Projected effects of **coastal restoration** on **biomass and distribution** of **living resources** depend on species, location and **sea level rise**.

Aim your camera to download the full paper

Kim de Mutsert, University of Southern Mississippi; Kristy Lewis, University of Central Florida; Eric White, Louisiana Coastal Protection and Restoration Agency; Joe Buszowski, Ecopath International initiative

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

INTRO

- High rates of wetland loss affect coastal Louisiana
- The Coastal Master Plan (CMP) contains a suite of protection and restoration projects to mitigate these losses
- These projects can affect the biomass and distribution of living resources (fish and shellfish)

APPROACH

The same modeling framework (the Integrated Compartment Model or ICM) used to inform which projects to include in the CMP was coupled to an ecosystem model (EwE's Ecospace) to evaluate effects on fish and shellfish.

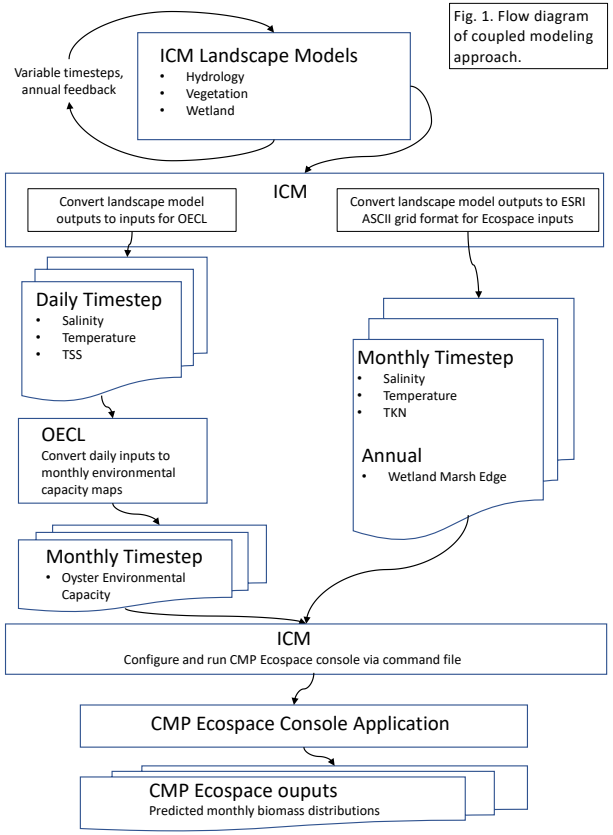

Fig. 1. Flow diagram of coupled modeling approach.

METHODS

Simulations of changes in biomass and distribution of fish and shellfish were run over 50 years with and without implementation of projects selected for the CMP under three future sea level rise projections.

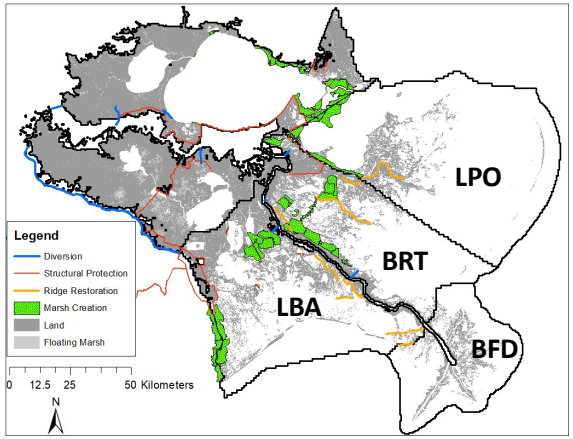

Fig. 2. We focus our results on the Mississippi River Delta, where the largest restoration projects are planned in the form of large sediment diversions, in addition to other projects. Results are evaluation per Coastal Study Area, where BFD = Birdsfoot Delta, BRT = Breton Sound, LBA = Lower Barataria, and LPO = Lower Pontchartrain

RESULTS

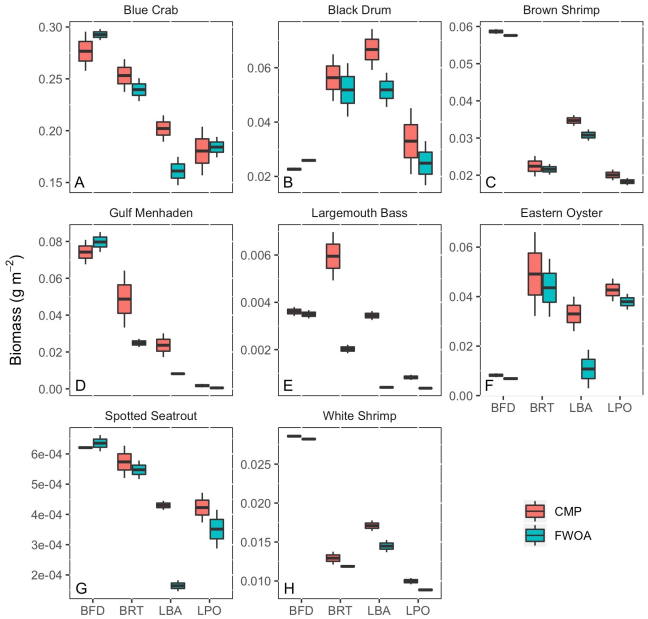

Fig. 3. Biomass of eight species of interest in the four areas (see Fig. 2). Output of simulation year 50 with (CMP) and without (future without action or FWOA) plan implementation is compared.

Fig. 4. Distribution comparison of one species (Blue Crab) with affinity for marsh habitat between start and end (year 50), under low and high sea level rise, with (CMP) and without (FWOA) plan, in two months.

CONCLUSIONS

- Simulations show mostly positive and no large negative effects on fish and shellfish of implementing restoration projects to mitigate wetland loss
- A main reason is that a future without action is a changing environment as well, undergoing habitat loss and saltwater intrusion with sea level rise
- Resource managers can use the information for adaptive measures