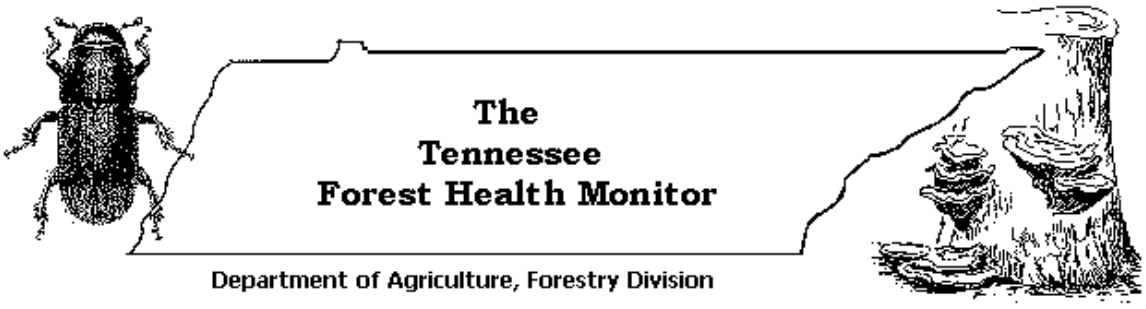

Watch For Bagworms, Fall webworm, Locust leaf miner, Nantucket pine tip moth, Oak decline and mortality, Red-headed pine sawfly, Southern pine beetle, Sycamore decline.

July, 1999

Hello and welcome to the second edition of Tennessee's Forest Health Highlights for 1999.

The first **gypsy moth** catches of the year came the week of June 28 in five (5) Anderson, Cumberland, Rutherford, Sevier) according to TDA, Regulatory Services. Only one in Murfreesboro, and a Pigeon Forge campground catch, were new sites. Five moths have been reported in Scott County after the aerial spray project in May. Over 1900 acres (1941) in five locations were sprayed twice with **BT (Boullus Thuringiensis)** – a bacterium that kills only leaf-chewing caterpillars. Nearly 2,000 traps over 100 square miles will be placed in this county. Infested oaks in Cumberland County treated from the ground using Dimilin. Nearly 20,000 acres were treated twice with BT or once with pheromone flakes (sex attractors) were treated in Virginia, North Carolina and West Virginia to slow the spread of the gypsy moth. However the largest spray projects this year were in Michigan and Wisconsin where over 50,000 acres were sprayed twice in each state. Treatments continue in northern Michigan until the end of June.

A **jumping oak gall** has infested scattered white and post oaks in all counties where the trees exist except the Cumberland Plateau. Curling, yellowing and browning leaves occurred where numbers of gall wasp larval developed inside pinhead sized cups of leaf tissue. From 1 to 10 percent of the white oaks in northwestern middle Tennessee and in the counties surrounding Knoxville were infested. Usually less than 50 percent of the foliage is affected although the problem is worse on the drier, southwestern slopes. Some locations around Knox County had single trees with nearly all the leaves brown. While severe browning and premature leaf drop occurred in Missouri in 1998 on more than 1.8 million acres in 12 counties near St. Louis, some trees have put out new leaves. Populations of this native insect are expected to decline next year.

March and April are usually the months when tornadoes are most common. But in May, **tornadoes** and **straight-line winds** up to 90 mph blasted paths across 22 counties in West and Middle Tennessee. Thousands of homes were without power from Jackson to Nashville in addition to suffering some property damage. Over 7,000 acres of the Natchez Trace State Forest and Park were damaged by straight-line winds in West Tennessee. The majority of this acreage is root-sprung hardwoods with one-third in pine. Over 5 percent of the downed timber has been salvaged to date. Thus far root sprung trees remain green reducing the problem with Ips beetles on pine as well as sawyer and ambrosia beetles.

A report of snow geese being killed by **tornadoes** came out of Arkansas this January. Over 1,500 geese were lost in one tornado near Jonesboro. In another round of storms four days later, **hail** about golf ball-size started and geese and ducks started falling out of the sky. Groups of 15 to 20 snow geese would fall at once. Up to 5,000 birds were killed or crippled. Hawks,

herons, doves, mallards and pintails were also found dead in the area that reached to southern Missouri.

Southern Pine Beetles (SPB) are on the rise after a dry fall, mild winter, and dry spring. Larger beetle spots remained active over the winter. Some spots that were IPS and SPB last year are 10-15 tree SPB spots in southwestern Tennessee. Traps placed by TDA forestry county personnel in Chester and Rhea Counties showed increases in SPB numbers as did USDA Forest Service beetle traps in the Nolichuckey and Ocoee Ranger Districts. Already reports have come in from Charles Corby, Bill McCrary and Martin Miller that SPB spots up to 5 acres in size are present in pitch and Virginia Pines on mountain slopes in Unicoi and Washington Counties as well as Holston Mountain in Carter County.

The number of small infestations (10 tree spots) has increased in areas north and west of Knoxville in June, especially in Morgan, Roane and Scott Counties. Spots have popped up on Catoosa WMA and Lone Mountain State Forest as well as Bowaters plantations. Some 80 to 100 year-old shortleaf pine infested by southern pine beetle in Morgan County had no pitch tubes due to dry conditions this spring. Be aware that there have been some reports of sawtimber-sized white pine being killed by SPB in Morgan County where large beetle populations exist. Early salvage is recommended where spots are large enough and the market allows. Buffer strips around these spots should rely on reddish-brown boring dust in the bark crevices, spider webs, and understory vegetation and should be liberal in size (wider then tree length). Some wood industries are only taking a limited amount of blue-stained timber so salvage should concentrate on the newly infested and buffer trees first. Cut-and-leave should be practiced in other locations. Please see the UT Extension Service's southern pine beetle pamphlet if you are unfamiliar with these control methods. No thinning should be done during this period of rising beetle populations.

No **oak wilt** was found in flights over Loudon, Morgan and Roane Counties in June. However **white oak decline** was the main pest problem found in addition to **lightning strikes**. Generally older trees and/or trees on drier, rocky sites were more affected by decline. Some **Hypoxylon canker** also infected these stressed trees.

Fire and **Ips beetles** go together. The probability of Ips infestations of fire-damaged pines is high when 80 percent or more of the trunk is charred and 50 percent or more of the foliage is consumed or browned by fire. Roots can also be damaged by fire when heavy pine litter has built up over shallow-rooted trees. Prescribed burning under safe conditions helps to reduce this problem.

There is some interest in **prescribed burning of oak stands** to increase survival of the species in future stands. Springtime fires can cause more tree damage and greater possibility of decay than do winter fires. Decay can begin as early as 3 years following a fire but wood loss will be minimal. Tree appraisal should be done 1 to 2 seasons after the fire to best be able to judge the wounding. When a tree is injured, the chance that it will become infected with decay fungi increases with the length of time between injury and callusing-over. Predictions have been made for the amount of butt log cull volume in board feet to the width of the basal wound 1 foot above the ground and number of years since the fire. In general oaks with a wound less than 5 inches wide will probably not lose any quality and no more than 3 board feet in volume.

Loblolly pine plantations damaged by the **Christmas Ice Storm** at Arnold Engineering land in Coffee and Franklin Counties are beginning to be salvaged. A total of 100 acres of plantations over 30 years of age will be clearcut, and another 75 acres of loblolly will be replanted after collapsing beneath the weight of ice. Selective marking of 160 acres in 30 year-plus stands will remove scattered trees with broken tops. About 60 miles of roads and fire breaks also need to be opened up.

Some folks have asked about a hazard rating system for **pales weevil** when planting back to pine on a previous pine site. The attached table is based on a system developed by Coleman Doggett of the North Carolina Forest Service.

Chiggers can be a real pain. They are sometimes called redbugs and are

extremely small. These mites feed on a variety of wild and domestic animals as well as humans. They are found in blackberry patches and grassy woods margins, and low overgrown damp places. Larvae feed for about 4 days at pores or hair follicles (not burrowing into the skin) and then drop off. Most people react to chigger bites by developing an itch and reddish welts within 24 hours. This intense itching may persist for 7 to 10 days. Bites that are scratched may become infected but chiggers are not known to transmit disease here. A soapy bath will lessen the attacks as well as applying antiseptic to the welts. People walking in chigger-infested areas should treat clothing and exposed skin with tick repellents.

The expansion of the gypsy moth into Wisconsin has caused changes in the policies for processing and shipment of regulated wood as of April, 1999. These changes apply to pulpwood, sawlogs, veneer logs with bark, and bark mulch. Wood chips with less than 1 percent bark contamination by industry definition are not regulated. More specific information can be obtained from Tom Crowe, USDA APHIS, PPQ, Nashville phone (615)781-5477.

Many folks have noticed white pines dying this spring and summer. **Procerum root disease** is the most probable cause of the death of trees up to 20 years of age in landscaped settings as well as Christmas tree plantings. The major symptom is the browning of branches within 3 feet of the ground line followed by resin oozing from the bark of the lower trunk. Later the entire tree's foliage fades and then turns red. The butt is saturated with resin in the bark and wood. The fungus is spread by weevils breeding in dying white pine. Procerum root disease is worse on heavy, shallow soils that are water-saturated in the spring and dry for prolonged periods during the summer. The moral of the story is do not plant white pine on adverse sites. Stump removal or Dursban stump sprays are also alternatives for stressed trees.

If you have a Conservation Reserve Program (CRP) pine planting that requires thinning, it should be evaluated for **annosus root rot hazard (ARR)** before the event takes place. All it takes is a soil probe to determine the depth and soil texture. Deep loamy or sandy soils (12 inches or greater) are moderate to high for ARR hazard if there is goo internal drainage and a low water table. All first thinning operations should consider the use of a borax or Sporax treatment of cut stumps if these high hazard conditions are met. This is especially true to high value stands such as seed orchards.

How does **acid rain** threaten forest productivity? It strips the soil of nutrients and minerals as it percolates down, limiting productivity. It also hampers the soil's ability to buffer trees from toxic substances such as aluminum and other heavy metals. One soil study near Spartanburg, South Carolina showed soil pH dropped one whole unit in the top 14 inches of soil over 30 years. This drop signals reductions in soil productivity so that calcium and potassium along with nitrogen and phosphorus will have to be added in fertilization programs to assure sustainable production in next rotation.

Dutch elm disease is at higher levels this year where elm populations are most numerous. An increase of the problem in rural areas of West Tennessee and portions of Middle Tennessee has caused concern about urban elms. All native elms are susceptible to the disease. Prompt removal of infected limbs before the disease reaches the main trunk can be recommended as well as removal before the European elm bark beetle can breed in infected dead trees. Systemic fungicides are primarily used as preventatives of the disease when leaves reach full size in May. They should be used in combination with pruning of crowns with not more than 10 percent dieback for infected trees.

When you are selecting **pine seedlings for planting**, a minimum root collar diameter of 1/4 and a 1 to 1 root to shoot ratio should be practiced. Seedlings with a reduced root system are the first to die during dry springs on steep, shallow, heavy soils. Plan ahead and get good balanced pine seedlings.

FIELD REPORTS

INSECTS

Pitch Mass Borer damaged the trunk of Norway spruce in Carter County (M. Miller).

Maple Petiole Borer caused light to moderate leaf drop on sugar maples in Dickson County (M. Tummins).

Bagworms killed several limbs on 3 cedars in Lewis County and caused light to moderate defoliation of white pine in Claiborne County (C. Gearhiser, S. Roark). They were ¼ to ½ inch long on white pine in Rutherford and Williamson Counties on the first of June (K. Arney , J. Clayton).

Rust Mites and the Elongate Hemlock Scale damaged hemlock foliage in Sullivan County (M. Miller).

Hackberry Butterfly larvae partially defoliated (30-50%) trees in Smith County (J. Replogle).

Jumping Oak Galls peppered the leaves of white oak in Benton, Davidson, Dickson, Henderson, Hickman, Houston, McMinn, Montgomery, Morgan, Rhea, Roane, Robertson, Stewart, Sullivan, and Sumner Counties (E. Smith, B. Thompson, S. Bingham, J. McGaughey, B. Miller, D. Brown, C. Gearhiser, S. Hayes Gann, M. Huddleston, S. Huskey, S. Malone, T. Melton, T. Simpson, T. Tynes, M. Williams, J. Woodcock, G. Zimmerman).

Southern Pine Beetle infestations in Morgan, Roane and northern Rhea County, have increased over the winter (S. Hayes-Gann, E. Smith, S. Malone).

Fall Webworms were present on redbuds in Cocke County (J. Henderson).

An Unknown Defoliator chewed holes in the leaves of red and white oaks, hackberry and apple trees in eastern Lawrence County (D. Barnett, M. Rose).

Fall Cankerworms continue their decline in numbers in Sullivan County (S. Bingham, S. Woody).

Oak Apple Galls on red oak leaves and Hedgehog Galls on white oak leaves were lightly infesting trees in Putnam County (G. Zimmerman).

Beech Borer hollowed out the center of a cherry trunk in White County (G. Zimmerman).

White Spotted Sawyer damaged the boles of 2 Virginia Pines in Grainger County (J. McGaughey).

Green-Striped Mapleworms fed on maples in Cocke County (J. Henderson).

Eastern Tent Capterpillars ended up their feeding on sweetgum in Cocke County (J. Henderson).

Black Turpentine Beetles killed 21 trees in 2 locations in Cumberland County (L. Grape-Burns).

May Beetles fed on leaves of sawtooth oak in Smith County (J. Replogle).

White Pine Adelgids covered the trunk of white pines with white wax in Cocke and Robertson Counties (J. Henderson, T. Melton).

Nantucket Pine Tip Moths had peak flight on June 15 in Wilson County. Time to spray Virginia pine Christmas trees on June 22 (B. Wright).

Twig Borer killed small branches of sugar maple in Roane County (E. Smith).

Virginia Pine Sawflies chewed Christmas trees in Maury and Wilson Counties (T. Shires, B. Wright).

Boxelder Bugs covered the outside walls of the Forestry Division Headquarters in Cocke County and residences in Knox County (J. Henderson, M. Williams).

Phylloxera Adelgid Galls killed back some branches of a hickory in Sullivan County (S. Bingham).

Spittlebugs were noticeable on a Virginia Pine in Weakley County (R. Stutts).

Loblolly Pine Sawflies moderately to heavily defoliated pines in Carroll, Dickson, Robertson, Sumner, and Weakley Counties (S. Johnson, T. Melton, R. Stutts, T. Tynes).

Southern Pine and Black Turpentine Beetles killed 6 loblolly pines in Benton County and 4 spots of shortleaf pine (10-15 trees in McNairy County) (P. Moditz, T. Tynes).

Cicadas damaged limbs of 4 Bradford pears in Giles County (T. Shires).

Eastern Tent Caterpillars migrated from tree to tree in large numbers in Morgan County (H. Chaudhary).

Cambium Maggots caused degrade of chestnut oak lumber (J. Bryson).

Gouty Oak Gall moderately to heavily infested the twigs of 4 red oaks in Haywood County (B. Taylor).

Locust Leaf Miner caused moderate browning of leaves of many black locusts in south Knox County (T. Simpson).

White Pine Aphids and Japanese Beetles damaged a Christmas tree plantation in Anderson County (M. Williams).

Japanese Beetles have defoliated plum, apple, and cherry trees in Blount, Dickson, and Montgomery Counties (C. Campbell, M. Huddleston, J. Keener).

Carpenter Ants tunneled in hardwood tree trunk in Robertson County (T. Melton).

DISEASES

Brown Spot Needle Disease infected the older needles of Scotch pine in Shelby County (K. Fermann).

Drought yellowed second year needles of scattered branches of ornamental white pines and Christmas trees in Davidson, Rutherford, Smith and Williamson Counties (K. Arney, J. Clayton, J. Replogle).

Black Knot infected cherries and plums in Hickman, Morgan and Counties (C. Gearhiser, E. Smith, G. Zimmerman).

Leaf Spot moderately covered leaves of red maple and dogwood saplings in Henderson and Union Counties (E. Elkins, S. Roark).

Dutch Elm Disease killed 1/3 of the crowns of 2 elms in Jackson County (J. Replogle).

Procerum Root Disease caused several white pines in wet areas to die in Blount, McMinn, Putnam, Roane, Rutherford, Sumner and Williamson Counties (J. Dale, G. Eaton, T. Melton, S. Huskey, E. Smith, T. Simpson, G. Zimmerman).

Anthracnose killed limbs on several sycamores in Davidson County (T. Melton).

Fire Blight lightly to heavily infected apples, pears and crabapples in Claiborne and Putnam Counties (J. League, S. Roark, G. Zimmerman).

Leucostoma Canker and Drought Stress affected a hemlock in Hamilton County (J. McCarty).

Slime Flux Bacterial Disease infected pin oak in Shelby County and white oak in Knox County (K. Fermann, T. Simpson).

Pitch Canker caused resinous infections of shortleaf, Virginia and white pines in McMinn County (S. Huskey).

Red Oak Decline occurred on several trees in Lincoln County and Montgomery County (M. Huddleston, J. Mann).

Heart Rot Fungi decayed 250 acres of fire-damaged hardwoods in Claiborne County (S. Roark).

Bacterial Infection (Pseudomonas?) blighted 5 Bradford Pears in Carter County (M. Miller).

Botryosphaeria Canker and Environmental Stress was responsible for Birch dieback in Sullivan County (S. Bingham).

Dutch Elm Disease continues to kill elms in eastern portions of Robertson County and parts of Sumner (T. Melton).

Oak Decline affected red oaks in Montgomery County (M. Huddleston).

White Pine Decline killed trees in urban homesites in Giles and Montgomery County (M. Huddleston, T. Shires).

Drought and Root Decline caused a magnolia to die in Hickman County (C. Gearhiser).

Butternut Canker infected 10 trees causing bark lesions, limb death and crown decline in Hickman County (C. Gearhiser).

Anthracnose caused dying limbs on sycamore throughout Robertson and Sumner Counties (T. Melton).

Elm Phloem Necrosis killed an elm in eastern Robertson County (T. Melton).

Cedar Apple Rust infected every leaf of 3 apples in Claiborne County (S. Roark).

OTHER

Drought caused the browning and drop of magnolia leaves in Giles, Hickman, and Shelby Counties (K. Fermann, C. Gearhiser, T. Shires).

Home and Sewer Construction damaged roots of hardwoods in Putnam and Roane Counties (E. Smith, G. Zimmerman).

Herbicides affected oaks over 10 acres in Weakley County (R. Stutts).

Drought killed scattered white pines in Knox County (M. Williams) and cedar in Sumner County (T. Reeves).

Excessive Fruit from sweetgum caused landowner concern in Shelby County (K. Fermann).

Straight-line winds damaged 15 hardwoods in Shelby County and scattered trees in Chester, Hardeman and McNairy Counties (K. Fermann, P. Moditz).

Dry Weather reduced 2-0 White Pine seedling survival by 30% in Putnam County (J. League).

Poor planting caused the death of 2 magnolias in Giles County (T. Shires).

Dirt piled around a maple caused tree decline in Weakley County (R. Stutts).

Topping killed a maple in Putnam County (G. Zimmerman).

Table 3. – Pales weevil hazard-rating system developed by Coleman Doggett.

Harvest Date	Site Preparation Date	Site Hazard
Before June	Before June	None
	After June	
	< 5 cords per ac	Low
	> cords per ac	Low to moderate
After June	After June	Low to high