The EU-Norway management plan for North Sea haddock

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Outline

- History and modifications
- Structure
- Evaluations
- Success or failure?

History and modifications

Next review postponed until December 2010

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010

Plan agreed

Plan came into force in Jan 2005

Review and revision during 2006

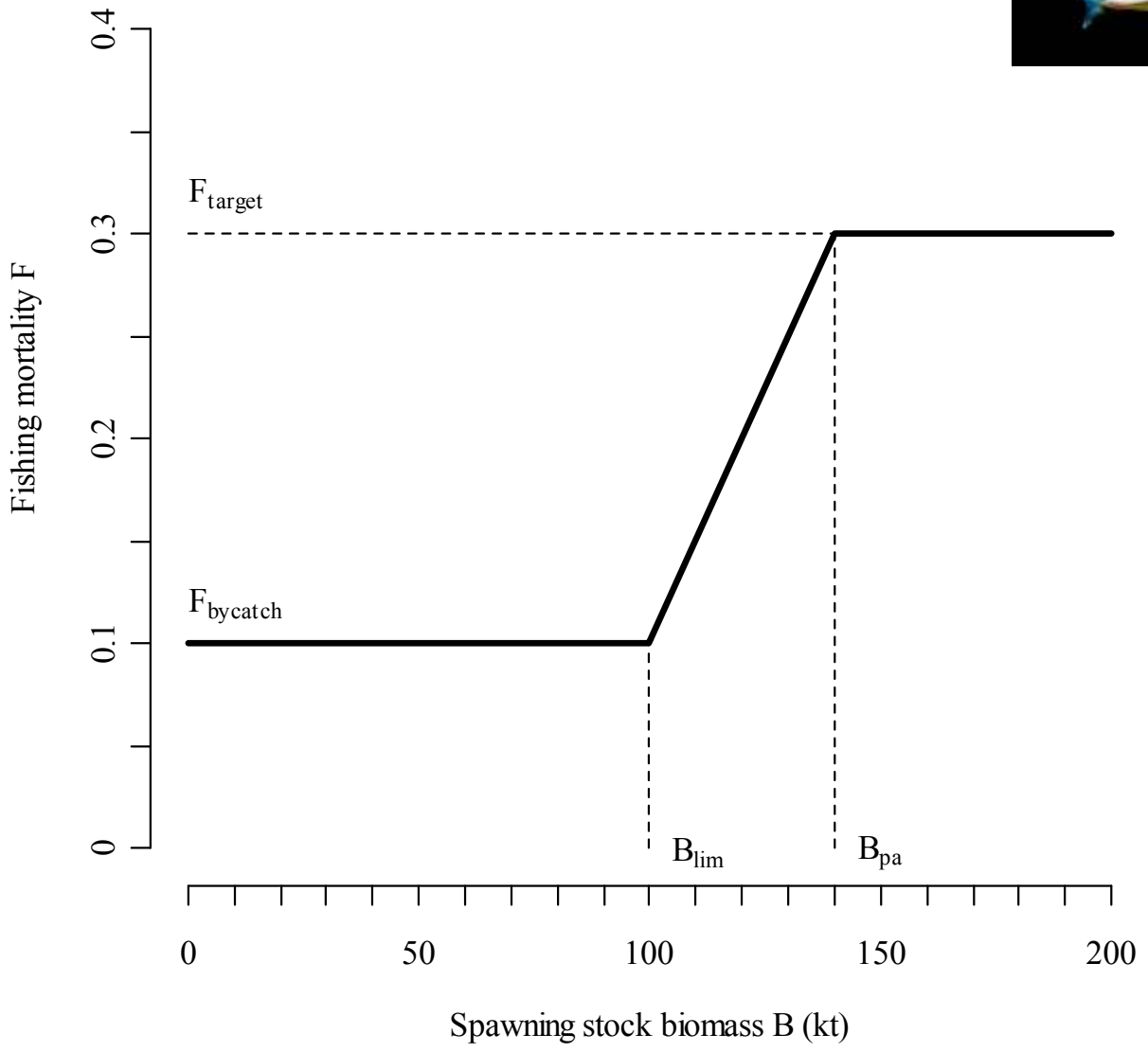
New plan implemented Jan 2007 + further review

Banking and borrowing reviewed during 2008 + implemented for 2009

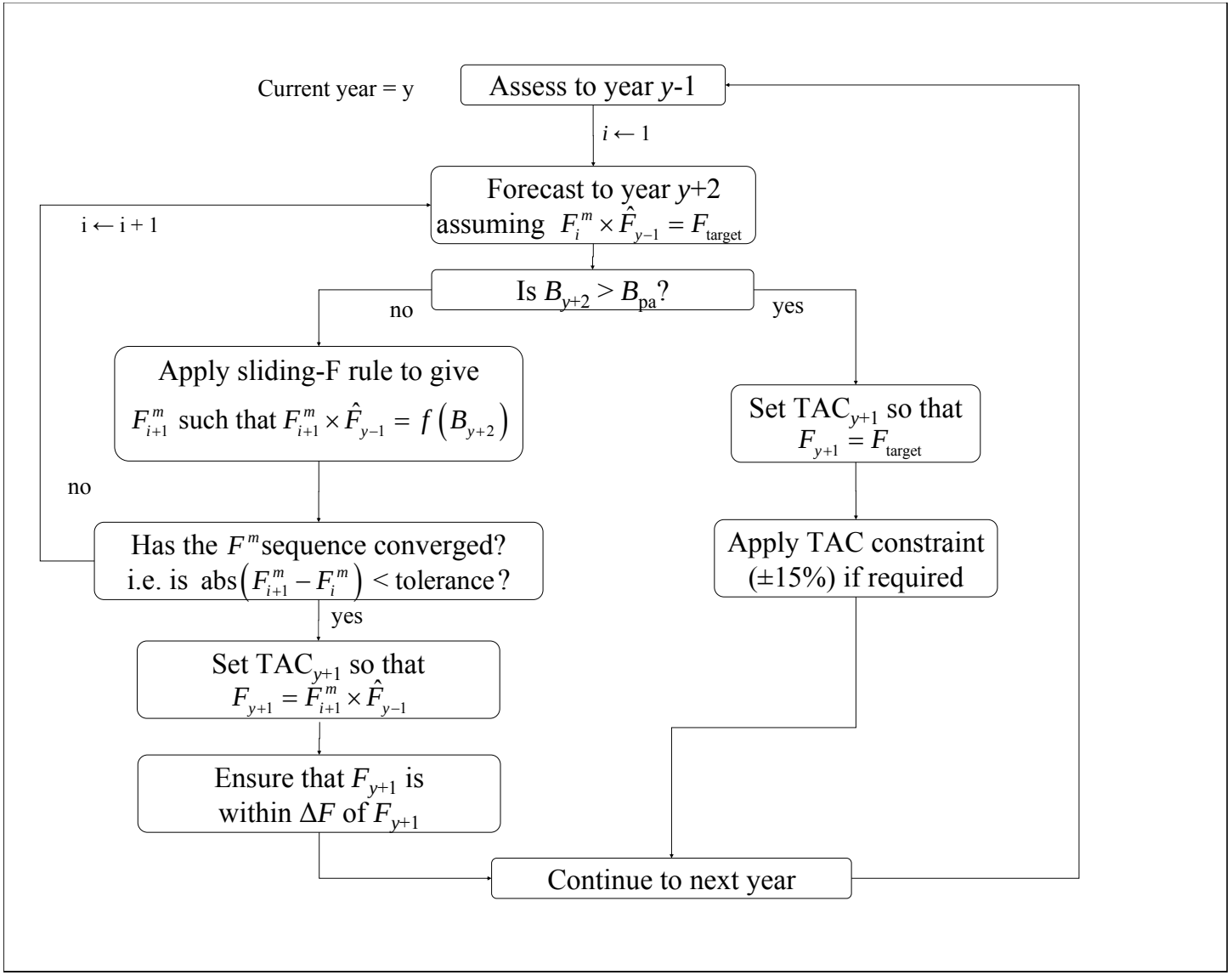
Structure

- Target F = 0.3
  - But sliding F rule if biomass low
- Constraint (± 15%) on interannual quota variation
  - If biomass greater than Bpa
- Banking and borrowing
  - ±10% maximum.
  - Stock must be predicted to remain above B_{pa}.
  - Quota banked for next year, or borrowed from next year, is not available for subsequent banking or borrowing.

Structure


Fishing mortality F
0
0.1
0.2
0.3
0.4
F_{target}
$F_{bycatch}$
B_{lim}
B_{pa}
0
50
100
150
200
Spawning stock biomass B (kt)

Structure


Current year = y
Assess to year y-1
i ← 1
Forecast to year y+2
assuming $F_i^m \times \hat{F}_{y-1} = F_{target}$
i ← i + 1
Is $B_{y+2} > B_{pa}$?
no
yes
Apply sliding-F rule to give
F_{i+1}^m such that $F_{i+1}^m \times \hat{F}_{y-1} = f\left(B_{y+2}\right)$
Set TAC_{y+1} so that
$F_{y+1} = F_{target}$
no
Has the F^m sequence converged?
i.e. is $abs\left(F_{i+1}^m - F_i^m\right) < tolerance$?
Apply TAC constraint
(±15%) if required
yes
Set TAC_{y+1} so that
$F_{y+1} = F_{i+1}^m \times \hat{F}_{y-1}$
Ensure that F_{y+1} is
within ΔF of F_{y+1}
Continue to next year

Evaluations

- Three distinct evaluation phases:
  - Original plan
  - Revised plan
  - Banking and borrowing
- Extensive analyses:
  - Around 20 meetings
  - 5 papers
  - 1 poster
  - 11 presentations

Evaluations

- Plan conclusions:
  - “It provides a low risk of biomass being below the limit reference point, along with stability in quotas that will benefit the fishing industry and related economies.” (Needle 2008)
- Banking and borrowing conclusions:
  - “it is very unlikely that any permitted sequence of banking-and-borrowing would have any deleterious effect on the future sustainability of the North Sea haddock stock.” (ICES 2008)

Success or failure?