

## **Regulatory Authority of the Gulf Council in the Context of Ecosystem FEP**

### ***Regulatory Authority***

How can an Ecosystem FEP be actually "useful" to the Gulf Council vs. a document that is developed to check a box and subsequently ignored?

Vision: Organize the FEP along the lines of the regulatory authority of the Council.

Action:

1. Change a catch limit
2. Change risk tolerance
3. Change a size limit
4. Change a bag limit
5. Establish/Change a seasonal closure
6. Establish/Create a spatial closure
7. etc.

where the discussion under each action would focus on the ecosystem pros/cons of any action taken there. For example, if you increase a size limit, you increase discards. With a low discard mortality rate, you promote rebuilding and also have more forage fish available for other co-occurring species. However, increasing a size limit may require more effort to get to the same catch, which results in more bycatch of related species, more lines in the water leading possibly to more bycatch of protected species. Changing a season could move fishing pressure off a target species resulting in more overall fishing days but may redistribute effort onto other species. It may also change the level of bycatch of protected species depending on whether there is a seasonal co-occurrence pattern for those species with the fishery. Creating closed areas have well documented ecosystem benefits we could summarize, and could also be used to reduce bycatch of non-target species. Changing catch limits in the context of optimizing multispecies yield has a lot of study behind it, and could also be used to evaluate less traditional tradeoffs such as reducing catch levels to increase forage base for protected species.

With all this discussion built into the FEP and boiled down into a simple summary table, the Council could refer to the ecosystem tradeoffs associated with their decision whenever they amend an FMP, and refer directly to the "Action" in the FEP that is applicable to what they are considering for the FMP. This would be the first step toward EAFM, where they "tweak" their single-species management decisions with information of how their alternatives might impact the ecosystem and information about how the ecosystem has impacted their single-species in the interim between assessments.

## ***Specific Products to Inform FEP***

- Informing stock assessment and interim assessment advice:
  - LEK red tide with real time info from fishers
  - Red tide real-time monitoring
  - Connectivity modeling
  - ECOSIM modeling with red tide and nutrient outflows (Chagaris)
  - Modifications to risk policy (OFL → ABC buffer?)
- Reducing protected species bycatch
  - Species distribution models
  - Mapping of interaction “hotspots” that could be prioritized for spatiotemporal closures
    - Reef Fish Amendment 31 (reduce bycatch of turtles:  
<http://archive.gulfcouncil.org/docs/amendments/Final%20Amendment%2031%20-%20revised%20-%202002-2010.pdf>)
    - NARW example SAFMC  
(<https://www.tandfonline.com/doi/pdf/10.1080/19425120.2016.1146181>)
- Maps of spawning grounds
  - Multispecies spawning areas that would be prioritized for spatial management
    - SAFMC example spawning SMZs  
([https://safmc.net/SpawningSMZs/story\\_html5.html](https://safmc.net/SpawningSMZs/story_html5.html))
      - <https://journals.plos.org/plosone/article%3Fid%3D10.1371/journal.pone.0172968>
  - Table of spawning seasons for optimization of timing of closed seasons
    - RESTORE team <https://geo.gcoos.org/restore/>
- Comprehensive overview of the benefits of spatial protection
- <https://pdfs.semanticscholar.org/cfaa/a17b038f5b7a99980a9fda231af689a0ffa1.pdf>
- Stock complexes and improved assessment of tradeoffs
  - Tradeoffs between species, with management actions of target species resulting in changes to removals of an incidental catch species
    - Species Groupings  
(<https://www.tandfonline.com/doi/pdf/10.1080/19425120.2015.1024359>)
    - Discards by sector and gear
    - Reef Fish Amendment 32 (spatial closures proposed to reduce interaction bycatch red/gag grouper:  
[http://archive.gulfcouncil.org/docs/amendments/Final%20RF32\\_EIS\\_October\\_21\\_2011\[2\].pdf](http://archive.gulfcouncil.org/docs/amendments/Final%20RF32_EIS_October_21_2011[2].pdf))
  - MAFMC prioritization of prioritizing the minimization of discards (reducing waste) in the fishery -- consider multispecies discard process, economic considerations of reduced catch but also reduced waste and potential for higher future catches.

- Multispecies stock assessment
  - Tradeoffs for forage fish similar to MAFMC
    - Menhaden and protected species
      - ECOSIM informed?
  - Proactive protection & conservation of unmanaged forage fish
    - Identification, incidental possession limits
- Linking Gains and Losses in nearshore habitat (especially seagrass and mangroves) to offshore production
  - More transparent multi-agency evaluation of tradeoffs
- Climate vulnerability assessment
  - Losses to Southeast as distributions shift northward?
    - In the Gulf, nowhere to go!
  - Reduced reproductive success?
    - (<https://onlinelibrary.wiley.com/doi/full/10.1111/ddi.12809>)
  - Changes in connectivity? Impacts to Loop Current especially.
  - Multi-Council governance issues (Blueline tilefish case study for SAFMC)