

The latest updates from the Eightmile River Wild & Scenic Watershed



Hamburg Cove, Lyme | Photo credit: Frank DiNardi

Chairman's Column

by Anthony Irving

Over the past year the Eightmile River watershed has been a scene of great activity. This quiet corner in southeastern CT erupted with use as the pandemic inspired folks to make a connection with the outdoors. It is the one place we can socially distance while sharing with one-another, giving us a few hours of seeming normalcy.

continued on page 3

IN THIS ISSUE

INTERN SPOTLIGHT

WATER QUALITY MONITORING

HERPETOLOGY INVENTORY

WATERSHED BIODIVERSITY

Spread of Invasive Aquatic Plants

by Riley Doherty

Hydrilla, an invasive aquatic plant species from eastern Asia, is quickly spreading throughout the lower Connecticut River. While hydrilla has previously been found in some Connecticut lakes, the hydrilla in the River is a new genetic strain to North America. This new strain is more robust and is spreading fast, taking over entire coves and shallow areas. An infestation of hydrilla can crowd out native vegetation, harm fisheries, limit recreation, obstruct navigation, and reduce property values. Large areas of the Connecticut River and associated coves, including Hamburg Cove, are now infested with hydrilla.

In 2019, the Eightmile River Wild & Scenic Coordinating Committee (ERWSSC) committed funds to CT Resource, Conservation and Development to help fund an invasive aquatic plant survey of the lower portion of the Connecticut River. Scientists Greg Bugbee and Summer Stebbins of the Invasive Aquatic Plant Program (IAPP) at the CT Agricultural Experiment Station (CAES) completed surveys of the Connecticut River in 2019 and 2020. ERWSSC also hired the IAPP to conduct aquatic plant surveys of Lake Hayward, Uncas Pond, Norwich Pond, and Mitchell Pond.

Continued on page 4

The Eightmile Wild & Scenic Coordinating Committee Members

Anthony Irving, Chair

Lyme Land Conservation Trust

Bernie Gillis

Town of East Haddam

David B. Bingham

Salem Land Trust

Anthony Griggs

Town of Salem

Ed Natoli

Town of Salem

Richard Chyinski

Salem Land Trust

Parker Lord

Town of Lyme

Melvin Woody

Lyme Land Conservation Trust

Paul Armond

Town of Lyme

Rob Smith

East Haddam Land Trust

Mary Augustiny

Town of East Haddam

Pete Govert

East Haddam Land Trust

Kim Barber-Bradley

Town of Salem

Regan Stacey

Town of Lyme

Liz Lacy

National Park Service

Eric Thomas

CT DEEP

Dave Gumbart

The Nature Conservancy

Staff:

Patricia Young

Riley Doherty

Intern Spotlight

by Geré Johnson

Hi, my name is Geré Johnson, and I am an Environmental Intern working with the Eightmile River Watershed through a Three Rivers Community College program funded by a grant from the Eastern Connecticut Foundation. I was born and raised in Philadelphia but moved to Connecticut in 2016 to study marine sciences at UCONN. As a child from the city, I was not exposed to nor taught how to enjoy nature, but I was always very interested in science and how things like bugs or plants adjusted to their environment.



While in high school, I was accepted into a science program called WINS (Women in Natural Sciences), and in my junior year I was given the opportunity to travel to Mongolia to study how climate change is affecting the native nomadic people. Many of the native people are farmers, and at the time of my visit they had been in a drought for seven years. After seeing the firsthand effects that climate change has on underrepresented farmers in the U.S. and around the world, my dream job would be to help farmers, specifically people of color, adapt to and prepare for the effects of climate change. I am also interested in any environmental position that would allow me to continue with fieldwork and gain new learning experiences. The Eightmile River has taught me how to appreciate my Connecticut environment while also giving me the tools to make change towards the future of climate change. I've enjoyed doing field work, educational programming, and learning digital mapping tools with the Eightmile River Wild & Scenic Watershed.

2019-2020 Expenditures and Volunteer Contributions

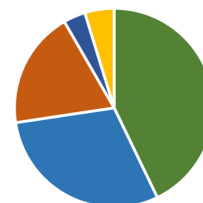
Expenditures

\$65,879	Contract Staff
\$ 6,406	Operating Costs
\$ 2,015	Education and Outreach Committee
\$ 3,040	Work with a Scientist- Project
\$ 4,295	Monitoring and Science Committee
\$ 2,301	Protection, Management, & Project Review Committee
\$ 638	Executive Committee
\$ 4,289	Annual Report & Newsletter
\$ 7,500	Community Project Grants
\$96,363	Total

Value of Volunteer Contributions

Total Hours = 420
Value in Dollars = \$13,470.00

- Board Member Contribution Hours
- Subcommittee Contribution Hours
- Citizen Scientist Contribution Hours
- Community Volunteers Hours
- Professional Service Contributions



Volunteer Rate of \$32.07/hour based on Independent Sector

Thank you to the Lyme Land Conservation Trust, for their continued support as ERWSCC's fiscal agent.

Chairman's Column *continued...*

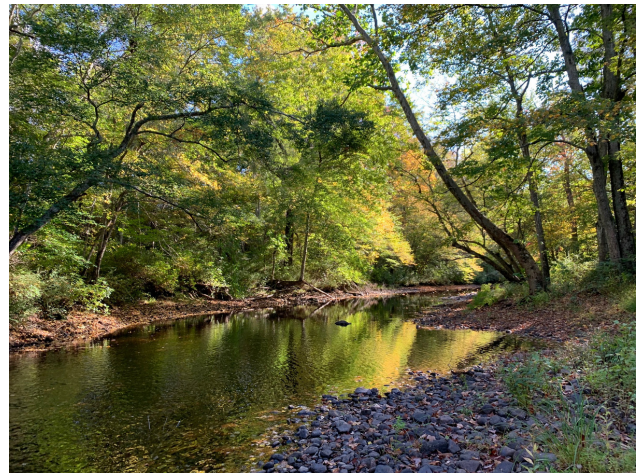
Not only is the outdoors a safe refuge but one full of beauty and wonder while we exercise and refresh our spirits. The “Wander Our Watershed” map we produced last fall highlights 44 parks within the watershed that are open for recreation. On weekends, especially, parking lots are full, but remarkably when you’re out on the trails it is still easy to find solitude and peace.

But these same open spaces provide the resources required for the lifecycle needs of all the other species indigenous to our watershed. It is in part because of the habitat quality of our 40,000-acre watershed that the Eightmile was recognized as one of the nation’s Wild and Scenic river systems. Of the six resource values that Congress recognized as reason for designation, “Unique Species and Natural Communities” and “The Watershed Ecosystem” were cited as exceptional for this near-coastal watershed in southern New England. Not only are there numerous, distinct habitat types, but so much of the landscape is in large, forested blocks with connections between them. Wildlife need space, not just for individuals, but for adequate numbers capable of maintaining viable populations and genetic diversity. A pair of bobcats by itself is not a sustainable population. Territory of sufficient size and resources is required with connections to other suitable habitat for successful population maintenance. With over 15,000 acres of protected open space and thousands more in private ownership, the Eightmile River watershed is a critical piece for wildlife sustainability in southern New England.

The question is one of balance, especially during these high-use periods. What is good for us is not necessarily beneficial to wildlife. Our increased use of these spaces may interfere with the natural functioning of habitats, making it important that as we use the preserves, we minimize our footprint. Keeping dogs leashed/under control is crucial. Ground nesting birds such as turkey, wood and hermit thrushes, the northern junco, meadowlark and woodcock are easily disturbed. Most of our mammals typically give birth in the spring. Fawns, coyote and fox pups and bobcat kittens are especially vulnerable to dogs on the loose. But with our understanding and diligence there is no reason why we all can’t benefit from of our watershed spaces.



Walden Preserve in Salem - an important ground nesting bird habitat.



Eightmile River at Pleasant Valley Preserve in Lyme.

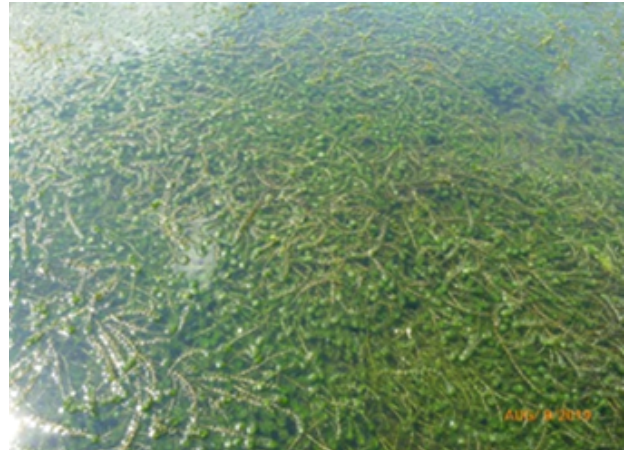


Devils Hopyard State Park, East Haddam

Spread of Invasive Aquatic Plants *continued...*

Hamburg Cove

Three invasive aquatic plant species were found in Hamburg Cove in 2019. Hydrilla and Eurasian watermilfoil have spread to create large patches in the cove, infesting about 33 acres each. The other invasive species, Variable-leaf watermilfoil, was found near the marina and yacht club and infests less than an acre. To view the interactive map of the Connecticut River survey visit: <https://bit.ly/39O5x82>. Going forward, ERWSCC plans to collaborate with the Connecticut River Conservancy and the CT Agricultural Experiment Station, where possible, to combat the invasive aquatic plant species in Hamburg Cove.



Dense patch of hydrilla in CT River | CAES IAPP



As seen in the maps above, both hydrilla and Eurasian watermilfoil have become issues in Hamburg Cove. The darker the shading, the higher the density of the plant. | Images provided by CAES IAPP.

Uncas Pond and Norwich Pond, Lyme

No invasive aquatic plant species were found in Uncas and Norwich Ponds. The survey found nineteen native aquatic plant species in Uncas Pond and twenty-one native species in Norwich Pond. Phragmites, an invasive wetland plant, was noted on the eastern shore of Uncas Pond and on the southern shore of Norwich Pond.

Mitchell Pond, Salem

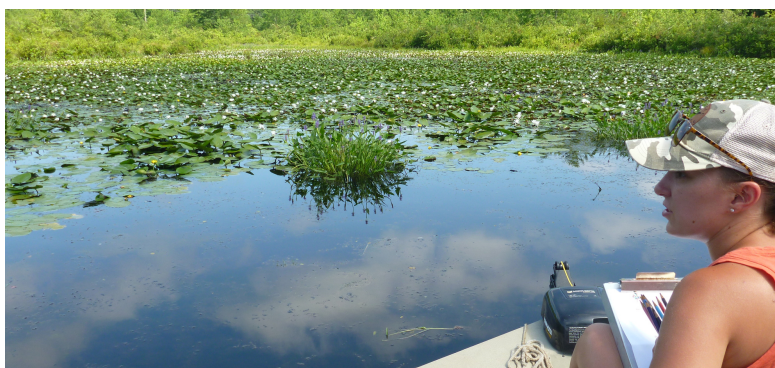
Seventeen native aquatic plant species were recorded in Mitchell Pond in the 2019 survey and no invasive aquatic plant species were found.



Greg Bugbee in the IAPP survey boat on Lake Hayward | CAES IAPP

Lake Hayward, East Haddam

Twenty-seven different aquatic plants were found in the 2019 Lake Hayward survey, however only one invasive species, fanwort, was noted, and this was primarily located near the State boat ramp. Fanwort in Lake Hayward has increased slightly since an earlier study in 2013. Two previous surveys of Lake Hayward in 2005 and 2013 noted the presence of the invasive aquatic plant species variable-leaf watermilfoil, however in the 2019 survey it was not present.



Surveying the aquatic plants in Lake Hayward | CAES IAPP

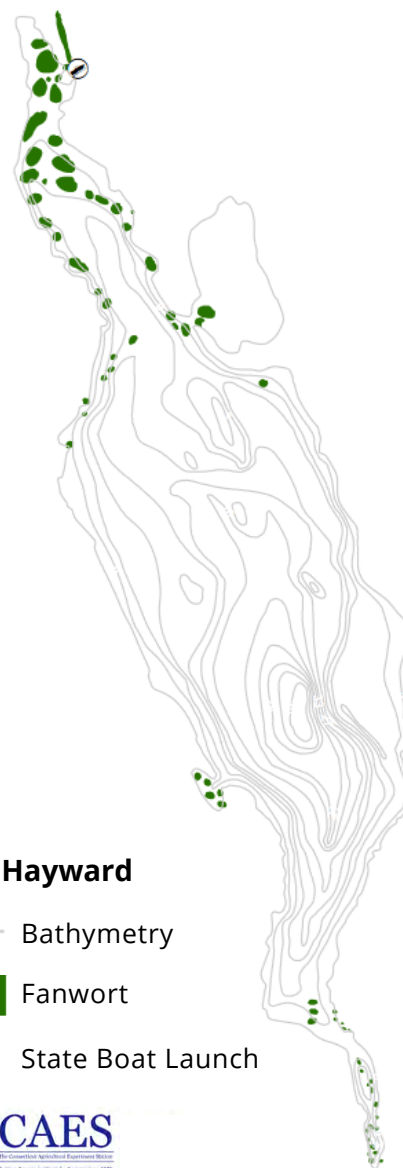
Do Your Part

If you take your boat or kayak out on the Connecticut River or any other water body, it is important to thoroughly clean it afterwards to prevent the spread of invasive aquatic plants.

- Follow the clean, drain, dry protocol, which can be found at <https://stopaquaticchitchhikers.org/prevention/>
- Assure that no plant fragments are left on your motor, trailer, or boat.
- Educate your friends and family!

Lake Hayward

- Bathymetry
- Fanwort
- 🚤 State Boat Launch



MEET THE SCIENTISTS

Greg Bugbee is an associate scientist at the Connecticut Agricultural Experiment Station where his career has spanned over 40 years. He is the principal investigator in the Invasive Aquatic Plant Program and directs the Station's soil testing laboratory. He has led aquatic plant surveys of over 350 Connecticut lakes and ponds and has directed research projects on invasive aquatic plant control statewide. He has numerous popular and scientific publications and is the recipient of the Journal of Aquatic Plant Management "Outstanding Paper Award." Recently, his surveillance of the Connecticut River has documented an extensive infestation of a genetically distinct strain of hydrilla that poses a severe threat to the native ecosystem.

Summer Stebbins is an aquatic Biologist/GIS Analyst at the Connecticut Agricultural Experiment Station since 2015. She is the lead surveyor for the Invasive Aquatic Plant Program, having performed over 70 aquatic plant surveys of Connecticut's lakes, ponds, and rivers. Her most recent work includes documenting the extensive infestation of a genetically distinct strain of hydrilla in the Connecticut River and the development of an online app showing the hydrilla locations.

Water Quality Monitoring in the Watershed

by Riley Doherty

Establishing Thermal Classes of Streams in the Watershed

Stream temperature loggers are deployed every summer and record measurements every hour. Through a partnership program with CT DEEP, we tripled the number of temperature loggers we deployed in 2020 to thirty to fill in gaps in data sites. The loggers allow us to monitor stream temperatures in the warmest months of the year when warm water can have a negative impact on fish and other aquatic life. Native brook trout need temperatures under 19°C for growth and generally cannot survive temperatures above 24°C. The data we collect is analyzed to determine the stream thermal class, whether the streams are cold, cool, or warm. This information can be viewed on the map for all streams monitored to date. Some stream segments have not been monitored due to difficult access or very shallow conditions. Factors that can raise stream and river temperatures include the presence of dams, increased exposure due to inadequate streamside vegetative buffers, and runoff stormwater.

Conductivity Monitoring to Establish Salt Levels

Eight conductivity loggers remain in streams year-round recording measurements every hour. Conductivity readings allow us to monitor the levels of dissolved salts and other inorganic materials in the water by measuring the electrical current. Stream conductivity is primarily a result of geology and soils, however there is a growing concern of chloride (salt) input which increases conductivity and can have a negative impact on the freshwater fish and other organisms living in the stream. Conductivity logger data gives us a better understanding of how salt is impacting our local streams and groundwater over time. The map displays the conductivity logger locations for the last two years.

Summer Stream Monitoring

Currently, eleven streams are monitored every summer in the watershed for ten weeks using handheld instruments. Conductivity, temperature, pH, total dissolved solids, salinity, and dissolved oxygen are all measured at the same time and day each week. The



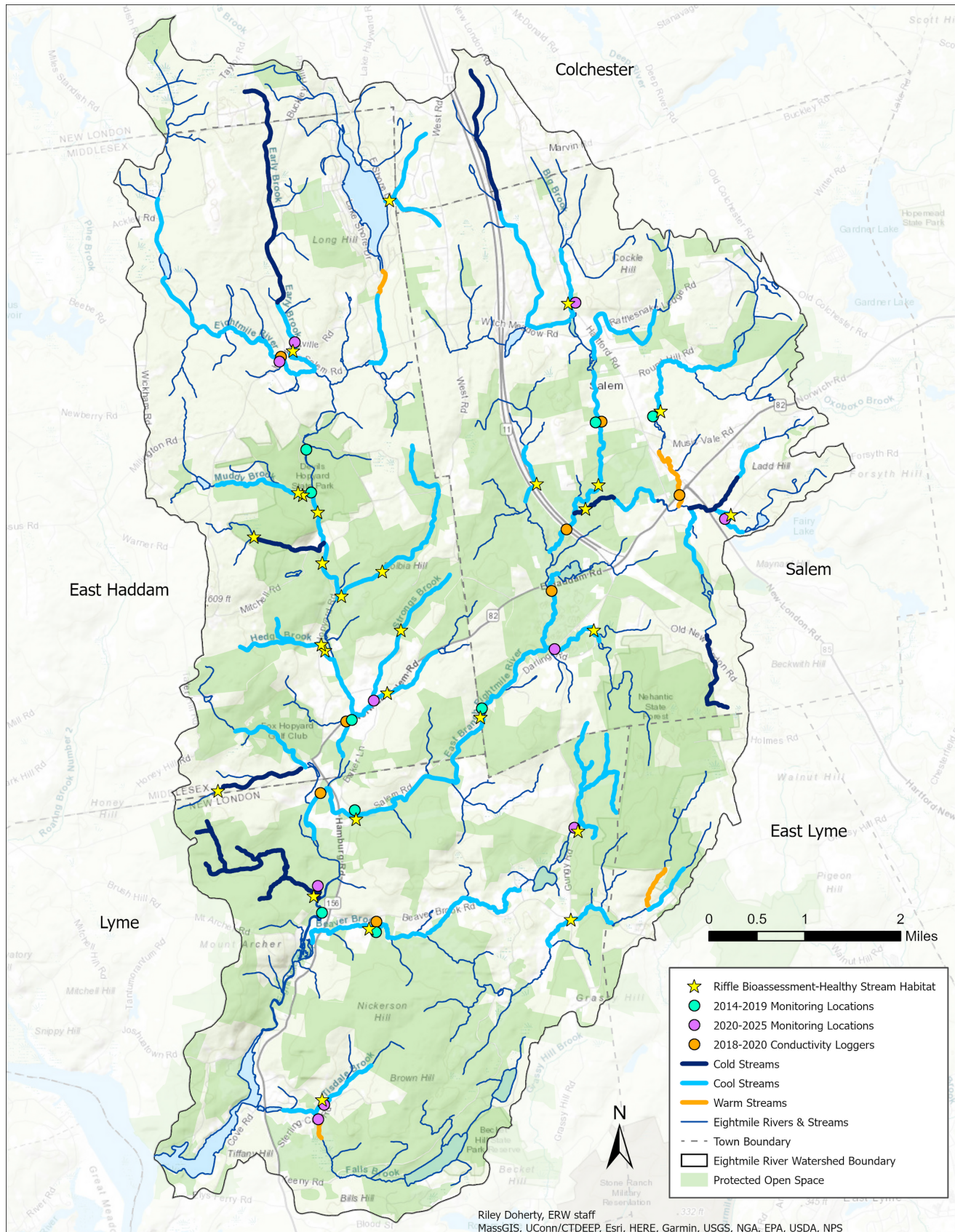
Summer intern, Paul, collecting temperature loggers

purpose of these measurements is to establish baseline conditions. The same locations will be monitored for at least five years and then new locations will be selected. The map shows the nine sites monitored from 2014-2019 as well as the new sites that started in 2020 and will continue through 2025.

Riffle Bioassessments

Riffle bioassessments are the analysis of stream riffle habitats through the collection and identification of benthic macroinvertebrates, which are insects that live underwater in the riffle habitats of streams and rivers. Many of them, including caddisflies, stoneflies, mayflies, and dragonflies, spend most of their lives underwater in larval form before undergoing metamorphosis and emerging from the water as flying insects. Certain macroinvertebrates are considered indicator species as they are especially sensitive to different water quality factors. Therefore their presence in a stream is an indicator of habitat quality. In Connecticut, if four or more different indicator species (as identified by CT DEEP) are found, the stream can be considered a healthy habitat. On the map, you can view all the locations where four or more different indicator species have been found.

Water Quality Monitoring in the Watershed



Balancing Recreation with Land Conservation and Protection of Reptiles and Amphibians

by Dennis Quinn

Integrating recreational uses into rural landscapes presents a unique set of challenges. While there is consensus that development, i.e., the construction of structures, roads, and infrastructure, frequently impacts natural resources, there is less understanding and acceptance that routing trails and other passive/active recreational access through natural areas has the potential to create negative impacts. This is a dynamic tension for conservationists because we recognize that encouraging people to access natural areas helps build a constituency for those areas, and that constituency becomes an advocate for habitat, species, and open space conservation. The Eightmile River Wild and Scenic Coordinating Committee (ERWSSCC) recognizes there may be impacts from passive/active recreational use of the watershed and that those impacts can be avoided or minimized with baseline species inventory data identifying highly sensitive natural resource areas. To that end, ERWSSCC contracted with Quinn Ecological, LLC to conduct a herpetological inventory of the Eightmile River Watershed to better understand the amphibian and reptile populations and critical habitats subject to land use impacts within the watershed.

Beginning In 2019 and continuing through 2020, Quinn Ecological, LLC conducted surveys to inventory the amphibians and reptiles of the Eightmile River Watershed. To date these surveys have documented a diverse assemblage of species, totalling 21 amphibians and reptiles, including the state listed spotted turtle (*Clemmys guttata*) and eastern ribbonsnake (*Thamnophis saurita*). Diversity hotspots with mosaics of critical habitats, including wetlands, early successional, transitional and forest habitats, were also identified during surveys. Many of these areas will benefit from active habitat management programs which will be developed in coordination with the Connecticut Department of Energy and Environmental Protection (CTDEEP).



Spotted Turtle (*Clemmys guttata*) | Photo by D. Quinn



Eastern Ribbon Snake (*Thamnophis saurita*) | Photo by D. Quinn



Marbled Salamander (*Ambystoma opacum*) | Photo by D. Quinn

These programs will focus on maintaining early successional habitats and the removal of invasive plant species within the region. In addition to species and habitat inventories, long-term monitoring sites for the spotted turtle were identified as part of a multi-state conservation initiative in coordination with the CT DEEP. These sites will be monitored to better understand long-term population dynamics, potential threats, and ultimately guide the development of regional management protocols for the spotted turtle.

During 2021 and 2022, Quinn Ecological, LLC will be working with ERWSSC to develop community outreach programs to facilitate hands-on community involvement in ongoing conservation initiatives within the region. These programs will be designed to connect residents with the diverse habitats of the Eightmile River Watershed and focus on the importance of protecting, managing, and conserving these habitats to maintain this diverse and ecologically rich region of Connecticut.



Wood Frog (*Rana sylvatica*) | Photo by D. Quinn

MEET THE SCIENTIST

Dennis P. Quinn received a Master of Arts in Environmental Science from Central Connecticut State University. He has over 20 years of experience studying amphibians and reptiles in the northeastern U.S. Since 2012, Mr. Quinn has contracted with the Wildlife Management Institute to conduct and coordinate State and regional research and conservation initiatives for the CTDEEP. Mr. Quinn serves as an adjunct instructor of Zoology and Field Biology at Naugatuck Valley Community College and is an internationally published wildlife photographer.

Biodiversity of the Watershed: A Conversation with Botanist William Moorhead

By Pat Young

Background: Back in the early 2000's, the Eightmile River Wild & Scenic Study Committee (now known as the Coordinating Committee or ERWSSC) commissioned botanist William Moorhead to conduct a study of the biodiversity of the watershed. In reviewing resource mapping, existing data on imperiled species (*those plant and animal species that may be uncommon due to limited habitat or those considered rare, threatened, or endangered*), and conducting field surveys, it became apparent that the Eightmile River Watershed had a considerable diversity of habitats, large blocks of undeveloped areas and verification of 53 rare vascular plant species, among other findings. These discoveries were instrumental in the final Wild & Scenic designation process. In 2019, the Coordinating Committee requested an update of the original assessment. Below is an interview of the progress to date. Note: Some of the answers have been summarized to fit in the format of a newsletter.

Q. What does the current survey involve?

A. The current survey involves revisiting as many of the original 100 or so sites as possible which were determined to be significant natural communities or critical habitats. At each site, I document what is existing and what has changed. Differences can be related to things such as land management, climate change, insect infestation or deer browse. I also note the presence or absence of previously observed imperiled plant species and changes to their populations. The final report will also include recommendations for management to maintain or encourage more robust populations.

Q. What are "significant natural communities" and "critical habitats"?

A. The terms "significant natural communities" and "critical habitats" have evolved over the last fifteen years or so. Generally speaking, significant natural communities are areas that are important but relatively rare on the landscape, and critical habitats are those habitats which support species of greatest

conservation need or those most threatened. These include different types of; intertidal marshes, fens (sometimes also referred to as bogs; note: fens are alkaline, bogs acidic), seasonally wet meadows, acidic cliffs, dry grasslands, xeric sand barrens and Atlantic White Cedar swamps, among others.



Fresh tidal marsh habitat with globally rare plants |
Photo by W. Moorhead

Q. Why is it important to know about and protect these habitats?

A. These habitats, because they are specialized, are often home to rare plants. Many of these plants are imperiled plants; plants that are on the decline or are uncommon, threatened, or endangered. Often, it is because their habitat is uncommon or it has been modified or destroyed. Many of the plant species may be critical to certain faunal (*animal*) species. For instance, certain moths or butterflies will only feed on very specific host plants. Therefore, these imperiled plants are critical to certain animal species and protecting their habitat protects both the plants and animals.

Q. Are there any significant trends you have noted compared to your original survey work in the early 2000's?

A. Yes, some I would consider negative and some positive.

1. Unfortunately, due to management changes in response to maintenance needs along major power lines, habitats that were generally open and devoid of organic layers, which also supports certain imperiled plants, have been modified to a more hardened landscape and no

longer conducive to those species. And another policy decision appears to consider red cedar, a smaller, native, slower-growing tree species, to be incompatible with power line management. Red cedar has a high wildlife value and is known regionally to support certain rare moth species and therefore the loss of these trees may impact certain populations.

2. In other open areas previously supporting imperiled native plants, such as former gravel pits, highway cuts and old roadways, non-native invasive plants like autumn olive have taken over, shading out these species.

3. Based on field research in the last couple of years it does appear that the forest undergrowth, in areas surveyed, has a much healthier understory (*layer of shrub and herbaceous plants occurring under tree canopy*) which seems to be a result of less deer browse.

4. The area above the recent Ed Bills Dam removal site on the East Branch of the Eightmile River in Lyme is what I would describe as a stunning success story for revegetation with native species. I was expecting there to be more non-native invasive plants present since the site was relatively exposed for a while, but between the existing seed bank that lay in the sediment at the bottom of the old pond and how the site was managed, it is now a healthy wet meadow habitat.



Oak Fern in cold talus habitat | Photo by W. Moorhead

Q. Can I ask for a clarification? It sounds like the first two habitats though, are due to relatively recent man-related disturbances—so would these imperiled species have even been here in the past—historically speaking?

A. That's a good question. If we consider that fire was much more common in the past, whether used by Native Americans to manage the landscape, or as an act of nature, these open habitats where the duff layer (*layer of accumulated organic matter*) would have burned off, were likely more common. Therefore, these areas could have supported these rare species that require open areas with minimal organic matter. And even after colonization, widespread fire control did not exist until after the beginning of the 1900s.

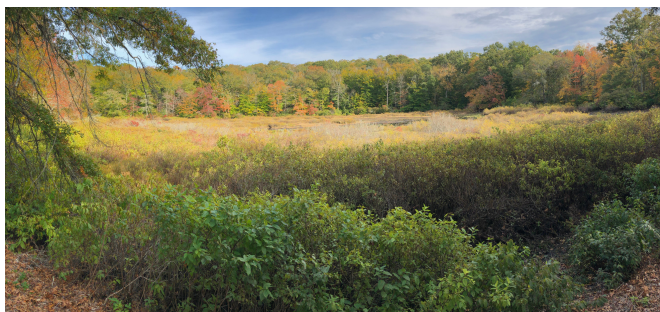
Q. Why is diversity important in a changing climate?

A. Simply speaking, a more diverse landscape which includes a greater diversity of plant species is better poised to adjust to changing conditions. And the area of the Eightmile Watershed hosts plants which are both at the southern edge of a more northern climate and also plants that are at the northern edge of a more southern climate. So for instance if the climate shifts to more warmer, wetter conditions as some scientists have predicted, the watershed already hosts plant species that are better adapted to these conditions.

Q. From a plant diversity standpoint, how does the Eightmile River Watershed rank in the region? And how many rare plants have you noted?

A. The Eightmile River Watershed ranks very high, in the top ten percent, compared to other watersheds in the New England region in terms of the number of rare or imperiled plants and animals that are extant in the watershed. This is due in part to the surficial and bedrock geology of the area, in part to the area's location near the coast, in part to the relative lack of development, and in part to patterns of historic land use and recent management of open-canopy habitats, which have together contributed to a diverse array of habitats, many of which are relatively uncommon. And it is those rare habitats which tend to support the rare or imperiled species.

In my original studies, I determined that there were 53 documented occurrences of plants that are endangered, threatened or species of concern at the state, regional or global level, and I predicted that number was likely even higher. My most recent field work revisiting the original sites resulted in the finding of an additional 19 rare plant occurrences. However, I was unable to locate 9 of the original occurrences, so that leaves us with a net gain of 10 rare plant occurrences for a total of 63 documented occurrences.



Medium fen habitat | Photo by W. Moorhead

MEET THE SCIENTIST

William Moorhead is a botanist and plant ecologist with the CT Department of Energy and Environmental Protection. He has over 30 years of experience as an independent consulting field botanist specializing in the search for populations of rare plants and their habitats, the study of plant communities and the factors determining their species composition and distribution, and classification and mapping of critical habitats and significant natural communities. He has worked in CT, MA, NY, RI, MD and VA. Highlights of his work include the rediscovery of 31 plants species presumed extirpated, and the discovery of over 900 new populations of rare plants. As a consultant, he also led botany and plant community walks and “eco-tours”, taught plant identification workshops in difficult plant groups, conducted research on invasive plants and led volunteers in non-chemical invasive plant control projects in critical/sensitive habitats.

EIGHTMILE RIVER
WILD & SCENIC WATERSHED

1066 Saybrook Road
PO Box 70
Haddam, CT 06438

Postal Patron



Contact us

✉ info@eightmileriver.org

☎ 860-345-8700

🌐 eightmileriver.org | WanderOurWatershed.org

Follow us on social media

📘 [Eightmile Wild & Scenic River Watershed](https://www.facebook.com/EightmileWildandScenicRiverWatershed)

📷 [@eightmile_wildandscenic](https://www.instagram.com/eightmile_wildandscenic)



Oil painting of the Eightmile River at Devils Hopyard by local artist, Hillary Ballek