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

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COMMISSIONER

http://maine.gov/dacf/mfs/forest_health/index.htm

Forest & Shade Tree - Insect & Disease Conditions for Maine *April 22, 2016*

Welcome all to the first issue of the 2016 *Forest and Shade Tree Insect and Disease Condition Reports*.

As in past years, diagnostic assistance for forest and shade trees and other woody ornamentals will be available from our insect and disease clinic, along with our *Conditions Reports*. Presently our ability to support disease diagnosis is limited as the forest pathologist position has not been filled. The process of hiring a new pathologist is under way, but how long the vacancy will remain is still very much up in the air. Cooperative extension pathologist Dave Lambert has agreed to assist with diagnosis. We can do some triage, but may ultimately refer you to Dave.

We ask you to be vigilant and to report to us any observations on tree insects and diseases of concern to you. We appreciate your willingness, expertise and commitment to help keep our trees and forests healthy, and look forward to working with you this season.

Laboratory Hours

Our business hours for 2016 will be 7:30 a.m. to 4:00 p.m. Monday through Friday, except for holidays. However, due to a very busy field schedule, we may not be able to staff the Insect and Disease Lab at all times. If you call our Lab and receive no answer, please call back another time. And if you plan to visit the Lab, you may wish to call ahead just to make sure someone will be present to meet with you.

If you have questions on insect and disease pests of trees, you can submit a clinic form directly on-line at http://maine.gov/dacf/mfs/forest_health/tree_ailment.html. We will also accept samples mailed in to our Lab in Augusta. Our street address and location remains the same (50 Hospital Street, Augusta); our mailing address is **168 State House Station, Augusta, 04333-0168**. Lastly, we have attached the following items to this report for your use: Advice and Technical Assistance Sheet; Insect & Disease Diagnostic and Report Form.

Insect and Disease Management Staff Notes

Forest Pathologist Dr. William Ostrofsky retired at the end of October 2015. He began work as the forest pathologist for the Maine Forest Service in September 2006, bringing with him detailed knowledge of and a wealth of experience in the subject. Even while the cold of winter kept inquiries regarding fungal pathogens to a minimum, his presence was missed.

Amy Ouellette joined us in September 2015 as a Conservation Aide out of the lab in Augusta. Among other projects, she has helped out in counting samples from the spruce budworm survey; surveying for winter moths and browntail webs, conducting equipment inventories and working on maintenance of the insect

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collection. Amy has insect survey experience from previous work contract work with the Department of Agriculture Conservation & Forestry and diverse fieldwork experiences from previous employment. We're happy to have her assistance in the division.

Forest Entomologist Allison Kanoti transferred to Maine Forest Service Old Town office in September 2015. New contact information is below:

E-mail: allison.m.kanoti@maine.gov

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Insects

Browntail Moth (*Euproctis chrysorrhoea*) – Unfortunately this year is going to be a banner year for browntail moth. Populations have increased over last year's numbers and spread further afield.

Winter webs of browntail moth glisten in the sun this time of year. Look for them in southern Maine at the tips of host branches including oaks, apples, birches, cherries, hawthorns, roses and other hardwoods. The caterpillars will be starting to come out of their webs on warm days looking for expanding buds. Exposure to caterpillar hairs, even those from the previous year, can cause dermatitis and other health problems in sensitive individuals. Browntail moth larva feed on the new foliage in the spring and can cause branch dieback and sometimes tree mortality after repeated years of defoliation.



Overwintering web of browntail moth. Inset: Caterpillars within a web. (Maine Forest Service)

Winter web counts were again highest in parts of Bowdoinham, Bath, Topsham, West Bath, Woolwich (Sagadahoc County) Brunswick, Freeport and Harpswell (Cumberland County) this year. The infestation is expanding south into Yarmouth and Cumberland (Cumberland County) and east into Wiscasset, Edgecomb and Boothbay (Lincoln County) and beyond.

We have seen pockets of infestation, some of them heavy, in other locations from Turner (Androscoggin County) to Waterville (Kennebec County) to Bristol (Lincoln County) to Kittery (York County). These spot infestations take less staff time, but if they are in your backyard they are noteworthy. A map of known risk of browntail moth exposure is available online. Note that this map reflects an average of reported or detected town-level risk and may not reflect conditions in your backyard.

http://www.maine.gov/dacf/mfs/forest_health/invasive_threats/browntail_moth_info.htm

Small infestations can often be managed by clipping webs. Clip and destroy webs before the end of April (this is a fine winter activity when the woodstove is humming and the caterpillars are huddled in their webs, but a bucket of soapy water also works well). Pesticides are necessary to manage larger infestations. We have a list of licensed pesticide applicators that treat browntail moth and other pests of trees and shrubs available on-line or by request.

www.maine.gov/dacf/mfs/forest_health/invasive_threats/browntail_moth_pesticide_applicator_info.htm

Eastern Tent Caterpillar (*Malacosoma americanum*) – Watch for the developing tents of these hairy caterpillars in cherries and apples in late-April and early-May in southern Maine (later as you move farther north). In Maine this is a pest of significance in orchards and backyard fruit trees and, from an aesthetic perspective, on ornamental trees. It



An eastern tent caterpillar egg mass with recently-hatched larvae. (Maine Forest Service)

does not significantly impact forest health. You can look for and destroy egg masses of this caterpillar. But also monitor valued ornamental and fruit trees for developing tents and consider removing them when they are small.

Emerald Ash Borer (*Agrilus planipennis*) – Emerald ash borer (EAB) has not yet been found in Maine. Purple trap surveys, biosurveillance sampling, trap tree processing and public reports have all yielded negative results in Maine. EAB has been found nearby in Massachusetts and New Hampshire.

Even though this destructive insect has been found on our doorstep, it is still too early to be treating specimen ash with pesticides to protect from this pest. Experts recommend holding off treatment until the EAB is within 10-15 miles of the trees in question. In the meantime, resources are better spent on inventorying ash and surveying and monitoring for the pest.

Ash phenology gives us a great opportunity to conduct surveys as hardwood leaves emerge. Ash are among the last to leaf out (black locust is another slow-poke), and because of this characteristic are easily



Woodpecker feeding activity caused "blonde" patches on this emerald ash borer infested ash. (Maine Forest Service)

recognized after other hardwood leaves have flushed. An ash inventory can be as simple as a windshield survey to determine whether you have boatloads of ash to worry about or just a few. For more in-depth inventories, consider recording location, size, value and likely management approach for each tree. If you are going to remove an ash when it gets infested, you might want to consider pro-active removal, especially for large trees which will produce huge broods of beetles. Check out the nhbugs.org site on EAB, for some succinct advice on preparing for this pest in areas more than 10 miles from known infestations (<http://nhbugs.org/recommendations-homeowners-and-landowners>).

Visual surveys can be conducted this time of year. Symptoms to look for include increased woodpecker activity, bark splits and excessive shoots. Signs such as larval tunneling, larvae or pupae may also be found in infested trees. After leaf out be on the lookout for crown thinning as well. Adult beetle activity is not generally expected until early to mid-June, in southern Maine. Later this year, consider participating in our trap tree network or conducting biosurveillance in your town.

Gypsy Moth (*Lymantria dispar*) – Significant defoliation by gypsy moth hit southern New England in 2015. Maine was out of the bulls-eye, but this is a pest worth watching.

Now is a good time to search for egg masses of gypsy moth around prized landscape trees and shrubs. Masses you find can be scraped into a bucket of soapy water. When pin cherries are in bloom, the caterpillars will be hatching. In southern Maine we should see them begin to hatch within the next couple weeks. Look for them soon if you intend to destroy them.

If you find gypsy moth egg masses (or larvae later in the spring) in the northern ends of Oxford, Franklin, Somerset, Piscataquis or Aroostook County, please report your find, including the location and photos if possible to our office. An expansion of the quarantine area for this pest is planned—it takes a fair amount of resources to make the change, so we'd like to have the best possible picture of where the pest is established.



Gypsy moth egg masses on birch and aspen in Orient, ME. (Maine Forest Service)

Hemlock Woolly Adelgid (*Adelges tsugae*) – Hemlock woolly adelgid (HWA) has been found in forests along the coast from Kittery to Camden. Infested ornamental trees have been found and treated farther afield.

We have entered the time of year when hemlock woolly adelgid can be spread on items other than live hemlocks. Both eggs and crawlers are out and can be transferred to hemlocks in new areas. If you are working in both infested and uninfested areas, try to begin your day in uninfested sites, and end in infested sites. To avoid spreading this pest to new locations, clean clothing and equipment before moving from infested areas to uninfested areas.

Hemlock branch material from quarantined areas is regulated. Chipped material must stay inside the quarantine area or be moved in an enclosed vehicle to a facility with a permit to receive regulated hemlock. Roundwood can be shipped freely outside of the quarantine area, but must be free from branches.

Hemlock woolly adelgid winter mortality assessments were conducted in early March this year for a project in cooperation with Tom McAvoy at Virginia Tech. Mortality ranged from 91% to 99% across five sites, and averaged 96%. This is up from 2014-2015 when the range was from 83% to 98% and the average was 93%. This may come as a surprise, as this winter was mild in comparison to last. However the timing of extreme warm and cold in early February may have played an important role in increasing the mortality of this pest. The good news is, infested trees should experience a reprieve from heavy attack, and spread of HWA should be slowed. Unfortunately, populations of adelgid building from this winter’s survivors may be more tolerant to winter cold than previous generations.

Site	2014-2015 HWA Percent Winter Mortality	2015-2016 HWA Percent Winter Mortality
York, ME-York Water District	93.4	90.6
South Berwick, ME -Vaughan Woods State Park	97.1	99.0
Cape Elizabeth, ME – Robinson Woods	92.5	95.8
Freeport, ME- Wolfe Neck Woods State Park	83.6	97.8
Bath, ME – Thorne Head	97.7	96.4
2015-2016 Average: 95.9% Range: 90.6% -99.0% N=100 live/2303 dead, 2403 total		

Spring treatments may not be necessary for trees that are being treated with non-systemic materials. Adelgid wool can be persistent, be sure to check for live adelgid before conducting foliar applications. If you run your finger down a twig with live adelgid, it will be stained red from their hemolymph. Hemolymph of dead adelgids quickly turns brown, and then dries.

Springtails (Collembola) – Springtails are small, soft-bodied primitive insects. In most situations, they are not pests. Springtails thrive in moist places and generally feed on decaying plant matter, fungi, bacteria and other organic matter. They are abundant; one estimate is that a cubic meter of soil holds about 100,000 springtails. Most are seldom seen by casual observers, snowfleas are an exception. They frequently aggregate in impressive swarms during winter and spring thaws and other ideal (read “moist”) conditions. Swarms are short lived and usually don't last more than a few days. Captivating macro-footage of springtails can be found on-line at: <https://vimeo.com/147126953>.

This winter we received many reports of masses of springtails—some in shovel-able quantities. Unfortunately, several reports came in a “shoot first, ask questions later” fashion—chemicals had already been applied to the “offending” swarm before identification of the organism. A keystone of pest management is to identify the organism to be managed—what you’re looking at might not be a pest at all!

As for springtails, management outside the immediate home environment really is not necessary. However, keeping areas around building foundations and entrances free of rotting debris including decaying mulch and leaves and reducing moisture around the building can limit swarming around the home and prevent infiltration into the home. If they do make it inside, snowfleas or springtails are not likely to survive long in a dry indoor environment. Persistent populations of springtails within homes should be addressed with moisture control, not chemical control.

Spruce Budworm (*Choristoneura fumiferana*) – The final draft of an initial spruce budworm risk assessment and response plan for Maine was released in March by the Spruce Budworm Task Force. The

report is available on-line at www.sprucebudwormmaine.org. Some key recommendations for forest landowners and managers, along with commentary, are included below—more details are available in the full report.

- Participate in monitoring efforts such as moth trapping.
 - A cooperative trapping effort involving more than 20 large land owners and managers was instituted following the formation of the task force in 2013. This system has worked very well and has expanded the trap network considerably. A report on the 2015 spruce budworm program, including the cooperative monitoring project can be found online: http://www.maine.gov/dacf/mfs/forest_health/documents/2015sbwreport.pdf. Participants in the 2014 and 2015 trapping network continue to be committed to the program. Their contribution is greatly appreciated.
 - Maine joined the Healthy Forest Partnership Budworm Tracker Program in 2016. Volunteers will trap and collect spruce budworm moths one or more times a week during the moth flight season, and send the data and moths back to the research team. The response to the request for Maine volunteers was terrific! At this point they are near or at capacity for our area. More information about the program is available at www.budwormtracker.ca.
- Regularly communicate to understand how the infestation is moving.
 - A new avenue for communication is available. In addition to information available in these bulletins and other division publications, updates will be posted on the Spruce Budworm Task Force website and their Facebook page, see more at www.sprucebudwormmaine.org.
- Map location, condition, and concentration of high-risk stands on forestlands.
- Adapt harvest activities before or as early as possible into the outbreak to reduce the area of high-risk stands.
 - Landowners have been encouraged to harvest stands with a significant component of merchantable fir and white spruce before the outbreak builds. A challenge to this approach in recent months has been dwindling markets. However, the recommendation remains to continue to try to reduce risk across the landscape where markets are available.
- Prepare for the possibility of applying insecticide to protect foliage in high-risk and high-value stands not ready for harvest.
 - People have already begun to ask what this might look like in Maine in the coming outbreak. The most succinct response is true for the coming budworm outbreak as a whole—it will be different from the last outbreak! Changes include: effective, targeted insecticides that were not fully developed at the time of the last outbreak are now available; new application technologies allow much more intricate spray blocks to be delineated and treated; there will not be a state-run spray program.
- Prepare to salvage dead and dying trees when they occur.

White Pine Weevil (*Pissodes strobi*) - Host trees of the white pine weevil include, as one might guess, white pine, but the beetle also has a taste for other pines and spruces. Often the calls we get from homeowners are regarding favorite blue spruces damaged by the beetle. Larval feeding can kill the host's leader (terminal shoot), causing loss of apical dominance, and can lead to development of a shrubby tree.

In southern Maine temperatures are already high enough to trigger emergence of white pine weevil adults from their winter homes in the duff beneath their host trees. The adults climb up the host trunks and feed on the terminal shoots. Soon after, females will deposit eggs in the terminal shoots. Eggs hatch within a couple weeks and the larvae chew their way downward, cutting off the conductive tissue of the shoot and causing the shoot to wither and die.

Host leaders can be protected from attack by physical barriers and pesticides. A protective sleeve made from a nylon stocking and a twist tie is an easy, low-tech approach to preventing attack in small ornamental trees. Fasten the stocking before temperatures climb above 60 degrees Fahrenheit in the spring, and remove it before shoot elongation. See the early season guide for information regarding chemical controls.

See also: http://www.na.fs.fed.us/spfo/pubs/fidls/wp_weevil/weevil.htm.

Winter Moth (*Operophtera brumata*) –The tiny caterpillars of winter moth are starting to hatch and mine the buds of hardwood trees. The easiest way to track down the larvae at this stage is to inspect host buds for silk and specks of frass. Wait a few weeks, and the signature feeding damage will be evident on expanded host leaves. Like the cuts in a paper snowflake, the larval bites make holes through several layers of leaf tissue, giving the unfurled leaves a Swiss cheese appearance. Caterpillars will finish feeding by the end of May or early-June and drop to the soil to pupate.

Surveys and reports of adult winter moths flying in December of 2015 indicate that winter moth numbers are up. Warm temperatures and no snow/ice cover allowed the moths to easily mate and lay eggs. Expect defoliation this year in places that have had winter moth in the past and extending into surrounding areas.

Places with significant number of moths caught or reported were Eliot, Kittery, South Berwick, York (York County), Cape Elizabeth, Harpswell, Portland, South Portland (Cumberland County), Bath, Georgetown (Sagadahoc County), Boothbay Harbor (Lincoln), Friendship, Saint George, Thomaston, Vinalhaven (Knox County), and Mount Desert (Hancock County). A risk map for winter moth can be found at http://www.maine.gov/dacf/mfs/forest_health/invasive_threats/winter_moth_risk.htm.



First instar winter moth caterpillar on an expanding maple bud. (Maine Forest Service)

Winter moth eggs that are exposed on trees can be killed with horticultural oil that suffocates the eggs. Oil should be applied in very late winter or very early spring when temperatures are above 45° F. Avoid applying oil when temperatures may dip below freezing for 24-48 hours after application. (Cold greatly increase the risk of causing injury to the plant (phytotoxicity).) Also cool and cloudy weather can delay drying time and increase the potential for injury.

Eggs that are protectively hidden within crevices and under lichen will not be covered by the spray nor killed. Where there is heavy winter moth pressure the oil sprays will most likely only achieve limited results; eggs are deposited virtually everywhere on trees and shrubs and new caterpillars will quickly migrate from untreated areas to the oil-treated plants.

Once the larvae hatch and leaves begin to expand in early May trees can be treated with the biological insecticide *Bacillus thuringiensis* (kurstaki) (B.t.k). B.t.k. works best on young larvae; older ones are much less affected. For older larvae use a spinosad product. As a last resort a conventional insecticide such as a permethrin is effective against winter moth larvae.

The biological control tachinid fly, *Cyzenis albicans*, has been released in Kittery, Vinalhaven, Harpswell, Cape Elizabeth and Portland (Peaks Island) since 2013. We hope some of the winter moth larvae will eat parasitic fly eggs. For those unlucky ones, the fly will develop within the winter moth cocoon, and prevent the winter moth from developing to adulthood. We will continue to release parasites where winter moth populations are high enough to support the control agent.

Diseases and Injuries

(The following material is gleaned from past reports contributed by William Ostrofsky)

Needle Diseases of Hard Pines – Early spring is the appropriate time to use fungicides to manage several pathogens. *Sphaeropsis* (= *Diplodia*) tip blight of red, Austrian, and Scots pine, and *Sirococcus* shoot blight (*Sirococcus conigenus*) of native and exotic species of hard pines are perennial problems. Protection of the new, current-season growth with fungicides can provide effective control. Specifics for several of the most important diseases are listed in the enclosed guide.

The new growth (foliage, needles, and shoots) needs to be treated with the appropriate fungicide before infection occurs. This usually requires an application shortly after budbreak, and again ten days to two weeks later, to protect the new growth as tissues expand. Timing of the first application varies from year to year, depending on local seasonal temperatures. Weekly observations of buds from late April through May will allow tailoring fungicide application timing to maximize effectiveness.

Spruce Needlecast – Wet spring seasons also provide ideal conditions for the intensification of *Rhizosphaera* needlecast infection on spruce, especially in landscape situations. The fungal pathogen (*Rhizosphaera kalkhoffii*) causes most significant damage to white and Colorado blue spruces, but other spruce species may be affected. Most frequently affected are border plantings of larger spruce, where trees provide a screen between abutting properties, but solitary trees may be affected as well. Symptoms typically develop from the bottom interior of the crown and slowly advance in an upward direction. Infected older needles turn a purplish-brown, and are shed first. Often, only the tips of the branches retain needles.

For effective control, at least two applications of fungicide are required; at half-needle elongation of newly emerging shoots, and again when needles are fully elongated. Fungicides will protect only the new, current-season shoots and foliage, so annual treatments over two or three years may be required to fully restore a dense, full tree crown.

White Pine Blister Rust (*Cronartium ribicola*) – Early spring is an ideal time to scout the woodlot for currants and gooseberries (plants in the genus *Ribes*), which serve as a host for the fungus which causes white pine blister rust. *Ribes* plants are some of the first vegetation to leaf out in early spring, thereby becoming easily located for removal or treatment.

Ribes plants, the primary host of white pine blister rust, will be one of the first understory plants to leaf out, usually by mid-April in southern Maine. There are several native species common throughout Maine. Because foliage of most other forest vegetation has not yet emerged, early spring is an ideal time to scout for *Ribes* plants. Located plants can be treated now (physically removed or treated with herbicide), or “flagged” for treatment at a later date. *Ribes* spp. eradication from around white pine stands has been an effective control measure for this disease since the practice was first initiated in Maine around 1918. Removal of all *Ribes* species within 900 – 1000 feet of susceptible pines or pine stands will greatly reduce the likelihood of infection of white pine by the white pine blister rust pathogen.

Some other New England states and New York have allowed the cultivation of *Ribes* specifically bred to be resistant or immune to the disease. However, a more virulent strain of the pathogen was discovered in 2011 in New England, and cultivars of *Ribes* once resistant or immune are now susceptible, and pose a significant risk of spreading the disease to white pines.

The **importation, possession, planting, and culture of currants, gooseberries, Jostaberries, Worcesterberries** and all other species of *Ribes* is prohibited by law in the quarantine area of Maine. In addition, the **importation, possession, planting, and culture of any *Ribes nigrum* (European black currant) or its varieties or cultivars** is prohibited throughout the entire state.

Miscellaneous

From the Maine Center for Disease Control & Prevention:

Tick Watch

Spring is here, so it's time to think about the outdoors and proper protection against ticks. Maine had 1,171 cases of Lyme disease reported in 2015. May is Lyme Disease Awareness Month and we want to remind you the importance of daily tick checks and encourage the “tick watch” prevention strategy.

Ticks are primarily active in warmer months. Lyme disease is a bacterial infection that is caused by a bite from an infected deer tick (*Ixodes scapularis*). In Maine, Lyme disease is most common in adults 65 and over and children between the ages of 5 and 15, but anyone can get the disease. Individuals who work or play outside are more likely to be exposed to ticks. The most common and visible symptom of Lyme disease is a red bulls-eye rash that grows and appears within 3-30 days of exposure. Other symptoms may include fevers, and joint or muscle pain. Lyme disease is treatable and most individuals recover completely with a proper drugs.

However, the easiest way to avoid the disease is prevention, using “No Ticks 4 ME”:

- 1) **Use caution in tick infested areas**
- 2) **Wear protective clothing**
- 3) **Use an EPA approved repellent**
- 4) **Perform daily tick checks after any outdoor activity**

A tick must be attached for a minimum of 24 hours before the infection can be passed on, further stressing the need for prompt and proper tick removal. If you are bitten by a tick, or work in a known tick habitat, watch for symptoms for up to 30 days, and call a healthcare provider if symptoms develop.

Deer ticks can transmit not only Lyme disease, but also two other tick-borne infections that are present in Maine: anaplasmosis and babesiosis. Babesiosis cases increased in 2015 and cases of Anaplasmosis remained steady. The majority of tick-borne illnesses occur during the summer months when ticks and humans are active outdoors.

Remember that the deer tick (*Ixodes scapularis*) is the only tick that can transmit Lyme disease, but there are other species of ticks throughout the state. Tick identification references are available to order online at Maine CDC’s website. The University of Maine Cooperative Extension Tick ID Lab offers free identification services and educational resources.

Additional information:

- Maine CDC has Lyme disease information available at <http://www.maine.gov/lyme>
- Lyme disease data is available through the Maine Tracking Network at <http://www.maine.gov/lyme> under Epidemiology Information on the left hand side of the page.
- University of Maine Cooperative Extension Tick ID Lab submission instructions can be found at <http://extension.umaine.edu/ipm/tickid/>
- To get Lyme updates throughout May please like the Maine CDC Facebook page at <https://www.facebook.com/MaineCDC>
- See also, Maine IPM council’s *A Homeowner’s Guide to Managing Ticks* on-line at <http://www.maine.gov/dacf/php/gotpests/lawns/publications.html>

Calendar of Division and Related Events

- **Trees in Trouble** will air on public television - Maine WCBB World Channel - as part of Earth Day and Arbor Day programming. “The documentary film *Trees in Trouble* tells the story of America's urban and community forests: their history, their growing importance to our health, economy and environment - and the serious threats they now face. Through stories of everyday people on the frontlines of change, the

Tues. April 26	9:30pm
Wed. April 27	1:30am, 9:30am, 3:30pm
Sat. April 30	11:30pm
Sun. May 1	10:30am, 6:30pm

film will show how community-wide efforts can save and protect our urban forests for future generations. Designed for audiences of all ages, *Trees in Trouble* inspires viewers to take action, and points towards first steps.”—National Public Broadcasting System

- ***A Homeowner's Guide to Managing Tick***, Maine IPM Council, Pre-registration is required! Register on-line at www.maine.gov/healthylawns or call (207) 287-2731
 - **May 4th, 2016**, Noon, Maine Audubon's Gilsland Farm Environmental Center, Falmouth ME
 - **May 4th, 2016**, 6:00 pm, Mather Auditorium at Wells Reserve, Wells ME
- ***Invasive Forest Pests Workshops***, Maine Association of Conservation Districts
 - **May 4, 2016** (Wed) 10am – noon at Bath Forestry Division, 4 Sheridan Ave, Bath. 12:30-1:30: Possible field visit to community forest depending on status of logging. **FMI and to register:** Androscoggin Valley SWCD, 753-9400 or jocelyn.lahey@oxfordnetworks.net
 - **May 5, 2016** (Wed) from 9:30 am-1 pm at Yankee Woodlot, UMaine Extension Office, 7 County Rd, Skowhegan. Invasive Forest Pests & Invasive Plants. **FMI and to register:** Somerset SWCD, 474-0638 or info@somersetswcd.org
- ***Tree Pest Information Session***. Wednesday, **May 11th, Surry, ME**, 7-9 pm. Surry Garden Club. Rural Hall. Presented by Allison Kanoti, Maine Forest Service
- ***Spruce Budworm Forum***. Wednesday, **May 25th, Lee ME**, 5-7pm. Join Lee Academy Teacher Susan Linscott and her students for a forum on spruce budworm. Speakers will include Allison Kanoti, Forest Entomologist and Terri Coolong, District Forester from the Maine Department of Agriculture, Conservation and Forestry's Maine Forest Service.

Conditions Report No. 1, 2016

On-line: 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



Forest and Shade Tree Early Season Guide to Pest Management in Maine

www.maineforestservice.gov • forestinfo@maine.gov • (207) 287-2431 • 1-800-367-0223 (in Maine)

The following table should assist you in the early season planning process. **Remember that this is just a guide** and that conditions will vary. Many pests may be managed with several other suitable products not listed here, but also registered for use in Maine. This chart reflects those products that should be readily available and effective, *but not to the exclusion of others that may be suitable*. Information on any entry preceded by an * may be available on our website or can be requested by calling or writing to the Insect and Disease Laboratory, 168 State House Station, Augusta, Maine 04333-0168, Phone (207) 287-2431, Fax (207) 287-2432.

Insect or Disease	Cultural Controls	Chemical Controls
Ash Anthracnose	Before budbreak, remove any fallen leaves not raked last autumn. Compost the leaves well away from ash trees.	Propiconazole (Banner), Chlorothalonil (Bravo, Daconil, Mainsail WDG) at budbreak, and again 10 to 14 days later.
Ash Leaf Rust	None which are practical and effective.	Mancozeb, chlorothalonil (Daconil), or Thiophanate methyl (T-Methyl), applied at budbreak and repeated 2 to 3 times at 10-day intervals.
*Balsam Gall Midge		Diazinon** or chlorpyrifos (Lorsban**) late May to early June.
*Balsam Shootboring Sawfly		Chlorpyrifos (Lorsban 4E**) or Diazinon AG500** 3 times at 5 day intervals during the 2 weeks following the observation of activity of adults (mid-late April) or in the two weeks prior to normal balsam twig aphid spray dates.
*Balsam Twig Aphid		Diazinon** or chlorpyrifos (Lorsban**) at bud break.
Black Knot of Peach, Plum, and Cherry	Prune and destroy knotted twigs and branches.	Thiophanate methyl (T-Methyl or Fungo Flo) or chlorothalonil (Daconil) when trees are dormant and twice again at three week intervals after budbreak.
*Browntail Moth	Clipping of overwintering webs is only effective prior to the time larvae beginning actively feeding on emerging foliage (April).	The use of pesticides is a complex issue requiring professional assistance and there are restrictions on treating near water. Call for more information.
*Bruce Spanworm		Emerges early as buds begin to swell on northern hardwoods, especially beech. Larvae bore into buds. Controls not usually recommended.
Diplodia Tip Blight	<i>see Sphaeropsis Shoot Blight</i>	<i>see Sphaeropsis Shoot Blight</i>
Dothistroma Needle Blight		Copper sulfate (Kocide) or Thiophanate methyl (T-Methyl)
Dogwood Anthracnose	Remove any fallen leaves not raked last autumn; fertilize trees; prune out dead twigs and suckers; plant Chinese or Japanese dogwood instead of native flowering dogwood.	Chlorothalonil (Daconil), Thiophanate methyl (T-Methyl, Fungo Flo), Propiconazole (Banner), or Mancozeb (Dithane, Fore) at bud break and again three times at three week intervals.
Dutch Elm Disease	Plant disease resistant elms; eliminate all potential beetle breeding elm material within 700 feet of trees to be protected.	Bifenthrin (Talstar) or chlorpyrifos (Lorsban**) for beetle vector control on the lower 9' of trunk.

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Insect or Disease	Cultural Controls	Chemical Controls
*Eastern Tent Caterpillar	Prune out egg masses on twigs prior to hatch; remove and destroy small tents as they develop (late April-early May)	<i>Bt</i> (Dipel or Thuricide), spinosad (Conserve or Entrust) or carbaryl (Sevin) on warm days when larvae leave tents to feed.
*Emerald Ash Borer	Emerald ash borer has not been found in Maine. It is not too soon to think about which trees threatening infrastructure will be protected and which will be removed. Consider beginning removal of ash in poor health or larger ash that will not be protected near roads, homes and other infrastructure.	It is too soon to treat trees with chemicals to manage the threat of emerald ash borer. Treatment is appropriate only after the beetle has been detected within 10 miles of the target ash.
*Fall Cankerworm		<i>Bt</i> (Dipel or Thuricide), spinosad (Conserve or Entrust) or carbaryl (Sevin) applied while larvae are small (late May-early June on boxelder in Aroostook County). Early to mid May on elm and oak in southern Maine.
*Gypsy Moth	Scrape egg clusters from tree boles and larger branches into a container and destroy them. Complete before egg hatch (late April).	<i>Bt</i> (Dipel or Thuricide), spinosad (Conserve or Entrust) or carbaryl (Sevin) or diflubenzuron (Dimilin**) when larvae are actively feeding (early June).
Hawthorn Leaf Spot Mt. Ash Leaf Spot	Remove any fallen leaves not raked last autumn; plant resistant varieties such as <i>Crataegus crus-galli</i> .	Thiophanate methyl (T-Methyl or Fungo Flo), chlorothalonil (Bravo, Daconil) or Mancozeb (Dithane, Fore) as leaves unfold and at two week intervals until dry weather.
*Hemlock Shoot Blight	Check shoot tips in late winter, early spring for browning and curling. Pruning (shearing and shaping) can be done during late summer or fall to remove blighted tips.	Two applications of chlorothalonil (Daconil), as shoots elongate in mid-spring (late May through June)
*Hemlock Woolly Adelgid	Watch for signs of infestation and report new finds.	Call for information.
Heterobasidion irregulare (= <i>H. annosum</i> ; <i>Fomes annosus</i>) Red Pine Root Rot	Restrict thinning operations to between December and February, when spore dispersal is minimal.	Disodium octaborate tetrahydrate (Cellu-Treat) applied to freshly cut stumps (within three days of tree felling).
Horse Chestnut Leaf Blotch	Remove any fallen leaves not raked last autumn.	Thiophanate methyl (Fungo Flo) or chlorothalonil (Bravo) at bud break and twice more at 14 day intervals.
*Larch Casebearer		Carbaryl (Sevin) or cyfluthrin (Tempo) applied after most cases have moved to the expanding needle clusters (late April to early May).
Maple Anthracnose	Before budbreak, remove any fallen leaves not raked last autumn. Compost the leaves well away from maples.	Thiophanate methyl (Fungo Flo) at bud break and twice again at 10-14 day intervals.
Peach Leaf Curl		Chlorothalonil (Bravo) or Ferbam (Carbamate) or Ziram applied as full coverage spray when trees are dormant.
*Pear Thrips		Controls and timing not well understood. Thrips are active on expanding maple.
Pine-Pine Gall Rust of Jack and Scotch Pine	Prune rust galls from lightly infected trees; rogue heavily infected trees from plantations before May 1. Use disease free planting stock.	None at this time.
*Satin Moth		Treat infested poplars and willow in mid to late May with <i>Bt</i> (Dipel or Thuricide), carbaryl (Sevin) or cyfluthrin (Tempo).

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Insect or Disease	Cultural Controls	Chemical Controls
Sirococcus Shoot Blight of Spruces	Prune out affected twig tips by mid-summer, and destroy.	Chlorothalonil (Daconil, Bravo), at bud break and again 10 to 14 days later. Apply second application sooner if wet weather conditions prevail.
Sphaeropsis Shoot Blight of Red, Scotch, and Austrian Pines	Use disease free planting stock; remove non-crop-tree hard pines from area. Prune and burn lower, heavily infected and dead branches.	Chlorothalonil (Bravo), copper sulfate (Kocide), or Thiophanate methyl (T-Methyl, Topsin) at bud break and again when shoots are half grown.
*Spruce Gall Adelgids	Prune off and destroy new developing galls in mid to late June.	Treat infested trees just prior to bud break with dormant oil, carbaryl (Sevin) chlorpyrifos (Lorsban**) or imidacloprid (Merit). Controls can also be applied in the fall.
Spruce Needlecast of White and Colorado Blue Spruce (Rhizosphaera kalkhoffii)	Prune, remove, and destroy the most heavily infected, lower branches on larger trees.	Chlorothalonil (Bravo, Daconil), or copper sulfate (Bordeaux mix) as buds break and again 10 days to two weeks later.
*Ticks	Watch for ticks throughout the field season (April-November). Avoid high risk areas if possible, inspect yourself daily and remove ticks and use repellents as directed.	Compounds containing DEET can be used as repellents. Those containing the toxicant permethrin (Repel) can be used on clothing as directed.
*Viburnum Leaf Beetle	Where possible, prune off any twigs with scabby, egg-filled holes prior to May 1st.	Watch in mid - late May) for developing larvae and treat with carbaryl (Sevin), bifenthrin (Talstar) or imidacloprid (Merit).
*White Pine Blister Rust	Prune cankered lateral branches from trees and excise stem cankers by removing bark at least four inches above and below and two inches either side of discolored bark. Remove (uproot or apply herbicide) Ribes from within 1000 feet of white pine forests or plantations. Surveying for Ribes plants is most effective from mid- April through early May.	Herbicides for controlling native Ribes include Glypho 41, Accord XRT II, Roundup Pro, Roundup 2K, and Roundup Original II.
*White Pine Weevil	Refrain from planting white pine or spruce for reforestation in open areas, on heavy clay soils, or on heavily sodded fields. Correctively prune damaged trees to establish new leaders.	Apply control in the spring once there have been several days above 60 degrees Fahrenheit. Use, permethrin (Astro), bifenthrin (Talstar) or Dibrom 8** at 14-20 day intervals until June. <u>Commercial Forest and Christmas Tree Plantations:</u> diflubenzuron (Dimilin**) or chlorpyrifos (Lorsban**).
*Winter Moth	Do not move soil or plants from under infested trees to un-infested areas – cocoons in ground from June-December.	Horticultural oil in very early spring. Bt (Biobit) on young larvae. For older larvae use a spinosad product (Conserve or Entrust) or permethrin (Astro).

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