

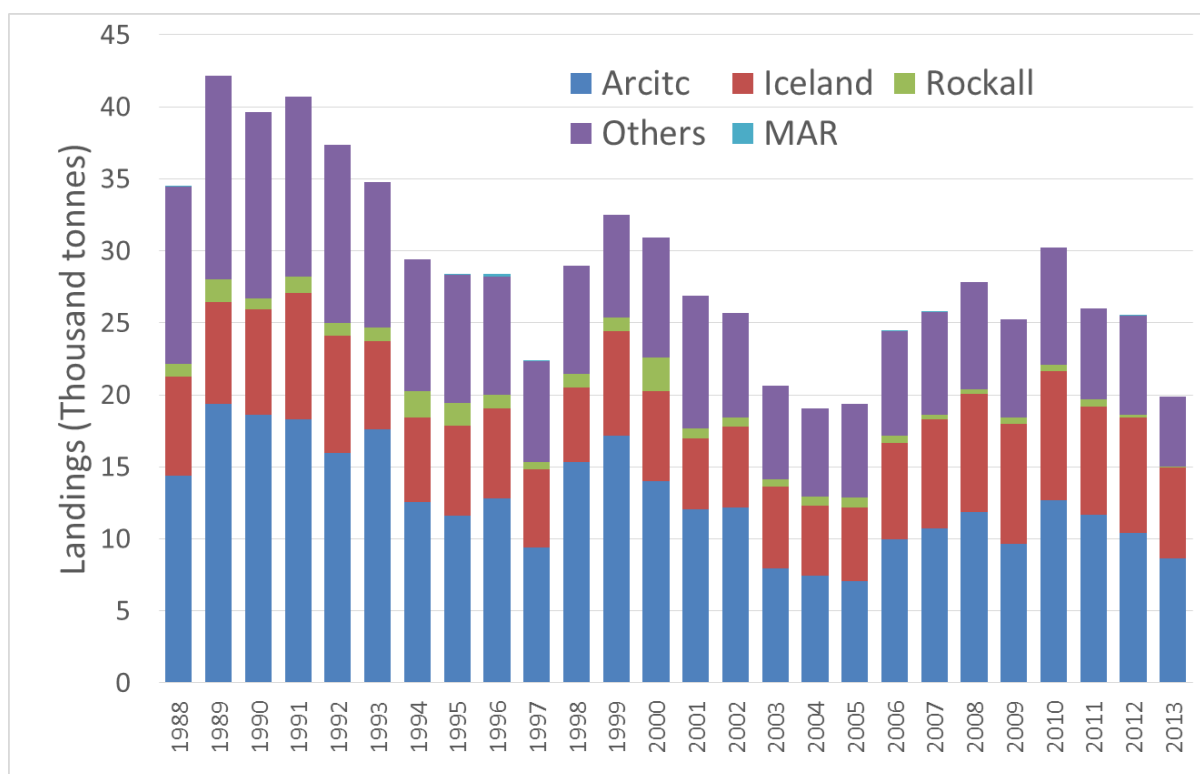
**ECOREGION**      **Widely distributed and migratory stocks**  
**STOCK**            **Tusk (*Brosme brosme*) in the Northeast Atlantic**

**Introduction**

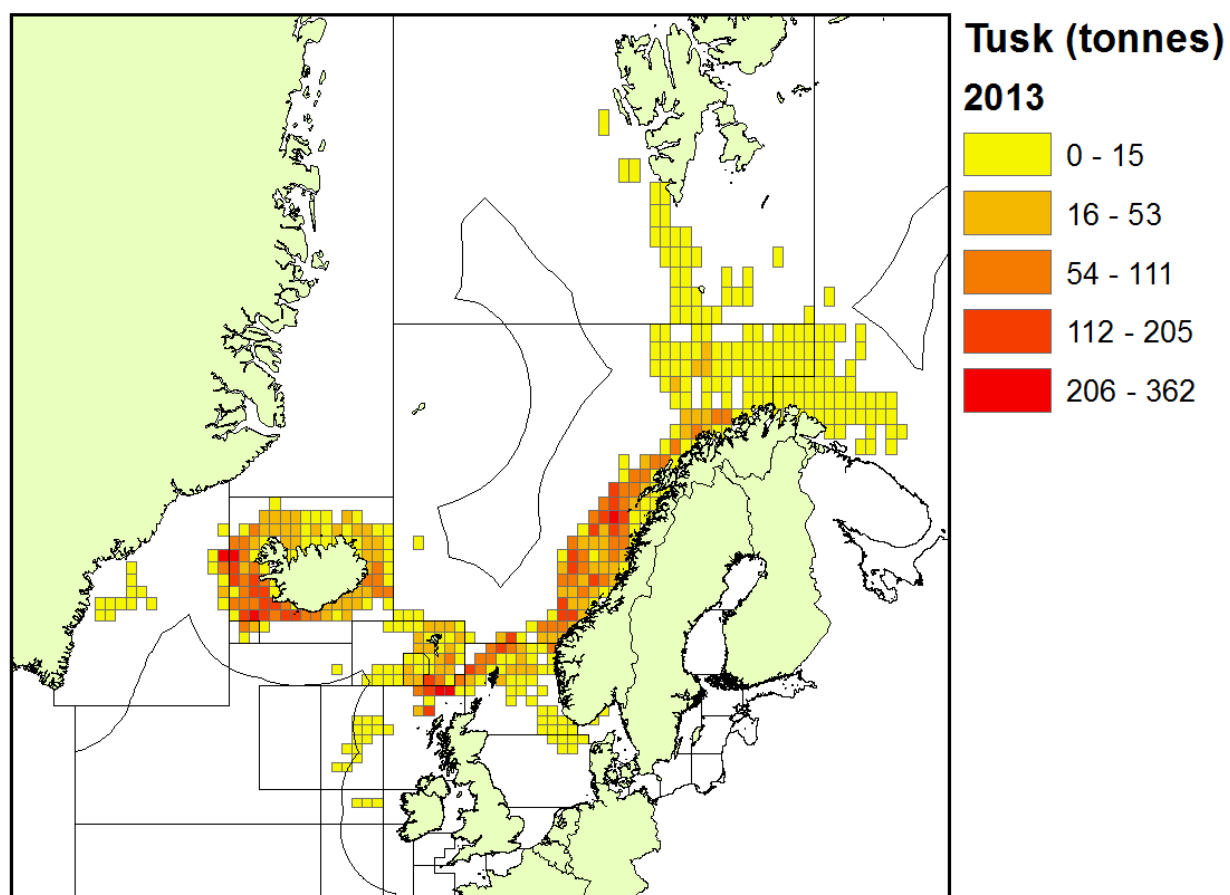
Based on the genetic information that has been analyzed in 2007, ICES presents advice for the following stock units of tusk:

- 9.3.29.1 Tusk (*Brosme brosme*) in Subareas I and II (Arctic)
- 9.3.29.2 Tusk (*Brosme brosme*) in Division Va and Subarea XIV (Iceland)
- 9.3.29.3 Tusk (*Brosme brosme*) in Subarea XII, excluding Division XIIb (Mid-Atlantic Ridge)
- 9.3.29.4 Tusk (*Brosme brosme*) in Division VIb (Rockall)
- 9.3.29.5 Tusk (*Brosme brosme*) in Divisions IIIa, Vb, VIa, and XIIb, and Subareas IV, VII, VIII, and IX (other areas).

This latter grouping is a combination of isolated fishing grounds and these areas are grouped due to their mutual lack of data.



**Figure 9.3.29.1** Tusk in the Northeast Atlantic. ICES landings by assessment unit.



**Figure 9.3.29.2** Tusk in the Northeast Atlantic. Data from Norway, Faroes, Iceland, France, UK (England and Wales), and Spain. Landings shown in this figure account for 99% of all reported landings in the ICES area.

#### Advice 2015

A summary of the advice can be found in Table 9.3.29.1.

**Table 9.3.29.1** Tusk in the Northeast Atlantic. Summary of the advice for different assessment units and landings.

Year	ICES advice Subareas I and II	ICES advice Division Va Subarea XIV	ICES advice Mid-Atlantic Ridge <sup>1</sup>	ICES advice Division VIb	ICES advice All other areas <sup>2</sup>	ICES landings All areas
2003	Reduce effort by 30% <sup>3</sup>	Reduce effort by 30% <sup>3</sup>	Reduce effort by 30% <sup>3</sup>	Reduce effort by 30% <sup>3</sup>	Reduce effort by 30% <sup>3</sup>	20.7
2004	Biennial <sup>3</sup>	Biennial <sup>3</sup>	Biennial <sup>3</sup>	Biennial <sup>3</sup>	Biennial <sup>3</sup>	19.1
2005	Effort should be reduced by 30% of 1998 effort <sup>3</sup>	Effort should be reduced by 30% of 1998 effort <sup>3</sup>	Effort should be reduced by 30% of 1998 effort <sup>3</sup>	Effort should be reduced by 30% of 1998 effort <sup>3</sup>	Effort should be reduced by 30% of 1998 effort <sup>3</sup>	19.4
2006	Biennial <sup>3</sup>	Biennial <sup>3</sup>	Biennial <sup>3</sup>	Biennial <sup>3</sup>	Biennial <sup>3</sup>	24.5
2007	Reduce catches to 5000 t	Maintain catches at recent level (avg. 2001–2004) of about 5000 t	— <sup>4</sup>	— <sup>4</sup>	Limit catches to 5000 t <sup>5</sup>	25.8
2008	Biennial	Biennial	Biennial		Biennial	27.8
2009	Constrain catches to 5000t	Constrain catches to 5000 t (avg. 2001–2004)	Fishery not allow to expand	Constrain catches to 530 t (avg. 2003–2007)	Constrain catches to 5000 t	25.2
2010	Biennial	Biennial	Biennial	Biennial	Biennial	30.2
2011	Less than 9900 t and a reduction below recent levels (2005–2008) should be considered	Fishing at $F_{0.1}$	Fisheries should not be allowed to expand and measures should be considered to limit occasional high levels of bycatch	Reduce catches by at least the rate of decline of the cpue	Less than 6900 t, and a reduction from recent catch levels should be considered	25.9
2012	No new advice, same as 2011					25.48
2013	20% reduction in catches (last 3 years' average) (9040t)	Fishing at $F_{MSY}$ (6700t)	Fisheries should not be allowed to expand and measures should be considered to limit occasional high levels of bycatch	20% reduction in catches (350 t)	No more than a 20% increase in catches (8500 t)	19.85
2014	No new advice, same as 2013					
2015	No new advice, same as 2014	3950 t	No new advice, same as 2013	350 t	No new advice, same as 2013	

Landings in thousand tonnes.

<sup>1</sup>Divisions Xb and XIc and Subdivisions Va<sub>1</sub>, XIIa<sub>1</sub>, and XIb<sub>1</sub>.<sup>2</sup>Divisions IIIa, Vb, VIa, and XIIb and Subareas IV, VII, VIII, and IX.<sup>3</sup>Advice for tusk in the Northeast Atlantic, not split by assessment units.<sup>4</sup>Advice together with Divisions IIIa, IVa, and Vb and Subareas VI, VII, VIII, IX, XII, and XIV (see other areas).<sup>5</sup>Advice for Divisions IIIa, IVa, and Vb and Subareas VI, VII, VIII, IX, XII, and XIV.

**Table 9.3.29.2** Landings of tusk (kt) by management units.

Year	Arctic	Iceland	Rockall	Others	MAR	TOTAL
1988	14.40	6.88	0.86	12.30	0.001	34.441
1989	19.35	7.06	1.59	14.13		42.130
1990	18.63	7.30	0.77	12.95		39.650
1991	18.31	8.80	1.11	12.50		40.720
1992	15.97	8.13	0.87	12.37		37.340
1993	17.59	6.12	1.00	10.05		34.760
1994	12.57	5.84	1.85	9.14		29.400
1995	11.62	6.26	1.56	8.90	0.018	28.358
1996	12.80	6.26	0.94	8.23	0.158	28.388
1997	9.43	5.41	0.48	7.02	0.03	22.370
1998	15.35	5.18	0.92	7.51		28.960
1999	17.18	7.23	0.95	7.16		32.520
2000	14.01	6.27	2.34	8.30		30.920
2001	12.06	4.90	0.68	9.25		26.890
2002	12.19	5.60	0.62	7.28		25.690
2003	7.94	5.66	0.56	6.50		20.660
2004	7.43	4.86	0.63	6.13		19.050
2005	7.05	5.10	0.69	6.55		19.390
2006	9.99	6.67	0.49	7.25	0.064	24.464
2007	10.74	7.58	0.30	7.12	0.019	25.759
2008	11.88	8.22	0.29	7.47		27.860
2009	9.66	8.30	0.45	6.85		25.260
2010	12.66	8.99	0.42	8.14		30.210
2011	11.65	7.57	0.45	6.37		26.040
2012	10.39	8.01	0.23	6.85	0.001	25.481
2013	8.65	6.28	0.06	4.86		19.850

## Biology

The new perception of the stock structure is based on considerations of new genetic information in 2009 (Knutsen *et al.*, 2009). Studies using recently developed microsatellite primers detected highly significant genetic differentiation in tusk within its North Atlantic range. In particular, tusk around Rockall, the Mid-Atlantic Ridge, and off Canada, most likely represent different biological populations that clearly warrant separate management considerations. For the remainder of the North Atlantic this study uncovered limited genetic differentiation and no firm conclusion can be reached at present regarding the number of populations and assessment units. Samples from Storegga and Tromsøflaket (ICES Subarea II) are similar and may represent a single population in this area, and likewise for Greenland and Iceland. Tusk from around Faroe Islands differ significantly both from those from Iceland and Tromsøflaket, but the differences are small and it is at present unclear how these differences should be interpreted in terms of management implications. The geographical coverage of this study is insufficient to exclude the possibility of additional genetically differentiated populations of tusk. More samples are required from around Iceland, Faroe Islands, Hatton Bank, and Western Scotland to disentangle potential structure within and among these areas.

Before 2008, ICES advised for three management units proposed on the basis of apparent isolation of fishing grounds: Subareas I and II (Arctic), Division Va (Iceland), and Divisions IIIa, IVa, and Vb and Subareas VI, VII, VIII, IX, XII, and XIV (other areas).

## Sources

- ICES. 2012. Report of the Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP), 29 March–5 April 2012, ICES Headquarters, Copenhagen. ICES CM 2012/ACFM:17.
- Knutsen, H., Jorde, P. E., Sannaes, H., *et al.* 2009. Bathymetric barriers promoting genetic structure in the deepwater demersal fish tusk (*Brosme brosme*). *Molecular Ecology*, 18(15): 3151–3162. Doi: 10.1111/j.1365-294X.2009.04253.x.