

# Mixed fisheries and multispecies considerations

## North Western Waters RAC

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# Mixed fisheries

In 2012, for the North Sea, ICES presents for the first time in its advice:

an analysis of the implications of mixed fisheries under current TAC and effort regimes

- Catch advice for each stock on a single stock basis (based on MP, MSY framework or PA)
- Are the TACs corresponding to this advice in agreement with each other in mixed fisheries contexts?
- Or are TACs for some species likely to be exhausted much sooner than for others? (in which case, some species will be caught above or below the TAC)

# Mixed fisheries

Analysis assumes:

- same fleet behaviour in 2012 and 2013 as in 2011 (same fishing pattern and catchability)

Five example mixed fisheries scenarios explored:

“**min**”: fleets stop fishing when their **first** quota exhausted

“**max**”: fleets stop fishing when their **last** quota exhausted

“**cod**”: fleets stop fishing when their **cod** quota exhausted

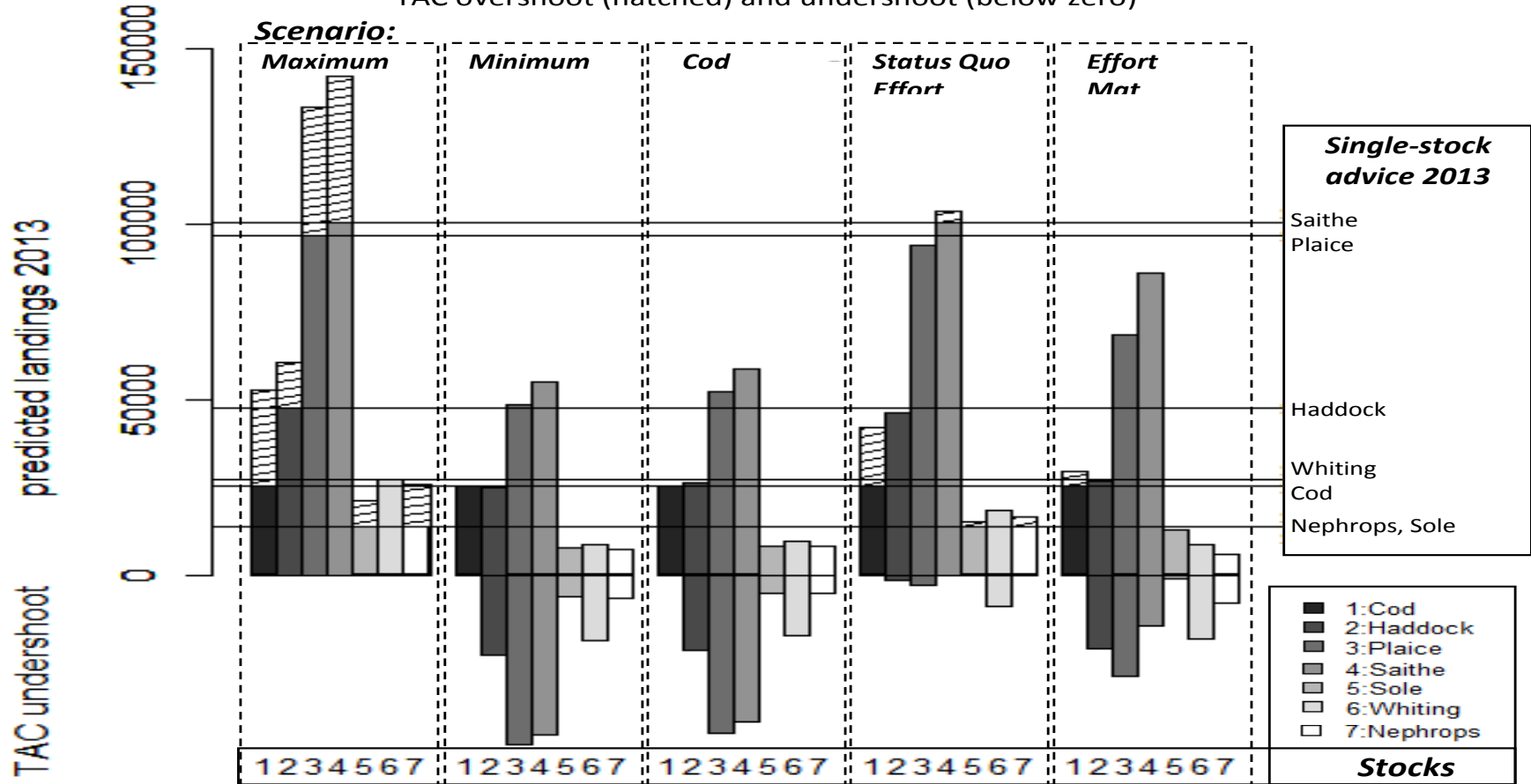
“**Status quo effort**”: effort equal to most recent year

“**Effort management**”: effort reduced according to regulations

“min” and “max” not realistic, but provide boundaries

# Mixed fisheries

**Predicted landings for 2013, per stock and per scenario**  
TAC overshoot (hatched) and undershoot (below zero)



Individual stock objectives can not all be achieved simultaneously

In 2013, the TAC (advice) for cod is the most limiting

# Mixed fisheries

Fleets will change behaviour in response to their catch possibilities for different species – but difficult to predict

Full value of mixed fisheries models will be realized with input from managers and stakeholders on trade-offs between different species in catch, *e.g.*:

- scenarios that take into account value of different species or other aspects influencing fleets' behaviour
- scenarios that consider changes in fleets' selectivities
- incorporation of mixed-fishery effects in LTMP

# Mixed fisheries

WGMIXFISH will convene (for the second time this year) in late August to

- Develop a mixed fisheries analysis for the West of Scotland
- For North Sea and West of Scotland, investigate the possibility of developing a mixed fisheries scenario consistent with reaching  $F_{MSY}$  by 2015 for all stocks

As of next year: expected new ICES WG to continue development of mixed fisheries methodology and extension to other geographical areas

# Multispecies considerations

Biological interactions occur between fish from a population, across populations and with other components of the marine ecosystem.

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

“Density-dependent” effects imply that all the expected increases in stock abundance based on an MSY approach on an individual stock basis are unlikely to occur simultaneously

# Multispecies considerations

Response of the stocks to changes in fishing pressure will also be affected by biological interactions

In most regions, reliable predictive models accounting for the effect of biological interactions on stocks' response do not exist at present. If that continues to be the case, a stock-by-stock MSY approach will be used based on the observed response of the stocks once they have been fished at  $F_{MSY}$

When reliable predictive models are developed: multispecies fishing strategies to be developed to achieve MSY on multispecies basis -- requires evaluating trade-offs based on managers' and stakeholders' preferences



# Multispecies considerations

In the 2012 advice, ICES presents an illustration concerning multispecies management for cod, herring and sprat fisheries in the Baltic:

- At this stage, work is illustrative
- Meant as starting point for dialogue
- Need to agree on objectives and risk tolerance
- Will need a transition period
- Focuses on most obvious interactions between cod, sprat and herring. Not a full ecosystem or foodweb model

ICES will pursue further development of multispecies work with a view to integrate it into advice when ready

**Thank you for your attention!  
Comments and questions?**