



KEYSMAP (Florida Keys Marine Adaptation Planning)

Overall Goal of Project

This project develops a method which has proven successful in terrestrial ecosystem planning, but has not yet been adopted in marine planning contexts: spatial scenario simulation. This approach first develops a set of “alternative futures” and examines their effects on natural resources. It then couples these expected outcomes against a number of adaptation strategies to plan for future conditions then tests the effectiveness of a set of potential management actions across this range of conditions. The scenarios are tied to IPCC scenarios, and they also encompass a discrete set of potential management strategies.

In order to judge the effectiveness of these strategies, we have chosen a set of indicator species and associated habitats. These have been chosen to be tractable within a small study, and yet to represent a reasonable diversity of conditions within the region. Climate change variables that will be examined include sea level rise, ocean acidification, and changes to sea surface temperature. The habitats that have been selected include: 1) coral reef, 2) mangroves, and 3) beaches. The species that have been selected include: 1) Goliath grouper, 2) spiny lobster, and 3) loggerhead turtle. The spatial scope of the project includes the Florida Keys and southern peninsular Florida south of 25.25° north latitude. The westward boundary will be the islands west of Key West up to approximately the Marquesas although this may vary depending on data availability.

This project is being conducted by GeoAdaptive, Inc., a spin-off from Massachusetts Institute of Technology, and the Florida Fish and Wildlife Conservation Commission. For questions, please email bob.glazer@myfwc.com.

The Approach

Three workshops will be conducted which will address specific parts of this project. All workshops will be convened in Marathon, Florida, except as noted. An additional set of pre-workshop meetings will be held to help validate the initialization assumptions for SLAMM inundation modeling for the Florida Keys and southern peninsular Florida region.

1. **SLAMM Modeling meetings**

When: 23 May 2012 (upper Keys), 24 May 2012 (lower Keys), 25 May 2012 (southern Peninsular Florida)

Who: Individuals familiar with the respective regions’ coastal and terrestrial habitats

Goal: Validate habitat maps prepared by FWC that will be used in SLAMM inundation modeling to ensure accuracy.

Outputs: Geospatially accurate representations of habitat maps.

2. **Workshop 1:** Developing Scenarios (Part 1) and Assessing Climate Change Impacts on Habitats

a. Part 1: Scenario development.

When: 17 July 2012

Who: Natural resource managers (including those focused on ecosystems and species) and marine planners

Goal: identify climate change (i.e., IPCC scenarios) and human dimensions scenarios that will be most relevant for their future planning.

Outputs: Scenarios will be identified related to climate change and human/political/conservation/management change. These scenarios will be used in all the workshops and outputs from each workshop will be propagated to the next workshop.

b. Part 2: Impacts of Climate Change on Select Marine Habitats

When: 18 July 2012

Who: Climate Change Impact Experts and Habitat Specialists for the focal habitats

Goal: To identify what changes may be expected to occur to the focal habitats under different climate change scenarios. This will be accomplished with close interactions between the climate change experts and the habitat specialists.

Outputs: Information will be collected from which a series of maps will be created within a GIS. These maps will be used in Workshop 2.

3. **Workshop 2.** Estimating impacts to select species under changes to climate and human dimensions.

When: TBD

Who: Species experts

Goal: Using the maps produced from Workshop 1 outputs and the associated scenarios, the species experts will develop forecasts identifying effects on the focal species populations.

Outputs: Information will be collected from which a series of maps will be created within a GIS that will detail the anticipated effects on species populations under each scenario identified in Workshop 1, Part 1. . These maps will be used in Workshop 3.

4. **Workshop 3:** Identifying Adaptation Strategies

When: TBD

Who: Natural resources managers and marine planners

Goal: Using the maps produced from Workshop 1 and 2 outputs and the associated scenarios, the natural resource managers and marine planners will develop adaptation options and strategies that may be appropriate to deal with changes identified for each scenario.

Outputs: A number of potential strategies to deal with changes to habitats and species will be developed.