

FLORIDA SCRUB JAY
STATEWIDE MAP, 1992-1993

submitted by

ARCHBOLD BIOLOGICAL STATION

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This report summarizes methods and results of the Florida Scrub Jay (FSJ; *Aphelocoma c. coerulescens*) statewide mapping project, conducted from September 1992 through March 1994 by Archbold Biological Station (ABS) and cooperators.

Origin and Funding

The project was organized by biologists at Archbold Biological Station, following a workshop on developing a biological framework for Habitat Conservation Plans for the FSJ, in May 1992. Field research, data compilation, and mapping were funded principally by a contract with the U.S. Fish and Wildlife Service, with supplemental funding provided by two grants from the Williams Company of Tulsa, OK and operating funds of Archbold Biological Station.

Goals of the Project

We mapped the FSJ species-wide distribution by documenting the occurrence, numbers, and status of jays, plus the condition of their potential habitat, within the recent known range of the species. Central objectives were: 1) to plot the location of all FSJ territories and/or occupied tracts of habitat on non-federal land as of 1992-1993; 2) to census FSJ numbers by recording the size of individual families wherever possible; and, 3) to record successional condition and degree of disturbance in occupied and unoccupied scrub habitat statewide.

Participants in this project revisited known FSJ localities to determine their current status; searched new, previously unsurveyed scrub patches for the presence of FSJs; and, compiled and attempted to confirm all existing information on recent FSJ localities. We compiled information from reliable, published or unpublished FSJ surveys (Cox 1987; Florida Breeding Bird Atlas project; Florida Natural Areas Inventory; and certain Christmas Bird Counts).

Coverage

Mapping duties were divided among several principal participants. Eight "county-compilers" were assigned one or more counties, covering the entire recent range of the FSJ, as follows (see attached list for addresses of participants): David Breininger (northern and central Brevard County); Jack Dozier (Clay, Flagler, Marion, Putnam, and Volusia counties); John Fitzpatrick (Glades County); Grace Iverson and Jack Gardner

(Palm Beach County); Bill Pranty (Citrus, Hernando, Hillsborough, Lake, Levy, Okeechobee, Orange, Osceola, Pasco, Seminole, and Sumter counties); Brad Stith (Highlands and Polk counties); Jon Thaxton (Charlotte, Collier, DeSoto, Hardee, Lee, Manatee, and Sarasota counties); and Brian Toland (southern Brevard County, and Indian River, Martin, and St. Lucie counties). Eight additional counties (Alachua, Broward, Dade, Duval, Gilchrist, Hendry, Pinellas, and St. Johns) were visited only briefly or not at all, because FSJs already were known to have been functionally extirpated from these areas.

Federally owned lands were not included in our survey. Therefore, a significant percentage of the total FSJ population was not censused directly. The most important jay populations not surveyed are in the following federal properties: Cape Canaveral Air Force Station (Brevard County), Merritt Island National Wildlife Refuge (Brevard County), Canaveral National Seashore (Brevard and Volusia counties), and Ocala National Forest (Lake, Marion, and Putnam counties).

Our final maps do indicate approximate numbers and locations of FSJs on the above-listed federal lands. Personnel from Archbold Biological Station and the U.S. Forest Service currently are studying FSJs in the Ocala National Forest, and they supplied provisional counts and maps for our use. Numbers and distribution of jays on Cape Canaveral and Merritt Island were estimated based upon previous surveys of some appropriate habitat by David Breininger, with extrapolations to account for the amount of potentially suitable habitat present. The federal land in Brevard County urgently needs thorough inventory, as much of the habitat appears to be densely overgrown. Our estimates for this area may be inflated.

Because FSJs sometimes persist in small, marginally suitable habitat patches, and because significant scrub patches were inaccessible to our survey team, additional FSJs must exist that could not be confirmed in this survey. Therefore, FSJ sites and numbers mapped in this report constitute a minimum count. Relatively undeveloped regions (especially eastern Manatee County, and portions of Okeechobee, Orange, and Osceola counties) were surveyed less thoroughly than developed counties, as residential development supplies the road access necessary to locate and census scrub patches most accurately. A complete FSJ inventory will require access to several large, private ranches and many hundreds of smaller, private landholdings.

Methods

Compilers and cooperators attempted to visit all sites recently known to have harbored FSJs to determine their current status. Concerted efforts also were made to locate new sites. The following outline describes our procedures.

1. Local persons with possible knowledge of FSJ sites were contacted statewide. These included numerous individual birders known to be reliable observers; members of Florida Ornithological Society, Florida Audubon, and local Audubon societies; certain county employees such as land planners or zoning officials; certain reliable environmental consultants; biologists from the Florida Game and Fresh Water Fish Commission and the U.S. Fish and Wildlife Service; personnel of county parks and state parks; and, residents of housing developments built in scrub habitats.

2. Notices of the statewide mapping project were published in ornithological journals, magazines, and newsletters. Notices appeared in the *Florida Naturalist* (distributed to 35,000+ members of the Florida Audubon Society), the *Florida Field Naturalist* and the *FOS Newsletter* (published by the Florida Ornithological Society), *The Skimmer* (a newsletter of the Florida Game and Fresh Water Fish Commission), and *Resource Management Notes* (newsletter of the [former] Department of Natural Resources). In addition, stories mentioning the project and providing the address and phone number of Archbold Biological Station were published in numerous newspapers statewide.

3. Soil maps published by the U.S. Soil Conservation Service (SCS) were scrutinized to identify well-drained, sandy soils known or suspected to support scrub vegetation. Thousands of xeric soil deposits were identified on these soil maps statewide. Field surveys were then undertaken, county by county, in attempt to visit as many of these xeric sites as possible. Because of the limited time and funding available to complete the field work, most "potential habitat polygons" we actually located and surveyed were located along or near public roadways. Access to private properties was requested mainly when FSJs already were known or strongly suspected to be present, or when substantial areas of scrub clearly existed in an area. Access to private property for purposes of censusing FSJs frequently was denied by landowners.

Certain soil types were ruled out after ground-truthing revealed no FSJ habitat. Most often, especially in the northern and northwestern counties, these false alarms turned out to harbor turkey oaks (*Quercus laevis*) and sandhill vegetation. Conversely, certain sandy soil types that had been suspected to be inappropriate for harboring scrub occasionally were included in the survey, after field work determined their suitability for harboring FSJs. Habitats marginally suitable for FSJs (especially dead citrus groves now regenerating as open, weedy fields with scattered young oaks of several species) were surveyed as encountered.

Soil maps sometimes proved inadequate for identifying scrub habitat, and in two counties (Glades County, and portions of Osceola County) soil surveys were lacking altogether. Our approach in these areas was to cruise public and accessible private

roadways to locate scrub patches visually, and to search available aerial photographs for any additional evidence of scrub habitat.

4. Visual searches and playback of FSJ territorial scolds provided the principal means of confirming presence/absence. All habitat patches we could visit that seemed potentially appropriate for FSJs were surveyed via well-established protocol (Fitzpatrick et al. 1991). Although field work was carried out during all months of the year, the most extensive surveys occurred September - November, 1992 and 1993, and February - May, 1993. These fall and spring seasons encompass periods of most active response by FSJs to playback of territorial scolds. Typical responses occurred within one or two minutes after initial broadcast of the tape. Playback stations were 100 to 200 meters apart, usually along edges of roads or trails. About three to five minutes of playback per station without a response constituted evidence that the site was unoccupied. Site-to-site variation in habitat structure and day-to-day variation in weather conditions precluded full standardization of this playback procedure. Some sites could be surveyed quickly, while other sites required extensive effort before the careful observer could conclude that they were vacant.

We emphasize that the most important ingredients for a credible inventory of FSJs are: 1) an observer with substantial field experience with FSJs during all seasons of the year, which permits accurate assessment of the effects of subtle variables such as habitat quality, seasonal changes in jay behavior, and weather conditions that are unfavorable for locating FSJs; and, 2) an observer who genuinely wants to find every FSJ present at a site. Any survey in which either of these two components is not met should be evaluated with caution.

5. Habitat features were recorded for most patches surveyed. A standardized data sheet (example attached) was used to record several characteristics of each patch, including: occupancy by FSJs; estimated degree of vegetative overgrowth; estimated degree and nature of human disturbance; and, whether or not the patch was under public ownership or conservation management.

Time and funding did not permit quantitative measurement of overgrowth or level of human disturbance. Rather, while surveying for FSJs most compilers qualitatively characterized the overall condition of each patch (see attached guidelines). Single habitat patches that had large, homogeneous portions having different degrees of overgrowth or disturbance were considered separate sub-patches on our maps. Patches that were heterogeneous in structure often were difficult to split into sub-patches. These were assigned a code reflecting the highest degree of overgrowth or disturbance represented within the patch. Variation existed among observers in assigning overgrowth and disturbance features to habitat polygons. Therefore, these attributes must be interpreted with caution when compared at the statewide scale.

Unoccupied tracts were not recorded in this study for Brevard, Indian River, St. Lucie, Martin counties. Brevard County is currently being mapped in detail in conjunction with a county-wide HCP process. For the other three counties, Fernald (1989) provides detailed maps of scrub tracts, most of which are no longer occupied by FSJs.

6. Field maps were digitized into a GIS at Archbold Biological Station. Habitat "polygons" and jay locations were hand drawn on field maps, usually SCS soil sheets where these were available. Prior to digitizing, 4 registration tics were located and marked on each map, and the x,y coordinates of the tics were written down and assigned ID numbers on a standardized data form. These tic coordinates and IDs were then entered into the ARC/INFO county coverages. Field maps were taped onto the digitizer board and registered using the appropriate tics. Habitat polygons and jay locations were then digitized by hand, mainly by Pranty. Attribute data for each habitat polygon and jay location were entered into the ARC/INFO database during this process.

7. Repeated drafts of the county maps were produced as hard-copy "check plots." Each county underwent detailed proofreading by Pranty and Stith, to compare the GIS database with the original field maps and data sheets. Digitizing or data-entry problems were corrected. New information on jay locations was accepted, entered into the database, and proofread through March, 1994. Data for 15 counties were proofread by their original compiler (Pranty's 11 counties, plus Glades, Highlands, Palm Beach, and Polk counties).

8. Final maps were plotted. Large-scale (34 x 44 inch) four-color maps of the 31 counties surveyed during the project were plotted. Each map is plotted at a scale allowing maximum use of the 34 x 44 inch paper, so their scales differ from one another. These county maps identify all scrub patches we located, including those that could not be surveyed. The following attribute data are shown for each polygon: FSJ occupancy (currently occupied, formerly occupied, unoccupied, or unknown); habitat overgrowth (prime, somewhat overgrown, heavily overgrown, or unknown); habitat disturbance (undisturbed, low-density development, ranch-modified, high-density development, or unknown); and, number of birds present in each FSJ territory, when provided to us (otherwise the territory is blank, or is marked with a zero, 0).

Other features shown on each county map are: all federal and state highways and selected county roads (from an ARC/INFO coverage supplied by Florida Game and Fresh Water Fish Commission); a scale, in miles and kilometers; a key describing color codes for occupancy, overgrowth, and disturbance features; and information detailing the persons responsible for gathering the field data and plotting the map. Around the boundaries of each county, data from neighboring counties are plotted as space provides, but all such extra data duplicate those plotted for the respective, neighboring counties on their own maps.

In addition to the 31 individual county maps, three statewide maps were printed to depict the entire current range of the FSJ. Map #1 depicts all scrub habitat polygons (yellow) and all FSJ territories (red dots). Map #2 depicts all scrub habitat polygons (yellow), all FSJ territories (red dots), plus buffer lines drawn exactly 1 mile (orange lines) and 2.5 miles (green lines) around FSJ locations to enclose subpopulations and Satellite Systems. Map #3 depicts all scrub habitat polygons (yellow), all FSJ territories (red dots), and all federal and state highways plus selected county roads (black lines of varying width).

9. Original field records for all sites occupied by FSJs are on file at Archbold Biological Station. At Archbold, the original field data sheets, including soils maps, polygon attribute sheets, and backup notes are stored in the ornithology laboratory, and the statewide map data are maintained in active coverages and databases in the GIS laboratory.

Results

County by county results of the statewide survey are shown in Table 1. We either observed directly or obtained credible evidence for 2,627 groups of Florida Scrub Jays during our survey. An estimated 1,334 additional groups exist on federal property. These figures yield a combined total of 3,961 FSJ groups statewide (Fig. 1).

The survey included 2,277 groups whose numbers were censused. Average group size statewide (excluding dependent young) was 2.77 jays, yielding a total population estimate of 10,972 jays.

The statewide population is broken up into 77 separate "Satellite Systems," which we define as aggregations of jays separated from other aggregations by more than 5 miles (8 km; i.e., separated by more than the normal FSJ dispersal distance). These Satellite Systems range in size from one or a few pairs up to nearly 1,100 pairs. Most are small (Fig. 2). Three Satellite Systems contain almost 70% of the total numbers. Six additional systems contain more than 100 groups each. Together, these nine largest Satellite Systems make up 86% of the total statewide Florida Scrub Jay population.

Half of all remaining Florida Scrub Jays occur in two counties, Brevard (approximately 1,232 groups) and Highlands (890 groups). Some 19 occupied counties now contain 30 or fewer groups of jays. Almost all these counties formerly would have contained hundreds or thousands of groups.

Population Decline

Our survey documents in several ways that the Florida Scrub Jay continues to decline rapidly. Over half of the groups documented during our survey were censused carefully for family size ($N = 2,277$). Extrapolating from the average group size of censused families ($X = 2.77$; Table 1) yields a total statewide estimate of 10,972 Florida Scrub Jays as of 1993. Correcting for the larger average group sizes in Highlands County ($X = 2.99$, $N = 890$ groups; for the remainder, $X = 2.62$, $N = 3071$ groups) yields a slightly more conservative estimate of 10,708 jays statewide.

Cox (1987) estimated that 15,400 to 22,800 FSJs existed as of the early 1980s. However, we strongly suspect that Cox missed a substantial number of localities during his one-man census of the state, which he conducted primarily in 1981. Therefore, it is difficult to compare our numerical results with Cox's directly. In particular, the proportion of the statewide population existing on federally owned land remains unclear. Admitting considerable uncertainty in his estimates, Cox (1987) inferred that of the entire statewide population, fully 12,200 to 19,400 (79-85%) were on federal land. Our estimates are quite different. We accounted for 2,627 FSJ groups outside of federal property, and our best sources indicate only about 1,334 groups on federal land. Our figures suggest that 66% of all remaining FSJs exist on non-federal property as of the early 1990s.

Without any doubt, FSJ numbers on private lands today are dramatically reduced compared to Cox's observed numbers, especially across the northern tier of occupied counties. Same-site comparisons of our results with Cox's allows us to quantify the change (Table 2). In the 11 counties surveyed by Pranty, 64 of the 67 FSJ localities listed as occupied by Cox (1987) were surveyed carefully in 1992 and 1993. Of these, only 19 (29%) are still occupied. Cox personally saw a total of 290 FSJs at 58 of these 67 occupied sites in 1981; at these same 58 sites, Pranty only saw 116 jays, plus 57 at a recent burn near one of Cox's sites. Outside of the burn, Pranty's count was only 40% of Cox's. Even including the burn, Pranty's count in the region was only 59% of Cox's from a decade earlier.

We conclude that in the northern third of its range, the Florida Scrub Jay has declined between 25% and 50% since the early 1980s. It is perhaps significant that this well-documented rate of decline matches the apparent difference between Cox's estimates and ours for the total statewide population, including both federal and non-federal lands (10,708 today versus 15,400 to 22,800 in 1981).

Fire suppression and habitat succession appear to be responsible for much of the population decline in the north. Of the 45 unoccupied sites Pranty visited, many had been partially cleared but only 4 had been cleared entirely, while 41 (91%) still contained at least some scrub habitat (Table 2). Most of this scrub was found to be mature sand pine (*Pinus clausa*) forest or xeric hammock.

Some of the most noteworthy peripheral populations of Florida Scrub Jays are now either extirpated or nearly so. In general, the northerly subpopulations appear to be disappearing most rapidly. Until 1991, for example, Gold Head Branch State Park (Clay County) had long supported the northernmost subpopulations of jays. This population and the nearby one at Camp Blanding Military Reservation were extinct as of 1993. Guana River State Park and surrounding barrier island scrubs of St. Johns County have supported the northernmost coastal jays for many years, but already had been eliminated by the time Cox's (1987) review. We could not confirm hearsay reports of one or more jays in this region, and we, too, consider FSJs to be extirpated from St. Johns County. Finally, the Cedar Key scrubs (Levy County) once supported a large population of jays (reviewed by Cox 1987), but this population is reduced to only 6 groups as of 1993.

Demographic Decline

Based on our counts of group sizes, widespread demographic decline is evident even within extant populations throughout the peninsula. Excluding the robust Highlands County population from the statewide sample (southern Lake Wales Ridge Subregion; mean group size = 2.99) yields an average group size elsewhere around the state of only 2.62. This is a minimum average, because it reflects only those jays actually seen during the survey; no doubt, some jays were missed even when a family was recorded. On the other hand, many of the groups were censused during the fall, when numbers are still enhanced by juveniles fledged the preceding spring. In a demographically stable population that has been studied in detail, the long-term average group size in April is exactly 3.00 (Woolfenden and Fitzpatrick 1990), which is very close to the census result for the same region (2.99, see above).

We suspect that average group sizes outside of the southern Lake Wales Ridge are indeed significantly smaller than 3.0. This means that fewer than one third of FSJ groups contain nonbreeding helpers. This, in turn, means that over most of its range the Florida Scrub Jay is at best only barely replacing itself. If we assume that yearling nonbreeders experience an average mortality of 25% (Fitzpatrick and Woolfenden 1986), then average production of 2-year-old recruits for a population with only 0.6 nonbreeding yearlings per pair is between 0.4 and 0.5 recruits (0.6×0.75). Therefore, if virtually every one of these potential recruits filled a breeding vacancy immediately (unlikely), then sufficient numbers would exist to replace breeders exactly at the rate of 20% annually (0.4 recruits per pair, or 0.2 per breeder). This 20% matches the adult death rate in healthy populations.

In the real world, stochastic variation across space and time actually prohibits such a delicate match of birth rates and death rates from persisting throughout the range of the jay. The absence of a standing surplus of non-breeding jays implies that across most of its range the species now exists in a precarious demographic balance. This pattern explains the continued, steady disappearance of FSJs even from areas that still contain

scrub habitat. Local extirpations are to be expected as a result of local shortfalls in the reservoir of recruits.

Conclusions and Recommendations

The Florida Scrub Jay is continuing to decline statewide, especially across the northern third of its recent range. Fire suppression now plays as large a role as outright habitat loss in explaining this decline. Further declines are to be expected, as remnant subpopulations continue to "blink out" because of demographic imbalances.

Efforts to protect large tracts of natural scrub habitat, and to place them under long-term conservation management, should be redoubled. Prescribed fire is urgently needed over much of the range of the species, as it is now clear that the Florida Scrub Jay is an early-successional habitat specialist.

The status and fate of Florida Scrub Jays on federally owned land remain uncertain. Precise counts of FSJs are most urgently needed in the land on Cape Canaveral being managed as military bases. Prescribed fire appears to be urgently needed in this large and vital Core Population.

Ocala National Forest should be declared critical habitat for the Florida Scrub Jay, and should incorporate ecosystem management over major expanses of its scrub habitat. Continued gardening of planted sand pines, and its associated disturbance of soil and plant composition, is likely to contribute to the continued decline of the FSJ in an areas that clearly has always been a Core Population.

The southern Lake Wales Ridge population is the third major Core Population, and the only one that remains largely on private land. Efforts to establish the Lake Wales Ridge National Wildlife Refuge (federal) and the Lake Wales Ridge Ecosystem Network (State of Florida) should be strengthened and accelerated.

Regional-scale Habitat Conservation Plans will be essential to the long-term protection of Florida Scrub Jays in the myriad smaller populations across the state. As the human population continues to expand in peninsular Florida, the HCP process could play a vital role in helping to channel mitigation funding toward local networks of scrub ecosystem preserves that can be managed in perpetuity.

Literature Cited

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APPENDIX 1

The following instructions and guidelines were distributed to all county compilers at the beginning of the study.

INSTRUCTIONS FOR STATEWIDE SURVEY OF FLORIDA SCRUB JAYS

GOALS

The primary goals of the project are to produce, 1) a map of all Florida Scrub Jay (FSJ) populations and their occupied habitat still extant as of 1992-93; 2) a corresponding digital database documenting the area and condition of habitat at each FSJ population; and, 3) an accurate census of Florida Scrub Jay numbers statewide, especially on non-federally owned land.

A secondary goal of the project is to map tracts of apparently suitable or restorable habitat that are not currently occupied by Florida Scrub Jays. Unoccupied habitat will be mapped only as encountered during the process of surveying for extant jay populations. Therefore, certain unoccupied but potentially suitable habitat tracts will not appear on this map because they were not visited by participants in the survey.

METHODS

Inventory and surveying is organized on a county by county basis. A single individual contractually is assigned primary responsibility as the "compiler" for each county (see list). The base map used in each county is the USCS Soil Survey map for that county. For those counties lacking a soils map, the USGS 7.5 min Quadrangle sheets are used as the base map.

For each county, the compiler checks all possible sources and leads for possible FSJ populations (see List of Sources), and notes these on a working copy of the county soil map. In addition, potential habitat as indicated by appropriate excessively drained sandy soils also is highlighted on the soil map. Modern aerial photographs should be consulted whenever possible to aid in locating extant habitat tracts.

FSJ populations (including individual family groups) that are already well known to the compiler prior to initiating the survey need not be exhaustively inventoried during the survey period, if the number of families is known or can be estimated accurately from

maps. Polygons depicting these FSJ previously documented populations and their numbers may be entered directly onto the final copy of the soils map. In addition, information about current FSJ families or populations reported to the compiler by individuals known to be reliable field observers can be treated in similar fashion. Polygon Data forms (see below) should clearly indicate the source and dates for information on any FSJ populations not visited personally by the compiler.

All unconfirmed leads from any source, including possibly suitable habitat polygons indicated by the soils maps, must be visited during 1992 or 1993. Field surveys are conducted with the intent of definitively confirming or refuting the existence of FSJs at each potential habitat tract. Methods follow those outlined in Fitzpatrick et al. (1991), especially in the use of playbacks of FSJ territorial vocalizations to attract resident families. It is expected that field methods will be modified according to judgement of the compiler in order to suit the individual situation. Most important, survey technique must rule out the possibility that extant FSJs could be missed at any site.

Permission of the landowner must be obtained to enter private property. If permission is denied, and effective survey for presence/absence cannot be conducted from public roadways, any suspected habitat tract should be entered on the map as "permission denied, not surveyed."

All tracts of occupied and potentially suitable but unoccupied habitat are carefully delineated on the county soils map as "polygons." These polygons must indicate exact size and spatial configuration of the extant habitat as it exists in 1992-93. In many (most?) cases, the photograph in the soils map is outdated, and caution must be exercised to outline polygons around today's configuration. These polygons will be digitized later onto GIS. Each polygon must be assigned a unique polygon-ID number for identification within the GIS database.

All FSJ groups directly observed or otherwise documented as present during 1992-93 are recorded directly onto the soil map. Group size is written inside a circle covering the apparent or assumed center of the territory.

All habitat polygons are labeled "occupied," "unoccupied," or "inaccessible." It is not necessary to survey entirely each tract of occupied habitat. If number of FSJ families can be reliably estimated from the size of the tract and the quality of the habitat, the tract simply may be labelled "occupied." The compiler must estimate total number of FSJ families present in an occupied tract even when it is not formally surveyed. Occupied tracts in which jay numbers are estimated by the compiler should be assumed to support typical FSJ densities (1 pair per 10 hectares or 25 acres of usable habitat).

Polygons may include small areas of marginal or unusable habitat (including developed residential housing) where these are interspersed among larger areas of

suitable habitat. The aim is to delineate well-defined "patches" of FSJ habitat, even if not all the area is usable or occupied.

All habitat polygons, occupied or unoccupied, must be recorded onto a Polygon Data form (attached) for later transfer into the GIS data base. The following codes are entered for each separate polygon:

FLORIDA SCRUB JAY POLYGON ATTRIBUTE DATA**1. POLYGON ID #****2. SOIL SURVEY PAGE #****3. OCCUPANCY CODE:**

- 0 = UNOCCUPIED
- 1 = OCCUPIED: CURRENT SURVEY
- 2 = OCCUPIED: RECENT RECORDS (since 1980)
- 3 = FORMERLY OCCUPIED: (pre 1980)
- 4 = UNKNOWN, ACCESS DENIED

4. OVERGROWTH CODE:

- 0 = OPTIMAL HABITAT
- 1 = SOMEWHAT OVERGROWN
- 2 = MODERATELY OVERGROWN
- 3 = HEAVILY OVERGROWN

| code | scrub oak coverage | oak height | % bare sand | % pine canopy |
|------|--------------------|------------|-------------|---------------|
| 0 | 0-90% | 1-3 m | 10-50% | <=20% |
| 1 | 50-100% | 2-4 m | 5-25% | <=30% |
| 2 | 80-100% | 2-5 m | 0-10% | <=40% |
| 3 | 90-100% | 3-6 m | 0-5% | up to 100% |

NOTE: Some heavily overgrown habitat (code 3) contains no pines, while other examples contain almost pure pine (especially sand pine). The latter examples frequently have oak cover well below 90%. Therefore, heavily overgrown habitat should contain nearly 100% cover by pines or oaks.

5. DISTURBANCE CODE:

- 0 = UNDISTURBED
- 1 = MINIMAL DISTURBANCE (rarely used trails, sand roads)
- 2 = MODERATELY DISTURBED (low density housing, light traffic)
- 3 = MODERATE TO HIGHLY DISTURBED, AGRICULTURAL (cleared understory, heavily grazed pasture, etc.)
- 4 = HIGHLY DISTURBED, RESIDENTIAL (high density housing)

6. PROTECTION STATUS:

- 0 = UNPROTECTED, PRIVATELY OWNED
- 1 = PROTECTED, PRIVATELY OWNED
- 2 = PROTECTED, PUBLICLY OWNED

At least one Data Form (attached) also should be filled out during each field survey to aid in record-keeping. This form is intended to supplement personal field notes, providing background data on weather conditions, time of day, and details about habitat polygons visited during surveys. The form need not be completed in detail at every stop along a survey route, as these data will not be entered into the final GIS database. These forms provide backup detail in case additional data are needed for follow-up studies.

Original maps, original Polygon Data forms, and copies of Field Data Forms and field notes are turned over directly to Brad Stith at Archbold Biological Station immediately after completion of the county survey. All counties must be completed and turned in before 1 June 1993. Draft copies of the final maps will be returned to the organizer for immediate proofreading. Final deadline for completion of the entire project and preparation of the final report is 1 October 1993.

IMPORTANT SOURCES FOR LOCATION OF FSJ HABITAT TRACTS

1. personal experience of compiler
2. Breeding Bird Atlas data and BBA compilers
3. Cox, J.A. 1987. Status and distribution of the Florida Scrub Jay. Florida Ornith. Soc. Spec. Publ. no. 3: 1-110.
4. Florida Natural Areas Inventory (FNAI) occurrence records
5. Christmas Bird Count data, especially 1980's and 1990's
6. Florida Game and Fresh Water Fish Commission habitat map
7. local birding contacts, consultants, and agency personnel

The development of the GIS database for the Florida Scrub Jay territory locations and habitat polygons follows a clearly definable set of steps that must be completed for each county. As an aid in tracking the progress of this project, the major steps are provided below in a numbered list, followed by a County tracking table showing progress as of June 1, 1993.

1. Recieve county soil maps and corresponding data forms.

2. Create map control tic file

- 2.1. Mark 4 control points on each soil sheet
- 2.2. Fill out tic coordinate data sheet with x,y coordinates for points in 2.1
- 2.3. Enter tic coordinates into database

3. Create Habitat Layer

- 3.1. Digitize habitat polygons
- 3.2. Correct and build polygon topology
- 3.3. Type in and attach polygon attributes from data sheets

4. Create Scrub Jay Territory Layer

- 4.1. Digitize territory locations
- 4.2. Type in and attach group size for each territory

5. Quality Control Procedures

- 5.1. Generate verification plot
- 5.2. Compare plot to original data
- 5.3. Make final corrections

APPENDIX 2

COUNTY COMPILERS and other cooperators, FSJ Satewide Mapping Project, 1992-93

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| Time | Station # | Quadrangle | Soil Surv. Pg | Soil Type | % Oak Cover | Oak Ht. (ft) | % Pine Cover | % Bare Sand | Over-growth Code | Disturbance Code | No. Jays | Comments |
|------|-----------|------------|---------------|-----------|-------------|--------------|--------------|-------------|------------------|------------------|----------|----------|
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overgrowth Code: 0 = prime; 1=somewhat overgrown; 2 = moderately overgrown ; 3 = heavily overgrown; 4 = cleared for pasture/agriculture
disturbance Code: 0 = undisturbed; 1= rarely used trails/dirt roads; 2 = low density housing/light traffic; 3 = high density housing/heavy traffic

Table 1.
Results of 1992-93 census of Florida Scrub Jays, by county

| | Total Groups | Groups on Federal Land | Censused Groups | Censused Jays | Mean Group Size | Comments |
|--------------|-----------------|------------------------------|--------------------|------------------|-----------------------|---------------------------------|
| Alachua | 0 | | | | | no map |
| Brevard (*) | 1232 | 860 | 276 | 749 | 2.71 | crude estimate for federal land |
| Broward | 0 | | | | | no map; 1 jay, 1986-93 |
| Charlotte | 128 | | 128 | 296 | 2.31 | |
| Citrus | 30 | | 30 | 97 | 3.23 | |
| Clay | 0 | | | | | |
| Collier | 19 | | 19 | 53 | 2.79 | |
| DeSoto | 24 | | 24 | 69 | 2.88 | |
| Flagler | 7 | | 7 | 22 | 3.14 | |
| Glades | 102 | | 55 | 121 | 2.20 | many jays inaccessible (Lykes) |
| Hardee | 8 | | 8 | 20 | 2.50 | |
| Hendry | 1 | | 1 | 2 | 2.00 | no map; jays unconfirmed |
| Hernando | 2 | | 2 | 3 | 1.50 | |
| Highlands | 890 | | 890 | 2662 | 2.99 | |
| Hillsborough | 17 | | 17 | 38 | 2.24 | |
| Indian River | 52 | | | | | no group sizes |
| Lake (*) | 148 | 33 | 115 | 306 | 2.66 | |
| Lee | 24 | | 24 | 51 | 2.13 | |
| Levy | 6 | | 6 | 21 | 3.50 | |
| Manatee | 25 | | 25 | 64 | 2.56 | |
| Marion (*) | 492 | 405 | 58 | 142 | 2.45 | some groups not censused |
| Martin | 96 | | | | | no group sizes |
| Okeechobee | 12 | | 12 | 36 | 3.00 | |
| Orange | 8 | | 8 | 32 | 4.00 | |
| Osceola | 26 | | 26 | 76 | 2.92 | |
| Palm Beach | 40 | | 40 | 107 | 2.68 | |
| Pasco | 24 | | 24 | 68 | 2.83 | |
| Polk | 202 | | 202 | 507 | 2.51 | |
| Putnam (*) | 10 | 10 | | | | |
| Sarasota | 145 | | 145 | 413 | 2.85 | |
| Seminole | 12 | | 12 | 42 | 3.50 | |
| St. Johns | 0 | | | | | no map; 3 jays reported 1993 |
| St. Lucie | 30 | | | | | no group sizes |
| Sumter | 17 | | 17 | 57 | 3.35 | |
| Volusia (*) | 132 | 26 | 106 | 257 | 2.42 | |
| Totals | 3961 | 1334 | 2277 | 6311 | 2.77 | |

(*) These counties contain significant populations on federal property; numbers given are unconfirmed estimates based on agency reports, habitat maps, and visitors' impressions; these properties still require thorough survey.

Table 2. Status of habitats at Cox (1987) sites during the FSJ statewide mapping project, 1992-1993.

| Cox sites by county | Cox jays | SMP jays | Habitat extant? | over-growth | Comments |
|---------------------|----------|----------|-----------------|----------------|---|
| Citrus 1 | 2 | 0 | yes | some | <5 acres of marginal habitat |
| Citrus 2 | 11 | 3 | yes | some | extensive area of marginal habitat; more jays possible |
| Citrus 3 | 2 | 0 | yes | some | 1-2 acres |
| Citrus 4 | 3 | 0 | yes | none | Crystal River State Reserve - <5 acres of marginal scrub, completely burned in 1990 |
| Citrus 5 | 2 | 0 | yes | heavy | |
| Citrus 6 | 2 | 0 | yes | some | <1 acre patch under powerlines |
| Citrus 7 | 1 | 2 | yes | heavy | Crystal River State Reserve |
| Citrus 8 | 2 | 0 | yes | some | a Brown Thrasher repeatedly mimicked an FSJ scold while we played the FSJ tape! |
| Citrus 9 | H | 0 | yes | heavy | McGregor Smith Scout Reservation (5000 acres) - habitat not managed |
| Hernando 1 | 10 | 0 | yes | heavy | many 100s of acres of marginal habitat; some jays still may exist |
| Hernando 2 | H | 0 | yes | heavy | <5 acres of atypical habitat |
| Hernando 3 | 5, 3 | 1 | yes | some/ heavy | 5-10 acres of scrub surrounded by 100s of acres of Sand Pines - Weeki Wachee scrub - WOULD MAKE AN EXCELLENT PRESERVE; some parts under consideration for acquisition by SWFWMD |
| Hillsborough 1 | H | 0 | yes | heavy | |
| Hillsborough 2 | H | ? | ? | ? | could not be searched; location not specific |
| Lake 1 | 4 | 0 | yes | heavy | |
| Lake 2 | 20 | 13 | yes | heavy | being developed slowly; partial preservation may be possible |
| Lake 3 | 2 | 0 | yes | heavy | 5-10 acres; undeveloped |
| Lake 4 | 3 | 0 | yes | heavy | <5 acres |
| Lake 5 | 3 | 0 | yes | some | <5 acres, within 12,070-acre Ocala Connector West CARL project |
| Lake 6 | 3 | 6 | yes | heavy | within 12,070-acre Ocala Connector West CARL project |

| | | | | | |
|---------|---------|---------|-----|---------------|--|
| Lake 7 | 12 0 | 3 57 | yes | heavy none | S part = Cox site N part = big burn in 1989, not Cox site. This site is Royal Trails development - 3000+ acres of roads, but with almost no houses in the W and N parts. THIS SITE AND ADJACENT PROPERTIES MUST BE PRESERVED! - adjacent to 12,070-acre Ocala Corridor West CARL project. |
| Lake 8 | 3 | 0 | yes | heavy | <5 acres, within 6000-acre Seminole Woods/Springs CARL project |
| Lake 9 | 3 | 6 | yes | some | 25 acres of beautiful <i>Ceratiola</i> scrub, slowly being developed - partial preservation may be possible. |
| Lake 10 | 9 | 2 | yes | some | |
| Lake 11 | 3 | 0 | yes | some | <5 acres |
| Lake 12 | 2 | 0 | yes | heavy | |
| Lake 13 | 8 | 0 | yes | heavy | |
| Lake 14 | 11, 4 | 0 | yes | some | mostly cleared for pasture; tiny remnants |
| Lake 15 | 4 | 0 | yes | heavy | dead citrus grove planted to Slash Pines, now tall |
| Lake 16 | 4 | 3 | yes | some | jays are hand-tame |
| Lake 17 | H | 12 | yes | some | dead citrus grove regenerating as open Laurel Oak forest; adjacent to <5 acres of Sand Pine forest - amazing! |
| Lake 18 | 1, 1 | 1 | yes | none | railroad right-of-way; <1 acre! |
| Lake 19 | 2 | 0 | yes | heavy | 1-2 acres |
| Lake 20 | 2 | 0 | NO | | cleared for pasture, within 6000-acre Seminole Woods/Springs CARL project |
| Lake 21 | 1-2 | 0 | yes | heavy | tiny remnant adjacent to Rock Springs Run State Reserve and 6000-acre Seminole Woods/Springs CARL project |
| Lake 22 | 2 | 21 | yes | none | Rock Springs Run State Reserve (13,850 acres) - managed - FSJs are color-banded |
| Lake 23 | 2 | 0 | yes | heavy | 1-2 acres of marginal habitat |
| Lake 24 | 2 | 0 | yes | heavy | extensive undeveloped area - part of 12,070-acre Ocala Connector West CARL project |
| Lake 25 | 6 | 0 | yes | some | large mobile home park with many small patches of scrub; some jays may still exist |
| Levy 1 | 5-7 | ? | ? | ? | no access; presumably not visited since 1980. |
| Levy 2 | 5 | 0 | yes | heavy | undeveloped |

| | | | | | |
|--------------|-------|----|-----|-------|---|
| Levy 3 | 7 | 0 | yes | heavy | mostly undeveloped; would make an excellent addition to the adjacent Scrub Reserve |
| Levy 4 | 23 | 12 | yes | some | mostly undeveloped; would make an excellent addition to the adjacent Scrub Reserve |
| Levy 5 | 16-17 | 7 | yes | some | Cedar Key Scrub State Reserve (4000 acres) - management has begun |
| Levy 6 | 4 | 0 | yes | heavy | Cedar Key Scrub State Reserve (4000 acres) - this site is not yet managed |
| Levy 7 | 2 | 0 | yes | heavy | atypical habitat |
| Okeechobee 1 | 3 | 0 | yes | heavy | 1-2 acres |
| Okeechobee 2 | 1 | 0 | yes | heavy | |
| Orange 1 | 6 | 0 | yes | some | beautiful 40-acre <i>Ceratiola</i> scrub surrounded by 200+ acres of Sand Pine forest - THIS SITE SHOULD BE PRESERVED; landowners appeared receptive. |
| Orange 2 | 19 | 20 | yes | some | Rock Springs Run State Reserve (13,850 acres) - managed - FSJs are color-banded |
| Orange 3 | 4-5 | 2 | yes | some | Disney property to be cleared in 1995-96; remaining 2 jays captured 11 March 1994 |
| Orange 4 | 4 | 0 | yes | heavy | adjacent to Disney property |
| Orange 5 | 10-15 | 0 | NO | | scrub mostly cleared for 4 power plants |
| Orange 6 | 1 | 0 | yes | some | 10-15 acres of nice scrub; lack of jays was a surprise |
| Orange 7 | 1 | 0 | yes | some | mostly palmettoes and grape vines |
| Orange 8 | 3 | 2 | yes | some | Wekiwa Springs State Park (6400 acres, but little scrub) - managed - FSJs are color-banded |
| Osceola 1 | H | ? | ? | ? | El Maximo Ranch (60,000 acres) - access denied by Latt Maxcy Corp. |
| Osceola 2 | 3 | 5 | yes | some | El Maximo Ranch (60,000 acres) - access denied, but scrub accessible along US 441 |
| Pasco 1 | 4 | 0 | NO | | cleared for houses |
| Pasco 2 | 3 | 7 | yes | some | Barthle Brothers Ranch (18,000+ acres) - THIS SITE AND ADJACENT PROPERTIES MUST BE PRESERVED! - probably has more jays than I found |
| Seminole 1 | 2, 2 | 0 | NO | | cleared for condominiums |
| Seminole 2 | 4 | 0 | yes | none | some cleared; scrub that remains is nice |
| Sumter 1 | 2 | 0 | yes | some | <5 acres |

| | | | | | |
|----------|--------|---|-----|-------|---|
| Sumter 2 | 2, 2 | 0 | yes | some | atypical habitat |
| Sumter 3 | 3 | 0 | yes | heavy | planted to Slash Pines, now tall |
| Sumter 4 | 1 | 0 | yes | none | <1 acre of atypical habitat |
| Sumter 5 | 3-4, 5 | 0 | yes | some | 5-10 acres; lack of jays was a surprise |

An "H" in the "Cox jays" column indicates a site for which Cox received "hearsay" reports of jays, but never visited the site personally. In these cases, Cox rarely listed the number of jays reported to him.

Different numbers in the "Cox jays" columns indicates the number of jays observed by Cox during different surveys, occasionally 1-2 years apart. (The number in the "SMP jays" column indicates the maximum number of jays observed.)

| Time | Station # | Quadrangle | Soil Surv. Pg | Soil Type | % Oak Cover | Oak Ht. (ft) | % Pine Cover | % Bare Sand | Over-growth Code | Distur-bance Code | No. Jays | Comments |
|------|-----------|------------|---------------|-----------|-------------|--------------|--------------|-------------|------------------|-------------------|----------|----------|
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Overgrowth Code: 0 = prime; 1 = somewhat overgrown; 2 = moderately overgrown; 3 = heavily overgrown; 4 = cleared for pasture/agriculture
Disturbance Code: 0 = undisturbed; 1 = rarely used trails/dirt roads; 2 = low density housing/light traffic; 3 = high density housing/heavy traffic

11/1/2011 10:00
sample data she.

Scrub Jay Polygon Data

| | |
|--------------------|----------------|
| Quadrangle: | County: |
|--------------------|----------------|

| Polygon Label ID | Soil Survey Page # | Occupancy Code | Overgrowth Code | Human Disturbance Code | Protection Status |
|------------------|--------------------|----------------|-----------------|------------------------|-------------------|
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Occupancy Code: 0 = unoccupied; 1 = Occupied - Current Survey; 2 = Occupied - Recent Records (1980 -recent); 3 = Occupied - Historic Data (pre-1980); 4 = Unknown (inaccessible)

Overgrowth Code: 0 = prime; 1=somewhat overgrown; 2 = moderately overgrown ; 3 = heavily overgrown

Disturbance Code: 0 = undisturbed; 1= rarely used trails/dirt roads; 2 = low density housing/light traffic; 3 = high density housing/heavy traffic; 4 cleared for pasture/agriculture

The development of the GIS database for the Florida Scrub Jay territory locations and habitat polygons follows a clearly definable set of steps that must be completed for each county. As an aid in tracking the progress of this project, the major steps are provided below in a numbered list, followed by a County tracking table showing progress as of June 1, 1993.

1. Recieve county soil maps and corresponding data forms.

2. Create map control tic file

- 2.1. Mark 4 control points on each soil sheet**
- 2.2. Fill out tic coordinate data sheet with x,y coordinates for points in 2.1**
- 2.3. Enter tic coordinates into database**

3. Create Habitat Layer

- 3.1. Digitize habitat polygons**
- 3.2. Correct and build polygon topology**
- 3.3. Type in and attach polygon attributes from data sheets**

4. Create Scrub Jay Territory Layer

- 4.1. Digitize territory locations**
- 4.2. Type in and attach group size for each territory**

5. Quality Control Procedures

- 5.1. Generate verification plot**
- 5.2. Compare plot to original data**
- 5.3. Make final corrections**

APPENDIX 2

COUNTY COMPILERS and other cooperators, FSJ Satewide Mapping Project, 1992-93

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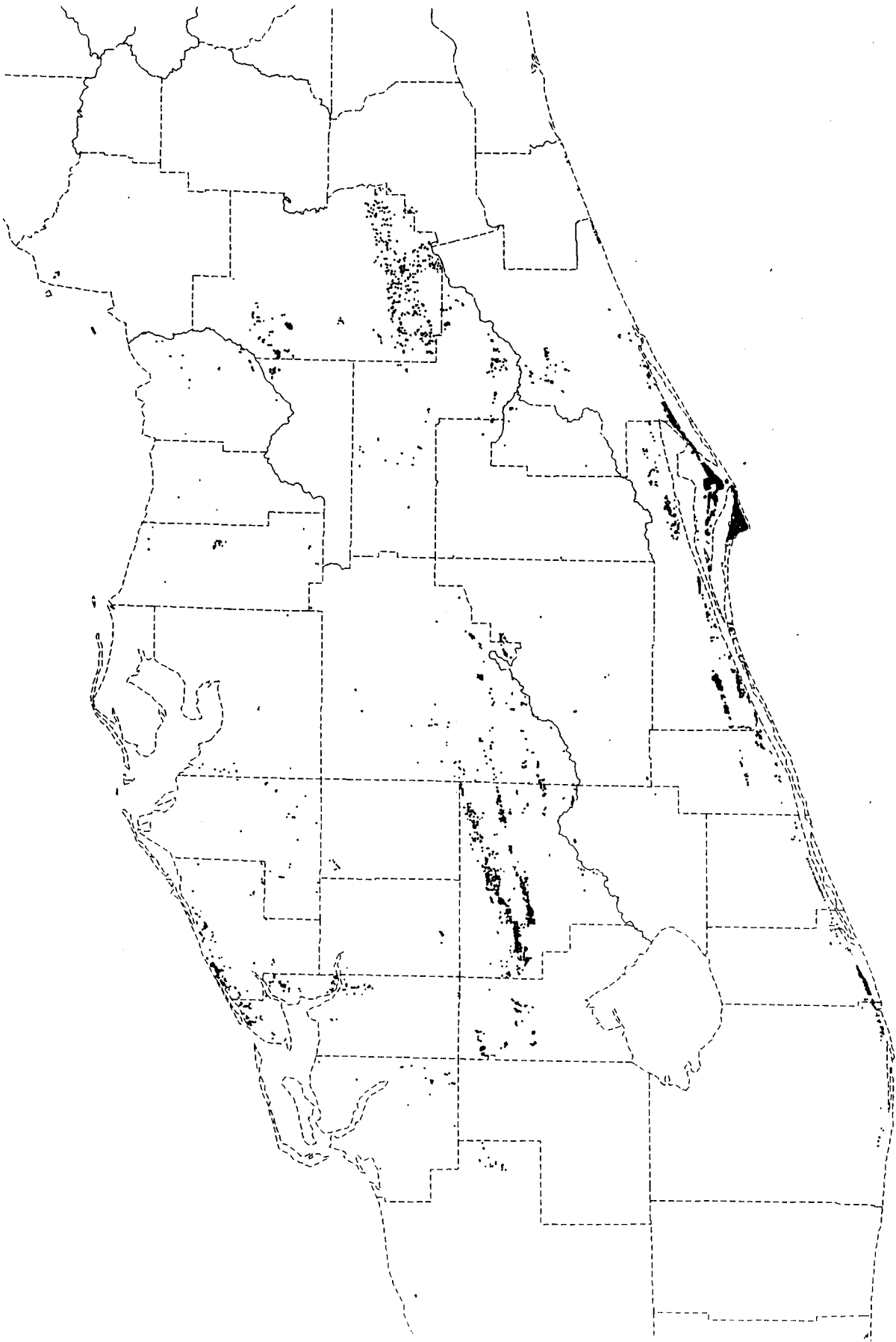
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Fig. 1



HIGHLANDS COUNTY SCRUB JAY POLYGON DATA

| Polygon Label ID | SCS Page No. | Occupancy Code ¹ | Source Code ² | Christman Code ³ | Quadrangle |
|------------------|--------------|-----------------------------|--------------------------|-----------------------------|----------------------|
| 1 | 1A | 1 | | HIGHT33/32 | AVON PARK/FROSTPROOF |
| 2 | 1A/6 | 2 | JC | | AVON PARK/FROSTPROOF |
| 3 | 6 | 0 | | | AVON PARK |
| 4 | 6/1A | 0 | | | AVON PARK |
| 5 | 1B | 3 | | | LAKE ARBUCKLE SW |
| 6 | 1B | 0 | | | LAKE ARBUCKLE SW |
| 7 | 1B | 3 | | POLK19 | LAKE ARBUCKLE SW |
| 8 | 1B | 3 | | POLK28 | LAKE ARBUCKLE SW |
| 9 | 1B | 1 | | HIGH49 | LAKE ARBUCKLE |
| 10 | 1B/2 | 3 | | | LAKE ARBUCKLE |
| 11 | 1A | 2 | JC | | FROSTPROOF |
| 12 | 3 | 1 | | HIGH409 | LAKE ARBUCKLE SW |
| 13 | 3 | 0 | | HIGH408 | LAKE ARBUCKLE SW |
| 14 | 3 | 1 | | | LAKE ARBUCKLE SW |
| 15 | 3 | 1 | | | LAKE ARBUCKLE SW |
| 16 | 3 | 3 | | | LAKE ARBUCKLE SW |
| 17 | 3 | 1 | | | LAKE ARBUCKLE SW |
| 18 | 3 | 1 | | | LAKE ARBUCKLE SW |
| 19 | 3/7 | 3 | | | LAKE ARBUCKLE SW |
| 20 | 7 | 3 | | | LAKE ARBUCKLE SW |
| 21 | 7 | 3 | | | LAKE ARBUCKLE SW |
| 22 | 7 | 1 | | HIGHT99/69 | LAKE ARBUCKLE SW |
| 23 | 7 | 0 | | HIGHT00 | LAKE ARBUCKLE SW |
| 24 | 7 | 0 | | HIGH85 | LAKE ARBUCKLE SW |
| 25 | 7 | 0 | | HIGHT10 | LAKE ARBUCKLE SW |
| 26 | 7 | 3 | | | LAKE ARBUCKLE SW |
| 27 | 7 | 3 | | HIGHT12 | LAKE ARBUCKLE SW |
| 28 | 7 | 3 | | HIGHT11 | LAKE ARBUCKLE SW |
| 29 | 7 | 2 | SC | HIGH01/91 HIGHU10 | LAKE ARBUCKLE SW |
| 30 | 7/10 | 3 | | | LAKE ARBUCKLE SW |
| 31 | 6A | 3 | | HIGH89 | AVON PARK |
| 32 | 6A/13A | 1 | | HIGH02/30 | AVON PARK |
| 33 | 6A/13A | 2 | SC | HIGH30 | AVON PARK |
| 34 | 6A | 2 | SC | HIGH03 | AVON PARK |
| 35 | 13A | 1 | | HIGHT15 | AVON PARK |
| 36 | 13A/10 | 2 | SC | HIGH04 | AVON PARK |
| 37 | 13A/10 | 0 | | | AVON PARK |
| 38 | 13A&B /10 | 1 | | HIGH92 | AVON PARK/CREWSVILLE |
| 39 | 13A | 3 | | | AVON PARK |
| 40 | 13B/14 | 1 | | | CREWSVILLE |
| 41 | 13B/14 | 0 | | | CREWSVILLE |
| 42 | 13B | 2 | MW | HIGH09 | CREWSVILLE |

| Polygon Label ID | SCS Page No. | Occupancy Code ¹ | Source Code ² | Christman Code ³ | Quadrangle |
|------------------|--------------|-----------------------------|--------------------------|---|-------------------|
| 43 | 13B | 2 | JC | HIGH08 | CREWSVILLE |
| 44 | 20A | 0 | | | CREWSVILLE |
| 45 | 20A | 3 | | | CREWSVILLE |
| 46 | 20A | 1 | | HIGH82 | CREWSVILLE |
| 47 | 20B/21 | 1 | | | CREWSVILLE |
| 48 | 14 | 1 | | HIGHT06 | SEBRING |
| 49 | 14 | 3 | | | SEBRING |
| 50 | 14 | 1 | | | SEBRING |
| 51 | 14 | 3 | | | SEBRING |
| 52 | 14 | 1 | | HIGH07 | SEBRING |
| 53 | 14/17 | 1 | | HIGH07 | SEBRING |
| 54 | 17 | 0 | | HIGH10 | SEBRING |
| 55 | 17/20A | 0 | | HIGH10 | SEBRING |
| 56 | 17 | 0 | | | SEBRING |
| 57 | 17 | 0 | | | SEBRING |
| 58 | 17 | 3 | | | SEBRING |
| 59 | 17 | 1 | | HIGH41 | SEBRING |
| 60 | 17 | 3 | | HIGH74 | SEBRING |
| 61 | 17 | 3 | | HIGH37 | SEBRING |
| 62 | 17 | 3 | | HIGH37 | SEBRING |
| 63 | 17/21 | 1 | | HIGH90/35/14/4 0 | SEBRING |
| 64 | 17 | 0 | | | SEBRING |
| 65 | 17 | 3 | | | SEBRING |
| 66 | 17/21 | 1 | | HIGH36 | SEBRING |
| 67 | 17/21 | 1 | | HIGH78 | SEBRING |
| 68 | 17/21 | 1 | | HIGHT27 HIGH87 | SEBRING |
| 69 | 17 | 0 | | | SEBRING |
| 70 | 17 | 1 | | HIGHT39/40/31/ 24 | SEBRING/LORIDA |
| 71 | 14/17 | 2 | CL | HIGHT25 | SEBRING |
| 72 | 14 | 0 | | | SEBRING |
| 73 | 14 | 0 | | | SEBRING |
| 74 | 14/15 | 3 | | HIGHT34 | SEBRING |
| 75 | 17 | 0 | | | SEBRING |
| 76 | 17/18 | 0 | | | SEBRING/LORIDA |
| 77 | 21 | 3 | | | SEBRING |
| 78 | 21 | 0 | | HIGH13 | SEBRING |
| 79 | 21 | 0 | | | SEBRING |
| 80 | 21 | 3 | | HIGH53 | SEBRING |
| 81 | 21 | 3 | | | SEBRING |
| 82 | 21/25 | 1 | | HIGH12 | SEBRING/LAKE JUNE |
| 83 | 21/25 | 1 | | HIGH01 | SEBRING/LAKE JUNE |
| 84 | 22 | 3 | | | LORIDA |
| 85 | 22 | 3 | | | LORIDA |
| 86 | 25 | 1 | | HIGH16/17/18/ 19/61/64/84 HIGHT42 | LAKE JUNE |

| Polygon Label ID | SCS Page No. | Occupancy Code ¹ | Source Code ² | Christman Code ³ | Quadrangle |
|------------------|--------------|-----------------------------|--------------------------|-----------------------------|-----------------------|
| 87 | 25 | 3 | | | LAKE JUNE |
| 88 | 25 | 3 | | HIGH05 | LAKE JUNE |
| 89 | 22/26 | 3 | | | LAKE PLACID |
| 90 | 26 | 3 | | HIGHT29 | LAKE PLACID |
| 91 | 26 | 1 | | HIGHT29 | LAKE PLACID |
| 92 | 26 | 1 | | HIGHT58 | LAKE PLACID |
| 93 | 26 | 1 | | | LAKE PLACID |
| 94 | 26/31 | 1 | | HIGHT23/27 | LAKE PLACID |
| 95 | 26/31 | 1 | | HIGHT17 | LAKE PLACID |
| 96 | 31 | 1 | | HIGHT18/39 | LAKE PLACID |
| 97 | 31 | 1 | | HIGHT18 | LAKE PLACID |
| 98 | 31/35 | 1 | | HIGH59 | LAKE PLACID |
| 99 | 31/30 | 2 | JC | HIGH80 HIGHT05 | LAKE PLACID/LAKE JUNE |
| 100 | 30 | 3 | | HIGH11 | LAKE JUNE |
| 101 | 30/34 | 1 | RB | HIGH19/21 | LAKE JUNE |
| 102 | 30 | 3 | | | LAKE JUNE |
| 103 | 34/39 | 1 | | HIGH83 | LAKE JUNE/VENUS NW |
| 104 | 34 | 0 | | HIGH98 | LAKE JUNE |
| 105 | 34 | 3 | | HIGH20 | LAKE JUNE |
| 106 | 34 | 3 | | HIGHT03 | LAKE JUNE |
| 107 | 34/35 | 2 | JC | HIGH62/32 | LAKE JUNE/LAKE PLACID |
| 108 | 35 | 3 | | HIGH72 | LAKE PLACID |
| 109 | 35 | 1 | | HIGH47 | LAKE PLACID |
| 110 | 35/40 | 1 | | HIGH29/38 | LAKE PLACID/CHILDS |
| 111 | 34/39 | 3 | | | VENUS NW |
| 112 | 39/44 | 1 | | HIGH83/22/28 HIGHT02 | VENUS NW |
| 113 | 39 | 3 | | | VENUS NW |
| 114 | 39 | 3 | | | VENUS NW |
| 115 | 45/49 | 1 | | HIGHT44/20/35 HIGH33 | CHILDS |
| 116 | 49/52 | 1 | | HIGH24/31 | CHILDS/VENUS |
| 117 | 44 | 2 | MM | HIGH65 | VENUS NW |
| 118 | 44 | 0 | MM | HIGH65 | VENUS NW |
| 119 | 7/10 | 3 | | | LAKE ARBUCKLE SW |
| 120 | 7/10/14 | 1 | | HIGHT08/30/04 HIGH63 | LAKE ARBUCKLE SW |
| 121 | 10 | 3 | | HIGH88 | LAKE ARBUCKLE SW |
| 122 | 10/13A | 1 | | | LAKE ARBUCKLE SW |
| 123 | 54 | 3 | | | VENUS |
| 124 | 54 | 2 | JC | HIGH48 | VENUS |
| 125 | 54 | 2 | JF | | VENUS |
| 126 | 54 | 3 | | | VENUS |
| 127 | 54 | 3 | | | VENUS |
| 128 | 52 | 2 | JF | HIGH49 | VENUS |
| 129 | 52 | 2 | JF | HIGH46/45 | VENUS |
| 130 | 52 | 2 | JF | | VENUS |
| 131 | 52 | 2 | JF | HIGH96 | VENUS |

| Polygon Label ID | SCS Page No. | Occupancy Code ¹ | Source Code ² | Christman Code ³ | Quadrangle |
|------------------|--------------|-----------------------------|--------------------------|-----------------------------|---------------------|
| 132 | 52 | 2 | JF | HIGH95 | VENUS |
| 133 | 52 | 2 | JF | HIGH95 | VENUS |
| 134 | 52 | 3 | | | VENUS |
| 135 | 52 | 3 | | | VENUS |
| 136 | 52 | 3 | | | VENUS |
| 137 | 52 | 3 | | | VENUS |
| 138 | 52 | 3 | | | VENUS |
| 139 | 52 | 3 | | | VENUS |
| 140 | 52/55 | 2 | JF | HIGH43 | VENUS |
| 141 | 55 | 2 | JF | HIGH54/97 | VENUS |
| 142 | 55 | 3 | | HIGH27/94 | VENUS |
| 143 | 55 | 3 | | | VENUS |
| 144 | 7 | 2 | JF | | VENUS |
| 145 | 14/17 | 3 | | | LAKE ARBUCKLE SW |
| 146 | 2A | 2 | | | SEBRING |
| 147 | 2A/4 | 2 | | PE | LAKE ARBUCKLE SE |
| 148 | 4 | 2 | | PE | LAKE ARBUCKLE SE |
| 149 | 2A | 2 | | PE | LAKE ARBUCKLE SE |
| 150 | 2A | 2 | | PE | LAKE ARBUCKLE SE |
| 151 | 2A/4 | 1 | | | LAKE ARBUCKLE SE |
| 152 | 2A/4 | 2 | | PE | LAKE ARBUCKLE SE |
| 153 | 2A/4 | 2 | | PE | LAKE ARBUCKLE SE |
| 154 | 2A | 3 | | | LAKE ARBUCKLE SE |
| 155 | 2A | 3 | | | LAKE ARBUCKLE SE |
| 156 | 2B | 2 | | | LAKE ARBUCKLE SE |
| 157 | 4 | 2 | | PE | FORT KISSIMMEE |
| 158 | 8 | 2 | | PE | LAKE ARBUCKLE SE |
| 159 | 8 | 3 | | PE | LAKE ARBUCKLE SE |
| 160 | 8 | 2 | | | |
| 161 | 5/9 | 2 | | PE | |
| 162 | 15 | 3 | | PE | FORT KISSIMMEE |
| 163 | 19/16 | 3 | | | |
| 164 | 7 | 3 | | | |
| 165 | 18 | 3 | | | LAKE ARBUCKLE SW |
| 166 | 18 | 3 | | | LORIDA |
| 167 | 18 | 3 | | | LORIDA |
| 168 | 30 | 3 | | | LORIDA |
| 169 | 35 | 3 | | | LAKE JUNE IN WINTER |
| 170 | 35 | 3 | | | LAKE PLACID |
| 171 | 44 | 3 | | | LAKE PLACID |
| 172 | 54 | 3 | | | |
| 173 | 51 | 2 | JF | | VENUS |
| 174 | 51 | 1 | | | |
| 175 | 19 | 1 | | | |
| 176 | 19 | 3 | | | LORIDA |
| 177 | 23 | 3 | | | LORIDA |
| 178 | 23 | 1 | | | LORIDA |
| 179 | 23 | 3 | | | LORIDA |
| 180 | 43A | 0 | | | LORIDA |
| | | | | | OKEECHOBEE NW |

| Polygon Label ID | SCS Page No. | Occupancy Code ¹ | Source Code ² | Christman Code ³ | Quadrangle |
|------------------|--------------|-----------------------------|--------------------------|-----------------------------|------------------|
| 181 | 37 | 0 | | | FORT BASINGER |
| 182 | 37 | 3 | | | FORT BASINGER |
| 183 | 33 | 0 | | | FORT BASINGER |
| 184 | 33 | 0 | | | FORT BASINGER |
| 185 | 33 | 3 | | | FORT BASINGER |
| 186 | 28 | 0 | | | FORT BASINGER |
| 187 | 28 | 0 | | | FORT BASINGER |
| 188 | 24 | 0 | | | BASINGER |
| 189 | 24 | 0 | | | BASINGER |
| 190 | 24 | 1 | | | BASINGER |
| 191 | 28 | 0 | | | FORT BASINGER |
| 192 | 12 | 3 | | | BASINGER NW |
| 193 | 12 | 3 | | | BASINGER NW |
| 194 | 12 | 3 | | | BASINGER NW |
| 195 | 12 | 3 | | | BASINGER NW |
| 196 | 25 | 3 | | | LAKE JUNE |
| 197 | 45 | 2 | | JF | CHILDS |
| 198 | 45 | 2 | | JF | CHILDS |
| 199 | 4 | 3 | | | LAKE ARBUCKLE SE |

¹ Occupancy Code of 0 = unoccupied, 1 = occupied (BMS 1991), 2 = occupied (other source), 3 = unknown

² Source Code JC = Jeff Cox FOS Publication 1985, SC = Steve Christman (1988 FGFWFC), JF = John Fitzpatrick (pers. comm.), RB = Reed Bowman (pers. comm.), MM = Mike McMillan (pers. comm.), MW = Mike Wallace (Highlands Hammock State Park - pers. comm.), SM = Steve Morrison (The Nature Conservancy - pers. comm.), CL = Cathy Laughter (local resident - pers. comm.), PE = Paul Ebersbauch (Avon Park Bombing Range - pers. comm.)

³ Steve Christman's polygon codes published in 1988 FGFWFC publication.