

ECOREGION Baltic Sea
STOCK Cod in Subdivisions 25–32

Advice for 2015

ICES advises on the basis of the data-limited approach (see Quality considerations) that catches should be no more than 29 085 tonnes.

ICES advises the implementation of a spatial management plan for the clupeid stocks in Subdivisions 25–26 (see Sections 8.3.10 and 8.3.18).

Stock status

Fishing pressure		
2011–2013		
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa}, F_{lim})	?	Unknown
Qualitative evaluation	→	Stable at low level
Stock size		
2009–2014		
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa}, B_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

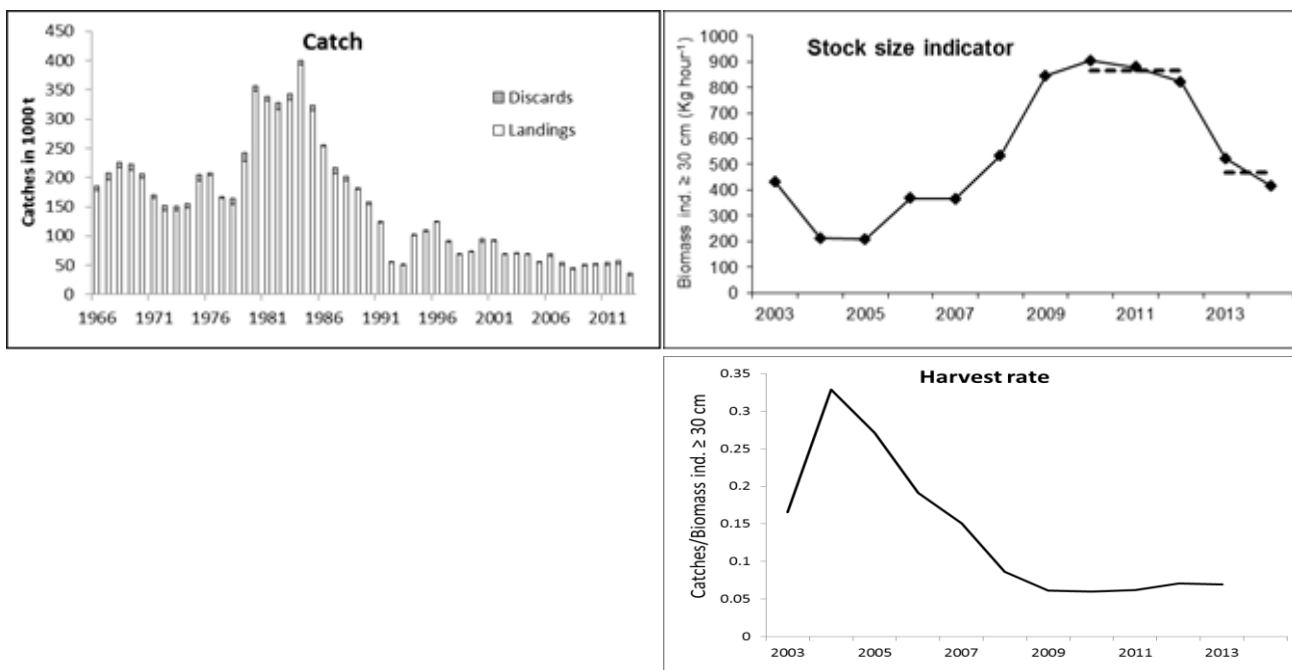


Figure 8.3.3.1 Cod in Subdivisions 25–32. Left panel: catches divided in official landings and estimated discards. Right upper panel: stock size indicator, calculated as cpue of fish ≥ 30 cm from the 1st and 4th quarters, from the BITS in SDs 25–28 (from ICES DATRAS database). Right lower panel: harvest rate (catches/SSB proxy).

Cpue from the Baltic International Trawl Survey (BITS) of fish larger than or equal to 30 cm are assumed as a proxy for SSB and have decreased since 2011. The average SSB proxy in the last two years (2013–2014) is 46% lower than the SSB index in the three previous years (2010–2012). The harvest rate has declined and has remained stable since 2009.

Management plans

EU has agreed on a multi-annual plan for cod in the Baltic Sea in 2007 ([EC, 2007](#)). ICES has evaluated the management plan in 2009 and considers it to be in accordance with the precautionary approach. It should, however, be noted that there is a large difference between the F_{MSY} and the target F in the management plan, regardless of the different reference age. It should be noted that the agreed multi-annual plan was developed under the assumption of unchanged growth. The most recent information shows that this assumption is no longer valid. For that reason, ICES has not used the EU-agreed multi-annual plan as the basis for advice.

Biology

Cod is the main predator on sprat and herring, and the natural mortality of the pelagic stocks is likely affected by changes in cod stock size and size distribution, but also stock geographical overlap. However, at present, the geographical overlap between cod and the pelagic stocks has been reduced since the 1980s. Consistent with an increasing number of cod and a declining availability of sprat and herring in the current main distribution area of cod (Subdivisions 25 and 26), the mean weight of larger cod has sharply declined in recent years. However, other possible reasons for the decline in growth include overall density-dependent growth, parasites, or reduced availability of benthic invertebrates. The recent trend in decreased growth has also resulted in a dramatic decrease in the number and biomass of larger cod.

Environmental influence on the stock

The recruitment of eastern Baltic cod is mainly driven by hydrological factors. At present, successful reproduction of the eastern Baltic cod occurs only in the Bornholm Basin (Subdivision 25), where the conditions for successful spawning (the reproductive volume) have been reasonable, but highly variable during the past decade. The distribution of cod is currently mainly confined to Subdivisions 25 and 26, and with very low abundance in northern areas (Subdivisions 27–32).

Since the mid-1990s the area of anoxic seabed has increased in autumn in all subdivisions of the central Baltic (Hansson and Andersson, 2013). This pattern is especially evident for the northern areas (Subdivisions 27, 28, and 29), whereas in the south (Subdivision 25) the extent of anoxic areas has stabilized since the mid-1990s. The increased area of anoxic seabed can have different effects on the cod population, such as changes in the stock spatial distribution, worsening of the density-dependent growth and decrease of the availability of benthic food. In spring, however, the oxygen content in the deeper parts of the Bornholm Basin has been higher in the last few years (since 2010), allowing for a bottom trawl fishery in areas that were previously void of cod. Therefore, the extent and distribution of anoxic areas are likely to also affect the tuning fleet indices and fishing practices, both of which may affect the stock assessment.

The grey seal populations in the Baltic Sea have increased in recent years. Grey seals have fish as their main diet and are estimated to consume an average of 4.5 kg fish per day; however, the total amount of consumed cod is unknown.

The fisheries

Trawlers and gillnetters, with a minor amount of longliners, represent the main fisheries.

Since 2009 the TAC has not been fully utilized and in 2013 only 46% of the TAC was utilized. The amount of fishable cod in the stock above the minimum landing size (MLS), 38 cm, has decreased since 2010 and the amount of fish below the minimum landing size has increased. This is likely a consequence of decreased growth rate and relatively high recruitment the last five years. The reduced growth rate has also resulted in age groups that were previously above the minimum landing size being now below it and not being allowed to be landed by the industry. The low fishable biomass can partially explain the low quota uptake as this level is the lowest in the time-series and high abundance of cod just below the MLS can contribute to the increased discarding observed.

The demersal fisheries for cod in the eastern Baltic have bycatch of flounder, which are mainly discarded.

Catch distribution Total catch (2013): 36.4 kt (83% by active and 17% by passive fisheries), where 84% were landings (31.4 kt) and 5 kt discards.

Effects of the fisheries on the ecosystem

The use of a size selective gear that was designed to reduce catch of cod below the MLS may favour the slow-growing individuals in the population.

Because sprat and herring are important prey for cod, the cod fishery can indirectly affect the sprat and herring stocks by changing predation mortality on these species. Furthermore, the fishery for sprat and herring in the distribution area of cod can influence the available food base for cod.

Quality considerations

There are three main areas of quality concerns important for the assessment. Ageing discrepancies between countries have been recognised for a long time but the recent trend in growth rate may have increased the consequence of this problem. Another concern is how the reduction in growth (condition) may have affected catchability in the fisheries and surveys. It has been assumed that the catchabilities in the tuning series were constant. The condition in cod could affect the catchability via gear selectivity (with larger cod being caught whereas slimmer cod would pass through the mesh in the gear) or through changes in cod behaviour. A further concern is the rapid decrease in the abundance of larger and older cod in recent years and to determine whether these individuals are dying of natural causes or by fishing. These concerns have led to the rejection of the age-based assessment used previously.

The advice is based on a combined biomass index from two surveys, used as proxy for SSB. The uncertainty associated with the index values is not available. The 2013 benchmark utilized data up to 2011. The subsequent two years of data have suggested that some processes were not incorporated in the previous assessment model. ICES will attempt to use the available information in an appropriate assessment model in a benchmark in the near future.

Scientific basis

Stock data category	3.2.0 (ICES, 2014a)
Assessment type	Survey trends.
Input data	International catches and length-based survey indices (BITS–Q1 since 2001; BITS–Q4 since 2002).
Discards and bycatch	Discards are available and used to provide catch advice, with data series from all the main fleets.
Indicators	Total international effort data (STECF, 2013).
Other information	This stock was benchmarked in 2013 (WKBALT; ICES, 2013a).
Working group	Baltic Fisheries Assessment Working Group (WGBFAS)

ECOREGION **Baltic Sea**
STOCK **Cod in Subdivisions 25–32**

Reference points

	<i>Type</i>	<i>Value</i>	<i>Technical basis</i>
MSY approach	MSY B_{trigger}	88 200	B_{pa} .
	F_{MSY}	0.46	Based on stochastic single-species simulations using stock–recruitment data from 1989–2011.
	Multispecies F_{MSY}	0.4–0.6	Multispecies model (SMS). One of several options giving a high sustainable yield of cod, as well as of herring and sprat due to low to moderate predation from cod.
Precautionary approach	B_{lim}	63 000	B_{loss} in 2005.
	B_{pa}	88 200	$B_{\text{lim}} \times 1.4$.
	F_{lim}	Undefined.	
	F_{pa}	Undefined.	
Management plan	SSB_{MGT}	Undefined.	
	F_{MGT}	0.30	EU management plan based on stochastic simulations (reference F age range 4–7).

(Last changed in: 2013)

The reference points are derived from an assessment which is currently not accepted to provide advice.

Outlook for 2015

No analytical assessment can be presented for this stock. Therefore, no forecast can be presented and due to the perception of the stock having changed, ICES is in the process of benchmarking in the near future.

ICES approach to data-limited stocks

For stocks for which a biomass index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock, the spawning-stock biomass index is estimated to have decreased by more than 20% between the periods 2010–2012 (average of the three years) and 2013–2014 (average of the two years). This implies a decrease in catches of 20% in relation to last year's (2013) catches (36 356 tonnes), corresponding to catches of no more than 29 085 tonnes in 2015. Assuming the same discard rates as last year, this implies wanted catches¹ of no more than 25 071 tonnes.

Taking the reduced growth into account (Figure 8.3.3.2), the estimated harvest rate (HR) is low compared to values from a decade ago. The HR also appears to be relatively stable and the estimated fishing effort for this stock (Figure 8.3.3.3) does not show any significant trend; ICES therefore considers that there are no immediate concerns regarding the exploitation rate. Catches were substantially reduced last year (–39%), well below the advice, and this reduction will act in a similar way to the precautionary buffer. Due to both the low exploitation and recent 39% reduction in catch it is considered that an additional 20% precautionary buffer reduction is not required.

The present advice is based on an assessment that ICES considers only as an interim solution.

Multispecies considerations

Fishing on the prey stocks herring and sprat will influence the food availability for cod and thereby the level of cod cannibalism and cod yield. Previously, the applied F for the prey species (in the range of 0.25–0.35; ICES, 2013b) was considered to only marginally affect the long-term yield of cod. In the absence of an analytical assessment for cod, ICES is unable to update this information.

Additional considerations

¹ “Wanted catch” is used to describe fish that would be landed in the absence of the EU landing obligation. The “unwanted catch” refers to the component that was previously discarded.

Advice considerations

The recent decreased growth and the resulting dramatic decrease in number and biomass of larger cod has indicated that there may be a need for additional measures to protect the older cod in the stock. The decrease in growth for larger cod is likely caused by many factors such as a general decrease in food availability (benthos, pelagic fish, and other food items) influenced by density dependence of cod, an increase in parasites induced by seals, and an increased number of anoxic areas. However, the only fishery component possible to manage in addition to the fishing mortality on cod is the amount of pelagic species (herring and sprat) caught in the main area of cod. ICES advises the implementation of a spatial management plan to reduce the fishing pressure for the pelagic stocks in Subdivisions 25–26, where the cod is concentrated (see Sections 8.3.10 and 8.3.18).

Management considerations

There are indications that discards in general have increased recently, particularly of older age groups, which is probably due to cod being in a more poor condition and having slower growth.

The amount of fish above the minimum landing size (38 cm) has recently diminished and the amount of fish below the minimum landing size has increased in the population (Figure 8.3.3.2). This has likely been a consequence of decreased growth. Age groups that were previously above the minimum landing size are now below it. This can partially explain the fact that the quotas are not filled and may also contribute to the increased discarding.

Changes in fishing technology and fishing patterns

Cod in the eastern Baltic are taken primarily by trawlers and gillnetters. There was a substantial increase in the use of gillnets in the 1990s. In 2013, gillnet catches accounted for about 17% of the total catch.

Regulations and their effects

The fishery is managed through TAC, effort, seasonal fisheries restrictions, and technical measures.

The Baltic cod management plan (EC Regulation 1098/2007) called for, *inter alia*, a reduction in fishing effort (10% annually in terms of number of fishing days per year) until the target F has been reached. The maximum number of fishing days for Subdivisions 25–28.2 was fixed at 160 in 2010, and remained at 160 days in 2011, 2012, and 2013. Since 2012, EU Member Countries have been allowed to allocate additional days absent from port to some vessels if an equal amount of days absent from port is withdrawn from other vessels. The number of vessels being allocated additional days may not exceed 10% of the total number of vessels.

The cod fisheries in the eastern Baltic are also regulated by a seasonal closure from 1 July to 31 August. A closure of a central part of the main spawning area in the Bornholm Deep has been implemented since the mid-1990s for all fisheries. A year-round area closure for all fisheries in specific areas of the Bornholm Deep, the Gotland Basin, and the Gdansk Deep was introduced in 2005, aimed at reducing fishing mortality. Since 2006, area closures have been implemented from 1 May to 31 October. The plan was designed to protect the spawning aggregation. However, STECF's evaluation (STECF, 2012) of the impact of the present spawning closures on the stocks and the fisheries concluded that the effect "is unclear but the measures are unlikely to have had a limiting effect on the overall fishing mortality. Spawning closures are not required to meet the biological objectives of the management plan as long as the TACs are effective in limiting the fishing mortalities as intended".

Highgrading has been prohibited since 1 January 2010 in all Baltic Sea fisheries. Data from observer schemes indicate that highgrading is a minor problem.

To decrease discards, a "Bacoma" codend with a 120 mm mesh was introduced by the International Baltic Sea Fisheries Commission (IBSFC) in 2001 in parallel with an increase in diamond mesh size to 130 mm in traditional codends. The expected effect of introducing the "Bacoma" 120 mm exit window was nullified by compensatory measures in the industry. This was to some extent explained by the mismatch between the selectivity of the 120 m "Bacoma" trawl and the minimum landing size. In October 2003, the regulation was changed to a 110 mm "Bacoma" window. This was expected to enhance the compliance and to be in better accordance with the minimum landing size, which was changed from 35 to 38 cm in the same year. On 1 March 2010 the "Bacoma" 120 mm was re-introduced along with an extended "Bacoma" window (5.5 m) to further decrease discarding, and the minimum landing size was kept at 38 cm.

Information from the fishing industry

Some of the information on historical mis- and underreporting came from industry sources, indicating that the estimates used in the assessment are minimum values. From 2010 the mis- and underreporting has been negligible. The increase in flatfish abundance interferes with the selectivity of the “Bacoma” codend, and discarding of cod has increased in 2011 and 2012.

The fishing industry reported that since 2012 the number of larger fish has decreased remarkably and, in contrast to the perceived increase in SSB from the last year’s assessment, to an extent where the fishery was not able to catch their quota. There is recent anecdotal information that this may have incentivised gear manufacturers to introduce modifications aimed at reducing the selectivity, thus increasing total catch but at the same time increasing the discards of undersized cod.

Environmental conditions

Successful spawning is limited to regions with favourable oxygen and salinity conditions (reproductive volume). As a consequence, two (the Gotland and the Gdansk basins) out of three spawning areas have ceased to significantly contribute to the reproduction of the eastern Baltic cod. Cod distribution in the Baltic is affected by environmental conditions, specifically lack of oxygen. In recent years, even though the stock has increased in Subdivision 25 and to a lesser extent in Subdivision 26, and is apparently suffering from food limitation, there is no strong northwards expansion (Figure 8.3.3.4). This could be related to a number of factors, including continued poor hydrographic conditions in the northern areas (an extensive area of anoxic seabed and absence of a reproductive volume), affecting cod active movements and recruitment. The lack of expansion of cod into northern areas could, however, also be due to a loss of the northern spawning components.

The grey seal populations have increased in the Baltic Sea in recent years, from around 2000 animals in the early 1970s to close to 30 000 seals in 2012. The numbers of grey seals in the ICES Subdivisions 24 and 25 have increased from 260 in 2004 to close to 1800 in 2012. Presently the population of grey seals is increasing by 6% a year (Härkönen *et al.*, 2013).

Data and methods

An index of SSB is obtained from the combined time-series of BITS–Q1 and Q4 surveys and relates to cod ≥ 30 cm. The last three years of data show that this length corresponds to the length at which 50% of the individuals are mature. For each survey, cpue (number \times hour⁻¹) per length class is converted into a cpue in weight (kg \times h⁻¹) using the quarter-specific length–weight relationships. For a given year, the sum of cpue by length for cod larger or equal to 30 cm from the Q1 survey of that year is averaged with the cpue from the Q4 survey of the preceding year (e.g., the 2014 index is the mean of the 2014 Q1 cpue and the 2013 Q4 cpue; Table 8.3.3.3).

Large inconsistencies exist in age determinations for the eastern Baltic cod stock owing to the lack of clear growth rings in the otoliths. ICES attempted to resolve the inconsistencies in age determinations for this stock, but no consensus was reached on the age determinations. An EU-funded study initiated in 2007 (project DECODE) has taken a different approach to delivering validated ageing data for the assessment, but this method is not fully validated from tagging studies. The SSB index used to provide this year’s advice, being based on lengths, excludes the problem connected with age estimation.

Uncertainties in the assessment and forecast

The present advice is based on an assessment that ICES considers only as an interim solution. Several aspects of the eastern Baltic cod biology need to be evaluated to determine how the outcome of a revised stock assessment would be affected:

- 1) Age reading: The discrepancies between the age estimates has increased the last three years.
- 2) Catchability by age: There are indications that the catchability has changed in the tuning fleets and in the fisheries in recent years.
- 3) Analysis of the rapid decrease in the abundance of larger and older cod in recent years and to determine whether these individuals are dying of natural causes or by fishing.
- 4) Determine which factors affect cod growth, maturity, and fecundity.
- 5) Model adjustments: How can the above problems be incorporated into the model.
- 6) Explore to what extent Subdivision 24 should be merged with Subdivisions 25–32.

All of these aspects should be considered in a benchmark process in the near future, with support from clients and ICES Member Countries.

Removals of cod in recreational fisheries in the Baltic Sea are currently neither consistently nor completely sampled; they are therefore not included in the assessment.

Comparison of the basis of previous assessment and advice

In 2013 the assessment was an aged-based analytical assessment (SAM). The 2014 assessment is based on trends of SSB proxy from surveys.

In 2013 the basis for the advice was the EC management plan. This year, the basis for the advice is the ICES approach to data-limited stocks.

Sources

- EC. 2007. Council Regulation (EC) No 1098/2007 of 18 September 2007 establishing a multiannual plan for the cod stocks in the Baltic Sea and the fisheries exploiting those stocks, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 779/97.
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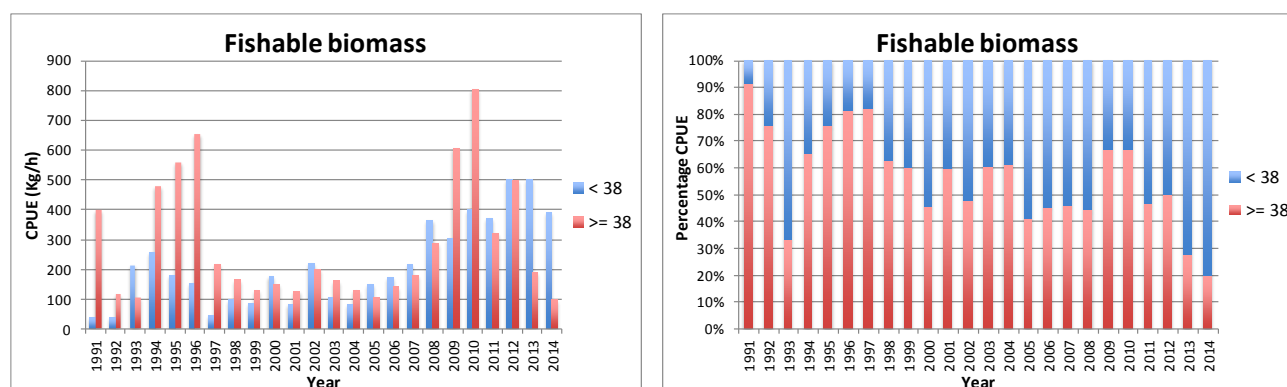


Figure 8.3.3.2 Cod in Subdivisions 25–32. Comparison of fishable biomass versus fish biomass under minimum landing size (MLS = 38 cm), based on survey cpues over time. Left panel: total biomass above versus below MSL. Right panel: the proportion of biomass above versus below MLS, showing that only 20% (7% in numbers) of the fish biomass was available for landing in 2013.

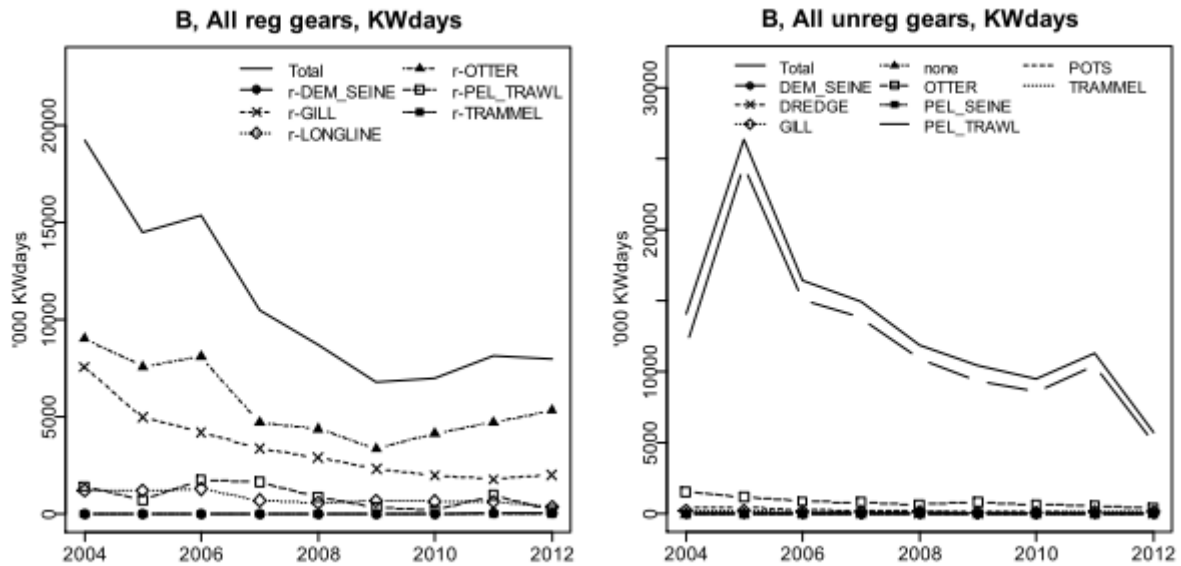


Figure 8.3.3.3 Cod in Subdivisions 25–32. Area B Baltic (SDs 25, 26, 27, and 28.2): Trend in nominal effort by gear types 2004–2012 ($\text{kW} \times \text{days-at-sea}^{-1}$). Left panel: Regulated gears. Right panel: Unregulated gears. Note that data from Poland, Latvia, and Lithuania are only available from 2004 onwards. Therefore, effort trends are shown from 2004 to 2012. In addition the Estonian data set of 2005–2012 was included in the database. No data were available from Finland (from STECF, 2013).

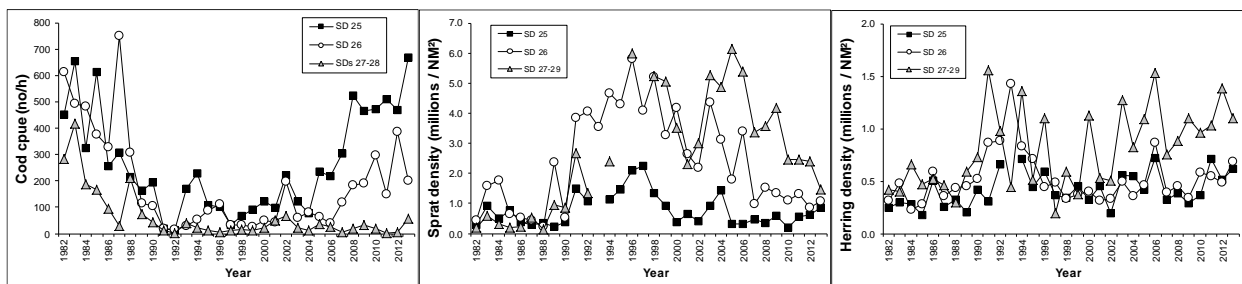


Figure 8.3.3.4 Cod in Subdivisions 25–32. Trends of cod cpue (left panel) from the BITS survey, as well as sprat density (middle panel) and herring density (right panel) from the BIAS survey in different areas of the Baltic Sea. Subdivision 29 is not well covered by the BITS survey.

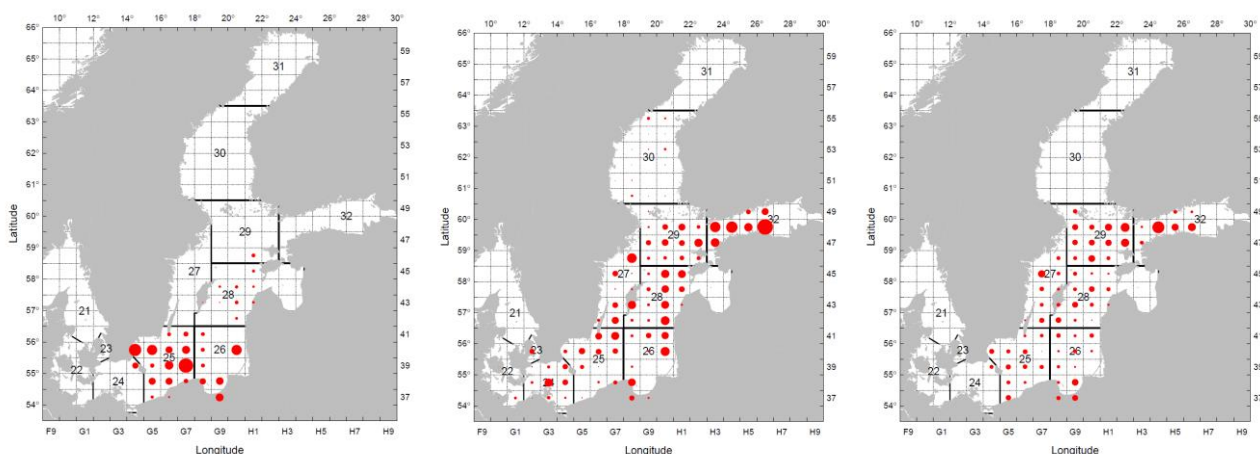


Figure 8.3.3.5 Cod in Subdivisions 25–32. Distribution of eastern Baltic Sea cod from bottom trawl survey (BITS) in the 4th quarter 2013 (left panel); Baltic sprat from the acoustic survey (BIAS) in the 4th quarter 2013 (middle panel); and herring in Subdivisions 25 to 29 and 32, excluding the Gulf of Riga, from the BIAS survey (BIAS) in the 4th quarter 2013 (right panel).

Table 8.3.3.1 Cod in Subdivisions 25–32. ICES advice, management, and landings.

Year	ICES Advice	Predicted landings corresp. to advice	Agreed TAC ^a	ICES landings (25–32)
1987	Reduce towards F_{\max}	245		207
1988	TAC	150		194
1989	TAC	179	220	179
1990	TAC	129	210	153
1991	TAC	122	171	123
1992	Lowest possible level	-	100	55 ^b
1993	No fishing	0	40	45 ^b
1994	TAC	25	60	93 ^b
1995	30% reduction in fishing effort from 1994	-	120	108 ^b
1996	30% reduction in fishing effort from 1994	-	165	122
1997	20% reduction in fishing mortality from 1995	130	180	89
1998	40% reduction in fishing mortality from 1996	60	140	67
1999	Proposed F_{pa} (= 0.6)	88	126	73
2000	40% reduction in F from 96–98 level	60	105	89 ^b
2001	Fishing mortality of 0.30	39	105	91 ^b
2002	No fishing	0	76	68 ^b
2003	70% reduction in F	See option table	75	69 ^b
2004	90% reduction in F	< 13.0	45.4	68 ^b
2005	No fishing	0	42.8	55 ^b
2006	Develop Management plan	< 14.9	49.2	66 ^b
2007	No fishing	0	44.3	51 ^b
2008	No fishing	0	42.3 ^c	42 ^b
2009	Limit (total) landings to 48 600 t	≤ 48.6	49.38 ^c	48 ^b
2010	Follow management plan	56.8	56.1 ^c	50
2011	See scenarios	-	64.5 ^c	50
2012	Follow management plan	74.2	74.2 ^c	51
2013	Follow management plan	65.9	68.7	31
2014	Follow management plan	70.3		
2015	20% reduction in catches	29.085 ^d		

Weights in thousand tonnes.

^a)For total Baltic until and including 2003.

^b)The reported landings in 1992–1995 and 2000–2009 are likely to be minimum estimates due to incomplete reporting.

^c)TAC is calculated as EU + Russian autonomous quotas.

^d)Total catches.

Table 8.3.3.2 Cod in Subdivisions 25–32. Total landings by country, discards, and total catch (tonnes).

Year	Denmark	Estonia	Finland	Germany Dem.Rep. ²	Germany Fed. Rep.	Latvia	Lithuania	Poland	Russia	Sweden	USSR	Faroe Islands ⁴	Norway	Unallo- cated ³	Discard	Total Landings	Total Catch
1965	35313		23	10680	15713			41498		21705	22420					147352	147352
1966	37070		26	10589	12831			56007		22525	38270				8735	177318	186053
1967	39105		27	21027	12941			56003		23363	42980				11733	195446	207179
1968	44109		70	24478	16833			63245		24008	43610				9700	216353	226053
1969	44061		58	25979	17432			60749		22301	41580				10654	212160	222814
1970	42392		70	18099	19444			68440		17756	32250				7625	198451	206076
1971	46831		53	10977	16248			54151		15670	20910				5426	164840	170266
1972	34072		76	4055	3203			57093		15194	30140				8490	143833	152323
1973	35455		95	6034	14973			49790		16734	20083				7491	143164	150655
1974	32028		160	2517	11831			48650		14498	38131				7933	147815	155748
1975	39043		298	8700	11968			69318		16033	49289				9576	194649	204225
1976	47412		287	3970	13733			70466		18388	49047				4341	203303	202764
1977	44400		310	7519	19120			47702		16061	29680				2978	164792	167770
1978	30266		1437	2260	4270			64113		14463	37200				9875	154009	163884
1979	34350		2938	1403	9777			79754		20593	75034	3850			14576	227699	242275
1980	49704		5962	1826	11750			123486		29291	124350	1250			8544	347619	356163
1981	68521		5681	1277	7021			120901		37730	87746	2765			6185	331642	337827
1982	71151		8126	753	13800			92541		38475	86906	4300			11548	316052	327600
1983	84406		8927	1424	15894			76474		46710	92248	6065			10998	332148	343146
1984	90089		9358	1793	30483			93429		59685	100761	6354			8521	391952	400473
1985	83527		7224	1215	26275			63260		49565	78127	5890			8199	315083	323282
1986	81521		5633	181	19520			43236		45723	52148	4596			3848	252558	256406
1987	68881		3007	218	14560			32667		42978	39203	5567			9340	207081	216421
1988	60436		2904	2	14078			33351		48964	28137	6915			7253	194787	202040
1989	57240		2254	3	12844			36855		50740	14722	4520			3462	179178	182640
1990	47394		1731		4691			32028		50683	13461	3558			4187	153546	157733
1991	39792	1810	1711		6564	2627	1865	25748	3299	36490		2611			2741	122517	125258
1992	18025	1368	485		2793	1250	1266	13314	1793	13995		593			1904	54882	56786
1993	8000	70	225		1042	1333	605	8909	892	10099		558	18978	1558	50711	52269	
1994	9901	952	594		3056	2831	1887	14335	1257	21264		779	44000	1956	100856	102812	
1995	16895	1049	1729		5496	6638	4513	25000	1612	24723		777	293	18993	1872	107718	109590
1996	17549	1338	3089		7340	8709	5524	34855	3306	30669		706	289	10815	1443	124189	125632
1997	9776	1414	1536		5215	6187	4601	31396	2803	25072		600			3462	88600	92062
1998	7818	1188	1026		1270	7765	4176	25155	4599	14431					2299	67428	69727
1999	12170	1052	1456		2215	6889	4371	25920	5202	13720					1838	72995	74833
2000	9715	604	1648		1508	6196	5165	21194	4231	15910			23118	6019	89289	95308	
2001	9580	765	1526		2159	6252	3137	21346	5032	17854			23677	2891	91328	94219	
2002	7831	37	1526		1445	4796	3137	15106	3793	12507			17562	1462	67740	69202	
2003	7655	591	1092		1354	3493	2767	15374	3707	11297			22147	2024	69476	71500	
2004	7394	1192	859		2659	4835	2041	14582	3410	12043			19563	1201	68578	69779	
2005	7270	833	278		2339	3513	2988	11669	3411	7740			14991	1670	55032	56702	
2006	9766	616	427		2025	3980	3200	14290	3719	9672			17836	4644	65532	70176	
2007	7280	877	615		1529	3996	2486	8599	3383	9660			12418	4146	50843	54989	
2008	7374	841	670		2341	3990	2835	8721	3888	8901			2673	3746	42235	45981	
2009	8295	623			3665	4588	2789	10625	4482	10182			3189	3328	48439	51767	
2010	10739	796	826		3908	5001	3140	11433	4264	10169					3543	50277	53820
2011	10842	1180	958		3054	4916	3017	11348	5022	10031					3850	50368	54218
2012	12102	686	1405		2432	4269	2261	14007	3954	10109					6795	51225	58020
2013 ¹	6052	249	399		541	2441	1744	11760	2870	5299					5020	31355	36375

¹Provisional data.²Includes landings from October to December 1990 of Fed. Rep. of Germany.³ICES estimates. No information available for years prior to 1993.⁴For 1997 landings were not officially reported – estimated by the WG.

Table 8.3.3.3

Cod in Subdivisions 25–32. SSB index ($\text{kg} \times \text{hr}^{-1}$) of fish equal to or larger than 30 cm, from the BITS in Subdivisions 25–28, from 1st and 4th quarters and combined (arithmetic mean. For a given year the biomass index of the 1st quarter survey is combined with the index of the 4th quarter of the previous year).

	SSB Index ($\text{kg} \times \text{h}^{-1}$)		
	4th Quarter	1st Quarter	Combined index
2002	617.42		
2003	246.19	247.98	432.70
2004	251.99	177.93	212.06
2005	457.26	166.16	209.07
2006	401.23	276.82	367.04
2007	537.53	330.77	366.00
2008	801.26	532.31	534.21
2009	636.51	887.23	844.24
2010	1129.37	1169.08	902.80
2011	680.24	625.07	877.22
2012	581.28	960.34	820.29
2013	511.40	463.40	522.34
2014		320.70	416.05