

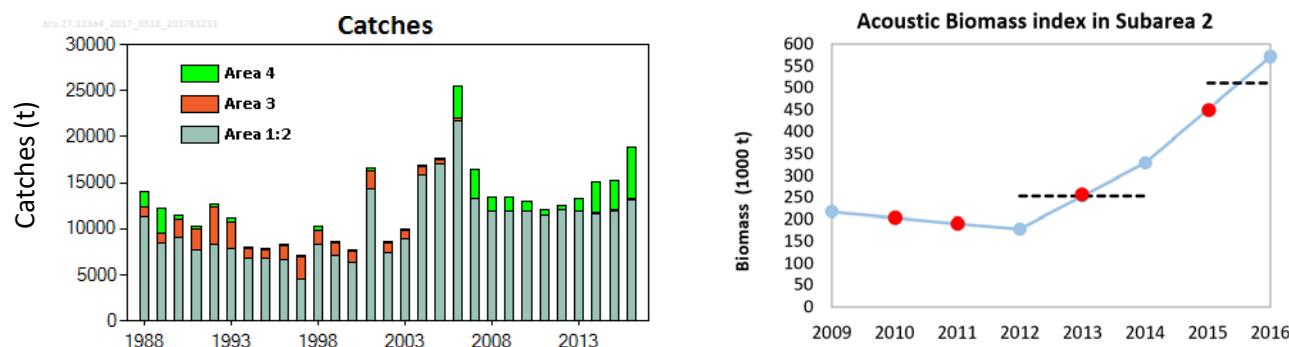
## Greater silver smelt (*Argentina silus*) in subareas 1, 2, and 4, and in Division 3.a (Northeast Arctic, North Sea, Skagerrak and Kattegat)

### ICES stock advice

ICES advises that when the precautionary approach is applied, catches should be no more than 15 656 tonnes in each of the years 2018 and 2019. All catches are assumed to be landed.

### Stock development over time

Most of the catches are from directed fisheries in subareas 1 and 2 and have been stable since 2007. There has been a marked increase in catches in Subarea 4 in the last three years, and these are all bycatch in other fisheries. Currently very minor catches are coming from Subarea 3. The acoustic index from Subarea 2 shows an increase between 2012 and 2016.



**Figure 1** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. Summary of the stock assessment. Left: Total catches in tonnes. Right: Norwegian acoustic biomass index from Subarea 2. The blue dots are measurements and red dots are an interpolation between observations. Dashed lines indicate the average index values of the respective year range used to calculate the advice.

### Stock and exploitation status

**Table 1** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. State of the stock and fishery relative to reference points.

		Fishing pressure					Stock size			
		2014	2015	2016			2014	2015	2016	
Maximum sustainable yield	$F_{MSY}$	?	?	?	Unknown	$MSY B_{trigger}$	?	?	?	Undefined
Precautionary approach	$F_{pa}, F_{lim}$	?	?	?	Unknown	$B_{pa}, B_{lim}$	?	?	?	Undefined
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	↗	?	↗	Increasing

## Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The Norwegian acoustic survey in Subarea 2 was used as the index for the stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), multiplied by the advised catch for years 2016–2017. For years where index values are not available the values are obtained by interpolation (Figure 1). The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. The stock status relative to candidate reference points is unknown, but the precautionary buffer was applied in 2015 and it is therefore not applied again. Discarding is considered negligible.

**Table 2** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. The basis for the catch options.

Index A (2015–2016)		510707
Index B (2012–2014)		253195
Index ratio (A/B)		2.0
Uncertainty cap	Applied	1.2
Advised catch for 2016 and 2017		13047 tonnes
Discard rate		Negligible
Precautionary buffer	Not applied	-
Catch advice*		15656 tonnes

\*[advice for 2016–2017] × [uncertainty cap]. The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

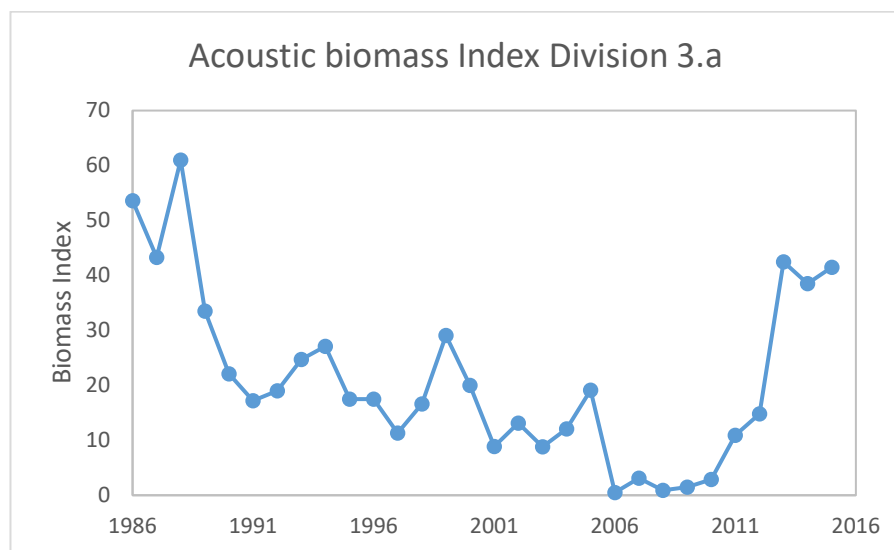
## Basis of the advice

**Table 3** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	ICES is not aware of any agreed precautionary management plan for 2017 in this area.

## Quality of the assessment

The acoustic survey time-series in Subarea 2 is considered the best stock indicator available and although it is short and intermittent it is used as the basis for the advice. The Norwegian shrimp survey in Division 3.a also shows more than a 20% increase in abundance.



**Figure 2** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. Norwegian acoustic biomass index from Subarea 3a (in tonnes).

## Issues relevant for the advice

The stock structure of greater silver smelt is unknown. The subareas 1, 2, and 4 and Division 3.a stock unit was defined in 2015 when ICES revised the advice units for the greater silver smelt. ICES provides separate advice for three other stock units (Subarea 14 and Division 5.a; divisions 5.b and 6.a; and subareas 7–10 and 12 and Division 6.b).

## Reference points

No reference points are defined for this stock. An attempt has been made this year to calculate MSY proxy reference points for this stock. However, there were concerns about the quality of the input parameters for the analysis and further investigation is needed (ICES, 2017).

## Basis of the assessment

**Table 4** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. Basis of assessment and advice.

ICES stock data category	3 ( <a href="#">ICES, 2016</a> ).
Assessment type	Survey trends-based assessment (ICES, 2017).
Input data	Acoustic index from Subarea 2.
Discards and bycatch	Discarding is considered to be negligible.
Indicators	None.
Other information	Norwegian shrimp trawl survey in Division 3.a.
Working group	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources ( <a href="#">WGDEEP</a> )

## Information from stakeholders

There is no available information.

## History of the advice, catch, and management

**Table 6** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. ICES advice and official landings. All weights are in tonnes.

Year	ICES advice*	Predicted catch corresp. to advice	Official landings	TAC EU in subareas 1 and 2	TAC EU in subareas 3 and 4	TAC Norway in subareas 1 and 2
2003	No fisheries unless data collection on (by)catch; no expansion unless proven to be sustainable	-	9949	-	1566	
2004	Biennial	-	17183	-	1566	
2005	No fisheries unless accompanied by programmes to collect data on both target and bycatch fish	-	17595	116	5310	
2006	Biennial	-	25496	116	5310	
2007	The fishery should not be allowed to expand unless it can be shown that it is sustainable	-	16375	116	5311	12000
2008	Biennial	-	13424	116	5311	12000
2009	Same advice as in 2007	-	13495	116	5311	12000
2010	Biennial	-	12898	111	5099	12000
2011	The fishery should not be allowed to expand, and a reduction in catches should be considered	-	12064	103	4691	12000
2012	No new advice, same as in 2011		12485	95	4316	12000
2013	Reduce catches by 10%		13230	90	4316	12000
2014	No new advice, same as in 2013		15057	90	4316	12000
2015	No new advice, same as in 2013		15236	90	1028	13047
2016*	Precautionary approach with application of PA buffer	13047	18893	90	1028	13047
2017	Same as in 2016	13047				
2018	Precautionary approach with application of PA buffer	≤ 15656				
2019	Same as in 2018	≤ 15656				

\* Until 2014 the advice was combined for subareas 1, 2, 4, 6, 7, 8, 9, 10, 12, and 14, and divisions 3.a and 5.b.

## History of the catch and landings

There are no reported catches in the NEAFC regulatory area.

**Table 7** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. Catch distribution by fleet in 2016 as estimated by ICES.

Catch (2016)	Landings	Discards
18 893 tonnes	Trawl 100%	Negligible
	18 893 tonnes	

**Table 8** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. History of commercial catch and landings; the ICES estimated values are presented by area. All weights are in tonnes.

Year	Subareas 1 and 2	Division 3.a	Subarea 4	Total catch
1988	11351	1089	1656	14096
1989	8390	1174	2612	12176
1990	9120	1882	439	11441
1991	7741	2221	333	10295
1992	8234	4198	236	12668
1993	7913	2830	445	11188
1994	6807	1108	38	7953
1995	6775	1061	21	7857
1996	6604	1548	111	8263
1997	4463	2700	2	7165
1998	8261	1589	427	10277
1999	7163	1422	11	8596
2000	6293	1316	45	7654
2001	14369	1918	262	16549
2002	7407	1098	167	8672
2003	8917	960	72	9949
2004	16162	911	110	17183
2005	17093	470	32	17595
2006	21685	324	3487	25496
2007	13273	0	3101	16374
2008	11876	0	1548	13424
2009	11929	0	1566	13495
2010	11854	0	1044	12898
2011	11476	0	588	12064
2012	12134	0	351	12485
2013	11979	0	1251	13230
2014	11747	0	3310	15057
2015	12049	23	3164	15236
2016*	13122	102	5669	18893

\* Preliminary.

## Summary of the assessment

**Table 9** Greater silver smelt in subareas 1, 2, and 4, and in Division 3.a. Assessment summary from the Norwegian acoustic biomass index from Subarea 2. Weights are in tonnes.

Year	Index Subarea 2
2009	216783
2010	202476*
2011	189705*
2012	177897
2013	253545*
2014	328143
2015	449852*
2016	571561

\*Numbers in italics are interpolated values.

## Sources and references

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68. 42 pp.  
 ICES. 2016. Advice basis. In Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

ICES. 2017. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), 24 April–1 May 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:14. 702 pp.