

I Don't Want No Scrub

But, the Florida Scrub-jay Does

Identifying Suitable Habitat for the Florida Scrub-jay



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The habitat of Florida's only endemic bird is under fire —

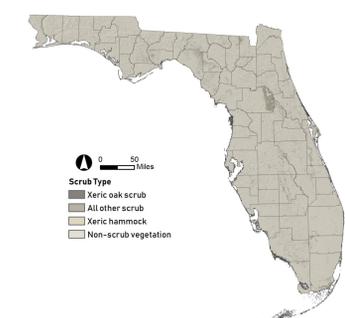
– Or at least, it used to be. The Florida scrub-jay (*Aphelocoma coerulescens*) is an obligate of a very specific type of habitat: they reside only in low-growing oak scrub in sand ridges. If the oak scrub is allowed to grow – becoming dense or tall – the Florida scrub-jay can no longer occupy the area. The habitat that the Florida scrub-jay thrives in is fire maintained, and due to increased urbanization in Florida and anthropogenic alteration of fire cycles, these important low-intensity fires occur less often (and if they do occur, are more catastrophic). The Florida scrub-jay's habitat has been further altered and fragmented by agricultural development. The scrub-jay is inordinately impacted by factors that threaten its habitat due to its extremely specific habitat requirements, paired with its sedentary nature, tendency not to disperse, and very high nest site fidelity.

The Florida scrub-jay is federally listed as Threatened under the United States Endangered Species Act. The US Fish & Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission have initiated human-assisted dispersals of scrub-jays to suitable areas across the state due to habitat degradation and fragmentation limiting the Florida scrub-jay from dispersing these far distances itself. This analysis seeks to identify the most suitable areas to protect and restore scrub-jay habitat, in an attempt to supplement the current Florida scrub-jay translocation effort.

Methods & Discussion

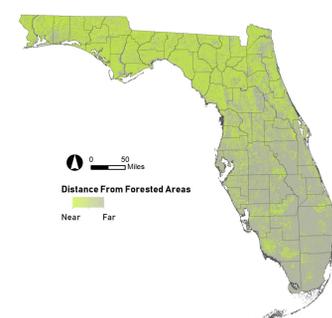
To perform a suitability analysis, factors critical to Florida scrub-jay habitat were identified from peer-reviewed literature. The methods used to analyze each factor are described below. Each factor was reclassified and given a score between 1 (being the most suitable) and 3 (being the least suitable). Final reclassified factors were combined in an unweighted analysis. Factors were then given individual weights in a weighted analysis, with weights being assigned on basis of level of importance based on peer-reviewed literature.

This analysis revealed the most suitable habitat to be found in the Ocala National Forest and the on the grounds of the Archbold Biological Station, where the two largest Florida scrub-jay populations currently reside. This analysis emphasizes the importance of management and protection of these areas: their preservation will be critical to the longevity of the Florida scrub-jay population. Hopefully, with the dedication of management experts and bird enthusiasts alike, areas identified with moderate suitability will remedied and will once again become home to the Florida scrub-jay.



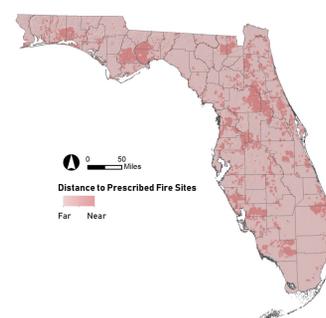
Location of Scrub

The absolute most essential part of habitat for the Florida scrub-jay is the presence of xeric oak scrub. Scrub vegetation was selected out of the overall vegetation layer and reclassified, with xeric oak scrub being the most suitable, other scrub falling as an intermediate, and xeric hammock being the least suitable in this category. However, non-scrub received the lowest suitability score, because xeric hammock habitat can become suitable with prescribed fire, so this dataset was reclassified into four categories rather than three.



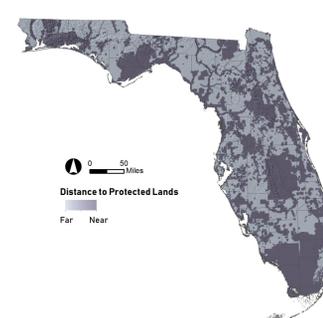
Distance from Forested Areas

Another important component of scrub-jay habitat is not only the presence of scrub, but also the absence of tall, dense forest. Based on the literature on this topic, ideal scrub-jay habitat will be at least 1,000 feet away from dense forested areas. However, scrub-jays have been known to use habitat as close to about 400 feet from forested areas. Euclidean distance was performed on a vegetation layer composed of forested areas only, which was created by selecting only relevant forest types from the overall vegetation layer. This was then reclassified for suitability based on distance.



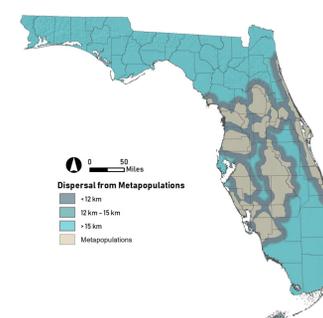
Prescribed Fire Sites

Prescribed fire is an essential part of management for the fire-maintained habitat of the Florida scrub-jay. For this analysis, designated prescribed fire areas for relevant habitat comprised of scrub and xeric hammock areas were selected out, while prescribed fire areas for non-relevant habitat were eliminated. Xeric hammock was included as relevant habitat in this analysis since, with fire management, it can become suitable habitat. Euclidean distance was performed on these relevant sites. The prescribed fire areas were then reclassified for suitability.



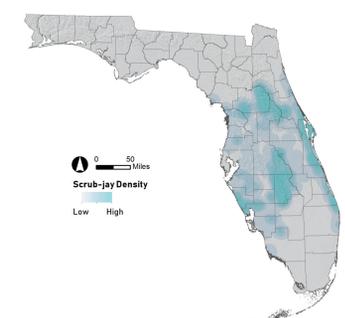
Distance to Protected Lands

It is important for Florida scrub-jay habitat to fall in or near protected areas for ease of management of habitat. This is especially important in conjunction with the necessity of prescribed fire use, which must be closely managed. Protected lands were defined by performing a Union between identified National Wildlife Refuge areas and Managed Lands. I then performed Euclidean distance on the Protected Areas I defined and reclassified for suitability based on closeness to Protected Lands.



Dispersal from Metapopulations

Connectivity between scrub-jay metapopulations is important to maintaining the genetic diversity of the species. New research has shown that small, isolated metapopulations still make valuable contributions to the genetic diversity of the species and should be protected rather than only protecting the larger, more connected metapopulations. However, it has also been shown that this scrub-jay is limited by ability to disperse. Metapopulation polygons were georeferenced from the 2011 Florida Scrub-jay Translocation Guidelines, and were buffered based on dispersal distance. The buffered zones were then reclassified for suitability.

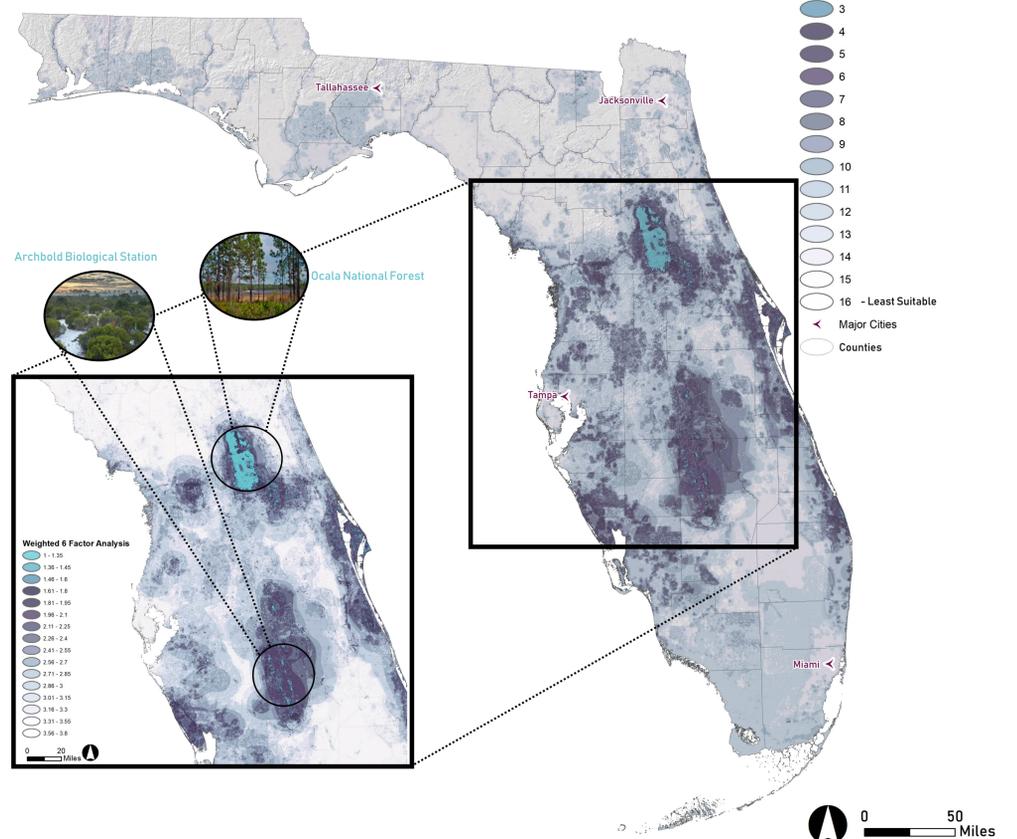


Florida Scrub-jay Distribution

Florida scrub-jay distribution was included as an additional metric to supplement the distribution described by the metapopulation data. This data is based on sightings of scrub-jays. Kernel density was performed on this data set, and then the data was organized into quantiles. The density data were then reclassified into categories of high, medium, and low density based on the five quantiles which resulted from the kernel density. This portion of the analysis provides a more specific view of where Florida scrub-jays have been sighted than the metapopulation data.



Final Weighted & Unweighted Suitability



Suitability Score	Distance from Protected Areas	Distance from Prescribed Fire Areas	Scrub type	Distance from forested areas	Dispersal Distance from metapopulations	Distribution - Sightings
Weight	5%	5%	40%	20%	20%	10%
1—Best	< 0.5 miles away	<0.05 miles away	Xeric oak scrub	> 1000 feet away	< 12 km	High
2	0.5-1 mile away	0.5-1 mile away	All other scrub	400-1000 feet	12-15 km	Medium
3—Worst	> 1 mile away	> 1 mile away	Xeric hammock	<400 feet away	> 15 km	Low

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Projection: NAD_1983_2011_Florida_GDL_Albers

Data sources: FGDL metadata explorer, Florida Fish and Wildlife Conservation Commission, Official State of Florida Geographic Data Portal, ESRI, USFWS & FWC Florida Scrub-jay Translocation Guidelines

Photo Sources: Florida Department of Environmental Protection, Miami Discount Tours, Florida Hikes, Archbold Biological Station

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