PART 2 Presentation on structure (and evolution) of ICES advice



ICES advice Sheets

Steven Mackinson

In this talk you will learn:

- How to get what you need
- How to read what you get
- How to interpret what you read

What's ICES?



- Inter-governmental Organisation with member countries across the North Atlantic
- Started in 1902
- NOT a European institution, but the EU is its biggest client

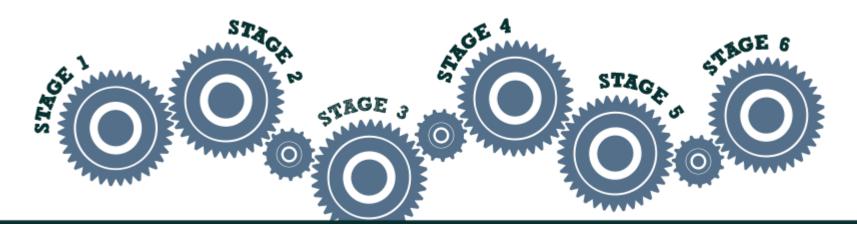
ICES advice is (supposed to be)

- To inform clients about what they have asked for.
- Relevant, accurate, unbiased, transparent & consistent.
- Regional in scope.



ICES advice is the culmination of a process

- 1. Starts with data collection by member countries
- Combined data is used by scientific expert groups to assess stock status and forecast next year (scientists only)
- Written by Advice drafting groups (open to observers)
- 4. Agreed by ACOM (advisory committee only)
- 5. Delivered by ICES to client
- 6. Made accessible published, presented, data



The advice evolves over time

F (February Martality)

Plaice in Subarea IV (North Sea)

State of the stock

Fishing mortality in relation to precautionary limits	mortality in	Fishing mortality in relation to agreed target	Comment
Harvested sustainably	Overfished	Below target	

Based on the most recent estimate of SSB (in 2009) and fishing mortality (in 2008), ICES classifies the stock as having full reproductive capacity and as being harvested australiably. SSB is estimated to have increased show the B_{pp} Finlang mortality is estimated to have decreased to below F_{pp} and F_{ppp}. Recruitment has been of average strength from 2005 onwards. The recruitment in 2008 is just below the long-term average.

EC and Norway have no agreed management plan for North Sea plaice. However, the EC has adopted a management plan for flatfish in the North Sea in June 2007 (Council Regulation (EC) No. 676(2007, see 64.7 Appendix). This plan has two stages. The first stage sims at an annual 10% reduction of fishing mortality in relation to the fishing mortality estimated for the preceding year until an F of O.3 is reached, with a naturational change in TAC of 15% and the preceding year stage and the preceding representationary reference points are reached for both phine and sole for two successive years. ICES manyests the F for the preceding year as the estimate of F for the year in which the assessment is carried out. The basis for this F estimate in the preceding year will be a constant application of the procedure used by ICES in 2007. In the second stage, the management plan sizes for exploitation at F = 0.3.

ICES has evaluated the agreed long-term management plan (Council Regulation (EC) No. 676/2007) for plaice and sole. For plaice, the management plan evaluation is not yet conclusive with regards to consistency with the precentionary approach.

Reference point:

	Туре	Value	Technical basis
	B _{tim}	160 000 t	$B_{loss} = 160000$ t, the lowest observed biomass in 1997 as assessed in 2004.
Precautionary	B _{ps}	230 000 t	Approximately 1.4 Bin.
approach	F _{tim}	0.74	F _{less} for ages 2–6.
	F _{pa}	0.60	5th percentile of Firm (0.6) and implies that B. B.
	-		probability that SSB _{MT} ~ B _{ox}
Targets	Fact	0.3	EU management plan

(unchanged since 2004, target added in 2008)

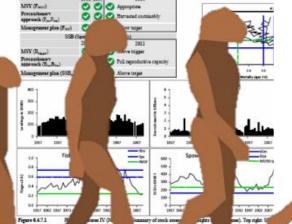
ICES Advice 2009, Book 6

Yield and spawning biomass per Recruit F-reference points (2009):

	Fish Mort Ages 2-6	Yield/R.	SSB/R
Average last 3			•
years	0.31	0.09	0.55
Fmax	0.17	0.10	1.25
F0.1	0.12	0.10	1.74
Fmed	0.42	0.07	0.32

A candidate for the reference point consistent with taking high long-term yields and achieving a low risk of depleting the productive potential of the stock is F....

6.4.7 Advice June 20 ECOREGION Plaice in Subarea IV (North Sea) STOCK ICES advises on the basis of the first stage of the EU menagement plan (Council Regulation No. 676/2007); landings in 2012 should be no mare than 84-410 1.ICES actes that according to the amanagement plan, transitie emanagements to the second stage of the plan should be established since both North Sea place and sels have now by within safe biological limits for two consecutive years. Steck states



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MSY (Fam.)

Stage 1 in the EU management plan for North Sea plains and sole (Council Regulation (EC) No. 676/2007. Appendix 6.4.7) results in a 15% TAC increase for plains. An evaluation of the plan (ICES, 1010) concluded that management plan is precautionary.

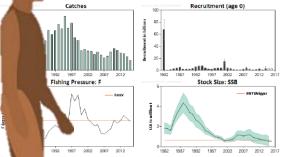
ICES Advice on fishing opportunities, catch, and effort

Horse mackerel (Trachurus trachurus) in Subarea 8 and divisions 2.a. 4.a. 5.b. 6.a. 7.a-c. and 7.e-k (Northeast Atlantic)

ICES stock advice

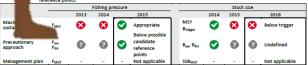
ICES advises that when the MSY approach is applied, catches in 2017 should be no more than 69 186 tonnes.

ishery are very dependent on occasional high recruitments. The very high 1982 recruitment gave a peak in he relatively high one in 2001 gave a moderate increase in SSB up to 2009. Recruitment from 2002 onwards cent years, SSB has been declining and is currently the lowest observed in the entire time-series, below nortality has increased since 2007 and is currently just below F_{MSY}.



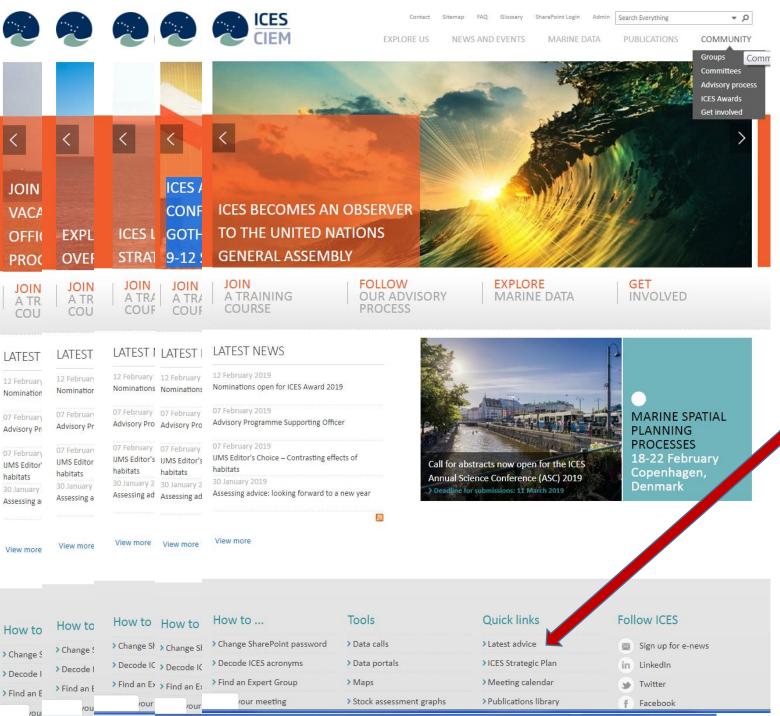
se mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a–c, and 7.e–k. Summary of stock assessment. Predicted ies are not shaded. Confidence intervals (95%, based on approximation using 2 * standard deviation) are included in recruitment and spawning stock biomass plots.

Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. State of the stock and fishery relative to



ICES Advice 2016. Book 9

ICES Advice 2011, Box



How to get what you need www.ices.dk

Buried way down here under a link called "latest Advice" is what you need

The advice page looks like this

LATEST ADVICE ICES provides scientific advice on the marine ecosystem to governments and international regulatory bodies that manage the North Atlantic Ocean and Advice for the adjacent seas. You will find the latest official ICES advice on this page. You can also search for our advice by species and ecoregions in the publications library. current year Advice 2019 Organised by Ecoregion Advice by ecoregion and by Species Advice by species Special requests and other advice by title Links to advice on ICES Viewpoint: Biofouling on vessels - what is the risk, and what might be done about it? UK - Review of the scientific basis for a UK non-detriment finding (NDF) for the international trade in European eel, seen in relation to CITES legislation special requests Advice 2018 Introduction to ICES Advice Previous advice, **Ecosystem Overviews Fisheries Overviews Technical Guidelines** scroll down for more Advice by ecoregion Arctic Ocean; Azores; Baltic Sea; Barents Sea; Bay of Biscay and Iberian Coast; Celtic Seas; Faroes; Greater North Sea; Greenland Sea; Icelandic Waters; Norwegian Sea; Oceanic Northeast Atlantic Advice by species Alfonsinos; Anchovy; Anglerfish; Black Scabbardfish; Blackspot seabream; Blue ling; Blue whiting; Brill; Capelin; Cod; Deep-sea species; Eel; Elasmobranchs; Flounder; Greater forkbeard; Greater silver smelt; Greenland halibut; Grey gurnard; Haddock; Hake; Herring; Horse mackerel; Lemon sole; Ling; Mackerel; Megrim; Norway lobster; Norway pout; Orange

rouphy; Pandalus; Plaice; Pollack; Redfish; Roughhead grenadier; Roughsnout grenadier; Roundnose grenadier; Saithe; Salmon; Sandeel; Sardine; Seabass; Skates and rays; Sole;

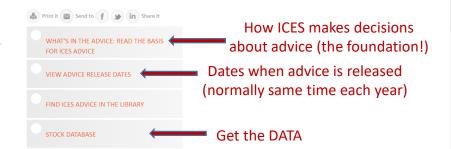
Bycatch of small cetaceans and other marine animals - review of national reports under

Coastal States - Re-evaluation of the reference points for Norwegian Spring-spawning herring

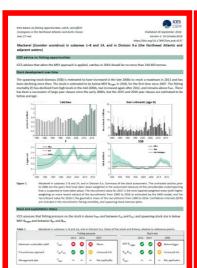
Council Regulation (EC) No. 812/2004 and other information

Sprat; Turbot; Tusk; Whiting

Special requests and other advice by title



How to read what you get







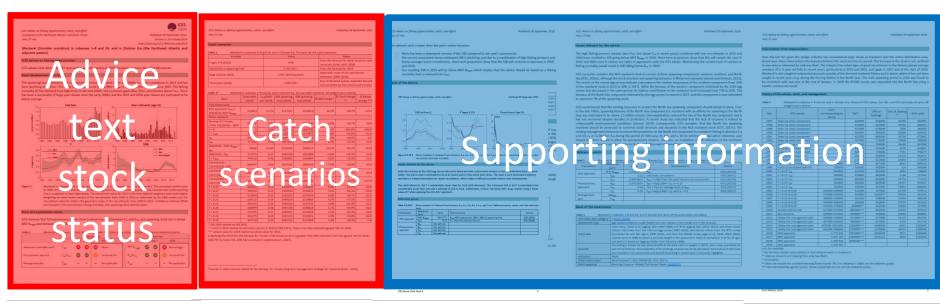
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conservat	tion reference	sice in relat	ion to stock pro	duction and conservation is needed.	
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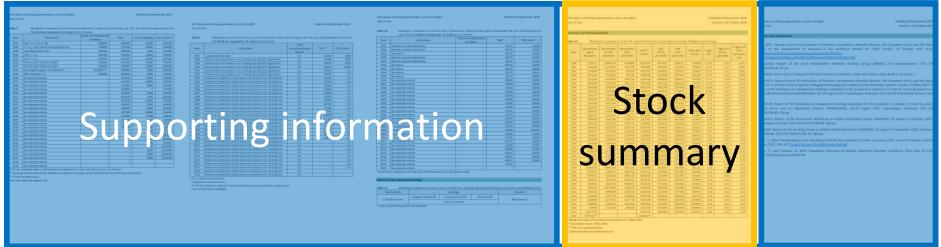
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1290	Given by stack component		562000	580000	15600	626
1991	Given by stack component		612000	509000	30700	975
1992	Claim by stock component		707000	729000	25000	750
1993	Given by stack component		767000	754000	18380	\$341
1994	Given by stack component		927000	794000	5170	819
1995	Given by stock component		643000	729000	7721	756
1996	Significant reduction in E		453000	509000	11415	563
1997	Significant reduction in F	76	470000	517000	14864	\$7%
2298	Fibetayeen 0.15 and 0.2	459000	549000	627000	8012	006
E000	F of 0.35-consistent with PA	437900	563000	545000	0/4	640
3000	F = 0.17: F _{pp}	543000	613000	622000	2094	7341
3001	F = 0.17: F _{ph}	665000	670000	660000	1189	797
2002	$F=0.17;F_{ge}$	694000	683000	685000	29774	
3003	F = 0.17: F _{ph}	543900	583000	600000	19427	67%
2004	F = 0.17: F _{pe}	545000	532000	567000	19962	660
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2007	F=0.251e-0.29	190000-509000	503000	558000	15444	586
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2012	Follow the management plan	586000-639000	927000***	877000	15174	852
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1987 SSB = 1.5 mill. t; TAC	380000 405000 11000 633000 430000 573000 36000 656000	Catalt	1987 Reduce Jovenile exploitation	· 36570 22000		Fages d-8	ion. 2017. Agreed record of conclusions of fisheries consultations between Norway, the Euro	ropean Union and the Far
1988 F = F ₃₋₂ TAC; closed area; landing size 1989 Inuit 558 decline; TAC	450000 575000 56000 656000 355000 455000 7000 572000	Near ICES white corresponding to TAC** ICES calcit	1966 Reduce Jovenile exploitation	- 56570 25000	Reculorant Secretment Secretment 555*** 128 128 74460		ands on the management of mackerel in the northeast Atlantic for 2018, London,	, 11 October 2017, 8)
1990 TAC: F = Fe1	480000 525000 16000 606000	1902 Lowest practical level UPL 15000 2000	2505 No advice	- 36570 18000	Year aged 97.5th 2.5th 500*** 92.5th 2.5th 700*** This could be confide to resettle because a constite according	n 4-6 shoertly persettle	to //www.ices.db/community/enoups/Documents/EO Non-	
1991 TAC; F = Fe1	500000 575000 31000 647000	2967 Linwest practical level LPL 55000 3000 1968 Chased areas and seasons; min. landing size; byoutsh regulations LPL 55000 6000 6000	1990 Reduce) ovenlie exploitation	- 36570 21000	product because because because because	peterse see	roe%20Agreed%20Record%20for%20Macketef%20Oct%202017.pdf	
1992 TAC for both 1992 and 1995	670000 670000 25000 742000	1989 Closed areas and session; min. landing ster, layoutch regulation: UP, 19200 7000	2991 Reduce juvenile exploitation	- 36570 21000	1990 7790521 18984113 3538889 4027907 8457857 1508712 754	990 0.371 0.34 0.087	IS. 2056a. Report of the Stock Identification Methods Working Group (SMWG), by	correspondence, ICES /
1993 TAC for both 1992 and 1993	670000 730000 18000 805000	1990 Good areas and seasons; min. lending size; byootch regulations UPs 43300 10000	2992 No advice 2995 No advice	- 36570 18000 - 36570 25000		865 0.371 0.32 0.091	\$6/35GEPL16, 47 co.	
	831000*** 800000 5000 796000	1991 Clessell arean and seasons; mm. landing ster; bycotch regulations: UPL 85500 n/s	1994 No advice	- 36570 25000 - 36570 25000		967 0.172 0.30 0.093	1770000 CON (170)	
1995 20% reduction in F	550000 608000 8000 728000 - 427000 11000 579000	1992 Closed areas and seasons; min. landing see; bysatch regulations; UR, 76300 n/s	1995 No advice	- 36570 28000		283 0.173 0.30 0.099	ES. 2016b. Advice basis. In Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book	sk 1, Section 1.2.
1996 No separate advice 1997 No separate advice	- 422000 11000 529000 - 414000 19000 529000	1993 Maximum protection; deced areas and seasons; min. landing size UP, 83100 n/s 1994 Maximum protection; closed areas and seasons; min. landing size UP, 95300 n/s	1996 Ne separate advice	- 30000 S4000		939 0.374 0.29 0.304	15. 2017a. Agreed record of conclusions of fisheries consultations between Norway, the Euro	ropean Union and the Fac
1998 No separate advice	- S14000 8000 629000	1990 Maximum protection; clease areas and sessions; min. landing size UPL 76500 n/s	1997 No separate advice	- 30000 41000		571 0.379 0.29 0.100	ands on a recision of the long-term management strategy for macketel in the Northwest Atlanti	
1999 No separate advice	- S20000 0 S47000	1799 Maximum protection; desed areas and season; min. lanking size UP, NSSD 1/4	1998 No separate advice	- i5000 44000		201 0.186 0.29 0.118	port of the Workshop on management strategy evaluation for the mackerel in subarras 1-7 an	
2000 No separate advice	- 573000 2000 703000	1997 Meantum protection; closed areas and seasons; min, briding size US. 33600 n/s	1999 No separate advice	- 35000 44000		992 0.395 0.30 0.327	d 9 a (Northeast Atlantic) (WKMACMSE), 28-29 August 2027, Copenhagen, Denmark, ICES CM 20	
2001 No separate advice	- 630000 1000 694000	1998 Maximum protection; closed areas and seasons; min. landing size UPS 53500 n/s	2000 No separate advice 2001 No separate advice	- 29200 26000 - 40160 43000		491 0.20 0.30 0.38 830 0.22 0.32 0.33		
2002 No separate advice	- 643000 24000 723000	3999 Maximum protection; deced areas and season; min. landing size UP. 62500 n/s	2001 No separate aduce 2002 No separate aduce	- 41200 50000		930 0.22 0.33 0.233 907 0.25 0.35 0.274		
2001 No separate advice	- 548000 5000 644000	2000 Maximum protection; closed sews and sessant; min. landing store LPs. 64700 n/a	2003 No separate advice	- 35000 36000			 2017b. Report of the Workshop on management strategy evaluation for the mackerel in st 	
2004 No separate advice	- 500000 11000 615000	2001. Maximum protection; closed areas and season; inin, funding size: UP, 71400 In/a 2002. Maximum protection; closed areas and season; iron, landing size: UP, 72500 In/a	2004 No separate advice	- 32310 25000		665 0.28 0.39 0.20 690 0.31 0.43 0.23	risions 8.a-e and 9.a (Northeast Atlantic) (WKMACMSE), 28-29 August 2017, Copenh	hagen, Denmark. ICES C
2005 No separate advice 2006 No separate advice	- 297000 20000 494000 - 418000 17000 420000	2001 Maximum protection; closed areas and season; min. landing size UP. 42500 n/a	2005 No separate advice	- 34870 50000		568 0.35 0.42 0.36	17/ACOM:48.216.pg.	
2000 No separate advice	- 42000 1700 42000 - 472000 8000 519000	2006 Maximum protection; closed sneet and sesson;; min. landing size LPL \$7700 r/s	2006 No separate advice	- 26180 53000		007 0.36 0.49 0.27	IS, 2017c. Report of the Benchmark Workshop on Widely Distributed Stocks (WKWIDE), 30	0 January-3 February 200
2008 No separate advice	- 452000 27000 552000	2007 Maximum protection; deced areas and seasons; min. landing size. UR. 44000 n/s	2007 No separate advice	- 29630 63000		277 0.34 0.44 0.26	penhagen, Denmark. ICES CM 2017/ACOM:36: 196 pp.	
2009 No separate advice	- 569000 15000 627000	2008 Maximum protection; desaid areas and seasons; min. landing size US. 47300 n/s	2008 No separate advice	- 27010 60000		672 0.29 0.36 0.23		
2010 No separate advice	- 4000 817000	2007 Maximum protection; closed areas and seasons; min. landing spe UM, 53300 n/a	2009 Ne separate advice	- 35830 208000	1997 2676837 6716690 3518632 2676629 243,3486 1799926 571	029 0.27 0.35 0.21	ES. 2038. Report of the Working Group on Widely Distributed Stocks (WGWDE), 28 August-3:	September 2018, Torshai
2011 No separate advice	- 8000 920000	2008 Maximum protection; closed areas and season; min. landing size UP. 48600 n/s	2000 Ne separate advice	- 33880 52000	2998 2348534 5020573 2304054 2309082 3458203 1809588 960	836 0.27 0.25 0.22	roe Islands. ICES CM 2008/ACOM: 23. 488 pp.	
2012 No separate advice	- 11000 864000	2003 Maximum protection; desed areas and seasons; min. landing size UPL 63600 n/e	2013 No separate advice 2012 No separate advice	- 87140 19000 - 96740 29000	2999 2753406 5636541 2902079 2253952 2616229 1946305 640	929 0.30 0.37 0.34	roen, T. 2014. Pseudocollapse and rebuilding of North Sea mackerel (Scomber scombrus), KES	5 Journal of Marine Scien
2013 No separate advice	- 2000 910000	2020 Maximum protection; desied areas and seasons; min. funding size UPL - n/e. 2013 Maximum protection; desied areas and seasons; min. fanding size UPL - n/e.	2012 No reporter advice	- 51160 22000	2000 2588498 1794164 1765955 2181219 2462669 1956526 756	600 0.30 0.39 0.29	Aume 71(2): 299-307. https://doi.org/10.1093/cesion/Hr1346/	
2014 No separate advice	- A 6000 1342000	2012 Maximum protection; closed areas and assuran; min. fanding size LPL - n/s	2014 No reporter advice	- 51160 22000 - 54640 51000		453 0.39 0.45 0.33		
2015 No separate advice	- 8000 1160000 - 8000 1056000	2015 Maximum protettion; decel areas and seasons; min. landing size UP n/s	2015 No separate advice	- 48140 44000	3003 6708579 12577632 6029700 1885640 2146182 1657079 771		isen, T., and Gidason, H. 2013. Population Structure of Atlantic Macketel (Scomber score	mbrus). PLoS One, 8:1-1
2016 No separate advice 2017 No separate advice	- \$000 2096000 - 3000 1120298	2018 Maximum protection; closed areas and seasons; min. landing tibe UP, - n/k	2016 No separate advice	- 40920 96000		287 0.48 0.54 0.39	i:10.1371/journal.pone.0064744	
2012 No separate advice		2015 Meximum protection; closed areas and season; min. landing cos Uh n/s	2017 No separate advice	- 46631 23000		HS 0.42 0.49 0.36		
2019 No separate advice		2018 Maximum protection; clessed areas and sessions; min. landing size LPL - In/a	2018 No separate advice	- 37305		554 632 638 627		
TAC for mackerel taken in all divisions and subarress 6, 7, 6.a, 6.b, 6.d.	d. 5 h. 2 a. 3 a. and 4 a.	2017 Maximum protection; clessed areas and seasons; min. landing size LPL - IV/a	2019 No separate advice	-	2006 13464574 16692597 2674129 2215900 2658927 1674894 481			
Candings and discards of the Western component; includes some call	catches from the North Sea compenent.	2018 Maximum protection; stend prept and season; min. landing size UP; 2015 Maximum protection; closed areas and season; min. landing size UP;	"Division E.c., subarress 9 and 10, and CECAF Division 34.1.1 (EU system only).			200 0.33 0.39 0.28		
** Catch at status quo F.		PL - Lanes) Practical Level.				005 0.32 0.38 0.27 969 0.29 0.56 0.25		
No internationally agreed TAC.		* Subarran 4 and District Rus.	History of the catch and landings			513 0.28 0.34 0.24		
		** TAC for Subarsa 4, discours 3.4 and 5.5-d (EU zone), and Discour 2.4 (EU zone).	Table 11 Mackerel in subarress 1-8 and 14, and in Division S.a. Landings distribu-	the bullet and discount or estimated by MIII	2010 0683930 9631467 4638427 4625533 4732936 3423862 875 2011 7482547 02773616 338207 4734829 5805302 4101560 946			
		ryla: ne mformation available.	Catch (2017) Landings distribution 1-6 and 16, and in Distribution 6.3. Landings distribu	Ution by feet and discards as estimated by KES. Discards		959 0.26 0.32 0.22		
					2012 1220480 4067764 2130621 4067388 481061A 3405388 931			
				en 0.2% 2832 tanner*	2014 8120909 12077522 5327746 4130139 499969 2502912 1291	900 0.33 0.40 0.27		
			1 159 112 tonnes		2015 2588980 4250901 1561361 5962608 4726985 8522248 1208			
			* Only quantified for part of the fisheries.		2018 784490 1514562 406338 8527255 4856303 2854640 1094			
					2017 \$267778* 2061442 4049404 2245404 1257			
					2018 8877184** 2959277			
					Weighted mean of recruitment estimates for 2990-2016.			
					* Geometric mean 1990-2016.			
					** SSB is at spawning time.			
					Extinuited value from the forecast.			

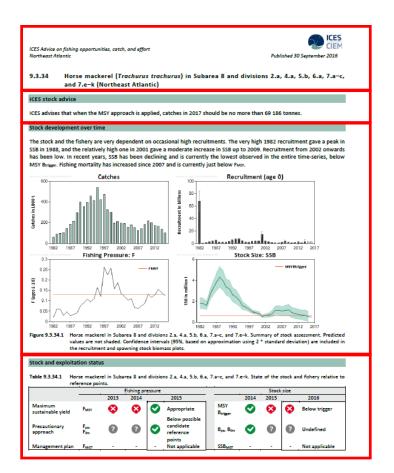
How to read what you get





20 Addres 2019 7 KET Addres 2019 8 KET Addres 2019 1 KET ADDRES 20

Headline News – advice, status and options



ICFS Advice 2016 Book 9

Published 30 September 2016

ICES Advice on fishing opportunities, catch, and effort

Catch options

Table 9.3,34.2 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The basis for the catch option

Variable	Value	Source	Notes		
F ages 1-10 (2016)	0.1606	ICES (2016a)	Catch constraint		
SSB (2016) at spawning time	t spawning time 489 616 t		Based on the ICES estimate of the total catch for 2016.		
R _{see 0} (2016–2018)	2 342 897	ICES (2016a)	GM 1983-2014		
Rage ((2010-2016)	thousands	1023 (20202)	GW 1963-2014		
			EU TAC - which is also the expected catch. The catches since		
Catch (2016)	124 403 t	ICES (2016a)	2007 have been below the total TAC (EU TAC plus national		
			quotas of other countries) and closer to the EU TAC.		

Table 9.3.34.3 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The catch options.

Rationale	Catch (2017)	Basis	F (2017 and 2018)	SSB (2017)*	SSB (2018)*	%SSB change**	% TAC change***
MSY approach ^	69186	F _{MSY} × SSB ₂₀₁₇ /MSY B _{trigger}	0.092	455086	490225	8	-45
	96494	F _{MSY}	0.13	445576	461276	4	-23
Zero catch	0	F = 0	0	478383	566841	18	-100
	93031	Facus	0.126	446793	464906	4	-26
	116886	F ₂₀₁₆	0.161	438350	440145	0	-7
Other options	0	SSB ₂₀₁₈ = MSY B _{trigger} ^^					
	126103	ICES catch advice for	0.175	435049	430740	-1	0

Weights in tonnes.
* SSB at spawning time.

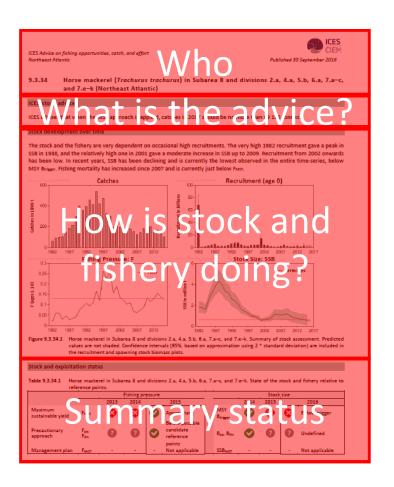
** SSB₂₀₁₈ relative to SSB₂₀₁₇ at spawning time.

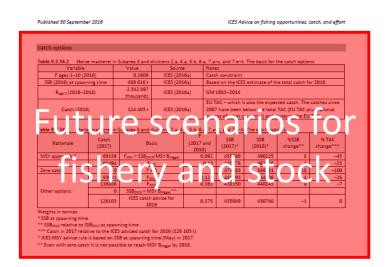
*** Catch in 2017 relative to the ICES advised catch for 2016 (126 103 t)

^ ICES MSY advice rule is based on SSB at spawning time (May) in 2017.

^^ Even with zero catch it is not possible to reach MSY Btrigger by 2018.

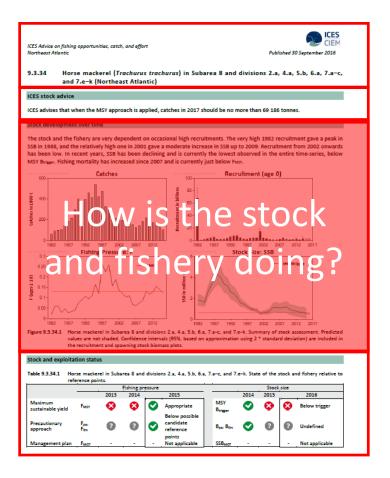
How to interpret what you read





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How to interpret what you read



Published 30 Sentember 2016

ICES Advice on fishing opportunities, catch, and effort

Catch options

Table 9.3.34.2 Horse mackerel in Subarea 8 and divisions 2.a. 4.a. 5.b. 6.a. 7.a-c. and 7.e-k. The basis for the catch options.

Variable	Value	Source	Notes		
F ages 1-10 (2016)	0.1606	ICES (2016a)	Catch constraint		
SSB (2016) at spawning time	489 616 t	ICES (2016a)	Based on the ICES estimate of the total catch for 2016.		
R _{aze 0} (2016–2018)	2 342 897	ICES (2016a)	GM 1983-2014		
Kaga ((2010–2018)	thousands	1023 (20202)			
			EU TAC - which is also the expected catch. The catches since		
Catch (2016)	124 403 t	ICES (2016a)	2007 have been below the total TAC (EU TAC plus national		
			quotas of other countries) and closer to the EU TAC.		

Table 9.3.34.3 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The catch options

Rationale	Catch (2017)	Basis	F (2017 and 2018)	SSB (2017)*	SSB (2018)*	%SSB change**	% TAC change***
MSY approach ^	69186	F _{MSY} × SSB ₂₀₁₇ /MSY B _{trigger}	0.092	455086	490225	8	-45
	96494	F _{MSY}	0.13	445576	461276	4	-23
Zero catch	0	F = 0	0	478383	566841	18	-100
	93031	F ₂₀₁₅	0.126	446793	464906	4	-26
	116886	F ₂₀₁₆	0.161	438350	440145	0	-7
Other options	0	SSB ₂₀₁₈ = MSY B _{trigger} ^^					
	126103	ICES catch advice for 2016	0.175	435049	430740	-1	0

Weights in tonnes.
* SSB at spawning time.

** SSB₂₀₁₈ relative to SSB₂₀₁₇ at spawning time.

*** Catch in 2017 relative to the ICES advised catch for 2016 (126 103 t)

^ ICES MSY advice rule is based on SSB at spawning time (May) in 2017. ^^ Even with zero catch it is not possible to reach MSY $B_{trigger}$ by 2018.

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Stock assessment & Forecast

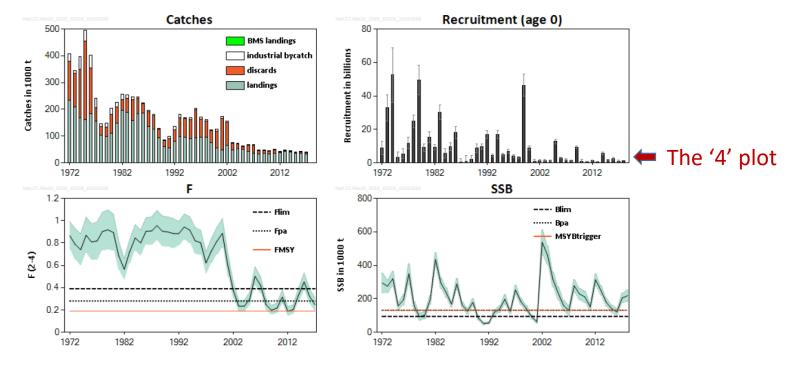


How is the stock and fishery doing? (= what the scientists think is happening)

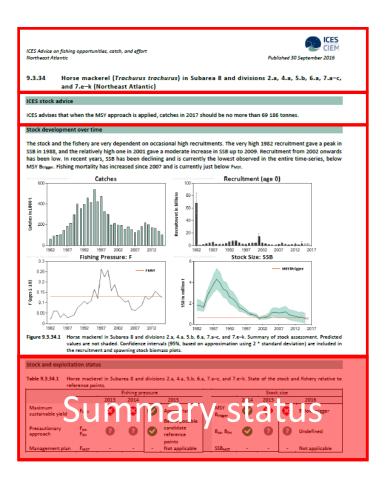
Stock development over time

Description of what's happened to the stock

Fishing mortality (F) has been fluctuating above F_{MSY} for most of the time-series and is above F_{MSY} in 2017. Spawning-stock biomass (SSB) has been above MSY B_{trigger} in most of the years since 2002. Recruitment since 2000 has been characterized by a low average level with occasional larger year classes, the size of which is diminishing.



Summary status = where is the stock in relation to targets & limits?



Published 30 Sentember 2016 ICES Advice on fishing opportunities, catch, and effort Catch options Table 9.3.34.2 Horse mackerel Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The basis for the catch option Fages 1-10 (2016) 0.1606 ICES (2016a) Catch constraint SSB (2016) at spawning time 489 616 + ICES (2016a) Based on the ICES estimate of the total catch for 2016. 2 342 897 R_{sg+0} (2016-2018) ICES (2016a) GM 1983-2014 thousand: Catch (2016) 124 403 2007 have been below the total TAC (EU TAC plus national quotas of other countries) and closer to the EU TAC. Table 9.3.34.3 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The catch option SSB %SSB % TAC SSB (2017 and change*** (2017)* (2018)* change* 69186 F_{MSY} × SSB₂₀₁₇/MSY B_{trig} MSY approach ^ 455086 490225 0.092 0.13 445576 461276 F=0 Zero catch 0 478383 566841 -100 93031 0.126 446793 -26 0.161 438350 SSB₂₀₁₈ = MSY B_{trigger} * SSB at spawning time. ** SSB₂₀₁₈ relative to SSB₂₀₁₇ at spawning time. *** Catch in 2017 relative to the ICES advised catch for 2016 (126 103 t) ^ ICES MSY advice rule is based on SSB at spawning time (May) in 2017. ^^ Even with zero catch it is not possible to reach MSY B_{trigger} by 2018.

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Summary status = where is the stock in relation to targets & limits?

Stock and exploitation status

ICES assesses that fishing pressure on the stock is above F_{MSY} and below F_{pa} and F_{lim} , and spawning-stock size is below MSY $B_{trigger}$, B_{pa} , and B_{lim} .

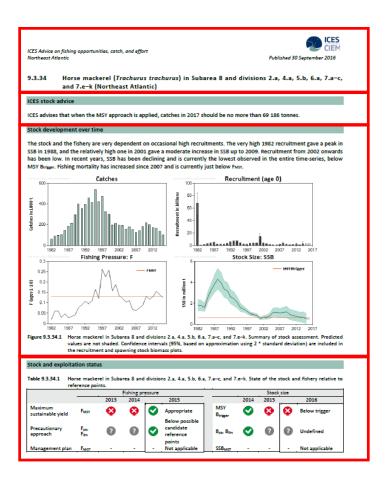
Table 1 Herring in subdivisions 20–24, spring spawners. State of the stock and fishery relative to reference points.

		Fishing pressure					Stock si	ze		
		2015	2016		2017	2	016	2017		2018
Maximum sustainable yield	FMSY	8	8	8	Above	MSY BTrigger	8	8	3	Below trigger
Precautionary approach	Fpa,Flim	•	•	0	Harvested sustainably	Bpa,Blim	8	8	8	Increased risk
Management plan	FMGT	_	_	-	Not applicable	SSBMGT	-	-	_	Not applicable



Pictogram description of the stock relative to reference points over time

Headline News – advice, status and options





ICES Advice 2016, Book 9

Future scenarios for fishery and stock = What the implications are of different choices about future fishing

Catch options

Table 9.3.34.2 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The basis for the catch options

Basis or sassumptions made in the forecast

Table 3.3.34.2 Horse Hackeren	ili Subarea o allu (ulvisions 2.a, 4.a, 3.b, 0.	a, 7.a-c, and 7.e-k. The basis for the catch options.			
Variable	Value	Source	Notes			
F ages 1–10 (2016)	0.1606	ICES (2016a)	Catch constraint			
SSB (2016) at spawning time	489 616 t	ICES (2016a)	Based on the ICES estimate of the total catch for 2016.			
R _{age 0} (2016–2018)	2 342 897		GM 1983–2014			
Nage 0 (2010–2018)	thousands	ICES (2016a)	GW 1985-2014			
			EU TAC – which is also the expected catch. The catches since			
Catch (2016)	124 403 t	ICES (2016a)	2007 have been below the total TAC (EU TAC plus national			
			quotas of other countries) and closer to the EU TAC.			

Table 9.3.34.3 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. The catch options.

Rationale for the	2
harvest rate	
applied	

Trable 51515415 Horse mackerer in Subarea 6 and divisions 2.a, 4.a, 5.b, 6.a, 7.a e, and 7.e k. The eaten options.									
Rationale	Catch (2017)	Basis	F (2017 and 2018)	SSB (2017)*	SSB (2018)*	%SSB change**	% TAC change***		
MSY approach ^	69186	$F_{MSY} \times SSB_{2017}/MSY B_{trigger}$	0.092	455086	490225	8	-45		
	96494	F _{MSY}	0.13	445576	461276	4	-23		
Zero catch	0	F = 0	0	478383	566841	18	-100		
	93031	F ₂₀₁₅	0.126	446793	464906	4	-26		
	116886	F ₂₀₁₆	0.161	438350	440145	0	-7		
Other options	0	$SSB_{2018} = MSY B_{trigger}^{\Lambda}$							
	126103	ICES catch advice for 2016	0.175	435049	430740	-1	0		

Weights in tonnes.

^{*} SSB at spawning time.

^{**} SSB2018 relative to SSB2017 at spawning time.

^{***} Catch in 2017 relative to the ICES advised catch for 2016 (126 103 t)

[^] ICES MSY advice rule is based on SSB at spawning time (May) in 2017.

 $^{^{\}rm h}$ Even with zero catch it is not possible to reach MSY $B_{\rm trigger}$ by 2018.

What's in the supporting information?

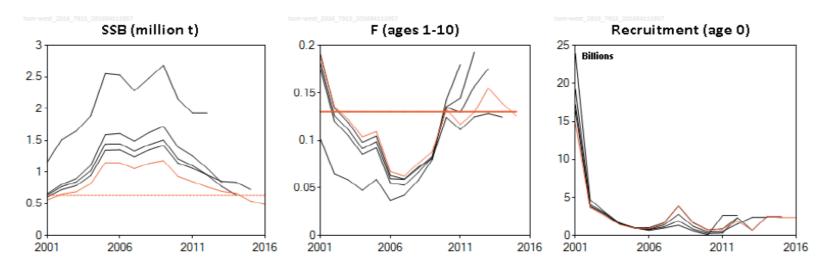


Figure 9.3.34.2 Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, and 7.e-k. Historical assessment results (final-year recruitment estimates included).

Information on the consistency of the assessment over time, which scientists call "quality of the assessment"

What's in the supporting information

Segments on

- Issues affecting the quality of the advice
- Information from stakeholders

A lot of reference information on

- Reference points and their technical basis
- The technical basis of the assessment.
- References to documents cited in the advice

A lot of tables of

- The ICES advice, agreed TAC and catches over time
- Details of where the catches were taken and how over time
- The stock assessment summary table

PART 3 Exercise – Deeper look – what do you see now?

PART 4 A quick look at mixed fisheries, multispecies and ecosystem advice

Interactive Stock advice online



Stock development over time

The spawning-stock biomass (SSB) has increased substantially since 2006 and is well above historical estimates. Fishing mortality (F) has decreased markedly after 2005 and has been below FMSY since 2012. The two most recent recruitment (R) estimates are above the average of the time-series.

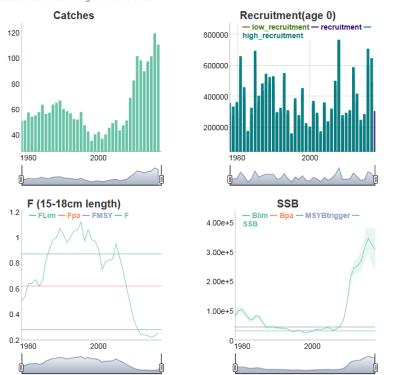


Figure 1. Summary of the stock assessment of hake in subareas 4, 6, and 7, and in divisions 3.a, 8.a–b, and 8.d, Northern stock. Complete discard estimates are available only since 2003. Recruitment and SSB plots show 95% confidence intervals (shaded area). Assumed recruitment values are unshaded.

Summary of the assessment

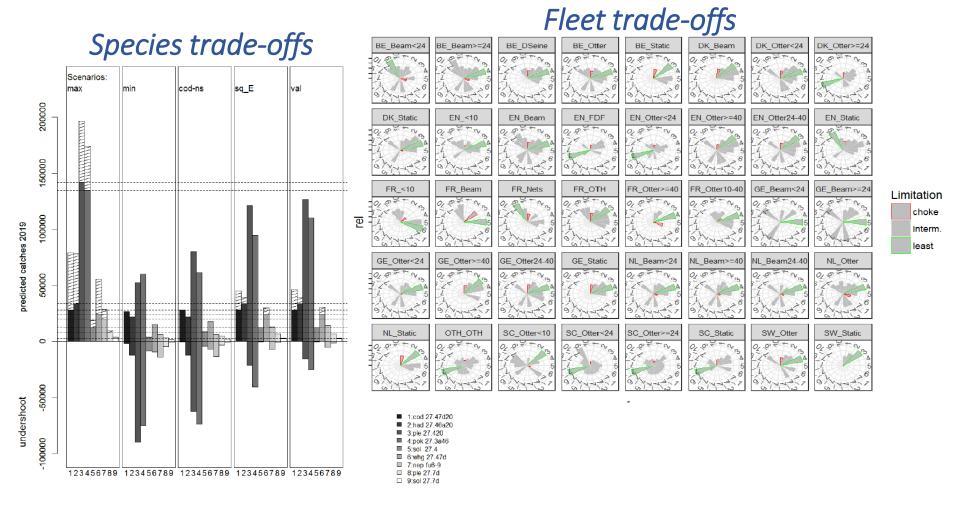
Assessment summary for hake in subareas 4, 6, and 7, and in divisions 3.a, 8.a–b, and 8.d, Northern stock. Weights are in tonnes. Highs and lows are 95% confidence intervals

Show/Download Table

Go to Top

Stock and explotation status

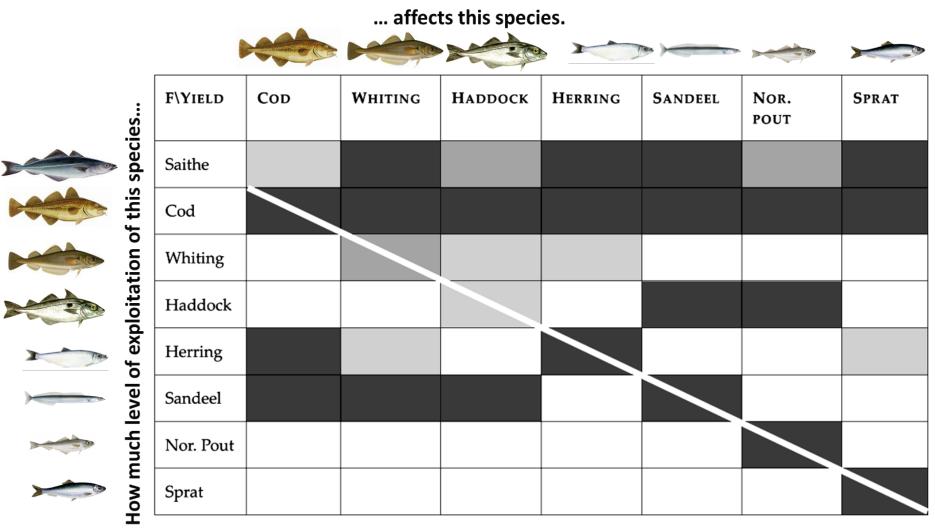
Mixed fisheries advice



Mixed fisheries for the North Sea. Mixed-fisheries projections. Estimates of potential catches (in tonnes) by stock and by scenario. Horizontal lines correspond to the single-stock catch advice for 2019. Bars below the value of zero show undershoot (compared to single-stock advice) where catches are predicted to be lower when applying the scenario. Hatched columns represent catches that overshoot the single-stock advice. Details for Division 7.d plaice and sole stocks are shown in Figure 7.

'Impact assessment' of single species advice

Multi-species advice: accounting for predator-prey interactions



Ecological trade-offs

Ecosystem Advice – where is it at?

Good Environmental Status Objectives



...each with a suite of indicators

ICES generates a lot of relevant IEA products but the 'venue' for their uptake is quite low Clients are still not asking the 'right' questions!