Florida Scrub-Jay
(*Aphelocoma coerulescens*)

5-Year Status Review:
Summary and Evaluation

Photo: Todd Mecklenborg - U.S. Fish and Wildlife Service

U.S. Fish and Wildlife Service
Southeast Region
Florida Ecological Services Field Office
Gainesville, Florida

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STATUS REVIEW
Florida Scrub-Jay (*Aphelocoma coerulescens*)

GENERAL INFORMATION

Current Classification: Threatened

Lead Field Office: Florida Ecological Services Field Office, Todd Mecklenborg

Reviewers: Robert Aldredge (Florida Ecological Services Field Office), Chad Allison (Partners for Fish and Wildlife), Craig Faulhaber (Migratory Birds), Mike Legare (Merritt Island National Wildlife Refuge)

Lead Regional Office: Southeast Region, Carrie Straight

Date of original listing: July 6, 1987 (52 FR 20715; June 3, 1987)

Methodology used to complete the review:

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants (50 CFR 424.11). The U.S. Fish and Wildlife Service (Service) evaluated the biology, habitat, and threats of the Florida Scrub-Jay (*Aphelocoma coerulescens*) to inform this status review.

The Service announced initiation of this review in the Federal Register on June 6, 2024 (89 FR 48437) with a 60-day comment period. We did not receive any public comments related to this species during the comment period. The primary sources of information used in this analysis were the 1987 final listing rule (52 FR 20715), Recovery Plan for the Florida Scrub-Jay (*Aphelocoma coerulescens*) (Service 2019a), Species Status Assessment Florida Scrub-Jay (*Aphelocoma coerulescens*) Version 1.0 (Service 2019b), previous 5-year status reviews, research project reports, peer reviewed scientific publications, unpublished field observations, and personal communications. This review was completed by the Service's Florida Ecological Services Field Office, Gainesville, Florida. All literature and documents used for this review are on file. All recommendations resulting from this review are the result of thoroughly evaluating the best available information on *A. coerulescens.*

FR Notice citation announcing the species is under active review: June 6, 2024 (89 FR 48437).

Species' Recovery Priority Number at start of 5-year review (48 FR 43098): 8. The "8C" indicates a species with a moderate degree of threat and high recovery potential; the "C" reflects a degree of conflict with economic activities (development and agriculture).

Review History: Previous 5-year reviews were completed in 2007 and 2020. These reviews recommended no change in status.

REVIEW ANALYSIS

Listed Entity

Taxonomy and Nomenclature

The taxonomy of the listed entity remains valid (Integrated Taxonomic Information System 2024). The species is currently identified as *Aphelocoma coerulescens*, Bosc (1795) – Florida Scrub-Jay. Refer to previous 5-Year Status Review (2020) for additional information.

Distinct Population Segment (DPS)

The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This species was not listed as a DPS, and we have no new information that would indicate the species should be listed as a DPS under the Service's 1996 DPS Policy.

Recovery Criteria

Recovery Plan

Recovery plans are not regulatory documents and are intended to provide guidance to the Service, states, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. If the recovery criteria defined in the plan are still valid, meeting recovery criteria can indicate that the species no longer requires protections under the Act. However, when recommending whether a listed species should be delisted, the Service must apply the factors in section 4(a) of the Act (84 FR 45020).

Recovery Plan for the Florida Scrub-Jay (*Aphelocoma coerulescens*) September 26, 2019

The 2019 recovery plan (Service 2019a) for delisting the species included the following three criteria:

- Each of the seven focal landscapes (East Coastal, North Central, Northeast Coastal, Lake Wales Ridge North, Lake Wales Ridge South, Southwest Inland, and Southeast Coastal) within six of the genetic units exhibit a stable or increasing trend including natural recruitment and multiple age classes.

- Subpopulations are connected to the extent that genetic diversity can be naturally maintained without translocations.

- When in addition to the above criteria, it can be demonstrated that the threats, particularly habitat loss and degradation associated with sea level rise, development, and inadequate habitat management are diminished such that sufficient habitat remains for the species to remain viable for the foreseeable future.

The focal landscape approach in the recovery criteria identifies areas where current populations may have long-term viability or have the potential for long-term viability. At this time, these criteria have not been met.

Biology and Habitat Summary

Details of the Florida Scrub-Jay's general biology and habitat can be found in the Species Status Assessment (Service 2019b).

Habitat and Distribution

Florida Scrub-Jays are non-migratory, extremely sedentary, and restricted to scrub and scrubby flatwoods. These natural communities occur on relict dunes and sand ridges throughout peninsula Florida, primarily concentrated along both the Atlantic and Gulf coasts and on the central ridges. Florida Scrub-Jays need large, open landscapes for long-term population persistence.

Florida Scrub-Jays once occupied 39 of the 40 counties south of, and including Levy, Gilchrist, Alachua, Clay, and Duval counties in peninsular Florida (Figure 1). Only the southernmost county, Monroe, lacked Florida Scrub-Jays. Currently, Florida Scrub-Jays are known to persist on conservation lands in 26 of the original counties but are now absent on conservation lands in 13 counties. Three counties have greater than 100 Florida Scrub-Jay family groups, 3 additional counties support between 41-100 Florida Scrub-Jay family groups, and another 4 counties currently contain 21-40 Florida Scrub-Jay family groups on their conservation lands. The status of Florida Scrub-Jay occupancy on private lands among the original 39 peninsular counties is unknown. Because of access issues on private lands and typically the lack of habitat management negatively affecting long-term population persistence, species recovery focuses on managed conservation lands. Although it is expected based on lack of fire and subsequent successional state of habitats to scrub hammocks, sand pine forests, and higher denser canopy, that occupancy and populations of Florida Scrub-Jays on private lands is severely reduced from previous estimates.

A Population Viability Analysis (PVA) was completed in 2021 to provide insights into possible fates of Florida Scrub-Jay populations. Individual-based simulation models were developed from Brevard County data utilizing demographics rates dependent on habitat state, impact of helpers on breeding success, and helper to breeder transition (Lacy and Breininger 2021). The models incorporate sociobiology and source-sink habitat dynamics to address questions about population size and habitat quality for a metapopulation. The model can be applied to other populations with data throughout the species range and also to determine an approximate Minimum Viable Population (MVP) for metapopulations throughout the distribution of the species. The MVP using common definitions – less than 5% probability of extinction and retention of more than 90% of gene diversity over 100 years – would require 80 to 100 breeding Florida Scrub-Jay family groups (territories) in high-quality habitat (optimal conditions). The scenarios with 250 potential territories (of which 100 territories are in optimal habitat conditions) just meet the MVP criteria, suggesting that at least 100 territories in optimal habitat condition are required for long-term viability for an isolated population (Lacy and Breininger 2021).

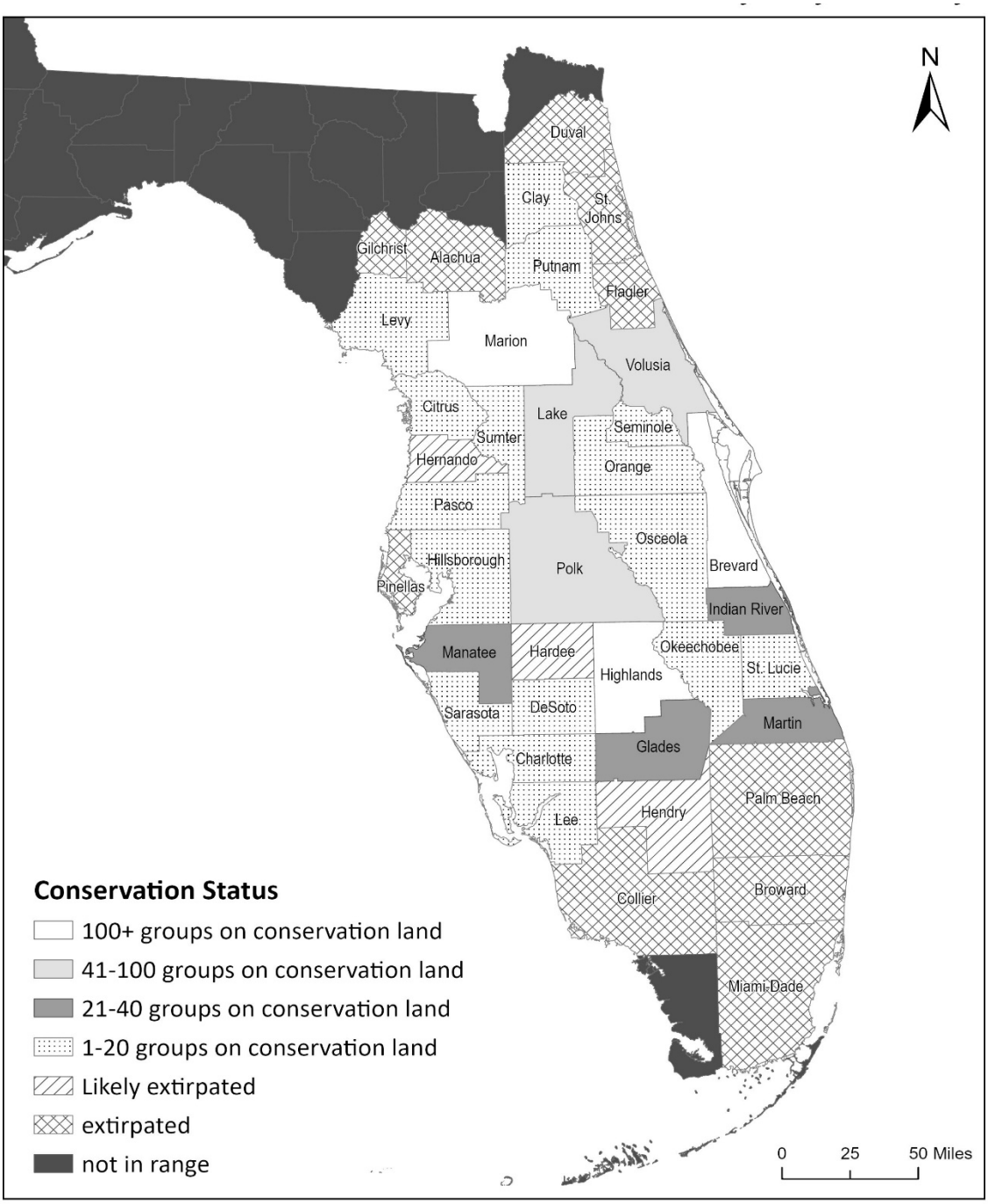

Figure 1. Known *Aphelocoma coerulescens* population estimates by county on conservation lands throughout the species range, Florida.

The revised Florida Scrub-Jay Recovery Plan (2019a) developed a conservation strategy emphasizing well-connected landscapes critical for viability while retaining flexibility to expand conservation efforts to smaller areas as resources allow. Seven metapopulations known as Focal Landscapes were selected representing 6 of the 10 genetic units. The Focal Landscape approach attempts to maintain genetic diversity by placing special emphasis on conserving those populations that have the highest likelihood of remaining demographically

viable (i.e., populations in focal landscapes). Maintaining multiple populations and ensuring connectivity among the populations via corridors or stepping-stones is essential.

Three Genetic Units – North Central (D), Northeast Coastal (C), and Lake Wales Ridge (B) – provide the greatest conservation opportunities, as these contain the four largest focal landscapes possessing expansive terrain and having high habitat connectivity (Figure 2). In addition, a high percentage of the scrub habitat in these genetic units is currently in public ownership with existing habitat management plans and should be able to be managed to optimal habitat conditions.

The three remaining focal landscapes in East Coastal (A), Southeast Coastal (I), and Southwest Inland (F) genetic units have smaller potential carrying capacities (Figure 2). Although their potential population sizes and opportunities for connectivity are not as great as in the four larger focal landscapes, they contain genetically and behaviorally distinct Florida Scrub-Jay populations, as well as significant parcels of native Florida scrub that are critical for a host of other at-risk scrub-endemic organisms. Recovery of these three focal landscapes is essential for ensuring the long-term representation, redundancy, and resiliency of Florida Scrub-Jays. Additional information and graphical depictions of focal landscapes are expanded on in the 2019 Species Status Assessment Florida Scrub-Jay (*Aphelocoma coerulescens*) Version 1.0 (Service 2019b).

However, it is important to emphasize that all remaining Florida Scrub-Jays populations, regardless of their size or location, contribute to the conservation, genetic resilience, and recovery of the species.

Population Summary

The prior 5-year review utilized the *State Wide Assessment of Florida Scrub-Jays on Managed Areas: A comparison of Current Populations to the Results of the 1992-93 Survey* (Boughton and Bowman 2011). The assessment documented a decline by as much as 25% or more on managed conservation lands from 1992 to 2010. The decline is estimated to be much greater in suburban and private areas (~50%) where the habitat is not managed.

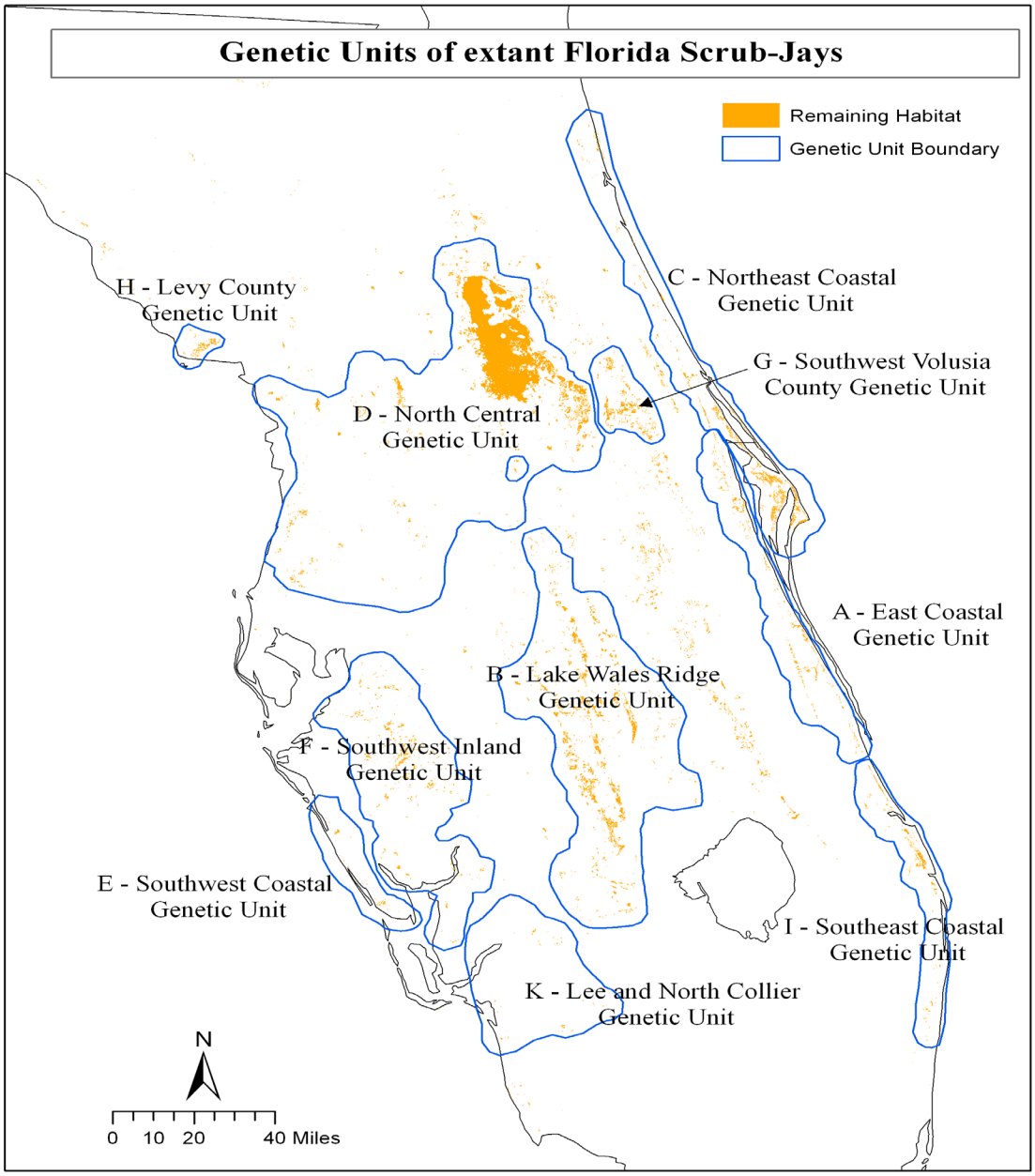

Figure 2. Genetic Units of Florida Scrub-Jays, adapted from Coulon et al. (2008).

The 2011 assessment estimated 2,400-2,600 Florida Scrub-Jay groups remaining range-wide on conservation lands, excluding Ocala National Forest, which was estimated between 900-1,000 Florida Scrub-Jay family groups (K. Miller and C. Faulhaber FWC, and J. Garcia USFS - pers. comm. 2017), therefore the total range-wide population on conservation lands estimate is 3,300-3,600 Florida Scrub-Jay family groups. No estimates were generated for populations on private lands.

An updated range-wide Florida Scrub-Jay survey is not currently available; however, the previous habitat estimate for Ocala National Forest's roughly 225,000 acres (91,000 hectares)

of scrub and sand pine (*Pinus clausa*) plant communities has been refined using a new approach. A recent study (July 2021 through January 2023) conducted by Florida Fish and Wildlife Conservation Commission updated the population estimate based on modeling a sample replicated dataset of land management categories under different scenarios (Miller et al., 2023 *Florida Scrub-Jay Population Estimate for Ocala National Forest under Different Management Scenarios*). Regression models were developed describing how forest timber stands vegetative structure influenced Florida Scrub-Jay densities. The two statistically highest supported models were then applied across the whole Ocala National Forest timber stands and yielded current population estimates of 1,907 (± 124) Florida Scrub-Jay family groups or 1,973 (± 124) Florida Scrub-Jay family groups. These estimates are nearly double the previous 2017 metric estimates for Ocala National Forest.

The 2024 metrics (tables below) are estimates based on reported Florida Scrub-Jay family groups in focal landscape populations, and the population trends are a comparison from the previous 5-Year Status Review (2020). A current range-wide survey is not available at this time, so these are not all known family groups on conservation lands. The number of family groups on private lands is also unknown so those metrics are not included in these estimates.

There are approximately 978 Florida Scrub-Jay family groups on conservation lands within the focal landscape populations – excluding Ocala National Forest's population. This is an increase of 11 Florida Scrub-Jay Family groups since the 2020 reporting. Currently our estimates show:

- Four of the genetic unit's focal landscapes (Genetic Unit A, Genetic Unit B, Genetic Unit D*, and Genetic Unit I) increased (Lake Wales North and Lake Wales South Focal Landscapes were combined in table),
- One remained stable (Genetic Unit F) and
- One of the genetic unit's focal landscapes decreased (Genetic Unit C).
- The population in Ocala National Forest (*Genetic Unit D Focal Landscape) was excluded from the trend assessment because recent efforts represent the first robust estimate of Florida Scrub-Jays in the forest. The actual baseline is unknown and previous and current data is based on different modeling techniques. However, it is likely that this population has increased with addition of suitable habitat in Genetic Unit D Focal Landscape in Ocala National Forest.

Populations on Conservation Lands

With the additional populations on conservation lands reported in the previous 5-year Status Review (2020) not included in a focal landscape (122 Florida Scrub-Jay family groups on other conservation lands), the total number of family groups on these conservation lands is 1100 Florida Scrub-Jay family groups, an increase of 38 Florida Scrub-Jay family groups (1,062) from 2020. Including Ocala National Forest's population estimate but acknowledging that not all conservation land populations are included, the total population estimate within conservation lands is in the range of 2,883 to 3,197 Florida Scrub-Jay family groups.

Summary of Genetic Units

The following tables are grouped by genetic units summarizing the population trends from 2010 through 2024 for the focal landscape populations in terms of the number of Florida Scrub-Jay family groups. Data sources include Boughton and Bowman 2011, 2024 Jay Watch data, agency's conservation lands monitoring data, and personal communication (unpublished data from Florida Scrub-Jay researchers). Based on the 2024 estimates, there are at least 1,100 family groups within the focal landscapes, an increase through the years of monitoring from 941 (2010), and 967 (2019).

The following trends for populations in focal landscapes are discussed by genetic unit. As noted above, four of the genetic unit's focal landscapes experienced an increase in the number of Florida Scrub-Jay family groups, one genetic unit's groups remained stable and one genetic unit's population decreased within focal landscapes.

Summary of Family Groups in Focal Landscapes

East Coastal Genetic Unit A
The focal landscape conservation lands have increased by 48 family groups since 2020.

Family Groups in Focal Landscapes in East Coastal Genetic Unit A

Focal Landscape	**2010**	**2019**	**2024**
St. Sebastian River State Preserve	35	45	59
Valkaria Scrub Sanctuary	16	10	18
Malabar Scrub Sanctuary	2	5	15
Jordan Scrub Sanctuary	6	11	20
North Sebastian Conservation Area	7	13	20
Total Family Groups	*66*	*84*	*132*

St. Sebastian River Preserve State Park, and the relatively adjacent North Sebastian Conservation Area is the largest core population in this genetic unit with over 2,000 acres of scrub and scrubby flatwood habitat. Active management over the last two decades has shown a positive population growth trend for this genetic unit almost doubling the number of Florida Scrub-Jay family groups since 2010. Since the previous 5-year review, the number of family groups has increased by 48 family groups in focal landscape populations.

Other important managed conservation lands within mainland Brevard County's focal landscape include Valkaria, Malabar, and Jordan Scrub Sanctuaries with greater than 1,000 acres collectively. The population remained relatively stable from 2011 through 2019; however, since 2019 there has been a significant increasing trend to present day. Starting in 2000, conservation land acquisition and a new management technique reducing the habitat's vegetative structure coupled with assisted translocations occurred in three populations resulted in doubling the habitat quality and population size within 2 years of initiation for these local populations. A fourth conservation land – Micco Scrub Sanctuary – with over 1,300 acres of scrubby flatwoods and mesic flatwoods has begun intense restoration activities identical to the former sites to provide additional habitat allowing increased future potential family group occupancy for the genetic unit.

The Helen and Allan Cruickshank Scrub Sanctuary – not included in the focal landscape – is a small but very productive conservation site also within Brevard County. This local population has served as the translocation donor populations for the recipient populations at Valkaria and Malabar Scrub Sanctuaries. In 2023 and 2024, thirty individual Florida Scrub-Jays were translocated from this local population without observable negative effects on the donor population. This population appears to have incredible reproductive output, exceeding typical carrying capacity for an area of limited oak scrub habitat surrounded by high density urban development. Food supplementing (hikers feed peanuts during outings and bird feeders in adjacent residential areas) may be resulting in higher fecundity and densities without showing detrimental effects of overcrowding (density dependence issues).

Lake Wales Ridge Genetic Unit B

The focal landscape conservation lands have increased by 25 family groups since 2020.

Family Groups in Focal Landscapes in Lake Wales Ridge Genetic Unit B

Focal Landscape	**2010**	**2019**	**2024**
Archbold Biological Station	116	98	110
Avon Park Air Force Range	57	47	42
A.D.B. Catfish Creek State Park	9	22	19
LWRSF - Arbuckle Tract	10	21	21
LWRNWR - Flamingo Villas	9	11	14
Highlands Hammock State Park	2	11	9
Lake June-in-Winter Scrub S.P.	8	9	11
LWRSF - Walk in the Water	8	6	2
Saddle Blanket Scrub Preserve	1	2	4
LWRWEA - Lake Placid Scrub	34	35	32
LWRWEA -McJunkin Tract	22	15	16
LWRWEA -Carter Creek	3*	16	26
LWRWEA -Gould Road	5	10	10
LWRWEA -Holmes Avenue	12	10	15
LWRWEA -Silver Lake	9*	10	8
LWRWEA -Henscratch Preserve	2*	9	5
LWRWEA -Highlands Ridge	18	9	8*
LWRWEA -Royce Ranch	5	9	15
LWRWEA -Sun N Lake North	7*	7	8
LWRWEA -Highlands Park Estates	12	4	9
LWRWEA -Jack Creek	1*	1	3
Total Family Groups	*350***	*362*	*387*

* 2009 data

** 2009 and 2010 data combine for populations not monitored in 2010

*** 2021 data

LWRSF - Lake Wales Ridge State Forest

LWRNWR - Lake Wales Ridge National Wildlife Refuge

LWRWEA - Lake Wales Ridge Wildlife Environmental Area, Florida Fish and Wildlife Conservation Commission

The conservation lands of Archbold Biological Station along with three tracts of the Lake Wales Ridge Wildlife and Environmental Areas (Lake Placid Scrub, McJunkin Tract, and Gould Road) support the third largest local population range-wide with an average of 168 Florida Scrub-Jay family groups. Roughly 44% of the genetic unit's population occur in the southern portion of Lake Wales Ridge on these sites. Comparing the previous 5-year review population metrics with current counts for the 21 conservation lands in the focal landscape's recovery plan strategy (Lake Wales Ridge Genetic Unit B table), 12 populations were relatively stable, 6 populations increased, and 4 populations declined for an overall gain of 25 Florida Scrub-Jay family groups for the focal landscape.

The most concerning decline continues to occur at Avon Park Air Force Range on the Bombing Range Ridge. Once a population of 98 Florida Scrub-Jay family groups (1992/1993), the population was reported at 42 Florida Scrub-Jay family groups in 2024. The available scrub habitat on the Bombing Range Ridge occurs as narrow linear islands and a more fragmented matrix with other habitat types (i.e. cutthroat grass, sandhills) than on the nearby Lake Wales Ridge. The Air Force has been collaborating with the Service to re-evaluate the scrub habitat management strategy in an attempt to create optimal habitat conditions from degraded habitats in occupied areas to improve reproductive output and increased recruitment into breeding populations.

Highlighting one of the increasing population trends, Lake Wales Ridge Wildlife and Environmental Area's Carter Creek continues to improve. There were 35 Florida Scrub-Jay family groups in 1992/1993. Habitat degradation from the lack of fire resulting in a tall sand pine forest canopy over several decades decimated the population to a low of 2 Florida Scrub-Jay family groups in 2013. Continued aggressive habitat management increasing optimal habitat conditions, additional land acquisitions, and property access restrictions over the more recent years are resulting in a positive growth trend as reflected in the current metric of 26 Florida Scrub-Jay family groups (increase of 10 family groups from 2020).

Northeast Coastal Genetic Unit C

These conservation lands have continued to decline since 2010 with an overall loss of 67 family groups since 2020.

Family Groups in Focal Landscapes in Northeast Coastal Genetic Unit C

Focal Landscape	**2010**	**2019**	**2024**
Merritt Island NWR	275	270	225
Cape Canaveral Space Force Station	155*	134	112
Total Family Groups	*430*	*404*	*337*

* 2009 data

As reflected in the table, Florida Scrub-Jays populations in Merritt Island National Wildlife Refuge (Kennedy Space Center) and Cape Canaveral Space Force Station had the most precipitous decline of all the genetic unit's focal landscapes since the pervious review in 2020. A decline of 67 Florida Scrub-Jay family groups has occurred in the last five years from 270 to a low of 225 in the Merritt Island population. This population was reported as 384

Florida Scrub-Jays family groups in 1992-1993 census, which is concerning as this is the only viable Florida Scrub-Jay population managed by the Service on conservation lands.

The Cape Canaveral population has also shown a declining trend, but the lower metrics may partly be a result of improved surveys. Beginning in 2021, Service staff have been banding Florida Scrub-Jays to more accurately determine population numbers. As the number of banded Florida Scrub-Jays in the population increases, the population metrics will be refined to reflect increased accuracy and may offer greater insight as to the declining trend. The population has declined from 134 Florida Scrub-Jay family groups in 2019 to 112 family groups in 2024. The population was once reported at 157 Florida Scrub-Jay family groups.

Increased activities on Cape Canaveral often hinder timing, location, and spatial scale of habitat management (i.e. prescribed fire applications) resulting in habitat degradation from optimal conditions in occupied habitat. These constraints are anticipated to become greater over the upcoming years as the number of space launches from the facility is expected to increase exponentially.

North Central Genetic Unit D

Excluding Ocala National Forest's modeling population estimates, the two remaining sites listed in the table had a net loss of nine Florida Scrub-Jay family groups since 2020. Ocala National Forest estimates appear to show an increase since 2020, but since estimates used a different method, the current estimates are not comparable.

Family Groups in Focal Landscapes in North Central Genetic Unit D

Focal Landscape	**2010**	**2019**	**2024**
Seminole State Forest	44	37	27
Rock Springs Run	0	6	7
Total Family Groups	*44*	*43*	*34*
Ocala National Forest		~1,000*	1,907-1,973 (± 124) **

* Conservative estimate based on known Florida Scrub-Jay group densities in a subset of timber management stands in Ocala National Forest and extrapolating to all stands of suitable habitat (K. Miller and C. Faulhaber FWC, and J. Garcia USFS - pers. comm. 2017).

** A Florida Scrub-Jay density and population size assessment was completed by Dr. Karl Miller and colleagues in 2023.

Having the largest contiguous scrub habitat remaining in peninsular Florida, Ocala National Forest supports the largest population of Florida Scrub-Jays throughout this species' range. Currently, there are approximately 51,850 acres of scrub habitat in Scrub-Jay Management Areas (MA 8.4 category) focusing management actions to provide high-quality Florida Scrub-Jay habitat in perpetuity. There are additional areas within the forest that are occupied by Florida Scrub-Jays, but not in the designated MA 8.4 category, including Forest Timber Management Area category MA 8.2, Juniper Prairie Wilderness Area (~ 9,000 scrub acres), and the Navy's Pinecastle Bombing Range (~ 5,700 scrub acres). There were roughly 12,400 acres of suitable Florida Scrub-Jay habitat within MA 8.4 and 22,630 acres of suitable habitat in MA 8.2 (3 to 12-year succession) as of 2024. Sand pine harvest activities in MA 8.4 are anticipated in Fiscal Year 2025 to include 2,100 acres.

A rigorous assessment of Florida Scrub-Jay densities by habitat age (timber stand age since previous harvest) to estimate population size was completed by Dr. Karl Miller and colleagues in 2023 (Miller et al. 2023). Utilizing 12 years of empirical data on density of Florida Scrub-Jays collected during 2011-2022 and Poisson regression models that describe how stand age influenced those sampled densities within different land management categories. Twelve models were developed to predict initial population size. Two population models were recommended as the most appropriate choices. Likely, the current population estimates ranged from 1,907 (± 124) to 1,973 (± 124) family groups, with both estimates less than the average from all 12 models (2,026 family groups). This new population estimate is nearly double the previously more conservative estimate from 2010. It is not possible to accurately quantify the Florida Scrub-Jay population in Ocala National Forest between 2010 and the present, because of the differences in methods used to generate the estimates.

Seminole State Forest is also a large scrub landscape (~5,000 acres) adjacent to Ocala National Forest's southern boundary with habitat management plans benefitting Florida Scrub-Jay persistence. Recent habitat management challenges have resulted in a declining trend in the population. Not only has the number of Florida Scrub-Jay family groups declined by 40% since 2010, but the family group sizes are smaller as well.

The third population tracked in this genetic unit is Rock Springs Run Reserve State Park consisting of roughly 800 acres of scrub habitat south of Seminole State Forest, but within typical dispersal distance for Florida Scrub-Jays. Ongoing habitat management and assisted translocations by the Florida Fish and Wildlife Conservation Commission (FWC) increased the population size in the park. Thirty individual Florida Scrub-Jays have been translocated to these conservation lands during 2018-2021.

Southwest Inland Genetic Unit F

The population has remained stable within the normal yearly fluctuation at 48 Florida Scrub-Jay family groups since 2020.

Family Groups in Focal Landscapes in Southwest Inland Genetic Unit F

Focal Landscape	**2010**	**2019**	**2024**
Duette Preserve/Mosaic Wellfield/Coker Tract	21	36	32
Edward Chance Reserve - Gilley Creek	4	7	5
Moody Branch Mitigation Park (FWCWEA)	5	5	10
Little Manatee River Southfork	4	2	1
Total Family Groups	*34*	*50*	*48*

FWCWEA – Florida Fish and Wildlife Conservation Commission - Wildlife Environmental Area.

The core population for this genetic unit centers around Duette Preserve, Mosaic Wellfield, and Edward W. Chance Reserve Coker Tract conservation lands. Additional conservation lands within the metapopulation include Moody Branch Mitigation Park, South Fork State Park (Becker A), Southwest Florida Water Management District's Little Manatee River South Fork Tract, and Edward W. Chance Reserve Gilley Creek Tract. The population has remained relatively stable at 48 Florida Scrub-Jay family groups since the last status review (two less Florida Scrub-Jay family group). As noted previously in the PVA and MVP discussion, the

number of Florida Scrub-Jay family groups for long-term viability would require doubling this metric in optimal habitat conditions.

In an attempt to ensure population viability, a research project has been initiated to increase the species recovery of Genetic Unit F, which is identified as a focal landscape in the recovery plan, by increasing the number of family groups from approximately 50 to over 100 family groups in optimal habitat. The Florida Scrub-Jay family group target represents the minimum metric to achieve long-term population resiliency. To meet this recovery target, the project will translocate Florida Scrub-Jays from outside this genetic unit to an unoccupied conservation land in proximity to the core population.

With the population currently at 48 Florida Scrub-Jay family groups, increased genetic diversity through translocation along with continued habitat management on the population's conservation lands, population growth is expected. Utilizing demographic information from this genetic unit from 2012 through 2024, the per capita growth rate had no indication of density dependence in this population, suggesting that while ample suitable habitat remains, the growth of this population can experience rapid growth in favorable environmental conditions.

Southeast Coastal Genetic Unit I
The population in this genetic unit has increased by 16 family groups since 2020.

Family Groups in Focal Landscapes in Southeast Coastal Genetic Unit I

Focal Landscape	**2010**	**2019**	**2024**
Jonathan Dickinson State Park	17	24	40
Total Family Groups	*17*	*24*	*40*

The number of Florida Scrub-Jay family groups at Jonathan Dickinson State Park has doubled from 20 to 40 Florida Scrub-jay family groups from 2009 to present and has increased by 16 groups since the prior 5-year Status Review (2020). Savannas Preserve State Park metric have also shown an increasing trend during this timeframe; however, it is not included in the focal landscape but is within the genetic unit. This conservation land is discussed in the Non-Focal Landscape section.

The translocation research project initiated in 2019 analyzing genomic patterns and demographic monitoring, including additional habitat management, has shown initial success with an increase in habitat occupancy at Jonathan Dickinson State Park and Savannas Preserve State Park (only habitat management). Along with continued habitat management, a total of 10 Florida Scrub-Jays from Ocala National Forest (North Central Genetic Unit D) were translocated by the FWC to Jonathan Dickinson State Park during three events (2019, 2020, 2024). Several of the translocated birds have integrated into the resident population at this point; however, the genetic influence will require many generations before genomic patterns in the population are revealed.

Summary of Family Groups in Non-Focal Landscapes

The following populations occur on conservation lands that were not included in the 2019 Recovery Plan's Focal Landscape strategy; however, these population trends were included in the previous 5-year Status Review (2020) and are summarized in the table below.

Non-Focal Landscape	2010	2019	2024
Cross Florida Greenways	17	36	47
Viera East Scrub Jay Preserve	21	23	22
Lyonia Preserve	32	18	35
Oscar Scherer State Park	16	6	6
Savannas Preserve State Park	7	8	10
Disney Wilderness Preserve	9	4	2
Total Family Groups	*102*	*95*	*122*

Marjorie Harris Carr Cross Florida Greenways State Recreation and Conservation Area – Triangle Property (North Central Genetic Unit D)

Extensive restoration of overgrown scrub has created additional suitable habitat for Florida Scrub-Jays over the past two decades. This population has been steadily increasing and exceeds its predicted carrying capacity based on the conservation land acreage (31 family groups predicted carrying capacity based on 70% of 1,100 acres). This is a result of continued active management and also from immigration due to habitat loss caused by ongoing road and residential development surrounding the conservation land. Utilization of the urban interface and possibly supplemental feeding may account for some of this metric. There were 47 Florida Scrub-Jay family groups reported in the latest census, an increase of 11 family groups from 2020.

Viera East Scrub Jay Preserve (East Coastal Genetic Unit A)

The number of Florida Scrub-Jay family groups in Viera East Scrub Jay Preserve has remained fairly constant over the years at around 22 Florida Scrub-Jay family groups. In conjunction with the adjacent Cruickshank Sanctuary and Capron Ridge Sanctuary population the area supports roughly 40 Florida Scrub-Jay family groups. This Florida Scrub-Jay population has been well over the predicted carrying capacity within these conservation areas for more than a decade.

Lyonia Preserve (Southwest Volusia County Genetic Unit G)

Lyonia Preserve experienced a declining trend for a number of years but has since rebounded to roughly 35 Florida Scrub-Jay family groups in the latest data reporting. The predicted carrying capacity based on available scrub habitat acreage within the preserve is roughly 10 Florida Scrub-Jay family groups. As with other urban populations, utilization of the urban interface and possibly supplemental feeding may account for some of this metric. This population was once reported as high as 45 Florida Scrub-Jay family groups in 2004-2005.

Oscar Scherer State Park (Southwest Coastal Genetic Unit E)

The state park's population has been declining since 2009 when the population hovered around 17 Florida Scrub-Jay family groups. The last two 5-year status reviews reported 6 Florida Scrub-Jay family groups.

Savannas Preserve State Park (Southeast Coastal Genetic Unit I)
Having limited scrub habitat and isolated from other occupied conservation lands in the genetic unit, this population has remained stable with a slight increase to 10 Florida Scrub-Jay family groups in 2024.

Disney Wilderness Preserve (Lake Wales Ridge Genetic Unit B)
Despite ongoing habitat management, the population may be experiencing quasi-extinction at this point with only two Florida Scrub-Jay family groups present. The isolated habitat prohibiting immigration opportunities along with lack of breeding pairs extremely limits potential growth and intrinsic recruitment. The population was reported to have 37 Florida Scrub-Jay family groups in 1992-1993.

Population Status

The overall total number of Florida Scrub-Jay family groups in focal landscape populations has remained relatively stable with a slight increase since 2020. As noted previously, four of the focal landscapes increased while one remained stable, and one decreased in the number of Florida Scrub-Jay family groups.

The East Coastal Genetic Unit A, Lake Wales Ridge Genetic Unit B, North Central Genetic Unit D, and Southeast Coastal Genetic Unit I increased their population's resiliency through effective ongoing habitat management and recent translocations (population augmentation) in two of these genetic units. Several of these populations are exceeding projected carrying capacities. The Southwest Inland Genetic Unit F remained stable while the Northeast Coastal Genetic Unit C is experiencing a declining population trend.

Florida Scrub-Jay population status on non-conservation lands (private lands) are unknown.

Total Number of Family Groups on Conservation Lands included in this Review

	2010	2019	2024
Focal Landscapes	941	967 +1000*	978 + (1907-1973 ± 124)**
Non-Focal Landscapes	102	95	122
Total Family Groups	*1043*	*1062 +1000*	*1100* +(1907-1973 ± 124)

2019 and 2024 Focal Landscape totals have numbers separated out for Ocala National Forest
*2019 (+1000) estimate
**2024 (+1907-1973 ± 124) estimate

Including Ocala National Forest's population estimate but acknowledging that not all conservation land populations are included, the total population estimate on conservation lands included in this review is in the range of 2,883 to 3,197 Florida Scrub-Jay family groups.

Translocation Information
Assisted dispersal, known as translocations, either for population augmentation and/or genetic rescue has become an important management tool to compliment continued habitat

management for species recovery. Since 1989, roughly 245 Florida Scrub-Jays have been translocated range-wide. Successful translocations resulting higher resiliency to the recipient populations have occurred in the East Coastal Genetic Unit A, North Central Genetic Unit D, Southwest Inland Genetic Unit F, and Southeast Coastal Genetic Unit I.

Dr. David Breininger's ongoing research has shown initial success recently for Florida Scrub-Jay translocations in Brevard County (East Coastal Genetic Unit A). Fifteen adult Florida Scrub-Jays (Breeding adults and non-breeding adults) were translocated from Cruickshank Sanctuary to Valkaria Scrub Sanctuary in 2023 and 15 adult Florida Scrub-Jays – same donor population – were translocated to Malabar Scrub Sanctuary in 2024. The donor population, Cruickshank Sanctuary population, has increased to 16 Florida Scrub-Jay family groups in 2025, despite removing 30 Florida Scrub-Jays from the population over a two-year timeframe for these translocations. Nearly half of the translocated Florida Scrub-Jays became breeders within two years, demonstrating that Florida Scrub-Jays can successfully be introduced into existing populations and eventually produce young. Dispersal documentation suggests that in at least some circumstances translocated birds have greater propensities to move and become breeders in other conservation areas than normal because Florida Scrub-Jays typically have low interpopulation dispersal propensities (Breininger et al. 2025). The increased dispersal propensity could be important for increasing connectivity (Lacy et al. 2024). Some translocated individuals were not located after translocation, which could have dispersed outside of the study area, and mortality rates within the study are within normal rates of adult Florida Scrub-Jays. In instances with potential supplemental food (Malabar Scrub Sanctuary), many translocated birds stayed indicating dispersal may be dependent on factors other than the translocation alone.

An analysis of the success of a translocation study by Linderoth et al. 2025 in Manatee County on The Mosaic Company's property (large phosphate mining operation) showed that during successful population growth that was seeded by 51 translocated Florida Scrub-Jays a few pairs of Florida Scrub-Jays were responsible for many young whose offsprings were also successful breeders, creating a large clade of related individuals. This phenomenon known as reproductive skew is likely common for Florida Scrub-Jays as typically less than half of the breeding pairs within a population are successful breeders in most years, and studies at Archbold Biological Station in central Florida (Highlands County), a saturated population, also show that a small proportion of Florida Scrub-Jay breeding pairs produce the most young that are themselves successful. Linderoth et al. (2025) expressed long-term concerns about genetic relatedness increasing among the population due to the reproductive skew in small populations but also express with caution that translocation can optimistically result in a sustainable and growing population. It should also be noted that large spatial and temporal variation in habitat quality in landscapes might explain differences in effective breeding population size, driven by the source-sink dynamics occurring with habitat condition.

Threats (Five-Factor Analysis) Summary

The status of a species is determined from an assessment of factors specified in section 4 (a)(1) of the Act. A summary of this assessment is detailed below. Generally, there is no indication that Factors B, C, D, and E pose a significant threat for the species. Factor A

(habitat destruction and degradation) threat remains ongoing. More details about threats to the Florida Scrub-Jay can be found in the Species Status Assessment and the 2020 5-year review (Service 2019b and 2020, respectively).

Factor A. The present or threatened destruction, modification, or curtailment of its habitat or range.
Direct habitat loss (destruction), habitat degradation (modification and lack of management), and habitat fragmentation continue to cause significant impacts to existing Florida Scrub-Jay populations.

Factor B. Overutilization for commercial, recreational, scientific, or educational purposes.
This factor is not a threat to the species.

Factor C: Disease or predation.
This factor is not currently known as a threat to the species; however, smaller populations are at a higher risk because they are less resilient to issues like periodic episodes of disease.

Factor D: The inadequacy of existing regulatory mechanisms.
At the time of listing, the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703 et seq.) protected individual Florida Scrub-Jays from take throughout their range, but did not protect their habitat. Regulations finalized in February 2007 authorize incidental take of migratory birds, including Florida Scrub-Jays, for military readiness training.

The National Wildlife Refuge System Administration Act (NWRAA) represents legislation that set up the administration of a national network of lands and water for the conservation, management, and restoration of fish, wildlife, and plant resources and their habitats for the benefit of the American people. Amendment of the NWRAA in 1997 required the refuge system to ensure that the biological integrity, diversity, and environmental health of refuges be maintained. The ability to meet these statutory requirements varies among refuges depending on local constraints.

The Florida Scrub-Jay is included in Florida Endangered and Threatened Species List as a Federally-designated Threatened Species. Florida State Law (Rule 68A-27.003, Florida Administrative Code) prohibits taking of individuals of threatened species, or parts thereof, or their nests or eggs, except as authorized. To eliminate the need for both a state and federal permit, activities that result in take of Federally-designated Threatened Species do not require a permit from the FWC when authorized by the Service (Rule 68A-27.007, Florida Administrative Code). To date, the FWC has not developed a regulatory program that ensures compliance with this statute. Instead, the FWC relies on the Service's implementation of the Act through sections 7 and 10 and enforcement of the prohibitions in section 9 of the Act.

On state wildlife management areas, regulations protect individual Florida Scrub-Jays because they are not listed as a game bird and therefore have no legal seasons established for taking. Wildlife management area regulations prohibit destruction or modification of habitat, except for management and restoration activities.

Many county governments have developed protective ordinances, but all such ordinances are based on compliance with the Act rather than local laws and therefore provide no additional protection. Within the current range of Florida Scrub-Jays, several counties and municipalities have provisions for reviewing all development proposals for impacts to scrub and/or Florida Scrub-Jays and for referring projects that may potentially affect Florida Scrub-Jays to the Service for Act compliance. Several other counties occasionally invoke threatened and endangered species screening, depending on the level of controversy surrounding pending developments. The remaining counties do not have environmental resource staff dedicated to habitat protection and/or have not developed protective ordinances.

These regulatory mechanisms are inadequate to protect the Florida Scrub-Jay and its habitat from the threats discussed in this review.

Factor E: Other natural or manmade factors affecting its continued existence.
The Service is not aware of any research specific to the impacts on habits or habitats of Florida Scrub-Jay that would indicate what potential effects of increasing temperatures and rainfall, extreme weather events, or extended drought conditions. Sea level rise in the range of 0.3-1.2 m (1-4 ft) by 2100, is expected to impact coastal Florida (Runkle et al., 2022). Although this will not directly impact most of the species immediately, this may change the influence of land use and population growth to the inland where this species does occur.

Temperatures have risen and are expected to increase, which is expected to increase drought intensity (Runkle et al. 2022). Consecutive dry days are expected to increase 10 to 20% for most of Florida. Species and habitats vary in how they respond to increasing temperatures, and there is uncertainty in how exactly increasing temperatures will affect Florida Scrub-Jays. Habitat changes also will vary in relation to temperature. In many locations vegetation composition and structure is already changing. Changes will occur on different temporal and spatial scales and will result in changes in habitat suitability for many species. High temperatures and prolonged drought can increase the risk and extent of wildfires.

The common thread regarding weather predictions for Florida is that extreme events will become more extreme and frequent. This will increase annual variation and likely increase annual variation in Florida Scrub-jay demographic rates. Increasing variation increases the strength of stochastic effects and typically has the greatest effects on small populations, hence potentially increasing their extinction risk. There are possible negative effects of increased temperature along with drought on insect prey abundance and/or growth rate and acorn production of scrub oaks. Decreases in precipitation could make it more difficult to apply prescribed fire safely. Conversely, sea level rise along with extreme weather events (e.g., hurricanes) will have negative impacts on coastal Florida Scrub-Jay populations.

A recent publication (Barve et al. 2024) suggests the increase in warmer winter weather in peninsula Florida has advanced the nesting season for Florida Scrub-Jays by about a week in the last 40 years. This has resulted in increased reproductive effort, but lower reproductive success possibly caused by increased nest predation. Additional studies in the future will increase our certainty and knowledge of the causation effects.

Other factors discussed in the 2020 review are still of concern for the species including:

- Small population sizes that put those populations at risk of catastrophic events.
- Potential for inbreeding depression or loss of genetic diversity which can result in loss of adaptive capacity and reductions in reproductive success.
- Road mortality associated with populations in urban areas.

Synthesis

Florida Scrub-Jays are medium-sized, non-migratory songbirds that are cooperative breeders living in groups ranging from two to large extended families of adults and juveniles. They are restricted to scrub and scrubby flatwoods that are large, open landscapes with periodic fire (or other disturbance) to maintain suitable habitat. Currently, Florida Scrub-Jays are known to persist on conservation lands in 26 of the 39 original counties. The status of occupancy on private lands is unknown. Seven metapopulations known as Focal Landscapes were selected, representing 6 of the 10 genetic units to maintain genetic diversity needed to conserve those populations that have the highest likelihood of remaining demographically viable. A current range-wide survey is not available. However, there are approximately 978 Florida Scrub-Jay family groups within the focal landscape populations – excluding Ocala National Forest. The total estimated Florida Scrub-Jay population on conservation lands including the latest estimate for Ocala National Forest and the additional 122 family groups occurring on non-focal conservation lands is 2,883 to 3,197 family groups. Since 2020, four of the genetic unit's focal landscape populations increased, one remained stable and one decreased. Translocations either for population augmentation and/or genetic rescue has become an important management tool to compliment continued habitat management for species recovery. Roughly 245 Florida Scrub-Jays have been translocated range-wide. Direct habitat loss (destruction), habitat degradation (modification and lack of management), and habitat fragmentation continue to be a significant threat to Florida Scrub-Jay. The impacts are uncertain, but increased temperature along with drought on insect prey abundance or growth rate and acorn production of scrub oaks is not certain, may result in health and reproduction of Florida Scrub-Jays to decline in the future. Additionally, decreases in precipitation could make it more difficult to apply prescribed fire to manage habitat safely. Sea level rise along with extreme events (e.g. hurricanes) will certainly have negative impacts on coastal Florida Scrub-Jay populations. Because of the current population levels, uncertainty in population changes with the on-going and future threats, the Service recommends the Florida Scrub-Jay remain listed as threatened.

RECOMMENDED FUTURE ACTIVITIES

During this status review new and/or targeted potential recovery activities were identified and are included below.

1. Conduct a range-wide systematic survey of all conservation lands to determine population resiliency and potential population carrying capacities.

2. Restore non-suitable (unoccupied) scrub habitat and manage occupied scrub habitat with an emphasis on conservation lands within Focal Landscapes for increased species resiliency. Prioritize occupied scrub habitat to maximize the proportion of source territories (i.e. where fecundity exceeds mortality) within the metapopulation having an emphasis near population centers. See Appendix A for additional information on focal landscape populations.

3. Promote and pursue translocations to improve the resilience of local populations and to increase genetic heterozygosity in populations where needed.

4. Acquire lands that will increase population carrying capacities and connectivity.

5. Initiate research on short-term and long-term effects of climate change of extreme heat events and increasing temperature trends.

REFERENCES

Barve, S., T.D. Barkley. A. Tringali. J.W. Fitzpatrick, and R. Bowman. 2024. Warm winters lead to increased reproductive effort, but lower reproductive success. Hidden cost of climate warming in a threatened bird. Ornithology 142, 1-8 https://doi.org/10.1093/ornithology/ukae053

Breininger, D.R., D.P. Armstrong, J.D. Nichols and R.C. Lacy. 2025 Linking habitat quality to population dynamics for conservation decision making. Frontiers in Conservation Science 6:1566673.

Breininger, D.R., E.D. Stolen, G.M. Carter, S.A. Legare, W.V. Payne, D.J. Breininger, J.E. Lyon, C.D. Schumann and D.K. Hunt. 2023. Territory and population attributes affect Florida scrub-jay fecundity in fire-adapted ecosystems. Ecology and Evolution 13, e9704.

Breininger, D.R., G.M. Carter, S.A. Legare, W.V. Payne, E.D. Stolen, D.J. Breininger, and J.E. Lyon. 2022. Multistate modeling of Florida scrub-jay adult survival and breeding transitions. Ecosphere e3991.

Breininger, D.R, V.L. Larson, B.W. Duncan, R.B. Smith, D.M. Oddy and M.F. Goodchild. 1995. Landscape patterns of Florida scrub-jay habitat preference and demographic success. Conservation Biology 9, 1442-1453.

Boughton, R.K. and R. Bowman. 2011. State wide assessment of Florida Scrub-Jay on managed areas: a comparison of current populations to the results of the 1992-93 survey. Report to U.S. Fish and Wildlife Service.

Coulon, A., J.W. Fitzpatrick, R. Bowman, B.M. Stith, C.A. Makarewich, L.M. Stenzler, and I.J. Lovette. 2008. Congruent population structure inferred from dispersal behaviour and intensive genetic surveys of the threatened Florida scrub-jay (*Aphelocoma coerulescens*). Molecular Ecology 17:1685-1701.

Eaton, M.J., D.R. Breininger, J.D. Nichols, P.L. Fackler, S. McGee, M. Smurl, D. DeMeyer, J. Baker and M.B. Zondervan. 2021. Integrated hierarchical models to inform management of transitional habitat and the recovery of a habitat specialist. Ecosphere 12(1), e03306.

Florida Fish and Wildlife Conservation Commission [FWC]. 2019. Scrub management guidelines for peninsular Florida. Tallahassee, Florida.

Lacy, R.C., and D.R. Breininger. 2021. Population Viability Analysis (PVA) as a platform for predicting outcomes of management options for the Florida Scrub-Jay in Brevard County. NASA Technical Report. Document 20210022519. 165 p. https://ntrs.nasa.gov/citations/20210022519.

Lacy, R.C., D.R. Breininger, D.J. Breininger, A.E. Savage, A.M. Forsman, E. Hoffman, S.D. McGuffey, D. DeMeyer, and T.S. Mecklenborg. 2024 Linking habitat and population viability analysis models to account for vegetation dynamics, habitat fragmentation, and social behavior of a metapopulation of Florida scrub-jays. Frontiers in Conservation Science 5:1505016.

Linderoth, T., L. Deaner, N. Chen, R. Bowman, R.K. Boughton, and J.W. Fitzpatrick. 2025. Translocations spur population growth but failed to prevent genetic erosion in imperiled Florida Scrub-Jays. Current Biology, 35: 1391-1399. e6

Miller, K.E. and C.P. Shea. 2021. Characterizing suitable habitat for the largest remaining population of the threatened Florida scrub-jay *Aphelocoma coerulescens*. Endangered Species Research 45:99-107.

Nation Climate Assessment. 2014. Climate Change Impacts in the United State: The Third National Climate Assessment. U.S. Global Change Research Program. Washington D.C.

U.S. Fish and Wildlife Service. 1987. Final Rule. Department of the Interior. Fish and Wildlife Service. 50 CFR Part17. Endangered and Threatened Wildlife and Plants: threatened status for Florida Scrub jay. 52 FR 20715-20719.

U.S. Fish and Wildlife Service. 2007. Florida Scrub-Jay (*Aphelocoma coerulescens*) 5-year review: status and summary. U.S. Fish and Wildlife Service. Atlanta, GA.

U.S. Fish and Wildlife Service. 2019a. Revised Recovery Plan for the Florida Scrub-Jay (*Aphelocoma coerulescens*). U.S. Fish and Wildlife Service. Atlanta, GA.

U.S. Fish and Wildlife Service. 2019b. Species Status Assessment Florida Scrub-Jay (*Aphelocoma coerulescens*), Version 1.0. U.S. Fish and Wildlife Service, South Atlantic - Gulf & Mississippi Basin, Jacksonville, Florida. 140 pp.

U.S. Fish and Wildlife Service. 2020. Florida Scrub-Jay (*Aphelocoma coerulescens*). 5-year review: status and summary. U.S. Fish and Wildlife Service. Atlanta, GA.

Woolfenden, G.E. and J.W. Fitzpatrick. 1984. The Florida scrub jay: demography of a cooperative-breeding bird. Princeton University Press; Princeton, New Jersey. 406 pages.

RESULTS / SIGNATURES

U.S. Fish and Wildlife Service
Status Review of Florida Scrub-Jay (*Aphelocoma coerulescens*)

Status Recommendation:

On the basis of this review, we recommend the following status for this species. A 5-year review presents a recommendation of the species status. Any change to the status requires a separate rulemaking process that includes public review and comment, as defined in the Act.

___ Downlist to Threatened
____ Uplist to Endangered
___ Delist:
____ *The species is extinct*
__ *The species does not meet the definition of an endangered or threatened species*
____ *The listed entity does not meet the statutory definition of a species*
__X__ No change needed

FIELD OFFICE APPROVAL:

Acting Division Manager, Florida Ecological Services Field Office, U.S. Fish and Wildlife Service

Approve: NICOLE COLANGELO Digitally signed by NICOLE COLANGELO Date: 2025.08.27 17:09:35 -04'00'

** In the Florida Ecological Services Field Office, the Classification and Recovery Division Manager has delegated authority to approve 5-year reviews that do not recommend a status change.*

Appendix A

As a component of the focal landscape strategy in the recovery plan, potential carrying capacities were projected for each genetic unit based on the amount of habitat within their conservation lands. These metrics were developed broadly from a habitat mapping exercise; however, individual parcels were not ground-truthed to account for variables that may influence a particular parcel's opportunity to exceed projections or constraints limiting the ability to achieve the number of Florida Scrub-Jay family groups suggested. Examples influencing potential carrying capacities include habitat fragmentation, edge effects from adjacent landscapes, supplemental feeding, metapopulation dynamics, or mapping errors. With the exception of the East Coast Genetic Unit A's Focal Landscape, the remaining five genetic units focal landscapes have the opportunity to increase their potential population resiliencies by as much as two-fold or more.

East Coastal Genetic Unit A

The projected metric for this genetic unit was estimated around 131 Florida Scrub-Jay family groups for the focal landscape. As shown in the previous table, 132 Florida Scrub-jay family groups were reported for this review. What is surprising, the large core area of St. Sebastian River State Park was projected to be around 100 Florida Scrub-jay family groups and the smaller conservation lands only estimated to be roughly half of their current metrics. These metrics for the smaller conservation lands that are higher than the carrying capacity estimates may be a result of the ongoing habitat management occurring and recent translocations. The continuing increasing trend in occupied habitat is very promising for the focal landscape in this genetic unit.

Lake Wales Ridge Genetic Unit B

The majority of the conservation lands in this important genetic unit remain stable or have increasing trends with the exception of Avon Park Bombing Range's population. Approximately a dozen focal landscape conservation lands in this genetic unit have the ability to increase their current population metrics two to three-fold based on potential habitat acres with increased effective management creating suitable conditions. Also, acquiring additional conservation lands to connect these scrub patches will create a genetically linked and robust population.

Avon Park Bombing Range historically supported 98 Florida Scrub-Jay family groups. In an attempt to increase habitat occupancy, the Air Force is re-evaluating their habitat management strategy to include the locations and timing of fire applications, fire return intervals, and appropriate vegetative structure to maximize habitat utilization. A realistic target for the available landscape that can be managed for optimal conditions after incorporating mission considerations and constraints is projected to be in the range of 130 Florida Scrub-Jay family groups.

A conservative potential carrying capacity for the conservation lands included in the focal landscape within this genetic unit is roughly 650 Florida Scrub-Jay family groups.

Northeast Coastal Genetic Unit C

As noted in the previous population trends discussion, this extremely important genetic unit is not faring well. Increased aeronautical mission activities result in increased restraints on habitat management. Along with decreased funding and less staff availability, population resiliency is directly affected. Merritt Island National Wildlife Refuge and Cape Canaveral Space Force Station populations have additional potential carrying capacity with a potential 70% around 600 Florida Scrub-Jay family groups. However, achieving historic number of Florida Scrub-Jay family groups or even stabilizing the current metrics would be a worthy target for these two local populations within the metapopulation. These areas offer an opportunity to study the effects of space mission activities, which are extreme in size but currently sporadic, on Florida Scrub-Jays with implications on other avian species as the activities increase in the future.

North Central Genetic Unit D

The potential carrying capacity estimate for this genetic unit is not a realistic metric as the amount of scrub habitat in Ocala National Forest alone is so vast that maximizing Florida Scrub-Jay habitat management would be an impossible effort. The U.S. Forest Service's mission incorporates many competing activities and land uses; however, the Florida Scrub-Jay population trends are responding favorably from the prior Forest Plan amendments over a decade ago have created additional habitat to benefit species recovery.

Seminole State Forest is an exception to this increasing trend in this focal landscape. Even having ongoing scrub habitat management and translocations within their forest boundaries, the population has shown a declining trend in occupancy over the last few decades. The projected metric for their forest was estimated to be over 100 Florida Scrub-Jay family groups.

Southwest Inland Genetic Unit F

With an estimated potential carrying capacity of roughly 120 Florida Scrub-Jay family groups for conservation lands noted in the table, the proposed population augmentation and potential genetic rescue in late 2025 and early 2026 may aid in increasing these metrics from roughly 50 Florida Scrub-Jay family groups to potentially long-term viability metrics if the translocations are successful.

Additional land acquisitions for this genetic unit have been discussed and attempted by Manatee County; however, potential habitat in private ownership still exists but nothing substantial has occurred.

Southeast Coastal Genetic Unit I

The focal landscape for these connected conservation lands was estimated to support roughly 100 Florida Scrub-Jay family groups. Jonathan Dickenson State Park has the potential metric of approximately 78 Florida Scrub-Jay family groups. If these metrics were obtained the population could achieve long-term viability. With continued habitat management and potential future population augmentation and genetic rescue, the current trajectory is more promising.