

# Comprehensive Wildlife Habitat Protection Program for Pasco County: Critical Linkages



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# Comprehensive Wildlife Habitat Protection Program

## Objectives for Today

- Discuss history of Critical Linkage development, and current status
- Review scientific literature relevant to the criteria for defining Critical Linkages
- Assess the characteristics of each Critical Linkage
- Summarize the rationale for the proposed widths and configurations

# Comprehensive Wildlife Habitat Protection Program

**2000 - Settlement Agreement requiring, among other things, that Pasco County:**

- Initiate a study to assess appropriate mechanisms for establishing wildlife corridors**
- Amend the Comprehensive Plan to establish measures to protect wildlife habitat**

# Comprehensive Wildlife Habitat Protection Program

## Background

- ❑ Glatting Jackson was hired to address the wildlife habitat components of the Settlement Agreement
- ❑ We convened a Technical Advisory Committee, held 2 public workshops, and reviewed our conclusions with the Citizens Advisory Committee



# Comprehensive Wildlife Habitat Protection Program

## Background

The Technical Advisory Committee prioritized:

- Biological diversity
- Riparian linkages
- Enhancing existing conservation lands
- Large mammal conservation
- Ability to withstand natural processes, i.e. fire, flood, hurricane, etc.



# Comprehensive Wildlife Habitat Protection Program

## Background

We used existing GIS data including:

- Biodiversity hotspots
- Hydrography
- Aerial Photography
- Existing conservation land boundaries
- Historic land use



# Comprehensive Wildlife Habitat Protection Program

## Background

Ultimately, we defined:

- Critical Linkages
- Ecological Planning Units
- Agricultural Reserve



# Comprehensive Wildlife Habitat Protection Program

## Background

Critical linkage locations and widths were:

- ❑ Defined through analyses of these data and scientific literature, and other examples of wildlife corridor protection across the state
- ❑ Reviewed with the TAC, and
- ❑ Presented at 2 public workshops



# Comprehensive Wildlife Habitat Protection Program

## Background

Critical Linkages ranged from 550 to 2200 feet in width depending on the length between existing conservation lands

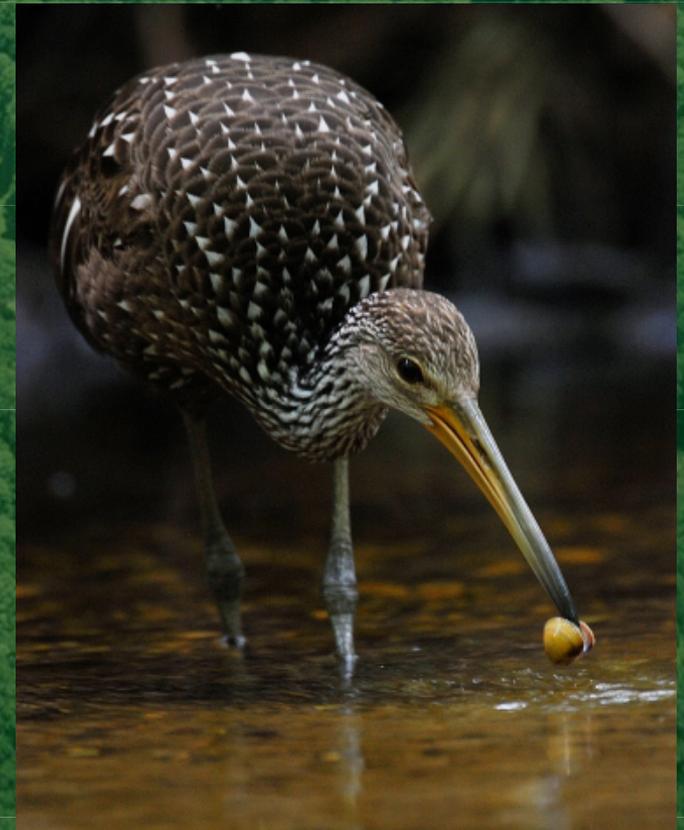


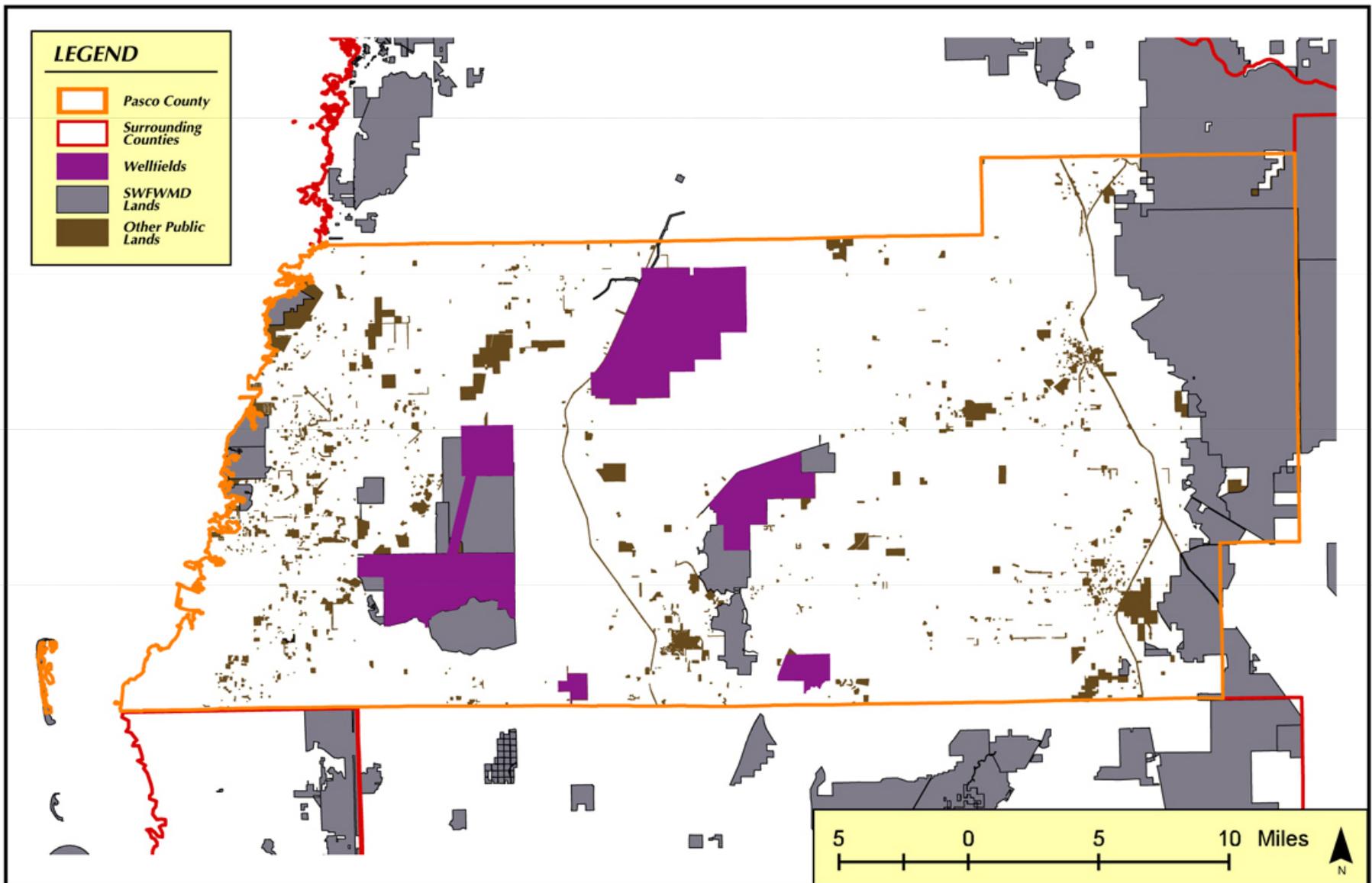
# Comprehensive Wildlife Habitat Protection Program

## Background

These corridor widths were selected based on similar objectives that resulted in policies and regulations in:

- Lake, Orange, Seminole and Sarasota Counties,
- for the Wekiva, Econ and Tomoka Rivers



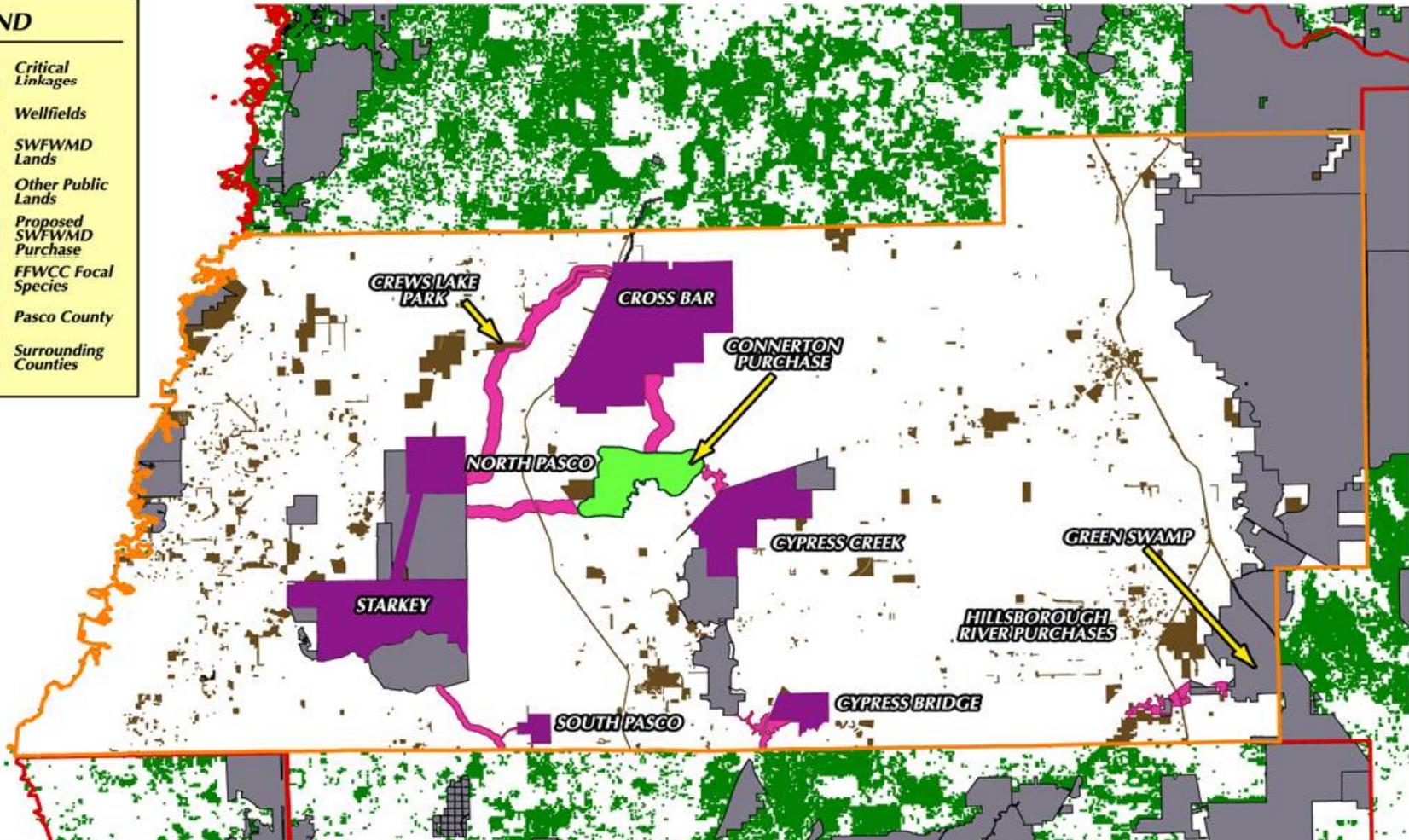


Source: Pasco County and Florida Natural Areas Inventory

# *Public Lands in Pasco County*

**LEGEND**

- Critical Linkages
- Wellfields
- SWFWMD Lands
- Other Public Lands
- Proposed SWFWMD Purchase
- FFWCC Focal Species
- Pasco County
- Surrounding Counties



*Critical Linkages – ranging from 550 feet to 2200 feet in width*

# Comprehensive Wildlife Habitat Protection Program

## Critical Linkages

- ❑ Our initial study was accepted by the BOCC in March 2002
- ❑ Comprehensive Plan changes in 2007 included special protection for Critical Linkages
- ❑ We have recently refined the boundaries of the Linkages based on more precise aerial photography and GIS data

# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- ❑ Conducted review of current scientific literature regarding wildlife corridors
  - ❑ Consistent with the 2002 study
- ❑ Analyzed state, national, and international research; applied global concepts to Pasco County

# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- ❑ Wider linkages are better (i.e. Beier et al. 2008; Sinclair et al. 2005; Lee et al. 2004; Bennett 2003)
  - ❑ Increased avian diversity (Darveau et al. 1995; Dickson et al. 1995)
  - ❑ Decreased edge effects, greater diversity of habitat and species diversity (Bennett 2003)
  - ❑ Provide valuable connections and breeding habitat for avian forest specialists (Shirley 2006)

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## Scientific Literature Database Review: Critical Linkages

- ❑ Preservation of riparian habitat and adjacent forest cover, not just narrow riparian buffers (i. e. England and Rosemond 2004; Houlahan and Findlay 2004; Semlitsch and Brodie 2003; Willson and Dorcas 2003)



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## Scientific Literature Database Review: Critical Linkages

- ❑ Comprehensive analysis outlined studies with recommended riparian buffer widths from 325 - 5250 ft
- ❑ Negative edge effects are biologically significant up to 985 ft in terrestrial and 165 ft in aquatic systems (Environmental Law Institute 2003)



# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- ❑ Widths based upon definitive studies by Brown and Schaefer (1990a and 1990b)
  - ❑ Studied buffer zones for wildlife on Wekiva and Econlockhatchee Rivers
  - ❑ Evaluated minimum home ranges for species by habitat type
  - ❑ Determined that 50% of wetland species accommodated in a 550-foot buffer (1100 feet total in width)

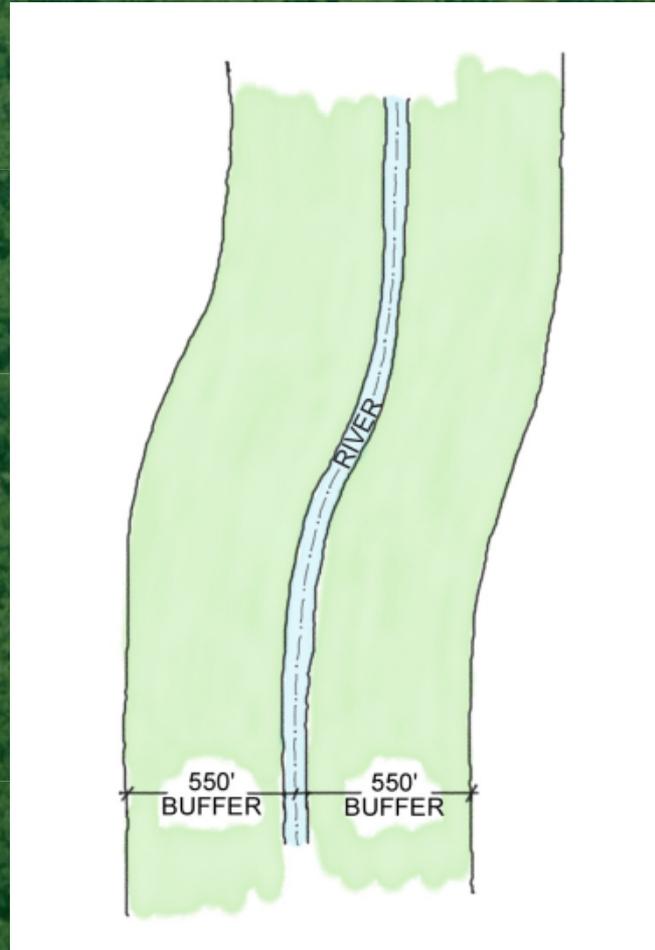
# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- Recommendations in Brown and Schaefer studies:
  - Maintain a buffer that is, at a minimum, 1100 feet wide
  - Any portions of the river/ wetland system that extend beyond the 1100-foot buffer are included, along with an additional 50-foot upland buffer

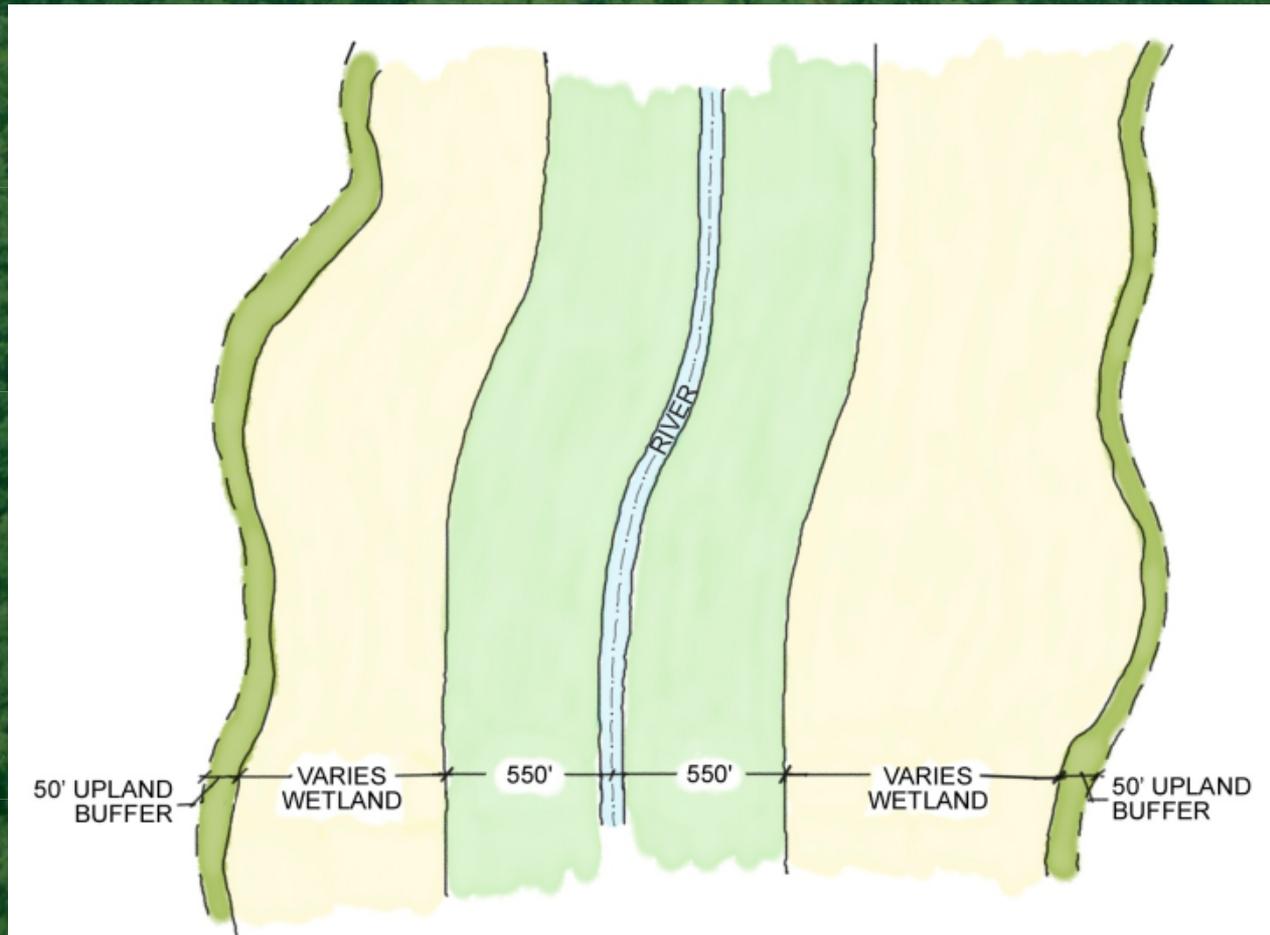
# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages



# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages



# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- Studies by Brown and Schaefer were adopted in Lake, Orange, Seminole, and Sarasota Counties and applied to the Tomoka River by SJRWMD
- Studies were also the basis for the recommended 550', 1100', and 2200' corridor widths
- Modified studies to account for:
  - variability among multiple corridors
  - lack of conservation lands adjacent to corridors

# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- ❑ Modified Brown and Schaefer studies to account for lack of conservation lands adjacent to corridors
- ❑ Establishing buffer zones adjacent to habitat reserves needed to protect wildlife value, especially in urbanizing landscapes (Rodewald 2003)



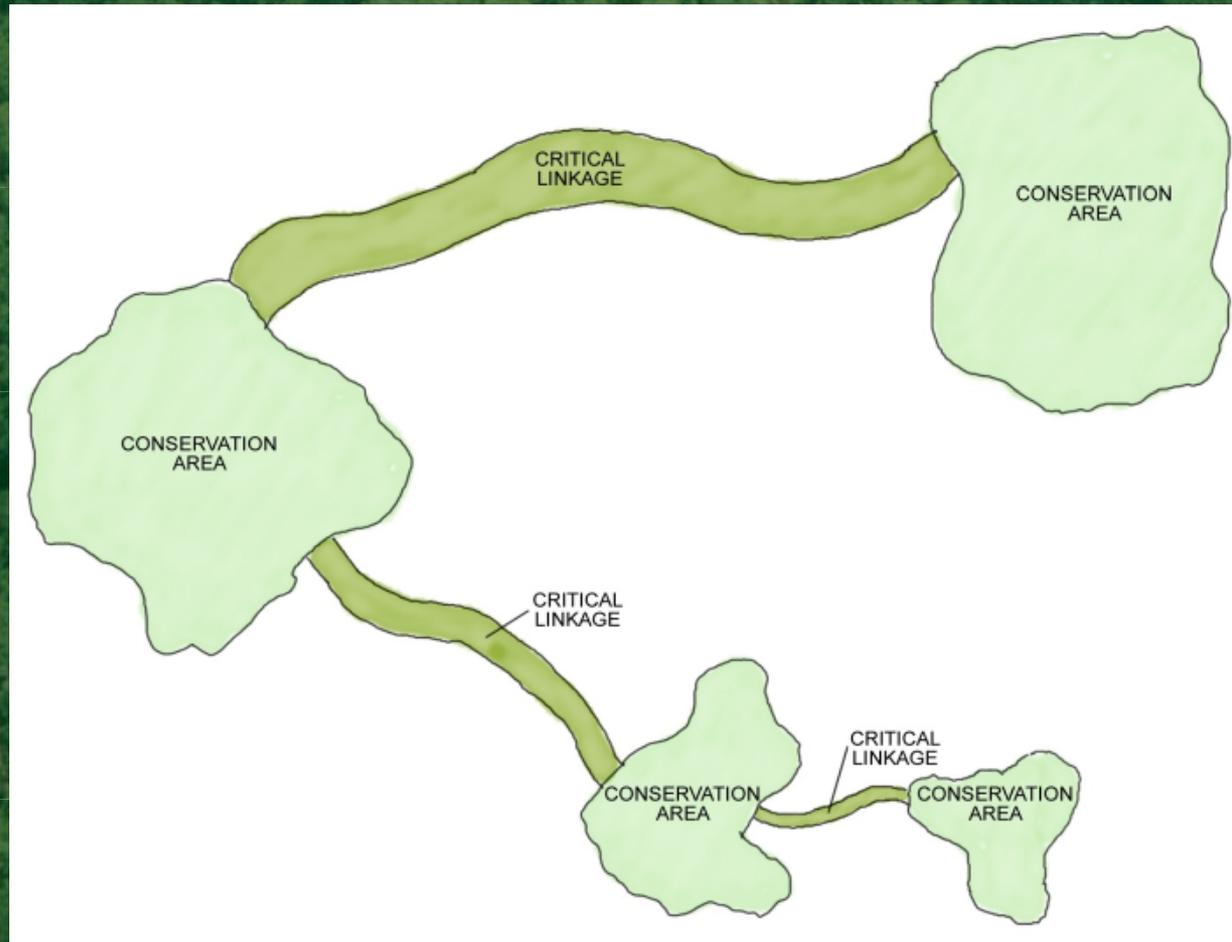
# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages

- ❑ **Modified Brown and Schaefer studies to account for variability among multiple corridors**
  - ❑ **Core areas that are farther apart may need wider linkages; especially to accommodate wide-ranging mammals (Harrison 1992)**
  - ❑ **To link large reserves with contrasting habitats, corridor must be wide enough to encompass suitable habitat for species that occur in each reserve (Bennett 2003)**

# Comprehensive Wildlife Habitat Protection Program

## Scientific Literature Database Review: Critical Linkages



# **Comprehensive Wildlife Habitat Protection Program**

## **Scientific Literature Database Review: Critical Linkages**

- New technological and analytical tools allow us to quantify habitat selection and movements- can approach corridors more holistically (Chetkiewicz et al. 2006)**
- GIS continues to be a tool to make landscape-scale decisions on wildlife linkage(s); regional approach to consider numerous variables at once (Beier et al. 2008)**

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## Scientific Literature Database Review: Conclusions

- ❑ Current trends in scientific literature, consistent with the 2002 study, include:
  - ❑ Corridors: wider is better
  - ❑ Corridors must provide suitable habitat for wildlife; encompass home ranges of large mammals
  - ❑ Corridors especially necessary in urbanizing areas

# Comprehensive Wildlife Habitat Protection Program

## Summary:

Corridors between conservation areas enhance the viability of the conservation areas themselves



# Comprehensive Wildlife Habitat Protection Program

## Wider corridors are better because:

- ❑ They are more resilient to natural disturbances
- ❑ They are less vulnerable to incompatible uses along the edges of the corridor
- ❑ They include a greater diversity of wildlife and plants
- ❑ They are more easily managed



# Comprehensive Wildlife Habitat Protection Program

The 550, 1100, 2200' approach is justified because:

- ❑ The concept has been sustained in previous administrative processes
- ❑ The corridors also protect wetlands and the 100-year floodplain
- ❑ They are relevant to the context of length, disturbance, and long-term viability

