

Tall Timbers eJournal

FALL 2014



What is TALL TIMBERS?

We are Stewards of Wildlife and Wildlands

Join us!

The history of Tall Timbers Research Station & Land Conservancy begins with Henry L. Beadel. In his will, Beadel left his hunting plantation and resources to create “a fire type nature preserve ... to conduct research on the effects of fire on quail, turkey and other wildlife, as well as on vegetation of value as cover and food for wildlife, and experiments on burning for said objectives.”

In 1958, Tall Timbers Research Station was established and Beadel’s legacy began. The goal of our research is to better understand the ecology of our ecosystems and apply that understanding toward better land stewardship. Our stewardship ethic supports productive and sustainable use of land, including hunting and forestry, in a manner that maintains ecosystem health and native wildlife populations.

Established in 1990, the nationally accredited Tall Timbers Land Conservancy has become one of the largest regional land trusts in the country, conserving over 130,000 acres of land from Tallahassee, Florida to Albany, Georgia. Our conservation easements protect working lands that provide critical upland wildlife habitat and intact wetland ecosystems, vital to the health and wellbeing of the region. The Land Conservancy also works closely with communities on “smart growth” planning and advocacy, and is engaged in coordinating a Greater Red Hills Awareness Initiative to enhance local awareness and understanding of the importance of the Red Hills region and increase support for its long-term conservation.



Become a member today and join us a Stewards of Wildlife and Wildlands.

talltimbers.org/join-ttrs



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On the Cover: *Wade Tract 7*,
oil painting by Philip Juras





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EDITOR

Rose Rodriguez

CONTRIBUTORS

Georgia Ackerman

Jim Cox

Neil Fleckenstein

Kevin McGorty

Bill Palmer

Kevin Robertson

Kim Sash

Clay Sisson

Theron Terhune

Shane Wellendorf

Juanita Whiddon

EXECUTIVE EDITOR

Bill Palmer

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eJournal is published biannually by Tall Timbers Research Station & Land Conservancy, 13093 Henry Beadel Drive, Tallahassee, FL 32312-0918.

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Join Tall Timbers at talltimbers.org/membership.

EDITOR'S LETTER

Welcome to the inaugural issue of the Tall Timbers eJournal. This digital magazine format will allow staff, associates and guest contributors to write longer, more in-depth features on a variety of topics that we hope will be of interest you.

There will be articles on our research and conservation work, and in the section called **Flora & Fauna**, a specific animal and plant that can be found in the greater Red Hills region will be featured. Because this is a digital publication, hyperlinks to websites that provide additional information, can be clicked on; text that is "red clay" colored indicates a hyperlink. And, click on the page number in the contents pages and you will go to the article on that page. Issues can also include video.

In every issue, the **Archives Corner** will highlight an entry from Henry Beadel's diaries. For those who don't know, Henry Beadel was the owner of Tall Timbers Plantation, the benefactor who left his property and fortune to establish Tall Timbers Research Station. Beadel was a diarist since he was a teenager; he also drew and painted and was an avid photographer. The Archives is fortunate to have his diaries and photographs, which provide a wealth of information about Beadel's private life, but also reference land management and hunting activities on the plantation.

President/CEO of Tall Timbers, Dr. Bill Palmer, will have the **Last Word**. Closing every issue, Dr. Palmer will share his thoughts on the work Tall Timbers is doing or on issues that affect the region.

Finally, I would like to thank our contributors. Staff came through with engaging articles during the busy field season, accompanying them with great photos and graphics that help tell the story. And, I would like to thank the guest photographers who graciously contributed some amazing photography for several of the articles: Pierson Hill, Bob Ireland, Philip Juras, Barry Mansell and Tara Tanaka.

I hope you enjoy the eJournal. Email me a note with your thoughts, or better yet, send me a letter to the editor; I will include it in our next issue.

Rose Rodriguez
rose@ttrs.org

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The Last Word

ARCHIVES CORNER

The diaries of Henry Beadel are some of the most interesting documents in Tall Timbers' archives collection. Beadel started his diaries at age fourteen when his grandmother gave him a journal; he kept his diaries until he was in his eighties. In an attempt to share with our readers a look into the life of Tall Timbers' benefactor, we will regularly publish excerpts from Henry Beadel's personal diaries and some copies of his sketches. The following is a partial account of a trip to Wakulla Springs when Beadel was 19 years old. Note: all spelling, capitalization, and grammar are those of Henry Beadel and have not been edited.

—Juanita Whiddon, Archivist



March 31, 1894

Gerald and I got a two-seated surrey and driver and drove to Wakulla Springs, about 18 miles. Started at 8 o'clock. In passing an old field with dead trees, saw a small sparrow hawk clinging to the side of a burnt pine stub about 20 feet up. Shinned up to the hole and saw the other hawk inside the hole. Tried to tear the hole open, so as to see the bottom, but wood was too hard to cut with knife. Bird was a strong olive color on back with large dark markings. Bill black with, I think, yellow at base. Slid down making three enormous holes in each stocking.... Drove to the Spring, passing Parish, the boatman's house, telling him to bring the oars down.... Gerald and I bailed out the boat. Parish soon came and took us out on the famous Spring. It looks like any round, woodland pool. It is about 200 yards across and the Wakulla River flows out at one side. The Spring is 180 feet deep, and when the water is clear one can see down the whole distance distinctly. The water had been stirred up by the heavy rains, and we could only see down 80 feet. We soon started down the river, not following the main stream, but striking off among the most beautiful little winding waterways that could be imagined.... An alligator flopped off a log, making the water fly as we came round a bend. The bright, clear swiftly running water kept the long water grasses and bonnets in constant motion, and altogether it was the most beautiful, fairy place I have ever seen. Went back to Spring, had another bite and drive home. My canvas coat dropped out and drove back four miles before we found it. Got home a little after 9 o'clock.

Above: Photo of Henry Beadel taken in 1894, the year of this diary entry. The background photo is of the Wakulla River, and was taken by Beadel on March 31, 1894, the day he visited Wakulla Springs.

The economics of quail hunting in the Albany plantation belt



Tall Timbers recently completed analysis of the economic impact of Red Hills hunting properties demonstrated the tremendous impact that Red Hills working lands have on local economies. These forested landscapes, which protect our drinking water, provide clean air and wildlife habitat, also infuse local economies with more than **\$147 million** in economic impact annually and over **1,400 jobs**.

Tall Timbers is now in the midst of a similar effort in the Greater Albany plantation belt. Our ***Greater Albany Quail Lands Economic Impact Analysis*** project began in January with detailed surveys mailed out to 75 quail hunting properties covering more than 300,000 acres in the Albany area. The goal of this effort is to estimate the economic impact and job creation provided by working rural lands in the Greater Albany area. We are undertaking this project because we know from our own experience that the messages that truly resonate with officials and others who make decisions directly affecting working rural lands in southwest Georgia are “**jobs**” and “**economic impact**.”

Response to our landowner survey has been excellent: the owners of more than **200,000 acres** of hunting properties in the Greater Albany area have already returned

their surveys and more are arriving every day. We hope that any property owners who have not yet completed the landowner survey will do so as soon as possible! Obtaining a high survey response rate will be the most important factor in determining the success of this project.

At the conclusion of this project, Tall Timbers will create a publication that will be a centerpiece of our efforts to educate and inform the public and our local and state leaders about the critical importance of quail hunting lands to the economic vitality of local and regional economies in the Albany area.

Tall Timbers’ recent publication documenting the result of the Red Hills study, ***The Economic Impact of the Red Hills Region of Southwest Georgia and North Florida***, ([click here for a PDF of the study](#)) has been very well received and is already being widely used in our Red Hills outreach efforts. For additional information about the ***Greater Albany Quail Lands Economic Impact Analysis*** project, please contact TTLC Planning Coordinator Neil Fleckenstein at Neil@ttrs.org.

—Neil Fleckenstein

Photo by Bill McDavid/Hall and Hall

The Attraction of Carnivorous Plants

BY KIM SASH

*Spring loaded jaws, a pitfall,
a glue trap, or a sucking vacuum
are all methods carnivorous
plants use to catch their prey.*

The southeastern coastal plain, which includes the Red Hills region, has the richest diversity of carnivorous plants in the world. These fascinating plants typically grow in wet habitats like savannahs, bogs and seepage slopes, although they can also be found in mowed road side ditches. Most of these habitats have acidic soil and lack nitrogen. Therefore the plants have modified leaves to trap nutrient rich insects.

Many of us are familiar with the Venus fly trap, perhaps the most famous of carnivorous plants, but there are actually many other equally fascinating carnivorous plants right here in the Red Hills region.

There are four plant genera in our area that have leaf modifications for catching and eating insects, the pitcher plant, the bladderwort, the butterwort and the sundews. Spring loaded jaws, a pitfall, a glue trap, or a sucking vacuum are all methods carnivorous plants use to catch their prey.

The funnel shaped leaves of the pitcher plant act like a pitfall trap; they are lined with downward facing hairs making escape nearly impossible. Once stuck inside the pitcher, the insect is consumed by digestive enzymes released from the plant.

Species in our area include the trumpet pitcher plant, with its tall upright yellowish or red pitchers; it is one of the most common pitcher plants in the Apalachicola National Forest. The reddish pitchers of the smaller parrot pitcher plant grow laterally from the basal rosette, making the plant wider verses the other pitcher plants that tend to grow more vertically.

In the Red Hills region, the most common pitcher plants are hooded pitcher plants. The hooded pitcher plant can be recognized by its pitchers being curved in at the top nearly closing off the pitcher in some cases. The hooded pitcher plants also have white dots on the backside of the pitchers. It has been hypothesized that



Trumpet pitcher plant
bog in the Apalachicola
National Forest



Butterwort



Bladderwort



Thread dew

the white dots allow more light into the pitcher therefore enticing an unsuspecting insect further down into their ultimate demise. This pitcher plant has the widest range of habitat requirements, with the ability to live on drier sandier sites and also road side ditches. There are six species of pitcher plants found in north Florida: the rose, purple, white-topped, pitcher plants; they can all be found within a short drive from Tallahassee.

Often found close to the pitcher plants are the thread dews and sundews. The thread dews have several upright green leaves that are covered in hair; the tip of each hair has a sticky fluid that captures the insect. Sundews have beautiful, red, spoon-shaped leaves that typically lay fairly close to the ground. Individual plants can be smaller than the size of a dime, and grow to about 1.5 inches in width. When an insect gets trapped in a sun or thread dew, they struggle to get free, and then get caught up in more sticky hairs. Eventually, they are digested by the plants and the nutrients from the insects are taken up by the leaves.

Bladderworts are one of the more interesting carnivorous plants and typically grow in an

aquatic environment but can also be found in damp ground. As the name suggests, they have a small bladder with a small opening that has a door. Each bladder holds suction and when a small insect brushes a small trigger hair by the bladder door, the insect is vacuumed inside and digested. These plants can often be found in ditches or small nutrient poor ponds. Twelve species of bladderworts can be found across north Florida.

Butterworts have plump little bright green glue trap leaves. As an insect travels across them they get stuck and digested in place. Butterworts can have a very tiny basal





Butterwort

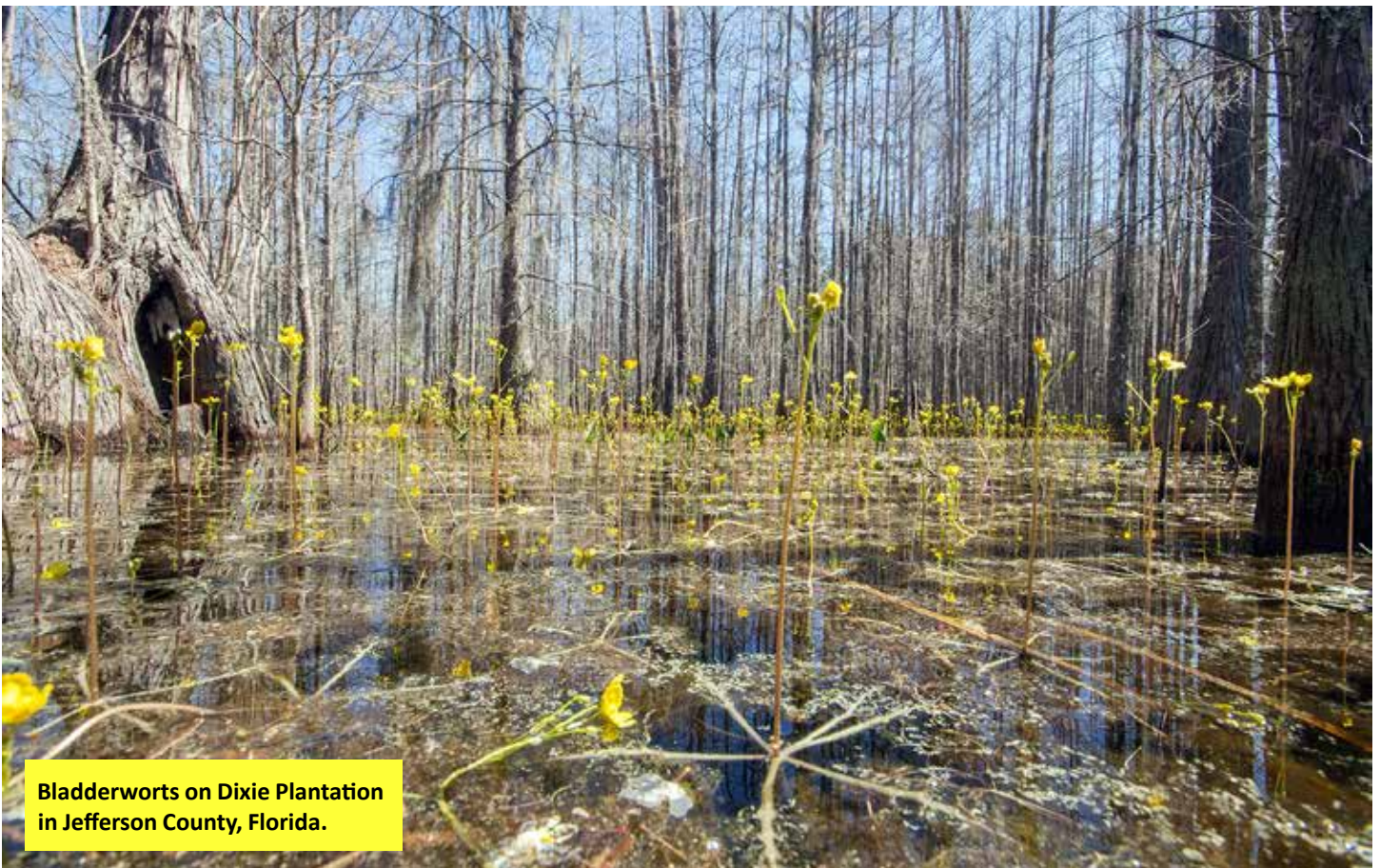
rosette of leaves and can be difficult to find, especially when they are not in bloom. There are six species in north Florida that can be found in damp sandy soils.

The best time to look for carnivorous plants is in the spring when they are in bloom. The pitcher plant blooms are like a small bowl with delicate petals that hang downward. The sun and thread dews have the most delicate flowers, which depending on the species can be white or pink. Their buds hang from a long inflorescence (which can contain over 15 buds) typically only opening one at a time.

There are over 600 species of carnivorous plants worldwide. Many of these plants, including those in our region, are victim to over collecting. However, several varieties are now available from local nurseries and do well in our climate if protected in winter. If you would like to add carnivorous plants to your landscape, considering building a bog garden; with no more than a liner, sand and peat moss, you can get one started. As long as they are kept moist, most of these plants are fairly easy to grow. Then you can enjoy their beautiful spring blooms and watch them “collect” their food.

There are many opportunities to see native carnivorous plants in north Florida. For hikes to see carnivorous plants visit: <http://floridahikes.com/pitcher-plants>.

All photos of carnivorous plants in this article were taken by Pierson Hill. Pierson is an avid photographer, herpetologist and naturalist. He currently works at the Florida Fish and Wildlife Conservation Commission.



Bladderworts on Dixie Plantation in Jefferson County, Florida.

Need Fire?



Fire Ecology Research Scientist Kevin Roberston, above, directs the Fire Ecology Program at Tall Timbers. Photo by Rose Rodriguez

The Fire Ecology Program needs your support to help you keep fire on your land.

Prescribed fire faces many challenges that can only be met with sound science. The Fire Ecology Program conducts research to provide the public with applicable, science-based information on the appropriate use of fire for maintaining natural plant communities while protecting the health and safety of the public. Research focuses on both plant ecology and fire science, including fire behavior, emissions, remote sensing, and fire effects on soil.

Contributions made directly to the Fire Ecology Program at Tall Timbers will be used to help supplement the program with internships, supplies and capital needs.

To learn more about the work of the Fire Ecology Program and make a donation to the program, visit:
<http://talltimbers.org/fireecology.html>





Shedding Light on the Reclusive “Sandy-mounder”

BY JIM COX, SEAN CAMPBELL & MARGARET RHODE

Burning provides a wonderful new perspective on a southern pine forest. With the groundcover removed, the subtle roll, pitch, and yaw of the ground become visible in intricate detail. Scattered here and there are the castings from gopher tortoise burrows, the curious mounds of the harvester ant, and then those cone-shaped piles of loose dirt created by the Howard Hughes of southern animals, the pocket gopher.

The reclusive southeastern pocket gopher, which goes by such local names as "sandy-mounder" or "salamander", thrives in the deep, well-drained sandy soils of southern pine forests. These chestnut-colored rodents excavate complex systems of underground tunnels using their large, powerful front claws to push the dirt around and long incisors to sever roots and other subterranean obstructions. Mound production occurs throughout the year with peaks in fall and dry periods, and while the reason for peaks is unknown, it may correlate with soil moisture, air quality in the tunnel, dispersal, and food resources.

The system of tunnels used by an individual can stretch farther than a football field and include shallow feeding areas as well as deeper tunnels used for nesting and food storage. There may even be special “dung chambers” that are used when nature calls. Paul Skelley, an entomologist at the University of Florida, has excavated scores of burrows and reports that it can take up to two days to excavate one using a spade. The effort is “...consuming, exhausting, frequently non-productive, and usually not appreciated by landowners.” That’s a lot of digging done by an animal that is less than a foot in length (including three inch of hairless tail).

Pocket gophers of course come together at some point to breed, but most of their time is spent in solitary confinement. Breeding appears to take place throughout the year, with peaks during warmer months. The majority of births documented occurred from March through August, and females produce one or two litters with one to three “pups”. Pups mature within four to six months.

While pocket gophers are often deemed a nuisance on a suburban lawn, they are hard-working ecological engineers that improve soil conditions in pine forests. While excavating tunnels, they mix and aerate the soil and increase nutrient cycling. Over the course of a year, a population of pocket gophers may move about one ton of soil to the surface, and, in doing so, they improve the soil fertility that has a positive influence on the diversity of the plant community surrounding mounds. Those small push-up mounds evident after a burn contain loose, rich soil that provides an ideal germination location for many native plants. (See page 41.) Pocket gophers not only affect the plant community, but also reptiles and amphibians that make use of the cool, moist burrows. Approximately 80 species of invertebrates are known to utilize the burrow system (with at least 14 known only from gopher tunnels), and pocket gophers form a huge part of the diet of the rare pine snake.



The pocket gopher is not protected in any state but, due mainly to habitat loss, appears to be declining in Alabama and Georgia. In addition to habitat loss, another factor contributing to declines could be reduced use of prescribed fire in some areas. Woody shrubs and thickets can shade out the grasses, legumes, and other herbaceous species required as food. Declines are cause for concern because of the scores of other species that

depend on the subterranean structures created by these ecological engineers. As pocket gophers decline, homes for camel crickets, scarab beetles, pine snakes, and other species also become scarce.

Photos clockwise from top: Pocket gopher peers out of a tunnel; scarab beetle in a pocket gopher tunnel; pine snake.



All photos here are courtesy of wildlife photographer Barry Mansell. For more of Barry Mansell's images visit, <http://barrymansell.animalsandearth.com/en/>.

– Pocket gopher continued on page 19

ALBANY QUAIL PROJECT

Best management practices for weed fields on sandy soils

BY CLAY SISSON

A good deal of information has been written over the last 20 years about brood habitat and how to manage for it in the southeastern piney woods. One of the first intensive radio-telemetry efforts done by the Albany Quail Project, when we started back in 1992, was to try and understand what good brood habitat was on local properties. Bob-white quail telemetry was still relatively new at the time and what information existed seemed to be contradictory. What we learned was that on the sandy soil properties in the Albany area there was a strong preference by hens with young broods for fallow fields, or what came to be known as “weed fields”. These fields were for the most part recently abandoned agricultural fields that were being either rotationally planted in wildlife crops or disked out during the fall and were grown up in ragweed during the summer.

This led to additional analysis of these openings and revealed that part of the attraction was increased insect abundance (see graph) compared to other habitat types and that hunting courses with a higher percentage of these openings were considered the “good” courses and those where the fields had been planted in pines were considered the “bad” courses.

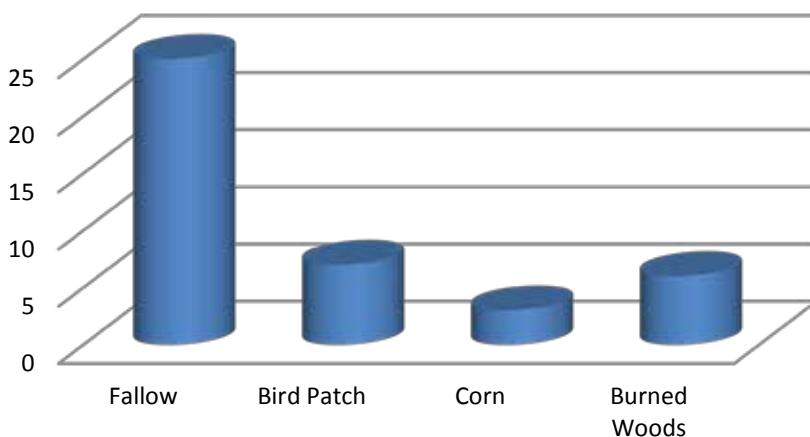
A GIS analysis of three large properties in the region additionally revealed that hunting success over time was better on individual courses where the field percentage was high (up to 30%), if it occurred in relatively small (5 acres or less) fields. In addition, a “sensitivity analysis” of our telemetry data revealed that brood survival was the second most important demographic parameter for population growth, beaten out only by adult survival through the winter. This led to a flurry of activity in the area of creating additional acreages of weed fields where needed and a whole counterculture of ragweed farming!

Over time it became apparent that the longer the field had been fallow the harder it was to keep it in the proper condition. This led to a whole series of experiments in ragweed farming that included liming, fertilizing, double disking, bottom plowing, and more recently a move back to rotational planting. Telemetry of broods during this time consistently revealed a preference for where the best weed growth was and that these weed fields were used the most during the first hatch in late May/ early June. Additional studies showed that hunting courses where the weed growth was maintained by fertilization out performed those where it was not, if studied

over a long time period. Having said all this, our recommendation currently for best management practices on Sandy soil properties are as follows:

- 1) Maintain 15-30% of each hunting course in well distributed and relatively small fields;
- 2) Maintain the Ph in these fields over 6 by frequent soil tests and lime as needed;
- 3) Check for and eliminate hard pan created by frequent disking every 3-4 years as needed with bottom plow;

Insect Volume





Top left: Unfertilized ragweed field July 2013. **Top right:** Fertilized ragweed field, July 2013. **Bottom left:** Ragweed following beans, July 2013. **Bottom right:** Fallow dove field, September 2012. Photos by Clay Sisson.

4) Maintain adequate fertility for weed growth by fertilization or rotational planting of soil building crops.

Recently there has been a move towards rotational agricultural plantings as weed growth was tapering off and commercial fertilizer prices were very high. It has become apparent that continuous winter disking over a long time period is not enough for quality weed growth, even if the Ph is maintained and the hardpan broken up. Fertilization works, but is expensive. We are monitoring some trials currently on local properties that show promise in using soil building crops in place

Over time it became apparent that the longer the field had been fallow the harder it was to keep it in the proper condition.

of annual fertilization. Some of these are low input legumes such as clover, lupine, and sun hemp, while others are experimenting with more intensive crops, such as soybeans and peanuts planted in a rotation with fallow land.

The point here is to reduce (or recoup) the input costs while at the same time maintain the fertility of the field and improve weed growth in the fallow years; much like what we saw when these fields were first fallowed out 20 years ago.

Clay Sisson is the Director of the Albany Quail Project

Where did they go?

Bobwhite covey evasion strategies

BY DR. THERON M. TERHUNE

It is the dim haze of mystery that adds enchantment to pursuit. — Antoine Rivarol

For quail hunters, the pursuit of the “prince of game birds” permeates every aspect of the lifestyle of those who pursue it, and it’s the mystery therein that defines the experience. As such, countless hours and millions of dollars are spent annually managing thousands of acres of habitat to benefit bobwhites on private properties throughout the South, and other portions of their range. Quail hunting on horseback and mule-drawn wagon is engrained as deeply in southern tradition as grits, fried chicken and cornbread. Of course, for many, the end goal of these labors and ultimate pursuit is to increase one’s odds of “taking” the elusive bobwhite and unfolding the mystery of their habits while doing so. Indeed, nothing quite compares to the cacophony and excitement of a bobwhite covey rise; the encounter only heightens the pursuit to experience yet another. Hunting quail though is not only about the “take” but the entire social experience and each hunter has their own hunting-style preferences.

A traditional past-time dating back more than 15 decades is the use of bird dogs for locating bobwhite coveys and to increase hunting success. Scenting a bird by a bird dog is complex and may be influenced by several factors (e.g., weather conditions, vegetation denseness, diet).

Hunting success may be related to those factors and others such as bobwhite abundance; weather conditions; vegetation composition and structure; and dog behavior, condition and quality. Experienced dog handlers and hunters alike can attest that quail hunting is typically better on a cool day with recent wet weather, be it rain or light snow, but even under what most would consider “ideal conditions” there seems to be enigmatic discrepancies making some days better than others or days that seem “right” just plain poor and disappointing. What is it that causes this phenomenon?

Our current research, along with past studies, suggests that regardless of whether you have lots of birds or

We recently completed the first field season of two new studies designed to better understand factors influencing hunting success and scenting conditions (to learn more about these studies [click here to view the Quail Call](#)); already we have begun to uncover some interesting tidbits about bobwhite covey behavior and evasion strategies. At the end of these three-year studies, we hope to learn how to best manage habitat to optimize hunting success as well as to learn why hunters miss certain coveys and how some coveys evade hunters better than others.



Here a Percheron-drawn (often mule-drawn) wagon, an iconic symbol of southern-style quail hunting at its best.

only a few coveys, on average nearly half of all bobwhite coveys are not detected, or are simply “missed,” and more than 62% of coveys are not shot into during a hunt (see Figure 1). And, approximately 2 - 5% of those coveys are never shot into during the course of an entire hunting season.

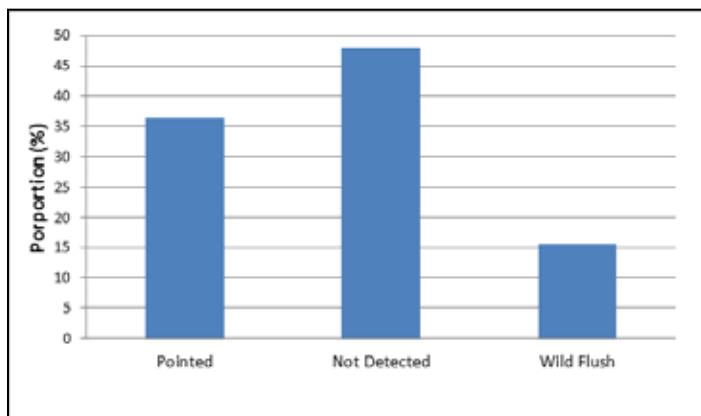


Figure 1. Summary of hunting encounters of radio-tagged coveys for the 2013-2014 hunting seasons on a plantation in South Carolina.

So, where do they go?

If you were to ask this question to ten different dog handlers/hunters, you may very well get ten different answers. And, I would partially agree with all of them, because chances are they are all probably right for different reasons and under varying scenarios. To explain, I will describe some of the more common evasion techniques exhibited by radio-tagged coveys to shed light on where they go, and explore how bobwhites typically behave during encounters with hunters.

The most commonly known evasive behaviors include:

- **Run** – It has been said that bobwhites prefer to run rather than fly. We have found that this technique is the most common evasive behavior exhibited by bobwhite coveys and its prevalence on a particular site may be linked to habitat composition, vegetation structure or vegetation denseness. Interestingly, our research in South Carolina showed nearly 88% of all radio-tagged coveys pointed by bird dogs and not seen by hunters ran to evade detection.

On average, we have observed hunters hunting on horseback and mule-drawn wagon taking between 60 and 90 seconds to ride up to, dismount and approach a dog on point. For those coveys choosing to run, they are easily 50 to 100



Graduate Student Diana McGrath tracking radio-tagged bobwhite coveys during a quail hunt.

or more yards away from the hunters by the time they get to their initial location.

- **Hold** – The majority (approximately 70%) of the coveys pointed and shot into are those coveys that choose to hold. This strategy favors the gun and is a poor strategy for bobwhite coveys and their survival. Only 12 % of coveys pointed that held tight were not observed and where hunters failed to flush them.
- **Flush Wild** – Coveys flushing wild are those that flush prior to a dog pointing them. On average, 16% of coveys flushed wild. Furthermore, wild flushes occurred at higher rates later in the season than early in the season, and wild flushes occurred at greater distances from the hunt party than was previously thought. One radio-tagged covey flushed wild greater than 700 meters away in response to a gunshot – the covey was located on a different hunting course altogether. This suggests that coveys may be on alert mode at the time of the first shot, giving them the opportunity to exhibit other less commonly known evasive strategies earlier than previously thought.
- **Any combination of run, hold and flush wild** – For example, run and then hold, or run and then flush wild. We found that 14% of all coveys exhibited some combination of these evasive strategies and approximately 3% ran from initial encounter (point) and then chose to hold tight to successfully evade detection.

The less commonly known evasion tactics include:

- **“Get out of Dodge”** – This technique comes in two different forms: leave the property entirely or leave hunting course temporarily. We observed that one covey left the property after the first hunt and stayed off the property until two weeks after the hunting season was over. We also observed multiple coveys located on the edge of two hunting courses and regularly moved on/off the course being hunted and therefore going undetected during the hunt.
- **“Short Straw or Suicide Bird”** – This evasion tactic is where one or a few birds decide to flush wild, drawing the “short straw,” while the rest of the covey runs or holds tight, going undetected by hunters. Interestingly, on several occasions, the birds opting to run ran to the left or right, or even toward and past the hunt party, instead of running straight away from them.
- **“Ditch ‘em”** – Coveys exhibiting this behavior ran to the nearest or commonly frequented ditch, and held or ran along the ditch to evade being detected. One of five coveys going undetected, and/or never shot into the entire season on Tall Timbers, employed this evasion tactic.
- **“Divide and Conquer”** – The divide and conquer technique, while providing a sporty wing shooting opportunity, also elicited the most confusion among hunters. Coveys using this strategy would divide into multiple subgroups or even individuals, spread out and run like heck, and flush like wildfire, often in varying directions.



Gerti, a deutsch drahthaar, pointing a covey during a research hunt on tall timbers. We are equipping all bird dogs with garmin astro gps units to track course coverage, location at time of point, and movement patterns related to hunt paths.

What about unproductive points (aka false points)? We have learned that the term false point is somewhat of a misnomer, because the dog is likely correctly pointing birds (or at least the scent of birds), but the point is merely unproductive for one of several reasons. We have observed that the most common reason for an unproductive point is a result of the covey employing the most frequently observed evasive technique: running. We have also discovered through intensive radio-location of coveys before the hunt that dogs may point where a covey was located earlier in the day, as much as three hours prior to the time of point during the hunt. This may help to explain why more experienced dogs typically have fewer unproductive points than younger dogs. Three other causes of unproductive points we observed using radio-telemetry were: holding tight and being missed entirely; flushing wild where the hunt party did not see it, or running from the original location and then holding.

Taken collectively, many coveys repeat the same evasion strategies (i.e., once a runner always a runner). For example, one covey flushed wild more than three quarters of the time they were encountered, and nearly always 150+ yards before the hunt party arrived at the covey's original location. Another covey ran 100% of the time to the same ditch along a highway, where dog handlers were reluctant to allow the dogs to go. Still other coveys found areas less frequented by hunters, such as, ephemeral wet bottoms, ditches, areas in or around industrial timberland, etc., and adjusted their home range accordingly during the hunting season.

– Bobwhite evasion continued on next page



Point in a ditch bank. Radio-telemetry shows that ditches make for a good escape route for quail during hunts and when nearby coveys commonly use them successfully as an evasion strategy.



Fresh pocket gopher push-ups are easy to see following a prescribed burn. The push-up mounds shown here were likely produced by a male whose tunnel system may stretch for 150 yards or more. Female mounds tend to be arranged in a clustered, irregular manner, while the mounds produced by males follow a straight line. Photo by intern Emma Schlatter. Jim Cox is the director of the Stoddard Bird Lab at Tall Timbers, Sean Campbell and Margaret Rhode are Lab technicians.

How do we counteract these evasive behaviors?

Isaac Newton stated: “For every action, there is an equal and opposite reaction.” I would submit that for every covey evasive tactic, there is an opposite counter-tactic we can employ to increase our hunting success. For example, we can minimize our predictability by hunting a course differently each time; or minimize the amount of hunting pressure by not hunting the same ground too frequently; if the dog goes on point near a ditch, work the ditch banks; if only one or a couple of birds get up at a perceived covey point, assume that there are more birds and that they may not always run straight ahead or in the direction the suicide bird(s) flew; approach a covey point as quickly as possible; work side to side and not always straight ahead; be ready for the “divide and conquer” so as not to be surprised; and study your coveys' behaviors in preparation for your next hunt, because they will likely employ the same tactic again.

After just one field season, we have already learned that bobwhite coveys seem to be detecting hunters more often than hunters are detecting coveys; or, perhaps more

accurately, we detect each other equally as well, but bobwhites are better at what they do (evading and surviving), than what we do (observing and harvesting). Alas, we now know that there are numerous evasive strategies employed by different coveys, and sometimes coveys exhibit the same behavior at each encounter during a hunt, while others will vary their evasive behaviors. That said, fortunately, or unfortunately depending on the way you look at it, we still have two more field seasons and a lot more to learn.

In summary, our research suggests that active or moving (e.g., feeding, or traversing from feed to or from roost) coveys are “easier” to locate by chance, whereas at other times, they are much more furtive and aloof, reducing a dogs' ability to encounter them. BUT, more times than not, they are there – we simply need to find them – and, when the dog staunchly goes on point, we will continue to dismount our horses and quicken our pace in hopes to experience the boil of a covey rise. It's in that moment the mystery is distinctly solved and the encounter reminds us of why we love this wing shooting sport and the pursuit!

The Devil You Know

BY SHANE WELLENDORF

Sometimes the devil you know is better than the one you don't know. Since the very beginning of quail management it has been well recognized that the Cooper's hawk (*Accipiter cooperii*) is considered Public Enemy #1 against northern bobwhite (*Colinus virginianus*) populations in the Southeast. But how much do we really know about this perceived menace of our beloved bobwhites? Much of our Cooper's hawk knowledge has been based primarily on anecdotal observations, but little in-depth research has been conducted on this species. A recently issued wildlife monograph on the Cooper's hawk has shed new light on how this species lives and forages in the north Florida landscape (<http://www.fwspubs.org/doi/abs/10.3996/nafa.78.0001>).

In late 1990s, Brian Millsap and crew set out to learn more about Cooper's hawks. As a nongame raptor biologist for the Florida Fish and Wildlife Conservation Commission, and an avid falconer, he had a passion for learning more about this secretive and voracious predator. Being a Tallahassee resident and a guy who interacted with the plantation community, he was also motivated to gain a better understanding how year-around resident Cooper's hawks impacted bobwhite populations. One of his two research sites was Tall Timbers Research Station (TTRS), which was selected because of its excellent natural habitats and as a representative of the plantation landscape; the other study site was near Live Oak, Florida in a working lands context with intensive agriculture and pine production.

One advantage of Millsap working on Tall Timbers was the ability to compare his Cooper's hawk research results to the bobwhite research also being conducted. During the waning years of Millsap's Cooper's hawk research, Tall Timbers, under the direction of Dr. Bill Palmer, established an intensive bobwhite monitoring program on the research station to better understand predation. This endeavor included a huge radio-tagged sample (still ongoing) and video monitoring of nest sites. These research tools allowed for a better understanding of bobwhite demographics, including survival and



A radio-tagged adult female Cooper's hawk from Brian Millsap's research on Tall Timbers. Photo by Brian Millsap

production, and the factors that influenced those rates. As a result, more information was gained collectively on both projects than separately, which shows the value of Tall Timbers Research Station conducting a variety of research projects.

Technology is really the only conceivable way to gain substantial information when trying to study an elusive animal. When the Cooper's hawk project started, radio telemetry was the best tool available and it had been established as a bona fide research method. The challenge, of course, is catching the animals and attaching the transmitters. Cooper's hawks, just like humans, can have their sensibilities blinded by rage, especially when there is

a perceived threat to their young. The great horned owl is a key predator of Cooper's hawks and their young. Adult Cooper's hawks were lured into mist nets by situating a live, rehabilitated, but non-releasable great horned owl within the vicinity of an active nest. During the 6-year study, 49 hawks were captured, radio-tagged, and tracked with 12 of those hawks (8 females and 4 males) from Tall Timbers. These individuals were the study subjects of an intensive monitoring protocol, to get a better understanding of home range, survival, breeding behaviors, and foraging data. It is important to emphasize these radio-tagged hawks were year-around residents of the study sites, and did not include migratory Cooper's hawks that were only on the study areas temporarily.

The Cooper's hawk is sometimes referred to as the blue darter because of its slate-colored feathers on the back and quick flight in forested conditions. On the wing, they are discernable by the flap and glide flight pattern and their unusually long tail with a rounded tip.



The general body shape of a Cooper's hawk. Notice the long rounded tail. Photo by Shane Wellendorf

When looking at a Cooper's hawk up close, the most ominous characteristic is the blood red eye color that develops in older adult birds, usually in the second year of life. The exact reason for the red eye color is unclear, but most likely it's for visual acuity, especially for seeing long distances in foggy or low light conditions. Based on the weights of captured individuals in this study, females averaged about a pound, and weighed almost twice as much as the males. One possible reason for the distinctive reversed sexual dimorphism is that the different sized sexes are able to pursue different sized bird prey and therefore reduce competition, especially in the nonbreeding season when there is significant home range overlap.

Millsap and crew documented five distinctive nesting areas on Tall Timbers' 3,900 acres. Nest locations were exclusively in hardwood bottoms and drainages with mature timber in the overstory. There was a certain level of site fidelity in reusing the same nesting areas year after year, but not necessarily for the same tree. Typically, nests were within 100 to 150 yards from the hardwood drain edge, presumably, situated to keep the nest somewhat inconspicuous, but close enough to the edge to allow for quick access to upland foraging areas. Interestingly, on Tall Timbers no nest locations were recorded in frequently burned pine uplands. Conversely, on the working lands site, the nests were almost exclusively found in closed canopy mixed hardwood/pine uplands. Presumably, historical disturbances, such as timbering or agriculture, in conjunction with decades of fallowed



An example of a typical Cooper's hawk nesting tree and habitat. Photo by Brian Millsap.

ground with no prescribed fire, allowed the uplands to develop into timber stands that more closely resembled hardwood swamp drainages and less like the open upland pine forests seen in the Red Hills.

A key goal of this research was to better understand Cooper's hawk diet and more specifically their foraging rates on bobwhites. Research crews spent numerous hours monitoring prey brought back to nests; they even placed video cameras on nests to record what prey were fed to young. For a video example go to: http://www.fwspubs.org/doi/suppl/10.3996/nafa.78.0001/suppl_file/10.3996_nafa.78.0001.s1.avi. Over 1,000 prey remains were collected with some items being sent to the Smithsonian for species confirmation. Clearly, birds were the primary prey focus and included almost 90% of prey deliveries to Cooper's hawk nestlings. Of interest and not previously well understood, the male Cooper's hawks did almost all of the hunting during the breeding season with the females staying very close to the nest and young. Given the males smaller stature they tended to deliver smaller birds or nestlings of other species. Important breeding season prey species were mourning doves, blue jays, northern mockingbirds, and northern cardinals. Larger prey species, such as adult northern bobwhites and cattle egrets were only a minor component of the breeding season diet. However, the impacts of Cooper's hawk predation on bobwhite young was not differentiated in their results, and may have been difficult to determine due to the small size of bobwhite young. Nonetheless, during the prime Cooper's hawk breeding months, April through June, there is overlap with northern bobwhite nesting and brood rearing; predation is likely, but not significant.

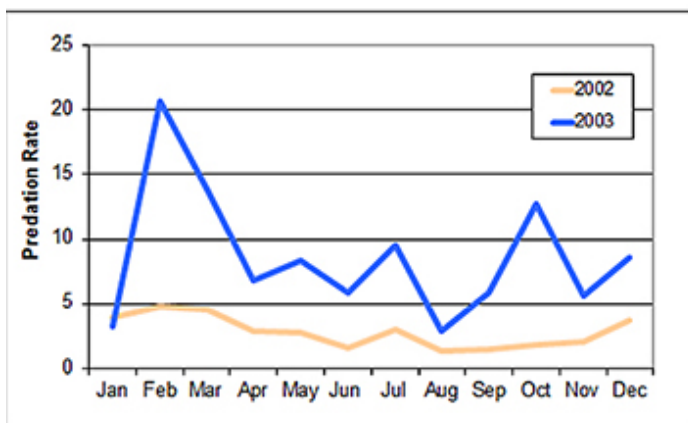


Cooper's hawk observed at a video monitored bobwhite nest.

The bobwhite radio telemetry data revealed that mortality during the breeding season by avian predators, including Cooper's hawks, was a minor component of the overall loss. (See avian predation graph). Mammals were the primary cause of summer population losses. Cooper's hawks had little to no impact on nesting bobwhites either. In over 500 nests monitored with cameras, very few (< 2%) were directly lost to Cooper's Hawks. In one unusual instance, a Cooper's hawk was observed walking between the camera and bobwhite nest, probably searching for the incubating bobwhite, which luckily was away from the nest at the time. In regards to predation on bobwhite young, neither research project was able to provide any new insights. Bobwhite young are small, which make it difficult to track or observe on a camera.

The researchers found that determining Cooper's hawk prey outside of the breeding season (July – March) was a little more difficult, but they were able to track radio-tagged hawks to kill sites and assess prey remains. While the observation opportunities were lower, they got some interesting results. During the non-breeding season prey captures were highest in the early mornings, between 9:00 a.m. and noon, but were less significant during the remainder of day. Researchers were also able to clearly document larger prey, such as bobwhites. On Tall Timbers, the two most observed prey species were mourning doves and bobwhites. Even though bobwhites were a focused prey, it constituted less than 7% of the overall Cooper's hawk diet. Millsap calculated that an individual Cooper's hawk was eating about 11 bobwhites throughout the winter when factoring for the proportion of bobwhites in the diet. Essentially, a bobwhite covey was consumed every winter for each established resident

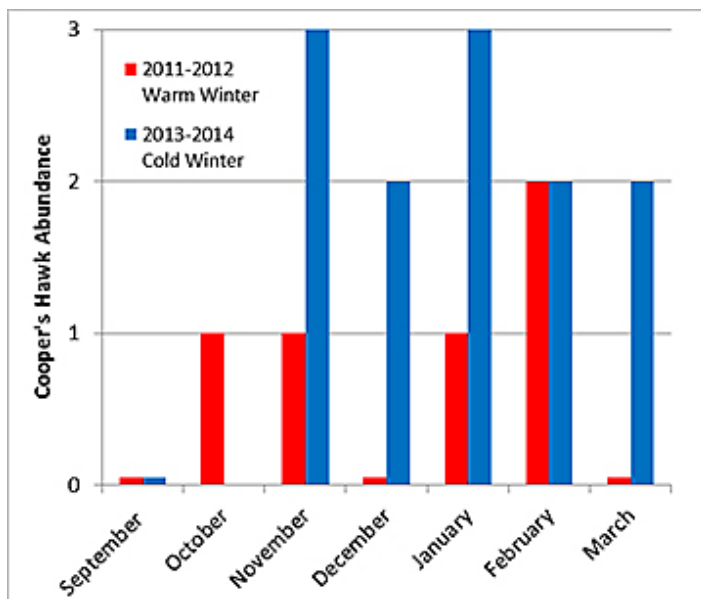
Avian Predation on Adult Quail



Seasonal and annual differences in avian predation on adult northern bobwhites.

Cooper's hawk on a property. As unbelievable as that statistic is at first glance, the overall number of bobwhites lost is still only a small proportion of the overall covey density on a modern, wild bobwhite plantation.

The dire loss of bobwhites is not from residents, but from migratory Cooper's hawks coming south as they follow the many bird populations also heading toward warmer winter climates. Millsap's work did not specifically address migratory hawks, but if you were to apply his estimated foraging rates on bobwhites to the potential numbers of migratory Cooper's hawks on a property, which could increase 2 to 10 fold during different times in winter, bobwhite losses could become more significant.



Cooper's hawk abundance on Tall Timbers from bi-weekly hawk surveys.

The abundance of migratory Cooper's hawks in south Georgia/north Florida varies seasonally. Most vigilant observers who frequent the woods in autumn will notice the increased numbers of Cooper's hawks in the early fall, usually around October and early November, and then again in the late spring, February and March. However, hawk abundances can differ dramatically from year to year, depending on climatic conditions in the northern latitudes. During colder winters, with large portions of the eastern U.S. covered in snow, such as the most recent winter (2013-14), there tends to be higher hawk numbers in our region, and conversely, during warmer winters, such as the 2011-12 winter, fewer migratory Cooper's hawks make it this far south. These conclusions are somewhat anecdotal, but Tall Timbers has been able to capture these trends with bi-weekly hawk surveys, which

it has been conducting for the last six years. Also, a recent journal article showed that latitudinal abundance of Cooper's hawks varied in different years (Holt et al. 2012).

The lingering question is, what impacts do these migratory Cooper's hawk populations have on local bobwhite populations? It is extremely difficult to get a definitive answer to such a complex question, but the radio-tagged bobwhite population on Tall Timbers can provide some insight to changes in overwinter survival. The difference in overwinter survival from a milder winter (68% in 2011-12) with relatively fewer hawks compared to a harsher winter (56% in 2013-14, survey through March 8) with higher hawk numbers was a reduction in about 12% fewer bobwhites surviving a season. A reduction in survival cannot be solely linked to Cooper's hawk abundance on Tall Timbers, but there appears to be a consistent trend. However, the overall impact of any additional loss from higher migratory hawk numbers is not that significant on the property. Consider that both years in the example had relatively high overwinter survival, well above average survival estimates reported in other places conducting bobwhite research. No doubt, there was a larger population reduction, but it's not likely to be enough to reduce growth for the upcoming fall population. Given the relatively high population of bobwhites and the potential reproductive output during the summer, they could easily make up this amount of additional loss and still have positive population growth.

The late spring (March – May) is a time when Cooper's hawk predation can significantly suppress bobwhites and have a population impact. Millsap's monograph specifically addressed Cooper's hawks and bobwhites during this time period, and Tall Timbers has highlighted in many of its publications the vulnerabilities of bobwhites in spring. Bobwhites are disbanding out of coveys and moving to new areas outside of the covey's winter range. Additionally, bobwhites are being forced to move to new areas as prescribed fires are being conducted across the property. Anytime bobwhites conduct movements out of the normal pattern there is an increase in predation. The increased susceptibility of bobwhites is timed with resident Cooper's hawks preparing to nest (Millsap's monograph) and could potentially be timed with a large numbers of migratory hawks moving through the region on their way back north. The culmination of these factors can result in a spike in bobwhite mortality rates.

On a couple of different radio-tagged bobwhite projects within in the Red Hills, Tall Timbers staff documented significant numbers of mortalities in early March after extensive prescribed burning had been completed in the project areas. The majority of those losses were due to avian predation during significant migratory bird activity. Presumably, the “double whammy effect” caused above average losses. These heavy losses immediately before the breeding season negatively impacted production, since a significant proportion of the population was dead before they ever had a chance to nest, and the following fall population observed declines. It should be noted that significantly high predation pressure from migratory hawks in early March may only be observed about 2 out of 10 years, but it is those years, such as after an extremely cold winter, that maximizing bobwhite survival is absolutely critical for population sustainability.

The 2014 spring season may be one of those years where prescribed burn timing and intensity could impact bobwhite survival. In years like this, it may be advantageous to burn conservatively during the first couple of weeks of March and then try to extend burning to the end of April. Delaying burning will keep the maximal amount of cover during the highest concentrations of migratory hawks and may alleviate excessive predation.

Overall, bobwhite populations at the end of this hunting season were still good for most properties, but cumulative stresses from a hard winter can begin to reduce bobwhite survival and add more stress; large scale burning early in the season could only exasperate the stress. The well managed quail hunting plantation does everything possible to minimize predation and maximize production of wild bobwhites, and the best managers adapt all the time to the present conditions. Considering the current condition of a property’s bobwhite population and their predators should be factored into the overall burn plan.

There is no doubt the Cooper’s hawk is a devil to the bobwhite populations they hunt, but so are the 20 or so other predator species in the Red Hills that feed on bobwhite. Through Millsap’s recent monograph and other research conducted on Tall Timbers, there is a better understanding of Cooper’s hawk impacts on bobwhites. The year-round impacts are less than we had previously presumed on the well managed quail plantation. The key is understanding that during some spring periods, especially after a harsh winter, Cooper’s hawk predation of bobwhites can be excessive. The good news is that landowners and managers can potentially diminish the loss with adaptive management.

Shane Wellendorf is the Conservation Coordinator for the Tall Timbers Land Conservancy, and was formerly a biologist in the Game Bird Program.



Bobwhite in weeds. Photo by Shane Wellendorf

QUAIL MANAGEMENT RESEARCH

Keep Coveys Rising

The Tall Timbers Game Bird Program sets the national standard for Northern Bobwhite management through dedicated long-term research. Given the socio-economic importance of bobwhite to the Red Hills and its conservation value regionally, we conduct research on a wide variety of topics and sites to establish best management practices for bobwhites.

Beyond the Red Hills region, the Albany Quail Project in southwest Georgia focuses on best management for its habitat type, and the South Carolina Quail Project research focuses on habitat restoration. Restoration projects are also being conducted on the eastern shore of Maryland and other areas in the northern range of bobwhites.

To learn more about the Game Bird Program visit, talltimbers.org/gamebird.html.

To give to a specific Game Bird project visit, talltimbers.org/member-psg.html.



Research Station & Land Conservancy





Hardwood resprouting after prescribed burning – more than meets the eye

BY DR. KEVIN ROBERTSON

In the southeastern U.S., the main objective of using prescribed fire for conservation is to keep fire-dependent natural communities open and grassy, instead of turning into a dense hardwood forest. Although frequently burned pinelands may look like little more than pine trees and grass, they invariably have abundant “hardwoods” (broad-leaf woody plants), which without fire will quickly grow up and shade out the hundreds of non-woody species that make up most of the native biodiversity and wildlife habitat. Fire usually only “topkills” hardwoods from the soil surface up, after which they resprout from the roots, and then have to be burned again before long, typically within one to three years.

Since hardwoods have no leaves when they begin resprouting and cannot get food from photosynthesis, their regrowth depends at first on whatever starches and sugars are stored in their roots. How much is stored depends on the species and how large the plant has grown, but it also depends on what time of the year the plant was topkilled. Many studies from around the world show that when woody plants are topkilled during their growing season, then they have less starch and sugar stored in the roots and so resprout with slower growth. How fast resprouts grow can also depend on how long it has been since they

last were last topkilled, with more time allowing more storage of energy in the roots.

Resprouting of hardwoods in pinelands of the South has not been studied a great deal, but recent research by the Fire Ecology Program at Tall Timbers confirms the general patterns found in past research. We followed hundreds of resprouting hardwoods in native and old-field pine forests near Thomasville, Georgia and found that those burned in the winter (January) resprouted with faster growth than those burned in the summer (June). Also, hardwoods burned at two-year intervals had a faster growth rate than those burned annually during the first year following fire.

We also found that hardwood resprouts grow a little bigger from one burn to the next, even with annual summer fires, but only up to a certain size. After reaching that size, the hardwoods keep resprouting back to about the same size. That maximum size is larger for hardwoods burned in the winter than those burned in the summer, and also larger for hardwoods burned at two-year intervals compared to the ones burned annually. Apparently, after the hardwoods reach a certain size, they stop increasing the amount of starch and sugars stored in the roots and instead send their resources to above-ground

growth, perhaps because larger hardwoods are more likely to survive fire and then benefit from being bigger above ground.

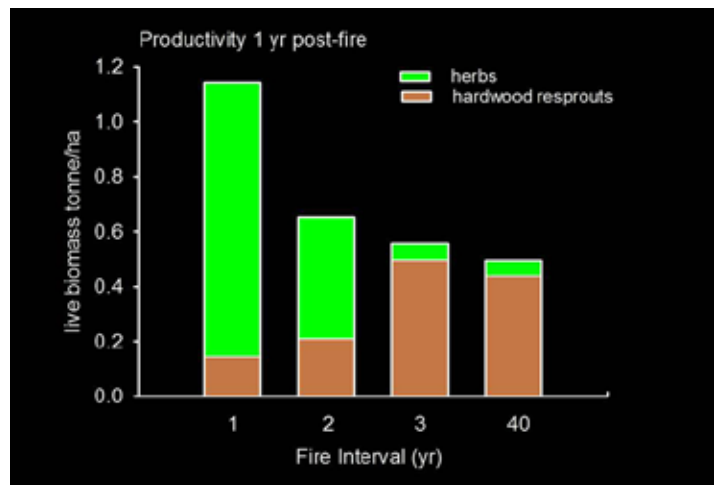
Curious about the effects of topkilling on hardwood roots, a graduate student in the Fire Ecology Program grew water oaks in pots, topkilled them at different times of the year, and a year later compared their root weight to water oaks that had not be topkilled. She found that, despite being topkilled, the water oak saplings continued to add root weight, but at a slower rate than saplings that had not been topkilled. This matched our earlier observation that the hardwoods resprout a little bit bigger after each fire while young. She also found that water oaks topkilled in the early and late growing season (April and August) resprouted with slower growth than those topkilled in the winter, also confirming our earlier observations.

For another project, we dug up the roots of resprouting hardwoods of various sizes and species and found that there was generally about twice as much root weight as above-ground (stem and leaf) weight for one-year-old resprouts. So when it comes to hardwoods in frequently burned pinelands, there is more going on below the ground than what we can see above.



Water oak in pot being topkilled by fire for the experiment (left) and roots of a topkilled water oak after soil was removed (right).

We also found that burning more often increases the numbers of whole plants that are killed over time. About 15% of whole hardwoods are killed in each fire, depending on size, but in areas burned every other year that equates to only about 6% being completely killed per year. These results are consistent with other studies showing that less frequently burned plots accumulate more hardwoods over time, such as the Stoddard Plots on Tall Timbers, which have been burned at 1, 2, and 3 year intervals since 1960.



Measurements of above-ground biomass of live herbs (green) and live hardwood resprouts (brown) one year after fire in plots burned every 1, 2, and 3 years or fire-excluded for over 40 years in the Stoddard Plots on Tall Timbers. Over many fire return intervals, woody plants begin to dominate.

Should these results influence when and how often to burn southern pinelands? What is most important is that the fire in fact topkills the hardwoods, which means having enough fuel and proper conditions for fire to reach the base of each resprout. Annual burns may not have enough fuel accumulation for such fires, and growing season burns may occur when it is too humid with too much green vegetation present to burn effectively; this is not usually a problem in longleaf pine-wiregrass habitats. Also, the effects of fire frequency and season are probably not going to be obvious after just one or two burns, as the changes are gradual and resprout growth generally reflects root size. However, if conditions are right for effective fires, then burns that are more frequent and later in the season should be more effective in limiting the size and number of hardwoods over several years.



A mockernut hickory resprout two years after fire in 2008 (left), and two years after fire in 2010 (right). It gets slightly bigger after each fire.

Dr. Kevin Roberston is the director of the Fire Ecology Program at Tall Timbers.



Painting with Fire

BY JIM COX

Incendiary terms are often used when describing artistic endeavors. The painter stares at a cold, blank sheet of canvas until the spark of imagination flickers. The image smolders and then, with luck, ignites into a burning vision that is laid out in scorching sweeps of bold colors and a fiery passion that touches both the heart and the mind.

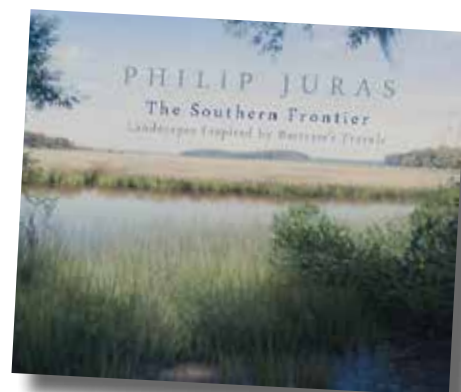
Flame-fanned passion is evident in the artwork of Philip Juras, an artist hailing from Athens, GA, but fire takes on a more fundamental role in his artwork, becoming in fact the subject for the art. Juras is the rare artist who frequently works decked out in nomex and leather boots, equipment known simply as PPE (personal protective equipment) for those who burn.

“I thank my friend Shan Cammack, senior wildlife ecologist with Georgia DNR’s Nongame Conservation Section, for getting me started burning back in 2009,” Juras wrote in a recent email. “Since then, I’ve volunteered on at least three burns a year and only wish I had time to do it all season. Since I often cut loose to paint on a burn after the initial black line is established, it will be a while before I accumulate the experience needed to be a burn boss.”

“Some of my paintings have gotten quite ashy,” he adds, “especially on heading and flanking fires. Even on a backing fire, at least a few ashes seem to find their way into the paint. Fortunately, ashes stuck to the paint usually help accentuate the explosive, sooty action of the fires I’m trying to capture. When they do,

I try not to brush them off. For examples: philipjuras.com/2014/201402-18fireinbroomsedge.htm or philipjuras.com/2012/201204-24wadetractburn5.htm.

Juras has garnered considerable attention both for his art and enthusiasm for fire-maintained southern landscapes. His most recent collection of paintings, *The Southern Frontier: Landscapes Inspired by Bartram’s Travels* attempts to allow a viewer to experience something that Juras argues is not easy to envision in the modern South: a glimpse of the pre-settlement Southern frontier. The stunning oil paintings featured in this collection are based on written descriptions of the southern landscape provided by the eighteenth century naturalist William Bartram and hearken back to the vivid landscapes produced by painters of the nineteenth century. According to acclaimed southern writer Janisse Ray, Juras’s artwork “... requires the ability to draw from words. To see ghosts.”



For the past two years, Juras has been visiting the Red Hills region regularly to capture the potent force that fire represents as well as the beautiful landscapes that abound.

“My first visit to the pine-woods of the Red Hills was with a graduate class in landscape architecture taught by Professor Darrel Morrison at UGA,” Juras notes. “Leon Neel showed us around the Big Woods of Greenwood Plantation and I will never forget how I felt like I was walking through paradise.”

“That was my initiation to the amazing Stoddard-Neel legacy. My impressions of awe have only increased over the years, especially with recent work in the region,” he adds. “I love to travel the highways of the region. The fire managed plantations with open, grassy pine woods on either side of the road, give some sense for how tens of million acres of the southeastern coastal plain used to be.”

“That is a rare experience in today’s South! Capturing those flowery, grassy pine woods on canvas completes the story begun with the fire paintings.”



Looking at his paintings of Greenwood and Arcadia Plantations, you quickly see an artist with a keen eye honed by his deep and intimate knowledge of southern forest lands. In paintings that feature fire, there is of course the bright mix of vibrant orange and red and yellow as the passing energy transforms the landscape, but look above the flames and you’ll also see that unique, quiescent deep orange pallor that occurs as smoke bends and refracts in the light cast upon the land. It’s a unique shift of the solar wavelength that brings forth some of the richest

tones in our pine forests, yet is also a quality that is often missed by those with little actual experience burning.

Although we often look at fire and pine forests through with the eyes of scientists, art and poetry lurk there as well. Juras—a trained landscape architect, as well as a highly proficient artist—is creating wonderful images of our most important management tool. Here’s to hoping his artwork can instill a fiery passion for fire itself among a larger audience.



Previous page, top left: Wade Tract Burn #1; **top right:** Wade Tract Burn #2. **Above, top:** Philip Juras painting during a prescribed burn. **Bottom left:** Wade Tract Burn #3. **Bottom right:** Wade Tract Burn #4. Photos courtesy of Philip Juras. Jim Cox is the director of the Stoddard Bird Lab at Tall Timbers.

Discovering what's so special about the Red Hills

Greater Red Hills Awareness Initiative

BY GEORGIA ACKERMAN

Welcome to the Red Hills Region! Let me start by simply asking, what do *you* enjoy most about this splendid American landscape? Is your list long or short? Perhaps you have one favorite activity, place, or pastime. It's quite possible that you don't have one exclusive response because the choices of ecologic, historical and cultural wonders of this region seem infinite.

The *Greater Red Hills Awareness Initiative*, an exciting new project launched by Tall Timbers in November 2013, has allowed me to spend considerable time over the past few months collecting community members' views of this magnificent stretch of soil connecting North Florida and Southwest Georgia. I routinely ask what folks enjoy most about our region. In talking with residents, community leaders, and elected officials, I am intrigued by accounts from both long time resident and area newcomers, who share their awe of this distinctive landscape and their desire to protect it. The Red Hills Region is undeniably special!

Tall Timbers Research Station & Land Conservancy and other organizations have long recognized the importance of stewardship and conservation of our ecological resources that greatly contribute to the uniqueness of the region. The collaborative partners of the recently launched Greater Red Hills Awareness Initiative seek to broaden the public's recognition of the breadth of natural, historical and cultural amenities of the region. This increased public awareness begins at home with us--the residents of the Red Hills Region. Project partners want to ensure that Red Hills' dwellers are familiar with their exceptional home. Because of this, numerous community conversations eliciting input from residents about the Region have taken place since the project's inception. The replies to my next question "what's so special about the Red Hills?" are typically lengthy. Let's consider the ecological, recreational, historical and cultural wonders in our backyard.

Nicknamed "the land between two rivers," the Red Hills Region is nestled between the scenic Ochlockonee and Aucilla Rivers, extending south of Tallahassee and north into Thomasville, Georgia. The region serves as a lifeline between coastal and northern wildlands, where

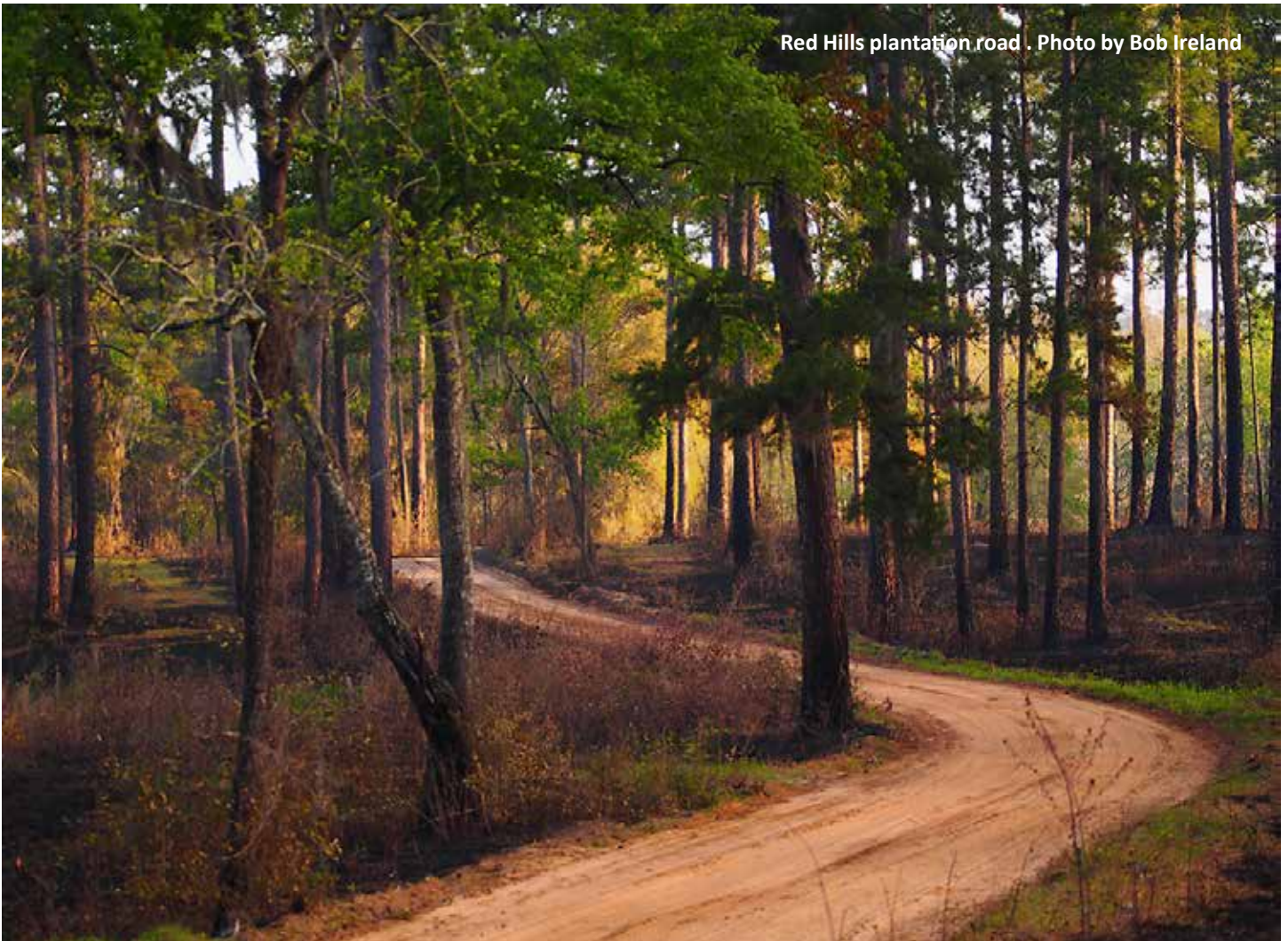
natural wonders abound. The impressive terrain boasts rolling red hills, oak canopied roads, lakes and rivers teeming with wildlife, and forests of impressive longleaf pine. The expanse is rich with wilderness offering outdoor enthusiasts limitless choices. Opportunities abound for fishing, hunting, birding, cycling and paddling throughout area public lands. Greater Red Hills wilderness playgrounds include:

- Ochlockonee, Aucilla, Wacissa and St. Marks Rivers
- Countless lakes including Iamonia, Miccosukee and Jackson
- Apalachicola National Forest, Talquin State Forest, Aucilla Wildlife Management Area
- State, city and county parks, such as Maclay Gardens

We are free to explore, hunt and fish in pristine public lands, float spring-fed rivers and lakes, and ramble along protected canopy roads in a region designated one of "America's Last Great Places" by The Nature Conservancy.



Kayakers on the Slave Canal. Photo by Bryan Desloge



At the heart of the Red Hills lies the largest concentration of undeveloped plantation lands in the country. This includes vast acres of native longleaf pine forests. Once abundant, longleaf forests cover only three percent of their original expanse from Virginia to Florida to Texas. The Red Hills Region is home to more than 60 endangered and threatened species including the Gopher Tortoise, Red-cockaded Woodpecker, Wood Stork, Sherman's Fox Squirrel and Eastern Indigo Snake.

Our landscape is also abundant in historical, scenic and cultural resources. The Red Hills' fertile soils, rolling hills and winding rivers systems have attracted diverse cultures for centuries. Thomasville, Tallahassee and adjacent towns boast numerous canopy roads, archeological and historical sites open to the public. Many of the sites are listed on the National Register of Historic Places. A myriad of museums along with vibrant main street communities that celebrate the rich heritage and cultural landscape of the Red Hills Region serve both residents and visitors of the Region.

Conserving what makes our landscape distinctive is critical to the survival of a land and its people. Healthy forests equate to clean water supplies. The Red Hills' forests provide significant ecological and economic benefit to the greater region. Area forests protect water quality, replenish our drinking water supplies, and protect air quality. Traditional quail hunting properties in the Red

Hills provided nearly \$150 million

in local economic impact and more than 1,400 local jobs in 2012. The public benefits greatly from landowners committed to the practices of selective timber harvesting and frequent prescribed fire.*

*[Click here for a PDF of this report.](#)

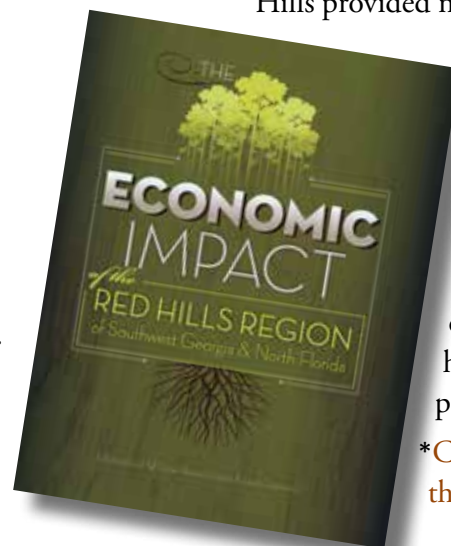


Photo credits: Gopher Tortoise, Pierson Hill; Brown-headed Nuthatch, Tara Tanaka; longleaf forest, Rose Rodriguez; Bachman's Sparrow, Ross McGregor; Red-cockaded Woodpecker and Indigo Snake, Tall Timbers Archives.

There is much to be in awe of throughout the region and Red Hills' inhabitants have an impressive habitat to continually rediscover. The *Greater Red Hills Awareness Initiative*, a collaborative regional project, seeks to broaden public awareness about the Red Hills and its natural, historical, and cultural amenities. In the coming months, more opportunities to experience the Red Hills Region will be offered by project partners. Watch for upcoming eco-awareness hikes, lunch lecture series, and Open House at Tall Timbers, along with other Red Hills' happenings offered by project partners throughout the Region.

We will continue to ask residents, "What's so special about the Red Hills?" Do you have a favorite recreational, cultural or historical pursuit in the Red Hills Region? If so, please drop us a note and tell us about it. By increasing awareness and appreciation of the remarkable resources of our region, educating the public about the Region's ecological and economical importance, and building support for conserving the Region, we can simultaneously **celebrate** and **conserve** what makes the Red Hills truly matchless. The Red Hills Region is undeniably special!



Red-cockaded Woodpecker



Bachman's Sparrow



Brown-headed Nuthatch



Gopher Tortoise



Indigo Snake

Georgia Ackerman is Project Manger of the Greater Red Hills Awareness Initiative at Tall Timbers Research Station & Land Conservancy. She can be reached at gackerman@ttrs.org or 850-893-4153 ext 345. For more information and to subscribe to Tall Timbers *eNews*, please visit www.talltimbers.org.

Tall Timbers Land Conservancy



LAND CONSERVATION

Established in 1990, the nationally accredited Tall Timbers Land Conservancy has become one of the largest regional land trusts in the country, conserving over 130,000 acres of land from Tallahassee, Florida to Albany, Georgia. Our conservation easements protect working lands that provide critical upland wildlife habitat and intact wetland ecosystems, vital to the health and well-being of the region. The public benefits from these easements as they serve to protect the region's water quality, clean air, wildlife and distinctive canopy roads.



REGIONAL PLANNING, ADVOCACY, & EDUCATIONAL OUTREACH

The Land Conservancy also works closely with communities on “smart growth” planning and advocacy, and is engaged in coordinating a Greater Red Hills Awareness Initiative to enhance local awareness and understanding of the importance of the Red Hills region and increase support for its long-term conservation.



To learn more about the Tall Timbers Land Conservancy or to make a contribution to its programs: the Land Conservancy, Advocacy and Planning or the Greater Red Hills Awareness Initiative, please visit, talltimbers.org/landconservancy.html



ALONG THE RED HILLS CANOPY ROADS

BY KEVIN MCGORTY

“In the South, it’s all about the pig.”

—Herschel Walker, Heisman Trophy Winner



Since 1927, travelers have ventured along red clay canopy roads to Bradley's Country Store to purchase some of the South's finest fresh and smoked sausage. Just a leisurely 12-mile drive from Tallahassee along the picturesque Centerville Road, Bradley's offers a "link with the past." A step into the tin-roofed store is a step back in time. Hanging from the horizontal board interior walls are washboards, pitch forks and harnesses for mule-drawn plows harken back to an earlier era when Bradley's served the farmers of the area.

To the rear of the store, the butcher counter and refrigerated case display prized fresh and smoked sausage. If it's lunch time, the smell of sizzling sausage permeates the air of the one room store. Eager customers grab a moon pie and cola to complement their six- or 12-inch sausage dog swathed with mustard.



From backyard barbeques to the finest restaurants from Tallahassee to Charleston, South Carolina, Bradley's sausage is served today in a variety of ways. Unlike national brands that use all parts of the hog but the squeal, Bradley's prides itself on using only the lean portions of the animal, adding spices made from a secret family recipe with no preservatives or additives allowed.

The distinctive taste has been enjoyed by U.S. Presidents, Hollywood celebrities, country and city-folk alike.

Four generations of the Bradley family have maintained the store and sausage processing. The family farm grew from 60 acres in 1888 to 150 acres in the early twentieth century. In 1893, John and Mary Bradley built a board-and-batten farmhouse, expanding it in 1903. At first a dirt farmer, John Bradley went on to clerk in a store in the crossroad village of Centerville near Pisgah Church. Reflecting the self sufficiency of the time, the Bradley's produced what they could on their land, and bartered with their neighbors and Tallahassee merchants for other goods.

In 1910, Mary Bradley began making extra sausage, first selling them from her kitchen window. As business grew, the family, which included five boys, began trading out of the "shed room" on the back of the house. They also traded boiled cane syrup they bottled on the farm. When the nearby Felkel store burned in the early 1920s the Bradley's moved a small commissary next to their farm house and began selling goods and hardware to yeoman and tenant farmers.

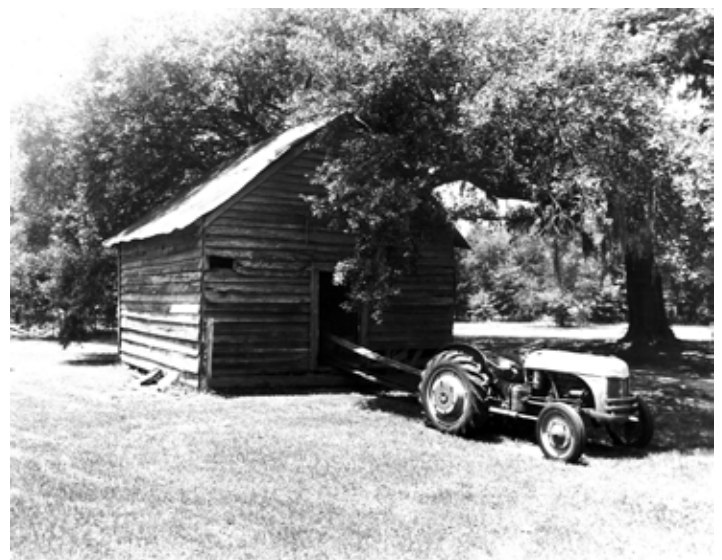
In 1926, the family erected a long shed boasting a roof made from Florida license plates where, during the cooler months of the year, the butchering and sausage making occurred. With no electrical power for refrigeration, the meat processing started well before dawn and quickly moved to a smokehouse. Hot coals from the



house furnace were placed in large galvanized wash tubs and on the earthen floor. Adding green hickory wood gave the meat its rich smoked flavor. Usually it took two days to fully cure the string of links.

The family also added a grist mill, driven by a single cylinder gasoline engine with a fly wheel, to grind corn into meal or grits. On Saturdays during the harvest season, local farmers would haul their wagon loads of corn to the site. Today a tractor engine powers the mill, producing Bradley's Country Milled Grits which are almost as famous as the family's sausage.

With the nearest competition five miles east in the village of Miccosukee, in 1927 the Bradley's built the current country store. Originally, it carried basics like coffee beans, sugar, rice, dried lima beans and a selection



Above left: Interior of the Gistmill Shed showing hook-up with the tractor to power the mill. **Right:** 1922 Gristmill shed was restored in 2012. Dr. John Lewis led effort and secured the help of friends of Bradley's Country Store including local plantation owners. **Top right:** A 1936 photo of Laurie and Edith Bradley's family at Bradley's Country Store. Note the old commissary building next to the old store. Photos courtesy of the Bradley family.



of canned goods. There were dry good items like cloth for making clothes and mosquito netting, and even \$25 wooden coffins. Snuff and tobacco sold alongside castor oil, liniment, and other medications of that time. When their father went back to farming full time, sons Laurie and Thomas Bradley became the store's proprietors.

Laurie continued to haul orders to Tallahassee, trading in the family's horse and buggy for a Model A Ford and later a V-8 pickup truck. By the 1930s, a handful of capital city grocery stores were selling Bradley's sausage. Laurie also delivered to state offices and private homes. The back of the pick-up truck featured a wooden ice box complete with a 100-pound block of ice to keep the meat and dairy products cold. On the return trip, Laurie purchased bread, ice, soda water, salt fish and dry goods for the store. Children would wait for him along the country road, knowing he put the soda pop on the ice to sell on the way back.

During the Great Depression, life was difficult in rural Leon County, as elsewhere in the country. The price of cotton, the main cash crop, plummeted as factories closed in New England. Local farmers suffered especially

black sharecroppers and tenant families who faced the double burden of poverty and Jim Crow segregation laws. Many families fled north. During this difficult period, Laurie Bradley went out on a limb to help his neighbors by extending store credit, often at the consternation of his father.

Another land transformation occurred during the first half of the twentieth century. With the success of Thomasville, Georgia as a winter retreat for wealthy northerners, sportsmen began leasing and buying old antebellum plantations in the area for quail hunting preserves. By mid-century, some twenty hunting plantations encompassed nearly 107, 000-acres in northern Leon County. As the post-war exodus of small farms continued, Bradleys' reached out to growing urban Tallahassee market, fueled by the rise of state government and employment opportunities at Florida State University and Florida Agricultural & Mechanical University.

In 1950, Centerville Road (now County Rd.151) was paved to Moccasin Gap, and then realigned eastward to Miccosukee. The Bradley family worked a deal with state road engineers, giving right-of-way to allow a broad

curve in the road, in return for the state paying to reorient the store 90 degrees, facing the newly aligned road and making it more accessible to city dwellers.

With the new road within spitting distance from the store's front porch, Laurie Bradley ended his truck farm deliveries to the city. He enlisted the assistance of his son, Frank, to begin taking over the business. A U. S. Navy serviceman, Frank worked for the Railway Express Company after the war, but, in 1957, returned to the family business full time. He would guide and expand the business over the next four decades.

Under pressure from the State Department of Agriculture, Frank modernized the sausage business with a state-of-the-art processing plant in 1970. Using plans from a Midwest operation, the new concrete block plant received the state's seal of approval with its stainless steel grinding and mixing technology. Today, the facility processes 20 hogs per week, with as many as 60 hogs during the Thanksgiving-Christmas season when demand peaks.

To celebrate their new facility, the family began a community tradition, Bradley's Fun Days, the weekend before Thanksgiving. Today the festival features kid's rides, country music, folk crafts, and good eatin'. The annual fall event attracts over 20,000 attendees.

Frank's daughter, Janet Fryzel, runs Bradley's Country Store today. With two degrees from Agnes Scott College in chemistry and economics, she admits that it is her business minor that has come in most handy. According to Frank, who does his best to provide guidance at a distance, "Just about every one of us has loved the store, and at the right time it just seemed that someone has stepped forward to assure the future."



The community loves Bradley's in return, supporting this landmark store, which is listed on the National Register of Historic Places. Today, Bradley's famous sausage and grits are iconic trademarks of the Red Hills.

While the small farms are gone, the beautiful rural countryside around Bradley's remains. Some 15,000 acres of quail hunting plantation land has been permanently protected with landowners donating conservation easements to Tall Timbers. In addition Tall Timbers has worked with Leon County to protect and designate miles of historic canopy roads which crisscross the area, including Old Centerville, Sunny Hill, Pisgah Church, and Miccosukee Roads. Scenic America has honored these majestic live oak tree-lined roads as some of the most scenic in the nation.

For a self-guided driving tour brochure of these canopy roads: <http://www.taltrust.org/local-historic-properties>. For an excellent history of Bradley's County Store and mouthwatering sausage recipes, read John Appleyard's book, *A Touch of Rural America: Bradley's Country Store*, which is available at the store and local book shops.

Kevin McGorty is the director of Tall Timbers Land Conservancy



At left, Bradley's Family Fun Day. The event is held each fall, the Saturday before Thanksgiving. It attracts over 20,000 people.

Red-cockaded Woodpeckers – The Road to Recovery

BY JIM COX

The phrase wildlife management can sound like an oxymoron at first blush. Can you really manage something that is wild?

The management of endangered wildlife can wrestle with this paradox in a particularly complicated dance. Managers obviously want to increase or maintain numbers of rare species that once thrived in pristine environments, but the challenge comes in sustaining these species in the altered environments that have developed in the time since Columbus arrived.

It's a situation that can lead to missteps, unintended consequences, and unimpressive results. However, increasingly, it seems that we know what we are doing for some rare species.

Take the case of the Red-cockaded Woodpecker, a flagship species for the mature pinelands that make the Red Hills so famous. The Red Hills region supports the largest population of this threatened woodpecker found on private lands, and some properties in the region provide unparalleled opportunities to study this rare bird in a setting where frequent fire and old-growth timber management have created conditions about as pristine as anywhere on earth.

In the late 1980s, the global woodpecker population seemed at best to be stuck at approximately 4700 territories (about 10,000 individuals). At worst, populations were declining and biologists everywhere were deeply worried about future prospects.

“Most people thought they were headed for extinction,” says renowned woodpecker expert Dr. Jeff Walters in a recent newsletter from his home institution, Virginia Tech University. “But now their numbers are increasing, and people say they think they can be recovered.”

The global population of woodpeckers has increased to over 6100 territories (about 14,000 individuals) — a resounding 120% improvement — since the early 1990s, and woodpeckers appear to be increasing throughout much of their current range.

Why the turnaround amid the doom and gloom of the late 1980s? The answer lies in development of an insightful management tool that addressed a key ecological need.

The cavities used by Red-cockaded Woodpeckers are as important as air, food, and water. They're even more important than securing a mate, at least for some young adults. Red-cockaded Woodpeckers are the only woodpecker in North America to excavate their living quarters exclusively in mature, living pines. They select trees that typically are at least 80-100 years old; the structures con-



Red-cockaded Woodpeckers, reproduced from a watercolor by George M. Sutton for *Georgia Birds* by Thomas D. Burleigh.



At left, biologist Greg Hagan drills an artificial cavity. Photo by Jim Cox. Center, Close-up of an artificial cavity insert. Photo by Robert L. Crawford. At right, pine tree with artificial cavity insert. Photo from Tall Timbers Photo archives.

vey critical shelter from nocturnal predators and inclement weather.

But the process of chiseling away at a mature tree in an effort to create a cavity can take months or years. Given the lengthy process, woodpeckers, particularly the young ones, are dependent on the cavities provided by their forbearers rather than the cavities that they might try to excavate anew. Cavities persist for many years, after all, and a woodpecker family that has occupied a territory for decades can accumulate dozen of cavities through the individual actions of its family members.

Duplicating a Critical Resource

Cavities were known to be a critical ecological resource that was tightly linked with population stability, but it took some innovative thinking to figure out how to supply this resource without waiting the many months it takes a woodpecker working solo to create new cavities or the time needed to grow a 120+ year old tree.

Starting in the late 1980s, Dr. Walters and his team set out to design artificial cavities that mimicked natural woodpecker cavities. As he describes, graduate student Carole K. Copeyon climbed special ladders wielding a small, gas-powered drill. She reamed out intersecting horizontal and vertical tunnels in the tree that produced an “artificial” cavity with an entrance tunnel about 1¼ inches in diameter and a cavity chamber that was approximately 6 inches deep.

It took about 45 minutes for Copeyon to excavate such a structure, not the months or years it might take a woodpecker, and the woodpeckers loved it.

Walter’s team placed 20 clusters of artificial cavities in mature pine forests in the North Carolina Sandhills region. The trees selected were immersed in areas that had suitable foraging habitat for woodpeckers but otherwise were not inhabited. Within a year, Red-cockaded Woodpeckers were living in 19 of the 20 clusters.

This key management tool helped to turn the tables for a threatened species that seemed to be headed for a very uncertain future in the 1980s. In addition to drilled artificial cavities, biologists now insert box cavities directly into trees as another method of enhancing cavity resources. Development and application of the management tool also represented one of the most rewarding points in Dr. Walter’s career. As he notes, “In 1989, anyone you asked would have said these birds were doomed, and now their populations are increasing. To me, the most rewarding thing is to apply basic science to conservation and then follow through with the implications of the science to improve the conservation. It’s very exciting and gratifying.”

A Second Innovative Tool

Artificial cavities were first used in the Red Hills region when U.S. 319 was scheduled to be widened in the late 1990s. The new right-of-way road passed through two

To view the installation of an artificial cavity, visit <http://www.talltimbers.org/ve-artificial-cavities.html>.



Warren Bicknell, above, signed a Safe Harbor agreement in 2003. Photo by Rose Rodriguez

woodpecker territories and threatened the stability of these sites. To help offset the losses, artificial cavities were constructed on six properties. Today, three of these territories are occupied—a net gain of one territory—while the other three have shown more occupancy followed by periods of inactivity.

More important, if you were to look at the number of artificial cavities that have been excavated since this early effort, you might think there'd been a proliferation of new road work in the region. Currently, over 350 artificial cavities are distributed throughout the Red Hills, but the rapid increase in cavity construction stems from a second innovative tool—the *Safe Harbor Program*—that caters to the conservation of rare species on private lands.

The *Safe Harbor Program* removes the fears that landowners might have when they hear the phrase “endangered species.” The program is totally voluntary and simply encourages property owners to conduct management activities that benefit rare species such as woodpeckers. In exchange for this, the property owner is not liable should woodpecker numbers increase on the property. In other words, a property owner that has entered the *Safe Harbor Program* may increase woodpecker numbers by scores and scores, but, should management objectives for the property change, the owner is not liable for all the new endangered species they now have living on their property.

“I was very reluctant to sign up for Safe Harbor at first”, says Warren Bicknell, owner of Warbick Farms near Thomasville. “It took a long time for me to become comfortable with the idea of signing an agreement with

a governmental agency, but I am now an enthusiastic supporter because the program works for the landowner and the woodpecker.”

Mr. Bicknell signed his *Safe Harbor Agreement* in 2003. All he had to do to satisfy the agreement was to burn his property regularly, but soon afterwards he also agreed to allow biologists to excavate artificial woodpecker cavities on Warbick Farms. Mr. Bicknell was under no obligation to allow such activities, but he also would not be penalized should woodpeckers take to the structures and increase in number.

And of course they did! Woodpeckers quickly took up residence in the areas where artificial cavities were provided. They will be there as long as Mr. Bicknell wishes, and during that time they will provide greater stability for the Red Hills population through an increase in number of woodpecker territories as well as the steady pool of young birds that these territories produce each year. Some of these young birds naturally disperse and help to maintain greater continuity among the other territories in the region.

“Forest management for woodpeckers fits well with our overall management,” Mr. Bicknell says, “but another aspect of the program I like is the important link between this endangered species and the use of prescribed fire.”

“Concerns about the effects that prescribed burns have on air quality seem to be increasing each year “and eventually might threaten our ability to burn,” he adds. “However, here in the Red Hills we can point to the importance of burning for an endangered woodpecker, as well as quail, in hopes that the use of prescribed is never jeopardized.”

The Canopy Road to Recovery

Thanks to the *Safe Harbor Program* and artificial cavities, increases in woodpecker numbers similar to those observed on Warbick Farms also have taken place on Tall Timbers Research Station, Pebble Hill Plantation, and four additional properties. Recent surveys suggest the increases are not quite offsetting losses that are taking place elsewhere. As a result whether we can maintain this rare bird with these innovative tools ultimately depends on larger issues that have far-reaching implications.

If a flagship species like the Red-cockaded Woodpecker continues to decline in the Red Hills, this import-

ant landscape—touted as one of the *Last Great Places* in North America—will become more and more like so many other private lands in the southeast. That is, the Red Hills is certain to remain rural and valuable at some level, but it become much less *exceptional*.

For decades, the management of pine forests throughout the region has served as an unparalleled model for land stewardship. The model has changed over the decades, but let's hope the region continues to make use of novel management tools in perpetuating the region's rare species. It's estimated that more than 35% of the endangered species found in North America are completely dependent on private lands for their continued existence. The tools that we use to keep the Red-cockaded Woodpecker thriving in the Red Hills could have application in many other regions.

"We understand the biology well enough now that we can recover the Red-cockaded Woodpecker to whatever level we want," Dr. Walters notes. "So now the question is: does American society want the bird or not? Is it willing to protect enough habitats?"

The Red-cockaded Woodpecker will be removed from the federal list of imperiled species when five key criteria are met. The criteria require that approximately 25 populations support more than 7600 active territories.

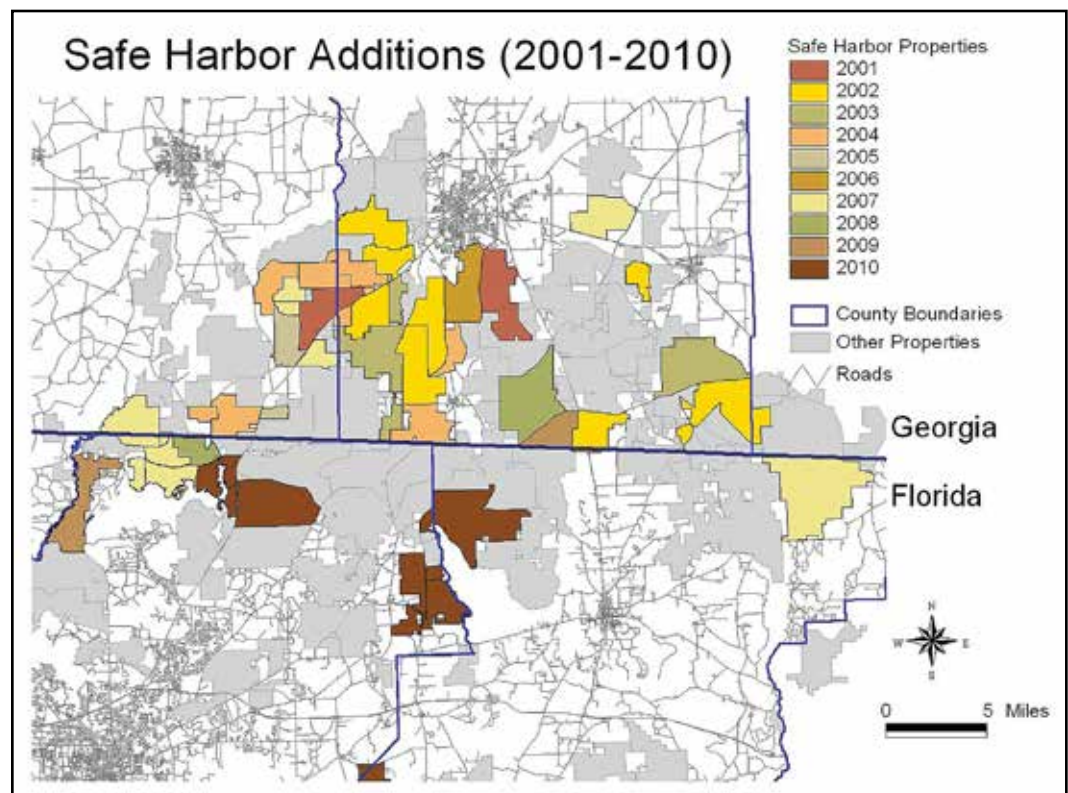
The criteria also require that the distribution of territories among these populations vary from a minimum of 1000 territories, for at least one primary population, to smaller regional populations that help to ensure the bird occurs across a broad geographic range.

While the recovery goal of 7600 active territories (about 19,000 total birds) appears to be close to the estimated 6100 territories that exist currently, recovery criteria also require that populations on public lands not be dependent on artificial cavities. Instead, the populations on public lands should thrive under habitat management plans that emphasize appropriate forest structure and age and frequent prescribed burning.

Here amid private landholdings of the Red Hills, artificial cavities will play a much more prominent role in maintaining this important component of our mature, open pinewoods. While there are many pockets where pristine conditions persist, these areas will not support the large population needed to sustain this species far into the future. Fortunately, the *Safe Harbor Program* allows all landowners in the region to pitch in without being penalized, so recovery along our canopy roads will take a different path—and perhaps a more important path—as we continue to find ways effectively to maintain rare species on private lands.



Above, author Jim Cox with a banded Red-cockaded Woodpecker. Photo by Susan Jones. At right, Safe Harbor properties in the Red Hills by year enrolled. Map by Jim Cox.



Jim Cox is the director of the Stoddard Bird Lab at Tall Timbers.

Stoddard Bird Lab

The Stoddard Bird Lab conducts problem-solving research designed to reverse the population declines observed for many birds associated with fire-maintained ecosystems. Over the decades, the lab also has provided important information on the bird mortality associated with communication towers and the unique characteristics of rare old-growth pine forests, and special monitoring programs developed by the lab are used to track rare birds on scores of public lands.

The lab also makes use of innovative tools that have been developed to help conserve habitat on private lands. This effort focuses primarily on the large population of endangered Red-cockaded Woodpeckers found in the Red Hills region and extends to over 130,000 acres in Georgia and Florida. The lab also has received numerous awards for other scientific contributions, conservation initiatives, and effective outreach.

Donations are essential for developing data-driven solutions to the problems confronting many pineland birds. To learn more about the Stoddard Bird Lab and to contribute to the program, visit the lab's [web pages](#).



Photos courtesy of Tara Tanaka.



The Last Word

The founders of Tall Timbers envisioned a relatively small organization having a disproportionately large impact on conservation – a legacy we are proud to continue. They knew the importance of fire for maintaining ecosystems and they were a catalyst for a whole new focus of science – fire ecology. Thanks to their vision and efforts, that field has blossomed from a handful of ardent fire advocates in the 1960s to an army of fire practitioners, managers, and scientists today. In addition to fire, Tall Timbers is recognized as a leader in wildlife conservation and management a result of 50 years of research and learning from the best quail managers in the world. Over the past 10 years, we have not just researched wildlife but helped expand habitat for quail and other species on well over a hundred thousand acres.

Our innovative research and outreach programs are paired with our accredited Land Conservancy, now protecting over 127,000 acres of frequently burned habitats in the greater Red Hills region, with an ultimate goal of 200,000 acres permanently protected. Our combination of research station and land trust is highly successful in protecting working landscapes! Recently, we have strengthened our advocacy program to build public support for protection of the region through the collaborative Awareness Campaign about the Greater Red Hills Region.

Our dedicated staff strives to conduct the best conservation of the region and award-winning research to understand how to manage and protect it. We are excited to share these efforts in a more comprehensive way with our new Tall Timbers eJournal. It provides us the opportunity to share more than research and management information. A key reason for our eJournal is to examine some of the things that make the Greater Red Hills Region a cool place to live and encourage more people to appreciate it – and help protect it. We greatly appreciate your support. -BILL PALMER

MEMBERSHIP

Annual membership giving helps support the day-to-day operations of Tall Timbers. As a charitable non-profit, Tall Timbers relies on the generous financial support of our members to help sustain our research, conservation and education programs. As Tall Timbers continues to grow in size and scope, so must our membership base; we need new members to support our mission. Please take a moment to tour our website, www.talltimbers.org, learn about our programs and join others like you as a member of Tall Timbers. You can [join](#), [renew](#) or [make a gift](#) of membership online using our secure website.

MEMBERSHIP LEVELS

- *Plantation Society* – \$100,000
- *Longleaf Society* – \$50,000
- *Quail Society* – \$25,000
- *Stoddard Society* – \$10,000
- *Benefactor* – \$5,000
- *Patron* – \$2,500
- *Sponsor* – \$1,000
- *Sustaining* – \$500
- *Supporting* – \$250
- *Contributing* – \$125
- *Friend* – \$65
- *Associate* – \$35
- *Youth* – \$15 (18 or younger)

PROGRAM SPECIFIC-GIVING

Game Bird Research

- *Tall Timbers Quail Research* (Pamela H. Firman Quail Management Research Fund) - Donations support our long-term research, which has studied over 15,000 radio-tagged quail and helped increase quail numbers on hundreds of thousands of acres.
- *Albany Quail Project* - Donations made to the project will be dedicated specifically to long-term research in the Albany area on the best management for quail habitat in this region of southwest Georgia.
- *South Carolina Quail Project* - Donations support our research and habitat restoration work in the low country region of South Carolina, helping landowners and managers re-establish sustainable and huntable populations of wild bobwhites in the region.

Dixie Plantation - This 9,100-acre property provides Tall Timbers with a unique opportunity for research on a working hunting plantation. Donations will support management of this historic property.

Fire Ecology Research Program - The goal of the Fire Ecology Program is to provide the public with applicable, science-based information on prescribed fire and vegetation dynamics in the southern pine ecosystem. Donations will support internships, supplies and capital needs.

Stoddard Bird Lab - Donations will support finding data-driven solutions for the problems facing some of our most threatened songbirds and woodpeckers. Research focuses on the bird mortality associated with communication towers, the unique characteristics of rare old-growth pine forests, the conservation of endangered species on private lands, and the overarching benefits of prescribed fire for declining bird populations.

Land Conservancy Programs

- *Tall Timbers Land Conservancy* - The Land Conservancy is considered one of the premier land trusts in the nation. We conserve working forests, farms, and recreational hunting lands in the Red Hills region of southwest Georgia and north Florida, and other areas that further Tall Timbers' broader mission, by working with land owners to donate conservation easements. Contributions will support these efforts.
- *Advocacy and Planning* - Donations will support land use planning, community planning and issue advocacy efforts.
- *Greater Red Hills Awareness Initiative* - Donations will support work to broaden public awareness about the Red Hills and its natural, historical, recreational, and cultural amenities.