Direct News About Direct Seeding!

Wed, Mar 01, 2023 12:05AM 21:44

SUMMARY KEYWORDS

direct seeding, seeds, site, trees, canary grass, project, jess, tree planting, forest, reed, benefits, wildlife, planting, field, partners, lake champlain, soil, state, fish, restoration

SPEAKERS

Jess Colby, Will Eldridge, Alison Adams, Cate Kreider

C **Cate Kreider** 00:07

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. This month we are revisiting the latter half of a topic we touched on before and bringing in some familiar guests to make it happen. Please welcome Will Eldridge who you might remember from our June episode, Fish Grow on Trees and Jess Colby, who spoke with us about seed collecting this past December for the episode Starting from Seed. Welcome you two.

W **Will Eldridge** 00:56

Thank you.

J **Jess Colby** 00:58

Thanks for having us.

C **Cate Kreider** 00:59

Pete Emerson has been working on this project researching direct seeding as a restoration method for the past six years and representing him and his work today are Will and Jess. So Will you work with Vermont fish and wildlife as an aquatic habitat biologist, and Jess, you work with Northwoods Stewardship Center as a riparian projects and forestry outreach coordinator. It's been a pleasure having you on previously. And I'm excited to have you both back with a new topic. Direct seeding is a really interesting and intensive project that coincides with a lot of problems facing the restoration field right now. So let's start from the top. What is hydroseeding? And what is your particular involvement in it?

J Jess Colby 01:40

So hydroseeding is a sowing technique that is used with the hydroseeder, which is a large tank with a sprayer attached. And we use it to spray a mixture of seeds and water out onto prepared soil. By prepared soil I mean, we've gone through and we've herbicided it, and we've tilled it to break up the sod on a field and made it very open and cleaner for seeds to regenerate on. Yeah, so that's like a very quick definition of what hydroseeding is. And so we're basing this off of work that's been done out in Arizona, on the Colorado River by the US Fish and Wildlife Service. And Vermont Fish and Wildlife, Northwoods, The Nature Conservancy, Intervale Conservation nursery, and the US Fish and Wildlife Service are all working on this hydroseeding direct seeding project here in the state. So.

C Cate Kreider 02:38

do you have anything to add? Will?

W Will Eldridge 02:39

Yeah, so I'm mostly working in a support role for direct seeding right now. So Pete Emerson, a fish and wildlife biologist out of the Northeast Kingdom, St. Johnsbury office, he started doing this bout six years ago and got really interested in it. And you know, unfortunately, last year, he had a stroke. And so he's no longer able to engage in interviews like this. I think taking a step back, fish and wildlife department, the role that we play in this effort is really as a demonstration of the effects the benefits of this strategy. And if it's a viable practice, statewide. So Pete started six years ago as an experiment, to see if hydroseeding is even viable. And he's expanded it to a number of other sites and a number of other partners. Our role is basically trying to build the practice, demonstrate that it works, you know, pilot it, and then, you know, see if it's something that the restoration community can take on in the rest of the state.

C Cate Kreider 03:36

So I'm curious because hydroseeding and direct seeding in general is not a method that has been used like this before. What do you think makes it a topic of growing interest right now? And what are you hoping will be accomplished through the use of it?

W Will Eldridge 03:51

Yeah, no great questions. So yeah, hydroseeding you know, it's actually been around for a really long time. And you know, it was adopted a long time ago by landscapers to reseed lawns. So it's commonly used for like grass lawns and things like that, but it's something that Pete got really interested in when he saw some abandoned ag fields and abandoned cornfields that just came back in natural regeneration of either silver maple or box elder or one side, I think came back with Alder, you know, that was just really just a neat observation. And at the time, we were struggling to restore hay fields. So another type of ag field. And you know, hay fields are dominated by reed canary grass, which forms a really thick thatch and reed canary grass is just

a very aggressive plant. It soaks up a lot of moisture. And so you know, we've done tree plantings directly into reed canary grass, and they've really just haven't been successful. Either the plants die because they get dehydrated, you know, the grounds just to dry the reed canary just outcompetes them or they get shaded out or if they do survive we ended up with what Pete affectionately calls lollipop trees, you know, so it's a tree. It's a single tree just surrounded by reed canary grass. So it's not really achieving our goal, which is ultimately forested riparian area. So, you know, not a hay field, we want to see this diversity of trees there. So the practice really evolved as a method to try and stimulate that forest regeneration along streams and rivers in particularly in these old ag fields and hay fields, in particular,

C Cate Kreider 05:30

You're mentioning reed canary grass, and Jess brought up some sapling nurseries. And I think that brings up something interesting about direct seeding. It's super relevant to issues that are going on right now. What do you think about the work that you're doing in relation to these contemporary problems that are facing the state?

W Will Eldridge 05:49

I mean, really, this was uh inspired by, you know, just observing natural regeneration that wasn't really motivated by the shortage in tree stock. That being said, definitely having an alternative strategy, one that doesn't require tree stock is right now it's a it's a huge benefit in the state, you know, just because of the shortage of trees. And yeah, I mean, if you know, hydroseeding works, and direct seeding, if these are viable practices, I think it can definitely help alleviate some of that nursery shortage and kind of increase our ability to restore forested riparian areas in a state.

C Cate Kreider 06:24

What would you say is the difference between hydroseeding and direct seeding? Are they different terms for the same thing? Or is there a difference in the work landscapers do with hydroseeding lawns and the reforestation projects direct seeding is involved in?

W Will Eldridge 06:39

Jess do you want to take that one?

J Jess Colby 06:41

Yeah, so with hydro seeding, of course, we're using the hydroseeder itself. And it's that slurry of water and seed. But with direct seeding, at least in the way that we've been approaching it, you're not necessarily using that piece of equipment all the time, like, we'll be out hand casting Silver Maple seeds on a site. And then also, like, for some other species, we can use a seed

drill, which is pulled behind a tractor. So they're different in that regard. But they're all kind of similar uses. Like they're all getting seeds out onto the field. They're just different methods of of choosing that that goal.

W Will Eldridge 07:25

So we use direct seeding as a general term, but yeah, it includes hydroseeding, as well as the seed drill approach.

C Cate Kreider 07:31

Okay, could you tell me a little bit more about the seed drill in particular?

W Will Eldridge 07:36

They used it down on the Nature Conservancy as a site down and the Hubbardton clay plain.

J Jess Colby 07:42

Yeah, I haven't seen it in person, it slides the seeds underneath the soil,

W Will Eldridge 07:47

I think one of the benefits is it can handle slightly bigger seeds than you can use with hydroseeding. So hydroseeding, we're talking about almost dissolving the seeds in the water, kind of prefer to use smaller stuff. So direct seeding, the seed drill, you can use some bigger things can also space things more evenly, you know, things like that. And I think there's gonna be some sites like clay plain, where it might be more appropriate if you have like a drier, harder soil. And you really want to get those seeds down into the soil, because one of the big risks is if they dry out before they have a chance to germinate, so being able to get them into the ground can be beneficial. Yeah, there's there are definitely some, some differences between the two approaches.

C Cate Kreider 08:31

We've just talked about a lot of the benefits. So I almost hesitate to ask, but what do you think are the main strengths of this method compared to others? What are the less conventional uses and benefits of this method that you found in your research and your work?

W Will Eldridge 08:50

No, so it's a really good point. And, yeah, there's a lot of benefits that really aren't so obvious. So as we talked about reed canary grass is considered an invasive exotic, there's others like

knotweed. And we find that hydroseeding can outcompete those other invasive plants, you know, the site preparation that just mentioned so kinda clearing the area with herbicide and tilling, you know, it's very important to get those invasives down. And then just the densities of seed that we're using, allows the trees to out-compete, any invasives that may move back in. This is a much higher density than with traditional tree planting. And the other is we're establishing a forest. And this also mimics what happens naturally, you know, I think it's important to point out that, you know, these floodplains historically, before they were channelized, and insized and all this stuff they would have flooded, and were reduced the floodplains that get flooded, we will see forests pop up in these like super dense clusters of trees. And so it's mimicking what happens naturally. The other important thing is that the seeds, you know, we're using native materials, so you know, native genetic diversity. You know, we're not bringing stuff in from outside And the other benefit is the seeds. They don't have to be used right away, you know, we can store them for a while. So it allows for the planning and spreading out the work over a while. I mean, maybe not as obvious, but it also doesn't occur at the same time as the traditional spring tree planting. So it's a different season that we're doing this type of work. And so it's an opportunity to continue to do riparian restoration, but in a different season. So you can do your traditional tree planting on some sites in the spring and then move over to hydroseeding at a later time.

J Jess Colby 10:33

Another application that hydroseeding could potentially be used for is pollinator habitat. We could potentially be using this not just on riparian areas, but more terrestrial sites to introduce a bunch of trees and shrubs with flowers and berries that attract pollinator species to the area.

W Will Eldridge 10:56

And the other is the scale that we can do this. We're testing this out on some many acre sites. So Pete and I are working on a 12 acre parcel Fish and Wildlife parcel in Wolcott starting this year. So that's to do that with tree planting would be a lot of work, but just the two of us and maybe a couple of extra hands. Doing this project up in Wilcott.

C Cate Kreider 11:20

in total across the project, how many sites are you working with?

W Will Eldridge 11:25

How many sites have we done direct seeding? Yeah, that's a really good question. Jess do you have a good handle on that?

J Jess Colby 11:32

Right now we have four different sites. So the Wilcott site that you mentioned, we have Johnson farms up in Canaan, the LaPlatte headwaters over in Hinesburg. And then the Hubbardton Glayplain Forest

Clayplain Forest.

C Cate Kreider 11:46

Are all four of those do to start coming up this spring, the

J Jess Colby 11:49

I think the only one that would be potentially showing any signs would be the Hubbardton Clayplain, the TNC site,

W Will Eldridge 11:59

The seeds they're using. It's a two year germination. So fingers crossed this spring, things start popping up. Yeah, and Peter has a site started back in 2016. Up on the Barton River, some that... actually he didn't even see that one, if I remember correctly. That one actually came back as natural regeneration of Box Elder. But I mean, he prepared the site he did he did all the prep work the herbicide and tilling. But this is before we recognize the importance of the actual seeding. Like that, that was one of the experiments that showed the importance of the actual seeding.

C Cate Kreider 12:32

Jess and Will corrected this later and noted that they have a fifth site. The Missisquoi National Wildlife Refuge in the town of Swanton is a site near the Webb forest where they put down herbicide but did not put down seed. You mentioned that timing and the season is different for a direct seeding project than a typical sapling replanting project. I'm curious about that. Could you cover that a little bit more? Either one of you?

W Will Eldridge 12:59

Jess do you, can you take that?

J Jess Colby 13:02

The sites that I've been part of for tree planting we're usually out in April and early May planting trees. But with the hydroseeder we'd be going in later, towards like June, pushing seeds out on the field at that time. So it brings in a different season of planting on the site.

C Cate Kreider 13:21

You've talked about the benefits and they sound exciting, but what are some of the obstacles that you've run into with your test sites, or some of the problems that you have coming up.

J Jess Colby 13:33

I would say the biggest one is water. With our hydroseeding and direct seeding, the seeds are just on top of the soil. So if they are sitting out in an open field, without any water, they're just going to desiccate and die. So getting water out on top of those seeds is one of the biggest issues that we've come across, like we're troubleshooting some ways that we could potentially address it, like putting out tanks of water to irrigate those fields after hydroseeding direct seeding seed drilling, so that water is actively being put on the site as well.

C Cate Kreider 14:13

And that's part of the getting the seeds deeper into the ground is to protect them from water shortages, right?

J Jess Colby 14:18

Yeah, if we if we use a seed drill that will get them into the soil a little bit further than by hydroseeding or direct seeding or hand casting.

C Cate Kreider 14:30

Will did you have anything to add to that?

W Will Eldridge 14:31

Yeah, so I think it's fair to say they've tried direct seeding a couple of sites and you know, we've learned a couple of things. Definitely timing is really important and drought years are really tough on these seeds. I actually just was talking to Katie Kane her saw a presentation by her recently where she demonstrated the benefits of this approach even if the trees don't survive, you know, because a lot of this work is going on in old hay fields reed canary grass, which forms a monoculture often and is not really good habitat. Once you do the site prep, even if the trees don't come back, often, it'll come back as like a very different herbaceous layer. Yeah, much more diverse, you're talking about like Joe Pye weed and goldenrod, things like that a lot more birds and other animals use it. And so from a wildlife habitat standpoint, even just converting from reed canary grass to something else, is a huge benefit. Ultimately, we would like it to come back as a forest. So we're still pursuing, you know, strategies to do that. And so this year, we're experimenting, we're actually going to try experimenting with irrigation, seeing if we can water these some of these sites post planting. So you know, when I, when I talk about planting, there's kind of three, three stages. So there's a site preparation, the planting itself, and then the post planting, maintenance. And so we've looked at site preparation, we've kind of figured that out. We've kind of figured out the planting stage. And now we're looking at the post planting maintenance side of things, we're recognizing that that's also pretty important.

C Cate Kreider 16:04

Yeah, and I think we've spoken a little bit about site maintenance on the show before, and how much of a burden it can be on site crews. So like, it's one thing to get out there. And it's another thing to get out there, again, to do the weeding and again, to do the trimming and the watering. So I'm really interested to hear about what site maintenance looks like in direct seeding projects, and how that differs from other types of plantings and what the learning process has been on that.

W Will Eldridge 16:33

Yeah, I mean, I think we're interested to learn that as well. I mean, like I said, there hasn't really been a whole lot of maintenance up to now. So this was our first foray into that, going back to the benefits of direct seeding, and something I didn't... forgot to emphasize, was, you know, a lot of concerns with traditional tree planting is browse. And like beaver predation and voles and stuff like that. And I think this approach to the seeding approach, because of the density of species, that's much less of a concern. You basically just overwhelm the local species. So I think there's a lot of post planting maintenance going on with tree planting to address those concerns. So like tree tubes and things like that, like that's something that with direct seeding, we don't expect that to do that kind of post planting maintenance.

C Cate Kreider 17:23

I'm gonna pivot back, especially to the point you made earlier about, I'm gonna call it a consolation prize, where even if the tree regrowth is not what happens, you still get a disruption of invasive species monocultures. I'm curious about this method of seeding expanding in usage or purpose? Because that seems like something that might be on the table.

W Will Eldridge 17:46

Yeah, I mean, definitely. So it'd be one thing about it, because the nature of the site preparation, it really works best in these ag fields, where you can get a plow or a tiller through there. So it's not really ideal for rocky soils. But any of these old ag fields yet should be appropriate. And you know, I think for us, in terms of future directions, I think working with like the Fish and Wildlife Service partners for wildlife, the NRCS program, the EQIP program or CREP, I think those are definitely programs that we see this fitting into, you know, another interesting avenue, one that we'd like to explore more is the required agricultural practices. There's a buffer strip around a lot of these ag fields now. And we see that potentially as an opportunity to restore forested area. And so is there, is there an opportunity to use this approach in that buffer strip, production ag fields?

C Cate Kreider 18:46

And I know this is a statewide collaborative effort. So can you tell me about the partners and sponsors you all are working with?

W Will Eldridge 18:54

Yeah, sure. I always like plugging the partners that are involved in all this work. I think it's important to acknowledge though that this is really a collaborative effort among a number of partners throughout the state, and honestly, throughout the country. So just looking in the state, you know, this, a lot of the work that we're doing is funded by the Great Lakes Fisheries Commission. So those are federal funds that are coming to the state to support this work. And then we're working with a lot of our local partners. So obviously, Jess from Northwoods is on this is participating in this, but you know, we're working with the intervale they just hired a new seed collector coordinator, Brooke Fleischman. We're working with the Fish and Wildlife Service, Department of Fish and Wildlife, you know, they're very active partners in this. We also mentioned the National Wildlife Refuge and Missisquoi that's one of the sites that we're testing this on. TNC Nature Conservancy is another partner that we've been working with, and let's see, I think you know, Hinesburg you know, we've been doing a lot of experiments on the town forest down there, the LaPlatte headwaters, and NRCS. I think, ultimately, we hope to make this a practice that NRCS will adopt and kind of fund and implement on other parcels or other places around the state. And I'd be remiss if I didn't mention the Connecticut River Conservancy, they're doing probably one of the most important steps in all this, which is helping with the monitoring. You know, without the monitoring piece, we wouldn't know, we wouldn't be able to turn this into a practice and learn from it. So they're also implementing this on on some of the parcels that they helped manage with some of their private lands.

C Cate Kreider 20:42

Well, thank you so so much, both of you for coming to join me and talking about this cool new project. I think a lot of our listeners will be really excited to read and hear about your research as it comes to fruition in the coming seasons. Thank you.

W Will Eldridge 20:57

Yeah, thank you.

J Jess Colby 20:58

Thanks for having us.

C Cate Kreider 21:09

Today's episode featured the call of the Redwing Blackbird. It was recorded by Barry Edmundston in Barnstable County, Massachusetts on June 28 of 2019.

A Alison Adams 21:20

For more information about today's topic and other topics related to riparian forest restoration, visit the restoration roundup podcast tab of Lake Champlain see grants watershed forestry Partnership website. This project has been funded wholly or in part by the United States

Partnership website. This project has been funded wholly or in part by the United States Environmental Protection Agency under an assistance agreement to NEIWPCC in partnership with the Lake Champlain Basin program.