The challenges of incorporating climate science into advice for marine policy makers

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26 February 2020

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ICES advice & Climate Change

EU request on distributional shifts in fish stocks (WKFISHDISH, related advice):

- changes in distributions for 16 out of 21 species examined (North East Atlantic)
- 8 species exhibited distribution changes crossing quota management and allocation boundaries
- Drivers: environmental conditions (T), fishing
- These drivers could not be singled out from a number of mechanisms that are species- and stock-dependent

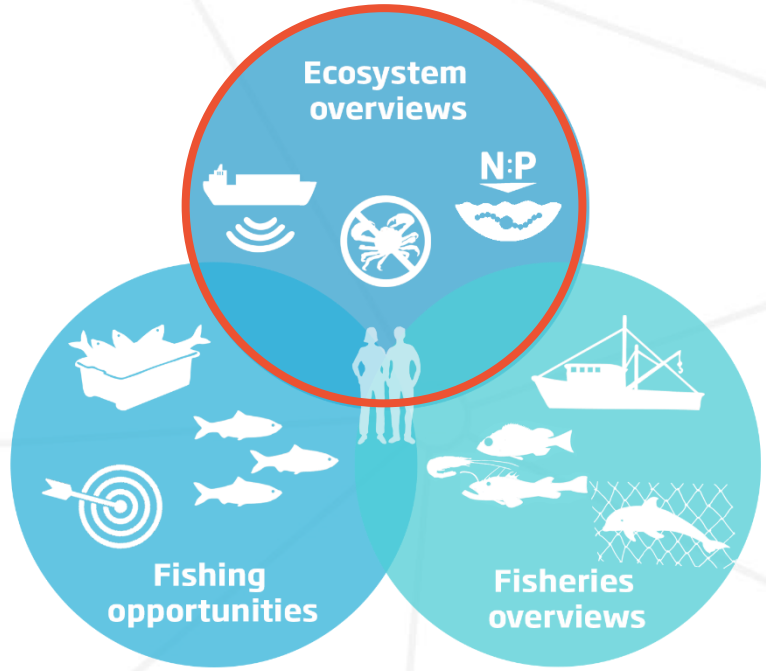
Climate work in the ICES network:

- ICES/PICES Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME)
- ICES/PICES Workshop on Regional climate change vulnerability assessment for the Large Marine Ecosystems of the northern hemisphere (WKSICCME-CVA)
- The ICES/PICES Workshop on Political, Economic, Social, Technological, Legal and Environmental scenarios used in climate projection modelling (WKPESTLE)
- ICES Working Group on Seasonal-to-Decadal Prediction of Marine Ecosystems (WGS2D)

ICES advice & Climate Change

ICES Ecosystem Overviews – part of the recurrent advice in the Grant Agreement between the European Commission and ICES:

- Climate change included as a distinct pressure across all activities and state components
- Evidence of ongoing and anticipated effects of climate change on relevant environmental variables, ecosystem state components and human activities
- Key knowledge gaps for assessing climate change impacts on the ecoregion.



The three main ICES Advice outputs in support of Ecosystem Based Management

The Future for ICES advice in a Changing Climate

- A historical perspective that draws upon observational data to describe climate-related trends, impacts, and adaptation
- A forward looking perspective, which often relies upon a variety of forecasting models to project future climate scenarios and potential effects
- A broad perspective that evaluates the potential impacts of changing climate relative to other anthropogenic and natural pressures co-occurring in a dynamic ocean environment

Fisheries Management in a changing climate

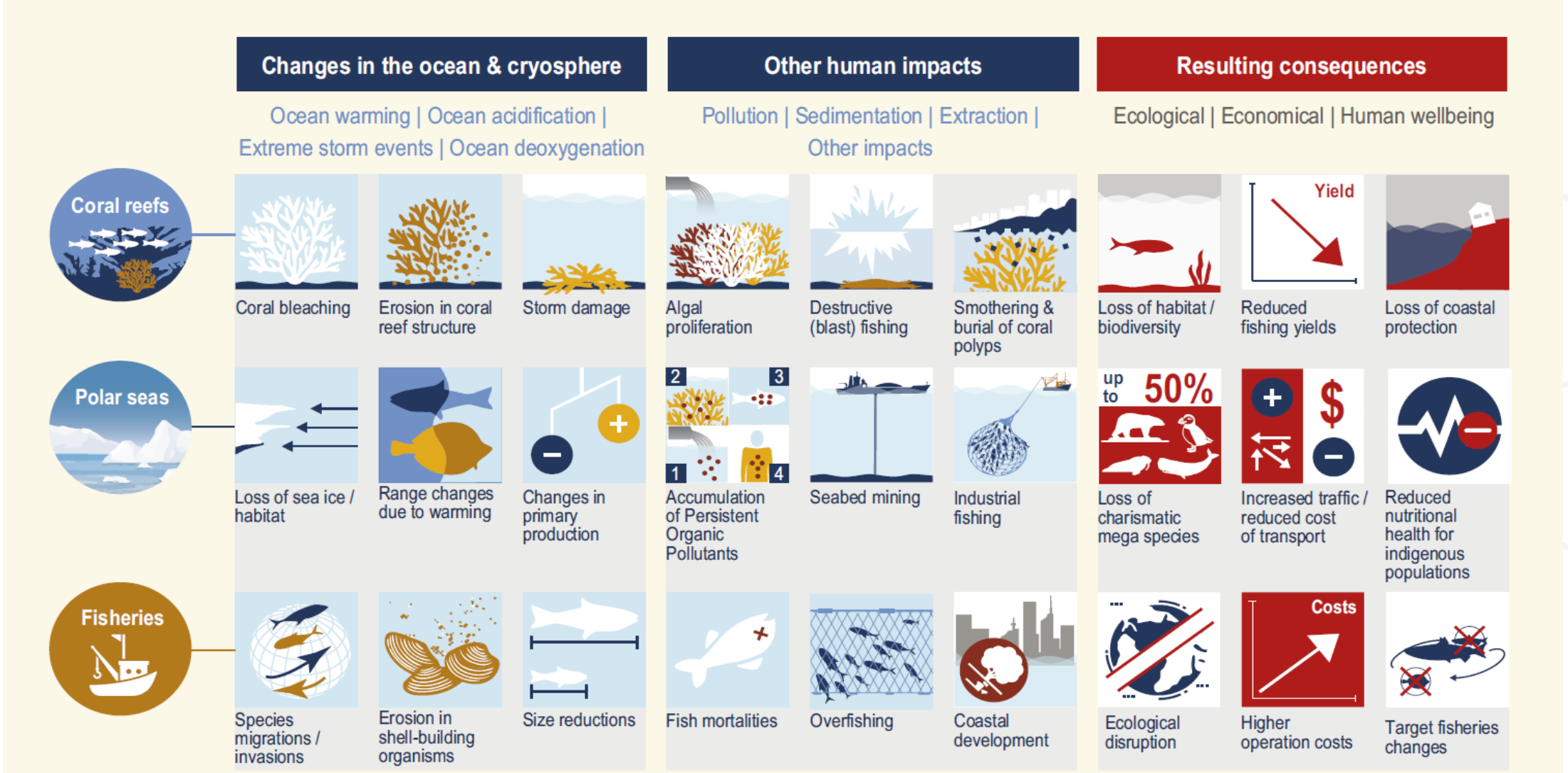
History has an important role in fisheries management (stock assessment, infrastructure, quota allocation)

"Climate change makes history unreliable"

Source: Crafting Guidance for Adapting to Shifting Fish Populations Project, Andrew Pershing, Lisa Kerr, Jonathan Labaree, GMRI

- How will different fisheries management systems around the world respond to a changing climate?
- What are the possible side effects of different allocation mechanisms under climate change?
- How to change the management of the fisheries in order to mitigate the climate stressors?

Complexity of Ocean Ecosystem Management in a changing climate



Summary schematic of the impacts and resulting consequences of climate change (warming, acidification, storminess and deoxygenation) and other human impacts, on coral reefs, polar seas and fisheries.

Source: IPCC, Special Report on the Ocean and Cryosphere in a Changing Climate, 2019

Areas of future work for advice in a changing climate

- Is more science the solution, or is there a need to change/adapt the management/governance of fisheries & aquaculture in the light of a changing climate?
- With the changes in fishing opportunities and shift in management jurisdictions, what practical operational advice will managers need?
- Which species will provide more food security in a changing climate?
- What spatial and time scales are relevant to advice products?
- How to assess climate impacts and provide advice in the context of cumulative impacts from other local and regional pressures in the marine environment?
- Which are the broader implications of adaptation practices?

Opportunity for climate science in aquaculture advice

Anne M. Cooper, Ph.D.

Presentation to the ClimeFish

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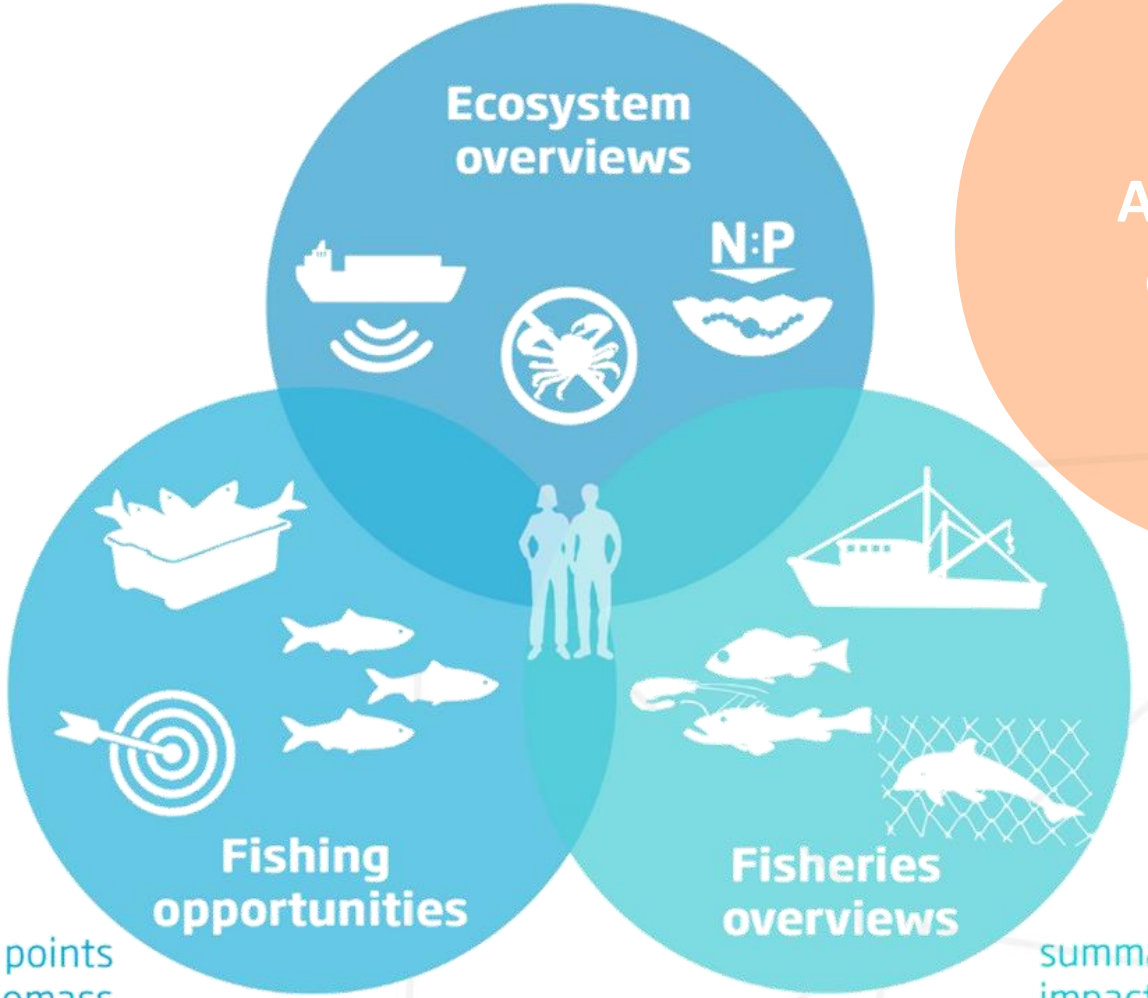
Overviews

describe ecoregion context
identify pressures & drivers
impacts on key ecosystem components



Aquaculture overviews

MSY options & reference points
consequences of catch on biomass
respond to changes in productivity

summarize fleet activity
impacts of fishing & species
trade-offs between fleets

ICES at a glance

Intergovernmental organization

20 member countries

Strategic partnerships extend our reach

Stakeholders | Clients | Science networks | Intergovernmental organizations


ICES
CIEM
A broad range of scientific disciplines
700 institutes and organizations
150 expert groups
5000 experts
Contributors from 60 countries
ICES network
Knowledge creation and sharing
Evidence based scientific advice
Data, tools and techniques
Training, conferences, and workshops

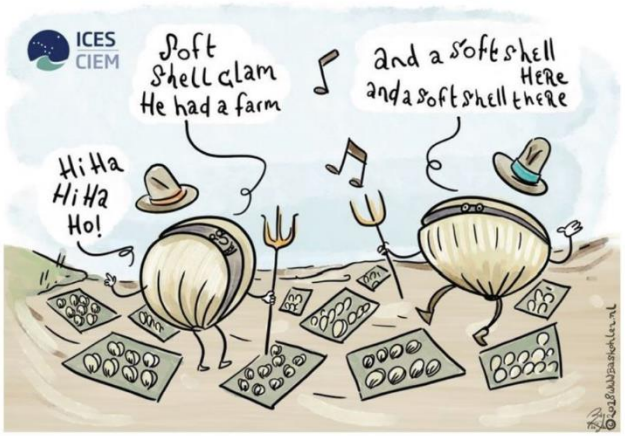
ICES Advice

On request

Built from bottom-up

Agreed by consensus

Stakeholder engagement survey



Stakeholder engagement survey to design the ICES Aquaculture Overviews

ICES seeks to develop aquaculture overviews that are highly relevant to all stakeholders, will inform decision-makers, and are based on the best available science and information.

Start

3→ What management objectives/issues require advice?

Choose as many as you like

- A Carrying capacity and efficiency of aquaculture systems
- B Genetics of cultured taxa
- C Environmental impacts and mitigation options
- D Pathology and diseases
- E Vulnerability/resiliency to environmental/climate change
- F Social impacts

44% completed

Powered by Typeform

4→ What general information should the overviews contain?

Choose as many as you like

- A Description of aquaculture practices
- B Regional patterns in aquaculture production
- C Cultured taxa
- D Relevant social information
- E Relevant economic information
- F Seafood safety policies and laws
- G Relevant mitigation strategies

Shape the future

Stakeholder input needed to develop
ICES Aquaculture overviews

Want to get involved? Tell us what you think!

- Which management and science issues are most important to you?
- What information should be included?
- How should the advice be presented and communicated?

Contact us!

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