Water Institute Distinguished Scholar Seminar Series

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3:00 PM - 4:00 PM
282 J. Wayne Reitz Union
Co-Host: Florida Climate Institute

Title:

Participatory Scenario Planning for Climate Change in Southern Florida's Greater Everglades Landscape

Abstract

There is widespread recognition that climate change will fundamentally affect how conservation planning can and should be done. As Hansen et al. (2010) state: "to be successful, conservation practitioners and resource managers must fully integrate the effects of climate change into all planning projects." Unfortunately, this is much easier said than done. Not only are wildlife habitats likely to shift in complex ways, but also climate changes will affect human beings and our use of land. Those responses potentially alter not only settlement patterns, but also many other sectors and land uses impacting conservation, including fisheries, agriculture and forestry. As supplies of resources such as water veer from historic patterns, ecological systems will likely face additional competition from human consumptive uses. More positively - human choices and policies for climate change mitigation provide an opportunity to alter economic, transportation and land use decisions in ways which might much better support conservation.

Few other landscapes will be so challenged by climate and landscape change as the Greater Everglades Region in Southern Florida. Under climate change, this region will experience significant loss of land, and potentially complex changes to human population settlement patterns. The need to address and plan strategically is critical given the complexity of overlapping systems and competing interests. Multiple scientific, economic and policy strategies have been formulated recently to address the challenges this phenomena poses to society - but sectoral approaches have not been able to provide comprehensive solutions.

In a two-year project funded by US Fish and Wildlife Service (FWS) and the US Geological Survey (USGS), our research team at MIT has developed a participatory modeling approach which allows managers to begin to grapple with key first and second order effects of climate change. Our study area was a 30 county region encompassing Southern and Central Florida.

The project employed two methodological approaches: 1) stakeholder-based participatory landscape planning and 2) scenario-based simulation modeling. Through extensive consultation with over one hundred FWS managers, USGS scientists, county land use planners and conservation and water managers, a series of scenarios were derived. The scenarios generated were nested within global IPCC scenarios, but included additional information and assumptions relevant to conservation planning in Florida. The scenarios were then used as inputs to spatial simulation models which simulated sea level rise and spatial shifts in human land use and settlement patterns. The resulting "alternative futures" represent a range of plausible future land use and land cover configurations in 2020, 2040 and 2060. This set of spatially-articulate potential future land use maps allows us to explore the interaction between global climate change, human population settlement preferences, and state and local policies. In particular, we can begin to judge the effectiveness of current conservation strategies against a landscape in which people - as well as species - are likely to relocate in response to climate change.

Hasen, L.; Hoffman, J. Drews, C. Mielbrecht, E. (2010). Designing Climate-Smart Conservation: Guidance and Case Studies. Conservation Biology Volume 24 Issue 1, Pages 63 - 69.