

## CACIWC's 45th Annual Meeting and Environmental Conference held on October 29, 2022

The CACIWC Board of Directors extends their appreciation to the many members and guests who were able to attend our 45th Annual Meeting and Environmental Conference, our first in-person conference since 2019. The conference was hosted by Scarlett's Fine Events at Best Western Plus North Haven Hotel on Saturday, October 29, 2022.

After scheduling several virtual conference during the COVID-19 pandemic, the CACIWC Board of Directors and its Annual Meeting Committee worked throughout the year to organize our 2022 conference. We endeavored to bring our conference attendees the wide variety of informative workshops, exhibitor displays, lunch and refreshments that our members had missed during the last in-person conference three years ago. The theme of the conference, *"Celebrating the 50th Anniversary of Connecticut's Inland Wetlands and Watercourses Act,"* helped guide the focus of several of the conference presentations and workshops.



2022 Conference ballroom & attendees. Photo by Laura Magaraci.

### Keynote Speaker

We were pleased to welcome **Attorney Gregory A. Sharp** as our 2022 conference keynote speaker. Attorney Sharp followed to our conference theme in his keynote presentation entitled, *The 50th Anniversary of the IWWA: a Look Back and a Gaze Forward*,

which reviewed the history of the IWWA starting with its approval by the Connecticut General Assembly on May 1972 through its various amendments during the past decades. Attorney Sharp was uniquely qualified to discuss these issues, having represented local wetlands agencies as well as applicants and intervenors since the 1970s. He reviewed the impact of several court cases, discussed the strengths and weaknesses of the IWWA, and provided thoughts for possible future evolution of the act.



Keynote speaker Attorney Gregory A. Sharp.  
Photo by Laura Magaraci.

### Keynote speaker biography:

Attorney Gregory A. Sharp practiced environmental law for many years as a partner in the Environmental Practice Department of Murtha Cullina LLP, until his retirement in 2016.

Entering the private practice of law in 1979, he represented local wetlands agencies, as well as applicants and intervenors, in inland wetland permit proceedings. Prior to his retirement, he published numerous articles in *The Habitat* on legal developments under the Inland Wetlands and Watercourses Act.

He is a past chairman of the Connecticut Council on Environmental Quality (CEQ) and of the Connecticut Bar Association Section on Environmental Law. Mr. Sharp served for seven years in the Connecticut

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*Interim Editor: Alan Siniscalchi*  
*Associate Editor: Ann Letendre*

Correspondence to the editor, manuscripts, inquiries, etc. should be sent to Alan Siniscalchi at [TheHabitat@caciwc.org](mailto:TheHabitat@caciwc.org).

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## CACIWC News

As the article and photos in this issue of *The Habitat* illustrate, our **45th Annual Meeting and Environmental Conference** was a very special event for us, being our first in-person conference since the onset of the COVID-19 pandemic changed our world three years ago. At this conference, we welcomed not only our first in-person attendees, but our first face-to-face luncheon and exhibitors since our 42nd conference held back on November 23, 2019 at the Red Lion Hotel in Cromwell.

The conference was certainly the high point in our year-long celebration of **50th Anniversary Connecticut Inland Wetlands and Watercourses Act (IWWA)** and it helped us remember and honor the many hundreds of commissioners and staff who have dedicated their time and efforts to protect our inland wetlands habitats since the original IWWA bill was approved by the Connecticut General Assembly on May 1972.

Many members of our board and others worked tirelessly to ensure the success of this 2022 conference and we are very appreciative of all the comments and suggestions that we received. All of us are already working to plan our **46th Annual Meeting and Environmental Conference** with its theme, *Celebrating Connecticut's Conservation Commissions*. We will be sharing new information with you during the next few months!

While we celebrate our first in-person conference and plan for our next event, we have not forgotten the impact of this pandemic on our lives during these past three years. We remember the greater than 12,000 Connecticut residents who lost their lives to the SARS-CoV-2 virus variants, and honor the medical, public health, and frontline workers who helped our state throughout the pandemic. All of you

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## Journey to the Legal Horizon

by Attorney Janet Brooks

# Learning From the First 50 Years of the Inland Wetlands & Watercourses Act: Time for Your Input

For the 2022 Annual Conference CACIWC assembled a group of speakers who contribute in some way to the ongoing implementation of the wetlands act for a panel discussion. My fellow panelists were: Attorney Gregory A. Sharp (retired); Attorney Mark Branse, Halloran & Sage, LLP; Michael Klein, Senior Wetlands Scientist, Davison Environmental, LLC; Patricia Sesto, Director of Environmental Affairs, Town of Greenwich, with Darcy Winther, Connecticut Department of Energy and Environmental Protection (DEEP), as moderator. We were asked to look backwards and say what has worked and look forward to what could be improved.

We exchanged emails and met by Zoom to brainstorm before presenting our live panel discussion. With each interaction we found new ideas surfacing. Listing them from degree of difficulty to implement, the ideas fell into these categories: (1) implement a simple change while administering the Act; (2) revise an existing municipal regulation or adopt a new one; (3) amend the Inland Wetlands & Watercourses Act. While not a complete list, here are some topics the panel offered. A recurring issue is the inconvenience caused by consultants who “share” their revised report at the meeting or a mere hour or two before the meeting. That bad practice can be addressed by the adoption of a municipal regulation that specifies the

number of days prior to a meeting that additional materials (except for submissions by the public at a public hearing) must be received by the commission, applicant and intervenor. Even more simply, the chairperson can announce at every matter that is continued to a future meeting, that only materials received by a certain date will be considered. (The commission has the opportunity to offer an extension for the commission’s timely review at a later time or it can withdraw and refile, resetting the “clock” of deadlines.)

Some commissions seem to place unwarranted value on the original wetlands and water course map adopted 40+ years ago. Some go so far as calling it the “official” map. Those original maps, as stated in § 3.1 of the fourth edition of the DEP Model Regulations, *legal, continued on page 12*




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Downtown Danbury Streetscape Renaissance Project

# Collaborations in Connecticut to Protect Eastern Hemlocks

by Carole Cheah, PhD, Research Entomologist, Valley Laboratory,  
The Connecticut Agricultural Experiment Station (CAES), [carole.cheah@ct.gov](mailto:carole.cheah@ct.gov)

Connecticut has an estimated 1.76 million acres of forest land and is 58% forested. Most of Connecticut's forests are privately-owned (71%) while the remainder are state and municipally-owned lands. Eastern or Canadian Hemlock, *Tsuga canadensis* (L.) Carriere, is now the most abundant native conifer in Connecticut, according to the latest published assessments by the USDA Forest Inventory Analyses, Forests of Connecticut 2019. In 2019, eastern hemlock and eastern hemlock-white pine forest types were estimated at 28,100 acres in Connecticut with an estimated 42 million hemlock trees. While hemlocks predominate in the northwestern corner of Connecticut in Litchfield and Hartford counties, large areas of hemlock also remain in the northeast (Windham County), southeast (New London County) corners of the state, and important concentrations of



Figure 1. Watershed forests of the Barkhamsted Reservoir showing hemlock-lined feeder brooks

hemlocks still thrive along the Salmon River and other major tributaries of the Connecticut River. Hemlocks are an important component of watershed forests that capture, filter, store and protect Connecticut's drinking water reservoirs, especially in the north and the protection of headwater streams and their hemlock buffer zones are a major priority (Figures 1 & 2). Eastern hemlocks are considered a foundation species as they are long-lived, very shade-tolerant and provide critical structure, shelter, and habitat for many communities of plant and animal species. The dense shade provided by mature hemlock forests are also essential for thermoregulation of native trout streams and rivers, and riparian



Figure 2. Hemlocks along Hubbard Brook, a major source for the Barkhamsted Reservoir

hemlock forests shelter many state listed endangered, threatened and species of special concern. Hemlocks are also integral to many recreational areas on Connecticut state forests and parks, land trust, bird sanctuaries and public preserves.

The most serious ongoing insect threat to eastern hemlocks is the invasive exotic hemlock woolly adelgid, *Adelges tsugae* (HWA) (Figure 3). Originating from southern Japan, HWA was first



Figure 3. Hemlock woolly adelgid, *Adelges tsugae*, a serious non-native insect pest of eastern hemlocks and major causal agent for hemlock decline and mortality

reported in Connecticut in 1985 and quickly spread statewide by the late 1990s, resulting in extensive hemlock decline and mortality (Figure 4) in central areas along the lower Connecticut River and in

*collaborations, continued on page 13*

# Food Forests: Feeding a Community with Conservation

Connecticut towns and cities face a range of crises every day, all of them competing for limited funding and resources. Everyone is looking for a practical approach to addressing multiple issues including climate change, biodiversity loss, food insecurity, and community disconnection. This type of thinking that focused the City of Torrington's Conservation Commission on the goal of creating wild fruit orchards that are free to the community.

Also known as "food forests," these perennial gardens contain diverse plantings that mimic the complexity of nature, all while providing an abundance of mostly native fruits, nuts, and vegetables to whoever can harvest them. The goal is for these plantings to become self-sustaining and require little management once established. In addition to providing food, these places also serve as urban refuges for both wildlife and residents, whether they use blueberry bushes as nest

sites or enjoy the shade of a large mulberry tree on a hot day.

In November of 2022, Torrington's Conservation Commission partnered with the Heritage Land Preservation Trust to plant their second food forest in the City. Blueberries, hazelnuts, and peach trees were



November 2022 Community Planting Day  
Credit: Christine Altman

added to a section of Bowman Gardens, a community garden run through the Sullivan Senior Center. The trees and shrubs were provided, free-of-charge, by Brett Lehner, who has been supplying non-profits and municipalities with technical assistance and plants since 2017. He was inspired to start this work following a 3,500-mile bike ride in which he and a friend rode their bicycles across the country to raise money for community-based forest gardens, in collaboration with UConn medical school and the Northwest Conservation District.

On the heels of their recent success, the Torrington Conservation Commission and their partners are identifying food deserts in the City's most disadvantaged communities and are planning new forests within walking distance of them. Once the plantings are mature and bearing fruit, the Commission's focus will shift to education and outreach. They are committed to connecting residents to free and healthy food, by bringing neighborhoods together to celebrate the fruits of their labor.

Prepared by Nate Nardi-Cyrus Assistant City Planner/ZEO/  
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Department of Environmental Protection prior to commencing the private practice of environmental law.

Mr. Sharp received a Bachelor of Arts Degree from Dartmouth College, a Master of Forest Science Degree from the Yale School of Forestry and Environmental Studies, and a Juris Doctor Degree from the University of Connecticut School of Law.

### Workshops & Displays

Breakout session workshops were organized into four newly revised tracks for our 2022 annual conference. These four tracks included our conference theme along with several conservation focus areas: *A. Preserving our Forests, Wetlands and Their Habitats, B. The 50th Anniversary of the Connecticut Inland Wetlands and Watercourses Act, C. Responding to our Evolving Environmental Issues, and D. Helping Commissions Assess and Respond.*

Three workshops of interest to Connecticut commissions were scheduled in Track A. *Preserving our Forests, Wetlands and Their Habitats* track.

The first track A workshop, **“Invasive Aquatic Plants in Connecticut Lakes, Ponds, and Rivers,”** was presented by Gregory J. Bugbee, Associate Scientist, Department of Environmental Sciences, Connecticut Agricultural Experiment Station (CAES). Many of our members have asked for an update on invasive aquatic plants as they have become an increasing management problem for many local communities. In his workshop, Greg reviewed the results of recent surveys conducted in Connecticut lakes and rivers that document the persistence

and distribution of various invasive plant species. He also reviewed the importance of proper seasonal timing of control methods.

The second track A workshop, entitled



Workshop leader Carole Cheah, PhD CAES. Photo by Laura Magaraci.

**“Renewed Threats to Hemlocks: Responding to Hemlock Woolly Adelgid Resurgence with Collaborative Biological Control,”** presented by Carole Cheah, PhD, Research Entomologist, Valley Laboratory, The Connecticut Agricultural Experiment Station (CAES) is detailed in a separate article in this issue of *The Habitat*, beginning on page 4.

The third track A workshop, **“Vernal Pool Monitoring and Education: Updates from CAWS,”** was presented by Edward Pawlak, MS, Certified Professional Wetland Scientist (PWS). In this presentation, updated data from the vernal pool monitoring program sponsored Connecticut Association of Wetland Scientists (CAWS) was reviewed along with information on a new CAWS vernal pool education program.

Three workshops of interest to inland wetlands commissions were scheduled in the *B. The 50th Anniversary of the Connecticut Inland Wetlands and Watercourses Act*. The first closely followed the keynote address and the theme of this conference theme.

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This workshop entitled “**Panel: Reflections on 50 years of the Inland Wetlands and Watercourses Law in Connecticut**” included keynote speaker Attorney Gregory A. Sharp, Attorney Mark Branse, Halloran & Sage, LLP, Janet Brooks, Attorney at Law, LLC, Michael Klein, Senior Wetlands Scientist, Davison Environmental, LLC, Patricia Sesto, Director of Environmental Affairs, Town of Greenwich, with Darcy Winther, Connecticut Department of Energy and Environmental Protection (DEEP), as moderator. The panel look backwards on the first 50 years implementing the Connecticut Inland Wetlands and Watercourses Act (IWWA), offering what has worked, what hasn’t, and suggestions of what might be improvements. The ensuing discussion brought out their perspectives on commission activities throughout the past five decades.

Our second track B workshop, “**2022 Wetlands Law & Regulations Update with Question & Answer Session,**” presented by Attorney Mark Branse, Halloran & Sage, LLP, Janet Brooks, Attorney at Law, LLC, and moderated by Darcy Winther, Connecticut Department of Energy and

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*The Importance of Riparian Buffers workshop.  
Photo by Alessandra Moch.*

Environmental Protection (DEEP), was brought back by popular demand. This workshop included its lengthy question and answer session.

The third B workshop, entitled “**Rivers & Watercourses: The Importance of Riparian Zones,**” was moderated by Denise Savageau, Chair of the CT Council on Soil and Water Conservation,

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and included three panelists: Alicea Charamut the Executive Director of Rivers Alliance, Kelsey Sudol the Research Assistant of the Lake Waramaug Task Force & Natural Resource Specialist, Northwest Conservation District, along with Meghan Lally, Environmental Analyst, Connecticut Department of Energy and Environmental Protection (DEEP). In their workshop, they outlined the importance of protecting riparian zones to maintaining the health and water quality of our rivers, streams, lakes, reservoirs, and other water bodies. and is essential for source water protection. The described the functions and value of riparian zones in protecting water quality and discussed buffers and upland review areas and the role of local land use agencies in protection of these critical areas.

Three workshops of interest to conservation commissions were scheduled in Track C. *Responding to our Evolving Environmental Issues.*

The first track C workshop, “**The Bear Reality**” was presented by Felicia A. E. Ortner, Connecticut Master Wildlife Conservationist. This requested workshop discussed the increasing population of black bears in Connecticut and the importance of educating land-use commissions with insight to help promote the reduction of conflicts with our wild bear neighbors.

A second track C workshop, entitled “**Managing for Water Resources in a Changing Climate**” was presented by Denise Savageau, Chair, CT Council

on Soil and Water Conservation, Alicea Charamut, Executive Director of Rivers Alliance, and George S. Logan, Director of Community Relations, Aquarion Water Company. The workshop discussed how Connecticut is experiencing drought conditions on a more frequent basis, how precipitation is being monitored throughout the year, and the State Water Plan and the Drought Preparedness and Management Plan and what is being done to ensure that we have an abundant and safe drinking water supply while maintaining adequate stream flow.


The third well-attended track C workshop was “**Talking Trash: Rethinking Municipal Waste Systems.**” In this panel workshop, Sherill Baldwin, Sustainable Materials Management Environmental Analyst, Department of Energy and Environmental Protection, presented on Sustainable Materials Management 101 and Welcome to the Waste Reduction and the Reuse Economy and Jennifer Heaton-Jones, Executive Director, Housatonic Resources Recovery Authority, discussed How Municipalities can Share Responsibility of Materials Management through

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Extended Producer Responsibility (EPR). Workshop organizer Kim O'Rourke, Recycling Coordinator, City of Middletown, presented on Municipalities in Action: Real Life Examples of Local Reuse, Refilling, and Waste Reduction Programs.

Three workshops of interest to conservation commissions were scheduled in Track D. *Helping Commissions Assess and Respond*.

The first track D workshop, entitled "**Pollinators in My Backyard**" was provided by Victor DeMasi, lepidopterist, curatorial affiliate, Peabody Museum of Natural History. In his presentation, Victor took the audience on a sunny day walk through his pollinator meadow in Redding, Connecticut, reviewing some of the rare and common species he has seen there in 40 years of stewardship. The importance of these species was discussed along with growing number of threats to their populations. Additional detail on his work will be available in an article in the next issue of *The Habitat*.

A second unique workshop in this track, "**Landscape Planning for Mental Health,**"

was presented by Susan A. Masino, PhD, Vernon D. Roosa Professor of Applied Science, Trinity College.

She described how mental illness is on the rise and has been declared

an epidemic by the American Association of Pediatricians. While most of the focus and funding is on much-needed increased services, prevention is increasingly urgent and is a chance to achieve multiple goals. Professor Masino outlined research that reveals how children who spend time in nature, particularly forests, have improved cognition, emotional regulation, and life-long mindfulness. She also shared practical strategies for ensuring and integrating nature experiences,



Trinity College Professor Susan Masino with Amy Blaymore Paterson, Executive Director, CT Land Conservation Council. Photo by Rod Parlee.



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CACIWC President Alan Siniscalchi announces our 2022 honorees. Photo by Laura Magaraci.

even in small "Urban Wilds," to connect children to the land while also protecting clean water, mitigating climate change and protecting biodiversity.

A third track D workshop, entitled, "**Leveraging Systems Thinking and Geospatial Technologies for Advanced Sustainable Watershed Management,**" was presented by Alicia Tyson, MA, MS, PhD Candidate, Assistant Extension Educator, UConn CT Sea Grant, and Emily Wilson, MS, Geospatial Educator, UConn Center for Land Use Education and Research

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(CLEAR). Using an interesting interactive format, participants will examine what is meant by spatial thinking and its role in responding to climate change impacts. Tools and other CLEAR resources available to CACIWC members and stakeholders for tangible application and enhancement of resilient communities and landscapes were also discussed.

With the return to an in-person conference format, we were once again able to host a variety of nonprofit and commercial **exhibitors** to provide their informative displays in an arrangement adjacent to our workshop rooms. The responses from our conference survey revealed an appreciation for the networking opportunity provided by these adjacent display and break areas.

During the business meeting preceding the keynote speaker, CACIWC President Alan Siniscalchi took the opportunity to acknowledge the 2022 **list of honorees**. This group of individuals representing a wide variety of professions, are in the process of retiring or have recently retired. They were recognized for a lifetime achievements in a variety of disciplines who contributed to conservation and wetlands protection within Connecticut. These honorees are listed at the end of this article.

We again thank the conference attendees and all those responsible for organizing our **45th Annual Meeting and Environmental Conference**. The CACIWC Board of Directors has been reviewing the evaluation forms submitted by participants of this conference. In addition to sharing their opinions of the educational sessions, the participants also provided valuable suggestions for workshop topics for future conferences. To provide our members the opportunity to continue

to submit ideas for workshop topics and other suggestions, the CACIWC Annual Meeting Committee has decided to maintain the [AnnualMtg@caciwc.org](mailto:AnnualMtg@caciwc.org) email throughout the year. Please keep forwarding your suggestions to us. The board of directors extends its most sincere appreciation to our 2022 conference sponsors and looks forward to your participation at our 2023 Annual Meeting and Environmental Conference!

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Please join us in recognizing these individuals for their lifetime achievements in conservation and protection of wetlands in Connecticut:

*The Honorable Marshall K. Berger, Jr. Connecticut Superior Court Judge & Presiding Judge for the Land Use Docket from 2012 to 2020.*

*Michael Klein, Senior Wetlands Scientist, Davison Environmental, LLC*

*Alicia Mozian, Conservation Director, Town of Westport & CACIWC Board Member*

*Patricia Sesto, Director of Environmental Affairs, Town of Greenwich*

*Attorney Gregory A. Sharp, 2022 CACIWC Conference Keynote Speaker* 🍀

## Help Your Town Prepare for Potentially Deadly Floods by Attending One of the Upcoming Federal and State Flooding Awareness Workshops!

Five Connecticut workshops have been scheduled during May and June for local municipal staff and officials. These day-long workshops are being sponsored by the US Army Corps of Engineers in cooperation with the Connecticut Division of Emergency Management and Homeland Security (DEMHS), the Connecticut Department of Energy and Environmental Protection (DEEP), the National Weather Service (NWS) and the US Geologic Survey (USGS).

The workshops, which are being held in Fairfield, Kent, Orange, West Hartford, and Willimantic, are free of charge including lunch, but registration is required.

Please see the links for the online registration and additional information on these workshops on our website, at [www.caciwc.org](http://www.caciwc.org). 🍀



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*CACIWC news, continued from page 2*

that maintained vigilance over key habitats in their towns during these three years have earned our thanks, as well.

In other news:

1. The CACIWC Annual Meeting Committee has been reviewing the many comments and suggestions submitted on the survey distributed at our **45th Annual Meeting and Environmental Conference** hosted by Scarlett's Fine Events at Best Western Plus North Haven Hotel on Saturday, October 29, 2022. If you did not have an opportunity to complete the 2022 conference survey, please contact us with your comments at [AnnualMtg@caciwc.org](mailto:AnnualMtg@caciwc.org).

2. We are specifically requesting suggestions for workshop topics and speakers that you would like us to recruit for our **46th Annual Meeting and Environmental Conference**, to be scheduled this fall. Please contact us at [AnnualMtg@caciwc.org](mailto:AnnualMtg@caciwc.org) with all of your suggestions. Watch for additional conference news in upcoming issues of *The Habitat* and on our [www.caciwc.org](http://www.caciwc.org) website.

3. Although our expenses for organizing our conferences and preparing issue of *The Habitat* have grown, the Board of Directors decided to maintain our **CACIWC 2023-24 membership dues** at the 2022-23 rates. You will soon be receiving a reminder to renew your Membership to qualify your commission members and staff for greatly discounted registration fees at our 2023 annual conference. Please see the links to our current online and mail-in membership renewal and conference registration forms on our website: [www.caciwc.org](http://www.caciwc.org).


4. During the next month, CACIWC will be reaching out to you with a new **membership survey** that will be sent to all conservation and inland wetlands commissions. The purpose of the survey is fourfold: to **update our commission contact information**, continue our celebration of the Inland Wetlands and Watercourses Act (IWWA) and efforts to assess ability of inland wetlands commissions and staff to conduct their work including the **need for additional wetlands training**, evaluate the ability of today's conservation commissions to conduct their work while **responding to climate change impacts** and other evolving new challenges, and seek

additional information on **topics for new workshops and on-site training**.

5. Please be certain to respond to this survey to provide us with updated and expanded emails and other contact information to help Our Membership Coordinator & Database Manager Janice Fournier maintain an **up-to-date membership list**. This information will help expand distribution of *The Habitat* and start our new and expanded **CACIWC Listserve**.


All of us on the CACIWC Board of Directors continue to thank you and your fellow commissioners and staff for your local efforts and your ongoing support through the last three challenging years. We look forward to working with you as we develop the agenda for our **46th Annual Meeting and Environmental Conference!**

Thank you,  
Alan J. Siniscalchi, President  
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*legal, continued from page 3*

characterize those maps as the “general location and boundaries.” If a commission’s regulations call the map “official” it should be amended and deleted. In any case, the commission can simply abandon calling the map “official” and focus on the individualized soil survey that will accompany each application.

Thorny problems also were brought up for which simple solutions were not so apparent. What remedies can a commission utilize when a property owner’s proposal has been determined to fall within the farming exemption, but the only work undertaken is the “preparatory work” to remove trees to expand cropland? No agriculture is occurring and there is no adequate remedy. Maybe a statutory fix would be necessary to address that circumstance.

A number of towns do not choose to undertake legal enforcement due to the cost or internal politics. This leaves it on the shoulders of a private citizen or association to bring an enforcement action in court in hopes of prevailing and being assessed its legal expenses as damages to be paid by the losing party. That’s not a very workable system in towns with no interest in enforcing the Act.

The more I heard others talk of their suggestions the more I wanted to hear. And so, on behalf of CACI-WC, I have continued my role as a panelist, reaching out to the CAWS (Connecticut Association of Wetland Scientists), staff to wetlands commissions, asking if folks would join in small Zoom meetings of 4-6 people, so that we can continue to “think out loud” and bounce ideas off each other. CACIWC has also asked me to review the responses to a member questionnaire asking for feedback on the IWWA.

Now, it’s your turn – do you have an idea of something that doesn’t work that you’d like to see fixed, or do you have an idea of how to fix it? You are cordially invited to send me an email with the subject line: “Make the Wetlands Act Better.” I will consider it and bring it up in the Zoom meetings that I will be holding. Please email me at: [jb@attorneyjanetbrooks.com](mailto:jb@attorneyjanetbrooks.com)

*Janet P. Brooks practices law in East Berlin. You can read her blog at: [www.ctwetlandslaw.com](http://www.ctwetlandslaw.com) and access prior training materials and articles: [www.attorneyjanetbrooks.com](http://www.attorneyjanetbrooks.com).* 🍀

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southern coastal stands. The prognosis then for Connecticut's susceptible hemlocks was bleak with predicted extinction of hemlocks statewide in



Figure 4. Hemlock decline from HWA attack

30 years. Fast forward to 2022, 37 years since the first report of HWA in Connecticut, with hemlocks facing increasing stressors from climate change (high temperatures, frequent extended droughts) and attacks from other exotic and native pests. Yet, Connecticut's hemlocks have held on, even increasing in volume from 1985 to the present. In the Northeast, the occasional severe winter has also helped to kill HWA but results are variable, with northern more cold hardy HWA surviving at higher numbers. A string of severe winter polar vortex events from 2014-2016 helped to greatly reduce HWA populations throughout CT but recent successive warmer winters throughout most of Connecticut (2020-2022) have led to increased winter survival, new invasions and renewed resurgence of HWA, threatening hemlocks again in forest and landscape settings. Widespread new incursions of HWA have been recently found along water courses and around ponds, lakes and reservoirs.

An important tool for managing HWA outbreaks in Connecticut forests has focused on the mass rearing and release of a safe, specific predator of HWA, a tiny ladybeetle, *Sasajiscymnus* (formerly *Pseudoscymnus*) *tsugae*, discovered and studied at the Connecticut Agricultural Experiment Station (CAES), Windsor, nearly three decades ago (Figure 5). Both HWA and its major predator, *S. tsugae* originate from the southern Japanese island of Honshu. These tiny beetles, about 2mm in length, are very cryptic and have a high affinity for HWA, producing two generations per year which match the two generations of HWA. Females lay over 200 eggs each and both larvae and adults feed on any stage of HWA present from mid-spring to fall. Adults live a long time, over a year including overwintering, and continue predation on HWA dormant instars during the hot summer, a behavior which is unique amongst all HWA predator species introduced. The lifecycle of this specialist predator is closely synchronized to HWA, with the only inactive period being the winter season. This ladybeetle has overwintered successfully in Connecticut.

Biological control of HWA with *S. tsugae* is the foremost strategy in Connecticut for managing HWA. There is no formal program in Connecticut for management of HWA with chemicals and neonicotinoid applications are restricted to licensed professionals after legislation in 2016 to protect pollinators and the environment. No other predator has been mass



Figure 5. Adult and larva of the Japanese ladybeetle predator, *Sasajiscymnus tsugae*, feeding on HWA

released and established in Connecticut, there has been no widespread use of chemicals to control HWA, mortality of hemlocks has been limited and hemlocks have persisted statewide, contrary to all the predictions. Mass releases of *S. tsugae* (>176,000 from 1995-2007) appear to have helped mitigate ini-

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tial HWA impacts, stem the tide of hemlock decline and mortality for over 27 years. The first release of *S. tsugae* in North America occurred in Connecticut in 1995, following a federal environmental risk assessment that concluded that the ladybeetle posed no risk to non-target organisms. No negative reports of

are prohibited from using chemical applications to control HWA. Biological control releases with *S. tsugae* provide a critical, important, alternative strategy to manage HWA infestations, especially in sensitive wetland and riparian corridors (Figure 6). This biological control strategy is also very popular with homeowners and the general public who do not want

to use chemicals to control HWA.

As most of Connecticut's hemlocks occur on private lands, the author sought to expand biological control with *S. tsugae* beyond state lands to target other hemlock forests threatened by HWA resurgence and spread. Efforts are ongoing to publicize and educate the public on the availability of this biological control

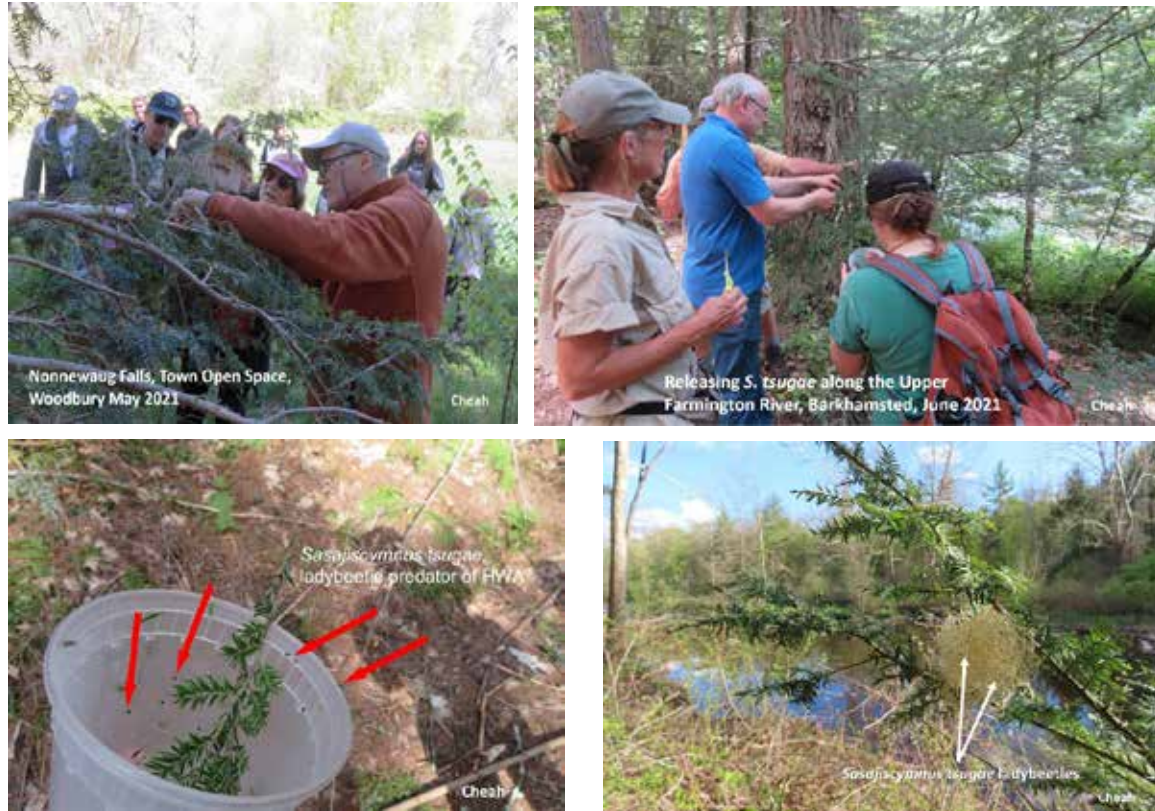


Figure 6. Releasing *S. tsugae* along riparian corridors to protect hemlock habitats in Connecticut

*S. tsugae* impacts have occurred in the 27 years of its release throughout the HWA range in eastern United States. That initial release in 1995 was followed by thousands more reared at the CAES, Windsor, and released into 26 of Connecticut's heavily HWA-infested forests from 1995-2007. Many original hemlocks from those first release sites still survive to this day and hemlock mortality has been limited to poor growing sites. But the lack of federal funding for this program has meant that this beetle can no longer be mass reared in Connecticut for ongoing releases, which stalled the HWA biological control program in Connecticut for 10 years. However, *S. tsugae* is available for sale to the general public through Tree Savers, Pennsylvania, which is the only private commercial company rearing it for biological control. Reservoir watershed forests have important hemlock components which filter and shade feeder brooks and

control strategy, train and help with HWA scouting and guide land trusts, property owners, forest managers and conservation professionals with optimal implementation techniques. In the past 5 years, collaborations between state and private, municipal and land trust partners, and Tree Savers have been instrumental in implementing thousands of beetle releases in new sites throughout Connecticut (>46,000 beetles released since 2017). Since 1995, the total number of *S. tsugae* released throughout Connecticut on state lands, land trust preserves, private forests, town open space, water company watershed forests, private lake communities, bird sanctuaries and public parks now exceeds 230,000 in more than 78 locations (Figure 7). Many more have also been released on individual private properties. All these efforts are establishing a statewide network of *S. tsugae* releases

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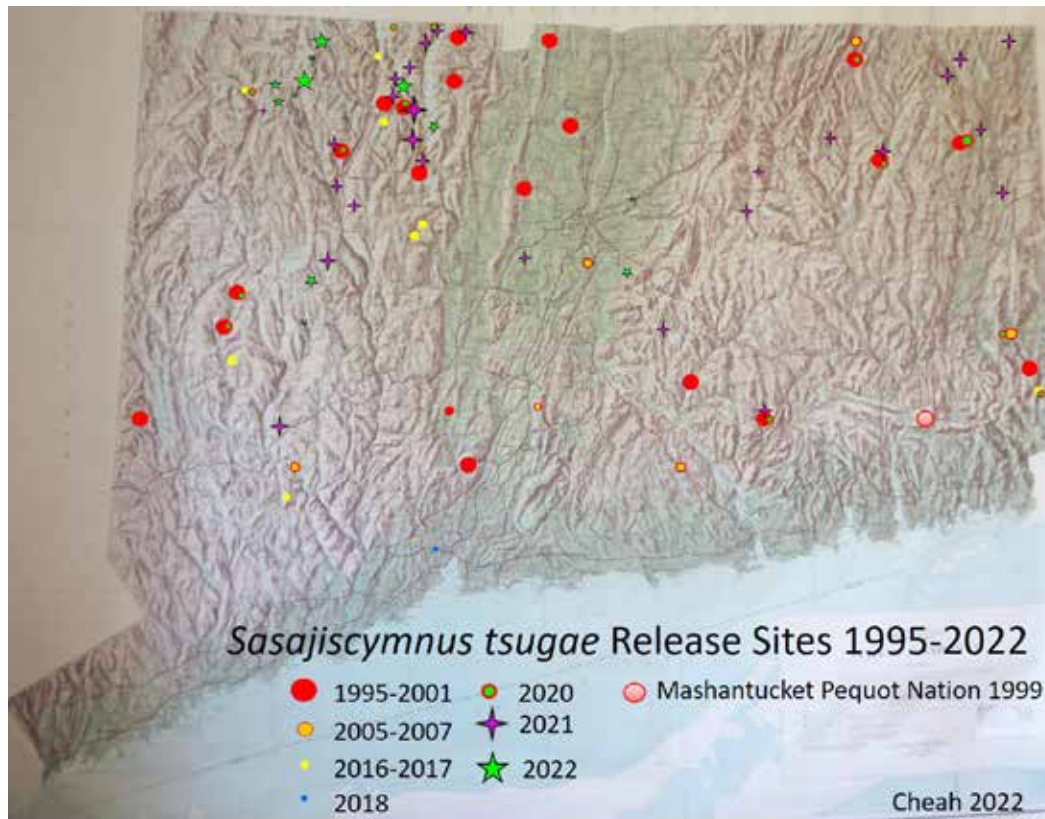


Figure 7. Map of Connecticut showing release sites for *S. tsugae* 1995-2022

to safely reduce HWA damage and impacts on Connecticut's forest and landscape hemlocks. Efforts will continue to form partnerships to seek conservation funding to implement *S. tsugae* to target and mitigate HWA infestations and protect our eastern hemlocks.

*The author thanks the many cooperators, volunteers and technicians who have helped on this project and the USDA National Institute of Food and Agriculture McIntire Stennis Cooperative Forestry Program, Farmington River*

*Coordinating Committee and the USDA Forest Service State and Private Forestry for funding. All pictures by Carole Cheah. Contact: [carole.cheah@ct.gov](mailto:carole.cheah@ct.gov). 🌿*

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### Our 2023 CACIWC Member Survey Is On Its Way to You!

**D**uring the next month, CACIWC will be reaching out to you with a new survey that will be sent to all conservation and inland wetlands commissions. The purpose of the survey is fourfold:

- 1) Contact information:** Our CACIWC membership team is reviewing all contacts for Connecticut conservation and inland wetlands commissions to ensure that we have information on the current commission chairs and staff with updated emails and office phone numbers. This information will be used for accurate distribution of *The Habitat*, as well as news from our upcoming revised ListServ.
- 2) IWWA authority:** As part of our 2022 celebration of the 50th Anniversary of the passage of the Connecticut Inland Wetlands and Watercourses Act (IWWA), we have continued a review of the IWWA to see how well it serves our inland wetlands commissions ability to

conduct their work. This survey will help us gain additional feedback on the IWWA and the need for additional training.

- 3) Celebrating Conservation Commissions:** This year's 46<sup>th</sup> Annual Meeting and Environmental Conference will celebrate the more 60 years of operation by the first several dozen Connecticut conservation commissions. This survey will help us evaluate the ability of today's conservation commissions to assess and protect important habitats in their towns while responding to climate change impacts and other evolving new challenges.
- 4) CACIWC Workshop Topics:** The survey will also seek your input on new topics for upcoming conference workshops and on-site training.

Please complete the member survey when you receive it and let us know if you have any questions or comments! 🍀