

Advisory Panel Survey Results

NGOMEX 2016 Workshop Two

Miami June 2019

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Intro

- NGOMEX 2016: User-driven tools to predict and assess effects of reduced nutrients and hypoxia on living resources in the Gulf of Mexico
 - “The main goal of this project is to integrate physical, biological, bioenergetics, and ecosystem models to address how changes in nutrient loads from the Mississippi River affect fish and fisheries in the northern Gulf of Mexico, develop practical management tools based on these linked models, and deliver those to managers and stakeholders.”
- The purpose of the survey is to gather more information about how to best serve managers and make sure that the outcomes/outputs of the model have the best chance of adoption or use.

Summary of Respondents

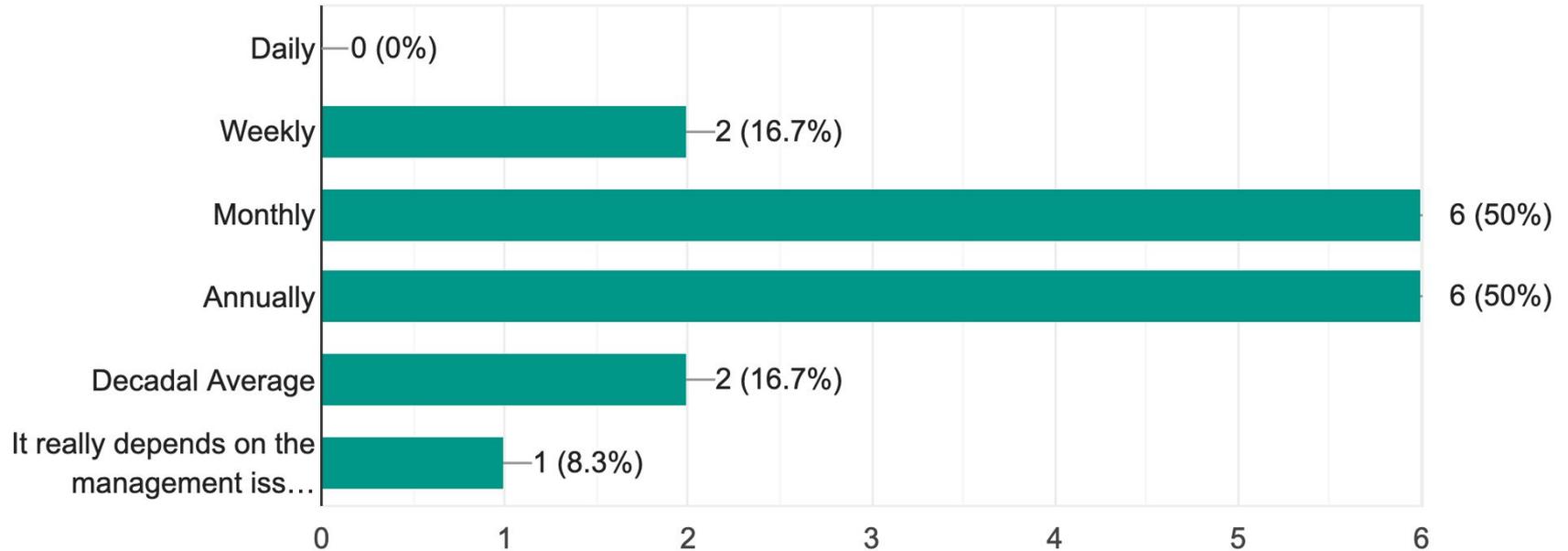
- Total of 12 Responses
- 8 NOAA [including contractors], 3 State Agencies, 1 GSFMC
- ½ of those who responded said they would attend this workshop

The Model Outputs

- Models are developed that have different temporal and spatial scales, levels of uncertainty, focus and output formats and metrics.
- Wanted to inform our models so that they are the most beneficial for users when considering impacts of changing nutrient loading on living marine resources.

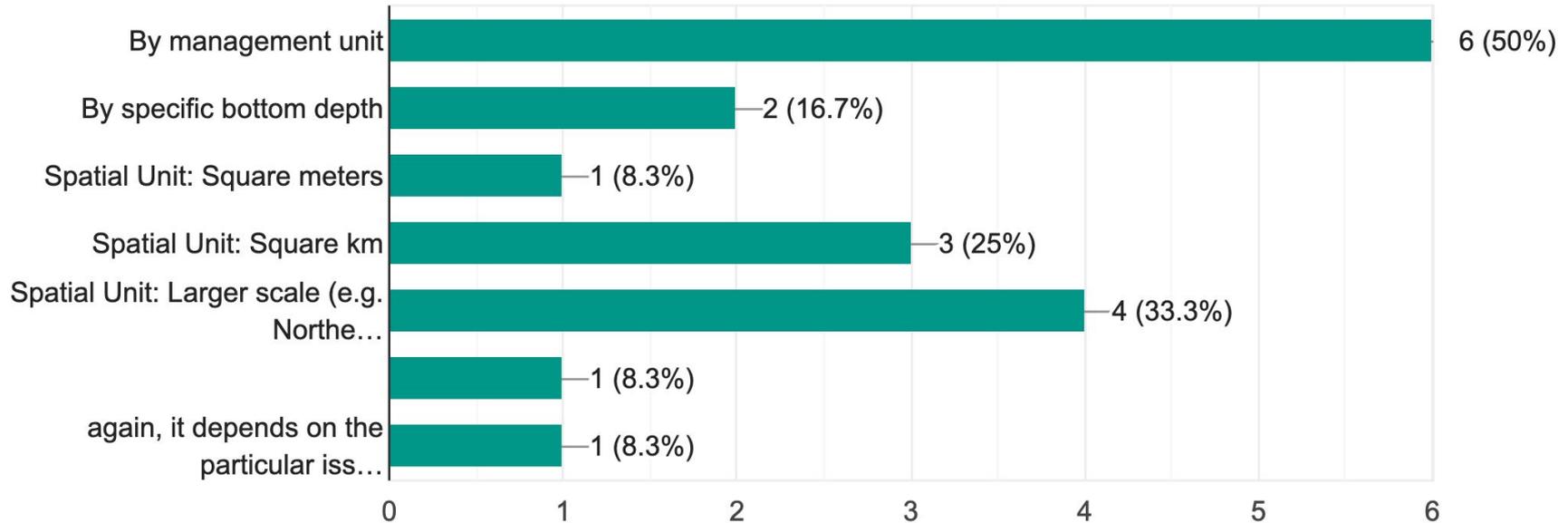
1. What are the best time scales to consider for management?

12 responses



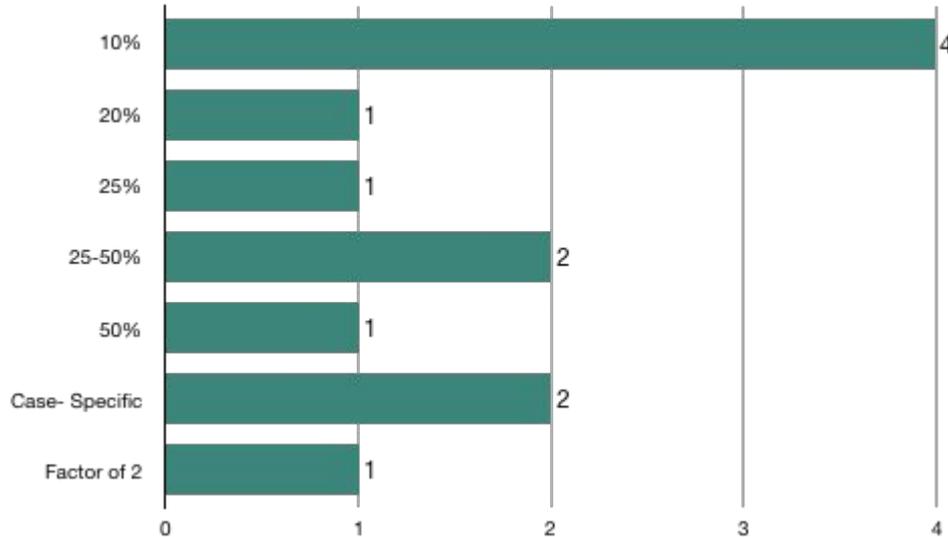
2. What are the best spatial scales to consider for management?

12 responses



3. What levels of uncertainty are acceptable to management? (Examples: 10%, 50%, a factor of 2, a factor of 10, Negative effect, Positive effect)

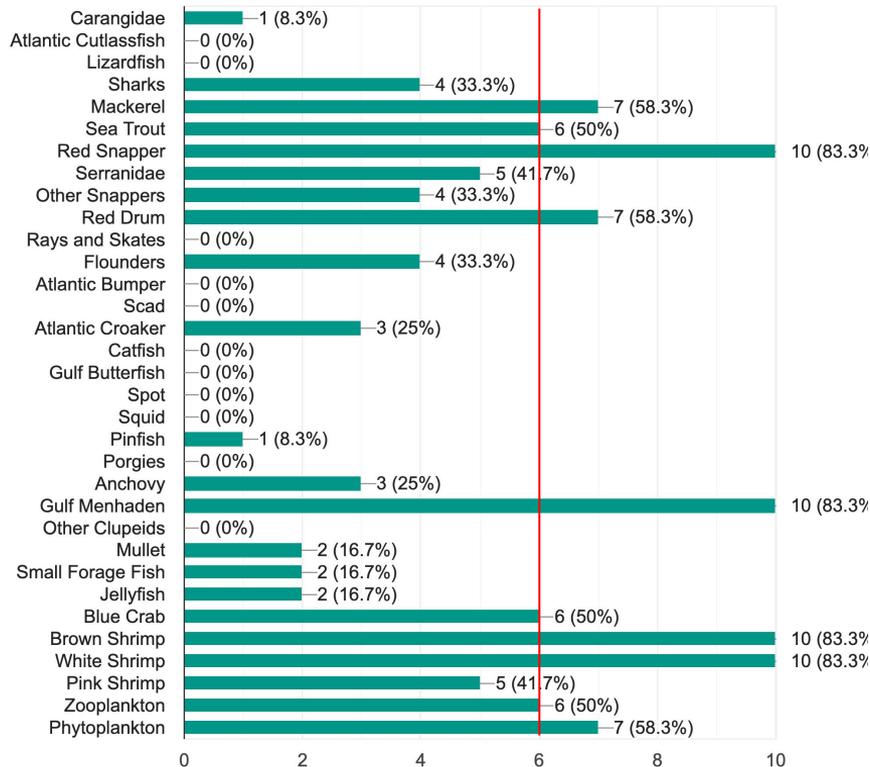
12 responses



- Varied Results, between 10-50% with a few commenting that it should be a case-specific figure.
- $\frac{1}{4}$ of respondents said 10% was an acceptable figure

4. What species output from the Ecospace model are you most interested in (choose up to 10)?

12 responses

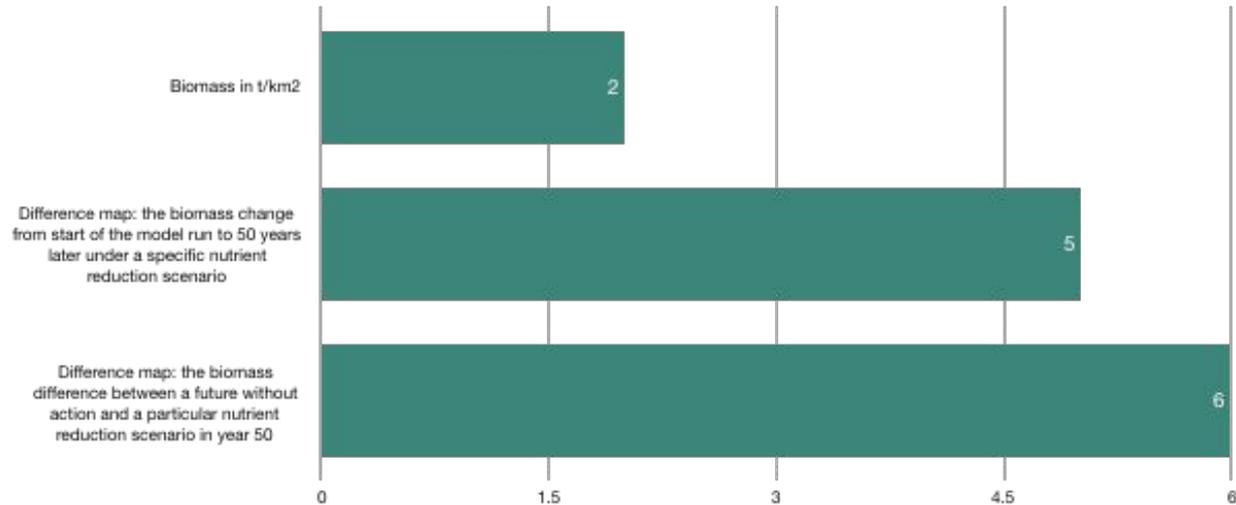


- During the workshop we will show data visualizations for those groups that were 50% or higher:

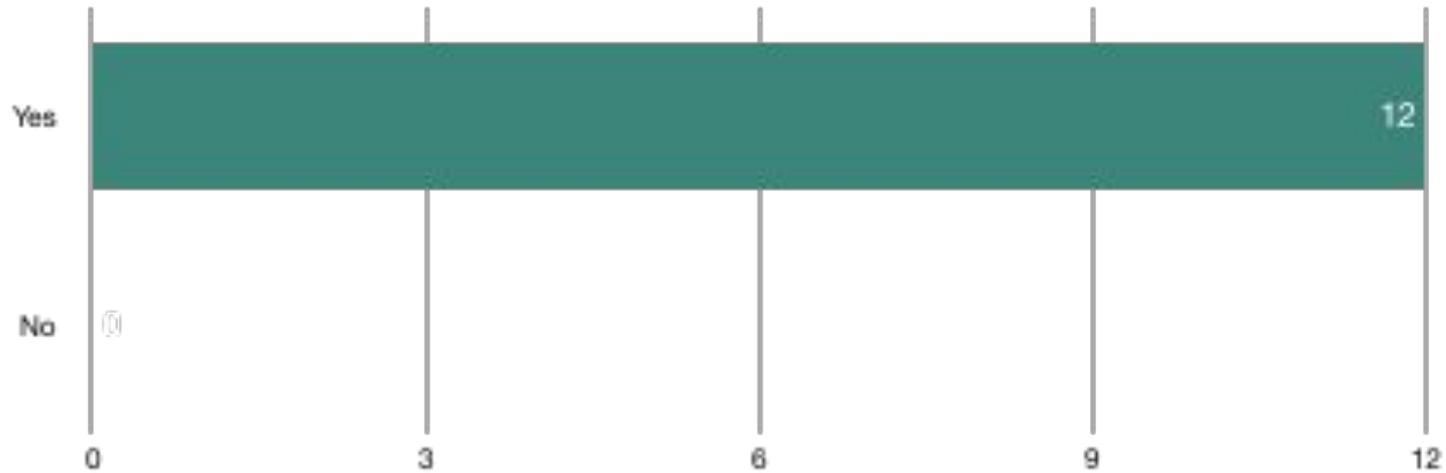
- Mackerel
- Sea Trout
- Red Snapper
- Red Drum
- Gulf Menhaden
- Blue Crab
- Brown Shrimp
- White Shrimp
- Zooplankton
- Phytoplankton

5. The Ecospace decision support tool can show biomass distribution of species in response to hypoxia scenarios; what unit and time step would be most useful?

11 responses



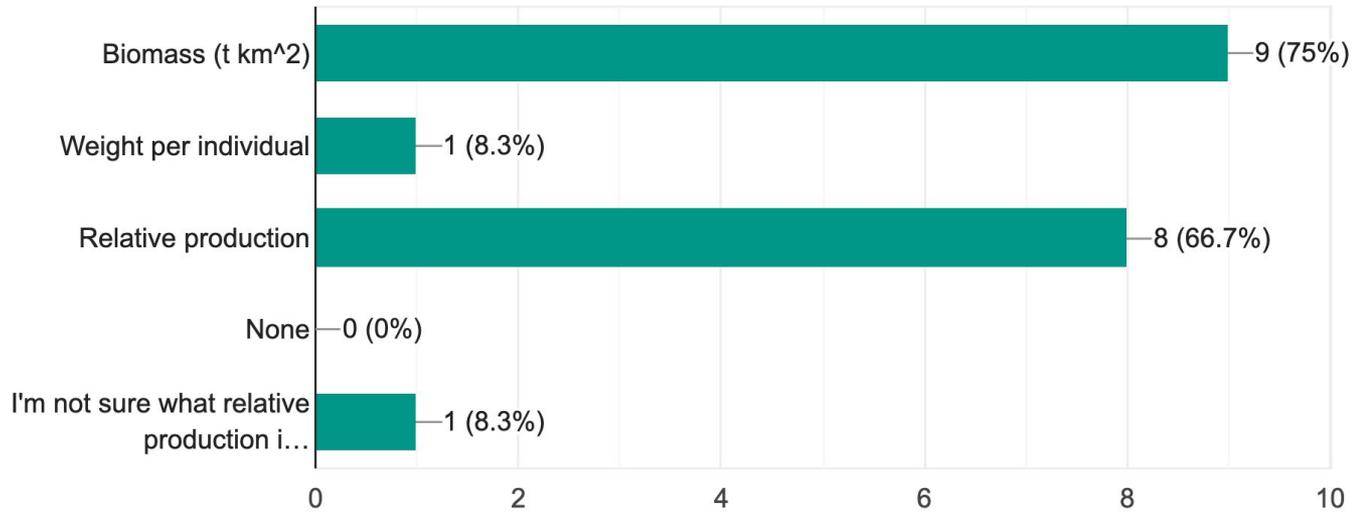
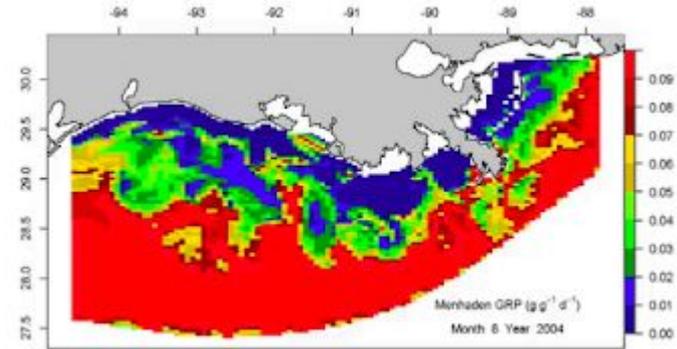
6. Is fisheries species biomass a useful response variable (standard output of Ecospace) to hypoxia scenarios or are there other response variables you would be more interested in?



Data Visualization

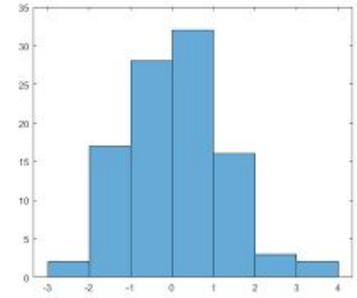
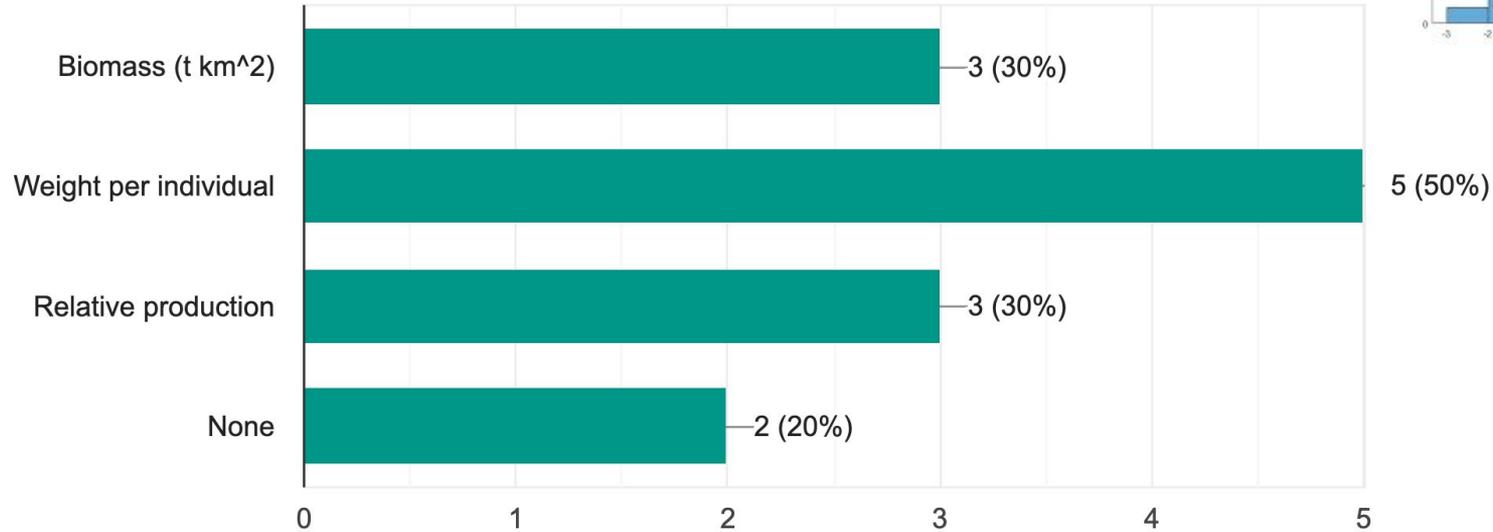
7. Spatially Animated Maps would be valuable output for:

12 responses



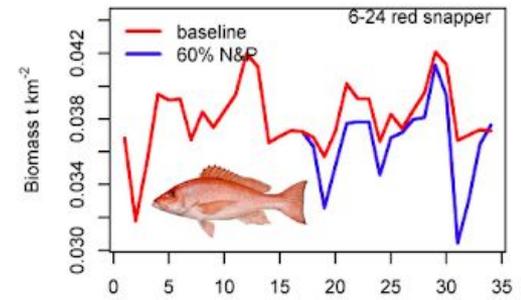
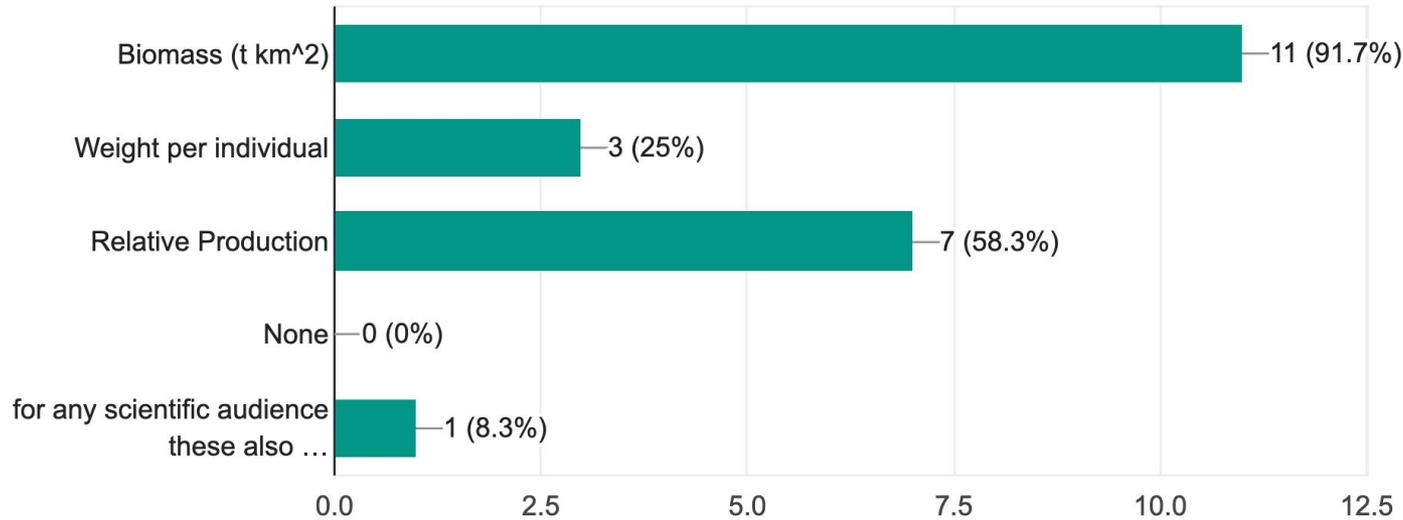
8. Histograms would be valuable output for:

10 responses



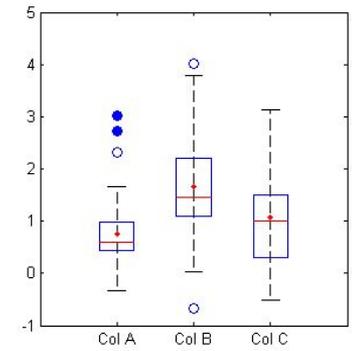
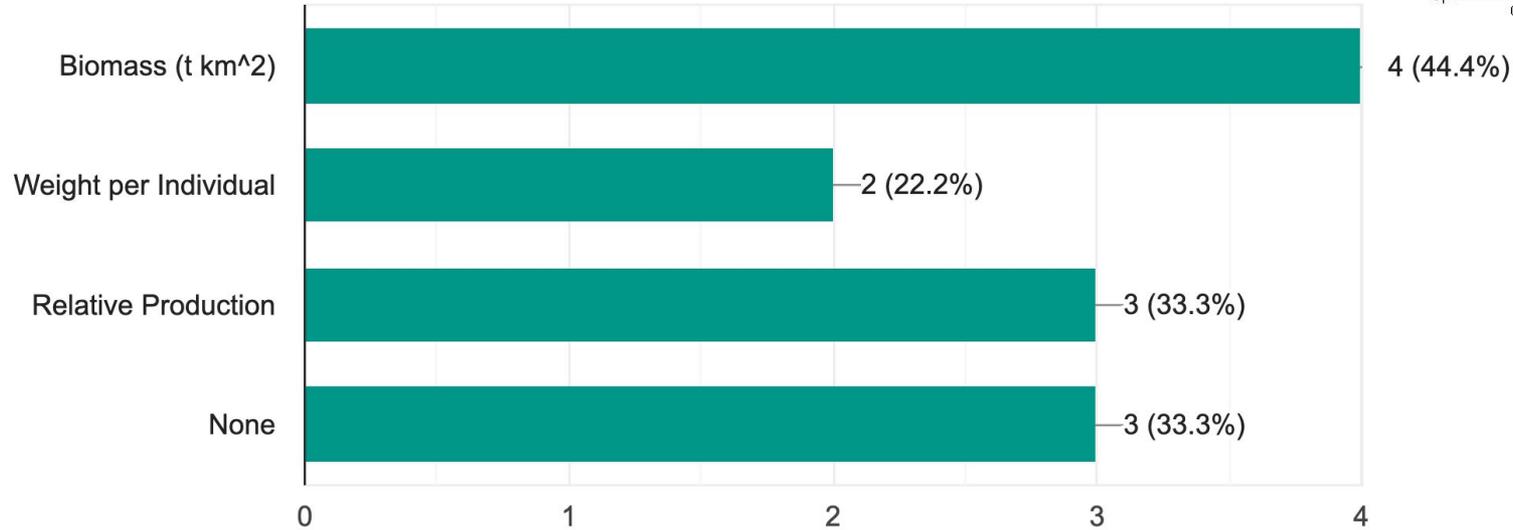
9. Line graphs (change over time) would be valuable output for:

12 responses



10. Means (Box plots) would be valuable output for:

9 responses



Open Questions

11. What do you want to know about the hypoxia model? Are there any particular details you would like to know?

- Most advantageous parameters to set for Hypoxia Task Force for nutrient reduction goals to decrease size of Dead Zone.
- How do you deal with sparse spatial-temporal data and how that impacts diet matrices
- It would be good to understand the major assumptions in the model and the major sources of uncertainty. Also, sources of uncertainty that may not be propagated through the model estimates of uncertainty.
- How species responses to hypoxia are parameterized. What a non-fertilized state of the Gulf of Mexico would look like.
- How do EWE biomass outputs compare with single species assessments in stock status, absolute biomass and carrying capacity and management implications. E.g. does multispecies inference change our single species advice, either tactically or strategically.
- A brief review of data inputs at the meeting will be helpful

12. What do you hope/anticipate the products of this project might be able to do?

- Provide insight into how species may respond to hypoxia scenarios. For example if species change their distributions in relation to hypoxia that would be useful information to know during assessments
- Let managers know how changing levels of nutrients affect fishery production in the northern Gulf of Mexico and how nutrient level changes could impact fish populations.
- From the proposal - improved capability to assess the effects of alternative management strategies on ecosystem function living resources and fisheries revenue.
- Estimate how these changes affect natural mortality and growth
- Inform managers of the losses or gains to fisheries based on alternative hypoxia scenarios.
- Use outputs for management advice (multi-species level) and to inform assessment models
- Enable better links between trophic levels with respect to hypoxia conditions
- test nutrient management strategies
- Inform broad-scale management decisions provide linkages from inshore to offshore provide guidance to fishermen as coastal conditions change
- to determine how different nutrient loadings scenarios would affect Gulf Productivity to inform strategic fisheries management decisions. For example does long-term nutrient reduction create ecosystems winners and losers that would likely need to be addressed by allowing for time-varying carrying capacity estimates in our single species assessments.

13. What should we strive to produce to make uptake by management likely?

- Data related
 - Time series would be most helpful for including in stock assessments
 - Concise graphs showing how different fish populations would be impacted by changes to nutrient levels.
 - Point value estimates with associated error ranges
 - Visually appealing (with solid data to back the visuals)
 - Decision- support tools, such as a report card of ecosystem winners and losers under different scenarios
- Outreach related
 - High level of communication- such as workshops
 - Continue working with the IEA groups to channel analysis into SEDAR. Once managers or SSC members start seeing information they will ask more direct questions.
 - Need face time with the actual managers or end-users. Spend a day shadowing their work to understand how their decisions are made and what they need.

14. How do you plan on using the models or decision support tools for your work in management

- Summarized:
 - Compare with stock assessment
 - Inform stock assessments
 - Communicate results within agencies
 - Advancing EBFM science
 - Productivity/Mortality index for input into stock synthesis
 - Information for the Louisiana Nutrient Management Strategy
 - Strategic decision making as to how and when to allow for non-stationarity in management benchmarks.

15. Who are your stakeholders?

- Summarized:
 - Fishermen (commercial and recreational)
 - Fishing Industry [e.g. shrimp]
 - NOAA
 - State agencies
 - NGOs
 - Public
 - Academic/Universities
 - Seafood Consumers
 - Fossil Fuel Industry
 - Marine Resource Users
 - Local communities
 - Natural resource managers and planners

16. What sort of information of this project would be useful important to your stakeholders?

- Showing the relative change in biomass between hypoxia scenarios
- Showing how nutrient levels can positively or negatively impact different fish populations.
- Best probable nutrient reduction scenarios to achieve HTF goals.
- Spending time to understand their business operations is the most direct way to ensure the information is used.
- Showing the relevance to the shrimp fishery. E.g. how hypoxia impacts sustainability; spatial and temporal changes in shrimp abundance over time, etc.
- Ecosystem winners and losers (e.g. the species most likely to have non-stationary productivity under nutrient reduction scenarios).

Training

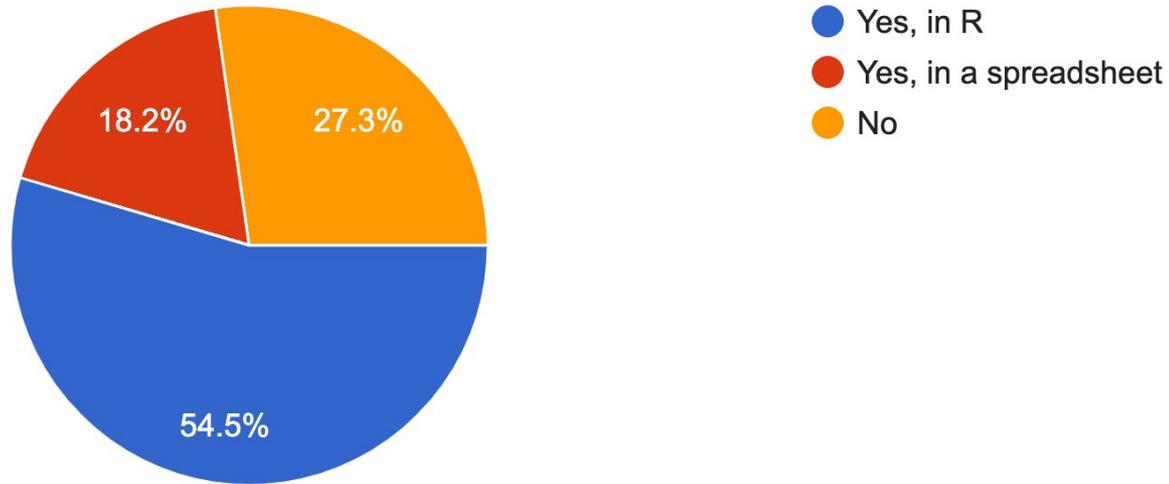
17. Would you like to be trained on using the models?

11 responses



18. Would you be interested in learning how to use/change the bioenergetics models for use in other species?

11 responses



Thank you for your
participation!