



Immediately limiting gaps from 2012 Science Assessment

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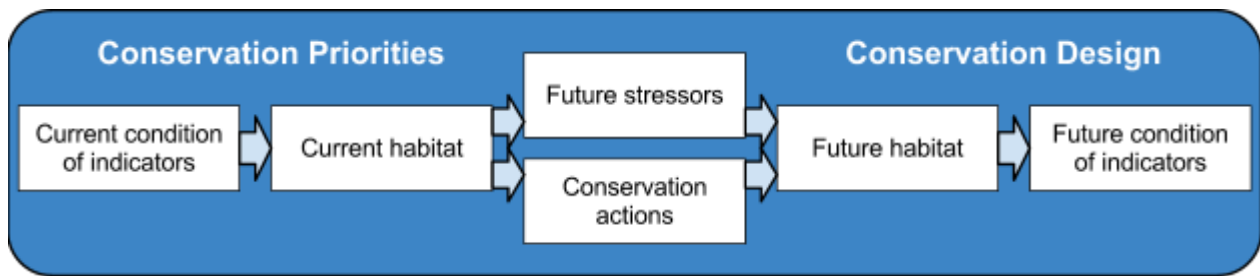


Fig. 1. Flow chart of modeling components for SALCC conservation planning

Conservation Priorities

- Identify SALCC natural resource indicators and measurable targets for those indicators while building on existing planning efforts (e.g., State Wildlife Action Plans, [Optimal Conservation Strategies](#), etc.) and existing measurable targets (e.g., Birds ([Atlantic Coast Joint Venture](#)), Marine fish ([South Atlantic Fishery Management Council](#)), Endangered species ([Recovery plans](#)), Freshwater fish / aquatic ecosystems ([Southeast Aquatic Habitat Plan](#), starting on page 41))
- Identify SALCC indicators and measurable targets for those indicators while building on existing planning efforts (e.g., Cultural Heritage Corridors, State Historic Preservation Offices, etc.)

Current Condition of Indicators

- Location of historic resources (shell middens, historic rice fields, etc) in areas 3m or less above sea level.

Current Habitat

- Locations of small isolated wetlands not detected by NWI
- Locations of small dams and obstructions on rivers and streams
- Current estimates of aquatic connectivity
- Improved mapping of high and low marsh habitats

- Improved mapping of estuarine and marine habitats
- Estimate of the existence value of conserved lands (an economic measure of an individual's appreciation for the resource)
- Bequest value of conserved lands (an economic measure of an individual's desire to pass on a conserved landscape to future generations.)

Future Stressors

- Integration of [Hayhoe et al. statistically downscaled predictions](#) with [La Florida dynamically downscaled predictions](#) to better represent uncertainty in future temperature and precipitation
- Improved precipitation predictions to better represent extremes (Current predictions tend to "flatten" peak rain events)
- Improved predictions of sea level rise (including uncertainty estimates) based on seamless LiDAR across the entire South Atlantic region
- Spatially explicit predictions of the impact of smart growth practices on suburban/exurban development
- Incorporation of local and regional long term land use plans in urbanization predications
- Refinement of models to allow new growth to occur in areas not just adjacent to other development
- Predictions of future changes in non-forest agriculture (i.e., crop and pasture)
- Future changes in major pathways for species invasions
- Predictions of future rates and locations for energy development (e.g., wind, biofuels extraction)

Conservation Actions

- Predictive models of the impact of hydrologic restoration on natural, cultural, and socioeconomic resources
- Predictive model of locations with the greatest opportunity for enhancements via cost-share program or incentives
- Predictive model of the impact of wetland enhancement on carbon sequestration

- Estimates of the economic benefits of prescribed fire in open pine (i.e., by maintaining open pine with prescribed fire, how much money is saved by reducing the risk of catastrophic wildfire)
- Predictive model of the impact of wetland management on carbon sequestration
- Predictive model of locations with the greatest opportunity for easements and acquisition

Future Habitat

- Incorporation of vegetation range shifts and agricultural change into future landcover predictions
- Impact of mangrove migration on coastal habitat
- Predictions of future temperature in rivers and streams
- Future hydrologic alterations and aquatic habitat fragmentation (e.g., dams) due to human population growth and agricultural change
- Predictions of future ocean temperature
- Impact of future changes in freshwater flow on marine habitat (including how sea level rise and instream flow changes will change estuarine locations, i.e., estuary creep)
- Impact of mangrove migration on marine habitat
- Improved predictions of ocean acidification
- Prediction of future Marine “hotspots”
- Current carbon sequestration capability / acre / year for South Atlantic habitats
- Predictions of current and future water filtration capability

Future Condition of Indicators

- Improved range shift models for all taxa (except landbirds) that: 1) Include predictions of uncertainty, 2) Allow for adaptive capacity, 3) Identify potential migration bottlenecks
- Impact of changes in temperature and flow on fish and mussel communities
- Impact of changes in aquatic connectivity on fish and mussel communities
- Integration of existing state fish monitoring programs to improve models of fish response to habitat change

- Impact of changes in temperature, flow, and mangrove migration on marine fishes
- Predictions of future opportunities for outdoor recreation vs. demand
- Predictions of changes in swimmable and fishable streams

Conservation Design

- Incorporation of ongoing terrestrial and aquatic connectivity analyses into planning models
- Sensitivity analysis on the uncertainty in modeling inputs. To which inputs (e.g, climate change, urban growth, habitat response to climate change, etc.) are the models of indicator response most sensitive to changes and thus might result in the biggest change in predicted indicator responses with better information.

Appendix 1: Other limiting gaps

What other SALCC wide information is limiting conservation planning for the cooperative?

Terrestrial

- More recent and detailed land cover models
- Improved understanding of population-level impacts of energy development
- Effect of rising petroleum prices on future suburban development
- Improved predictions of marsh migration

Freshwater

- Improved estimates of Nonindigenous Aquatic Species (NAS) distribution
- In-water habitat information such as Submerged Aquatic Vegetation (SAV) and woody debris distribution
- Locations of artificial flow paths (ditches and levees)
- Further evaluation of stream restoration, mitigation techniques, and effectiveness of mitigation banks.
- Predictions of current and future sediment flows
- Economic study on freshwater invasive species and their impacts to water control structures/ water delivery, habitat restoration, and imperilment of native species
- More recent and detailed land cover models
- Improved understanding of population-level impacts of energy development
- Effect of rising petroleum prices on future suburban development

Marine

- Improved predictions of marsh migration
- Estimates of the amount of water, sediment, and nutrients needed by coastal habitats to support wetland and marine organisms

- More recent and detailed land cover models
- Improved understanding of population-level impacts of energy development

Ecosystem Services

- Economic study on freshwater invasive species and their impacts to water control structures/ water delivery, habitat restoration, and imperilment of native species
- More recent and detailed land cover models
- Effect of rising petroleum prices on future suburban development

Cultural Resources

- Future impact of invasive species on cultural sites
- More recent and detailed land cover models
- Effect of rising petroleum prices on future suburban development
- Locations of cultural resources over 3m sea level.
- Catalog of ethnographic resources (uses of natural resources for cultural practices)