

FOREST HEALTH REVIEW

May 2009



Lobolly pine stands in the central Piedmont damaged by heavy snow and strong winds following a March 2-3 storm.

IN THIS ISSUE ...

USE OF TRIMBLE UNITS FOR FOREST HEALTH OBSERVATIONS UPDATES: Weather Late Winter Snowstorm Southern Pine Beetle (SPB) Southern Pine Beetle Prevention Program

Gypsy Moth Emerald Ash Borer (EAB) Firewood Survey Asian Longhorned Beetle (ALB) Tree of Heaven Publication Available Soon Biological Control of Mile-a-minute JAPANESE HONEYSUCKLE

GREETINGS

This winter seemed colder to me than normal until I looked at the monthly weather summaries and realized it was pretty average, historically speaking. Perhaps it was because it had been so unusually warm the previous few winters that I forgot what 'normal' winter weather was like. As I describe in this issue, we did have one notable snowstorm in March. However, we were very fortunate to have escaped the severe impacts of a devastating ice storm that befell Kentucky in late January, considered the worst ice storm in its history.

For the past year, some of our foresters have started to use their Trimble units in the field to enter forest health ground observations (FHGOs). We all know there have been many



frustrating delays and technical difficulties while unrolling these devices and making them operational and useful. However, I certainly hope at some point once all the training is done and all the bugs ironed out, efficient use of the Trimble units will become a more routine part of your field work. Since so much time has been spent just getting these things to be operational, there has not been much of an opportunity for me to communicate the 'what, when, where and why?' regarding collection of FHGOs. In the opening article of this issue, I will try to articulate some of that to you. I hope you find this issue to be useful and informative.

Chris Asaro, forest health specialist

USE OF TRIMBLE UNITS FOR FOREST HEALTH OBSERVATIONS



You are all aware that your Trimble unit has pull-down menus for insect, disease and weed conditions to be entered as an FHGO, which I can then retrieve through IFRIS. What you may not be aware of and what probably has not been well communicated to you up to this point are the various reasons why you might take the time to enter an FHGO while in the field.

Probably for most of you, the obvious reason to enter an FHGO is to highlight a particular problem that requires my attention or feedback. Thus, you have the option to request a 'follow-up' on the Trimble Unit – which I am then supposed to address in some fashion when I become aware of it by scanning the entries on IFRIS. It may be that I call you about this, request more information or even schedule a site visit, depending on your needs.

Other kinds of FHGO entries don't necessarily need my individual attention, but should be entered because of their importance to forest health and particularly for reporting

purposes by myself to the

"Time is that wherein there is opportunity, and opportunity is that wherein there is no great time."

Hippocrates, ca. 300 BC

USE OF TRIMBLE UNITS FOR FOREST HEALTH, CONTINUED

USDA Forest Service. The most prominent example of this would be reporting Southern Pine Beetle (SPB) spots. Our funding and cooperative agreements with the USDA Forest Service require that we report and quantify all SPB activity to the best of our ability. Entering each spot and the number of trees as an FHGO is a very efficient way for me to keep track of SPB activity, particularly during an outbreak. While I would normally fly an area to map spots if heavy activity is reported, I rely heavily on ground reporting to first alert me to these problem areas because our agency does not have the resources to routinely fly the whole state looking for SPB spots. Nor would that be very efficient unless we had multiple planes and surveyors, which we do not. In addition, southern pine beetles spots can grow and spread rapidly during outbreak years; therefore, it's important to keep close tabs on the larger spots to monitor their development over the course of the season. All of this can be facilitated by regular use of the Trimble FHGO features.

An additional reason to enter an FHGO is one that may not be as obvious but is certainly important to us: to help VDOF develop a comprehensive forest health database. For example, many of our common and less common forest weed problems are very poorly documented. With the exception of Ailanthus and Paulownia, which show up well in the FIA database, distribution data and quantification of most invasive weeds in Virginia and most other states is lacking. At best, a presence-absence-by-county map would be about as detailed a distribution as we could come up with for most weeds. Regular use of the FHGO feature by all personnel over time could change that. If every forester entered an invasive weed entry once per week while in the field and did this over a two- to three-year period, VDOF could have the beginnings of a very detailed distribution map for each weed species. Such information could be enormously valuable for directing efforts in and funding for weed control, land management and conservation, public education, etc. Such data would also be highly coveted and appreciated by other land management agencies at the state, federal and local levels.

Another example of a useful database contribution would be the collection of surviving American chestnuts, especially larger and/or flowering trees that could be used in our breeding and restoration efforts.

Does this mean you have to go out of your way each time you want to make an FHGO entry? Absolutely not. We know you are extremely busy with your day-to-day duties and the last thing we want to do is burden you with extra tasks. Our vision is that use of your Trimble units some day becomes so routine that you will have them with you at all times. While in the field doing something else, if you happen to stop and observe a large patch of oriental bittersweet infesting an acre of hardwood forest, for example, take a minute to put in an FHGO and add whatever descriptive comments you feel are necessary. It shouldn't be difficult or time consuming at all provided you have a signal and you are comfortable operating the Trimble unit.

The database development idea applies equally well to insect and disease outbreaks. Although these are temporary in nature compared to weeds, the same logic applies and it is valuable to have historical records of major and minor pest outbreaks for many reasons.

When is an FHGO entry important? Use your judgment. For example, if Ailanthus is very common in your county, I wouldn't expect you to enter one tree by the side of a road. On the other hand, if you're working in a 10-acre oak-hickory stand and Ailanthus is scattered throughout the stand, it's worth entering. That's a ten-acre area of Ailanthus that will find its way onto a distribution map. Likewise, if you are in a county where a particular weed or pest has not been historically prevalent, it might be worth entering an FHGO even if it's only a few individual weeds or one tree being affected by a pest insect or disease. If you find a new locality for an invasive pest, such as emerald ash borer, location data and number of trees affected would be critical information that could be used by many people. If the pest in question is not in the pull-down menu, click 'Other' and fill out the comment field in detail. Remember: it's better to have too much information than too little, so if you're not sure if something is important, enter it anyway.

How does this benefit YOU? We can do lots of things with this data once we have enough of it. Maps of weed distribution or historical recurrence of pest outbreaks can be generated for each county or region and placed on IFRIS or our Web site for everyone to access. The arrival and spread of new invasive species can be documented. Invasive pests, particularly weeds, may greatly influence future management plans for a particular tract, so more awareness of their presence would be essential. New foresters would have a valuable resource for learning about the major issues and problems within their county or region. We would cement our agencies' reputation as a source of high-quality resource information. Less directly, this could help us secure federal funding for future projects. This is our vision, but it will never be realized without your help!

> "Seek not to know who said this or that, but take note of what has been said."

> > Thomas á Kempis, ca. 1450

WEATHER



Beginning with this issue, I am presenting monthly weather data summaries for the previous six months in tabular form. Hopefully this will be easier to wade through compared to my previous method of verbally describing each month. I have, somewhat arbitrarily, divided the Commonwealth into nine regions, which I describe below. Table 1 describes monthly temperature and precipitation values relative to average for each region. Where a considerable range of values was present within each selected region, I will attempt to present that range of values. I hope this is a little more efficient than the previous format, which was probably as cumbersome to read as it was for me to write.

Table 1. Percent of normal monthly precipitation and average degrees above (+) or below (-) monthly average temperature for each of nine geographic regions in Virginia. For monthly temperatures, a '0' indicates average.

	SW	CW	NW	NP	СР	SP	NCP	SCP	ES
NOV. Precip	50 to 125%	50 to 100%	50 to 100%	50 to 75%	50 to 100%	50 to 125%	25 to 125%	100 to 200%	150 to 200%
NOV. Temp	-2 to -6	-2 to -4	-2 to -4	0 to -2	0 to -4	-2 to -4	0 to -4	0 to -4	-2 to -6
DEC. Precip	150 to 300 %	150 to 200 %	150 to 200 %	110 to 200 %	110 to 200 %	150 to 200%	130 to 200 %	130 to 200%	70 to 130%
DEC. Temp	0 to +4	+2 to +4	-2 to + 4	0 to +2	0 to +6	0 to +4	0 to +4	+2 to +4	+2 to +4
JAN. Precip	110 to 300%	70 to 100%	70 to 90%	50 to 90%	50 to 100%	70 to 100%	25 to 50%	25 to 70%	25 to 50%
JAN. Temp	0 to -4	-2 to + 2	0 to -4	0 to -4	-2 to +2	0 to -2	0 to -4	0 to -2	-2 to -4
FEB. Precip	25 to 70%	25 to 50%	5 to 25%	5 to 25%	5 to 50%	5 to 50%	5 to 50%	25 to 50%	5 to 50%
FEB. Temp	-2 to +2	0 to +4	0 to +2	0 to +4	0 to +4	0 to +4	0 to +2	0 to +2	0 to +2
MAR. Precip	50 to 130%	50 to 130%	25 to 70%	50 to 110%	50 to 200%	70 to 200%	50 to 70%	50 to 200%	25 to 70%
MAR. Temp	-1 to +3	-1 to +3	-1 to +1	-1 to +1	-2 to +2	-3 to 0	-5 to -1	0 to -2	0 to -2

 SW = Southwest (Cumberland gap to Abingdon to Blacksburg and Galax)
CW = Central West (Roanoke to Staunton)

NW = Northwest (Staunton to Winchester)

NP = Northern Piedmont (Loudoun/DC to Greene/Spotsylvania)

CP = Central Piedmont (Albemarle/Goochland to Bedford/Nottoway)

SP = Southern Piedmont (Campbell/Lunenburg to Henry/Mecklenburg)

NCP = North Coastal Plain (King George/Northumberland to Chesterfield/Newport News)

SCP = South Coastal Plan (Dinwiddie/Brunswick to Virginia Beach) **ES** = Eastern Shore

"All intellectual improvement arises from leisure."

Samuel Johnson, 1791

LATE WINTER SNOWSTORM



One of many uprooted trees in a loblolly pine stand in Lunenburg County following a late winter snowstorm.

On March 2, an unusually heavy snowstorm impacted many areas of the Commonwealth. Depths close to or exceeding one foot fell in a swath from the Grayson highlands northeast across the Piedmont to the Northern Neck, while many other areas saw

more than six inches (Figure 1). Following this heavy accumulation, very cold air and strong winds were present the subsequent evening, with temperatures plummeting as low as 10 degrees and wind speeds reaching up to 50 mph. Therefore, many pine trees already laden with snow were put under further stress due to snow hardening and compacting. The strong winds were enough to snap or uproot many of these snow-laden pine trees. The areas experiencing the most damage coincided with those areas reporting the most snow accumulation. Foresters and technicians from Lunenburg and Nottoway counties reported a number of damaged loblolly pine sites as FHGOs with their Trimble units totaling 130 acres (Figure 1). I also noticed guite a smattering of damage to pine stands in Prince Edward-Gallion State Forest and to some extent in Cumberland and Appomattox-Buckingham state forests. While Virginia was fortunate to have escaped the severe impacts of a devastating ice storm that befell Kentucky in late January, the scattered damage caused by this combination of weather events (snow, frigid temperatures and strong winds) was unusual.



"In politics, what begins in fear usually ends in folly."

Samuel Taylor Coleridge, 1835

SOUTHERN PINE BEETLE (SPB)

About 15 SPB spots have been reported over the winter since January 1 – all spots that began late last year and were not noticed right away. Often, trees attacked late in the year will remain green throughout much of the winter before beginning to fade by early spring. Charlotte and Caroline counties have reported the most significant activity. Most of these larger spots are being actively harvested to prevent further damage and spread.

Spring trapping for this year's SPB forecast is just beginning as of this writing, so it is too early to say what kind of year we will have in this regard.



A southern pine beetle spot in Lunenburg County.

"If a nation expects to be ignorant and free, in a state of civilization, it expects what never was and never will be."

SOUTHERN PINE BEETLE PREVENTION PROGRAM

The SPB Prevention Program continues to be strongly funded, and thanks to our foresters' hard work, we have cost-shared pre-commercial thinning jobs on almost 25,000 acres of overstocked pine throughout the Commonwealth.



Thinned loblolly pine stand in Prince Edward-Gallion State Forest.

Our accomplishments for longleaf pine restoration have been considerably more modest. However, given the limited (although rapidly rising) demand for longleaf as well as limited availability of seedlings, this is not at all surprising. Furthermore, longleaf restoration is being supported by a number of other federal agencies and funding sources. Overall, longleaf pine sites are very slowly but surely being restored to southeastern Virginia's landscape. Our newly established, grafted seed orchard comprised of native Virginia longleaf stock looks fantastic, and may be producing cones in 10 years time (see the Forest Research Review for more details on the longleaf restoration efforts).

Finally, after six months and a very limited number of applications, we are reevaluating our guidelines for first commercial thinning flat rate payments. Not only will we be changing the stand parameters for qualification, we are also planning on shifting payment from the landowner to the logger. We feel this will have a stronger impact on getting small forested parcels thinned and perhaps

James Jeans, 1899

help the logging industry during these very difficult economic times.

GYPSY MOTH

Gypsy moth defoliation has been increasing annually for four consecutive years now, reaching approximately 114,000 acres last year, the most since 2001. However, some areas may be ripe for a population crash if the weather cooperates this spring. Cool, wet weather during the critical month of May benefits the gypsy moth fungus, *Entomophaga maimaiga*, and can go a long way towards suppressing gypsy moth populations. As I write this, it is a little too early to know what is in store for us this year. April has been relatively cool and wet, so if this pattern holds through May, we might have some luck. As usual, warm, dry conditions during May/June will likely mean even more defoliation than during 2008.

EMERALD ASH BORER (EAB)

This year, the Virginia Department of Agriculture and Consumer Services (VDACS), with grant support from the US Animal and Plant Health Inspection Service (APHIS), is initiating a massive trapping effort for the emerald ash borer across the Commonwealth. With assistance from numerous cooperators and hired help, they will be hanging approximately 3,500 purple prism traps across Virginia. A majority of the traps will be concentrated in Fairfax County, the only Virginia County currently known to be infested. A significant number of traps will also be hung in adjacent Loudoun, Fauquier and Prince William counties. A few traps will be placed across each of the remaining counties.

The hope is that this effort will allow us to more precisely monitor the location and spread of this pest. The prism traps have a large sticky surface and are baited with a mixture of manuka and pheobe oil, which contain volatiles also given off by stressed ash trees. This bait does not specifically attract EAB and is not effective over very long distances. Therefore, catching EAB is unlikely unless there is an active adult population close by. Nonetheless, until an improved lure comes along, it is far better than nothing. Adequately monitoring for EAB without the use of traps is next to impossible since it is so difficult to locate infested trees until long after the beetle has come and gone.



Setting up an emerald ash borer trap in Prince Edward-Gallion State Forest.

We will be monitoring for EAB in Albemarle County on UVA Foundation property, as well as placing traps in Prince Edward, Cumberland and Appomattox-Buckingham state forests. In those locations, ash is generally not very abundant except along major stream or river bottoms where green ash tends to be more prevalent.



In the Piedmont, green ash is more common along floodplain sites, such as along the Willis River, which flows through Cumberland State Forest.

"In the United States, there is more space where nobody is than where anybody is. That is what makes America what it is."

Gertrude Stein, 1936

FIREWOOD SURVEY

In an effort to monitor the problem of moving invasive species, such as EAB, around in firewood, VDACS just completed a second firewood survey to determine the source of firewood for sale in Virginia. Between the two surveys, almost 250 individual vendors were sampled throughout Virginia. These vendors included places, such as Kroger, Food Lion, Home Depot, Lowe's, Wal-Mart, 7-11, and other assorted convenience stores and gas stations. Results were very similar to the survey conducted two years ago and data from the combined surveys are as follows:

State/Country	# Surveyed	% of Total	
VA	89	36.03	
PA	79	31.98	
WV	11	4.45	
KY	11	4.45	
CA	11	4.45	
ME	7	2.83	
NM	6	2.43	
ТХ	5	2.02	
NC	5	2.02	
МО	3	1.22	
NY	2	0.81	
NJ	2	0.81	
GA	1	0.40	
MD	1	0.40	
Honduras	8	3.24	
Canada	4	1.62	
Estonia	2	0.81	
Total =	247	99.97	

As you can see, while about 36 percent of firewood for sale comes from within Virginia, the reminder is from a diversity of places, including many western states and a few foreign countries. It seems odd that we would import firewood from California or Estonia when we probably have enough wood in Virginia to meet most or all of our firewood demand. It is clear that large firewood distributors profit from being able to sell wood to many disparate locations - but do we collectively profit from this in the long run? Not only is there potential to import an unwanted pest hitching a ride, but what is the ultimate energy cost of moving this wood from such a distant source for society at large? Especially when you consider that we send firewood to states, such as Pennsylvania, for example, while they simultaneously are sending us firewood from their state. Should that be?

I think it would be acceptable to avoid trade disruptions between states and countries provided that all wood for sale is certified as kiln-dried to an acceptable core temperature and given length of time, for which there are already federal standards that kill most wood infesting pests. The good news is that anecdotally I and some VDACS inspectors have observed many of the more distant sources of firewood for sale to be labeled as kiln dried. Unfortunately, we did not think to include this observation as one of our survey variables, so we can't quantify that just yet – but will do so in the future. It may be that with stringent firewood restrictions already present in other states, some of the major distributors are starting to get the message and realize that this is a good business practice.

"Man's capacity for justice makes democracy possible, but man's inclination towards injustice makes democracy necessary."

Reinhold Niebuhr, 1944

ASIAN LONGHORNED BEETLE (ALB)

With the activity surrounding emerald ash borer this past year, it's worth noting that another serious non-native wood-boring insect pest is out there. The Asian longhorned beetle, if it were to become established in Virginia, could pose an even greater threat to our forest resources than the emerald ash borer. Because its primary host is maple, we stand to lose a great deal more forest and urban trees from this pest if it were to spread and go uncontrolled within the Commonwealth. While our two major ash species, green and white, make up approximately 1.5 percent of all forested volume in Virginia based on FIA inventory data, red maple and a much smaller amount of sugar maple make up approximately eight percent of forested volume. Furthermore, while ash may on average make up perhaps five percent of all urban street trees, the combined plantings of red, sugar, Norway and silver maples could exceed 20 percent of all urban street trees. In addition, birch is another potential host of ALB.

The good news is that the potential for eradication seems much more promising than with EAB since ALB's rate of spread seems comparatively less dynamic. New York City has been undergoing an eradication program since 1996; Chicago since 1998, and the Jersey City area since 2002. Except for Chicago, which declared ALB eradicated last year, the other municipalities are still battling the beetle but have made significant progress.



Asian longhorned beetle

The bad news is that just last summer, a large infestation of ALB was discovered in Worcester, MA., which they project has been there longer than five years. This was very troubling news indeed, not only because of the abundance of maple in the city, but because Worcester is right on the edge of the northern hardwood forest, of which sugar maple is a very large component. There is considerable risk that ALB may escape, if it hasn't already, from an urban to a forested setting, greatly reducing the prospect of successful eradication. It also begs the question, "where else is ALB that we don't know about?" The longer an infestation remains undetected, the much greater the likelihood it has spread.

Unless there is a breakthrough in the biological control of this pest, it is difficult to imagine the potential devastation this pest could cause if it became established. One USDA Forest Service scientist published a paper projecting that the impact to urban forests alone, if ALB established from coast to coast, could be \$669 billion with a loss of approximately one third of the urban forest canopy across the nation. We must do everything we can to prevent this insect from spreading and eradicate it at all costs.

TREE OF HEAVEN PUBLICATION AVAILABLE SOON

As promised earlier, we are putting the finishing touches on our Ailanthus publication 'Control and Utilization of Tree of Heaven: A Guide for Virginia Landowners.' This will broadly cover control tactics but also provide data on wood properties and alternative uses for Ailanthus with the goal of encouraging landowners to remove it and control its spread. Many landowners and foresters have expressed a strong interest in such a document, so look for this publication on our Web site and hard copies to be distributed to the regions in a couple of months or so.

"We may become the makers of our fate when we have ceased to pose as its prophets."

Karl Popper, 1945

BIOLOGICAL CONTROL OF MILE-A-MINUTE

Mile-a-minute (*Persicaria perfoliata*) is a very aggressive non-native weed that has been invading Virginia from the north since the early 1990s. Currently, infestations are concentrated in northern Virginia, with scattered additional counties reporting infestations since 1995. These include the Counties of Fairfax, Loudoun, Prince William, Fauquier, Warren, Rappahannock, Culpeper, Stafford, Albemarle, Nelson, Hanover, Henrico, Middlesex, Gloucester and Washington. Its growth rates and habits are similar to kudzu, overtopping and blanketing vegetation and entire forested stands. Unlike kudzu, its stems and lower leaves are covered with nasty recurved spines.



Mile-a-minute

"It's a recession when your neighbor loses his job. It's a depression when you lose yours."

Fortunately, we may have a tool to help turn back the tide of this weed before it becomes entrenched across the Commonwealth: biological control. A weevil (Rhinoncomimus latipes) from China, where mile-a-minute is native, is being released throughout some Northeast and Mid-Atlantic states to limit the spread of mile-a-minute. These weevils have already gone through years of host range testing to ensure they will not have an impact on non-target plants; apparently they feed and successfully develop only on mile-a-minute. Most of the research effort has been supported by the USDA Forest Service and comes out of the University of Delaware. Mass rearing of weevils for distribution to various states and cooperators is being done by the New Jersey Department of Agriculture.

I first learned of this biocontrol effort during a meeting in January. A presentation included before/after photos of mile-a-minute infested sites where weevils were released. The difference was striking, and the weevils appeared to consume a great deal of foliage in a short period of time. Reproduction and spread once released in the field also seemed to be very strong at most sites. It is hoped that this weevil, while not eradicating mile-a-minute on its own, will be effective at beating it back enough to allow native vegetation to compete with it and take back a particular site.

As it turns out, this year, VDACS has received money from APHIS to acquire 1,000 weevils for the first releases to be done in Virginia. I have been working with VDACS to find two release sites in northern Virginia where mile-a-minute is abundant to release 500 weevils at each site some time in May. One release site will be on property owned by the Smithsonian Institute in Front Royal and adjacent to the northern boundary of Shenandoah National Park, which also has a mile-a-minute problem on its northern end. The second site will be on park land owned by the Fairfax County Park Authority in southern Fairfax County. Follow up monitoring will occur at these sites in the forthcoming years to monitor the progress of these weevils. Hopefully, they will multiply and spread to other areas on their own, but more releases are likely

in other areas in future years.

Harry S. Truman, 1958

JAPANESE HONEYSUCKLE

Japanese honeysuckle, *Lonicera japonica*, is considered to be the most common non-native invasive (NNI) plant in the forests of the southeastern U.S. and is found in 38 states. Like many NNI weeds, it comes from eastern Asia and was introduced into the U.S. via Long Island, New York, in 1806. It was planted primarily for erosion control, as an ornamental due to its attractive flowers, and for deer forage. It is prolific along forest edges, openings and disturbed habitats; it can also invade interior forest due to moderate shade tolerance, although it is not as shade tolerant as some native vines, and it rarely produces flowers in low light.

While it is commonly found trailing along the ground, it is most noticeable when it climbs its way up a tree, power line or other scaffolding to heights of up to 80 feet. It is capable of girdling shrubs and saplings by twining around them, as well as overtopping and shading larger trees and shrubs by forming dense mats. Dense thickets of honeysuckle on the forest floor can also inhibit the growth of native understory plants and tree seedlings. Root competition can be most severe, lowering overall leaf nitrogen, photosynthesis and growth of native plants. Forest regeneration following a disturbance can be difficult or nearly non-existent in honeysuckle infested areas. Due to its evergreen to semi-evergreen status, Japanese honeysuckle experiences a long growing season, allowing it to be highly competitive with native plants for resources above and below ground. When invading and establishing along forest edges or openings, honeysuckle can form an imposing wall of vegetation. In addition to its moderate shade tolerance, it is also tolerant of flooding and drought, allowing it to thrive in a variety of habitats. It has also shown a positive response to an increase in carbon dixoxide (CO_{2}).

Honeysuckle flowers appear in late summer to early fall and are pollinated by insects and hummingbirds. Fruits appear in September to October. Beyond rapid vegetative growth, honeysuckle fruit and seed is consumed and spread by deer, rabbits, bobwhite quail, turkey and other birds. Seed production is prolific, but seed bank potential is very low (less than one year). Germination is promoted by high light and disturbed, exposed soil. It sprouts vigorously after cutting or fire, and following a controlled burn honeysuckle is known to return to pre-burn levels within a few years. Typically, honeysuckle will remain at low densities in mature forest until released by thinning or a clear-cut, at which point it spreads rapidly. Early successional forests with small-diameter trees can quickly become overrun with honeysuckle to the point of stand failure.

Hand pulling and cutting can be effective for small patches. Cutting climbing vines at the base is an efficient way to quickly kill a lot



"Scientists do not discover in order to know, they know in order to discover."

Edward O. Wilson, 1984

JAPANESE HONEYSUCKLE, CONTINUED

of aboveground biomass, although the remaining cut stem should be treated with herbicide, such as glyphosate or Garlon (triclopyr), to kill the root system and prevent vigorous re-sprouting. As with many other invasive plants, herbicide use in conjunction with other practices provides the most effective means of control. Escort XP with a surfactant can be applied to foliage from June to August by broadcast or spot treatment. A glyphosate herbicide as a two percent solution in water with surfactant can be applied July to October or during warm days in early winter. Alternatively, foliage can be treated with Garlon 3A or Garlon 4 as a three- to five-percent solution in water with surfactant during the same time interval. Prescribed burning in spring can be used to reduce dense ground mats but will need to be followed up by herbicide treatments applied to resprouting foliage.



Virginia Department of Forestry 900 Natural Resources Drive, Suite 800 Charlottesville, VA 22903 It is important for foresters to recognize how quickly a honeysuckle infestation can get out of control following a thinning or other disturbance. It may seem innocuous at first, but if it isn't given proper attention, it could interfere significantly with future forest management plants.





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