



**NOAA
FISHERIES**

Managing Fisheries in the Face of Changing Ecosystem Productivity

Fisheries Leadership & Sustainability Forum

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Outline

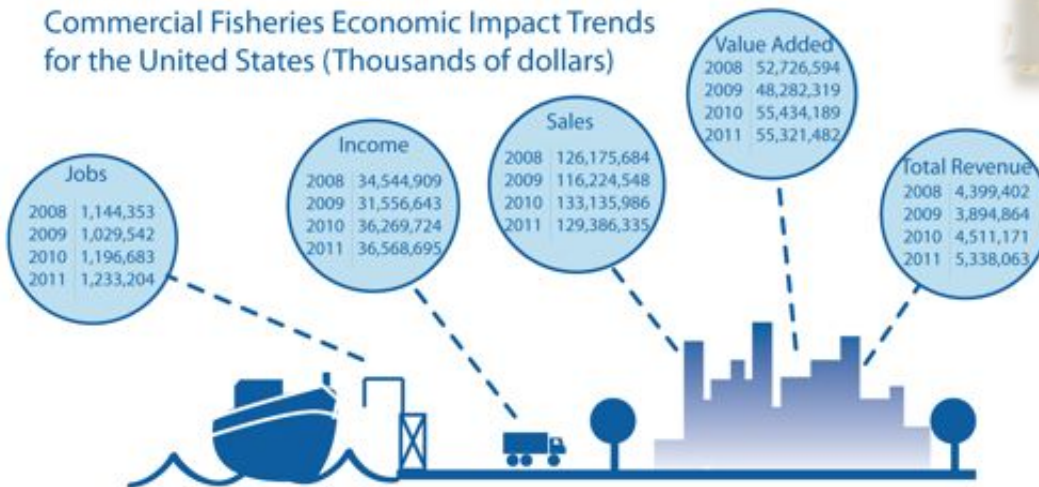
- Vibrant Marine Ecosystems are Important , but They are Changing Rapidly
- Impacts Are Why NOAA Cares
- Is Ecosystem-Based Management Possible?
- Questions

Vibrant Marine Ecosystems Are Important

- 70% of the earth is ocean
- Oceans produce the proteins that feed creatures...including us
- Huge economic engine for the U.S.

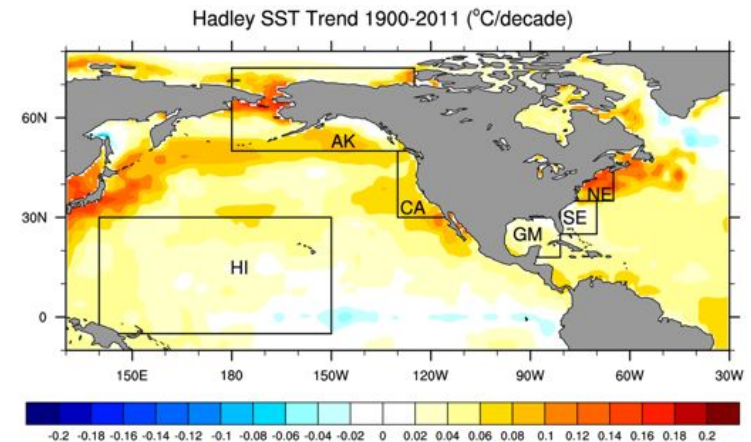
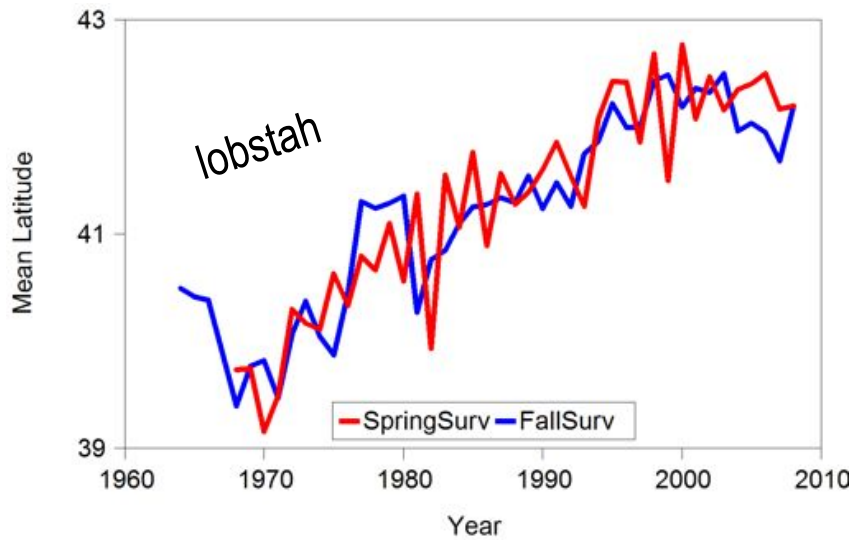


Commercial Fisheries Economic Impact Trends for the United States (Thousands of dollars)



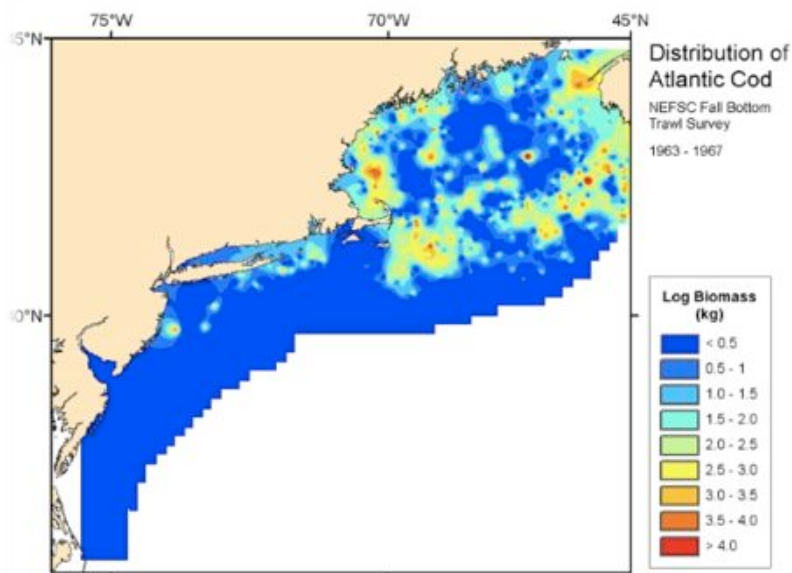
Marine Ecosystems Are Changing Rapidly

- Climate change effects
- System production constraints

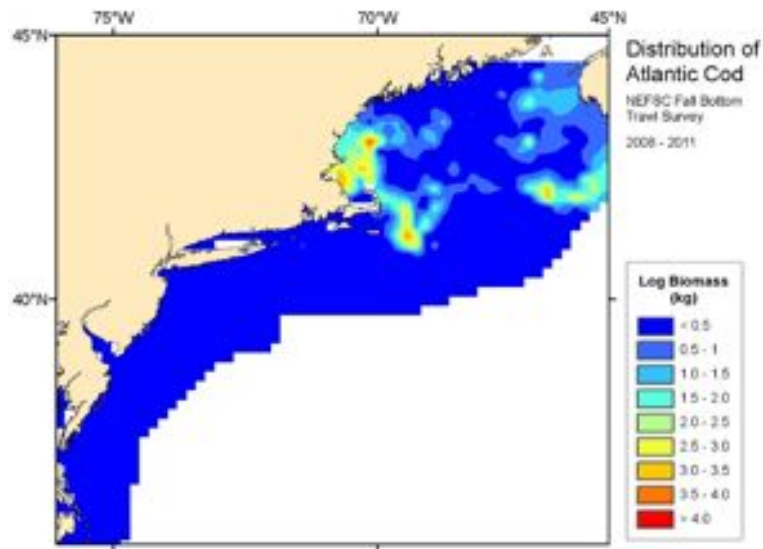


Understanding Climate Change Effects Is Critical

- Habitats for key species are changing
- The problem with shifting and shrinking



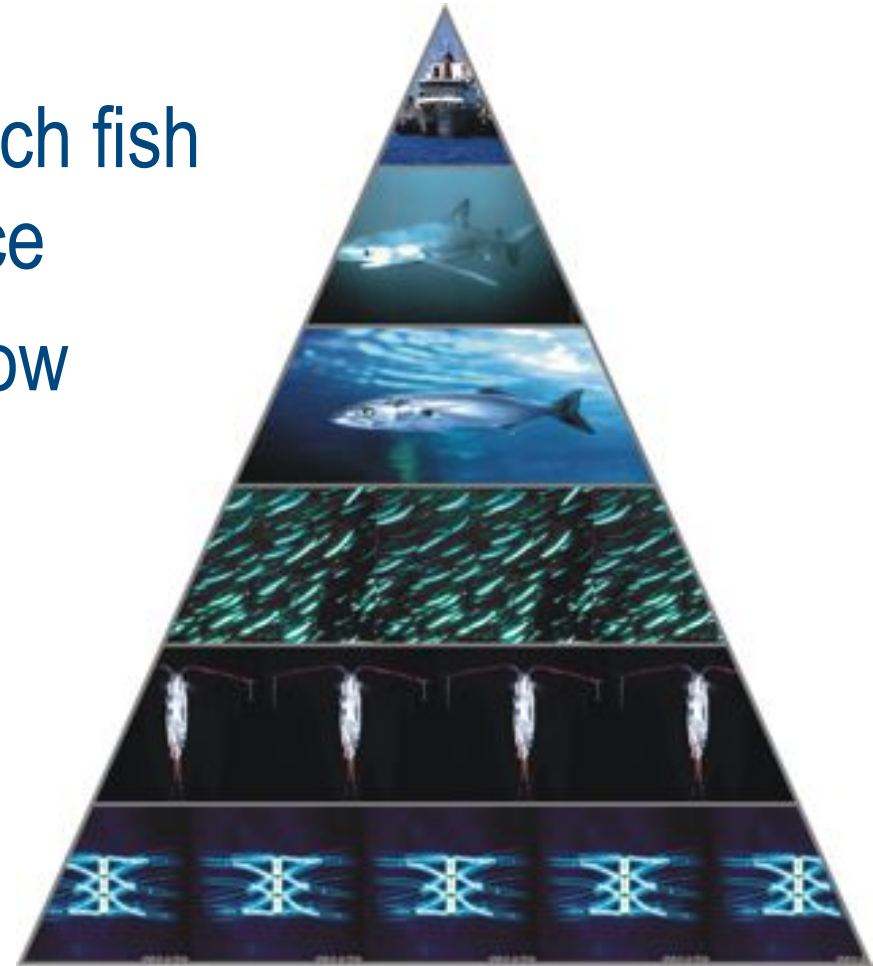
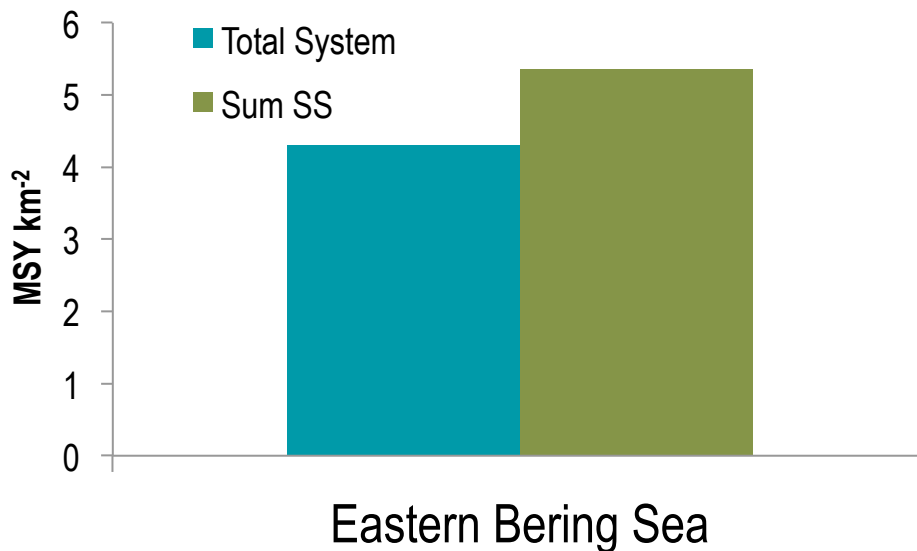
NEFSC Ecosystem Assessment Program



NEFSC Ecosystem Assessment Program

Understanding System Production Limits Is Critical

- There are limits to how much fish any ecosystem can produce
- The challenge of energy flow



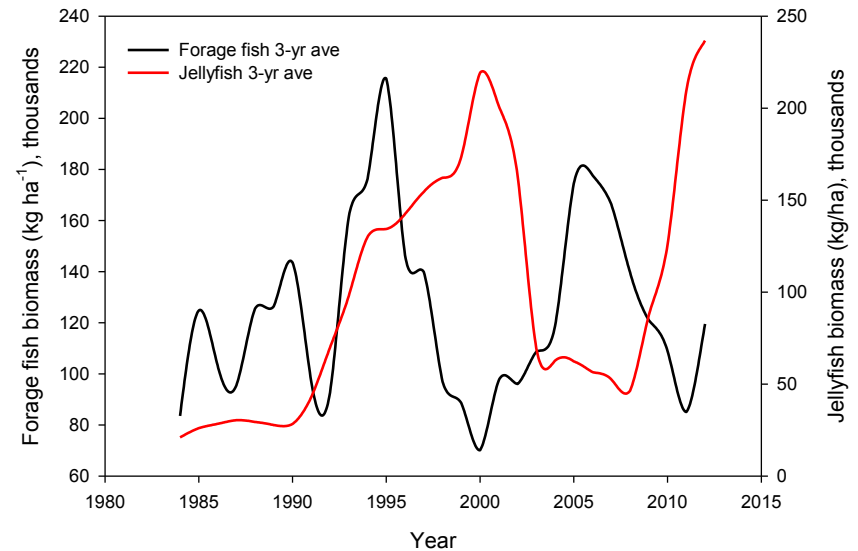
Impacts Are Why NOAA Cares

- Changes are having significant impacts on system and on us
 - System impacts
 - Human impacts (loss of jobs)



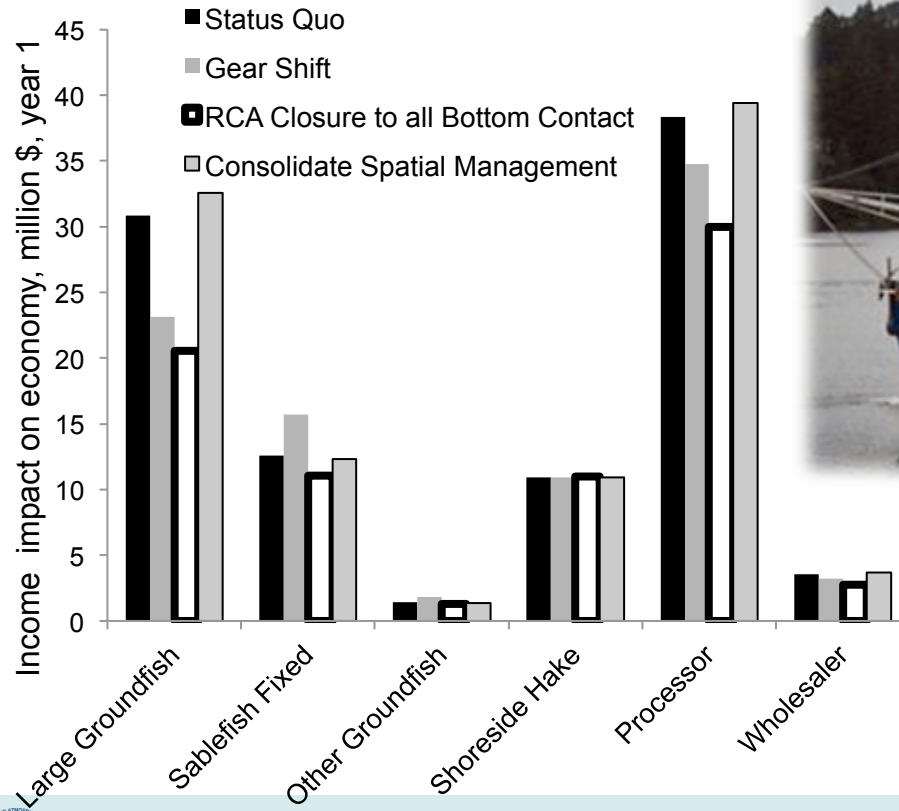
System Impacts of Ecosystem Changes

- Jellyfish outbreaks



Human Impacts of Ecosystem Changes

- Testing West Coast trawling scenarios



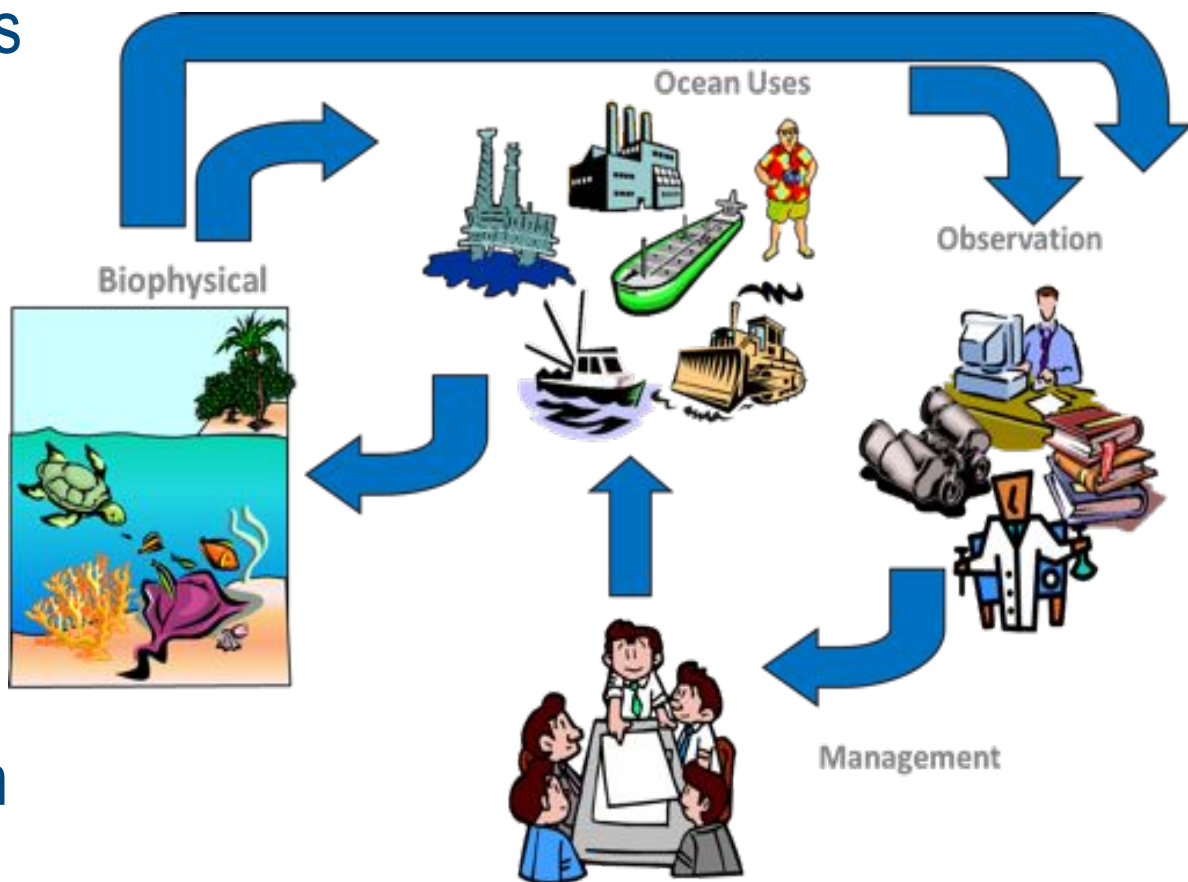
What If We Don't Do Ecosystem Based Management?

- Critical to our mission to recognize and be able to measure these changes in the system.
- Changes will affect all of us.



How Do We Move Forward?

- Develop and use tools to make connections.
 - Need to link climate and habitat with fish production
- We must move forward or we run the risk of doing things incorrectly with impacts to the system and our livelihoods.



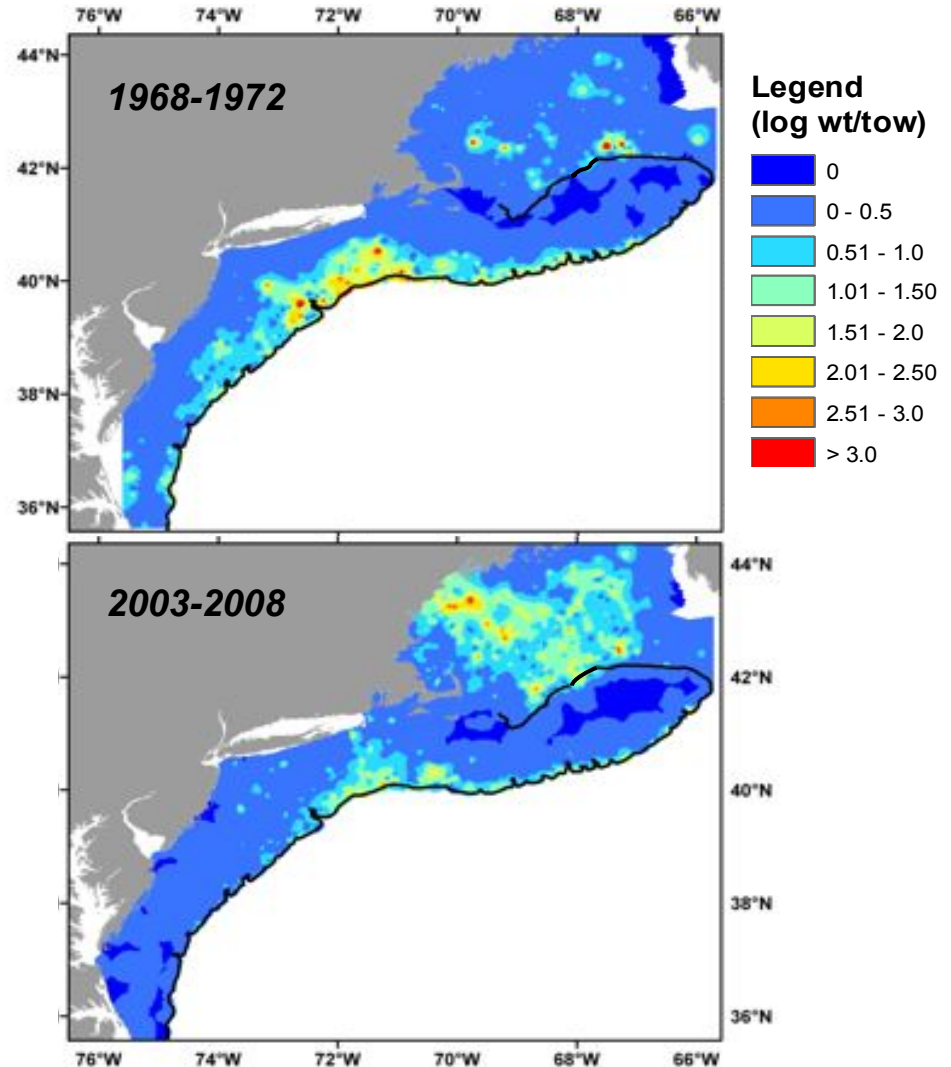
Moving Forward with Habitat and Fisheries

- Incorporate habitat features into stock assessments, SSC reviews, OFLs, ABCs, HCRs, etc.?
- Fisheries habitat informing other ocean-use sector decisions
- Habitat assessments as part of full ecosystem assessments



Why We Should Move Forward

- We know marine ecosystems are changing
- These changes are impacting these systems and us
- We have the tools available to move forward with ecosystem-based management



Questions / Discussion

Would a compilation of the most appropriate tools to use in various situations be helpful?

What EBM tools do we need to further develop?

What is impeding our use of EBM tools?

What future scenarios do we need to explore?

