Executive Summary

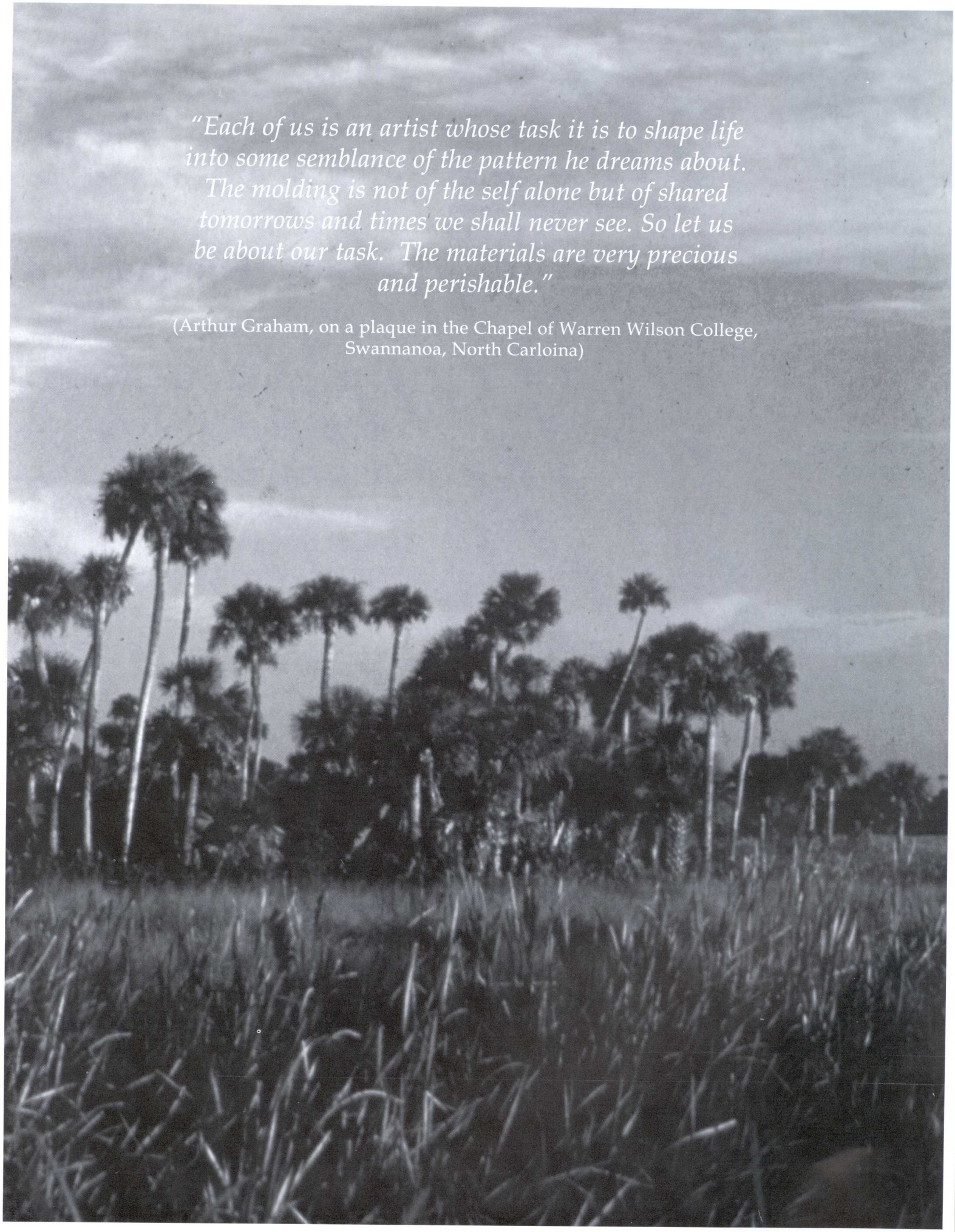
The Florida Statewide Greenways System Planning Project

Recommendations for the Physical Design of a Statewide Greenways System

Prepared by:

The University of Florida's
Department of Landscape Architecture
Department of Urban and Regional Planning
GeoPlan Center
Department of Wildlife Ecology and Conservation
Program in Landscape Ecology

July 1999



"Each of us is an artist whose task it is to shape life into some semblance of the pattern he dreams about. The molding is not of the self alone but of shared tomorrows and times we shall never see. So let us be about our task. The materials are very precious and perishable."

(Arthur Graham, on a plaque in the Chapel of Warren Wilson College, Swannanoa, North Carloina)

Executive Summary The Florida Statewide Greenways System Planning Project

Introduction

This is the Executive Summary of the Final Report for the *Florida Statewide Greenways System Planning Project*, which describes work completed from January 1995 through December 1998. The project was undertaken by the University of Florida in cooperation with the Florida Department of Environmental Protection, the Florida Department of Transportation, the Florida Greenways Commission, the Florida Greenways Coordinating Council, and the Florida Recreational Trails Council. The Commission's 1994 vision statement describes the Florida Greenways Concept :

> *In the 21st century, Florida has a protected system of greenways that is planned and managed to conserve native landscapes, ecosystems and their species; and to connect people to the land and their archaeological, historic and cultural resources. Parks and open spaces are linked by corridors that provide opportunities for hiking, bicycling, horseback riding, and canoeing. Florida's history and geography come alive as users explore old trails, roads, canals, rivers, and archeological sites. Preserved historic homes, museums, and monuments along the way provide a link to Florida's roots. Florida's diverse wildlife species are able to move between feeding and shelter areas within their ranges, and native landscapes and ecosystems are protected, managed, and restored through strong public and private partnerships.*
>
> (Florida Greenways Commission 1994, p. 1)

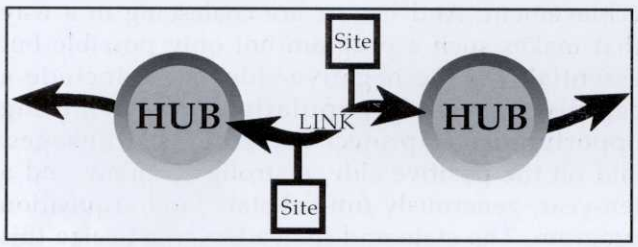
The primary objective of the University of Florida's work was the preparation of a recommended design or a physical plan for Florida's Statewide Greenways System. The University of Florida's recommended Greenways Vision includes approximately 57% of the state. Nearly 63% of those lands are either currently publicly owned, are proposed for public ownership, or are open water features. The remaining 37% of the proposed system lands are privately owned. In addition, nearly 7,200 miles of terrestrial trails are proposed to connect Floridians with their natural surroundings and with cultural and historic sites located throughout the state. Another 2,500 miles of paddling trails are also included.

The Florida Greenways Initiative is under scrutiny by many people in many places. The state has the potential to set a new standard for conservation, cultural heritage protection, and recreation achievement. And factors are coalescing in a way that makes such a program not only possible but essential. On the negative side, these include a rapidly increasing population and dwindling opportunities to protect key ecological linkages; and on the positive side, a strong economy and a ten-year, generously funded state land acquisition program. The state and its leaders must seize this opportunity to make a difference in the future.

What is a Greenway?

A greenway is a corridor of protected open space that is managed for conservation and/or recreation. Greenways follow natural land and water features, like ridges or rivers, or human landscape features like abandoned railroad corridors or canals. They link natural reserves, parks, and cultural and historic sites with each other and, in some cases, with populated areas. Greenways not only protect environmentally sensitive lands and wildlife, but also can provide people access to outdoor recreation and enjoyment close to home.

A greenways system is composed of hubs, links and smaller sites consisting of natural or restored native habitat as well as recreational, historical, and cultural features. The hubs anchor the system and provide an origin or destination for people, wildlife, and ecological processes moving to or through it. Hubs come in many different sizes, from large protected nature reserves, to smaller regional preserves and parks, to ecological, recreational and/or cultural/historic sites that serve as trailheads. Links are the connections that enable the system to work. They range in size and function from large ecologically-based landscape linkages to small multi-use and single use trail corridors.



Components of a Greenways System

Greenways systems can be designed and implemented at many different scales. A local greenways system can encompass natural, recreational, and cultural/historic features within a single community or county. A regional greenways system might link conservation areas, parks, and trails within one or more watersheds. A statewide greenways system can link community and regional greenways systems. Multi-state greenways systems constitute the building blocks for national conservation and recreational strategies. The University Team's charge was the identification of the statewide elements that will serve as the spine or backbone of a complete system. Although some regional elements have been incorporated within the statewide design, most regional elements and all local elements will be designed and incorporated into the Statewide System by community and regional greenways planning initiatives in later phases.

The Benefits of Greenways

A Statewide System of Greenways would have significant ecological, economic, and social benefits for Florida. By helping conserve linked native ecosystems and landscapes, greenways are an important component of statewide, regional, and local conservation strategies. Water and land pathways along greenways can provide recreational and educational opportunities for residents and visitors and provide opportunities to enjoy Florida's unique natural environment, as well as its historical and cultural resources, which can expand tourism and associated businesses. In addition, greenways can be used to protect working landscapes such as farms, groves, and tree plantations. Conservation easements or other agreements affecting these lands can allow traditional land uses to continue, while providing habitat for sensitive wildlife species and corridors for the movement of wildlife and people. Finally, greenways can provide important growth management benefits. Areas of protected lands around and through Florida's towns and cities can help shape urban form and mitigate urban sprawl.

Foundations for the Design of Florida's Statewide Greenways Initiative

With nearly 8 million acres of conservation land in public ownership and an additional 2.5 million acres proposed for purchase by federal, state, water management district, and local programs, Florida is an acknowledged national leader in conservation land acquisition. These valuable resource areas are cornerstones for the development of Florida's Statewide Greenways System. Because they have been safeguarded, Florida has a realistic opportunity to

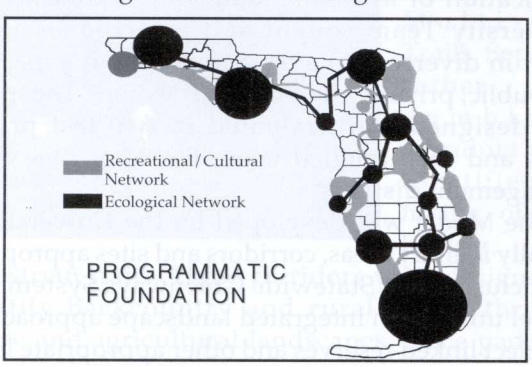
create an integrated, statewide system of protected natural areas and greenways (Florida Greenways Commission 1994, p. 71).

Today's concept of creating an integrated habitat conservation system for Florida grew out of work initiated in the 1980's by Larry Harris, Reed Noss, and others to comprehensively plan for the protection of the state's irreplaceable habitat for native wildlife. The Florida Greenways Program began in early 1991 as a cooperative effort of 1000 Friends of Florida and The Conservation Fund. The goal was to create a vision and framework for a Statewide Greenways System. One of the most significant accomplishments of the Florida Greenways Program was the creation of the Florida Greenways Commission by Governor Lawton Chiles.

The Florida Greenways Commission was created for a three-year period (1993-1995) "to promote the creation of a linked network of greenways and greenspaces across Florida that will benefit the state's citizens, wildlife, and environment." The 40-member Commission represented a wide variety of interests from across the state. The result of the Commission's work in 1993 and 1994 was the preparation of a report entitled *Creating a Statewide Greenways System: for People...for Wildlife...for Florida.* The report presented the Commission's vision and a concept diagram for the Florida Greenways System and over 200 specific recommendations on its creation.

The Commission's concept was that the Statewide System would be composed of two sub-systems or networks: an **Ecological Network**, consisting of ecological hubs, linkages and sites along rivers, coastlines and across watersheds; and a **Recreational/ Cultural Network**, with trail corridors connecting parks, urban areas, working landscapes and cultural/ historic sites. It was the Commission's opinion that connecting greenways and core reserves results in a system that is truly greater than the sum of its parts.

In 1995, Florida's Greenways initiative changed from a non-governmental organization-based Program and a gubernatorially appointed Commission to a government-based Program and a legislatively appointed Council. The DEP was designated the lead state agency. To design a Statewide Greenways System, DEP contracted with the University of Florida to develop the physical design, and worked with the Florida Greenways Coordinating Council in the preparation of a *Five Year Implementation Plan*. The plan was forwarded to the legislature in February 1999 and resulting legislation was signed into law in June 1999.



Integrated Landscape Approach

The University Team used an integrated landscape approach in the formulation of its design goals and objectives and in the subsequent development of the physical plan. This approach, which incorporates environmental analysis, planning, and design at the landscape/regional scale, ensured that a diversity of natural and cultural resource issues were taken into consideration during the design process.

An integrated landscape approach addresses the interrelationships and interactions between humans and the natural world and incorporates a number of defining characteristics. This approach is system-wide as opposed to site-specific; is applied at multiple scales; crosses political boundaries; integrates ecological and cultural considerations; and, is both multi-disciplinary and multi-sector. In addition to these defining characteristics, there are a number of guiding concepts that are fundamental to an integrated landscape approach. These include a sound basis in ecological and environmental sciences; consideration of context as well as content; a link between ecosystem/land use components and processes over space and time; and the use of green infrastructure as a central organizing theme for planning and design activities.

The University Team consisted of professors, research scientists, and graduate students from a number of University of Florida departments and programs including the Department of Landscape Architecture, the Department of Urban and Regional Planning and its GeoPlan Center, and the Department of Wildlife Ecology and Conservation's Program in Landscape Ecology. To that end, the University Team's integrated landscape approach incorporated the theories and principles of a number of different

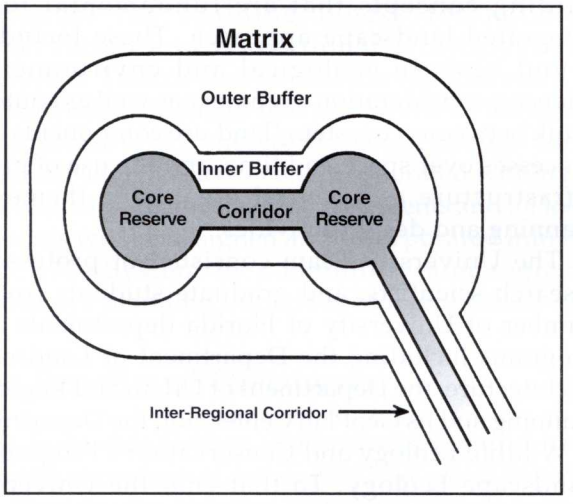
professional disciplines, including: Landscape Ecology and Conservation Biology, GIS Spatial Analysis, and Environmental Planning & Design.

Goals of the Statewide Greenways System Planning Project

The overriding mission of the *Florida Statewide Greenways System Planning Project* was to delineate a physical plan for a Statewide Greenways System, combining the results of GIS modeling and public input while following guidelines contained in the Florida Greenways Commission's December 1994 Report to the Governor. The University's design was based on more specific goals developed in 1995 at the start of the *Project*.

The goal for the Ecological Network was to use a regional landscape approach to design an ecologically functional Statewide Greenways System that:

- conserves critical elements of Florida's native ecosystems and landscapes;
- restores and maintains connectivity among native ecological systems and processes;
- facilitates the ability of these ecosystems and landscapes to function as dynamic systems; and,
- maintains the evolutionary potential of the components of these ecosystems to adapt to future environmental changes.



A model regional reserve network (Noss and Cooperrider, 1994)

The goal for the Trails/Cultural-Historic Network was to include trails in the Statewide Greenways System that provide public access to and promote appreciation, support and conservation of the System's natural, cultural, and historic features, and to provide opportunities for alternative, non-motorized transportation.

The Vision

There were three phases in the University of Florida's design process: development of a GIS decision support model to produce a preliminary plan; modification of the preliminary plan in response to public participation; and, modification of the revised plan in response to landowner participation. Discussion of the process and results of all three phases follows, but the University of Florida views the results from the second phase of the process, the model results reconciled with public comment, as the most complete vision for the Statewide Greenways System.

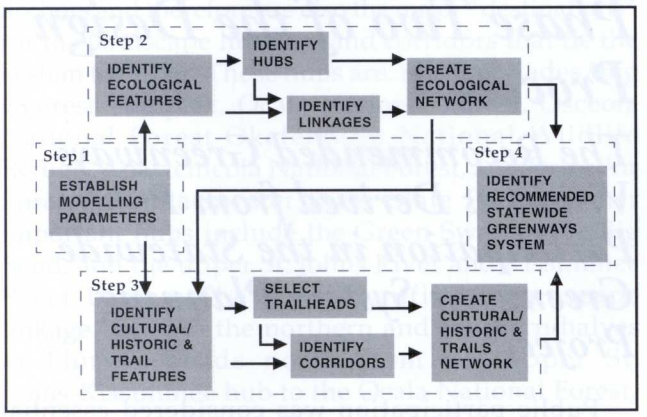
The First Phase of the Design Process

The Florida Greenways GIS Decision Support Model

The University used a geographic information system (GIS) model to define and identify the best locations for greenways within the state. The model was named a Decision Support Model because it was intended to be the first step in delineating or deciding upon a physical plan for the Statewide Greenways System. To ensure the appropriateness of decisions and to seek input on the use and application of available statewide databases, the University Team sought and received technical input in diverse forms from a variety of experts in the public, private, and nonprofit sectors. The model was designed and evaluated in two test project areas and then applied using Florida's five water management districts.

The Model was developed by the University to initially identify areas, corridors and sites appropriate for inclusion in a Statewide Greenways System. The Model utilized an integrated landscape approach to: (1) select linked reserves and other appropriate lands

to protect an ecologically functional System; and (2) identify trailheads, trail corridors and cultural-historic sites that provide public access to and promote the conservation of the System's natural, cultural and historic features.

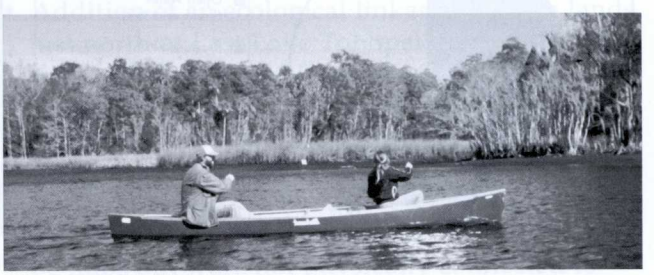


Steps in the GIS Decision Support Model

Available statewide data were used to identify ecological landscape features that could contribute to meeting the design goal for the ecological sub-system. Selection criteria were used to generally categorize both native and non-native landscape features in terms of their significance and compatibility with ecological conservation objectives. The largest areas and areas of highest quality were selected as hubs for the Ecological Network and then linkages among those hubs were identified. The final ecological modeling step was the creation of a preliminary Ecological Network by adding together hubs and linkages.

The next step in the Model was to design the Trails/Cultural-Historic Network. Four distinct terrestrial trail types were identified for modeling purposes: Hiking Trails, Off-Road Biking Trails, Equestrian Trails, and Multi-Use Trails. Separate rather than combined corridors were identified for hiking, offroad biking, and equestrian trails. These corridors were designed to identify backcountry and rural routes through native and agricultural landscapes. Since paddling trail locations are confined to existing water courses, the University Team did not use the GIS model to identify their locations.

The trails modeling objective was to design a recreational trails system, comprised of the five trail types, with three defining features: **Trailheads**, that provide access to the system and are located on publicly-owned land with parking and restrooms; **Trail Corridors**, with physical characteristics that meet the expectations of each user group; and appropriate **Cultural-Historic Sites** that support both. A preliminary Network was created by adding together the trailheads and trail corridors, plus cultural-historic sites for all terrestrial trail types. Paddling trails, identified with the help of the Florida Recreational Trails Council, were added in at this point. The approximately 2,500 miles of paddling trails recommended for inclusion in the Greenways System are all existing paddling trails, and include a Florida circum-navigational trail as well as favorites like the Aucilla, Chipola, Juniper Springs, Wekiva, Peace River, and Loxahatchee River.



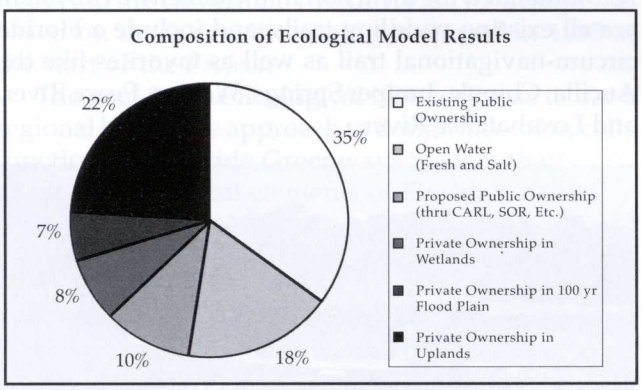
The purposes of multi-use corridors are slightly different from hiking, biking, and equestrian corridors. They are intended to connect key urban areas, possibly supporting alternatives to vehicular transportation, and connect urban multi-use corridors with key natural destinations. Multi-use trailheads in the urban areas include city parks, cultural-historic sites, and museums. It is appropriate for the multi-use corridors to pass through some native landscapes and agricultural landscapes, as well as suburban and urban landscapes. However, multi-use trails, more than other trail types, should not be placed within environmentally sensitive areas, including areas strictly protected for biodiversity/ ecological conservation.

The final step in the Model was to combine the Ecological Network and the Trails/Cultural-Historic Network to represent an initial physical plan for the Statewide Greenways System. The UF completed this design phase in July 1997.

Ecological Model Results

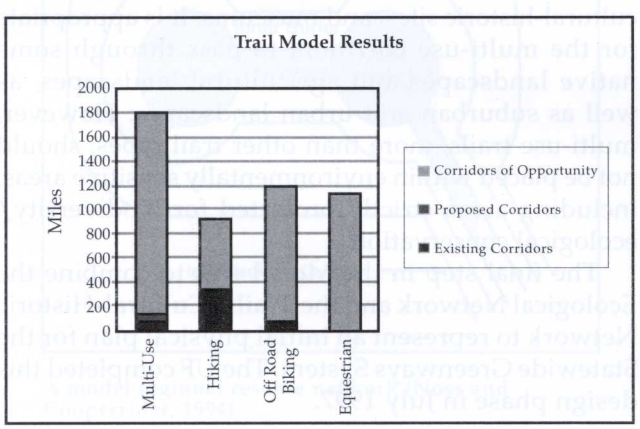
The Ecological Greenways Model Results incorporate approximately 57% of the state including coastal waters. Open freshwater, coastal waters, existing public conservation lands, and private preserves (e.g., Audubon Society and The Nature Conservancy Preserves) compose 53% of the model results. Another 10% of the model result are composed of proposed public conservation lands (CARL or SOR). Other private lands comprise 37% of the results, approximately one-third of which is either wetlands or within 100-year floodplains.

	Acres	% of State
Land Area	18,800,946	47.0
Open Water (Fresh and Salt)	4,002,865	10.0
Total	22,803,811	57.1



Trails/Cultural-Historic Model Results

Almost 2,000 miles of multi-use trails were identified by the model and approximately 1,100 miles of off-road biking and equestrian trails. The model identified a little over 900 miles of hiking trail.



The modeling approach encouraged use of existing trails wherever appropriate, but even so, more than half of the routes identified would have to be newly developed.

Phase Two of the Design Process

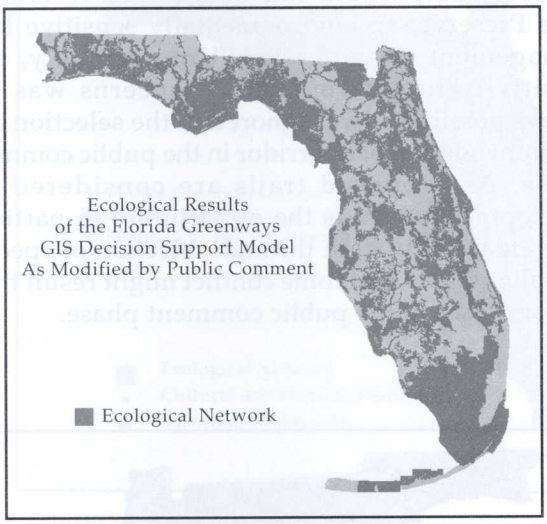
The Recommended Greenways Vision as Derived from Public Participation in the Statewide Greenways System Planning Project

Public participation was considered essential from the inception of the *Florida Statewide Greenways System Planning Project*. The composition of the Florida Greenways Commission and the successor Florida Greenways Coordinating Council with individuals representing diverse interests was meant to guarantee some degree of general public knowledge and understanding of Greenways issues.

More traditional public participation in the design of the Statewide Greenways System continued in two phases. Phase I included the review of goals and objectives on which the physical plan was to be based, and the assumptions and data to be incorporated into the GIS Model. Phase II involved review and comment on the results of the GIS Model and incorporation of those comments into the physical plan. This phase relied on input received predominantly through four forums: the Florida Greenways Workshop Series held in 1996; the work of the six Regional Greenways Task Forces, including public hearings, in 1997 and 1998; the work of the Florida Greenways Coordinating Council, including public hearings, in 1997 and 1998, and the work of the Florida Recreational Trails Council from 1996 to 1998. The result of the Phase II effort was minor modification to the ecological results originally derived by the GIS Model and significant modification to the trails/cultural-historic results.

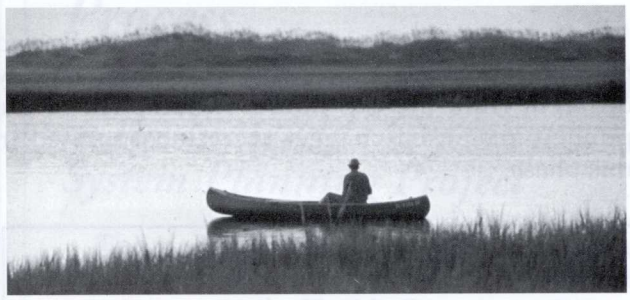
Ecological Model Results as Modified by Public Comment

The Ecological Vision contains the five largest conservation hubs in the state, which serve as anchors and therefore are also the major "destinations" for the landscape linkages and corridors that tie the system together. These hubs are: the Everglades/Big Cypress complex, Ocala National Forest, Osceola National Forest-Okefenokee National Wildlife Refuge, Apalachicola National Forest, and Eglin Air Force Base-Blackwater River State Forest. Other important hubs include the Green Swamp, the Big Bend, and the upper St. Johns River and Kissimmee River basins. The most significant landscape linkage between the northern and southern halves of Florida heads north from the upper St. Johns-Kissimmee hub to the Ocala National Forest.



Probably the most important landscape linkage in Florida runs north from the Ocala National Forest to the Osceola National Forest-Okefenokee National Wildlife Refuge hub through the Cross-Florida Greenway and Etoniah Creek CARL projects, Camp Blanding Military Site, the New River Swamp and Raiford Wildlife Management Area, and the Lake Butler Wildlife Management Area. This landscape linkage would protect a connected and integrated conservation network running from the Wekiva River basin just north of Orlando to the Okefenokee National Wildlife Refuge in northern Florida and southern Georgia.

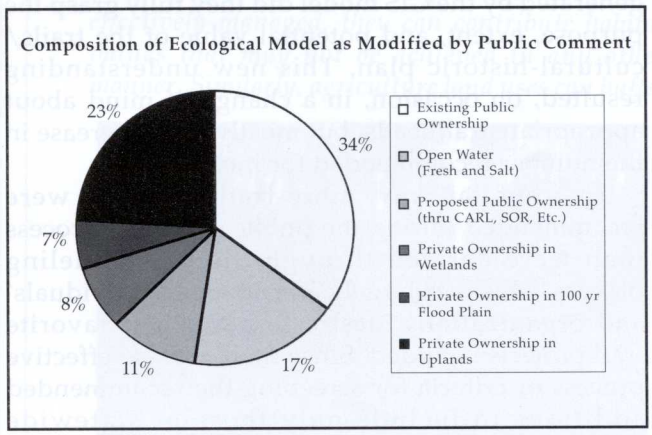
Throughout the state the Ecological Vision also includes significant coastal water bodies with buffers of adjacent wetlands and intact uplands with various degrees of connectivity.



The changes made to the ecological model results through public comment included the following:

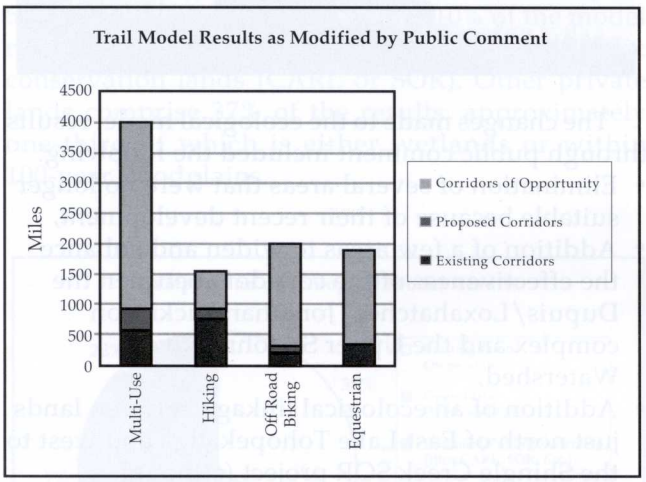
- Elimination of several areas that were no longer suitable because of their recent development,
- Addition of a few areas to widen and enhance the effectiveness of the corridors between the Dupuis/Loxahatchee/Jonathan Dickinson complex and the Upper St. Johns River Watershed,
- Addition of an ecological linkage between lands just north of East Lake Tohopekaliga and west to the Shingle Creek SOR project (although severely threatened by Orlando development),
- Addition of an ecological linkage from the north-central part of the Green Swamp northwest to Lake Panasoffkee, and
- Deletion of four areas that were large enough to be hubs but were not physically connected to the rest of the Ecological Network including two areas in eastern Suwannee County, one area in western Marion County, and lands around Lake Dora, Lake Eustis, and Lake Yale in Lake County.

The modifications resulted in only a slight increase in the overall acreage in the ecological results.



Trails/Cultural-Historic Model Results as Modified by Public Comment

The suggested corridors and trailheads derived through the public comment process were significantly different from the GIS Model Results. All of the publicly proposed changes were incorporated in this phase.

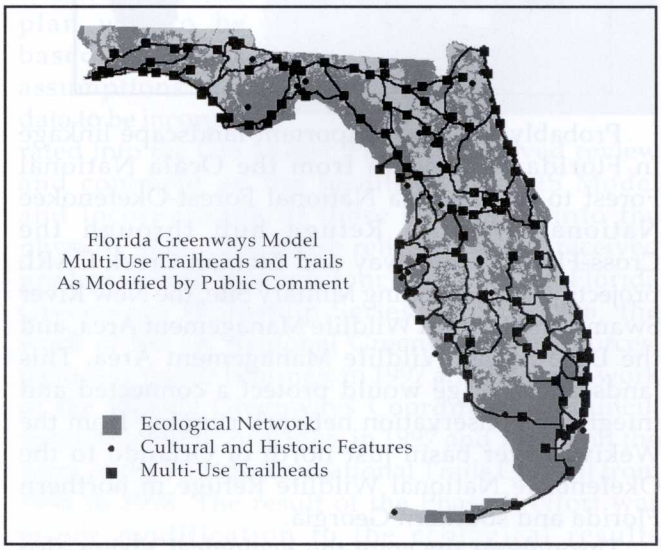


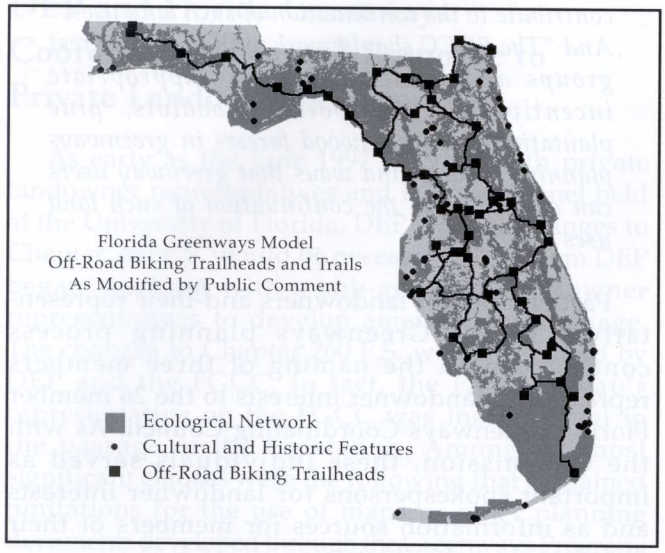
One of the disparities between the model results and public comment was in the identification of trailheads. Trailheads originally selected to support the GIS model were considered less appropriate by trail user groups than those suggested through the review and comment process. There appear to have been two reasons for this. First, fewer people participated in the selection of trailheads for the GIS model than in the period of public review and comment on results. And second, even though some of the same individuals participated in both phases, only after seeing the preliminary results generated by the GIS model did they fully grasp the purpose, extent, and potential value of the trails/cultural-historic plan. This new understanding resulted, on occasion, in a change of mind about appropriate trailheads, but mostly in an increase in the number recommended for inclusion.

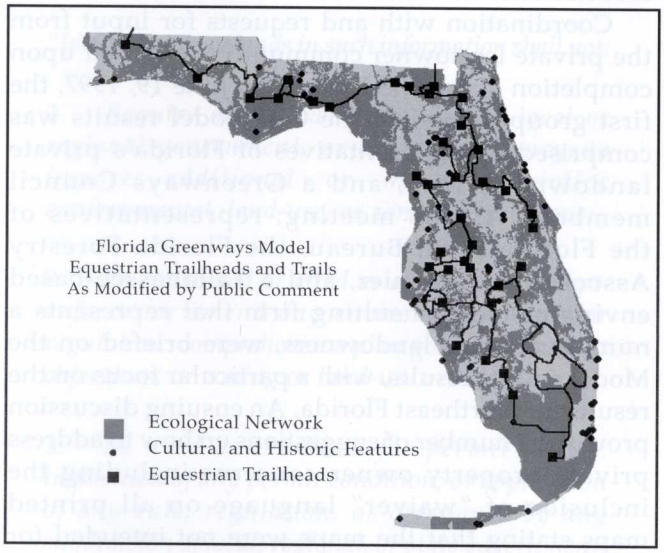
In a similar way, more trail corridors were recommended during the public comment process than were derived through the GIS modeling process. This was largely a product of individuals' and organizations' desire to have their favorite trail projects included. Since there was no effective process or criteria for screening the recommended additions to include only those of statewide significance, essentially every trail recommended for inclusion that could be reasonably linked to other trails of the same type was added. The total number of miles of terrestrial trails identified in the public comment phase was double that identified by the model.

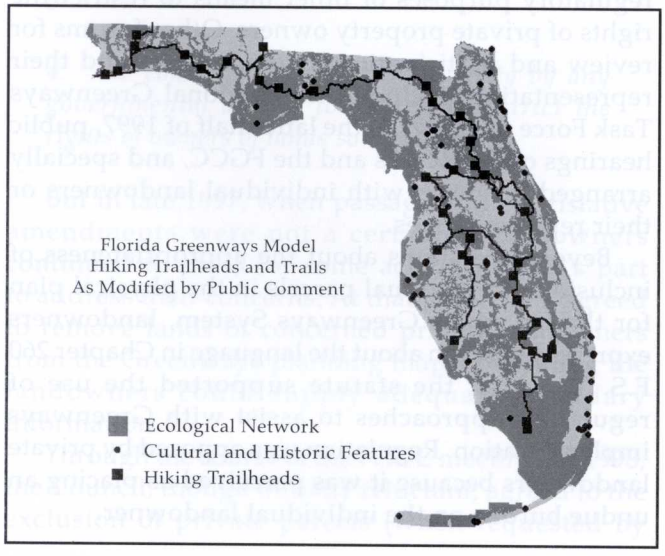
Another factor that altered the trails/cultural-historic recommendations in the public comment phase was the concerted effort to use multi-use connectors to complete trail sub-networks where appropriate. This represents a significant improvement over the trails results derived from the GIS model, because the multi-use trails are coordinated with the single-use trails where appropriate.

One final difference between the trails model results and the trails portion of the Greenways Vision is that the model was constructed to be responsive to environmental sensitivity. For example, a trail corridor, particularly a multi-use trail corridor, would not be allowed to cross a State Preserve, an environmentally sensitive land management classification. Unfortunately, this sensitivity to environmental concerns was not always possible or was ignored in the selection and recommendation of a corridor in the public comment phase. As proposed trails are considered for development, there is the opportunity to partially mitigate this situation through selection of specific trail alignments, but some conflict might result from this omission in the public comment phase.









Phase Three of the Design Process

Private Landowner Participation in the Statewide Greenways System Planning Project

The participation of private landowners in Greenways design began in 1993 with the appointment to the Florida Greenways Commission of four individuals who represented landowner interests. The Commission's 1994 Report to the Governor laid out many fundamental premises about the potential of greenways to serve Florida including those related to the use of private lands. A cornerstone of the Report was the assumption that private lands were critical to the implementation of a Statewide System, but that participation was to be voluntary. The groundwork for inclusion of private lands was laid in a discussion in the 1994 Report regarding Integrated Conservation Systems and the Role of Greenways:

> *"The goal is to protect and manage an overall landscape that effectively protects biological diversity while supporting other compatible and productive land uses in a sustainable manner. Although native ecological communities are the standard for protecting biological diversity, altered ecosystems can also contribute in special ways. For example, lands devoted to less intensive forms of agriculture and silviculture or rangelands provide habitat for wildlife that constitutes prey for species such as the Florida panther. Indeed, because such land uses often occur in large tracts and can be effectively managed, they can contribute habitat values that may not be achieved in any other manner. Similarly, agriculture land uses can buffer*

ecological preserves and other public conservation areas from the effects of more intensive urban land uses. Therefore, such integrated conservation systems could result in gradient patterns from full protection to intensive use. Ideally, connected reserve lands would be surrounded by compatible agricultural activities such as silviculture and ranching, which would then grade into more intensive agricultural land uses. In combination, preserve lands relieve pressure on the private sector to worry about each and every species while at the same time private lands allow the all-too-small preserves to function as refuges for species such as the panther" (p42).

The Report to the Governor went on to more specifically acknowledge the importance of working landscapes to a Statewide Greenways System.

"An important part of the character of Florida are the many kinds of rural landscapes that reflect human use of the environment, whether the use is recent, ongoing, or long past. It is important to protect these rural landscapes because they contribute to a sense of place and provide an alternative to the rapid change that is so characteristic of our urban areas" (p. 55 - 56).

And the Report continued with the following recommended actions:

"The FGCC (Florida Greenways Coordinating Council) should work with agricultural interest groups and landowners using appropriate incentives to incorporate pastures, groves, fields, and other productive lands into greenways planning and to find ways that greenway users can contribute to the continuation of such land uses." And *"The FGCC should work with forest interest groups and landowners using appropriate incentives to incorporate woodlots, pine plantations, and hardwood forests in greenways planning, and to find ways that greenway users can contribute to the continuation of such land uses"* (p. 56).

Participation of landowners and their representatives in the Greenways planning process continued with the naming of three members representing landowner interests to the 26 member Florida Greenways Coordinating Council. As with the Commission, these individuals served as important spokespersons for landowner interests and as information sources for members of their associations and industries.

Coordination with and requests for input from the private landowner community continued upon completion of the GIS Model. On June 19, 1997, the first group to review the GIS model results was comprised of representatives of Florida's private landowners, DEP, and a Greenways Council member. At this meeting, representatives of the Florida Farm Bureau, the Florida Forestry Association, Rayonier, and a Tallahassee-based environmental consulting firm that represents a number of large landowners, were briefed on the Model and its results, with a particular focus on the results for Northeast Florida. An ensuing discussion provided a number of suggestions on how to address private property owner concerns including the inclusion of "waiver" language on all printed maps stating that the maps were not intended for regulatory purposes or other means to restrict the rights of private property owners. Other forums for review and participation by landowners and their representatives included the Regional Greenways Task Force meetings in the latter half of 1997, public hearings of the RGTFs and the FGCC, and specially arranged meetings with individual landowners or their representatives.

Beyond questions about the appropriateness of inclusion of individual parcels in the physical plan for the Statewide Greenways System, landowners expressed concern about the language in Chapter 260 F.S. They felt the statute supported the use of regulatory approaches to assist with Greenways implementation. Regulation was opposed by private landowners because it was perceived as placing an undue burden on the individual landowner.

DEP and Florida Greenways Coordinating Council Response to Private Landowner Concerns

As early as the June 1997 meeting with private landowner representatives and DEP personnel held at the University of Florida, DEP realized changes to Chapter 260 F.S. would be necessary. Staff from DEP began working with a sub-group of landowner representatives to develop amendment language. The changes to Chapter 260 F.S. were supported by DEP and the FGCC. In fact, the Farm Bureau's representative on the FGCC was instrumental in the passage of the legislation. Among the most significant clauses were the following that explained limitations for the use of maps or other planning documents developed through the Greenways Program:

"Identification of lands in such information shall not:

1. Require or empower any unit of local or regional government, or any state agency, to impose additional or more restrictive environmental, land-use, or zoning regulations;

2. Be construed or cited as authority to adopt, enforce, or amend any environmental rule or regulation; comprehensive plan goals, policies, or objectives; or zoning or land-use ordinance;

3. Be used as the basis for permit denial; imposition of any permit condition; or application of any rule, regulation, or ordinance by any subdivision of local, regional, or state government; or

4. Be construed or cited as authority by any governmental agency to reduce or restrict the rights of owners of lands so identified."

But in late 1997, when passage of the legislative amendments were not a certainty, landowners continued to press for some action on DEP's part to address their concerns. At that point, DEP agreed to remove lands of concerned private landowners from the Greenways planning maps, providing the landowners could supply adequate boundary information.

Through the course of the FGCC meetings in 1998, the Council, though initially reluctant, agreed to the exclusion of private parcels (when requested by landowners) from Greenways planning maps. As a consequence, the maps contained in the *Five Year Implementation Plan* are called "Implementation Opportunities" maps and exclude lands for which sufficient boundary information was received from private landowners.

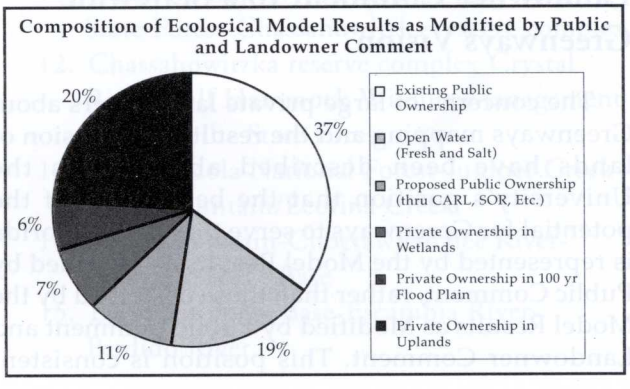
Private Landowner Property Data Description

Private landowners who wished to have their lands removed from Greenways planning maps were encouraged to send in spatial information regarding their landholdings. This information could include hard copy maps or digital data, or written descriptions of property boundaries. Property boundaries were digitized to as fine an accuracy as the supplied data would allow.

The derived private landowner GIS dataset includes attributes that describe information about the property such as a data source, owner name, parcel acreage, date of automation, and whether or not the property owner wishes to be included in the ecological or trail portion of the Greenways initiative. At the request of landowners, the University is not permitted to distribute this dataset. The University will continue to work with DEP to maintain and update these data.

Ecological Model Results as Modified by Public Comment and Landowner Comment

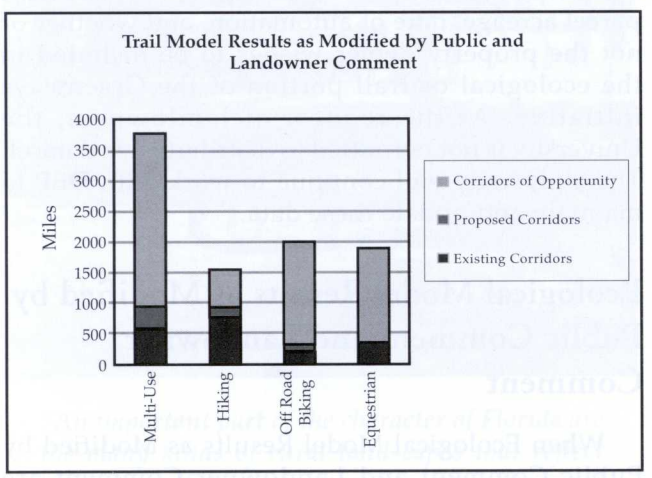
When Ecological Model Results as Modified by Public Comment and Landowner Comment are compared with the Ecological Model Results as modified by Public Comment, one can see the total



area of the statewide results is reduced by roughly five percent. Almost all of this difference is in land area, only a tenth of a percent is attributable to exclusion of areas of open water. Acres in private wetlands drop from 1,733,815 to 1,406,260; acres in private 100 year flood plain drops from 1,622,720 to 1,226,693; and acres in private uplands drops most significantly from 5,193,065 to 4,250,239.

Trails/Cultural-Historic Model Results as Modified by Public Comment and Landowner Comment

When private lands are excluded, the reduction in total miles of the four terrestrial trail types is minor. However, the gaps created by exclusion of trails on selected lands would mean a fragmented trail experience. There is no difference in paddling trails since they occur on sovereign lands.



Relationship of Model Results as Modified by Public Comment and Landowner Comment to a Statewide Greenways Vision

The concerns of large private landowners about Greenways mapping and the results of exclusion of lands have been described above. It is the University's position that the best vision of the potential for Greenways to serve the state of Florida is represented by the Model Results as Modified by Public Comment, rather than those described by the Model Results as Modified by Public Comment and Landowner Comment. This position is consistent with the thinking of the Greenways Coordinating Council that agreed to include the following wording on the "Implementation Opportunities" maps contained in the *Five Year Implementation Plan.*

> *"Establishment of the Greenways and Trails System is a dynamic process. The Department of Environmental Protection (DEP) and the Florida Greenways Coordinating Council (FGCC) have made every effort to work with private landowners and public land managers to assure them the Statewide Greenways and Trails Program is voluntary. As a result, DEP and the FGCC agreed to remove features from this map if they occur within the ownership of those who do not wish to have their lands included. Therefore, the Opportunities included on this map do not represent a complete statewide vision. This map represents a vision as modified by requests from landowners to remove or include their lands in the system."*

The University also strongly endorses the position of DEP and FGCC that participation by private landowners should be voluntary. Implementation of the Statewide Greenways System should not employ regulation but should instead involve cooperative agreements between landowners, managing agencies, and non-governmental organizations.

Recommendations

Conservation of a Statewide Ecological Network

The Ecological Network identified as part of the Florida Statewide Greenways process is another significant step towards protection of an integrated state reserve system that could effectively conserve Florida's biological diversity and other important land resources. Previously, Larry Harris, Reed Noss, and The Nature Conservancy had recommended linked reserve systems through knowledge of existing landscape and other habitat conditions in Florida, and through expert mapping charrettes. Then, the Strategic Habitat Conservation Area analysis by the Florida Game and Fresh Water Fish Commission provided a systematic identification of habitat areas needed to protect viable populations

of vertebrate species and natural communities, and the natural areas identification by the Florida Natural Areas Inventory provided important baseline information for identifying priority areas for conservation. The progress represented by the design of the Ecological Network through the greenways process is the integration of the above analyses and other pertinent data sets into an updated and completely linked reserve system of statewide significance.

It is essential that the Ecological Network be incorporated into the planning process for identifying areas to be added to acquisition/easement lists in future conservation land protection programs. We recommend the Florida Greenways and Trails Council and the Department of Environmental Protection prioritize potential landscape linkage and conservation corridor projects and develop recommendations for additions to the CARL list for the Land Acquisition and Management Advisory Council. To facilitate these efforts, we recommend the formation of an Ecological Network committee including representatives from the Florida Game and Fresh Water Fish Commission, Florida Natural Areas Inventory, Department of Environmental Protection, the Water Management Districts, The Nature Conservancy, and other appropriate organizations to review and rank potential projects and to develop CARL proposals important for protecting a statewide Ecological Network.

After delineating the Ecological Network and working on a prioritization process, we feel confident that there are a set of landscape linkages and

corridor projects that stand out as highest priorities. Subject to the willingness of key landowners, these include:

1. Ocala National Forest to the Osceola National Forest-Pinhook Swamp-Okefenokee Wildlife Refuge Reserve complex
2. Big Cypress National Preserve to Avon Park Bombing Range via the Okaloacoochee Slough, Caloosahatchee Ecoscape CARL Project, and the Fisheating Creek and Charlie Creek watershed
3. Steinhatchee River to Hickory Mound Wildlife Management Area
4. Eglin Air Force Base-Blackwater River State Forest
5. Tosahatchee State Reserve-Middle St. Johns River-Tiger Bay State Forest-Lake George SOR Project to the Ocala National Forest
6. Osceola National Forest-Suwannee River-Mallory Swamp-Steinhatchee River-San Pedro Bay-Econfina River
7. Cecil Webb Wildlife Management Area, Brighthour Ranch, Myakka River State Park, and Peace River basin to the Green Swamp supported through a network of creek corridors including Shell, Prairie, Horse, Joshua, and Charlie Creeks
8. Three Lakes Wildlife Management Area to the St. Johns River via the Osceola Pine Savannahs and Ranch Preserve CARL projects
9. Corbett Wildlife Management Area-Upper St. Johns River-Kissimmee Prairie State Preserve via ranchlands, swamps, and flatwoods in western St. Lucie and eastern Okeechobee Counties, and around Fort Drum and Yeehaw Junction
10. Avon Park-Kissimmee River-Reedy Creek/Marion Creek-Davenport Creek-Green Swamp
11. Green Swamp-Withlacoochee River and State Forest-Chassahowitzka reserve complex
12. Chassahowitzka reserve complex-Crystal River-Gulf Hammock Wildlife Management Area-Goethe State Forest
13. Apalachicola National Forest-Juniper Creek-Sand Mountain/Ecofina Creek
14. Sand Mountain-Choctawhatchee River-Eglin Air Force Base
15. Eglin Air Force Base-Escambia River-Perdido River

16. Loxahatchee National Wildlife Refuge-Corbett Wildlife Management Area

Protection efforts should concentrate primarily on areas within the network identified as high priority that are also in areas most threatened by development. To facilitate this comparison, a statewide analysis of development pressure is needed.

The identification, prioritization, and protection of a statewide Ecological Network must also be an iterative process that accounts for the availability of new data. It is important that prioritization be assessed within future context. Development patterns and other land use changes could cause areas currently of high priority to become less significant or unsuitable and other alternatives to become more significant. Also, new data, such as the Strategic Federal Gap Analysis of Florida's biological diversity, and the assessments by the Florida Natural Areas Inventory may indicate other areas of high ecological significance that should be considered in future iterations. It is important that the work of the Office of Environmental Studies of the Florida Game and Fresh Water Fish Commission and Florida Natural Areas Inventory continues to be funded. Their biodiversity/wildlife inventory and analysis work is essential for making informed conservation decisions.

We encourage the Florida Greenways and Trails Council and the Department of Environmental Protection to also promote the identification of regional and local areas of ecological significance that could be incorporated as regional and local greenways.

Management of Conservation Areas and a Statewide Ecological Network

To ensure that conservation objectives are met as part of a Statewide Greenways Program, the issue of the compatibility of trails, especially large, multi-use trails, with conserving biological diversity and other natural resources should be dealt with quickly and aggressively. The goal is to avoid and minimize future conflicts between interest groups and potentially disparate greenways system objectives.

Second, the management of conservation areas for compatibility with the ecological conservation functions associated with landscape linkages and corridors is also important. The protection of core zones managed primarily for the conservation of biological diversity including core areas within landscape linkages and corridors protected from intensive uses is optimal.

Third, protection of a statewide Ecological Network will require significant cooperation between the multitude of agencies and organizations responsible for managing land within the Greenways system, and all efforts should be made to develop effective methods for facilitating such cooperation.

The relationship between the state's system of highways and other primary roads and a statewide Ecological Network must be addressed. Significant progress towards mitigating the impacts of roads has been made, but there is still a need to avoid major new road projects that would impact important elements of the Ecological Network.

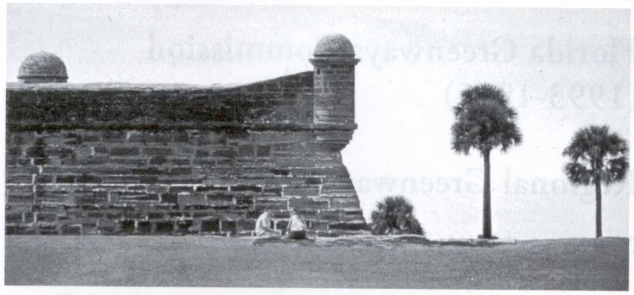
State Conservation Plan

We cannot overstate the fact that the Greenway Vision does not represent a state conservation plan. Although the statewide Ecological Network would be an integral component of such a plan and contains the vast majority of lands that might be included, there are other areas that would need to be protected to meet conservation objectives. The Ecological Network modeling process emphasized the identification of large intact areas of high ecological significance that could be functionally connected. Therefore sites like pine rocklands in southeast Florida, and scrub along the Lake Wales Ridge and coastal ridges were not included in the final results because they were either small or isolated by intensive land uses. However, these sites are also necessary to effectively conserve Florida's biological diversity. Therefore, it is inappropriate to conclude that exclusion of an area from the Ecological Network means that it has no conservation value. We recommend that the Ecological Network model results be used in concert with any other pertinent information about significant ecological and natural resources to guide protection decisions and to develop a statewide conservation plan.

Creation of the Statewide Trails/Cultural-Historic Network

The Trails/Cultural-Historic Network identified through the *Project* is a master plan for including the largest and most significant features worthy of development and protection. If implemented it would afford Floridians and visitors the opportunity

to move along trail systems from major city to major city and from those urban areas to sites of historic, cultural, and ecological significance. Such a system would help fulfill the increasing demand for linear recreation and would support alternatives to vehicular transportation. When completed the Network would allow for north-south, east-west cross state trail use, or for loop trail use at the regional scale. And, of course, individual segments of the Network could be used for day trips or for shorter outings.



The first step in implementation should be the development of an approach for prioritizing the projects to be undertaken. This will prove to be a highly complex task because not only will elements identified through this *Project* be included, but new projects promoted by local governments and/or user groups are certain to be proposed. Among the questions to be addressed through prioritization will be what projects should be first implemented and how available financial resources should be allocated. This includes allocation of funds for trail construction and for development/enhancement of trailheads, including significant cultural-historic sites.

While the determination of priorities should be carefully considered, multi-use trails have the potential to serve the largest segment of the population. However, placement of multi-use trails must be done sensitively to avoid fragile environmental areas. Priority should also be given to completing the Hiking sub-Network, also known as the Florida National Scenic Trail, given its national designation and degree of completion.

We encourage the Florida Greenways and Trails Council and the Department of Environmental Protection to also promote the identification of regional and local trails and cultural-historic sites that could be incorporated as regional and local greenways.

Management of the Statewide Trails/ Cultural-Historic Network

Every component of a Statewide Trails/Cultural-Historic Network will require maintenance and management. Determination of the parties responsible for these long-term obligations must be made early on. DEP should develop inter-governmental agreements with local and regional entities and should identify sources of funding for maintenance and management.

Conclusion

The Greenways Vision, if implemented, will restore and maintain connectivity among native ecological systems and processes, will facilitate the ability of these ecosystems and landscapes to function as dynamic systems, and will maintain the evolutionary potential of the components of these ecosystems to adapt to future environmental changes. In addition, it will provide public access to and promote appreciation, support, and conservation of the State's natural, cultural, and historic features. The Greenways Vision should serve as the starting point from which prioritization and implementation decisions can be made. The State of Florida now has an unparalleled opportunity to set a new standard for conservation, cultural heritage protection, and recreation achievement. We can make our Vision a reality. So let us be about our task.

Acknowledgements

DEP Greenways Planning Team

Director, Office of Greenways and Trails
Fred Ayer

Project Manager - Office of Greenways and Trails
Robin Young, Program and Policy Implementation Coordinator

Principal Staff - Office of Greenways and Trails
Tana Duden
Frank LaRosa
Jack Maynard
Marcia Messersmith
Gale Scharron
Nicole Smith
Heather Stipanovich
Trish Stratton
Suzanne Walker
Samantha Waters
Kent Wimmer

Office of the Secretary
Kirby Green, Deputy Secretary
Pam McVety, Executive Coordinator, Office of Ecosystem Management
Paul Moses, Deputy Secretary
Dale Patchett, Executive Liaison Officer
Nevin Smith, Assistant Secretary

Other Key DEP Staff Members
Jeremy Craft, Director, Division of Environmental Resource Permitting
Mark Glisson, Office of Ecosystem Management
Mike Bullock, Albert Gregory, and Tammy Seale, Division of Recreation and Parks
Bud Cates, Bureau of Mine Reclamation

Other Project Partners

Florida Game and Fresh Water Fish Commission
Florida Natural Areas Inventory
Florida Chapter, The Nature Conservancy
Northwest Florida Water Management District
St. Johns River Water Management District
South Florida Water Management District
Southwest Florida Water Management District
Suwannee River Water Management District
National Park Service Rivers, Trails and Conservation Assistance Program Southeast Field Office
1000 Friends of Florida

Florida Greenways Coordinating Council (1995-1998)

Florida Greenways Commission (1993-1995)

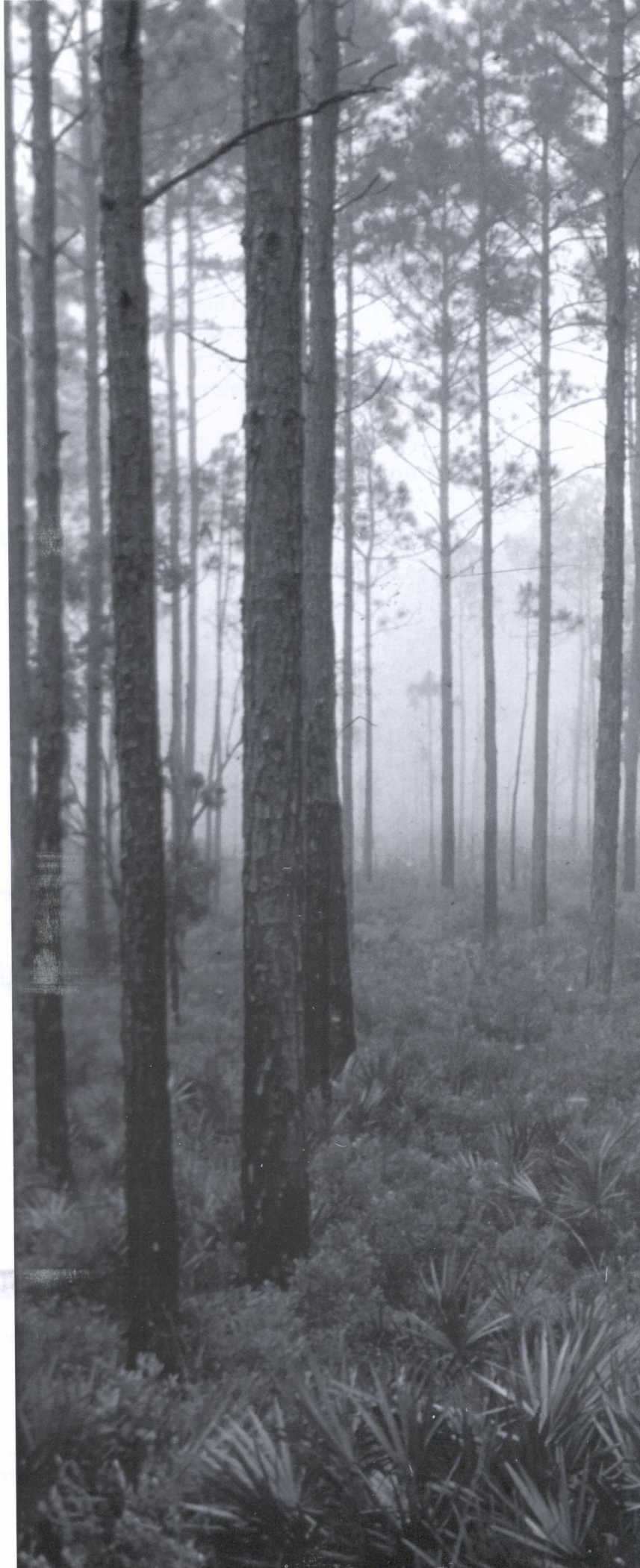
Regional Greenways Task Forces

Northwest District Regional Greenways Task Force
Northeast District Regional Greenways Task Force
Central District Regional Greenways Task Force
Southwest District Regional Greenways Task Force
South District Regional Greenways Task Force
Southeast District Regional Greenways Task Force

UF Greenways Planning Team

Principal Investigators
Mark A. Benedict, Ph.D., Associate Scientist
Department of Landscape Architecture
Margaret H. Carr, Associate Professor
Department of Landscape Architecture
Thomas S. Hoctor, Doctoral Candidate
Department of Wildlife Ecology and Conservation
Paul D. Zwick, Ph.D., Associate Professor
Department of Urban and Regional Planning

Executive Summary Production
Annie Griffenberg



This document is a summary of information contained in the *Final Report* submitted to the Department of Environmental Protection by the University of Florida in February 1999.

For copies of the full report or this summary contact:

Florida Greenways Project
Department of Landscape Architecture
Post Office Box 115704
University of Florida
Gainesville, Florida 32611

For copies of *The Five Year Implementation Plan for the Florida Greenways and Trails System* contact:

Florida Department of Environmental Protection
Office of Greenways and Trails
2600 Blair Stone Road
MS 795
Tallahassee, Florida 32399-2400

Prepared for:

Florida Department of Environmental Protection

With funding from:

Florida Department of Transportation
Intermodal Surface Transportation Efficiency Act (ISTEA)
Enhancement Program