Closing the Red Hills Red-cockaded Woodpecker Gap

Final Report of the 2022 Bill Terrell Avian Conservation Grant

Georgia Ornithological Society

Prepared by

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1. Project Description

The Red-cockaded Woodpecker (*Dryobates borealis*) is an iconic endangered species endemic to the southeastern U.S. The Red-cockaded Woodpecker is a cooperative breeder with each member of a family group occupying a cavity of their own. What sets this species apart from other woodpeckers is its dependency on cavities individual excavate in living pine trees instead of dead trees. The cavities they create benefit dozens of other species and led to designation of the woodpecker as a "keystone species". Over time these cavities can be used by many other species including other cavity-nesting birds as well as a few species of mammals, reptiles and amphibians (Rudolph et al. 1990; Conner et al. 1997). They accomplish this unique task by making cavities in old pines with weak heartwood (typically caused by a fungus). These pines are usually over 60-70 years of age with each woodpecker in the group roosting within one of the cavities within the territory each night. Thus, this species needs many old pines within a close distance of each other to sustain its cooperative breeding lifestyle.

Since European settlement, the Red-cockaded Woodpecker has lost substantial amounts of its native habitat. Land use change and the lack of prescribed fire have removed much of the native longleaf pine ecosystem (*Pinus palustris*) with less than 4% of its historical ~35 million ha extent remaining (Noss et al. 1995; Ware et al. 1993). The lack of old (>70yrs) pines has severely diminished the Red-cockaded Woodpecker's ability to expand and sustain its numbers. Georgia's Red Hills Region however, has some of the last remaining old-growth longleaf pine forests due to the exemplary land stewardship practiced in the region (Means 1996). Since its establishment in 1958, Tall Timbers Research Station has provided research to promote best land management practices for the Red Hills, including helping to Red Hills helping to conserve land and protect endemic species such as the Red-cockaded Woodpecker.

The Red Hills currently contains approximately 217 active groups of Red-cockaded Woodpeckers making it the largest population on private lands. These groups are distributed unevenly across the region with most groups occupying a central 'core' and others lying on the periphery of the region. Groups farther away from the core area risk local extirpation from demographic effects as well as natural disasters such as hurricanes and tornados that often impact this region. Walters et al. (2002) prediceds that populations of Red-cockaded Woodpeckers containing 250-350 active groups would be large enough to withstand extinction for at least 100 years regardless of spatial orientation/distribution across core and peripheral areas. Achieving this minimum threshold of 250 active groups has been the goal of the Stoddard Bird Lab to ensure the persistence of the Red Hills Region's population of Red-cockaded Woodpeckers.

In 2019 we received funds from the Georgia Ornithological Society's Bill Terrell Avian Conservation Grant to increase the woodpecker population on Osceola Plantation, one of several private properties that compose the core of the Red Hills' Red-cockaded Woodpecker population. I created four additional artificial groups (construction of 4 artificial cavities in each group to mimic natural RCW arrangement) with the help from the Georgia Department of Natural Resources (DNR). Today, each of the newly created groups contains Red-cockaded Woodpeckers and underscores the productivity of creating such groups. Since then, several other

landowners have expressed interest in expanding their Red-cockaded Woodpecker groups. This has provided Tall Timbers Research Station with an opportunity to create more Red-cockaded Woodpecker cavities that can help to bridge the gap between currently disjointed woodpecker groups. One important property that recently established a Safe Harbor agreement with Georgia DNR is the Four Oaks Plantation. Four Oaks has expressed interest in expanding its woodpecker population by as many as 15 additional groups. This will greatly help to demographically support the far eastern extent of the woodpeckers in the Red Hills which contains only eight active groups on Livingston Place, the adjacent landowner (Fig 1). Four Oaks and Livingston Place is however, still distant from other Red Hills groups (~10mi away) making it out of the reach of the typical dispersal distance for this species. Other landowners that have expressed interest in acquiring woodpeckers include those on the edge of the core Red-cockaded Woodpecker population and can thus contribute to expanding the core closer to the Four Oaks/Livingston Place population and further solidify the Red Hills population as a whole (Fig 1).

To expand the Red-cockaded Woodpecker's population, I propose to create additional groups of artificial cavities on each of the four participating properties including Beechwood, Dogwood, Four Oaks and Osceola for a total of 25 additional groups (100 cavities), including several cavities on these properties (and surrounding properties) that need cavity maintenance/replacement (15 additional cavities). The habitat is conducive for these woodpeckers and the landowners have shown excellent stewardship and a long-standing partnership with Tall Timbers. Similar to the previous grant we will enlist the help of Georgia DNR staff to help create cavity insert boxes and help with installation and RCW banding and capture where needed. We will translocate birds from within the Red Hills from established, stable groups within the core population and Tall Timbers' woodpecker population to supply Red-cockaded Woodpeckers to newly constructed groups of cavities. Translocation involves banding chicks followed by sexing individuals post-fledging. Both activities require multiple site visits and additional help from an internship. The intern (preferably selected from a local applicant) will assist the bander and cavity installer (Robert T. Meyer) with climbing and banding, providing the applicant with vital experience in the field of ornithology and endangered species management. Additionally, as time allows the intern can pursue research questions related to Red-cockaded Woodpeckers in the study area. The support from the GOS in this work will help to achieve stability in the Red Hills Region's Red-cockaded Woodpecker population and by doing so, further aid conservation efforts for the dozens of species that use the cavities created by these endangered birds.

2. Objectives Met

With the goal of strengthening the eastern Red Hills region's Red-cockaded woodpecker population our objectives were to a) color-band 50 juvenile RCWs, b) install 25 new RCW clusters (100 cavities total), c) translocate 8-16 juvenile woodpeckers to new recruitment clusters, and d) maintain existing RCW clusters through replacing old artificial cavities and supplementing groups with less than 4 suitable cavities. Several issues arose during the project including a land owner that no longer wished to have 15 new groups as they wanted to wait until new construction was completed and personal reasons involving staff undergoing health issues. Here we will outline each objective and the alternative means of which we accomplished our goals to the best of our ability.

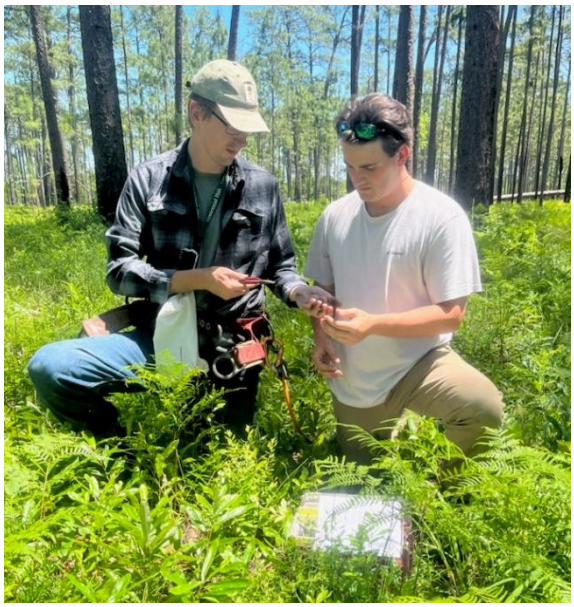

Figure 1. Rob Meyer (left) and Michael Dayton (right) band RCW nestlings on private lands in Georgia.

Color-banding 50 Juvenile RCWs

In order to translocate juveniles we must first band nestlings to ensure we take only hatch-year birds to new recipient sites. We aim to band more than we plan to translocate to ensure a pool of options incase of nest-failures, predation of young post-fledging, and other issues that would make capture too difficult. We banded a total of 49 and 66 nestlings in 2022 and 2023 respectively. We hired two interns (one in each year) to aid in nestling banding, sexing of individuals, and installation of cavities (Fig 1).

Figure 2. Rob Meyer installs an artificial cavity for an outreach event at Birdsong Nature Center in Georgia.

Install 25 new RCW clusters

The majority of new recruitment clusters (15/25) was to be installed at the Four Oaks property in the eastern part of the Red Hills. After receiving a verbal agreement in 2021 for additional groups, the project was halted due to construction planned in 2022 for additional facilities that could influence woodpecker cluster placement. After repeated attempts to begin the project on Four Oaks, we decided to instead strengthen the rest of the Red Hills properties, focusing on the Red Hills 'gap' whenever possible.

Tall Timbers staff, with help from Georgia DNR, installed new woodpecker groups on the following properties in 2022 and 2023: Beechwood (2 groups, 8

cavities), Birdsong (1 group, 2 cavities; Fig 2), Braewood (1 group, 4 cavities), Dogwood (2 groups, 8 cavities), Elsoma (1 group, 4 cavities), Melrose (2 groups, 8 cavities), Osceola (6 groups, 24 cavities), Pebble Hill (1 group, 4 cavities), and Warbick Farms (2 groups, 7 cavities; Fig 3). This resulted in a total of 18 new groups (69 cavities installed). This left us 7 groups short of our goal. Without the support of Four Oaks, we turned to alternative properties such as Braewood (located next to Beechwood) and the Moultrie region. Moultrie has enough land between 3 properties to support 10-15 groups of woodpeckers. To expand woodpeckers on these properties we worked with Gerogia DNR and the landowners to form Safe Harbor agreements. Braewood signed into Safe Harbor in early 2023 and thus we created a recruitment cluster on their property which will help connect their existing group to the Beechwood population. Two of the properties in Moultrie were already in Safe Harbor but the majority of the property needed for a population was on a third property that signed into Safe Harbor late in 2023. We have not yet received permissions from the Fish and Wildlife Service to begin work in this region but are prepared to begin work in 2024 to install new recruitment clusters in this region.

Translocate 8-16 Juvenile Woodpeckers

Color-banded individuals were sexed in summer and located in fall of 2022 and 2023 at roost cavities. This generally required multiple days of work to locate individuals. We translocated 3 birds in 2022 (two to Osceola and 1 to Livingston) and 1 bird in 2023 (translocated to Osceola). Several captures made in 2022 and 2023 resulted in birds that were not fit for translocation, either due to accidental captures of adults or same-sex nestlings that could not be translocated together to the same site. Thus, we were unable to translocate the full amount of birds possible to recruitment clusters.

One of the birds translocated in 2022 became a resident male in a newly created cluster at Osceola. In 2023, we made it a priority to capture a female for to release to this male to form a pair. Over the coming years Tall Timbers will attempt to translocate more to the surrounding areas to ensure clusters become occupied with a genetically diverse population of birds.

Maintain Existing RCW Clusters

Maintaining woodpecker groups involved replacing old artificial inserts (about 8-10 years after installation) to ensure the cavities are suitable for the birds and supplying additional cavites if there are fewer than 4 suitable cavities available. While we were short 7 new groups (28 cavities), we decided to increase the number of inserts refurbished or replaced instead. We replaced cavities on the following properties: Beechwood (1 cavity), Dogwood (3 cavities), Elsoma (2 cavities), Green Family Farm (1 cavity), Livingston Place (7 cavities), Mandalay (4 cavities), Osceola (6 cavities), Pebble Hill (7 cavities), Tall Timbers (4 cavities), Terramore (3 cavities), Warbick Farms (1 cavity), White Family Farms (2 cavities), and Willow Oak (3 cavities). These 35 additional cavities replaced many old inserts and supplemented 29 groups. The inclusion of three Florida properties includes those that boarder Georgia. The seven cavities

installed on Livingston Place include trees lost from Hurricane Idalia in 2023. Without support of these trees, much of the population at Livingston Place would become vulnerable to extirpation and thus the 'gap' would become even more difficult to close. The Braewood property received 4 additional cavities to help support the Beechwood property (in Georgia) and Tall Timbers received four additional cavities to support the Birdsong and Mandalay properties (in Georgia; Fig 3).

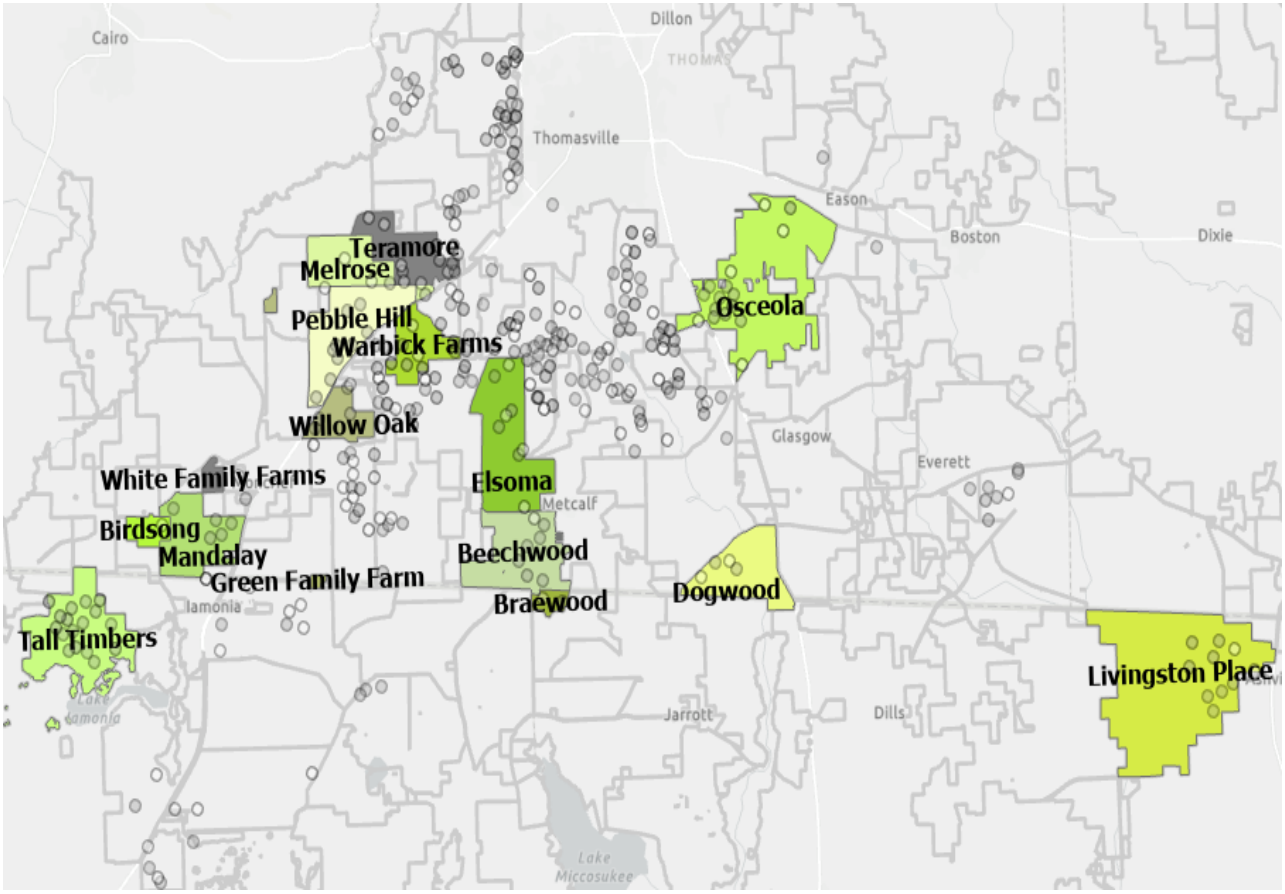

Figure 3. Red Hills region of Georgia and Florida. Properties where work was conducted. Active Red-ocockaded Woodpecker groups are shown in darker dots and inactive groups are white dots.

3. Criteria for Evaluating Success

Success was determined as follows:

- ✓ Color banding of approximately 50 Red-cockaded Woodpecker nestlings.
- Translocate 8-16 juvenile Red-cockaded Woodpeckers to Osceola and Four Oaks.
- Creation of 20-25 additional clusters across Beechwood, Dogwood, Four Oaks, and Osceola.

- ✓ Maintenance of existing cavities on each property such that each group contains four suitable cavities.

We were able to fully complete the first objective, banding 115 nestlings between the two years of the project. We did not fully meet the second criteria. While we did capture 8 woodpeckers for translocation, only 4 were suitable to be moved. The others were after-hatch year birds and were returned to their cavity of origin (after-hatch year birds are not allowed for translocation by the Fish and Wildlife Service). We constructed 18 new groups but failed to construct the full 20. As stated in the Objectives Met section, the reluctance of Four Oaks to allow the installation of the woodpecker cavities caused delays in construction and ultimately the construction of cavities elsewhere in the Red Hills (adding to the fourth objective instead). Additionally, medical issues arose that prevented the installation of cavities late in 2022, and thus work was completed in 2023 delaying the project completion date by a year. We are grateful to the Georgia Ornithological Society for extending the grant in this circumstance. We did however improve pioneer clusters and those with fewer than 4 cavities and supported an additional 29 other woodpecker groups instead.

4. Conclusions

With the support of the Bill Terrell Avian Conservation Grant and facing setbacks from Four Oaks, personal medical issues, and Hurricane Idalia, we were able to create 18 new woodpecker groups and installed or replaced a total of 104 cavities over the two-year timeframe of the project. We remain hopeful to eventually work with Four Oaks to improve the woodpeckers in the eastern Red Hills region as they have historically been cooperative with Tall Timbers and are excellent stewards of the land. When able, we will complete construction of additional cavities on Four Oaks and begin translocations to restore connections between the core Red Hills population and the eastern side.

The support of the Georgia Ornithological Society has aided the Red Hills Red-cockaded Woodpeckers to the point where we are approaching a critical milestone of achieving 250 active groups. While just shy of this at the moment, this milestone will ensure that these woodpeckers remain in the region over the next 100 years according to prior research (Walters et al. 2002; see our Tall Timbers eNews article at https://talltimbers.org/articles/a-milestone-on-the-horizon-for-woodpeckers-in-the-red-hills/). We would also like to thank the Georgia Department of Natural Resources' Joe Burnham and Christina Lokey for their help with cavity creation, installation, and overall support.

5. Literature Cited

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Means, D.B. 1996. Longleaf pine forest, going, going, ... Pages 210-229 in M.B. Davis, ed. Eastern old-growth forests: prospects for rediscovery and recovery. Island Press, Washington, D.C.

Noss, R.F., E.T. LaRoe, and J.M. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. USDI National Biological Service, Biological Report 28.

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Walters, J. R., L. B. Crowder, and J. A. Priddy. 2002. Population viability analysis for the red-cockaded woodpeckers using an individual-based model. Ecological Applications 12:249-260.

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6. **Personnel Resume**

Robert T. Meyer

EDUCATION

Mississippi State University [Aug 2016–May 2018]
College of Forest Resources
M.S. Wildlife, Fisheries, and Aquaculture
State University of New York [Aug 2011–May 2014]
College of Environmental Sciences and Forestry
B.S. Wildlife Science with Honors

RELEVANT WORK EXPERIENCE

Woodpecker Conservation Specialist, Tall Timbers Research Station and Land Conservancy [Jan. 2018–Present]: Responsible for maintaining Red-cockaded Woodpecker clusters on Tall Timbers, inventory cavity trees throughout the Red Hills Region and assist with research priorities.

Graduate Research Assistant, Mississippi State University [Jul. 2016– Dec. 2017]: conducted research on flying squirrels relative to Red-cockaded Woodpecker habitat.

U.S. Fish and Wildlife Technician, S.D.H. Noxubee N.W.R. [Feb. 2016– Jul. 2016]: Monitored Red-cockaded Woodpecker clusters, banded > 30 nestlings, and maintained woodpecker cavities.

RELEVANT GRANTS RECEIVED

Georgia Ornithological Society, Bill Terrell Avian Conservation Grant (2019): *Expansion of the Red Hills Red-cockaded Woodpecker Population: A Strategic Plan*

7. Partners

The Georgia Department of Natural Resources will provide the cavity inserts needed for the project. Primary contact:
Joe Burnam
Georgia DNR, Wildlife Biologist
River Creek Wildlife Management Area
871 US-84
Thomasville, GA 31792

8. Additional References

Table 1. The proposed budget is designed to cover the cost of the intern's salary ($250 per week), housing ($150 per month) and cost of the equipment involved in carrying out the project. Housing will be given to the intern selected and provided on site at Tall Timbers Research Station (TTRS; Tallahassee). Tall Timbers will fully cover the cost of the Woodpecker Specialist's Salary. Costs of cavity inserts includes the price for the artificial boxes (115 total), wood putty, shims, and cost from chainsaw maintenance (gas, oil, chains). Mileage is calculated at $0.56 per mile driven. Vehicle maintenance is also required due to rough field conditions typical in the field.

Item		**Cost**	**Match**	**Description**
Salary	Intern	**$4,000.00**	-	to assist bird banding and cavity installation as well as conduct resighting of banded RCWs
	Cavity Installer/bird bander	**-**	$32,000.00	Hourly rate of insert installation and bird banding
	Cavity Installation Assistance	**-**	$10,000.00	Georgia Department of Natural Resources assistance with insert installation and cavity building
Housing	Tall Timbers Intern Housing	**$450.00**	-	Housing for 3 months
Supplies	Cavity creation and installation	**$5,905.00**	-	Cost of lumber, wood putty, chainsaw equipment
	Bird banding supplies	**$125.00**	-	bird bands and related equipment
	Misc.	**$1,000.00**	-	climbing equipment, insert installation tools, cavity cleaning supplies
Mileage		**$5,000.00**	-	Mileage rate is $0.56/mi
Total		**$16,480.00**	$42,000.00	$58,480.00

Figure 1. The Red Hills Region of Georgia and Florida's Red-cockaded Woodpecker (RCW) cavity trees. Four private landowners (Beechwood, Dogwood, Four Oaks and Osceola) have agreed to acquire additional artificial cavities on their properties which boarder the 'core' RCW population as well as the far eastern portion of the Red Hills.

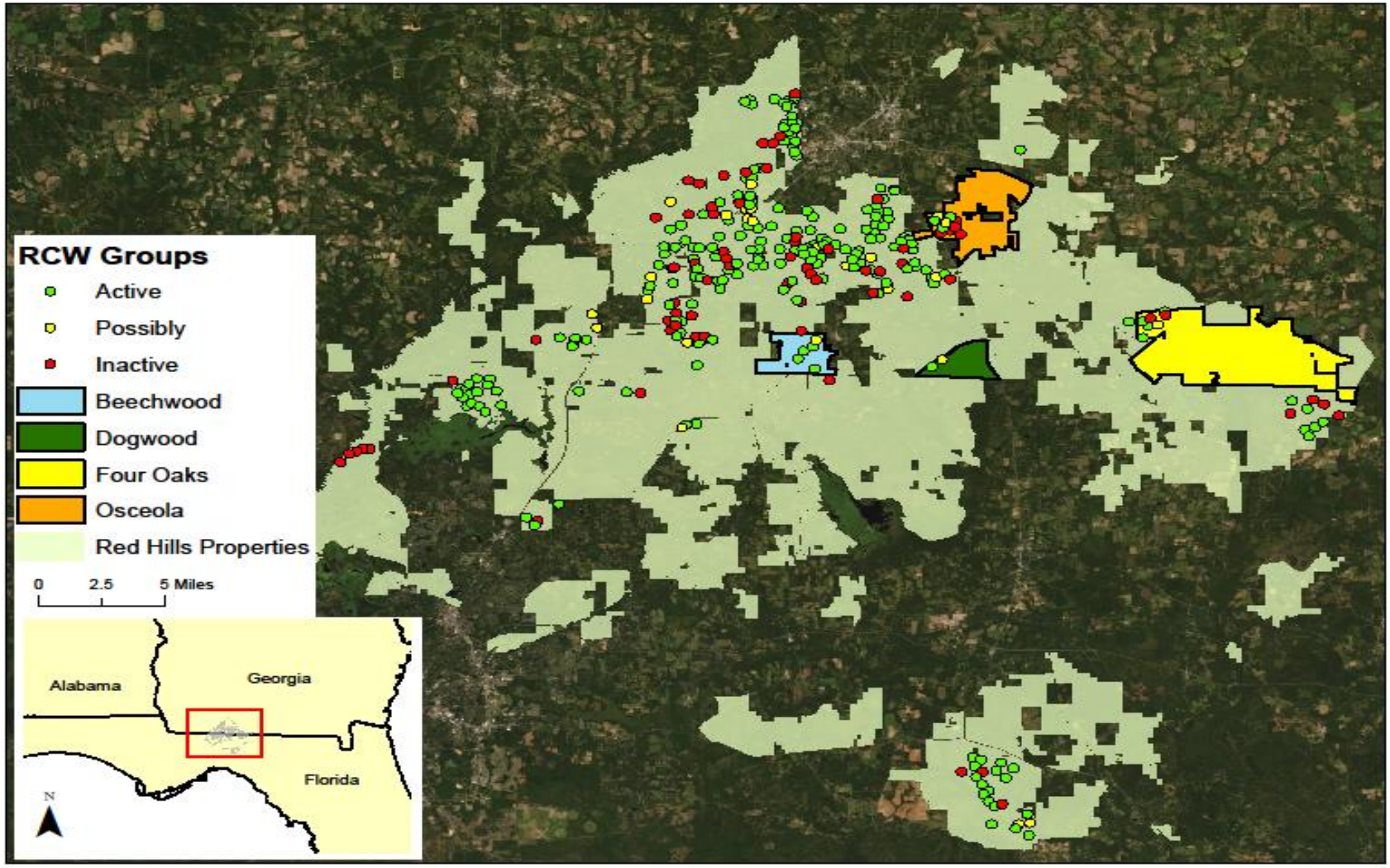

Figure 2. The colored properties represent landowners within the Red Hills Region of north Florida/south Georgia that have agreed to increase the number of Red-cockaded woodpecker (RCW) groups on their properties at the specified surveyed locations (green circles with center dots). Dogwood has agreed to take two additional RCW groups but I have not yet scouted that area for exact locations yet (25 new artificial groups total).