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DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
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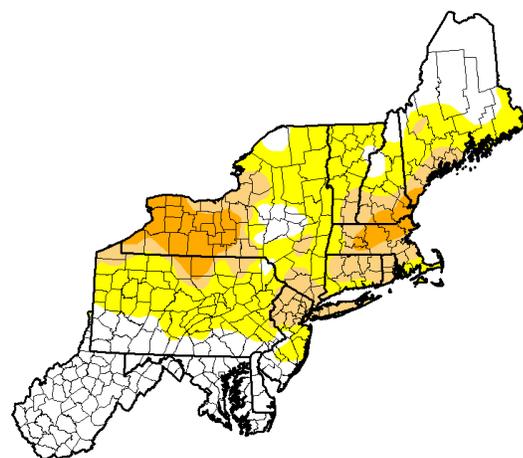
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http://maine.gov/dacf/mfs/forest_health/index.htm

Forest & Shade Tree - Insect & Disease Conditions for Maine July 25, 2016

July 19, 2016

The 2016 growing season has been dry to date. According to the July 19th summary from the National Drought Monitor parts of the northeast including Maine are in a short-term drought. Severe Drought conditions exist approximately south of the boundary created by routes 111 and 202 in southern York County (bordered on the north by the towns of Saco, Alfred, Sanford and Lebanon). Moderate Drought conditions are found in portions of Androscoggin, Cumberland, Franklin, Kennebec, Knox, Lincoln, Oxford, Sagadahoc and York Counties. Abnormally Dry conditions are found in portions of Androscoggin, Cumberland, Franklin, Hancock, Kennebec, Knox, Oxford, Penobscot, Piscataquis, Somerset, Waldo, Washington & York Counties.



Abnormally Dry (yellow), Moderate Drought (Tan) and Severe Drought Conditions in the Northeast for the Week of July 19, 2016 (Image: U.S. Drought Monitor)

Dry conditions are stressful to trees—and can be especially hard on smaller trees, those that have been recently transplanted, and those that are experiencing other significant stresses. It is important to consider this stress when pondering management in affected areas and when caring for ornamental trees. For example, balsam woolly adelgid infestation of balsam fir can make the host less tolerant of dry conditions due to changes the insect's feeding causes in the cells the trees produces at and around the feeding site. Likewise, defoliation can make a tree less tolerant of the added stress of dry conditions. To promote health, important ornamental trees should be watered during dry periods that take place within the growing season. Additionally the dry spring weather favors early season defoliators as they are less likely to be controlled by fungal diseases.

On the other hand, the scarcity of precipitation this growing season could spell some relief from needle and shoot diseases that have been so prevalent in recent years. However, that is not guaranteed as timing of moisture, spore production and tissue vulnerability may come together and allow adequate infection support continued epidemics.

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Personnel Changes

We are happy to welcome Aaron Bergdahl to our team. Aaron joined the Maine Forest Service as a forest pathologist on July 20th. He comes to Maine from the North Dakota Forest Service, where he was the forest health manager for seven years. Before that he completed a master's degree in Finland where he lived and worked for 10 years. Originally from Vermont, and a graduate of the University of Vermont forestry program, he is very pleased to be back in the northeast and especially glad to be in Maine. Aaron's interests include many outdoor activities such as gardening, growing fruit trees and shrubs, mushroom hunting and fishing. He has a wife and three children and plans to settle in the Augusta area in the near future. Aaron is looking forward to serving Maine residents by providing technical assistance and educational opportunities, while building relationships with partners and stakeholders to maximize opportunities to address forest and tree health issues statewide. One of his first projects he plans to focus on is the white pine needle damage situation. You can reach Aaron at the lab at (207) 287-3008 or aaron.bergdahl@maine.gov.

Additionally, we are pleased to announce that Joe Bither of Stockholm, ME has accepted the position of Senior Entomology Technician, which was vacated when Mike Skinner retired in December 2014. Joe brings a broad forestry background and experience in insect survey to this position. He has been a Maine Licensed Professional Forester since 2003 and completed his BS in Forest Management at the University of Maine in 1993. Joe has been with the Forest Inventory and Analysis (FIA) unit of Forest Health and Monitoring since 1999 and in recent years has helped out with surveys for emerald ash borer, gypsy moth (trapping and egg mass scouting), spruce budworm (adult and overwintering larvae surveys) and pine shoot beetle. This year he has been busy tending to 40 beetle traps in Aroostook County as well as trap routes for spruce budworm and gypsy moth, all the while continuing his work with FIA. Joe will split his time between FIA and insect and disease management in his current assignment.

Annual Summary Report

A combined summary of 2014 and 2015 activities is now available on-line and in print. You will find the online version on our website at: http://maine.gov/dacf/mfs/publications/condition_reports.html. Subscribers who have signed up for a print copy of the report should receive them very soon if they haven't already. Others may contact the lab to request a print version of the document.

Request from Budworm Tracker For Folks in Northern Maine

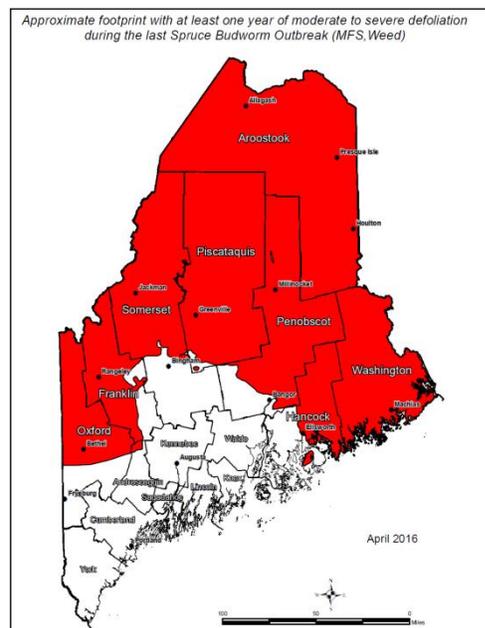
This request came in just before we were ready to hit send and print labels for this bulletin. Please contact Emily with questions or requests for more information. This request pertains to our readers in the shaded area shown in the accompanying map.

Are you seeing large amounts of moths around your porch or street light? They might be spruce budworm... and we want them!

Over the past few days there have been numerous reports of moth swarms throughout Atlantic Canada. Weather radar imagery indicates that these are very likely immigrants coming on wind currents. That being said, we still don't know much about these moths: Are there many female moths (with eggs) migrating or are they mainly males? Are the females that migrate carrying many eggs or have they already unloaded them? We are calling on people like you to help us answer these questions, and in doing so helping us to better understand how spruce budworm outbreaks spread.

Here is what we are asking: Six simple steps.

- (1) Look for moths (live or dead) beneath your porch or street light. They may be on the ground or wall.



- (2) Sweep these moths into a paper or plastic bag.
- (3) Add a piece of paper that has your name, address (of collection), and the date.
- (4) Put the bag into your freezer (this is important to preserve the eggs for counting).
- (5) Repeat as often as you can for the next three weeks – check once per day or a couple times per week, whatever works for you!
- (6) Contact us to tell us who you are and we'll contact you to arrange pickup of moths. Contact Emily Owens (Budworm Tracker Coordinator) via e-mail (emily.owens@canada.ca), on Twitter (@emilyowenz), on Facebook (<https://www.facebook.com/budwormtracker/?fref=ts>) or through the Healthy Forest Partnership Website (<http://budwormtracker.ca/#/>).

As a side bonus, for all who participate, we will be adding your name to a draw to win one of 5 fancy “Budworm Tracker” T-shirts and will add you to the e-mail list (if you so desire) for occasional updates on the ongoing spruce budworm outbreak.

Insects

Bare-Patched Oak Leafroller (*Pseudexentera spoliata (cressoniana)*) – Defoliation from this pest has subsided in the Augusta area. However, it has continued in the Cherryfield portion of Washington County and adjacent Hancock county. A few thousand acres have moderate to severe defoliation this year and there is now some mortality in the oaks in this area.

Browntail Moth (*Euproctis chrysorrhoea*) – This spring was the worst one for browntail moth caterpillars in over a decade. Extremely high numbers of larvae stripped the leaves before they had hardly begun to unfurl and then the larvae dropped to the ground and spread out devouring the leaves of trees and shrubs they encountered. From Woolwich to Freeport and inland to Bowdoinham they defoliated the oaks and spot infestations along the coast and in as far as Turner were reported. The heaviest hit area was Bowdoinham and Topsham. Parts of these two towns may get some relief next year as a few days of cool, damp weather in June allowed the fungus *Entomophaga miamaga* to take hold causing a small epizootic and killing thousands of larvae. Dead larvae were literally falling out of the trees and people in those areas are reporting fewer moths.

Licensed pesticide applicators were out straight trying to treat all the properties where people requested control of the larvae and the town of Cumberland did a ground treatment along route 88 using Conserve (active ingredient spinosad). The lab has logged close to 200 calls/emails concerning browntail. Numerous news stories covered the epidemic and hundreds of people sought relief from the rash with visits to doctors, clinics and pharmacies.



Browntail Moth (*Euproctis chrysorrhoea*) in Augusta July 12
(Photo: Maine Forest Service)

The Maine Forest Service and Dr. Ellie Groden of the University of Maine, collected hundreds of browntail cadavers and cocoons and the University is holding the fungus-infused cadavers for possible control work in the future. They are also looking at possible transfer of the fungus to the adult moths.

The trees have refoliated and most will survive this round. Browntail moths are good mothers and tend to lay their eggs on the leaves of trees that have not been stripped and then refoliated (this second round of foliage is not as good quality – a way of the trees protecting themselves from more feeding). But there are plenty of other trees out there to support the population.

Browntail adults are finishing flying and we are getting reports of huge numbers in the core area around Bath/Brunswick plus moths from Skowhegan to Saco. Department Facebook posts July 15th about the moths drew thousands of viewers. Next year is going to another bad one and the infestation will most likely be larger.

Cherry Scallop Shell Moth (*Hydria prunivorata*) – This is a very occasional pest of cherry trees - so occasional that our senior entomologist has not seen an outbreak in her 22 years with the Maine Forest Service. There is a small patch of defoliation from this leaf tying caterpillar in the Turner (Androscoggin County) where there is a stand of cherry trees. These larvae carefully fold one or more cherry leaves over and stitch them together. They then feed inside this protected enclosure carefully skeletonizing the leaves but leaving the outer layer whole. The leaves are all brown but stay on the tree most of the summer. The larvae are finishing their feeding now.



Cherry Scallop Shell Moth (*Hydria prunivorata*) Turner July 19 (Photo: Maine Forest Service)

Emerald Ash Borer (*Agrilus planipennis*) – Emerald ash borer (EAB) has not yet been found in the state of Maine. Purple traps have been hung throughout the state. Unlike in previous years, the federal



Cerceris fumipennis with emerald ash borer (Photo: Philip Careless, Ontario)

government has contracted with a private company to hang and service the traps. Although the Maine Forest Service is not involved with this aspect of detection this year, we continue to actively survey for signs of damage and encourage public reporting of suspect trees.

Biosurveillance for EAB has started for the 2016 season, www.maine.gov/cerceris. Again, no EAB have been found so far. If you find any colonies of wasps (often found on baseball diamonds) you think may be *Cerceris fumipennis*, please contact us and we will check them out. We are always on the lookout for new colonies of this wasp to help us monitor for EAB.

Given the current known distribution of EAB relative to Maine's borders it is too early to be using pesticides to treat for the pest anywhere in the state. That doesn't mean it is too early to read up on the methods one might use to treat ash trees. The insecticide guideline from the North Central IPM Center is available on-line: <http://www.emeraldashborer.info/files/EAB%20Bulletin%202014-final.pdf>.

Elongate Hemlock Scale (*Fiorinia externa*) – Elongate hemlock scale (EHS) has recently been discovered on Frye Island. Until now, EHS was known to be established in native forest trees only in one area of southern Kittery. All other infested trees we have found in the state had been brought into the state in an infested condition. We have treated these trees aggressively to try to prevent or slow spread from that tree into the surrounding forest.



Elongate hemlock scale on hemlock (photo: Maine DACF)

Although we have so far only found EHS in one location on the island, it has quite possibly become established in other areas, since we found it on a tree which would have brushed against Fire and Rescue trucks every time they went out on a call. This would have transported crawlers every time the trucks went out. We will continue to look for EHS on the island. The town of Frye Island has been very proactive in dealing with this insect and trying to contain it. They pruned back the affected tree immediately to stop further spread and are working with the Maine Forest Service to educate the people of the town and to reduce further spread.

Remember that at this time of year, tiny crawlers are present, and it is very easy to transport EHS on clothing, machinery and vehicles.

Forest Tent Caterpillar (*Malacosoma disstria*) – Defoliation by forest tent caterpillar has not detected in Maine. This is notable partly because it was found by our neighbors in New Hampshire and Vermont at levels detectable in aerial survey. This continues to be a pest worth watching.

Gypsy Moth (*Lymantria dispar*) – Gypsy moth in southern Maine have begun pupation—and some have completed their life cycles! A male gypsy moth was seen in Cherryfield (Washington County) on July 15th and a second one in T10 SD (Hancock County) on the same day. Maine Forest Service deployed 400 traps for this moth in parts of Maine not yet quarantined for the pest. Last week Joe Bither hung the last of our traps in north-western Aroostook County.

Hemlock Woolly Adelgid (*Adelges tsugae*) – Hemlock woolly adelgid (HWA) was recently found on Frye Island in Cumberland County, thanks to a tip from a local arborist. HWA has probably been present on the north end of the island for several years where some hemlock trees are in very bad shape.



Hemlock woolly adelgid covered in 'wool' and juveniles to the left (photo: USFS)

Trees in the southern part of the island are still generally healthy and many do not have detectable levels of HWA. The town has been very proactive about dealing with HWA and within hours of learning about it had already started pruning hemlock trees back from parking areas around the public works depot, brush dump, and other high-risk areas. They have been working with the MFS to educate their citizens and are doing all they can to slow down the spread of this insect. HWA has also been found in the adjacent town of Raymond. We will continue to survey for HWA in the towns of this area.

If you are harvesting hemlock you are encouraged to examine branches of felled trees for signs of HWA and elongate hemlock scale (EHS). They are both more readily detectable from canopy samples than from the ground. If you have any doubt whether what you are looking at is HWA (or EHS), bag a sample and put it in the mail to the lab. Often all that is required to ship it is a standard-sized envelope and a single stamp.

We are nearing the time when most crawlers will be settled on the new growth of hemlock. August first is when we generally think of as being low risk of spreading HWA on anything but rooted trees. Given the nature of insects, the actual date varies from year to year. August through February is the best time to work in hemlocks from the standpoint of minimizing the risk of introducing or spreading HWA.

Oak Twig Pruner (*Anelaphus parallelus*) – Calls and e-mails have started to come in about oak twig pruner damage. So far reports have come in from Durham (Androscoggin County), Edgecomb and Waldoboro (Lincoln County), Otisfield and Peru (Oxford County), Dixmont and Old Town (Penobscot County) and Richmond (Sagadahoc County). This species takes two years to mature. In their second season of feeding the larvae make pruning cuts beneath the bark. They cut around the branch except for the thin bark so that the branches break with the wind and fall to the ground. Sometimes the branches are noted when they are dangling in the crown—a spray of reddened, withered leaves. Others, people notice the fallen twigs and note the fine workmanship of the cut (and sometimes even note the frass or the larva itself). The larvae pupate within the twig in the fall. Many winters they are insulated by a warm blanket of snow. Oak twig pruner is not a significant threat to tree health.

Pine Leaf Adelgid (*Adelges pinifoliae*) – As was guessed in the May report, this was a year of abundant galls in red and black spruce caused by the pine leaf adelgid.

Galls were open and females flying and depositing eggs on pine needles in T6 R13 WELS (Piscataquis County) on June 15th. This seemed to be near peak of adult emergence at this site in 2016. Many had hatched from the eggs under females on pine needles and settled on 2016 twig-growth by July 7th in T4 R7 WELS (Penobscot). It was observed that most galls had fallen from affected spruce during a visit to T6 R13 WELS site on July 14th.



Cone-like galls on spruce caused by pine leaf adelgid. Note recently opened gall in lower right and older, dried galls in upper left. Unlike some other adelgid galls, these are deciduous. (Photo: Maine Forest Service)

Those remaining on the tree were only lightly attached to the twigs. Fewer galls had fallen and those still attached were firmly connected to the twigs at a second site visited the same day in T5 R11 WELS (Piscataquis County). If an observer wanted to rate the level of galling in the spruce host, it would be best done in mid- to late- June in this area of north-central Maine.



Adult females, having emerged from galls on spruce settle on white pine needles (Photo June 22). Abdomen splits and eggs remain protected under the roof of the adult wings. Eggs hatch and nymphs settle on the current-year twigs of white pines (black specks, Photo July 14). (Photos: Maine Forest Service)

Elevated activity of this pest was first reported in September 2012. This was likely early damage caused by nymphs that had settled that same year. We did not have many reports of damage to pine in 2013; however, in 2015 people who visit the North Maine Woods were noticing and reporting damage to the gates. Also in 2015, aerial survey efforts mapped almost a quarter million acres damaged by this pest. We can expect another year with significant flagging of outer branches in white pine next year. Some of that damage may show up as early as late-summer 2016, but we expect more to be expressed by spring 2017. Affected pine will experience growth impacts and casual surveys have shown there is already some tree mortality apparent. The last recorded outbreak of this pest in Maine lasted approximately 10 years.

Winter Moth (*Operophtera brumata*) – Winter moth was not as severe a problem this season as was expected. Most areas had moderate defoliation although some new parts of Harpswell were harder hit but no trees completely striped in that town. The apparent reason for this was delayed foliage due to weather and, in some cases, severe damage from past years defoliation, caused mortality of newly emerged larvae. Unfortunately for some trees in Cape Elizabeth this reprieve came too late and there is now tree mortality in that town.

No parasitic flies were released in Maine this year as there were none available. Hopefully next year there will be a large enough population of *Cyzenis albicans* flies from Massachusetts that we can release more in Maine. The very good news is that the flies have become established in at least Kittery after just two years. The report is not back yet on the other release towns.

Reminder: DO NOT MOVE soil, perennials, saplings etc. from under or near winter moth infested trees. You will be moving winter moth with the soil/plant material. The cocoons look like dirt.

Diseases and Injuries

Herbicide injury – Herbicide injury, from right of way management, has been noted by some who have recently travelled the golden road. Leaves in aspen crowns along the road west of Millinocket are stunted and distorted; white pine mortality is also particularly striking. Damage to the white pine adds to the apparent impact of pine leaf adelgid. This type of injury is not restricted to private woods roads as similar methods are used in right of way maintenance on public roads. It is important for many reasons to get away from the road before drawing conclusions regarding the health of the forest beyond.

White Pine Needle Diseases – White pine needle damage was again a major concern of clients in Maine this June and July. Most reports came in from Kennebec County and south (including the towns of Augusta,

Belgrade, Berwick, Casco, Gray, Kittery, Oakland, Porter, Saco, South Berwick, West Gardiner and Windham), with a single public report from Dover-Foxcroft (Piscataquis County). In addition to calls from the public, damage was observed by division staff along Route 2 from the New Hampshire border east to Bangor; in the area along Routes 15 and 43 between Dover-Foxcroft to Old Town; as well as in northern York County.

Calendar of Division and Related Events

August 2nd, 7-8 pm, Thomas Memorial Library, ME. Combatting Winter Moths, in Partnership with the Cape Elizabeth Garden Club. Charlene Donahue, entomologist with the Maine Forest Service will discuss last year's Winter Moth infestation and discuss how you can combat the negative effects of this infestation on your trees and gardens both this season and next.

August 13th, Hardwood Silviculture, Newall Tree Farm, Unity/Thorndike, ME. This joint NESAF/SWOAM field tour will focus on hardwood silviculture including discussions of forest soils & site productivity, silviculture and management of beech bark disease, crop tree management and aspen/poplar management. This will be an opportunity to meet our new pathologist, Aaron Bergdahl. Registration *required*, www.mesaf.org, field tours.

August 13th, Forest Heritage Days, Greenville, ME. We will have a display table at Forest Heritage Days in Greenville on Saturday August 13th. Stop in and see us if you're at the event. We'll be set up from 10 to 3 in the gymnasium. You can learn more about Forest Heritage Days here: <http://www.forestheritagedays.org/>.

August 24th & 25th, Maine Farm Days 2016, Misty Meadows Farm, Clinton, ME. The event includes activities for both farmers and non-farmers alike. There are a range of agribusiness exhibits, equipment dealers, wagon tours, children's learning center, craft tent, farmers market and educational speakers and presentations. Charlene Donahue will speak on 'Invasive Forest Pests - Slowing the Spread'. http://kcswcd.org/?page_id=176.

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 contact Gretchen Heldmann, coordinator@mainetreefarm.org, the Maine Tree Farm Coordinator or SWOAM, info@swoam.org.

September 13th, 9am – 3pm, State Museum, Augusta, ME. BUG MAINE-IA. Creepy, crawly as Bug Maine-ia invades the Maine State Museum. A great learning experience for kids and adults as bugs from Maine and around the world (many living) converge 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.

Sept 23-25, Common Ground Fair: MFS 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. Please also visit the MFS booth just outside the Pine (south) Gate.

Conditions Report No. 3, 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, Colleen Teerling, Emily Owens (Budworm Tracker)