

ep 16 master m3 vs

Mon, Mar 13, 2023 11:59AM 35:08

SUMMARY KEYWORDS

restoration, landowners, streams, watershed, years, projects, plant, riparian, habitat restoration, floodplain, work, vermont, habitats, trees, restoration projects, dam, river, rivers, removals, species

SPEAKERS

Cate Kreider, Chris Smith, Ron Rhodes, Shawn White, Mike Kline, Alison Adams

Cate Kreider 00:10

Welcome to restoration Roundup, a monthly podcast that explores recent research on, new and emerging best practices for, and stories about riparian forest restoration. I'm Cate Kreider, a recent graduate of the University of Vermont, and the interim host and director of this podcast with the support of the UVM extension and Lake Champlain Sea Grant. On this podcast we oftentimes focus on what is fresh and new in terms of methods and practices in riparian restoration. But today we have some guests that have been watching the field develop over the past several years, and know what practitioners have gone through to reach these new ideas. I'm excited to welcome Ron Rhodes, Shawn White, Chris Smith and Mike Kline to the podcast. Ron Rhodes is the Interim Executive Director of the Connecticut River Conservancy and has been working with them since 2011. Shawn White has been working in restoration with the Friends of Winooski River project since 2012. Chris Smith is a biologist for the US Fish and Wildlife Service and has worked on habitat, wetland restoration, and aquatic connectivity projects since 1996. And Mike Kline works on river and floodplain restoration with the company Fluvial Matters after working with the state for 31 years on river restoration and protection. Welcome all to the podcast.

Chris Smith 01:37

Good morning, Cate.

Shawn White 01:38

Hello!

Mike Kline 01:39

Hello, great to be here.

C Cate Kreider 01:42

I'm really glad to have you all here! Thank you for coming. To start off. Can we go around and hear from each of you a little bit about the history of your work experience and sort of what your expertise is?

S Shawn White 01:56

Yeah, so this is Shawn with the Friends of the Winooski River. I do a variety of projects within the Friends of the Winooski's total number of things that we do in the watershed, including the riparian restoration work. So we also work on mitigation for stormwater and we do a lot of education and outreach projects. We talk with landowners about little things that they can do on their properties in order to protect water quality and improve habitat around the watershed. We also do some paddling outings, because we would like to increase people's enjoyment of the river because if they if they enjoy the river, and they appreciate, you know good water quality and healthy streams that they're more likely to want to protect them. We also do dam removals and floodplain restoration work. So we do a little bit of everything. And riparian restoration is just one of them.

C Chris Smith 02:44

Yeah, so I started with the Fish and Wildlife Service in 1996. I started with the Partners for Fish and Wildlife Program, which is the service's habitat restoration program. At that point, it was really a fledgling program in Vermont. It just kind of come online in 1983-94. And so we were just getting our feet under us to figure out really how to do habitat restoration for those trust resources or priority species for the US Fish and Wildlife Service. The first day on the job I was out planting trees; we jumped right in. And riparian restoration was one of our main focuses, along with wetland restoration in those very early days of the habitat restoration program in Vermont. Since then, that program has really expanded and built itself out in addition to several different forms of riparian restoration and the way that we do wetland restoration, we have taken on roles in aquatic connectivity, and barrier removals. We've also worked in stream habitat restoration and channel restoration. We have tried to improve aquatic habitats, working with natural channel concepts and improving the stability of those systems as well as some of the habitat along the way that's included some invasive species control, I guess I'll leave it at that, Cate.

M Mike Kline 04:02

I started working with the state of Vermont back in the 1990s on stream restoration, and working with volunteer groups, trying to introduce bio-engineering techniques to restore streambanks and riparian areas with natural vegetation. And from there really started re-educating myself after some of the failures of my previous efforts to understand green dynamics, and the scale and process that are happening in our watersheds as they respond to years and years, decades really, of manipulation and generalization. And how does our restoration projects fit with these natural processes that are ongoing?

C Cate Kreider 04:50
Thanks, Mike. Ron?

R Ron Rhodes 04:52
Yes, so the Connecticut River Conservancy's restoration program is really focused on nutrient loading, so farmers and others with erosion problems on the Connecticut River or its tributaries, the impacts of flooding and flood plains, as Mike said that have been cut off from berming and dredging activities over the past 200 years. And then habitat loss. And that's riparian habitat. We are often out there planting buffers along the rivers, and also dam removals. So for me personally, that is sort of my addiction is dam removals. This might be my 10th year of removing dams, we've done 20 of them so far. And these are old dams, not, you know, active hydro projects. And those 20 Dam removals have opened more than 400 miles of upstream habitat for fish and other aquatic species.

C Cate Kreider 05:51
Having heard all that, and knowing that each of you has been working in riparian restoration for at least 10 years. I'm really curious about things that have changed. When you walk into work in the morning, what's different from your first day on the job?

C Chris Smith 06:08
No, I think there has been a tremendous amount of change. And I think there's been change in two major places. One of the biggest changes has been our understanding as a natural resource community, about the habitats and the processes that have formed those habitats and sustain those habitats. A couple examples. When we started work on riparian restoration projects we understood what species were there and understood maybe why they were there a little bit. But we didn't really think about that as a natural community in the early 2000s, Liz Thompson and Eric Sorenson put out *Wetlands, Woodlands and Wildlands*. It's a book about Vermont, and the natural communities that that are found in Vermont. And that was the first time that the restoration community in Vermont really started to understand the connection, all of the connections between soil, plants, animals and their juxtaposition in the landscape. And so that ability for us to really take a deeper dive into how we should be restoring those natural community types really started to refine how we put projects on the ground, and how we could make those projects you know, more successful. If we look to the watershed or the stream side, the science of fluvial geomorphic process really started to come onto the scene in the late 90s, in the understanding of how the physical chemical and biological components of the waste streams function, really started to help us do a better job of figuring out how to restore those, those watersheds or those stream channels. And so I think the evolution of the science has really helped us to do a better job at restoring these habitats, and have better outcomes and more successful projects. I think the second thing that has really happened in that time is habitat restoration and restoration ecology has become much more of a core principle of natural resource management. When I first started, it was something that, yeah, you did. Now, there are courses taught on it, there are degrees that you can get. So I think that habitat

restoration has really become a core principle, a core function of natural resource management. And I think that's a huge change from where we were 25 years ago with habitat restoration.

R

Ron Rhodes 08:46

I would say the biggest difference in the last decade is funding. The state of Vermont has provided clean water funding and that has spurred a lot more projects. I did my first dam removal for CRC in 2014. There may have been one other dam removed that year, I'm not sure, now there are five or six or seven dams removed every year in the state. So, many more organizations are undertaking restoration programs, because there's more money, there's more state money and there's more federal money. For that 2014 dam... wasn't a big project, I think it cost about \$120,000, and I think I had to get like five or six different grants to cobble together that amount. 10 years later. We're doing projects that are \$360,000 or more, and you might only need two or three grants. So there's more funding in the system, more capacity to do these projects, more watershed groups and others taking them on. Just collectively, there's more restoration work happening now than there was 10 years ago.

C

Cate Kreider 09:53

Thank you.

S

Shawn White 09:53

You know, we often still work with a single landowner, you know, doing a planting on a single site. and often a landowner wants to do that, because they want us to somehow magically fix their eroding stream bank. And we have to be really honest with them, that's just often not feasible in terms of wanting to really stabilize the stream bank with trees. We have learned a little bit more about avoiding places where gonna lose the trees, as soon as the next big storm comes. You know, we still do plant, but we, you know, pull back from the edge of the stream, hope that those trees will get established. So, I would say that, in practical terms, working watershed wide for us anyway, it's something we keep in mind, but isn't always in practice what we're doing. We're often still working in very discrete sites.

M

Mike Kline 10:42

Follow up on, on a point that Shawn was making about the viability of buffers, I think, you know, challenges with our buffer work is that our streams are evolving from really centuries of channelization that occurred in order to make our narrow valley floors useful to agriculture and transportation, and what have you. And because of that channelization, our streams became disconnected from their floodplains. That concentrates all the power of a flood inside the channel, instead of having it spill out onto the floodplain. When that happens, the plants that we try to put on the tops of these insized rivers and streams are often undercut by the process of those streams, then evolving back to what is a reconnected floodplain configuration. So as a straightened stream goes to a meandering stream, the plants that are going to grow on those stream banks, they're going to move and propagate with that meandering channel. And you

have to, again, plan for that process that's going to be occurring. The difference today is that we try to go into understand why is the stream eroding right here? How can our project mesh with this, this larger scale process that's happening in the watershed?

C Cate Kreider 12:04

Okay, so something I heard reoccur throughout that, a few times, was about how projects get started, where you're able to put your boots on the ground. Could you elaborate on that a little bit?

C Chris Smith 12:19

One of the biggest things here is communication, the ability to communicate and develop close partnerships, because that's key to getting this work done. Most of the work that we're talking about in the habitat restoration world is volunteer. Nobody- it's not required by anybody to do this. And most of that work takes place on private land. And so in order for this to happen, we have to be able to communicate with those private landowners, with those other stakeholders that are at the local geographies where this work is going on. And so that communication piece and the ability to have landowners understand what it is we're trying to do, what we... why we are trying to do that, how that fits with maybe their management philosophies or their goals for their property, that's really key to getting a project on the ground and to having a project be successful. So, I really think that that that communication piece, much more so than when I started, is critical to how everything works in the restoration arena, especially in Vermont.

S Shawn White 13:27

I guess one thing that that occurs to me is landowner outreach and working with private property owners. One of the obstacles that we do face is that we can identify a particular site that would be really great to do restoration work on, but we have landowners that are not at all interested, we really prioritize landowners that come to us, that's just much easier that we know that they're going to be good stewards of the project afterwards. You know, we're not forcing anybody to do something they don't really want to do. It's a little bit frustrating sometimes, because you might be working in places where you think, well, this is sort of not exactly the priority that we have, you know, in terms of location, but we do what's feasible.

C Cate Kreider 14:10

Thank you.

R Ron Rhodes 14:11

Right. And that's it. You know, that's a good point, Mike talked to earlier about watershed scale, and there's often like, especially for dam removals, but even within the state, Clean Water Block Grant, they're sort of priority projects, right? And it's great to have a priority list. But if the owner of that dam or of that farm isn't interested, it doesn't matter if it's number one on

the list, right? You can't force someone to do the project. So it is even though we might be focused in certain areas. It ultimately is a willing landowner, you know, kind of catch as catch can right? We have to take those opportunities where we where we can find them.

M

Mike Kline 14:51

I'll add to the really great point that 30 years ago, there really were very few if any landowner incentives and or mechanisms that drove or assisted landowners to coming to the realization that restoration is an alternative for their land. Some of our modern regulations deal with the conflicts between human activity and the dynamics of rivers in such a way that landowners are seeking alternatives. And one of the least expensive alternatives is working with watershed groups to do restoration projects. We've worked really hard in Vermont to have a management and regulatory regimen that really has landowners coming to the table to talk about restoration as an alternative, and the practitioners can really play a key role in being there and being a part of that alternative analysis that a landowner might be going through.

S

Shawn White 15:54

Although I'd say that a lot of landowners are also opting to do restoration work, because they're, they're better educated about why they why they should, and I think most people want to do the right thing. And I think, you know, because of some of the state programs and work that the watershed groups have been doing, I think a lot of landowners, they appreciate those streams, and they want to do what's right for them. And they know that planting trees and doing floodplain restoration work is is the right thing to do.

C

Cate Kreider 16:22

Thank you for that. I didn't know that much about that part of the restoration project process. So, that's really interesting to hear about. The next thing I want to talk about is kind of the contemporary big topics that we are talking about in the field right now. Invasive species, the native trees stock shortage, climate change. What do you all have to say about these things that you've been here to watch rise and become the problems that they are today?

R

Ron Rhodes 16:54

For the tree plantings, the buffers, some recent phenomenon, because so many people are now doing tree plantings because the funding is available but you know, the Intervale Conservation Nursery in Burlington is where we get most of our stock for our plantings in Vermont and New Hampshire. And they only have so much land and can only grow so many, you know, stems and we're trying to order from them, Friends of the Winooski's ordering from them, White River Partnership is ordering from them, you know, all of the Vermont watershed groups are ordering from the same place. And we are, you know, essentially buying them out. So it's going to be a challenge going forward. We've... we've had discussions UVM extension has been talking with folks, Watersheds nited Vermont has been talking about this and you know, can we create a new nursery? Can one of these nurseries find additional land to grow more species on? And how do we help fund that? How do we help them grow as a, as a business

C

Chris Smith 17:50

In the face of climate change the dynamic nature of a floodplain and the fact that you can have, you know, water, you know, a flood tearing through this and that those species have had to evolve with that those are going to be things that as we see everything that is being predicted around climate change, as some of those events become more extreme, as we see maybe more intense flooding. Those species that have evolved in those areas are going to be critical to maintaining those areas. A lot of that has to do with how the species evolved, and that these species have been for hundreds and hundreds of years, 1000s of years have been subject to this change. And it's you know, where there are intense events, where there's floods, and where they get broken off and bent over and have to regrow. And so those species, you know, like Willow, like Cottonwood, like Basswood, Speckled Alder, you know, those are species that all are very resilient, and I think are going to need to continue to be resilient as we see more in the in the face of climate change.

M

Mike Kline 18:57

Well, invasive claims are absolutely one of our biggest conundrums. Right. I can remember driving along the White River and the Mad River 30 some years ago and not seeing any knotweed. So it has been something that is that has really occurred in the last 30-35 years from my experience.

S

Shawn White 19:17

I think Hurricane Irene really, in terms of the knotweed anyway, I think really spread it in a lot of the parts of the watershed that I've seen, like the Dog River, for example, in you know, sort of Northfield to Montpelier. It was great fishery, it was considered one of the healthiest rivers in the state. And Irene, not only decimated the fish population there, but it spread the knotweed a lot. Before that I don't remember seeing it quite as bad. Now it's, you know, up and down the Dog riverbanks everywhere.

C

Cate Kreider 19:47

And I don't want to dwell on the negative here, but having heard new challenges, I'm curious to hear about mistakes that you feel you've made in the past that you've learned from, what would you change now? Get the knowledge that you have about ways that things used to be done?

R

Ron Rhodes 20:04

I'll jump in on that one if folks don't mind. So 20 years ago, or 20, some years ago, I joined the White River Partnership as volunteer ended up on the board. And we used to plant 18 inch, you know, little tiny whips. And we go out to local farms, and we'd plant you know, a 35, or a 50, foot buffers, you know, back from the stream, with these little tiny, you know, things that you

didn't, you know, didn't really need to dig a hole even. And survival rates were terrible, you know. Trees, get them, you know, they don't have enough root system to grow... drought, deer, you know, whatever. And so that has evolved over time. At one point, everybody was using plastic, they were putting plastic tubes on the trees and plastic to keep the weeds down. And we have evolved, and CRC now is where we're planting those taller native species, you know, again, 3 to 4 to 5 foot tall, bare root or potted plants. We do not put plastic in the watershed, because it's just another thing you have to go back out and try to manage or flood comes and all of a sudden those blue tubes are floating downstream somewhere. And do we still get deer browse? Yes, we have a standard, you know, if 70% survival. And if we had last, I don't know, five years, maybe we've had two sites that we planted that got less than that, you know, had 50% survival. So we went back out and did a replanting. But there are standards; different grants have different requirements that we have to follow. And you know, we do monitoring of those sites, everybody does, to make sure that those those projects are, you know, viable and having the intended effect, which is wildlife habitat, and hopefully, the bank stabilization. So.

S

Shawn White 21:51

Yeah, I would say that that's another change that has happened over the past 10 years. And we used to not have funding for monitoring and doing site site maintenance after we planted so we would plant and we would just have to walk away because we didn't have any funding to go back and take a look and see how things were doing. And you know, there are some sites that just don't really take for whatever reason, you plant the trees, and they just get 23% survivorship and that's it, sometimes even less than that. So now we have more funding from the state and other organizations that will allow us to do site maintenance, where we go out and we take weed whackers and trim around the new trees for the first year or two. We're able to remove vines, you know, like grapes often grow up on the trees and pull them down. And I think that really improves the success rate of of the plantings. And I'm hoping that we'll continue that we have the capacity to go out and do maintenance work that really, I think is crucial, especially in the first year.

M

Mike Kline 22:51

I think the thing I'd like to add to this conversation is that one of the things that we've learned is that rivers heal themselves in many respects, and understanding that natural channel evolution process and that natural floodplain reformation process, and the recruitment of vegetation from the watershed. You see banks that are in the watershed are also a component of riparian restoration. The work that Shawn and Ron both described is really critically important, especially to bring people into the process of that, of restoring our sites. But many will rejuvenate. The key that we've learned over time is that the protection of our river corridor from ongoing encroachment is really fundamental. And it's one of the things that we learned to focus a lot of our energy on is making sure there's a place to plant buffers, or there's a place for buffers to reestablish themselves, which won't happen if we're not careful about river corridor development.

C

Cate Kreider 23:59

My next question is that I want to know, what are your predictions for the next decade of forest restoration?

C

Chris Smith 24:08

I think that the habitat restoration field is going to continue to evolve, I think that we're going to continue to gain greater understanding of the habitats and the species and the processes that are involved in forming and sustaining those habitats. So I think the science will continue to evolve with us. Obviously, there needs to be some recognition of a warming climate and changes to our environment because of those warming changes. So I think that that's going to be folded into the restoration process and how we're thinking about restoration. And some of these areas that we work on for restoration, like riparian areas, are going to be critical, you know, over the next 30, 40, 50, 100 years because those are the spots in the landscape that are kind of like these elastic rubber bands and that have the flexibility to change as the climate changes. And so I think that our work in those areas is going to continue to be really important. The other thing that I see that I think is going to continue to change for the good, I think is the acceptance of habitat restoration and land conservation. You know, so as it was, you know, 30 years ago, could be considered relatively new, not a lot of people understood that whether you were a landowner, you know, whether you were a teacher, whether you were a land manager, you know, whether you were a conservation organization. Now, that has become much more mainstream. And I think people understand more about habitat restoration and land conservation. And we have a whole nother generation of kids that have become adults that grew up with that in school, and that, you know, had a chance to start to understand more about the natural world.

S

Shawn White 25:59

I think, you know, for the Friends of the Winooski, I'd like to see us work more on smaller streams. I think those are places where, you know, they're sort of headwaters of these of these more major waterways, where we can start to have a bigger impact. In the past, we've focused on a lot of the mainstem rivers and larger tributaries. And if we can work in areas that are less disturbed, and at the very beginning of these streams and rivers, then I'm hoping that that will be one place where we can really have much more of an effect. Another thing is we're doing more restoration work in these small streams and kind of mimicking beaver activity. Back before Europeans came, there were lots more beavers on the landscape than there are now they built dams, of course, everywhere that caused rivers and streams to meander a lot across the landscape to have large floodplains to be more resistant to those high water events. And so we're going back and we're mimicking that, to some extent, on these smaller streams. And that's something I've been really excited about in terms of what we might be working on in the future.

R

Ron Rhodes 27:13

Yeah, the strategic wood addition, as it's often called, or now there's analog beaver dams were sort of manmade beaver dams. Back in the day, 20 years ago, US Forest Service was doing some chop and drop, trying to add some of that wood back into the streams. Now it's become more scientific. The other thing is we're doing like CRC in the state of Vermont, we're working on an innovative floodplain restoration project where we're testing which sort of approaches work best to restore that floodplain. So let's say someone's given up a hay field or a cornfield,

right? Should we just come in and plant trees? And then walk away and let mother nature take over? Or does it work better to come in with a tractor and plow the ground? And then plant trees? Or is it seeds, should we start from scratch? And so there's some work being done right now to sort of test these different techniques, and get better still doing the same work. But you know, we might end up changing the way we do some of this. And so the future could look a little different for us. And maybe we won't be buying 4 foot tall trees for every tree planting site, in the future. Maybe we will be cultivating seeds and hiring a tractor and reestablishing that floodplain forest in that manner.

M

Mike Kline 28:41

You know, I think one of the exciting opportunities is going to come along as people get a greater appreciation for how climate change is affecting our watersheds, and how the frequency that events is going to affect the all these stream processes of erosion and deposition and channel evolution that we've been mentioning. You know, we scrape our river network and our streams. And now we're coming to appreciate what we call storage. And now I think there's a renewed understanding of the importance of stories, not only for the critters in our watershed and the riparian plant communities, but also our own human community resilience. One of the things that, that I think is also exciting is that we have data now about streams that enable a much greater understanding of our streams. And that data- LIDAR that give us information about the topography of the land, you know, down to a half a foot or land use floodland cover data that allows us to use satellite imagery to understand the land use and land cover implications on the watershed hydrology and increase effectiveness of that work and be affordable. Right now this science is there, but it's just not affordable to really utilize at that low level project by project basis. I think that's kind of in the coming years. And that's kind of exciting to see where that might take us to.

C

Cate Kreider 30:18

And I think it's fitting to end on a request for advice. What suggestions do you have for practitioners that are entering the field now,

C

Chris Smith 30:28

I encourage them to work with folks that have been doing it. Work with people that have been in the field, build on others experience, expose yourself to others' experience. As we kind of talked about, it's a relatively new field, you know, even over the last 30-40 years, it's relatively new. And there's been a lot learned. And so I really encourage folks to find somebody that has been doing it in the field and work with them, to gain some of that experience, and to learn from practitioners that have been doing it for a while.

S

Shawn White 31:02

This is probably implied by everything that we've been talking about so far. But this field is evolving. We're learning more and more about how to make these projects successful. So I would say that a new practitioner should expect that things are not going to be perfect, and not

to give up to keep moving, keep working. Yeah, I think it's easy for us all to be idealists. And that's often why we're working in this field is we're optimists and idealists both. And so, sometimes projects fail, or they just don't do as well as you think that they're going to. And you have to just kind of say, Okay, I'm going to learn from that and move on.

M

Mike Kline 31:37

Well, I think, Catherine, you've cooked some of the history of stream restoration out of us here this morning. And I, I think that would be one of the things I'd advise any new practitioner is maybe take the time to understand the history of this practice. In the state. We've all worked so much. We've all, many of us, have put together projects and failed and learned from them. Talk to the folks that are in the profession or have been, and try to understand some of this history. And I think, really, you know, help you get started in this work, not only the technical science of rivers, but the history of of our communities working to restore their rivers over time, the history of water, local watersheds. And what they've experienced, that they've been through, I think is a great place to start.

R

Ron Rhodes 32:35

And I would just say, jump in with both feet, you do not need to be an engineer, fisheries biologist, or river geomorphologist to plant trees, or restore rivers or remove dams. I'm none of those things. You partner with all those experts. I've learned a lot from all of our partners and all of the folks that we work with, and that helped fund these projects. And that we hire. I think the worst thing right now is for anybody to feel like they can't jump in, right? All this federal and state money is there available. And it might not be here, 5 years from now or 10 years from now, right? This might be our opportunity to do as much as we can. I would just encourage people to, you know, connect with their local local watershed groups and to get involved, right? Volunteer, donate if they're able to do that. But there's lots of different ways that folks can get involved and help out in their local watersheds and make their local watersheds a better place to live, work and play.

S

Shawn White 33:38

Yeah, I would agree with that, for sure. I mean, we are always looking for volunteers to help plant and if there's anyone who would like to be a little bit more involved in terms of, you know, really helping us organize some of these plantings and leading the actual project work. That would be great too; we're always looking for that kind of volunteer.

C

Cate Kreider 33:59

That's a really uplifting note to end on. Thank you, all of you for joining us in this conversation today. I really appreciate your unique perspectives and the knowledge that you've collected here. Thanks for coming.

M

Mike Kline 34:15

THANK YOU

Thank you.

S Shawn White 34:16

Thanks.

R Ron Rhodes 34:17

Thank you, Catherine. And thanks to UVM for helping make this possible.

C Cate Kreider 34:33

Today's episode featured the call of the American yellow warbler. It was recorded by Jim Berry in Chautauqua County, New York on March 28 of 2022.

A Alison Adams 34:43

For more information about today's topic and other topics related to riparian forest restoration, visit the restoration roundup podcast tab of Lake Champlain Sea Grant's Watershed Forestry Partnership website. This project has been funded wholly or in part by the United States Environmental Protection Agency under an assistance agreement to NEIWPC in partnership with the Lake Champlain Basin program