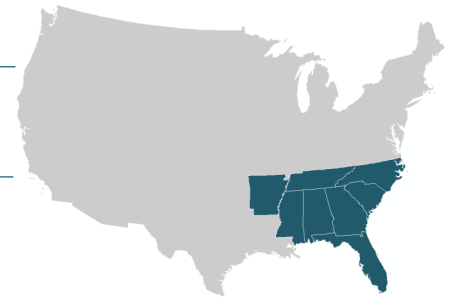


FLORIDA

PROJECT HIGHLIGHTS

Florida falls within the domain of the Southeast Climate Adaptation Science Center (CASC), managed by the USGS



THE GULF COAST'S MIGRATING MANGROVES

Coastal wetlands purify water, protect coastal communities from storms, store carbon, provide habitat for fish and wildlife, and offer opportunities for recreation and fishing. They are also vulnerable to changing climate conditions.

WHAT:

- Southeast CASC examined how changes in temperature and rainfall could alter coastal wetlands in Florida, Alabama, Mississippi, Louisiana, and Texas.

RESULTS:

- Warmer winters will transform coastal wetlands in the Gulf of Mexico by 2100. Mangrove forests (comprised of trees) will expand northward and replace salt marshes (comprised of grasses). These shifts in vegetation could affect the ecological and economic services wetlands provide.

IMPACT:

- Helps wetland managers in Florida and other Gulf of Mexico states plan for these expected changes in wetlands and prepare for the related impacts to fish, wildlife, and ecosystem

>> [Learn More: bit.ly/MangroveMigration](https://bit.ly/MangroveMigration)



PREDICTING URBAN SPRAWL IN THE SOUTHEAST

The Southeast U.S. has grown rapidly over the past 60 years. The region also has diverse wildlife, and urbanization can lead to the loss and fragmentation of critical habitat. Coupled with the impacts of changing climate conditions, such as sea-level rise, wildlife in parts of the region could face a range of threats that

WHAT:

- Southeast CASC predicted changes in the extent of urban sprawl in the Southeast U.S. over the next 50 years.

RESULTS:

- Urban sprawl in the Southern Florida Coastal Plain region is predicted to increase by 42% by 2060. Large new areas of urbanization could develop north of the Everglades.

IMPACT:

- Urban sprawl will likely influence the ability of species to respond to climate change, impeding their ability to move to new habitats as conditions change. Understanding how urban areas will grow is an important component of natural resource planning.

>> [Learn More: bit.ly/SEUrbanization](https://bit.ly/SEUrbanization)



THE FUTURE OF FLORIDA'S CORAL REEFS

The economic value of coral reefs in southeast Florida is estimated at \$8.5 billion. Referred to as the “rainforests of the sea”, coral reefs provide sportfishing and recreation opportunities, protect coastlines from storms, and shelter thousands of plant and animal species. Yet in southeast Florida and elsewhere, ocean warming and acidification threaten these economically and ecologically important ecosystems.

WHAT:

- Southeast CASC examined the growth rates of coral at reefs from Miami to Dry Tortugas, to understand the vulnerability of coral to stressors such as warming ocean temperatures and increasing acidification.

RESULTS:

- The growth rates of coral differed from reef to reef. Reefs with a higher growth rate, such as those in Dry Tortugas, may take longer to show signs of stress as ocean conditions change than other reefs in the region.

IMPACT:

- This information is useful for resource management decision making regarding reef restoration and species protection policies.
- Establishes a baseline for coral growth rates that can be used as a reference as ocean conditions

>> **Learn More:** bit.ly/CoralClimateVulnerability



OPTIMIZING RESERVE DESIGN IN THE EVERGLADES

Selecting land for a protected area, such as a national wildlife refuge, is challenged by the need to consider current conditions of the landscape, budget constraints, and potential future changes in climate and urbanization.

WHAT:

- Southeast CASC developed a framework for optimal reserve design for use in Everglades Headwaters National Wildlife Refuge (EHNWR). The framework considers objectives for habitat protection, potential future urbanization and coastal habitat change scenarios, and cost estimates of different designs.

RESULTS:

- Identified which land parcels should be included for optimal reserve design.
- Found that reserve costs increase under scenarios of increased urbanization, likely because fewer quality land parcels would be available for reserves.

IMPACT:

- Supports FWS in prioritizing land acquisition for refuges such as EHNWR, home to 43 federally-listed and 161 state-listed species.

>> **Learn More:** bit.ly/DynamicReserveDesign



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*The Southeast CASC is hosted by North Carolina State University and has five partner institutions. The CASC works with natural and cultural resource managers to gather the scientific information and build the tools needed to help fish, wildlife, and ecosystems adapt to the impacts of climate change. **Learn more:** globalchange.ncsu.edu/secsc/*