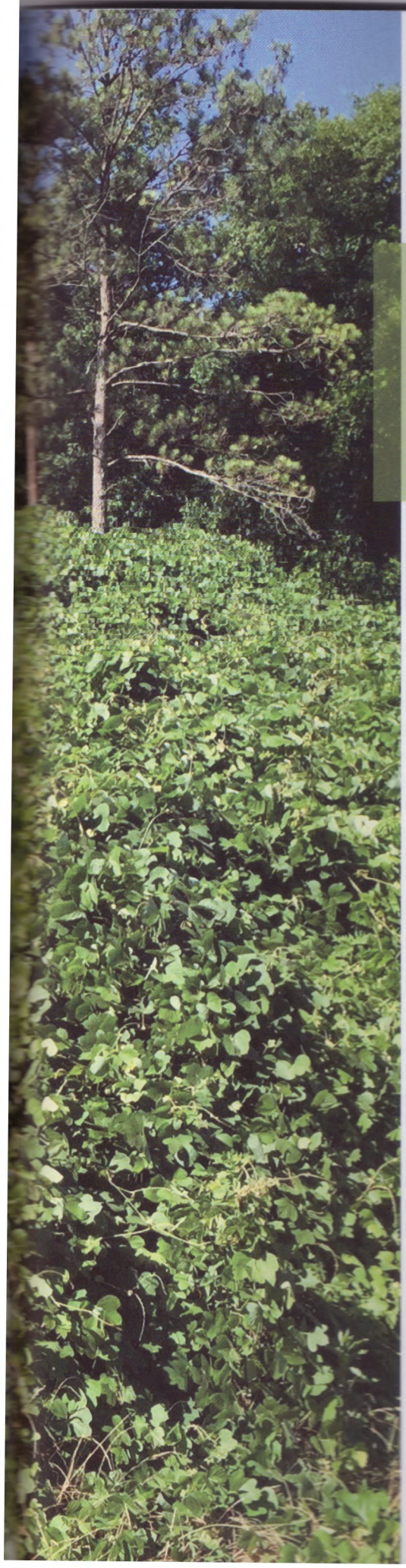


PLANT INVADERS

KUDZU, PRIVET, AND CALLERY PEAR ARE THREE OF THE BIGGEST NUISANCES FOR LANDOWNERS. HERE'S HOW TO TAME THEM AND KEEP THEM FROM RETURNING.

BY DAVID COYLE

When it comes to plants, not all green is good. Many common plants in natural areas across this country are not native. In fact, a study by Chris Oswalt of the U.S. Forest Service and his colleagues published in 2015 showed that non-native, invasive plants impact nearly 40 percent of our forests.

There are regional differences, with higher rates of invasion in the eastern United States and Hawaii. In many cases invasive plants have become naturalized – a part of the common flora – with no chance whatsoever of eradicating them or returning the land back to its original flora.

Why are there so many invasive plants in U.S. forests? Part of the problem is people. It's human nature to want to make our new home look like our old home, whether the situation is moving from Europe to North America in the 1700s or relocating from Pennsylvania to North Carolina today.

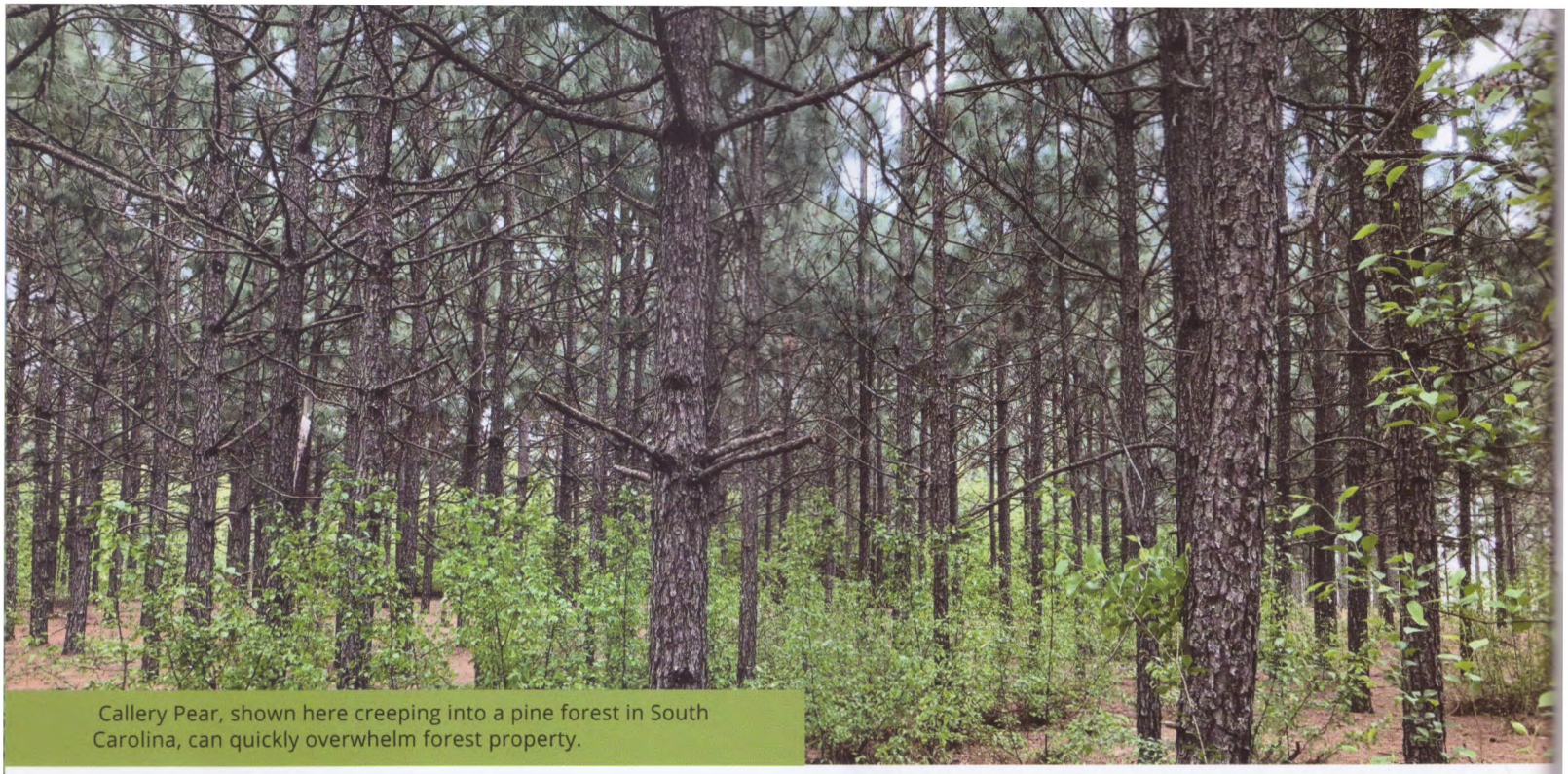
For many, part of home is the plants, especially those in the managed landscape. Unbeknownst to many, bringing that pretty flower from one yard to a new place might unwittingly introduce an invasive species. In some cases, people bring plants to new places with a well-thought out purpose, like trying to establish a new crop, or as part of a new technology.

Another part of the problem is the plants themselves. Some plants have characteristics that increase their ability to become invasive. When these plants are installed in new areas, without naturally occurring biological controls on their growth, their populations rapidly increase and expand, and soon an invasive species is established.

In forested areas it can be difficult to detect infestations because many forests are vast, rural places, and it's easy for a new plant to grow unnoticed. By the time it's discovered, it might be too late to do anything about it.

What makes a plant invasive? Generally speaking, there are four main biological areas: fruit or seed characteristics, reproduction habits, growth habits, and natural enemies. Invasive plants often produce fruit or seed early in the plant's lifespan and annually, and they produce an abundance of fruit or seed (some plants can produce thousands of seeds each year). These fruits or seeds can remain dormant for long periods waiting for the right conditions to geminate. Wind, water, and/or animals can disperse them, and when conditions are right, nearly all of them sprout.

Invasive plants reproduce either sexually (a male plant or flower produces pollen, which fertilizes flowers on the female plant or flower; in some species, both male and female flowers can be present on the same plant), and can produce fruit or seed anytime during the year. Invasive plants also can reproduce vegetatively, where



Callery Pear, shown here creeping into a pine forest in South Carolina, can quickly overwhelm forest property.

new plants arise from pieces of the old plant, or by growing off of feeder roots underground.

Invasive plants often get leaves early in the season and keep them until late in the season; they tolerate a wide variety of growing conditions (shade, sun, wet, dry, poor soil, polluted areas, disturbed areas, etc.), and have rapid growth rates. Finally, invasive plants often have few, if any, natural enemies. Not much eats them, and few fungi or other microorganisms impact them.

Many of the most common invasive plants in the United States were brought here intentionally, and in most cases we know when they got here. Let's take a closer look at a few common invasive plants – some have quite the history here with many unexpected twists and turns leading to their current status as an invasive species.

Chinese and Japanese privet are two of the most well known invasive species in the southeastern U.S., but did you know there are actually nine species of privet in the region? This aggressively growing evergreen shrub is a common sight in the understory of forest areas, along river bottoms and roadsides, and in landscapes. Glossy privet was brought here in 1794 for use as a hedge plant, or for gardens or ornamental purposes. Several additional privet species followed, and by the mid-1900s privet had escaped cultivation and was widely naturalized.

Privet can be managed with herbicides; glyphosate applied during late winter provides effective control. The key to privet management is dedication management. Privet grows fast and thick, is spread by birds (who consume the seeds and spread them when they poop), and can quickly overtake a forest understory.

Regenerating trees when privet is present is nearly impossible; the privet has to be removed prior to replanting. Scientists have documented the detrimental ecological effects of privet, too – in areas where privet has been removed, native plant and insect populations skyrocketed.

Kudzu, also known as "the vine that ate the South" or "mile a minute weed," is a common leafy vine found growing up power lines, over abandoned homes, and covering hillsides across much of the eastern United States. This relative of the soybean was brought to Philadelphia in 1876 for the Centennial Exposition in Philadelphia, the first official World's Fair in the United States, and then to the New Orleans Exposition in 1883.

The vine was marketed as an ornamental plant to shade porches, and later as a potential forage for cattle. When this failed (kudzu cannot sustain growth when consistently grazed, which coincidentally, is an effective management strategy), Congress promoted kudzu as a tool to prevent soil erosion during the Dust Bowl years of the early 1930s. The (then) newly-formed Soil Conservation Service (now the Natural Resource Conservation Service, or NRCS) grew seedlings in nurseries and paid people to plant the vine. The plant's popularity grew so much that a Kudzu Club of America was formed for a Georgia farmer named Channing Cope, and at one point this club had 20,000 members.

As time passed, people realized the evils of kudzu. It was more weed than plant and in 1953 the USDA removed kudzu from its list of recommended cover crop plants. In 1997 it was added to the federal noxious weed list. Today, it is one of the most common invasive plants in southeastern forests. Kudzu commonly inhabits disturbed areas, roadsides, and forest edges, and easily climbs to the tops of mature trees and electric poles. Control is difficult due to its rapid growth, and reclaiming land requires eradication of the vine. Several chemical methods are effective in killing kudzu, but in nearly all cases multiple years of treatment are required to fully eradicate the plant from an area.

Then there's Callery pear. We are seeing white flowers in

early spring across more and more of our American landscape, and most of these trees are Callery pear. This species, Pyrus calleryana, was originally brought here from China in the early 1900s by famous plant collector Frank Meyer, who worked for the USDA, with the hopes that it could be used to help confer resistance to fire blight in Eurasian pears (the ones we use for fruit production).

The good news is that it worked, and almost singlehandedly saved the U.S. pear industry. Unfortunately, many of the trees and seeds brought over from China were planted and allowed to grow. Over time, these trees grew, and in the early 1950s the horticulturalist John Creech noticed that some of these selections could be usable as street trees. The trees had lush foliage, bountiful white flowers, very few pests or pathogens, and were tolerant of a wide range of abiotic conditions.

Creech named one particular cultivar the "Bradford pear" after a former director of the U.S. Plant Introduction Station in Maryland where he worked. Such is the origin of the Bradford pear.

These trees all originated from one seed, which was then propagated and grafted onto other P. calleryana rootstocks. One other benefit of Bradford pears? They were sterile – two Bradford pears cannot make viable seed. Unfortunately, Creech and his collaborators knew of the dangers of the Bradford pear, namely that the tree has very poor branch structure, which makes it prone to breaking, and that if pollen from a non-Bradford tree pollinates a Bradford flower, it can make a viable seed.

Also, if the tree sprouted from the roots or below the graft, that plant would be the P. calleryana version, not Bradford. Bradford pears are widely planted, as are other cultivars of flowering pears – all of which can make viable seed, which is readily eaten and spread by birds.

To say Bradford pears were planted widely in the urban landscape would be an understatement. Fast forward to today, and you'll see the characteristic white flowers along roadsides, in abandoned lots, and creeping into forests along the east coast. These "rogue" Bradford pears are called Callery pears. Many have strong thorns, have very few pests, and provide little in terms of ecological or economic benefit. In fact, the thorns are strong enough to puncture tires of forestry equipment, making this invasive plant a huge detriment to forest harvesting.

Kudzu, aka "mile a minute weed," was once a popular ornamental until people realized how difficult it was to control.

Pear management is time and labor intensive. Prescribed fire makes it worse as a recent study showed that for every stem burned, four more sprouted in its place. Herbicides, however, are effective. We're working with our state and federal partners to determine the best management method for these invasive trees.

These three case studies illustrate the economic and environmental dangers associated with non-native flora. If you have invasive species on your forestland, there are many state and federal programs that can help you manage these pests. It also helps, of course, to plant native species whenever possible.

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Callery pear, brought here from China, is a major nuisance for forest landowners.