CASE STUDIES AND LESSONS LEARNED FROM FISHERY ECOSYSTEM PLANNING

Presented to:

Ecosystem Technical Committee,
Gulf of Mexico Fisheries Management Council

Presented by:

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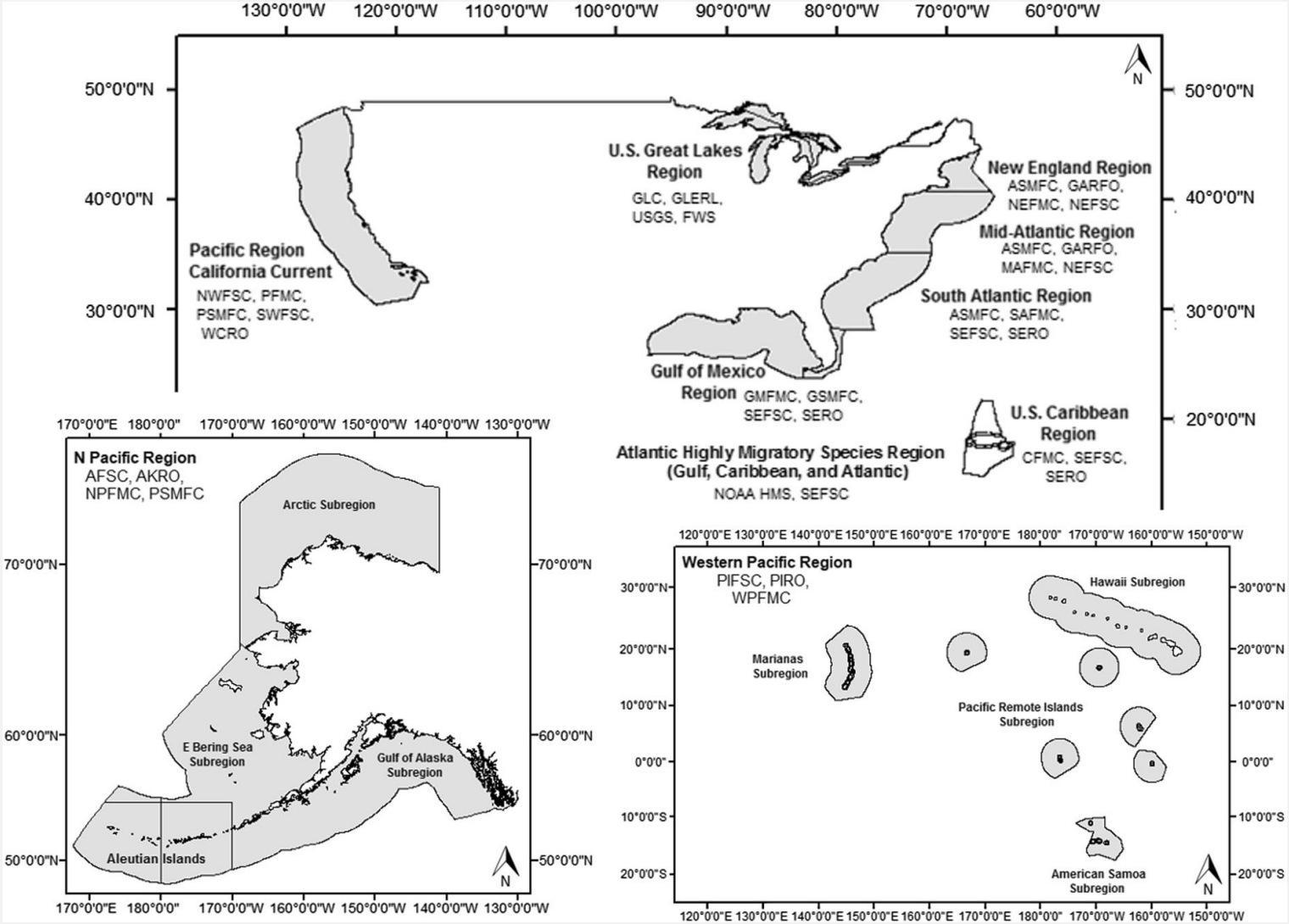

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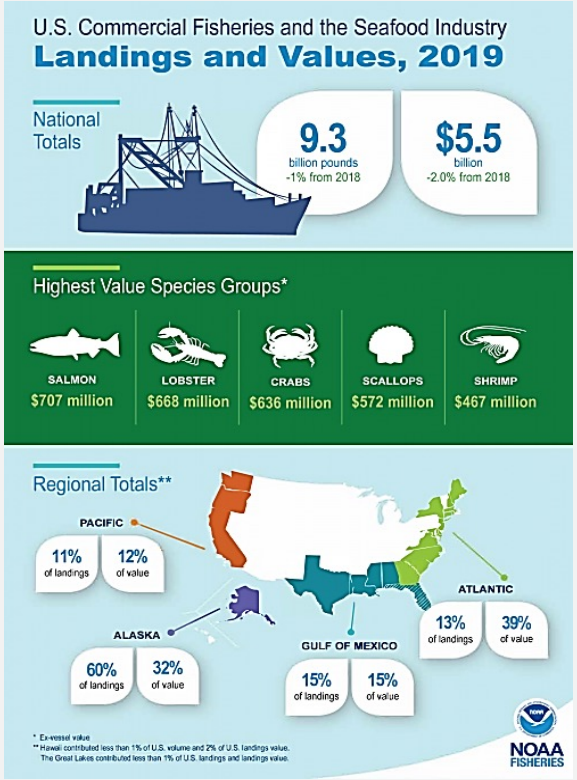
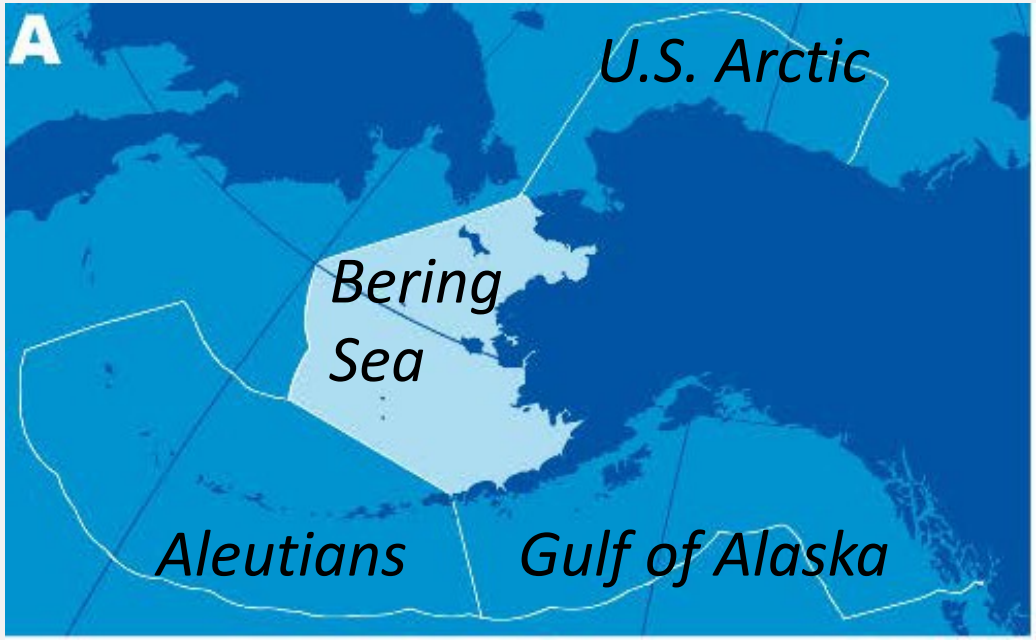


Figure 4.11: U.S. commercial fisheries landing and value, 2019. (https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-united-states)

CONTENTS OF EACH STUDY

- Ecosystem description
- FEP development
- Ecosystem conceptual modelling and indicators
- Resulting management actions
- Summary of best practices and lessons learned
- Perspectives from people involved

NORTH PACIFIC

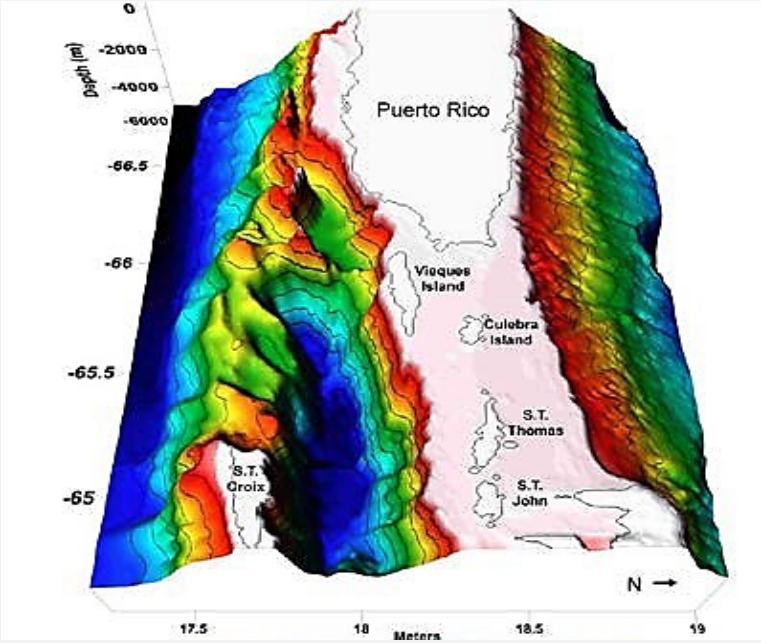


- Commercial fisheries in the North Pacific Region land over 5.6 billion pounds of finfish and shellfish each year.
- The Region has been divided into subregions (Bering Sea, Gulf of Alaska, Aleutian Islands and Arctic) for management purposes.

NORTH PACIFIC LESSONS

- Subregional areas are the focal scale for management.
- MPAs have been used extensively as an Ecosystem Management Tool
- Just prior to setting annual ABCs, stock assessment scientists and ecosystem scientists convene to consider ecosystem effects on stocks and incorporate up-to-date ecosystem information into annual TACs.
- Council creates Action Modules to address specific ecosystem issues. The modules are implemented by a dedicated taskforce and driven by a workplan with a timeline of specific deliverables, Workplans, and Work Products to achieve Module goals according to the designated schedule.

CARIBBEAN



- The Caribbean Region includes the three U.S. Virgin Islands (St. Croix, St. Thomas, and St. John) and Puerto Rico.

- The Caribbean Region has always been considered “data limited”, which has necessitated an ecosystem-based approach from its inception

CARIBBEAN LESSONS

- Subdivided ecosystems and management between islands with differing ecosystems and fisheries.
- Integrated ecosystem-based fisheries management principles directly into comprehensive spatially based FMP/EAs
- Stakeholder engagement with conceptual modeling
- Decisions must be made in the absence of complete data and information, or models. A commonsense approach, with intensive stakeholder engagement, may be more actionable in the short term.

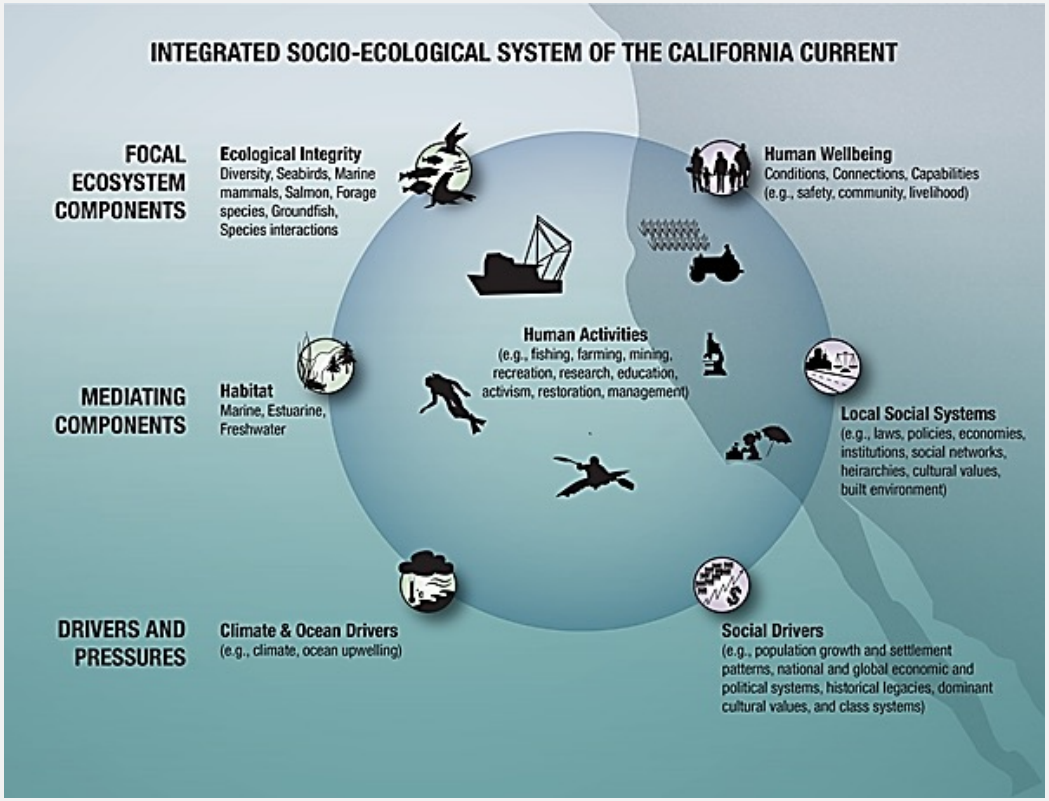
SOUTH ATLANTIC

- The South Atlantic Region covers the federal waters between Key West, FL and Cape Hatteras, NC

SOUTH ATLANTIC LESSONS

- Often the most effective EBFM actions are not labeled as such, but are accomplished under names that can be more palatable and understandable to stakeholders (e.g., Citizen Science)
- Comprehensive MPA system, designed with stakeholder input
- Spawning Special Management Zones designed specifically for spawning protection. The regulations are adaptive and require validation. These can be moved/adjusted adaptively as spawning locations move (esp. in response to climate change)
- Participatory conceptual modeling from the perspective of stakeholders used to create conceptual models and frame fishery ecosystems issues

PACIFIC (CALIFORNIA CURRENT)

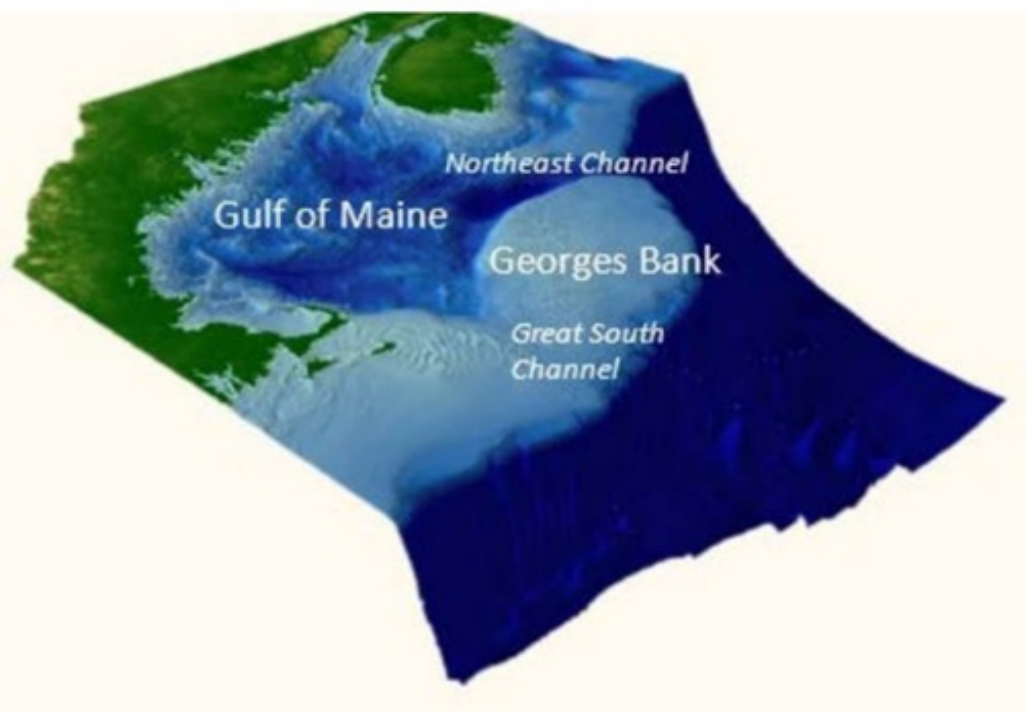


- The California Current Ecosystem supports economic and social dynamics of at least 125 communities along the coastline of California, Oregon, and Washington.

PACIFIC LESSONS

- Appoint ad hoc committees for new tasks and Ecosystem Initiatives
- Schedule set times for FEP document review and for Ecosystem Initiative additions and selections, so expectations are set to discuss and address these regularly at council meetings
- Making information from Annual Ecosystem Status Reports concise and digestible for council and decision-making purposes.
- Focus on forage fish.

NEW ENGLAND

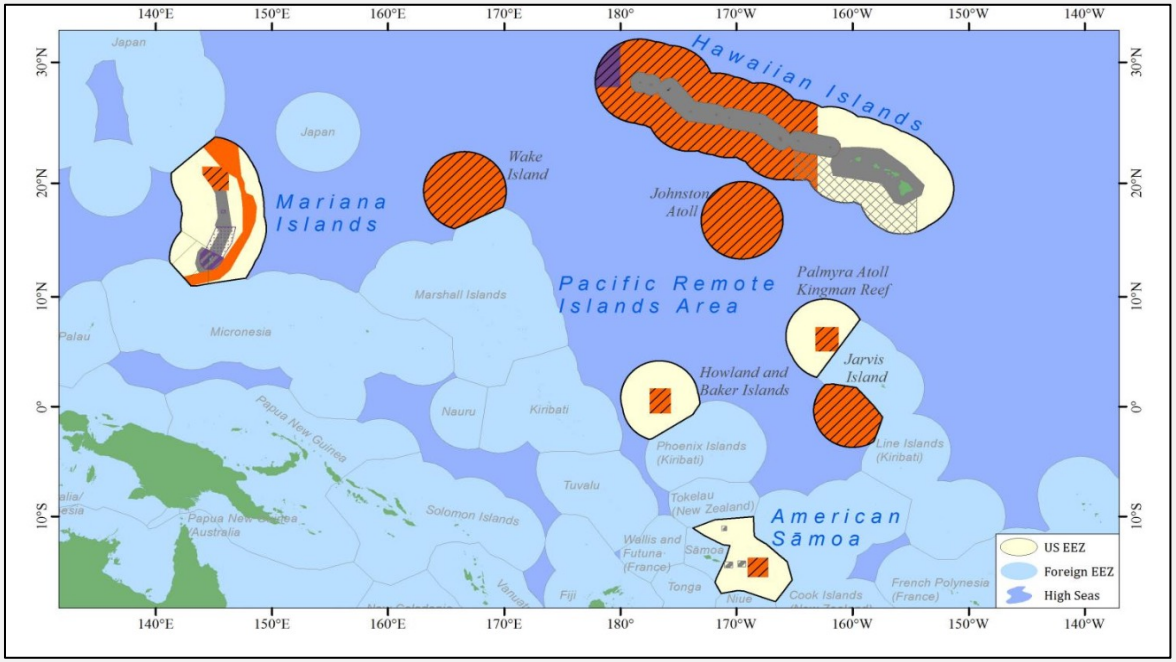


- The region encompasses the marine waters from Maine to Cape Cod, Massachusetts.
- Commercial landings of over of 595 million pounds of finfish and shellfish

NEW ENGLAND LESSONS

- Recognize the transboundary nature of the fisheries resources, fisheries management in the region has had a long history of inter-agency collaboration and overlapping jurisdictions.
- FEPs are based on subregional areas (called Ecological Production Units)
- Various in-depth ecosystem models employed to inform ecosystem management (e.g., Atlantis, Hydra, Kraken, Ecopath)
- State of the Ecosystem annual reports used to inform council management decisions without formal FEP

WESTERN PACIFIC (HAWAI'I)



- The region includes vast tracts of Pacific Ocean EEZ surrounding three U.S. territory archipelagos and eight remote islands

- The islands are geographically isolated, which limits cross-boundary conflicts with the exception of migratory pelagic fishery issues.

WESTERN PACIFIC LESSONS

- Extensive use of MPAs, with spatial scale depending on needs and community input, from very large reserves to small areas with a variety of specific regulations
- Community councils directly involved in choice and implementation of management rules and areas
- The recognition that humans and human institutions are particularly well established elements of the marine systems
- Change is conducted on an incremental and adaptive basis

MOVING FROM SSM TO EBFM

- RFMCs have focused on a single species management (SSM) approach, following the Magnuson Stevens Fishery and Conservation Act (MSA) mandate to end overfishing.
- Where governance infrastructure is strong and consistent with the approach, RFMCs have been successful in ending overfishing for many species, maintaining stocks near levels that produce maximum catches.
- MSA and many previous guidance documents from National Marine Fisheries Service (NMFS) provide the mandate and guidance on incorporating EBFM into fisheries management.
- Existing capacity at the Council and the NMFS Southeast Fisheries Science Center is already stretched thin to complete needed stock assessments, harvest control rules and other regulations.
- Other Councils (e.g., Caribbean and Western Pacific) have begun to reframe management by subsuming all FMPs into FEPs. They have allocated the resources to do so.

DEVELOPING A COMMON VISION

- The ETC proposed mission for the FEP could serve as the common vision but requires increased support and adjustment to include concerns from a wider group of stakeholders:
  - *"To provide a framework for integrating ecosystem science into the Council's decision making for long term ecological and socioeconomic sustainability of Gulf of Mexico resources".*
- A broad survey of stakeholders will provide backing for a common vision.
- Visioning sessions at Council, Science and Statistical Committee (SSC), and Advisory Panel (AP) meetings will likely be required.

MANAGING AT APPROPRIATE SUBREGIONAL SCALES

- The most effective and actionable fishery ecosystem approaches have occurred at subregional scales targeting specific geographic fishery issues, species guilds, and/or systems.

- FEPs should be based on subregional areas, with spatial divisions dictated by biophysical and socioeconomic considerations (e.g., management between areas with differing ecological communities and fisheries use and regulation).

FISHERY ECOSYSTEM ISSUES

- Fisheries Ecosystem Issues (FEIs) are also called Action Modules (e.g., NPFMC) and Ecosystem Initiatives (e.g., PFMC). This includes selection and use of conceptual models, stakeholder involvement and interaction, indicator selection and the specificity of implementable management actions.

- Identify and work through FEIs of high management concern. These can be implemented by a dedicated taskforce and driven by a workplan with a timeline of specific deliverables according to the designated schedule.

- Schedule set times for FEP document review and for Ecosystem Initiative additions and selections, so expectations are set to discuss and address these regularly at council meetings

WHAT CAN BE (AND IS BEING) DONE NOW?

- Ecosystem effects can be (and have been) incorporated into the single species management framework during stock assessment modeling (e.g. Red Grouper), and during Allowable Catch Limit (ACL) development, through management strategy evaluation.

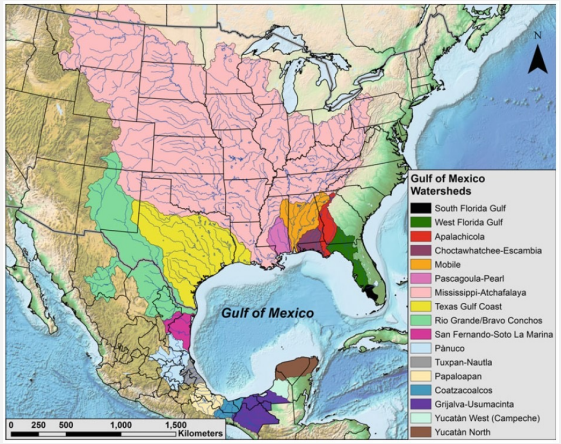
- Just prior to setting annual ACLs, stock assessment scientists and ecosystem scientists (ETC or ESSC) could convene to consider ecosystem effects on stocks (following Bering Sea example) and incorporate up-to-date ecosystem information and relevant indicator trends, adjusting ACLs if appropriate.

DEALING WITH IMPACTS GENERATED OUTSIDE THE JURISDICTION OF THE COUNCIL

- Many of the impacts on fishery resources are generated outside of the geography and jurisdiction of the RFMC (e.g., coastal development and upland sources of pollution).

- There is a need for inter-agency collaboration with overlapping jurisdictions (e.g., explicitly achieved in WPRFMC process through recruiting stakeholders engaged in land-based and transboundary ecosystem issues for the Council's Regional Ecosystem Advisory Committees).

- The GMFMC represents the economic interest and clout behind a $10 billion dollar fishing industry. Use it.



BUILDING CLIMATE READY FISHERIES

- Climate change is perhaps the largest impact affecting all RFMCs.
- Climate Ready Fisheries: the Council could use this as branding to support a common vision for EBFM (as other Councils have done).
- The history of fisheries management has led to the tendency to prioritize maximizing catch and profit over "*long term ecological and socioeconomic sustainability*."
- Climate ready fisheries would prioritize resilience and sustainability equally with maximizing catch.

MARINE PROTECTED AREAS

- Marine Protected Areas (MPAs) have been used extensively as an EBFM implementation tool in all other areas. Networks of MPAs and large no-activity zones appear to be most effective.
- Individual MPAs should be evaluated in terms of achieving stated objectives, management and enforcement effectiveness
- Re-define the existing MPAs in the context of their contribution to a network or system of MPAs
- Conduct gap analysis and recommendations to re-align the MPA system to meet their individual and collective purposes.

RESEARCH AND MONITORING

- Existing Integrated Ecosystem Assessment, Gulf wide indicators, and annual reports are valuable and should continue.
- Intensive, well-funded, long-term, cooperative research and monitoring allow detailed and comprehensive indicator tracking that can be visualized in time series and annual reports.
- Implementing EBFM through various means is expensive and requires dedicated staff, budget and institutional support.
- Citizen science and cooperative research can be expanded to support existing and future science needs.

STAKEHOLDER INVOLVEMENT

- Making it real: all Gulf residents have witnessed Gulf ecosystem degradation, regardless of what any scientist or model output may indicate. The FEP must start with basic and obvious realities facing Gulf resources, holistically.
- FEP should be guided by a wide and representative group or stakeholders that can define Fishery Ecosystem Issues.
- Having scientists at the heart of EBFM will necessarily bias efforts toward either technical solutions or more measurements and models.
- Scientists should play a supporting role, particularly after issues are identified.
- Active captains of fishing vessels with water experience both recent and over the long term, are perhaps the best source of information for conceptual modeling of FEIs.
- Fishery Ecosystem Issues should be developed by stakeholders and form the core of FEPs

WHAT STAKEHOLDERS SEE

Study: Florida tourism industry lost out on more than $184 million after 2018 red tide outbreak

”at least 676 tons of dead marine life collected in Pinellas County alone”
July 16, 2021

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KEY TAKEAWAYS

- Most effective fishery ecosystem approaches have occurred at subregional scales targeting specific Fishery Ecosystem Issues
- Climate is the overwhelmingly agreed upon force driving changes to ecosystems.
- Stakeholder involvement throughout the process is increasingly important.
- FEP can bring stakeholders into practical, solutions-oriented, formal processes to confront issues from their perspectives
- Common sense solutions are possible with less science
- Action is possible now
- Proposed FEP implementation will require additional resources
- FEP should aim to deliver triple bottom line results – Sustainable and resilient economies, resources, and communities

QUESTIONS?