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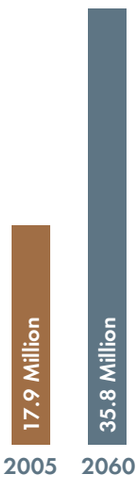
Photo Courtesy of Joanne Davis, 1000 Friends of Florida

Chapter 1

Designing Wildlife-Friendly Communities in Florida

POPULATION FORECAST



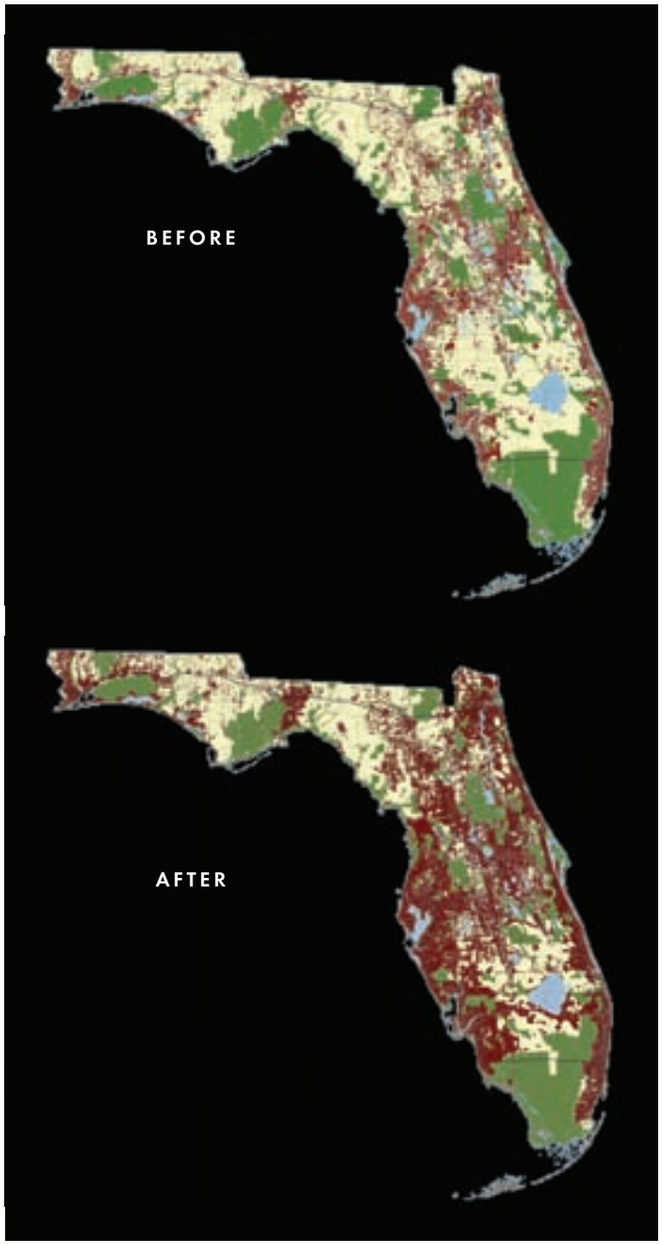
Florida 2060:
A Research Project of
1000 Friends of Florida

Both geologically and biologically, Florida is a very distinct region of the United States. Southern Florida has a subtropical climate which transitions through the central part of the state to a more temperate climate in North Florida. Due to its peninsular geography and this range of climates, Florida supports in excess of 700 terrestrial animals, 200 freshwater fish, and 1,000 marine fish, as well as numerous other aquatic and marine vertebrates, and many thousands of terrestrial insects and other invertebrates. While many of these species can be found elsewhere in North America, there are also a number that are unique to Florida.

As with so many other places in the world, Florida is facing rapid growth, which is resulting in major changes in land use and related impacts on the state's natural resources. Florida's population grew from approximately 3 million people in 1950 to more than 18 million in 2005. Moderate projections indicate that Florida's population could increase to 36 million by the year 2060. If the historic patterns of development continue over the next 50 years, Florida could stand to convert 7 million acres of additional land from rural to urban uses, including 2.7 million acres of native habitat.

Adding millions of new residents to this state will only serve to heighten the competition between wildlife and humans for land, water, food and air resources. Given the ability of humans to reshape entire landscapes to meet their needs, there is no doubt that wildlife will not fare well. In the face of this unrelenting growth and development, it is imperative that Floridians recognize the need to serve as wise stewards of the land, water, and the intertwined ecosystems.

While protecting large tracts of undisturbed landscapes is best from a wildlife perspective, unfortunately that is increasingly impossible in Florida. Future efforts, then, must include strategies to maximize habitat within and adjacent to developed, managed, or otherwise human-influenced landscapes. The goal of this manual is to share Florida-specific wildlife conservation tools that can be used by community planners, landscape architects,



Florida 2060: A Research Project of 1000 Friends of Florida

landowners, developers, and active citizens to minimize impacts of development on the state's rich natural resources through development of a green infrastructure for Florida.

THE VALUE OF GREEN INFRASTRUCTURE

In its May 1999 report, *Towards a Sustainable America – Advancing Prosperity, Opportunity and a Healthy America*, the President's Council on Sustainable Development helped institutionalize the phrase, "green infrastructure." It defined green infrastructure as "... an interconnected network of protected land and water 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 can include greenways, parks, wetlands, forests, and other natural areas that help manage stormwater, reduce the risk of flooding, improve water quality, and provide other ecological and recreational services. Other names for green infrastructure identification include greenprinting, biodiversity by design, sustainable development, ecological principles for managing land uses, and a variety of other terms.

There is an increasing awareness of the inherent value of – and need for – green infrastructure to support human and wildlife needs. This is contrasted by human activities – ranging from farming and suburban development to the introduction of non-native species – that act as stressors to wildlife. These stressors may affect the ability of native organisms or communities to sustain themselves over time and can lower their ability to resist invasion by fungi, microorganisms, or non-native species. Common stressors include:

- Suburban and urban development that fragment habitats and isolate plant and wildlife populations.
- Hydrological modification of streams, and drainage of land via ditching, berming redirecting or causing the drawdown of water.
- Dredging, filling and draining and drying out of wetlands.
- Fire suppression in fire-evolved habitats.
- Introduction of non-native species that reduce or eliminate native species.
- Pollution by toxic or metabolic-altering substances.
- The addition of excess nutrients and sediment.
- Increase in domestic and feral animals such as cats and dogs that prey on sensitive species and alter ecosystem structure.
- Removal of native vegetation and alteration of micro-climates supportive of local species.
- Addition of nighttime lighting and noise which disrupts normal behavior, disorients animal functions and reduces ranging areas.
- Global climate change, causing changes in natural processes faster than many species can respond.

Reprinted by permission of the artist, Jeff Parker, FLORIDA TODAY

"When we examine anything in the universe we find that it is hitched to everything else."- John Muir

Chapter 1

Designing Wildlife-Friendly Communities in Florida

Many smaller creatures – from newts to eagles – can finds sufficient habitat to survive in our suburban and urban environments if we recognize their basic needs and work to integrate them into the developed landscape.

IMPORTANT ECOSYSTEM "SERVICES" OF GREEN INFRASTRUCTURE

- Sustain biodiversity.
- Protect areas from impacts of flooding, storm damage or drought.
- Protect stream and river channels and coastal shores from erosion.
- Provide a carbon sink. As an example, 100 acres of woodland can absorb emissions equivalent to 100 family cars.
- Offer pollution control. Vegetation has a significant capacity to attenuate noise and filter air pollution from motor vehicles. Wetland ecosystems are also effective in filtering polluted run-off and sewage.
- Provide natural "air conditioning." A single large tree can be equivalent to five room air conditioners and will supply enough oxygen for ten people.
- Provide microclimate control by providing shade, hold in humidity and blocking winds and air currents.
- Protect people from the sun's harmful ultraviolet rays.
- Cycle and move nutrients and detoxify and decompose wastes.
- Control agricultural pests and regulate disease carrying organisms.
- Generate and preserve soils and renew their fertility.
- Disperse seeds and pollinate crops and natural vegetation.
- Contribute to the health and wellbeing of our citizens. Accessible green space and natural habitats create opportunities for recreation and exercise, and studies have shown that this increases our creative play, social skills and concentration span.
- Contribute to a community's social cohesion. The active use of greenspaces, including streets and communal spaces, can encourage greater social interaction and contribute to a lively public realm. Participation in the design and stewardship of green space can help strengthen communities.
- Enhance economic value. Natural greenspaces can increase property values, reduce management overheads, and reduce healthcare costs.

Adapted from: Ecosystem Services, Ecological Society of America, 2000, at ***www.esa.org****; and, Biodiversity by Design: A Guide for Sustainable Communities, Town and Country Planning Association (TCPA), England, 2004.*

Thoughtful planning at the community level can lessen the impacts from these stressors. Many smaller creatures- – from newts to eagles – can finds sufficient habitat to survive in our suburban and urban environments if we recognize their basic needs and work to integrate them into the developed landscape. To promote sustained biodiversity, a community first must identify local wildlife and habitats, and then ensure that basic necessities for survival are sustained, including food, cover, water, living and reproductive space, and limits on disturbances.

At the same time, ecosystems provide many "services" with little or no capital costs involved. These can range from protecting areas from flooding, to providing natural "air conditioning," to offering pollution control. The ecological services of green infrastructure can be conserved and enhanced through careful planning. Extending the green infrastructure network to adjacent communities and regional, state or national managed environmental lands is often very possible and can further enhance the value and utility of the services.

In addition to the ecosystem service values, a community can gain monetary value from carefully integrating habitat into its jurisdiction. The 2006 total retail sales from wildlife viewing in Florida were estimated at $3.1 billion ($2.4 billion by residents and $653.3 million by nonresidents). Since 2001, expenditures in Florida for wildlife viewing have almost doubled ($1.6 billion in 2001). These 2006 expenditures support a total economic effect to the Florida economy of $5.248 billion. The 2006 economic impact of wildlife viewing in Florida is summarized below. (Information from, *The 2006 Economic Benefits of Wildlife Viewing in Florida*, Southwick Associates, Inc, 2008)

2006 ECONOMIC IMPACTS OF WILDLIFE VIEWING IN FLORIDA			
	Resident	**Nonresident**	**Total**
Retail sales	$2.428 billion	$653.3 million	$3.081 billion
Salaries & wages	$1.204 billion	$391.8 million	$1.595 billion
Full & part-time jobs	38,069	13,298	51,367
Tax revenues			
State sales tax	$243.1 million	$69.7 million	$312.8 million
Federal income tax	$292.5 million	$92.8 million	$385.3 million
Total economic effect	**$4.078 billion**	**$1.170 billion**	**$5.248 billion**

A TIERED APPROACH TO CONSERVATION

Over the past few decades, a three-tiered approach to land conservation has evolved in Florida. The top tier includes large statewide and regional land acquisition and protection efforts intended to establish "islands" of protected and relatively intact habitats which are linked, where possible, by ecological greenways. These efforts have laid the foundation for a statewide green infrastructure in Florida.

The bottom tier includes programs directed at protecting habitats within neighborhoods and in backyards. Often grassroots in nature, these include the University of Florida's Florida Yards and Neighborhoods program and the National Wildlife Federation's Backyard Wildlife Habitat Program, both of which are targeted at individual citizens, families, and/or neighborhoods.

The middle tier focuses on creating regional and community-wide green infrastructure to promote conservation within large landholdings, large developments, and neighborhoods. This tier is perhaps the least evolved of the three, but includes better land use planning, development design, and best management practices by both the public and private sectors. It is the middle tier at which most development approvals are issued. This tier offers the greatest potential for better integration of human and wildlife habitat.

THE TOP TIER: TOWARD A STATEWIDE GREEN INFRASTRUCTURE IN FLORIDA

Before the phrase "green infrastructure" had even been coined, Florida launched an ambitious series of land acquisition and conservation planning projects which laid the foundation for creating Florida's existing green infrastructure. Building on earlier state land acquisition programs, in 1990 Florida established the Preservation 2000 program. This 10-year program raised $3 billion, and protected 1,781,489 acres of environmentally sensitive land. In 1999, the Florida Legislature created Florida Forever, also designed to dedicate $3 billion to land acquisition over the following decade. As of December 2006, another 535,643 acres of environmentally sensitive land had been protected through this effort.

As these major land acquisition programs evolved, there was a growing awareness of the need to be more strategic in land acquisition, and a series of efforts were launched in the 1990s. In 1994, researchers from the Florida Fish and Wildlife Conservation Commission (FWC) completed a very important report, *Closing the Gaps in Florida's Wildlife Habitat Conservation*. This cornerstone report used a geographic information system approach to identify key habitat areas to conserve in order

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As part of this effort, the University of Florida undertook the Florida Ecological Network Project, and completed the first phase in 1998. It used GIS data to identify large connected ecologically significant areas of statewide significance. The goal was to create a system of interconnected lands protected for their ecological value to native wildlife and plants, or for their provision of ecological services such as water quality protection and flood prevention.

THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

The Florida Constitution vests the Florida Fish and Wildlife Conservation Commission with regulatory and executive powers of the state with respect to wild animal life. In the area of regulating hunting and specific wild animal management actions, the principle of state wildlife primacy over local regulation is well established. Courts will invalidate local ordinances in clear conflict with state authority on hunting and wildlife. On the other hand, when such regulations are not in clear conflict, the courts will often seek to interpret local regulations and state law harmoniously.

By contrast, actions affecting habitat and biodiversity are not yet an organizing concept for federal or state regulatory programs. Local governments have considerable discretion to define their planning, management and regulatory niche. So, for example, a local action prescribing gopher tortoise protection or mitigation in a manner that conflicts with state regulations, would likely be invalidated on preemption grounds, whereas a local regulation directed more generally to gopher tortoise habitat might survive such a challenge. A local regulation directed even more broadly to protection of entire natural vegetative community types or ecosystems would certainly not be preempted on these grounds.

Graphic Courtesy of Noss & Cooperrider, 1994

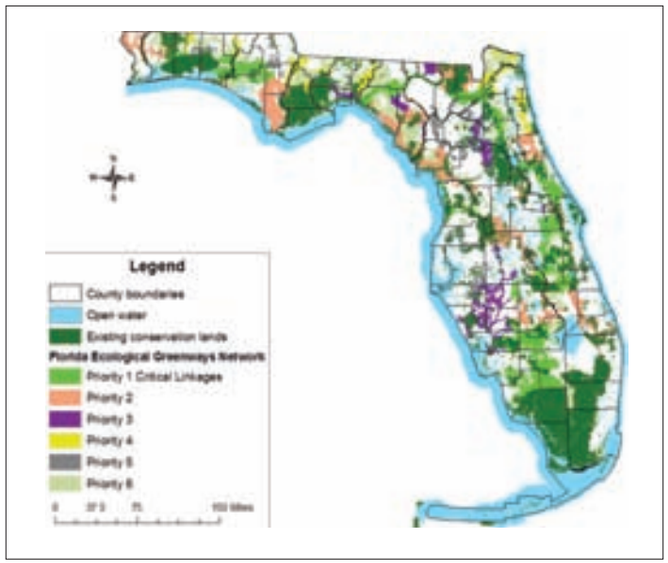


Photo Courtesy of GeoPlan Center

The Florida Ecological Greenway Network

to maintain key components of the state's biological diversity. These areas, known as Strategic Habitat Conservation Areas (SHCA), continue to serve as a foundation for conservation planning in Florida.

Around the same time, the seed was being planted for Florida's greenways network. In the early 1990s, 1000 Friends of Florida and The Conservation Fund launched a coordinated effort to identify and protect a linked network of natural areas to accomplish both ecological and recreation needs. This evolved into the Florida Statewide Greenways Planning Project, established under the Florida Department of Environmental Protection in 1990s.

As part of this effort, the University of Florida undertook the Florida Ecological Network Project, and completed the first phase in 1998. It used GIS data to identify large connected ecologically significant areas of statewide significance. The goal was to create a system of interconnected lands protected for their ecological value to native wildlife and plants, or for their provision of ecological services such as water quality protection and flood prevention. It helped to form the basis of the Florida Greenways and Trails System and supports ecological connectivity conservation directed at priority landscape linkages. The network has been updated several times (most recently in 2004), primarily to take advantage of new data and methods and remove lands lost to development.

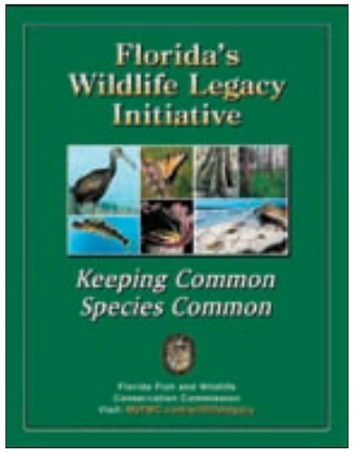
The result of this process was an updated Florida Ecological Greenways Network. This network provides a linked statewide reserve system containing most of each major ecological community and most known occurrences of rare species. It represents significant progress toward a more integrated approach to biodiversity conservation in Florida.

In 2000, the Florida Natural Areas Inventory released its *Florida Conservation Needs Assessment*. Prepared on behalf of the Florida Forever Advisory Council, this report focused on the geographic distribution of natural resources, or resources-based land uses (such as sustainable forestry) to guide conservation decision making related to Florida's second major state land acquisition program, Florida Forever.

TWENTY-FIRST CENTURY INITIATIVES — LINKAGE BETWEEN TIERS

A new round of conservation planning has now begun, building on these earlier efforts. Begun in 2004 as part of a nation-wide effort, the Florida Fish and Wildlife Conservation Commission's *Wildlife Legacy Initiative* is an action plan to address the long-term conservation of all native wildlife and the places they live. The stated goal is to "prevent wildlife from becoming endangered before they become more rare and costly to protect." The initiative focuses on creating partnerships to better protect Florida's wildlife and their habitats. As part of the initiative, the Commission has created Florida's Wildlife Conservation Strategy. This updates existing conservation plans from the last 30 years into a single state wildlife action plan, providing a platform for proactive conservation. Florida's State Wildlife Grants Program provides funds to assist with implementing the Strategy.

One outgrowth of the Wildlife Conservation Strategy is the Cooperative Conservation Blueprint. The Florida Fish and Wildlife Conservation Commission, The Century Commission for a Sustainable Florida and Defenders of Wildlife are providing leadership on this project, the goal of which is to build agreement between government and private interests on using common priorities as the basis for state-wide land use decisions. When completed, it will include a fully unified set of Geographic Information System (GIS) data layers of conservation and development lands that will be available to all Floridians, and a package of recommended landowner incentives to apply the strategies statewide.



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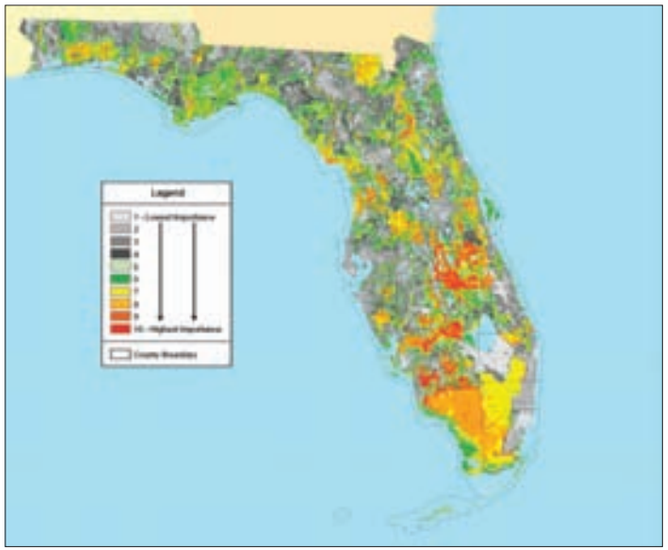
The challenge for Florida communities is to craft situations to healthily maintain the maximum number of wildlife species. This is becoming increasingly difficult as sprawling development has pushed much wildlife to the wilderness edge. Additionally, human-to-wildlife contact is escalating, including negative interactions.

The Florida Fish and Wildlife Conservation Commission updated Closing the Gaps in the 2006 report, *Wildlife Habitat Conservation Needs in Florida: Updated Recommendations for Strategic Habitat Conservation Areas*. The report details an assessment to determine the protection afforded to focal species, including many rare and imperiled species, on existing conservation lands in Florida and to identify important habitat areas in Florida that have no conservation protection. These areas, known as Strategic Habitat Conservation Areas, serve as a foundation for conservation planning in Florida and depict the need for species protection through habitat conservation. This was further enhanced with development of The Integrated Wildlife Habitat Ranking System. The Integrated Wildlife Habitat Ranking System (IWHRS) ranks the Florida landscape based upon the habitat needs of wildlife as a way to identify ecologically significant lands in the state, and to assess the potential impacts of land development projects. The IWHRS is provided as part of the Commission's continuing technical assistance to various local, regional, state, and federal agencies, and entities interested in wildlife needs and conservation in order to: (1) determine ways to avoid or minimize project impacts by evaluating alternative placements, alignments, and transportation corridors during early planning stages, (2) assess direct, secondary, and cumulative impacts to habitat and wildlife resources, and (3) identify appropriate parcels for public land acquisition for wetland and upland habitat mitigation purposes.

These resources and land acquisition funding sources have gone a long way toward creating a statewide green infrastructure network, and can serve as valuable tools which can complement and/or leverage activities at the regional and local levels. Building on these efforts is the Critical Lands/Waters Identification Project (CLIP) sponsored by the Century Commission for a Sustainable Florida. The Century Commission was formed by the Florida Legislature in 2005 and is tasked with: envisioning Florida's future by looking out 25 and 50 years; making recommendations to the Governor and Legislature regarding how they should address the impacts of population growth; and establishing a place where the "best community-building ideas" can be studied and shared for the benefit of all Floridians. CLIP is a process to identify Florida's "must save" environmental treasures and critical green infrastructure (see Chapter 4 for more information on CLIP).

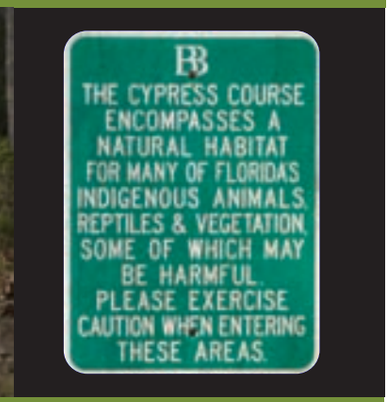


Florida Fish and Wildlife Conservation Commission

The Integrated Wildlife Habitat Ranking System, 2007.

PROMOTING GREEN INFRASTRUCTURE AT THE MIDDLE TIER

While much has been accomplished at the top and bottom tiers, a great deal still remains to be done at the regional and community levels in Florida to conserve Florida's wildlife and habitats. Very little will happen at the middle tier to conserve, integrate or enhance wildlife habitat unless people plan, design and manage for this purpose. Fortunately, more and more com-



munities, landowners and developers are beginning to integrate wildlife features into their local landscapes.

The challenge for Florida communities is to craft situations to healthily maintain the maximum number of wildlife species. This is becoming increasingly difficult as sprawling development has pushed much wildlife aside. Additionally, human-to-wildlife contact is escalating, including negative interactions. The public safety threat of large predators has been unintentionally marginalized (alligators, panthers and bears do kill people). While there is, perhaps, a great appreciation of wildlife today, there is also a growing "Not In My Back Yard" – or NIMBY–reaction that wants wildlife to be put back "where it belongs." Better planning, design, and use of best management practices at the local community level need to be used to help address these issues.

A new wildlife and habitat paradigm needs to be encouraged. It need not be a revolution, but instead, it can evolve from where we have been, using many of the same strategies, albeit in a new context. Keys to success will include using science to frame the issues, involving the public in making the decisions, and garnering sufficient support to fund the needed actions.

Photo Courtesy David Moynahan Photography

Signage can help educate the public regarding wildlife conservation efforts.

Photo Courtesy of Dan Pennington and Joanne Davis, 1000 Friends of Florida