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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In this second issue of the Tall Timbers eJournal read about "star" trees, the Red Hills online farmers’ market, the economic impact of the Red Hills region and quail hunting lands of the greater Albany area, and more.

The Archives Corner "exhibits" one of Henry Beadel's passions, painting, as Archivist Juanita Whiddon introduces you to the new Webster Art Gallery on the second floor of the historic Beadel House.

Flora & Fauna articles are written by two associates, Gil Nelson who is a Tall Timbers Beadel Fellow and D. Bruce Means, who was a past Research Director at Tall Timbers.

In this issue we put the spotlight on a land manager. Conservation biologist Kim Sash interviewed Terry Chastain, the land manager at Melrose Plantation. Read what he has to say about his job.

At the end of publication, President/CEO of Tall Timbers, Dr. Bill Palmer, has the Last Word.

Because this is a digital publication, most articles include hyperlinks to websites that provide additional information. Click on text that is “red clay” in color, which indicates a hyperlink. You can also click on the page number in the contents pages to go directly to the article on that page.

A new feature is the addition of our social media feeds: Facebook, Twitter, Instagram and YouTube. Clicking on the icons below will take you to there.

I hope you enjoy this spring issue of the eJournal. Your comments about our inaugural issue last fall were very positive. But some of you asked how you can get a printed issue. There is a top arrow on every page that opens features that give you a print option; click on the print icon to print the entire publication or just the article(s) you want to read. You can search and share here too; there is also a ? icon to help you navigate the publication.

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
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A Brief History of Art at Tall Timbers

BY JUANITA WHIDDON

The second floor of the Beadel House is now the Webster Art Gallery, where Tall Timbers has partnered with the Tallahassee Area Watercolor Society to exhibit paintings. I have been asked why we chose to exhibit art and not restore the upstairs like it was when the Beadels occupied the house. We could have furnished three more bedrooms, but they would have been very similar to the one already interpreted on the first floor. When empty, the rooms seemed logical space for an art gallery and given the art interests of the Beadels, the decision was made to exhibit art.

Art was an important feature in the life of Henry Beadel and wives, Genevieve Dillon Beadel and Beatrice Williams Beadel. Henry, as a young boy of fourteen was given a journal by his grandmother and he began to record the events of his days and enhanced a number of entries with sketches. In his late teens and early twenties he turned to watercolor as his preferred art medium. While he tried other art forms such as oils and wood carving, his favorite was always watercolor and close behind was his photography.

Watercolor by Henry Beadel. On the painting written in pencil is the location and the time it took for him to paint the picture.
"Crosier’s Island, Charleston Lake, 2 Hrs. H. L. Beadel July 11, 1896"
Genevieve Beadel expressed her love of art in landscape design. She attended school in Lucerne, Switzerland at the turn of the last century and was in contact with many students of landscape design who came to study in that city. Beatrice Beadel was head of the Fine Arts Department at Florida State College for Women (FSCW, later Florida State University), and was interested in many different art forms. One art project she enjoyed doing with her students was using native grasses and bark to make baskets.

We display several of Henry Beadel’s watercolors downstairs in the house. In typical Henry Beadel fashion, he not only signs and dates his art, and provides the location, he takes it one step farther by letting the viewer know how long it took him to complete the work. Beadel was gracious about sharing his lovely surroundings with visiting artists. Art classes from FSCW were often visitors; and friends Theron and Maude Strong of New York often came down during hunting season, but many days while they were here, Henry put down his guns for his paint brushes as he and Maude painted while the others shot.

Tall Timbers is proud to be associated with the Tallahassee Area Watercolor Society (TAWS), one of the most active and prestigious groups in the region. This group hosts two juried shows per year: the Tri-State Show (Alabama, Georgia and Florida) in May and Brush Strokes in September.

TAWS also does out-reach for young artists, providing scholarships for workshops and classroom assistance in painting with watercolor. Now our plans are for TAWS to have three exhibits per year at Tall Timbers and also sponsor a youth exhibit in conjunction with area art instructors. Tall Timbers will provide the Walter Art Gallery as exhibit space and will get a percentage of each sale, which will go back into the maintenance of the gallery. Our current endeavor for this project is a feasibility study to make the second floor handicapped accessible; these exhibits are too beautiful for anyone to miss.

Paintings can be viewed during our monthly Beadel House tours (usually the second Sunday of each month, except July), at each exhibit’s “Meet the Artists” reception and by special appointment. Visit Tall Timbers’ website for the open house schedule. Call 850.893.4153, x236 to schedule an appointment.
Meadowbeauties: Dainties of Red Hills Pinelands

Meadowbeauties, of the genus Rhexia, comprise a group of showy wildflowers in the Melastome family (Melastomataceae). In the strictest sense the family includes as many as 4,500 species, nearly all of which are tropical in distribution. Though morphologically similar to other Melastomes, Rhexia stands out as the family’s only essentially temperate genus.

Ten species of meadowbeauty occur in Florida and Georgia, with an additional rare species ranging from Alabama and southwest Georgia to New Jersey. Virtually all are scattered across the Red Hills region. These are easy wildflowers to find and even easier to recognize, decorating sandhills, flatwoods, savannas, and bogs from spring to fall. As might be expected, most are responsive
These are easy wildflowers to find and even easier to recognize, decorating sandhills, flatwoods, savannas, and bogs from spring to fall.

**Maid Marian** (R. nashii)
The urn-shaped floral tube typical of the meadowbeauties is easily seen in this picture of Maid Marian.

**Yellow Meadowbeauty** (R. lutea)
This is our only meadowbeauty with yellow flower petals, as denoted by the Latinized epithet, lutea.

**Savanna Meadowbeauty** (R. alifanus)
Savanna meadowbeauty is one of our most common and widespread meadowbeauties. The combination of large floral tubes, hairless bluish stem and leaves, and large hooked anthers are usually enough to identify it.

**Pale Meadowbeauty** (R. mariana)
This conspicuously hairy species is one of our most common, widespread, and variable meadowbeauties, often seen along moist roadsides. It can be somewhat diminutive and not exceeding about 12 inches tall with small flowers, or up to 40 inches tall with larger flowers. As demonstrated here, petals range in color from pale lavender to rose or white.

to fire and are at their showiest and greatest abundance following spring and summer burns.

The flowers have four petals, all attached to a usually enlarged floral tube — or hypanthium — that often resembles an urn, a feature that is clearly visible in the picture of Maid Marian. The urn-shaped floral tube may be smooth — lacking hairs — as is often the case with Maid Marian, or it may contain short hairs that are sometimes tipped with a tiny dot of glandular exudate. The latter characteristic can be helpful with identification. The petals in most species are a shade of lavender, but in one are yellow, and in at least two may be white.

Gil Nelson is a writer, naturalist, educator, and researcher who works in Tallahassee, Florida and lives in southwest Georgia. He writes, speaks, edits, and consults on botany, natural history, ecology, outdoor recreation, and environmental science topics, especially as they relate to Florida and the southeastern United States. He holds a faculty position at Florida State University in the Institute for Digital Information and Scientific Communication. He specializes in digitization research and practice for the National Science Foundation’s Integrated Digitized Biocollections (iDigBio).

In September 2006 the board of the Tall Timbers Research Station & Land Conservancy named him a Beadel Fellow and enlisted his assistance with refining and re-designing the database management system for the station’s research herbarium, work he continues. Nelson holds BS, MS and PhD degrees from Florida State University and worked as a professional educator for 30 years.
How My Study of Living Rattlesnakes Began

BY D. BRUCE MEANS

I like snakes, but my early interests were amphibians. In 1969, I needed a dial caliper to measure north Florida and south Georgia salamanders for my Master’s degree research, which Tall Timbers Research Station Director, Ed Komarek, kindly provided.

One thing led to another, and I was awarded the first Gerald Beadel* Fellowship to complete my PhD at nearby Florida State University; salamanders were replaced by studying the pine barrens treefrog and the fire ecology of its seepage bog habitats.

By the spring of 1976, I had my doctorate and was a full-time biologist at Tall Timbers Research Station (TTRS). My family and I lived in the Gallien House on the north side of the station’s main campus, and I went back and forth to the Stoddard Lab each day. I was aware that the eastern diamondback rattlesnake also lived on Tall Timbers, but I almost never saw one.

And then it happened. While marking and releasing bobwhite quail on the north side of TTRS, the crew of the Southeastern Cooperative Wildlife Study, run by Dr. Forest Kellogg, shot a rattlesnake basking near the burrow of a gopher tortoise. I was aghast to learn that it was then a common practice to kill venomous snakes. Indiscriminately killing what might be a major predator in the local vertebrate food web seemed rather unbefitting for a natural history research station.

My concerns were not getting any positive response when voiced, so I dug into the scientific literature to learn what was known about this iconic animal. And that’s when, after discovering that almost nothing of substance was published, I got the bright idea to kill two birds with one stone, and launch a killer of a research program that was, indeed, right up Tall Timbers’ alley.

That alley was one of the cornerstones of Tall Timbers’ mission, “to conduct long-term ecological studies.” The first bird was that I would become the first biologist to study the world’s largest — and some say most dangerous — rattlesnake, the eastern diamondback. The second bird was — by making snakes the object of a serious study — to stop their killing.

So it was on February 12, 1976 that I began a special journal with this sentence, “Today begins the study of living rattlesnakes and their behavior in the field.” It also included all the eight large snakes found on Tall Timbers (eastern diamondback, cottonmouth, eastern kingsnake, black racer, coachwhip, red rat snake, gray rat snake, and pine snake).

My coworkers and I, especially Jimmy Atkinson, marked and released a total of 135 rattlesnakes on TTRS over an 8-year period as well as dozens of other snakes. Not all were alive at the same time. We found, marked, and regularly observed activity at 112 gopher tortoise burrows and 63 stump holes. My study was the second to use radio transmitters in snakes, which we followed daily throughout the seasons and obtained much useful information on rattlesnake thermal biology, daily and seasonal movements, breeding and combat behavior, food and feeding, and predators.

I terminated my TTRS studies in January of 1984, but continued research on the eastern diamondback over three following decades. Sometime later this year or early 2016, my life’s work with the eastern diamondback rattlesnake will appear as Diamonds in the Rough, Tall Timbers Miscellaneous Publication No. 20.

Africa’s premier animal is the lion; India has its tiger; North America can boast of the world’s largest rattlesnake.

Bruce Means is the Executive Director and President of the Coastal Plains Institute, Inc. *Gerald Beadel was the brother of Tall Timbers former owner and benefactor Henry Beadel. Gerald left a bequest for the Tall Timbers Beadel Fellowships.
CONSERVATION

Red Hills Star Trees

BY SHANE WELLENDORF

It is amazing how a distinctive tree can capture a person’s attention and curiosity, especially the big ones. It doesn’t matter if it’s fat and wide like Thomasville’s most famous live oak (see Google map of the Big Oak) or a grove of skyscraper tall longleaf pines, like those found along Greenwood’s section of Cairo Road (see Google map of Greenwood’s longleaf). There’s no doubt impressive trees can generate plenty of inquiry. Just like people, I think trees can have their own stories to tell. Sometimes the history around a tree is known and other times we are left to speculate on the “hows” and “whys” of a tree’s existence.

The Red Hills community is lucky to be surrounded by some amazing trees. I will periodically highlight some of those trees and tell their story as best as possible in future issues of the Tall Timbers eJournal.

Big Spruce

I thought I might start by revealing one of my favorite trees on Tall Timbers Research Station. Ok, I know what you’re thinking, “He’s a bona fide tree hugger!” For the record, I have leaned against many impressive trees in the pursuit of springtime gobblers, but I never have hugged a tree with any sort of sentimental inclinations. However, I do have a favorite tree on Tall Timbers, an extremely large spruce pine (*Pinus glabra*), located well off the beaten path, in the middle of Woodyard Hammock (see Photo 1).

Woodyard Hammock is the large creek corridor and floodplain located on the western side of the property. Along the primary creek, there is a string of very large trees. I do not know the complete history of Woodyard Hammock, but from the looks of some of the other big trees, including laurel oaks (*Quercus hemisphaerica*), American beeches (*Fagus grandifolia*) and southern magnolias (*Magnolia grandiflora*), the area has had little to no logging and minimal disturbance since the Beadels’ acquisition in the late 1890s, maybe even longer. The trees in this spot are very big and have dominated the canopy for a long time. I think this little spot where the big trees

Photo 1. While I’ll never be a tree hugger, I have no problem recruiting my family to give a squeeze to my favorite spruce pine in the middle of Woodyard Hammock, Tall Timbers Research Station.
live has a bit of magnetism to it that draws all sorts of animals to walk amongst the open understory with ease.

It is the size of the large spruce pine’s trunk that first catches your eyes when you are meandering through the hammock. Its diameter at breast height (DBH or diameter) is 39.5 inches and its circumference is over 10 feet. Now that is a big waist band! As you approach the tree you notice that the broad diameter continues up the tree, which is over 90 feet tall. The spread of the crown isn’t all that impressive, but considering its equally tall neighbors, there isn’t a whole lot of room for expansion.

In general, spruce pines don’t have a very good reputation. The wood of this species is brittle due to the relatively short wood fibers, which means reduced strength. Commercially, it has no real value as saw timber, but the fibers can be used for paper pulp when intermixed with other pine species. The species also does not tolerate fire well due to its thin bark. The spruce pine’s greatest value is its ability to grow in rather shady conditions and survive in moist floodplains much better than other pines. It can provide some diversity in places typically dominated by hardwoods and provides a little green to the hammock in the winter when most of the other trees have shed their leaves.

This particular spruce pine is my favorite because it is one of the few trees in the hammock where three turkey hunters can sit shoulder to shoulder and all be facing the same way. Why three, when most turkey hunts only involve one or two turkey hunters? On Tall Timbers we occasionally conduct youth hunts and its good when the young hunter, the parent and I can all see the same things and be in constant communication. When the moment of truth is near with a big gobbler approaching, young hunters can sometimes be overtaken with excitement; it’s good to be able to provide a little coaching all the way until the end.

With the aid of this spruce pine and its appealing location, I have been able to see a young hunter kill his first turkey, a young hunter get restless when two coyotes almost touched the group before detecting our scent, and I’ve seen my turkey decoy flattened by a bobcat in pursuit of breakfast. I’ll never forget these experiences and they are all tied back to this big ol’ spruce.

A Longleaf Champion

The Red Hills is blessed with some really enormous longleaf pine (*Pinus palustris*). The longleaf is fortunate, at least in the Red Hills, that it’s compatible with quail management and frequent fires. In fact, the longleaf pine Wikipedia page acknowledges the Red Hills Region as a place with some of the best remaining old longleaf stands. It also doesn’t hurt that a mature longleaf has a stately appearance and wispy long needles that make for a fine looking tree.

The stately characteristics of the longleaf with its tremendous wood strength, straight form, and useful resins, historically meant it was destined to be a highly valued commodity. Throughout much of the Gulf Coast almost all of the big longleaf were harvested almost a century ago. However, in the Red Hills, much of the “pine barrens” were bought up and utilized for quail hunting and recreation before the more intensive logging practices had entered into the region.
In Jim Cox’s essay, “Big Chance. Fat Chance. Slim Chance. How Caprice Brought Us the Red Hills,” he describes how it took some visionary folks and a little luck to have so much of the Red Hills Region remain with relatively intact stands of old longleaf pine and the whole natural community associated with the tree. (To read Jim’s essay, click on the essay title above.)

Researchers at Tall Timbers have estimated that over 24,000 acres of high quality longleaf and native plants remain in this region. With that many acres of exemplary habitat, there are bound to be some outstanding examples of longleaf pine.

On Dogwood Plantation, a privately-owned property along the Georgia-Florida border, there are some impressive longleaf, but one particular tree takes center stage. Dogwood Plantation is owned by the Watkins family, who purchased the property in late 1990s. Prior to their ownership, the property was part of Greenwood Plantation and was referred to as the Mitchell-Swift place. Just like the Whitneys before them, the Watkins bought the property as a quail hunting plantation. However, over the years they have developed a broad spectrum of interests and a real connection with the land. This includes a long-term management approach to timber, which is a good strategy to have when managing for old longleaf.

On a high loamy hilltop overlooking the Wards Creek floodplain is one of Dogwood’s stands of big longleaf pines. There are about 6 or 8 really large longleaf that easily have a diameter greater than 30 inches. These trees really catch your attention once you tune into their size, but there is one in particular along the grassy road that dominates the hill with its girth and height (see Photo 2). This massive longleaf has a diameter of 43 inches and circumference over 11 feet (135 inches)! Equally impressive is its estimated height of over 107 feet tall and its crown spread (width of the over story canopy) of 54 feet. In its own right this longleaf is a champion of this hill and presumably of Dogwood Plantation, but it could be a state champion. Most states, including Georgia (GA Champion Trees) and Florida (FL Champion Trees) keep track of champion trees for their state. For Georgia, the registered champion longleaf is near Sparta, Georgia, and has an overall score of 217. All champion trees in Georgia and throughout the country are scored using the same formula and measurements: circumference (in.) + height (ft.) + (crown width (ft.))/4 = Tree Score. If my measurements are correct, the Dogwood longleaf would have a score of: 135+107+14 = 256. This would be the largest documented living longleaf pine in Georgia, which is an amazing thought considering that Georgia’s coastal plain is the heart of the longleaf’s historical range. The national champion tree registry is maintained by American Forests, the oldest non-profit conservation organization in the United States. The national champion longleaf is in North Carolina with a score of 260. Regardless of any official lists, there is no doubt the Dogwood longleaf is a champion to the Watkins Family, and a tree that has been growing on this earth for a long time.

Like people, it can sometimes be difficult to age a tree by just looking at and studying its outward appearance. Our guesses at the longleaf’s age are just that, a guess. However, there is a way to determine the age of a living tree by coring a small, pencil-sized cylinder of wood from the outer bark to the center pith. The small cross section of tree reveals the annual rings and therefore its age. However, coring such a large tree can be difficult when trying to drill into heart pine, which is known for its density and strength. The coring could also potentially harm the tree, albeit a minor risk, by allowing insects and other pathogens access to the interior portions of the tree. So why take the risk when we could just guess; well, we have a ringer. Rhett Johnson, co-founder of the Longleaf

Photo 3. A cross section of an old growth longleaf pine harvested in the Red Hills. The tree has been dated back to before the arrival of Columbus to the Americas.
Alliance and leading expert on longleaf, has visited the tree and shared his opinion of its age. From his perspective, the Dogwood Champion is at least 200 years old and could easily be over 300 years old.

Compared to the other southern yellow pines, the longleaf is known for its longevity. In the book, *Longleaf: Far as the Eye Can See*, the authors describe the life of a 400 year old longleaf that first emerged in 1632 and is still standing today. In the basement of Wade Research Center at Tall Timbers there is tree cross section or “cookie” that dates this longleaf as being alive when Columbus first explored the Americas (see Photo 3). For me, the thought of a tree being around for more than a dozen human generations and surviving a myriad of hardships like lightning, fires, hurricanes, beetles, and people is amazing and deserves some reverence.

It is hard to determine why the big longleaf pines on Dogwood were allowed to remain standing for the last century or so, when timbering has clearly taken place all around them. While the longleaf champion may have not been the best specimen for timbering, with its big size and fire scars, the others around it are of high value, and under many circumstances would have been harvested. When I asked the Watkins their thoughts on why these longleaf remain, they commented that Mrs. Whitney enjoyed riding horses among the big pines along the Florida border. And presumably, during her ownership no forester or staff would have wanted to be the one who cut down Mrs. Whitney’s big longleaf! Regardless of the reason, I appreciate all of the previous stewards of these pines who decided that these few trees should remain standing another year. To be honest, I appreciate all of the great stewards in the Red Hills, landowners, managers, foresters, who have allowed the great many old longleaf we have to remain a distinctive part of our region.

Thankfully this champion longleaf and the other longleaf cohort on Dogwood will be able to live their remaining days on this Earth for as long as Mother Nature allows. In 2012, the Watkins established a Conservation Easement on the portion of Dogwood Plantation where the big trees live. As part of the Conservation Easement provisions, a sustainable timber management plan was developed to keep the forest functioning and productive for the future. The plan allows for some selective timbering to maintain forest health and generate a little revenue, but it also ensures that big longleaf will dominate the Dogwood skyline well beyond the foreseeable future.

The Dueling Oak

When a tree is named the “Dueling Oak” you know there has to be a great story associated with that tree. For years I have driven by this unusually named tree and wondered about its story. When time allows, I like to take a slight detour when traveling between Tall Timbers and Monticello, Florida, and drive down Old Magnolia Road. Old Magnolia Road is definitely the path least traveled when a driver could just as easily take County Road 59 and U.S. Highway 90, and end up at the same spot in much less time.

If you don’t mind a slower pace and some minor inconveniences, then Old Magnolia Road has some nice perks. It is located in northeastern Leon County between T. S. Green Road and U. S. Highway 90 (Mahan Road). The best way to get to Old Magnolia road is to take Cromartie Road, which starts at the only blinking light intersection in Miccosukee, and goes east for 1.5 miles where it ends at Old Magnolia Road. From there, a driver can go north or south, but the southern section is definitely my favorite.

The narrow dirt road has high banks in sections and is just wide enough for two trucks to pass one another. Roads that haven’t been updated to modern standards have their own character and provide a sense of the geography and a history of the region. As you motor along you can see the deep ditch banks that expose the red clay that gives the region its name. Those banks also allude to the fact that this road has been around a long time.

In addition to the red clay accents, Old Magnolia Road is shrouded in shade by the overhanging trees, some of which are quite large. The largest and most impressive tree along the road cannot be missed, since it is located in the middle of the road! About one mile south of Cromartie Road, you will see a large live oak (*Quercus virginiana*) that needs to be driven around in order to be avoided (see Photo 4). Not only is the live oak large and impressive, but upon closer glance you notice a short brick wall around the base of the tree to protect the base from the hazards of the road. Clearly someone has made an effort to protect this tree.

Along a three mile segment of Old Magnolia Road, including the Dueling Oak, the land on both sides is called Ring Oak Plantation. Since the late 1940s the property has been owned by the Ingalls family, which in later years incorporated their ownerships into the Gem...
Land Company. In the late 1960s, Mrs. Louise Ingalls gained control of the property. According to Tommy Yown, the property manager at Ring Oak for over 40 years, the well-being of the Dueling Oak, as well as other notable trees, was important to Mrs. Ingalls and she hired an arborist to ensure their longevity.

To learn more about the tree in the road, I contacted Redmond Ingalls, a person familiar with the tree. I had always assumed that Ring Oak Plantation got its name from the brick and road rings around the large live oak tree in the middle of the road. However, the actual ring oak tree is another large live oak near the property’s private residences along the bluff overlooking Lake Miccosukee, which is quite remarkable in its own right (see Photo 5). The live oak in the middle of road, Redmond pointed out, is actually called the Dueling Oak and is the tree with the much more interesting story.

A few days later Redmond sent me a magazine clipping from 1959, explaining the most famous duel in Florida’s history. In 1839, when Florida was still a territory, two political leaders, Mr. Augustus Alston from the Whig Party and General Leigh Read from the Democratic Party, had deep partisan and personal differences. The primary issue was over banking regulations; Alston was a prominent banker and Read an ardent supporter for increased regulation. Mr. Alston’s hatred and frustration towards his political rival was so extreme that he challenged Mr. Read to a duel. Mr. Alston felt it was the only course of action to resolve the conflict. The duel that took place was just as in the movies: pick your firearm, start back to back, walk 15 paces, turn, and fire. Mr. Alston, the experienced dueler and crowd favorite, fired his hair-triggered Yager rifle first, but missed. This mistake cost Mr. Alston his life and Mr. Read walked away the victor.

This violent act spawned a series of gruesome, even deadly, events over a two-year period. Willis Alston, the slain man’s brother, made two attempts to kill General Read to avenge his brother’s death. In between the assassination attempts, the heavily armed vigilante even conveyed violent threats to the governor of the Florida
Territory in response to the governor’s public rebuke of the entire affair. Alston was successful the second time, killing Read with two shotgun blasts at short range while he was strolling down Monroe Street with a fellow politician. Willis Alston was captured and charged with the murder, but was released on bail through political maneuvering. He immediately fled to Texas, only to be murdered a year later by a close political supporter of General Read. In addition to the bloodshed, the famous duel had long reaching political ramifications for Florida and resulted in more punitive laws to stop the act of dueling.

After some additional research on the duel, I found two highly detailed accounts of the Read-Alston duel (Paisley 1989, Denham 1990). I assumed within these articles I would find mention of the Dueling Oak as part of the story, but no reference to the oak was ever found. In fact, the famous duel did not take place east of Miccosukee along Old Magnolia Road, but in the small village of Mannington, FL. The village was located along U.S. Highway 319, just south of the present day Georgia border and north of the Watson Line. The town was reportedly the place where duels were often conducted, since it was located in a strip of land claimed by both Georgia and Florida and in legal limbo. Therefore, the prosecutorial authority for illegal activity, such as duels, was uncertain.

Even though the most famous Florida duel was nowhere near Dueling Oak along Old Magnolia Road, there is a good chance the tree’s name is still tied to the event. The Alston family moved to the region in the 1830s and over time built a very large plantation near Lake Miccosukee, called Ingleside. Based on old maps, the property would have included part of the modern day Ring Oak Plantation and the Dueling Oak tree, linking the tree to the Alston family.

The question that remains is which came first, the unforgettable name or the unusual location. There is no way to accurately determine the age of the Dueling Oak. No doubt, it’s an old live oak tree with a 5½ foot diameter trunk and a width and height greater than 70 feet. Presumably, that tree could easily have been living 176 years ago at the time of duel, when Magnolia road was one of the most important roads in that era for transporting cotton from Thomasville to the St. Marks River. A tree planted in the middle of the road that must be circumvented on every trip would make for quite a reminder. So, couldn’t the Dueling Oak tree be exactly 176 years old? This is just a guess by me of course, and not supported in any facts, but it would make for nice ending to this story.

Regardless of never finding the true origin of the Dueling Oak, I think it is a piece of living history that reminds us all that our great state was a wild and raucous place in the early years. I am thankful to Gem Land Co. for their efforts to keep the Dueling Oak alive and a part of Old Magnolia Road. If you ever have a few minutes to spare, take the detour around the big tree in the middle of the road.

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Managing Bobwhite Cover

BY ERIC STALLER

High quality ground cover is an essential component of bobwhite management, and a driver in bobwhite demographics. Ground cover must meet or exceed the nesting, brooding, roosting, loafing, escape cover, and feeding needs of bobwhite throughout the year on an annual basis.

Structure, the vertical and horizontal arrangement of plants, and plant species composition are two important concepts in ground cover management. A good guideline is to have a species composition of approximately 1/3 woody, 1/3 forbs and 1/3 native warm season grasses. The woody component is important for bobwhite in that it provides roosting, loafing, and escape cover.

Forbs, particularly legumes tend to drop important food sources which persist later in the winter and can provide excellent brood rearing, loafing/escape, and roosting sites. Bobwhites “hold” well in grasses, and grasses can meet nesting, loafing, escape and feeding needs.

Generally, ground cover structure should be less than 4 feet tall and easy to walk through; it should not be too thick or matted or have a heavy duff layer. Sites vary greatly in soil type, (sandy soils vs. heavier clay soils), drainage ability (mesic vs. xeric), timber density and tree species, and proportion of land base in fields, so management practices and ground cover objectives should be tailored to each site. Since most quail lands are old field

Photo points help monitor ground cover changes. This point on Tall Timbers shows a mix of 1/3 grass, 1/3 forbs and 1/3 woody species composition, with 4 foot structure.
habitat, I will primarily focus on that community, with minor management additions that include native ground cover (longleaf-wiregrass community).

Managers have many tools to meet the ground cover objectives listed above: prescribed fire, rotary mowing, roller-chopping, disking, and herbicide application; they can all help shape ever-changing ground cover to meet bobwhite needs.

Prescribed fire has proven to be the most important aspect to ground cover management and is the most economical. Mechanical and chemical tools can mimic some of the changes to the ground cover; however burning is the only tool that can influence all aspects including: plant species composition, vegetation structure, and reduction of the duff layer. The lack of a heavy duff layer is an important component of ground cover management as bobwhites are not good at scratching; a deep duff layer makes seeds inaccessible and impedes bobwhite movement. Burning also influences flowering/seed production, increases insect abundance, increases limbing of young pines (particularly shortleaf and loblolly), top-kills hardwood scrub and natural pine regeneration (particularly shortleaf and loblolly).

Fire frequency is a driver in both species composition and structure. The higher the frequency (i.e. annually) the more we change the species composition of grasses and forbs and lower the structure. We tend to retain what is present on old-field lands with a 2-year fire frequency; a 3-year fire frequency allows the woody component to dominate while increasing the structure height. Burning on a 1-2 year fire frequency in a mosaic fashion is the standard on old field lands. On native systems consisting of wiregrass and longleaf, the fire frequency should be increased to every 12-18 months on fertile, clay sites. While less-fertile, sandy sites, where wiregrass doesn’t mat as badly, should remain on a 1-2 year frequency. This is important because most quail will avoid wiregrass areas with a rough that is over 1.5 years, as wiregrass gets too thick and matted.

Scale of burning is another important consideration, and can be modified by timing of burns. Quail managers need to burn 50-70% of old field uplands annually, while native systems need 60-80% of the uplands burned annually. Block size should be in the 10-50-acre range and can be dependent on the size of your property. It is important that there are burned and unburned areas in the home ranges of bobwhite. It is also imperative that if burning closer to 70%, that the burns be spread out over time; this minimizes the risk of inadequate useable habitat at any given time causing decreased survival. By burning an area in early March, the ground cover will have recovered and an adjacent area can then be burned in mid to late April.

Season of burn
Old field lands have a relatively short burn window, typically March through mid-May. Often by the middle of May relative humidity in the southeast begins to climb too high to get clean burns on old field lands. Spring and summer burning are very important for native uplands, many of the native plant species, such as wiregrass, evolved with frequent fire and need the growing season burns to produce viable seed. Although a few quail nests may be burned up in the summer, quail readily re-nest, and the summer burns will become great brooding habitat for later hatched broods. Late spring and summer burning is also the best time for hardwood control, as the saplings have moved resources from the root system to above ground, top killing them at this time will lower the resources to resprout and the length of the growing season to replenish.

Post-burn mowing and chopping
Often a manager will utilize other tools in conjunction with fire to make a rapid change in ground cover. Post-burn mowing and chopping can be a necessary treatment in ground cover management. Particularly on old field lands where there may be 10-25% of the uplands that either didn’t burn (due to fire shadows, lack of fuel, or edge effects) or did not produce the fire intensity nec-
necessary to top-kill hardwood scrubs. In other areas the vegetation may have been top-killed but the structure is too high. It is important to flat mow/chop these areas for several reasons. First, it is necessary to set back succession, and to get sunlight down to the ground; second, you are selecting for grasses to carry subsequent fires when mowing; and finally, the hardwood scrub, whether top killed or not, acts as a ladder for vines to increase the height of the ground cover above desired structure objectives.

Post burn mechanical treatments are also beneficial in that if burning and mechanical treatments are synchronized; hardwoods are top killed twice in the same year. This will ultimately lower the height of the hardwood scrubs, and select for grasses if mowed, and forbs if chopped. A burn in March will produce the first top kill, and if we allow hardwoods to invest energy in resprouting to 1.5-2 feet before we do the post burn treatment, we can top kill them again, resulting in additional decreases in resources to re-sprout, and the length of the growing season to replenish.

Blocking

Blocking, the mowing and roller chopping of lanes in a checker board fashion, is a necessary management technique that serves many objectives; foremost it is the best way to increase hunter success, but also needed for accessibility, safety, and setting back plant succession.

Blocking is utilized mainly for hunting reasons. Dogs, horses, wagons, and hunters are able to see hazards, and utilize the blocked lanes to navigate and handle the dogs and horses. However, blocking also takes 15-35% of the ground cover back to an early successional state and can continue to influence the species composition.

Using roller choppers in the fall, particularly October and November, tends to promote forbs such as partridge pea. Mowing on the other hand tends to benefit the native warm season grasses. Areas with too high of a structure should be flattened to set back succession, and therefore increase hunter success. These blocked lanes are
also very useful for burning the following spring, allowing access into the woods and exits for burning safely.

**Herbicides**

Herbicides are another important tool, and will almost always be used in conjunction with fire. They are a great tool to quickly change both species composition and structure. Hardwood control is typically the reason for an application, but herbicides are also used for exotic control, site preparation for planting, release of either grasses or forbs, and in some cases limbing of mid-story trees. Most of the herbicides used in ground cover management are selective in nature; either for forbs (10-14 oz. Imazapin/acre) or for grasses (4-6 qt. Triclopyr/acre); both will control hardwoods, while Triclopyr will also control pine regeneration. Herbicides can be applied in many ways, from backpack misters, spot spray, or broadcast.

Herbicide mixtures consist of water, a surfactant to aid in absorption, and the herbicide chemical(s). It is important to use as much water per acre as possible (20-50 gal/acre), and to double spray when broadcasting to insure adequate wetting of the target plant, which translates into an increase in the amount of control.

For exotics we recommend spraying from 2 directions at a 90 degree angle to maximize wetting (50 gal/acre) and to ensure complete coverage, particularly around mature trees. Typical prescriptions include a spring burn and flat mow/chop (March-Mid May), herbicide application once vegetation has recovered to 2 feet or higher (June-Sept), followed by a subsequent burn the next spring. It is important to flatten/mow the area, so all the target vegetation is at the same height to get uniform coverage, while the subsequent burn will help promote germination of the released species and remove dead material. Areas that have been treated with herbicide burn much hotter than they normally do under normal conditions. This can allow a manager to thermally thin pine, top kill larger hardwoods, or limb trees. If a hot fire is not warranted, a manger may wish to burn under less dry conditions, or change the ignition plan.

Cogon grass, Japanese climbing fern, Kudzu, bamboo, bi-color lespedeza, and sod forming grasses tend to be the most common exotics in upland sites, but Chinese privet, Coral Ardisia, and many others can impact ground cover quality in the uplands or transition zones as well. Bahia and Bermuda grasses can become a problem when they spread off the roads from blocking, disking, or timber harvest. Some forethought on how to minimize spreading those seeds throughout the woods will minimize later herbicide costs.

There is no silver bullet to manage the ever changing nature of ground cover. It has to be managed by utilizing and monitoring multiple land management tools. Prescribed fire is the most important tool, but particularly on old field lands other treatments are necessary. As with any land management plan, a solid description of your short and long-term management objectives is imperative. Continued monitoring of the treatment results will allow a manger to adapt their management techniques to meet those desired objectives.

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Need Fire?

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
We have great reason to be thankful for fire and the beautiful natural habitats it maintains on the southern landscape, as it has come to us along a bumpy road. Although most of our fire today is prescribed on paper and requires an authorization, it was not always so, except as prescribed by nature and the people’s needs as they changed over the years.

For millennia, most natural ecosystems in the South saw fire several times per decade, even as these ecosystems ebbed and flowed on the North American continent from one glaciation to the next. Well before the arrival of humans, abundant lightning in the coastal regions drove evolution of many plants and animals to become fire-dependent. Between the last glaciation and recent times, the South was mostly grassland or shrubland mowed by fire, dotted with fire-adapted trees such as longleaf pine, oaks, and other hardwoods, or no trees at all in prairies and marshes.

As Native American populations increased, they used broadcast fire for many purposes, including ease of travel, improving visibility, reducing ticks, corralling game, promoting desired plants, and preparing fields for planting. The seasonal timing and frequency of burning varied greatly according to custom and location, but their fires supplemented lighting fire, or vice versa, such that the great grassland with trees remained intact.

The influx of people of European and African descent beginning in the 1700s brought a fairly abrupt change to fire on the grasslands. The periodic burning by natives was replaced by nearly annual burning by settlers, in order to green up the grass in spring for cattle, sheep, and horses, while nutritious bamboo shoots in the once vast canebrakes of the bottomlands sustained livestock during the winter.

Until the Civil War, most of the undeveloped South remained in the “public domain”, that is, owned by the federal or state government, for eventual distribution by the General Land Office (GLO). That land corresponded pretty closely to old-growth pine-grasslands and cypress swamps in the Coastal Plain, as most land-buying settlers were drawn first to the more fertile lands of the Piedmont, alluvial lowlands, and areas such as the Tallahassee Red Hills, where the soils readily grew cotton. In contrast, land in the pinelands did not need to be owned to graze
cattle and sheep, and the soil was poorer and not deemed worth the effort of clearing the ancient pines. Besides, many settlers were too poor to purchase land at $1.25 per acre at the minimum size of homesteads.

The beginning of the end of the burning and grazing era of the southern pinelands came with the convergence of two great forces – the Civil War and the rise of industrial logging. By the time the first shots were fired, the old-growth timber of the Lake States, which had provided most of the timber for the growing nation, was drying up. Steam-powered locomotives, timber skidders, and lumber mills made the wholesale liquidation of ancient forests possible, and northern timber barons who had made fortunes looked to the South to make greater fortunes. However, to their dismay and against their resistance, the Southern Homestead Act of 1866 was signed with the intent of opening small parcels of land for homesteading by freedmen and later all settlers. However, little land was allowed by southerners to go to the hands of freedmen, while quite a bit was bought by straw-buyers accumulating land for speculators and timber companies.

Along with northern industrialists, southern legislators and aristocrats pushed to repeal the Southern Homestead Act, thinking it would open the land to industrial development by southern companies and greater prosperity for the region. The Act was repealed in 1876, and massive land sales ensued, transferring land from the GLO and southerners impoverished by the war to speculators and large timber companies. The southern legislators had underestimated the savvy of northern industrialists with government connections during Reconstruction, and most of the land went into northern hands. Congress reinstated the Southern Homestead Act in 1888, but by then the dealing was mostly done. The near complete clearcutting of the southern pines progressed at a dizzying pace during the following few decades, tapering off to completion in the early 1940s. When the company “cut out,” it typically moved on and never returned.

At first the new moonscape of stumps still provided rangeland for the herdsman; they continued their annual burning and ranching, as most others viewed the land as worthless. However, Gifford Pinchot was on the rise as a political figure, spreading a vision that forestry would be the main land use of America’s future. As Chief of the Bureau of Forestry, he and his friend Teddy Roosevelt jointly promoted the growing “Conservation Movement.” It was not conservation in the modern sense, but rather efficient industrial production of natural resources under large government and private industry landholdings. Trained in Europe, Pinchot thought it also entailed the removal of fire, along with the troublesome pastoralists who used it. In 1905, Roosevelt signed into law the transfer of the vast landholdings of the GLO under the Department of Interior to the newly established U.S. Forest Service, placing it under Pinchot’s authority. The first task of this new powerhouse was to thwart the California herdsmen and their “light burning.” The South was next.

At first, the Forest Service had limited influence in the South because the land was largely under private ownership. Pinchot’s vision notwithstanding, there was a serious debate about the future of the cut-over (and largely tax-delinquent) lands of the South. The three
land. The new trees were not the fire-tolerant longleaf, but rather slash and loblolly which required fire-exclusion during their early years.

The rate of planting greatly accelerated during the Great Depression, when the New Deal sent thousands of Civilian Conservation Corps (CCC) workers to take on the monumental task of planting vast forests and protecting them from fire. The development of the tractor-plow assisted with fire exclusion, but also introduced the possibility of containing fire, an early step towards “prescribed fire.” The development of emulsification of pulp wood for paper around that time also increased the value of short rotation forestry, creating dense pine forests bearing little resemblance to the longleaf pine-grasslands they replaced.

But the southern woods-burners did not give up easily, and either in an effort to continue to graze livestock or just out of spite, the fires kept being lit. Stock laws requiring fencing of livestock on owned land did much to remove the incentive to burn the woods. Even so, unauthorized grazing on forest company and public land continued all the way into the 1960s. The widespread use of the pinelands for turpentine extraction, especially in Georgia and Florida, also employed frequent fire, and produced little timber to the angst of foresters.

While national leadership was pushing for industrial forestry and fire exclusion during the first three decades of the twentieth century, a significant body of fire ecology research was emerging. Publications by geographer and naturalist Roland Harper, Yale forestry professor Herman H. Chapman, wildlife biologist Herbert Stoddard, and husbandry researcher Smith Winford Greene were asserting the positive effects of fire for longleaf pine, cattle range, and soil quality. Even researchers within the Forest Service’s own newly established experiment stations were publishing on the benefits of fire, although with considerable resistance from the Forest Chiefs. These reports joined even older reports on the benefits of burning for range and wildfire control in California.

The increasing evidence for the benefits of fire sent the Forest Service officials into a bit of frenzy. Nevertheless, convinced that common people could not be trusted with fire, and with no prescribed fire training yet available for forest managers, they stuck to their guns. Seeing that their efforts to control fire so far were less than successful, the Forest Service doubled down and
called for immediate suppression of all fires anywhere on public lands, whatever the cost. Some Forest Service policy makers were horrified, as it separated from Pinchot’s promise that the forest conservation movement would be economically self-sustaining. Tossing aside science and economics, the Forest Service invested in professional ad agencies to bring its anti-fire obsession to the people, and Smokey Bear was born in 1944. It was war time, and the Forest Service took full advantage of America’s patriotism to paint fire as enemy to the nation and ally of the Axis.

Ironically, one year earlier, Lyle Watts became the Chief of the Forest Service and presented to it a new perspective on fire. Under his leadership the Forest Service officially sanctioned prescribed burning in National Forests for the first time, convinced by forest managers in the South that it was essential, although some burning had quietly been going on all along. Forest experiment station research continued to accumulate knowledge about the benefits of fire, as well as how to apply it safely. After Tall Timbers Research Station appeared in 1958, it began working with the Forest Service and state agencies to bring more fire back to the landscape, which was beginning to suffer from unnaturally severe wildfires in the wake of decades of fire suppression.

In 1974, at a Tall Timbers Fire Ecology Conference, the Forest Service publically announced their dedication to “fire management” in place of “fire suppression,” incorporating prescribed fire as a key tool for sustainable forestry. The National Parks Service and U. S. Fish and Wildlife Service also helped bring fire back to public lands, pushed by mounting scientific evidence, the new Environmental Protection Agency, and conservation groups promoting natural ecosystem management. Prescribed fire councils, beginning in Florida, played a key role in establishing prescribed fire legislation throughout the South, protecting certified burners from excessive legal risks in order to promote burning.

In only a few regions has the flame been passed from one generation to the next, never interrupted by changing politics and economics. One is the quail hunting lands of the Red Hills and surrounding areas of southern Georgia and northern Florida; another is the rangelands...
of southwest Florida. In many other areas of the south, burning continued long enough to be easily remembered, making it much easier to bring back. The result is that the South continues to be blessed with a “fire culture” which has helped pass the flickering flame from the distant past to the present.

The fight for fire continues today, but the battle lines have changed. In recent decades the threats to burning have become increasing development and smoke-sensitive areas, tightening air quality regulations, fear of litigation, and limited resources for conducting prescribed burns. The challenges are great, but the support for prescribed burning is stronger than ever, with increasing numbers of foresters, hunters, conservationists, and agency leaders vowing, “We won’t let it disappear.”

Dr. Kevin Robertson is the director of the Fire Ecology program at Tall Timbers. He is shown at right with the tools and gear of the modern fire practitioner.
Herbert L. Stoddard opined the Northern Bobwhite the Firebird. Yet, paradoxically, fire is a destructive force by nature—it must destroy in order to feed itself. So, why is the “prince of gamebirds” the Firebird? For quail, wrongly used fire is capable of damage, but the real destruction begins when fire is excluded from an area. Fire has historically been integral to forests and ecosystem health—we have yet to find a replacement functionally and ecologically for fire. In fact, fires first covered prodigious areas before the days of roads and other anthropogenic influences, but more recently it is estimated that only 5-10% of the landscape that once burned regularly, in the late 1800s, is burned today (Pyne 1997). Humans have disrupted the natural environmental link with fire. This has resulted in a maldistribution of fire on the landscape, an increased risk of wildfire and a decreased application of controlled burning.

Nevertheless, fire remains the most economical, effective tool for anyone hankering to promote wild quail. Carefully controlled fire (or prescribed burning) used at the proper frequency, season and spatial extent (or scale), and under proper weather conditions, for the purpose of regulating cover and increasing food supply for wildlife is a necessary tool for much of the southeastern woodlands. It is an essential feature in any sound quail program. But, the use of fire can be and often is underutilized, with relatively scant positive results, or it can be overdone with adverse effects on habitat.

Our research has shown that quail profit from fire such that its proper application will foster a balance of habitats needed for meeting annual, seasonal and daily requirements. Bobwhites are comparatively weak scratchers and so need considerable amounts of bare ground to provide direct access to food; the absence of fire, however, may yield dense wiregrass, broomsedge, or accumulation of debris and pine needles, which may become a detriment to feeding and an impediment to mobility for young chicks. In addition, bobwhites require roosting, nesting and feeding cover that is structurally open below (at ground level and up to a foot above ground) with protective cover from winged enemies above. In general, managing toward the Third Rule will help to ensure adequate distribution of these habitats and vegetation structure optimal for quail. The Third Rule involves maintaining an approximate balance of native (bunch-type) grasses, legumes/forbs, and shrub-scrub in upland sites being managed for quail. This balance can be achieved through the proper application of prescribed fire but may vary slightly from property to property depending on locale, general plant community, soil type, and annual precipitation. We accomplish this balance by applying fire at the appropriate frequency, season and spatial extent.

Burning on native ground cover results in very clean burns.
Frequency

Burning with the right frequency is of great importance to maintain the proper balance of habitats and bare ground required by bobwhites. In particular, fire frequencies <3 years are necessary to sustain high-quality habitat in most upland pine ecosystems. This frequency may vary with respect to richness of vegetation as influenced by growing season or type and fertility of soils as well as which kinds of vegetation are being targeted at a given point in time. For example, where bunch grass is limited annual fire can help to increase the amount of grass, but where mast (e.g., dwarf chinquapins, runner oaks) and fruits (e.g., dwarf varieties of huckleberry, blueberry, etc.) are desired from ground shrubs, annual fires should be avoided. This is because these shrubs do not bear well the year of the burn, despite the occasional pruning back by fire being highly beneficial to overall production. In these instances, burning every other year provides a suitable balance. On the other hand, many native perennial legumes, which are of special benefit to quail, provide the advantage of increased native seed availability to birds when burning is more frequent. However, areas that are burned too frequently can have an overall reduction in biodiversity. Thus, fire application requires a delicate balance and a flexible, adaptive approach tailored by a keen eye to identify and manage for vegetation limitations.

Short fire-return intervals are typically required in the southeastern portions of the bobwhites’ range given high annual rainfall and long growing seasons to keep habitat in check. Our research shows that bobwhites preferentially shift use of habitat toward more recently burned areas almost immediately following a burn. Specifically, we have observed that habitat quality declines at about 18 months post-burn, especially among native wire grass communities; and, as a result, habitat use by radio-tagged bobwhites shifts toward burned areas at this time, where more than 50% of telemetry locations are in <1-year rough during September (compared to unburned areas that are 18 months post-burn at this time) and by January (compared to unburned areas that are 22 months post-burn at this time) nearly 60% of locations are in the <1-year rough or equivalently the current year’s burn (see Figure 1). Thus, for bobwhite, a 2-year fire return interval on most sites in the Southeast is recommended, and in some native, wiregrass communities a shorter fire-return interval (>1 year but < 2 years, with an average of about 18 months) may prove even more advantageous during some years to prevent rank grass establishment.

Season

Although fire frequency is the most important factor, seasonality of fire is also influential, encouraging some essential native food plants; but weather rather than calendar should govern the timeframe of the burning season. Variation in the timing of fire will tend to favor certain plant communities that may be more or less desirable for.
bobwhites, and this may vary from site to site depending on site-specific conditions (such as soil type and precipitation), management objectives and vegetation goals.

Burning reduces the amount of cover on a property for a short period of time, which can result in increased movements of birds to nearby unburned cover. This combined movement and concentration of birds results in below average survival for the year (Figure 2, previous page). In addition, quail woods burned too early (such as December/January) may expose bobwhites to excessive predation prior to breeding season, especially when considering the timing of hawk migration. However, burning too late (June/July) may result in destroyed nests and disruped brooding activity. Our research shows that if you conducted all your burning in the first 2 weeks of May you would on average only destroy 10% of the total nests for that breeding season. However, in reality, the bulk of the burning activity is typically completed prior to May inferring that fewer nests (less than 5%) are destroyed by fire, but burning later can objectionably impact nesting efforts (see Figure 3). That said, May burning can help to reduce stature of hardwoods and promote grasses, which may be a worthy tradeoff to maintain the appropriate balance of vegetation components from year to year. Leaving adequate amounts of unburned (30-50%) cover is necessary for quality nesting grounds and adult survival, especially early in the season (see Figure 4).

Native forbs and legumes such as beggar weeds, lespedezas, bush clovers, and many others sprout vigorously and seed prolifically, even if pruned back by fire as late as May. These critical insect-producing plants are abundant among burned piney woods in high site-index soils as commonly found in the Reds Hills region. In the Red Hills, brood use is concentrated largely in the recently burned areas (Figure 5), because quality vegetative response by forbs and legumes results in insect-rich habitat. In lower quality sandy soils, brood habitat often needs to be supplemented through the establishment and maintenance of weed fields, and broods select for these fields in most years to meet their energy and dietary needs as growing chicks.

Adult survival, reproductive success, and brood habitat-use may all be influenced by the season at which fire is
applied. Generally, it is common to conduct burning after the hunting season and as late in the season as is possible without injury to the nesting of bobwhites. However, mixing burn season timing every few or alternate years can be a good thing in terms of plant biodiversity.

Spatial Extent

Fire extent (the size of individual fires), in addition to frequency and season, is an important but often overlooked factor necessary to defining natural or managed fire regimes. On private lands, burn extents are often relatively small (<200 acres) as compared to public lands where fuel reduction and wildfire prevention are often the primary goal of fire programs rather than quail management. To meet burn acreage goals, fire managers depend on large burn extents (>1000 acre blocks) on public lands. We hypothesize that the combination of low fire return intervals (>2 years) and large burn extents may be a major reason for decline of bobwhites and other species on public lands in the Southeastern U.S. Further, when habitats are recovered using large extent fires bobwhite may not respond as expected.

Once the scale of management surpasses the behavioral adaptations and physiological ability of a species to respond to change, their populations could be negatively impacted. This is likely the case with bobwhite, where our studies indicate that survival rates decline as scale increases. As bobwhite populations are highly sensitive to survival rates of adults, larger extent fires result in a loss of habitat and possibly even direct mortality. Therefore, in areas where recovery of bobwhite is a priority, reducing burn extent should be considered. The negative impact of large burn scales may be manifested in a way not as familiar to many. Specifically large scale burns can impact small mammal (such as cotton rats) communities that provide a buffer prey species. When small mammals are prolific, bobwhite survival is enhanced, because predators key in on those species that are most abundant, taking the pressure off quail in this case.

Quail survival dips when raptors migrate in the fall and late-winter (Figure 3). However, even after many of the migrating hawks have moved north, weekly survival remains low during April, May and June. This is likely associated with prescribed burning and subsequent increased movement by bobwhites to seek out unburned areas, as well as covey break up prior to breeding season.

As an extreme example of what can happen when burning is overdone, Tall Timbers monitored quail abundance on a property that did extensive burning during February and March 2014. While the primary objective on this property is not quail management, it is one of the objectives. Increased burning is normally a good thing for quail but it can be overdone. Quail numbers on this property plummeted in 2015. While most quail plantation managers know how much is too much to burn on their properties, it is a good reminder to be cognizant of the size and distribution of burns each spring to maximize the carry-over of birds into the breeding season.

Take Home Message

Fire is an essential force that has shaped plant and animal life around the globe, but in many ecosystems today, the role of fire is severely out of balance. This is perhaps the
single-most important landuse attribute that has impacted — for the worse — bobwhite abundance throughout its range. In contrast to range-wide declines, the Red Hills and the greater Albany areas are prime examples of where consistent application of fire on the landscape, and intentional management can maintain good quail numbers year in and year out. Therefore, if we are to cast back ecological darkness and prevent the bobwhite from following the path of the passenger-pigeon or the dodo bird, we must actively keep fire on the landscape.

The bobwhite quail is called the “firebird” for good reason — you can apply fire and not have wild quail, but you cannot sustain wild quail without proper application of fire. We have observed through our long-term research that fire frequency, season and extent can impact different species in different ways. But, we know that fire frequency is the most important variable in sustaining habitat for bobwhites, as well as other species adapted to these habitats. As such, it is recommended to burn at any season to maintain high fire frequency — better to burn a little early or a little late than to let the cover go unburned for a third or fourth year. And, the application of fire can be used more judiciously by changing the seasonality to alter plant composition and structure toward the Third Rule as needed. Lastly, species with low survival rates and limited dispersal ability that depend on high recruitment to sustain populations are likely to be negatively affected as scale of fire is increased. Thus, keeping the burn scale small, while maintaining a good mixture of burned and unburned areas, will mitigate mortality and increase reproductive efforts for bobwhites.

Dr. Theron M. Terhune is the Robert C. Balfour Jr. Game Bird Management Research Fellow and the Director of the Game Bird Program at Tall Timbers.
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 click here.
There are some people that are just made to work outside. People that don't mind sweating, driving a tractor, training dogs, or getting dirty. In my experience as a biologist, most people aren't made for outdoor work and prefer air conditioning versus our humid southeastern climate. However, I occasionally come across folks that look uncomfortable in the confines of four walls and are more at home in the woods than anywhere else.

I would classify Terry Chastain as one of these people. For example, his preference was to conduct this interview outside, rather than in the office. He drove me over to the pond, and we sat in the truck admiring the view and watched the wading birds forage, and the bass create ripples as they darted after minnows. This is where Terry is at home, this view is what he knows, and this land is what he loves. When I asked him if he ever got sick of living where he works he looked at me and said, “I don’t want to be anywhere else.”

Terry’s dream was to train dogs and work on a quail plantation. Luckily for him, in his early years of being an avid outdoorsman and hunter he had gotten to know Leon Neel very well. Neel, a well-known local forester, had heard about a dog training job on Melrose Plantation just south of Thomasville, Georgia. Terry interviewed and landed the job as dog trainer. He wholeheartedly attributes getting the job to Leon Neel, as Leon is well respected and spoke up for young Terry.

In the fall of 1982, Mrs. Bolten, owner of Melrose Plantation, passed away and the property was split between her two daughters, Mrs. Claire Jonklaas and Mrs. Betsy Schafer. Half the property went to Mrs. Schafer, which remained Melrose Plantation. At this point Terry was named manager of Melrose Plantation. Terry oversaw construction of the new headquarters site on Melrose, as well as the dam that created the pond that provided the beautiful view for this interview. Terry is quick to admit that the accomplishments were possible with the great team working alongside him. He also speaks often about the support given by Mr. and Mrs. Jonklaas. He remembers Mrs. Jonklaas fondly, describing her kind nature and love of Melrose.

I asked Terry to think back to his early years as a manager and what he would now tell the young Terry just starting out as land manager. Terry laughs and says, “We don’t have enough time!” He quickly follows with, “What I was being told wasn’t suiting me, the timber was too thick, the hardwoods were encroaching up the hillsides, we were running out of hunting courses in two hours’ time, the bottoms were choked with hardwoods, and our fields were too small.” Melrose also had a lot of hammocks and hedgerows, therefore, there wasn’t enough sunlight reaching the forest floor, and he needed to get more quail on the place, “there were some quail,
but not enough.” Terry wasted no time adding acreage suitable for hunting by hiring a crew to chip all of the hardwoods that crept along the hillsides, allowing more sunlight to reach the ground. This benefitted the groundcover, making it thicker and more quail friendly with plants for foraging and grasses for nesting. He maintained the hardwood bottoms, but allowed fire to creep in as necessary to maintain a line of sight through the bottoms, which allowed the older trees to thrive. Terry’s quick to point out that it’s a constant battle to get your woods right and “prescribed fire is 100% important.”

What is your favorite part of your job, what activities do you look forward to the most, what is your biggest success?

Having the privilege to manage and maintain such a beautiful property through the changing seasons. I love all the different types of work we do here. I enjoy burning and love burning season. I also love hunting season and watching the dogs hunt quail in the woods. We’ve been successful in transforming the property into a better quail hunting operation. The Melrose kennel has been very successful in turning out impressive dogs through the years.

What advice do you have for land managers just starting out on a new property?

Clean up your woods, but don’t cut all of your timber or live oaks. Supplemental feed the quail, trap quail nest predators, and leave plenty of cover as this is where the quail are found. That doesn’t mean you can’t condense your cover before hunting season, but be dang sure you’re not going to put them out of house and home.

What is the biggest land management problem you have overcome?

Increasing the quail cover on the well-drained manageable land using prescribed fire as well as mechanical means.

How do you manage your quail on Melrose?

This is old school what we do here. Most of these plantations wouldn’t dare have this much timber. Mr. Jonklaas wants it and I don’t want to see all the trees cut. We have a quail population that allows for a good time. We work at keeping a good quail population, and do most of the right things year round and every year so we stay at a happy medium. Rarely do we have record quail years, yet rarely are we disappointed. But I do know that cutting more timber would increase our quail numbers. Being so close to the river, it is a challenge to control predators that enjoy the many hammocks and drains on Melrose. We are very proactive with predator control.

Has your philosophy on predator management changed over time?

The more predators you intercept the better. We trap the fur bearing animals with box traps and also use foot holds, which are still legal here in Georgia, thanks to Saxby Chambliss and other supporters. Our foot holds do not break their legs because they are offset, and much more humane than the old traps. We keep yearly records of what we take off this place because I like to be aware of the predator populations. Last year we caught 76 nest predators in box traps and 17 coyotes in foot holds. Those numbers stay pretty much the same every year. We use eggs as bait and I’ve learned after many years of trapping that trap placement is important; we focus more on trapping in the drains and transition zones to the uplands. We spend a lot of money to give our quail good habitat to thrive and reproduce. Trapping and supplemental feed are important tools for aiding a healthy quail population.

Who are your major influences?

Mr. Leon Neel, it was on his recommendation that I got this job, there’s no doubt about it. He was a great influence on me and taught me a lot about timber management. In high school I read Memoirs of a Naturalist by Herbert Stoddard. It had a great bearing on me and at that time I decided I wanted to work outside in the great outdoors. I was also hunting on Lake Iamonia, and
Tall Timbers Research Station had just been established. When were boys and we’d walk around on Tall Timbers and see their quail traps. (“We never bothered their traps, our daddy would beat the starch out of us.”) It was intriguing to see the research going on, which sparked my interest to work with wildlife.


*What do you think is the best way to expose kids to the outdoors and teach them outdoor appreciation?*

My Daddy was taking me to Lake Iamonia from the time I was three years old. By the time I was seven, I could run a motor and I would take my friends out on the lake by ourselves in the boat. Daddy taught us to be hunters first and I think it is much easier to teach a kid to be a hunter first. Teach them to hunt legally and properly and then teach them about conservation. Start taking them when they were young so they learn to appreciate hunting and gun safety. Hunters are some of the best conservationists; they support and save the resource.

*What experience has taught you the most in your role as a land manager?*

When we did the hardwood cleanup it was pretty extensive for this little place. I used bahiagrass to heal it, and where it established itself really well it’s mostly still there. I wish I had not used that bahiagrass. It served its purpose, helped to carry a fire and reduce erosion, but it reduced the quality of quail habitat where it is located. We’ve used herbicide on it in the past, and will continuing spraying it to eliminate it and let native plants reestablish in those areas. There are a lot better chemicals that are bahiagrass specific that we are going to start using this year.


*Over all the years you’ve been here, what is the most unexpected hurdle you’ve overcome?*

I ran into some opposition when I started cleaning up the hardwoods, as the community had not been doing a lot of this kind of management technique. In Albany, Georgia, I observed hardwood clean ups and saw how Otis and Rusty Hawkins on Susina cleaned up their place. They gave me great advice about protecting the trees in the bottoms. Mr. and Mrs. Jonklaas always supported me, which made it easier to try new things.

*Why is burning important and what advice do you have for people new to burning?*

Burning cleanses the land. It allows the land to regenerate and be suitable for more species that couldn’t live there otherwise. It’s important that you secure all boundaries and assets in the area and get an accurate weather report. Start easy and slowly. If you’ve never burned before you should take a class or burn with someone that knows how. Experience is everything with burning.

*What does working on a place with a conservation easement mean to you?*

Dealing with an easement is easy. I think it’s wonderful. When the other landowners started putting their properties under easement I encouraged Mr. and Mrs. Jonklaas to do the same. I was hoping they would at least put the bottomland hammock under easement. When they decided to put the whole place under easement, I was pleasantly surprised. I was elated. Dealing with an easement is easy. It makes me happy knowing this place will always be here.

*What do you think the biggest threat is to the Red Hills?*

Development from Tallahassee and Thomasville coming together. Just look around—if it’s not protected—someone is going to build something there one day. A lot of plantation personnel’s offspring continue to work on plantations because they love it and want to work with
wildlife. If this wasn’t here, where are those people going to work, and what would happen to the wildlife?

**You are always passionate about learning new things and have so much passion for this place. What fuels that passion?**

In my life, I’ve been impressed with people that know about plants and animals. I just like to know what I’m looking at. I used to go out in the woods a lot with Dr. Charlie Watt; he knew everything about his plants and animals, his knowledge really impressed me. My mother also had a passion for birding and taught us about birds. Her passion has also fueled my willingness to learn.

**You started off as a dog trainer; what are your thoughts on training dogs?**

Well I think this region we live in has the best bloodlines of pointers, retrievers, and setters of anywhere in the world. These dogs are tested here generation after generation; it’s just wonderful to worked with these well-bred animals in country like this. The pointers are my favorite for bird dogs. Melrose Buck, Melrose Huck-A-Buck, and Melrose Buck Dance were three of my favorites. They were all related and all won the Masters Field Trial. To train a dog, you really must know your dog. Some dogs are tougher and you can’t really hurt their feelings; other dogs are pretty soft (sensitive), and you need to be careful with them to keep them productive and interested in learning. I heard someone say once to someone being hard on a dog, “You’re going to fold his tent.” I like using that because you have to understand with a dog when enough is enough.

**What makes someone a good dog trainer?**

They have to love it and be passionate about it. My best tip for them to have a successful dog is to read all you can about it and find someone that is good at it and work with them. I was fortunate to work with several good dog trainers when I was first starting out.

**You have been on this place for 38 years and have taken a lot of people hunting. Who is the best shot you’ve ever seen?**

Without a doubt, Leon Neel and Joe Beverly were both excellent shots.

Interested in learning more about Leon Neel or the Stoddard-Neel system of forestry? You can start here: [http://talltimbers.org/forestry-program/](http://talltimbers.org/forestry-program/)

Kim Sash is the Conservation Biologist with the Tall Timbers Land Conservancy.
“FOODIE” FRIEND REPEATEDLY TEMPTED ME with social media photos of her colorful, locally- grown grocery bounty accompanied with tried-and-true recipes. Could radishes really be that colorful? Does crockpot chicken curry with spiral cut veggies really taste that fresh? For more than two years, Katie McCormick, associate Dean of Library Sciences at Florida State and conspicuously enthusiastic meal planner has regularly purchased meats, cheese, fruits and produce from the Red Hills On-line Market. This local market is a service of the Red Hills Small Farm Alliance (RHSFA), a nonprofit organization with goals that include strengthening the economic stability of local farms, providing farmer education, and expanding the local food market.

The Red Hills Online Market (RHOM) sells food products direct from farmers, grown or produced within a 100 mile radius of Tallahassee, to customers like Katie McCormick. The market has steadily grown since its inception in March 2011. When asked about her overall experience, Katie said, “I sing the praises of RHO Market every chance I get. I mention it to every new employee in the Library; tell stories about the amazing dishes I have cooked with market orders to friends near and far.”

Katie maintains that, “I have never been disappointed with the quality of the food I have received. Honestly, there have been times when I have been simply stunned by the beauty of the food – perfect Meyer’s lemons and the most amazing head of cabbage come to mind. The vibrant colors are outdone only by the incredible flavor of truly fresh, local food. Sometimes I order specific vegetables, eggs, cuts of meat and other times I go for a farm basket and enjoy the delights that the farms put together for me.”

A farm basket consists of a variety of seasonal vegetables from the alliance members’ farms. Farm baskets can also be a component of Community Supported Agriculture, commonly called by its acronym CSA. Kim Sash, a Tall Timbers’ biologist who lives in Havana, Florida, and long-time CSA customer, described it succinctly, “Eaters support growers. I get a fresh box of fruits and veggies every week. It’s perfect and it’s grown close to home.”

Explaining that multiple delivery hub sites exist for the RHOM, Katie McCormick agreed with Kim Sash. Katie told me that she was “hooked after my first pick up.” She fluctuates between Bread and Roses Co-op and New Leaf Market to grab her weekly bag of fresh food. Tallahassee Memorial Hospital also offers a hub for pick up. Occasionally Katie opts for home delivery with a $5.00 fee.

Eventually baiting me with fresh bagels from Tulelo’s Bakery in Monticello, Katie encouraged me to give it a try. I asked, “Can I order their oatmeal cookies, too?” Evidently, there is so much more than local fruits and vegetables available with a click of the mouse. Scones, gourmet honey, feta cheese, and a variety of pesto are just...
a few of the items available for on-line purchase. Over 50 farmers participate in the Red Hills On-line Market.

Since I was eager to learn about this mysterious shopping process, I readily accepted an invitation from Louise Divine (co-owner of Turkey Hill Farm) to come pack customers’ weekly orders. Divine is one of the founding members of the farm alliance. As I headed to my afternoon volunteer stint with the RHOM, I wondered about the steps involved in buying locally-grown lettuce on-line. Familiar with the quality farmers’ markets associated with the Red Hills Small Farm Alliance, I recognized that a cucumber grown a few miles from home in fertile Florida-Georgia soil is considerably tastier than one harvested prematurely and flown in from a western state.

Contemplating the general on-line shopping experience, images of international icons like Amazon, e-Bay and FedEx are quickly conjured up in my head. Typically, purchased goods stored in industrial, hanger-like buildings are shipped from faraway places and arrive at the doorstep. My neighborhood UPS driver does the ring-and-dash routine and I hear his truck pulling out of the driveway long before I make it to the front door. On-line purchases typically involve little human interaction and seem fueled by a need for convenience. Shopping from a home computer offers efficiency and convenience, albeit a somewhat impersonal process.

The RHOM main hub is located at the old FRM building at Northwood Center in Tallahassee. That’s where Nancy Stefka and Karen Goodlett later challenged most of my assumptions about web-based consumerism. While it was efficient, nothing was impersonal about the process I experienced as a new RHOM consumer and episodic volunteer.

Upon entering RHOM’s building, there was the unmistakable sweet aroma of soil mingled with carrots, green onions and cabbage. Sprouting baby tomato plants were stacked by bins of cilantro and radishes. It smelled delightfully garden-fresh. Nancy Stefka stood at the door way of the Red Hills Online Market warehouse, dangling cloth grocery bags from both arms. Walking in, she exclaimed animatedly, “I’m a new customer. I’m so excited.” Her enthusiasm was understandable and somewhat contagious.

Glancing around the room jammed with produce-packed coolers and tables covered with baked goods, pecans, cheeses and gourmet jams, Nancy summarily added with a grin, “This is like gardening without doing the actual gardening.” She had arrived to pick up her locally-grown food ordered days earlier from the convenience of her computer.
Karen Goodlet, RHOM Market Manager, responded to Nancy with a warm smile asking, “Hi there, tell me your name and I’ll get your order together.” She simultaneously gestured at Nancy to surrender her shopping bags. Karen proficiently pulled a sheet from a binder and weaved around the room from cooler to counter to refrigerator gathering Nancy’s fresh items all the while chatting with the new customer who was taking it all in. Nancy lightly peppered Karen with questions as she peeked in some bins and coolers.

Multiple long, portable coolers lined against the walls were tagged brightly with farm names like Full Earth, iGrow, Owen River, Blue Ridge, Raggedy Glory and Cherokee Creek. Earlier that day, farmers had dropped off their goods to Karen Goodlet. Then, Karen and volunteers swiftly sorted and bagged individual customers’ delivery orders that were picked up by cheerful RHOM delivery drivers. Some customers opt to pick up their purchases while some prefer home delivery.

Mary Phipps of Orchard Pond Organics has been selling her farm’s goods at the RHOM since its creation. She told me, “The RHOM is great because it makes our products available to more people. We like the way it works because we get our order every Wednesday so that we know exactly what and how much to harvest and have ready on Thursday. The staff and volunteers are great to work with, too.” Imagine someone harvesting your food specifically for you a few days before you prepare and eat it. So simple. So fresh. It is easy to understand getting “hooked,” as Katie McCormick called it.

The customer service at the Red Hills On-line Market hub that afternoon was notably second to none. After packing delivery bags, I assisted about a dozen customers picking up their various purchases. Several shoppers eagerly told Karen about new recipe ideas while a small group lingered outside chatting with each other about their purchases. Each customer-staff exchange was warm, personal, and efficient.

I am certain that new customers like Nancy Stefka will provide repeat business for the RHOM. Dashing in to pick up her pre-ordered groceries was reportedly convenient and she was clearly satisfied with the products. Likewise, as I bagged my first on-line order of chards, tomato-basil feta cheese, kale and blueberry scones, I knew my family would eat well that week. And, I was undoubtedly destined to be repeat customer. In the words of Katie McCormick, “RHO Market is easy, educational, delicious, fun and fresh.” We suggest you give it a try.

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**The Red Hills Small Farm Alliance**

**is a nonprofit organization with goals that include strengthening the economic stability of local farms, providing farmer education, and expanding the local food market.**

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**Red Hills On-Line Market, a service of the Red Hills Small Farm Alliance**

**What:** On-line market for purchasing locally-grown fruits, produce and other groceries

**How:** Place on-line order Sun-Wed: [www.rhomarket.com](http://www.rhomarket.com)

**When:** Pick up or home-delivery on Thursday

Learn more at the [Red Hills Small Farm Alliance website](http://www.rhomarket.com)

Georgia Ackerman is Project Manager for the Greater Red Hills Awareness Initiative at Tall Timbers. She can be reached at [gackerman@ttrs.org](mailto:gackerman@ttrs.org) or 850-893-4153 ext 345.
Quail Hunting — a Mainstay of Southwest Georgia Economy

BY NEIL FLECKENSTEIN

The emergence of quail hunting in Albany is closely linked to the earlier rise of Thomasville and the Red Hills Region. In the 1880s, Thomasville and the Red Hills emerged as a popular destination for wealthy visitors seeking respite from cold northern winters. Some visitors, taken by the warm climate, Southern hospitality, and abundant inexpensive land, purchased former antebellum properties throughout the Red Hills, effectively turning the area into a quail hunting preserve. Other visitors—seeking similar hunting properties—looked north of the Red Hills to the broad, flat expanse of the Dougherty Plain. There they found a landscape of patchwork farmland, rich fertile soils, and an abundance of bobwhite quail.

Beginning in the years before the Great Depression and continuing for decades, some of the nation’s leading industrialists, financiers, and entrepreneurs purchased vast hunting properties along Georgia’s famed Flint River and its many winding tributaries. They joined well known and respected “locals” with deep historical connections to Southwest Georgia including the Colquitts, Tifts, and Tarvers. Though some 90 years have passed, the rich legacy of quail hunting in the Albany Region continues to thrive. These working rural lands protect the Flint River, the Chickasawhatchee Swamp and Ichauway-Notchaway Creek, recharge and filter vital regional drinking water supplies, and protect the habitat of dozens of imperiled animals and plants. And importantly, these quail hunting lands provide a huge economic boost for this rural area.

Tall Timbers undertook this project for three important reasons: to understand the economic contribution to local and regional economies by quail hunting in the Greater Albany Region; to educate the public and policy makers about the economic and employment contributions of quail hunting to the Region; and to better inform important policy discussions affecting these lands and the communities in which they are located.

Tall Timbers worked with Florida State University’s Center for Economic Forecasting and Analysis, local landowners and managers, and financial professionals developing a survey to accurately determine the full range of expenditures and employment opportunities associated with Albany Region quail hunting lands. Over 55 percent of landowners responded to the survey and reported owning in excess of 203,000 acres of high quality hunting lands (more than 66 percent of the land in the survey area).

Regional and Local Results

The total economic impact generated by wild quail hunting properties in the Greater Albany Region in 2013 was nearly $125 million. This includes $82 million in direct economic impact and $43 million of additional indirect local economic activity. Albany Region quail properties create or support 878 jobs including an estimated 501 employees working directly for the 73 properties surveyed. These jobs include land managers, assistant managers, tractor drivers, hunting dog handlers and assistant handlers, hunting scouts, maintenance...
Plantations of Southwest Georgia by artist Rena Devine
personnel, administrative support, and domestic help, among others and pay salaries higher than the average throughout the Region. An additional 377 jobs are indirectly related to expenditures on Greater Albany Region working lands. The Albany Region is also a destination for quail hunters from around the country – surveyed properties reported more than 7,400 overnight visitors stays in 2013. These guests keep cash registers ringing during the cooler months coinciding with hunting seasons for quail, deer, and turkey.

Of the $125 million in economic impact, more than $48 million and 300 jobs are generated by some of the largest hunting properties in the Region, located in one of Georgia’s most rural communities, Baker County. Nearly all leading employers in the community are related to quail hunting, commercial agriculture, forestry, or ecological research. Plantation Seed, for example, is one of the county’s largest employers and has close ties to nearly all quail hunting properties in the Greater Albany Region.

The single largest employer in Baker County and one of the biggest in the Region is the Joseph W. Jones Ecological Research Center. This internationally known research station is located on Ichauway, a 29,000 acre former hunting property once owned by Robert W. Woodruff, the former, long-time president of the Coca Cola Company. Woodruff’s purchase of Ichauway in the late 1920s set the stage for decades of careful land stewardship. In 1993, the founding of the Jones Center ushered in a new legacy for this historic property.

In Dougherty County, the economic and urban hub of the Region, quail hunting properties generated over $38 million in economic impact and created or supported 270 jobs — demonstrating they are an essential component of a healthy economy. Dozens of small local businesses in Albany are closely tied to the quail hunting industry. One of the oldest of these is Ivey’s Outdoor and Farm Supply where three generations of the Ivey and Glow families have met the needs of quail hunting properties going back to the days of the Eisenhower administration.

Lee County, which is a rapidly growing bedroom community near Albany, still retains many large quail hunting properties that contribute over $9 million to local coffers and support 66 jobs. Lee County hunting properties reported more than 2,000 overnight visitor stays in 2013, helping fuel the continuing expansion of the county’s growing commercial base.

The economic impact of wild quail hunting also extends to two of the Region’s most rural counties: Worth and Calhoun. One of Georgia’s largest producers of agricultural staples like cotton and peanuts, Worth County’s hunting lands produce more than $8 million in economic impact and support 59 local jobs. This is critical in a community where 7 out of every 10 workers commute to neighboring counties for employment. Among the many local businesses closely tied to the quail hunting industry is Bennett’s Feed & Seed, a landmark business with four locations in the Region. In operation for nearly 75 years, Bennett’s, with 40 employees, provides hunting plantations with everything from feed and seed to fertilizer, tools, horse tack, veterinary supplies, and countless other needed items.

As one of Georgia’s most rural communities, Calhoun County’s landscape is dominated by farmland and wild quail hunting plantations. Fertile soil for growing cotton, peanuts, and corn, the staples of southwest Georgia agriculture, has always been one of Calhoun County’s best assets. More than half of the county is designated as prime farmland by the U.S. Department of Agriculture, while tens of thousands of acres of high quality habitat can be found on wild quail properties in eastern Calhoun County. These properties created nearly $7.5 million in local economic impact in 2013 and over 50 local jobs.
Threats to Greater Albany Region Quail Hunting Lands

There are challenges to the rich legacy and tremendous economic benefits provided by Albany’s quail hunting properties. These include the expansion of intensive agricultural operations; the first hints of conversion of rural and agricultural land to suburban development; high property taxes on working rural lands; and the vital importance of protecting Albany Region landowners’ ability to use prescribed fire—a necessity in a landscape shaped by frequent natural fire. Rising to these challenges will be critical for ensuring the long-term sustainability of Albany’s quail lands.

Bottom Line

The vast quail hunting lands of the Greater Albany Region generate nearly $125 million in economic impact, support almost 900 jobs, and provide over $38 million in labor income. Combined with the results from Tall Timbers’ recently completed Economic Impact of the Red Hills Region of Southwest Georgia & North Florida, the impact of quail hunting to local and regional economies is a staggering $272 million, nearly 2,300 jobs, $89 million in labor income, and annual wages much higher than the average in Southwest Georgia and North Florida. (Click here for a PDF file of the Red Hills Economic Impact publication). The quail hunting lands of the Greater Albany Region and the Red Hills Region are a model of sustainability, providing great examples of how economic growth and good jobs are possible while also safeguarding the health of Southwest Georgia’s and North Florida’s environment for this and future generations.

Neil Fleckenstein, AICP, is the Planning Coordinator for the Tall Timbers Land Conservancy and the author of The Economic Impact of the Quail Hunting Lands of Georgia’s Greater Albany Region, as well as The Economic Impact of the Red Hills Region of Southwest Georgia & North Florida and Valuing Ecosystem Services in the Red Hills Region of Southwest Georgia & North Florida.
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
Extraordinary Encounter of the Bird Kind

A Snail Kite spotted in the Red Hills

BY JIM COX, ADRIENNE DOYLE AND MARY MACK GRAY

Grayal Farr received a special present on the Tallahassee Christmas Bird Count last winter. He had logged 56 species of birds by the time he pulled up to the Rhoden Cove landing along the eastern shore of Lake Jackson around noon. It was a fair list, but his day was about to turn stellar thanks to an extraordinary encounter.

“When I arrived at Rhoden Cove Landing,” Grayal recounted, “the bird was sitting in some small cypresses out in the water at the end of the boat ramp. It was facing me. At first I thought it was a Northern Harrier. But the breast markings and especially the face bothered me. I was about to walk back to the car to get a guidebook when the bird flew and I saw the distinctive broad white upper tail band. The pattern reminded me of the Snail Kites I had seen frequently while visiting Barro Colorado Island in Central America, and that’s when the ‘holy #$%&’ moment came.”

Birders live for rare discoveries, and this encounter had all the makings of a special New Year’s fireworks show. Still, it seemed absolutely crazy to think that this tropical kite might be spending a winter here on Lake Jackson.

Grayal called other count participants who were working a nearby area and were known to travel with the top-notch video equipment needed to document a rarity. They arrived a few minutes later. A video of the bird was recorded and posted on the web, and from that point on, the boaters launching at Rhoden’s Cover were a bit perplexed by all the binocular-toting people they saw standing on the shoreline. The birders were trying to glimpse the first Snail Kite ever recorded in the Red Hills region of north Florida.

— Snail Kite continued on next page
Snail Kite with exotic apple snail; note the curved beak, at right, for extracting snails from the shell. Photos by Tara Tanaka

**Did the invitation to visit come by snail mail?**

Snail Kites occur in South America, the Caribbean, and central and south Florida. They don’t migrate, but they are nomadic and can cover a lot of ground searching for appropriate food resources, water levels, and habitat quality. A kite was once spotted on the Wakulla River many decades ago, but to see this subtropical species on Lake Jackson in January with temperatures plunging regularly below freezing defied the odds.

Turns out the kite’s decision about where to spend the winter might not have been as crazy as it initially seemed. In fact, it follows some other unusual changes in local bird populations that, like the appearance of the kite, are linked to the exotic, one-dimensional tastes of some birds.

The Snail Kite sports an unusual beak adapted for extracting freshwater apple snails from thick, protective shells. Apples snails provide an energy-rich protein package that can be plucked from the water by the long legs of the kite. The kite’s specially curved beak then slips between the operculum and the shell and grasps the body, removing it from its protective mantel. Apple snails make up more than 90% of the typical diet of the Snail Kite, and as snail populations go, so go kites.

Populations of our native apple snail (*Pomacea paludosa*) have been on the decline for decades. It’s not known why the plum-sized snails have disappeared, but changes in water quality, water chemistry, and encroachment by exotic plants all could be playing important roles.

While the native apple snail has become scarce, four non-native apple snails now inhabit southeastern states thanks largely to aquaculturists who were unaware of the consequences of releasing exotic snails into our freshwater lakes and rivers. The mild climate of the Red Hills region provides an excellent breeding ground for these exotic species, and many lakes in the region now support robust populations of the island apple snail (*Pomacea insularum*) from South America.

The island apple snail is much larger than our native apple snail—a Georgia peach compared to a Georgia plum. Island apple snails also thrive in unsavory settings dominated by exotic plants and polluted water, perhaps because the pink egg masses laid contain a neurotoxin that deters egg predators.

The island apple snail first appeared in canal systems bordering Lake Okeechobee in extreme south Florida in 1987 and has spread north and west. Large populations are now found almost everywhere. Surveys conducted by the Florida Fish and Wildlife Conservation Commission (FWC) in 2006 found only four water bodies were infested in Florida, but follow-up work in 2009 found
that exotic apple snails occupied 75 water bodies encompassing over 750,000 acres—roughly 60% of Florida’s freshwater areas.

Michael Hill, a fisheries biologist who worked with the FWC until retiring last year, spent years sampling fish stocks in our local lakes and has been a close observer of the expansion of this alien snail in the Red Hills.

“I first saw the egg masses in 1995 on Upper Lake Lafayette,” he noted in a recent email. “The snails probably found their way down from a storm-water drain where someone released them. We started seeing the egg masses in Lake Jackson soon after the lake was drawn down in 1999. The snails stayed in small numbers in Meginnis Arm for several years, but once the lake started filling back up, the snails floated out and made their way into other portions of the lake.”

“The snail population in Fords Arm where the kite was spotted on Lake Jackson has exploded in recent years—much more so than in other portions of the lake,” Hill noted. “The snail has found its way into many other water bodies in the region, but let’s just be thankful that they haven’t found their way into Lake Iamonia and Lake Miccosukee.”

Hill’s concerns about spread stem from the voracious appetite of this exotic mollusk. Island apple snails stripped Lake Munson south of Tallahassee of much of its vegetation a few years ago. The exotic apple snail also may pose a health threat because it’s also known to harbor unusual parasites, including a lungworm that can harm wildlife and humans alike.

Still, the first hint of this exotic snail being more than yet another exotic nuisance among the lakes of the Red Hills region came when another snail eating bird began expanding explosively.

**Limpkins, Limpkins Everywhere**

Limpkins lie at the opposite end of the spectrum of the soaring kite in terms of the approach they take to foraging for snails. Related to cranes, Limpkins move like wading birds often chest deep in the water. Limpkins grab snails using their beaks rather than plucking the snails kite-like using feet, and Limpkins also have perhaps the most haunting calls of any bird in the region. It’s a loud trumpeting cry that carries forever and can be heard in the background of several Tarzan moves shot on the Wakulla River where the Limpkin once was common.

Unlike the thin-tipped bill of the kite, Limpkins have a specialized bill that lies somewhere between the downward curve of the white ibis and the streamlined stabbing instrument found on herons. The Limpkin’s bill is distinctly its own, and well-suited to the task of harvesting the apple snail. Once again, the relationship between the Limpkin’s bill and the apple snail is so intimate that these birds are often only found in areas where apple snails are abundant.

Fifteen years ago, a bird enthusiast would need to visit Wakulla Springs to see this rare bird in north Florida. Roger Tory Peterson visited Wakulla Springs in the 1950s and reported dozens of territories staked out along a mile-long stretch of the river. But the population mysteriously disappeared in the early 2000s, leaving visiting birders in various states of exasperation and alarm. After all, Wakulla Springs and the Wacissa and Aucilla rivers were some of the very few places one could hope to catch this strange wading bird in northern Florida.

Following the expansion of the exotic snail, a small local population of Limpkins took up residence at Lake Jackson in 2011. Today, the poignant call of the Limpkin is echoing in Leon and Jefferson county lakes as never before. You can even see Limpkins in some of the stormwater retention ponds along Capitol Circle in

*Snail Kite continued on next page*
Grayal’s sighting of a snail kite also serves as a great reminder of the thrill of discovery that has made bird watching the fastest growing outdoor activity in the United States. Scores of local birders went to look for the kite, but so too did birders from Alabama, Georgia, and Tennessee. It might seem like a long way to go to add a bird to your personal life list, but they’d be shaving a few hundred miles off the trip they’d need to make to see the kite in south Florida.

The economic impact of bird watching in Florida and Georgia is substantial. Consider the following:

- Nature-based recreation has increased at a rate of 30% annually since 1987;
- 46 million Americans watch birds and the sport of bird watching is still growing;
- Nationally, 71 million wildlife watchers spent $45 billion in 2011;
- Florida is second in the nation (behind California) in the amount of retail sales generated by bird watching with an estimated support of more than 19,000 jobs;
- 4.1 million residents and non-resident wildlife watchers traveled to see birds in Florida in 2011, and spent over $3 billion in 2011;
- 19 million people watched birds in Georgia in 2011;
- Expenditures by all wildlife watchers in Georgia exceeded $1.8 billion in 2011;
- Birders are great people. They tend to be middle-aged, well educated, and have above-average incomes.

At left, Stoddard Bird Lab Director, Jim Cox, leads a group of birders on the Tall Timbers bird trail. Photo by Rose Rodriguez
Nuthatch Poetry

Biologists often find inspiration in the animals they study. Here we provide poetic offerings penned by biologists that have worked on our long-term study of the Brown-headed Nuthatch. This small songbird places its nests in dead trees and generally excavates a new cavity for each nesting attempt. It’s found only in southern pineyards, and it is rapidly declining throughout much of its range. Lauren Scopel worked on the project in 2011; Margaret Rhode helped out in 2014; and Miguel de Villa and Adrienne Doyle are part of the 2015 nuthatch field crew.

Four Nuthatch Haikus
Quick wings beat through pines
Up and down to stay alive
Small nuthatch squeaks big
Miguel de Villa

Squeaking calls about
Soft tapping in the distance
Nuthatches are out
Adrienne Doyle

Hard at work all day
Up in pines and inside snags
It’s the nuthatch way
Miguel de Villa

A snag’s perfection
Once weakened by rain and rot,
Home for a nuthatch
Adrienne Doyle

Nuthatch’s Lament
I’m hunkered here upon my eggs
Nestled in moss and pine-wing shreds
While light filters in from high above
To shine on walls excavated with love
For our little nutty family:
My mate, our helper, and our chicks-to-be.
Oh crap: what was that guttural roar?
Have they returned to my nest-door?
As I tremble and squeak in mortal fear
A crunching sound approaches near!
The vicious assault by the others begins
In a bevy of scolds and fluttering wings
Yet undeterred, that cursed light
Fills up the nest and my eyes shut tight.
“Still incubating!” I hear it sigh,
And I vow, “Next year, we’re nesting up high!”
Lauren Scopel

The Nuthatch Tree of Life
We owe our lives to dead trees
The most important trees in the forest
The tall, still-life forms that merge with earth
Like jigsaw puzzles slowly disarticulating
Piece by piece by piece

Until years later
Stripped of wrinkled bark and arching limbs
And almost gone
They are finally ready
For the light thrust of small beaks

Tap, tap, toward the future
Speed the signal held in buttery yolk
The signal perhaps intercepted by
Snakes or skinks or squirrels
But always sounded, sculpted, and refined
Using a soft, rotten, antennae
The most important trees in the forest
Jim Cox

Sketch by Margaret Rhode
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.
In the late ‘80s a biologist in Mississippi said to me, “Why should we manage for quail; no one hunts them anymore.” To which I pointed out, there are no quail to hunt. He changed the subject to deer hunting rather than deal with his circular logic. It’s almost fanciful that 50 years ago some 7 million quail were harvested in Florida and Georgia. Today fewer than 200,000 wild quail are shot. Changes to how we use the land doomed the bird to a steep decline. At about the same time, quail numbers declined on private lands in the Red Hills, as well. Not nearly as steep a decline, but some wildlife professionals were saying, “Even the plantations don’t have quail like they used too.”

The decline of quail in the Red Hills was a result of changing habitat, hardwood encroachment into the piney woods, and use of outdated management practices. Several decades had passed without a research program focused on quail management. That changed in 1992, with the launch of the Albany Quail Project, and a renewed focus on quail management research by Tall Timbers. Research funded by plantation owners eager for success, along with ideas that innovative managers wanted to test. Fast forward and today quail numbers in the region are at historical highs. On Tall Timbers, quail numbers have increased nearly 20 fold since that time. Increases in many species dependent on pine savannas were created with frequent fire and removal of the hardwoods that shade the diverse ground cover from the sun.

It wasn’t too many years ago that wildlife agencies had almost given up on quail, like my colleague in Mississippi. Fortunately, in 1995, the wildlife agencies in the Southeastern U. S. got together and formed the Southeast Quail Study Group to increase focus on the issue of the quail decline at a regional level. There have been many accomplishments as a result of this group, now the National Bobwhite Technical Committee, that are helping quail recover in places across the Southeast. Early on at these meetings it was consistent that the only quail management success stories presented were on the private “quail plantations.” Biologists in Florida and Georgia were proud of this success and aimed to increase management, similar to that on the plantations, on public lands. While there is no easy comeback for quail on a statewide level, opportunities do exist and thankfully our state wildlife agencies are looking forward not back.

As an example in Georgia, the DNR began applying focused management on Dilane Wildlife Management Area (WMA). This included both habitat management, but also dealing with predation and supplemental feeding—techniques with scientific backing, but up until this point had not been faithfully applied on public lands. The results have been impressive, with quail numbers increasing and hunting success improving each year. Their success on Dilane WMA is now being carried out on other WMAs in Georgia. In Florida, the Florida Fish and Wildlife Conservation Commission (FWC) has supported increased management for quail on many of its WMAs, as well. Under a cooperative partnership with, Tall Timbers, FWC, the Florida Forest Service, U. S. Forest Service and the Florida Park Service, Florida now has over 150,000 acres of public land under favorable quail management across the state. In addition, both states are supportive of the Florida-Georgia Quail Coalition, housed at Tall Timbers to encourage Quail Forever Chapters to support management for wild quail on public lands. By adopting the latest quail management techniques honed on private quail plantations, our agencies also have created and adopted policies and practices that support management of quail in our region. Simply put they have stepped up to the challenge.

We are fortunate to have wildlife agencies in Florida and Georgia that continue to make positive steps to increase habitat for bobwhite quail and hunting opportunities. With continued focus and staying the course, quail will return in good numbers on many of our WMAs, and I can call that biologist in Mississippi and let him know they are being hunted too.

-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
- Stoddard Society – $100,000
- Bobwhite Society – $50,000
- Fire Society – $25,000
- Longleaf – $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 hunt-able 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.