

Video	Audio
	<p>Narrator: Longleaf pine woodlands once covered Georgia's coastal plains. Join us as we explore some of the best remaining examples of this forest and the animals and plants who live there. We'll also learn about the challenges of restoring a lost forest.</p> <p>Coming up next</p>
	<p>(Georgia Outdoors theme song)</p>
	<p>Narrator: A great Longleaf Pine Forest once blanketed the southeastern coastal plains with lush splendor, much different than the short-rotation pine timberlands we see much of today. Longleaf pines have very long needles, and large cones. They live much longer and are more resistant to disease than any other southern pine. Their forest had an open-canopy, with few other tree species, but amazing diversity in plants and animals: Bachman's sparrow, fox squirrels, woodpeckers, gopher tortoises, bobwhite quail, corn snakes, opossums, eastern indigo snakes and raccoons. all of these animals have developed special adaptations to the one element as important to the longleaf forest as rain to the rainforest: fire. Many of the forage plants in this fire forest were stimulated to flower and seed by fires and tree species not adapted to fire were controlled. These fires were originally caused by lightning and, later, by native Americans.</p>
	<p>Ray: The lightning announced itself lightly to the pine one summer evening. "I rained over this land" it said. "You must leave immediately." "There was nothing here when I came," said the longleaf pine. "I was here," said lightning. "I'm always here. I'm here more than any other place in the world." "Then do what you will," said the pine. For years they warred...Longleaf and lightning began to depend on each other. And the groundcover grasses and flowering herbs evolved to survive and welcome fire as well. Longleaf became known as the pine that fire built.</p>
	<p>Narrator: Janisse Ray tells this story in her book "Ecology of a Cracker Childhood." Her book also describes growing up isolated in Appling County, Georgia, in the midst of a junkyard which had once</p>

	<p>been part of the longleaf forest. Because of logging, agriculture, and fire suppression, we have lost almost 99 percent of the original virgin longleaf forest. Ecology also describes the beauty of this forest and the sense of urgency Janisse feels to help restore it.</p>
	<p>Ray: what a tragedy to lose this landscape. a tree so grandiose that it had taken over an entire landscape for itself. And to lose a forest so intricate and highly evolved is an awful thought. It's an awful thought to have so little of it left.</p>
	<p>Narrator: What was once a single forest now only exists in a few examples of longleaf pine communities, separated from each other by roads, cities, fields and other types of woodlands. Where once a lightning fire might burn undisturbed through the forest for miles, now humans must start and control fires. Although, there is evidence this maintenance began well before European settlement.</p> <p>Tribal legend of the Alibamo Creek Indians claims that fire once belonged to Bear who neglected it one day. Fire cried out to the humans, who fed it with sticks and brush. From that point on, fire belonged to humans.</p>
	<p>Boring: Native Americans would have used fire for all kinds of different reasons, they would have been very knowledgeable about the different habitats that optimized some of their food resources, the deer and other animals that were dependent on it for their own subsistence. They also had fire as a tool to drive game for protection of their village sites from wildfire, as well as perhaps as a tool in warfare.</p> <p>McGuire: Up to the mid 1800's there was still a lot of wilderness in the SE. You look around and a lot of the SE would have looked like what's behind me, just very open, park-like longleaf pine forest.</p>
	<p>Narrator: As Europeans settled here, the strong heartwood from the longleaf or heartpine were used, to build homes, and for many of products used to build ships and seal ships and make them watertight. These naval stores included tar, pitch, and also spirits of turpentine.</p>

	<p>McGuire: But prior to the advent of steam technology, these massive longleaf pine trees were felled with hand axes or crosscut saws and dragged to nearby rivers and streams.</p>
	<p>Shortly After the Civil War the south was in a economic depression. northern investors would buy large chunks of long leaf woods like this and resell them to logging companies. And at the turn of the century, with the invention of steam technology that really opened up large areas of this wilderness for cutting and the idea was simply to just cut out and get out.</p>
	<p>Narrator: During the depression, the Civilian Conservation Corp put young people to work replanting cut-over longleaf forests, but with other pine species, considered at the time, faster growing and more reliable as seedlings. But slash and loblolly pines are not as fire resistant and a campaign against fire was undertaken to protect these young timberlands.</p>
	<p>McGuire: And about the late 1920's the American Forestry Association sponsored the Southern Forestry Educational Project. And the role of that group, who became the Dixie Crusaders, was to basically preach the ills of fire in the longleaf pine forest, which to a lot of the rural culture here, that was just a new concept to them. They understood the benefits of fire and the use of fire.</p>
	<p>Narrator: The fire suppression which started then means many of the woodlands we see along the road are crowded with young hardwoods and slash or loblolly pine instead of the open, parklike beauty of the original fire forest. A number of people are working hard to preserve longleaf forests we have left. John McGuire of the Longleaf Alliance, is one of them.</p>
	<p>McGuire: The long leaf alliance was formed in 1996 in response to the steady decline of the long leaf pine ecosystem. Basically what we want to do is promote not only the ecological value of long leaf pine but the economic value of it as well.</p>
	<p>Narrator: The Longleaf Alliance has been an active presence in Georgia. And Georgia has some of the best examples of longleaf pine forest left anywhere. Greenwood Plantation may be the best living example of a fully-functioning long-leaf pine woodland or forest.</p>

	<p>Neel: Well Greenwood is one of the premier properties in the area, always has been. Uh, it had everything that made it a premier property. It had large acreage, and heavily timbered, and most of the area has been very well cared for, very well managed since the late 1900's, late 1800's. So it had a continuous history of a conservation-oriented management, land management base.</p>
	<p>Narrator: And Leon Neel should know. He has been an ecology and forestry consultant to Greenwood for fifty years. Leon is the primary advocate of the Stodard-Neel multi-age system of forestry originally espoused by Herbert Stoddard.</p>
	<p>Neel: Mr. Herbert L. Stoddard, Sr., the man who came into this area in 1922 and became a consulting ecologist in wildlife management and, forester. he was my mentor; I went to work for him in 1950. This is, uh, this is the type of a forest management program that always guarantees that a forest will be here, and yet we can over time carefully remove some tree. And by maintaining this multi-aged forest on the same ground, you never terminate a forest. You never clear-cut a forest and have to go back and plant or whatever. if you don't get greedy, if you only accept what the land will produce then you can perpetuate it forever and consequently, you can perpetuate all the species that are associated with a forest like that.</p>
	<p>Narrator: Leon Neel continues his work here at Greenwood, and has a new partner, The Nature Conservancy of Georgia.</p>
	<p>Neel: We've been working with the Nature Conservancy for years, and years, and years before there was ever a Georgia chapter. And we encouraged and helped them and we've been talking about Greenwood with them for a long time. And we're here today because Nature Conservancy has assumed control of Greenwood for the moment and we feel like it's going to be a good, long-term project.</p>
	<p>Narrator: The Director of the Nature Conservancy's Greenwood Project is Todd Engstrom.</p>
	<p>Engstrom: to have a forest like this that is so well maintained and has been managed for fire so well for so long, it's a glimpse into what was probably dominant throughout the uplands of the southeastern United States, before extensive settlement. But the Green Tree Foundation and the Whitney family, who are the owners are in the process of giving to the NC, not only these beautiful woods, but also the historical buildings that made up the Greenwood Plantation.</p>
	<p>Narrator: Greenwood located in the red hills of Georgia, where it was once used for quail hunting by wealthy industrialists.</p>
	<p>Engstrom:</p>

	<p>Shortly after the civil war, some wealthy industrialists bought this land and used it for quail hunting, now we know of their tremendous ecological value. And so, we have sort of a snapshot of what this landscape was like before European settlement.</p>
	<p>Narrator: Georgia’s red hills are not the only place where longleaf pines can thrive. A few longleaf pine communities exist even on some mountain sides. But we may be more familiar with the idea of longleaf growing in the sandhills and flatwoods of the coastal plains. Different plant and animal species are associated with each area in which longleaf grow.</p>
	<p>Narrator: Some of these longleaf pine woodlands have a very special resident, the gopher tortoise. These animals spend most of their time underground in their burrows.</p>
	<p>Birkhead: These are the centers of activities for these tortoises. They’re a tortoise; They’re not really active. They spend about 75% of their life inactive down in their burrows. And there’s a thermal gradient down in that burrow, and they can move up and down that thermal gradient in order to maintain their body temperature.</p>
	<p>Narrator: Gopher tortoise can live up to seventy years and may not start to reproduce until they are ten or twelve years old. Because of their low rate of reproduction, and human interference, they are listed as a threatened species in several southern states, including Georgia. We humans have not only disturbed their habitat, but once relied heavily on them for food. During the depression, gopher tortoises were called “Hoover Chickens” because they were fairly plentiful and of good nutritional value. Today, tortoises are still important, but as innkeepers, not as food.</p>
	<p>Birkhead: These burrows are extremely important for the tortoises and for lots of other organisms out in this ecosystem. Burrows, on average, are about 15 feet long and 6 feet deep, which is often very surprising to people. And what’s even more surprising is that they can dig one of these in one, maybe just two days. A lot</p>

	<p>of the time, these burrows actually persist the environment for years, even after the tortoise has abandoned the burrow and moved on. A lot of other species will come in and utilize these burrows. Tortoises are considered a keystone species in this environment. A keystone species modifies biotic factors: plants, distributions of animals. Tortoises do that, but they're also considered an ecosystem engineer, which is a species that changes the A-biotic conditions within a system. So the fact that they move all this sand, which is an A-biotic factor, and create these burrows, which changes humidity and temperature levels within those burrows, that makes them an ecosystem engineer.</p>
	<p>Narrator: Gopher tortoises can only survive in a forest which is maintained by fire. They eat sunlight-loving forage plants. In fact, every plant and animal in a longleaf forest is specifically adapted to live there.</p>
	<p>Ray: In a wild fire, even the insects that lives under the bark of longleaf pine trees scurry up the trunk in order to get out of the way of the fires, just as the gopher tortoises go under ground to escape the fires. It's amazing to study the system and see how everything has evolved to be there.</p>
	<p>Narrator: The Nature Conservancy and Georgia's Department of Natural Resources have recently acquired Moody Forest which is in Janisse Ray's home county of Appling.</p>
	<p>McGee: Moody forest has been a priority for the Nature Conservancy since the early 80's. We realized even then how special the property was. And It wasn't just the old growth longleaf, but also the old growth cypress, and to have a property with both old growth upland and old growth bottomland forest was incredibly rare even in the early 1980's. So we began to talk to the family. Then it was 3 brothers and a sister that owned the property. They'd never married and had no children. And We tried to talk with them then about the benefits of either selling the property for conservation or for putting the property under a conservation easement.</p>
	<p>Narrator: A conservation easement is a legal agreement between a landowner and a land trust or government agency that limits uses of the land in order to protect its conservation value. Easements can also lower property and estate taxes while allowing the landowner to continue to own the land and to pass it on to heirs.</p>

	<p>McGee: They had millions of dollars worth of trees sitting out here in the ground, but they lived off the land in a very simple manner. And they didn't really appreciate the need to protect the property at that time. But then when Ms Elizabeth died, the sister, in 1999, the property was then left to approximately 33 heirs, and they had to find some way to pay the tremendous estate taxes that were due. So they did put the property up for open bid, and the Nature Conservancy and the Department of Natural Resources were the high bidders on the property.</p>
	<p>Narrator: Moody Forest Natural Area presents many challenges to both of these agencies. The biggest one is reintroducing fire to a forest where it has not been used in forty years.</p>
	<p>McGee: We're worried that when we reintroduce fire to this area if the fire is too hot or the conditions aren't right, then we'll burn this duff layer which will in turn kill these fine roots. If we kill too many of these fine roots, we can actually kill the tree. So we really need to target our fire so we just consume this top layer of litter and leave this duff layer intact with at least our first fire. And then slowly over time, we hope to reduce this duff layer. And when we reach that point, then we will have done our job. And we will be able to burn Moody forest under a more natural regime</p>
	<p>Narrator: Trees once used for turpentine production have large scars, called catfaces, on their trunks, and may not have enough protective bark to withstand fire. Extra care must be taken when burning these areas.</p>
	<p>Luckily, The Nature Conservancy is not facing these challenges alone. The Wildlife Resources Division of Georgia's DNR is not just co-owner of Moody, but an equal partner in its management.</p>
	<p>McGee: The partnership that the Nature Conservancy and DNR have formed is really unique in the state of Georgia and it has allowed us to really do what needs to be done here at Moody by putting both private dollars and public dollars into this place.</p>
	<p>Narrator: Jim Ozier tells us about efforts to save the federally endangered red cockaded woodpecker. In a forest where fire has been suppressed, species like the red cockaded woodpecker cannot find adequate food.</p>
	<p>Ozier: We're trying to restore red cockaded woodpeckers. We were down to a single group of birds, and hopefully we can bring some more habitat into shape and bring that population up to a stable level. One group</p>

	<p>of birds could go out any day and we certainly don't want that to happen. So, if we can continue to grow from the ones that are here, bring some more in, improve the habitat that we have, we hope at least 10 group Over the next few years. Once we get then to a viable level hopefully we won't have to work with them near as intensively.</p>
	<p>Narrator: Red-cockaded woodpeckers are blubird-sized, black and white, and have prominent white cheek patches. There is a small red cockade on the head of the males. These are the only woodpecker to nest in living trees, preferring older longleaf pines because they often develop red-heart fungus which makes the wood easier to excavate for nesting cavities.</p>
	<p>Ozier: The group that was originally here consisted pretty much just of a breeding pair, now that same group is up to 4 birds, they have a couple helpers, and we do have a single male here as well. So we're hoping to get a female in with that single male this coming breeding season which will give us two groups, and if we continue to increase by a group or so every year, we'll meet our population goals pretty quickly, hopefully.</p>
	<p>Narrator: The work DNR is accomplishing here at Moody with RCW's is connected to overall conservation goals for the state. The Safe Harbor Management Agreement, for example, is a flexible approach to endangered species management. As part of Safe Harbor, birds are sometimes translocated to habitat which can sustain more birds to give their family group a better chance of survival.</p>
	<p>Ozier: Translocating individual birds is a very useful tool for building populations, a lot of the bigger populations such as fort stewart or fort benning move birds around inside their boundaries to pair up single birds, but they also have a few left over each year that are not being used and we can usually get two or three of those to go to other populations where the population is very small so each individual bird that you bring in is a big help.</p>
	<p>Narrator: One place with plenty of room for Red-cockaded woodpeckers is the approximately 29,000 acres at the Joseph W. Jones Ecological Research Center at Ichauway.</p>

	<p>Stober: This program is in cooperation with the Georgia Department of Natural Resources. We act as a state mitigation site, so if in the future there is a conflict with woodpecker conservation and perpetuation of the species, we can translocate birds here to this property and perpetuate those birds through time. Our goal here at Ichauway is to establish a population of red cockaded woodpeckers with a minimum of 10 breeding pair, we hope to push the population to 30 breeding pair in the future and hopefully saturate this abundant habitat we have here at Ichauway with red cockaded woodpeckers.</p>
	<p>Narrator: You can spot a nest cavity tree by the whitish resin which decorates the trunk. This resin has the effect of protecting against predators, like snakes, which can climb trees.</p>
	<p>Stober: Timber management and red cockaded woodpeckers are not mutually exclusive we can manage for timber and have woodpeckers through time using the Stoddard/ Neel method of civil culture, which is a group selection or single tree selection timber management regime. So, hopefully in the future we will be acting as a cooperater with the state in that we're helping birds persist on the landscape as well as showing that you can manage timber and natural resources and endangered species.</p>
	<p>Narrator: But the Jones Center is not only involved in saving one species. Dr. Lindsay Boring tells us about the Jones Center's mission.</p>
	<p>Boring: We're not interested in the conservation of red cockaded woodpeckers just for the sake of that one species they are a very important part of the longleaf pine ecosystem, and it's really the ecosystem conservation that we are about.</p> <p>The mission of the Joseph W. Jones Ecological Research Center at Ichauway is to provide a program of excellence in ecology and natural resource management and it should include integrated goals of research, education and outreach and conservation.</p>
	<p>Narrator: As a botanist, Dr. Boring is particularly interested in the many varied species of groundcover in a healthy fire forest.</p>
	<p>Boring: wiregrass is the indigenous grass in the longleaf system and it serves an important functional role, it provides a structure out here that captures all these longleaf pine needles, holds them off the ground so they don't decompose and it provides a resin rich fuel with these needles so that, when we burn, we can burn very hot and effectively control these young hardwood sprouts that otherwise, with fire suppression, could come in here and displace the longleaf ecosystem. so we consider wiregrass to be a very important functional part, it also provides a lot of cover for ground nesting birds and</p>

	<p>many other animals although not a very important food resource.</p> <p>Another group of plants which are dormant that you can't see this time of year are the wild land native legumes... we have 40 or 50 species out here, and have very nutritious seeds that they also produce so that whether we're talking about game or non game wildlife most of these fawn are very depend on the legume systems as the basis for the food web on which they exist...</p>
	<p>McGee: Longleaf pine forests are actually one of the most diverse ecosystem in the world. You can find hundreds of plant species in the longleaf pine forests. you can find up to 50 plant species in a single square meter plot in some longleaf pine savannahs and that's incredibly diverse – it even rivals the diversity in some of the tropical rainforests</p>
	<p>Narrator: There are many more fascinating aspects to the longleaf pine forest than we can cover in this program, but Maybe its most important aspect is its complexity and beauty. There is something in it older and wiser than we are. Janisse Ray ends a chapter of her book called “Forest Beloved” with these words...</p>
	<p>Ray: I drink old-growth forest in like water. This is the homeland that built us. Here I walk shoulder to shoulder with history-my history. I am in the presence of something ancient and venerable, perhaps of time itself, its unhurried passing marked by immensity, each year purged by fire, cinched by a ring. Here mortality's roving hands grapple with air. I can see my place as human in a natural order more grand, whole and functional than I've ever witnessed, and I am humbled, not frightened by it. Comforted. It is as if a round table springs up in the cathedral of pines and God graciously pulls out a chair for me, and I no longer have to worry about what happens to souls.”</p>
	<p>Female Narrator: Georgia's Department of Natural Resources helps landowners achieve goals for preserving wildlife and their habitats by identifying incentives that provide tax relief, direct payments, technical assistance or cost sharing. <u>The Landowner's Guide to Conservation Options</u> is a booklet provided by the department of natural resources that compares various incentives and provides landowners with the information they need to pursue those programs. Some incentives promote reforestation, protection of rare species, or implementation of specific management practices like prescribed burning. Call this number or visit this website for a free copy of <u>The Landowner's Guide to Conservation Options</u>.</p> <p>(Georgia Outdoors theme song)</p>