



## Population Dynamics & Movements of the Endangered Wood Stork

### Overview

The Wood Stork once bred primarily in the Florida Everglades. Widespread alterations to the hydrology and extent of the Everglades in the mid-20<sup>th</sup> century caused the Wood Stork to decline from approximately 75,000 birds in the early 1930's to less than 10,000 birds in the early 1980's. **The Wood Stork was declared endangered in 1984.**

The US Fish and Wildlife Service has a mandate to conserve and protect endangered species. The protection of endangered species requires an understanding of the factors that threaten listed species. Additionally, population dynamics of each species must be well-understood. The central question in delisting species is "**How many are enough?**"

### Recovery Goal

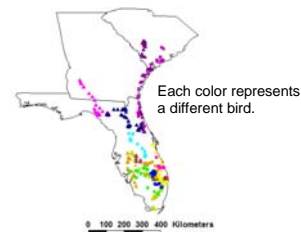
In order to delist the species, the Fish and Wildlife Service has set a recovery goal for the Wood Stork of at least 10,000 nesting pairs producing at least 1.5 chicks per nest over a 5 year period. Of those 10,000 pairs, a minimum of 2,500 must occur in south Florida.



### Approach

**Satellite telemetry**--We are using satellite telemetry coupled with a modeling approach to investigate the environmental factors limiting Wood Stork population size and to determine whether and when the Wood Stork might be considered for delisting.

Satellite telemetry allows us to follow young Wood Storks over a number of years in order to determine their range, habitat use, and mortality rates. This information can be used to construct matrix and simulation models of population growth.



Dispersal of fledglings from south Florida during 1 week in July.

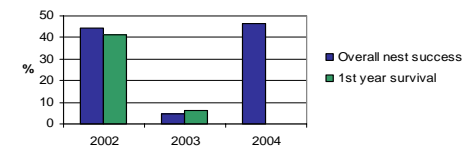
### Nest monitoring--

We have closely monitored nest success in selected colonies over the past 3 years and will continue to do so in the future.

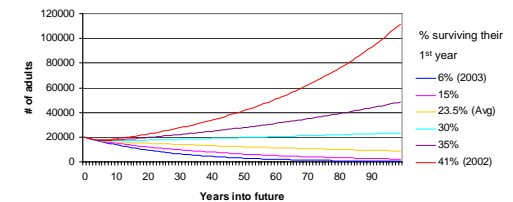
**Modeling**—We are using a preliminary matrix model to explore the likely population trajectory of the Wood Stork under a variety of scenarios. By varying the values of the vital rates used in the model, we can determine the sensitivity of model outcomes to differences in survival and reproductive rates. This provides a better understanding of which vital rates need further research.

### Preliminary Results

We have seen that nest success and 1<sup>st</sup> year survival are highly variable among years in south Florida colonies.



Variability in vital rates and small data sets make it hard to predict population dynamics: 1<sup>st</sup> yr survival rates of young storks were 41% in 2002 but just 6% in 2003. The value used to represent 1<sup>st</sup> year survival makes a huge difference in projected population size over the next 100 years.



### Future Directions

We will continue to tag birds and to collect information on survival and reproduction over the next 3 years. The additional information we gain will allow us to model Wood Stork population dynamics with greater certainty and to understand relationships between habitat use and population dynamics. **This information will be essential in deciding when to remove the Wood Stork from the Endangered Species list.**

\*I would like to acknowledge my co-authors, Peter Frederick and Rebecca Hylton.