

***“Cherish our Natural Heritage:
Managing Invasives to Promote Native Diversity”***

University of Connecticut-Storrs, CT

Lewis B. Rome Commons

Wednesday, October 1, 2008

Speaker Abstracts and Biographies

Keynote Speaker- Doug Tallamy

A Case for Native Plants

Abstract

With as many as 33,000 species imperiled in the U.S., it is clear that we must change our approach to gardening and landscaping if we hope to share the spaces we live and work with other living things. Native plants will play a key role in the restoration of our landscapes because only natives provide the coevolved relationships required by animals. By supporting a diversity of insect herbivores, native plants provide food for a large and healthy community of natural enemies that keep herbivores in balance and our gardens aesthetically pleasing. Gardening in this crowded world carries both moral and ecological responsibilities that we can no longer ignore.

Biography

Doug Tallamy is Professor and Chair of the Department of Entomology and Wildlife Ecology at the University of Delaware in Newark, Delaware, where he has authored 68 research articles and has taught Insect Taxonomy, Behavioral Ecology, and other courses for 28 years. Chief among his research goals is to better understand the many ways insects interact with plants and how such interactions determine the diversity of animal communities. His new book “Bringing Nature Home; How Native Plants Sustain Wildlife in Our Gardens” was published by Timber Press in 2007 and was awarded the 2008 silver medal by the Garden Writer’s Association.

Stopping Water Chestnut at the Landscape Scale in the Connecticut River Watershed

Cynthia Boettner - Biologist, Silvio O. Conte National Fish and Wildlife Refuge

ABSTRACT

When the problematic invasive aquatic water chestnut (*Trapa natans*) was discovered in the Connecticut River watershed in 1998, the Silvio O. Conte National Fish and Wildlife Refuge began an effort to stop this invasive aquatic plant from spreading. If left unchecked, this plant can cover an entire shallow water body, shading native plants, depleting oxygen needed by fish and other aquatic animals and inhibiting recreation. The species is an annual that reproduces only from seed, so if seed productions can be prevented, populations can be controlled over time (seeds already in the system remain viable for up to twelve years).

A three-prong approach has been taken:

- Control the large source populations using a mechanical harvester and, when necessary, herbicide
- Find satellite populations by inspecting other water bodies
- Hand-pull small populations

A partnership formed to control the largest site (20 acres) in Holyoke, Massachusetts using a mechanical harvester (since 1999) and 2,4-D (since 2002). Partners have provided some of the funds, have secured outside funding on a year-to-year basis, and have lent expertise, equipment and much of their time to the project. A handful of other sites have required a shorter period of mechanical harvesting and can now be controlled through hand-pulling. The Connecticut Department of Environmental Protection (CT DEP) leads this effort in CT. In years when funding is available, the Conte refuge has engaged volunteers and hired contractors in MA, CT, NH and VT to search hundreds of lakes and ponds where it may have become established.

At sites where it is discovered, citizens and partnering organizations' staff and youth crews, hand-pull the plant. Hundreds of people have been involved through the years. The Conte Refuge leads the hand-pulling effort in Massachusetts and the CT DEP leads in Connecticut, with several landowners and citizens taking responsibility for the effort on the ponds they own or that they wish to "adopt."

The initiative, though challenging, is proving to be promising. As of 2008, hundreds of waterbodies had been inspected, with 41 water chestnut sites found and hand-pulled. Weights at long-term hand-pulling sites have been decreasing overall, though we have seen some periodic spiking in productivity. In some cases, sites that required a huge effort initially now only require only an inspection and minor hand-pulling. At other sites, especially large shallow sites where plants hide among other plants, populations remain steady (though we expect that they would have been entirely covered had they been left unchecked.) As populations in water bodies are brought under control over time, new ones require attention, making the project logistically challenging as the number of sites within our scope increases. An effort is being made to encourage local entities to take over responsibility for the water chestnut populations within their locale.

Partnerships and volunteers are critical to this entire effort

BIOGRAPHY

As Coordinator of the New England Invasive Plant Group, Cynthia serves those concerned about invasive plants by sending notices about events and opportunities, organizing workshops and conferences, and collaborating with the staff of the Invasive Plant Atlas of New England. As Coordinator of the Connecticut River Watershed Invasive Plant Control Initiative, she helps lead the effort to keep water chestnut in check in the watershed and works with partnering organizations on pale swallowwort control on Mt. Tom. Cynthia is past Coordinator of the Massachusetts Invasive Plant Advisory Group. Cynthia earned a Masters of Arts in environmentally oriented landscape design and planning from the Conway School of Landscape Design, and a Bachelor of Arts from the University of Michigan in Environmental Studies with a concentration in Biology. Prior to her position with the U.S. Fish and Wildlife Service, she worked for several years at the University of Massachusetts studying gypsy moths as well as native silk moths.

Controlling Oriental Bittersweet (*Celastrus orbiculatus*) from Individuals to Acres.

Glenn D. Dreyer - Director, Connecticut College Arboretum

ABSTRACT

Oriental Bittersweet is an invasive, woody, twining vine from eastern Asia that has become very common and problematic in Connecticut during recent decades. There are a number of effective methods to eliminate individual plants and even large patches of this vine. I will draw on research and experience at the Connecticut College Arboretum and Sachuest Point Wildlife Refuge, RI, to illustrate different techniques at different scales of infestation.

With relatively small areas of infestation, hand pulling effectively removes the plants. This is best utilized with very young plants, however even vines up to an inch or more in diameter may have a shallow and poorly developed root system that pulls out fairly easily. In a field situation where mowing is possible and tolerable, mowing every 1 to 2 weeks during the growing season will effectively control *Celastrus orbiculatus*. Mowing once or twice a season will only stimulate vigorous re-growth.

When pulling and mowing is not an option, large vines can be cut near the ground and the cut surface treated with a 25% solution of Roundup (Glyphosate at full strength, not pre-mixed) in water. A small household hand spray bottle works well for this type of application. This effectively inhibits the cut stump from resprouting. Vines left hanging in trees will die and take a number of years to disintegrate in place. Studies have proved that Glyphosate does not effectively root kill Oriental Bittersweet when used in a foliar application.

Effective root kill of bittersweet with a single foliar application is attainable using herbicides containing Triclopyr (Garlon 4, Garlon 3a, Crossbow, and Brush-B-Gone are some of the available commercial formulations). This herbicide has the added bonus of not damaging grasses, sedges, lilies and other monocot plants. An effective application technique for open areas infested with bittersweet is to mow or brush hog the site during the growing season and perform a foliar application on the regrowing bittersweet approximately one month later. Spraying, low, actively resprouting plants minimizes the amount of chemical needed, minimizes the nearby non-target plants damaged and minimizes spray drift. Small areas can be treated with back pack sprayers and the mixture selectively applied only to bittersweet and other undesirable plants. On a scale of multiple acres, an agricultural boom sprayer on a tractor or utility vehicle can be used to blanket spray areas mowed one month prior to the application. Late

season applications of Garlon at concentrations as low as 0.5% in water effectively eliminate bittersweet. At such low concentrations many broadleaved plants and all monocots will survive.

Herbicides must be used only according to specifications on the label. Read and obey the label.

BIOGRAPHY

MA Botany, Connecticut College; BS Ecology UC Davis. Glenn has been applying floristic and ecological knowledge to vegetation management problems for 25 years.

Organic Land Care Standards

Bill Duesing, Director, CT Chapter Northeast Organic Farming Association

BIOGRAPHY

Bill Duesing has been farming using organic methods for over 35 years on the Old Solar Farm in Oxford, and has been promoting a vigorous Connecticut food system and organic land care for that time. He practiced organic land care in the New Haven area in the 1980s and has worked for the NOFA Organic Land Care Program since 2000. He is currently using chickens to control invasive plants. He is the Executive Director of CT NOFA, the Northeast Organic Farming Association in Connecticut, president of the NOFA Interstate Council and past president of the Connecticut Farmland Trust. He was the founding director of the New Haven Ecology Project and its Common Ground High School (on a farm) and has created school gardens in Bridgeport, New Haven and Hamden. Bill is also a published author. His insightful book: *Living on the Earth: Eclectic Essays for a Sustainable and Joyful Future*, published in 1993, brings together all the issues we are just starting to talk about publicly today.

Co-occurrence of invasive and rare plant species in New England woodlands: spatial patterns and evidence of impacts

Elizabeth Farnsworth- Consulting Biologist

ABSTRACT

The nature and scope of invasive species' impacts on rare plants need to be definitively articulated. Data from IPANE as well as comprehensive Conservation and Research Plans produced by the New England Wild Flower Society for listed plants in New England provide critical, concrete information on the biogeographic distribution of invasive species at rare plant occurrences, their associations with multiple habitat variables and other threats, and

possible correlations with rare plant population declines.

Twenty-two rare plant species documented from Connecticut forests were examined for evidence of impacts from co-occurring invasive species. Species of floodplain forests and forested wetlands were compared to species inhabiting dry upland forests and glades. Fifteen invasive species were identified as posing threats to rare forest plants, with *Alliaria petiolata* the most common, followed by *Lonicera morrowii*, *Berberis thunbergii*, and *Celastrus orbiculata*. From a review of the published scientific literature, I discuss the documented effects of these species on the native woodland flora, but stress that no explicitly experimental studies have specifically addressed the impacts on rare species.

The spatial distribution of invasive species at rare plant sites paralleled large-scale patterns of richness and frequency throughout the state, but invaded sites were disproportionately concentrated in New Haven County. Invasive species were noted as threats to 14 (63%) of the 22 rare woodland species – a higher proportion than previously reported for rare species across multiple habitat types in New England. Thirty-three (31%) of 106 rare plant populations studied had one or more invasive present, with a mean of two invasive taxa affecting each rare species. Among rare plants that co-occurred with invasives, invasive species posed threats to 41% of populations. Species of forested wetlands and floodplains showed slightly, but not significantly, higher rates of invasion than species of upland forests. Analysis of species from across New England indicate that invasives occurrences are disproportionately associated with roads and anthropogenic habitats (i.e., power lines, railroads). Declines observed in invaded rare plant populations are correlated with the same habitat variables that were positively associated with invasive species presence. Thus, invasive species are both a direct threat and a symptom of larger landscape variables that influence rare species' persistence. More research from scientific management trials is sorely needed to document the individual and synergistic effects of invasives and other threats on rare species of Connecticut woodlands.

BIOGRAPHY

PhD, Harvard University; MSc, University of Vermont; BA, Brown University

Elizabeth Farnsworth is a biologist, writer, scientific illustrator, and scientific consultant to numerous federal and regional conservation agencies, including the Trustees of Reservations, Natural Heritage Programs throughout New England, and the U. S. Forest Service. She is co-author of the “Connecticut River Boating Guide: Source to Sea” and the “Peterson Field Guide to the Ferns,” and is currently illustrating the forthcoming “Flora of New England” for the New England Wild Flower Society (NEWFS). She served for five years as Senior Research Ecologist with NEWFS, where she coordinated planning for the conservation and management of over 100 species of rare plants. She is a member of the graduate faculty of the University of Massachusetts at Amherst and the University of Rhode Island, and has taught at Smith College, Hampshire College, and the Conway School of Landscape Design. She has conducted scientific research on many ecosystems throughout the world, focusing on restoration and conservation, and has been awarded a Bullard Research Fellowship by Harvard University and a National Science Foundation Fellowship.

Management Options in Grassland

Kathleen Giorgi, Biologist, USDA-Natural Resources Conservation Service, Rhode Island

ABSTRACT

With the decline of many grassland dependent birds, hayland, meadow, and pasture restoration and maintenance has become a priority for NRCS and other organizations. Factors such as size, height of vegetation, amount of woody plants, distance to forest edge, surrounding landscape, and management techniques will all influence which birds are likely to breed at a particular site. Some grasslands won't be suitable breeding sites for any grassland birds, but they may play an important role as a stop over site for birds during migration. Moreover, these sites can be very valuable for other species, including pollinators, a group receiving more attention now with the declines in honey bees and other beneficial insects. Understanding what species are already using the site and are likely to use your grassland in the future, along with what time of year you can expect them should help guide what species you plant and how you maintain the field.

Invasive plants can become a major issue in grasslands, undermining efforts to support particular plants and animals. Herbaceous invasives are often a big concern when first establishing grasses. Invasive shrubs, such as multiflora rose and autumn olive, are often found dominating old fields since years ago these shrubs were commonly planted on farms in hedgerows and borders. Controlling invasives often requires a major initial attack with dedicated continual maintenance to ensure they are kept in check, but just as there are factors affecting what wildlife will use a site, there are factors, such as time, money, intended use of the site, and others that will determine what invasive treatments work best for your situation.

BIOGRAPHY

Kathleen Giorgi holds a B.A. in Biology from Clark University, Worcester, Ma, M.S. in Wildlife Conservation from University of Massachusetts, Amherst, MA. She has aided in the restoration and creation of over 20 grasslands throughout RI. The grasslands she has worked on have ranged in size from as small as 1 acre to over 60 acres (a moderately sized grassland to most, but large for RI). Locations have included abandoned gravel pits, old hayfields and pasture dominated by invasives, areas cleared of mature forest, and both on inland and coastal sites.

Update on Federal Efforts/Cooperative Weed Management Areas

David Gumbart- Assistant Director of Land Management, The Nature Conservancy

BIOGRAPHY

David holds a BA, from Middlebury College, and has 18 years with The Nature Conservancy of Connecticut. His previous work experience includes the Branford Inland Wetlands Commission, DEP Wildlife Division and Connecticut Agricultural Experiment Station. David is active locally as Chairman of the Killingworth Open Space Committee, former Chairman of the Conservation Commission, involved with the Killingworth Land Trust, and is a member of the Killingworth Lions.

ABSTRACT

The idea of a Cooperative Weed Management Area (CWMA) began as a partnership among multiple interest groups out west, following the devastating Yellowstone fires of 1988. With 1.2 million acres burned, and open to possible infestation by noxious weeds, federal, state and county agencies joined forces with environmentalists, ranchers and universities to plan invasive species control strategies at the landscape scale. Today, there are dozens of CWMA's and hundreds of participating groups across the country. New York state has many PRISM's already established (Partnership for Regional Invasive Species Management), and in New England, the US Fish & Wildlife Service and US Forest Service are playing key roles in establishing new CWMA's throughout our region. In Connecticut, the Eightmile River has recently been formally designated a Wild & Scenic River; this watershed will serve as an example of how and why a CWMA could benefit conservation efforts in Connecticut.

Mute Swans in Connecticut

Min T. Huang, Migratory Gamebird Program Leader - Connecticut Department of Environmental Protection

ABSTRACT

The mute swan (*Cygnus olor*) is an exotic species that originated in Europe and Asia. Beginning in the mid 1800's and through the early 1900's, mute swans were imported into this country as adornments for private estates, parks, etc. The first documented mute swan occurrence in Connecticut was in the mid-1950's and more than tripled between 1972 and 2002 from approximately 500 to over 1500 birds.

Mute swans are a threat to native habitats and species due to their voracious appetites, body size, fecundity, longevity, and aggressiveness. The ability of mute swans to consume more than 8 pounds (wet weight) of submerged aquatic vegetation (SAV) per day coupled with approximately another 20 pounds uprooted during feeding can have devastating effects on plant beds. Year-round mute swan presence can have negative effects on aquatic habitats and the native species associated with such ecosystems. Mute swans can also displace native wildlife. There is concern that a growing mute swan population in Connecticut could eventually impact our ground nesting shorebirds, some of which are threatened, or species of concern. Much concern also exists about the spread of swans into Connecticut's inland water bodies.

Although the impact of the non-native mute swan cannot be completely quantified at this time, data from studies in Connecticut and elsewhere, indicate that swans do have negative impacts on natural habitats. Additionally, historic problems created by non-native species in North America, the mute swans' potential for large-scale negative impact on native waterfowl and habitat, and a lack of evidence that natural causes will limit the population in the future, warrants the need to manage the mute swan population in Connecticut.

BIOGRAPHY

Min Huang has been the leader of the migratory gamebird program for the CT DEP since 2002. He grew up in Mansfield and received a BS in natural resource management and a BA in English from the University of

Connecticut. He conducted his Master's thesis on white-tailed deer at Frostburg State University in MD. He spent 2 years managing a Wildlife Management Area for the FL Fish and Wildlife Conservation Commission and 6 years managing big game and endangered species for the Washington Department of Fish and Wildlife. He is currently finishing up his doctorate work at the University of Connecticut.

The fruits of success: examining the interaction between European starlings and fleshy-fruited invasive plants.

Nancy LaFleur- Postdoctoral Fellow, University of Connecticut

ABSTRACT

Invasive plants and animals have become commonplace in many ecosystems. In southern New England, several of the most aggressive invasive plants, such as autumn olive, Oriental bittersweet, and multiflora rose, have seeds which are thought to be bird-dispersed. Research presented in this talk explores the connection between fleshy-fruited invasive plants and European starlings, a fruit-eating invasive bird, by investigating starling feeding preferences, movement patterns, and germination rates of seeds ingested by starlings.

BIOGRAPHY

Nancy holds a BS from Eastern Connecticut State University, a Ph.D. from the University of Connecticut, and a Postdoc from the University of Connecticut.

Tracking the spread of ornamental purple-leaved Japanese barberry to invasive populations in southern New England

Jessica Lubell-Assistant Professor of Horticulture, University of Connecticut

ABSTRACT

Japanese barberry (*Berberis thunbergii* DC.) was introduced to United States cultivation as a horticultural plant in 1875. By the 1920s, this plant had naturalized in many parts of New England. Contemporary barberry plants have purple foliage and are of the botanical variety *atropurpurea*. Currently there is interest in banning Japanese barberry and its purple-leaved forms even though little is known regarding the invasive potential of *B. thunbergii* var. *atropurpurea*. Such an act will result in economic losses for the nursery industry and loss of a highly adaptable landscape plant. Using amplified fragment length polymorphism (AFLP) genetic fingerprinting we tracked the genetic spread of a 20-year-old landscape *B. thunbergii* var. *atropurpurea* plant to a surrounding feral population in Willington, CT, and assessed the presence of *B. thunbergii* var. *atropurpurea* genetics in feral populations in southern New England. At the Willington site the landscape is undergoing a transition from agricultural land to woodland. Of the 45 plants within a 300 ft. radius of the landscape *B. thunbergii* var. *atropurpurea* plant, 14% were found to be its offspring. Despite the presence of *B. thunbergii* var. *atropurpurea* in the landscape for more

than 80 years we found minimal genetic influence in southern New England invasions. At three out of the five populations studied a small amount of purple barberry introgression was found. Although a feral purple-leaved plant was found at one site, only 10% of plants at the other two sites contained purple barberry genes and the percent purple genotype for each of these plants was less than 20%. This was somewhat surprising since it took only 30 years for *B. thunbergii* to become widespread. One possible reason why purple barberry has contributed so little is that the environmental conditions present in the landscape today do not facilitate spread as well as they did in the early 1900's. Land which is now forested was characterized by abandoned farmlands undergoing reforestation in the early 1900's, and this type of landscape condition favors barberry establishment. The minimal influence of *B. thunbergii* var. *atropurpurea* may also be due to reduced reproductive potential compared to *B. thunbergii*. The environmental conditions present at the Willington, CT site mimic those of the early 1900's which may why the *B. thunbergii* var. *atropurpurea* landscape plant has been so successful at this location.

BIOGRAPHY

Jessica received her doctorate in horticulture at the University of Connecticut in 2008. Her graduate research explored the invasion biology of Japanese barberry, a popular garden plant that has escaped to colonize natural habitats. Currently, she is working on developing novel native plants as replacements for invasive species. She is also interested in green roof cultivation particularly the identification of plants that are capable of growing in artificial green roof turf and withstanding the variable weather patterns in Connecticut. In 2008, she received the Outstanding Academic Achievement Award from the University of Connecticut's Provost's Commission on the Status of Women and the Women's Center.

A 33 year perspective on invasive plants in Connecticut's woodlands

Les Mehrhoff - Director, Invasive Plant Atlas of New England, Department of Ecology and Evolutionary Biology, University of Connecticut

ABSTRACT

This presentation discusses the recent history of non-native invasive plant species in Connecticut's woodlands. Data from the Invasive Plant Atlas of New England, regional herbaria, and observations is presented. Changes in numbers and distribution of species currently considered to be non-native invasive or potentially invasive plant species have occurred since the 1975. Some long-established non-natives have increased to the point of conservation concern. Others, uncommon in minimally-managed habitats in the late 1970s, are increasing. Some non-native species now acknowledged as invasive were not present in Connecticut in 1975. Until recently, some of the non-native invasive species were being distributed as ornamentals or in wildlife plantings; a few still are.

The status and history of key non-native species that invasive Connecticut forests will be the primary focus of this presentation. These species include Garlic Mustard, *Alliaria petiolata*, Porcelainberry, *Ampelopsis brevipedunculata*, Japanese Barberry *Berberis thunbergii*, Narrowleaf bittercress *Cardamine impatiens*, Oriental Bittersweet *Celastrus orbiculatus*, Burning bush *Euonymus alatus*, Japanese stilt-grass *Microstegium vimineum*, and Mile-a-minute vine *Persicaria perfoliata* (syn.: *Polygonum perfoliatum*). Changes in distribution and increase

in numbers will be discussed.

Pathways of introduction and vectors of invasive plants will be illustrated. Potential new invaders, some already present in Connecticut and some anticipated, will be illustrated. Hypotheses will be offered in hopes that others might find ideas for future research. The need for continued inventory, herbarium documentation, monitoring, and research is discussed.

BIOGRAPHY

Les Mehrhoff holds a B. S. from New England College, Henniker, NH, a M.S. from the University of Connecticut, and a Ph.D. University of Connecticut (Thesis: A phytogeographical analysis of the flora of Connecticut. His experience includes being a former Curator of UCONN's George Safford Torrey Herbarium, and a former Supervising Biologist of the DEP's Connecticut Geological and Natural History Survey. Les is Co-chair of CIPWG, 2008 Recipient of the Massachusetts Horticulture Society Gold Medal for work on invasive plants, current Curator of the New England Botanical Club Herbarium, and is working at the Arnold Arboretum on redoing a 1930 study of the spontaneous flora of the Arboretum.

Research Projects: Management of Pale Swallow-wort and Japanese Stiltgrass

Todd Mervosh- Weed Scientist, The Connecticut Agricultural Experiment Station

BIOGRAPHY

Todd holds a B.S., Agricultural Sciences, Univ. of Illinois, M.S., Agronomy / Weed Science, Univ. of Wisconsin, and a Ph.D., Agronomy / Weed Science, Univ. of Illinois. Since coming to CAES in 1994, Dr. Mervosh has conducted weed management research in a variety of crops, including field- and container-grown nursery stock (ornamentals), Christmas trees and pumpkins. He also has conducted experiments on control of invasive plants such as Oriental bittersweet, phragmites, pale swallow-wort, Japanese stiltgrass, and others. He provides advice to growers and other property managers about weed control issues, including the proper use of herbicides in a management program. Todd is a member of: Connecticut Invasive Plant Working Group, Northeastern Weed Science Society, and Weed Science Society of America.

Using Ecological Bridge Species in Grassland Restoration

Chris Miller, USDA-NRCS Plant Materials Specialist, Cape May Plant Materials Center

ABSTRACT

The difficulty in establishing native warm season grasses is that stands often take two three years to fully develop. Warm season grass growth is most often inhibited by two factors; a high percentage of seed dormancy and lack of good weed control. Warm season grasses are particularly sensitive to shading during the seedling stage. Although there are a few ways around these problems, one solution is to add non-competitive cool season grasses to the native grass mixes. This not only broadens plant diversity and inhibits competitive weed growth but also provides good cover while the slow developing warm season grasses become established.

The cool season companion grasses are divided into two broad categories; nurse crops and companion crops. Nurse crops are generally annual grasses that provide immediate and short term cover/residue. These grasses can also help reduce weed competition. Companion grasses, on the other hand, provide fairly quick cover but may persist for a few years depending on the species and site conditions. The trick is to seed these grasses at a rate that is non-competitive to the establishment of the warm season grasses. The nurse crops most commonly used with native warm season grasses are oats, barley, and annual ryegrass. The companion grasses used include Virginia (*Elymus virginicus*) and/or Canada Wildrye (*Elymus canadensis*), red fescue (*Festuca rubra*), hard fescue (*Festuca brevipila*), sheep fescue (*Festuca ovina*), redtop (*Agrostis gigantea*) and perennial ryegrass (*Lolium perenne*). The use and application of each of these grasses will be discussed in this presentation.

Without a doubt, most cool-season grasses are easier to establish than warm-season grasses. Initially, having a mix of the two has definite advantages. Nevertheless, if you are willing to be patient, the long term benefits of the warm-season grasses are well worth your time and effort.

BIOGRAPHY

Chris holds a B.S. in Agronomy from Penn State University, and a M.S. in Plant Science from South Dakota State University. His experience includes University of Maryland-Water Quality Extension Agent (Chesapeake Bay Program) - 4 years, State Agronomist USDA-SCS, Annapolis, MD (2 years), USDA-NRCS Plant Materials Specialist – New Jersey (18 years). He is a member of Society for Ecological Restoration, Soil and Water Conservation Society and American Society of Agronomy.

Connecticut Invasive Plants Council Update

Mary Musgrave, Department Head Plant Science- University of Connecticut

ABSTRACT

Since the last CIPWG meeting in 2006, substantial progress has been made by the Council. In 2007, the Legislature voted to appropriate \$1M over a 2-year period to implement a coordinated invasive plants program at the state level. The funds are administered by the CT-Department of Environmental Protection and support inspections, education, rapid response, and grants to municipalities for eradication projects. Through this support, staff from the CT Department of Agriculture inspect pet shops for aquatic plants that are banned by the state, and staff from the CT Agricultural Experiment Station do the same at nurseries for both aquatic and terrestrial plants. Two educational posters were distributed in 2008, and details on the grants program will be released shortly. Through the Council's efforts, porcelainberry, an unregulated plant that has been classified as invasive, has been voluntarily withdrawn from production and sale by the state's nursery industry. Discussions are currently underway with the state Department of Transportation to minimize the threat of invasions posed by plants growing along our highways. A matter of concern has been the continued failure of the legislature to pass important technical changes to the invasives bill. For example, current language prohibits movement of invasives, even for purposes of education. This prohibition limits efforts to increase public awareness and knowledge of invasive plants.

BIOGRAPHY

Mary holds a B.A. from Cornell University in Biological Sciences, and a Ph.D. Duke University, Botany. She was a Professor of Plant Stress Physiology, 1987 – 1999 at Louisiana State University, Associate Dean, University of Massachusetts, Amherst, 1999-2003, and currently is a Department Head, UConn, from 2003-present. She is Chair of the Connecticut Invasive Plants Council.

Organic Removal Methods and Project Budgets

Michael Nadeau, President and co-owner of Plantscapes Inc.

BIOGRAPHY

Michael Nadeau, president and owner of Plantscapes, Inc., is a founding member of the Northeast Organic Farming Association's Organic Land Care Committee, which published the first and only Standards for Organic Land Care in the country. He is an instructor of the NOFA Professional Organic Land Care Accreditation Course and past president of the CT Grounds Keepers Association. Michael is also a contributor to the Organic Lawn and Turf Course Manual. He is a designer and builder of ecological landscapes, with a passion for wetlands, meadows, woodlands, that increases the use of native plants and reduces high maintenance turf and synthetic pesticide and fertilizer use. His work with many CT town inland wetland commissions improved water quality in wetland habitats, restore native vegetation in both upland and bottom land environments.

Symposium Wrap-up

Charlotte Pyle - Landscape Ecologist, USDA-NRCS

BIOGRAPHY

Charlotte holds a BS Conservation of Natural Resources, from the University of California, Berkeley, a MS in Forestry, University of Tennessee, Knoxville, and a PhD Forestry/Landscape Ecology, from the University of Washington, Seattle. After a few jobs grooming harness and thoroughbred racehorses, Charlotte has worked mostly in the natural resources field beginning as a field technician for the US Forest Service. Subsequently, she worked in Great Smoky Mountains National Park and for the University of Connecticut. Currently, Charlotte works for the USDA Natural Resources Conservation Service where her work includes invasive plant concerns, developing appropriate choices of native plant materials for conservation plantings, and ecological review and recommendations.

Identification of Invasive Aquatic Plants

Roslyn Selsky - Research Associate, The Connecticut Agricultural Experiment Station

ABSTRACT

The Connecticut Agricultural Experiment Station Invasive Aquatic Plant Program (CAES IAPP) was formed in 2004 to survey the lakes and ponds of Connecticut for invasive aquatic plants and to conduct research on management methods. From 2004 to 2007, CAES IAPP has surveyed 133 Connecticut lakes and ponds for both native and invasive aquatic plants. Eleven invasive aquatic species were found, and a majority (62%) of the surveyed lakes had at least one invasive aquatic plant species. For many of these lakes, it was the first time that an infestation was detected by anyone and/or officially documented by a Connecticut government agency.

Information from the surveys, in the form of species location maps and transect abundance data, is freely available to the public on our website (www.ct.gov/caes/iapp) and published in various print sources. This information has been used by lake associations and lake professionals to develop management plans for existing infestations and prevention plans for possible future infestations.

CAES IAPP also helps prevent and detect early invasive aquatic plant infestations by teaching Connecticut residents how to identify invasive aquatic plants. In the past three years, seventeen workshops have been held in various locations around the state. About 550 participants from ninety-six Connecticut towns attended, including lake association members, lake managers, town conservation officers, Connecticut government agency personnel and concerned citizens. During the workshop today, participants will learn how to identify some of the Connecticut invasive aquatic plants and commonly confused natives through a lecture and hands-on identification. The workshop also will include information about survey and early detection techniques, as well as information on how to prevent introductions. Participants will be given folders with information on invasive aquatic plants, including a dichotomous key and laminated picture identification sheet.

BIOGRAPHY

Roslyn holds a BS in Ecology and Evolutionary Biology, a BA in Political Science, and MS Conservation and Biodiversity, The University of Connecticut. She has worked for the Connecticut Agricultural Experiment Station Invasive Aquatic Plant Program (CAES IAPP) since 2004, and has surveyed close to 100 Connecticut lakes and ponds for invasive aquatic plants. Prior to working at CAES IAPP, she worked for the Invasive Plant Atlas of New England (IPANE).

Controlling Japanese Barberry

Dr Jeffrey Ward - Chief Scientist, Department of Forestry and Horticulture Connecticut Agricultural Experiment Station

ABSTRACT

Japanese barberry (*Berberis thunbergii*) has spread beyond manicured landscapes and is naturalized in at least 31 states. Throughout the region, especially where white-tailed deer (*Odocoileus virginianus*) populations are high, dense barberry stands develop in the forest understory. These dense barberry stands are associated with a paucity of both tree regeneration and herbaceous plants. Our research has found that excellent control of Japanese barberry can be achieved using either propane torches or herbicides. Propane torches provide a non-chemical alternative where in parks, nature preserves, or forests where herbicide use is restricted and where barberry infestations are still light. Controlling barberry has the additional benefit of reducing tick populations. Practical insights into controlling barberry infestations will be provided. Cooperators include: University of Connecticut Department of Cooperative Extension, Aquarion Water Company, CT DEP – Forestry Division, Propane Research and Education Council, Regional Water Authority, and The Nature Conservancy.

BIOGRAPHY

Dr. Jeffrey S. Ward received his BS (forest biology) and MS (silviculture) at The Ohio State University, and his PhD (forest ecology) at Purdue University. His research has included controlling invasive species such as barberry; long-term population dynamics of woody plants; the impact of deer browsing on landscape plantings, conifer plantations, and forest regeneration; alternative forest management practices; urban tree populations; and use of prescribed fire to maintain oak. He is the Chief Scientist of the Department of Forestry and Horticulture at The Connecticut Agricultural Experiment Station in New Haven, Connecticut.

Overabundant Suburban White-Tailed Deer as Seed Dispersal Agents

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ABSTRACT

We examined the role of white-tailed deer (*Odocoileus virginianus*) in the dispersal of viable seeds in an intact forest bordered by medium-density housing in southern Connecticut. Estimated deer density on site was 23 deer/km² with higher local densities along the suburban/woodland interface. A total of 566 pellet groups were gathered in summers through early winters of 2002 - 2005. After vernalization at 5°C for 60 days, pellet groups were placed in a growing medium in a temperature controlled greenhouse for six months. A total of 11,512 seedlings germinated from 61% of pellet groups, which included 86 taxa. Seeds of 40 species confirmed not native to the United States germinated from pellet groups. Given mean germination data of more than 20 germinants/pellet group and deer population estimate, each deer on site during the sampling interval had the potential to disperse over 500 viable seeds/day, which included approximately 350 seeds of exotic species. Median maximum travel distance of does for a 24-hour period was 568 m with a maximum distance of 5,932 m. Deer were likely consuming seeds in disturbed and/or edge habitats, which are often adjacent to residential housing, and transporting them into forested areas where exotic plants are not as prevalent. Birds, small mammals, and abiotic factors are known dispersal agents for plants. These results indicate that white-tailed deer are another important dispersal agent of seeds, particularly exotics. Thus, white-tailed deer may not only alter vegetation structure through direct browse damage of established plants, but also indirectly by lowering reproductive output of native plants and simultaneously distributing seeds of exotic species.

BIOGRAPHY

Scott is an Assistant Agricultural Scientist II with The Connecticut Agricultural Experiment Station. Scott holds a B. A. Connecticut College, a M. E. S. Yale University School of Forestry and Environmental Studies, and a Ph. D. from the University of Connecticut. His experience includes researching the ecological and public health impacts of overabundant deer, exotic plant species, and their interaction. Scott is also an Associate Wildlife Biologist with the Wildlife Society.