



PAUL R. LEPAGE

GOVERNOR

STATE OF MAINE  
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY  
MAINE FOREST SERVICE  
168 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0168

WALTER E. WHITCOMB

COMMISSIONER

[http://maine.gov/dacf/mfs/forest\\_health/index.htm](http://maine.gov/dacf/mfs/forest_health/index.htm)

## *Forest & Shade Tree - Insect & Disease Conditions for Maine December 8, 2015*

Shortly after the last issue of this bulletin we got news that brought selfish sadness—Bill Ostrofsky announced he would be retiring. His date of retirement, the first of November, has come and gone. Now seems like a good opportunity to let readers know of this change: we have just prepared our annual highlights for the USDA Forest Service, which they will compile with additional information and post to their website sometime next year, and Thanksgiving has put us in a grateful mood.

We are grateful for the years that Bill dedicated to the job as Maine's Forest Pathologist. He approached the job with a passion for pathology and a gift for service. He was always available to help us learn more about the world of forest pathology, and we heard from clients that his availability to them was greatly appreciated. Bill was a champion of this publication and helped to make sure it got out to you on a regular basis—you'll probably notice a change of voice with his absence. We wish him the best in retirement.

We are also grateful to you for your contributions to this bulletin and forest health monitoring—through your reporting of what you see out there affecting Maine's forests and trees and participation in projects throughout the year. We wish you and your loved ones a safe, healthy and happy Holiday Season and the best in the New Year.

In addition to the 2015 highlights compiled for the Forest Service, you will find below some requests for assistance and a calendar of events for the coming months.

### *Requests for Assistance*

#### **Tracking Winter Moth**

Electronic subscribers will have received the Department press release requesting help from the public to track winter moth, and others may have seen the news in print or on television. Reminder: the survey can be accessed [online](#). Reports of moth flights can also be made by phone at (207) 287-2431.

If you are east of Rockland or in towns removed from the coast and seeing numbers of moths we encourage you to collect and submit samples to the lab (mailing address above). Winter moths are very similar to native Bruce spanworm that might still be flying as well so we need to dissect them to see which species is present. This could help us better understand the edges of the current distribution of winter moth. Samples can be mailed in a standard envelope,



Male winter moths rest around an outside light. (Photo: Maine Forest Service)

DOUGLAS P. DENICO  
DIRECTOR

18 ELKINS LANE, HARLOW BUILDING  
AUGUSTA, ME 04330  
[www.maine.gov/dacf](http://www.maine.gov/dacf)

PHONE: 207-287-2431  
OR: 800-367-0223  
FAX: 207-287-2432

information enclosed should include date and location sample collected was collected from and collector's name. If information about results is desired, then contact information (preferably e-mail) should also be enclosed. Samples will be dissected in February.

### Watching for Emerald Ash Borer (with the help of woodpeckers)

This is probably the best time of year to watch for signs of the invasive wood borer, emerald ash borer (EAB). EAB has been found just across our borders in New Hampshire and Massachusetts, and we expect to find it in Maine soon. During the winter, from this time until the trees start to leaf out in the spring, woodpeckers often find and feed on overwintering EAB larvae. As they feed, they flick off the grey outer bark, and expose the light blond inner bark, leaving a distinctive pattern. When you are out and about, watch for signs of woodpecker feeding and let us know if you see any. If you can, take a picture of any feeding you see on ash and pass it on to us.



Evidence of woodpecker feeding on ash. (Photo: Maine Forest Service)

### Heterobasidion Population Genomics Study

Research scientists at the Canadian Forest Service Laurentian Forestry Centre have approached us about participating in their study to unravel patterns of movement of *Heterobasidion* spp. fungal spores. Infection by these fungi can kill trees causing openings within stands. These openings have informally been dubbed "Fomes holes" (this fungus was once called *Fomes annosus*).



A stand opening caused by *Heterobasidion* spp. root disease, Freeman Twp., ME. (Photo: W. Ostrofsky, Maine Forest Service)

We're looking for stands thought to have *Fomes* holes that we can scour for fruiting bodies (conks) to help our neighbors (and therefore ourselves) learn more about this disease complex. These will most likely be red pine stands, but other conifers are also susceptible to *Heterobasidion* spp. and may have *Fomes* holes as well. If you know of potential areas to carry out this work, please let us know. Collections could start immediately, so we are interested in leads you may have as soon as possible. However, this study will continue through spring 2017, so we're also interested on sites you may remember or come across in the future.

The GPS coordinates of selected sites would be shared with Canadian cooperators and a conk would be collected from each *Fomes* hole and sent to a lab for genetic analysis. Collection of the fruiting bodies may involve minor soil excavation and wounding of (doomed) trees.

Contact Allison Kanoti, [allison.m.kanoti@maine.gov](mailto:allison.m.kanoti@maine.gov) or (207) 827-1813, with question or information regarding potential sites.

### Calendar

Winter is a time for meetings; for us that means we get to speak to a lot of you. For you, that can mean a chance to ask your questions in person, and sometimes even get some continuing education or licensing credits. Here is an incomplete schedule of our talks for the next few months:

**Agricultural Trades Show in Augusta, ME** -- This free event runs from **January 12<sup>th</sup>** through the **14<sup>th</sup>**. There are many workshops that might be of interest. The full schedule for the trades show will be linked on this website when it is available: <https://www.regonline.com/getrealmaine>. Colleen Teerling will speak to the Maine Maple Syrup Producers on Tuesday **January 12<sup>th</sup>** on forest pests both invasive and native that can affect maple trees. The exact time has not yet been decided, but will be sometime between 9 and 11 am. On Wednesday, **January 13<sup>th</sup>**, Allison Kanoti will be presenting a Forest Health

Update for the Board of Pesticides Control Workshop (1 CEU for pesticide licensees) from **10:15 - 11:15**. That same day, she'll present an update at the SWOAM Annual Meeting from **2:45 to 3:30**.

**Grow Maine Green Expo in Augusta ME.** On Wednesday, **January 20<sup>th</sup>**, Colleen Teerling will present a talk at the joint meeting of the Maine Arborists Association and Maine Landscape & Nursery Association. She will talk about invasive insects which impact arborists and landscapers and how they in turn impact those insects. The day will include a keynote address, educational seminars and a B2B trade show. More information can be found at the MAA website: <http://maa.camp8.org/event-2072699>.

**New England Regional Conference on Forest Engineering, Orono, ME** – Allison Kanoti will provide a brief forest health update at the NERCOFE conference in Orono on **March 14<sup>th</sup>**. More information on the full conference will be available on the University of Maine website: <http://forest.umaine.edu/outreach-resources/nercofe/>.

**Winter Ag School, Houlton, ME** – Charlene Donahue will provide an update on the Spruce Budworm Situation in Maine and Canada at the forestry session of the Southern Aroostook Soil and Water Conservation District (SASWCD) Winter Ag School. The session will take place at the Houlton Higher Education building at 18 Military St. from **6:00pm-9:00pm** on Thursday, **March 31<sup>st</sup>**. Credits pending for licensed foresters, CLP and QLP. For more information contact Angie Wotton at the SASWCD: 532-2087 ext.101 or [angela.wotton@me.nacdnet.net](mailto:angela.wotton@me.nacdnet.net).

**Ash Peeling Workshops, Various, ME** – Dates and locations for the ash trap tree peeling workshops will be announced at a later date. If you created a trap tree in 2015 and haven't already contacted Patti Roberts with details, please contact Patti: (207) 287-2431 or [patti.roberts@maine.gov](mailto:patti.roberts@maine.gov). You can also contact Patti also if you haven't created a trap tree, but are interested in helping peel trees at a workshop.

## ***2015 Forest Health Highlights***

Report to the USDA Forest Service of Forest Health Conditions

### **2015 Disease Highlights**

#### ***Caliciopsis Canker of White Pine***

*Caliciopsis* canker (*Caliciopsis pinea*) is a disease that has been historically associated with overstocked, pole-sized white pine stands of low vigor. More recently, it has been observed to be more aggressive in some situations, so a re-examination study of the disease was initiated, with the USDA Forest Service, New Hampshire Division of Forests and Lands, Maine Forest Service, and the University of Maine as cooperators. The survey and research effort is on-going in both Maine and New Hampshire. A summary of only the Maine Forest Service efforts are outlined here.

In 2014, 22 randomly selected stands were surveyed in Maine, with *Caliciopsis pinea* identified on white pine regeneration from 16 stands surveyed. *Caliciopsis* symptoms in overstory trees were also identified in 16 stands, but not always from those with infected white pine regeneration. Relationships between tree stress resulting from the white pine needle disease complex, and the incidence and severity of *Caliciopsis* canker have not been established, but may become apparent as studies continue.



Figure 1. Inter-nodal pitch streaks on the bark of white pine, a symptom of infection by *Caliciopsis pinea* Limington, Maine. (Maine Forest Service Photo)

In 2015, the study was expanded to assess *Caliciopsis* canker incidence and severity as it may be related to soil type characteristics. An additional 16 white pine stands were surveyed for the canker disease in Maine and the data will be combined with similar data collected in New Hampshire by USDA Forest Service and New Hampshire DRED personnel. Of the 16 plots surveyed in Maine this year, fruiting of the pathogen was found on sapling-sized white pines in ten of the stands. Symptoms of pitching (pitch streaks along the main bole) were observed in all sixteen stands. Percentage of white pines exhibiting pitching ranged from a low of 10% in a stand in Lyman, to 73% in a stand in Shapleigh. Although pitching is one criterion for assessing infection by *Caliciopsis*, not all pitching is likely the result of infection by this pathogen. Detailed canker analyses are being conducted by University of Maine, other State, and USDA Forest Service cooperators to determine the reliability of using pitching as a survey tool for this disease.

### White Pine Needle Cast and Needle Blight

The needle disease complex that has resulted in extensive pre-mature needle shedding in white pines over the past several years continued at a similar level of intensity in 2015. Losses of one-year-old needles during late May and through June resulted in numerous disease clinic requests for assistance. This is believed to be the ninth consecutive year of heavy needle loss in Maine from this disease complex. As part of a region-wide study coordinated by USDA Forest Service personnel, two permanent plots in Maine were again assessed for white pine needle disease symptoms. The disease complex was also noted when conducting the survey for *Caliciopsis pinea* (described above in this report). The disease remains widespread but most severe throughout central, western, and southern Maine. An extensive survey in Downeast and northern regions of Maine indicated disease presence wherever white pine was found, but disease intensity in these regions was judged to be considerably less than in southern and western areas.

### Other Disease Issues of Note

In an upcoming issue, *Plant Disease* is set to publish a first report of the pathogen *Diplodia corticola* in Maine. Symptoms of oak dieback were observed in Standish (Cumberland County) and a few surrounding towns in 2015. Symptoms include the drying and death of leaves and branch tips, often with a clearly delimited canker separating the dead portion from the live portion of the branch. Leaves on affected branches become brown and persist on the tree, at least for several weeks. Occasionally, twigs of branches more proximal to the stem are affected first, rather than those at the branch tip itself. Although no positive identification was made on material from Standish, it is very likely that the causal agent for this dieback is *Diplodia corticola* (= *Botryosphaeria corticola*). This disease is generally considered to be a secondary agent, affecting trees initially weakened or damaged by some other cause. A First Look of the Plant Disease article can be found here: <http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-09-15-0994-PDN>.

*Sirococcus* shoot blights remain notable in Maine, particularly *Sirococcus conigenus* on red pine and *S. tsugae* on hemlock. Red pine in both natural and planted stands have experienced significant decline and mortality in locations scattered throughout the state due at least in part to *S. conigenus*. Hemlock regeneration has been compromised by *S. tsugae* in scattered locations in Maine, especially in coastal areas.



Figure 2. Yellow needles in June is a symptom of the needle disease complex that has been affecting eastern white pine in the region, Augusta, Maine. (Maine Forest Service Photo)

## 2015 Insect Highlights

### Spruce Budworm

Spruce budworm is a periodic major pest of fir and spruce in Maine. The Maine Forest Service has been monitoring this insect since the early part of the last century. Since 1992 we have been using pheromone traps and catches have averaged well below five moths/trap across the northern part of the State. In 2011 that average crept up to over five moths/trap and this year the average is 27 moths/traps; up slightly from 25 moths/trap in 2014. All of the sites had some spruce budworm moths.

For the second year the Maine Forest Service has asked large land owners and managers in northern Maine to help survey for spruce budworm by setting out pheromone traps on their lands. We request one three-trap sample per six mile-square township set in at least a 25 acre spruce/fir stand that was composed of more than 50 percent spruce/fir pole-sized or larger trees. This year 19 entities participated in setting out over 1,300 traps at 452 sites. An additional 129 traps used in a research project were included in the tally as well.



Figure 3. Spruce budworm pheromone traps are hung in spruce/fir stands that are more than 25 acres in size and have at least 50 percent pole-sized or larger spruce/fir. (Maine Forest Service Photo)

The overall average moths/trap was 25.7 moths/ trap with 98% of the traps positive for spruce budworm. The townships with the most moths are in Aroostook and Piscataquis Counties. The number of traps with over 100 moths has gone from six in 2014 to 17 in 2015 and the number of traps with over 50 moths has doubled.

Table 1. Number of spruce budworm moths in pheromone traps by county

<b>County</b>	<b>Average Number of SBW Moths/Trap</b>	
	<b>2014</b>	<b>2015</b>
Aroostook	25.8	44.9
Franklin	0.8	0.5
Hancock	2.4	4.9
Oxford	1.1	1.3
Penobscot	6.1	15.1
Piscataquis	10.7	20.4
Somerset	13.2	6.2
Washington	3.2	7.1
<b>Grand Total</b>	<b>15.7</b>	<b>25.7</b>

No spruce budworm damage was detected either in ground or aerial surveys. The University of Maine spearheaded an overwintering larval survey (called L2 for the larval instar collected). Land managers had crews take three mid-crown branch samples from 100 of the most at risk sites. Branch samples were sent Canada for processing. Eight larvae were found, all in townships in Aroostook County.

Table 2. Number of spruce budworm larvae found in 300 branch samples in winter of 2014/15

Town	Number of Larvae
Westmanland	3
St. Francis	2
T14 R13 WELS	1
T14 R8 WELS	1
T12 R12 WELS	1

Maine is poised at the beginning of another spruce budworm outbreak. Outbreaks occur on a roughly 40 year cycle in response to maturing forest stands and reduced pressure from parasites; the last time budworm was a problem in Maine was in the 1970’s and 80’s. This native defoliator of balsam fir and spruce has been defoliating trees in Quebec north of the Saint Lawrence Seaway for more than 10 years. Defoliation, which has spread to the south shore, currently covers more than 15 million acres. New Brunswick is seeing increased numbers of budworm moths in their pheromone traps and may see light amounts of defoliation in the northern part of the province in 2016.

**Winter Moth**

Winter moth is firmly established along the southern coast of Maine from Kittery (York County) to Bar Harbor (Hancock County) and on many offshore islands. Although more acres of defoliation were



Figure 4. Winter moth damage spotted from aerial survey in Harpswell, Maine. (Maine Forest Service photo)

mapped this year than last, the intensity was not as severe. I.e. Many trees were not as heavily defoliated as last year but there was a broader footprint across the landscape. In ground surveys defoliation ranged from light to heavy from Kittery to Rockland (Cumberland, Knox, Lincoln, Sagadahoc and York Counties). Heaviest damage was in Cape Elizabeth, Peaks Island in Portland, Harpswell and Chebeague Island (Cumberland County). Total area mapped in aerial survey was 10,264 acres, all in Cumberland County.

The Maine Forest Service ran a pheromone trap survey in December 2014 to determine where winter moth populations were heaviest and to delineate the outer reaches of the infestation. Traps were deployed at 75 locations in towns along the coast and along a transect inland from known infested areas. The survey covered coastal portions of York, Cumberland, Sagadahoc, Lincoln, Knox, Waldo and parts of Hancock, Androscoggin and Kennebec counties. At the same time, reports of moth observations were solicited from the public using a Survey Monkey form—over 700 reports were received through this method. A map predicting intensity of defoliation was produced from these surveys to help green industry professionals and homeowners prepare for the growing season.

Parasitic flies, *Cyzenis albicans*, were released for the third year in Maine in cooperation with Dr. Joseph Elkinton, University of Massachusetts and funded by the USDA. Releases were made in two towns in Cumberland County: Peaks Island - Portland 2,000 flies and Two Lights State Park, Cape Elizabeth 2,000 flies. Locations where flies had been released in previous years were sampled for parasitoids.

## Pine Leaf Adelgid

Pine leaf adelgid is a native adelgid which depends on eastern white pine and red or black spruce to complete its lifecycle. Growth impacts to spruce are limited and occasionally growth impacts to white pine can be significant. In recent years populations have been building in parts of Maine. This has happened before. The 1968 Maine Agricultural Experiment Station Bulletin 658 reports on a waning outbreak of the pine leaf adelgid. The report states that radial growth impacts to eastern white pine began in 1955, populations of the adelgid peaked in 1961 were still declining in 1968 (Dimond and Bishop 1968).

The current build-up was first noticed in 2012 in the north end of Baxter State Park and was reported in the [September issue of the Maine Forest Service' Conditions Report](#). 2015 was the year the public and natural resources professionals began to notice and report the pest over a wide area. Damage ranges from reddening and wilting of just a few shoots on individual trees, to widespread dieback of the majority of shoots on seedling and small pole-sized trees as well as some pockets of mortality. Surveys in 2015 showed severe damage to white pine scattered over more than a quarter of a million acres of forest. Reports indicate that lighter damage covers an even broader extent. The most severe damage is confined to Piscataquis County in an area west of Baxter State Park.

We expect to see significant damage from this pest for years to come; the outbreak that began in the 1950's lasted more than 10 years.

## Other Insects Issues of Note

2015 marked one more trapping and field season without detection of **emerald ash borer** (EAB) in Maine. That was not due to a lack of trying. Seven hundred ten purple traps, 20 green funnel traps, 24 trap trees and 25 biosurveillance sites were used in EAB monitoring in Maine in 2015. In addition, public education and awareness efforts have remained a key part of our detection strategy.

Two other invasive insects have been making an impact on our forests and communities in a very similar footprint to the winter moth presence in Maine—hemlock woolly adelgid and browntail moth.

**Hemlock woolly adelgid** is established in Maine forest hemlocks at least from Kittery to Camden—roughly 1/3 of the coastline in Maine. Declining hemlocks can be found in many coastal peninsulas where warmer winter weather and drier soil conditions help speed decline. A new regional publication funded by a USFS grant on management of threatened hemlock has recently been made available on-line: [Managing Hemlock in Northern New England Forests Threatened by Hemlock Woolly Adelgid and Elongate Hemlock Scale](#).

**Browntail moth** populations show signs of increase in many coastal communities. Winter web counts were moderate to high in small areas of Bath, Bowdoinham Topsham and West Bath (Sagadahoc County) and Brunswick and Freeport (Cumberland County) again in the winter of 2014-15. Defoliation was mapped on only 90 acres in Cumberland County this spring in Freeport. But in September over 10,000 acres of defoliation by first instar larvae was mapped in Sagadahoc and Cumberland Counties. This level of fall defoliation has not been seen since the early 2000's. Winter web surveys will verify the size of the footprint of this now perennial problem. There is concern that

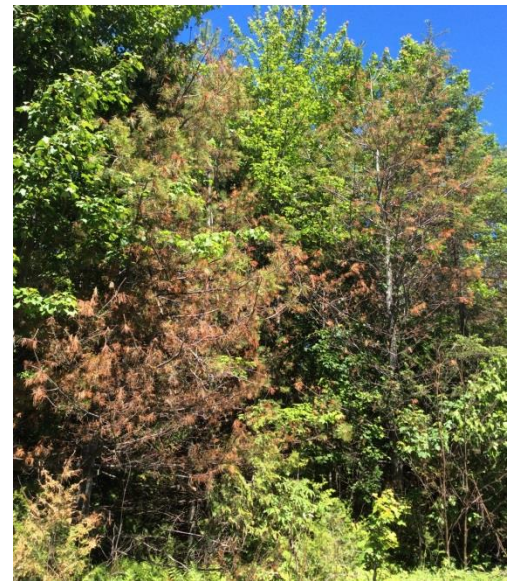


Figure 5. Eastern white pine with severe damage from pine leaf adelgid, T6 R13 WELS, Maine. (Maine Forest Service Photo)

expanding browntail moth populations combined with winter moth will have a severe impact on oak trees in the midcoast region.

References:

Dimond, J.B., and R.H. Bishop. 1968. Susceptibility and vulnerability of forests to the pine leaf aphid, *Pineus pinifoliae* (Fitch) (Adelgidae). Maine Agricultural Experiment Station Bulletin 658.

---

Conditions Report No. 5, 2015

On-line: [http://maine.gov/dacf/mfs/publications/condition\\_reports.html](http://maine.gov/dacf/mfs/publications/condition_reports.html)

DEPARTMENT OF AGRICULTURE CONSERVATION & FORESTRY

Maine Forest Service - Forest Health and Monitoring

Contributors: Charlene Donahue, Allison Kanoti, William Ostrofsky (retired), Colleen Teerling

.....  
**Paper Subscriptions:**

If you are received a hardcopy of this report, now is the time to renew for 2016. Please fill out the enclosed form and return it to **Maine Forest Service, 168 State House Station, Augusta, ME 04333-0168 or fax to (207) 287-2432**. If you have any questions, please contact Patti Roberts at (207) 287-2431. Thank you!

.....