

- *Modeling and Experimental Research to Guide Management of Community Adaptations in the South Atlantic Coastal Plain in Response To Climate Change And Sea Level Rise.* This project will use a combination of field sampling, species distribution modeling, and targeted experimentation to assess the potential influence of climate change and sea level rise on target communities in the lower coastal plain.



Flooded Coastal Plain



SET Device

- *Coastal Wetland Dynamics and Wildlife Populations: Modeling the Effects of Sea Level Rise and Landscape Change.* Assess the potential impacts of sea level rise on coastal ecosystems and related wildlife resources. Develop a Bayesian models that projects the impact of sea level rise on coastal wetland habitats. Develop marshbird habitat models using a Bayesian hierarchical framework and integrate physical parameters and estimates of coastal wetland change to predict future land use change in terms of species distributions.



SET locations in North America

- *NCCWSC - Integrated Coastal Assessment for the Southeast.* The approach taken is to install Sediment Elevation Table devices (SET) and accretion monitoring plots in seven northern Gulf coastal wetland sites from Biloxi, MS to Mobile, AL.



Salt Marsh

Landscape Conservation Cooperatives (LCC): The USGS Patuxent Wildlife Research Center Commitment

What are Landscape Conservation Cooperatives (LCCs)?

LCCs are broad-based partnerships providing the science necessary to undertake strategic conservation efforts across large geographic areas. The U.S. Fish and Wildlife Service (FWS) has taken the lead in preparing Development and Operations Plans for each of the LCCs.

The Challenge

The USGS and FWS have had an active partnership for years working toward using adaptive management approaches to inform natural resource management actions. The two agencies jointly developed a Strategic Habitat Conservation approach that uses adaptive management to guide FWS habitat management. A major failure with much of the past research and management activities has been the explicit assumption that climatic and environmental conditions have been stable. The scientific community has realized that this is not true. The world is rapidly undergoing global warming and the effects on the environment will be profound. The challenge of understanding the impacts of rapidly accelerating climatic change on landscapes and altered ecosystems, habitats and species distributions and abundance are imperative to managers as they are called upon to make informed decisions.

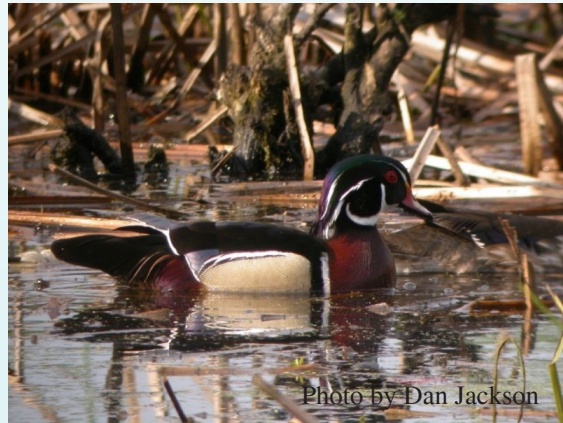
The science focus of the LCCs are:

- **Climate Change** – temperature, precipitation, sea level rise
- **Energy Development** – wind, hydropower, gas, transmission lines
- **Water Resources** – climate and land use impacts on flow patterns
- **Forest Practices** – timber impact on fish and wildlife habitat
- **Invasive Species** – climate and land use impact on range expansion
- **Emerging Diseases** – expansion of vectors from multiple stressors

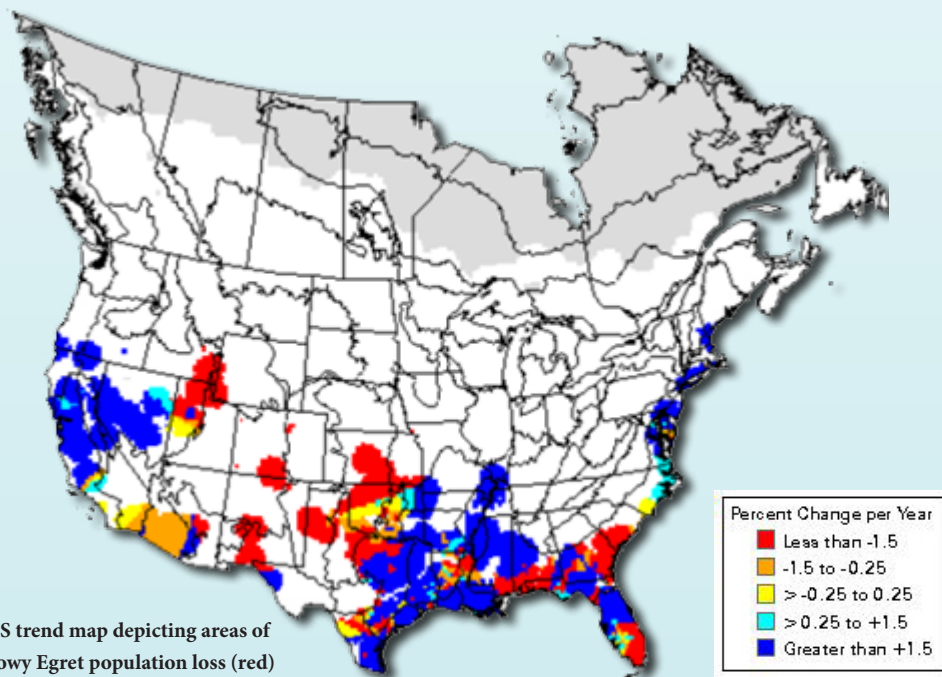


On-going Research and Coordination

USGS Patuxent Wildlife Research Center (PWRC) is working closely with the North Atlantic LCC (NALCC) Coordinator, FWS Region 5, Atlantic Coast Joint Venture, Leetown Science Center (USGS lead for NALCC), USGS/Reston, and other Department of Interior Agencies to identify opportunities to meet science needs of the NALCC. We are discussing ideas for collaborative or complementary projects with Leetown Science Center that would broaden our ability to support LCC needs in FY2011 and beyond. PWRC is identifying a point person who with close support by Center Management will focus a substantial portion of her time toward having PWRC meet SALCC needs at the technical level.



- *Strategic Habitat Conservation (SHC) implementation plan to meet waterbird management needs within the Atlantic and Mississippi flyways.* Implementation of SHC for waterbirds east of Mississippi River – monitoring, survey design and management to inform managers in an adaptive management context. (Includes SALCC).

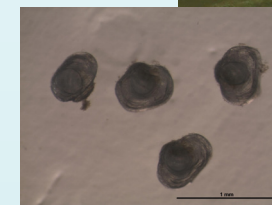


BBS trend map depicting areas of Snowy Egret population loss (red) and increase (blue).



PWRC, as the USGS lead for the South Atlantic LCC (SALCC), is working closely with the Interim Steering Committee, and the SALCC Coordinator, FWS Region 4, USGS Southeast Region, and the Atlantic Coast Joint Venture to direct FY2010 funding to support priority projects identified by the SALCC partners. Dependent upon the Congressional allocation, FY2011 will follow a similar path. PWRC is identifying a point person who, with close support by Center Management, will focus a substantial portion of his time toward having PWRC meet NALCC needs at the technical level.

- *Designing Sustainable Landscapes in the Southeastern United States.* Pilot project for bird populations in the Eastern U. S. *Patch and range dynamics of North American avian species in response to land use patterns and climatic change in Southeastern United States.* This project will predict the effects of land use changes and climate change on selected bird populations at the level of Bird Conservation Regions and states based on Regional Circulation Models for the SEAFWA region.



Research on freshwater mussels

- *Multi-resolution Assessment of Potential Climate Change Effects on Biological Resources: Aquatic and Hydrologic Dynamics.* Component of the Southeast Regional Assessment Program. The specific focus of this research is on aquatic biota, especially freshwater fishes and mussels, and on improving our ability to answer questions concerning how species are likely to respond to climate-induced hydrologic change.

- *Aquatic Research to Support SALCC Science Needs.* This task directly addresses priority information needs relevant to aquatic conservation: developing predictive models for species ranges; identifying hydrology and water use relations to ecological responses; collecting data to develop priority species-habitat relationships.

