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DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
DIVISON OF ANIMAL AND PLANT HEALTH
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MAINE REPORT TO THE EASTERN PLANT BOARD APRIL 2018 – MYSTIC, CONNECTICUT SUMMARY OF 2017 ACTIVITIES

INTRODUCTION

The Division of Animal and Plant Health within the Department of Agriculture, Conservation and Forestry (ACF) includes Maine's plant regulatory programs, responsible for protecting the state's plant resources from the introduction and spread of regulated insects and diseases. The Division provides technical information and support to agricultural producers and issues a number of licenses and permits for individuals to conduct certain business. The Division carries out its mission through the work of various programs including: nursery program, integrated pest management program, apiary program, arborist program, cooperative agricultural pest survey (CAPS), seed potato certification and the Board of Pesticides Control. The Division also works closely with the Division of Forest Health and Monitoring which is charged with protecting Maine's forest, shade and ornamental tree resources from significant insect and disease damage.

NURSERY PROGRAM

LICENSING AND INSPECTION

All businesses or individuals selling nursery stock in Maine must have a license. Nursery stock is defined as: woody plants, including ornamental and fruiting trees, shrubs, vines and all viable parts of these plants; herbaceous plants, including florist stock plants, annuals, perennials, vegetable seedlings, herbs, potted plants and all viable parts of these plants; and any other plant or plant part designated by the commissioner. 1366 nursery stock licenses were issued in 2017. A list of businesses with Maine nursery stock licenses can be found at: www.maine.gov/hort Inspectors performed 956 inspections at nurseries, greenhouses and plant dealers. A variety of pests were observed during inspections, but most were minor or common pests.

PHYTOSANITARY INSPECTION AND SHIPPING CERTIFICATION

584 lots of plant materials were inspected and certified for shipment using phytosanitary certificate forms. 8 federal certificates and 4 state certificates were for nursery/forest materials, 22 federal certificates and 1 state certificate were for seeds, 4 federal certificates were for a processed peat products and 545 federal certificates were for potatoes and grain (barley, rye and wheat). 29 businesses operated under compliance agreements and were approved to ship nursery stock to other states. 4 businesses had firewood kilns certified to produce heat-treated firewood and other forest products for shipment out-of-state.

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INVASIVE PLANTS

In January 2017, the Division adopted rules that prohibit the sale and distribution of thirty-three invasive terrestrial plant species starting January 1, 2018. The plants were evaluated using a previously established list of invasive plant criteria and then reviewed by a specially-convened committee of horticulture professionals, land managers, foresters, wildlife biologists and other scientists. The full invasive terrestrial plant rule and list of plants is available at www.maine.gov/dacf/php/horticulture/invasiveplants.shtml

INDUSTRIAL HEMP

LICENSING AND THC TESTING

2017 was a strange growing season, wet in the spring and dry the rest of the year. Despite the weather-related challenges, Maine's industrial hemp industry continued to grow. In 2017 there were 34 licensed growers of Industrial Hemp in the state with 36 planted growing sites. Thirteen licensed sites were not planted. Although there were 150 acres licensed only about 30 acres of industrial hemp were planted. Industrial hemp rules require the Department to take growing season samples to test for Delta 9 THC. Test results ranged from 0.0007% to 0.167%, all results were well below the 0.3% threshold.

While no major program changes are anticipated for 2018, the Department will be making small adjustments. Licensees in 2018 will be asked to fill out a mid-season progress report that will include information on how many acres were planted and estimated harvest dates. This information should help Department personnel better plan sampling schedules to ensure all crops are sampled and tested for delta 9 THC at the appropriate time. Other changes include: allowing growers to start seedlings indoors if plants are moved outside by June 1 and allowing planting of industrial hemp from tissue culture or clones, if the same THC testing that is required for production from seed is provided for the tissue culture or clone parent plants.

LEGISLATION

There were two industrial hemp related bills in the Legislature in 2017. The bills were LD 742 An Act to Allow Hemp Growers to Grow Hemp from Clones and Indoors and LD 1611 An Act to Protect Persons Who Cultivate, Process, Buy and Sell Hemp. Both bills were voted ought not to pass by the Legislature's Agriculture, Conservation and Forestry Committee, effectively killing the bills.

In November 2016 Maine voters passed a referendum allowing the adult use of recreational marijuana. The legislature has delayed implementation of the referendum while they work on details of licensing, taxation and other regulatory details of retail marijuana sales. It remains unclear how Maine's recreational adult use marijuana law may impact the industrial hemp program or other programs within the Division of Animal and Plant Health.

OUTREACH

The Department received inquiries from 5 callers asking if licensed industrial hemp growing sites were legal. Two calls were from law enforcement, two calls were from the Department of Health and Human Services, which oversees Maine's medical marijuana program and one call was from a concerned neighbor. Fortunately, all the growers were licensed.

In addition to licensing industrial hemp producers the Division supports *Cannabis* growers through the IPM program with pest problem solving, education and outreach to promote IPM methods, especially biological control.

More information on Maine's industrial hemp program can be found at www.maine.gov/dacf/php/hemp

GINSENG PROGRAM

Maine's ginseng certification program facilitates the export of American ginseng while meeting the requirements of the Convention for International Trade of Endangered Species of Flora and Fauna. In Maine, American ginseng is considered state endangered and the Department does not certify wild-harvested ginseng for sale. A license is required to grow cultivated ginseng for sale to out-of-state markets; harvested ginseng must be weighed and certified before sale. In 2017 there were 15 licenses issued for ginseng growers and 1 for a ginseng dealer. Ginseng can be a difficult crop to grow in Maine and no cultivated ginseng has been harvested and certified for sale since 2001.

INTEGRATED PEST MANAGEMENT PROGRAM

SCHOOL IPM

The Maine School IPM Program continued to support compliance with state pesticide regulations requiring all K-12 schools to utilize IPM methods aimed at minimizing risks of exposure to pests and pesticides. In 2017 the School IPM Program provided training for over 200 public and private school maintenance and custodial staff at six workshops, including a turf IPM workshop for schools and parks. In addition, the Maine School IPM Program gave presentations to other school officials, teachers and nurses. In 2016, a new project was initiated to provide support and IPM training to school nurses throughout the Northeast region, with grant funding from the Northeastern IPM Center. This two-year project seeks to empower school nurses to support adoption of least-risk strategies for preventing and managing health-impacting pests such as ticks, mosquitoes and bed bugs. On-line self-paced training modules have been developed. Outreach efforts via school nurse associations, exhibits and presentations are underway. In addition, IPM literacy among teachers and youth audiences was supported through teacher workshops and statewide youth education events. In 2017 we trained 60 pre-service teachers at the University of Maine, Farmington and engaged over 3000 young learners and educators at various educational events across the state.

GREENHOUSE IPM

The Maine IPM Program supports Maine's green industry through education and outreach aimed at minimizing pest problems and production costs and growing healthy plants. The IPM program collaborates with partners to offer workshops and share informational resources. In 2017, we offered two day-long workshops attended by about 150 greenhouse growers, and we gave several presentations on IPM to growers and gardeners at state-wide conferences and local garden club meetings.

APIARY PROGRAM

REGISTRATION AND INTERSTATE MOVEMENT

In 2017, there were 1147 resident beekeepers that registered 9853 hives. Entry permits were issued for approximately 27,500 hives managed by 21 commercial beekeeping operations contracted for blueberry, apple and cranberry pollination. This was a 46.7% decrease from 2016 when approximately 58,833 were imported for pollination. The reduction in the number of hives being used for blueberry pollination is due to a decline in blueberry prices and reluctance by producers to add to production costs. Since 2011, growers have seen a steady decrease the average price per lb value of the crop. In 2016 growers averaged $0.27per pound, down $0.19 from 2015 and $0.64 lower than 2011. The average price growers received for berries is expected to be around $0.27 per pound again in 2017. Not surprisingly, Maine blueberry growers produced a smaller crop in 2017, estimated to be around 65 million pounds. This is a 36.2% reduction from the 2016 yield of 101.8 million pounds.

In 2017, 6228 hives were issued Maine health certificates for interstate movement to NY, MA, VI, PA, FL and GA for crop pollination and wintering. After blueberry pollination, most hives return to their states of origin under certification previously issued by that state. In recent years, beekeepers have made far fewer requests for Health Certificates for interstate movement.

BEEKEEPER REPORTED LOSSES AND CAUSES

In April 2017, the Maine Apiary Program offered an online survey to beekeepers to assess hive loss and beekeeper management practices across the state. Respondents reported losing 53% of their hives between April 2016 and April 2017 (summer: 5.9%, winter: 47.1%). The most common reported cause of summer loses were queen loss/failure (11.6%), unknown (8.7%), environmental factors (7.6%) and Varroa mites (7.3%). Most (71.5%) respondents reported no summer losses. The most commonly reported causes of winter losses were Varroa mites (29.7%), environmental factors (24.4%), starvation (22.1%), unknown (16.9%) and queen loss/failure (15.7%). A quarter (26.7%) of respondents reported no winter losses.

INSPECTION AND DISEASE DETECTION

Throughout the year 2861 colonies were inspected for disease and parasites. All migratory operations (21) in Maine for pollination and many (152) of the resident beekeepers were inspected. Sixteen nucleus hive distributers and 4 package dealers were also inspected. Early spring inspections focused on hives that died during late winter and early spring. Of those hives inspected one third of the inspected hives perished due to starvation, poor weather, moisture, and queen issues. The remaining two thirds of hive mortality was due to Varroa and its associated viral complex.

Colony buildup for surviving hives started strong in 2017 but was halted during an extended stretch of cold rainy weather in late May/early June. Several incidences of European Foulbrood (*Melissococcus plutonius*) occurred in hives that were not provided adequate supplemental forage. Swarming was slightly delayed and minimal in 2017. Two of six hives in an abandoned apiary located in Sagadahoc County tested positive for American foulbrood (*Paenibacillus larvae*). No other colonies in the area showed signs or tested positive for AFB infection.

There was a particularly virulent incidence of chalkbrood (*Ascosphaera apis*) infection in Oxford County that was possibly traced back to queen stock out of Canada. South African small hive beetles (*Aethina tumida*) popped up again this year following the evacuation of the migratory hives in Midcoast, Downeast, and Central Maine. Two hives with heavy infestations were destroyed, the rest were saved following intervention.

Varroa continues to be the biggest problem facing beekeepers in Maine. Nearly all (93%) hives that were sampled for varroa tested positive. As usual, Varroa populations increased to damaging levels during late summer/early fall in 2017 and viral infections associated with Varroa were widespread. Early fall losses

were higher than previous years due to an unseasonably warm fall that allowed brood production and mite reproduction in hives later than normal. The long warm fall also increased incidences of bee and wasp robbing of weak colonies.

In 2017, the Maine Apiary Program received several nuisance complaints and stinging incidents associated with urban/suburban beekeeping and hives used for blueberry pollination. Like previous years, some of the hives inspected during pollination exhibit extreme defensive behavior. The state apiarist responded to calls from the Maine Turnpike Authority, local law enforcement, private businesses, and the public about bees that escape from semis at truck stops, toll booths, and fuel stations as well as several nuisance bee calls regarding bees drinking from pools and hot tubs. The state apiarist made recommendations to town code enforcement and the public regarding nuisance situations involving bees and wasps and helped two municipalities in Cumberland and Kennebec counties remove and dispose of abandoned bee equipment.

OUTREACH

In 2017 the state apiarist presented 49 lectures and workshops on a variety of beekeeping topics to blueberry growers, ME Board of Pesticide Control inspectors, schools, conservation organizations, beekeeping associations, and at beekeeping short courses offered via County Extension and Adult Education programs. An estimated 2146 people attended these talks.

The Veterinary Feed Directive (VFD) was implemented in January 2017. The state apiarist talked at the State Veterinarian Spring Education meeting and held three in-hive trainings specifically designed for veterinarians on the basics of beekeeping and disease identification.

MISCELLANEOUS

USDA EAP Assistance: 13 beekeepers applied for assistance for 2017. This number is higher than previous years and is mostly attributed to an extended drought in southern Maine.

Review Committees: Sat on the Farm Bill Bee Project review committee, chaired the Eastern Apicultural Society Research Grant Committee.

Grants Submitted: Northeast IPM Center Grant “A Varroa Mite IPM Program for New England Honey Beekeepers” and USDA Farm Bill Project “National Honeybee Survey”

COOPERATIVE AGRICULTURAL PEST SURVEY (CAPS)

The Division administered the Cooperative Agricultural Pest Survey (CAPS) Program, a cooperative survey effort between the USDA APHIS PPQ, state departments of agriculture and state universities. The CAPS program supports the position of the state survey coordinator (SSC).

The Maine CAPS Program allowed for survey work of the following in 2017:

- Nursery Commodity Survey; conducted by the Division. Visual inspections of host trees were conducted at 36 nurseries in 13 counties for the following targets: *Aeolesthes sarta*, *Anoplophora glabripennis*, *Agrilus spp.*, and *Monochamus spp*. Trapping surveys were conducted at 15 nurseries in 8 counties for the following targets *Monochamus alternatus*, *M. urussovii*, *Hylobius abietis*, *Archips xylosteanus*, *Tortrix viridana* and *Lymantria mathura*. Five nurseries were inspected for snails and slugs. All samples were processed in-house and all beetle and moth specimens identified. No target specimens were found.

- Exotic Woodborer/Bark Beetle Survey in Conifers; conducted by the Bureau of Forestry, Division of Forest Health and Monitoring. Traps were deployed for *Ips typographus, I. sexdentatus*, and *Orthotomicus erosus* at five sites; *Monochamus urussovii*, *M. alternatus*, and *Hylobius abietis* at five sites; *Tetropium castaneum* and *T. fuscum* at five sites; and *Dendroctonus frontalis* at 10 sites in Cumberland Co. Most collections were sent to the Carnegie Museum of Natural History who screened the samples and found no targets. The *D. frontalis* samples were screened in house and no targets were found.

In addition, the CAPS program administered five projects with funding from the Farm Bill:

- Small Fruit Commodity Survey; conducted by the Division and the University of Maine Cooperative Extension. Traps were deployed at 8 vineyards in 5 counties for seven target pests: *Autographa gamma, Epiphyas postvittana, Eupoecilia ambiguella, Lobesia botrana, Spodoptera littoralis, S. litura,* and *Thaumatotibia leucotreta,* and visually inspected for *Lycorma delicatula*. Additional traps were deployed in various berry plots at 10 sites in 6 counties for *E. postvittana, E. ambiguella, L. botrana*, and *S. litura*. All samples were screened in house and no target species were found.

- Vegetable Pest Survey; conducted by the Division and the University of Maine Cooperative Extension. Traps were deployed in tomato at 10 sites in 6 counties for *Helicoverpa armigera, Neoleucinodes elegantalis, Spodoptera litura, Tuta absoluta*; and in mixed alliums at 15 sites in 8 counties for *Acrolepiopsis assectella*. Visual surveys were conducted at the allium sites (15) for *Phytomyza gymnostoma*. All samples were screened in house. Multiple specimens of A. assectella were found at one site. No other targets were found.

- Solanaceous Survey (PCN/Blackleg); conducted by the Division's Seed Potato Inspection staff. Discussed elsewhere in report.

- Forest Pest Outreach and Survey Project; conducted by the Division, with subcontracts to Saco River Recreational Council (SRRC) and the Maine Association of Conservation Districts. Staff conducted 47 outreach events in 14 (out of 16) counties. SRRC's outreach is difficult to quantify as a large part of its efforts involves one-on-one conversations with river campers bringing in firewood.

- Firewood Outreach Campaign; conducted by the Division and the Bureau of Forestry. The Division administered a contract with Firewood Scout, an online resource for the public to locate local sources of firewood. Approximately 195 firewood vendors in Maine agreed to have their location and contact information entered into the network. To advertise and promote the use of Firewood Scout to more vendors and Maine campground visitors, the Division produced a brochure to help vendors sign up, advertised twice in the Maine Campground guide, ran four Facebook promotions, and distributed information when conducting outreach events. The Bureau of Forestry intends to conduct on-the-ground outreach at a number of campgrounds during peak camping weekends. The project was extended another year to accomplish this outreach.

Data was entered into NAPIS for 50 pests. New positive records were entered for *Acrolepiopsis assectella* (leek moth) and *Halyomorpha halys* (brown marmorated stink bug).

SEED POTATO CERTIFICATION

Seed potatoes are certified to control the level of pests in Maine's potato industry. Certification is a three-step process: inspection of seed potatoes during the summer, post-harvest disease evaluation of samples

submitted for testing and inspection during shipping to ensure the potatoes meet grade standards. Only lots that have been found to meet, field, post-harvest testing and shipping point inspection can be tagged as certified seed.

SUMMER FIELD INSPECTION

In 2017, 9625 acres met disease tolerances for regulated diseases and pests during the summer field inspection program. A directory of producers whose seed lots passed the summer inspection program is compiled after the field inspection season and posted at www.maine.gov/dacf/php/seed_potato.

POST-HARVEST TESTING

Maine statutes require a sample be submitted for post-harvest disease evaluation at a state operated farm in Homestead, Florida in order for a seed lot to receive certification. Due to a recent rule change in May of 2016, Field Year 1, Field Year 2 and 7 Latent varieties; (varieties that do not exhibit typical Potato Virus Y (PVY) symptoms) were tested at the Department Disease Testing Laboratory utilizing the ELISA testing method. This change was put into effect as a transition to full laboratory testing in the future for all post-harvest testing for the Maine certified seed program. From November 2017 to January 2018, 989 samples, representing approximately 9363 acres of potatoes were evaluated for disease in Presque Isle and Homestead Florida. 64% met the certification requirements for foundation seed (total virus <0.55%), 30% met the requirements of certified seed (total virus 0.56-5%) and 6% did not meet the seed certification standards (>5% total virus). Post-Harvest testing results are posted at www.maine.gov/dacf/php/seed_potato/index.shtml

For the 2018 crop year the Department, based on industry input, has decided to fully transition to Elisa laboratory testing for all post-harvest PVY samples starting in November 2018. This represents a three year process to test the feasibility of ending the Florida grow-out and fully process all samples at the certification laboratory in Presque Isle, Maine. With this step Maine will be the first state in the country to fully transition to laboratory post-harvest testing for seed potatoes.

BLACK LEG AND DICKEYA

In recent years, blackleg and Dickeya have contributed to crop losses in Maine and other potato producing states resulting in severe economic losses for several potato growers. The Seed Potato Certification Program developed new standards in cooperation with industry stakeholders and university researchers to better inspect and identify Maine seed lots that may contain pectolytic bacteria and Dickeya by adding visual field tolerances for blackleg as part of the summer field inspection. These tolerances were approved and went into effect in May 2016.

For the 2017 crop year, the seed certification program decertified only one lot based on field readings. Two other lots were voluntarily withdrawn by the grower. Field staff did not see much in the way of symptomatic plants due to an extended dry period from July onwards.

POTATO CYST NEMATODE NATIONAL SURVEY

The Seed Potato Certification Program participated in the Potato Cyst Nematode (PCN) National Survey for the ninth year in a row. No seed potatoes could be shipped out of Maine unless they came from fields that have been sampled and tested for PCN (*Globodera pallida*) and Golden nematode (GN) (*Globodera rostochiensis*). Division staff used either soil probes or specialized mechanical samplers to survey choice seed potato fields in Aroostook County that grow seed for export. Each acre was sampled according to protocol to collect a 5 lb sample, resulting in 3195 samples. All soil samples were shipped to the USDA APHIS Nematode Laboratory in Avoca, NY. No PCN or GN was found.

BOARD OF PESTICIDES CONTROL

PESTICIDE USE AND APPLICATOR LICENSING

The Board of Pesticides Control (BPC) licenses pesticide applicators (Agricultural Basic, Private and Commercial) and pesticide dealers (limited/restricted and general use products). As of March 31, 2018, there are 410 active agricultural basic licensees, 885 active private licensees, 1580 active commercial licensees, 233 spray contracting firm (business) licenses, 62 limited/restricted use dealers, and 716 general use dealers.

LEGISLATION AND REGULATION

The first regular session of the 128th Maine Legislature entertained five pesticide related bills. LD 174 An Act to Limit the Use of Pesticides on School Grounds was amended to An Act to Require Schools To Submit Pest Management Activity Logs and Inspection Results to the Board of Pesticides Control for the Purposes of Providing Information to the Public—it was held over to the next session. LD 418 An Act to Educate the Public on the Proper Use of Pesticides and To Promote Integrated Pest Management Using Existing Resources; LD 993 An Act to Protect Pollinators from Neonicotinoid Pesticides; and LD 699 An Act to Enact the Toxic Chemicals in the Workplace Act were "Placed in Legislative Files (DEAD). LD 594 An Act to Modify the Definition of "General Use Pesticide" was signed by the Governor on 5/11/2017 (PL 59).

The Board did not amend any rules in 2017.

ARBORIST PROGRAM

All individuals performing arborist work in Maine must have a license. According to Maine Arborist Licensing Law (7MRSA Section 2173-2191) an arborist is anyone who, for compensation, takes down or fells, diagnoses or evaluates, recommends or supervises treatment, or in any manner or for any purpose treats or cares for shade or ornamental trees. In order to become a Maine licensed arborist, individuals must pass an exam demonstrating proficiency in arborist techniques, safe use of arborist tools and equipment, tree identification and pest identification. Licenses and exams are offered in two categories, landscape and utility. In 2017 the Department was pressured to require continuing education units for licensees, but this was found to be unfeasible due to limited resources. 115 people took and 108 passed the arborist exam in 2017. A total of 1035 arborist licenses were issued by the Division in 2017.

FOREST INSECT AND DISEASE CONDITIONS

Courtesy of the Division of Forest Health & Monitoring. Growing season conditions reports as well as information about the pests below can be found at www.maine.gov/dacf/mfs/forest_health

GYPSY MOTH

Maine maintains a town by town quarantine for gypsy moth. The Maine forest service surveys yearly for gypsy moth presence in the non-quarantined part of the state through both pheromone trapping and winter egg mass surveys. Every year more towns are added to the quarantine area as the gypsy moth infested portion of Maine creeps ever northward. The Department has begun to collect feedback from stakeholders to determine if the state should continue to maintain a town by town quarantine or if it is time to quarantine the entire state.

SPRUCE BUDWORM

The Maine Forest Service (MFS) and its cooperators are closely watching spruce budworm in Maine to monitor and prepare for another epidemic of this native defoliator of fir and spruce. 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 is an insect whose epidemics cover vast regions and flights of moths from heavily infested areas can migrate to new areas. The Maine Forest Service, cooperators within and outside the state, and Canadian provinces are working together to monitor and predict the growth of the spruce budworm population and its potential impact on the regions forests. Monitoring takes place using pheromone traps, light traps, overwintering larval samples, ground and aerial surveys.

As in the last several years, the cooperative pheromone trap effort for spruce budworm included participation from over 20 organizations. The spruce budworm pheromone survey shows spruce budworm is widespread but still at low numbers across the trapping range. Trapping effort was heaviest in the northern third of the state, light across the middle of the state, with no trapping in the south where budworm is not expected to have a direct impact. Across most counties trapped, the average number of moths caught was stable compared to 2016 with an average catch of 7 moths/trap. No defoliation was detected during aerial survey. Feeding needs to be approaching a moderate level of damage before it is visible from the air. All population measures indicate that numbers are too low everywhere in Maine to expect that level of feeding yet. Updates about the spruce budworm situation in Maine can be found at www.sprucebudwormmaine.org/

BROWNTAIL MOTH

The browntail moth (*Euproctis chrysorrhoea*), an insect of forest and human health concern, has increased in population over the last several years. The larval stage of this insect feeds on the foliage of hardwood trees and shrubs including: oak, shadbush, apple, cherry, beach plum, and rugosa rose. Larval feeding causes reduction of growth and occasional mortality of valued trees and shrubs but, the primary concern is the impact on human health. Contact with the hairs found on the caterpillars of browntail moth causes a rash similar to poison ivy that can be severe on some individuals.

In 2017, there were over 54,000 acres of defoliation observed during aerial surveys in the core infested area (coastal Sagadahoc and Cumberland Counties) as well as other scattered patches of defoliation. There is some evidence that browntail moth populations may be decreasing in previously hard-hit communities, however, populations seem to be increasing in outlying areas. While populations are expected to be lower in 2018 than 2017, browntail moth will still be affecting a lot of people in a wide area, probably including new places not affected in past years.

DROUGHT STRESS

Drought stress impacted trees in the southern half of Maine for much of the 2017 summer season, essentially a repeat of 2016's very dry months of July and August. The drought has been especially tough on trees along the coast and on the islands, leading to dieback and mortality. Drought stress in back-to-back growing seasons could potentially have negative short and long-term impacts on tree health. Reduced vigor due to drought stress may lead to future outbreaks of damaging forest pests, such as bark- and wood-boring beetles and some trees may develop higher susceptibility to spider mite, aphid and scale infestation, further reducing tree vigor.

HEMLOCK WOOLLY ADELGID

The detection of hemlock woolly adelgid (HWA) in three counties of southwest Nova Scotia is an important reminder that this hard-to-detect insect could be, undetected, in forests of interior and Downeast coastal Maine. To date, any HWA found east of Camden has been thought to be associated with artificial spread, and populations have not been found in forest trees in that area. The Maine Forest Service continues to regularly look at hemlocks outside the known infested area in Maine for the tell-tale white, wispy material covering adelgid on the twigs of hemlock trees. More information on Maine's HWA quarantine is posted online at www.maine.gov/dacf/php/horticulture/importinghemlocks.shtml