



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
MAINE FOREST SERVICE
INSECT & DISEASE LABORATORY
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http://maine.gov/dacf/mfs/forest_health/index.htm

Forest & Shade Tree - Insect & Disease Conditions for Maine September 1st, 2016

We are getting on towards the end of the growing season. Pests found on tree foliage now do little damage as the trees are shutting down for the winter. It is still dry in the southern half of the State. This will affect trees that have had pest problems this year as the lack water is another stressor and makes it more difficult for the trees to overcome insect or disease damage. In areas without adequate precipitation, water newly planted trees through the fall.

In Memorium

We note the passing of Maynard Atwood, retired long-time Entomology Technician in western Maine, who died August 5th <http://www.wilescremationcare.com/obituaries/Maynard-Atwood/#!/Obituary>.

Maynard originally came to work for the Maine Forest Service in spring of 1955, working seasonally for Fire Control. In the spring of 1961 he transferred to what was then known as the Division of Entomology, just in time to be involved in the 1961 spruce budworm treatment project in northern Aroostook County. He continued to work on survey and management of forest insects and diseases until he retired in Feb 29, 1984. Although his primary responsibility throughout his career was monitoring conditions in the Southern District in the Western Region, Maynard spent a large portion of the last 10 years of his career heavily focused on spruce budworm management, and back in the northern half of the state.

Even after he retired, he continued his involvement with our shop, often stopping at the lab when he was in Augusta and operating a light trap at his home in Kingfield into the 2016 season. His cheerful demeanor and ready assistance will be missed.

Insects

Alder Flea Beetle (*Altica ambiens*) – Populations of alder flea beetle seem to be enjoying a boom. Field technicians in our inventory unit noted that they needed to close truck windows to avoid larval intrusions to the passenger cab when travelling roads overarched by alders and several have noticed and reported the stretches of alder with lacy brown leaves along roadsides in their travels through Maine. In his documentation of the biology of the alder flea beetle (MAES Bull. 265, 1917) William C. Woods describes the scene of an outbreak of this species well: "...By the middle of August practically all of the leaves of every alder bush...had been skeletonized by the larvae, and the trees looked brown and bare as

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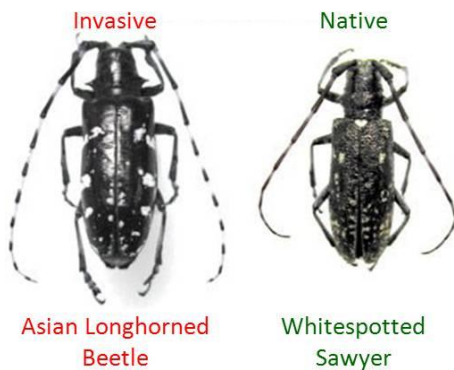
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though they had been swept by a fire.” Although infestations have not uniformly reached that level, cosses of alder can be found that fit that description. This is not an economic pest in Maine, as alder are of little economic significance.

Outbreaks are reported to last two to three years. Woods noted that the flea beetle prefers to oviposit within the leaf-rolls created by alder tubemaker moths (*Acrobasis rubrifasciella*), and noted that a drop in numbers of the moth coincided with the collapse of the 1912-1915 outbreak of alder flea beetle. A quick lunch-time search of alder around the Old Town office revealed some sign of the tubemaker (one frass tube) and ample evidence of alder flea beetle including damage to foliage and feeding adults (along with two species of sawfly, woolly alder aphids and two *Calligrapha* spp. beetle).



Alder flea beetle adult on damaged alder leaf. (MFS Photo)



The invasive Asian longhorned beetle (left) and native look-alike (right) (Photo PA DCNR)

Asian Longhorned Beetle (*Anoplophora glabripennis*)– August has been designated “tree check month” by the USDA APHIS, in part because of the August 2008 detection of Asian longhorned beetle in Worcester, MA. We are in the period now where we would expect peak emergence of adult Asian longhorned beetles in Maine *if it were here*. Asian longhorned beetle has not been confirmed in Maine. Please take some time to become familiar with its appearance and the damage it causes so if it is in Maine we find it early and respond quickly. If you need informational material to distribute to friends or clients please let us know. You’ll find more information at www.maine.gov/alb.

Balsam Woolly Adelgid (*Adelges piceae*) – Observations have come in from many corners of balsam woolly adelgid (BWA) populations rebounding. High density trunk phase populations (those found on the stems of the tree) have been observed in New Sharon (Franklin County), Rome (Kennebec County) Bangor (Penobscot County) and Washington County. Populations of moderate density have been observed in Lincolnville (Waldo County) and Calais (Washington County). Combine current populations with a history of chronic infestation and the stress of an abnormally dry growing season and you have a formula for increased fir mortality in Maine’s coastal and interior regions (http://digitalcommons.colby.edu/cgi/viewcontent.cgi?article=1002&context=atlas_docs).



Three wool-covered balsam woolly adelgid (in crevice above finger) and a predatory green lacewing larva (*Chrysopidae*) covered with BWA corpses and other debris (at arrow). (MFS Photo)

Browntail Moth (*Euproctis chrysorrhoea*) – Browntail moth larvae have hatched and are skeletonizing the leaves of oak and apple trees in the Midcoast region. The infestation will again be severe in Sagadahoc County and spreading into Freeport, Yarmouth and Falmouth (Cumberland County). Reports of moths and/or damage have come in from Eliot to Rouque Bluffs indicating spot infestations may be found anywhere along the coast and inland as far as Turner (Androscoggin County) and Waterville (Kennebec County). Look for brown leaves at the tops of oak and apple right now and leaves wrapped tightly together at the very tips of oaks and apples once the rest of the leaves have fallen. Consider what your strategy for next year will be.



Developing overwintering web of browntail moth caterpillars. Note the characteristic binding of the leaf stems to the twig with tight "ropes" of silk on the left. This will keep webs fastened to the tree through tough winter storms, allowing the caterpillars to be right next to their food source when the buds just start to swell. (MFS Photo)



Dogwood sawfly larvae are invading the top of this deck post in Rangeley, ME. (Photo Courtesy David Fuller, UMaine Coop. Ext.)

Dogwood Sawfly (*Macremphytus spp.*) – Dogwood bling? That is how this insect is described by one University of Illinois extension specialist, http://web.extension.illinois.edu/cfiv/eb294/entry_9063/. Unless you catch these guys early, it is probably the best way to think of them. Dogwood flowers bring swarms of beneficial insects including adult parasitoids and pollinators, so avoiding broad-spectrum chemical insecticides on this pest is a sensible practice. If you catch the sawflies early, hand picking and application of horticultural oils or soaps are effective ways to manage their aesthetic impacts. For early intervention, periodically scout your dogwood leaves for eggs and the skeletonizing damage from the gregarious young larvae (photos: <http://www.ipm.iastate.edu/ipm/hortnews/2009/8-12/sawfly.html>). Dogwoods do tend to survive attacks well so if you miss this window of opportunity, don't fret, begin scouting earlier next year. The last instar of this insect wanders in search of a pupation site in soft wood. This can create a nuisance for homeowners when that soft wood is siding, favorite outdoor furniture or very occasionally structural wood—the nuisance can be compounded by woodpecker activity.

Emerald Ash Borer (*Agilus planipennis*) – Biosurveillance for emerald ash borer (EAB) has just finished for the season. We were monitoring for EAB with the assistance of *Cerceris fumipennis*, a helpful (non-stinging) wasp which often lives in baseball diamonds and hunts the native relatives of EAB as well as EAB when it is present. Wasp numbers in some of our colonies were down, but we carried out biosurveillance throughout the southern part of the state where this wasp lives. No EAB were discovered during this survey, nor has EAB been confirmed in Maine to-date.

Elongate Hemlock Scale (*Fiorinia externa*) – Mobile stages of this pest are still present, so there is still high risk of spreading scale on clothing and machinery. If you wait until after a hard frost for forest management and pruning activities, you will minimize risk of spreading this pest.

Fall Webworm (*Hyphantria cunea*) – The webs of fall webworm caterpillars are quite visible now; building of the webs was underway by mid-July but additions will continue until the caterpillars pupate later this season. Although unsightly, feeding from this insect does not cause significant damage to its host. If you want to reduce aesthetic impacts it is best to start looking for this pest in early July. Two low impact ways to reduce aesthetic damage are to relocate webs or wash them from the tree with a

concentrated blast from a garden hose. Both methods may require follow-up and should be employed when the webs first begin to form. These webs are much looser and larger than those of the early larval instars of browntail moth. Another way to distinguish the webs is to look at their occupants. Browntail moth caterpillars are tiny (~ 1/8th inch), the two bright orange glands on their tail-ends aren't orange in these early instars, but they are there as yellow spots. Fall webworm caterpillars, just like their webs, are larger (>1/2 inch in most places by now).

Hemlock Woolly Adelgid (*Adelges tsugae*) – Towards the beginning of August hemlock woolly adelgid crawlers settle on their hosts and are attached to them for the next six months or more. Because the adelgid cannot be spread except on rooted hosts, now is an ideal time to conduct forest management and pruning activities in hemlock. Hemlock woolly adelgid has been confirmed in Standish (Cumberland County).



A look inside a nest of fall webworm caterpillars on gray birch. These larvae were approximately 1/2" long on August 26th in Old Town, ME. (MFS Photo)



Leaf-mine possibly created by *Rhopobota dietziana* on mountain holly (*Ilex mucronata*). (MFS Photo)

Leaf-miner on Holly Species (Possibly *Rhopobota dietziana*) – The mines of a tortricid leaf-miner and –tier on holly (*Ilex* spp.), possibly *Rhopobota dietziana*, were seen in abundance in Orono (Penobscot County) and Lincolnville (Waldo County) this month. Hosts included the understory shrubs winterberry (*Ilex verticillata*) and mountain holly (*Ilex mucronata*). Although the mining itself was abundant enough to be eye-catching in places, the “hook” was a small tube of frass extending out of the mine on the undersurface of affected leaves. At first glance this resembled spindle-galls found on cherry, but close examination revealed that the hook was made of digested, not galled, plant tissue. The moth had already departed all examined mines and tied leaves.

Locust Leaf Miner and Locust Digitate Leafminer (*Odontota dorsalis* and *Parectopa robinella*) – Similarly to the attention given to the scorched appearance of alders, people have been noting, some with alarm, the scorched appearance of black locusts. Some locusts appear untouched by damage and others have scant green leaves. Significant skeletonizing and mining is being done by a leaf-mining beetle—*Odontota dorsalis*. However some mines of a delicate moth species, the locust digitate leafminer, can also be found on the foliage of affected trees. The previous outbreak of locust leaf mining beetles in Maine caused branch dieback and some locust mortality.



A mine of the locust digitate leafminer, a gracillariid moth (left) and larval mines and adult skeletonizing damage caused by the locust leaf miner, a chrysomelid beetle (right), Old Town, ME.

Spruce budworm (*Choristoneura fumiferana*) – In June the Maine Forest Service distributed spruce budworm pheromone trapping supplies to over 20 cooperators; more than 35 additional volunteers received trapping supplies through a

MFS cooperator, the Canadian Budworm Tracker program (www.budwormtracker.ca). Participants in the Maine Forest Service trap network are just beginning to send in their catches—early results suggest the number of budworm in traps may be down this year from previous years. When full results are in, a report will be available on-line and by request (expected late-fall 2016 for MFS and early-spring 2017 for Budworm Tracker Program). Links to these reports will be provided from www.maineforestservice.gov and www.sprucebudwormmaine.org.

Diseases and Injuries

Stigmina and Rhizosphaera Spruce Needle Cast Diseases (*Rhizosphaera kalkoffii* and *Stigmina lautii*)

– Spruce needle cast diseases are commonly encountered throughout Maine where spruce trees are planted. Needle cast fungi were also recently noticed during a survey of a naturally forested area in central Maine, although symptom severity in most instances in the forest was less than typically seen in landscape situations. The most susceptible host species are Colorado blue spruce and white spruce, with red, black and Norway spruces showing varied levels of resistance.

Symptoms and signs of spruce needle cast disease include the following:

- Needle loss and branch dieback occurring from the bottom up.
- Current-year needles have no visible symptoms, although they are already infected following early spring spore dispersal and will show symptoms next year (1). Needles from the previous year remain attached to the tree and appear discolored (2). Needles from three years ago are typically brown and begin to fall off the fine branches; many of these needles are gone by late summer, while needles from four years ago or older are absent (3+). This loss of older needles causes the lower canopy to appear thin and grayish. (See annotated image, next page)
- The tiny spore-producing structures of *Stigmina* are black, round and fuzzy looking; those of *Rhizosphaera* are black, round and not fuzzy looking. Both forms of fungal masses grow in orderly rows out of needle pores (stomata) and are visible with a hand lens.



A tree with needle cast symptoms. Note the lack of needle retention. (Photo: Aaron Bergdahl, North Dakota Forest Service)



(Left image) Current-year needles (1) are infected but do not show symptoms. Second-year needles (2) were infected last year and have begun to show discoloration, spore producing structures appear on some needles and some needles are beginning to fall off. The third-year needles (3) have mostly been cast; the remaining needles contain many spore-producing structures. Trees heavily infested with needle cast disease fungi will not have needles on any growth that is older than three years.

(Close-up needle images) (L) A healthy needle and (R) a needle infected with the *Stigmina* needle cast fungus showing the fuzzy-looking, round spore producing structures. (Photos: Aaron Bergdahl, North Dakota Forest Service)

Management of spruce needle cast diseases

Needle cast diseases require moisture for infection and spread, so improving spacing and airflow are important cultural practices for management. Care should be taken to avoid wetting of foliage during irrigation. Irrigate lawns at night to prevent prolonging periods of higher relative humidity near landscape trees.

Needles on at least the bottom half of the crown should be protected with fungicide containing chlorothalonil for at least two months after bud break. Needles must be protected as they begin to emerge and shoots have elongated about one-and-a-half inches (often referred to as the candle stage). Older needles can be infected during moist conditions as well and benefit from fungicide application. This may need to be repeated every year in areas where *Stigmina* is present. If only *Rhizosphaera* is found in the area, treatment may be stopped after three consecutive years, as this has been proven to break the cycle of infection. It is important to note that fungicides for control of needle cast fungi are not curative and are only effective when applied as protectants before spores are released in spring (which coincides with the emergence of young, susceptible needles). Tree health will be conserved if treatments continue through the candle stage of shoot growth. To maximize aesthetic quality, fungicide would need to be re-applied every two weeks, with the last treatment in September. This process requires a dedicated, long-term effort and can be frustrating for some landowners because it takes a few years of treatment before sufficient needle retention is achieved, making aesthetic improvements noticeable. For further information about this topic, please contact aaron.bergdahl@maine.gov.

Tip Dieback of Red Oaks (*Botryosphaeria* sp.) – Branch tip dieback of red oaks has been observed in several locations in Kennebec County and a particularly severe site was visited in the Limington area in York County. The typically observed symptoms include a random pattern of dead branch tips with wilted orange leaves. Branch samples were taken from the Limington site and a site on the East Side Campus in Augusta (Kennebec County, pictured). Upon closer observation of these samples, cankers were noticed below all symptomatic branch tips and fruiting structures were present near the canker margins. On the Augusta sample, physical characteristics such as staining of the sapwood, the fruiting structures on the canker margins and spore characteristics strongly indicate that the dieback was caused by a fungus in the genus *Botryosphaeria* (likely *Botryosphaeria quercuum*).



Dieback symptoms of red oak twig infected with a *Botryosphaeria* spp. and (lower right) a typical 'Bot canker' (pictured canker is about 1/2inch long). (MFS Photos)

The condition caused by these fungi is more generally referred to as 'Bot canker'. Typically, disease outbreaks caused by the fungi in this group only last a few years and result in minor damage. This is because the pathogen is not particularly aggressive and typically does not spread into larger branches causing mortality. It is believed that outbreaks usually result from some kind of initial stress, weakening trees enough for the *Botryosphaeria* fungus to cause symptoms. However, the oaks at the Limington site were severely affected and the condition appeared to be leading to large branch and even whole tree mortality of oaks throughout a wooded neighborhood. For management of high-value trees, the affected branches can be pruned back 8 to 10 inches below the nearest visible symptom. To avoid spreading the fungus, pruning equipment should be sanitized between cuts with either 70% alcohol or 1:9 bleach to water solution.

While this disease is presently not a widespread phenomenon of great concern, the Maine Forest Service will continue to monitor this outbreak. Anyone with oaks showing similar symptoms is encouraged to report the location and extent of the damage to the Maine Forest Service Insect and Disease Lab. For further information about this topic, please contact aaron.bergdahl@maine.gov.

Calendar of Division and Related Events

September 10th, Maine Tree Farm/SWOAM Forestry Field Day, Pine Tree Camp, Rome, ME. The Field Day includes woods tours covering locating and constructing roads and trails, best management practices to protect water quality, managing deer wintering areas and stands of older trees, rebuilding camper's cabins and pest problems. There will be vendors and educational stations by a variety of organizations and agencies. For more information visit:

<http://www.swoam.org/Events/ForestryFieldDay.aspx>

September 10th, 9-4, Maine Christmas Tree Association Fall Meeting, New Canada, ME. *Insect Friends and Enemies of Christmas Tree Growers.* Indoor Session at the club house 9:30-10:30; Field Session Starts at 1:30. Attendance at both the morning and afternoon sessions will earn 2 credit hours for Maine Licensed Pesticide Applicators. The meeting will start at the Sly Brook Sno-Riders club house, 106 Sly Brook Road, New Canada, ME. Same-day registration from 8:30-9:00. For more details and to register in advance visit: http://www.mainechristmastree.com/meeting_locations.cfm

September 13th, 9am – 3pm, State Museum, Augusta, ME. BUG MAINE-IA. The Maine State Museum gets creepy and crawly as Bug Maine-ia invades! This is a great learning experience for kids and adults with bugs from Maine and around the world (many living) converging under one roof! Admission is FREE. <http://mainestatemuseum.org/>.

September 14th, 6-7 pm, Freeport Community Library - Freeport, ME. Browntail Moth Informational Session. Charlene Donahue will discuss the browntail moth problem.

September 23-25, Common Ground Fair. Maine Forest Service will have two displays at Common Ground Fair. There will be a display on emerald ash borer with respect to brown ash and basket-making in the Native Arts tent in the Maine Indian Basketmakers area. In addition the Maine Forest Service booth will be set up in the Low Impact Forestry area by the Pine (south) Gate.

<http://www.mofga.org/TheFair/tabid/135/Default.aspx>

October 26th, 6pm, Downeast Lakes Land Trust History & Heritage Lecture, Grand Lake Stream School Bldg. *Aliens and Super Heroes of the Forest Insect World.* Celebrate Halloween early! Be prepared to be creeped out, frightened and amazed by the forest insect world around us. Tales of body snatching, alien terrors for trees and the superheroes of the forest await you. This talk has been approved for 1 CEU for SAF CF and Maine Licensed Foresters as well as Licensed Pesticide Applicators. Details on-line at: <https://www.downeastlakes.org/news-events/events/>

Conditions Report No. 4, 2016

On-line: http://maine.gov/dacf/mfs/publications/condition_reports.html

DEPARTMENT OF AGRICULTURE CONSERVATION & FORESTRY

Maine Forest Service - Forest Health and Monitoring

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