



The Big Picture: Fishery Management, Ocean Management and Biodiversity

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A Personal Reflection

- Like many, I was trained in conventional fishery management, emphasizing single-species assessments, models and policies.
- In the 1990s, after the collapse of Canada's Northern cod stock, I served on an innovative new body, Canada's Fisheries Resource Conservation Council, advising the government on conservation... but the focus was on Total Allowable Catches, thus continuing the single-species approach that hadn't worked for the cod fishery!
- Meanwhile, as we focused on TACs, deep sea corals were destroyed by trawling, the right whale population continued declining, and government fisheries policies were damaging coastal communities.
- We failed to see the 'big picture' then. Is everything fine now? The Ecosystem Approach is a popular idea, just like that of Sustainable Development... but will inertia prevent the real changes needed in fishery management? How much have we actually learned since the cod collapse? Consider two ongoing yet flawed myths in fisheries...

Myth:

“The System Works”

(All's well - we just need some incremental change to improve things a bit)

Reality:

No one knows how to ‘do it right’

(To believe we do is to delude ourselves... a kind of over-confidence known as the ‘Fallacy of Controllability’. For example, we do not really know how to: incorporate local knowledge, limit catches, apply an ecosystem approach...and whatever is next)

Myth:

A Dead Fish is A Dead Fish

(It doesn't matter how you catch them, just that you killed them)

Reality:

How We Fish Matters

(The various ways of fishing have varying effects on other species and on fish habitat)

Untrawled and Trawled Coral-Sponge Forests (NW Australia)



Untrawled and Trawled *Lophelia* Reefs (Scotian Shelf, Canada)



Claim:

**We will never see fishery sustainability
if we restrict attention only
to what happens within the fishery**

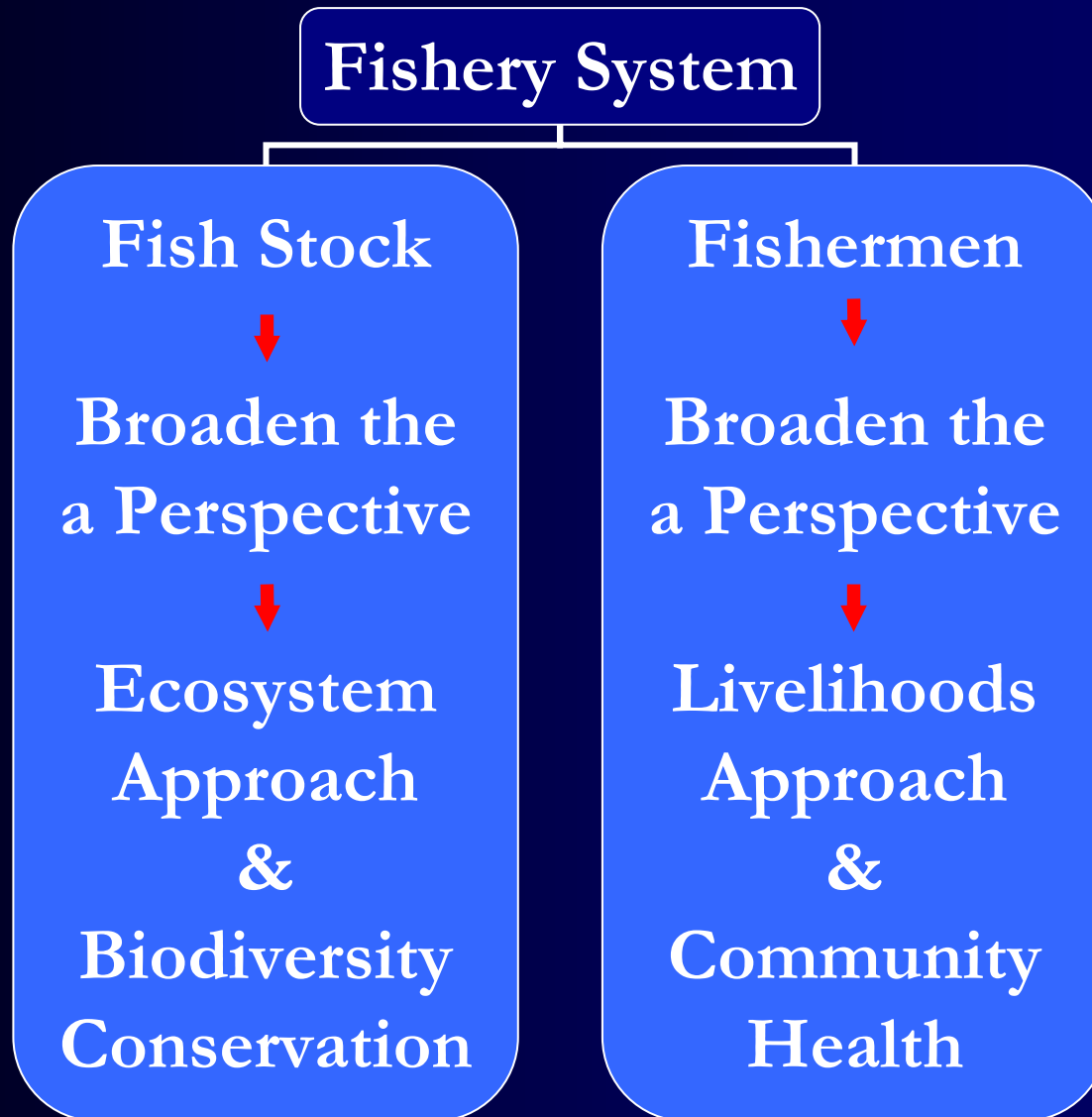
The Ecosystem Approach

- We have come to realize that classical fishery management focused too narrowly – on assessing individual fish stocks, and not dealing with ecosystem impacts and interactions...
- The Ecosystem Approach is crucial in broadening the perspective, to reflect in part the ‘big picture’ surrounding “fish & fishermen”.
- Some of the key dimensions are:
 - When managing a species, keep in mind interactions with others
 - When managing a species, keep in mind interactions with its habitat
 - When monitoring and managing fishing activity, take into account not only impact on the target fish stocks, but on the ecosystem too
 - When dealing with human uses of the ocean, manage for ecosystem health (not just “sustainable yield”) – i.e. pursue real ‘sustainable development’

The Fishery-System Approach

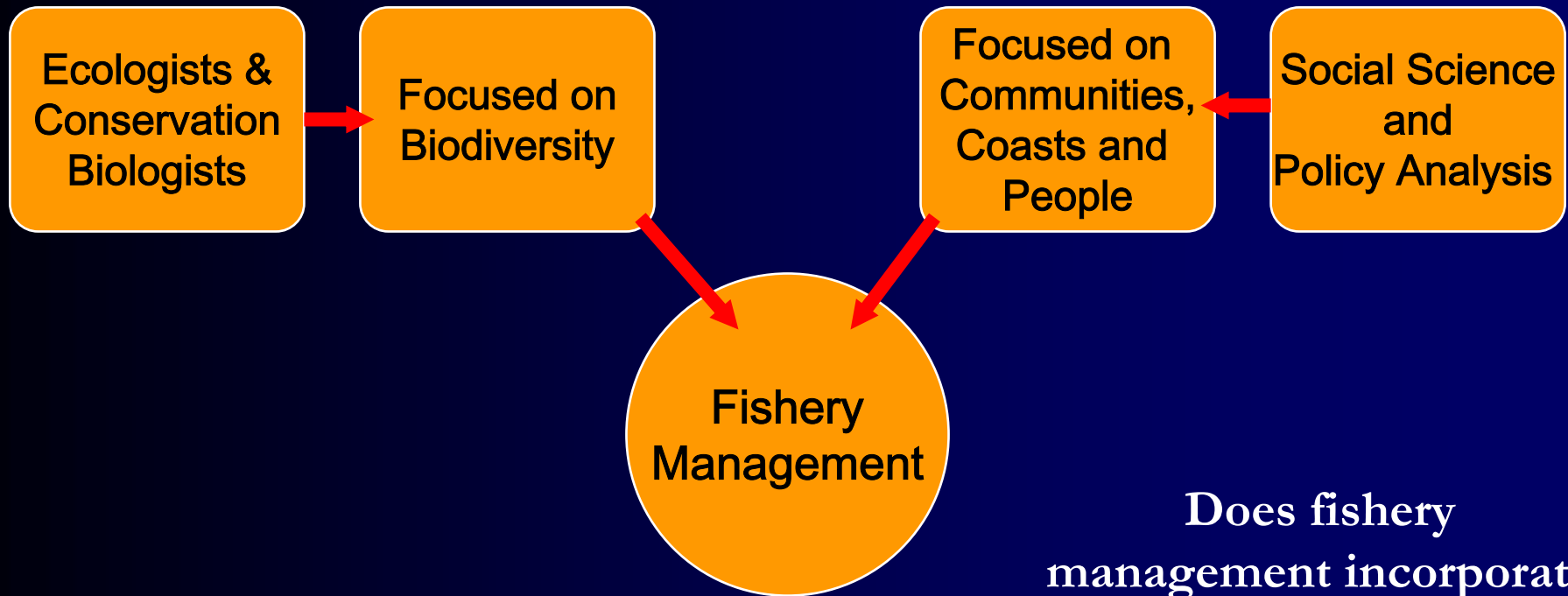
- The spirit of the Ecosystem Approach can be usefully extended by adding the equivalent on the human side, to give a broader look at the whole fishery system, and interactions beyond the fishery... what I refer to as a Fishery-System Approach
- For example, development of marine protected areas requires both an ecosystem approach, and an understanding of the ‘big picture’ from the human side (e.g., impacts of the MPA on the local community, and involvement of that community).
- The equivalent of the Ecosystem Approach on the human side may be the Livelihoods Approach, which says: Don’t focus just on “fishery jobs” but address all sources of livelihood (income) and well-being for fishery-based households and communities.

Symmetry in the Big Picture



Broadening Fishery Management...

Expansion on Two Fronts

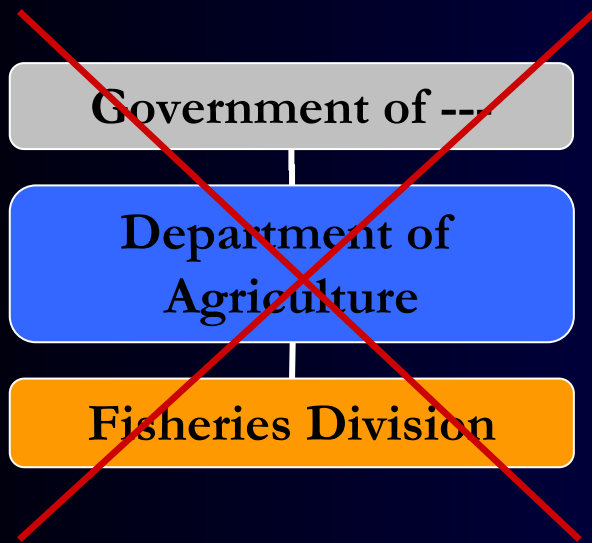


Does fishery management incorporate the voices of biodiversity conservation, of coastal communities?

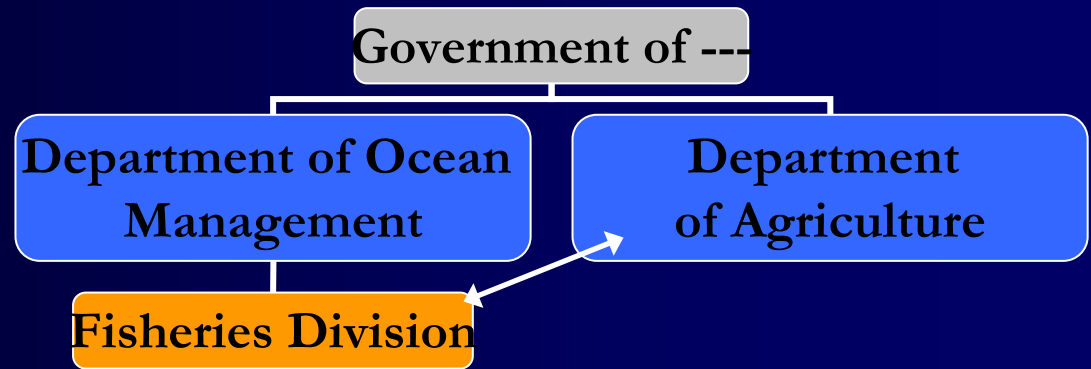
Implementing A Fishery-System Approach

- Make biodiversity conservation not merely a ‘constraint’ on human resource use, but a legitimate objective of society
- Manage for resilience... aim for ‘robust management’
- Avoid the *Illusion of Certainty* and *Fallacy of Controllability*
- Question Quota (TAC) Management
 - Is it compatible with Ecosystem Approach, Biodiversity Conservation?
 - Are there alternatives? Effort management, place-based management?
- Learn from Integrated Coastal / Watershed Management and explore integrated ocean conservation and management ideas
 - e.g., Canada’s Ocean Management Research Network (www.omrn.ca)

Perhaps To Really Incorporate Biodiversity and Human Dimensions Around Fisheries, Changes in Government Structure are Needed...



Current Structure



Possible New Structure

Conclusions

- In broadening to the ‘big picture’, it is useful to link the Ecosystem Approach, Livelihood Approach and Integrated Management ideas.
- A broader perspective may be possible only with institutional change: perhaps a ‘fishery agency’ cannot really deal properly with ensuring sustainability of marine ecosystems & coastal communities

