

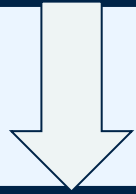
# ICES advisory process: assessment and methodology

April 2013, Carmen Fernández  
ACOM vice-chair

# Steps in Advisory Process

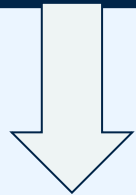
## Expert Groups

Conduct assessments &  
first draft of advice



## Advice Drafting Groups

Finalise advice documents



## ACOM

Approves and releases advice

## Benchmark Workshops

In-depth revision of  
assessment methods:  
data, models...

External Reviewers

Technical audits annually  
& extra reviewing  
when needed

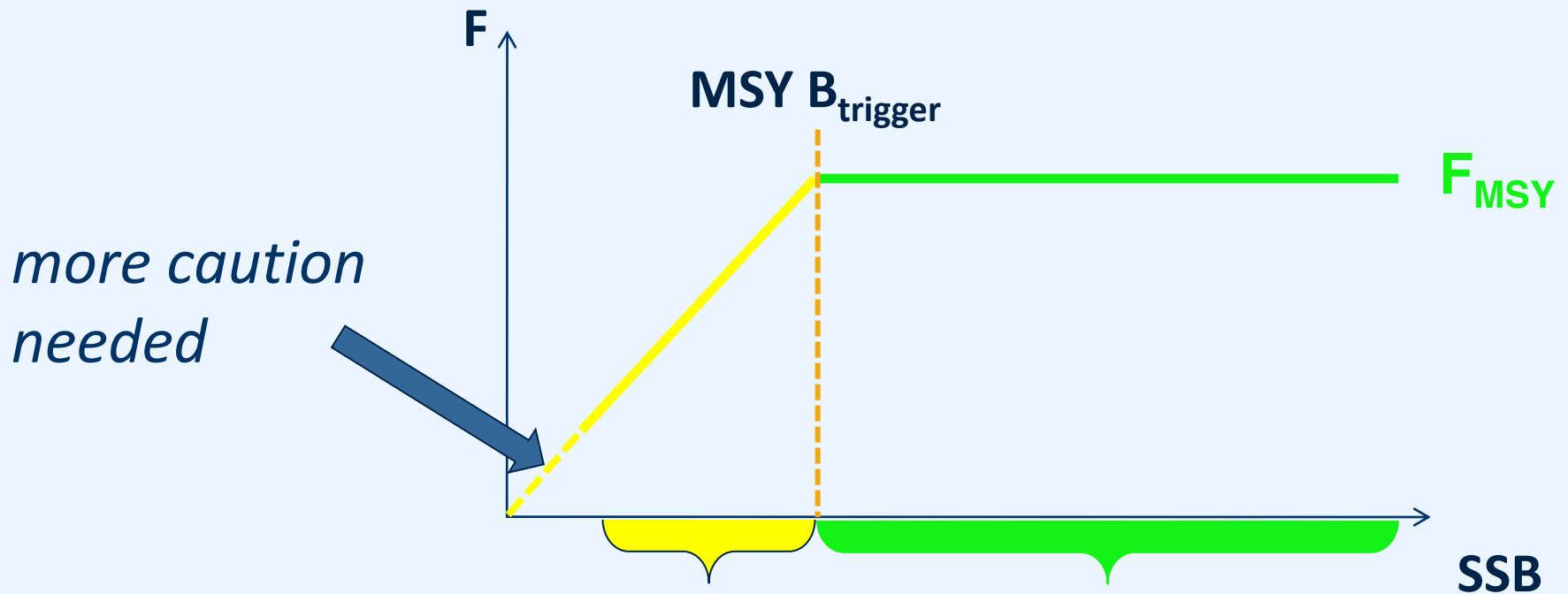
# Basis for ICES Advice



All options in Outlook Table

# ICES MSY approach:

- ✓ Maximize long term average yield
- ✓ Safeguard against low SSB



\* If current  $F$  higher than this: transition for 2015

# Data limited stocks (DLS): new approach in 2012

All stocks for which a “full assessment” and outlook table with catch options can not be provided (more than 100)

***In 2012, ICES provided quantitative advice for the first time***

- Categorisation of all stocks (6 categories)  
from data rich towards situations of decreasing information
- Methods for each category
- Progress will continue in 2013: WKLIFE3 in October

***If a reliable stock abundance index exists:***

**advice:** recent catch modified according to index trend in last 5 years (average last 2 years)/(average previous 3 years)

1. limit result to 20% change (to dampen noise)
2. Precautionary margin: 20% reduction if stock status relative to reference points unknown -- unless evidence that stock is strongly increasing or exploitation (F or effort) has decreased substantially.

\* Where least information available, and when precautionary margin applied:

no expected changes in advice for some years, unless important new knowledge emerges

# Update on biology of the stocks: ICES assessment methods and advice

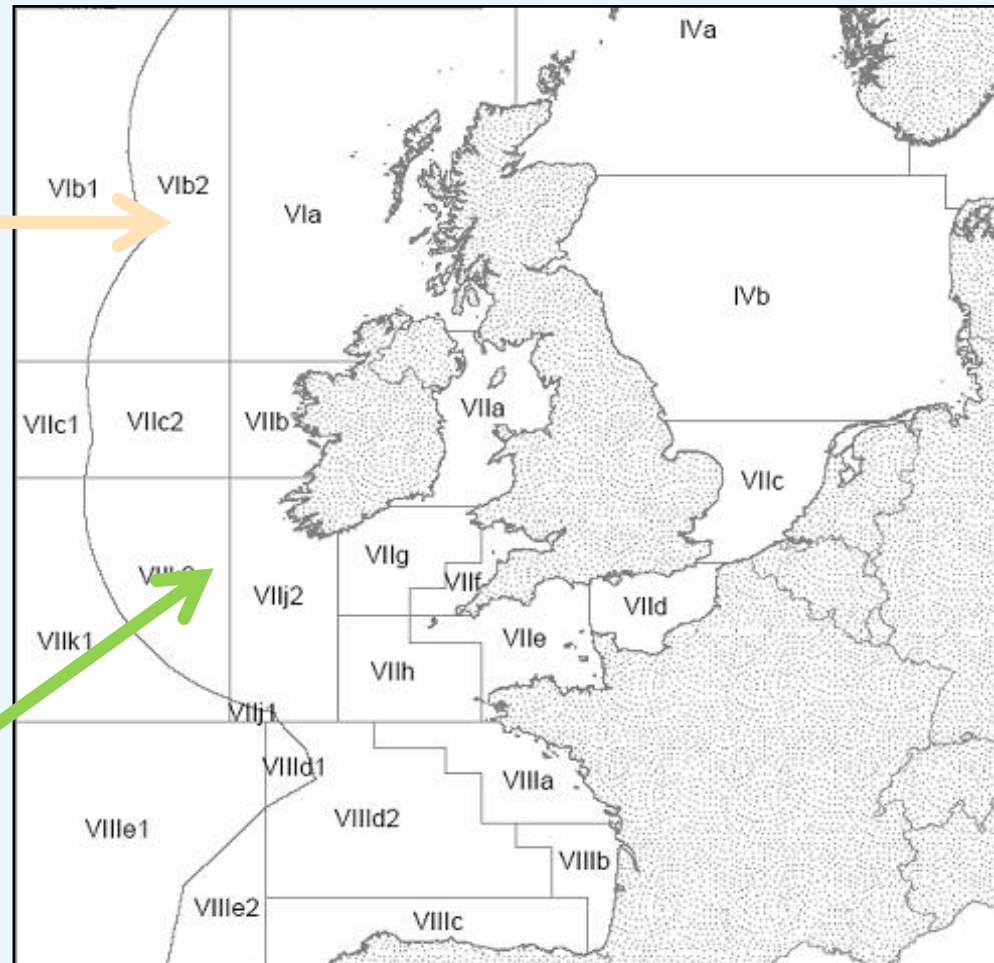
## Stocks and advice method in 2012:

### West of Scotland & Rockall

- Anglerfish IIIa, IV VI: **DLS**
- Megrim IVa, VIa: **MSY**
- Megrim VIb: **DLS**

### Celtic Sea & West, SW Ireland

- Anglerfish VIIb-k, VIIIabd: **DLS**
- Megrim VIIb-k, VIIIabd: **DLS**
- Hake (widely distributed):  
**MSY transition**





# Anglerfish (*L. piscatorius* & *L. budegassa*) in IIIa, IV and VI

**Advice for 2013, DLS:** Reduce catch by 20% in relation to last 3 years average. Due to uncertainty in landings data, ICES can not quantify resulting catch.

		F (Fishing Mortality)	
		2009–2011	
MSY ( $F_{MSY}$ )	?	Unknown	
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	Unknown	
		SSB (Spawning-Stock Biomass)	
		2007–2011	
MSY ( $B_{trigger}$ )	?	Unknown	
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	Unknown	
Qualitative evaluation	↘	Decreasing	

Assessment difficult:

- Maturity, growth, ageing issues

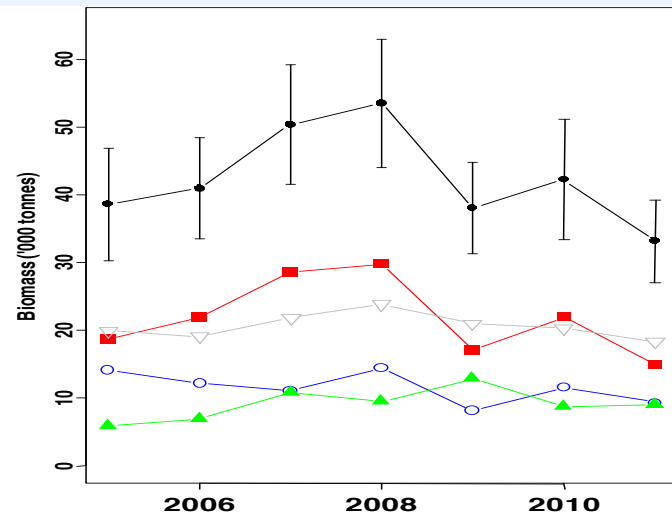
**Stock benchmarked in WKFLAT 2012 and WKROUND 2013:**

Age-based assessment attempted, not accepted: sensitivity to growth assumptions

Advice method: DLS based on survey trend

- Trend: 20% decrease
  1. Uncertainty window: 20% decrease
  2. Precautionary margin: no, because significant effort decrease in main fisheries

➔ 20% catch decrease with respect to recent average (last 3 year average)



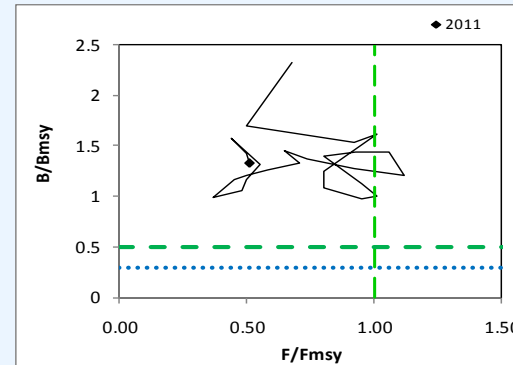


# Megrim (*Lepidorhombus spp.*) in IVa and VIa

**Advice for 2013, MSY: Landings < 4 700 t**

**Benchmarked in WKFLAT 2011 and IBPMEG 2012:**

F (Fishing Mortality)				
	2009	2010	2011	
MSY ( $F_{MSY}$ )	✓	✓	✓	Appropriate
Precautionary approach ( $F_{pa}, F_{lim}$ )	✓	✓	✓	Harvested sustainably
Biomass				
	2010	2011	2012	
MSY ( $B_{trigger}$ )	✓	✓	✓	Above trigger
Precautionary approach ( $B_{pa}, B_{lim}$ )	✓	✓	✓	Full reproductive capacity

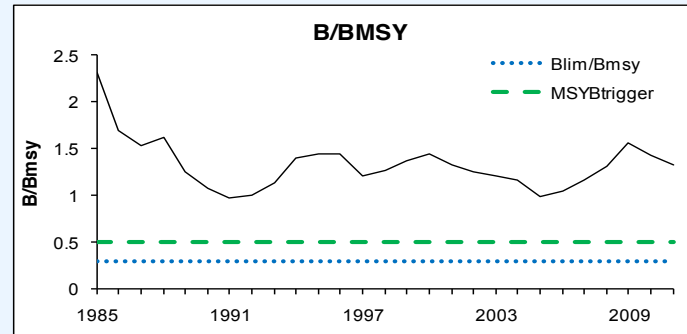
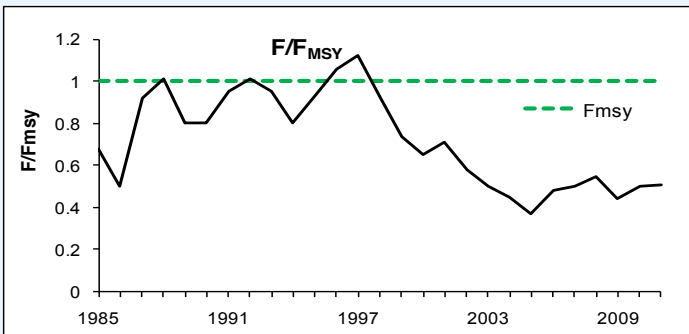
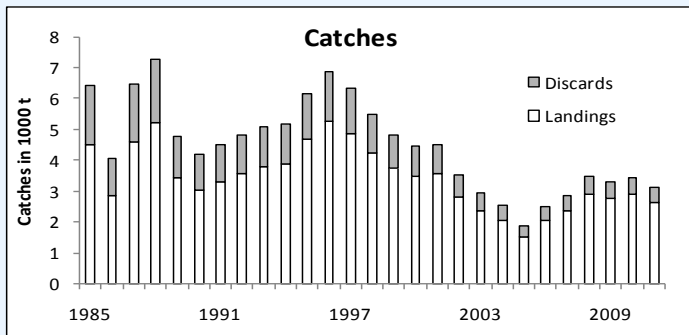


Imprecise and missing age data precludes an age-based assessment

Assessment based on biomass dynamics model (no age or length data used)

\* F below  $F_{MSY}$

\* Biomass above MSY  $B_{trigger}$



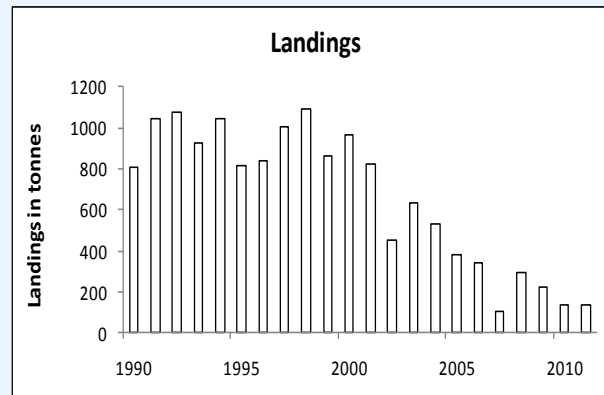
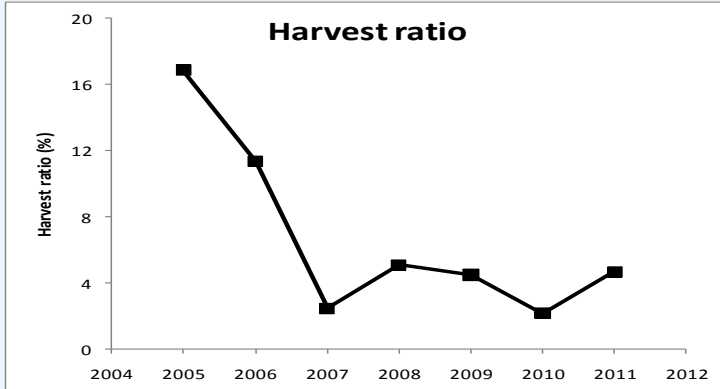
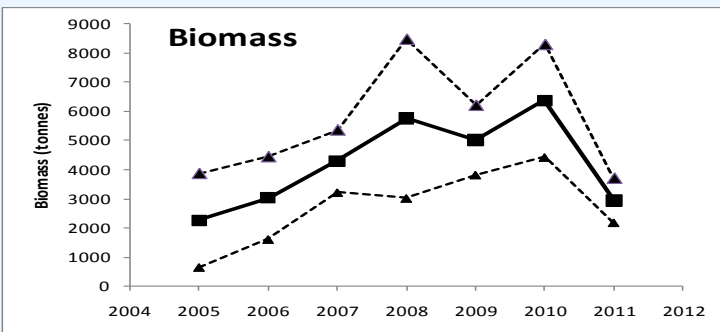
# Megrim (*Lepidorhombus* spp) in VIb (Rockall)

**Advice for 2013, DLS: Catch < 160 t**

F (Fishing Mortality)	
2009-2011	
MSY ( $F_{MSY}$ )	Unknown
Precautionary approach ( $F_{pa}, F_{lim}$ )	Unknown
Qualitative evaluation	Below poss. reference points
SSB (Spawning Stock Biomass)	
2007-2011	
MSY ( $B_{trigger}$ )	Unknown
Precautionary approach ( $B_{pa}, B_{lim}$ )	Unknown
Qualitative evaluation	Decreasing

Anglerfish-Megrim survey since 2005:

- Index trend: 7% decrease
  - 1. Uncertainty window: 7% decrease
  - 2. Precautionary margin: no, because harvest ratio very low (<5%)
- ➔ 7% catch decrease in relation to recent landings (last 3 year average)



# Anglerfish (*L. piscatorius* & *L. budegassa*) in VIIb–k and VIIIa,b,d

**Advice for 2013, DLS: Catch < 24 800 t**

## *Lophius piscatorius*

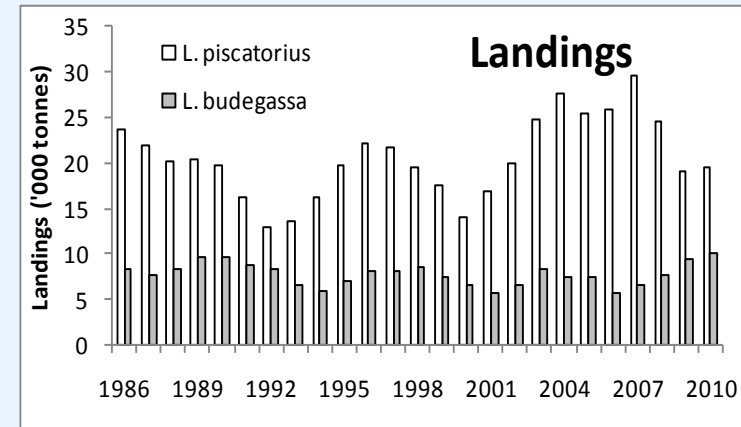
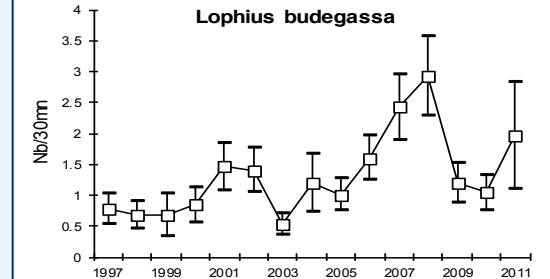
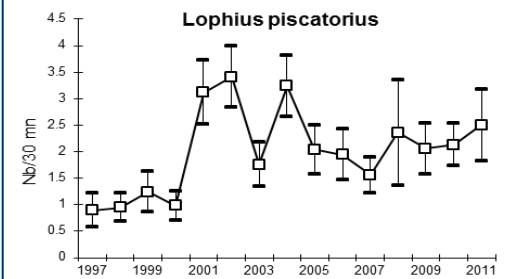
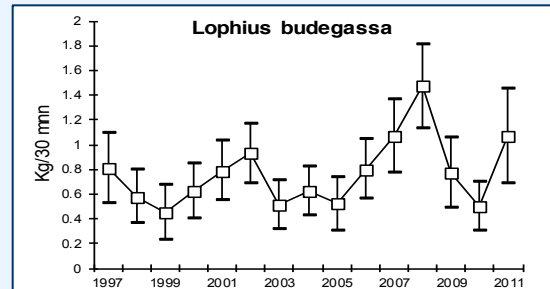
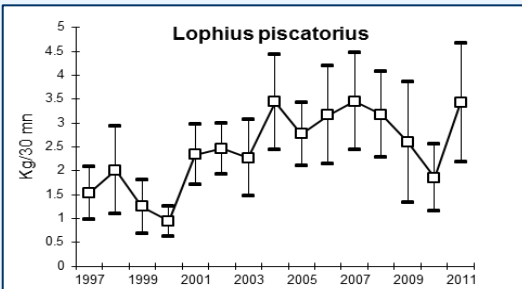
	F (Fishing Mortality)	
	2009–2010	2011
MSY ( $F_{MSY}$ )	?	?
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?
Total Stock Biomass		
2007–2011		
MSY ( $B_{trigger}$ )	?	Unknown
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	Unknown
Qualitative evaluation	↘	Decreasing

## *Lophius budegassa*

	F (Fishing Mortality)	
	2009–2010	2011
MSY ( $F_{MSY}$ )	?	?
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?
Total Stock Biomass		
2007–2011		
MSY ( $B_{trigger}$ )	?	Unknown
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	Unknown
Qualitative evaluation	↘	Decreasing

\* Overall stock trend stable, increasing during 2000s, decreasing in recent years

\* Indications that discarding of small fish increased in recent years, but no reliable estimates



Landings 2010 – 29 700 t (discards unknown)

Spanish landings not available in 2011

Use biomass index from survey as stock indicator:

- *L. piscatorius*: Index trend: 14% decrease
- *L. budegassa*: Index trend: 20% decrease

1. Uncertainty window: 14% decrease for *L.pisc* & 20% decrease for *L.bude*
2. Precautionary margin: no, because steady effort decline in main fisheries

➔ 14% decrease over recent landings (2008-10 average) for *L. piscatorious* & 20% decrease for *L. budegassa*

Result: 24 800 t

# Megrim (*L. whiffiagonis*) in VIIb–k and Villa,b,d

**Advice for 2013, DLS: Landings < 12 000 t**

F (Fishing Mortality)		
2002 -2010		2011
MSY ( $F_{MSY}$ )	?	?
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?
Qualitative evaluation	→	?
SSB (Spawning Stock Biomass)		
2006 - 2010		2011
MSY ( $B_{trigger}$ )	?	?
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	?
Qualitative evaluation	↗	↗

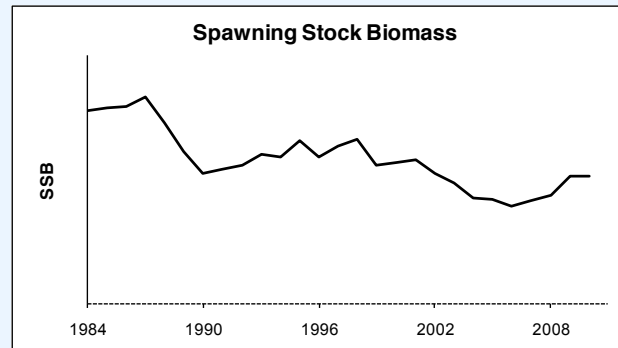
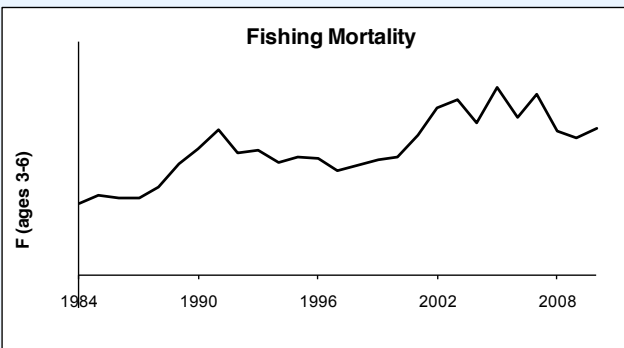
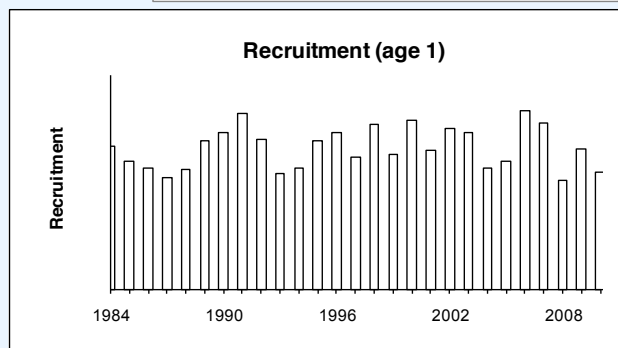
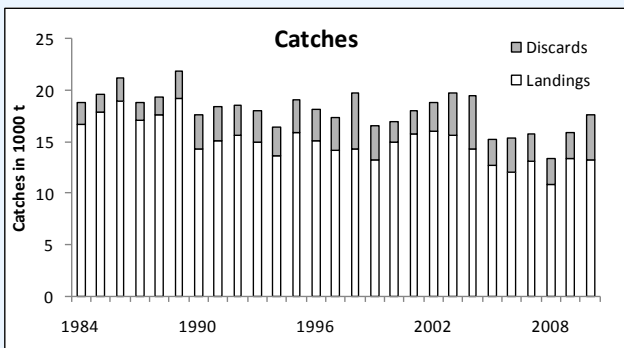


- \* Only indicative of trends
- \* No Spanish data in 2011
- \* Discards substantial, many gaps (no discards provided by France in last decade)

SSB trend: 25% increase

1. Uncertainty window: 20% increase

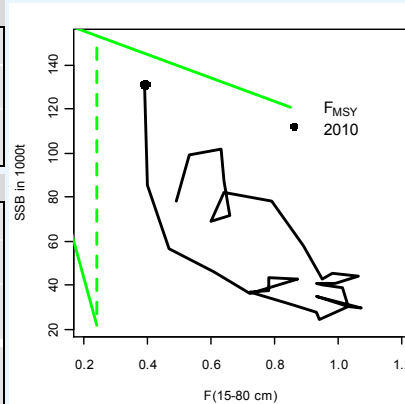
2. Precautionary margin: 20% decrease, exploitation unknown with no indication of decreasing or low F



# Hake – Northern stock

## Advice for 2013, MSY transition: Landings < 45 400 t

F (Fishing Mortality)			
	2009	2010	2011
MSY ( $F_{MSY}$ )	✘	✘	? Not available
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?	? Not available
SSB (Spawning-Stock Biomass)			
	2010	2011	2012
MSY ( $B_{trigger}$ )	?	?	? Not available
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	?	? Not available
Qualitative evaluation	↗	↗	✓ Above poss. reference points



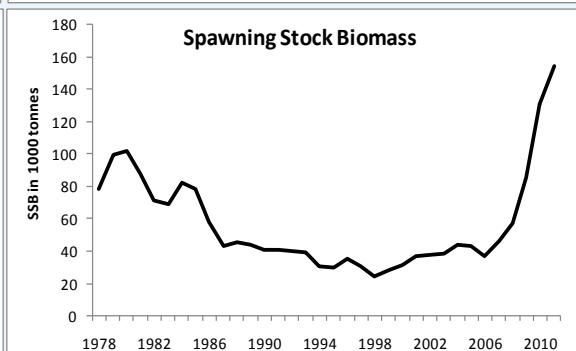
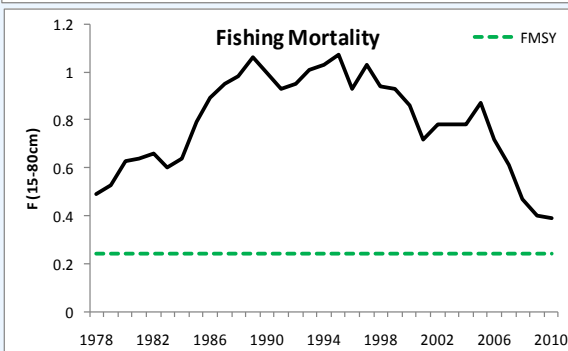
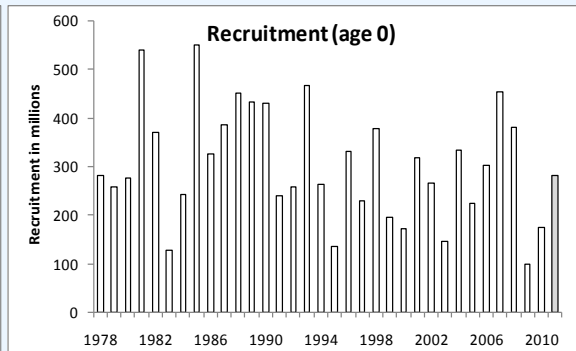
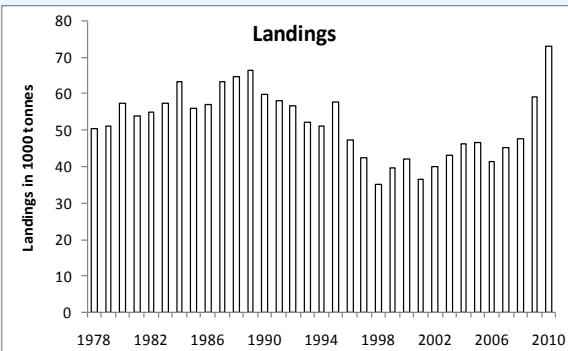
\* No new assessment in 2012 (no Spanish data in 2011)

\* Strong yc in 2007 and 2008, but weak in 2009 and 2010

\* Very strong increase in SSB and decrease in F

\* Rapid growth and fast dynamics

\* Last year: short-term forecast 2 years ahead (hence, more uncertain)



# Overview of ICES Strategy for mixed fisheries & multispecies advice: timetable

## *Mixed fisheries (technical interactions):*

fisheries catch several species at the same time  
→ fishing pressure linked for several species

If ignored in management, this can:

- lead to under- or over-utilization of fishing opportunities
- discarding
- jeopardize recovery of weak stocks



In 2012, ICES **North Sea** advice presented an analysis of mixed fishery implications under current TAC and effort regimes. The analysis

- considers different mixed fisheries scenarios of quota uptake or effort applied, and
- highlights main points of friction between single-species objectives

Methods being extended to evaluate the probability of reaching  $F_{msy}$  by 2015 under mixed-fisheries scenarios

WGMIXFISH is developing a similar analysis for **W of Scotland**

- started in 2012, progress expected this year

Process starting for **Iberian waters** this year

**Mixed fisheries advice** will continue to develop by considering wider technical interaction, taking into account spatial and technical effects across a species assemblage

This requires interactive process with managers and stakeholders

Celtic Sea, Biscay and Iberia are developing this via RACs and GEPETO project

## *Multispecies (biological interactions):*

Biological interactions occur within populations, between populations and with other ecosystem components:

- responses of stocks to changes in fishing pressure affected by these interactions

Some aspects incorporated in ICES single-stock advice (e.g. natural mortality values reflecting history of predator populations) – but more progress required

Knowledge must be gained on biological interactions, in order to incorporate them in the advice, where relevant:  
requires data (stomach contents) and models

## ***This is a learning process:***

- framework and format is being developed
  - Advice will present precautionary boundaries and highlight main trade-offs*
- started with Baltic Sea in 2012
- North Sea is also starting process
- Iberian waters, Biscay and Celtic Seas areas will come later
- Adaptive improvements to advice for each region will occur yearly
- Process assisted by benchmarking process: to take place by ecoregion, aiming to develop ecosystem benchmarks

*These newly developing advisory strands require freeing up time from other routinely performed tasks in connection with single-stock advice*

In future, for all stocks, ICES is considering updating advice only when significant changes in stock status

The fact that exploitation is now getting closer to the Fmsy objective, helps making this a feasible approach

# Thank you