

# Notes from the Field

THE WATERSHED FORESTRY PARTNERSHIP & RIPARIAN BUFFER WORKING GROUP NEWSLETTER

SPRING 2022

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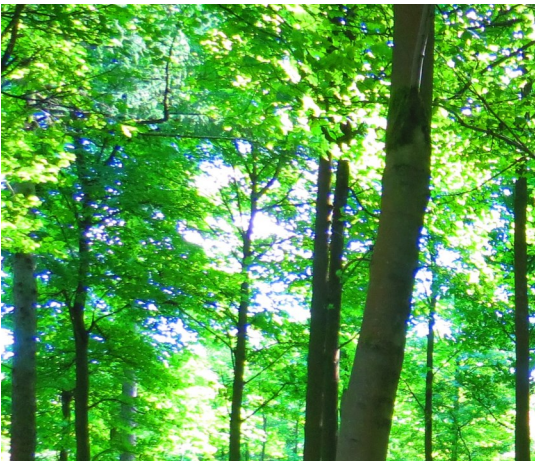
## RECONNECTING RIVERS AS A NATURE-BASED SOLUTION TO CLIMATE CHANGE

*Karina Dailey, Restoration Ecologist, Vermont Natural Resources Council*

Relic dam removal is critical to reconnecting rivers, restoring riparian habitat, and reducing flood vulnerability. The proactive removal of aging dam infrastructure and restoration of natural stream processes is a nature-based solution to climate change. Vermont has over 800 dams which no longer serve their original economic purpose – they prevent aquatic organism passage and block cold water refuge for migratory fish, and in many cases worsen the flood risk within the local watershed.

Last fall, Vermont Natural Resources Council (VNRC) and partners met along Tenney Brook in Rutland to celebrate the removal of Dunklee Pond Dam. With approximately 13 miles of habitat reconnected, Tenney Brook is once again a free-flowing river, allowing for the natural movement of fish and other aquatic organisms, as well as terrestrial birds and animals. The dam removal also addressed a significant flood hazard; prior to removal the City of Rutland had to evacuate the nearby homes (adjacent the dam) a total of eight times during heavy rainfall events to ensure public safety.

Read more about the Dunklee Pond Dam removal on [pages 2-3!](#)



# REPORTING BACK FROM THE 2022 LAKE CHAMPLAIN BASIN RIPARIAN BUFFER PRACTITIONERS' MEETING

Alison Adams, Watershed Forestry Coordinator, UVM Extension & LCSG

In late March more than 150 riparian buffer practitioners from across the state of Vermont met for a two-day virtual meeting to discuss best practices, new research, and recent work related to riparian forest restoration.

The meeting, organized by the Watershed Forestry Partnership, was the fourth annual meeting of this group. Topics covered over the course of 10 virtual sessions included updates from 20+ partners in the network; an update on the rollout of Act 76 and associated funding opportunities; managing buffers for birds and pollinators; a discussion of recent work around direct seeding; tips for managing emerald ash borer in our forests and riparian areas; and much, much more. The meeting sparked new ideas and collaborations including a field visit for practitioners to a process-based restoration project this fall—stay tuned for more on that coming soon.

The Watershed Forestry Partnership has compiled all of the meeting materials, including the agenda and links to videos of each session, on the [meeting archive page](#).



We look forward to working with everyone over the next year, and convening—hopefully in person again!—for the next annual practitioners' meeting in spring 2023! ♦

**NEW & EMERGING RESEARCH**

## THE ROLE OF MYCORRHIZAE IN PHOSPHORUS UPTAKE: NEW ARTICLE FROM JESS RUBIN & JOSEF GÖRRES

A new paper authored by Jess Rubin (UVM & MycoEvolve) and Josef Görres, “The effects of mycorrhizae on phosphorus mitigation and pollinator habitat restoration within riparian buffers on unceded land,” was published in *Restoration Ecology* earlier this spring. The paper is available in full in the [Watershed Forestry Partnership resource library](#).

Jess would like to thank the Watershed Forestry Partnership partners who contributed to the survey that is referenced in the paper.

For more information about MycoEvolve’s research, earthworks, and education offerings please visit [www.mycoevolve.net](http://www.mycoevolve.net).



# RECONNECTING RIVERS AS A NATURE-BASED SOLUTION TO CLIMATE CHANGE

*Karina Dailey, Restoration Ecologist, Vermont Natural Resources Council*

*(cont. from front page)*

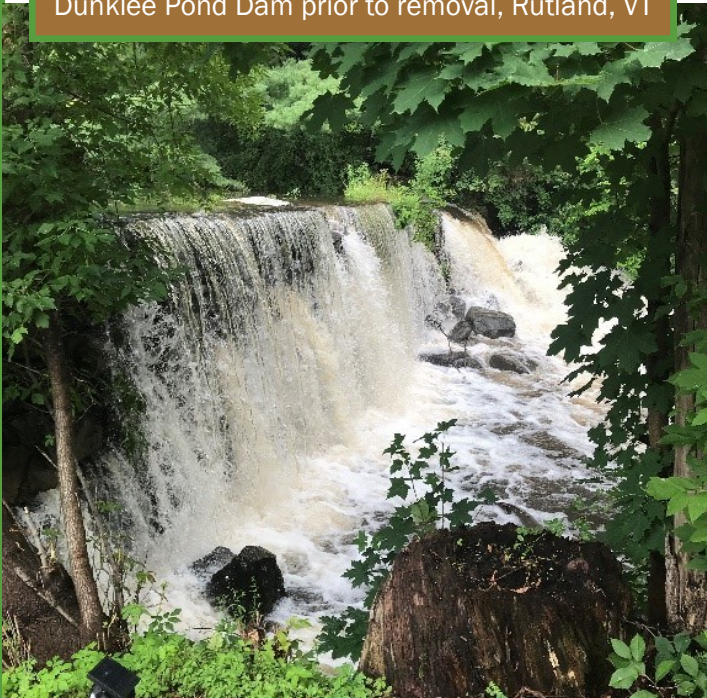
The dam removal was the culmination of a three-year design and permitting process that involved many stakeholders and partners. The restoration project involved removal of the dam, excavation of about 11,300 cubic yards of sediment from behind the dam, and the creation of a new pilot stream channel and floodplain in the former Dunklee Pond. According to River Management Engineer Todd Menees, the dam removal project excavated about 400 pounds of phosphorus that would otherwise have reached Lake Champlain, and the restored floodplain wetlands will trap future sediments from contributing to the cyanobacteria blooms in Lake Champlain. Spring planting is scheduled for May 20<sup>th</sup> when approximately 900 native tree and shrub species will be planted along the restored floodplain.

While there were definitely some challenging days balancing the many elements of this project, the benefits are already apparent as the river is able to move freely within its floodplain and the overall biodiversity of the system has increased. We are grateful to the dam landowners, the Shah family, the neighbors, Forte Brothers, Pond Meadows Association, the City of Rutland, SLR engineering team, Kings Construction Vermont River

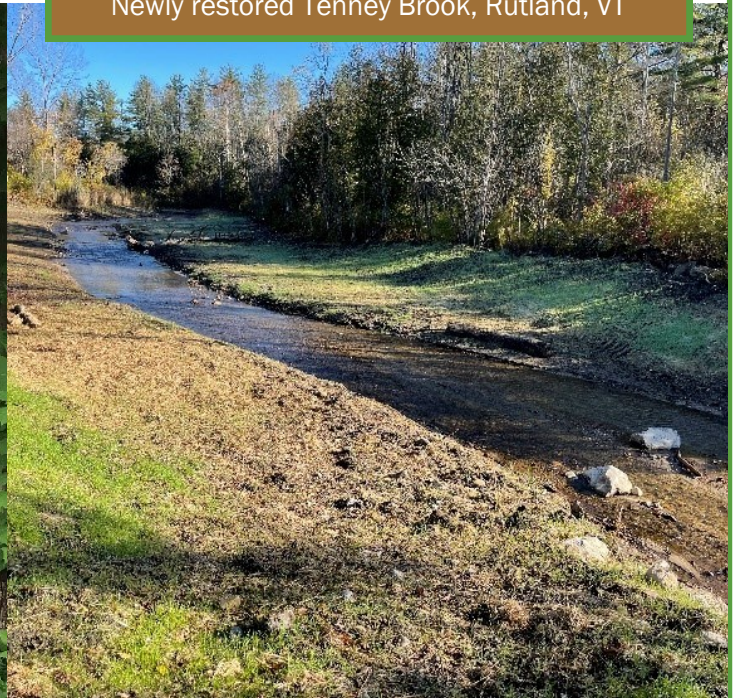
Conservancy, U.S. Fish and Wildlife Service, NEIWPC in partnership with the Lake Champlain Basin Program, Trout Unlimited, and the VTDEC Ecosystem Restoration Program for the support, cooperation, and appreciation of this dam removal project. It takes a village to remove a dam!

VNRC has plans to remove another dam this summer - the Pelletier Dam in Castleton, Vermont. This dam is located on North Breton Brook — a tributary to the Castleton River — and is approximately 180 ft long by 20 ft high. The dam is owned by the State of Vermont (VT Fish and Wildlife Department) and for the past 134 years has caused a significant impediment to stream flow, sediment transport, and fish passage along North Breton Brook and the Castleton River. The removal of this dam will reconnect approximately 36 miles of native wild eastern brook trout habitat, and restore approximately 2,700ft of riparian zone floodplain and stream habitat. In order to protect downstream infrastructure and restore the stream channels natural geomorphology approximately 15,000 cyd of sediment (and the phosphorus it contains) is proposed to be removed. The dam removal will not only restore natural sediment transport but will also lower water surface elevations to mitigate flooding associated with large storm events. *(cont.)*

Dunklee Pond Dam prior to removal, Rutland, VT



Newly restored Tenney Brook, Rutland, VT



(cont. from pg. 2)

Funding for design, permitting, and construction has been provided by NEIWPC in partnership with the Lake Champlain Basin Program, the National Fish Passage Program, The Nature Conservancy, Vermont Fish and Wildlife Department and the Vermont Department of Environmental Conservation. Stone Environmental is the engineer for the project.

For more information about the work VNRC and partner organizations are doing to remove unused and unmaintained dams across Vermont, visit <https://freevermontrivers.org/>. ◆

Pelletier Dam, North Breton Brook, Castleton, VT



## UPDATES FROM THE VERMONT RIVER CONSERVANCY: NEW STAFF & RESTORATION PROJECT HIGHLIGHTS

*Erin De Vries, Conservation Program Manager, Vermont River Conservancy*

### NEW STAFF

The first week of May, Erin De Vries joined the VRC team as Conservation Program Manager. She knows the organizations work well, having helped with easement monitoring and stewardship over the last year. Going forward, Erin will play a lead role building out the river corridor easement program and strategizing land management and restoration plans. The critical effort to protect floodplains along rivers helps keep downstream homes and businesses safe and creates healthy habitat. Erin's mantra is respect, relate, protect, conserve, restore, celebrate, repeat.

Erin currently lives in Essex, VT with her partner and two active and curious kids while they search for a home with a little bit of land for homesteading experiments. Erin and her family love to hike, explore swimming holes, cook with friends, bake pies, and travel to new places.

### RESTORATION PROJECT HIGHLIGHT

The Green River Meadows property is aptly named, as the site is mostly open field, and is bordered on one side by the meandering Green River lined with mature trees and with a relief of rolling green hills in the background. The site formerly housed a commercial auto salvage yard and at one point was nearly covered with cars and car parts. Vermont River Conservancy saw the

value of this property as an important area for the river to spread out and flood during heavy rain events, and thus took on this project to restore the meadow to an active floodplain while also providing public access to the beautiful Green River.

Located in the quaint town of Guilford, the Green River Meadows is one of many beautiful parcels along the Green River. Vermont River Conservancy was alerted by residents who were concerned that the prior and long-time existence of a car salvage yard on this site was having a negative impact on the health of the Green River as it flowed through the meadow.

Studies through the state's Department of Environmental Conservation showed these concerns were valid, and VRC stepped in to begin the process of cleaning up the site and restoring it to a functioning, healthy floodplain. Additionally, given the property's proximity to a popular swimming hole, VRC also saw the importance of protecting public access to this spot for people to enjoy on a hot summer's day. This section of the river offers gentle, shaded, and shallow pools perfect for cooling your feet off on a hot day or searching for macroinvertebrates under smoothed rocks.

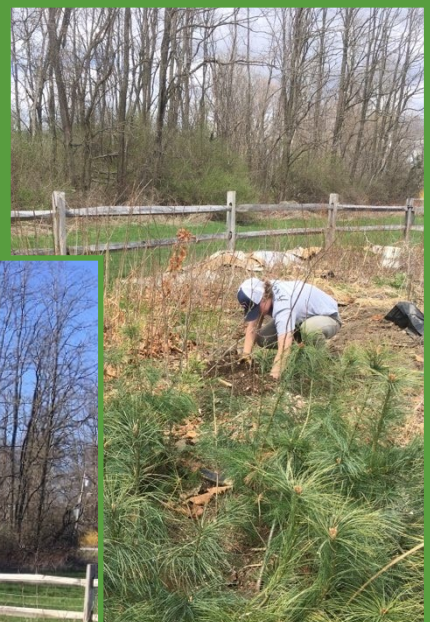
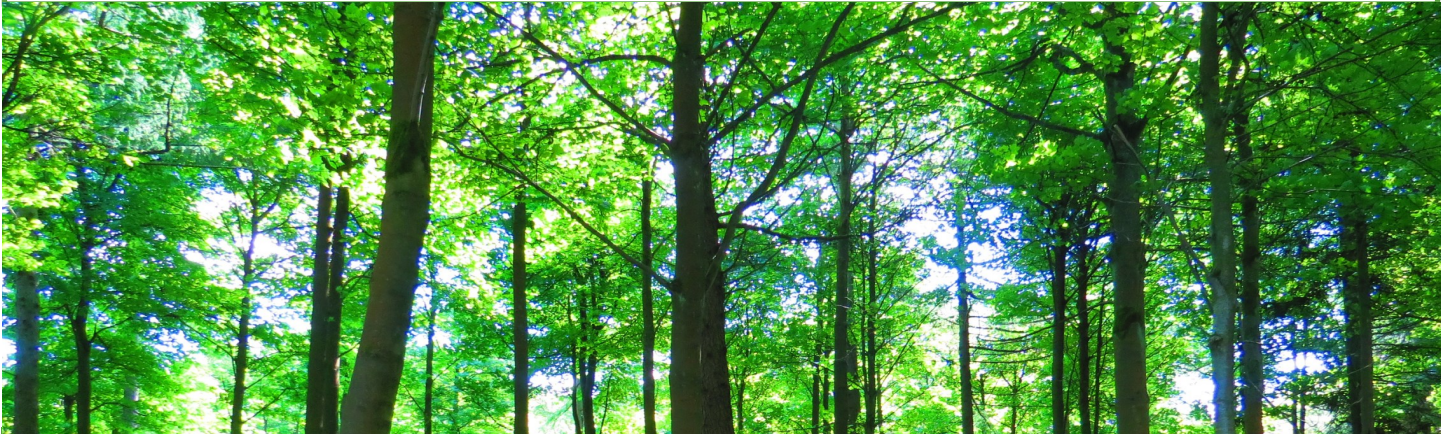
View the transformation of the Green River Meadow property on [Vermont River Conservancy's YouTube channel](#). (cont.)

(cont. from pg. 3)

### WATERSHED ASSISTANCE

As part of Vermont's Clean Water Service Delivery Act of 2019, Act 76 establishes regional organizations called clean water service providers (CWSP). CWSPs have been established for each Tactical Basin Planning watershed in Lake Champlain and Lake Memphremagog basins. Three CWSPs invited Vermont River Conservan-

cy to join the Basin Water Quality Councils that will help identify, implement, operate, and maintain non-regulatory projects to meet phosphorus reduction targets. VRC staff, Steve Libby and Erin De Vries will be members of the Lamoille, Winooski, and Otter Creek BWQCs. If you live or work in one of these areas and have questions about the BWQC please contact your regional planning commission or visit <https://www.vapda.org/>. ♦



WORK AT THE  
CHAMPLAIN  
VALLEY NATIVE  
PLANT NURSERY

# AN ORGANIC PARTNERSHIP: PLANTING TREES FOR THE BIRDS AND THE BEES AT THE INTERVALE CENTER

Cassie Wolfanger, Conservation Fellow, Audubon Vermont & LCSG

Over the last 30 years, the Intervale Center in Burlington, Vermont has created a nationally recognized incubator model for strengthening local community food systems and land sustainability on a 360-acre campus of farmland, trails, and open spaces along the Winooski River. A valuable combination of habitat heterogeneity,

a native plant nursery on-site, flowering crops from agricultural working lands, sandy soils ideal for ground nesting bees, and warmer and more stable temperatures in the Champlain Valley relative to the rest of the state of Vermont, all contribute to high abundance and diversity of pollinators and birds enjoyed there. Naturally,

Audubon Vermont and the Gund Institute at the University of Vermont were ecstatic to connect with Intervale folks last year through our Bird and Bee Friendly Farming initiative and see some of the ideas come to fruition this spring. Duncan Murdoch, Natural Areas Stewardship Coordinator for the Intervale Center, put it well “working together on enhancing bird and pollinator habitat is in perfect alignment with our vision of creating and supporting joyful, vibrant human and natural communities.”

The Intervale Conservation Nursery supplies many of the in-state stem stock for restoration projects in Vermont, but sometimes it takes looking no further than inward to find opportunities for improvement. Some of what the Intervale Center and its farmers already do supports birds and pollinators (e.g., organic, crop diversity, invasive vegetation control), but we wanted to identify small adjustments to current practices to increase foraging

and breeding habitat potential and focused specifically on enhancing marginal areas out of production. These are spaces like field edges, hedgerows, and fallow fields as well as forest patches and riparian areas. The presence of structurally heterogeneous hedgerows that incorporate a mix of native tree, shrub, and perennial species can increase

the abundance and diversity of pollinator and bird species that in turn provide important on-farm services, such as crop pollination and pest control.

After a habitat assessment at the Intervale Center in summer of 2021, Audubon Vermont and Gund came up with a series of recommendations for the farmers and land management crews, which included optimal

mowing regimes, best ‘superstar’ native plants, pollinator-friendly cover crop seed mixes, making hedgerows structurally diverse, and ensuring resources were available throughout all seasons with early, mid, and late bloomers. We noticed that resources were not evenly distributed spatially across the property and there were several small and irregular-shaped areas adjacent to fields that were not being used, likely because they were too small, shady, or wet to be reliable. A few great native herbaceous plants like goldenrod, jewelweed, Joe Pye weed, sensitive fern, and milkweed naturally occupied these areas, but non-native invasive plants like purple loosestrife were also creeping in. Importantly, we noted that beneficial shrubs such as willows, dogwoods, alders, and viburnums were absent outside the nursery and could enhance other areas.

(cont.)



(cont. from pg. 5)

To our delight, Duncan at the Intervale Center and several farms including Digger's Mirth Collective and the Intervale Community Farm, were game to make some simple changes and plant marginal areas in unused field edges. "We used to cultivate there, but years ago decided it was too prone to flooding. Since then, our approach has been pretty hands off in these areas, so it

wood, Arrowwood, Nannyberry, Aronia, Silky Dogwood, and Chokecherry. Trees included Grey Birch, Swamp White Oak, Silver Maple, and American Elm. All of these native plants are excellent choices for nectar, fruit, or hosting high numbers of caterpillars that are essential for feeding growing nestlings. Being on a floodplain with some of the most productive soils for farming, I overheard volunteers say the Intervale was loveliest soil to dig in and actually a pleasure to plant, without rocks



was exciting to hear suggestions on how to more actively manage it" said Hilary Martin of Digger's Mirth Collective. "Our plan for this spring was to throw in a handful of shrubs ourselves, but Duncan led a planting re-design and we now have nearly an acre planted with over 100 native trees and shrubs to support the biodiversity around us!"

The Intervale Center has an incredible volunteer base of community members and corporate groups, which brings people power to many projects and this one was no exception. Ursa Major skin care volunteers harvested and planted native shrub willow whips to line the perimeter of the planting site. One Tree Planted sponsored the bare root stems for the interior of the planting, which were naturally acquired from the Intervale Conservation Nursery. Inspired by suggestions of Audubon Vermont and Gund, stems were planted in clusters of one tree, surrounded by nine shrubs, interspersed in islands approximately 30 feet by 30 feet, with even rows to allow ease of maintenance mowing between patches in the late season. Clusters closest to production fields were only planted with shrubs, so crops would not be shaded when the plantings mature. Among shrubs selected were Buttonbush, Elderberry, Red Osier Dog-

and without heavy clay they've encountered in other projects.

Not all projects happen so serendipitously, but in the occasional instance where all the moving parts for location, funding, design, stems, and volunteers all align, there feels a need to celebrate when it all works out nicely. When asked what feelings it brings to see the habitat planted, Duncan replied "It's heartwarming and meaningful," while Hilary replied "We love that so many people made personal connections with the field by planting. This land truly connects and supports so many of us." Next, a field margin at the Intervale Community Farm will be planted in June with volunteers from the Lake Champlain Chamber. There is always more work to do.

To read a copy of the full Bird and Bee Friendly Farming Recommendations Report a link is here: [https://www.uvm.edu/seagrant/sites/default/files/files/publication/Bird\\_and\\_BeeFriendlyFarmingRecommendations\\_Intervale2021.pdf](https://www.uvm.edu/seagrant/sites/default/files/files/publication/Bird_and_BeeFriendlyFarmingRecommendations_Intervale2021.pdf). ◆

# WHERE THERE'S A WILLOW, THERE'S A WAY! A FRANKLIN COUNTY NRCD PLANTING USING WILLOW CUTTINGS THREE WAYS

Kate Wettergreen (she/her), ECO AmeriCorps Member, Franklin County NRCD

In mid-April, the Franklin County Natural Resources Conservation District installed a planting at the Choiniere Family Farm along the Rock River. In the Missisquoi Tactical Basin Plan the Rock River is classified as impaired. This planting included using live willow stakes, and cuttings to create fascines and woven willow fences. This project was funded by the Lake Champlain Basin Program through the Natural Resources Conservation Commission's Trees for Streams program. The project design was informed by the landowner, FCNRCD, DEC Rivers Program, and USFWS Partners for Fish and Wildlife Program throughout 2021-22 over several site visits. An additional component of bare root planting will also be incorporated at this site in May 2022.

## FASCINES

Fascines are a continuous length of overlapping willow stems. They are constructed by digging a shallow trench and laying bundles of willows, secured with twine, into the trench. Some loose soil is placed over the fascine and tamped down for maximum soil to stem contact. Live stakes are hammered in every 5 feet to anchor the fascine in place. At our planting site, we installed fascines in a long line parallel to the stream with three shorter rows perpendicular to the stream.



Katy Dynarski, Megan Walker, and Kate Wettergreen stand beside a willow fascine that is bundled and tied in a shallow trench.

## LIVE STAKES

Live stakes are one of the simplest ways to plant a willow! Cuttings are taken from established willows and then trimmed down to 1–2-foot stakes, usually with a diameter of ½-2 inches. They are planted so that 2/3 of the stake is underground. In softer soils they can be planted by pressing the stake down into the ground with your hand. At some sites a mallet is required to hammer the stakes into the soil. We planted live stakes along the stream bank and buffer area to stabilize the bank and increase the amount of vegetation.

## WOVEN WILLOW FENCES

Woven willow fences are created by placing a tightly spaced row of live stakes in the ground and then weaving long slender willow cuttings between the stakes. They can be created in a range of sizes. We installed these as a method to prevent erosion by slowing the water running down a slope.

We incorporated all three of these planting methods to establish willows at the site while decreasing erosion and increasing the riparian buffer along the stream. ◆



A close-up of woven willow stems

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If you would like to submit a story for a future issue, or subscribe to or unsubscribe from the Watershed Forestry Partnership mailing list, contact Alison Adams at [alison.adams@uvm.edu](mailto:alison.adams@uvm.edu).

For more information about the Watershed Forestry Partnership, please visit [our website!](#)

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