

Presentation of ICES *draft* Advice to North Sea RAC

29 June 2010, Boulogne-Sur-Mer, France

Manuela Azevedo
ACOM Vice-chair

Cod & Haddock

Cod North Sea, Eastern channel, Skagerrak (cod-347)

Cod Kattegat (cod-kat)

Haddock North Sea and Skagerrak (had-34)

Whiting

North Sea and Eastern channel (whg-47d)

Skagerrak-Kattegat (whg-kask)

Plaice and Sole

Plaice North Sea (ple-nsea)

Sole North Sea (sol-nsea)

Plaice Skagerrak-Kattegat (ple-kask)

Sole Skagerrak-Kattegat (sol-kask)

Sole Eastern channel (sol-eche)

Herring

Western Baltic spring spawners (her3a22)

North Sea autumn spawners (her-47d3)

Norway pout

Sprat

Sprat NS: Available information is inadequate to evaluate stock status.
Advice will be **revisited in 2011**.

Sprat Skagerrak-Kattegat: Available survey results not reliable
indicators: **No Advice**

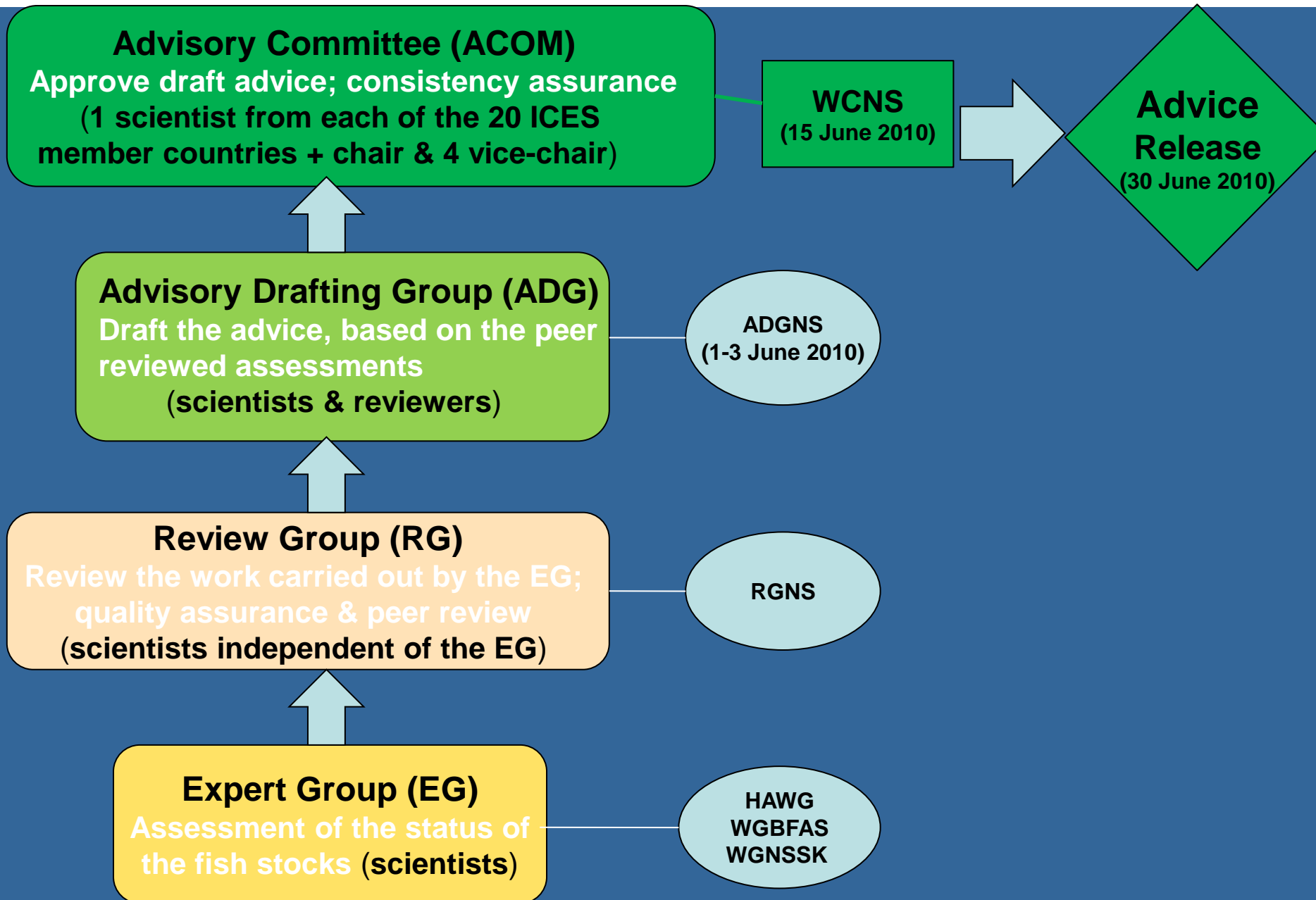
Saithe

NS, Skagerrak, West Scotland & Rockall (sai3a46)

Nephrops

North Sea (nep-IV): FUs 5-6-7-8-9-10-32-33

Skagerrak-Kattegat (nep-IIIa)

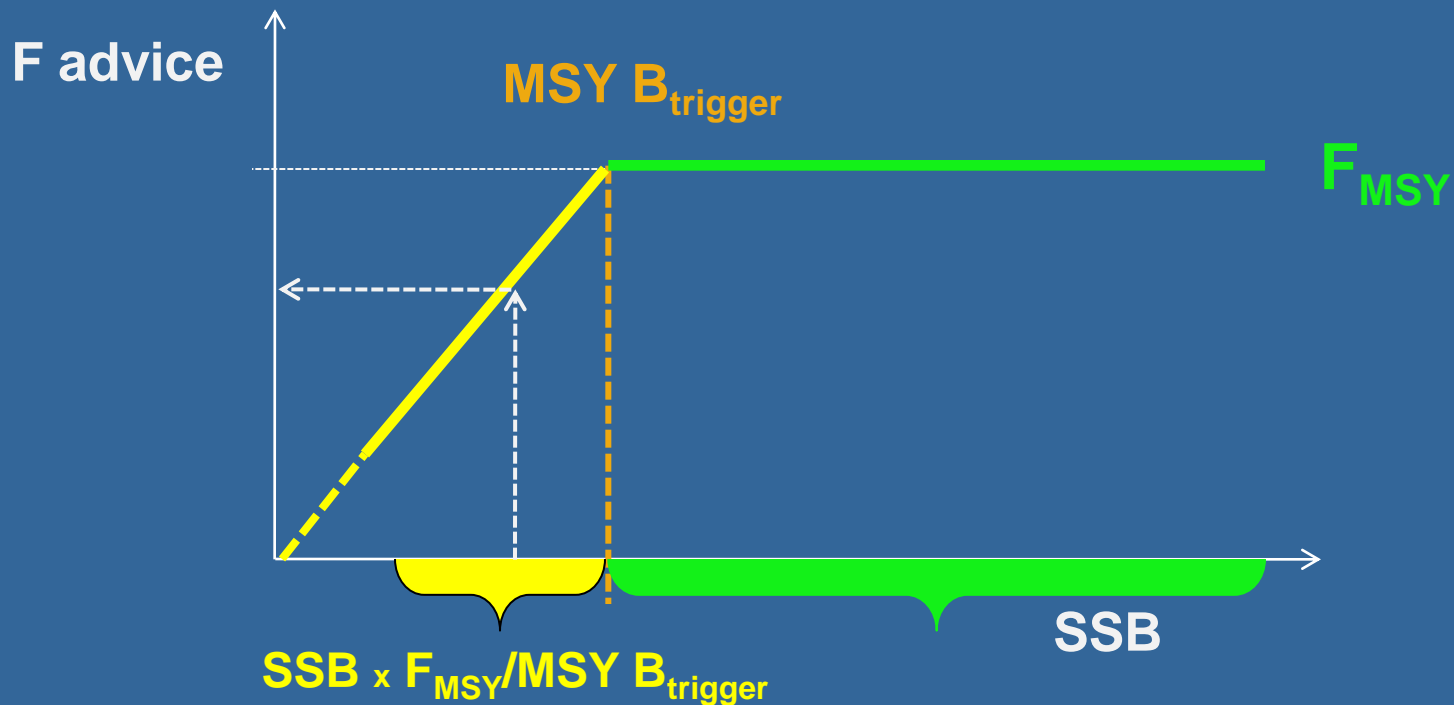


Based on an F_{MSY} and a biomass safeguard against low spawning stock biomass

F_{MSY} is the fishing mortality that in the long-term will maximize yield

$MSY B_{trigger}$ is a biomass reference point that triggers a cautious response: “A cautious biomass triggering action to maintain a stock within a desirable stock size range”

ICES MSY Harvest Control Rule (HCR)



MSY Transition

Moving from Current F to **MSY** in 2015

In 5 steps

$$2011: (F(2010)*0.8 + F_{MSY} *0.2)$$

$$2012: (F(2011)*0.6 + F_{MSY} *0.4)$$

$$2013: (F(2012)*0.4 + F_{MSY} *0.6)$$

$$2014: (F(2013)*0.2 + F_{MSY} *0.8)$$

$$2015: (F(2014)*0.0 + F_{MSY} *1.0) \rightarrow F_{MSY}$$

Advice summary table

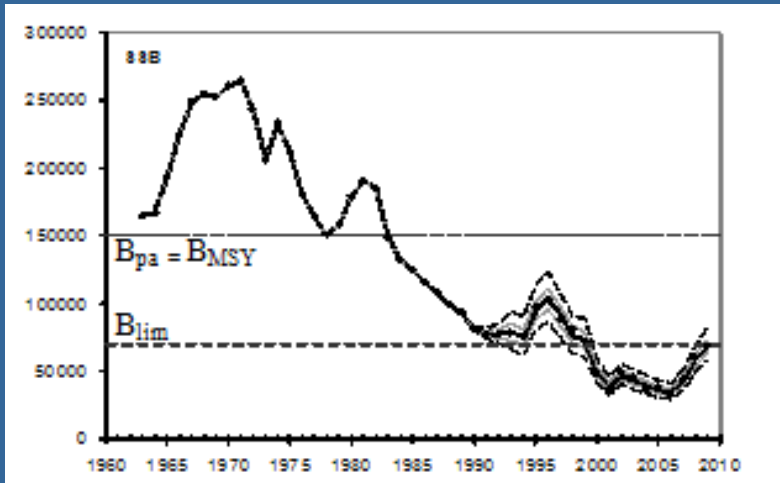
Management Objective (s)	Landings (2011)
<ul style="list-style-type: none"> • Transition to an MSY approach with caution at low stock size 	Less than XX T
<ul style="list-style-type: none"> • Cautiously avoid impaired recruitment (Precautionary Approach) 	Less than X T
<ul style="list-style-type: none"> • Cautiously avoid impaired recruitment and achieve other objective(s) of a management plan (e.g., catch stability) 	Y t

Stocks without projections

stock trends based assessments

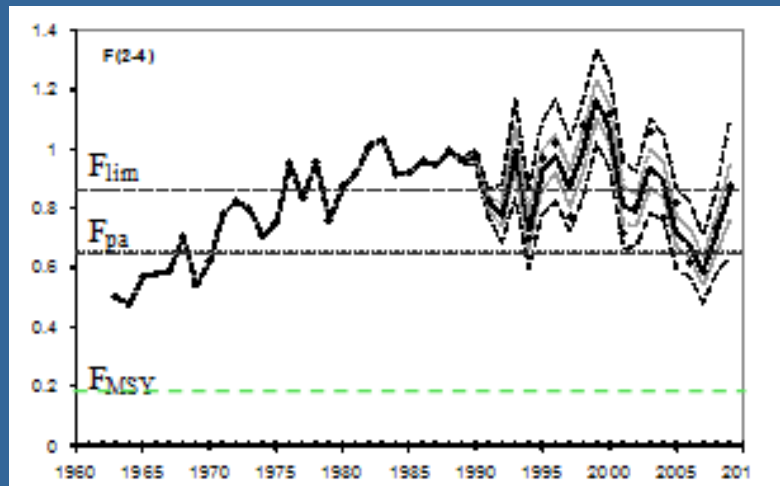
	No Overfishing	Overfishing or Unknown Exploitation Status
Decreasing stock trend	Reduce catch from recent level at rate of stock decrease	Reduce catch from recent level at rate greater than the rate of stock decrease
Stable stock trend	Maintain catch at recent level	Reduce catch from recent level
Increasing stock trend	Increase catch from recent level at rate of stock increase	Maintain catch at recent level

Cod & Haddock



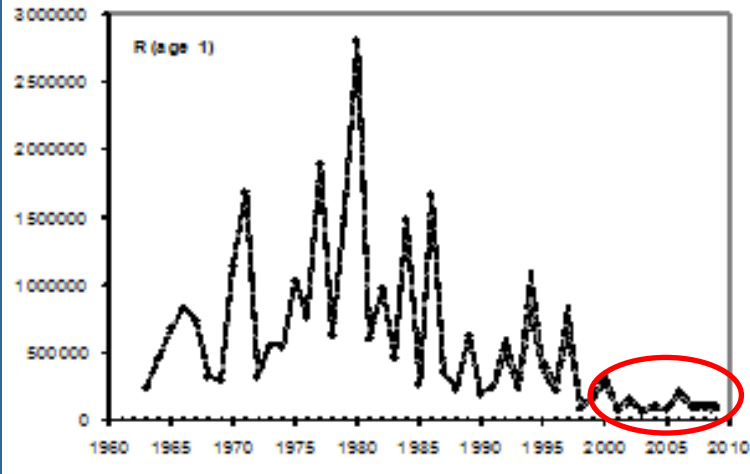
SSB has increased since its historical low in 2006, but remains below B_{lim}

$$SSB_{2009} = 68.6 \text{ kt}$$

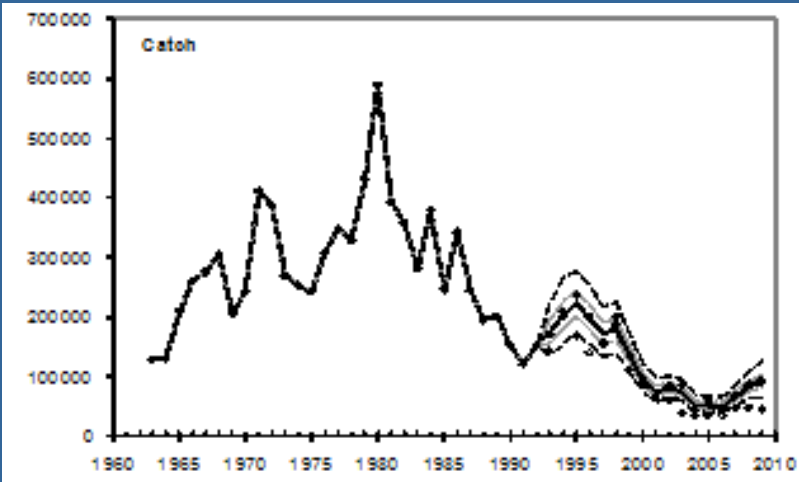


Fishing mortality declined after 2000, and although its most recent trajectory is considered uncertain, it is estimated to be well above the long-term objectives of maximum yield, and likely above F_{pa} .

$$F_{2009} = 0.85$$

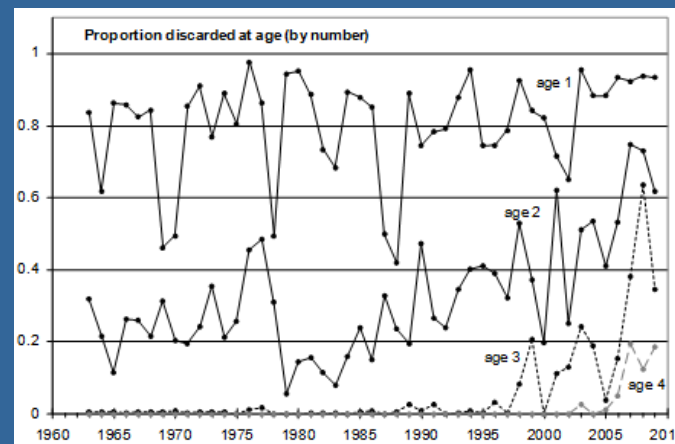


Recruitment since 2000 is poor



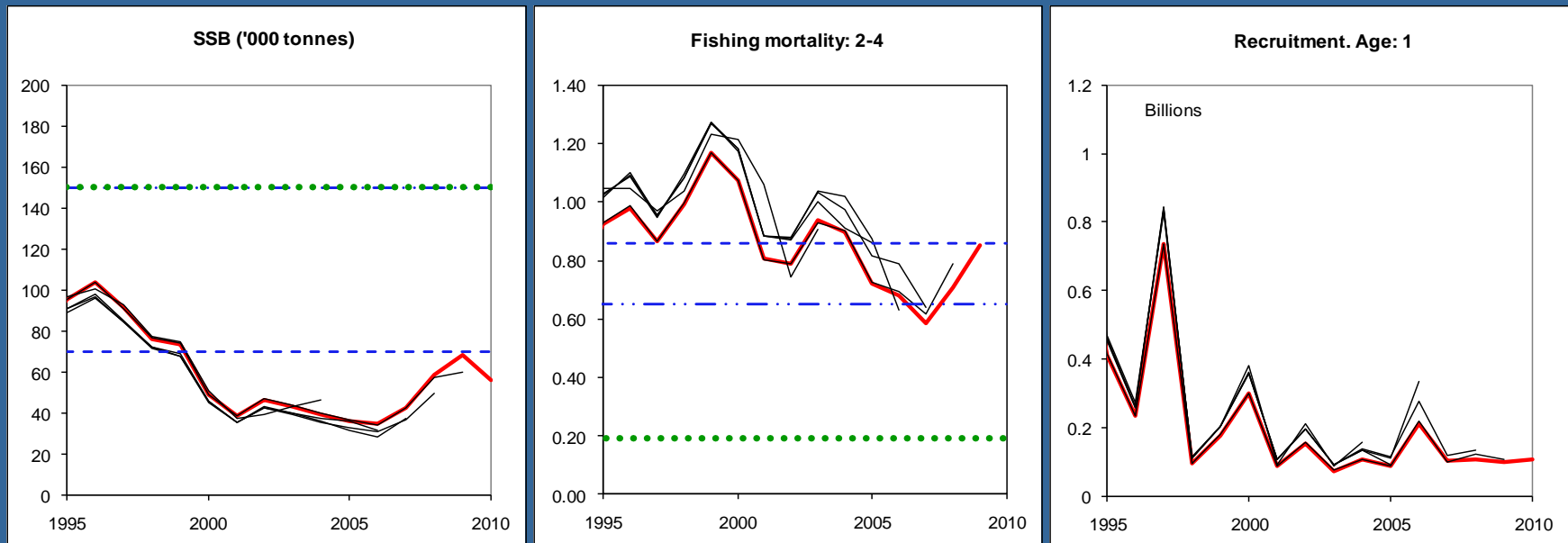
Catch 2008: 84 kt

Catch 2009: 91.4 kt
 30.8 kt recorded landings
 14.6 kt recorded discards



2009:
 93% (1)
 62% (2)
 34% (3)
 18% (4: YC2005)

Historical performance



Assessment is an update (benchmark in 2009). Considered more uncertain than last year (mainly most recent year). Informative of general stock status in relation to BRPs; alternative assessment method gives same perception.

MSY approach (Transition scheme):

$F = ((0.85 * 0.8) + (0.19 * 0.2))$ reduced by the ratio $SSB_{2011} / MSYB_{trigger}$

Increase in SSB of 90% in 2012

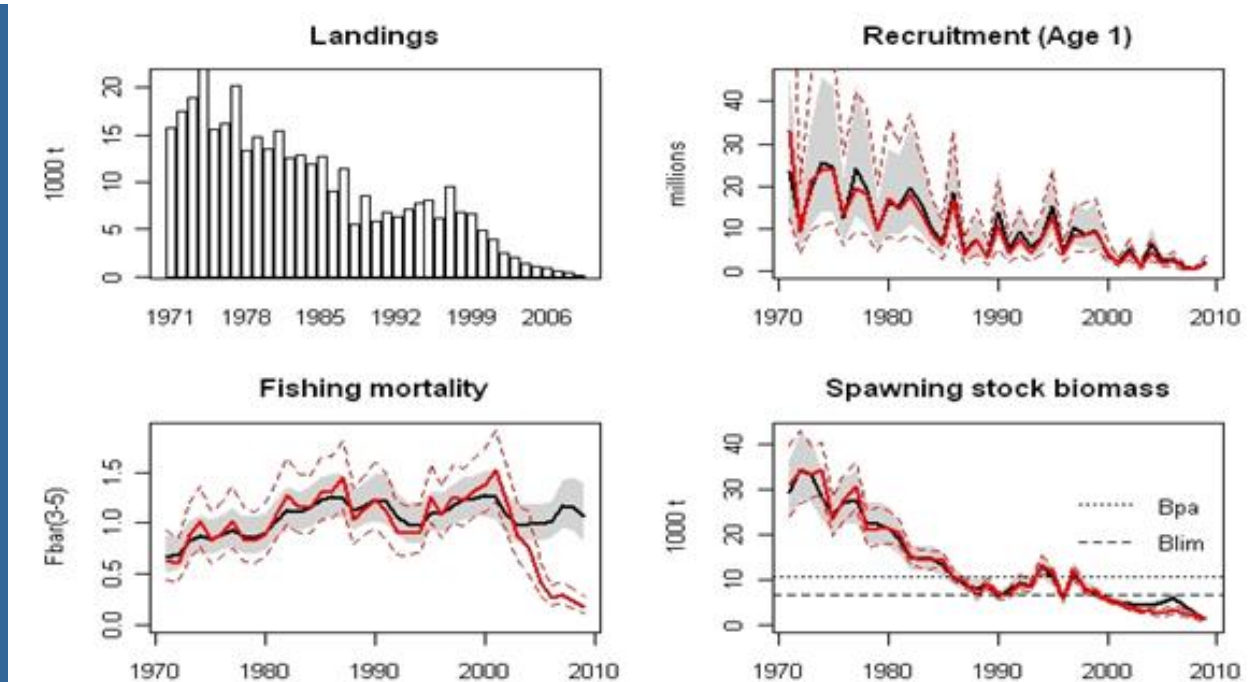
%TAC change: - 86%

PA approach:

$F_{pa} = 0.4$: even a zero catch in 2011 is not expected to result in SSB reaching B_{pa} in 2012

Management Plan:

$F_{08} * 0.55$ with TAC constraint (20%)



SSB has been at a historically lowest level since 2000

Recruitment in recent years has been the lowest in the time series

Fishing mortality: current level is unknown and is likely somewhere in between the estimates from the two runs (with and without estimating unallocated removals)

Year	Landings multiplier	Low	High
2003	1.61	1.13	2.30
2004	1.81	1.25	2.63
2005	3.77	2.59	5.50
2006	5.45	3.71	8.03
2007	4.85	3.23	7.28
2008	4.52	2.99	6.82
2009	4.54	2.99	6.90

Estimated scaling factors for landings to represent **total removals** from the stock (average and 95% confidence intervals, indicated as Low and High)

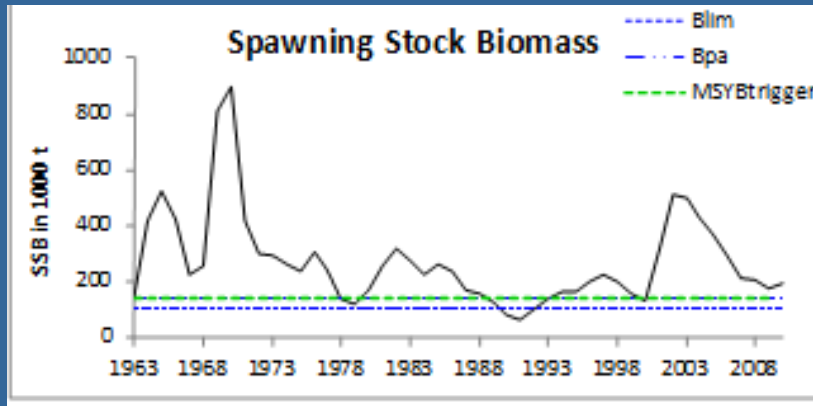
Overall perception of the stock is unchanged compared to last year

MSY based advice:

Not relevant - the state of the stock is unknown and low recruitment and spawning biomass is at historically lowest level in recent years

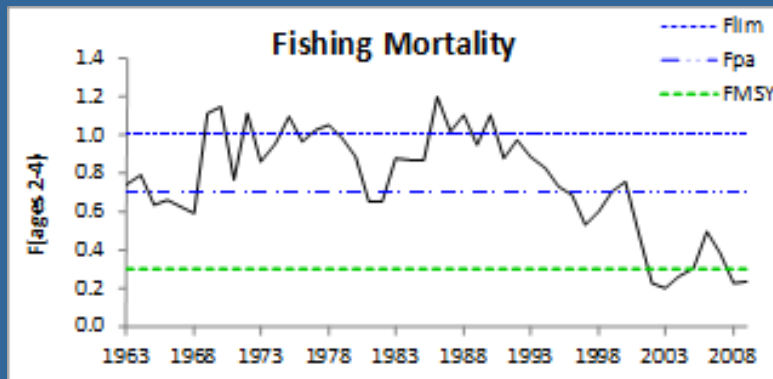
PA considerations:

Due to the historical low recruitment and stock biomass the catches should be set to zero for 2011



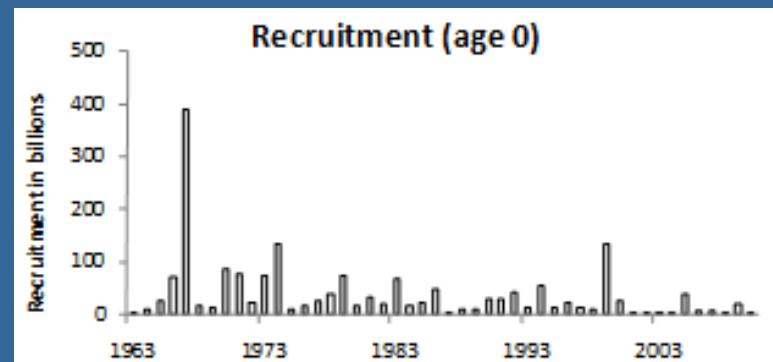
SSB is above MSY $B_{trigger}$ since 2001

$$SSB_{2009} = 178 \text{ kt}$$



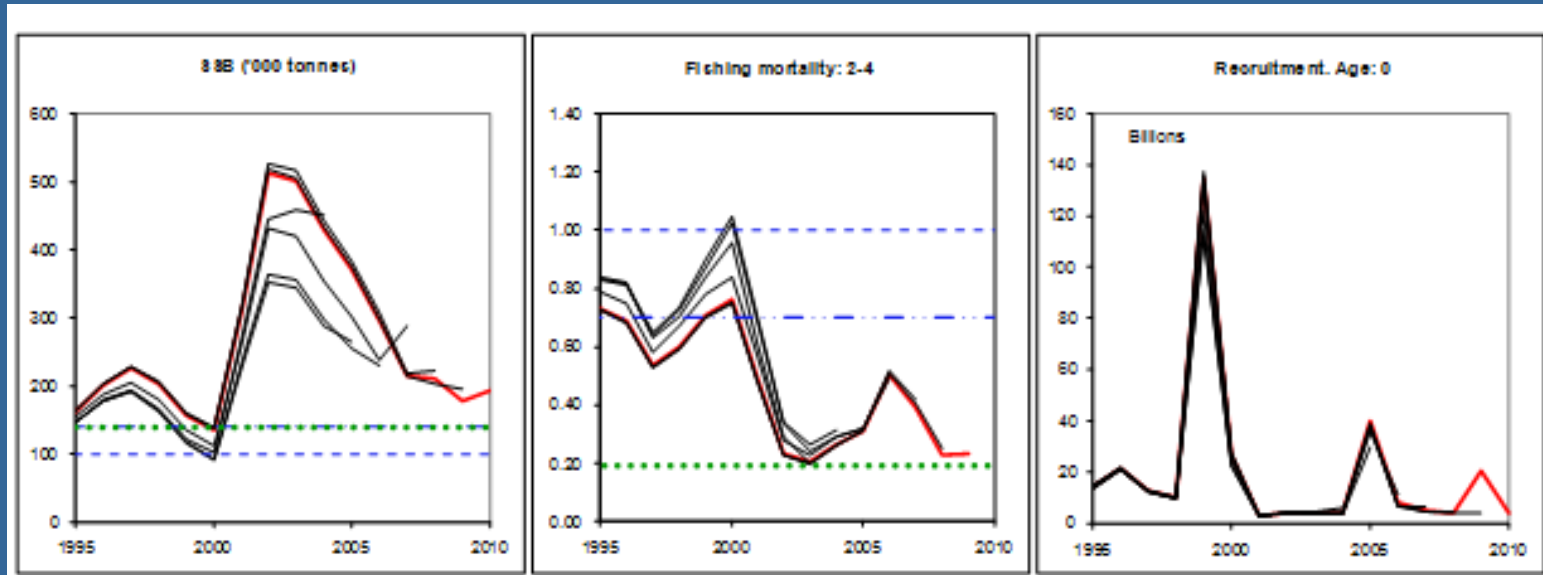
Fishing mortality declined early 90 s and has been below F_{pa} since 2001.

$$F_{2009} = 0.23 < F_{MSY} (0.3)$$



Recruitment: the last large YC was the strong 1999 YC. Apart from the 2005 and 2009 YC which are about average, recent recruitment has been poor

Historical performance



**Assessment is an update (benchmark planned for early 2011).
Perception of the stock remains relatively unchanged.**

MSY approach:

Increase F_{sq} to F_{MSY} (0.30). Increase in SSB of 3% in 2012.
%TAC change: - 5%

PA approach:

F no more than F_{pa} . SSB above B_{pa} in 2012.
%TAC change: + 94%

Management Plan:

Following the management plan is expected to lead to a TAC reduction of 5% and an effort increase of 29%.

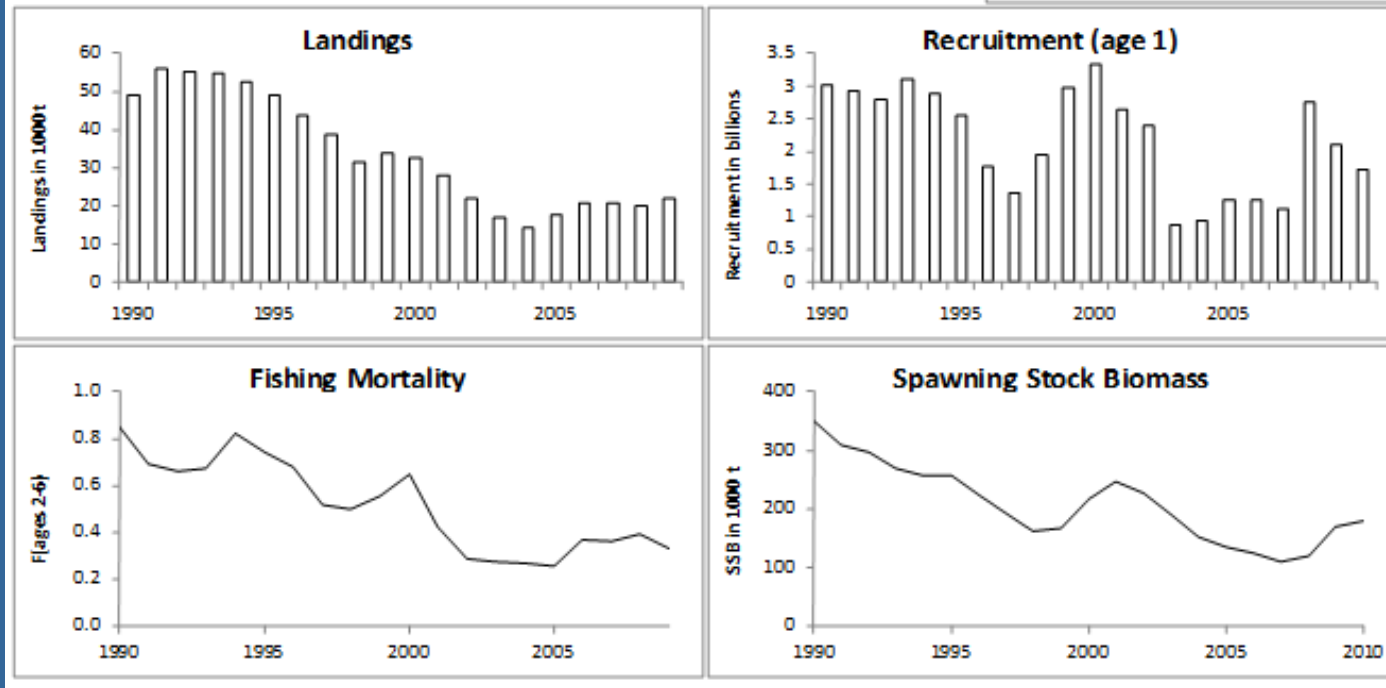
Whiting

- NS and Eastern channel (whg-47d)

- Skagerrak-Kattegat (whg-kask)

Available landing data provide insufficient information on stock status: **No Advice**

Total catch (2009) 243 t comprising 8 % landings, 80 % discards, 13 % industrial by-catch



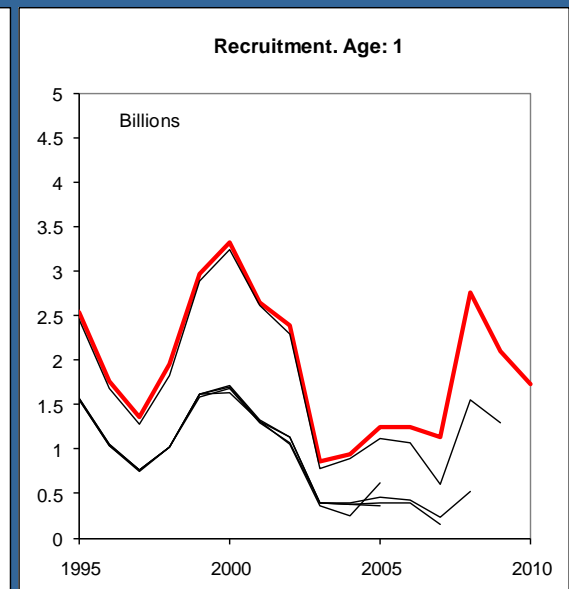
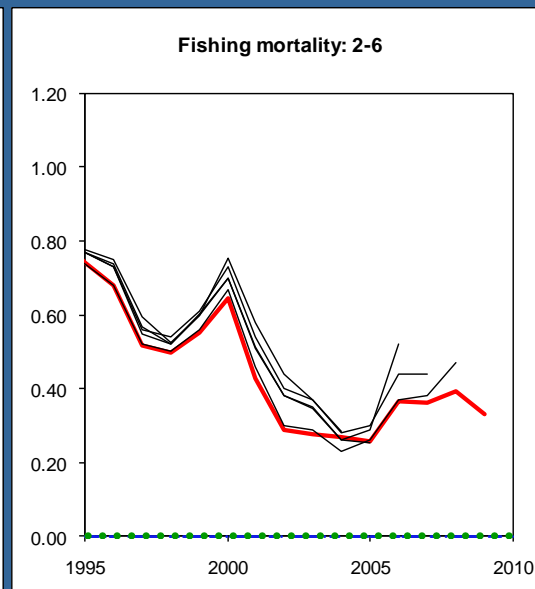
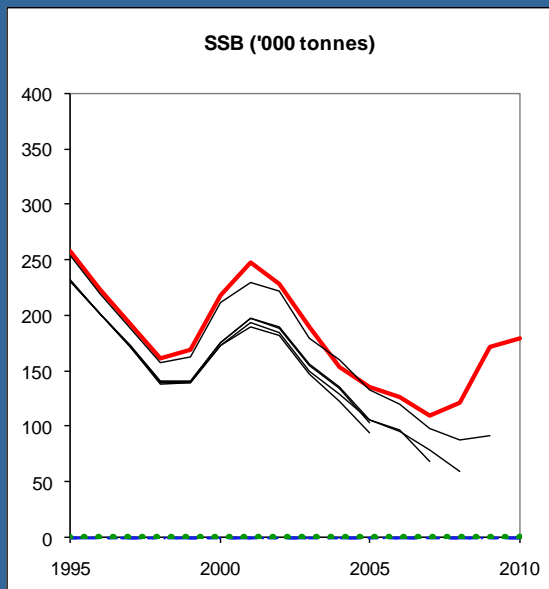
RPs:
undefined

SSB in 2009 is slightly higher than in 2008 but remains below average

Fishing mortality has been stable over the last 4 years.

Recruitment has been very low between 2003 and 2007 with stronger recruitments estimated in 2008 and 2009, however the size of these recruitments are uncertain.

Assessment type	Age based analytical (XSA)
Input data	2 survey indices (IBTS Q1 & Q3 ages 1 to 5)
Discards and by-catch	Included in the assessment for IV and VIId since 1990
Indicators	none
Other information	This assessment was benchmarked in 2009
Working group report	WGNSK



The assessment is uncertain.

The change in assessments results since 2009 is caused by the use of increased values of natural mortality particularly at age 1

MSY approach:

There are no RPs to enable MSY advice.

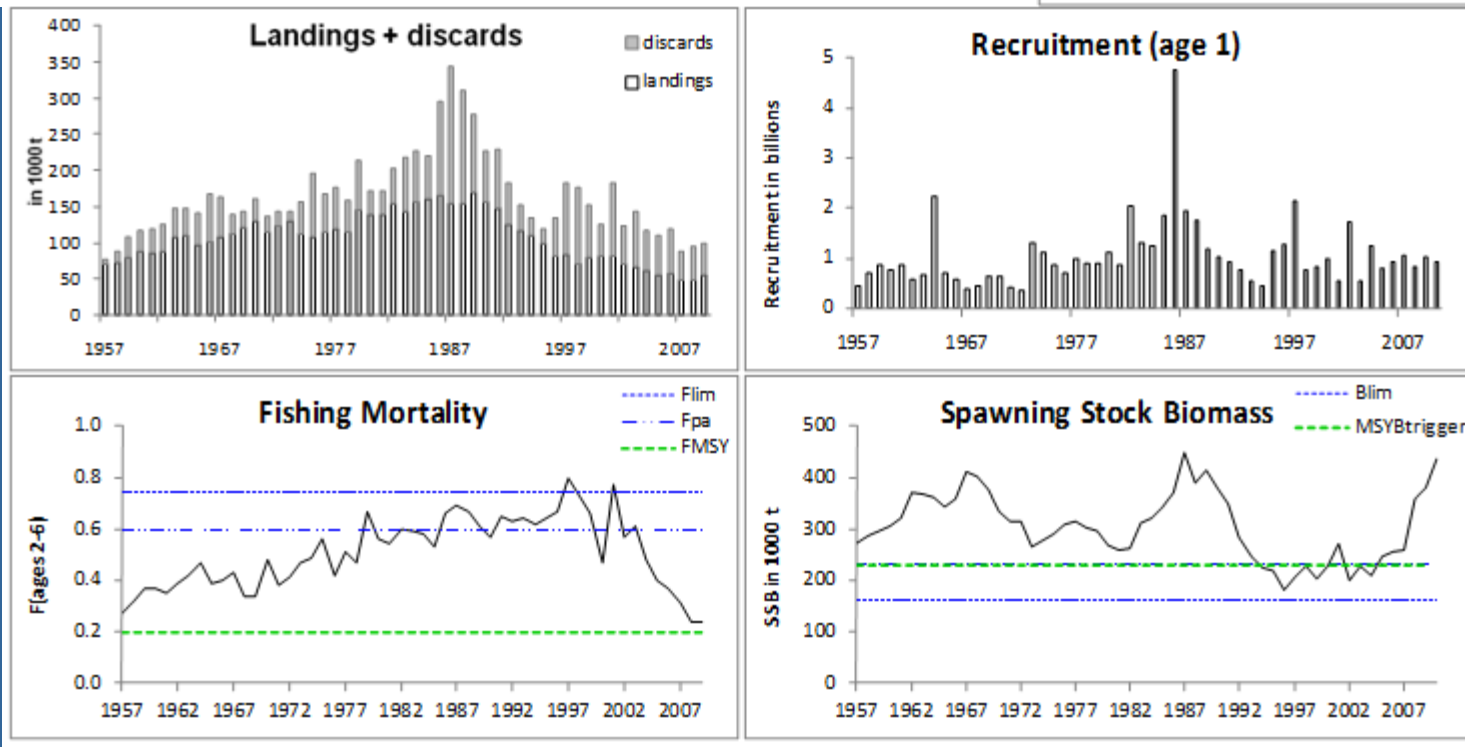
PA approach:

No PA RPs. A 50% reduction in F is needed to maintain SSB at the 2010 level.

Management Plan:

No specific management objectives known to ICES.

Plaice & Sole



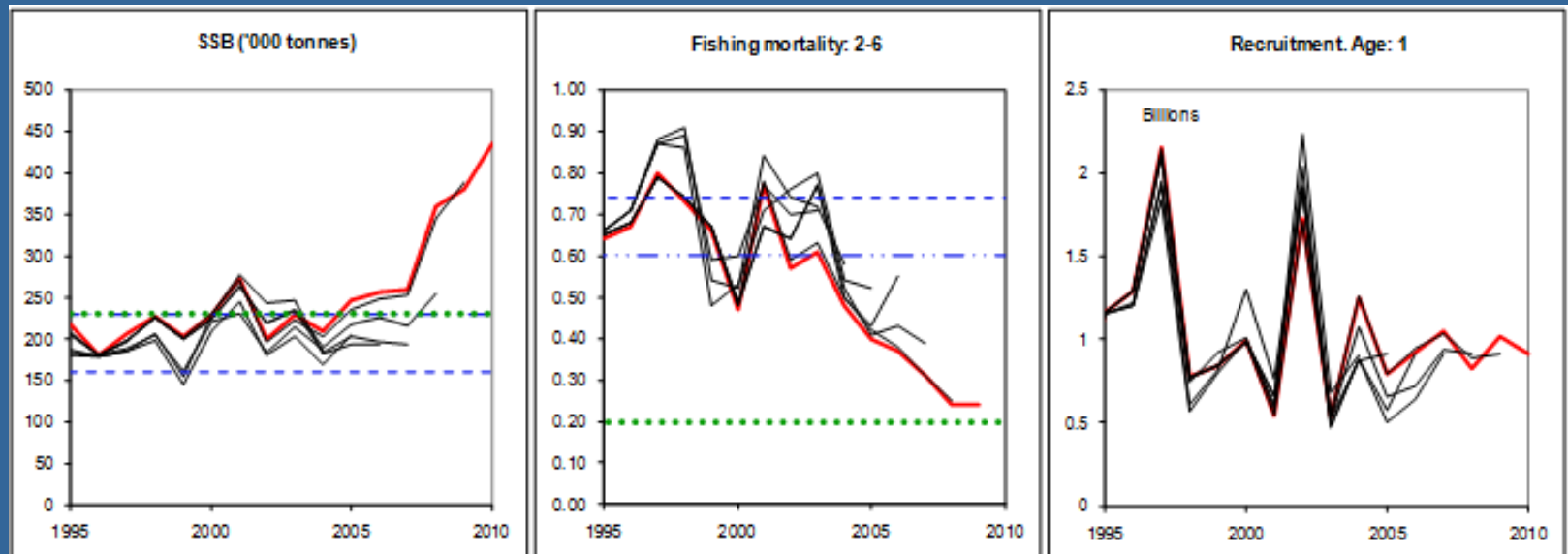
SSB well above $MSY B_{trigger}$ (230 kt)

Fishing mortality below F_{pa} (0.74) and slightly above F_{MSY} (0.20)

Recruitment around LT average from 2005 onwards

Total catch (2009) 100kt: 55 % landings, 45 % discards

Assessment type	Age-based analytical assessment (XSA)
Input data	3 survey indices (BTS-Tridens, BTS-Isis, SNS)
Discards and by-catch	Included in the assessment (since 2004)
Indicators	None
Other information	This stock was benchmarked in 2009
Working group report	WGNSSK



The assessment is uncertain: discards form a substantial part of the total catch and cannot be well estimated; large differences in abundance observed in the different regions of the North Sea

MSY approach (Transition scheme):

Reduce F to 0.23. Increase in SSB of 11% in 2012.

%TAC change: +1%

PA approach:

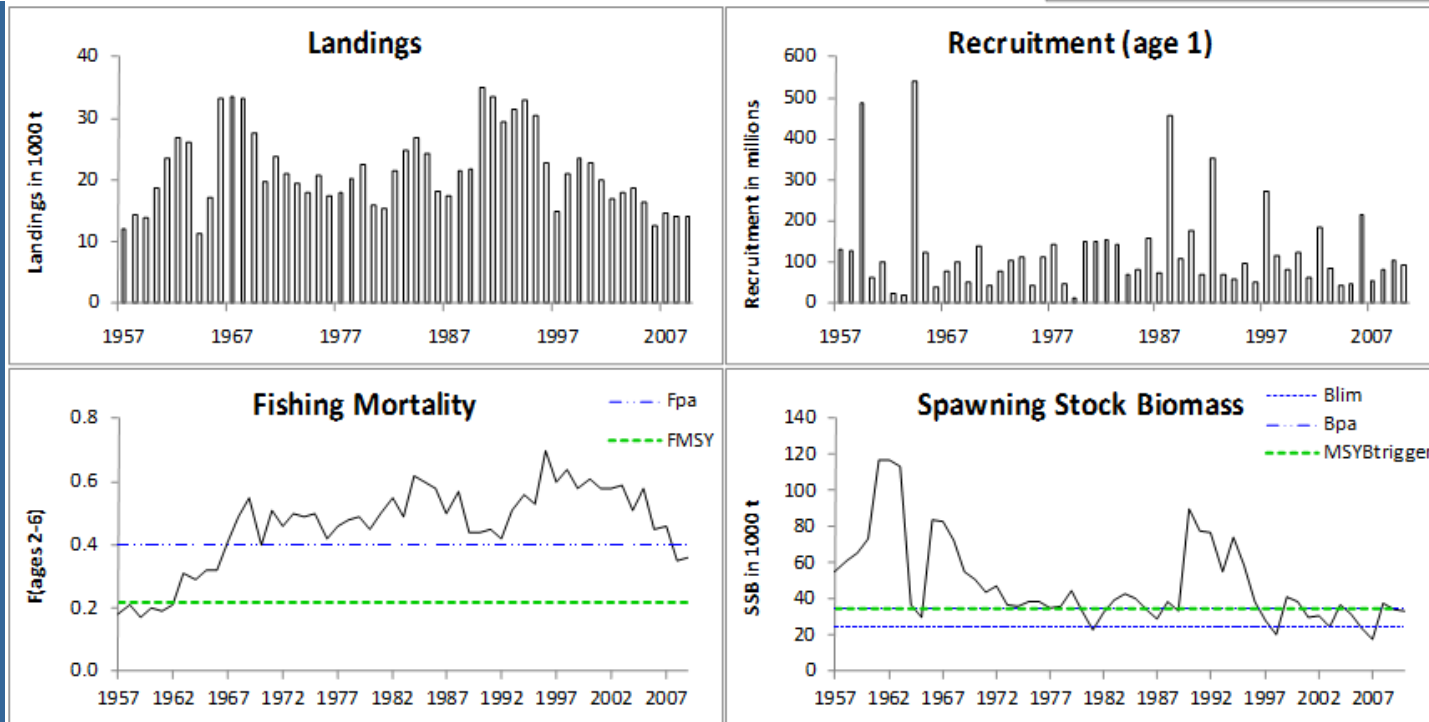
No more than $F_{pa}=0.6$. Decrease in SSB of 16% in 2012.

%TAC change: + 126%.

Management Plan:

Initial evaluation: Not precautionary

The catch according to the plan can be considered precautionary in 2011

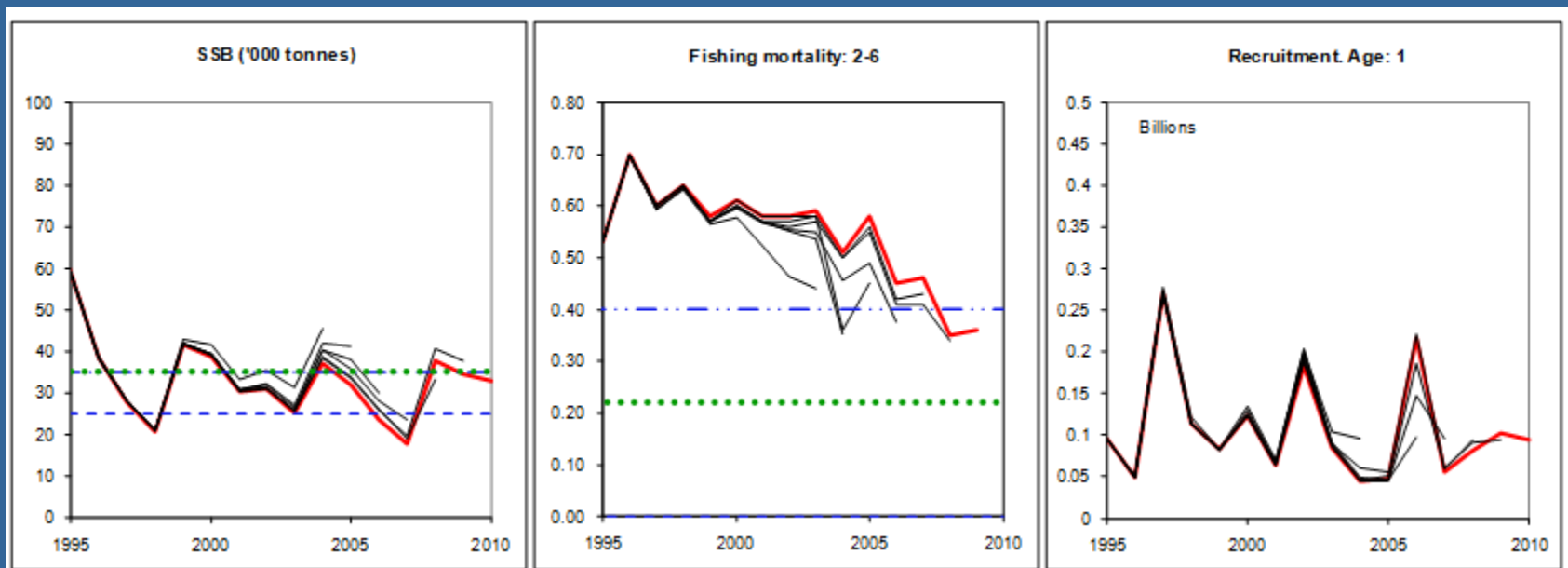


SSB fluctuated around the PA RPs for the last decade; in 2009 below $MSYB_{trigger}$ (35 kt)

Fishing mortality declining trend since 1995; below F_{pa} (0.4) in 2008 and 2009; above F_{MSY} (0.22)

Landings 2009: 14 kt

Assessment type	Age based analytical assessment (XSA)
Input data	2 survey indices (BTS-ISIS, SNS) 1 commercial index (NL BT)
Discards and by-catch	Not included in the assessment
Indicators	None
Other information	Benchmarked February 2010 (WKFLAT)
Working group report	WGNSSK



Perception of the stock remains relatively unchanged.

MSY approach (Transition scheme):

Reduce F to 0.33. Increase in SSB of 4% in 2012.

%TAC change: -2%

PA approach:

SSB above B_{pa} in 2012: increase in F of 6% (to 0.38; < $F_{pa}=0.4$)

%TAC change: + 10%

Management Plan:

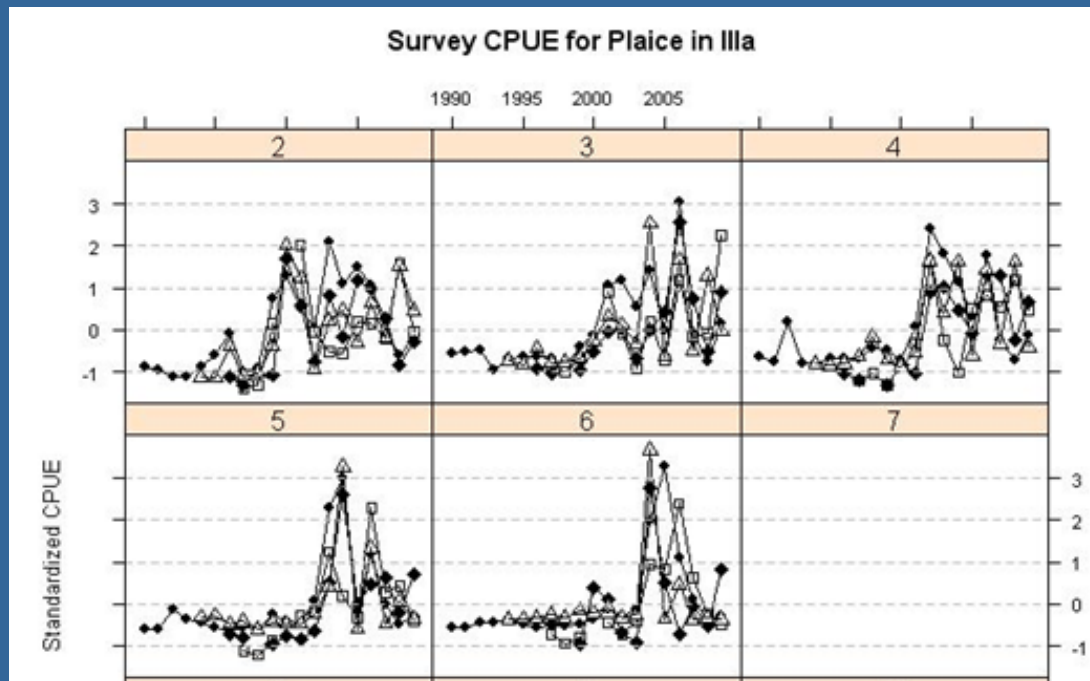
10% reduction of F_{sq} . Increase in SSB of 5% in 2012.

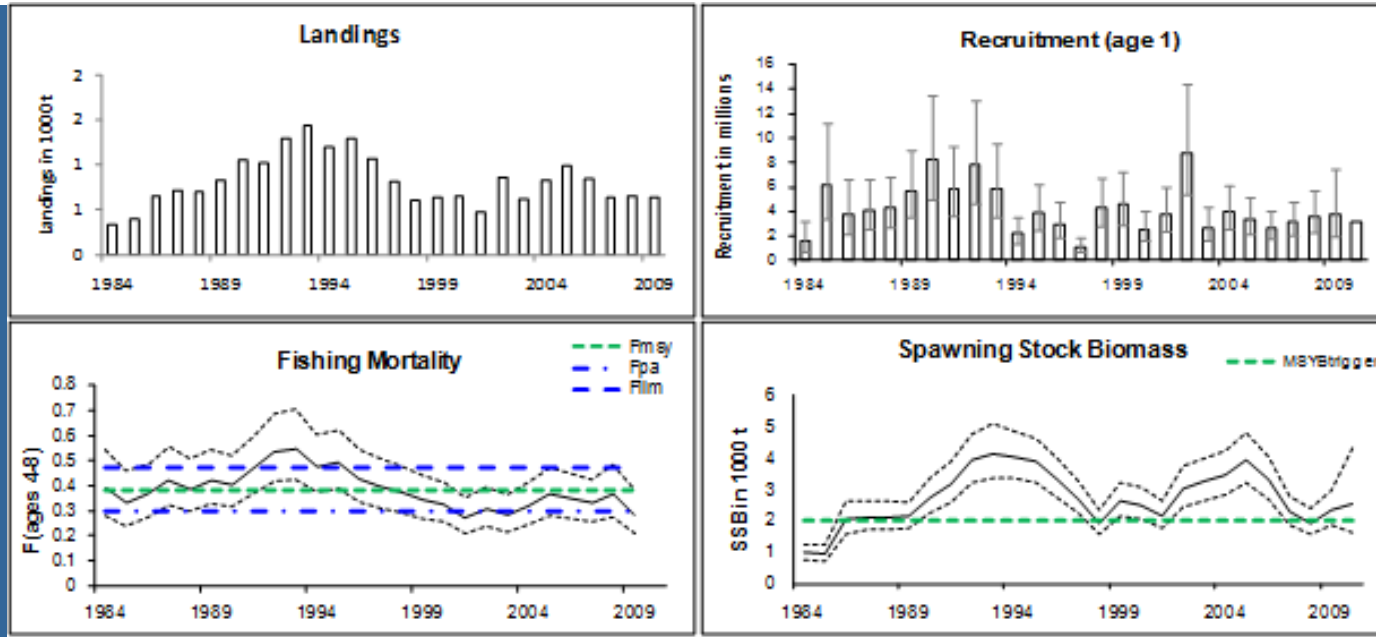
%TAC change: - 4%

No reliable assessment. The state of the stock is unknown.

MSY considerations: survey indices indicate abundance and R are higher during the last 6-8 years than in the 90's. Landings should not exceed the average level 2007-2009

PA considerations: no reason to revise the perception of stock condition. Landings should not exceed the average level 2007-2009





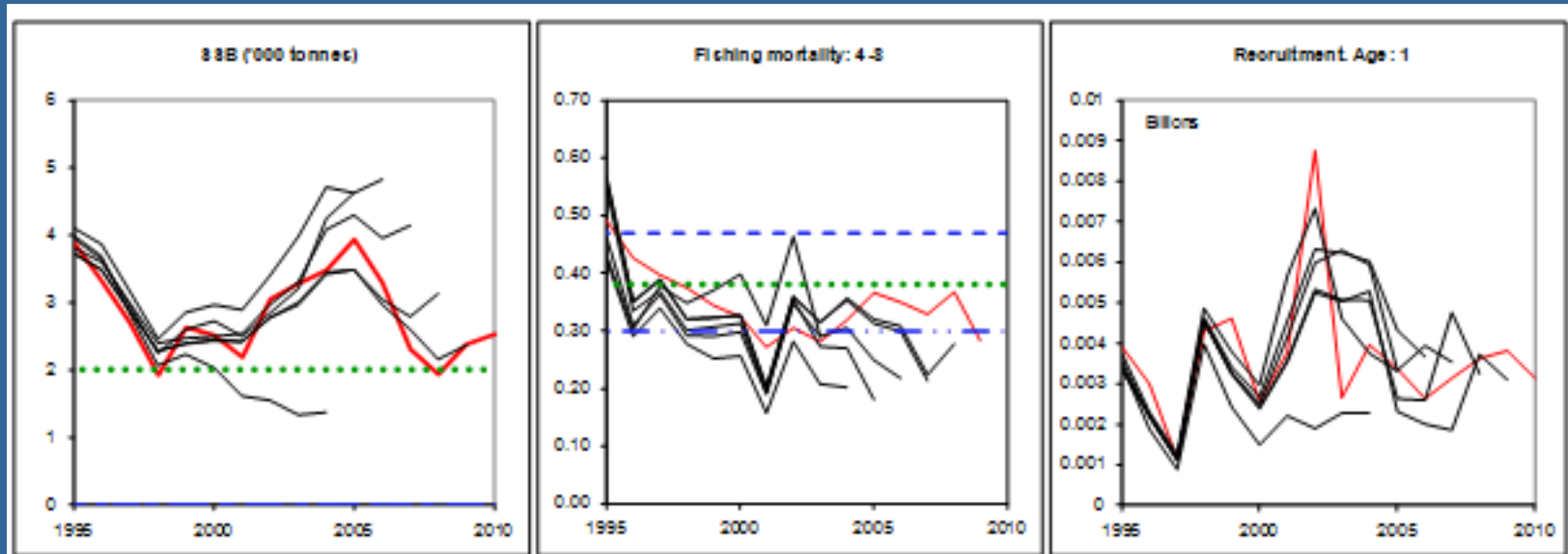
SSB has decreased since 2005, but is still above MSY $B_{trigger}$ (2000 t)

Fishing mortality stable slightly below F_{MSY} (0.38) since 2005

Recruitment about average since 2003

Landings 2009: 640 t

Assessment type	Age based analytical stochastic assessment (SAM)
Input data	1 survey indices (Fisherman-DTU Aqua survey) 3 commercial cpue indices (Official logbooks trawlers, Private logbooks trawlers and gillnetters)
Discards and by-catch	Not included
Indicators	none
Other information	benchmark done in 2010
Working group report	WGBFAS



Introduction of a survey designed for sole improves fishery independent information.

The inclusion of information from the Western Baltic (Subdivisions 22-24) into the assessment has improved the coverage of the complete population entity

MSY approach:

Increase F to F_{MSY} (0.38). No changes in SSB in 2012.
%TAC change: + 19%

PA approach:

No more than F_{pa} (0.30). Increase in SSB of 6% in 2012
%TAC change: - 3%

Management Plan:

No specific management objectives known to ICES

Assessment indicative of trends only



SSB since 2004 is stable at a low level

Fishing mortality varies without trend around LT average

Recruitment is stable in most recent years

Total catch (2009) 2.9 kt (including components of the IV and VIIe coming in VIId to spawn in the beginning of the year).
No discards time-series are yet available.

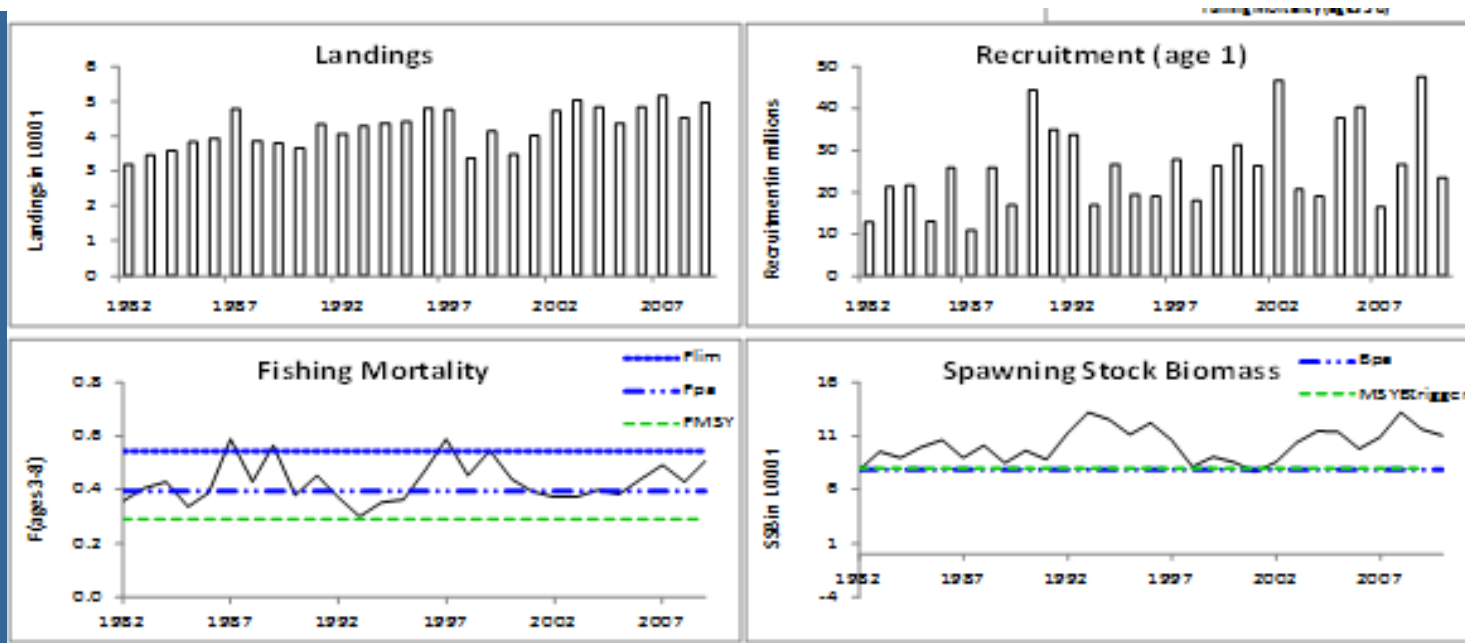
MSY considerations: The state of the stock is unknown but SSB since 2004 is stable. Reduce landings from recent level.

PA considerations:

No reason to revise the perception of the stock condition.
Landings should not exceed average level 2007-2009.

Management Plan:

No specific management objectives known to ICES



SSB fluctuating around a mean of about 10 000 t since 1982, and has been above B_{pa} since 2002.

Fishing mortality increased and fluctuated between F_{pa} and F_{lim} the last 4 years

Recruitment YC 2001, 2004 & 2005 were the three highest since 1990. The 2008 year class is predicted to be the highest in the time-series

MSY approach (Transition scheme):

Transition implies $F=0.44$, above $F_{pa}=0.40$. Reduce F to F_{pa} .

SSB in 2012 above B_{pa} .

%TAC change: +15 %

$$\text{MSY } B_{\text{trigger}} = 8\,000 \text{ t}$$
$$F_{\text{MSY}} = 0.29$$

PA considerations:

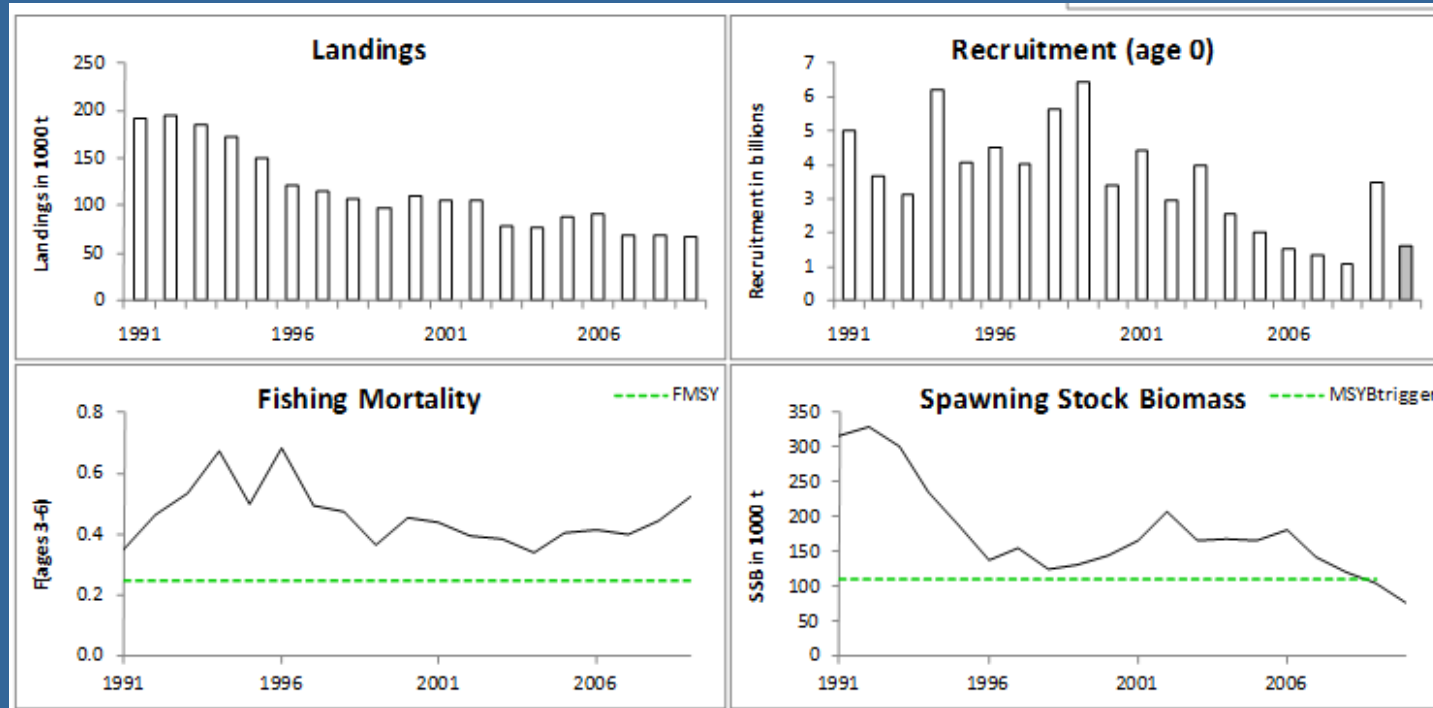
No more than F_{pa} .

Management Plan:

No specific management objectives known to ICES

Herring

- Western Baltic spring spawners ([her3a22](#))
- North Sea autumn spawners ([her-47d3](#))



SSB decreasing in recent years and is expected to further decline in 2010 due to an increased **fishing mortality**, **poor recruitment** (2004-2008) and a change in fishing pattern in 2009.

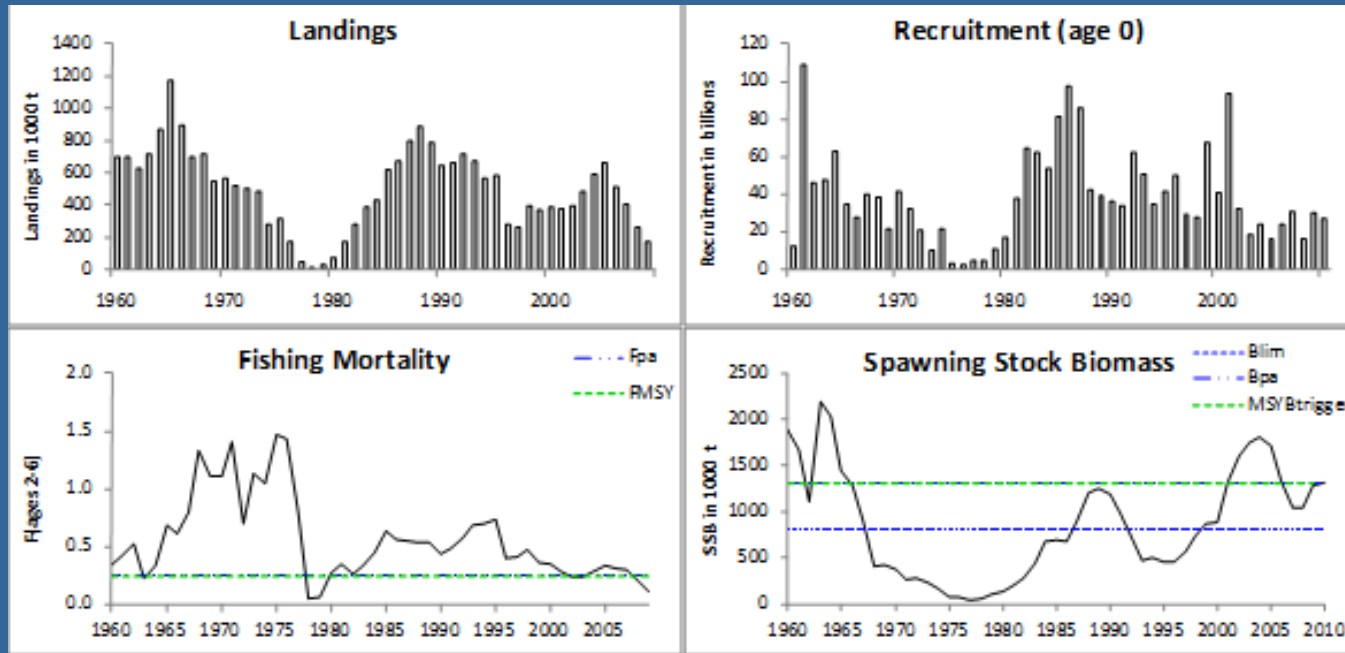
MSY approach (Transition scheme):

Reduce F to 0.27 (because $SSB_{2011} < MSY B_{trigger}$);
Catches of WBSS herring in the NS should not be allowed to increase (conserve mature adults)

$$MSY B_{trigger} = 110\,000 \text{ t}$$
$$F_{MSY} = 0.25$$

Management Plan:

No specific management objectives known to ICES



SSB between B_{pa} and B_{lim}

Recruitment YC from 2002 onwards are estimated to be among the weakest since the late 1970s

MSY approach:

Increase F to F_{MSY} (0.25, ages 2-6). Increase in SSB to 1.34 million in 2012.

%TAC change (fleet A): + 126%

MSY $B_{trigger}=1.3$ million t
 $F_{MSY}=0.25$

PA approach:

No more than F_{pa} (0.25, ages 2-6). SSB remains above B_{pa} in 2012

Management Plan:

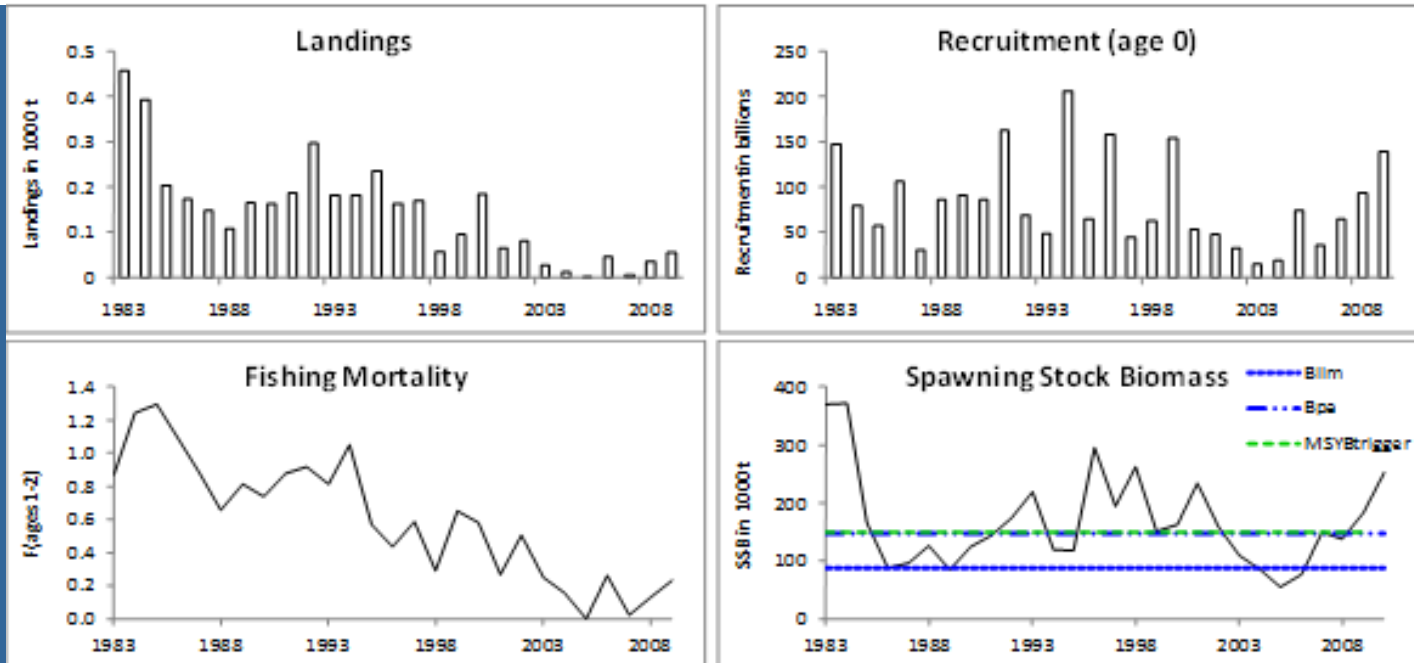
Following the MP implies maximum of 15% increase in TAC

Norway pout

NS and Skagerrak-Kattegat (nop-34)

In year advice: landings in 2010

Advice for 2011 to be available in autumn 2010



SSB increased recently and is considered to be above $MSY B_{escapement}$

Fishing mortality lower than the natural mortality for this stock and has decreased in recent years well below the long term average F (0.6).

Recruitment in 2007-08 was around the long term average (83 billions) and well above average in 2009. With present fishing mortality levels, the status of the stock is mainly determined by natural processes.

MSY approach:

Maintain the SSB above a reference level MSY $B_{\text{escapement}}$ by 1st Jan 2011: do not need to reduce F.

PA approach:

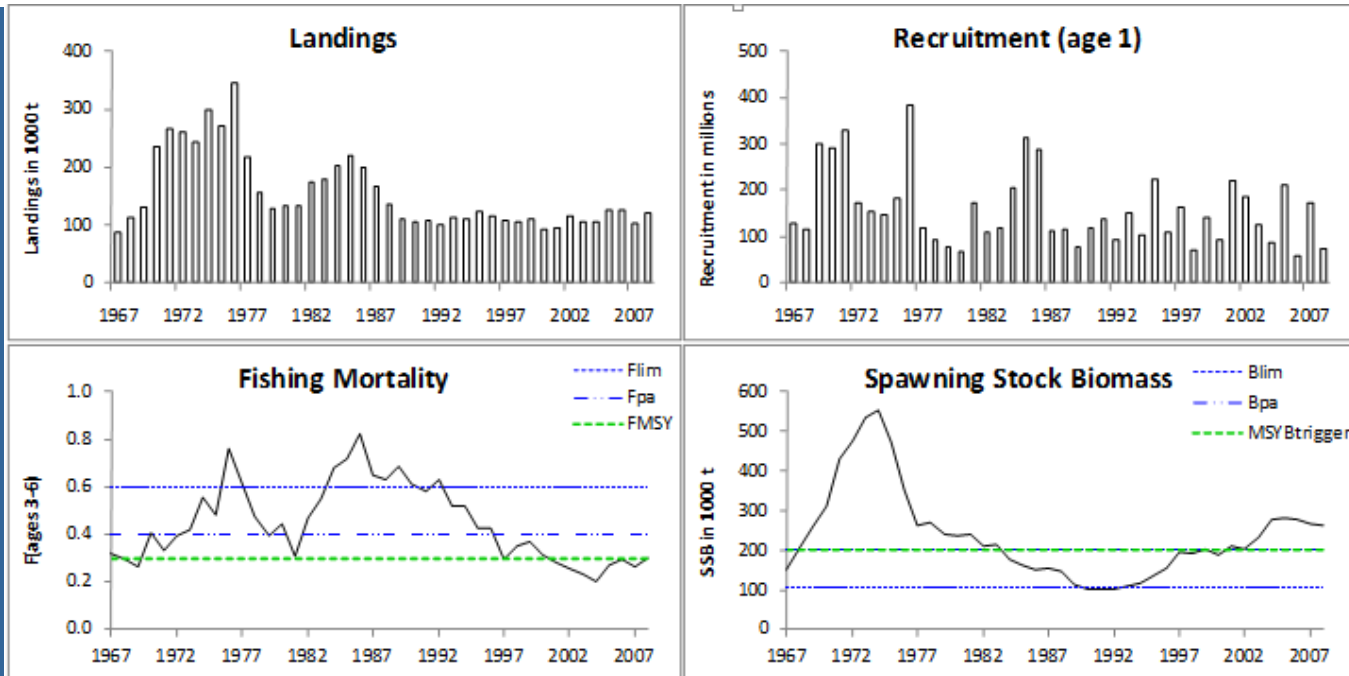
Same as MSY approach.

Management Plan:

ICES has evaluated and commented on three management strategies, although these have not yet been decided on.

Saithe

NS, Skagerrak, West Scotland & Rockall ([sai3a46](#))



An update assessment could not be run in 2010 due to missing and incomplete indices for 2009: The assessment of the 2009 working group meeting has been used as a basis for the forecast run that has been extended to 4 years

SSB above B_{pa} from 2001-2008

Fishing mortality From 2001 - 2008, F has been at or below the fishing mortality target of the management plan (0.3)

MSY approach:

Marginal increase in F to F_{MSY} (0.30). SSB kept above $MSYB_{trigger}$.
%TAC change: - 13%

PA approach:

Keep SSB above B_{pa} .
%TAC change: + 5%

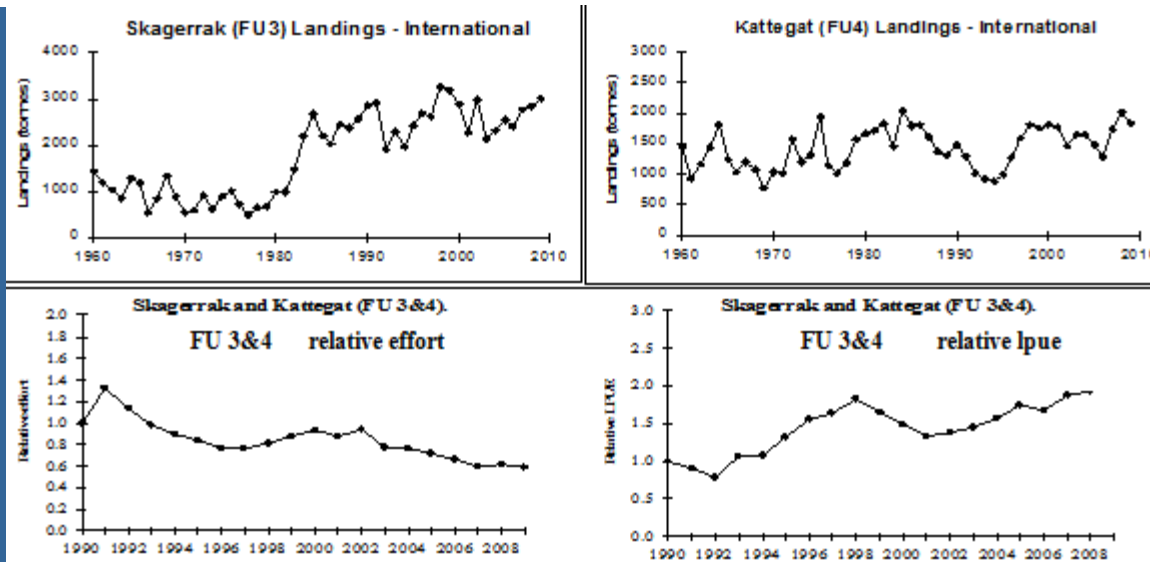
Management Plan:

Following the MP implies decrease in TAC of 13%

Nephrops

Skagerrak-Kattegat (*nep-IIIa*)

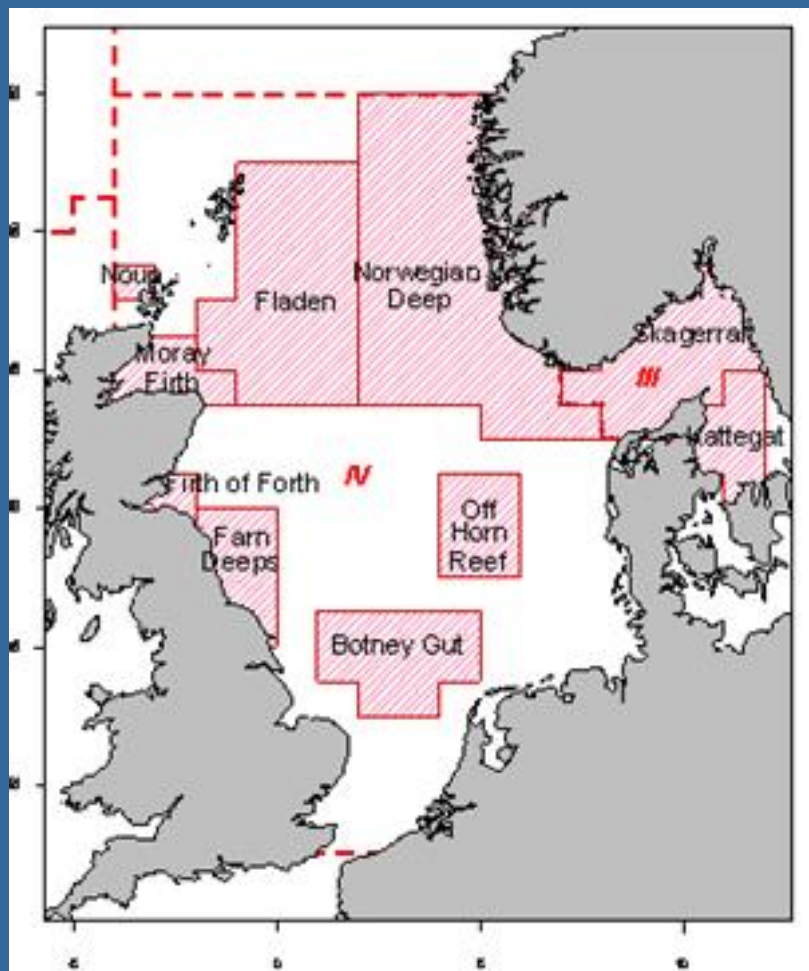
North Sea (*nep-IV*): FUs 5-6-7-8-9-10-32-33



State of the stock unknown. Commercial fishery indices (lpue, landings per unit effort) have been increasing in recent years suggesting that the stock is exploited sustainably.

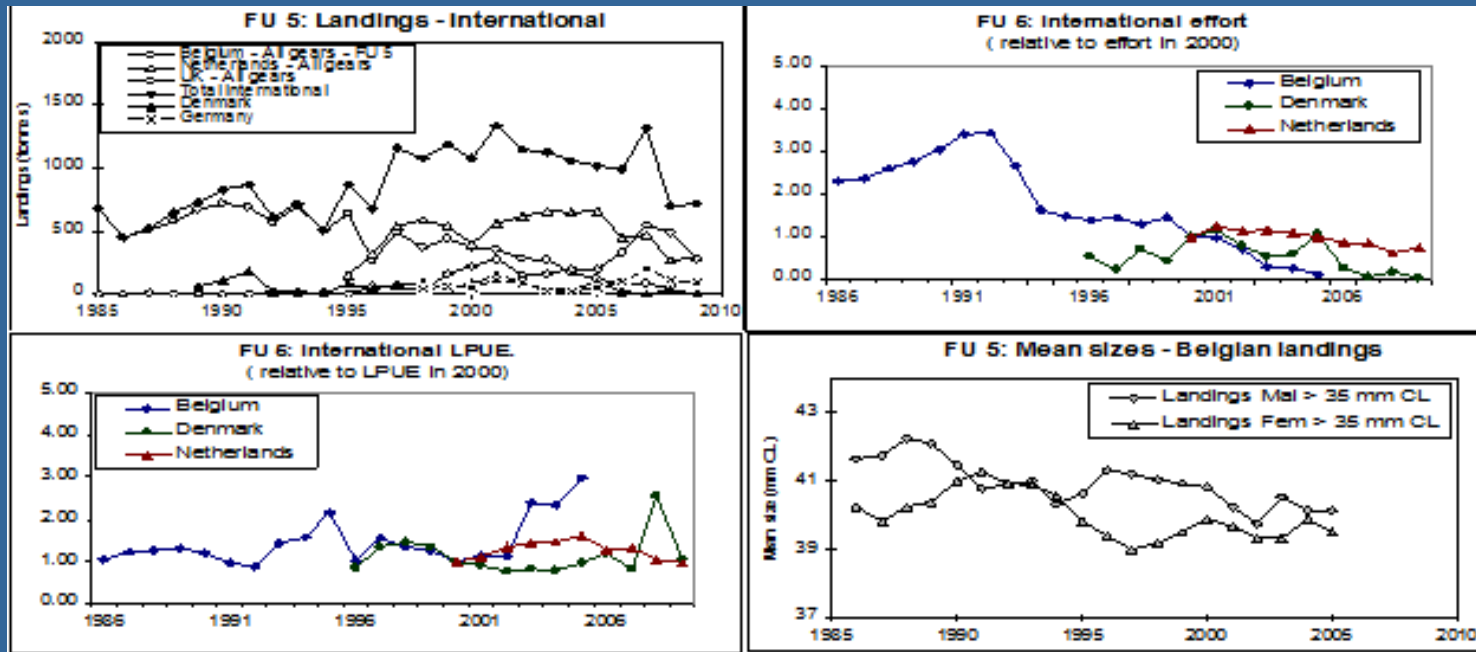
High catch rates of small *Nephrops* in 2007, 2008 and 2009 may indicate strong recruitment in these years.

MSY considerations: state stock unknown but stock stable or slightly increasing -> catches in 2011 should not exceed recent average



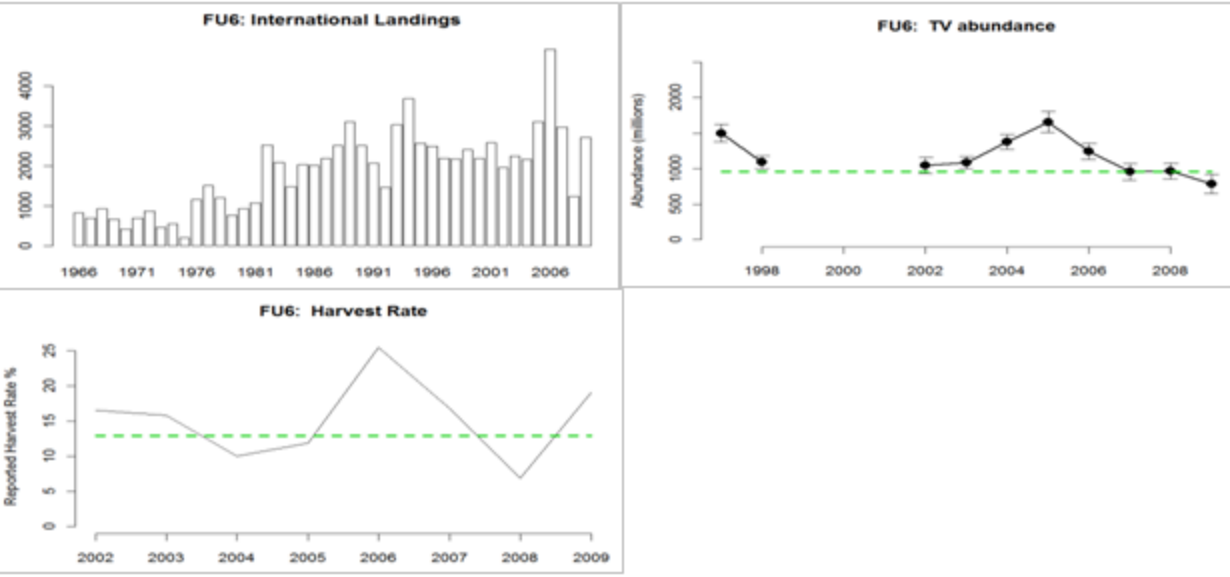
FU no.	Name
5	Botney Gut - Silver Pit
6	Farn Deeps
7	Fladen Ground
8	Firth of Forth
9	Moray Firth
10	Noup
32	Norwegian Deep
33	Off Horn's Reef

FU 10: the state of the stock is unknown (lack of data); no new advice.



MSY considerations: state stock unknown. Lpue fluctuating without trend indicating stable stock status -> reduce landings from recent level

PA considerations: average of past three years.

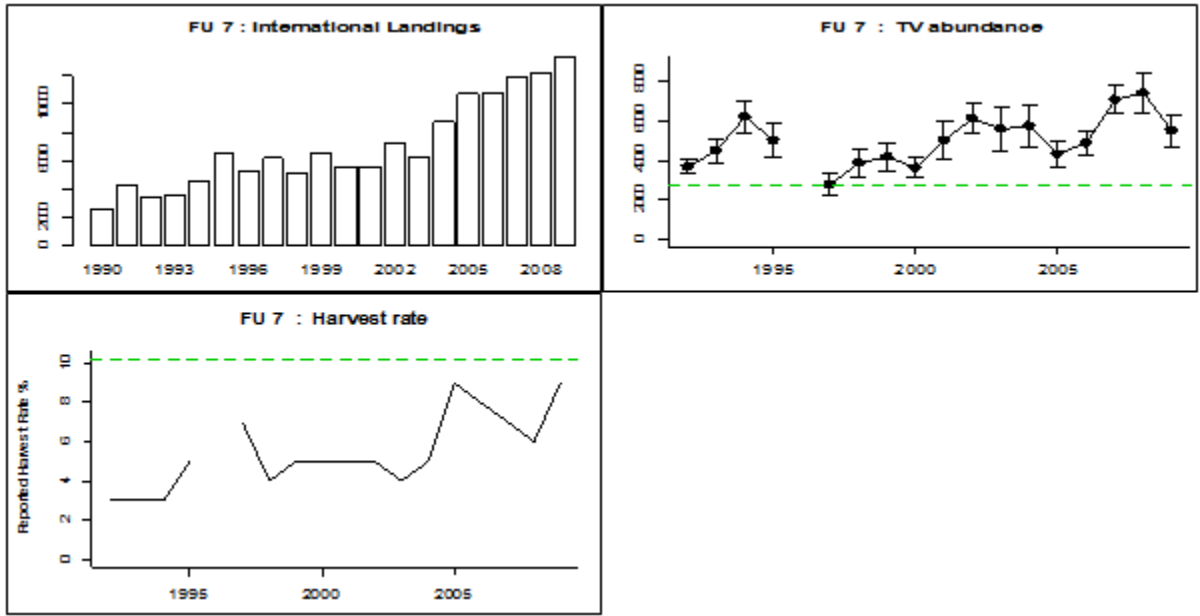


MSY $B_{trigger}$ = 958 million

F_{MSY} = HR 12.9%

The UWTV survey, fishery data and length frequency data all point to the stock continuing to be at a low level

MSY approach (Transition scheme): Harvest ratio of 14.3% with additional reduction of 20% (since SSB is below MSY $B_{trigger}$) = HR of 11.2%

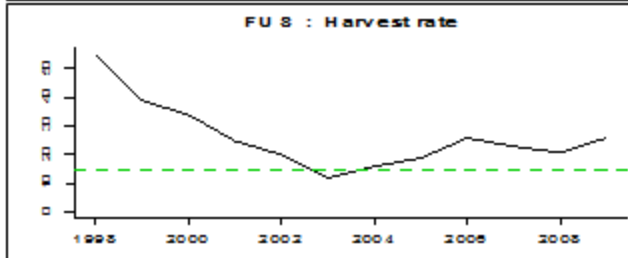
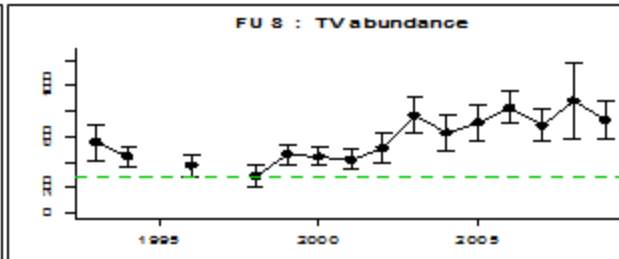
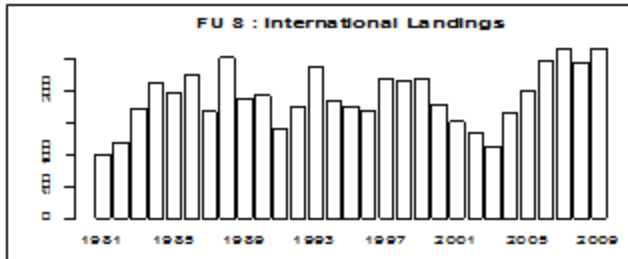


MSY $B_{trigger}$ = 2767 million

F_{MSY} = HR 10.2%

The UWTV abundance is still at a high level relative to the historical time series. The stock is being exploited sustainably.

MSY approach: Harvest ratio be increased to 10.2 %.

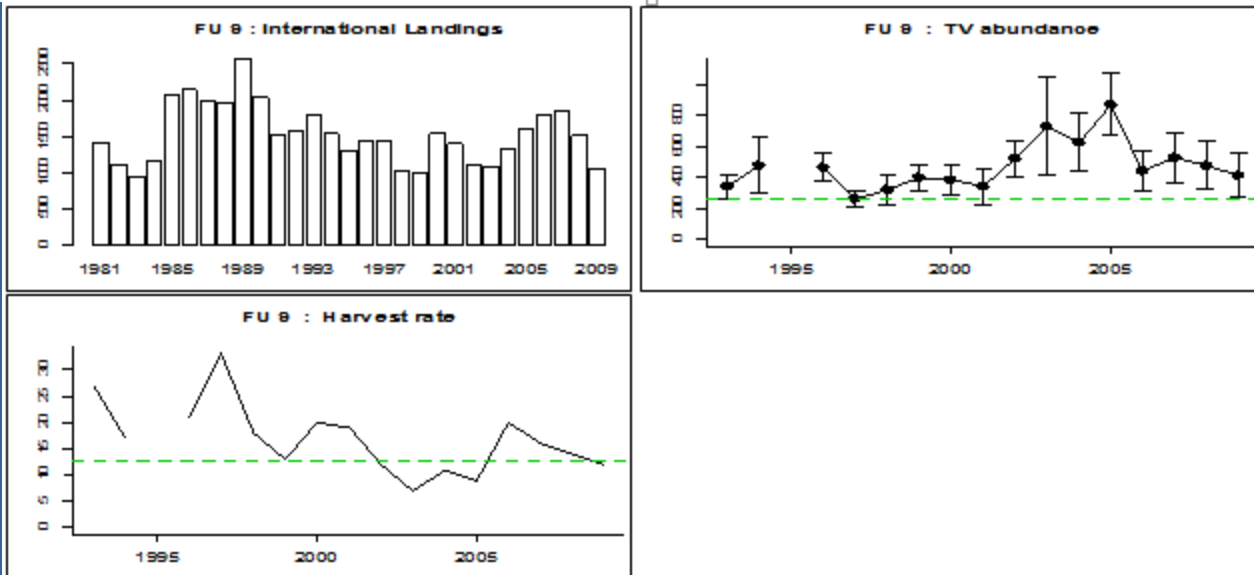


MSY $B_{trigger}$ = 292 million

F_{MSY} = HR 15%

The UWTV abundance has been at a relatively high level since 2003. The stock does not show signs of overexploitation.

MSY approach (Transition scheme): Harvest ratio to be reduced to 21.7%.

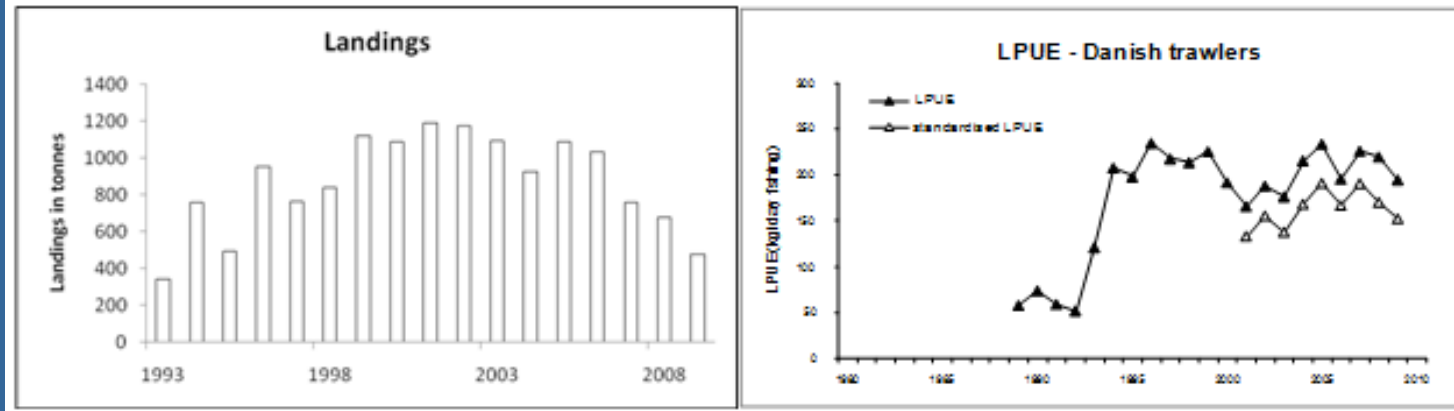


MSY $B_{trigger}$ = 262 million

F_{MSY} = HR 12.7%

The UWTV abundance has been stable, but at a lower level than that evident from 2003-2005. The stock does not show signs of overexploitation although the current low discard rate suggests that recruitment may be lower than it has been previously.

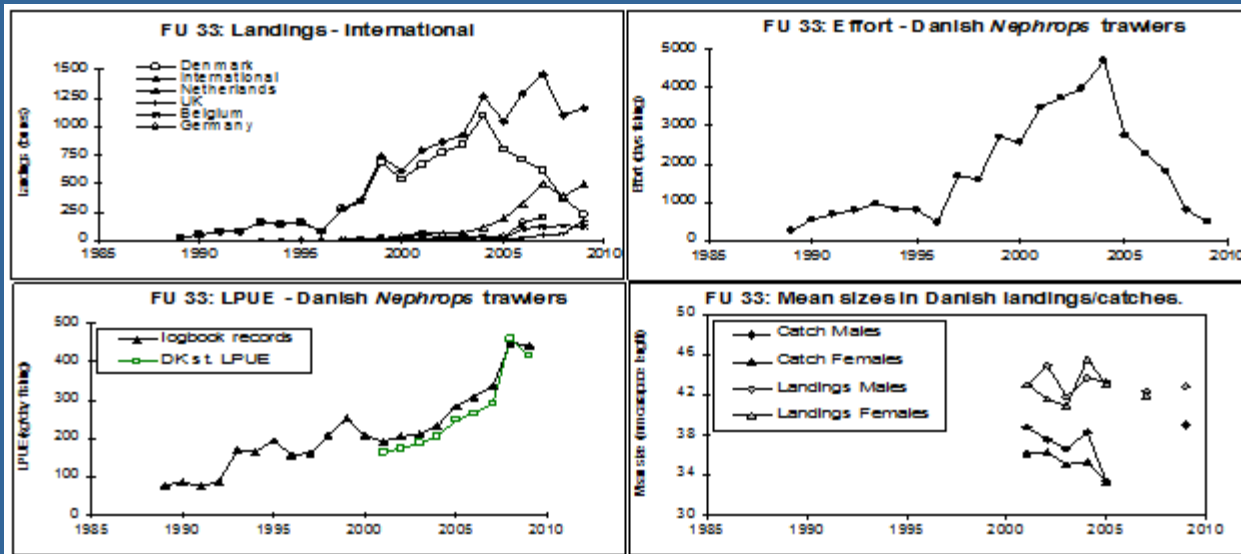
MSY approach (Transition scheme): Harvest ratio to be slightly decreased to 13.7%.



No RPs

Landings per unit effort (lpue) have been relatively stable over the last 16 years and suggest that current levels of exploitation are sustainable. A slight increase in mean size in the catches in 2007 could indicate a reduced exploitation.

MSY considerations: State of the stock unknown but stable stock status -> landings in 2011 should be reduced from recent levels.



No RPs

Lpue has been increasing up to 2008, probably reflecting increase in gear efficiency (technological creep) in the last years. The mean sizes in 2005 catches and the increased lpue's in the subsequent years could indicate a high recruitment in 2005. The development in 2009 then suggests that the contribution of the 2005 recruitment to the stock now has faded.

MSY considerations: State of the stock unknown but lpue and R suggest no major changes in the stock -> landings in 2011 should be reduced from recent levels.

Thank you for your attention!
Comments and questions?