
Green Infrastructure Models in the USFS Southern Region



Prepared for the Southern Region of the U.S. Forest Service
by the Green Infrastructure Center Inc.
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We wish to extend our thanks to the Virginia Department of Forestry and the Southern Region of the U.S. Forest Service for making this project possible. We have also completed a demonstration project of green and blue infrastructure planning for Accomack County VA under this same grant and that report is available on line: <http://www.gicinc.org/accomack.htm>. For information on the Green Infrastructure Center visit www.gicinc.org

The research for this report was completed by Karen Firehock of the Green Infrastructure Center and Alisa Hefner of our partner firm Skeo Solutions. To update any information within the report, please send an email to info@gicinc.org Information is only current to the date listed on each state's page.

This report contains a series of hyper links to take the reader directly to the model or state web page within the report, so the best way to access the information in this report is to use a digital copy. The report can be found on-line at <http://www.gicinc.org/resources.htm>

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Front Cover Photo: Cherokee National Forest, Tenn.
Photo Credit: Tim Lewis

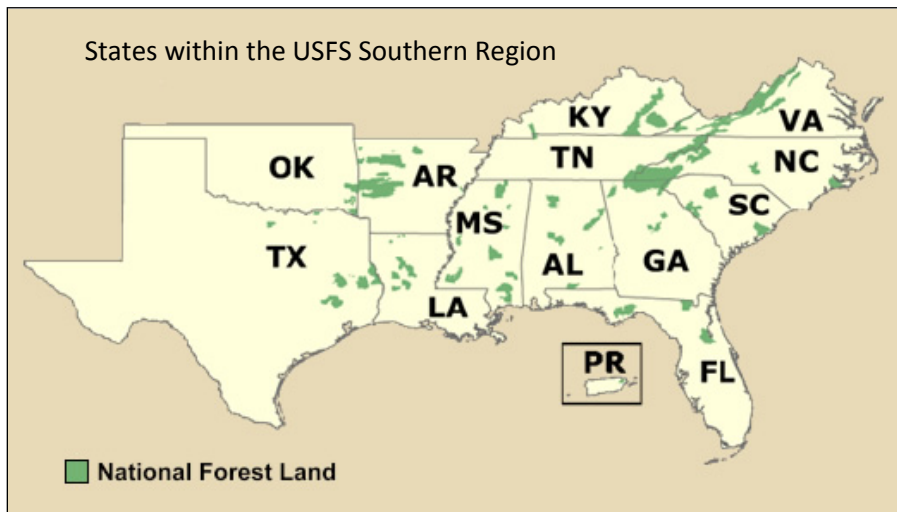
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Introduction and Overview

Report Purpose

This report was produced by the Green Infrastructure Center (GIC) for the Southern Region of the U.S. Forest Service. The report reviews the use of green infrastructure planning models at the state scale. This report discusses several state-level green infrastructure planning models and documents whether and how they have been used to inform local planning. To create the report, staff contacted each of the contiguous U.S. states in the US Forest Service's (USFS) Southern Region to determine if a state model existed. If the state had a model, we researched its applications for state level planning and whether and how it is used for regional or local planning. The report will inform the GIC's upcoming book on green infrastructure planning now currently underway, to be published in 2012.



Readers of this report should keep in mind that this is not a technical report or a data report. The primary purpose of this report is to reference state programs and models that readers may want to consult for use in green infrastructure planning within their states or for guidance and examples as they seek to create their own state models. For readers who are interested in individual green infrastructure projects, the Conservation Fund maintains a searchable on-line database of project examples and also an option to upload new projects at <http://www.greeninfrastructure.net/projects>. For states that do not have a model of green infrastructure assets, an attempt was made to locate and reference one or more examples of green infrastructure planning at the regional or local scale.

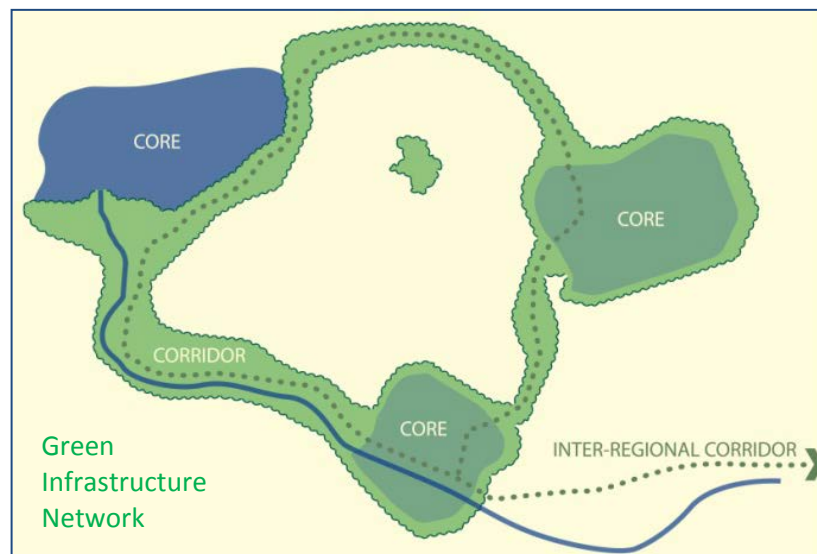
Green Infrastructure Defined

For purposes of this report, we define green infrastructure planning as a strategic landscape approach to open space conservation, whereby local communities, landowners, and organizations work together to identify, design, and conserve the land network essential for maintenance of healthy ecological functioning. This is essentially the definition employed by Benedict in a memo to the American Planning Association (2000) and later by Benedict, Allen and McMahon in 2004 in their paper *Advancing Strategic Conservation in the Commonwealth* and later in 2006 in the book by Benedict and McMahon

Green Infrastructure. They define Green infrastructure as "a strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for America's communities and people."

Green infrastructure planning is not an entirely new concept and the principles that form the basis for the concept arose from multiple disciplines. The term itself was first coined in Florida in 1994 in a report to the governor on land conservation strategies and was intended to reflect the notion that natural systems are important components of our "infrastructure." Since it is generally accepted that we have to plan for grey infrastructure, the idea of also planning to conserve or restore "green infrastructure," was seen as a way to help people recognize our natural resources as an important component of community planning.

Green infrastructure planning includes the corridor notion of greenways as critical connectors for habitats but *also* includes larger blocks of intact habitat types such as un-fragmented forests, wetlands or dune systems. These larger blocks of intact habitat have been referred to as "hubs" or "cores." Green infrastructure expands upon the concept of connecting greenways by thinking of the landscape as a series of networks that includes both connecting lands and the large areas of intact landscape elements. Green infrastructure also includes a recognition of the importance of ecological services provided by natural resources, such as the role that forests and wetlands play in cleaning the air or filtering the water.



Green infrastructure planning places a strong emphasis on connectivity. A connected forest landscape provides greater support for biodiversity. "When forests are isolated, species within them are at greater risk to decline since animals and plants cannot re-colonize isolated areas. Connecting forests through wide, vegetated corridors facilitates the movements of animals, pollinators and plants over time to ensure that species can repopulate" (Va. Statewide Forest Assessment, 2010). Large forest cores also provide greater potential economic benefits because they are easier to manage for harvest and conservation over the long term using silvicultural principles, as opposed to smaller tracts that can be cut just once in many years.

Regional and State Models

Green infrastructure maps have been created at many different scales. The mapping and modeling that have occurred in the past few decades have been made possible by advances in Geographic Information System software as well as improvements and increased access to high resolution satellite imagery, new data management tools and increased processing power of the desktop computer.

Only a handful of states in the Southern Region, including Virginia, North Carolina and Florida, have their own statewide models to facilitate state-level green infrastructure planning. These models can be used by state agencies to determine locations for future parks, to assist with road planning by identifying areas to avoid or areas where more sensitive designs may be needed, to inform state wildlife action plans, to evaluate the status and potential of the state's timber economy and many other uses. The earliest statewide green infrastructure network model in the USFS Southern Region was created in Florida in 1992 and was adopted by the state in 1999 when they proposed the concept of an integrated habitat network as part of the Florida Greenways Plan.



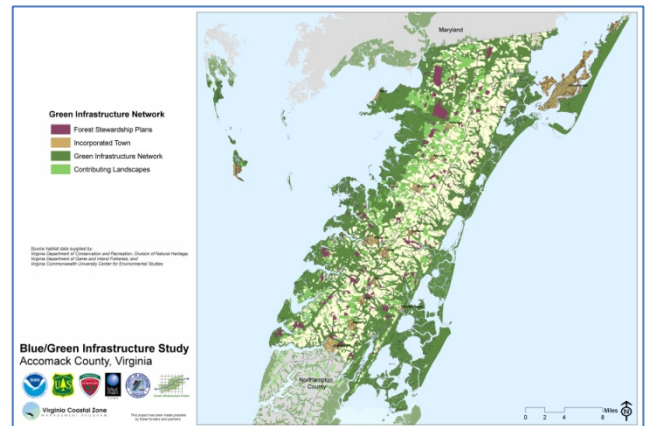
The first multi-state regional map was the Southeastern Ecological Framework map published in May 2002. It was created as a decision support tool to provide systematic landscape analysis of ecological significance and the identification of critical landscape linkages. Since the report was bounded by the states within the U.S. Environmental Protection Agency's Region IV area, the report excluded Virginia. As a regional map covering multiple states, the resolution is, of necessity, somewhat coarse at 90 meters (referring to the cell size image used for analysis). This scale of mapping can be used to identify significant landscapes and corridors at the large regional or multi-state areas. However, it tends to be too coarse to use for county or town level planning as the resolution does not provide the level of detail needed. Most state models, such as those in Virginia, are applied at 30 meter resolution. These models can be used for regional planning and with further adjustments, can be applied to smaller scales, such as for counties or towns.

There are also other useful regional models available for green infrastructure planning, such as the Southern Forest Land Assessment (SFLA) which was a cooperative project of the Southern Group of State Foresters designed to highlight high value landscapes in the southern region and to help prioritize where to target rural forestry assistance programs and funds. The project serves as the assessment component of the Forest Stewardship Program's Spatial Analysis Project: www.fs.fed.us/na/sap/.

The SFLA model is built by overlaying and ranking various land uses and functions. Forests are given the highest ranking, followed by riparian areas, public water supply, priority watersheds, forest patches, site productivity, threatened and endangered species, proximity to public land and slope. The model also includes threats in the ranking, such as development level, wildlife risk and forest health. By overlaying and ranking these land types and uses, priorities emerge and are represented as High, Medium and Low Priority. The model allows the user to modify the weights used to rank the model's values so that maps can be produced to place greater emphasis on local or regionally significant values. The model's resolution is at 30 meters, but users should keep in mind that some layers were originally at much lower resolution (e.g. a square kilometer) so that the model may be more or less accurate depending on what information is being reviewed. The model's creators suggest it is appropriate for planning at a state, regional or county scale.

Only a handful of states in the southern region have developed statewide models of green infrastructure resources. These states include Florida, North Carolina and Virginia and they are described in the following sections. For these states, there is a summary table describing the model and its applications for regional or local planning.

Some states have individual data layers that users can obtain to create their own maps and models. If the state has data available for download that can be used to help create a map of natural assets, we have included this information in the summary table. For the remainder of the states that do not have a statewide model, we have attempted to provide an example of a related local or regional effort (if available). For the most current information about each state, readers are advised to contact the state programs directly.



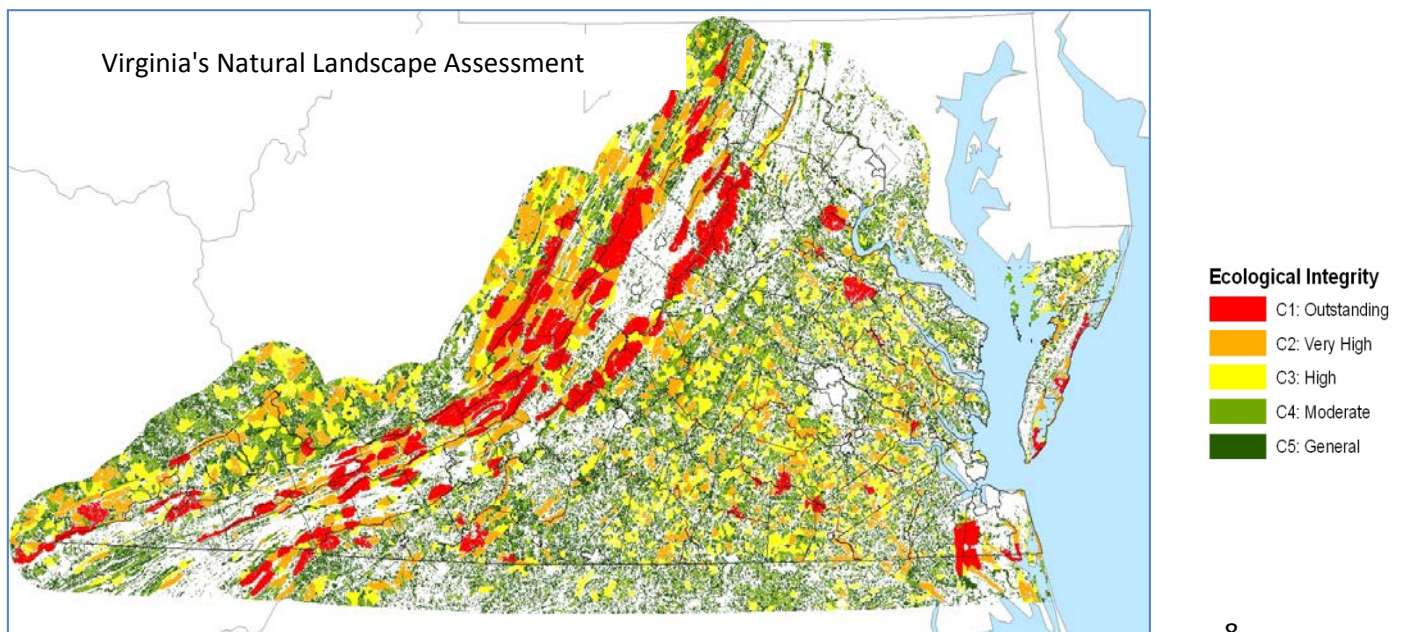
Virginia

Virginia	Data and Models Summary
Date information obtained	10-Nov-2011
Name of program	Virginia Conservation Lands Needs Assessment
Web address	http://www.dcr.virginia.gov/natural_heritage/vclnavnla.shtml
Contact person	Joe Weber
Contact info	Joe.Weber@dcr.virginia.gov
	GIS Projects Manager/Conservation Biologist
	Phone: (804)371-2545
Available to the public	Yes available to anyone. No cost to use.
Name of model	VA Natural Landscape Assessment
Date created	2007
Data date range	2000
Model description	Shows location of large intact forest, wetland and dune habitats. Includes habitat fragments from 10 to 99 acres of interior and ecological "cores" of 100 and greater acres of interior habitat. Ranks cores according to ecological integrity as C1 Outstanding to C5 general. Ecological Integrity is determined based on factors such as depth to interior, amount of surface waters, and prevalence of rare species and important habitats. Also includes 300 meter wide corridors between highest ranked cores.
Use model with ArcGIS™	Yes. Data can be obtained as shape files and manipulated.
Resolution	30 meters
Coverage	Entire state plus a 20-mile buffer (to account for cross boundary cores)
Model purpose/use	At the state level it has been used to evaluate potential state held conservation easements and locations for future parks.
Local use (yes/no)	Yes
If yes to local, how used	Several PDCs and counties have developed green infrastructure plans using the model as a base map and then updated the data and added new layers such as ag forestal districts, or locations of conservation easements and regional trails.
If used locally or regionally, describe extent	Currently used statewide by regional planning districts, counties, cities, and state agencies for prioritizing lands for conservation.
Case examples of use	Yes examples of cases available at www.gicinc.org/projects
Plans for expansion	Yes
If yes to expansion, how	State is updating the entire model in 2011 using 2006 land cover and aerial photography from 2006 to 2009.
Notes:	Model can be combined with other state models to create enhanced applications, such as relation of forest cores to supporting views for historic landscapes or access to recreation.

Implementation

The Natural Heritage Program in the Department of Conservation and Recreation (DCR-DNH) completed its first green infrastructure assessment in Virginia for the Southern Watershed Area Management Program (SWAMP) http://www.vbgov.com/file_source/dept/planning/consplanrpt.pdf in 2001. In 2004, a pilot natural landscape assessment modeled after the Chesapeake Bay Resource Lands Assessment was completed for Virginia's Coastal Zone Management Area. In 2007, using methods refined by the pilot along with a new statistical process for prioritizing natural lands, DCR-DNH extended the analysis statewide and completed the Virginia Natural Landscape Assessment (VaNLA). The VaNLA is a landscape-scale, geospatial analysis to use in identifying, prioritizing and linking Virginia's natural lands. Using land cover data derived from satellite imagery, the VaNLA identifies large patches of natural land such as forests, wetlands or dune systems, with at least one hundred acres of interior forest cover. The interior land, or ecological cores, begins one hundred meters from patch edges. The model also includes habitat fragments, small patches with ten to ninety-nine acres of interior cover that support landscape corridors.

The model ranks each ecological core based on several parameters such as overall size, depth of interior, amount of surface waters (streams and wetlands), presence of rare species and important habitats and other features. In summary, the larger and more biologically diverse an area, the higher its overall score. Scores may also be higher for areas that contribute to good water quality or are part of a complex of natural lands. The resulting scores were classified into five categories of ecological integrity: C1 - Outstanding; C2 - Very High; C3 - High; C4 - Moderate; and C5 - General. The model also shows the key corridors that link these cores. Corridors are at least 300 meters wide (ideally) to maximize their effectiveness at allowing movement of animals and plant propagules (seeds) between cores. Virginia has a series of other models that also can be used in concert with the VaNLA model for other planning applications. For example, the cultural model, which contains architectural and archeological features can be overlain with the VaNLA to show where the green infrastructure model supports historic resources. For example, a civil war battlefield viewshed can be conserved by the existence of a large forested core. The Forest Economics Model can be used to determine areas where large forested cores may also support the timber economy of the state.



Other Models and Related Applications

Cultural Model: Includes archaeological and architectural sites that are listed as National Historic Landmarks, in the National Register of Historic Places, eligible sites, American Indian Lands. Data were provided by the Virginia Department of Historic resources.

Vulnerability Model: Comprised of a series of models (urban, urban fringe and other) that together comprise the vulnerability maps showing predicted growth in Virginia and ranking growth threats from hot (red) to cool (blue). The model uses growth predictors such as major highways, road intersections, proximity to existing population centers, and other factors that drive development. This map can be used with the VaNLA to consider where habitats may be at risk from future development.

Forest Economics Model: Maps areas that may be more suitable for economic use of the forest based on vegetation type, soil productivity, forest density, slope, water features, threatened and endangered species, and economic data, such as proximity to mills.

Agricultural Model: Maps agricultural land using STATSGO and SSURGO soils data, land use, slope RESAC 2000 land cover and historic farms data. Can be used to determine areas most suited to maintain in agricultural uses.

Recreation Model: Maps public recreation lands managed by federal, state or local governments including beaches, hunting areas, parks, trails, scenic byways, state birding and wildlife trails (publically accessible), and state conservation lands, such as natural area preserves, state forests, wildlife refuges and other lands. This model can be used with the VaNLA to identify forest cores and corridors that are also publically accessible and provide a recreation benefit.

Priority Conservation Areas Model: This is the state's newest model and covers coastal localities (tidally influenced). The model combines mapped species' habitats, including occurrences of rare species and their habitat needs, connecting corridors, and an aquatic resources integrity layer that includes fish, macroinvertebrate and aquatic habitat. This model also includes the VaNLA model as well.

Implementation

There are many examples of regional and local use of state models in Virginia. In 2006, the Hampton Roads Planning District Commission created a new green infrastructure plan. They have since updated that work to include more current data and their February 2010 report includes a summary of change from 2006 to 2010. The Hampton Roads PDC's plan can be found at <http://hrpdc.org/Documents/Phys%20Planning/2010/HRGreenInfrastructure2010.pdf>

In July 2007, the Green Infrastructure Center (GIC) began a statewide field test of [green infrastructure planning](#) in Virginia using the state's VaNLA and several other state models as well as local data. The goal of the field test was to develop practical methods for identifying and conserving green assets such as forests, rivers, wildlife areas, historic landscape features and recreational opportunities and to demonstrate how the models could be used to better inform local planning. Field tests demonstrated how to do this work in a variety of settings. They represented several of the state's distinct [ecoregions](#) – coastal, piedmont, ridge and valley -- as well as diversity of development patterns from rural, to urban to suburban. Methods derived from these field tests will be shared

through a green infrastructure planning manual that will be completed in 2012. The following are links provide case examples of Green Infrastructure Center Projects that used the state models:

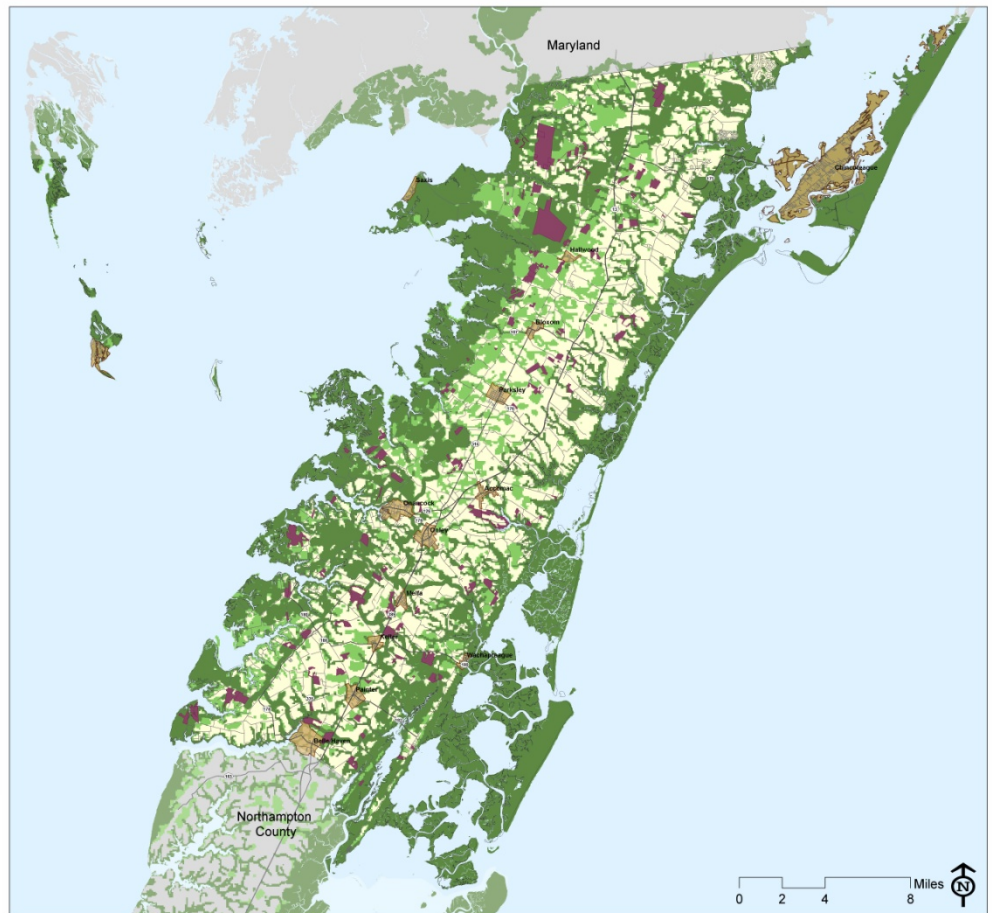
- [Madison County \(Completed - October 2008\)](#)
- [Crater and Richmond Regional Planning Districts \(Completed - July 2009\)](#)
- [New Kent County \(Completed - July 2009\)](#)
- [Accomack County \(Completed - May 2010\)](#)
- [City of Richmond \(Completed – December 2010\)](#)

In 2009-2010 the Virginia Coastal Zone Management Program and the National Oceanic and Atmospheric Administration also funded seven regional planning districts and two counties in Virginia's coastal plain, to develop green and blue infrastructure plans. Several of the coastal plans also incorporated issues of climate change and sea level rise. Green Infrastructure plans were completed by the George Washington Regional Commission, the Hampton Roads Planning District Commission, the Middle Peninsula Planning District Commission, the Northern Neck Planning District Commission, the Northern Virginia Regional Commission and the counties of Accomack and Northampton on the Delmarva Peninsula. The GIC served as mapping consultant for Accomack County, the Richmond Regional Planning District and The Northern Virginia Regional Planning Commission. For more visit <http://www.deq.state.va.us/coastal/bluegreeninfrastructure.htm>

This map shows Accomack County's Land-Based Green Infrastructure Network and parcels with Stewardship Plans. The county forester can use the map to target new stewardship plans to support the green infrastructure network.

- Green Infrastructure Network**
- Forest Stewardship Plans
 - Incorporated Town
 - Green Infrastructure Network
 - Contributing Landscapes

Source habitat data supplied by:
Virginia Department of Conservation and Recreation, Division of Natural Heritage;
Virginia Department of Game and Inland Fisheries; and
Virginia Commonwealth University Center for Environmental Studies



Blue/Green Infrastructure Study
Accomack County, Virginia



North Carolina

North Carolina	Data and Models Summary
Date information obtained	2-June-2011
Name of program	North Carolina Natural Heritage Program (One NC Naturally initiative)
Web address	http://www.onencnaturally.org/pages/ConservationPlanningTool.html
Contact person	Allison Weakley
Contact info.	Allison.Weakley@ncdenr.gov
Available to the public	Yes
Name of model	One NC Naturally Conservation Planning Tool (CPT)
Date created	Most CPT assessment layers were created in 2007
Data date range	Intended to be updated regularly, most recent data from 2009
Model description	<p>The Conservation Planning Tool (CPT) is comprised of five assessment layers that can be used independently. The Biodiversity/Wildlife Habitat Assessment and Open Space and Conservation Lands Maps are most relevant to creation of a green infrastructure base map. Data from the CPT are available to localities and organizations for free download at http://www.conservision-nc.net/. The data are also available in an on-line map viewer. The NC One Map is a data portal that links to supporting data used in the CPT: http://www.nconemap.com/.</p>
Use model with ArcGIS™	Yes. The CPT assessment layers are available as ESRI shapefiles or raster grids and can be downloaded statewide or by county.
Resolution	30 meters
Coverage	Statewide
Model purpose/use	<p>The Conservation Planning Tool (CPT) consists of assessments and maps that identify, evaluate, and prioritize important natural resources required to maintain healthy and sustainable ecosystems statewide. Five assessments and maps are included in the CPT: Biodiversity/Wildlife Habitat, Forestry Lands, Farmland, Open Space and Conservation Lands and Water Services.</p> <p>Biodiversity/Wildlife Habitat Assessment: prioritizes aquatic and terrestrial habitat, landscape function and connectivity. Open Space and Conservation Lands Map: shows lands that are in permanent conservation and actively managed. Water Services Assessment: prioritizes lands that are most critical to protect water resources for North Carolina's residents. Farmland Assessment: prioritizes viable and threatened agriculture lands. Forestry Lands Assessment: prioritizes forestry lands that are important for sustaining the forest products sector of economy and providing ecosystem services.</p>
Local use (yes/no)	Yes. Can be used with ArcGIS™ in both shape file and raster formats and can be downloaded statewide and by county. Open space conservation data are available statewide.

If yes to local, how used	The CPT has been applied by local governments, state agencies, regional councils of governments, funding programs, and conservation organizations to support land use, conservation, mitigation and transportation planning and decision-making. Several local green infrastructure/greenway programs are using GIS data layers to support collaborative efforts to create their own strategic plans for conserving and protecting green spaces in regions across the state. These individual projects are intended to serve as pilot programs and models for other regions of the state. See implementation write up for more information.
Case examples of use	Yes. Chatham County used the model and other local data to create a countywide conservation plan.
Plans for expansion	Yes.
If yes to expansion, how	New updates to the Biodiversity/Wildlife Habitat Assessment and the Open Space and Conservation Lands map are planned for July of 2011. Data within the tool (e.g. Heritage data) are updated about every six months. The newest dataset is the Landscape Habitat Indicator Guilds -- based on empirical data of indicator species -- that show important habitats and connectivity and make up a portion of the Biodiversity/Wildlife Habitat Assessment tool. This data can be requested from the NC Natural Heritage Program. The North Carolina Natural Heritage Program is actively promoting the use of the indicator guilds by the Department of Transportation and trying to work more closely with both Metropolitan and Rural Planning Districts. The intention is to incorporate natural resources data earlier in planning processes and avoid problems later. An interagency leadership team works together to help identify issues. The NC Natural Heritage Program is also conducting outreach to local governments and others to help them understand and use the CPT.
Notes:	The CPT is a comprehensive reference tool to help guide conservation and development. While ranking and suitability criteria are included in each of the assessments, a composite analysis of prioritized assets across all assessments does not exist currently. Connecting landscapes and identified corridors have been included as part of the CPT and could be a valuable addition to help guide strategic conservation. North Carolina surveys local usage of the CPT and hopes to begin to do this regularly.

Implementation

The One NC Naturally initiative began the development of the state's first countywide conservation plan in 2002, with the first CPT assessments and maps completed in 2007. Next steps include better incorporating the model's data in local and state planning efforts, including transportation planning, watershed planning and the state's Ecosystem Enhancement Program (NCEEP). Local Councils of Government have used the model for regional watershed and green infrastructure plans.

The State Parks and Recreation Division uses the CPT to evaluate where to locate new parks, while the Parks and Recreation and Natural Heritage Trust Fund use it to make decisions about grant funding for state parks, game lands and other natural areas. The NC Division of Water Quality is beginning to use the CPT for watershed planning. The Division of Forestry also has used the tool to help with planning for Johnston County.

Chatham County also used the CPT to create a local conservation plan. The Comprehensive Conservation Plan for Chatham County (Plan) was completed in January 2011 and identifies and describes the county's important natural resources, and recommends strategies to guide the protection of a sustaining network of natural areas, surface waters, working lands, and wildlife corridors. To adapt the CPT to county scale, the staff changed some of the values in the model to reflect local priorities. They also used soil survey data to improve the accuracy of surface waters. The plan can serve as an educational tool and guide for development review and future land use decisions in the county. It can also support funding for further conservation planning and conservation projects. NCNHP staff served on the steering committee for the CCP, and several NCDENR divisions were represented on the advisory board for the conservation plan. For more information on the Chatham County Plan: <http://chathamconservation.wikispaces.com/Comprehensive+Conservation+Plan>

Other Models and Related Applications

In addition to existing models, North Carolina has also developed some useful tools to help people implement conservation planning. The Green Growth Toolbox¹ is a cooperative effort led by the NC Wildlife Resources Commission and incorporates the Conservation Planning Tool (CPT). The Green Growth Toolbox consists of a handbook, GIS dataset, and website. The Green Growth dataset includes one of the assessments found in the NC One Naturally Planning CPT: the “Biodiversity and Wildlife Habitat Assessment.” An individualized training workshop and follow up technical assistance is available to communities across North Carolina who want to utilize the data and toolbox elements.

Linking Lands and Communities in the Land-of-Sky Region

The Land-of-Sky Regional Council (LOSRC) worked with local and regional interests to develop a regional framework for conservation and development to help shape future growth for Madison, Buncombe, Henderson, and Transylvania counties while respecting the integrity of the region’s ecosystems. The project is called Linking Lands and Communities² (LLC) and it created a forum for practitioners, citizens, local governments and organizations to build a common understanding of the region’s ecological systems and services across sectors and jurisdictional boundaries. The project involved both urban and rural communities. The final green infrastructure network is completed and staff from the LOSRC are promoting its use region-wide through presentations, workshops and technical support.

The LLC project created its own green infrastructure map series using a variety of spatial data sets. The network, maps, data and documentation were completed in July 2010. Partners from the One NC Naturally and NC Natural Heritage Program participated and provided their expertise to the Wildlife Habitat and Biodiversity map/assessment and also to the Water Quality assessment.

¹ Green Growth Toolbox <http://www.ncwildlife.org/greengrowth/index.htm>

² Land of Sky Green Infrastructure Website – includes complete documentation, maps and fact sheets: <http://www.linkinglands.org>

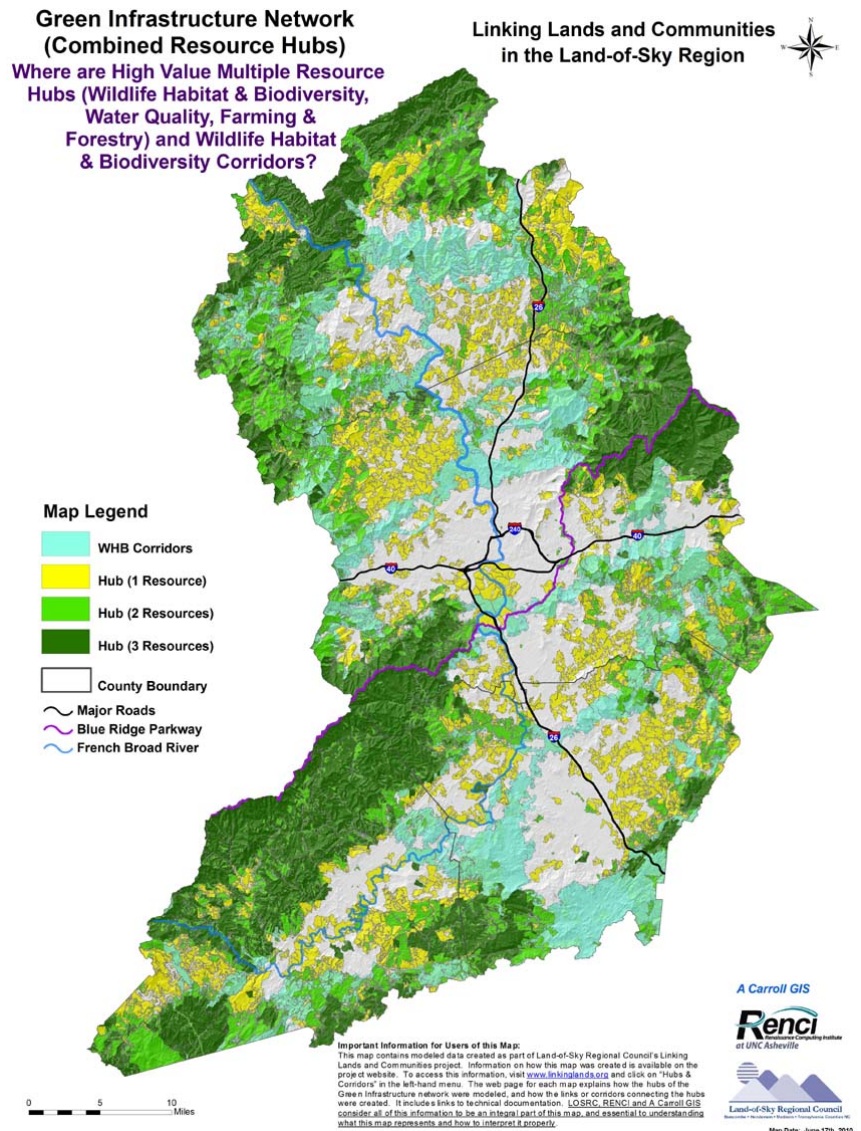
The LLC project used some of the same datasets used by the state’s Conservation Planning Tool but the LLC created their own map layers since they were doing the work simultaneously to the state's effort and some data, such as the habitat guilds were not completed in time for the Land of Sky regional effort to be able to use them. The One NC Naturally water assessment was very complex the LLC project found that there were not adequate local data to support the complexity of the state’s model. Lastly, the LLC project wanted to create and apply its localities’ regional values to the rankings to reflect local concerns and conservation priorities.

The LOSRC offers a workshop on how to use the data. Data are currently used by land trusts including the Southern Appalachian Highlands Conservancy and Carolina Mountain Lands Conservancy to prioritize lands for conservation. Both land trusts were very involved in the project and the development of the resource assessments and green infrastructure network.

The data and maps will be updated in the summer of 2011 to incorporate new/updated datasets and to add Haywood County data. There is a "resource assessment" for Water Quality, Agriculture and Wildlife Habitat and Biodiversity. Names, descriptions and sources for these data are included in the project documentation at <http://www.linkinglands.org/DataandMaps.html>

Local governments and other organizations can obtain the data by requesting it the Regional Council. They share this through their ftp site. Examples of local governments using the data include the following:

- **Hendersonville** – compared vacant parcels and public lands to natural resource maps to identify opportunities for conservation, parks and recreation; utilized maps and data in greenways master plan.
- **Henderson County** – maps used in the community (small area) planning processes; the Linking Lands maps correspond nicely with the areas the County had previously mapped based on the community plans’ criteria, and may be shown as supporting evidence of the importance in preserving the identified areas.
- **Transylvania County** – Maps and data will be used as background information for upcoming community meetings that the Planning Board and Environmental Advisory Boards to gather input



about what citizens want to see addressed in the near future. The maps and data will be useful in updating the county's comprehensive plan.

Other organizations using the data and maps:

- **NC Wildlife Resources Commission** – Staff are using the maps for reference when evaluating conservation opportunities and they used them to support a funding application for a recent land acquisition (East Fork Headwaters).
- **Blue Ridge Parkway** – Staff are using the information to provide a framework for community planning adjacent to the Parkway and to help them identify priority areas for conservation.
- **Carl Sandburg Home National Historic Site** – Staff are using the data to identify opportunities for connecting the Historic Site to nearby public and conserved lands and to lands with valuable natural resources and habitats.

Future plans and uses:

- The LOSRC will be updating the LLC data and maps to include Haywood County and any updated datasets in summer 2011. The data and maps will be used as a base set of data for the Western North Carolina Livable Communities Initiative, to help develop future scenarios and alternatives for future development.
- The Blue Ridge Natural Heritage Area has provided LOSRC with a grant to share the project's findings with adjacent regions, so they can undertake similar projects.
- The LOSRC has also given 63 presentations or workshops to approximately 1850 people at local, state and national events.

Florida

Florida	Data and Models Summary
Date information obtained	16-Dec-2010
Name of program	Florida's Ecological Greenways Network (FEGN) and CLIP
Web address	<p>http://www.dep.state.fl.us/gwt/network/network.htm</p> <p>http://www.fgdl.org/ [Florida Geographic Data Library]</p> <p>http://www.collinscenter.org/resource/resmgr/Century_Commission/CLIPRptJune08.pdf [Report on the Clip Database and a link to access GIS data]</p> <p>http://www.cues.fau.edu/toolbox/subchapter.asp?SubchapterID=14&ChapterID=13 (Florida Planning Toolbox)</p>
Contact person	Tom Hoctor
Contact Info.	University of Florida, GeoPlan Center, (352) 392-5037, tomh@geoplan.ufl.edu
Available to the public	Yes. A map viewer is available at http://data.labins.org/imf2/FREAC/FNAI.jsp? and data can be obtains at the Collins Center website listed above.
Name of model	Florida Ecological Greenways Network (FEGN), the ecological component of the statewide greenways system and the Florida Ecological Inventory and the Critical Lands and Waters Identification Project (CLIP) .
Date created	<p>1999, 2004. Since 1999, the following updates have been made:</p> <p>a. Identification of a new highest priority class called Critical Linkages in 2002 based on a combination of highest ecological priorities and potential vulnerability to conversion to intensive development.</p> <p>b. An update of the base boundary in 2004, which involved both the deletion of a few areas that were no longer compatible to the FEGN objectives because of conversion to intensive development and addition of areas of high ecological significance based on new or updated ecological GIS data.</p> <p>c. Also in 2004, an update of the priority classes based on the new base boundary. This involved primarily allocation of the closest original priority classes to the areas that were added to the base boundary.</p> <p>d. A refinement of the FEGN priorities as part of the CLIP 1.0 database in 2008. This involved identifying the most important areas for completing linkages with the original Priority 1 (Critical Linkages) and Priority 2 classes. These new top two priorities are named Critical Linkages 1 and Critical Linkages 2. The FEGN has eight priority classes described in the following sections.</p>
Data date range	<p>1999-present . Florida ecological inventory data are updated annually as appropriate. (For reports: http://www.dep.state.fl.us/gwt/network/network.htm)</p> <p>CLIP data are up-to-date as of 2003-05. FEGN priorities within CLIP were updated in 2008.</p>

Model description	The Ecological Network includes hubs, which are large, regionally important protected areas or entry points, and sites, which are smaller or more locally important areas. The network cuts across county, local, and watershed divisions, necessitating a cooperative planning and implementation effort. The FEGN is available through the Florida Geographic Data Library (FGDL), as a data layer included in CLIP, as part of the Florida Natural Areas Inventory Florida Forever Needs Assessment. Reports detailing the development and revisions of the FEGN are on the Florida Department of Environmental Protection's website. CLIP includes a revision of the FEGN priorities by refining the two highest priority classes in the FEGN and creating a new eight class set of priorities (versus the older six priority class system). In addition, CLIP provides an important vehicle for making the FEGN available to a large audience by packaging it within a set of other relevant conservation GIS data that are useful for a wider variety of conservation and land use planning purposes.
Use model with ArcGIS™	Yes
Resolution	Varies
Coverage	Statewide. CLIP report: http://www.collinscenter.org/resource/resmgr/Century_Commission/CLIPRptJune08.pdf
Model purpose/use	<p>The Florida Ecological Greenways Network (FEGN) is part of the legislatively adopted Florida Greenways Plan administered by the Office of Greenways and Trails (OGT) in the Florida Department of Environmental Protection (Florida Statutes, Chapter 260). The FEGN was delineated as the ecological component of a Statewide Greenways System plan developed by the DEP Office of Greenways and Trails (OGT) and University of Florida, under guidance from the Florida Greenways Coordinating Council and the Florida Greenways and Trails Council. The FEGN identifies areas of opportunity for protecting a statewide network of ecological hubs and linkages designed to maintain large landscape-scale ecological functions including focal species habitat and ecosystem services throughout the state.</p> <p>The FEGN aggregates various data identifying areas of ecological significance from the Florida Natural Areas Inventory, Florida Fish and Wildlife Conservation Commission, existing and proposed conservation lands, and other relevant data. These data were combined to identify large, landscape-scale areas of ecological significance (ecological hubs), and a network of landscape linkages and corridors connecting the hubs into a statewide ecological greenways system (ecological greenways and wildlife corridors).</p>
Local use (yes/no)	Yes. The FEGN is also used by state agencies including DEP, Florida Fish and Wildlife Conservation Commission, Florida Department of Community Affairs (DCA), and Florida Department of Transportation to guide relevant planning efforts. various federal, state, regional, and local governmental entities are using CLIP data for a variety of purposes though that use varies across geographic areas and jurisdictional arenas. However, CLIP is intended primarily for state and regional planning scales so it may overlook local resources that a county or town may consider significant. See partial list of localities in implementation section.
If yes to local, how used	Used for local and regional planning and design activities involving transportation, stormwater and changes to the Future Land Use Map in the State Comprehensive Plan.

Case examples of use	The City of Tallahassee and Leon County also have an extensive greenway program and there are resource-specific plans, such as the Loxahatchee Greenway Network Project that addresses the watershed scale.
Plans for expansion	Yes.
If yes to expansion, how	Currently under a State Wildlife Grant (July 2010 - June 2012) both the FEGN base boundary and priorities will be revised using both updated and additional data for land use and areas of ecological significance, with additional attention to impacts of climate change and specifically sea level rise.

Implementation

In 2008, for the Critical Lands and Waters Identification Project, two additional priority levels were added to the existing FEGN priority classes as a strategic subset of the original Priority 1 and Priority 2 areas. These two new highest priority classes, Critical Linkages 1 and Critical Linkages 2, were delineated by identifying the areas within Priority 1 and Priority 2 linkages that were considered most important for completing a statewide ecological network of public and private conservation lands. These Critical Linkages were reviewed and accepted by the CLIP Technical Advisory Group as part of the development of the CLIP database and identification of CLIP statewide conservation priorities. These new priorities were also accepted by the Florida Greenways and Trails Council in December 2008. All priority levels within the FEGN are potentially important at the regional and local scales for identifying large, connected landscapes and wildlife corridors, but Critical Linkages 1 and 2 and Priority 1 and 2 Linkages collectively are the areas with the highest state and regional significance. The FEGN priorities are:

1) Critical Linkages: These Critical Linkages, which are a subset of the original Priority 1 linkages, are critical for completing a connection between existing conservation lands. Critical Linkages 1 are defined as areas with very high ecological significance while also being most threatened by development.

2) Critical Linkages: These Critical Linkages, which are a subset of the original Priority 2 linkages, are critical for completing a connection between existing conservation lands. Critical Linkages 1 and 2 together would complete a statewide ecological network containing the most important large intact landscapes and best connection opportunities.

Priority 1: These are the remaining areas of Priority 1 linkages not included within Critical Linkages

Priority 2: These are the remaining areas of Priority 2 linkages not included within Critical Linkages 2.

Priority 3: Priority 3 linkages provide significant alternate routes to higher priority linkages.

Priority 4: Most Priority 4 linkages provide important riparian corridors within Florida and to other states. One Priority 4 linkage is needed to protect the northern half of the St. Johns Florida black bear population.

Priority 5: Priority 5 linkages represent other regionally significant opportunities to protect large intact landscapes.

Priority 6: Priority 6 includes all other areas of large intact landscapes that support protection of a statewide ecological network.

In addition to those projects described above, the following counties, regional planning councils and water management districts have used the FEGN or CLIP data for local green infrastructure planning as a singular plan or as part of larger planning activities:

- East Central Florida Regional Planning Council
- Central Florida Regional Planning Council
- Northeast Florida Regional Council
- North Central Florida Regional Planning Council
- Southwest Florida Water Management District
- Alachua County
- Highlands County
- Hernando County
- Volusia County

Examples: <http://www.cues.fau.edu/toolbox/subchapter.asp?SubchapterID=13&ChapterID=13>

There are many other examples of how green infrastructure planning has been implemented locally. The Conservation Fund and 1000 Friends of Florida joined together in the 1990s in Martin and Palm Beach counties and the associated 18 local regional, state, and federal agencies over concerns about the impacts of growth and development on the Loxahatchee River and its 500,000-acre watershed. They established a consensus-based regional green infrastructure network - Loxahatchee Greenway Network Project - that utilized GIS, including the Florida State Ecological Network, to identify ways to protect the Loxahatchee River and its wildlife, vegetation, wetland systems, and water supply. Local and regional planning agencies, businesses, and communities have incorporated the greenway plan into their planning efforts.

The City of Tallahassee and Leon County have an extensive greenway program. The Tallahassee Blueprint 2020 and Beyond was the result of a year-long planning process by the Economic and Environmental Consensus Committee (EECC). The EECC's report recommended a plan to tie gray and green infrastructure improvements together and use them to stimulate economic development in targeted areas.

In June 2010, the West Florida Regional Planning Council began an agreement with the Department of Agricultural and Consumer Services Division of Forestry for the promotion and development of a Green Infrastructure plan for a 10-county region of Northwest Florida. The report on green infrastructure approaches to planning can be found at <http://www.wfrpc.dst.fl.us/barcgreeninfrastructure>. The report uses a number of ideas from The Green Infrastructure Center's website. The outreach for this project is intended to educate local officials, the general public, and others about how to incorporate green infrastructure into their planning and development processes.

* The GIC wishes to acknowledge Tom Hctor from the University of Florida and the Collins Center for Public Policy for providing most of the information for Florida's listing in this report.

South Carolina

South Carolina	Data and Models Summary
Date information obtained	14-Dec-2010
Name of program	South Carolina Dept. of Natural Resources GIS Data Resources
Web address	http://www.dnr.sc.gov/GIS/gisdata.html
Contact person	Dr. Jim Scurry or Tim De Troye,
Contact info.	Dr. Scurry: scurryj@dnr.sc.gov, phone: (803) 734-9494 Mr. DeTroy: detroyet@gis.sc.gov, (803) 734-3894
Available to the public	Yes
Name of model	Not a model but a series of data layers available for download. Includes land resources such as hydrology and lands managed by the DNR and aquatic resources such as intertidal reefs and oyster beds.
Model description	The data layers developed as part of this effort are: soils, wetlands/land use, digital line graphs, digital elevation models and digital raster graphics (scanned topographic quadrangle maps). The digital raster graphics files are provided by the S.C. Department of Commerce.
Resolution	n/a
Coverage	statewide
Model purpose/use	The data are available free of charge to the public.
Local use (yes/no)	Yes
If yes to local, how used	Upstate Forever – Spartanburg, see text description.
Case examples of use?	Yes.
Notes:	The state's GIS data resource serves as a GIS data clearing house and does not provide a strategic plan or base map for localities or regions to build upon.

Implementation

Upstate Forever – Spartanburg: With assistance from the Conservation Fund, Spartansburg completed the Spartanburg County Rapid Parks Assessment in 2006. The rapid assessment facilitated identification and prioritization of parkland, greenway, and greenbelt protection opportunities that advance the goals of local parks and active living advocates. The assessment also identified opportunities for existing park expansions, greenway trails, and a potential greenbelt along the Palmetto Trail and Pacolet River. In addition to an array of policy and funding recommendations focused on securing new parks and open space, Upstate Forever – Spartanburg also received a customized ArcGIS™ system for future planning and evaluation work and is utilizing the rapid assessment to garner support for more parks and protected open space.

Kentucky

Kentucky	Data and Models Summary
Date information obtained	14-Dec-2010
Name of program	No mention of green infrastructure programs or models
Web address	http://kygeonet.ky.gov/govmaps/
Available to the public	Yes the web portal for accessing data is available to the public.
Name of model	No model currently exists. Data can be assembled through clearinghouse and other agencies. The KyGovMaps Site helps people find commonly used layers and maps for a better understanding of statewide issues and trends.
Model description	KYGEONET is the Geospatial Data Clearinghouse for the Commonwealth of Kentucky http://kygeonet.ky.gov/
Notes	There are local green infrastructure plan examples.

Implementation

While the state does not have a green infrastructure model, there are local examples of green infrastructure planning in Kentucky, a few of which are highlighted in this section. Campbell County completed a green infrastructure report to look at farmland conservation called The Strategic Implementation Plan. The plan was adopted by the Campbell County Conservation District in April 2007, based on the American Farmland Trust's 2005 farmland study and it recommended prioritizing what farmland should be saved. The report provides an inventory of county farms based on actual land use. http://home.fuse.net/campbellcd/farm/Green%20Infrastructure%20Report_Oct2010_apf.pdf

The Floyds Fork Greenway Master Plan designed by Wallace Roberts and Todd LLC establishes the general design direction for over 3,200 acres of permanently protected park land on the eastern edge of the Louisville, KY. The plan defines a blueprint to increase biodiversity through habitat preservation and enhancement, improve water quality through innovative stormwater management techniques, preserve agricultural land, and measure the regional sustainability costs and benefits of plan proposals implemented over time. For more see: <http://www.asla.org/2009awards/572.html>

Tennessee

Tennessee	Data and Models Summary
Date information obtained	15-Dec-2010
Name of program	Land Trust of Tennessee
Web address	http://www.landtrusttn.org/
Name of model	There is no government model available. Efforts are through the land trust.
Model description	Land Trust for Tennessee is combining data from the Southeast Ecological Framework Project with other GIS data layers (property parcels > 100 acres, agricultural land use, prime farmland soils, proximity to existing public/protected lands, proximity to the historic features, proximity to potential blueway features, and within predicted high growth area) to identify properties matching multiple conservation / recreation objectives. Model suggests focus areas in each county at the parcel level.
Local use (yes/no)	Yes
If yes to local, how used	Used on the regional level (described below) to create a roadmap for the strategic conservation and creation of green spaces, by both the public and private sectors. A major motivation is to protect the landscape of middle Tennessee from future flooding.
Case examples of use	The Nashville/Davidson County Open Space project (see implementation.)
Notes	While there is not a state model, there are a number of local green infrastructure planning efforts, a few of which are highlighted below.

Implementation

The Nashville/Davidson County Open Space project is a joint public/private effort between the Metropolitan Government of Nashville and Davidson County and The Land Trust for Tennessee. The project uses GIS data to map natural and cultural resources and then collects stakeholder input. The results of the plan - recommendations for conserving priority areas and acquiring needed investments in green infrastructure - will be integrated into department master plans, planning policies, and private organization's priority areas. For more: <http://www.conservationfund.org/green-infrastructure-nashville>

Also of note, the Beaver Creek Watershed Green Infrastructure Plan can be found at <http://www.tdot.state.tn.us/sr475/library/bcgitdot.pdf>. While this is more of a study than a specific implementation plan, the document shows some interesting approaches for prioritizing green infrastructure assets, as well as their relationship to the built environment.

Blount County also has a green infrastructure plan (2009) that can be accessed here: <http://www.blounttn.org/Planning/Blount%20County%20Green%20Infrastructure%20Plan%207-23-2009%20Adopted.pdf> The plan includes the land use and green infrastructure maps along with detailed documentation for how the plan was constructed and the process for stakeholder engagement. It also includes a set of principles and practices for plan implementation.

The Tennessee Environmental Council's Sustainable Tennessee Agenda 21 for 2011 calls for expanded green infrastructure planning: <http://www.tectn.org/fckeditor/file/SustainableTN2011FinalAgenda-012411.pdf>

Georgia

Georgia	Data and Models Summary
Date information obtained	14-Dec-2010
Name of Program	Georgia Spatial Data Infrastructure
Web Address	http://gis.state.ga.us/
Model Description	The Georgia Land Conservation Program (GLCP) and Georgia Department of Natural Resources (DNR) conducted a joint effort in 2009 to map the state's conservation values and identify regions of importance. This initiative produced a statewide geographical representation of the program's ten conservation criteria. A data layer was created for each of the ten criteria indicating the presence or absence of specific conservation features. Using Geographic Information Systems (GIS) software, these layers were then placed one on top of another over a base map of Georgia. Darker shaded areas represent overlap between a greater number of conservation criteria than lighter shaded areas. The purpose of the Clearinghouse is to collect, document, format, and publish GIS information collected by multiple agencies of Georgia state government. The Georgia GIS Data Clearinghouse is operating with no state funding since July 1, 2009. However, both clearinghouse nodes at Georgia Tech and UGA/ITOS continue to operate the Clearinghouse and the data repository websites including GISCC specific web pages.
Use model with ARCGIS™	Yes
Local Use (yes/no)	Yes
If yes to local, how used	The data are intended to support a regional approach to management and land-use planning in southeast Georgia. The GLCP has begun sharing this information with local and regional governments, other state agencies, and private sector conservation partners and will be targeting the darkest (priority) areas for ongoing outreach efforts.
If used locally or regionally, describe extent	The Georgia Forestry Commission (see implementation.)
Plans for expansion	No
Notes:	The Georgia Forestry Commission held a GI workshop on 8/19/2010

Implementation

The Georgia Forestry Commission received a grant from the USFS to develop an Integrated Green Infrastructure Management System for the Okefenokee Swamp and surrounding coastal plain region in southeast Georgia. The project proposed to create a synergistic system to identify, link and collectively manage these diverse ecosystems. The plan is one of four Green Infrastructure pilot studies supported by the Southeast Region of the USFS.

<http://www.fs.fed.us/r8/spf/grants/documents/FY08%20Competitive%20Process/Funded%20Proposals/FY08%20GA%20Integrated%20Green%20Infrastructure%20Mgmt%20System.pdf>

The Atlanta Regional Commission, the Georgia Conservancy and the Trust for Public Lands developed a Green Infrastructure Toolkit:

http://documents.atlantaregional.com/Land%20Use/lu_greenpace_toolkit_1009.pdf The project created an inventory of existing parks and greenspace in the 20-County Atlanta Region and a Green

Infrastructure Priorities Map. The priorities maps provides an identification of areas in the region that could have conservation value within a regional network of protected greenspace. The map was developed using criteria established by the State of Georgia to identify lands that may serve a conservation purpose (see page 11 for criteria). ARC developed and executed a methodology using Geographic Information Systems (GIS) to map these areas. The resulting map is a coarse, graphic illustration of potential priority areas. ARC, Georgia Conservancy and TPL will engage stakeholders from across the region to further refine priorities. The map viewer can be accessed here: <http://mapping.atlantaregional.com/essentials/web/Viewer.aspx?Site=ARC>

Alabama

Alabama	Data and Models Summary
Date information obtained	14-Dec-2010
Name of program	No one program exists. GIS data can be put together from several sources in the state described below.
Web address	NOAA Coastal Service Center Projects: http://www.csc.noaa.gov/regions/gulfcoast.html Geological Survey of Alabama - Alabama NSDI node with links to downloadable data sets: http://www.gsa.state.al.us/gsa/gis_data.aspx USDA National Forest Service Alabama GIS: http://www.fs.fed.us/r8/alabama/maps/gis_databases.shtml Water Quality GIS: http://www.aces.edu/waterquality/gis_data/ Water Resources of Alabama - USGS: http://al.water.usgs.gov/ Alabama Data Portal: http://portal.gsa.state.al.us/
Name of model	No model currently exists.
Local use (yes/no)	The Alabama Forestry Commission advertized federal cost share funds available to support Green Infrastructure demonstration projects in the state in 2008, but it is unclear exactly which projects have been funded.
Notes	The Alabama Forestry Commission outlines their goals to support Green Infrastructure Planning in their 2009 - 2011 Strategic Plan. http://www.forestry.state.al.us/

Implementation

The GRCA Green Progress Report published annually by the Green Resource Center for Alabama provides an annual update on environmentally-friendly projects including new greenways and land conservation efforts: <http://www.greenalabama.org/wp-content/uploads/2010/12/Green-Progress-Report-20101.pdf>

Mississippi

Mississippi	Data and Models Summary
Date information obtained	14-Dec-2010
Name of program	No statewide model
Web address	http://www.gis.ms.gov/portal/detail.aspx?aspect=Environmental&realm=All&dom=
Available to the public	The Mississippi Geospatial Clearinghouse (MGC) provides access to a comprehensive spatial information warehouse of Geographic Information Systems (GIS) for use by government, academia and the private sector.
Use model with ARCGIS™	Data layers are available for download but they are only basic information such as soils, hydrography, land cover etc.
If used locally or regionally, describe extent	There are several examples of green infrastructure planning in Mississippi. See link below.
Case examples of use	https://sites.google.com/site/mississippigreeninfrastructure/resources/green-infrastructure-ccase-studies
Plans for expansion	Yes, at the local scale.
If yes to expansion, how	See below.

Implementation

The National Association of Regional Councils, in partnership with the U.S. Forest Service, recognized and supported the Southern Mississippi Planning and Development District as a Mississippi Valley Regional Center of Excellence for their green infrastructure and Landcare program focused on greenway mapping and community engagement.

The Mississippi Green Infrastructure Training and Resources website has information, training templates and upcoming as well as resources and a speaker's bureau for green infrastructure. They also list case studies and presentations for download. <https://sites.google.com/site/mississippigreeninfrastructure/home>. Green infrastructure projects highlighted in the case studies are underway and have already achieved significant success such as, new greenway trails, tree planting projects and tree canopy evaluations and new donations for land trusts to expand conservation easements. Examples of partners include the North Central RC&D, the Natural Resources Initiative of Mississippi with technical support from the Conservation Fund and financial support from the U.S. Forest Service.

Arkansas

Arkansas	Data and Models Summary
Date information obtained	14-Dec-2010
Name of program	Plan for Green Infrastructure-Linking Arkansas Communities, 2009-2010
Web address	http://www.fayettevillenatural.org/whats-happening.php#Plan for Green Infrastructure
Contact person	Bob Caulk, Chairman, Fayetteville Natural Heritage Association
Contact info.	(479) 973-2968
	bobcaulk@cox.net
Name of model	The state does not have a model, but Washington County's Regional effort is a good example.
Model description	Definitions of what should constitute the cores, hubs, corridors and sites were determined by the project's working groups. Forest coverage was extracted from the most recent Land Use Land Cover imagery (2006), otherwise cores were identified by Working Group sub-committees. Hubs were identified from three sources: 1) areas designated as highly conservation worthy by a prior study, 2) public lands, and 3) already protected lands. The three types were merged, a minimum size of 100 acres was applied and the resulting 25 hubs were ranked by habitat quality and size. Hubs were ranked by source, habitat diversity, and size. The Urban Forest Conservation Assessment (UFCA) for Fayetteville, Arkansas (UFCA), October 2006, was used to designate habitat quality for hub delineation. The UFCA is a complex GIS model that ranks ownership parcels for their conservation value in terms of quality of both aquatic and terrestrial habitat, with emphases on forest coverage, absence of man-made structures, and parcel size, among other characteristics.
Model purpose/use	The plan is intended to provide a scientific, and predictable planning tool for coordinating both conservation of natural resources and encouragement of growth in the Washington County region of the state. One of the plan's objectives is to provide a demonstration case study as a model for future developments across Arkansas and the USFS Southern Region.
Local use (yes/no):	Yes. The Arkansas Forestry Commission Urban Forestry Program, the Beaver Water District, and the Fayetteville Natural Heritage Association (FNHA) received a \$25,000 grant from the USFS to develop a green infrastructure plan. The plan is one of four Green Infrastructure pilot studies supported by the Southeast Region of the USFS. The project study area is confined to Washington County and focuses on the city limits and planning areas of the municipalities of Fayetteville, Farmington, Greenland, and Johnson and the Wedington Wildlife Management Unit of the Ozark National Forest.
If yes to local, how used	The plan uses the UFCA and other GIS mapping to analyze science-based goals and objectives and create maps of natural and cultural resources.

If used locally or regionally, describe extent	The goal is to have the plan adopted by all local governments and to assist policy makers and the League of Women Voters in developing legislation to support water quality and quantity in the region.
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Implementation

A grant project to initiate a regional strategic conservation plan was conducted by Fayetteville Natural Heritage Association in partnership with Beaver Water District funded by the United States Forest Service through the Arkansas Forestry Commission's Urban Forestry Program (as described above). The report has been completed but is not yet published online. It can serve as a case study for application by other regions of the state. The report states that the FNHA, in partnership with the Center for Advanced Spatial Technologies (CAST) at the University of Arkansas, will make over 50 GIS map layers available for viewing in the future via online GIS software linked to the FNHA's website: <http://www.fayettevillenatural.org/whats-happening.php>.

Louisiana

Louisiana	Data and Models Summary
Date information obtained	14-Dec-2010
Name of program	While Louisiana does not have a green infrastructure model or much GIS information on line, the state does make its natural heritage data of rare, threatened and endangered species available by request.
Web address	http://www.wlf.louisiana.gov/wildlife/how-request-data
Contact person	Carolyn Michon
Contact info.	Carolyn Michon at cmichon@wlf.la.gov

Implementation

In 2002, American Forests completed an urban tree canopy analysis for the New Orleans Metro Region and that report is available http://www.americanforests.org/downloads/rea/AF_NewOrleans.pdf. The total stormwater retention capacity of the urban forest in New Orleans is 370 million cubic feet in avoided storage of water and is valued at \$741 million (based on construction costs estimated at \$2 per cubic foot to build equivalent retention facilities).

The Southern University Agricultural Research and Extension Center (SUAREC) put together a scientific poster on Green Infrastructure Evaluation of the East Baton Rouge. One of the goals of the SUAREC is to utilize cutting edge spatial technologies and environmental simulation to address the role of urban forest ecosystem in urban water quality and urban hydrology. A study evaluated structural changes in the Green Infrastructure in East Baton Rouge Parish, Louisiana. Remote Sensing and GIS technology were used to examine change of urban ecosystems damaged by construction, storms, or invasive species. Changes in species diversity and loss of indigenous species were evaluated along with land use, right-of-way management and wildland-urban interface issues.

<http://www.googlesyndicatedsearch.com/u/SUAgCenter?q=green+infrastructure>

Oklahoma

Oklahoma	Data and Models Summary
Date information obtained	15-Dec-2010
Name of program	Edmond, Oklahoma Green Infrastructure Initiative
Web address	http://edmondok.com/government/boards/gii
Name of model	There is no state model.
Date created	Mapping efforts are currently underway.
Model description	The U.S. Forest Service/Oklahoma Forestry Services provided a grant in 2009 for developing a Green Infrastructure plan.
Model purpose/use:	The project will create a GIS layer for the city that can be used by staff, planning commission, and the city council to make decisions and guide policy.
Local use (yes/no):	Yes
If yes to local, how used:	It is being used to focus efforts in acquiring conservation easements and create changes in city code to provide approaches to construction that are environmentally sensitive. It is also providing guidelines for land conservation organizations such as the Edmond Land Conservancy and for community planning staff to promote and establish conservation of critical Cross Timbers forestlands. http://www.fs.fed.us/r8/spf/grants/documents/FY08%20Competitive%20Process/Funded%20Proposals/FY08%20OK%20Edmond%20Green%20Infrastructure%20Initiative.pdf

Texas

Texas	Data and Models Summary
Date information obtained	30-Jan-2011
Name of program	Texas Parks and Wildlife Department GIS Lab
Web address	http://www.tpwd.state.tx.us/landwater/land/maps/gis/index.phtml
Available to the public	Yes
Name of model	No state model is available, but state data layers are available for download to support GI asset mapping.
Model description	<p>In addition to data available from the General Land Office, the Texas Parks and Wildlife Department (TPWD) has a GIS Lab that provides biological and hydrological data and maps. The Texas Ecological Systems Classification Project is underway (with support from USFS, NatureServe, and others). Phases 1, 2 and 3 of the project are complete. These phases cover 80,168,327 acres (47% of Texas' land area).</p> <p>There are 73 Ecological Systems mapped in Phases 1 thru 3 and 288 mapping subsystems. This includes floristic details refined by field sampling data collected by project personnel, ecological processes, such as fire, grazing, flooding and the soils and geology. There is also an Interpretive Guide with a general description of each ecological system and subordinate Mapping Sub-systems and representative photos for most Mapping Sub-systems, a list of public properties where an example of each system may be viewed, and a map showing the distribution of each sub-system.</p>
Use model with ARCGIS™	Yes. Data layers available for use with ArcGIS™
Resolution	Varies
Local use (yes/no)	Yes. See implementation.
If yes to local, how used	Used to guide conservation efforts, development, community growth.
Case examples of use	Yes
Notes	<p>Houston Tomorrow and the Regional Plan Association held an infrastructure workshop in 2009 with a focus on green infrastructure.</p> <p>http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_pl_e01_00_867_land_water_plan_01_2010.pdf</p>

Implementation

The Conservation Fund, in partnership with Angelina County and the Cities of Lufkin and Diboll, completed the Lufkin-Angelina County Green Infrastructure Plan in 2008. The rapid assessment delineates the County's ecological network of forests, wetlands, and aquatic systems and possible community conservation projects to achieve the county's conservation and economic vision.

The City of El Paso adopted the Open Space Master Plan on March 13, 2007. The Open Space Master Plan is a green infrastructure plan intended to mitigate a number of concerns the municipality has regarding current and future growth. Development of the plan involved extensive community outreach to develop criteria to rank the lands to be preserved.

Puerto Rico

The USFS helped to fund the development of a national report, "Green Infrastructure and Our Parks", in 2003. The plan recommends coordination between the PNC (National Park Service) and DNER on the development of a GI Plan. http://www.gobierno.pr/NR/rdonlyres/F165B33C-9749-4F03-9332-BB191FDC7580/0/INfraestructuraVerde_1.pdf

US Virgin Islands

No examples of green infrastructure planning were found.

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Duerksen, Christopher and Snyder, Cara. *Nature Friendly Communities, Habitat Protection, and Land Use Planning*. Washington, D.C., Island Press. 2005.

Helpful Websites:

Southern Forest Research Station -- Statistics on Southern Forests: www.srs.fs.usda.gov

The Conservation Fund Green Infrastructure Network: www.greeninfrastructure.net/what_we_do

Green Infrastructure Center - case studies: www.gicinc.org/projects.htm

* For a more detailed bibliography, please visit: <http://www.gicinc.org/resources.htm>