Ecosystem Approach to Fisheries Management in the Barents Sea

by

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Ecosystem Approach to Fisheries Management (EAFM)

- Nothing new!
- We don’t start from scratch!
- BUT: represents new direction and focus for marine research and fisheries management
Status for EAFM

• Long time series, environment/biology
• Multispecies
• Precautionary approach to harvest rates
• Numerous management measures (legal size, mesh size, gids, closed areas – for target species, but effect also on non t.dp.)
• Protected areas (e.g. deep water corals)
• Models (physical, plankton, single species, multispecies, ecosystem......)
• + + + + +
Northeast Arctic cod.

Models for management advice in the Barents Sea

• Cod, single-species models
  – XSA
  – Fleksibest

• Herring, single-species model
  – SeaStar, ISVPA

• Capelin, predation from cod taken into account
  – Bifrost

CHALLENGE: to link ”basic models” to ”operational models”
The road towards ecosystem based management:
Can be made very complicated – or relatively simple, but still demanding
Ecosystem based fisheries management: main elements

• A: improved knowledge and understanding of ecosystem dynamics - for controlled harvest levels of single species/stocks
• B: improved fish capture techniques for low adverse ecosystem effects
• C: indicators of ”ecosystem health” – to monitor effects of fishing and other human activities on the marine ecosystem
A: Improved knowledge and understanding of the ecosystem

- Improved management oriented, operational models – utilising multispecies and ecosystem dynamics data and information
- DEMAND for huge increase in ecosystem data (in time and space) and effective data handling systems
Increased data supply by use of improved and new ”platforms”

- Research vessels /state of the art technology
- The fishing fleet (catch and ecosystem data)
- Airborne and sattelite platforms
- Buoys
- Tags (DST, acoustic...)
- AUVs / ROVs /HUBs
- Ships, offshore installations
The fishing fleet as data platform

• Russia: long tradition for obtaining data from the fishing fleet

• Norway: developing, e.g. Reference fleet of different vessels in the demersal fisheries supplying electronic catch, effort and biological data
The reference fleet

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Hub monitoring

Example: wintering NSSH

- Establish an acoustic fens
  - Transducer array
  - Horizontal looking sonar
  - Watch dog – AUV patrolling the fens

- Develop software for efficient and automatic handling of large data sources
- Develop software for assessing movement and fluxes
To ekkolodd med sild

Sonar med silderegistrering

Deler av ADCP-bilde
DST being attached to cod

Measure
- Temperature
- depth
- tilt angle
- time
North Cape - Bear Island in 90 days
LIDAR (lasedr) observations from airplanes

- Mackerel – migration and distribution
- Seal-capelin interactions in the Barents Sea
B: “ecosystem friendly” fish capture techniques

- Promote a shift to best practices regarding fishing methods – and further development for: species- and size selectivity, minimal effects on bottom habitats, low fuel consumption and pollution per unit catch, improved catch quality, low “hidden” mortality (e.g. “ghost fishing”)
Sorting grid: separating fish and shrimp

- Keep shrimp
- Release fish
- Improved catch quality
- Reduced labour/on deck sorting
- Compulsory use in shrimp fisheries worldwide
C: indicators of ”ecosyst. health”

• Indicator species?

• Indicator areas (e.g. In the Barents Sea): basic inventory of species/ abundance + regular monitoring of community changes – related to human and/or environmental effects
Ecosystem Approach to Fisheries Management

- The concept should imply management strategies for balanced harvest of living marine resources – including all trophic levels from plankton to top predators
Ecosystem organized research

- 2003 IMR-PINRO ecosystem surveys in the Barents Sea
- 2004 IMR from discipline - to ecosystem based organization
Ecosystem based fisheries management: challenge

• From slogan to operational reality
• From ”political talking point” as disguise of obvious unpopular actions (e.g. decommissioning of fleet capacity) – to real investment in ecosystem dynamics knowledge and understanding
• THE END – THANK YOU FOR LISTENING