



ABOVE Gyrotrac mulching machine grinding up Chinese privet. Scott Horn, USDA Forest Service, Southern Research Station.

ABOVE Chinese privet overhanging trail in State Botanical Garden of Georgia at the University of Georgia. Scott Horn, USDA Forest Service, Southern Research Station.

Controlling Chinese Privet Can be a Grind

Jim Hanula, Research Entomologist, USDA Forest Service Southern Research Station,
John Taylor, Integrated Pest Management Specialist, USDA Forest Service, Southern Region, Forest Health Protection

Like most species of exotic plants that invade forests, Chinese privet started out around the house. Valued as a formal hedge or foundation plant that could “take a licking and keep on ticking,” Chinese privet (*Ligustrum sinense*) was introduced to North America in 1852, and by 1932 was already widely established in forests of the Southeast. Since then it has continued to spread, but the extent of the infestation is not really clear. At least three million acres of forest interior are heavily infested, but this does not take into account forest edges or urban forests and parks where infestation is often the worst. Consequently, we do not have a good indication of how widespread the problem is. Ride along any road in the South and examine the forest edges and it becomes evident Chinese privet is one of the most widely distributed invasive plants in this region. However, its range also extends as far north as Massachusetts and west to Missouri,

Oklahoma, and Texas.

Where Privet Thrives

Chinese privet is an evergreen shrub that grows just about anywhere, but it does especially well in riparian or streamside forests. Invasion of riparian forests may be due in part to the frequent disturbances that these forests receive from periodic flooding, and possibly because they are usually dominated by deciduous hardwood species, which allow the evergreen privet to obtain sufficient sunlight during the winter months. Regardless of the reason, Chinese privet can form dense monocultures in the shrub layer, making riparian forests nearly impassable to humans.

Privet invasion alters forests by crowding out native plants and preventing tree seedlings from establishing. As trees die in a forest with a thick privet understory, nothing is available to replace them but privet. Over time, or following a serious forest canopy dis-

turbance like a windstorm, Chinese privet is the only thing left. Privet also makes harvesting and replanting difficult. Even if the shrubs are cut to ground level, they sprout back rapidly and grow quickly when exposed to full sunlight, making seedling establishment of other species difficult.

Chinese privet can be recognized using the following description from the Center for Invasive Species and Ecosystem Health

“... a semi-evergreen shrub or small tree that grows to 20 ft. (6.1 m) in height. Trunks usually occur as multiple stems with many long, leafy branches. Leaves are opposite, oval, pubescent on the underside of the midvein and less than 2 in. (5 cm) long. Flowering occurs in late spring, when small, white flowers develop at the end of branches in 2–3 in. (5–7.6 cm) long clusters. Fruit are oval, fleshy, less than 0.5 in. (1.3 cm) long.

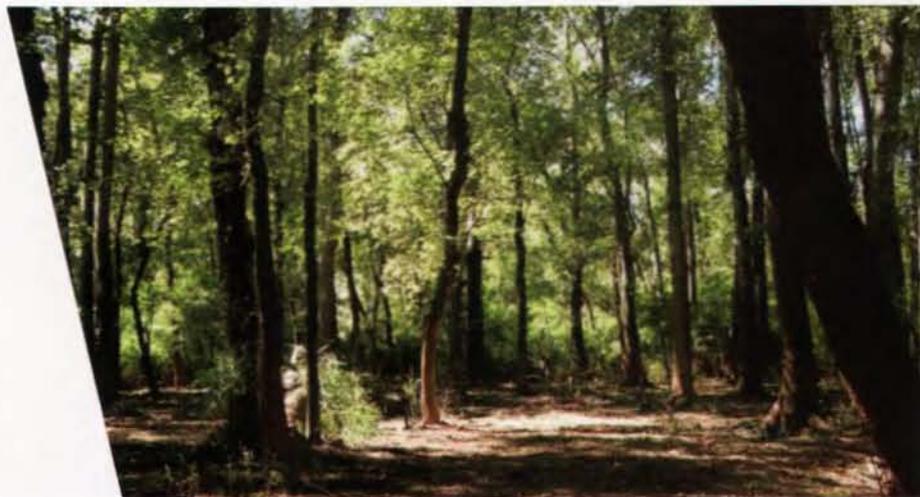
ripen to a dark purple to black color, and persist into winter...Chinese privet commonly forms dense thickets in fields or in the understory of forests."

Although Chinese privet is difficult to remove, it can be done.

Control Treatments and Benefits

Successful control procedures for Chinese privet may include foliar or stem treatment with herbicides and may involve cutting stems prior to herbicide application to the stump, depending on species composition of the stand, time of year, and size of privet plants. Foliar applications of three percent glyphosate in appropriate surfactant during the fall and winter will provide excellent control of privet, as will foliar application of metsulfuron methyl or imazapyr during the growing season. Metsulfuron methyl and imazapyr must not be applied where susceptible hardwood species occur, but they will not harm most pines. Larger privet stems (up to four inches) in diameter may be treated with a solution of 20 percent triclopyr ester in an appropriate carrier oil applied as a basal spray. Basal spray is effective at any time of year; however, applications are usually made in winter since there is less interception by foliage and the stems are easier to see. Stems larger than four inches may be cut and the cut surface treated with triclopyr ester in oil, triclopyr amine, or glyphosate to control the plant. Combinations of these methods are commonly required to eradicate privet from a site. The first pass through the stand may focus on basal spray and cut-and-treat, followed the next season by a foliar treatment aimed at the shorter residual stand of privet.

When forests are heavily infested, these treatments leave a tangle of dead stems that make follow-up treatments difficult. One option is to use a Gyrotrac® or similar type of mulching machine to grind up privet shrubs in place and then treat foliage later with herbicide. In one trial, mulching privet



ABOVE Bottomland hardwood forest immediately after privet removal with Gyrotrac mulching machine. Jim Hanula, USDA Forest Service, Southern Research Station

was compared to the more traditional method of felling plus stump treatment with triclopyr (Hanula and others 2009). The contractor (GFA Land Clearing, Inc., Palm Bay, FL) was asked to remove all privet possible, but to avoid removing trees 3.94 inches (10 cm) or larger and all large logs lying on the ground because of the ecological importance of coarse woody debris. The mulching machine ground stumps to the soil surface and covered them with mulch, making them difficult to find, so only about five percent of the stumps were treated with herbicide. Also, because of the danger in working near the machine, stumps that could be found were treated up to 30 minutes after they were cut. This combination of factors limited the usefulness of stump treatments on machine-treated plots.

Both treatments completely removed or killed the privet shrub layer without harming residual native shrubs or tree saplings. Although that sounds good, it was due mostly to the fact that long-term heavy infestations of privet in the test forests had reduced the native shrubs and saplings to very low levels. Surprisingly, both treatment plots had the same high level of privet sprouts and seedlings in them as the untreated control plots. Since neither treatment was effective by itself, the

residual privet seedlings and saplings were treated with a foliar application of two percent glyphosate in water plus surfactant applied with backpack sprayers in late November and early December. The next summer, privet cover was less than one percent on both treatment types compared to over 25 percent cover on the untreated control plots. Since then, the small amount of remaining privet has grown very slowly, so retreatment should not be necessary for 8 to 10 years and should require a relatively limited foliar application to seedlings and small saplings.

So which treatment is better? That depends on objectives and costs. Mulching cost \$500 per acre to treat four five-acre plots, while traditional felling cost \$250 per acre. However, subsequent foliar applications were much easier on the mulched plots and generally took less herbicide, so follow-up treatment costs should be lower on mulched areas. Mulching produced an open park-like stand, while felling resulted in a jumble of stems that took three years to deteriorate enough to make walking on the plots relatively easy. After three years, both treatments resulted in the same type of plant community, consisting mostly of early colonizing plant species. Although the two methods of removing privet resulted in

plant communities with almost the same species composition, treatment with the mulching machine resulted in more of the forest floor being covered by new plants, probably because of greater soil disturbance. The plants in the new communities were more diverse and covered more of the forest floor than privet-infested plots, but they were still very different from nearby healthy riparian forests that were never infested with privet. How long will it take for infested forests to recover? That is a question we are trying to answer, but it is likely that it will take a very long time without some type of restoration plantings.

One very positive outcome of removing privet was an increase in pollinators—both bees and butterflies. Forest plots from which privet was removed, regardless of method, had a 10-fold increase in pollinators visiting them and a four-fold increase in the number of species, a trend that continued into the second year after removal. Pollinator abundance was primarily associated with increased non-privet plant cover. These results show the unexpected consequences of exotic plant invasions and the benefits that can accrue from their removal.

Conclusion

Chinese privet is one of the most serious invasive plants in our forests today and, unchecked, it will continue to

spread. Although heavily infested forests can be cleared of privet, the plant community that returns, at least in the short term, is not representative of the rich, diverse plant communities associated with healthy forests. One option is to prevent forests from being choked to death by dealing with privet invasion early. Lightly infested forests with a few stems per acre can be cleared of privet and kept that way for a fraction of the cost of clearing heavily infested land. Removing privet from forests in the early stages of invasion will allow the plant community to remain intact and will eliminate the need for long-term treatment periods and restoration plantings to facilitate recovery. However, the health of heavily infested forests can be improved and, once initial clearing of privet is completed, keeping privet in check should be relatively easy. ♦

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