Forest Health Review

November 2006

Defoliation of white oak by the variable oak leaf caterpillar in Powhatan County, Virginia.

In this issue...

Greetings

Last spring, the dry weather continued. For the most part, though, we saw average precipitation levels during the summer, continuing into Autumn. As I write, we are experiencing a statewide soaking and are not nearly as dry as we were at this time last year, despite the fact that we have had far fewer Atlantic storms and hurricanes than predicted this year. Climatologists indicate we are entering another weak El Niño pattern, which is a warming of equatorial waters in the Pacific Ocean that usually results in a reduction in the number of Atlantic storms. Predictions are that these conditions will continue at least into the spring of 2007 and result in warmer than average temperatures in the western and northern U.S.; wetter than average conditions along the Gulf Coast and Florida, and drier (and more likely colder) conditions in the Northeast. The mid-Atlantic region was not specified thus far so I don't know where that leaves Virginia. Why all this talk of weather trends? If you've read past issues, you know that forest health is intimately tied to weather conditions. With a few exceptions, the last 10 years have been unusually warm and dry, and these conditions have often had a negative impact on tree health. Some long-term climate models predict that if this pattern continues it will eventually result in conditions more beneficial to pine than hardwoods in our part of the world. But hey, these are only models, and I guess I'm getting way ahead of myself. The point is, pay attention to the weather, it affects forest health. I hope you find this issue to be useful and informative.

Chris Asaro, forest health specialist

Variable Oakleaf Caterpillar Outbreak

By the second week of July, numerous phone calls started coming in from a number of counties on the west side of Richmond. Homeowners were complaining that caterpillars were feeding on their trees. Their presence was first indicated by massive amounts of droppings (called frass) falling from the tree canopy, which sounds like a light rain as the droppings impact the ground and foliage below. As the weeks went on, the caterpillars, along with their frass, grew larger, and visible signs of defoliation began to appear. By the end of the month, full-grown caterpillars were stripping many trees bare of all their foliage, primarily white oaks and beech. Numerous other species of hardwoods serve as hosts, but typically defoliation is less severe on these species.

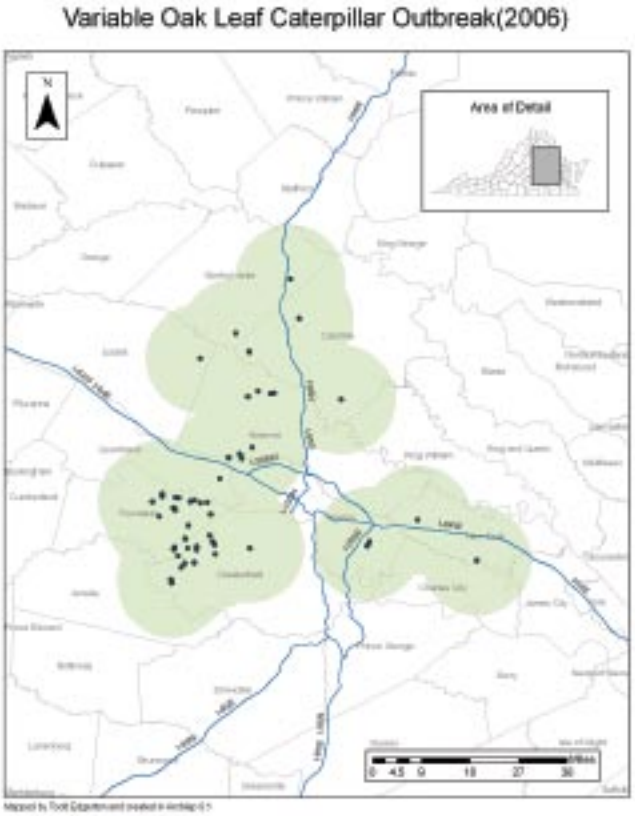
It was soon evident that the culprit was the variable oakleaf caterpillar (VOLC), *Heterocampa manteo*. This native insect is well known to cause very heavy defoliation from time to time throughout the eastern U.S., although large severe outbreaks such as this may appear in any given area only once or twice in a person's lifetime. This outbreak spanned a 10-county area of more than 1.5 million acres, but was most severe and widespread in Henrico, Powhatan and western Chesterfield counties (see figure); it was from these counties where the bulk of the phone calls came.

Literature on this pest reports that it has one generation per year in the North, and two in the South. Unfortunately, it is not known precisely were this North/South divide lies (at least as far at this insect is concerned). My guess is that the outbreak we witnessed is probably in a transitional area and has a combination of VOLC

"The aim of science is not to open the door to infinite wisdom, but to set a limit to infinite error."

Bertolt Brecht, 1939

with one and two generations per year. Normally, these insects overwinter as pre-pupae, which basically look like larvae, although their color turns red or pink after



crawling down from the tree and burrowing beneath the leaf litter into the top few inches of soil. Adult moths emerge in late spring, mate and lay eggs. Egg hatch and feeding occur in early to mid-summer. In two generation areas in the South, larvae from the first generation start feeding early in the season (May), mature, pupate, and emerge as adult moths the same summer. After producing eggs, a second generation of larvae begins feeding by mid-August into September. Larvae then change into pre-pupae after burrowing into the soil, where they overwinter. In northern areas, the timing is a little different. Adults emerge in June and most of the feeding occurs in July into August. These larvae do not develop into adults until the following spring, but remain as pre-pupae until that time. The reason I suspect we have both one and two generation individuals is that the timing of the feeding (July) in central Virginia is more coincident with what is reported for one generation areas. In two generation areas, feeding tends to occur in May/June and again in August/September. However, after the feeding in July, I was able to find some fully formed pupae in the soil under defoliated trees. In one generation areas, pupation is not supposed to occur until the following spring. When I collected these pupae, adult moths emerged about a week later, suggesting that they were primed and ready to emerge and produce a second generation of eggs this year. Therefore, there may be both one and two generation moths present in the population. It would not be unusual to see this in Virginia, which lies at the interface between a northern and southern climate.

A larva of the VOLC, which turns a reddish color prior to burrowing in the soil and becoming a pre-pupa, where it overwinters.

What are the implications of having a second generation of VOLC in the same year? Apparently, not much. Most of the time, only one of the two generations is severe, normally the first. By the time the second generation emerges and begins to feed, it is almost fall and most of the trees are getting ready to drop their leaves soon anyway. Furthermore, trees heavily defoliated the first time will have already lost their leaves, so a second generation of VOLC will have to find other, less favorable hosts to feed on in the vicinity. Third, most outbreaks of VOLC, as well as outbreaks of native defoliators in general, will experience

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"The essence of science: Ask an impertinent question and you are on the way to a pertinent answer."

Jacob Bronowski, 1973

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Weather

Last March saw record-breaking monthly drought throughout the Commonwealth and the nation. This dry pattern continued through April for some. Areas south of a line from about Roanoke to Charlottesville to Richmond saw average monthly precipitation levels at 25-75% of normal. Most other areas in the southwest, extreme west, north, and eastern parts of the state saw slightly above average precipitation during April. Monthly temperatures were 2-4 degrees above normal in the eastern third and 4-6 degrees above throughout most of the rest of Virginia. May temperatures moderated, with most locations seeing average conditions, while monthly precipitation generally continued to be 1-3 inches below normal.

During June, average temperatures were within a degree or two of normal in most locations. Dry conditions continued for the first couple of weeks until tropical depression Alberto settled over the area, bringing the average monthly totals in most areas to 150-300% above normal. The DC area and parts of Maryland saw more than 300% normal monthly precipitation, most of which fell over a couple of days. During July, monthly temperatures were 2-4 degrees above average for many areas in central, eastern, and northern Virginia, while the southwest, west and extreme south saw average to slightly below average temperatures. Precipitation patterns in July were highly variable; most areas saw average monthly totals that varied from 25-90% of normal. However, a few spots in the mountains and coastal plain were above average for July. In particular, another storm system settled over areas along the south side between Halifax and Southampton counties north to Petersburg during the first week of July and brought monthly average precipitation levels to 150-250% above normal for the month.

August truly felt like the dog days of summer, with average monthly temperatures 2-5 degrees above normal, the hottest locations being in the vicinity of Richmond, Petersburg, and DC. Average monthly precipitation was all over the map, but in general was 10-50% of normal in the DC area, Northern Neck and Eastern Shore, 50-70% of normal in Roanoke and surrounding counties, with other parts of the Commonwealth 100-200% of normal.

Tropical depression Ernesto arrived the 1st of September, putting an end to the relatively dry conditions in most places. It dumped 8-12 inches of rain over much of coastal Virginia north to DC, causing widespread flooding. Most other areas in the eastern two thirds of the Commonwealth saw 5-8 inches, with pockets here and there seeing more or less rain. Most of the extreme west and southwest saw only 2-3 inches of rain from the storm. For the month, most areas saw 150-300% more rain than average, although the Roanoke area and southern Blue Ridge Mountains north to Highland County saw precipitation levels slightly above to slightly below normal. Temperatures for September averaged a few degrees below normal in most locations, with one unusually cool spot in south central Virginia (centered over Appomattox, Charlotte and Campbell counties) that averaged 8-15 degrees below normal.

Pine Bark Beetles

Southern pine beetle (SPB) populations were generally low this year throughout most of the Commonwealth, as predicted last spring from our annual trapping survey. However, a couple of counties saw a resurgence in isolated areas. Pocahontas State Park in Chesterfield County saw multiple small spots resulting in mortality of about 150 mature loblolly pines. These spots were controlled by VDCR by felling infested trees. An additional outbreak area was along the John H. Kerr reservoir in southern Mecklenburg County, totaling about 12 spots or 36 acres.

Most pine mortality throughout the state, however, has been due to Ips bark beetles, black turpentine beetle (BTB) and other secondary insects. Pines under stress due to continued drought or overstocking

"History teaches us that men and nations behave wisely once they have exhausted all other alternatives."

Abba Eban, 1970

have been succumbing to these agents, but in most cases adequate stocking densities have been maintained. Although Ips bark beetles and BTB are not as aggressive as SPB, they can still cause widespread damage to stressed trees and have considerable economic impacts under the right circumstances.

Precommercial Thinning

We continue to increase our annual rate of pre-commercially thinned acres under the Southern Pine Beetle Prevention and Restoration Program. During the past (federal) fiscal year, approximately 5,800 acres have been signed up for cost-sharing, including pending jobs, an increase of 20% from the previous year. US Forest Service, Forest Health Protection funds for this program continue to be generous, so once again I strongly encourage foresters to promote this program to non-industrial private landowners. We are also supporting the costs associated with the establishment of longleaf pine, for those landowners in southeast Virginia who are interested. At the present rate, we will have money available for this program for many years to come.

Gypsy Moth

Gypsy moth populations have resurged this year, and defoliation on approximately 14,330 acres was documented throughout the Commonwealth, compared to 5,000 acres during 2005. However, significant defoliation was concentrated in three main areas – about 7,000 acres along Poor Mountain near Roanoke, 4,000 acres scattered throughout Giles County near Pembroke, and 3,000 acres on Great North Mountain in Frederick County. All of these locations reported some defoliation last summer and heavy egg mass densities last fall, so it was not a great surprise that defoliation showed up. What is surprising to me is that defoliation was not more severe and widespread given that we have had two back to back years with a very dry spring. These conditions are not conducive to survival of the gypsy moth fungus, *Entomophaga maimaiga*, which can cause severe mortality of gypsy moth caterpillars during years when spring conditions are moist. What is even more surprising to me is that in many locations where defoliation was significant, *E. maimaiga* was found to be killing many caterpillars, despite the relatively dry conditions. *Entomophaga maimaiga* began having a major impact on gypsy moth in Virginia during the mid-'90s. We're not sure how it got here, but nobody is complaining. Although gypsy moth outbreaks will probably always be with us from time to time, some experts believe we can expect to see less intense outbreaks now that this natural mortality factor is out there helping to keeping populations in check. Perhaps a 'bad' gypsy moth year will mean tens of thousands of acres instead of hundreds of thousands of acres. Time will tell. In the meantime, we'll take all the help we can get since next year's funding to support gypsy moth suppression and the Slow the Spread Program is going to be cut drastically.

Hemlock Woolly Adelgid

We continue to get reports of the hemlock woolly adelgid (HWA) spreading into previously uninfested areas. Loudoun and Fauquier counties in northern Virginia and Dickenson County in southwestern Virginia reported infestations for the first time this year. Another area where they were found for the first time was the Pinnacles Natural Area Preserve near the Clinch River. This area, known for its biodiversity and unique geology is in Russell County, which was just added to the list of HWA infested counties last year. The infestation is in its early stages as the

"Irrationally held truths may be more dangerous than reasoned error."

T. H. Huxley, 1881

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hemlocks still appear to be healthy. A release of the beetle *Laricobius nigrinus* for biological control is being considered by Virginia Tech entomologists.

White Pine Decline

White pine seems to be taking a hit in many locations throughout Virginia. Usually when we use the term 'decline,' however, we refer to a condition where a tree is affected by multiple agents, usually biotic and abiotic, acting together. With a 'decline,' it is often not clear which factor is most important or fundamental to tree mortality. White pine decline usually is noticed in mature pine stands that are overstocked. Often within a stand, one finds evidence of pine bark adelgid, bark beetles, or wood borers, along with a variety of diseases. Trees with these conditions are often dead or dying, scattered or in small clusters within the stand. All of these insects and diseases are known to be secondary, meaning they are only attacking the trees after they have become weakened or stressed by some other agent. The question is, why the stress in the first place? Many declining stands are on sites very suitable for white pine growth. Overstocking certainly can contribute to stress, but white pine typically shows a high tolerance for this compared to other pines. I often think we have been seeing such unusually warm, dry weather during the last 10 years (with some exceptions) that it is starting to catch up with some of these white pines, particularly those in highly overstocked stands. Healthy white pine typically has a copious amount of resin flow and therefore is more effective at warding off attack from bark beetles than other pine species. However, I often find bark-beetle-attacked trees with no evidence of pitch flow, suggesting that the trees were pretty well dried out at the time of attack. This is only one hypothesis as to what might be going on, but it's the best explanation I have at the moment.

Oak Decline

Oak decline, the gradual death of oaks due to numerous factors, continued at elevated levels this year, although it was not as severe as last year. The sudden and rapid wilting of oaks seen last year throughout eastern Virginia did not occur with the same severity, and calls about dying oaks were far fewer in number. However, maturing oaks, particularly those in urban and suburban landscapes and on mountain ridges, as well as many other tree species, continue to suffer due to drought, flooding, wind damage and many secondary insects and diseases. Therefore, this problem will not ever completely go away, particularly if we continue with an unusually warm, dry climatic pattern or are hit by subsequent severe storms.

I ran across an interesting article recently out of Daytona Beach, FL. In it they describe 'sprawling canopies of huge oaks that turn brown almost overnight' and arborists are receiving tons of calls. The problem was occurring in many parts of Florida this summer. Rather than sudden oak death, oak wilt, or some new blight, the state forest pathologist for Florida stated that "the problems probably started during the hurricanes of 2004, as trees were whipped and twisted by fierce winds, or even during extreme drought earlier in the decade. The high water that followed the hurricanes killed other trees." Subsequently, a variety of insect and disease problems slowly killed off weakened trees that were not killed outright by the storm. I described a similar scenario affecting trees in Virginia (See Forest Health Review, September 2005). What I find particularly interesting is the timing of this mass wilting event (2006), two years after a severe storm season (2004). Similarly, in Virginia, we saw mass wilting of oaks during the summer of 2005, which was attributed, in part, to Hurricane Isabel which hit Virginia in 2003 – also two years earlier.

Sudden Oak Death

Once again our annual survey of general forested areas and forested nursery perimeters yielded no samples that were

"A healthy male adult bore consumes each year one and a half times his own weight in other people's patience."

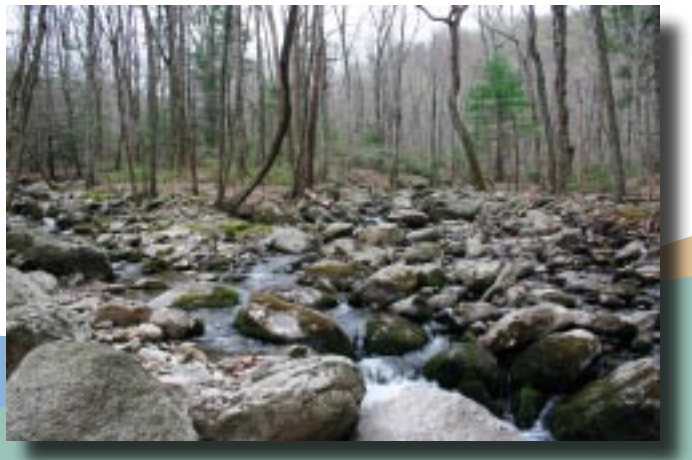
John Updike, 1965

positive for the pathogen that causes sudden oak death (SOD), *Phytophthora ramorum*. In fact, after three years with no positive samples, there is more confidence that nurseries out West are doing a much better job at screening their high-risk host plants before shipping them all across the country. As of now, SOD is established only in forests in parts of California and Oregon. Positive samples showing up in nurseries have decreased markedly since greater awareness and careful screening of shipments has occurred. It does not appear that SOD is easily transmitted from infested nursery stock to the natural environment, although it is still unknown what impact SOD would have in our eastern forests. Although lab tests have demonstrated that this pathogen can infect many of our native oaks, this does not tell us how aggressively they are able to do this and how efficiently they are able to spread in a natural setting.

Because of limited US Forest Service funds, some of the money allocated for SOD surveys is being shunted towards other priorities. However, monitoring for this pest will continue next year in the form of stream surveys. This year, along with some other states, we tested a new SOD sampling method by which healthy mountain laurel or rhododendron leaves are inserted into a mesh bag and hung in a number of streams throughout Virginia. After a two-week exposure period, the leaves become infected with water-born spores of various *Phytophthora* species, indicated by black spots on the leaves. Because there are many native species of *Phytophthora* carried throughout our waterways, presumably *P. ramorum*, if present in our forests, can be detected in the same fashion. Once the infected leaves are collected, they are sent to a diagnostic lab to determine whether the infected areas of the leaf are from *P. ramorum* or some other *Phytophthora* species. The advantage of this method over collecting leaves directly from plants along a transect is that the stream sample represents the entire watershed that lies upstream from it. Therefore, a much larger area can be surveyed by one stream sample than by walking a transect along the ground and visually scanning for infected host plants that most likely are not infected by *P. ramorum* but some other species of pathogen. We sampled seven watersheds draining over 55,000 acres this year as part of a pilot study and no samples came up positive for *P. ramorum*. Next year, although funding for the general ground survey will be discontinued, funding for stream sampling will continue. Thus we should still be able to adequately monitor for the presence of *P. ramorum* in the environment.

Leaf samples baited in a stream as part of the sudden oak death survey.

Leaf samples following two weeks of stream baiting. The black spots on the leaves represent infection points for an as yet unknown species of Phytophthora.



Fusiform Rust

In the September 2005 issue of Forest Health Review, I mentioned that we had an unusual amount of fusiform rust in the loblolly pine seedlings from our nursery during 2004, perhaps because it was an unusually wet year. These seedlings were planted in many locations but, in most cases, seedling losses did not

"He that plants trees loves others besides himself."

Thomas Fuller, 1732

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impact stocking levels too seriously. However, infected two-year-old seedlings planted from that nursery stock are still showing up, particularly in some of our state forest plantings. Estimates are about 10% of the seedlings are infected with the rust in places, although the impact to the future stand should not be serious since adequate planting densities will offset this loss. Historically, Virginia has had few problems with fusiform rust and fungicide use in the nursery prior to planting was rarely used. Since this incident, however, it will be used more routinely.

Emerald Ash Borer

The situation with emerald ash borer (EAB) has suddenly gotten more serious for Virginia. Up until August of this year, I was cautiously telling people that, to the best of our knowledge, it appears that emerald ash borer was successfully eradicated from Maryland and Fairfax County, Virginia after its appearance there in 2003. Since that time, there had not been another sighting of EAB in either location. Unfortunately, that changed late this summer, when EAB was discovered in trap trees from Maryland near Andrews Air Force Base. This was in an area where previous eradication efforts were undertaken, and was being monitored regularly since 2003. The trap trees being used are potted ash saplings about 1-2 inches in diameter that are stressed to attract wood-boring insects such as emerald ash borer. Adult insects lay eggs in the bark, which hatch into larvae that bore into and feed in the cambial region of the tree. These trap trees are laid out in a grid over an extended area. It is not clear whether other ash trees outside of the trap tree zone have been attacked. If so, our eradication efforts may ultimately prove unsuccessful since such trees are not likely to be inspected closely. Emerald ash borer damage is hard to detect at first, and an infested tree may go undiscovered until it has been infested for a number of years. At that point, new adult beetles will have already emerged and moved on to infest new trees.

Virginia also has a trap tree network set up in Fairfax County, which is run by the Fairfax County Forest Pest Program and the Virginia Department of Agriculture and Consumer Services (VDACS). These trap trees were cut in mid-September and had to be carefully stripped of all bark to look for signs of EAB galleries just under the surface. I had an opportunity to partake in this fun for a half day, although it took a crew of about 15 more than a couple of days to finish examining about 80 trap trees. These trees were distributed among 16 sites in the County, five per site. No signs of EAB were found in any of the trees. Unfortunately, the area in Maryland where they found the new infestation is only about 10 miles east of the Potomac River and our border, so if that situation gets

Removing bark from ash trap trees to search for signs of emerald ash borer infestations in Fairfax County, Virginia.

"Genius is only a greater aptitude for patience."

George Louis Leclerc, 1803

out of hand we probably won't be far behind. Let's hope for the best.

In addition to the trap tree survey, we have also conducted visual surveys of suspect or declining ash trees throughout Virginia. Although these surveys are much less efficient due to the difficulty of discovering an infested ash tree until the infestation is pretty far along, it does allow us to cover a lot of ground in a short period of time. Thus far, we have generated a lot of negative data, which at least suggests that EAB has not become established in Virginia, yet. Ironically but understandably, funding from the US Forest Service, Forest Health Protection to support survey efforts was scaled back this year due to the apparent success of the past eradication effort in Maryland/Fairfax and the lack of any positive sightings for three years.

Hopefully, we will not end up like the mid-West and Great Lake states, which have lost millions of ash trees due to this pest, and were unable to contain an outbreak that was discovered too late for eradication to be effective. We have far less ash than they do in this part of the world, but green ash and white ash are still very significant. Virginia has nearly 200 million ash trees, five inches in diameter or greater. Although ash represents a little more than 1% of Virginia's annual sawtimber volume and a little less than 1% of the annual harvest, it is a highly valued wood that typically brings $250-330 per thousand board feet. At the lowest end of this price range, the value of the annual harvest is estimated at $1.26 million in stumpage. Green ash, in particular, is also a common urban and residential tree, and represents 5-10% of the riparian forest tree cover in some locations within Virginia.

European Woodwasp

Following the discovery of *Sirex noctilio*, the European woodwasp, in New York in 2005, intensive surveys for this exotic pest have been conducted in various states. It is now thought that *Sirex* was probably present in New York for at least a few years prior to its discovery. Pennsylvania recently discovered this pest in Tioga County bordering southern New York state. In Virginia, our Department as well as VDACS put out monitoring traps in more than 75 locations throughout the Commonwealth except for the southwest, where establishment risk is believed to be much lower due to a lack of preferred hosts. This year, no *Sirex noctilio* were caught, although we did catch a variety of native woodwasps in the traps.

If there is any good news in all of this, some entomologists have surveyed the damage in New York, and the initial consensus is that it is not a highly aggressive tree killer; it seems to prefer trees that are weak or declining. Therefore, the same prescription for maintaining well thinned, vigorously growing pine stands to mitigate southern pine beetle impacts will also apply here. Scotch pine and red pine are the predominant hosts in New York. In Virginia, we are mostly concerned about its potential impact on loblolly pine, which is a highly preferred host. Shortleaf and Virginia pine are also preferred hosts; longleaf, table mountain and pitch pine are moderately preferred, while white pine is considered to have low susceptibility.

Should this pest eventually become established in Virginia due to spread of the present infestation farther south, or a new introduction through wood-packing material at one of our ports, there is also an effective biological control available (See Forest Health Review, April, 2006 for more details). Of course, this would cost considerable time and money to implement, so it's a problem we certainly don't want to have.

Vole Meeting

On July 18th, a meeting consisting of myself, Jim Parkhurst - Virginia Tech associate professor and wildlife extension specialist, and about 20 VDOF personnel consisting of regional foresters, assistant regional foresters, foresters and technicians from Regions 1-4 met to discuss ongoing problems with voles destroying pine and hardwood regeneration. I have already written an extensive article on the vole problem in the previous Forest Health Review (April 2006), so I don't want to be too redundant here. It is clear that voles have been unusually problematic, widespread and persistent during the last five years, but it is not clear why.

"If a little knowledge is dangerous, where is the man who has so much as to be out of danger?"

T. H. Huxley, 1877

Updates: Vole Meeting, continued

Jim Parkhurst listened to various foresters describe problems in their respective counties, asked lots of questions and shared his expertise. It is clear that new research is necessary to clarify what is going on and why, and whether any of our forest management practices should be altered. Unfortunately, funding for vole research is difficult to come by, and one of the reasons is a lack of adequate documentation of the scope of the problem. In 2005, I surveyed all the foresters that reported vole problems to me and determined that approximately 1,000 acres of young pine have been reported destroyed that year. This estimate probably just scratches the surface, but we simply don't have the data to say for certain. The consensus was that, until we have better information on the scope of the problem, it does not make sense to change how we typically do things. How do we get a better handle on the extent of the problem? One suggestion was to incorporate vole damage estimates into our annual plantation re-inspection surveys. Information and details on specific tracts can be obtained from our database and we can examine whether certain site and stand characteristics promote vole problems. Ultimately, research will be required to uncover many of these lingering questions.

Variable Oakleaf Caterpillar Outbreak, continued

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a population crash due to an increase of natural predators, parasitoids and diseases. For all of these reasons, it is unlikely that a second generation would cause much additional damage to trees already heavily defoliated from the first generation. Furthermore, the presence of so many natural enemies makes chemical control unnecessary in most situations, although a homeowner may want to protect an individual tree or two with chemicals if practical and heavy defoliation in anticipated. In most cases, however, the forested areas are too extensive to make chemical control an economically or environmentally sound option.

There was much evidence of significant mortality of VOLC near the ground following the defoliation in Virginia. Many larvae, after crawling down from the upper canopies, were found dead on foliage in the understory. This was most likely due to a fungal pathogen or parasitoid insect (an insect which lays eggs on or inside the caterpillar – these eggs hatch and the parasitoid larvae devour the caterpillar from the inside out). Furthermore, a common predatory ground beetle called the fiery searcher (Calasoma scrutator), a well-known predator of gypsy moth larvae, was abundant at multiple sites. Both adults and larvae are predatory, and we found many of both crawling around the leaf litter, sometimes caught in the act of feeding on a VOLC. All of this evidence suggests that the VOLC population is due for a crash. Hopefully, defoliation levels have peaked this year and we will not see another significant episode next year. Normally, populations build up before they reach such severe levels. After talking to a few observant landowners, it was clear that this was actually the second year of defoliation in many areas. It is likely that last year was when populations were building up from normally very low levels, but they did not cause enough defoliation to catch the notice of most folks.

Ants collecting a variable oakleaf caterpillar cadaver that succumbed to disease or parasitism.

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"A little inaccuracy sometimes saves tons of explanation."

Saki (Hector Hugh Munro), 1924

Aerial Survey Training for Forest Health Surveys

In an effort to bolster our aerial surveyor work force, VDOF Pilot Phil Carpenter and I conducted aerial survey training for forest health surveys at this year's Resource Management Academy at Smith Mountain Lake. We had 12 people attend, two from each of our six regions. These folks were approved by their regional or assistant regional forester to take the course and be available for this type of work if asked. The class consisted of two hours of lecture, in which I went over some very basic sketch mapping procedures. Phil discussed some of the mechanics of the plane, flight procedures and safety. In the afternoon, each student was flown up two at a time to conduct a sketch mapping exercise over some fire kill on nearby Smith Mountain, which we scouted out the week before. The weather was great, and I believe everyone learned a lot about this important activity.

Our goal is to have other agency personnel available during times of need, particularly during a major gypsy moth or southern pine beetle outbreak. Currently, I am the only one within the agency who conducts aerial forest health surveys. However, due to scheduling conflicts, bad weather or poor visibility during summer haze, it is not always possible for me to go up when needed. Furthermore, it is inefficient to fly from Charlottesville to a distant destination, such as Abingdon, where the weather may be perfectly fine on takeoff but visibility problems arise upon arrival to the survey location. I have had trips where I had to come back empty handed because of poor visibility over a defoliated area and could not come up with a map. Having trained people on the ground in these more distant parts of the state will be enormously helpful, not only to better time flights around inclement weather or poor visibility but also because they will know their local terrain much better than I and will therefore be more effective surveyors after some experience.

Virginia has 15.8 million acres of forest scattered over a very large area, and it is simply not possible to routinely survey all of this area with one person, one department plane, and one pilot. Furthermore, gypsy moth continues to move farther into southwest Virginia, and most future outbreaks will occur in those distant areas affecting Regions 5 and 6. We are also due (it is said) for another major southern pine beetle outbreak, which will likely impact Regions 1,2, and 4 the most. Obtaining good information on these future problems will require a coordinated effort among multiple surveyors. With this recent training, in addition to Phil Carpenter's recent status as a full-time pilot for our agency, we have taken important steps in this direction.

"There is no cure for birth and death save to enjoy the interval."

George Santayana, 1922

Variable Oakleaf Caterpillar Outbreak, continued

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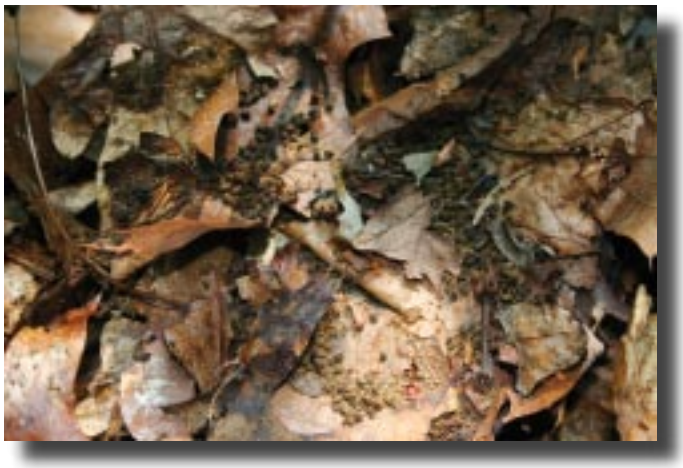
Dennis Gaston (left), assistant regional forester for Region 2, Chris Asaro (middle) and Kathleen Ogilvy, forestry technician for Hanover and Henrico counties, search for VOLC pre-pupae and their ground beetle predators under a defoliated stand in Hanover County, Virginia.

What will be the impact of all of this defoliation? In general, healthy hardwood trees can withstand a significant amount of defoliation, even complete defoliation, without being killed or even significantly weakened. An event like this that occurs for only one year can actually benefit the forest by returning nutrients to the soil in the form of insect frass, which acts as a fertilizer. On the other hand, trees that aren't healthy may suffer or even be pushed past the point of no return from this event. I have already discussed oak decline and the multiple stresses from years of drought and storm damage in past issues. Thus, it is clear that there are many highly stressed and dying trees in the landscape, and this VOLC outbreak will not help. Some foresters have also reported that many trees have leafed out partially by the end of the summer. This will actually weaken trees further, as they are using important energy reserves to replace the lost leaves, lessening their winter hardiness. Hopefully most trees will fare well.



Frass piles up on the forest floor as VOLC munch on the leaves above.

Virginia Department of Forestry
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