Insects and Disease

Introduction

The purpose of this monitoring is to determine the current extent and severity of insect and disease occurrence on the Forest. The frequency and scope of monitoring may vary, but it typically occurs on an annual basis. Monitoring is usually conducted through a combination of aerial detection surveys and on-the-ground visual inspections during normal project work. The Monongahela National Forest (MNF) cooperates with the West Virginia Department of Agriculture (WVDA), USDA Animal and Plant Health Inspection Service (APHIS), and the State & Private Forestry branch of the USDA Forest Service (S&PF) to monitor and control insect and disease outbreaks within the Forest. Typically, S&PF and WVDA conduct the surveys or inspections, so there are no direct Forest accomplishments to report.

Monitoring and Evaluation

Monitoring Question 3. Are insect and disease populations compatible with objectives for restoring or maintaining healthy forest conditions?

Monitoring Question 4. To what extent is the Forest managing undesirable occurrences of insect and disease outbreaks through integrated pest management?

These two monitoring questions are so interlinked that they will be addressed together in this report.

Forest Service employees in the S&PF Forest Health Program typically complete aerial detection surveys for insect and disease activity in July; however, FY10 surveys were suspended after an airplane crash involving employee fatalities. Thus there are no survey results to report for FY10.

Hemlock woolly adelgid continues to cause mortality to eastern hemlock trees on the Forest. However, severe and extended cold temperatures experienced during the 2009/2010 winter, may have slowed the advance temporarily. Surveys in the summer of 2009 and the spring of 2010 indicated a dramatic drop in adelgid populations.

Beech bark disease (BBD) continues to spread through the Forest. The scale and killing fronts of the beech bark disease complex are within the Forest boundaries, and beech management has become a complicating factor in many Forest vegetation projects.

A second infestation of emerald ash borer (EAB) was found in 2009 in Morgan County, West Virginia, near Berkeley Springs. No EABs were detected on the Forest in FY10.

The Asian long-horned beetle (ALB) and sirex woodwasp have not yet been observed in West Virginia. ALB has been found in Illinois, New York, New Jersey, and Massachusetts. Sirex woodwasp has been found in Pennsylvania, Michigan, New York, and Vermont.

Monitoring Questions 3 and 4. Evaluation, Conclusions, and Recommendations

The current insect and disease infestations are not related to management activities occurring on the Forest. The insects and diseases mentioned above are not native to the United States.

Due to the substantial increase of defoliated acres from gypsy moth in 2008 compared to the previous 2 years, the Forest decided to spray for gypsy moth in 2009. An estimated 471 acres were sprayed with an application of Gypchek, a viral biological control agent. An additional 20,585 acres were treated with *Bacillus thuriengiensis* variety *kurstaki* (BtK), a bacterial biological control agent. Egg mass surveys conducted by Forest Health Program employees and WVDA personnel in the fall of 2009 indicated the spray program was successful. There was a substantial collapse of the gypsy moth population in 2009. Studies were initiated in 2009 on the Forest to determine the location and effects of *Entomophaga maimaiga*, a fungus that kills gypsy moth caterpillars. The fungus is especially active in cool, wet weather during the spring or early summer and has proven to be an effective pathogen to help control gypsy moth.

Hemlock woolly adelgid came to the United States from Asia. It was first detected in West Virginia in 1992. Since 2003 over 300 trees in Forest recreation areas have been treated with insecticide to study the effectiveness of the various treatments. Amy Hill, USDA Forest Service entomologist with Forest Health Protection, held several meetings to prepare a hemlock action plan for the Monongahela National Forest. The Forest is also cooperating with other federal and state agencies, non-government organizations, and private landowners to develop a state-wide hemlock conservation plan. In FY10, the Forest decided to treat additional hemlock trees in developed recreations areas on the Forest.

The beech scale insect, native to Europe, is part of the beech bark disease complex. Presently it appears that only 1 to 2 percent of native American beech trees are resistant to this insect/disease complex. Forest employees are looking for American beech trees that appear to be resistant to the disease and recording the locations with GPS equipment. Several hundred beech nuts were collected by district personnel to send to Jennifer Koch, Research Scientist with the Northern Research Station Forestry Sciences Laboratory in Delaware, Ohio. The Forest is working with the Northern Research Station and USDA Forest Service State & Private Forestry Forest Health Protection to establish a resistant beech seed tree nursery on the Forest.

Emerald ash borer, native to Asia, was first detected in Michigan in 2002. Since then it has spread to Ohio, Indiana, Illinois, Maryland, and Pennsylvania, and it was found in 2007 in one site near a private campground in Fayette County, West Virginia. Forest Service personnel with S&PF placed traps in 2009 in or near Forest recreation areas to help determine if the insect is here. An inspection of the traps placed on the Forest did not reveal any EAB populations on the MNF. Traps were also placed in various locations throughout WV by WVDA and APHIS employees, and additional infestations were found. In October 2009, APHIS placed the entire State of WV under quarantine for all hardwood firewood, wood chips, bark chips, unprocessed ash wood products with attached bark, and ash trees. A Firewood Alert remains in effect, requesting Forest visitors to not bring potentially infested firewood into the Forest or move it once it is here.

Recommendations: Continue to cooperate with WVDA, APHIS, and S&PF to monitor the occurrence and outbreaks of insect and disease infestations through aerial detection surveys and visual on-the-ground inspections. Train MNF employees to recognize the various indications of non-native insect and disease infestations that may threaten the Forest.

Prepare an HWA action plan document to prioritize areas on the Forest in an effort to preserve critical habitat for Threatened, Endangered, Sensitive, and Management Indicator species and for aesthetic values in high visitor use areas. Complete NEPA documentation, as needed, to release predatory beetles as they become available and to treat high-priority hemlocks with insecticide.

Continue to locate disease-resistant American beech trees to collect scion and root grafts for potential future restoration efforts. Continue cooperating with the USDA Natural Resource Conservation Service Plant Materials Center at Alderson, WV to grow disease-resistant American beech seedlings, from root cuttings or scion grafts, for planting on national forest lands. Work with the Northern Research Station and the Forest Health Program in State & Private Forestry to establish a seed tree orchard from disease-resistant American beech stock on the Forest. Do not mark disease-resistant American beech trees in timber sale preparation activities. Invite Alan Iskra, Forest Plant Pathologist, and Rick Turcotte, Entomologist with State & Private Forestry Forest Health Program to hold a workshop on the Forest for timber markers in identifying disease-resistant American beech trees. Avoid cutting disease-resistant American beech trees during timber sale operations and site preparation for natural regeneration activities, if possible.

Figure ID-1. Hemlock Woolly Adelgid Infestation (white substance along needle twigs)