

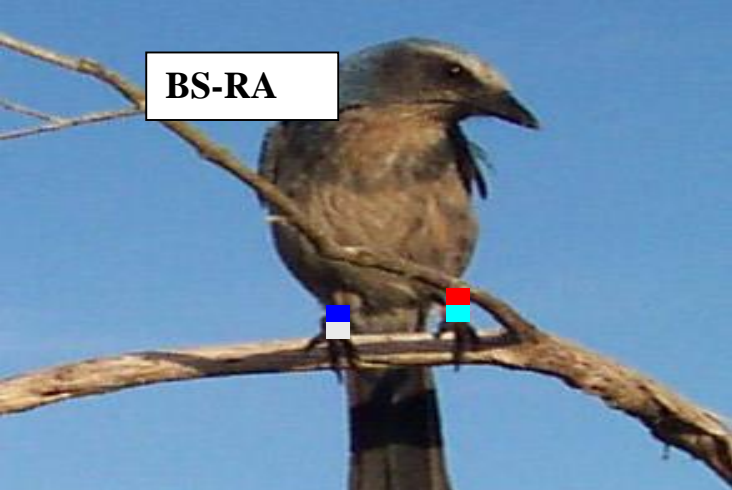
**Integrating science  
& management:**

**Florida Scrub-Jay  
Conservation along  
the Central  
Florida's Atlantic  
Coast**

[david.r.breining@nasa.gov](mailto:david.r.breining@nasa.gov)

**Kennedy Space  
Center  
Ecological Program**

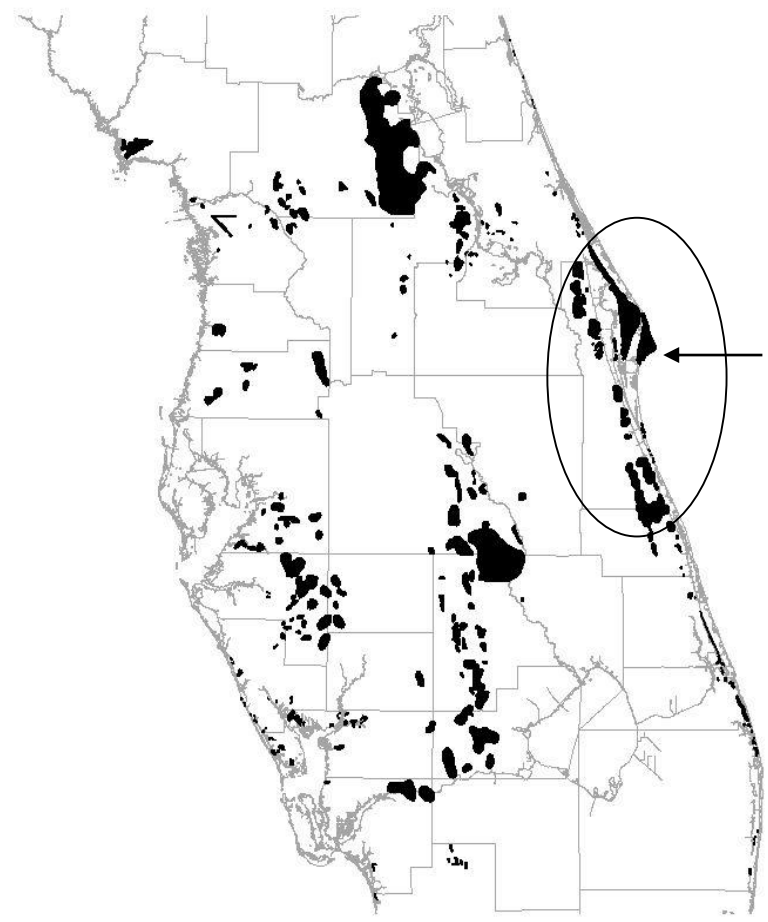




**BS-RA**

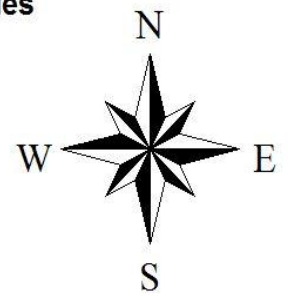
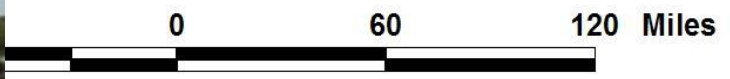


**GL-SP**



**Study area**

**~ 30  
years  
~ 30  
sites  
~ 30  
journal  
articles**



# **Sociobiology**

**Florida's unique bird species**

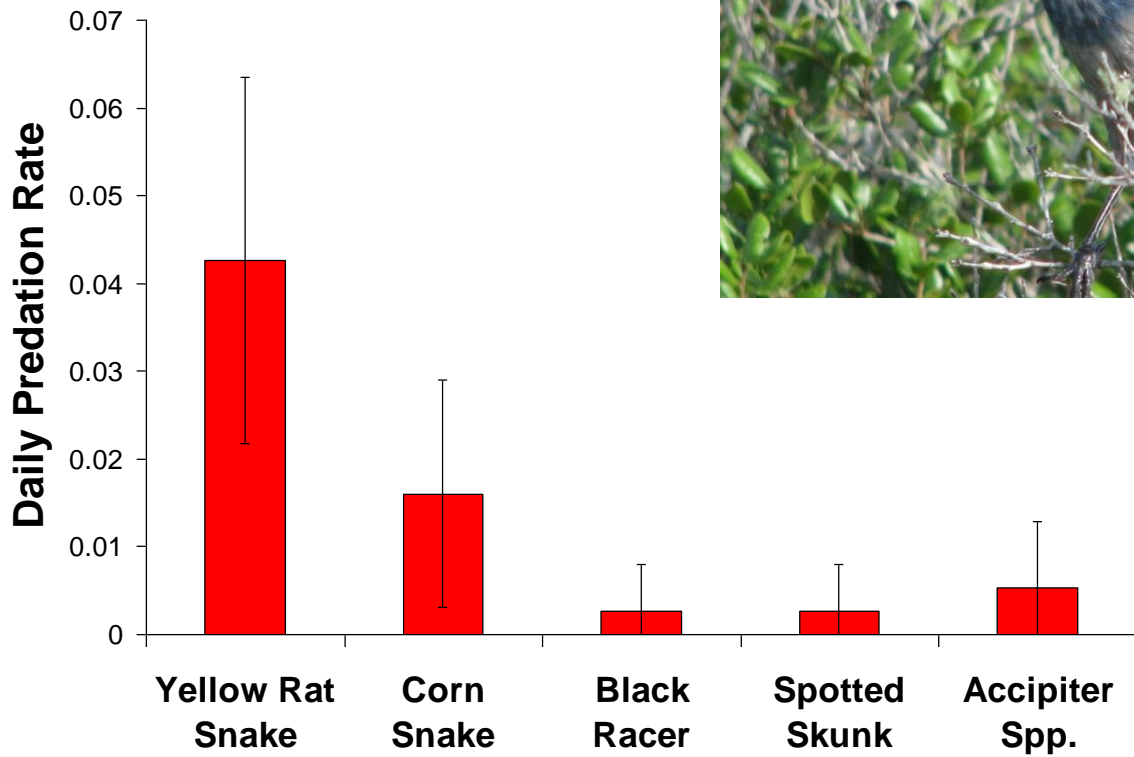
**Mate for life**

**Can breed first year, usually delay**

**Families of 2-8 adults**

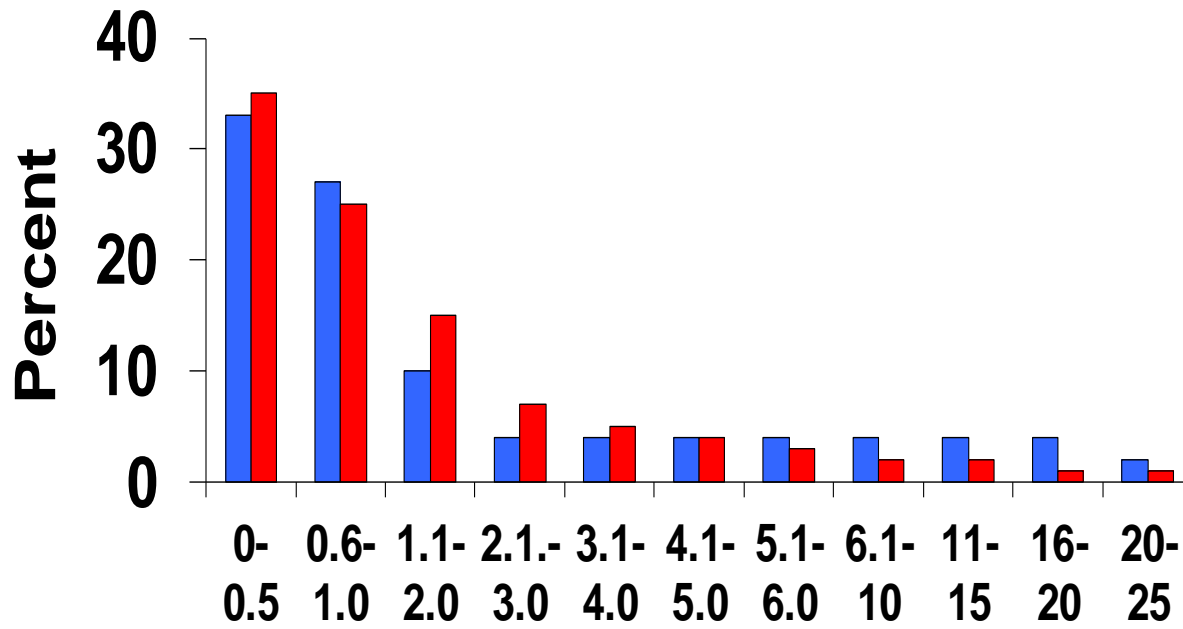
**Help at nest, defend territory, spot & mob predators (sentinel system)**



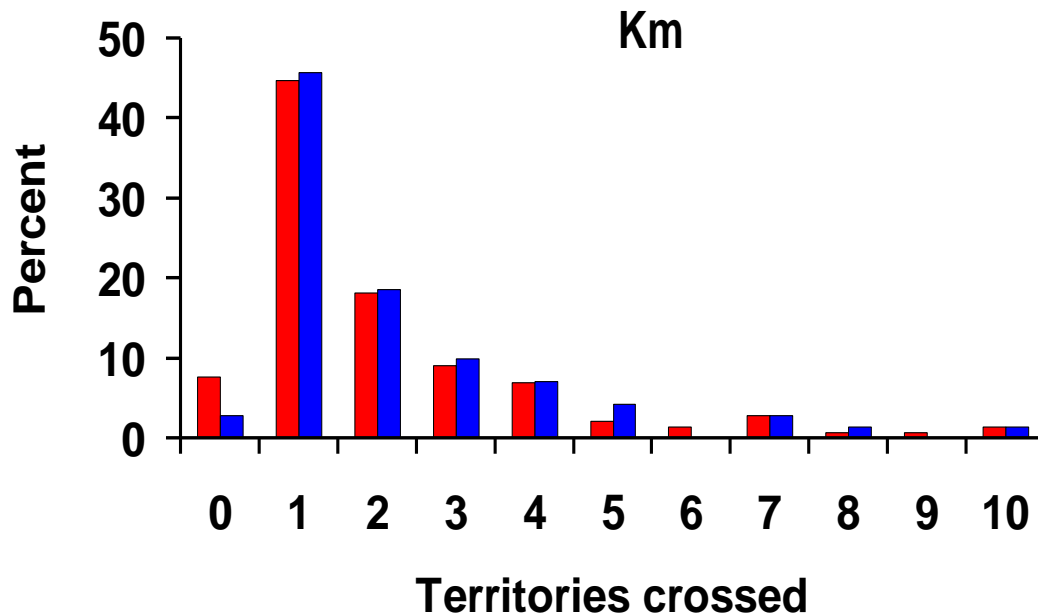




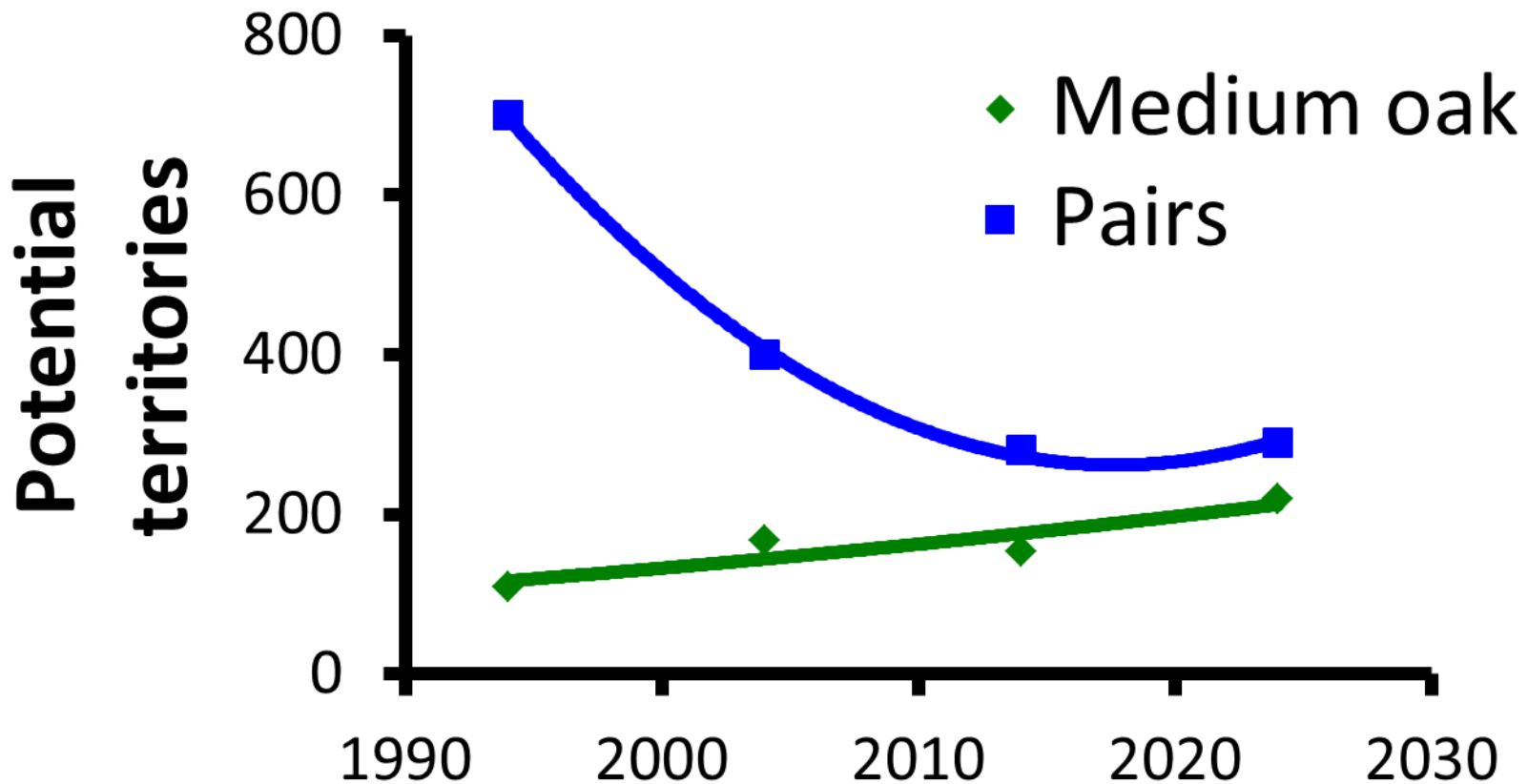


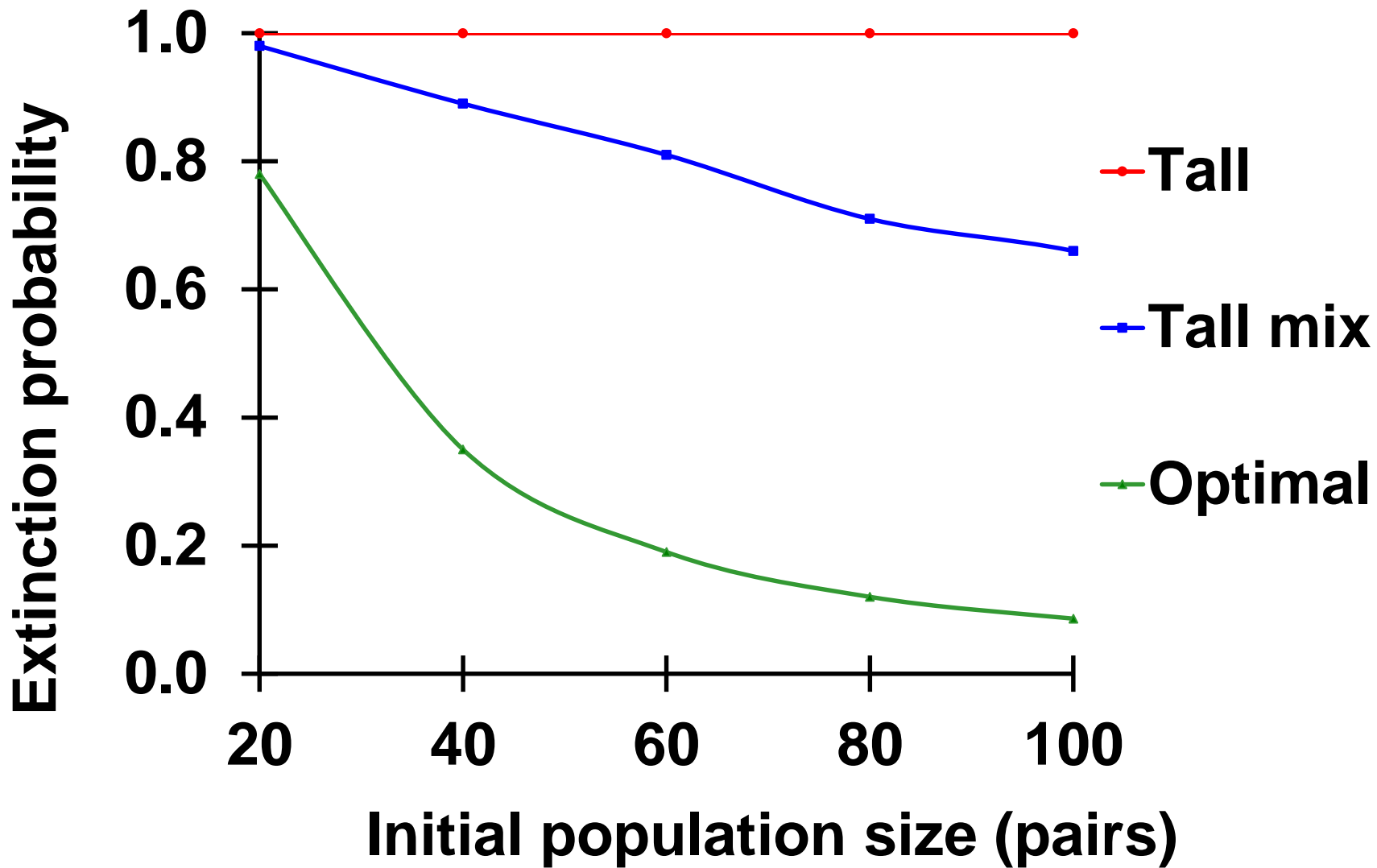


**Short  
dispersal  
by  
males &  
females**



# Population & habitat trends







## Conservation planning (nonfederal properties)

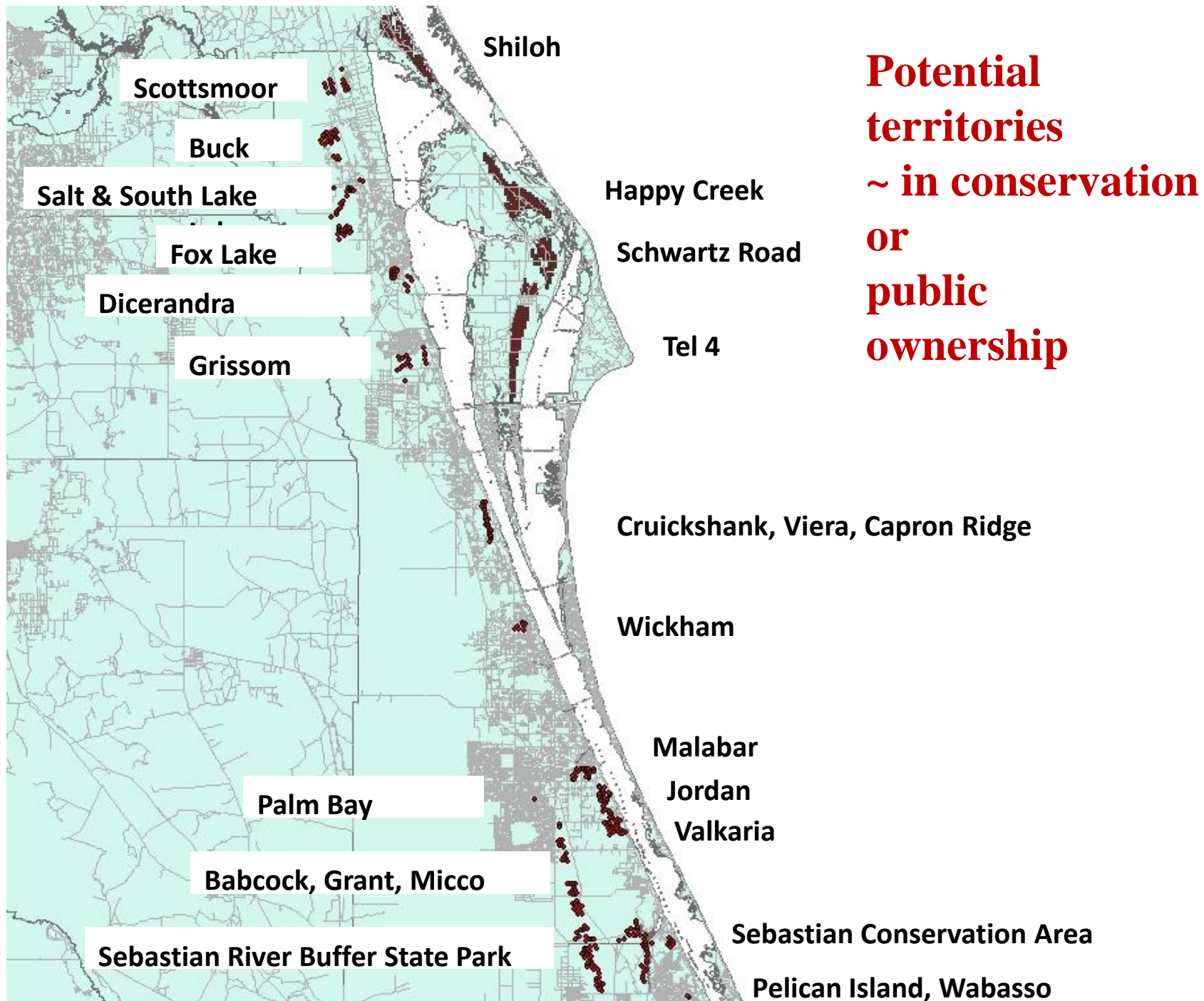
- Still operating under 1990 recovery plan
- Brevard County Scrub Compensation and Development Plan effort outlined key conservation areas (EELS, DEP, FWCC, SJRWD); still some gaps
- HCPs & mitigation
- Five year review in draft
- Conservation mapping exercise

**Potential local populations = potential habitat within 670 m (two FSJ territories).**

**Core** = habitat to support  $\geq 40$  family groups at 70% carrying capacity (K).

**Support** = support 10 - 39 family groups within 3.5 km of a core or 3.5 km of other support areas that together can support 40 or more groups at 70% K.

**Auxiliary** = a potential local population that contains sufficient habitat to support 10 or more family groups at 70% K that does not meet the definition of a core or support area.



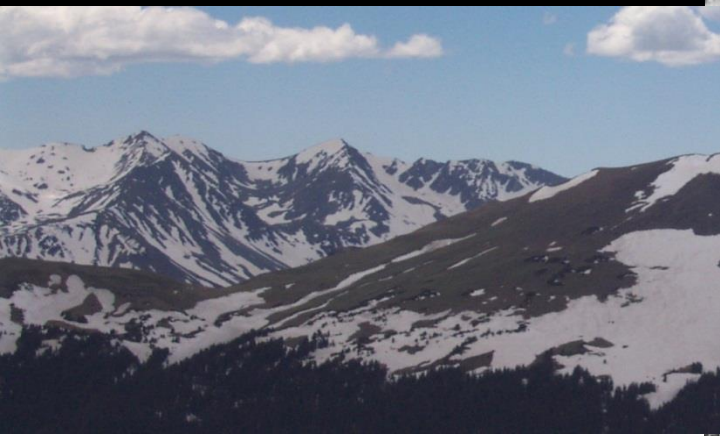
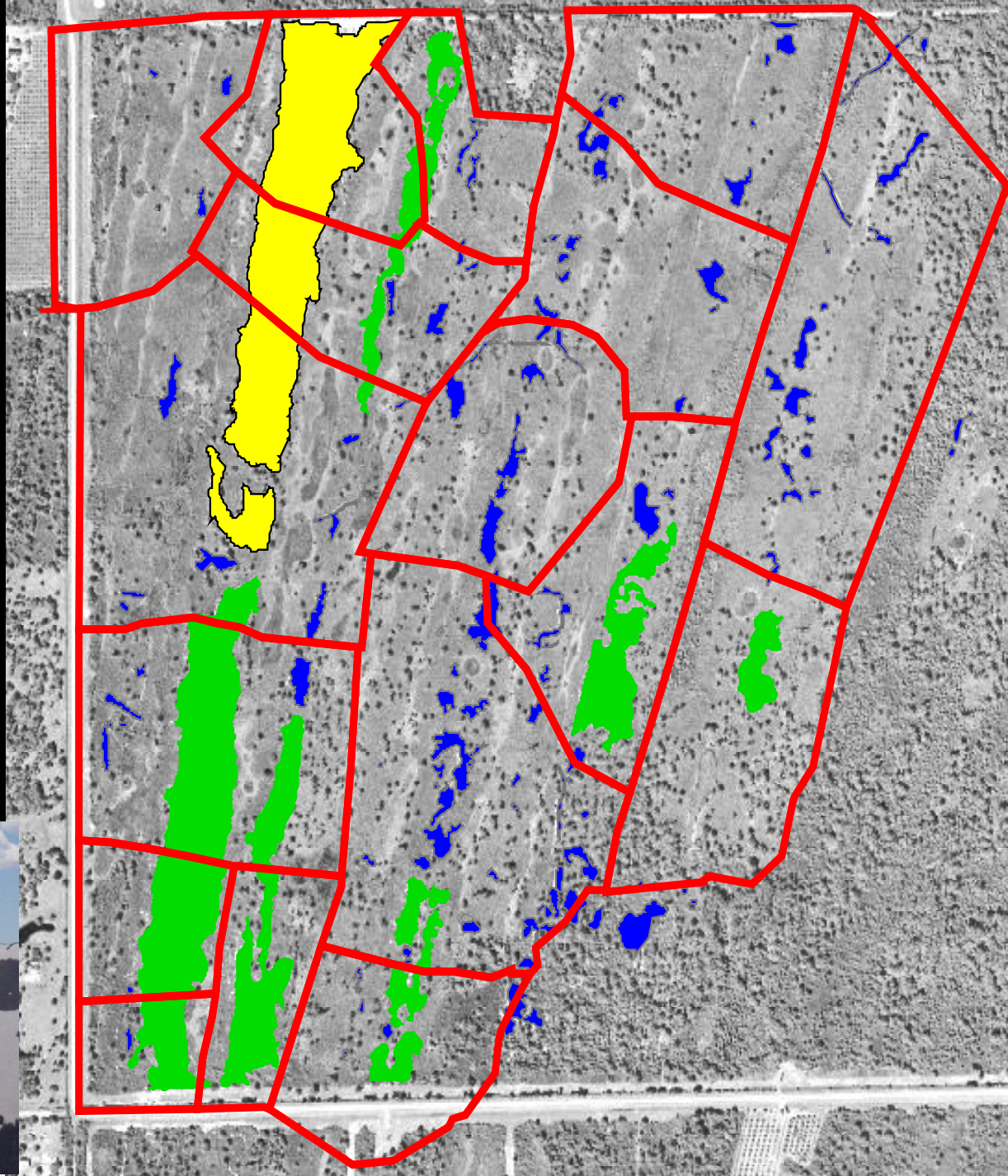






**Florida  
Scrub-Jay  
territories &**

**Primary  
Secondary,  
Tertiary  
scrub ridges  
in a  
flammable  
flatwoods  
matrix**





# Anthropogenic features disrupt fires





**Forestation & loss of open sandy areas across large areas**



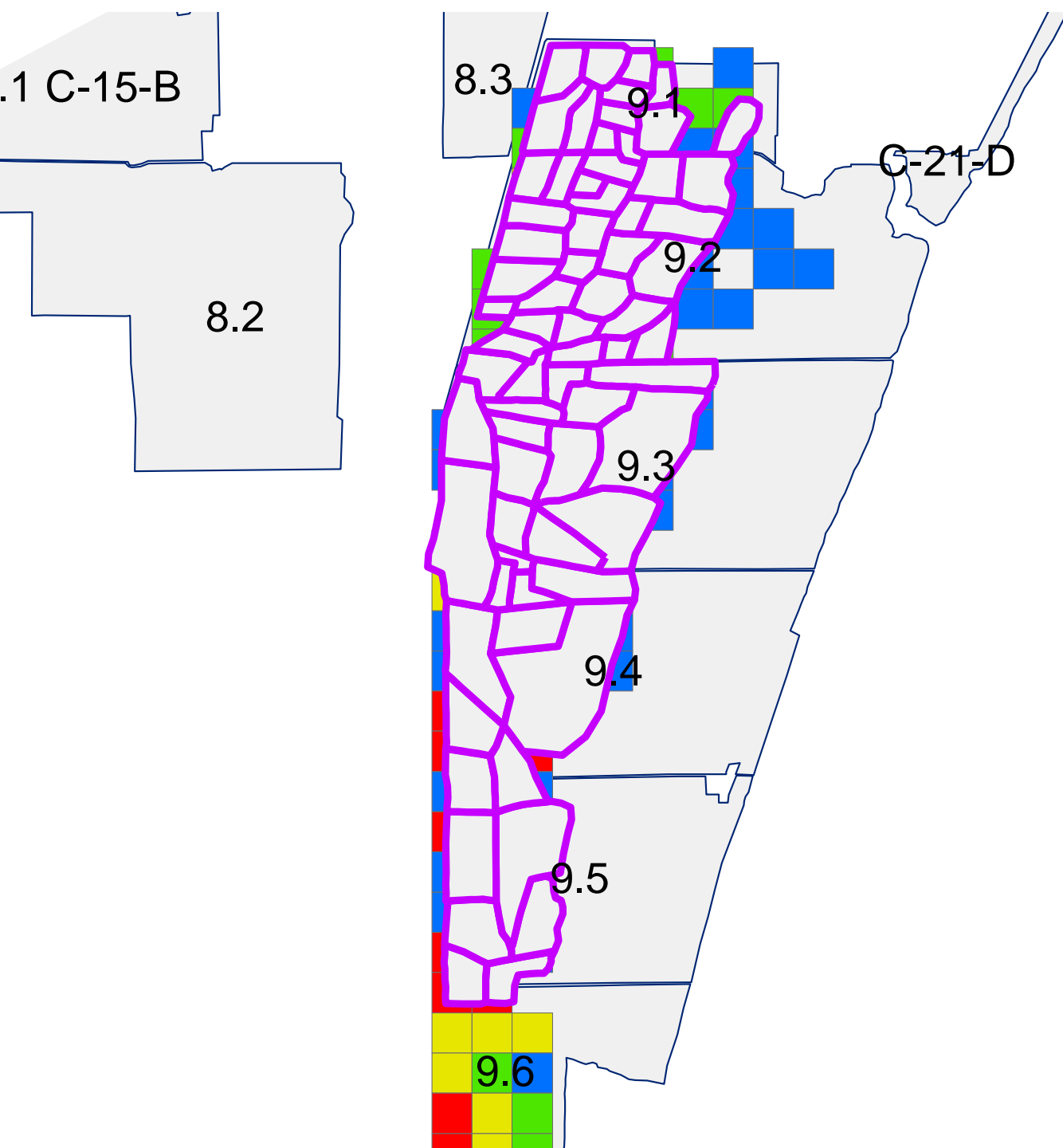
## **Scrub Management Guidelines for Peninsular Florida:**

- 1.  $\geq 10\%$  of each potential scrub-jay territory should have shrubs 4 -5.5 feet, rest of the vegetation should be shorter,**
- 2.  $< 1$  acre of vegetation taller than 5.5 feet,**
- 3. tree overstory  $< 1$  tree per acre,**
- 4. Distance to forest edge  $< 1000$  foot between a scrub-jay territory and forest**
- 5. Open ground 10-50% bare sand or sparse herbaceous vegetation**

# Influence of **habitat state** on demography & catastrophic fire hazard

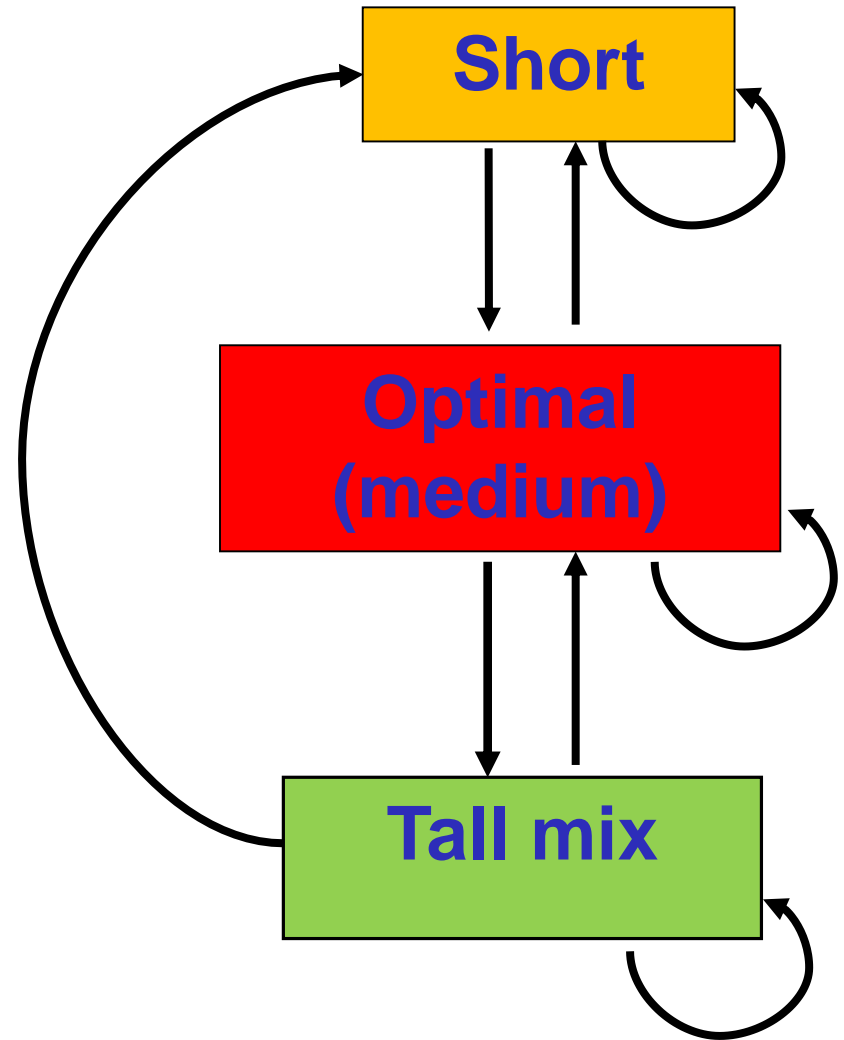
<b>State</b>	(yearlings - breeder deaths) / pair-year	<b>Fuels hazard</b>
<b>Short</b>	- 0.32	<b>Low</b>
<b>Open-medium</b>	+ 0.49	<b>Low</b>
<b>Closed-medium</b>	+ 0.15	<b>Moderate</b>
<b>Tall</b>	- 0.24	<b>High</b>



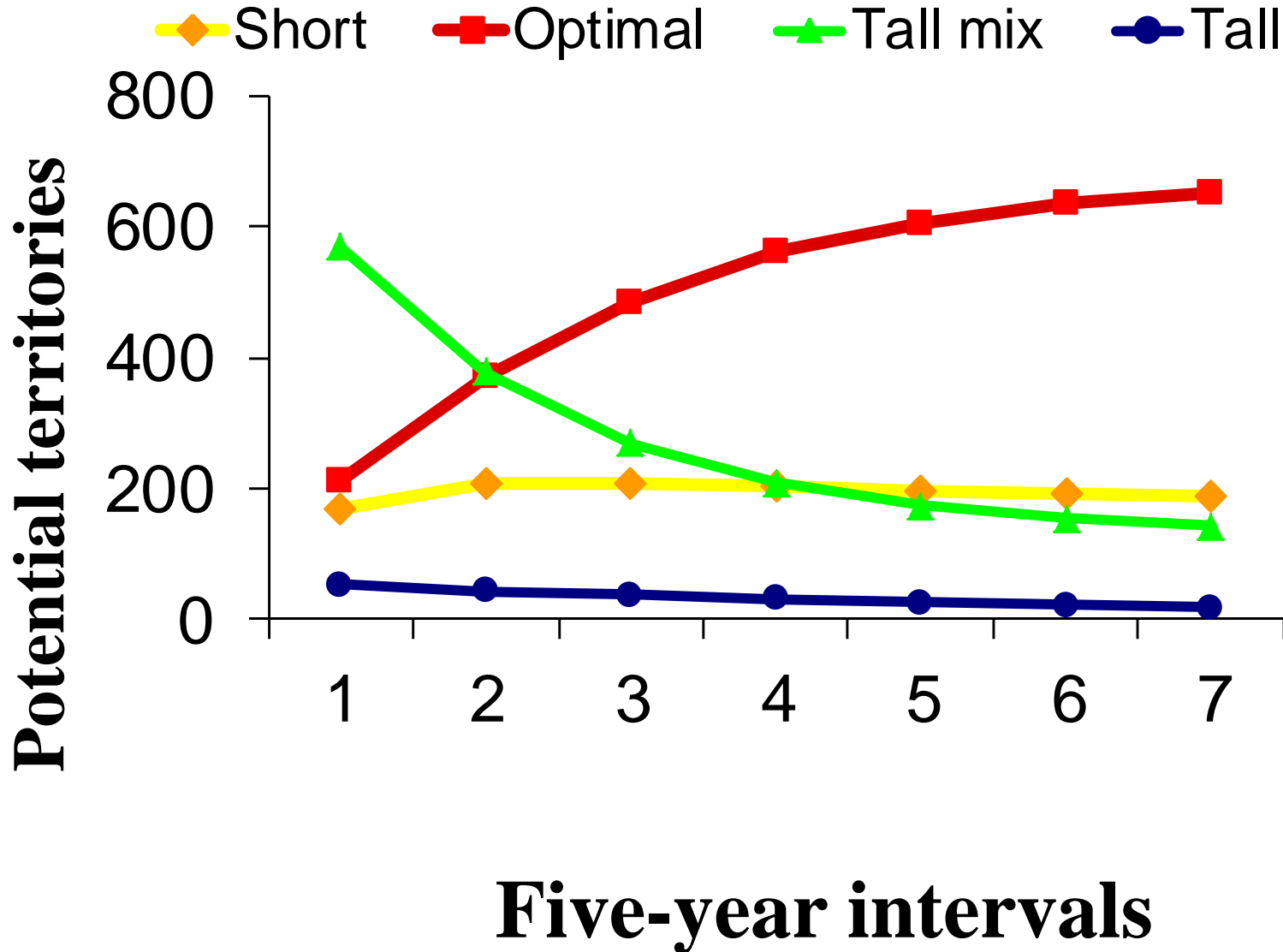


**Transition probabilities as functions of:**

- oak cover**
- edges**
- time since fire**
- number of fires**
- types of cutting**
- rainfall...**



# Frequent fire (1-5 years) / cutting



# Adaptive Resource Management & Optimal Decisions

Occupancy	habitat	treatment
Occupied	Short	NONE
	Open	NONE
	Closed	LT. MECH & BURN
	Tall-mix	BURN
	Tall	LT. MECH & BURN
Unoccupied	Short	NONE
	Open	NONE
	Closed	BURN
	Tall-mix	BURN
	Tall	LT. MECH & BURN





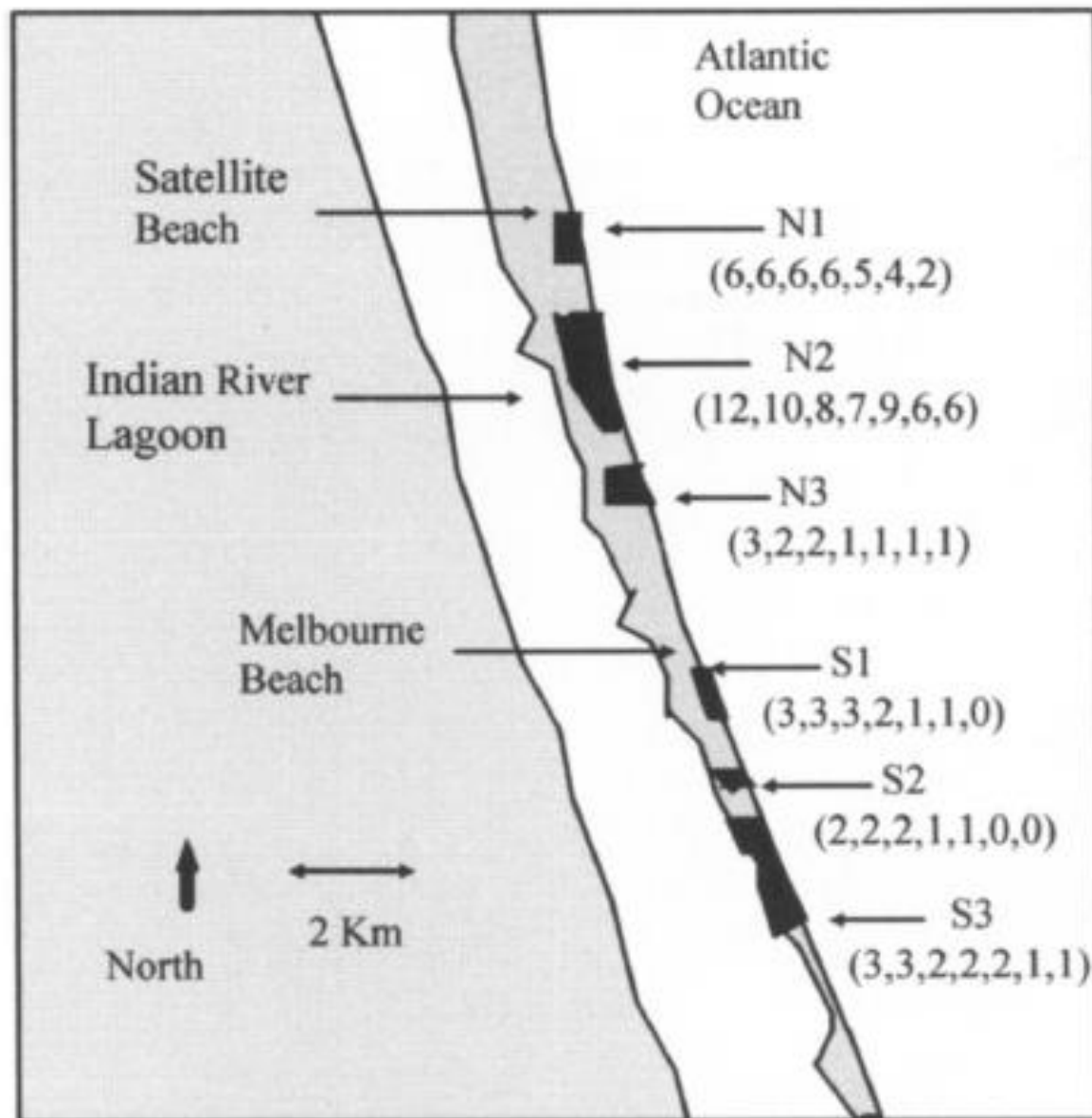




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## Florida Scrub-jay Translocation Guidelines June 30, 2011

- **≥500 acres habitat in conservation area**
- **~ 50 acres unoccupied optimal habitat / family**
- **~ 4 translocation programs having short term success**
- **Next step demonstrate population recovery**
- **In Brevard many sites with potential for >10 pairs but not many source birds**



Google earth



# Summary

**Need adaptive management using frequent  
controlled fires & cutting**

**Role for acquisition & translocation**



**[david.r.breininger@nasa.gov](mailto:david.r.breininger@nasa.gov)**





**Partner: NASA, USFWS, USGS, FWCC, EELS, DEP, BREVARD ZOO, SJRWMD, IRC, UCF, NCSU.**