

Scrub-Jay Survey Guidelines **Small Lots in Urban Areas (less than 1 acre in size)**

Adapted from: J.W. Fitzpatrick, G.E. Woolfenden and M.T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub jay (*Aphelocoma coerulescens coerulescens*). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 8. Tallahassee, FL. 49 pp.

The main purpose of the survey is to establish whether the lot is within a scrub-jay territory. In general, Florida scrub-jays have well-defined territories defended year-round by all group members. For determining territorial boundaries, it is essential that the surveyor be familiar with different types of behavior exhibited by scrub-jays. Territorial boundaries may be most accurately predicted through a combination of observing scrub-jays and listening for territorial behavior (in the case where several families of scrub-jays exist in contiguous habitat) or by including habitat suitable for occupation by scrub-jays within a territorial boundary (in the case where a family of scrub-jays is somewhat isolated from other groups). Territories typically occur in the same areas for many years, though the boundaries may vary somewhat among seasons. Ownership is passed on by mate replacement or inheritance by helpers. The boundaries of scrub-jay groups are determined from data obtained at each of the playback stations discussed below.

To effectively survey for Florida scrub-jays in urban settings, the survey protocol must include a systematic search for individual birds while periodically using a high quality tape recording of Florida scrub-jay territorial scolding in an attempt to attract the jays. The recording should include clear examples of all typical territorial scolds, including the female "hiccup" call. Vocalizations are available by contacting:

Macaulay Library
Cornell Lab of Ornithology
159 Sapsucker Rd.
Ithaca, NY 14850
Email: macaulaylibrary@cornell.edu

<http://birds.cornell.edu>

Scrub-jay surveys should be conducted on and around the subject lot where oak scrub or suitable oak scrub surrogate vegetation exists. Typical scrub includes xeric oak scrub, scrubby pine flatwoods, scrubby coastal strand, and sand pine scrub. Other habitat types that can be occupied by Florida scrub-jays include: pine-mesic oak; xeric oak; sand live oak; improved, unimproved, and woodland pastures; citrus groves; rangeland; pine flatwoods; longleaf pine xeric oak; sand pine; sand pine plantations; forest regeneration areas; sand other than beaches; disturbed rural land in transition without positive indicators of intended activity; and disturbed burned areas.

The presence of scrub oaks, no matter how sparsely distributed, is the key indicator of “scrub” habitat.

Preparation

Before initiating a Florida scrub-jay survey on a small lot, develop a plan that addresses a sampling strategy that fits the specific characteristics of the area to be surveyed. The survey must include an area encompassing a 500-foot (152-m) radius around the subject lot.

- a) Obtain an aerial image for the area to be surveyed. Aerial images are available from the county’s property appraiser’s website or commercial sources.
- b) On the aerial map, determine where playback call stations will be located considering that distances between playback stations will depend on several factors, including power of the speaker used for broadcasting the calls and the density of the surrounding vegetation or residential development. Adequate spacing between playback stations where dense vegetation and high ambient noise is prevalent in urban areas is 165 feet (50 meters). Establish call stations at each of the four corners of the property. On unusually-shaped lots, additional stations along the property boundary may be needed to maintain adequate spacing. Eight additional outer call stations should be marked, located perpendicularly to each side of the lot and separated from each other by 165 feet (50 meters) (Figure 1). If access to the surrounding areas of the subject lot is limited, establish playback stations along the nearest public rights-of-way. In no case should unauthorized trespass take place in order to conduct the survey.

Field Survey

Once the survey plan is in place, we recommend a preliminary reconnaissance of the survey area. This preliminary scouting can provide valuable information on scrub-jay activity. Spend one morning, **before the 5-day survey begins**, visiting the area to be covered by the playback stations marked during the preparation phase. Without the use of playback, inspect areas that contain habitats potentially used by scrub-jays, spending extra time at areas with scrub habitat. Be aware of all birds in the area, paying special attention to utility wires and short tree tops often chosen by scrub-jays for perching. Scrub-jays are naturally tame and curious birds and will often approach your vehicle or yourself with or without using a call tape. Record the major vegetation types on the lot and surrounding areas with an emphasis on scrub oaks.

Timing: Surveys may be conducted anytime between March 1 and October 31. However, ideal survey periods include: (1) spring (especially March); (2) fall (September and October), when territorial displays are most frequent and vigorous; and (3) midsummer (July) when young of the year are independent but still distinguishable by plumage. The poorest time of the year within this period to survey is in late spring, when the young are quiet and the adults are occupied with molt and feeding fledglings. Check with the local Florida Fish and

Wildlife Conservation Commission office to determine if there are any additional State restrictions on the survey period in your area.

Conditions: Surveys should be carried out on calm, clear days about one hour after sunrise, and should terminate before midday heat or wind. Surveys should not be conducted in winds stronger than a moderate breeze (5-8 mph), in mist or fog, or in precipitation exceeding a light, intermittent drizzle. Heat and especially wind lowers the tendency for jays to respond to distant territorial scolds, and wind reduces the distance over which recordings can be heard. Jays are also reluctant to fly on windy days regardless of hour or season.

Survey Effort: Generally, surveys for a minimum of five days are sufficient to assess scrub-jay presence, territory boundary, and distribution. During each day all 12 call stations (or more if lot is irregularly shaped) should be visited. Broadcast the calls at each station for at least **one minute** in four directions at 90° to each other, emphasizing any direction in which low-growing oak scrub is the predominant vegetation. If a scrub-jay is seen during the playback time, the recording should be stopped immediately. In the event a raptor (hawk or falcon) is seen during the playback, the recording should be turned off immediately, and the survey should continue at a later time.

Data Recording: At each call station, completely fill in the scrub-jay data sheet. Indicate the number of Florida scrub-jays observed and mark their location when first observed on the aerial map. Note the direction from which they arrive and the direction toward which they depart. Distinguish adult-plumaged scrub-jays from juvenile-plumaged scrub-jays whenever possible. Take note of the behavior displayed by the scrub-jays (see Summary of Behavior (Appendix A)).

Territory Boundary

If scrub-jays respond to the playback calls at one of the lot-corner stations, it would indicate the lot is within a territory and occupied by scrub-jays. If scrub-jays respond to the outer call stations from the direction of the lot, it would indicate that the area of the lot is within a territory and occupied by scrub-jays. If scrub-jays respond from a direction away from the lot, then the lot may not be within a territory and not occupied. Further observation should be made of any such scrub-jays to make an accurate determination of occupancy.

The frequency of response and the number of responding scrub-jays are indicators of the level of use of a property by the species. If a single scrub-jay is observed crossing the lot on one day and does not stop and give a territorial display, then the Service may conclude that the bird is not within its territory and is not defending the resources on the property. This is especially true if the scrub-jay is flying high without an undulating flight path. Birds responding to a call on multiple days indicate the area is within a territory and occupied.

If no scrub-jays are seen or display territorial behavior during the 5-day survey, then the Service may conclude the lot is unoccupied.

Report

Provide the Service with a Biological Evaluation of the property. This report should include the following:

- A. Brief introduction with location information for the lot (latitude and longitude; section, township, and range; parcel identification number). See county property appraiser's sites for this information.
- B. Description of vegetation on the lot. List major vegetation with particular focus on scrub oaks. Also describe surrounding vegetation such as scrub oaks on adjacent or near-by lots.
- C. Description of proposed action (e.g., clear all vegetation on lot for single family home).
- D. List any proposed minimization measures for the action (leave a portion of the native vegetation on the site, plant scrub oaks as part of landscaping, clear vegetation outside of nesting season [1 March to 30 June], etc.).
- E. Scrub-jay data sheets for each survey day including:
 1. dates and starting times for all call stations;
 2. weather conditions during each survey, including air temperature, wind speed and direction, visibility, and precipitation;
 3. number of adult and juvenile scrub-jays observed, number of groups, if more than one; and
 4. behavior of each scrub-jay (see Summary of Behavior, Appendix A).
- F. An aerial image map depicting:
 1. the entire area of interest (lot and 500-ft buffer);
 2. location of playback stations; and
 3. location of all scrub-jays observed and their approach and departure directions.

Mail Scrub-jay survey to:

U.S. Fish and Wildlife Service
6620 Southpoint Dr. S., Ste. 310
Jacksonville, FL 32216

U.S. Fish and Wildlife Service
1339 20th St.
Vero Beach, FL 32960

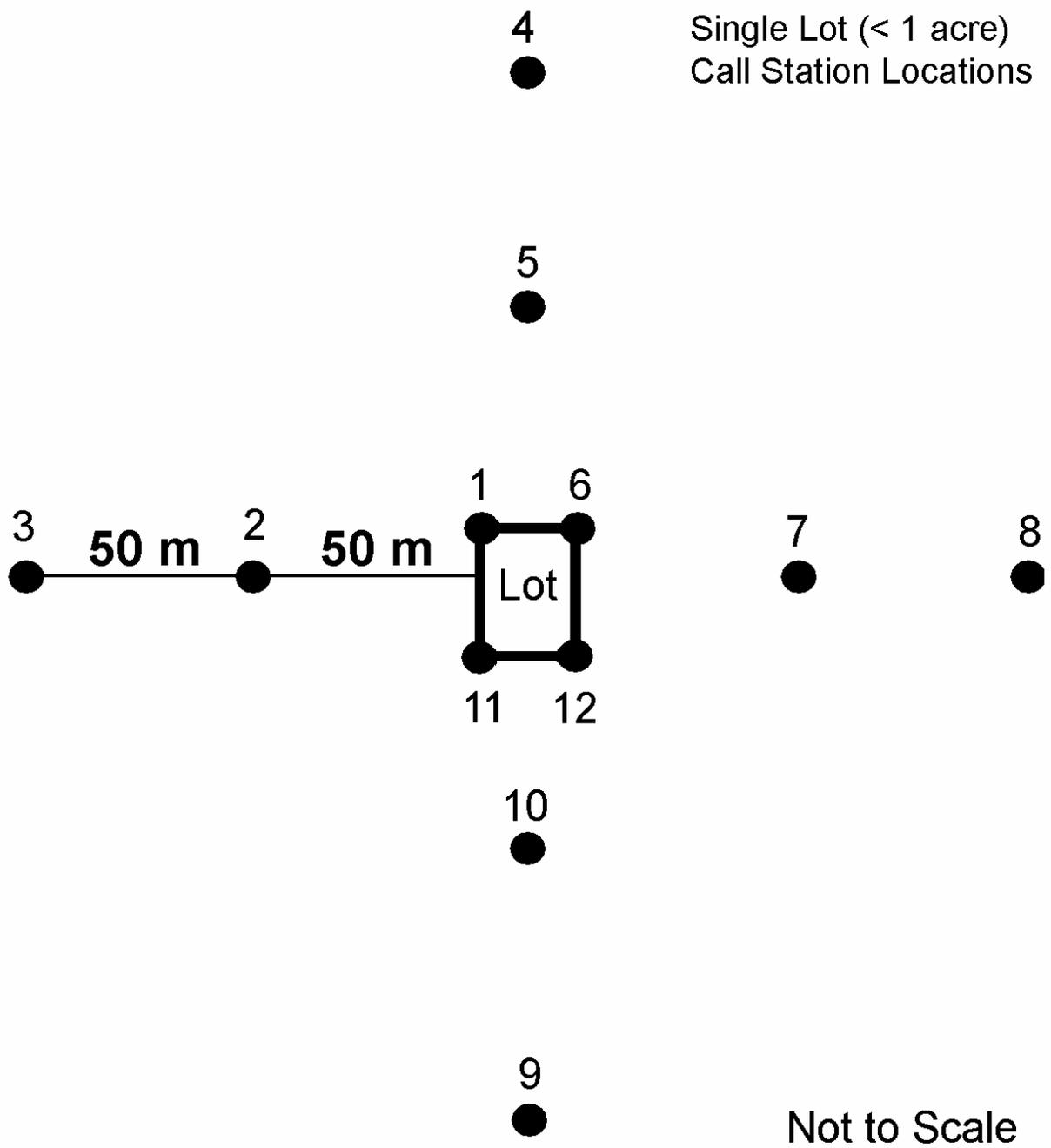


Figure 1.

APPENDIX A. Summary of Behavior of Florida Scrub-Jays

Florida scrub-jays have specific behaviors which are indicative of whether or not they are located within their territorial boundaries. The summary here is taken from Woolfenden and Fitzpatrick (1996). If any of these behaviors are noted when observing scrub-jays in an area, then the scrub-jays are located within an active territory.

Scrub-jays have an extensive vocabulary. Rapid multiple weep calls are associated with territorial defense year-round but are highest in January through February (just before nesting) and August through October (after heavy molt and when dispersal is most common). November through December and June through July are annual lows in frequency. Territorial encounters eliciting vocal display are most common during early or mid-morning, but may occur any time during the day. Territorial vocalizations are typically given from the tops of high shrubs or trees, especially near a territory boundary, or in flight toward a territorial intruder, and are usually loud. Some examples follow:

- Rapid *weep, weep, weep, weep* (3 to 10 in series at about 4 calls per second), usually accompanied with undulating flight pattern during territorial display.
- Single or widely-spaced *weep!*, usually delivered from sentinel perch during or preceding territorial disputes.
- Single short high-pitched *kweep!*, given when adult detects predator near dependent young.
- Single or several rapidly-repeated, sweet-sounding, high-pitched *kweep!* notes, given as warning of an aerial predator, varying somewhat according to intensity of alarm.
- Hiccup call (given only by female), given in contexts of alarm, most commonly during combative encounters with territory intruders.
- Screech scold (wide frequency range, about 1/3 of a second in duration), usually given repeatedly from top of shrubbery. Most often used when mobbing predators on ground or perched in tree or shrub. Also given immediately after spotting another scrub-jay which is not part of the family or during intense territorial disputes.
- Single short, harsh, guttural attack growl, not carrying, given by aggressor in flight at onset of physical attack, indicating imminent contact. Most often given during intense territorial defense.
- Soft but extremely raspy snarl (about 2/10 of a second in duration), given while perched. Delivered in contexts eliciting anxiety, usually during territorial encounters.
- Soft, single, sweet, staccato *chiop*, given while perched. Delivered in contexts eliciting anxiety, usually during territorial encounters.

Some nonvocal sounds of scrub-jays can also be interpreted as territorial behaviors:

- Wingbeats are more audible than during normal flight when a scrub-jay approaches a scrub-jay from another territory and when shifting perches during a territorial display.
- During territorial encounters, and when a human approaches a nest, scrub-jays may hammer on a shrub branch or dried palmetto frond with its beak.

Territorial behaviors of scrub-jays, in addition to those noted above, include:

- Flight is normally silent, but during territorial disputes, scrub-jays sometimes perform undulating display flight, accompanied by flapping noise.
- Caching of acorns takes place almost entirely within a scrub-jay's territory.
- Bobbing motions (sometimes with slight upward pointing of beak) are done when a scrub-jay from another territory intrudes.
- Preceding onset of territorial display and during high anxiety, bobbing is accompanied by raising of the tail well above horizontal.
- During a hiccup call (described above), the female emphasizes bobbing and points the beak straight upward or even over back.
- Undulating flight display is usually engaged in by either sex, mainly by the breeding pair during territorial displays in which intruding or neighboring scrub-jays are visible. Opposing breeders often perform this display in parallel along the shared boundary.
- Lateral display occurs on the ground, most often by male breeder during a territorial encounter with a neighboring male breeder when they are about within about 3 feet of each other. In a slightly crouched posture, but with legs stiff, the male hops sideways toward the opposing scrub-jay. During a mutual encounter, each scrub-jay orients towards the other's tail, and the two awkwardly circle one another, sometimes with shrub stalks or palmetto in between. They often rap on a palmetto frond or dig in the sand with their beak while in full display.
- Threat display is made most often by a male during territorial encounters. Body plumage is compressed; the feathers of the lateral neck, nape, sides of head, and especially the eyebrows are extended, but feathers of the forecrown are compressed, giving a "flat headed" and "eared" appearance.

Territorial spacing:

- Boundaries of territories are often associated with breaks in oak scrub, such as grassy depressions or palmetto flats.

In short, territorial behaviors include any of the following:

- Rapid *weep, weep, weep, weep*
- Single or widely-spaced *weep!*
- Single short high-pitched *kweep!*
- Single or several rapidly-repeated, sweet-sounding, high-pitched *kweep!*
- Hiccup call
- Screech scold
- Attack growl
- Snarl
- Soft, single, sweet, staccato *chiop*, given while perched
- Audible wingbeats
- Hammer on branch or dried palmetto with beak
- Undulating flight

- Acorn caching
- Bobbing motion
- Raising of tail with bobbing motion
- Beak straight up with bobbing motion
- Lateral display
- Threat display

Reference cited:

Woolfenden, G.E. and J.W. Fitzpatrick. 1996. Florida scrub-jay (*Aphelocoma coerulescens*). *In* The Birds of North America, No. 228 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.