

The Habitat

A newsletter of the Connecticut Association of
Conservation & Inland Wetlands Commissions, Inc.

Winter 2022
volume 34 number 1



Join CACIWC in Celebrating the 50th Anniversary of Connecticut's Inland Wetlands Act!

This is a special year for CACIWC and its members as 2022 marks the **50th Anniversary of the Connecticut Inland Wetlands and Watercourses Act (IWWA)**. This key enabling legislation, which was approved by the Connecticut General Assembly (CGA) during May 1972, led to the formation of local inland wetlands commissions throughout Connecticut.

CACIWC has been planning for the 50th Anniversary of the CGA passage of Connecticut's IWWA since we celebrated our 40th Annual Meeting in 2017. As we mentioned in the fall issue of *The Habitat* and at our 2021 annual meeting, we are dedicating our fall 2022 45th Annual Meeting and Environmental Conference to the CT IWWA anniversary. CACIWC is also working with other Connecticut conservation organiza-

tions who value wetlands and watercourses to help celebrate the anniversary throughout the year.

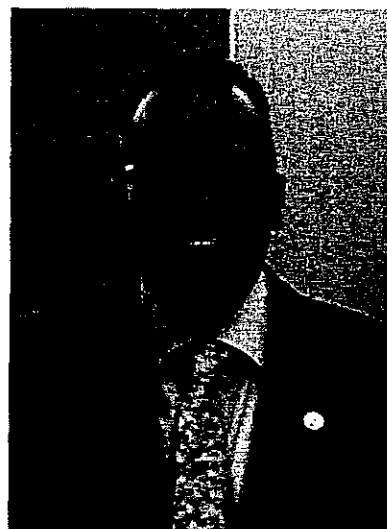
As part of the anniversary celebration, CACIWC will be including articles in *The Habitat* on the history of the IWWA along with stories on commission activities throughout the past five decades. Please contact us at TheHabitat@caciwc.org if you wish to include stories and photos of early years of wetlands protection by your town commissions.

You may also submit these photos and stories as part of our **special IWWA photo contest and commission awards** to be given as part of our year-long celebration. All CACIWC members are eligible to enter. Please see the link to our nomination form on our website, at www.caciwc.org.

CACIWC's 44th Annual Meeting and Environmental Conference Held on November 6, 2021

The CACIWC Board of Directors extends their appreciation to the many members and guests who were able to participate our **44th Annual Meeting and Environmental Conference**. This conference, held on Saturday, November 6, 2021, was our third virtual conference, established to protect our member commissioners, staff, and other attendees from the COVID-19 pandemic. While the CACIWC Board of Directors and its Annual Meeting Committee were again hoping to schedule an in-person event, the decision to go with a virtual event was widely supported. The conference theme, "*Maintaining Conservation & Preserving Habitats Efforts During the ongoing COVID-19 Pandemic*," focused discussions on encouraging our members to continue their efforts during these challenging times.

Before introducing our Keynote Speaker, CACIWC President Alan Siniscalchi thanked our sponsors and all who contributed to organizing the conference and proceeded through the agenda of our brief annual business meeting. During this meeting the nominated CACIWC Board of Directors were elected to a two-year term.



David R. Vallee, Hydrologist-in-Charge, NOAA/NWS/Northeast River Forecast Center

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www.caciwc.org

CACIWC News

As we complete this issue of *The Habitat*, we approach the second anniversary since the COVID-19 pandemic began to change our lives and challenge commission members and staff in their ability to conduct their important work. The current Omicron variant surge followed the Delta variant wave, increasing community spread, and resulting in very high case positivity and daily hospitalization counts. While this activity has decreased since its peak in early January, Connecticut's mortality data exceeded the somber milestone of 10,000 COVID associated deaths, reminding us of its severe impact as we enter the third year of this ongoing pandemic.

The adverse effects of the pandemic transcend even the serious public and mental health impact on our state and nation. An unfortunate collateral effect that is being increasingly observed is a growing mistrust of government and a rejection of science. While this trend has had obvious impact in my work in public health, its long-term consequences may impact not only regional and national efforts to reduce the rate of global climate change and our resiliency to climate change, but also it may impact our ability to use scientific data to support conservation of local habitats and species.

One anniversary that we will happily celebrate this year is the 50th Anniversary of the Connecticut Inland Wetlands and Watercourses Act (IWWA), which was approved by the Connecticut General Assembly in May 1972. As the primary organization dedicated to the support of inland wetlands agencies, CACIWC has been planning for the 50th Anniversary of the CGA passage of Connecticut's IWWA since we celebrated our 40th Annual Meeting in 2017. We plan a series of article in *The Habitat*, a photo contest, special awards, and will dedicate our upcoming 45th Annual Meeting and Environmental Conference to this anniversary. CACIWC is also working with other Connecticut conservation organizations who value wetlands and watercourses to celebrate the anniversary. We are requesting stories and photos of the early years of wetlands protection by both

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Journey to the Legal Horizon

by Attorney Janet Brooks

Issuing Orders to Correct When You Don't Know What The Solution Should Be

I addressed this topic at the 2021 CACIWC annual meeting because I believed that wetlands agencies were more likely to issue orders for situations where the solution is clearcut: remove the piece of equipment left in the wetlands, stop digging in the wetlands and piling the spoils in the wetlands, etc. But what if the situation is that the streambank has become steeply eroded through some activity where the landowner failed to get a permit and your commission doesn't know what to order the landowner to do? Or, animal or plant habitat has been disturbed and your commission doesn't know what the safest way to order restoration is without further damaging the habitat. I'm going to rely on my experience representing DEEP for almost 2 decades in enforcement matters and adapt a page from the DEEP playbook on pollution abatement orders *and* I'm going to tweak it so that agencies can get the financial support needed to undertake successful enforcement.

The conceptual approach is: (1) payment of a fee to the agency to allow the agency to evaluate the order-ee's compliance with the order; (2) requirement that the order-ee retain the appropriate professional(s) to undertake what is necessary to stabilize, correct or restore the resource; (3) requirement that the order-ee submit a report for the wetlands agency's approval, (a) evaluating the degree and extent of pollution, contamination, alteration, destruction (or whatever the impact has been) of the resource and (b) with proposed alternatives to correct and/or restore the resource with reasons for seeking approval of one alternative (c) to be accomplished within a proposed schedule; (4) upon a decision by the agency, with appropriate input from the retained consultants, implementation of the required actions within the specified timeframe. Note: at the end of the order process, the order-ee is *not* going to file a permit application. A permit is appropriate when a person *wishes* permission to conduct a regulated activity which s/he can subsequently decide not to do. An order is the vehicle to use when the agency *requires* actions to occur.

As an individual wetlands agency member, you don't know or have to know what the required outcome will be when you issue the order. The order provides the agency with the process and the tools to gain the knowledge of what the agency will require

Are you surprised to start by seeking a fee from the order-ee? The legislature has clearly authorized this: "The inland wetlands agency may require a filing fee to be deposited with the agency. The amount of such fee shall be sufficient to cover the reasonable cost of reviewing and acting on applications and petitions, including but not limited to, the costs of . . . monitoring compliance with . . . agency orders." General Statutes § 22a-42a (e). You are accustomed to requiring fees for permit applications. You should

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Connecticut Herpetology: A 50-Year Retrospective

by Michael W. Klemens, PhD, Research Associate in Herpetology, American Museum of Natural History

On Nov. 4, 2021, after a delay caused by the COVID-19 pandemic, DEEP published the long-awaited update of my 1993 book, *Amphibians and Reptiles of Connecticut and Adjacent Regions*.¹ This new, multi-authored book, entitled *Conservation of Amphibians and Reptiles in Connecticut*,² is available from the DEEP online bookstore. All proceeds from book sales will be restricted by CT DEEP to amphibian and reptile conservation in Connecticut.

This is the first of a series of invited articles by *The Habitat*, addressing conservation challenges facing amphibians and reptiles and the instrumental role CACIWC members can play in meeting those challenges. I began studying amphibians and reptiles in the early 1970s. Thus, the timeline of my work spans 50 years, and is conterminous with the inception of local inland wetlands regulation in Connecticut. In a similar manner that many of you will take stock of what has been accomplished over the last half century

of wetland regulation, we, too, examined the successes, failures and lessons learned conserving amphibians and reptiles.

Since the publication of my first book in 1993, we recognized that there are now many more urgent challenges to confront. Certain issues that we were not even aware of, such as climate change and disease, have dramatically altered our perspective of the future. Invasive plants have become a much greater factor in conservation of wetlands, uplands and the species that inhabit them. In 1993, the science of conservation biology was very much in its infancy, reflected in the 1993 book, where scant discussion was provided on this topic. Table 1 (below) in our new book contrasts and summarizes these challenges. As the book was delayed in publication, the comparisons and many other metrics were calculated through 2020, the intended date of publication.

herpetology, continued on page 12

TABLE 1. Evaluating conservation challenges in Connecticut 1993 vs. 2020

Years	1993	2020
Ecological		
Habitat Loss and Fragmentation	Increasing	Increasing
Mortality/Collection	Increasing	Increasing
Invasive Plants	Emerging*	Increasing
Subsidized Wildlife Species (Native and Non-Native)	Emerging*	Increasing
Disease	Emerging*	Increasing
Climate Change	Emerging*	Increasing
Science/Data		
Natural Diversity Data Base (NDDb) used in Lieu of Site-Specific Data	Emerging	Increasing
Integration of Scientific Data in the Decision - making Process	Emerging	Improving
Inconsistent Standards for Collecting Biological Data	Absent	Improving
Lack of Natural History Information for Many Species	Minimal	Improving
Policy		
Consistency Environmental Reviews	Inconsistent	Inconsistent
Perceived Conflict Between Economic Viability and the Environment	Emerging	Increasing
DEP/DEEP Natural Resources Staffing	Adequate	Inadequate
DEP/DEEP Natural Resources Intra-agency Coordination**	Inconsistent	Decreasing
Lack of Conservation Protection in Perpetuity for State Owned Lands	Inadequate	Improving

*Awareness of these factors was in its infancy.

**Combining the Department of Environmental Protection (CTDEP) with various components of State agencies dealing with energy on July 1st 2011 has diluted the focus on natural resources within the newly-created agency (CTDEEP).

Keynote Speaker

CACIWC was pleased to welcome David R. Vallee of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) Northeast River Forecast Center to serve as our 2021 Annual Conference keynote speaker.

During his keynote address, entitled **"Torrential Rains from Slow Moving Tropical Systems; Is This The New Normal?"**, David described how New England has been experiencing an increasing trend in annual average temperature and annual average precipitation over the past several decades. During this same period, the region has experienced an increasing number of moderate to major flood episodes. The common threads in each episode were the ability of each storm system to move slowly and tap into a deep tropical moisture source which resulted in very heavy if not record rainfall amounts. David's presentation reviewed these current trends and examined recent storms such as Florence, Henri, and Ida as examples of our increasing vulnerability to such high impact events. The presentation ended with a brief look at

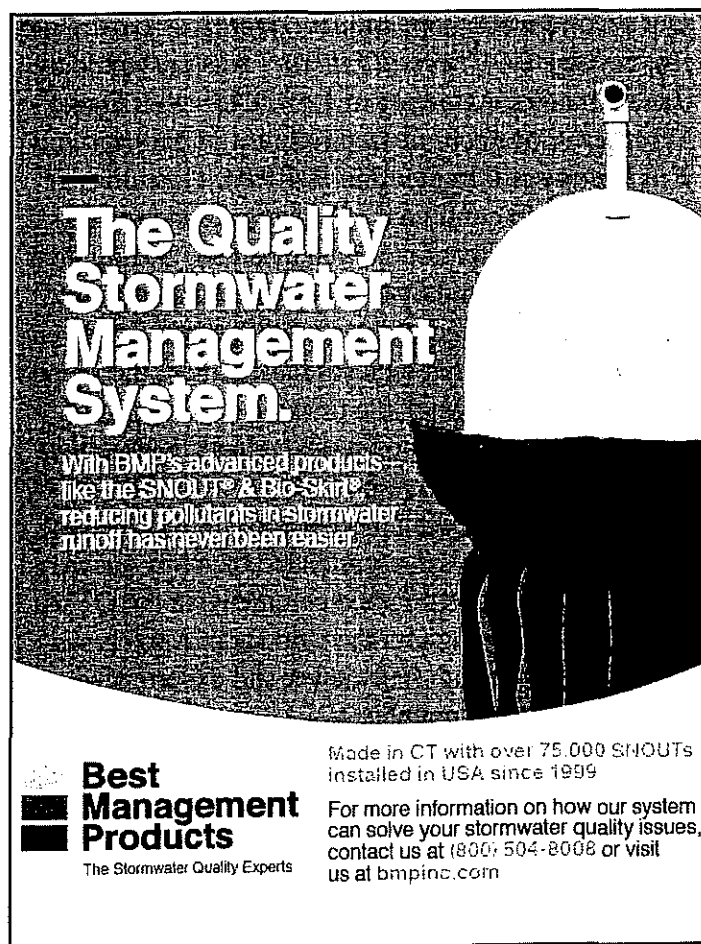
new prototype services under development by the National Weather Service to provide forecasts of inundation to Emergency Managers.

Workshops

Following the keynote presentation, our 2021 annual conference proceeded to our three virtual workshops designed for both new and experienced conservation and inland wetlands commissions and their staff.

Our first workshop, entitled *"Municipal Activities to Promote Waste Reduction and Recycling,"* was organized by **Kim O'Rourke, Middletown Recycling Coordinator** to explore municipal responses to the upcoming waste disposal crisis that will result from the 2022 scheduled closure of Connecticut's largest waste-to-energy facility. In her portion of the workshop, Kim described the Connecticut Coalition of Sustainable Materials Management organized by Connecticut Department of Energy and Environmental Protection (DEEP) in partnership with municipalities to discuss ways to reduce the waste generated, recycle more, divert materials from traditional facilities and advance

annual meeting, continued on page 6



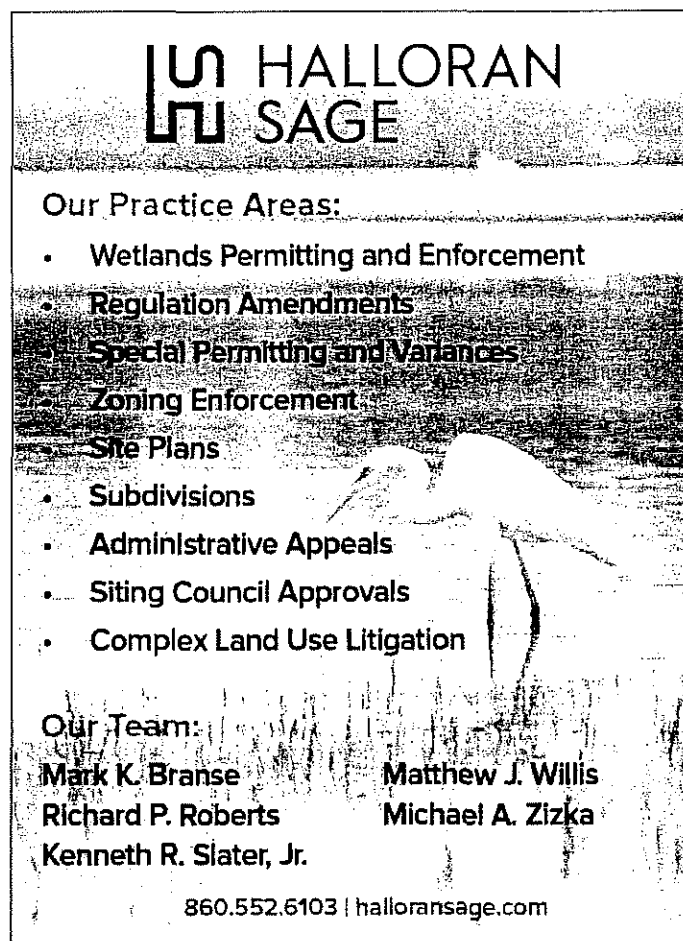
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programs and policies to implement these actions. Kim reviewed options highlighted by the coalition to help tackle of waste disposal problems, such coalition food scrap collections, and programs to promote extended producer responsibility and described local initiatives in her presentation on *"What's Happening with Trash in Connecticut & Middletown's Feed the Earth Program."*

Additional examples of innovative projects and programs developed to address Connecticut's waste crisis, included **Howard Weissberg, PE, Director of Public Works, City of Meriden** who reviewed *"Meriden's Solid Waste Co-Collection Waste Reduction Pilot Program,"* and **Doug Colter, C.F.M., Grants Administrator, Project Manager, and Flood Plain Manager for the City of West Haven** who discussed *"Adding Food Waste to Municipal Composting Operations & School Food Waste Education."* **Jennifer Heaton-Jones, Executive Director, Housatonic Resources Authority** also outlined *"How Municipalities Can Share Responsibility of Materials Management Through Extended Producer Responsibility (EPR)."*



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Our second workshop, entitled *"Wetlands Law: Problem Solving 2.0 - Second Edition"* was presented by **Janet Brooks, Attorney at Law, LLC** with **Darcy Winther, Connecticut Department of Energy and Environmental Protection (DEEP)**. This innovative workshop continued efforts to provide updates and review application of wetlands law. During their 90-minute session they deconstructed and analyzed together complicated problems dealing with (1) an enforcement matter that requires remediation, the scope of which is unknown at the time the order is issued and (2) a plan to remove invasive plants: is it permitted as of right or a nonregulated activity (and what's the difference) or does it need a permit? Between the problem-solving sessions, attendees actively answered poll questions and submitted comments in the Q + A or chat boxes throughout the workshop. A lively discussion resulted with both newer and experienced wetlands commission members.

Our third workshop, entitled *"Emerald Ash Borer and Spotted Lantern Fly,"* was presented by **Claire Rutledge, PhD, Associate Agricultural Scientist,**

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Department of Entomology, The Connecticut Agricultural Experiment Station (CAES). In this informative workshop, Dr. Rutledge presented on the Emerald ash borer which was first detected in Connecticut in 2012 and has since killed thousands of ash trees. She also presented information on the Spotted lantern fly, which was first detected in 2020 and appears to be establishing new populations along highways at a rapid pace. Dr. Rutledge also discussed management of both these highly invasive insects, helping to inform commission members and staff of efforts to tracking and respond to their findings.

In our fourth and final workshop, entitled, "*Water 101 - Understanding the Science of Water to Help You Protect Your Community Resources*," **Virginia de Lima, former Director of the USGS Connecticut Water Science Center** emphasized how understanding the interconnectedness of water leads to being able to assess the water system as a whole and better anticipate how changes in one component may affect other components. She emphasized the importance of groundwater flow in the hydrologic cycle. Virginia, who served as former Director of the USGS Connecticut Water Science Center, continues to serve on multiple state committees focused on the State Water Plan (SWP). As co-chair of the SWP Implementation Committee and previous chair of the Science and Technical Committee, she reviewed the importance of the SWP to.

We again thank the conference attendees and all those responsible for organizing our **44th Annual Meeting and Environmental Conference**. To allow our members the opportunity to submit ideas for workshop topics and other suggestions, the CACTWC Annual

Meeting Committee has decided to again maintain the AnnualMtg@caciwc.org email throughout the year. We used many of your suggestions in our 2021 conferences so please keep forwarding your suggestions to us. We look forward to your participation at our 2022 Annual Meeting and Environmental Conference, as we continue our celebration of the 50th Anniversary of the Connecticut Inland Wetlands and Watercourses Act! 🍀

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inland wetlands and conservation commissions in your town. Please watch our website for periodic updates. We hope to highlight your town's many decades of service as part of our year-long celebration!

In other news:

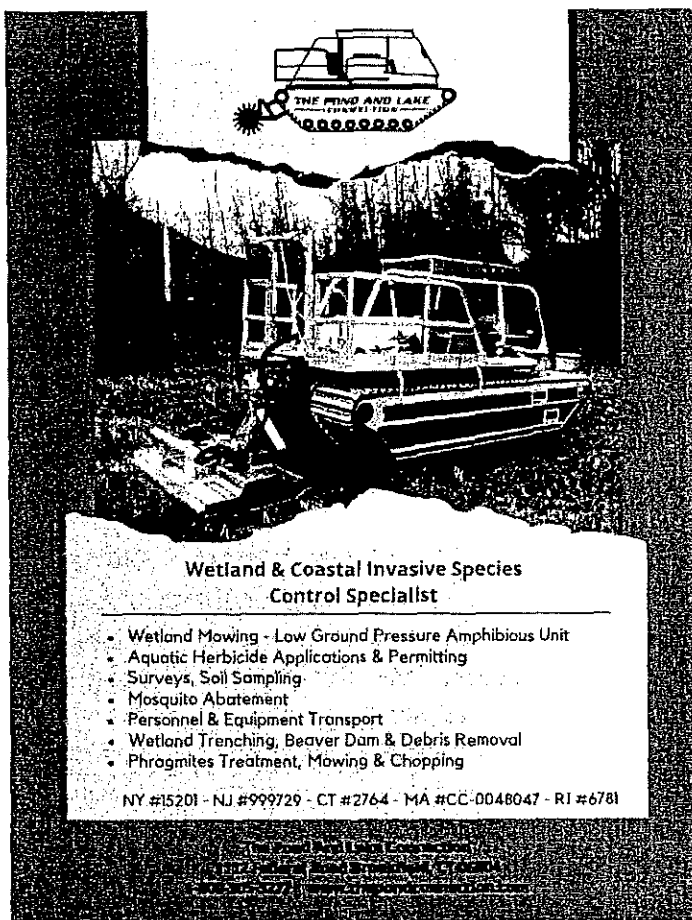
1. During this past two years, the CACIWC Board of Directors and Annual Meeting Committee have reviewed the many comments and suggestions submitted in response to our recent conferences, converted to virtual event due to the risks of the COVID-19 pandemic. These include our 43rd Annual Meeting and Environmental Conference, held on December 5, 2020, our first ever, 2021 Mid-Year Conference, held on June 5, 2021, along with the recent 44th Annual Meeting and Environmental Conference, held on November 6, 2021 and highlighted in this issue. These comments and suggestions will be used to select the speakers and workshops for our upcoming 45th Annual Meeting and Environmental Conference, to be scheduled this fall. Please do not hesitate to contact us with any additional suggestions for speakers and workshops for this conference at AnnualMtg@caciwc.org.

2. The Board of Directors is very grateful to the growing number of commissions who have already renewed their CACIWC 2021-22 membership dues. For those who have not yet done so, it is not too late to send in your 2021-22 membership dues. A copy of the current renewal online and mail forms can be found on our website: www.caciwc.org.

3. Improved membership communication is an important goal of our strategic plan. Please be certain to provide us with updated emails and other contact information to help our Membership Coordinator & Database Manager Janice Fournier maintain an up-to-date membership list.

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 this challenging pandemic. We hope you will help us reminisce of pre-pandemic times during our 50th anniversary Connecticut's IWWA while we plan for future in-person conferences and other events!

Thank you,
Alan J. Siniscalchi, President
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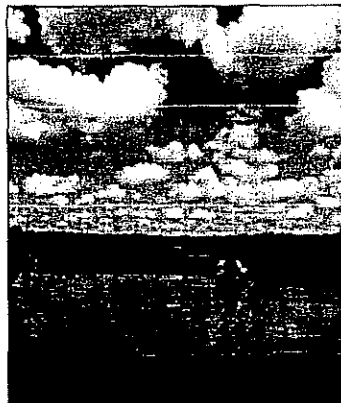
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require a fee when issuing orders to assure that you make science-based decisions.

The template that I offer (*see page 10*) doesn't contain required legalese or magical phrases. It is a concept which you tailor to your situation. Please read the numbered paragraph of the template first and then these comments.

Comment to Paragraph 1: The fee is not a penalty. The amount does not rise with your opinion of how severe the violation is. The fee reflects the costs you will pay for consultants' fees. If your agency does not already have a business relationship with outside consultants, the agency may need to request bids from consultants for the estimated work.

Comment to Paragraph 2: You are not in the business of choosing which consultant(s) the orderee will employ. Your job is to determine if the orderee has retained the correct kind of consultant. If the orderee discloses a contractor when an engineer or wetlands biologist is needed, you can disapprove the consultant.

Comment to Paragraph 3: Depending on the circumstances, one consultant may be qualified to address all aspects of the report. In other cases, an engineer may be needed to address drainage, and a wetlands biologist, the impact on the habitat. Just as with some permit applications, the agency may require more information or revisions to the report before the agency approval will be voted upon. The same give-and-take is appropriate. Ultimately it is for the agency to decide which of the alternatives will be the approved corrective action.

The goal is to use the order to allow the wetlands agency to create the record which supports the agency's decision. I look forward to hearing your success stories!

Janet P. Brooks practices law in East Berlin. You can access prior training materials and articles at: www.attorneyjanetbrooks.com

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Instructions: The black text below in times new roman font is suggested language for use in an order. The text in blue **bold** arial font constitutes comments for your use in drafting language. It is not for inclusion in the order itself.

Template for Cease, Desist and Correct Order

[Recitation of facts which you, the wetlands agency, will prove at the statutorily mandated hearing. The orderee does not have the initial burden of disproving these facts.]

As a result of the above-stated facts, the **[landowner/individual/contractor/ "orderee"]** has violated sections ____ of the [town] municipal wetlands regulations.

Therefore, the [town] **[official name of the wetlands agency]** orders the following:

1. On or before **[date]** submit a check in the amount of **[amount determined by consultant(s)]** to cover the **[agency name]**'s cost in monitoring the orderee's compliance with this order, pursuant to Connecticut General Statutes § 22a-42a (e). **See Comment #1.**
Or: Within ten days of receiving an estimate of the cost of consultants which the wetlands agency will retain, the order shall submit a check **[can specify bank draft/certified check/money order or other form which your municipality prefers]** in such amount to cover the **[agency name]**'s cost in monitoring the orderee's compliance with this order, pursuant to Connecticut General Statutes § 22a-42a (e).

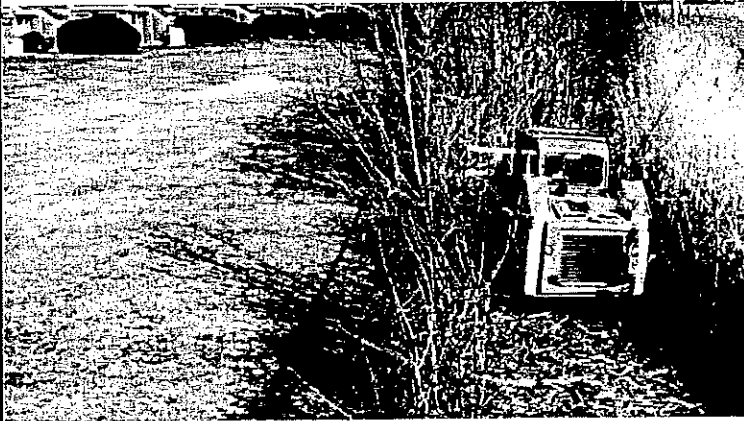
If the initial amount of the fee is insufficient to cover the cost of the agency's monitoring the orderee's compliance with this order, within ten days of the agency's notice to the orderee of an additional fee necessary to monitor compliance with the order, the orderee shall submit the additional requested amount. Any portion of the fee in excess of

the actual cost incurred by the agency shall be refunded to the orderee no later than 30 days after the agency has determined the orderee is in compliance with all requirements of the order.

2. Within ____ days of the issuance of this order / On or before **(date)**, (a) the orderee shall retain consultants, acceptable to the agency, needed to carry out the activities in this order and (b) shall so notify the agency in writing.
3. On or before **(date)**, the orderee shall submit for the agency's review and written approval a comprehensive and thorough report which describes the existing conditions and evaluates alternative actions which may be undertaken by the orderee to correct **[describe what needs to be addressed]**. Such report shall (a) propose a preferred alternative or combination of alternatives with supporting justification therefor, (b) provide a preliminary design submittal, (c) state in detail the most expeditious schedule for performing each alternative and (d) propose a detailed schedule to perform all actions required to implement the preferred alternative, including but not limited to the start and completion date, or ranges of dates, of all proposed activities. The agency may require further submissions prior to the granting of agency approval of the report. The agency may require the orderee to submit periodic status reports.
4. Upon the agency's approval of actions to be undertaken pursuant to an approved report submitted pursuant to ¶ 3, the orderee shall undertake the approved activities in accordance with the approved schedule.

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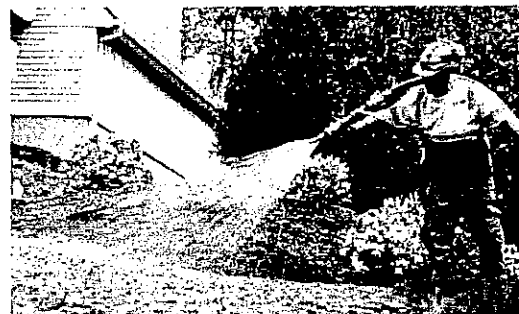
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herpetology, continued from page 4

We wrote the new book not only update the distributions of the state's herpetofauna, but to incorporate a wealth of new information about how to conserve these species. To accomplish this we grouped the species in a novel way, four assemblages based on threats, which we termed guilds.

In the mid-1990s I began working with municipalities in order to achieve better natural resource protection. As Connecticut and our neighboring states all have strong home rule traditions, it made sense that local wetlands agencies, conservation commissions, and planning and zoning commissions become active participants in better planning for the protection of ecosystems, and the wildlife which depends upon them.

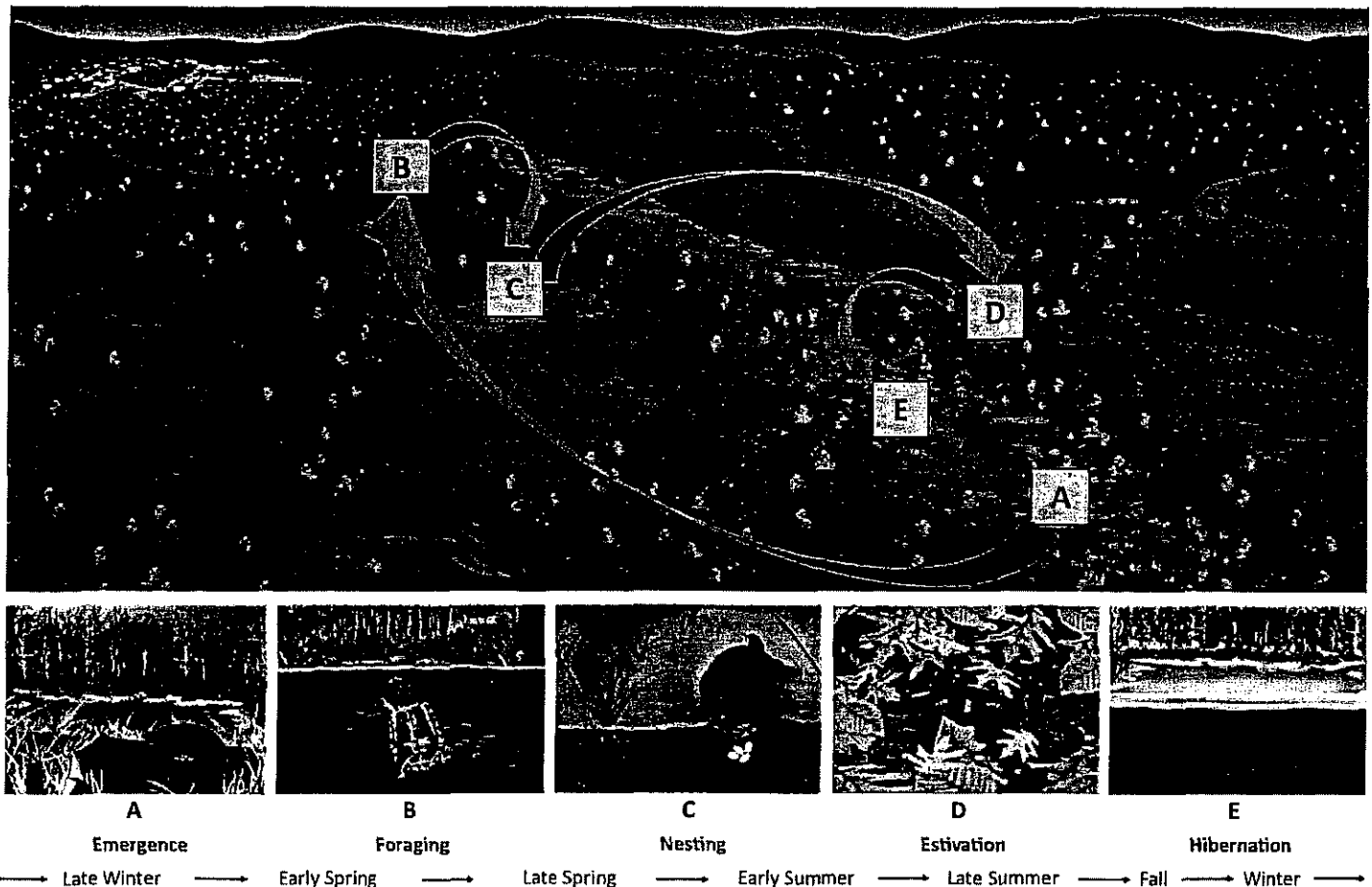
To that end, I founded the Metropolitan Conservation Alliance (MCA) in 1994 under the aegis of the Wildlife Conservation Society. Most of the multi-town studies and planning exercises we conducted were in the lower Hudson Valley of New York, but we had projects in New Jersey, and a seven-town study in Connecticut. It is the cornerstone of my professional belief (and career)

that local governments have a major role to play in the future of conservation in Connecticut and elsewhere. An entire chapter (8) of the new book discusses how better, scientifically-informed decisions can be made locally.

MCA's technical publications are available on my website: www.michaelwklemens.com/mca. Among those most familiar to many of you is the work that Aram Calhoun and I co-authored in 2002, about assessment and best development practices to conserve vernal pools.³ A future article in this series will discuss progress made in conserving vernal pools, and the pitfalls encountered, including how these guidelines have been misused.

Habitat fragmentation remains the principle threat to the survival of amphibians and reptiles. Many species have complex landscape-scale habitat requirements (*see below*). These requirements are beyond the statutory authority of local land-use commissions. Therefore, these species and their habitat use should be documented, ideally in a town's Natural Resource Inventory (NRI). The preparation and updating of a NRI is the single most important function of each

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herpetology, continued from page 12

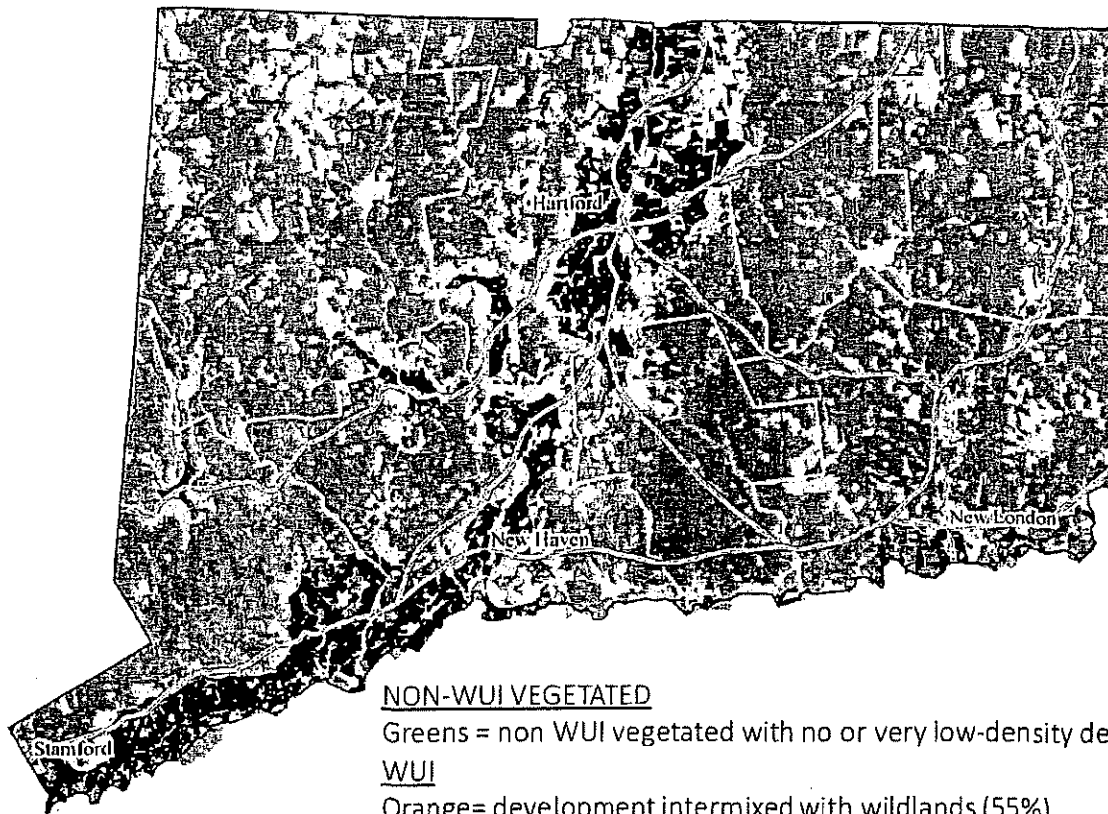
town's conservation commission. The NRI should be updated periodically and become an integral part of a town's Plan of Conservation and Development (POCD). Once the landscape-scale use of species like the spotted turtle, illustrated on page 12, are documented, then a conservation plan that includes various government agencies and other organizations should be formed. Such landscape-scale understanding can be a template to guide local development and wetlands decisions. The figure by Mari Reeder on page 12 is adapted from our recent publication.

Fragmentation can also be viewed from a statewide perspective. In our book we presented the Wildlife Urban Interface Map (*below, adapted from 4*). This map demonstrates that only a small percentage (18%) of Connecticut's land cover is intact forest. Large portions of the state shown in orange (55%) are perforated habitats, where development has intruded into the forested landscape. These orange areas present opportunities to develop smarter, reducing the ecological footprint of development and in some instances restore habitat connec-

tivity. Yet the orange areas are most often those selected for development. For example, the majority of solar farms that have been permitted in Connecticut over the last five years are within the orange zone. In this zone, solar development outpaces acreage consumption of traditional development. There is a mismatch (termed in our book, "mandates at cross purposes") between the concepts of promoting green energy versus where it is actually sited on the landscape. The subject of green energy (primarily solar) as a driver of habitat loss and fragmentation will form the basis of another article in this series, discussing not only the problem, but pathways to achieve a better balance between these competing interests at DEEP.

Climate change is an ongoing challenge, and its effects on biodiversity are affecting natural systems in a wide variety of ways. Some of these are readily apparent, but others are more subtle but non-the-less serious and some, I am sure, we are not even aware of yet. Greatly altered patterns of precipitation are widely-recognized as one effect of climate change. The recharge of

herpetology, continued on page 14



NON-WUI VEGETATED

Greens = non WUI vegetated with no or very low-density development (18%)

WUI

Orange = development intermixed with wildlands (55%)

Yellow = development interfacing with intermixed wildlands/wildlands (11%)

NON-VEGETATED

Red = medium-high density development (8%)

White = non vegetated low-density development or agriculture (5%)

Blue = water (3%)

herpetology, continued from page 13

wetlands has been greatly affected. Flooding is more frequent, as are droughty periods. There is an increased frequency of vernal pools drying out too quickly during the late spring and early summer, placing tremendous stresses on the successful development and metamorphosis of vernal pool amphibians. When I began my research in the 1970s through the early 1990s, the spring-time migrations to vernal pools and subsequent breeding occurred predictably between the vernal equinox in March and the first week of April. The altered climate in the last decades has been characterized by early springtime movement of a portion of the vernal pool amphibian population in late February and very early March, often followed by a two-week period of very cold temperatures, and then a second wave of migration in late March and early April. The hard freeze often results in the mortality of amphibians in the pools and their egg masses. Researchers have had to alter their vernal pool assessment protocols to accommodate this greatly attenuated bimodal breeding season.

The activity season for many amphibians and reptiles has been extended, especially in the autumn where

surface activity in some years extends into early November. In our new book, we have shortened the seasonal time period where brush clearing can safely occur along rivers and power line rights-of-way to prevent the incidental take (i.e., killing) of box and wood turtles that now remain active in those terrestrial habitats from early March through late October. Climate change has been linked to various pathogens, including snake fungal disease. Rising sea levels will inundate diamondback terrapin nesting areas. Along large portions of the Connecticut shoreline, development impedes the necessary landward expansion of tidal wetlands and associated terrapin nesting habitats. Many of our native turtles have temperature dependent sex-determination and have fidelity to certain nesting areas. Will climate change alter the sex ratios within turtle populations?

In the first decades of my research, I encountered the occasional released red-eared slider but these were not posing a threat to native turtle populations. In the last decade we have documented successful breeding of red-eared sliders at many lower lying sites in Connecticut. This species has become established and now is competing with native turtles, especially painted turtles.

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Some ponds new seem exclusively inhabited by this species. Soft-shell turtles have become established in the Connecticut River from East Hartford to Enfield and possibly elsewhere. Both the red-eared sliders and soft-shells have become established by direct human introduction into lakes, ponds and waterways.

Another non-native species, the Italian wall lizard, was introduced and became established in the boroughs of New York City in the 1970s, or even earlier.

In 2009, these lizards established breeding populations at several sites along the Metro North RR tracks in southwestern Connecticut. While these lizards may have been introduced by humans, we consider the most likely explanation is that the warming of the Connecticut shoreline allowed these lizards to migrate north-eastward from New York City along the disturbed RR corridor, which provided dry basking areas, ample cover, and invertebrate food. The arrival of this species in southwestern Connecticut in 2009 is strongly correlated with the revised plant hardiness zonal maps produced by the United States Department of Agriculture in 2012. These maps recognized that a small area of the shoreline in Fairfield and New Haven counties was now part of Plant Hardiness Zone 7, which is the same climatic zone where these lizards have been established around New York City for decades.

In summary, the previous climate change discussions, demonstrates that the conservation challenges we face in the opening decades of the 21st century are multi-faceted and synergistic. This does not mean that they are insoluble, but rather we need new approaches to deal with these problems. Understanding what is not working is the necessary first step leading to new solutions.

Surely the same human intelligence that has resulted in so many technological advances, including vaccines and advances in health care, can be brought to bear on these pressing issues of environmental stewardship.

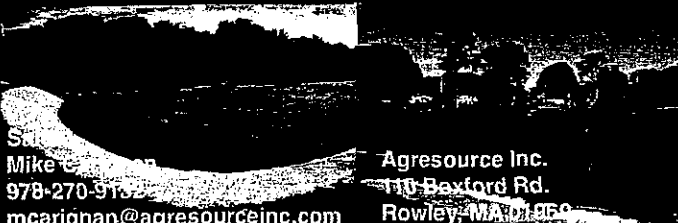
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DEEP's Municipal Inland Wetlands Agency Comprehensive Training Program

The DEEP's Municipal Inland Wetlands Agency Comprehensive Training Program has resumed! This FREE, online course was custom built to allow agencies and their staff to carry out the regulatory and training requirements of the Connecticut Inland Wetlands and Watercourses Act (IWWA). This program instructs and guides agency members and staff on both the law they are implementing and enforcing, and the resources they are charged with protecting.

The training program consists of 8 modules and is designed with text and video content, interactive activities, and module assessments to allow you to review and digest the material at your own pace. The DEEP will issue a Certificate of Achievement upon successful completion of the course.

This online training fulfills the requirement pursuant to Connecticut General Statutes (CGS) section 22a-42(d) that at least one member of the inland wetlands agency or staff of the agency be a person who has completed the comprehensive training program. This program also fulfills the training requirement for duly authorized agents pursuant to CGS section 22a-42a(c)(2).

The training program is being offered through a partnership with UConn's Center for Land Use Education and Research (CLEAR). To register, please see "CT DEEP Municipal Inland Wetlands Agency Comprehensive Training Program" posted under the "Training" section posted on the CLEAR webpage, see: UConn CLEAR. Questions regarding the training program can be directed to Darcy Winther, CT DEEP, Inland Wetlands Management Program (darcy.winther@ct.gov).

Celebrate 50 years of the CT IWWA (1972 – 2022) and register for this important training program! ♣