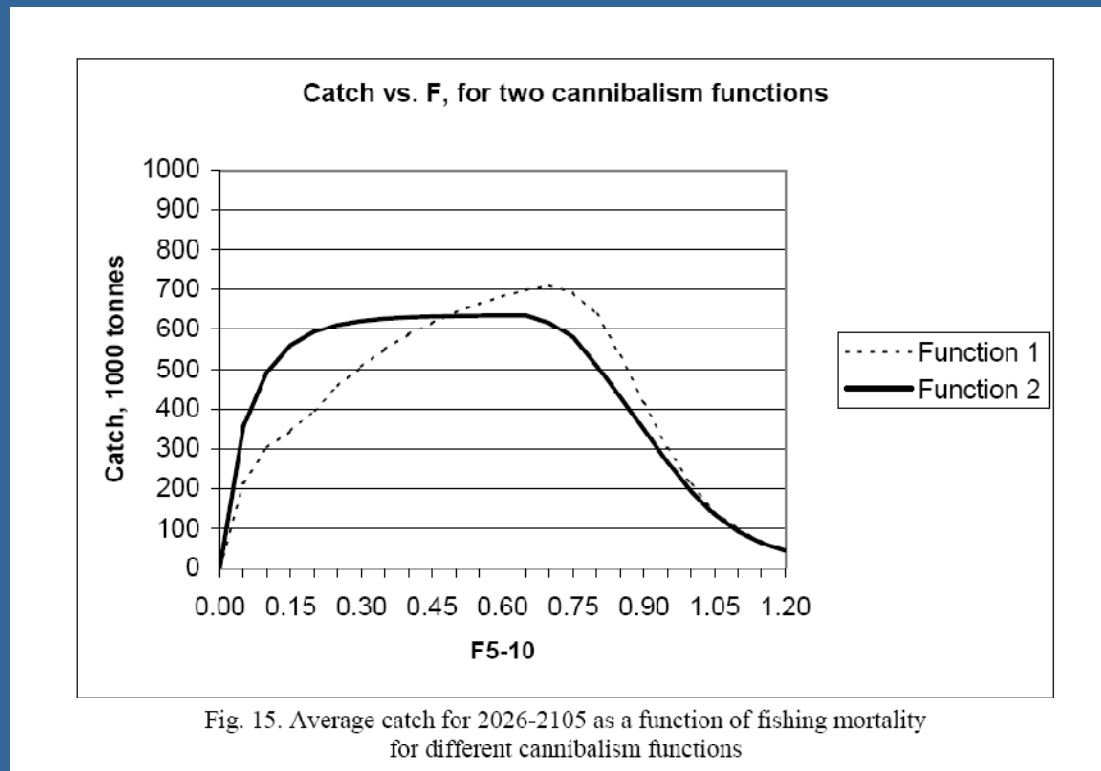


ICES MSY Framework

NEAFC November 2010

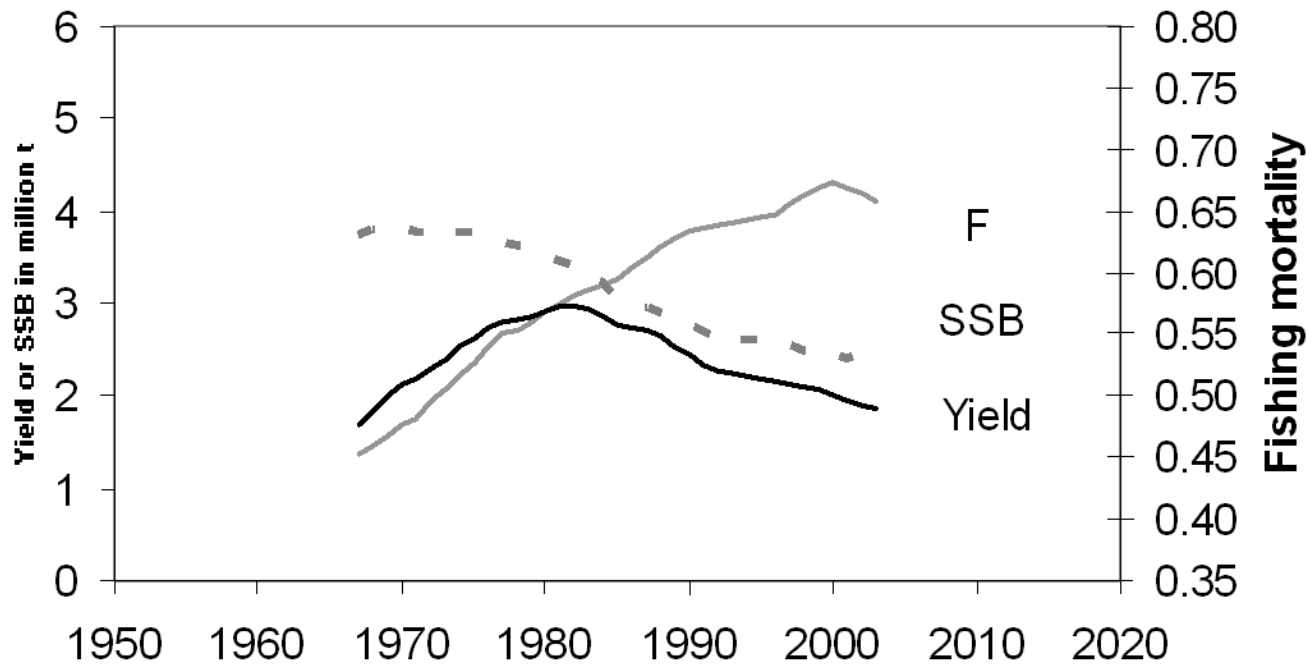
MSY concept

- Example: Northeast Arctic cod



MSY

ICES Demersal stocks
15-year running means



Background – Based on UNCLOS

1995 UN Fish stock Agreement

1998 ICES PA approach

2002 WSSD rebuild fisheries to MSY by 2015

2006 EC MSY Policy

2009 – ICES MSY framework

Evolution continues

Background

1998 – ICES PA approach

Avoid recruitment impairment

2009 – ICES MSY framework

Getting most out of the stocks

MSY sufficient for PA

PA necessary but not sufficient for MSY

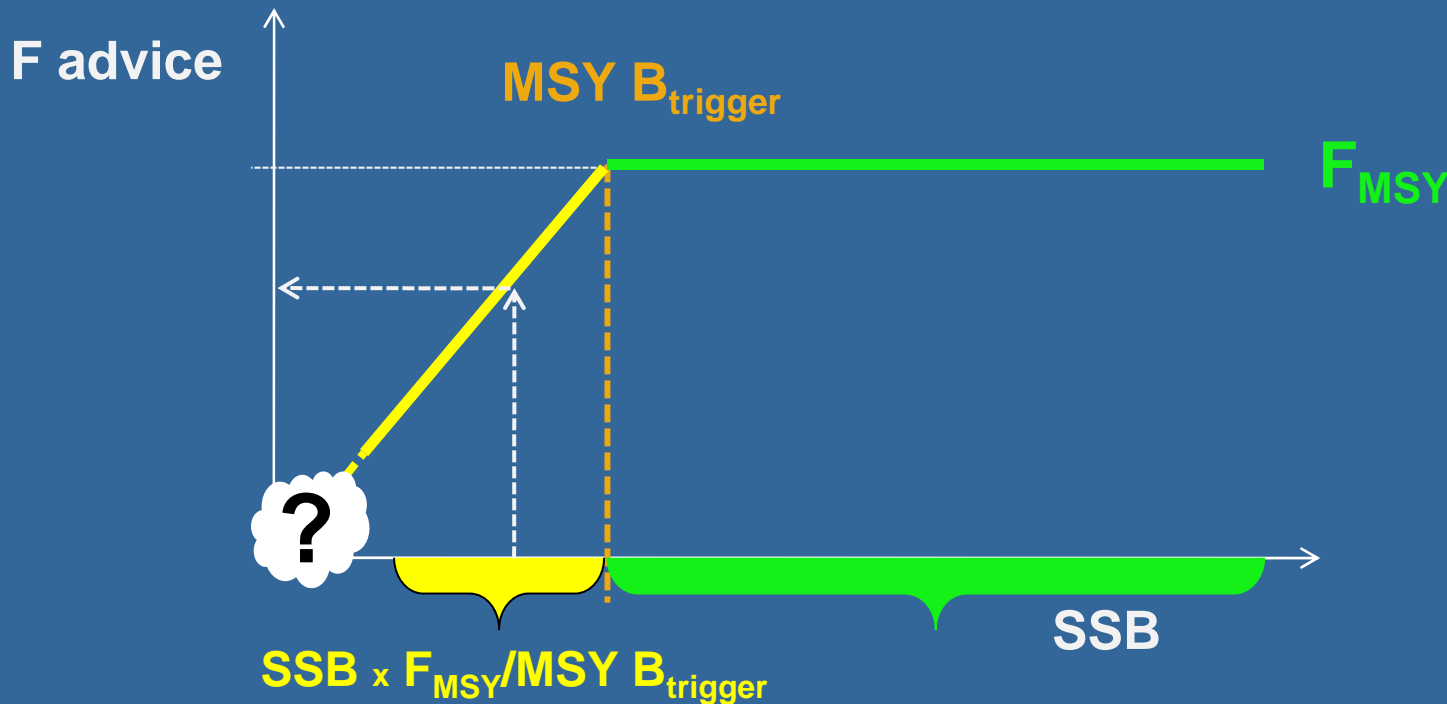
ICES MSY Framework

- Conceptual – not linked to a particular model
- Production function with an optimum
- We model this production function using several different approaches
- We advise based on stock specific knowledge and broad experience
- MSY estimates are never global but are conditional (on selectivity, growth, ...)

ICES MSY Harvest Control Rule (HCR)

Set F_{MSY} and MSY $B_{trigger}$ Ref. Points

Assess current SSB in relation to MSY $B_{trigger}$



MSY Framework Ref. Points

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”

B_{MSY} is not explicitly a reference point

Reference points:

F_{MSY} proxies

Y/R (F_{max} , $F_{35\%}$, $F_{0.1}$, M ,)

Modified by

- 1) Intra-species interaction (Cannibalism, growth)
- 2) Environmental drivers (Recruitment)
- 3) Species interaction (Growth – Mortality)

Reference points:

MSY B_{trigger}

Low percentile on expected observed SSB range when fishing at F_{MSY}

Accounting for

- 1) Natural variability: Recruitment – Growth – Mortality
- 2) Observation / implementation error

For **2011**: mainly B_{pa} (if available)

What to do for:

Data Rich situations

Long lived species (F and SSB estimates and projections)

MSY Framework

1) MSY ICES HCR

2) MSY Transition scheme

MSY Transition

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

In 5 steps

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

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

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

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

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

What to do for:

Data Rich situations

Short lived species

Escapement strategy (assure minimum SSB)

$$\text{Escapement SSB} = B_{MSY}$$

1. Preliminary TAC (well below expected fishing possibilities)
2. In-year assessment: typically through a survey (acoustic)
3. Adjust TAC based on in-year information assuring that SSB (surviving stock) is above a pre-defined level

What to do for:

Stocks without projection

No projection of the stock status and fisheries performance

Stable stock: not an indication of fishing at MSY

Look for

1. stock trend indicators: cpue (Commercial), cpue (R/V)
2. Exploitation pressure (e.g. catch curve, effort trend)
3. MSY references (e.g. based on longevity)

Catch options

Stocks without projection

	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

Stocks without projection

ICES Advice October 2010:

*On the European Commission's TAC Setting Rules
[COM (2010) 241]*

- Fishing mortality based rules perform poorly.
- Stock abundance based rules better.

What to do for:

Stocks with no stock indicator

Usually only catch statistics available

If Effort statistics available see previous slide

Acknowledge that no information is available and provide 'No advice'.

Thank you!