

**USER-DRIVEN TOOLS TO PREDICT AND ASSESS EFFECTS OF
REDUCED NUTRIENTS AND HYPOXIA ON LIVING RESOURCES
IN THE GULF OF MEXICO**

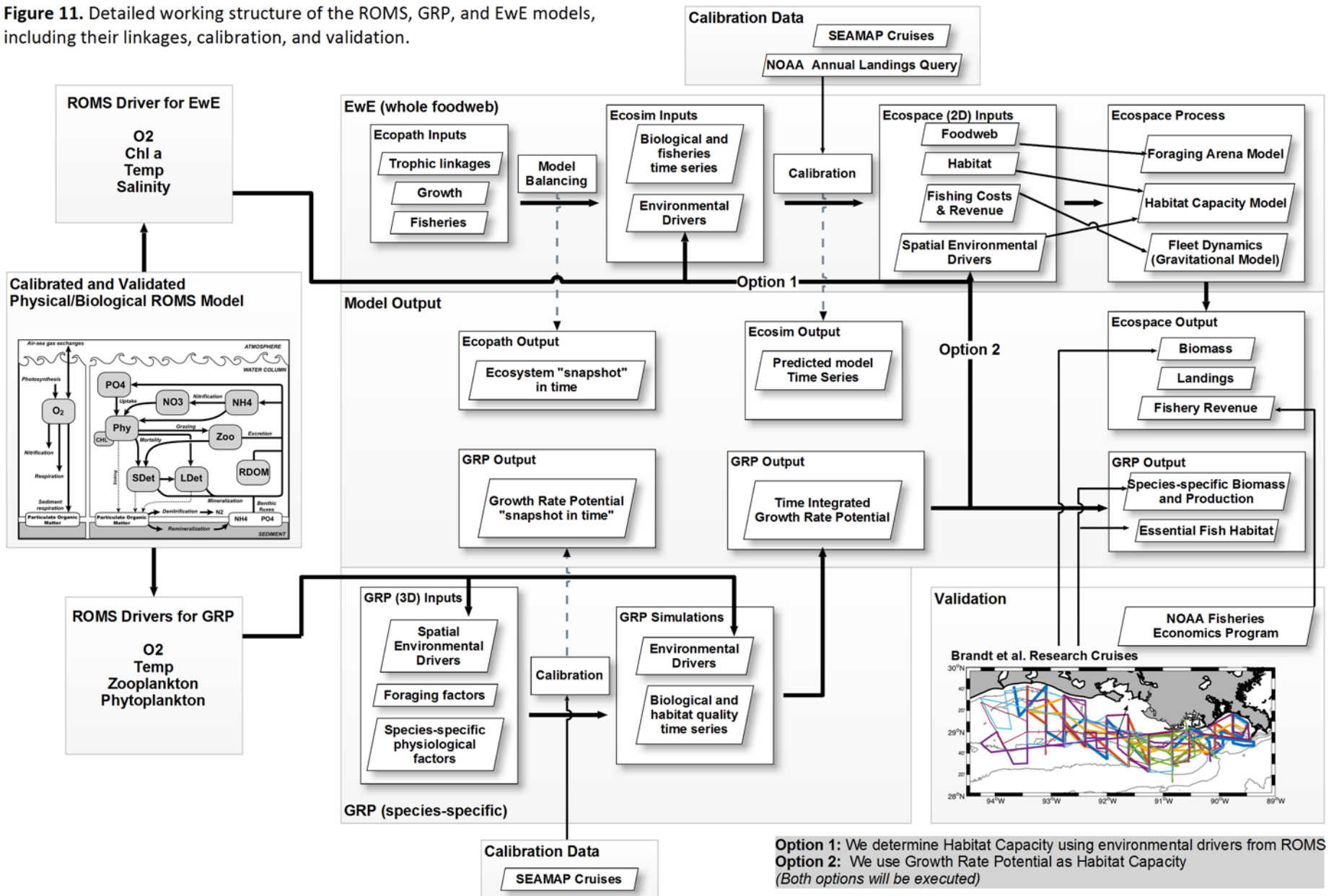
**Kim de Mutsert, George Mason University; Matthew Campbell, NMFS
Mississippi Laboratories; Stephen Brandt and Cynthia Sellinger, Oregon State
University; Kristy Lewis, St. Mary's College; Arnaud Laurent, Dalhousie
University; Joe Buszowski and Jeroen Steenbeek, Ecopath International Initiative**



WITH THE DELIVERY OF PRACTICAL MANAGEMENT TOOLS AS OUR MAIN OBJECTIVE, OUR PROJECT GOALS ARE:

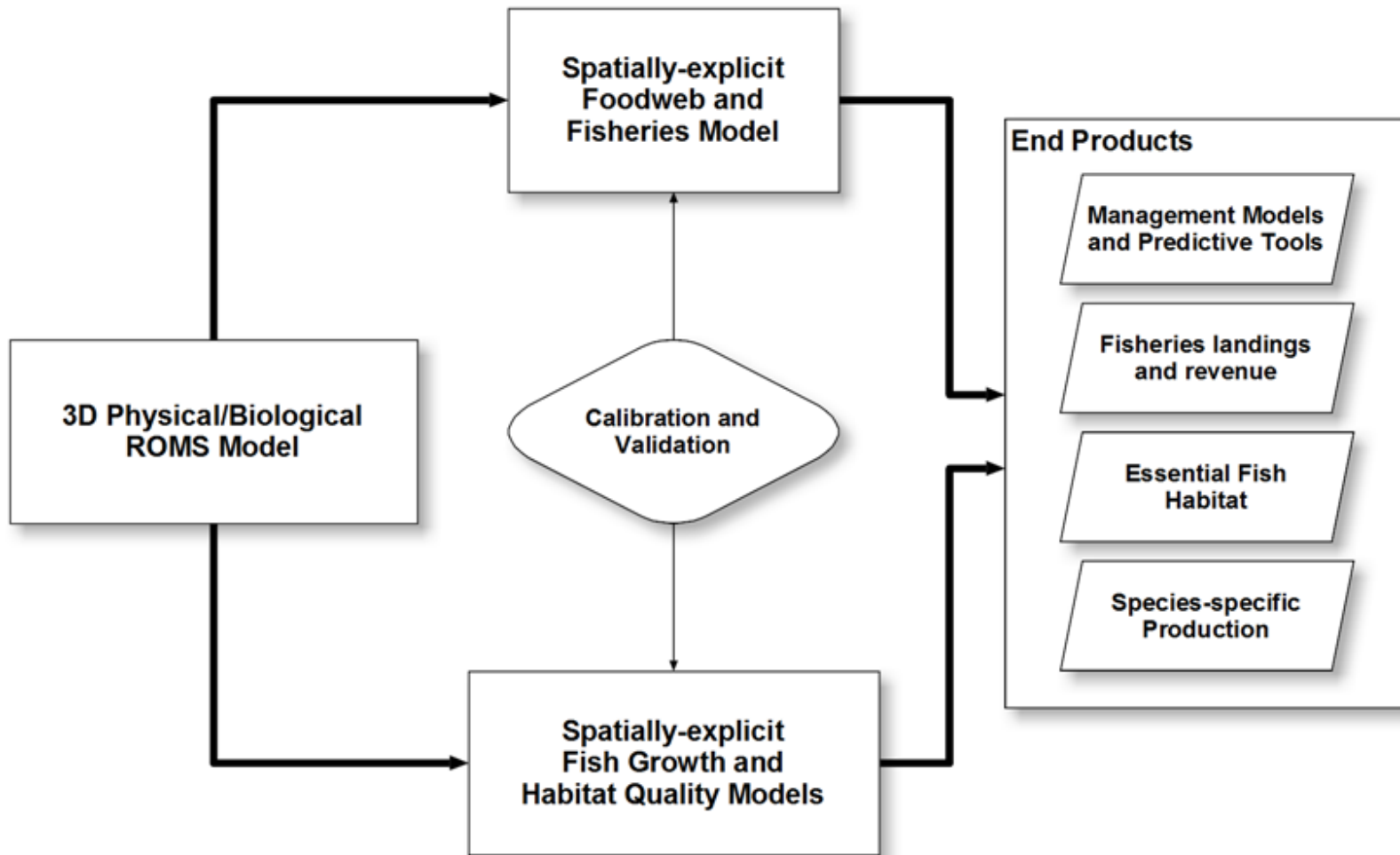
- Determine effects of nutrient loading and hypoxic volume reduction scenarios on growth rate potential, habitat quantity and quality, fish population biomass and catch, and fisheries revenue.
- Improve species bioenergetics, food web, and spatially/temporally explicit modeling capabilities of key living resources in the NGOMEX in response to changing hypoxic and climatic conditions.
- Determine minimal data requirements, and develop quantitative indicators (including uncertainty) for when changes in above-mentioned parameters are expected.
- Develop management tools in collaboration with fisheries managers that can be readily applied to test alternative management strategies to reduce hypoxic volume, and investigate subsequent effects on fish growth, population dynamics (e.g. abundance and biomass), and fisheries catches.
- Evaluate whether incorporation of hypoxia improves resource assessments, and develop/refine the tools for implementation.

Figure 11. Detailed working structure of the ROMS, GRP, and EwE models, including their linkages, calibration, and validation.



Option 1: We determine Habitat Capacity using environmental drivers from ROMS
Option 2: We use Growth Rate Potential as Habitat Capacity
(Both options will be executed)

Figure 10. Simplified conceptual diagram of the ROMS, GRP, and EwE model linkages and expected products



GOALS WORKSHOP 1

- * Introduce project to advisory panel and other stakeholders
- * Solicit input:
 - Hypoxia scenarios
 - Species in the models
 - Collection metrics
 - Resources available
 - Useful tools/products resulting from our modeling effort, especially related to management
- * Align project with NOAA goals, and evaluate collaboration potential with synergistic projects