

attracting interest and attention for planting and restoration for both sawtimber and pole forest products. Most management focus has been towards loblolly and longleaf the last few decades without much emphasis on shortleaf.

The Shortleaf Pine Initiative

A concerned group of foresters and biologists met in September 2010 at a shortleaf meeting hosted by Southern Regional Extension Forestry (SREF). Those in attendance all shared an interest in the value of shortleaf pine for both forest and wildlife management objectives. Many stayed after the meeting and formed what became the Shortleaf Working Group. These professionals continued to meet and promote shortleaf and alert others to the decline of the resource across the range. A national conference was held in October 2011 in Huntsville, Alabama with over 100 in attendance. During this conference, the enormity of the loss of acreage was realized due to a presentation using FIA data.

Following the Huntsville conference, the need for range-wide shortleaf restoration was accepted and a planning team was formed. Sufficient funding was obtained to conduct a series of four stakeholder workshops across the range to gather input for the planning process. The first draft of the Shortleaf Pine Restoration Plan was completed in September 2014 and subsequent drafts have been written in the last year. The Shortleaf Pine Restoration Plan is in its final draft and should be officially released and available in January 2016.

A great deal of renewed interest and management has occurred in the last four years, and local initiatives have developed in portions of Tennessee, Alabama, Mississippi, Arkansas, Missouri, Texas, and New Jersey. The Shortleaf Pine Initiative (SPI) was formalized in 2013. An SPI Advisory Committee was formed, composed of numerous forestry and wildlife agencies and organizations, and a full-time director was hired in November 2014. The Initiative operates out of the University of Tennessee's Department of Forestry, Wildlife and Fisheries, and operates in close collaboration with the National Bobwhite Conservation Initiative and the Center for Native Grassland Management.

Why Shortleaf?

Professional foresters and wildlife biologists have understood the value of shortleaf forests in the management of public lands. It is a good fit with the principles of ecosystem management; when shortleaf is managed with thinning and prescribed fire, it not only provides excellent wildlife habitat, but also yields forest products from thinning and final harvest.

Private landowners manage and retain land for a variety of reasons. Income from the sale of timber is important, but landowners are increasingly interested in the objectives of wildlife, legacy of ownership and recreation, and shortleaf fits these objectives well. Lower-quality, well-drained sites, not used for high-quality hardwood management, can be planted or managed for shortleaf and mixed stands. When managed properly with thinning and application of prescribed fire, shortleaf can provide an additional source of timber income and excellent game and non-game wildlife habitat.

Interested? Contact your local forester and wildlife biologist. Additional information can be found at www.shortleafpine.net. Since not all sites and lands are suitable for shortleaf, it is always recommended that the services and expertise of a professional forester and wildlife biologist be utilized in the planning process.

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***Editor's note:** Interested landowners can find their local state forester at www.dof.virginia.gov. In certain counties, cost-share assistance is available to help landowners cover the cost of planting shortleaf pine. Learn more here: http://dof.virginia.gov/infopubs/_forestry-topics/FT0016-Forestry-Quail-Habitat-Recovery-Cost-Share-Prog-2014-06_pub.pdf.*

Learn more about shortleaf pine:

- **Draft Shortleaf Pine Restoration Plan:** <http://shortleafpine.net/tools-and-resources/additional-resources/publications/shortleaf-pine-restoration-plan>
- **Shortleaf Pine: An Option for Virginia Landowners:** https://pubs.ext.vt.edu/420/420-165/420-165_pdf.pdf
- **Successful Establishment of Shortleaf Pine:** <http://ncforests.gov/publications/Forestry%20Leaflets/FM14.pdf>

JG

VIRGINIA FOREST LANDOWNER UPDATE

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Events, news, and information promoting the stewardship of Virginia's forest resources.

VIRGINIA FOREST LANDOWNER EDUCATION PROGRAM

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Shortleaf Pine: An Opportunity for Landowners in Virginia
Mike Black, Shortleaf Pine Initiative

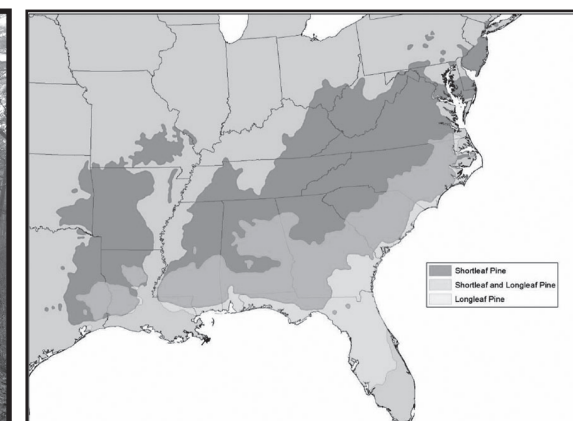


Overview

Shortleaf pine forests and associated habitats once covered a vast area of the continent from the piney woods of eastern Texas and Oklahoma to the eastern seaboard from New Jersey to Florida. Shortleaf pine dominated significant portions of its historic range due to its adaptation to frequent fire return intervals that were common for thousands of years until the loss of open range and subsequent fire suppression efforts. Shortleaf pine not only provided outstanding forest products for dimension lumber, poles and paper, but also excellent wildlife habitat, particularly in stands with adequate sunlight to the ground and frequent fire return intervals. The loss of these open forest habitats has led to significant declines in both plant and wildlife populations and range that are dependent on these early successional forests.



A stand of shortleaf pine managed for both forest products and wildlife habitat. Thinning, along with a frequent application of prescribed fire, promotes an understory of plants beneficial to both game and non-game wildlife species. Photo courtesy of Mike Black, SPI.



Shortleaf and longleaf pine are often favorites of private landowners (on proper soils) for both high quality timber production and excellent wildlife habitat. Both species respond well to management utilizing thinning and prescribed fire. Map courtesy of Southern Regional Extension Forestry (SREF).

Shortleaf pine can be found in 22 states from east Texas to Florida and up the eastern seaboard to New Jersey. According to Forest Inventory Analysis (FIA) data from 2012, there are only approximately 6.1 million acres of shortleaf and shortleaf-oak habitats across the range. The same FIA data from the 1980s showed that there were approximately 12.6 million acres of shortleaf pine and shortleaf-oak habitat. This represents a 52 percent habitat decrease across the range. Most of the remaining shortleaf pine is found west of the Mississippi.

The Loss of Shortleaf Forests in Virginia

While shortleaf pine has decreased in all areas in its range, the greatest loss in Virginia occurred decades before losses in other states, as fence laws were enacted there far earlier in history. Fence laws and the end of open range drastically reduced the frequency of landscape-scale fires that favored shortleaf pine. Intensive settlement across Virginia also occurred earlier than in other states. Another factor that has led to the recent decline of shortleaf in Virginia is that shortleaf often occurs in mixed stands of shortleaf and other hardwoods. When these stands are cut (with the shortleaf removed), there is often insufficient sunlight to allow for regeneration, and the shortleaf disappears. Like other southern yellow pines, shortleaf requires bare soil and nearly full sunlight for effective regeneration.

Throughout much of the southeast, a great deal of emphasis has been placed on the planting of loblolly pine for fiber production and a faster rate of growth. Another favored species – longleaf pine – is also

Shortleaf cont. on page 5

Useful Resources

Dovetail Partners provides authoritative information about the impacts and trade-offs of environmental decisions, including consumption choices, land use, and policy alternatives. Check out one of their latest publications: *American Chestnut: A Primer on an Eastern Forest Icon*, http://www.dovetailinc.org/report_pdfs/2015/dovetailamericanchestnut1015.pdf.

Forests for the Bay promotes healthy forests and good forest management in the states surrounding the Chesapeake Bay. Sign up for their newsletter and learn more about their program at: <https://www.forestsforthebay.org/index.cfm>.

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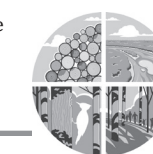


Virginia Department of Forestry	Virginia Tech Department of Forest Resources & Environmental Conservation & Virginia Cooperative Extension	USDA Forest Service Forest Stewardship Program	Virginia Forestry Association	Virginia Sustainable Forestry Initiative SIC/Virginia Tree Farm Committee
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EVENTS CALENDAR			For the most complete listing of natural resource education events, visit the on-line events calendar at http://forestupdate.frec.vt.edu		
Contact	Date	Location	Event	Time	Fee
DCR	Jan., Feb., & March	Virginia's State Parks	A variety of events and activities For a complete list, visit: www.dcr.virginia.gov/parks	Varies	Varies
MP	Year-round	State-wide	Virginia Master Naturalist Volunteer basic training www.virginiamasternaturalist.org/chapters.html	Varies	Varies
VAFHP	Jan. 25-26	Blacksburg	VA Assn. of Forest Health Professionals Annual Conference Updates on existing and new forest health issues will be presented by top experts in the field. Pesticide recertification credits will be available.	All-day	\$80* one-day \$125* both days
AM	Feb. 9	Webinar	Native Plants and Providing Habitat for Wildlife This presentation will focus on various native plants and their importance to wildlife, but also the habitat management techniques that apply to enhance, establish, and maintain them. Register on-line: http://extension.psu.edu/natural-resources/forests/courses/pa-forests-web-seminar-center	12 - 1 or 7 - 8	Free
AD	Feb. 20	Culpeper	12th Annual Woods & Wildlife Conference Join Virginia Cooperative Extension and partners for a full day of presentations and workshops geared to help both large and small acreage landowners become better stewards.	8:30 - 4:30	\$40*/person \$70*/couple
AD	March 9	Roanoke	Roanoke Tree Care Workshop Check for details at: http://www.treesvirginia.org/	TBA	TBA
JG	March 18-20	Cumberland	Central Virginia Landowner Weekend Retreat Spend the weekend with fellow forest owners and natural resource professionals. A combination of classroom talks, field tours, and hands-on experiences will teach new landowners about important aspects of forest management.	Varies	\$40*/person \$80*/couple or \$75**/person \$150**/couple
VFA	April 20-22	Virginia Beach	Virginia Forestry Summit Join professional foresters, loggers, wood products manufacturers, and woodland owners at this annual meeting. Educational programs will be available for everyone.	Varies	Varies
JG	May 2 - July 31	On-line	On-line Woodland Options for Landowners Registration opens March 1. Learn the basics of forest management, from setting goals and objectives to developing a management plan, in this 12-week class.	Varies	\$45/family
JF	May 21	Alberta	Spring Venture Outdoors! Interested in learning about current forestry issues that pertain to the health and management of your land? If so, join Virginia Cooperative Extension and partners for this one-day program.	9 - 4	Free*
If you are a real estate professional or Commissioner of the Revenue, please visit the Landowner Update website for a schedule of our continuing education classes, Real Forestry for Real Estate. (http://forestupdate.frec.vt.edu).					
*meals included; **meals and lodging included					

EVENT CONTACTS			
Contact	Name/Affiliation	Phone	e-mail/website
DCR	Virginia Department of Conservation & Recreation	804/786-1712	www.dcr.virginia.gov
MP	Michelle Prysby	434/872-4580	www.virginiamasternaturalist.org
VAFHP	Virginia Association of Forest Health Professionals	NA	http://vafhp.org
AM	Allyson Muth	814/865-3208	abm173@psu.edu
AD	Adam Downing	540/948-6881	adowning@vt.edu
JG	Jennifer Gagnon	540/231-6391	jgagnon@vt.edu
VFA	Virginia Forestry Association	804/278-8733	www.vaforestry.org
JF	Jason Fisher	434/476-2147	jasonf@vt.edu

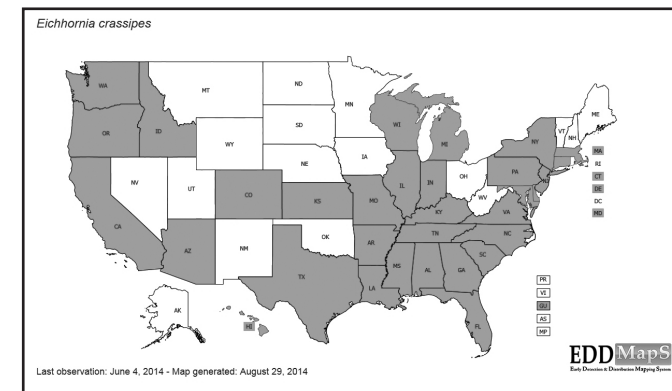
You Ain't From Around Here! Exotic Invasive of the Quarter: Water Hyacinth (*Eichhornia crassipes*) Jennifer Gagnon, Virginia Tech

This quarter, we'll take a look at water hyacinth. According to the Department of Conservation and Recreation, this species isn't officially in Virginia; but the USDA PLANTS Early Detection & Distribution Mapping System shows it being reported in Augusta County, Hampton, and Virginia Beach, so it may very well be unofficially here.

I'll be honest, when I began writing this article, I was totally uninspired and apathetic about water hyacinth. Aside from learning how to identify it during an aquatic plant lab in dendrology in the summer of 1997, I had little knowledge of it. This all changed as I started research for this article. Turns out, water hyacinth does not lack for interesting details. In fact, because of this plant, the world's most dangerous animal was almost introduced in Louisiana. More on that shortly.

My obsessive Jeopardy watching has given me a strong appreciation for the etymology of words. Typically the Latin names of plant species are quite descriptive, as is the case for water hyacinth. *Crassipes* is from the Latin *pes* (foot) and *crassus* (foot) – ergo, fat foot. This refers to the inflated petioles at the base of the leaves. These give the leaves buoyancy and keep them afloat.

In addition to etymology, I also enjoy hyperbole. So learning that many aquatic plant scientists consider this to be the worst aquatic plant in the world and that it is one of the fastest growing plants known, certainly piqued my interest. While a single plant can produce as many as 5,000 seeds a year (which can remain viable up to 20 years), plants typically reproduce vegetatively from daughter plants that form from the roots. In one study, a single water hyacinth produced 1,200 daughter plants in just four months. Populations have been known to double in two weeks. In SE Asia, there are reports of water hyacinth growing between 6.5 and 16 feet a day. That's faster than kudzu.



(Left) Waterways infested with water hyacinth provide little habitat for wildlife species. Photo by Chris Evans, University of Illinois.; (Right) Current reported distribution of water hyacinth in the US.

Water hyacinth will grow in a wide variety of aquatic habitats, including lakes, ponds, rivers, wetlands, and marshes. It can withstand drastic fluctuations in water level, flow rates, acidity, and nutrient levels (although it especially likes water with high nutrient content). Water hyacinth does not do well in brackish or salt water.

The plants are sensitive to cold temperatures, preferring a range between 54-86° F. Frost will kill the leaves, which may help keep this species under control in cooler parts of Virginia.

Water hyacinth doesn't come from too far away. It is native to tropical and subtropical South America. It has been widely introduced around the world, in North America, Asia, Africa, and New Zealand. In the US, it was introduced in 1884 at the World's Fair in New Orleans. The plants were given away as gifts by a group of visitors from Japan. Since those early days, water hyacinth quickly took hold in the US. It covers lakes and ponds, impacting water flow, blocking sunlight, and starving the water of oxygen. This kills fish and turtles, and breeds mosquitoes and a species of snail known to host a parasitic flatworm that causes snail fever. Fortunately, this isn't a common problem in the US, but it is in developing countries. Also, it has no direct food value to wildlife.

Over the years, some extremely, um, creative, attempts have been made to get this plant under control. The US War Department became involved in eradication efforts and dumped oil over many of the plants (let's not think too much

Water hyacinth cont. from page 3

about the residual damage from such a treatment!). But better yet, in 1910, the New Foods Society made a wonderful suggestion that would not only address the water hyacinth problem, but also the meat shortage problem the US was undergoing at the start of the 20th century.

The New Foods Society backed a bill that would introduce hippopotamuses from Africa into the bayous and rivers of Louisiana. The hippos would plump up eating water hyacinth and then be harvested for food. This was known as the American Hippo Bill and as far as I'm concerned, would have been a win-win for everyone! Unfortunately for foodies, the bill fell one vote short of passing. I know this sounds nuts, but I verified that this is real. There's even a movie in the works called *American Hippopotamus*, with Edward Norton as one of the producers. I was recently in Baton Rouge and can say with some certainty, Louisiana would be a different place with hippos instead of nutria (the walking trail along the Mississippi River would undoubtedly be less popular). Anyway, enough about hippos.



From left: Glossy leaves, inflated petioles, and attractive purple flowers are characteristics to help easily identify water hyacinth. Photos by: Katherine Parys, USDA ARS, Leslie J, Mehrhoff, University of Connecticut, and Wendy VanDyk Evans.

How to identify water hyacinth

Form: Free-floating perennial plant.

Leaves: Densely veined; thick, glossy, and waxy; dark green; circular to elliptical, up to 6" long and 4" wide; held upright and act like sails; attached to a spongy inflated petiole (helps keep the plant afloat) up to 19" long.

Roots: Underwater; heavily branched; dark and fibrous; up to 50% of the plant's biomass.

Flowers: Six petals, light blue to violet, uppermost petal has a yellow spot; 2-3" long; 8-25 flowers per terminal spike.

Fruit/Seed: Capsule containing up to 450 seeds; seeds are small, oval at the base, and taper; production of seeds and seedlings is rare; seeds can remain viable for 20 years.

How to Control Water Hyacinth

Mechanical: Hand-pull all plant parts, being careful not to break the plants (small pieces left behind will form new plants); bag and dispose. Must monitor for several growing seasons.

Chemical: Use a 2% glyphosate solution in a formulation made for aquatic application and spray over the foliage; avoid contact with non-target species.

Biological: Triploid grass carp will eat water hyacinth but also native plant species. You must be prepared to have desired species eaten as well if you choose this method. You may obtain a permit for triploid grass carp from the Virginia Department of Game & Inland Fisheries. Additionally, there are three insects that have been introduced to control water hyacinth. Two are beetles and the third is a moth. Although these insects do help reduce populations, other control methods are usually required.

As with many exotic invasive species, there are mixed messages out there. During my research I found a site called "*Caring for your new water hyacinth*". And while the article acknowledges that it is a noxious weed, it also gives detailed information on the growing and fertilization of water hyacinth. To be fair, this site is from Iowa, where winters are severe enough to keep these plants in check. But still, a few warm winters, and who knows? I always say, better to be safe than sorry and stick with planting natives. Because I'm pretty certain the residents of Iowa don't want hippos in their waterways.

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