

FLORIDA LAND STEWARD



A Quarterly Newsletter for Florida Landowners and Resource Professionals **SPRING/SUMMER 2021 - VOLUME 10, NO. 2**

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Fire and Oaks? Understanding the Role of Fire in Upland Oak Forests

By Dr. Marcus Lashley, UF/IFAS Dept. of Wildlife Ecology and Conservation and Dr. Heather Alexander, Auburn University School of Forestry and Wildlife Sciences

Fire historically played an important role in structuring upland forests. When we think of fire being important in forests though, oak forests usually are not the forest type that comes to mind. However, evidence indicates that fire is a necessary disturbance in upland oak forests and the lack of fire in recent decades has contributed to reduced prominence of upland oak landscapes across the central and eastern United States (Alexander et al. 2021). Our research group, with expertise in several related disciplines stationed at institutions across the U.S., is conducting research on multiple aspects of this loss of oak landscapes in relation to fire

suppression via a hypothesized process known as “mesophication.”

Upland oaks are fire-adapted

Reconstructions of fire occurrences using charcoal sediments (i.e., presence of charcoal in soil from a historical burn) and dendrochronology (i.e., fire scars in the growth rings of trees) both indicate that fire was a common part of the upland oak landscape historically.

Across forest types that regularly experience fire, plant species have leaf and bark traits that tend to promote fire. The typical plants that

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Fire has historically played an important role in the health of upland oak forests. Photo by Marcus Lashley.

come to mind in Florida are longleaf pine, wiregrass, and various other pines and native warm-season grasses. Our research shows that many upland oak species also have characteristics that suggest strong adaptation and even an affinity for fire.

Upland oaks generally produce thicker, larger leaves with a lower leaf area compared to other hardwoods such as maples and sweetgum. Oak leaves curl when dry to create a “fluffy” high oxygen fuelbed with a lower initial fuel moisture content, traits associated with high flammability. See this video about leaf traits that affect fire behavior in upland hardwoods: <https://www.youtube.com/watch?v=8sYbisKFdsI&t=203s>

Our experimental burns confirmed that non-oak leaf litter flammability was lower than that of oaks and that flammability decreased linearly with increasing non-oak leaf litter contribution to the fuelbed (McDaniel et al. 2021). Moreover, the canopy structure and rougher bark characteristics of oaks promote more sunny and dry conditions, thereby promoting flammability (Babl et al. 2020).

Lack of fire results in loss of oak dominance through mesophication

Both studies above address key components of the mesophication hypothesis. Most importantly, they suggest that a lack of fire promotes growth and survival of fire-intolerant species. In return, these species have leaf traits that create a less flammable landscape hindering the reintroduction of fire.

Our group conducted an exhaustive literature review on the subject to determine how strong the evidence is for mesophication (Alexander et al. 2021). In this review, we found strong evidence for the following: 1) fire exclusion indeed leads to spread of other less fire-friendly

hardwood species; 2) those species create shadier, cooler, more humid conditions with higher fuel moisture and less aerated fuels to carry fire; 3) those conditions ultimately reduce flammability hindering reintroduction of fire; and 4) as species composition changes, it continues to more strongly promote undesirable hardwoods while suppressing oak regeneration in a positive feedback. Overall, our work and the work of others provide strong evidence that upland oak forests are in trouble due to mesophication initiated by fire suppression decades ago.

The fate of upland oak forests

Oaks are a foundational genus, or in other words, they play a strong role in structuring entire food webs. They do this namely by providing food, cover, and unique forest community structure and conditions for a multitude of wildlife, insect, plant, fungi and other species. Also, quite a few animal species are strongly promoted by recurring use of prescribed fire in upland oaks and may be reduced or even lost through mesophication (Harper et al. 2016). This makes the current trends in oak forest concerning because, although we have mature oaks in the overstory, few young oaks exist to replace them, and prescribed fire is still relatively infrequently used in upland oak forests.

How do we reverse mesophication?

Fixing the issue is not as simple as just returning fire. Many studies have implemented prescribed fires in upland oak forests, but oak

regeneration often fails to improve. Moreover, mesophication is making the system less flammable and harder to burn. Other forest management practices used with fire may be needed. For example, pairing fire with a timber harvest could quickly transform forest structure and composition to promote most associated wildlife and increase flammability.

One silvicultural system focused on improving oak regeneration that has had some success is termed the shelterwood with fire harvest technique. Essentially, harvests are designed to reduce the canopy to about 50% cover. This increases sunlight penetration through the canopy and then the application of a prescribed fire soon after helps to shift the competitive advantage to oak seedlings. Later on, once advanced regeneration of oak is present, a follow up harvest is used to remove the remaining overstory.



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Similar strategies have emerged focused on forest stand improvement for wildlife. One is called a wildlife retention cut, which is similar to the shelterwood technique, but the purpose is to maintain the open canopy and developed ground layer of vegetation by burning every few years. Any future timber harvests are only implemented to maintain the open canopy and fire is used to repeatedly reset succession of the ground layer vegetation. Also, forest stand improvements could include killing non-oak mesophytic species, which has the advantages of improving wildlife habitat and increasing flammability for prescribed burning, but has the disadvantage of being noncommercial. In any case, ensuring the health of future upland oak forests will require fire, and may initially require other silvicultural practices to reverse mesophication.

If you are interested in this topic and want to learn more, we have a suite of content available discussing mesophication and related forest management strategies on the Fire University podcast (<https://fireuniversity.libsyn.com/>). We also regularly post related wildlife and habitat management information on social media, follow us on all the major platforms @ufdeerlab.

The collaborative effort was undertaken by authors from Auburn University, Mississippi State University, University of Mississippi, University of Georgia, University of Florida, University of California Davis, Pennsylvania State University and Tall Timbers Research Station representing various expertise, including fire ecology, forest hydrology, tree ecophysiology, wildlife, and plant ecology.

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Pollinator Habitat in the Longleaf Ecosystem

By Arlo Kane, Florida Fish and Wildlife Conservation Commission

After you have harvested your pines and are preparing to replant, it's a good time to start thinking about the understory associated with re-establishing your pine forest. Most people think about what species of pine they want to replant, but in most cases, the overstory is only composed of one or two species. It's the understory where all the diversity of plant life is found. Wildlife, especially native pollinators, depend on this diversity of plant life. The majority of agricultural crops and native plants depend on insect pollination.

Native bees

Native bees are by far the most important pollinators, but other insects such as butterflies, moths, beetles, and birds contribute as well. There are over 20,000 species of bees worldwide and 4,000 in the United

States. Florida has 316 species of native bees. Of those, 29 are found only in Florida. Wild bees are in peril though. Many species are declining worldwide, and habitat loss and fragmentation is a big part of that decline. It doesn't take a lot of area to provide pollinator habitat, but blocks of well-spaced habitat can best accommodate bees that may fly less than a mile from their nest to seek food for their offspring.

While we often think of bees pollinating agricultural crops, our native bees are critically important for pollinating native plants. Bees may be pollinating agricultural crops by day, and spending the night in a forested ecosystem. What happens in the forest doesn't always stay in the forest. In the 1970's blueberry farmers in New Brunswick, Canada suffered a sudden decline in the

blueberry harvest. The farmers later found out aerial spraying of the adjacent forest for spruce budworm had also killed the bumble bees, mason bees, and mining bees that pollinated their crops. These bees nested in the adjacent forest.

What to plant for pollinators

After your timber harvest and site preparation are complete there will be a lot of open land with disturbed soil that could be planted to native plants beneficial to pollinators. These native plants are not the same ones you find in a big box store. There are three main sources where you can buy native plant seed adapted to our area. Look for Florida ecotypes to get seeds with the best chance of survival. Ernst Seeds, Roundstone

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A University of Florida researcher collects specimens for a study of native pollinators, photo by Tyler Jones.

Native Seed, and Florida Wildflower Growers Cooperative are all good sources of seed.

Good options for longleaf pine ecosystems include legumes, sunflowers, tickseeds, blazing stars, and native warm season grasses. Legumes important for pollinators and longleaf include butterfly pea, partridge pea, false indigo, wild indigo, sundial lupine, Virginia tephrosia, and summer farewell. Native warm season grasses are used for nectar and nesting, and include lopsided indiagrass, splitbeard bluestem, toothache grass, little bluestem, pineywoods dropseed and purple tridens. Keep the grasses to no more than 20 percent volume of the mix.

Generally, for wildland planting, you need two to four pounds of seed per acre to establish native pollinator plants. Select a mixed assortment of plants that flower at different times so that you have something blooming the entire growing season

through the fall. For most areas, six to eight different species planted will result in a varied diet for bees and butterflies and help ensure that something is always blooming.

Seeding can be done by hand spreader or a fertilizer spreader. If you are trying to seed areas that are scheduled to be planted back to longleaf pine, wait until about November, after any site prep has finished and at least 60 days after any herbicide applications, to plant your seeds. If the ground is already disturbed, then you can mix the seed with sand or generic clay-based cat litter. Use two parts carrier to one-part seed. Another alternative is to use disked strips either through the planted area or around the edge. One landowner in the panhandle recently planted 4 acres of pollinator habitat by disking 2 miles of strips around the edge of his pine stands. While 2 miles sounds like a long distance, because the width

was only 20 feet wide, he only had to buy twelve pounds of seed.

The Natural Resources Conservation Service offers cost-share assistance to landowners who want to plant pollinator habitat. If you would like to learn more about how to plant native plants for pollinators a good source of information is the Xerces Society (<http://www.xerces.org/>). They have a publication entitled *Conservation Cover for Pollinators Florida Installation Guide*. If you would like to apply for cost-share assistance, contact your local Natural Resources Conservation Service District Conservationist. Find your local USDA Service Center at <https://offices.sc.egov.usda.gov/locator/app>.

To learn more about managing wildlife on your property, check out our habitat how-to section at the FWC's Landowner Assistance Program (LAP), or find the LAP biologist serving your area at <http://MyFWC.com/LAP>.

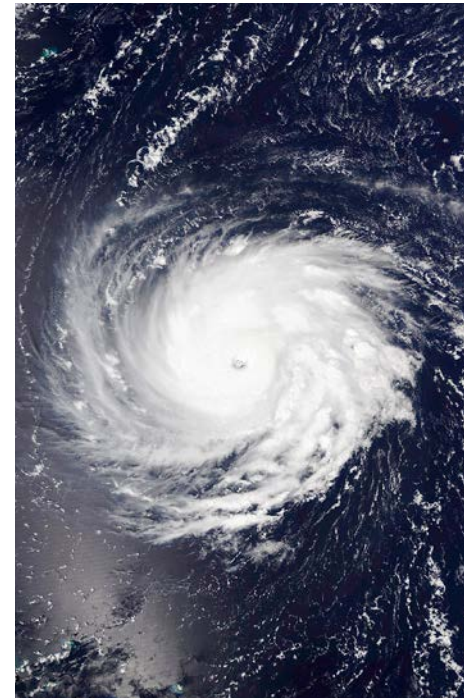
Get Ready for Hurricane Season

Hurricane season is June 1 through November 30. There are some strategies to make you and your property more resilient, and steps you can take to recover from a storm more quickly. See the USDA's Hurricane Preparation and Recovery Guides for pine forests and other commodities at: <https://www.climatehubs.usda.gov/hubs/southeast/topic/hurricane-preparation-and-recovery-southeast-us>

Our Florida Land Steward Webinar Series on Hurricane Preparation & Recovery is underway. Find registrations, recordings, links, and materials from these and other Florida Land Steward Webinars at: <https://programs.ifas.ufl.edu/florida-land-steward/bulletin-board/workshop-and-tour-materials/>

Get your Farm Service Agency farm information forms filled out ahead of time

One of the best hurricane preparation tips we can share is to get your farm information forms filled out ahead of time with the USDA Farm Service Agency. This will greatly expedite the process of enrolling in assistance programs such as the Emergency Forest Restoration Program, if necessary, after the storm. It will also help the USDA get assistance program applications processed more quickly and efficiently. Find your USDA Service Center at <https://offices.sc.egov.usda.gov/locator/app>



Don't miss out on news and events!

Sign up for the regular updates! Send an email to cdemers@ufl.edu to be added to the email listserv. Florida Land Steward email updates are sent once a week or every other week and include the latest calendar of workshops, tours and other events; a link to the current issue of this quarterly newsletter; updates on cost-share and other assistance programs, opportunities, and resources; and other stewardship related news and information.

All the latest news and events are online at the new UF/IFAS Florida Land Steward Program web site: <https://programs.ifas.ufl.edu/florida-land-steward/>

UF/IFAS School of Forest Resources and Conservation is now the School of Forest, Fisheries, and Geomatics Sciences

The University of Florida's School of Forest Resources and Conservation is now the School of Forest, Fisheries, and Geomatics Sciences (FFGS). The new name was launched and announced in March 2021.



**SCHOOL OF FOREST,
FISHERIES, AND
GEOMATICS SCIENCES**

FFGS started as a forestry department at UF in 1935, and officially became a school in 1937. In 2004, the school merged with the geomatics program, which was once housed in the College of Engineering's Civil Engineering Department. The

school merged with fisheries and aquatic sciences, another UF/IFAS College of Agricultural and Life Sciences department in 2008.

The name was chosen after close engagement with faculty, staff, students, alumni and stakeholders,

including in-person brainstorming sessions, phone calls, and surveys. The new name better reflects the School's diverse teaching, research, and extension programs; and will increase visibility for the school for hundreds of students and faculty in the fisheries and aquatic sciences graduate major, geomatics graduate and undergraduate majors, and marine sciences undergraduate major.

TIMBER PRICE UPDATE

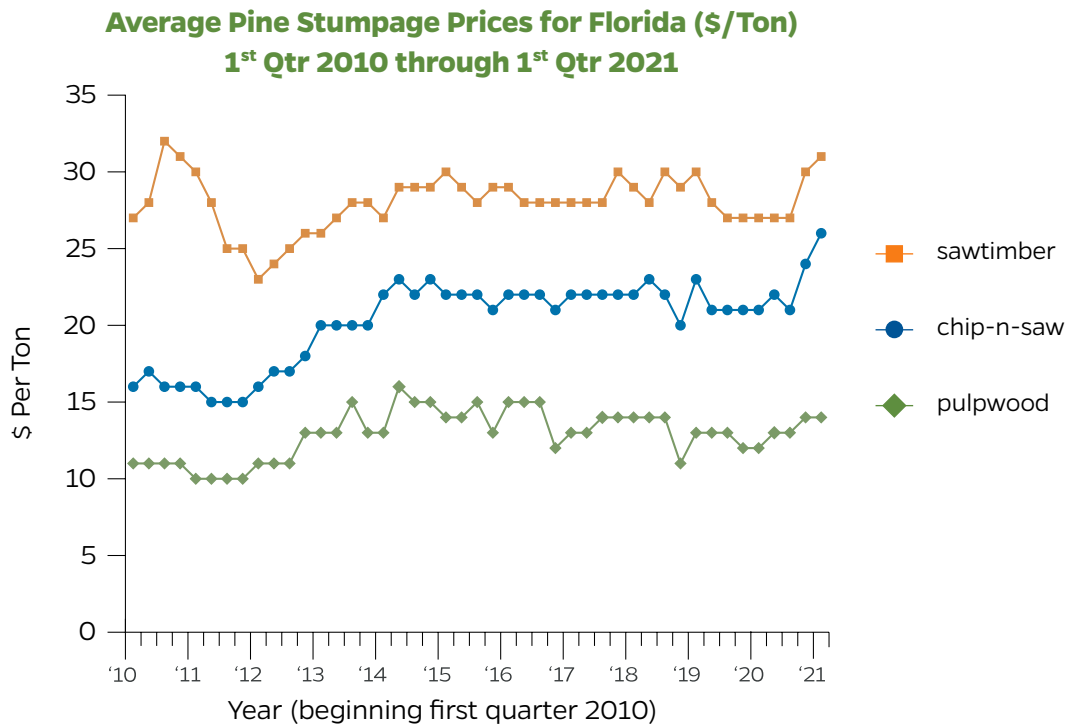
The timber price information below is useful for observing trends over time, but does not reflect current conditions at a particular location. Landowners considering a timber sale are advised to solicit the services of a consulting forester to obtain current local market conditions.

Average stumpage prices for the three major products in Florida, as reported in the 1st Quarter 2021 Timber Mart-South report were:

Florida Stumpage Prices	
Pine pulpwood:	\$14/ton, same as 4 th Qtr. 2020
Pine C-N-S:	\$26/ton, ↑
Pine sawtimber:	\$31/ton, ↑

Trend Report

Overall, average stumpage prices increased across the region in the first quarter of 2021. Steady demand and wet weather in many areas contributed to a modest increase in prices. While lumber indicators and prices remain strong, the supply of sawtimber in the woods and in wood yards continues to suppress sawtimber stumpage prices. Potentially good news on the lumber front is the number of saw mills operating in this region is on the increase and some existing saw mills are expanding. We'll see if expansion in this market gives sawtimber stumpage prices a much-needed boost. Other emerging developments that may have some impact on stumpage prices are forest carbon markets. SilviaTerra is now rolling out a harvest deferral program that will pay landowners to keep trees on the stump for a year. As always, email updates are the best way to stay current on news, opportunities, webinars, and events. Send an email to cdemers@ufl.edu to be added to this service if you do not receive the email updates.



Timber Mart-South is compiled and produced at the Center for Forest Business, Warnell School of Forest Resources, University of Georgia, under contract with the Frank W. Norris Foundation, a non-profit corporation serving the forest products industry. See <http://www.tmart-south.com/> for information on subscriptions.

CONGRATULATIONS CERTIFIED LANDOWNERS

More information about certification in these programs is available at:

<https://www.fdacs.gov/Divisions-Offices/Florida-Forest-Service/For-Landowners/Programs/Forest-Stewardship-Program>

<https://www.treefarmssystem.org/florida>

<https://myfwc.com/lap>

These landowners have achieved certification in the Tree Farm, Forest Stewardship, Forces Forest, and/or Wildlife Habitat Recognition Program and demonstrate excellent stewardship of their land resources.



Craig Gilliken and Joanne Duffy, Gilchrist County



George "Bob" Koon, Columbia County



James Moses (L) with Stan Shepard, Columbia County



Sharon Wombles, Santa Rosa County



Rhonda Marynec (L) with Stan Shepard, Columbia County



Jim Fischer (center) with grandson Jason and Megan Ellis (R), Alachua County



Ben Odum, Escambia County



Scott Amberson, Escambia County

Upcoming Events

Date	Event, Location, Contact
June 3	Hurricane Preparation & Recovery Webinar: Prepare for the Storm. 2:00 to 3:00 pm ET. Provided by the UF/IFAS Florida Land Steward Program with support from Florida Forest Service, Farm Credit Associations of Florida, and other partners. Hurricane season is upon us. Take some important precautions to prepare your property for the next storm. <i>For details and registration see the events calendar at https://programs.ifas.ufl.edu/florida-land-steward/</i>
June 23	USDA Natural Resources and Conservation Service State Technical Committee Meeting. 9:00 am to 12:00 pm. <i>For information contact Nina Bhattacharyya, nina.bhattacharyya@usda.gov, 352-338-9554.</i>
Aug. 16-19	2021 Aquatic Weed Control Short Course. At the Renaissance Orlando at Sea World. The Aquatic Weed Control Short Course offers training and continuing education for Florida's pesticide applicators. <i>Details and registration at https://conference.ifas.ufl.edu/aw/index.html</i>
Aug. 26	Hurricane Preparation & Recovery Webinar: Recovering from the Storm. 2:00 to 3:00 pm ET. Provided by the UF/IFAS Florida Land Steward Program with support from Florida Forest Service, Farm Credit Associations of Florida, and other partners. We'll discuss key assistance contacts and strategies to minimize losses within a week and a month after a hurricane. <i>For details and registration see the events calendar at https://programs.ifas.ufl.edu/florida-land-steward/</i>
Aug.31 - Sept. 2	Florida Forestry Association Annual Meeting & Trade Show. Panama City Golf and Spa Resort, Panama City Beach, FL. <i>Details to be posted at http://www.flforestry.org/annual-meeting/</i>
Oct. 12-13	SAF/FFGS Fall Symposium: Southern Pine Update. Stern Learning Center, Austin Cary Forest near Gainesville, FL. Provided by the Florida Division Society of American Foresters and the UF/IFAS School of Forest, Fisheries, and Geomatics Sciences. Join us for a broad array of topics related to Southern pines. We'll dive into the latest on genetics, forest health, management, and markets. <i>Details and registration will be posted and linked in the events calendar at https://programs.ifas.ufl.edu/florida-land-steward/</i>

More events, news, and information can be found at programs.ifas.ufl.edu/florida-land-steward

The Florida Land Steward Newsletter is joint project of the UF/IFAS Extension, Florida Forest Service, Florida Fish & Wildlife Conservation Commission, US Fish & Wildlife Service, USDA Natural Resources Conservation Service and Florida Tree Farm Program:

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