

# STATION NEWS

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION



## THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

STATION NEWS  
*PUTTING SCIENCE TO WORK FOR  
SOCIETY*

The mission of The Connecticut Agricultural Experiment Station is to develop, advance, and disseminate scientific knowledge, improve agricultural productivity and environmental quality, protect plants, and enhance human health and well-being through research for the benefit of Connecticut residents and the nation. Seeking solutions across a variety of disciplines for the benefit of urban, suburban, and rural communities, Station scientists remain committed to "Putting Science to Work for Society", a motto as relevant today as it was at our founding in 1875.



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## DEPARTMENTAL NEWS

### ADMINISTRATION

**DR. THEODORE ANDREADIS** attended the 62<sup>nd</sup> Annual Meeting of the American Society of Tropical Medicine and Hygiene held in Washington DC and presented a poster display entitled, *Eastern equine encephalitis virus: reemergence and expansion in the northeastern United States* (November 12-15); met with US Representatives Rosa DeLauro and Joe Courtney and legislative aides from US Senators Richard Blumenthal and Chris Murphy, Representatives Elizabeth Esty, Jim Hines and John Larson in Washington DC and presented an overview of current research activities at the Experiment Station (November 14-15); gave an update on Station activities and presented an invited talk entitled, *West Nile Virus: The Emergence and Spread of an Exotic Mosquito-Borne Disease in the Western Hemisphere*, at the annual meeting of the Connecticut Environmental Council in Southington (200 attendees) (November 26).

### ANALYTICAL CHEMISTRY

**DR. JASON C. WHITE** met with Professor Saion Sinha of the University of New Haven to discuss collaborative research and publications (November 1); attended the second annual meeting of the Sustainable Nanotechnology Society (SNO) in Santa Barbara CA and gave a lecture entitled "Engineered nanomaterials and agricultural crops: Co-contaminant interactions and trophic transfer" (35 attendees) (November 3-5); attended the Working Lands Alliance annual luncheon at the Capital Building in Hartford (November 13); along with **DR. BRIAN EITZER, MS. KITTI-PATH PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, AND DR. WALTER KROL** participated in the monthly FDA FERN chemistry cooperative agreement program (cCAP) teleconference call (November 14); attended the CT Farm Bureau annual luncheon in Glastonbury CT (November 15); participated in the FDA FERN data entry training webinar (November 18); along with **DR. BRIAN EITZER, MS. KITTI-PATH PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, AND DR. WALTER KROL** participated in a FDA and APHL webinar on "Control charts and trend analysis for ISO/IEC17025:2005" (November 18); along with **DR. BRIAN EITZER, MS. KITTI-PATH PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, AND DR. WALTER KROL** participated in the bimonthly ISO 17025 Accreditation mentor/mentee conference call with the Ohio Department of Agriculture (November 19); along with **DR. BRIAN EITZER, MS. KITTI-PATH PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, AND DR. WALTER KROL** participated in a FDA FERN-wide teleconference call on the 10<sup>th</sup> year of FERN and on APHL ISO Accreditation support programs (November 21); along with **DR. WALTER KROL** attended a meeting at CT DEEP Marine Fisheries in Old Lyme to discuss collaborative work with the University of Connecticut Center for Environmental Science and Engineering (CESE) and CT DEEP on the analysis of synthetic pyrethroids and methoprene in Long Island lobster tissues (November 22); along with **MR. MICHAEL CAVADINI, MS. TERRI ARSENAULT, AND MR. JOSEPH HAWTHORNE** hosted the quarterly meeting of the CAES Safety Committee (November 25); and met with Dr. Sarah Hale and Dr. Gerard Cornelissen of the Norwegian Geotechnical Institute and described Analytical Chemistry Department programs and research (November 26).



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**DR. BRIAN EITZER** attended the monthly Laboratory Preparedness Advisory Group Meeting at the CT Department of Public Health Laboratory in Rocky Hill CT (November 4), and participated in conference call of the NACRW (North American Chemical Residue Workshop) Organizing Committee (November 14).

**DR. CHRISTINA ROBB** attended the webinar training course “2013 Select Agent Webinar from CDC and APHIS” (November 15) and attended the 2013 Eastern Analytical Symposium in Somerset, NJ from and as a board member, participated in Program Planning meeting, board meetings and chaired the technical session entitled “What’s in the Cabinet? Looking at Everyday Items in a New Light” (November 17-20).

**MR. JOSEPH HAWTHORNE** participated in the FDA Training Course LB401: Mobile Laboratory Training for Chemists in Jefferson Arkansas and upon course completion, is now a member of the FDA’s Mobile Laboratory Deployment Cadre, comprised of state and FDA employees that can be deployed nationwide for scheduled or emergency testing of food and/or drug materials for chemical contaminants (November 17-23).

**MS. KITTIPATH PRAPAYOTIN-RIVEROS** participated in a conference call with the Connecticut State Department of Consumer Protection and FDA audit team for the Manufactured Food Regulatory Program Standard (MFRPS) (November 13) and participated along with **MS. VICKIE BOMBA-LEWANDOSKI** in a seminar on PC and Mobility Symposium at Bureau of Enterprise Systems and Technology (BEST) in Hartford (November 20).

## ENTOMOLOGY

**MS. KATHERINE DUGAS**, with **MS. ROSE HISKES**, presented Connecticut’s Forest Pest Outreach and Survey Program during the multi-state review webinar conducted by USDA APHIS PPQ (17 states participated) (November 6); with **MS. ROSE HISKES**, put on a luncheon for the UConn Master Gardener Coordinators who volunteer for us in the Forest Pest Outreach and Survey Program at the UConn West Hartford campus (8 attendees) (November 20); with **MS. ROSE HISKES** and **DR. CLAIRE RUTLEDGE**, assisted Dr. Joe Elkinton, UMass, with placement of winter moth traps at high risk sites in Shelton, Milford, and Mystic (November 26).

**DR. LAURA ESTEP HAYES** gave a talk titled “Lyme Disease in Connecticut: Epidemiology and Control” at the Cheshire Library in Cheshire (9 adult attendees) (November 17).

**MS. ROSE HISKES** updated the Connecticut Maple Syrup Producers on the Asian longhorned beetle and Emerald ash borer situation via e-mail (November 1); with **MS. KATHERINE DUGAS**, presented Connecticut’s Forest Pest Outreach and Survey Program during the multi-state review webinar conducted by USDA APHIS PPQ (17 states participated) (November 6); with **MS. KATHERINE DUGAS**, put on a luncheon for the UConn Master Gardener Coordinators who volunteer for us in the Forest Pest Outreach and Survey Program at the UConn West Hartford campus (8 attendees) (November 20); participated in the Connecticut Invasive Plant Working Group symposium planning committee meeting at the Valley Lab in Windsor (November 20); with **MS. KATHERINE DUGAS** and **DR. CLAIRE RUTLEDGE**, assisted Dr. Joe Elkinton, UMass, with placement of winter moth traps at high risk sites in Shelton, Milford, and Mystic (November 26).

**DR. CHRIS T. MAIER** was interviewed about a new periodical cicada in Connecticut by Patrick Skahill of WNPR radio (November 15).

**DR. GALE E. RIDGE** spoke about bed bugs at the Connecticut Environmental Health Association Fall Conference in East Haven (120 attendees) (November 1); presented a talk titled “The Complete Life Reproduction Study of the Common Bed Bug, *Cimex lectularius* L. (Heteroptera: Cimicidae), Including Behavior, Fecundity, and Longevity” at the Annual Meeting of the Entomological Society of America held in Austin, TX (November 9-14); was a presenter in a Canadi-



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an Broadcasting Corporation documentary film titled "Bite Me: The Bed Bug Invasion," which aired in Canada (November 14); in partnership with Diane Jorsey and Sherill Baldwin of DEEP, ran a bed bug training program for the recycling and refurbishing industries for Connecticut, Massachusetts, and Rhode Island, held at Middlesex Community College in Middletown (25 attendees) (November 21).

**DR. CLAIRE E. RUTLEDGE** gave an interview about biological control of Emerald ash borer to Gregory Hladky of the New Haven Advocate, which resulted in an article in the November 14 issue titled "Insect Wars" (November 6); gave a talk titled "Emerald Ash Borer in Connecticut" to the Oxford Land Trust in Oxford (23 adult attendees) (November 18).

**DR. VICTORIA L. SMITH** participated in the annual Forest Health Cooperators Meeting, sponsored by the US Forest Service, held at Southern Maine University in Gorham, Maine, and reported on aerial survey, forest health surveys, and forest conditions (20 participants) (November 20-21).

**DR. KIRBY C. STAFFORD III** spoke on the Emerald ash borer quarantine and then on the firewood regulations at an informational forum for the CT Professional Timber Products Association held at Sessions Woods in Burlington (84 attendees) (November 5); presented a talk titled "Expansion of zoonotic Babesiosis and Lyme disease and comparison with human cases in Connecticut, 2001-2010" at the Annual Meeting of the Entomological Society of America in Austin, TX (November 10); with **DRS. GOUDARZ MOLAEI, SCOTT WILLIAMS, and LAURA HAYES**, spoke with representatives of U.S. Biologics, Inc., about research opportunities (November 21); attended a presentation by Gregory Gallo, UConn Office of Economic Development, on patents in the Slate Board Room (November 22); and was visited by Linda Grace from Meril to discuss a new canine tick and flea product (November 26).

**DR. KIMBERLY A. STONER** spoke on "Conserving Pollinators in our Horticultural Businesses" at a conference for nursery and greenhouse growers on biological control held in Sturbridge, MA (105 attendees, including 26 from Connecticut) (November 6); led a meeting of the subcommittee on Lead and Arsenic in Soil of the Urban Agriculture Working Group for the City of New Haven, which is working on a publication of Best Management Practices for Gardening in Soils with Lead (7 attendees) (November 12); participated in a meeting of the Urban Agriculture Working Group for the City of New Haven, held at City Hall (10 attendees) (November 14).

## ENVIRONMENTAL SCIENCES

**DR. PHILLIP ARMSTRONG** attended the Annual Meeting of the American Society of Tropical Medicine and Hygiene in Washington D.C. and presented the talk "A New Insect-Specific Flavivirus Infecting *Culiseta melanura* mosquitoes" (November 15).

**MR. GREGORY BUGBEE** with **MS. JORDAN GIBBONS** gave an Invasive Aquatic Plant Identification Seminar at the Connecticut Envirothon at Eastern Connecticut State University in Willimantic (Approx. 75 attendees) (November 9); and with Jordan Gibbons spoke to a 2nd grade class at the Beecher Magnet School in New Haven on "Soil and Plants" (Approx. 25 attendees) (November 29).

**MR. JOHN SHEPARD** with **MR. MICHAEL THOMAS**, conducted a hands-on workshop on mosquito biology and spoke about the Mosquito Trapping and Testing Program to a group of 14 students and 2 teachers from Co-op Arts and Humanities High School in New Haven as part of the Yale-Peabody Fellows SEPA NIH program on mosquito biology (November 13); and spoke to four 7<sup>th</sup> grade science classes (via Skype) about mosquito collection techniques and answered questions about mosquito biology from students at the STEM Academy at Rogers Park Middle School in Danbury as part of the Yale-Peabody Fellows SEPA NIH program on mosquito biology (102 students, 2 teachers) (November 19 - 20).

**DR. JOSEPH PIGNATELLO** attended the Methyl Bromide Outreach and Alternatives annual conference in San Diego and presented a lecture on Catalyzed Combustion of CH<sub>3</sub>Br: Mecha-



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nism And Dry Scrubbing of Br Byproducts (November 4-6); attended the annual meeting of the North American Chapter of the Society for Environmental Toxicology and Chemistry in Nashville, TN and gave a lecture on "Influence of Molecular Structure and Adsorbent Properties on Sorption of Organic Compounds to a Temperature Series of Wood Chars" by J.J. Pignatello, Charisma Lattao, and others (audience of about 40) (November 21); and hosted visitors, Prof. Gerard Cornelissen and Dr. Sarah Hale, from the Norwegian Geotechnical Institute, Oslo to discuss collaborative research (audience of approximately 50) (November 25-26).

**MR. MICHAEL C. THOMAS** with John Shepard conducted a hands-on workshop on mosquito biology and collection techniques to a group of 14 students and 2 teachers from the Co-op Arts and Humanities High School in New Haven participating in the Yale-Peabody Fellows Program (November 13).

## FORESTRY AND HORTICULTURE

**DR. ABIGAIL MAYNARD** reported on Station activities at a quarterly meeting of the Council on Soil and Water Conservation in Windsor (16 adults) (November 14); judged AP Biology projects at Hamden Hall Country Day School (15 children, 1 adult) (November 21); and discussed the New Crops Program at the Offinger Farm in Wilton and the Murphy Farm in Weston (November 21).

**DR. JEFFREY WARD** along with **MR. JOSEPH P. BARSKY**, meet with Keith Cudworth, White Memorial Foundation, to discuss roadside forest management (November 13); visited by Linda Tomasso, Harvard graduate student, to discuss forest dynamics and carbon modelling (November 6); spoke on tree identification, forest measurements, and ecology to students from Coop High School, New Haven (9 students, 2 teachers) (November 6); along with **MR. JOSEPH P. BARSKY**, meet with Peter Connorton, Manchester Water Company, to discuss roadside forest management (November 13); spoke on woodlot management to the Oxford Land Trust (27 attendees) (November 18); interviewed about beech bark disease and the importance of beech in Connecticut's forest by Bob Miller of the Danbury News-Times (November 22).

**DR. SCOTT WILLIAMS** with **MR. JOSEPH P. BARSKY**, **MR. MICHAEL R. SHORT**, and **MS. MEGAN FLOYD**, hosted the Connecticut FFA Forestry Career Development Event at Lockwood Farm (November 6); gave an invited lecture titled "Ecological interconnectedness between a native ectoparasite, an alien invasive shrub, a native rodent, and a native invasive mammal and potential health impacts to humans" to the Potapaug Chapter of the National Audubon Society Lecture Series, Old Lyme (29 attendees) (November 7); taught a lesson to the 6th grade science class at St. Thomas's Day School on symbiotic relationships including blacklegged tick parasitism and disease transfer, New Haven (23 students, 3 teachers) (November 19); attended an executive committee meeting of the Connecticut Urban Forest Council, Middlefield (November 22); and with **MR. MICHAEL R. SHORT** and **MS. MEGAN FLOYD** hosted the 6th grade science class from St. Thomas's Day School and demonstrated invasive species removal techniques and toured the Station grounds and explained other ongoing research at the Connecticut Agricultural Experiment Station, New Haven (23 students, 3 teachers) (November 25).

## PLANT PATHOLOGY AND ECOLOGY

**DR. SANDRA L. ANAGNOSTAKIS** gave a talk titled "Old Chestnut Trees in England" to the New Haven Garden Club in New Haven (40 attendees) (November 4).

**DR. SHARON M. DOUGLAS** participated in a research update conference call of the Boxwood Blight Working Group (November 1); participated in the monthly meeting of the Board of Directors of the CTPA (12 participants) (November 12); and organized and chaired a meeting of the CTPA Education Committee to review topics for workshops for 2014 (8 participants) (November 18).

**DR. WADE H. ELMER** gave a presentation titled "Comparison of *Fusarium* spp. composition



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between stressed and healthy *Spartina* spp. in Atlantic marshes in North and South America” at the biennial meeting of the Coastal Estuarine Research Foundation in San Diego, CA (32 attendees) (November 3-6); met with Sarah Hale and Gerard Cornelissen from the Norwegian Geotechnical Institute, Oslo, Norway, to discuss biochar research (November 25).

**DR. FRANCIS J. FERRANDINO** attended the Annual Meeting of NE-1020, “Improved Grape and Wine Quality,” in Nebraska City, NE, 5-7 November 2013. This meeting afforded Dr. Ferrandino with the opportunity to confer with colleagues in the fields of Viticulture and Enology and deliver a report on the progress made in the past year in Connecticut.

**MS. MARY K. INMAN** gave a talk titled “Fruit Trees in the Home Garden” to the Burlington Garden Club in Burlington (26 attendees) (November 14); and gave a talk titled “Maintaining Healthy Perennials” to the Portland River Valley Garden Club in Portland (23 attendees) (November 20).

**DR. ROBERT E. MARRA** gave a lecture titled “Tropical Storms, Hurricanes, and Superstorms: Impacts and Influences on Tree Diseases” to the Federated Garden Club’s Environmental Studies School at the Kellogg Environmental Center in Derby (40 adult attendees) (November 7); and met with staff at Great Mountain Forest in Norfolk, CT, to site study plots for research that will take place there this summer (November 19).

## VALLEY LABORATORY

**DR. RICHARD COWLES** and Michael Dukette (Harrell's Turf Supply) spoke on "Annual bluegrass weevil: Is it time to change your perspective?" at Harrell's Turf Supply educational seminar, West Boylston, MA, November 12 (200 attendees). He spoke via phone conference to the Red Tomato marketing group about neonicotinoids and other pesticide impacts on bees, November 12 (10 attendees).

**DR. TODD L. MERVOSH** met Mrs. LaFlamme and students from the Suffield High School Agriscience Program to collect soil samples on the Suffield Town Green and talk about soil fertility in preparation for planting of trees next spring (1 teacher, 4 students) (November 20); and participated in a general meeting and symposium planning meeting for the Conn. Invasive Plant Working Group at the Valley Laboratory (November 20).



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## ARTICLES OF INTEREST NOVEMBER 2013

### 2013 Connecticut-FFA Forestry Career Development Event, Lockwood Farm

On November 6<sup>th</sup> Lockwood Farm was the site of the 2013 Connecticut-FFA Forestry Career Development Event. This marks the 2<sup>nd</sup> year the event has been hosted by the Department of Forestry & Horticulture at Lockwood Farm. The Forestry Career Development Event evaluates students' knowledge of forest management practices, tree and wood products identification, forest mensuration, map reading skills and industry safety standards.

Thirty five students from 9 State FFA Chapters participated in this years' event: Lebanon Regional FFA – Lyman Memorial High School, Woodbury FFA – Nonnewaug High School, Lyman Hall FFA – Lyman Hall High School, Suffield Regional FFA – Suffield High School, Southington FFA – Southington High School, Ledyard FFA – Ledyard High School, Wamogo FFA – Wamogo Regional High School, Storrs Regional FFA – EO Smith High School and Housatonic Valley FFA – Housatonic Valley Regional High School.

The students took a 50 question exam, testing their general knowledge of forestry and the forest. They then had to identify 25 pieces of forestry related tools and equipment, followed by a 20 specimen tree identification exam and finally a timber cruising practicum. The students were then allowed to participate in two team events; a map interpretation practicum and a chainsaw parts and troubleshooting practicum.

The 4-student team from EO Smith High School Agriculture Education Program finished in first place and will represent The State of Connecticut in regional and national competition at the 2014 Eastern States Exposition and National FFA Convention in Louisville, KY.

Dr. Scott Williams, Michael Short, J.P. Barsky and Megan Floyd, all in the Department of Forestry & Horticulture organized and oversaw the event. Former Station staff members Geoffrey Picard, Emily Picard, Vikki Christian and Lauren Bspuda were on hand as teachers. Rich Ccarelli, Research Farm Manager was kind enough to let us use the facilities at Lockwood Farm.



Group picture. Photo credit M. Short

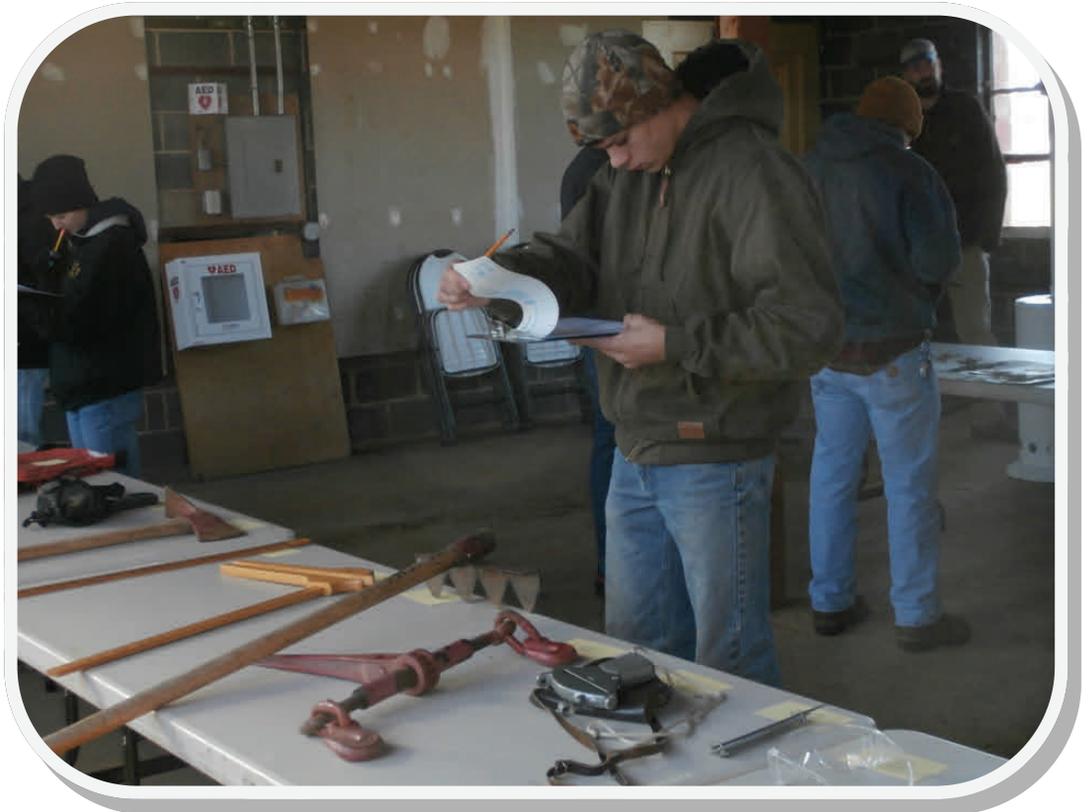


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Tree identification. Photo credit M. Short



Chainsaw team event. Photo credit M. Short



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## DEPARTMENTAL RESEARCH UPDATES NOVEMBER 2013

### ANALYTICAL CHEMISTRY

Wang, H.; Wu, F.; **White, J.C.**; Holder, P.A.; Xing, B. 2013. Engineered nanoparticles may induce genotoxicity. *Environ. Sci. Technol.* 47:13212-13214.

**Abstract-** Dramatic increases engineered nanoparticle (ENPs) use has resulted in much greater potential for environmental and human exposure to these materials. Although some report minimal receptor response to ENP exposure, the majority of the literature indicates toxicity by a wide range of measures. For plants, the most common toxic responses upon exposure include reduced germination or growth, membrane damage, impaired photosynthesis, slowed/reduced reproductive development, and mortality. Commonly described toxic responses for animals exposed to ENPs include cytotoxicity by necrosis or apoptosis, tissue or organ-level damage, growth inhibition, impaired reproduction and/or development, and mortality. Although limited human exposure to high levels of ENPs can occur occupationally, widespread low dose exposure can occur through a variety of ENP-containing consumer products, including textiles, cosmetics, food packaging, for which the potential risks are poorly understood.

A "Web of Science" search found 2567 articles with the results Topic=(nanoparticle) AND Topic=(toxicity), while there are only 136 articles with results Topic=(nanoparticle) AND Topic=(genotoxicity). However, mounting evidence shows that ENP exposure may induce mammalian cell genotoxicity, as well as in bacteria, and plants including soybean and radish. These findings suggest potential long-term risk and harm to both ecosystems and humans. The reported genotoxic responses range from oxidative DNA damage to point mutations and altered gene expression. The ENPs shown to generate genotoxic responses include metal/metal-oxide nanoparticles (TiO<sub>2</sub> and CuO), fullerenes, and carbon nanotubes. Therefore, our viewpoint is that genotoxicity can be induced by ENP exposure and the mechanisms driving this molecular response need to be thoroughly characterized to enable adequate evaluation, prediction and management of risk.

### FORESTRY AND HORTICULTURE

Dreyer, G.; and **J.S. Ward.** 2013. Right tree, right, place. *Connecticut Gardener.* 19(1): 20-22.

**Abstract:** This brief informative article discusses the importance of importance of planting trees and shrubs with shorter mature heights near utility lines to reduce disruption of electrical and telecommunication services during severe weather. Abbreviated lists of shorter trees and shrubs are included along with a link to the full list that was included in the State Vegetation Management Task Force Final Report.

**Magnarelli, L. A., S. C. Williams,** S. J. Norris, and E. Fikrig. 2013. Serum antibodies to *Borrelia burgdorferi*, *Anaplasma phagocytophilum*, and *Babesia microti* in recaptured white-footed mice. *Journal of Wildlife Diseases* 49:294-302.

**Abstract-** A mark-release-recapture study was conducted during 2007 through 2010 in six tick-infested sites in Connecticut (USA) to assess changes in antibody titers for *Borrelia burgdorferi* sensu stricto, *Anaplasma phagocytophilum*, and *Babesia microti* in *Peromyscus leucopus* (white-footed mice). There was an overall recapture rate of 40%, but only four tagged mice were caught in two or more years. Whole-blood samples were obtained from 557 mice. Sera were analyzed for total antibodies to *B. burgdorferi* and *A. phagocytophilum* by using whole-cell or recombinant (VlsE or protein 44) antigens in a solid-phase enzyme-linked immunosorbent assay (ELISA) or to whole-cell *B. microti* by indirect fluorescent antibody staining methods. Seropositivity rates were highly variable for *B. burgdorferi* (56% to 98%), *A. phagocytophilum* (11% to 85%), and *B. microti* (11% to 84%), depending on the site and time of sampling. Of the 463 seropositive mice, 206 (45%) had antibodies to all three pathogens. There were changes in antibody status



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for some mice from negative to positive (117 seroconversions) or from positive to negative (55 reversions). Prevalence of seroconversions was 10.1% of 417 mice for *B. burgdorferi*, 18% of 306 mice for *A. phagocytophilum*, and 6.6% of 304 mice for *B. microti*; reversion rates were 5.3%, 5.9%, and 4.9%, respectively. Antibodies to all pathogens tended to persist in some mice over several weeks, suggesting possible continued infections. In other individuals, the marked declines in titration end points to negative status may indicate possible elimination of a certain pathogen, such as *A. phagocytophilum*, or that mouse immune systems ceased to produce antibodies despite an existing patent infection.

**Ward, J.S., S.C. Williams, and T.E. Worthley.** 2013. Japanese barberry control methods reference guide for foresters and professional woodland managers. Connecticut Agricultural Experiment Station Special Bulletin - February 2013. 12p.

Abstract: This handbook provides practical information on controlling Japanese barberry that is based on our research over the past seven years. Written for the practicing professional, but accessible to private landowners, the handbook discusses the advantages and limitations (including costs) of using mechanical, herbicide, directed heating, and combination treatments.

**Ward, J.S. and S.C. Williams.** 2013. Treating Japanese barberry (*Berberis thunbergii*) during the dormant season. P. 182-191 In Proceedings 18th Central Hardwood Conference. USDA Forest Service General Technical Report NRS-P-117. 531 p. [CD-ROM].

Abstract: Japanese barberry (*Berberis thunbergii*) is an invasive shrub that can suppress forest regeneration and increase the risk of exposure to Lyme disease. In 2008, we began a study in central Connecticut to examine the efficacy of treating barberry infestations during the dormant season (October-March). Techniques included basal spray (triclopyr in oil) and clearing saw cutting with a wet-blade application of triclopyr. Dormant season techniques were compared with a glyphosate foliar spray applied in September. Foliar application resulted in a greater reduction of barberry cover (94 percent) compared to basal spray (84 percent) and wet-blade treatments (74 percent). Treatment effectiveness did not differ among months for either of the dormant season techniques. Labor costs did not differ among techniques, averaging 0.13 hours/acre/percent cover (i.e., 3.9 hours for a 1 acre stand with 30 percent barberry abundance). There was a large difference among treatments in amount of herbicide applied with 0.6 ( $\pm 0.1$ ), 1.4 ( $\pm 0.4$ ), and 2.8 ( $\pm 0.4$ ) ounces/acre/percent cover for wet-blade clearing saw, foliar spray, and basal spray applications, respectively. While not as effective as foliar spraying, wet-blade clearing saw and basal spray applications provide an opportunity to control barberry during the dormant season. Wet-blade clearing saw technique can reduce the amount of applied herbicide.

**Ward, J.S., T.E. Worthley, J.P. Smallidge, and K. Bennett.** 2013. Northeastern Forest Regeneration Handbook, revised. USDA Forest Service, Northeastern Area State and Private Forestry. NA-TP-03-06. 59p.

Summary: This handbook has been prepared to help readers develop an appreciation of how northeastern forests develop and an understanding of forest regeneration concepts, including the importance of disturbance. This information will help landowners and other land use decisionmakers, in concert with professional foresters, make informed decisions about forest regeneration options tailored to their management objectives.

**Ward, J.S.** 2013. Influence of disturbance on stand development during deciduous forest succession in Connecticut. P. 93-104 In Proceedings 18th Central Hardwood Conference. USDA Forest Service General Technical Report NRS-P-117. 531 p. [CD-ROM].

Abstract: Eighty years of data on stand development on 39 strip transects were used to



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elucidate the influence of disturbance on forest composition. Transects were measured at 10-year intervals between 1927 and 2007, except for 1947, and the resulting data include records of 35,953 stems. Disturbances included a wildfire in 1932, single-year defoliations (1964, 1972, 1981), and multi-year defoliations (1961- 1963, 1971-1972, 1981). Wildfire reduced basal area by 46 percent. During the first defoliation period, oak basal area mortality averaged 36 (multi-year) and 12 percent (single-year). In 2007, oak density (stems per acre) on burned transects in 2007 was twice that observed on unburned transects, 90 and 42; while maple density was higher on transects that had had only single-year defoliations (190) compared with multiyear defoliation (119). In contrast, birch density was lower on transects with single year defoliations (97) compared to multi-year defoliation (198). Oak ingrowth was highest following wildfire, 244 stems per acre per decade ( $SA^{10}$ ) and was negligible during subsequent decades, 6  $SA^{10}$ . Transects with multi-year defoliations averaged 80 birch  $SA^{10}$  compared with 44 maple  $SA^{10}$  between 1967 and 1997. During that same period, maple ingrowth averaged 35  $SA^{10}$  and birch ingrowth averaged 14  $SA^{10}$  following single-year defoliations. Disturbance type has a long-term impact on forest composition.

**Ward, J.S.** 2013. Using vegetation to date clandestine graves. *Forensic Magazine*. May 2013 [[http://www.forensicmag.com/articles/2013/05/using-vegetation-date-clandestine-graves#.UcmJfTjD\\_cs](http://www.forensicmag.com/articles/2013/05/using-vegetation-date-clandestine-graves#.UcmJfTjD_cs)]

**Abstract:** Determining the postmortem interval (PMI) is a critical component of clandestine grave investigations. If investigators are able to find the grave within 24 hours of death, then pathologists can estimate the time of death. For shallow graves, forensic entomologists may be able use to insect succession and development to estimate PMI. Forensic anthropologists can assist with estimating the PMI for longer internments based on rate of decay and condition of the remains. Investigators may also be familiar with the potential of using biological matter such as pollen as a tool to estimate the season when a clandestine grave was created or DNA to identify plant fragments. It is less appreciated that the vegetation above and within the grave can also provide information on when a grave was created. However, the care taken to minimize postmortem trauma to the remains could inadvertently destroy this botanical evidence. The focus of this article will be to inform readers of potential botanical evidence that might be present at a site along with suggestions on proper documentation and preservation.

**Williams, S. C., A. J. DeNicola, T. Almendinger, and J. Maddock.** 2013. Evaluation of traditional hunting as an overabundant deer management technique in suburban landscapes. *Wildlife Society Bulletin* 37:137-145.

**Abstract:** Hunting has been the primary white-tailed deer (*Odocoileus virginianus*) management tool for decades. Regulated hunting has been effective at meeting management objectives in rural areas, but typical logistical constraints placed on hunting in residential and urban areas can cause deer to become overabundant and incompatible with other societal interests. Deer-vehicle collisions, tick-associated diseases, and damage to residential landscape plantings are the primary reasons for implementing lethal management programs, often with objectives of  $<10$  deer/ $km^2$ . There are limited data demonstrating that hunting alone in suburban landscapes can reduce densities sufficiently to result in adequate conflict resolutions or a corresponding density objective for deer. We present data from 3 controlled hunting programs in New Jersey and one in Pennsylvania, USA. Annual or periodic population estimates were conducted using aerial counts and road-based distance sampling to assess trends. Initial populations, some of which were previously subjected to regulated unorganized hunting, ranged from approximately 30-80 deer/ $km^2$ . From 3 years to 10 years of traditional hunting, along with organized hunting and liberalized regulations, resulted in an estimated 17-18 deer/ $km^2$  at each location. These projects clearly demonstrate that a reduction in local deer densities using regulated hunting can be achieved. However, the sole use of existing regulated hunting techniques in suburban are-



# STATION NEWS

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

## GRANT AWARDS NOVEMBER 2013

Cooperative Agreements funded by USDA APHIS PPQ:

Forest Pest Outreach and Survey Program, \$37,500.00

Early detection of exotic forest pests is critical to maintain the health of the urban and rural forest and also home and commercial landscapes. This project expands proactive legislative and inter-governmental outreach and systematic engagement of stakeholders and citizens to increase public understanding, acceptance and support of early detection, eradication or control of forest pests, particularly those of regulatory concern such as Asian longhorned beetle (ALB), Emerald ash borer (EAB) and other pests of concern to federal, state and public constituencies. This project is a region-wide, multi-year public awareness campaign aimed at messaging the threat that invasive forest pests pose to the nation's forests and environment in an effort to increase the likelihood that the public will change behaviors to look for and report suspicious pests which will help mitigate the impact of new infestations or reduce the spread of these invasive forest pests.

Cooperative Agricultural Pest Survey (CAPS), \$101,560.00

Connecticut needs to protect its production agriculture and natural environment from exotic insects, weeds and diseases that threaten to come in from other countries. The purpose of this project is to build the infrastructure of the CT CAPS program and enhance communication networking among targeted stakeholders to support detection and response efforts for exotic pests. The ultimate goal of this work plan is to further the Homeland Security Initiative by protecting our nation's and Connecticut's food production and natural resources from exotic pests and bioterrorism.

## JOURNAL ARTICLES APPROVED NOVEMBER 2013

**Cheah, C.A.S.-J.**, Pre-domestication predation characteristics in *Sasajiscymnus* (= *Pseudoscymnus*) *tsugae*, (Coleoptera:Coccinellidae) an exotic predator of the hemlock woolly adelgid. II. The adult. *Biocontrol*

**Cheah, C.A.S.-J.**, Pre-domestication predation characteristics in *Sasajiscymnus* (= *Pseudoscymnus*) *tsugae*, (Coleoptera:Coccinellidae) an exotic predator of the hemlock woolly adelgid. I. The larva. *Biocontrol*

Gardea-Torresdey, J.L., Rico, C., and **White, J.C.**, Trophic transfer of engineered nanomaterials in terrestrial environments. *Environmental Science and Technology*

**Hiskes, R. T.** 2013. Light Brown Apple Moth (*Epiphyas postvittana*) [http://www.ct.gov/caes/lib/caes/documents/caps/2013/light\\_brown\\_apple\\_moth\\_2013.pdf](http://www.ct.gov/caes/lib/caes/documents/caps/2013/light_brown_apple_moth_2013.pdf)

**Hiskes, R. T.** 2013. Pesticide Guide Toward Integrated Pest Management for Connecticut Arborists. <http://www.ct.gov/caes/cwp/view.asp?a=2826&q=448278&caesNav=>

**Hiskes, R. T.** 2013. Pesticide Guide Toward Integrated Pest Management for Connecticut Nurseries. <http://www.ct.gov/caes/cwp/view.asp?a=2826&q=448278&caesNav=>

**Hiskes, R. T.** 2013. Northern Black Widow, Southern Black Widow, *Latrodectus variolus*, *Latrodectus mactans*, Family Theridiidae. [http://www.ct.gov/caes/lib/caes/documents/publications/fact\\_sheets/entomology/black\\_widow\\_fact\\_sheet\\_13.pdf](http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/entomology/black_widow_fact_sheet_13.pdf)

**Hiskes, R. T.** 2013. Redheaded Flea Beetle, *Systema frontalis*, Coleoptera:Chrysomelidae. [http://www.ct.gov/caes/lib/caes/documents/publications/fact\\_sheets/entomology/](http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/entomology/)



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[redheaded\\_flea\\_beetle.pdf](#)

**Krol, W.J., Eitzer, B.D., Arsenault, T., White, J.C.,** Fontana, J., Kinney, S., and Sloan, E., Pesticide residues in produce sold in Connecticut in 2011 with concurrent surveillance for microbial contamination. *Station Technical Bulletin*

**Lattao, C.,** Cao, X., Mao, J., Schmidt-Rohr, K., and **Pignatello, J.J.,** Influence of Molecular Structure and Absorbent Properties on Sorption of Organic Compounds to a Temperature Series of Wood Chars. *Environmental Science and Technology*

**Vossbrinck, C.R.,** and Krinsky, W.L., Envenomation by *Trachelas tranquillus*, the broad-faced sac spider in Connecticut. *Journal of Medical Entomology*

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