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MODIFIED MEANDERING STRIP CENSUS

PREPARED TO SATISFY:

LEE COUNTY LISTED SPECIES SURVEY METHODOLOGY
PER CHAPTER 10-473(a)

PREPARED BY:

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Modified Meandering Strip Census

Overview

The modified meandering strip census represents a methodology for conducting listed species surveys which provides a thorough yet flexible means of taking a census of habitats for listed species listed by Lee County. Text book methodologies are typically designed specifically for plants or animals, but rarely both. Even then, surveys designed for animals often target specific types of animals (i.e. birds, fish, small mammals). As a result, it became necessary to design a survey methodology that contains the flexibility to survey numerous listed species simultaneously, and the ability to vary the intensity of the survey, based on the density of vegetation, the type of vegetation and the target listed species based on the FLUCCS registers, while maintaining a minimum 80% habitat coverage.

This methodology includes parallel meandering pedestrian transects spaced 30 to 150 feet apart through FLUCCS registers which have the potential to contain listed species. Transect spacing is variable and based on vegetation type and density. Survey ribbon is tied along each transect such that adjacent transects remain parallel and evenly spaced. Listed species, or signs thereof, and FLUCCS register boundaries are noted on aerials carried in the field. Results of the survey are then compiled into a report in narrative, tabular, and exhibit format.

Methodology

1. On a blue-line aerial or aerial photograph, identify and delineate anticipated FLUCCS registers. A preliminary site visit may aid in FLUCCS identification.
2. Based on FLUCCS registers identified on-site, compile a list of listed flora and fauna with potential to occur on-site (per Lee County Listed Species List, Appendix H).
3. In the field, determine location, spacing, and orientation of transects within each FLUCCS register with listed species potential occurrence. In order to attain at least 80% visual coverage of the property, transect spacing ranges between 30 and 150 feet depending upon vegetation type and density. Very dense saw palmetto with potential gopher tortoise occurrence may require 30 feet transect spacing whereas open agricultural fields may require 150 feet spacing. Transect orientation is based upon on-site land marks such as trails, lake edges, roadways and agricultural fields. Transect spacing and orientation are malleable to accommodate site-specific environmental and geographic variability.

4. The observer, equipped with an aerial photograph, binoculars, compass, survey type ribbon, note pad and identification materials as needed, proceeds in a unidirectional meandering pattern across the FLUCCS register (or subset of a register based on land marks per Step 3). The observer stops, looks, and listens frequently along the transect to identify listed species that may be present. If a listed specie, or sign thereof, is located, its identification and location are noted on the aerial photograph. The survey ribbon is tied to vegetation or stakes along the transects at intervals that are visible between ribbons on the same transect and between transects. The date, time, and weather conditions are noted during each survey event and transect locations are also noted on the aerial photograph.
5. The preliminary FLUCCS boundaries determined in Step #1 are updated and refined to reflect results of the field census (Step #4).
6. Results of the survey are tabulated to include listed species which have the potential to occur on-site, the FLUCCS register within which each is anticipated to occur, and whether the species was observed during the survey. Exhibits would include property boundaries, species occurrence locations (including nest sites, dens, burrows, feeding locations, trails, and resting/perching areas), FLUCCS boundaries, and transect locations typically overlain on 1" = 200' aerial photographs.
7. Until density calculations are incorporated into state or federal management guidelines, for faunal species other than gopher tortoises, abundance accompanied by a description of the location of the observation and the type of activity observed should be sufficient to develop management plans as necessary per LDC 10-474.

Plant density can be computed individually for each specie as follows:

$$D = n / (\text{area encompassing the specie})$$

n = Specie abundance

This assumes 100% of the area immediately encompassing the specie was observed. Likewise, this also assumes that only the habitat appropriate to support the species was included in the area calculation. Observations of single individuals of a species may be noted as such since density calculations for these individuals would not be meaningful.

Gopher tortoise densities (D) are calculated as follows:

$$D = \frac{(\text{active burrows} + \text{inactive burrows}) \times (\text{burrow occupancy rate})}{(\text{fraction surveyed of the habitat appropriate to support the species}) \times (\text{area encompassing the burrows})}$$

Since individual gopher tortoises typically occupy between two and four burrows, *burrow occupancy rates* range between approximately 0.3 and 0.6 tortoises/burrow. Occupancy rates are site specific and should be determined through coordination with the Florida Game and Fresh Water Fish Commission.

Division by the *fraction surveyed of the habitat appropriate to support the species* will account for burrows anticipated to exist, but were not observed if visual coverage of the suitable tortoise habitat was less than 100%. The density calculation assumes that only the habitat appropriate to support the species was included in the *area encompassing the burrows* quantity.

Summary

In conclusion, listed species surveys would include the following information:

1. Project overview including a general project description.
2. Description of the survey methodology.
3. Aerial illustrating FLUCCS codes.
4. Aerial illustrating listed species locations.
5. Aerial illustrating transect locations.
6. Description of each of the FLUCCS registers located on-site.
7. Tabular illustration of the time, temperature, and weather conditions during the survey event(s).
8. Tabular illustration of the FLUCCS registers, listed species with potential occurrence based on the FLUCCS registers present, and the documented presence/absence of those listed species.
9. Summary discussion of the survey findings. The discussion will include listed species densities (gopher tortoise and Lee County listed plants) and/or abundances of other state and federally listed wildlife observed during the survey. Descriptions of observed wildlife activity (flyover, foraging, roosting, nesting, etc.) will accompany species abundance for each observed species.