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# Climate Change and Transboundary Fisheries: Continuity and Adaptation in Legal Structures

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# Fisheries and Climate Change (and Acidification)

“Transboundary” – including: joint, straddling, HMS

- Impacts (IPCC, FAO)
  - “Indirect” effects
    - Extreme events
    - Local coastal erosion
    - Habitat destruction
    - Socio-economic effects (employment, food security etc)
    - “Ecosystem Impacts”\*



For some impacts –many adaptation measures will be located outside the fisheries management regime:

EG:

### Risk

Coastal inundation and habitat loss due to sea level rise, extreme events, changes in precipitation, and reduced ecological resilience...

### Adaptation

Human adaptation options are limited to reducing other stresses, mainly by reducing pollution and limiting pressures from tourism, **fishing**, physical destruction...

Source: IPCC: Assessment  
Report 5 (AR 5)

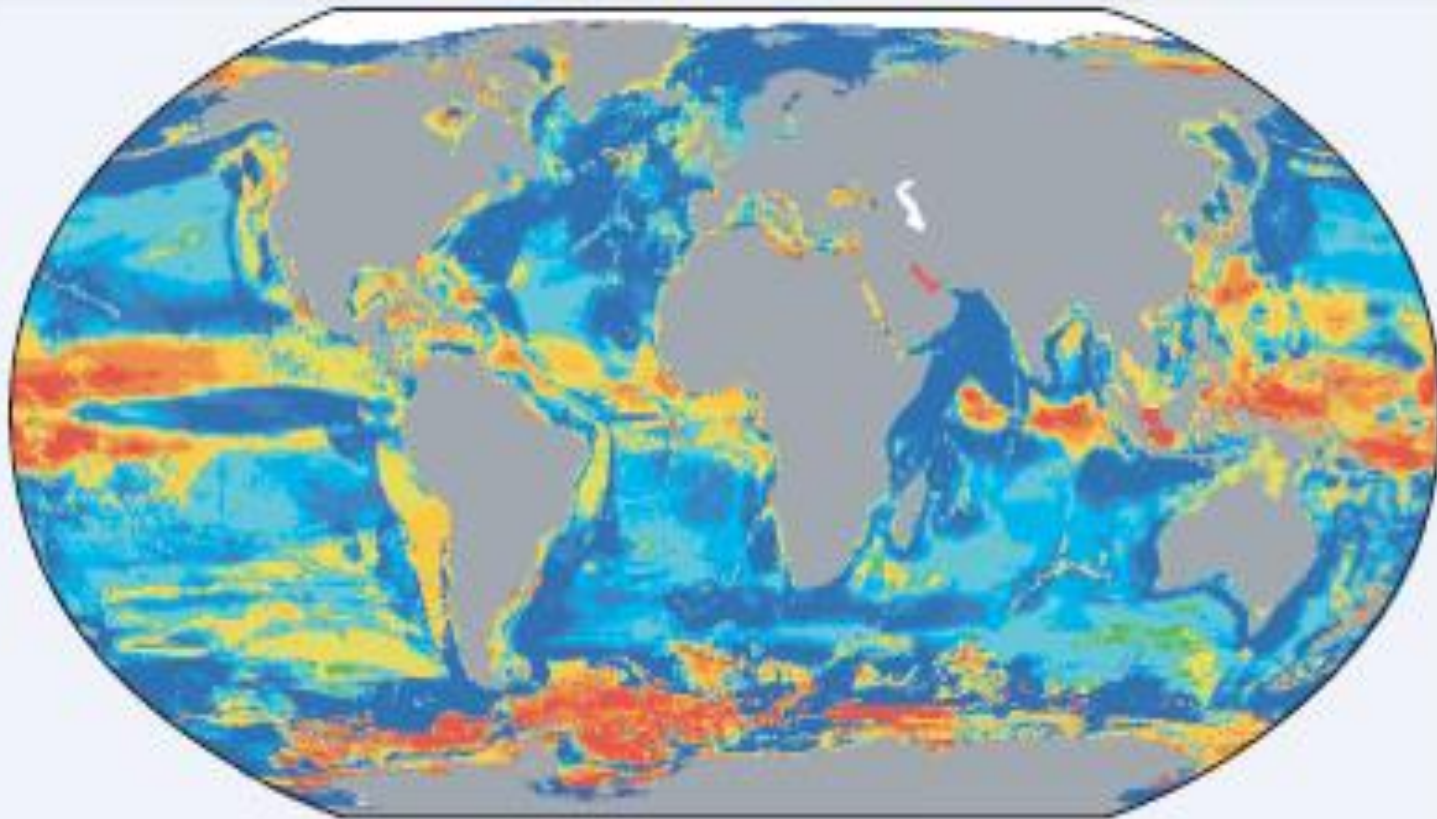


## Ecosystem Impacts

- Redistribution of species
- Invasive species and disease vector alterations
- Changes in fishery productivity
- Expansion of oxygen-minimum and anoxic dead zones
- Acidification impacts on local habitats, species

# Redistribution

maximum catch potential (2051–2060 compared to 2001–2010, SRES A1B)



“Species richness and fisheries catch potential are projected to increase, on average, at mid and high latitudes ... and decrease at tropical latitudes...” Source: AR-5

# Productivity Impacts (FAO 2008, 2009)

- Physiological: tolerance of temperature change and + or – impacts on productivity
- Spawning: time of spawning, egg size, survival rates
- Recruitment: rates (related) can be affected by time of spawning, food availability
- Combined effects critical to stock assessment for some species





## And a Couple of Reminders...

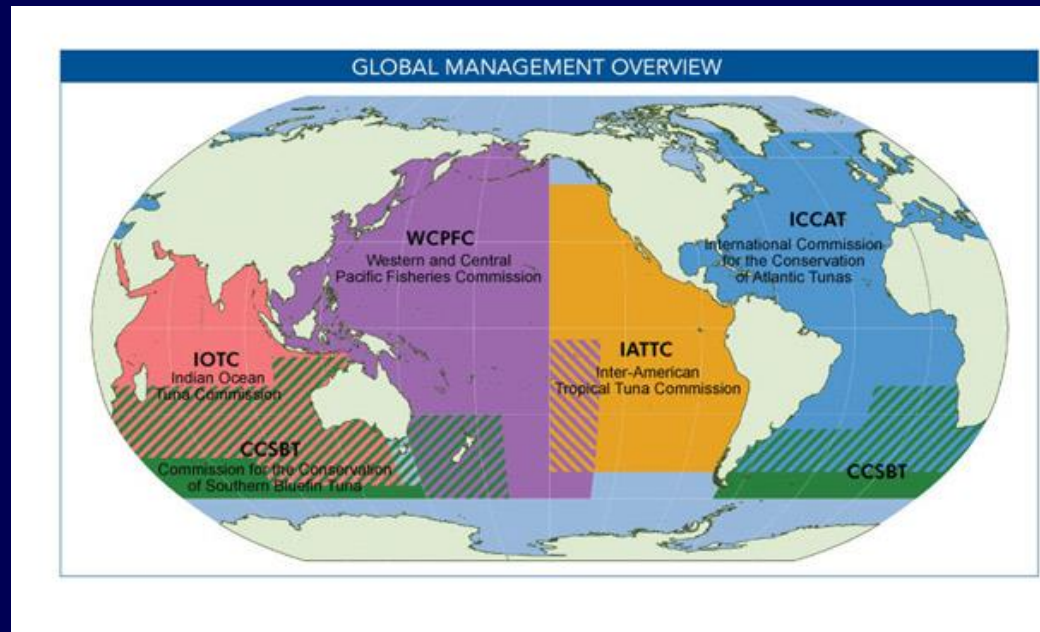
- “Climate change adds to the **threats of over-fishing and other nonclimatic stressors**, thus complicating marine management regimes (*high confidence*).”
- “Simultaneous drivers, such as warming and ocean acidification, can lead to **interactive, complex, and amplified impacts** for species and ecosystems” AR-5



# Impact on Legal and Management Structures

## Species redistribution

- Possible incompatibility of species-centred RFMOS where geographic limits do not track species range
- Reliance on existing RFMOs in face of newly-feasible fisheries in areas beyond their jurisdictional reach







- Opening of new areas with unanticipated rapid fisheries development, no RFMO or other management authority





- Emergence of “new” shared stocks, straddling stock situations with potential conflict



**The Rt. Hon. Brian Tobin,**  
*Grand Admiral and Conqueror of the Armada (aka Minister of Fisheries and Oceans)*

# Deeper Structural Issues: Capacity for Adaptation?

- The IPCC & FAO – though with limited focus on governance issues, have identified the following:

*“Addressing the potential complexities of climate change interactions and their possible impacts requires **mainstreaming of cross-sectoral responses** into governance frameworks”* FAO 2009

- To date? CCAMLR, NEAFC/OSPAR cooperation?

*“Governance aimed towards equitable and sustainable fisheries, accepting inherent uncertainty, and based on an ecosystem approach, as currently advocated, is thought to generally improve the adaptive capacity of fisheries.”* FAO 2008

-- And other post-UNCED “principles” – precaution, sustainable development??

-- Applications to date in RFMOs?



## A brief walk down memory lane...

- LOS 1982, Effect of Fisheries Provisions:
  - Endorsed “conservation”, but primary concern was to establish jurisdiction
  - Jurisdictional *entitlements* came with (less well-defined) conservation *obligations*
  - States – arguably – tended to grasp the entitlements with enthusiasm while forgetting the obligations

As maritime and DWFN states tried to maintain a balance, Convention imposed an “exploitation” mindset:

61 (1) The coastal State **shall determine the allowable catch** of the living resources in its exclusive economic zone.

61(2) The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation....

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61(3) Such measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors including the economic needs of coastal fishing communities .....

62(1) 1. The coastal State shall promote the objective of optimum utilization of the living resources in the exclusive economic zone without prejudice to article 61.

Plus – surplus allocation obligations (effectively nullified by provisions of art 62)





- **Characteristics:**

- An exploitation-oriented approach
- Enshrines a particular **scientific methodology** (TAC, MSY) of the time – while simultaneously neutering it
- **Predictive** in orientation – in developed industrial fisheries, this allowed the **monetization of “quota”**
  - Hard – though not impossible – to take away
- Limited concern for the *principles* that emerged later in UNCED era

- Have we gone beyond this: one oft-cited example – the introduction of **precaution** in the 1995 UN Fish Stocks Agreement (straddling, HMS)
  - But what is the reality?
- UNFSA clearly a post-UNCED agreement:
  - Art 5(1) sets out a list of the management measures and **principles** which are to be applied by States in giving effect to the duty to cooperate under LOS 1982 Arts 63 and 64.
  - These include, *inter alia*, **precaution** and protection of **biodiversity**



- But then – in a non-hierarchical list, also:
  - Measures shall “promote the objective of optimum utilization”
  - Measures designed to “maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors”
- And the “precautionary approach” is to be applied as defined in Article 6

## In brief:

- Art 6(3): ...apply the guidelines **set out in Annex II** and determine, on the basis of the best scientific information available, **stock-specific reference points** and the action to be taken if they are exceeded.
- A **precautionary reference point** is “an estimated value derived through an agreed scientific procedure, which corresponds to the state of the resource and of the fishery” (Annex II, Art. 1)
- States are to use both “**conservation**” or “**limit**” reference points, representing the outer limit of biological parameters; and “**management**” or “**target**” points (Annex II, Art. 2)

- Management strategies are to seek to “maintain or restore” stocks within “previously agreed” reference points, and include mechanisms to “trigger pre-agreed conservation and management action” (Annex II, Art. 4);
- Management strategies “shall ensure that the risk of exceeding **limit** reference points is very low”, and that they are not exceeded “**on average**” (Annex II, Art. 5);
- The level of fishing mortality which “generates **maximum sustainable yield should be regarded as a minimum standard for limit reference points**” (Annex II, Art. 7).

In other words: “precaution” = a properly managed TAC/MSY system under the LOS regime?



## A Few Lessons Going Forward

- “More law” may not always be the answer
- **Science is temporal**: if moving to new agreements re climate change/fisheries – or legislation - enshrine broad principles, not today’s particular theory.
- **First, do no harm**: the TAC/MSY approach diverted scientific effort away from biology, ecosystem knowledge to feed the insatiable maw of stock assessment

- System is based on MSY - modelled on **historical data** – which may be rendered useless by climate change (FAO)
- And - directed at **prediction** to a level of detail, in a system that is becoming **less and less predictable**.
- “Rebounds” assumed if it goes wrong – but may not be the norm (Grand Banks)
- Possibility of further refinement of principles via the courts? Art 30(5) UNFSA and the application of “generally accepted” conservation principles





# Remaining Optimistic in the Face of Reality...



"You know, we're just not reaching that guy."