\*\* Set for EU waters of Divisions IIa and IIIa and Subarea IV.

\*\*\* Preliminary.

### History of catch and landings

**Table 6.3.40.6** Sandeel in the North Sea (SA 4). Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Landings	Discards
4.3 kt	100% industrial trawl fisheries	Negligible
	4.3 kt	

**Table 6.3.40.7** Sandeel in the North Sea (SA 4). History of total catch (tonnes) as estimated by ICES.

Year	Catch (tonnes)
1982	2611
1983	2796
1984	2570
1985	38123
1986	12706
1987	8179
1988	1335
1989	4384
1990	3314
1991	41372
1992	68905
1993	133136
1994	159789
1995	52759
1996	162338
1997	59353
1998	58460
1999	53959
2000	37748
2001	47828
2002	12213
2003	64002
2004	6915
2005	1486
2006	85
2007	11
2008	1201
2009	0
2010	273
2011	272
2012	2546
2013	5238
2014	4278

### Summary of the assessment

**Table 6.3.40.8** Sandeel in the North Sea (SA 4). Assessment summary. The assessment uses an abundance index from the Scottish December dredge survey in the Firth of Forth (with each age standardized to its long-term mean in the survey, and averaged over ages 0 and 1). Empty cells denote that no data were collected.

Year	Survey Age 0	Survey Age 1	Survey avg. of ages 0 & 1	ICES estimated catch (tonnes)
1999	1.84	0.57	1.21	53959
2000	1.76	3.66	2.71	37748
2001	0.14	3.07	1.61	47828
2002	0.73	0.47	0.60	12213
2003	1.74		1.74	64002
2008	0.20	0.03	0.12	1201
2009	3.06	0.20	1.63	0
2010	0.56	1.44	1.00	273
2011	0.36	0.25	0.31	272
2012	0.37	0.21	0.29	2546
2013	0.25	0.10	0.17	5238
2014	1.33	0.05	0.69	4278
Average 2010–2013			0.44	

### Sources and references

ICES. 2010. Report of the Benchmark Workshop on Sandeel (WKSAN), 6–10 September 2010, Copenhagen, Denmark. ICES CM 2010/ACOM:57. 201 pp.

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68. 42 pp.

ICES. 2015a. General context of ICES advice. *In* Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 1, Section 1.2.

ICES. 2015b. Sandeel in Divisions IIIa and IV. *In* Report of the Herring Assessment Working Group for the Area South of 62°N (HAWG), 10–19 March 2015, ICES HQ, Denmark. ICES CM 2015/ACOM:06.