Integrating science & management:

Florida Scrub-Jay Conservation along the Central Florida’s Atlantic Coast

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Kennedy Space Center
Ecological Program
1988 - 2011

Study area ~ 30 years ~ 30 sites ~ 30 journal articles
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

- **Medium oak**: Decreasing trend from 600 territories in 1990 to around 400 territories in 2030.
- **Pairs**: Increasing trend from around 50 territories in 1990 to 200 territories in 2030.
Extinction probability

Initial population size (pairs)

- Tall
- Tall mix
- Optimal
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.
Potential territories ~ in conservation or public ownership
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. ≥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

<table>
<thead>
<tr>
<th>State</th>
<th>(yearlings - breeder deaths) / pair-year</th>
<th>Fuels hazard</th>
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</thead>
<tbody>
<tr>
<td>Short</td>
<td>- 0.32</td>
<td>Low</td>
</tr>
<tr>
<td>Open-medium</td>
<td>+ 0.49</td>
<td>Low</td>
</tr>
<tr>
<td>Closed-medium</td>
<td>+ 0.15</td>
<td>Moderate</td>
</tr>
<tr>
<td>Tall</td>
<td>- 0.24</td>
<td>High</td>
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</table>
Transition probabilities as functions of:

- oak cover
- edges
- time since fire
- number of fires
- types of cutting
- rainfall
Frequent fire (1-5 years) / cutting

Potential territories

Five-year intervals
## Adaptive Resource Management & Optimal Decisions

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>habitat</th>
<th>treatment</th>
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</thead>
<tbody>
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<td>Occupied</td>
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<td>NONE</td>
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<tr>
<td></td>
<td>Open</td>
<td>NONE</td>
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<td></td>
<td>Closed</td>
<td>LT. MECH &amp; BURN</td>
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<td>BURN</td>
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</table>
• >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
Summary

Need adaptive management using frequent controlled fires & cutting

Role for acquisition & translocation

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