

Use of Fire in Pine Forests and Game Lands Of the Deep Southeast

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AMONG THOSE WHO have come up here so far, no one has stated that he has had a longer experience in burning pineland than I have, though my first fire was uncontrolled. We moved to Florida in 1893—and lived there until 1900. I had a lot of fun with these people, developing a very high regard for them and the way they handled things. That was of course many, many years before this hot battle started on the use of fire. I started my first fire at five years of age. I was sent into the closet and got a good spanking afterwards. The only ones worried were the neighbors, who were northerners. The southern people that lived nearby took it in stride as a matter of course. So my first burning attempt dates back to 1894. My main reason for going into a lot of historical matter later in my paper is to try to put the early cattlemen of Florida in an entirely different light than they now stand in with respect to the use of fire. For a considerable period they got much publicity, and were damned uphill and down. Before I pass on I would like to do what I can to get a true appreciation of what they were actually doing and why they did it and how they did it. So if you will excuse some pretty sharp criticism, here and there. I'll appreciate it.

I will attempt to sketch a brief history of one of the most bitterly fought battles of the forestry-wildlife conserva-

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tion movement, and explain why after fifty years of misunderstanding and bickering, we are gradually getting closer together in thought and practice.

I will start with some discussion of conditions in the Florida pinelands before 1900 and bring the matter up to 1962, as I see it. I am aware that some of my statements and conclusions may be questioned by others who hold contrary views. It would be strange indeed were this not the case when dealing with such a controversial subject, and in the absence of adequate and unbiased longtime experimentation and research. In addition to my own observations of over sixty years, I have been influenced by the discussions and the writings of several foresters, botanists, and students of ecology with long field experience in the region. Among these men I want especially to acknowledge my indebtedness to Professor H. H. Chapman, Dr. Roland Harper, and Messrs. Frank Heyward and S. W. Greene, all of whom did yeoman's service in publishing on the use of fire and its effects from the forestry, botanical, grazing, and soil-fertility standpoints.

In my opinion the much maligned pioneer cattlemen of the Florida "flatwoods" and elsewhere in the piney woods of the southeastern coastal plain, had many valid reasons for burning off the dead grasses, pine needles, and other forest debris in the vast forests that covered much of the terrain surrounding them. I will discuss a few of their reasons as I heard them first hand well before the day of the wild claims and counterclaims that characterized a later period of bitterness and confusion.

Up to 1900, when I left Florida as a twelve-year-old boy, early settlers and their descendants of the Orlando, Sanford and Titusville region of east-central Florida, where we had lived since 1893, had used fire liberally for generations, and had no doubt in mind as to its necessity and effectiveness in accomplishing certain things of importance to them.

During this early period, pine lumber from the vast virgin forests of this region had no commercial value except for local construction, and the trees more or less interfered with the settlers' livestock raising and farming activities. Each town of

any size had a crude sawmill that sawed lumber for local building. Lumber for our house built in Chuluota in 1893, was sawed by such a mill; just a few years previously it would have been built of logs. The mill men selected the best virgin pines in the immediate vicinity, paying no stumpage to anyone. The pioneers wanted the woods open and parklike for the grazing and handling of their hogs and cattle, which did have a substantial dollar value. Florida, it must be remembered, was in the reign of the nation's first cattle industry. The cattlemen believed, with reason, that the woods had best be kept open and *ground cover short* so that they could drive their cattle to and from the cowpens, from one prairie or savanna to another, and most important, so that most of the upland terrain would produce a maximum of the most palatable grasses, legumes, and other herbaceous vegetation for their grazing livestock.

Neither would they tolerate brushy pinelands. Like the Indians before them, they ranged the woods barefoot or rode horseback either day or night. They wanted the woods as nearly free of ticks and chiggers as possible, and observations and common sense told them that frequent burning kept these pests in greatly reduced numbers, though it did not exterminate them. They wanted the ground cover, mainly of Saw Palmetto and wiregrass, short and open also so that they and their livestock could see and avoid the dangerous Diamondback Rattlesnakes and Cottonmouth Moccasins. Anyone privileged to live in the virgin piney woods, as did the speaker as a barefoot boy, can readily see and agree with their viewpoint.

They enjoyed eating the huckleberries and blueberries and had observed that they fruited most abundantly when occasionally pruned back by fire. In addition the berry patches localized the bears for the fruiting period each year. As bears were enemies of their semi-wild hogs, this assisted in finding them, so they could be more easily killed. The people well knew how much stronger the cooling breezes blew during the heat of summer in the open woods, as compared to brushy jungle. They went on foot at night from one marked "bee tree" to an-

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other in groups when harvesting wild honey. It was good sport, and the honey was an important part of their diet.

The frequently burned-over woods were easily traversed on such expeditions, and they well knew that the burning increased the growth of Partridge Pea and the flowering of the Saw Palmetto and other honey-producing plants.

These children of nature also knew that large areas of dense jungle harbored "varmints" such as bears, wolves, pumas, bobcats, snakes, etc., and they wanted no such hiding places near their homes, where barefoot children played the year round, or near their free-ranging poultry. So *nearby* woods were burned over *annually*. Naturally there was little or no pine reproduction; none was expected or desired in the immediate vicinity of their homes. The distant cattle ranges were not burned nearly so closely, as the cattlemen wanted plenty of well distributed "rough" as well as fresh green grass on recently burned ground. Hence Longleaf Pine came in strongly following large "mast" crops, and replaced natural mortality from over-age. This whole country, which was covered with virgin pine timber in the nineties and was cut over as far as the cream of the stands was concerned immediately after 1900, is now covered with a splendid young pine forest. I revisited my boyhood range in 1927, just 27 years after our return to Illinois. It was apparent that much young Longleaf had been "in the grass" and made fast growth following the removal of the old pine. Longleaf could not reproduce in the "rough" after the burning was stopped, although the Slash Pine, in partially wet ground, continued to seed in following the stopping of fire use. Where the few seed trees included Slash, it took over most of the Longleaf sites. This was the most tragic angle of the fire exclusion, and was largely responsible for the terrific damage done by the wildfires during the great droughts of the 1930's and the 1950's. I have always felt that the so-mistaken anti-fire propagandists were largely responsible for these great conflagrations.

The "wimmen folks" and the children of the pioneers frequently assisted in burning around headquarters, and it was

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a hard, dirty, though interesting, job; great care had to be taken to avoid damaging the rail fences that encircled each corn, cane, sweet potato, and cowpea patch, and the ever-present cowpens. It was hard work to split rails from even the straightest-grained virgin longleaf, so the "snake fences" were well worth protecting from fire; the pitchy rails burned fiercely, and the blaze could not be easily extinguished.

Some with no firsthand knowledge of these hardy and capable pioneers, would have us believe that they set fires just to see them burn, and some propagandists schooled in the west European forestry traditions, referred to them as morons, imbeciles, etc. These people had to do a multitude of things correctly to live isolated lives in the "pine barrens." They produced or built almost everything they needed or used, and they lived rich and interesting lives.

The objectives of the cattlemen were probably almost identical with those of the red men that had used fire from time immemorial, for land clearing, hunting, etc. So it is safe to state that the magnificent Longleaf Pine forest that covered the high terrain, had grown to its centuries-old maturity under the programs of man, white and red, who got much the same results as had Mother Nature for thousands of years before man with her lightning-set fires. The speaker was most fortunate to have lived in these forests that so thrilled William Bartram in the late 1700's: forests that grew because of, not in spite of, the handling given the land by sparse populations. But not owning the ranges they used contributed to the downfall of most of the pioneer cattlemen.

The forefathers of these cattlemen had come in from the North Carolina mountains long before the nineties. They spent much of their daylight hours on horseback, thus having an advantage over the earlier Indians. As they rode the ranges, they set fires at intervals when conditions were right for light burning, from early fall to late spring. They *knew* from the way the cattle gravitated to the fresh burns that the tender grass would make them grow and fatten. It put them in shape to market, or survive the hardships of the coming "dry season," and oc-

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casional severe cold. Curiously, some swivel-chair foresters of the north that had little or no field experience in the deep southeast, at a somewhat later date claimed that "rough" range nourished cattle better in their weird anti-fire propaganda. Finally after some eleven years of careful research by the U. S. Bureau of Animal Industry under S. W. Greene and associates in coastal plain Mississippi, the cattlemen were proved right and their critics completely wrong; the cattle showed some 40 per cent higher gain on annually burned wiregrass range than on the "rough"! The propagandists had been mistaken by wishful thinking.

This and many other things showed that these early cattlemen could not properly be called "ignorant" or "vicious," nor did they "need their heads examined," as one not too bright sociologist, hired to analyze their behavior by the anti-fire propagandists, reported several years later at the height of the anti-fire battle. Our little family had taken up residence in the Florida backwoods in 1893, and we left the state in 1900, the year turpentine of the virgin Longleaf and Slash started in our region. Three or four years later the virgin pine started through the sawmills, so we saw the very last of its glory. Now, I "ran with the cattlemen" seven months of the year from 1896 to 1900. At that time the cattlemen did not use severe sweeping fires on their ranges. It was in the early 1920's that some in desperation started using such fires in an endeavor to save a remnant of their herds. It *was then* that the propagandists so blackened their name. I had an opportunity to see the great abundance of quail that frequented the virgin pine lands, and how small fields that were opened up and planted attracted them as a magnet. Such observations were to be of great value to me over twenty years later when starting studies of the Bobwhite Quail.

Beginning soon after 1900, changes came with stunning suddenness to the cattlemen of the Florida flatwoods; probably they came several years earlier in the Carolinas and coastal Georgia, and west into Texas, where similar conditions prevailed. More changes took place during the following forty

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years than during the hundred preceding. With the turpentin-
ing and sawmilling of the "yellow pine," even the cutovers be-
gan to acquire a money value. At first, grazing was probably
helped if anything due to the increased areas of open land. But
before long wealthy and brainy individuals "saw the handwrit-
ing on the wall" and purchased and posted one huge tract after
another for their own exclusive use and control.

The day of the "open range" was rapidly drawing to a
close. Before the smaller or less literate cattlemen realized what
was happening, they lost their grazing ranges along with many
of the liberties they had cherished for generations. Some in
desperation tried leasing grazing rights from the big timber
companies that had acquired title to the former pine lands. But
their cattle were starved out, as one landowner after another
following the intensive anti-fire propoganda of the day and in-
sisted on keeping their lands "rough." At the same time the
liberty-loving "natives" began to be harassed by an influx of
northerners that neither understood them, nor had much con-
sideration for them. Most of my Seminole County friends, cat-
tlemen for generations, were faced with ruin in a few short
years. After this a few desperate cattlemen undoubtedly did
set fires on windy days that swept large areas bare; they were
bitter from feeling they had been wronged. The preceding
has only been outlined for background, for I would like to
make straight a sadly confused record. The majority of the
early cattlemen were sturdy, disease-free citizens, most worthy
of our admiration.

A few foresters and ecologists began to see the true
picture soon after 1910, as previously mentioned. It remained
for me, as a result of my several-year study of the Bobwhite
Quail, to point out the values of using controlled fire for the ben-
efit of quail and other upland game and wildlife. If our minority
group of less than a dozen "outlanders" who wrote on the sub-
ject were right, and the use of fire was necessary and desirable
to perpetuate the flora and fauna of the region, the big ques-
tions to answer were *when* to burn, *under what conditions*
to burn, *how* to burn, and with what *frequency* to burn, for

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best results with both pine forestry and wildlife. While progress is being made, it will take many more years, and a vast amount of dedicated research and experimentation, to provide all the right answers and to work out refinements. Until then, it seems likely that well-meaning but uninformed people will continue with the hoopla — “Keep Florida Green,” “Keep Georgia Green” — and publicly deplore “setting fires in the woods,” just as if no such legitimate thing as controlled burning existed and would at times, under certain conditions, do the job much better from every viewpoint than would fire exclusion! True, fire-tender seedlings of Loblolly and Slash Pine do require fire exclusion for several years, when controlled burning can be safely started and used to great advantage for the remainder of their life span, to reduce fuel, keep out broadleaved “brush,” etc. Longleaf and Shortleaf are true “fire types,” however, and should be handled accordingly.

The present-day U. S. Forest Service can be complimented on making rapid progress during recent years in working out useful techniques for controlled burning. Several of the State Forest Services are “coming around,” also, and have even published bulletins informing landowners how to control burn where it is advantageous all around for them to do so. I refer especially to Georgia, Florida, and South Carolina.

This is a far cry from what I ran into in the '20's and early '30's. The U. S. Biological Survey (now the U. S. Fish and Wildlife Service) was one of the smallest bureaus of the U. S. Department of Agriculture, while the Forest Service was one of the largest and most powerful. Some of the leaders of the “old school” were opinionated and unreasonable from our standpoint to say the least, when the time came to publish “The Bobwhite Quail.” I had first outlined the fire chapter in 1928 and 1929, for I anticipated we were going to run into publication difficulties of a serious nature. Manuscript originating in one bureau had to “go through channels” and be approved by others concerned before publication. To make a long story short, I rewrote the fire chapter five times in the attempt to get it cleared. Finally, seeing no other course to

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pursue, I passed the word where I knew it would spread to the effect that the fire chapter, already sadly "watered down," would have to be cleared for publication or else I would resign and write a book on the subject that would *not be a compromise*. The sportsmen who had financed our study to the tune of over fifty thousand dollars included several of the most powerful men in the country, politically and financially; I knew they would back me to a man. If those in the saddle at the Forest Service preferred a fight to "okaying" the chapter as rewritten, they could have it, for we had compromised as far as we would. It was soon reluctantly cleared in the form it appeared in "The Bobwhite Quail" in 1931.

I am happy to state that there was no opposition to our fire findings or their publication in the Biological Survey; just the contrary. We had the full backing of the late W. L. McAttee, head of the Division of Food Habits Research under which the quail investigations were organized. And this support continued after 1931, when the new Cooperative Quail Study Association was organized, financed, and started operations under private auspices. Our backers were practically the same group that had instigated and financed the earlier investigation, and were represented by Mr. H. L. Beadel as Secretary and Treasurer. Mr. Beadel had ably pointed out that the original investigation had but opened up several important lines of inquiry, among which the use and control of fire on game lands was probably the most important. This was to be pushed by the new association through research and experimentation, as its importance warranted. It was clear by this time that the income from thriving pine forests could be made to help pay the costs of developments for upland game, especially the quail and wild turkey. We believed the production of forest products, as well as such agricultural products as corn, could be dovetailed with the game developments. Hence we intended to find out all that we could about the effects of controlled burning on the pine forests as well as on the game. This was disturbing news to our previous antagonists, and the battle flared up again. But now we were in an independent position, and

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could experiment with and study the ecological effects of fire use, and publish on the subject as we saw fit. As the new setup called for us to make two or more inspection trips yearly to properties of non-resident members owning game lands from North Carolina through Mississippi, we could study fire effects on the pine forests of six states and practically all coastal plain pine forest types. Several large properties in each state were practicing controlled burning under our programs.

During this period we published a good deal on the use of fire in our Annual Reports and separately from 1931 to 1943, when the association was disbanded. World War II was intensifying and it looked as though the conflict might last several years. Mr. Komarek, who had been with the association since 1934, and I both felt we should do our bit for the war effort in the fields of forestry and agriculture.

The speaker was soon up to his neck, in partnership with Mr. Richard Tift of Albany, Georgia, getting out the kind of pine lumber most in demand for military use; many of the association members had asked us to represent them in whatever lumbering it seemed desirable to do. Soon lumber sales came under O.P.A., and our group cut and sold some forty million board feet before the war ended. As the poorest of pine was in great demand for boxing and crating of war supplies and machinery, we made fine progress in "culling" the splendid pine forests of diseased, overaged, poorly formed, and genetically bad trees. The bigger the pines the greater the demand; there was a one-dollar premium on pine boards a foot and wider. Most of the game lands had never had any commercial cutting at all of any kind, and greatly needed the treatment we gave them during the war.

When the conflict was over it seemed impractical to re-organize the Cooperative Quail Study Association; our younger associates, Roy Komarek and H. L. Stoddard, Jr., preferred other activities. Hence we decided that after nineteen years of research on quail, it might be best for us to continue our forestry and agricultural activities on lands of our former members. We could do considerable fire and wildlife research

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in any case. To me it was, however, quite regrettable that we had never had the opportunity to set up a large series of fire ecology, genetic, and other plots; *continuity has to be assured* when the results of many of the tests and experiments do not give maximum results for over a hundred years!

This problem was solved in a most satisfactory way when Mr. H. L. Beadel decided to leave his Tall Timbers Plantation of 2,800 acres of ideal land, buildings, machinery, and a substantial sum of money for biological research, with special emphasis on long-time studies on the ecology of fire. The place, however, is ideally adapted to a variety of lines of both terrestrial and aquatic research, including bird banding and life-history studies of a wide variety of birds, mammals, reptiles, fishes, insects, and other creatures too numerous to mention here. There are also fine possibilities for education in natural history. With plenty of land, opportunities are almost unlimited for ecological research on the effects of fire use on forests and all the living creatures and vegetation that are affected for better or worse by its use. Mr. Beadel has long been interested in this.

Formation of the Tall Timbers Research Station and preliminary plans have been continuing for the past three years. In February and March of 1959, we set up 84 half-acre plots [see *Tall Timbers Research Station Bulletin* No. 2, 1962.], well distributed over highlands and lowlands, and including samples of the four species of pines common on the place. Some will be burned in summer, some in winter, and at intervals varying from annually to once in over 100 years. Some forestry, botanical, and insect studies have been carried on, while the controlled burning of the shortest-period plots has been conducted according to plans. This series will soon be followed by another of forest genetics plots of an acre in size, in which burning will also have a part.

Mr. Beadel's desires for the future of the station, so far as fire studies are concerned, have been incorporated both in his will and the Charter of Tall Timbers Research Station, and every precaution known to man has been taken to see that his desires are followed perpetually.

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Prospects seem bright that we will finally get our “adequate and unbiased experimentation and research” in at least the forest type of the Tallahassee-Thomasville region. We hope that others will conduct similar studies in other forest types of the deep Southeast.

I did not read this paper to stir up a rumpus or kick a sleeping dog or anything like that. I did want it on record that the early pioneer cattlemen of central Florida had neither horns nor spiked tails. Since nobody had come to their defense in the last half century, I felt an obligation to do so.