

9.3.47 Tusk (*Brosme brosme*) in Subarea 14 and Division 5.a (East Greenland, Iceland grounds)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2017 should be no more than 3780 tonnes. All catches are assumed to be landed. Biological information from catches in Subarea 14 should be collected and made available.

Stock development over time

Recruitment peaked in 2004 to 2006, declined to a historically low level in 2013, and has increased since. Fishing mortality has declined in recent years but is above the F_{MSY} estimate. SSB has been increasing in recent years.

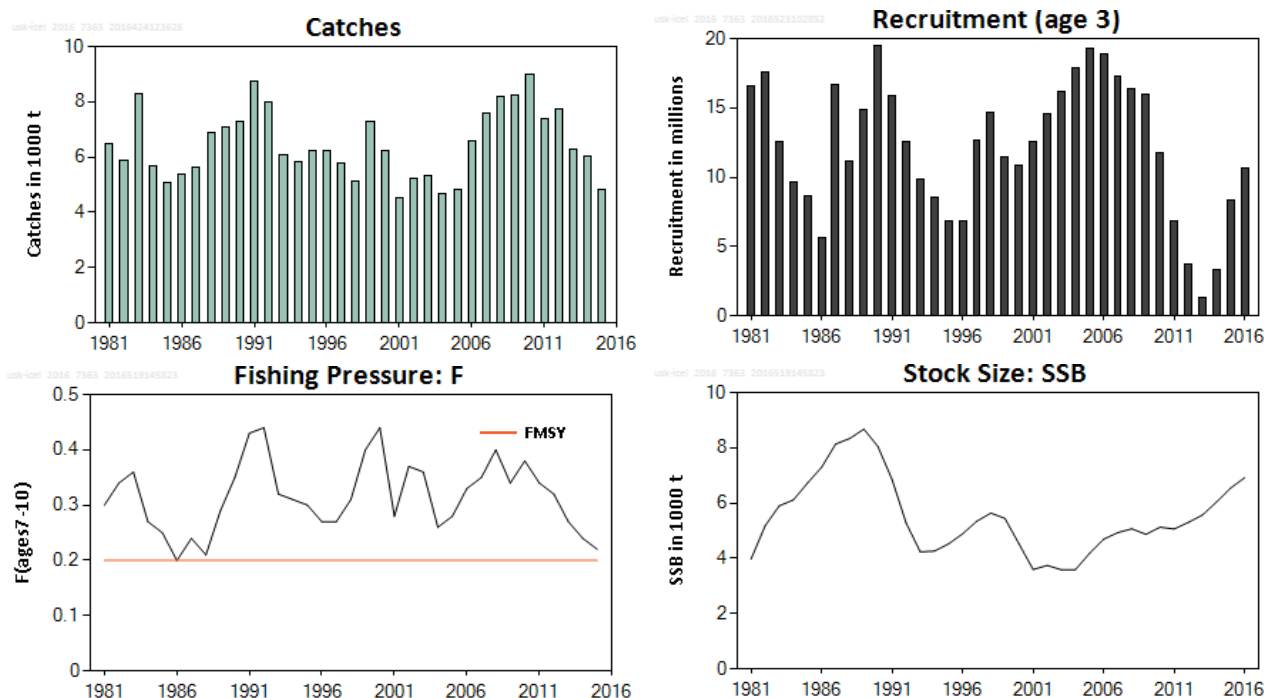


Figure 9.3.47.1 Tusk in Subarea 14 and Division 5.a. Summary of the stock assessment (weights in thousand tonnes and recruitment in millions).

Stock and exploitation status

Table 9.3.47.1 Tusk in Subarea 14 and Division 5.a. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size		
		2013	2014	2015	2014	2015	2016
Maximum sustainable yield	F_{MSY}	✗	✗	✗ Above	MSY	?	?
Precautionary approach	F_{pa} , F_{lim}	?	?	?	$B_{trigger}$?	?
Management plan	F_{MGT}	-	-	- Not applicable	B_{pa} , B_{lim}	?	?
					SSB_{MGT}	-	-
							?
							Undefined
							Undefined
							Not applicable

Catch options

Table 9.3.47.2 Tusk in Subarea 14 and Division 5.a. The basis for the catch options (in thousand tonnes).

Variable	Value	Source	Notes
F ages 7–10 (2016)	0.18	ICES (2016a)	TAC constraint (2015/2016 for the fishing year)
SSB (2017)	7.412	ICES (2016a)	
R _{age3} (2017)	7.402	ICES (2016a)	Mean of 2014–2016
Total catch (2016)	3.580	ICES (2016a)	Catch constraint, best estimate of catches

Table 9.3.47.3 Tusk in Subarea 14 and Division 5.a5.a. The catch options. Weights in thousand tonnes.

Rationale	Catches (2017)	Basis	F (2017)	SSB (2018)	% SSB change *	% TAC change **
ICES MSY framework	3.780	F _{MSY}	0.20	7.370	–1%	10%
Zero catch	0	Zero catch	0	10 888	47%	–100%

* SSB in 2018 relative to SSB in 2017.

** Catches in 2017 relative to TAC in 2016.

Basis of the advice

Table 9.3.47.4 Tusk in Subarea 14 and Division 5.a. The basis of the advice.

Advice basis	MSY approach.
Management plan	There is no management plan for tusk in this area.

Quality of the assessment

Landings in Subarea 14 have historically been less than 5% of the landings for the stock (less than 1% on average) and are not included in the analytical assessment. The exclusion was not considered to alter the overall perception of the state of the stock. In 2015, landings in Subarea 14 were reported to constitute 898 tonnes (15% of the total). These landings were not included in the assessment. No biological sampling of these catches was available.

The assessments conducted since the benchmark in 2010 provide consistent estimates of SSB and fishing mortality.



Figure 9.3.47.2 Tusk in Subarea 14 and Division 5.a. Historical assessment results (final-year recruitment estimates included).

Issues relevant for the advice

With increased catches in Subarea 14, it is essential that the biological sampling of catches in this area be available so that this information can properly be included in the assessment.

Reference points

Table 9.3.47.5 Tusk in Subarea 14 and Division 5.a. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY B_{trigger}	Not defined		
	F_{MSY}	0.2	Based on stochastic simulations.	ICES (2015)
Precautionary approach	B_{lim}	Not defined		
	B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB_{MGT}	Not defined		
	F_{MGT}	Not defined		

Basis of the assessment

Table 9.3.47.6 Tusk in Subarea 14 and Division 5.a. The basis of the assessment.

ICES stock data category	1 (ICES, 2016b)
Assessment type	Analytical length-based assessment (Gadget model) that uses catches in the model and in the forecast (ICES, 2016a).
Input data	March Icelandic groundfish survey and landings in Division 5.a.
Discards and bycatch	Discarding is considered negligible.
Indicators	None
Other information	Last benchmark in 2010 (ICES, 2010).
Working group	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)

Information from stakeholders

There is no available information.

History of advice, catch, and management

Table 9.3.47.7 Tusk in Subarea 14 and Division 5.a. History of ICES advice, the agreed TAC, and ICES estimates of catches. Weights in thousand tonnes.

Year*	ICES advice*	Predicted catch corresp. to advice**	ICES catches**	TAC Icelandic Division 5.a*	ICES catches Division 5.a*
2004/05	^		4.9	3.5	4.9
2005/06	^		5.1	3.5	5.9
2006/07	^		6.7	5.0	7.9
2007/08	^		7.6	5.5	7.6
2008/09	Constrain catches to 5 000 t	< 5.0	8.2	5.5	8.2
2009/10	Biennial	< 5.0	8.3	5.5	8.4
2010/11	Fishing at $F_{0.1}$	< 6.0	9.0	6.0	7.8
2011/12	Biennial	< 6.0	7.4	7.0	7.4
2012/13	Fishing at F_{MSY} (F_{MAX})	< 6.7	7.8	6.4	6.8
2013/14	No new advice, same as 2013	< 6.7	6.3	5.9	5.9
2014/15	Fishing at F_{MSY}	< 3.95	6.1	4.0	5.0
2015/16	Fishing at F_{MSY}	< 3.44	5.7	3.4	
2016/17	Fishing at F_{MSY}	≤ 3.78			

* National fishing year ending 31 August. The EU sets a small TAC (21 tonnes in 2016) exclusively for bycatches and for subareas 1, 2, and 14 combined.

** Calendar year (first year in fishing year).

^ Prior to 2008/2009 the advice for tusk was for the entire Northeast Atlantic, not split in several assessment units.

History of catch and landings

Table 9.3.47.8 Tusk in Subarea 14 and Division 5.a. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch (2015)	Commercial landings		Commercial discards
5.7 thousand tonnes	Longlines	Other	Negligible
	99%	1%	
	5.7 thousand tonnes		

Table 9.3.47.9 Tusk in Subarea 14 and Division 5.a. History of official catches (tonnes) by country in Division 5.a.

Year	Faroes	Denmark	Germany	Iceland	Norway	UK	Total
1973	3363	0	576	2366	911	391	7607
1974	3172	0	375	1857	893	230	6527
1975	2445	0	384	1673	975	254	5731
1976	2397	0	334	2935	1352	94	7112
1977	2818	0	212	3122	1796	0	7948
1978	2168	0	0	3352	812	0	6332
1979	2050	0	0	3558	845	0	6453
1980	2873	0	0	3089	928	0	6890
1981	2624	0	0	2827	1025	0	6476
1982	2410	0	0	2804	666	0	5880
1983	4046	0	0	3469	772	0	8287
1984	2008	0	0	3430	254	0	5692
1985	1885	0	0	3068	111	0	5064
1986	2811	0	0	2549	21	0	5381
1987	2638	0	0	2984	19	0	5641
1988	3757	0	0	3078	20	0	6855
1989	3908	0	0	3131	10	0	7049
1990	2475	0	0	4813	0	0	7288
1991	2286	0	0	6439	0	0	8725
1992	1567	0	0	6437	0	0	8004
1993	1329	0	0	4746	0	0	6075
1994	1212	0	0	4612	0	0	5824
1995	979	0	1	5245	0	0	6225
1996	872	0	1	5226	3	0	6102
1997	575	0	0	4819	0	0	5394
1998	1052	0	1	4118	0	0	5171
1999	1035	0	2	5794	391	2	7224
2000	1154	0	0	4714	374	2	6244
2001	1125	0	1	3392	285	5	4808
2002	1269	0	0	3840	372	2	5483
2003	1163	0	1	4028	373	2	5567
2004	1478	0	1	3126	214	2	4821
2005	1157	0	3	3539	303	41	5043
2006	1239	0	2	5054	299	2	6596
2007	1250	0	0	5984	300	1	7535
2008	959	0	0	6932	284	0	8175
2009	997	0	0	6955	300	0	8252
2010	1794	0	0	6919	263	0	8976
2011	1347	0	0	5845	198	0	7390
2012	1203	0	0	6341	217	0	7761
2013	1092	0.12	0	4973	192	0	6257
2014	728	0	0	4995	306	0	6029
2015*	625	0	0	4000	198	0	4823

* Preliminary.

Table 9.3.47.10 Tusk in Subarea 14 and Division 5.a. History of official catches (tonnes) by country in Subarea 14.

Year	Faroes	Denmark	Greenland	Germany	Iceland	Norway	Russia*	Spain	UK	Total
1973	16	0	0	9	0	0	0	0	2	27
1974	259	0	0	2	15	0	0	0	1	277
1975	29	0	0	17	13	138	0	0	0	197
1976	0	0	0	5	89	47	0	0	1	142
1977	167	0	0	16	0	40	0	0	1	224
1978	0	0	0	47	0	38	0	0	0	85
1979	0	0	0	27	0	0	0	0	0	27
1980	0	0	0	13	0	0	0	0	0	13
1981	110	0	0	10	0	0	0	0	0	120
1982	0	0	0	10	0	0	0	0	0	10
1983	74	0	0	11	0	0	0	0	0	85
1984	0	0	0	5	0	58	0	0	0	63
1985	0	0	0	4	0	0	0	0	0	4
1986	33	0	0	2	0	0	0	0	0	35
1987	13	0	0	2	0	0	0	0	0	15
1988	19	0	0	2	0	0	0	0	0	21
1989	13	0	0	1	0	0	0	0	0	14
1990	0	0	0	2	0	7	0	0	0	9
1991	0	0	0	2	0	68	0	0	1	71
1992	0	0	0	0	3	120	0	0	0	123
1993	0	0	0	0	1	39	0	0	0	40
1994	0	0	0	0	0	16	0	0	0	16
1995	0	0	0	0	0	30	0	0	0	30
1996	0	0	0	0	0	157	0	0	0	157
1997	0	0	0	0	10	9	0	0	0	19
1998	0	0	0	0	0	12	0	0	0	12
1999	0	0	0	0	0	8	0	0	0	8
2000	0	0	0	0	11	11	0	3	0	25
2001	3	0	0	0	20	69	0	0	0	92
2002	4	0	0	0	86	30	0	0	0	120
2003	0	0	0	0	2	88	0	0	0	90
2004	0	0	0	0	0	40	0	0	0	40
2005	7	0	0	0	0	41	8	0	0	56
2006	3	0	0	0	0	19	51	0	0	73
2007	0	0	0	0	0	40	6	0	0	46
2008	0	0	33	0	0	7	0	0	0	40
2009	12	0	15	0	0	5	11	0	0	43
2010	7	0	0	0	0	5	0	0	0	12
2011	20	0	0	0	131	24	0	0	0	175
2012	33	0	0	0	174	46	0	0	0	253
2013	1.9	0.3	0	0	0	23.8	0	0	0	26
2014	2	0	0	0	0	26	0	0	0	28
2015**	670	0.1	166	0	0	0	0	0	0	898

* Russian catches were taken in Subdivision 14.b.1 (Mid-Atlantic Ridge).

** Preliminary.

Table 9.3.47.11 Tusk in Subarea 14 and Division 5.a Landings inside and outside the NEAFC Regulatory Area (RA) as estimated by ICES Commercial landings in tonnes.

Year	Inside the NEAFC RA	Outside the NEAFC RA	Landings
2014	0	6057	6057
2015	0	5721	5721

Summary of the assessment

Table 9.3.47.12 Tusk in Subarea 14 and Division 5.a. Assessment summary. Weights in tonnes, recruitment in thousands.

Year	Recruitment (age 3)	Stock size: SSB	Total catch	Fishing pressure: F
	thousands	tonnes	tonnes	Ages 7–10
1981	16590	3971	6476	0.3
1982	17608	5181	5880	0.34
1983	12558	5901	8287	0.36
1984	9657	6115	5692	0.27
1985	8606	6721	5065	0.25
1986	5636	7295	5381	0.2
1987	16660	8136	5645	0.24
1988	11125	8339	6865	0.21
1989	14876	8678	7077	0.29
1990	19482	8046	7292	0.35
1991	15855	6851	8733	0.43
1992	12597	5274	8010	0.44
1993	9833	4236	6059	0.32
1994	8546	4264	5828	0.31
1995	6819	4524	6231	0.3
1996	6853	4888	6241	0.27
1997	12675	5346	5759	0.27
1998	14661	5640	5146	0.31
1999	11436	5447	7290	0.4
2000	10855	4523	6240	0.44
2001	12541	3601	4526	0.28
2002	14588	3746	5249	0.37
2003	16131	3591	5315	0.36
2004	17903	3593	4655	0.26
2005	19290	4184	4820	0.28
2006	18906	4696	6602	0.33
2007	17301	4932	7594	0.35
2008	16342	5070	8175	0.4
2009	16013	4870	8253	0.34
2010	11767	5130	8986	0.38
2011	6801	5066	7391	0.34
2012	3738	5303	7762	0.32
2013	1285	5567	6258	0.27
2014	3297	6038	6025	0.24
2015	8348	6542	4822	0.22
2016	10620	6923		

Sources and references

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