



SUNY College of Environmental Science and Forestry Campus Conversations: The Podcast

Season 2, Episode 1

Dr. John Farrell, professor of aquatic and fishery science, and director, Thousand Islands Biological Station (TIBS)

Dr. Don Leopold, distinguished teaching professor in environmental biology

4/7/22

Joanie Mahoney: Welcome. This is Joanie Mahoney, and I am back for season two of Campus Conversations, the Podcast. And I've been really looking forward to the conversations this semester. We're going to focus on some of the incredible research that's being done here at SUNY E S F, and I am starting with two esteemed faculty members here, Dr. Don Leopold, Dr. John Farrell, and welcome. Thank you for doing this.

John Farrell: Our pleasure.

Don Leopold: Thank you.

Joanie Mahoney: You can probably introduce yourselves better than I can.

John Farrell: Sure. This is John Farrell. I'm a professor of aquatic and fishery science here at SUNY E S F, and I'm also director of the Thousand Islands Biological Station up in Clayton. So, I've been a member of the college since about 1999, and I did my graduate work here as well. So, I've been on campus for about 32 years.

Joanie Mahoney: You would not know it looking at you, John!

John Farrell: Who's counting?

Joanie Mahoney: Right. Right. Welcome.

Don Leopold: I'm Don Leopold. I'm currently distinguished teaching professor in environmental biology. I have the privilege of teaching the oldest and largest tree course in the country, going now on to 36 years. And it's the highlight of my professional life year after year. It's just so wonderful to have so many students so excited about learning trees. And I've known John for all 32 of his years here and it's he's had a marvelous career and his role at the TIBS managing our really important field



station there is essential for some of the most important research that we do here at the college.

Joanie Mahoney: I had the opportunity to visit TIBS with John and it is a spectacular setting and I saw some of the work that the students were doing. Let's start there. So, you relocate pretty much for the whole summer up to the Thousand Islands Biological Station, is that right?

John Farrell: Yeah, that's correct. Joanie, the transition's about to begin. The sun shining and the ice is melting. And that's when the TIBS forces jump into action. And we make a transition from here on the main campus to life on the Saint Lawrence River. These transition times in both the spring and fall are particularly challenging because the teaching and all the other activities on campus are still ongoing while something new is beginning, but we will have a group of undergraduates, some of them beginning their first research since their time here at E S F. And then a series of graduate student projects are ongoing, and we do long-term monitoring and research, engaged with agencies, and helping to manage and ensure a bright future for the Great Lakes and Saint Lawrence River ecosystem.

Joanie Mahoney: So the Restoration Science Center, is this connected to the work that you're doing at TIBS?

John Farrell: Yeah, it certainly is. And, you know, we're going to hear more about the R S C and its role. But initially there were a group of faculty here on campus that had restoration related research going on and interest, and that's where the idea of the center was born. So up at TIBS, we do a lot of species restoration and habitat restoration. We have a project called the Fish Habitat Conservation Strategy that's funded by the U.S. Fish and Wildlife Service that's ongoing, that's battling invasive species, and also looking at how water level management influences the Saint Lawrence River ecosystem. But that that's just the tip of the iceberg for the R S C because it's morphed into a more comprehensive view of restoration.

Joanie Mahoney: And that's where I've had experience with the Restoration Science Center was here closer, Don, I was able to spend some time with you and a creek restoration project out in Skaneateles in the Finger Lakes, and I learned about the Lawns to Meadows program. I know that people want to do what they can to mitigate the effects of climate change, and they just don't know how. In this work that you are both doing and others in the Restoration Science Center is a way that regular folks in their own lives can be contributing. Is that, am I accurate?



Don Leopold:

It's probably one of the most important ways that the general public can have a role in making sure that we minimize toxic input to the environment. And in some places maybe it's not deemed as important, but when you're basically a part of a large watershed that provides water to Syracuse and you start having harmful algal blooms because of those inputs, and other things start to get out of whack, then a lot of it boils down to what can I do on my property? And if you think about it, regardless of how a lawn looks, it doesn't have much of an ecological function. So function, ecological function, is really defined by the amount of biomass, the amount of roots and shoots that you see in lawns compared to meadows, compared to forests obviously have very little function. And that's just one aspect of thinking about meadows. The other aspects have to do with esthetics. I would argue that a lousy-looking meadow looks a lot better than a well-groomed lawn. You have the role of pollinators. And, you know, pollinators really are responsible for delivering a lot of our food to us. And pollinators are in trouble. A lot of trouble. And it's really interesting, since we've hired a pollinator ecologist due to the generosity of the Fink Family Foundation, there's thousands of insects that serve in the role of pollinators. Lawns don't support any of them, but a rich meadow full of beautiful flowers and grass-like plants, you get tremendous ecological function. They feed birds. I mean, there's so much that comes out of a simple meadow and they're fairly low to no maintenance. And you don't have to keep on paying for fertilizer and herbicides and insecticides to maintain the lawn.

Joanie Mahoney:

Yeah. And the more you learn about it, I don't know why anyone would have a lawn. I remember when the harmful algal blooms first came on the scene in the Finger Lakes, known for their pristine water quality. And there were pictures of the blooms on the shoreline. And right behind them were these impeccable, well-manicured lawns with the straight lines from the lawn mowers. And it wasn't hard to connect whatever the fertilizers being used there on that lawn, a rainstorm and that fertilizer washes into the lake. And pretty soon you're feeding these harmful algal blooms. Am I am I oversimplifying?

Don Leopold:

No, it's that relatively simple. And so if you go to E S F's Restoration Science Center website, you'll see now a manual, a how-to, how do you get rid of your lawn and how do you put this meadow in. And it's not that expensive. We don't know any downside to doing this. And we hope that, you know, as we develop more and more educational materials that we're posting, that, you know, the public will take advantage of this information and think about doing the right thing. And if you're still not convinced, contact us and we'll get them over the line there.



Joanie Mahoney:

Yeah, I'm sure. And that's part of the benefit of having a conversation like this. We're hoping to get out to the public because as I said, it's been my experience, you know, in a previous life when we were trying to manage stormwater with green infrastructure, people would stop in the grocery store and say, you know, how can I help? And I'd tell them about turning their downspouts so that they hit soft landscaping instead of the hard surface and, you know, reduce the runoff. And people they want to help. Most people, I think, feel helpless with this changing climate and these more intense storms. But this is a really good, practical way that everybody can contribute to mitigating the effects of the changing climate. So where did the Restoration Science Center come from? Is that a product of the Discovery Challenge?

Don Leopold:

It is, and it was a matter of having a good reason for faculty to really talk hard about putting together innovative groups for important reasons. They would be more competitive. And so we had a large number of faculty here. John and I were lucky to have others who I think recognized here's an opportunity to put all these people under this umbrella working on, maybe the projects don't seem in any way related, but their common goal was to restore something, species to ecosystem level, not just in New York, but literally around the world.

Joanie Mahoney:

You're reminding me about you said outside of New York. Another thing that I think I have in common but is really important to this is that you have to do a lot of work on private land. There's not enough land that's publicly owned to move the needle as far as we need to move it. So your group does work on private, privately owned land?

Don Leopold:

Well, the other way of looking at it is that most of the land in the United States is owned by private individuals, that if you add up all the parks at all levels and other federal and state properties, you're not close to covering the home ranges of species and the key areas for species. And so we were lucky about 15 years ago to have a very good landscape architect reach out to us to provide the baseline biological data for his master planning. This is Thomas Woltz, of Nelson Bird Woltz. And through that process, we were able to start meeting people of means that had large properties and they wanted to do something on their properties, extract more wood, or grow something for commercial purposes, or whatever. But they didn't want to have a negative impact on biodiversity. And so we were able to do things on those properties. And in some cases, it led to some fairly significant private donations, over \$1.2 million, now from one couple that we have all kinds of really neat things going on down there. But that donation has led to us being able to hire Sam Quinn, one of the key persons in our Restoration Science Center. And



then another private donation from the Finke Family Foundation allowed us to hire a pollinator ecologist. And so we can recognize how important pollination ecology is. But most of us, even though we're organismal-focused, don't appreciate that there are 4000 bees in North and in the United States. And the only bee that gets attention is the non-native bee, the honey bee, which out-competes a lot of the native bees that are dwindling. So, a lot of bumblebees now have become federally listed, meaning that we're kind of concerned. And but this Molly Jacobson, who we recently hired, has opened up some more doors that are leading to more donations and more really interesting projects.

Joanie Mahoney: And it's connecting those things because we do outside of your world, those of us that just are reading, you know, articles in the newspaper, we see that bees are in trouble. But how that actually connects to what you're trying to do to get people to get their lawns out and replace them with these flowering meadows. That's how you solve the problem. So while you're sitting over your coffee on Sunday morning and you're reading it and you're concerned about the bees, there's a real way that you're connecting that work. And I think it's great that people with means are contributing to the work that you're doing because we can't do it without the private help. So can you walk people through what these projects are like?

Don Leopold: We're usually engaged with a landscape architect. We often bring a group of graduate students with us, 12 to 15, who all are responsible for a particular part of the biota, and they collect data. And then usually James Gibbs and I, and more recently, Sam, we often compile that information, give recommendations. Almost, it's kind of depressing to see that no matter where we do this and we've done it in Mississippi, we've done it in Virginia a number of times, Long Island is a real rich place to do these things because it's such an interesting area. But almost always the problems are the same, which also means they're not that difficult to fix. These are not things that we need innovative solutions. We need to tell people what's what's good about their property, what's not, and what are ways to make it better. And a lot of it has to do with invasive species control. That's not getting better. There are other things happening, as you know, like diseases of trees. We don't meddle as much there, although we hope someday we can with our restoration, with the Tree Restoration Center and the fine work that Bill Powell is doing. But the problems are fixable as long as we get to the people are open-minded about wanting to really help. That's really where the sticking point will often be.

Joanie Mahoney: And that's a really hopeful message, is that we know how to do it.



Don Leopold:

Yeah, well, I think a lot of us would have quit many years ago if that wasn't the message. But, you know, there's a lot of reasons to be optimistic. Climate change is scary because right now we don't have any tools to change the drivers of that. I mean, we know how we know what the problems are. It's getting people to change on a really large scale. But we do know how to adapt in terms of species to introduce and those kinds of innovative things. But we hope we don't have to sort of act as nature's dispersal agent of plants and animals because we can't fix the real reason why these current plants and animals are struggling sometimes where they are.

Joanie Mahoney:

You know, again, I think it was a New York Times article about the people that are well-intentioned, that have been planting trees in an effort to help, and they're planting the wrong trees and they're damaging the ecosystems around the trees that they're planting. And that's information that I'm sure comes out of the work that you're doing.

Don Leopold:

Well, some of the most serious conservation problems in the United States are due to people who mean well, like the person who introduced melaleuca to the Everglades back in the early 1900s flying over the Everglades with this most serious noxious species and dispersing pounds and pounds of seeds. That is now one of the most serious problem plants down there. The python! People introducing things from their aquarium. This isn't like somebody from the outside has caused the problems and now we're stuck with a solution. We are causing the problems. So the solution, the continuation and the solution really depends on us.

Joanie Mahoney:

So, John, is that true also in the fisheries world?

John Farrell:

Yeah. I mean, I can echo what Don is saying and I think we provide a nice partnership because, you know, Don kind of starts at wetlands and then goes into forest ecosystems. And I, I kind of serve more from wetlands into lakes and our aquatic systems. So that's kind of a nice synergy for the R S C. And I just wanted to mention that there's so many faculty that have been engaged, involved with the R S C that hopefully we can get to that to broaden just this incredible wealth of talent here at E S F that has potential to participate and help us find some of these solutions. But, you know, and the other recent news is that the smallmouth bass, one of our revered local favorite sport fisheries and a native species here in much of New York State, except the Adirondacks, has now been found in the greater Yellowstone ecosystem. So there's big news there and it's just another example of people moving species around without considering the intent. You know, ecosystems are complex and many, many species are somewhat innocuous and



get moved around. And it doesn't really impact the ecosystem that much. But many of the aggressive ones are the ones that take hold and are able to, you know, colonize on top of existing assemblages. And, you know, we see that with species like smallmouth bass, which is a voracious predator and also many of these plant species. So they're kind of pre-adapted from their home ranges to be aggressive. Some of them are quite innocuous in their home ranges, and they change dramatically when they come into a new habitat because it kind of presents with them an open niche space. So when you move to a new system, you're able to take advantage of opportunities and become invasive and aggressive. You know, for the R S C, invasive species management, it's always got to be kind of part of the equation and understanding how to repair and make sure our native species try to help them provide the resilience for them to continue to complete their life cycles.

Joanie Mahoney: So are we are we going to tackle these things one after the other, you know, sort of sequentially or maybe overlapping, or are we going to get to the point where we can solve the problem from a bigger level? And what I mean is there's the invasive milfoil, right, that's taking over some of the waterways and then there's a whole bunch of effort and money. And, you know, people are focused very narrowly on getting rid of the milfoil. The milfoil's barely gone. And then you have the blue green algae and then you fight the blue green algae. And there's another plant that I just recently heard is coming and taking over. And we just seem to be focusing on the very narrow problem. And it's not ending. What we need is somebody to say, here's the things that you're doing wrong that are going to keep these cycles of bad things happening, you know? Am I right about that?

John Farrell: Yeah, I would agree with that. I mean, education is really at the core. So people understand, you know, their actions and what they're doing on the landscapes. And, you know, I just wanted to point out, Dr. Kim Schultz, she has a big program here at E S F that has a whole team of boat stewards that are around launches across New York State. And, you know, that's a proactive research program that is at the site of introduction. So many of the vectors to our aquatic systems come from trailers and boats and people moving species around. And E S F students and researchers are there, you know, right at the forefront and are trying to intercept that, that process. And Kim is taking it a step further and incorporating that into her research. So we understand vectors and how a species move around so we can try to to head it off because it's a lot easier to keep a species out of a system than to try to eradicate it once it's there.

Joanie Mahoney: There were some E S F faculty involved in a plan for the Erie Canal, and, you know, it connects Lake Ontario and it connects points west, probably the Saint Lawrence



Seaway. That water can mix at some point. And they were talking about how we needed dry docks. We needed to have parts of it where a boat would have to come out of the water and get cleaned and move into the next one. Or else we're just going to be spreading these invasive species all over.

John Farrell:

You know, the dilemma is, is that once an invasive species gets into a system, it's almost impossible to control on a broad scale. So if you have like there's five plants or animals that you want to get rid of collectively instead of one at a time, then that requires broad-based types of herbicides, and that's what the public most reacts against. And because they're the most problematic, the only specific thing you can do for an individual species as biocontrol, the things that control these species in their native habitats. That is really difficult to come up with. I mean, you're looking at literally for every invasive species, plant animal, a unique suite of or so the things that I'll take out purple loosestrife, the six beetles that eat the flowers and the shoots and the roots, they're all different. And none of them care about any other invasive plant that we have. So, so you've got the biocontrol method, highly specific. You've got the broad-base systems which are not environmentally... they're just of great concern. Then you've got, well, let's just control these things to begin with. That's not easy either. That's why I don't think the folks in our field are going to go out of business, because these things are just going to get worse. They are getting worse despite us knowing more today than any other point in time. All of these issues are getting more difficult. We're getting more species. We're having trouble controlling all of them. On the level of the professional side, I mean, gosh, our students should be excited about coming here. They're going to be part of fixing things that only are getting worse in the United States and elsewhere. So, there's guaranteed jobs.

Joanie Mahoney:

Yeah. Isn't that ironic that we know more now than we've ever known and we have a bigger problem now than we've ever had?

John Farrell:

Yeah.

Joanie Mahoney:

And you know, just in your everyday life, probably you hear citizen-scientists and there's a little drop of information and then it takes on a life of its own. I remember when the zebra mussels came, it was bad and then it was good because they were clearing the water. And then it was bad because with the clear water, the oxygen can get in. And then, you know, people have no idea what they're talking about, which is why we need the work that you folks are doing, you know? How do you end up becoming a restoration scientist? Like, where did your path come from?



Like, were you interested in this work as a young person? Did you have some schooling that sparked something along the way?

John Farrell:

So, you know, a lot of students come here because they think by coming here, they're going to be sort of those positions that require a little bit more than an undergrad degree and experience. And so, restoration ecology is just one of them. So, you know, you come you go to a place that focuses on organisms, because if you don't understand the organism, you can't just look at a label on a herbicide container and make them can make the match between, okay, this will work with this. You have to understand the organisms I've studied since I've been here, I'll continue to say it. E S F has had, I think, the strongest organismal program in biology in the country. Now, it's not necessarily the best place to, you know, for med school, because that's not what our focus is. Although our med students are pre-med students, you know, they apply to a place I had a dendro TA, an undergrad who applied to med school and the committee looked at his application and said, somebody who loves trees wants to become a doctor. This is interesting. So they do stand out. But most of us, I think, get to become restoration ecologists by understanding systems and organisms to a level where we're more comfortable thinking that we might be able to fix something. But you don't you're not going to do that at the undergrad. It's too complex. That's what's so fascinating. I mean, we're never bored because, you know, we learn so much. It's also humbling to know how much you don't know about a lot of these things.

Joanie Mahoney:

I think that was Socrates who famously said he was the wisest person because he knew that he didn't know everything. Right. So how about you, John? How did you end up?

John Farrell:

Yeah, thanks for that. You know, I was fortunate to have parents that loved the environment and showed me, like many of the students here, I think you find some connections somewhere that that triggered the love of nature. You know, it's just such a rewarding place to go during tough times. So you always can go back and count on nature to help heal you. And, you know, in terms of restoration, I find it just such a hopeful aspect of ecology. You know, many other areas we were studying declines and, you know, the latest extirpation or extinctions or, you know, how that's going to influence ecosystems having missing parts of it. And it almost feels like you need another course, like just to deal with the psychology of, you know, the state of the environment. And we try to be very optimistic because there's a lot of reasons to be optimistic. But one of them is certainly restoration because trying to work to undo, hopefully unintentional wrongs that have been placed on the ecosystem and to develop the knowledge base. And to do that is



very satisfying professionally. You know, when you can step back from, you know, your work and take a look at the influence you have on the students that are out across the country, across the state, across the world that are really involved in restoration in one way or another is just remarkable. And then there's specific projects you can point to as well that you had involvement with where that you may have changed or influenced that are a success story. You know, that's just a wonderful thing to carry. And, you know, it helps you keep going from day to day.

Joanie Mahoney: Yeah, I would imagine that you have among the most fascinating careers because as you said, it's a never ending list of challenges. You have this fresh group of students that come every year excited to learn, and you still have an opportunity to keep learning, like being a teacher must be very gratifying. But I it's got to be one of the most difficult jobs. So you mentor grad students in the work that you're doing. Do you have current students?

John Farrell: Oh, yes, that's correct. And you know, I just wanted to point out that the faculty need to keep learning as well, and we have to or you'll fall behind. And, you know, one of the ways we do that is through collaboration. And that's kind of what the R S C is all about in a way. It's teams of collaborators, like-minded collaborators with like differing expertise. So when you pick a collaborator, you know, you don't pick somebody who does the same thing that you do because then you basically have a carbon copy of yourself and the ideas might not be as innovative and thoughtful.

Joanie Mahoney: So give us an idea. What are the subject areas that you collaborate with, the two of you with other folks in the Restoration Science Center?

John Farrell: Yeah, I mean, there's a long list. I think, like when Don and I started working with us and with with our other colleagues, people kept joining and bringing fresh, new ideas that, you know, maybe we hadn't thought of before. And one of the most powerful ones is, you know, we've been talking about invasive species and species restoration, but people came into our group that are engaged with things like bio cultural restoration, which is the restoration of the relationships of people with the environment. And that really wasn't my focus prior to the R S C. And, you know, maybe we were doing some of that without thinking of it. But when people value ecosystems and their services, they tend to take care of them in a different way, right? So, you know, when you have a vested interest and you get something back from the ecosystem that promotes your well-being, you know, that's going to make you want to take care of it. And, you know, we learned from Stew Diemont, who is focused on biocultural restoration some of his work in Mexico and more recently with the food forests that Don is much more prepared to talk about. But



those are areas that just opened my eyes to the potential. And then all the other scientists, you know, there's people from many walks and many disciplines that play a significant role from, you know, biochemical reactions that occur to the climate effects and physiology. And it's really what we would call an integrative science.

Joanie Mahoney: What interesting conversations you must have among each other. You know, I can't I would like to be in on a faculty meeting. But Don, what is the food forest?

Don Leopold: So the food forest is this idea that, let's just take Syracuse, for example. There's 1800 abandoned parcels in the city of Syracuse. They're abandoned. They're black topped. So what do you think happens with all of the salt runoff, all of the precip, anything that hits those pavements? What do you think happens to it?

Joanie Mahoney: Straight into the sewer system and out into Onondaga Lake.

Don Leopold: It's not good, right? What happens if you instead had these same parcels planted with a unique array of species, tree species that produce nuts that are the most delicious tasting thing you've ever had. Sub canopies of pawpaw, which are this new, highly nutritious tropical tasting plant, berries in the understory, things in the herbaceous layer. What if you did that repeatedly hundreds of times and you let people access it? So that's what a lot of what Stew Diemont and Matt Pottinger teaming up with Syracuse University faculty. They put together this extraordinary team. They've recently got a \$200,000 grant to install some of these in the city, and I should have brought the numbers with me. But the numbers are pretty amazing, the millions of gallons of runoff they're going to keep from happening because of some very modest plantings in the city of Syracuse. So I recently had a talk with a Pennsylvania Bureau of Forestry and I mentioned the same idea. And you look at the city of Philadelphia, 40,000 abandoned lots and they're not doing any good staying abandoned. Now, I understand you're not going to necessarily build a mall on each one. In fact, I would argue, don't don't build anything. Let's convert these back to the green spaces so they have ecological function and ideally let's not put lawns on them.

Joanie Mahoney: Okay. So how do we prevent people from planting the wrong thing? As I said, even with the best of intentions, without knowing what you all know, we could be doing more harm than good.

Don Leopold: You know, some of us have been talking to people for 40 plus years about the right trees to plant, the right shrubs to plant. We've got stuff on the web. We've got



videos. We've got so much stuff out there. I don't know how to lead people who don't know about these things to find those that information. The information's there. It's not packaged in a way that, you know, it's only for stuffy academics. There are in general, if you stick with native plants, you will not, you'll minimize problems. There are very few native plants. There are a few that are problem, but most of them are not. A lot of non-native plants can be a problem. And Tree of Heaven is a great example. It was brought here back in, oh gosh, a hundred years ago to Philadelphia because it had a neat appearance. Well, a hundred years later, it's the favorite plant of the spotted lanternfly, which is going to be, of all the insects we've been dealing with, this one is going to wake people up because it eats everything that people love to eat. That's their favorite stuff, our fruit trees. And it's an amazing insect. I mean, you have to appreciate it from an ecologist how something can be that effective. But it's scary. And it's just it just took off in Pennsylvania. It's now in New York. And it's going to be the next big thing to deal with.

Joanie Mahoney: What's it called?

Don Leopold: The spotted lanternfly.

Joanie Mahoney: All right. Well, you heard it here first. We're all going to know about the spotted lanternfly before too long. The same way I learned about the emerald ash borer. And so, you know, people have these decorative Japanese maple trees in front of their homes and the leaves are red, right? And they're pretty. Is that okay?

Don Leopold: So we know what's okay and what's not okay. So I have 15 or 20 of those Japanese maples, which, you know, I've given so many native talks, the native plant talks the last 30 years. Once in a while somebody will see a non-native plant in the background and they'll get up and they'll scream at me and it's you don't it's not that extreme. You know, gardening in nature should be fun, but there are things that we know. So New York State has published a list of prohibited plants. So I wouldn't plant plants on that. It's it's a legal document. So the guidance is crystal clear. Burning Bush is a great example. Burning Bush is so over planted and it has no benefit other than red fall color. Well, other things that are native do like high bush blueberry. Would you rather pick quarts of blueberries in August and then get the red fall color versus nothing?

Joanie Mahoney: Exactly. And I've seen those burning bushes everywhere.



Don Leopold:

A lot of it has to do with what nurseries sell. We talk to them and they'll say, well, we only saw what people ask for. Well, you're only they're only asking for it because this is all they know. So it all starts back at education. And if this was a really complex topic like math and physics, I would understand why the public doesn't get it. But this is easy stuff. It's fun stuff. Why would you not want to know what's...? I can't imagine planting something and not knowing what it is in my land. It just seems absurd.

Joanie Mahoney:

Yeah. And I think you would be maybe disappointed to know how little people do know, though. So just even what you said, that there is a list of plants in New York State that we don't want you to plant. So I'm assuming that's on the DEC website?

Don Leopold:

All you do, is you type in New York State prohibited plants and it comes right up. It's a really nice document.

Joanie Mahoney:

Yeah. So, you know, I had a similar kind of conversation when we were trying to battle sprawl because, you know, the population is flat and we're taking up more land for people to live in. And there's a lot of problems that are probably obvious to you too, with that. But when we would talk to the builders, they'd say, well, we're just, you know, just building where people want to live. And I said, my experience with people is if they understand the impact that they're not going to want to. So, as you said, the education, if the person at the nursery says that was, you know, not going to do good things for the pollinators in your lawn, people aren't going to want it. It's all about the education. And I don't know how we more broadly, that's one of the purposes of this. We're going to, you know, push this out to folks because I know people want to know and we have the experts here at E S F. I've been blown away by the projects that I hear about that are done here at E S F. It's such an interesting place to work.

Don Leopold:

Well, I think people don't appreciate the fact that this is one of the few doctoral granting programs in the SUNY system. Those are special. Those are those are really special. And so, you might have the finest teachers at other places. I know they're really good. Teachers within the SUNY system at the non-doctoral schools. But the people who are here, they're here because they want to do research. That's we didn't go through not med school, but we didn't go through grad school to not be doing research. And so I think that's it's a real difference in philosophy. And we were fortunate in New York State to have really fine doctoral institutions. They sometimes compete with us, but they also sometimes are collaborative with us and give us something to look at, you know, sort of in some cases, models of how we might do better.



Joanie Mahoney: What was your P h. D.? What did you earn a P h. D. in?

Don Leopold: So my my P h. D. and Master's are in forest ecology, but my undergrad is in horticulture. I was initially interested in growing plants, but then when I started to learn how they may look similar, they're so different ecologically, and that really translates in how to use them in the garden so that that information is more useful beyond, you know, just horticulture. But getting into the forests of the Eastern United States and learning their complexities, that was just too fascinating to not stay in. So, I mean, a lot of us sort of come from these more basic foundations. And then with grad school and with doing work, you start to specialize more and more.

Joanie Mahoney: Mm hmm. How about you, John?

John Farrell: Yeah. I have degrees in natural resources management and fisheries. And I just wanted to add that my attraction to E S F revolves around its field properties. And, you know, the same thing's going on in laboratories as well. But Don mentioned that the doctoral granting nature of SUNY E S F, and why that's important, it's also really important to our undergraduate population. And, you know, some people may wonder why that that is. It's because they're not here to get a doctoral degree, but they actually work and interact with these students that are to have taken this next step, so they begin to understand graduate school, they get employment in these labs and opportunities and working with these students. And we have really strong interaction between the graduate and undergraduate population. And that's one of the reasons why I think it's exceedingly important. And then with field stations, you know, when you get to work with students out in the environment, in the field, it's just like all the barriers melt away and are broken down. And it's a different type of interaction than you have in a classroom and you get to just explore. And I really enjoy that environment. And the college has numerous field stations, as you're well aware, and 25,000 acres of properties. And, you know, everybody here is engaged with environment and environmental problem solving. And so it's just a real nucleus, a wonderful place to work.

Joanie Mahoney: Yeah. And I have visited all of them and seen the opportunity. Anything in environmental science that you want to research is possible here with the things that we have with E S F. I saw a few done. Maybe you were involved in this. I saw a few different stands of trees that were having different patterns of logging and to see what the effects would be. You know, I saw your students going out at TIBS, and I know that that's not why you're there, but what a spectacular setting for the



way you're spending your summer. I thought, wow, John won the game of life. That's pretty nice.

John Farrell:

I remember that day. I think that was a really nice day. It was some days aren't so nice but yeah, it was it's you know, one of the things that's going on at our field properties is, is what we call longitudinal studies. So students are working to collect data over long periods of time. And I've learned that like data is power. So you learn about the dynamics of species and environmental change from this information. And it really informs us about the complexities of nature and how things like climate change or some influence humans are having on the environment can be detected in our data sets. And when you can go to a meeting or show an agency with hard data saying we have a problem that people wouldn't have been aware of without this information, it's really powerful. And it also allows a springboard for development of like research hypotheses. So understanding like what's driving these dynamics is where the some of the interesting research begins.

Joanie Mahoney:

You know, I was at Cranberry Lake Biological Station, and I saw a student who came from a different college. They were doing their research and just gushing about, as you called it, the longitudinal data set. But you can learn so much about nature just from data that's been collected by E S F faculty and students over the last 100 years or so. It's amazing that that data exists and that it's available to people who not only attend school or work here at E S F. But we have diaries that have been kept about the ice on the lake and when people were able to make their way out and how you can see that that's that date has moved out a little bit over time. You know, I'm fascinated by it. I see my job as sort of explaining to people why E S F is different. People know how important the work is here and they know the quality of the work that's done here. But it's the, it's the financing. It's making sure that you have the resources, that you have the labs that you need. I want to support around the faculty and students that are just doing this incredible work and then getting the word out. People have said forever that yes, up as a hidden gem. I've lived in Syracuse my entire life. It shouldn't be hidden. We should be screaming from the rooftops about the kind of work that's done here. You'll be happy maybe to hear that we had a record number of applications last year at E S F and we have more this year than we had last year. Let me just ask you, in the few minutes that we have left, I was talking to some students and they were talking about the speed with which the changes are happening and how even if we are able to completely mitigate or stop some of the warming that we know has been caused by taking a lot of the fossil fuels out of the ground, they were saying that the ecosystems can adapt if the change happens slowly enough. But if we go too



quickly that the species aren't going to be able to keep up with us. Is that true? Is there a benefit in everybody just, you know, doing our part and seeing if we can slow it down to give these species the opportunity to adapt to these changes?

John Farrell:

Well, it depends on the species. You know, birds can fly to a safer place. Plants take a while to move. And so, it really depends on the scale, depends on the species. It depends on where you are. If you're on the edge of that, where the climate change is most apparent, you know, the climate change that's happening in this region so far, it was predicted to be mostly a wetter eastern Lake Ontario basin, and that's what it's been. So we know we're about 40 inches down on our snowfall, again, two years in a row, but at least we've got the precip. So that kind of change isn't going to be a dramatic detriment that other places, the changes are much more serious. I mean, these catastrophic storms that are increasing in the western United States drought cycles, I don't know where it's all going, but I'll tell you, it's easy to convince people that the Northeast, New York in particular, it's a really good place to live if you're concerned about a lot of these environmental issues, you know, we're, for the most part, going to get less of the hit than a lot of other places are getting immediately. And that's catastrophic.

Joanie Mahoney:

New York, we're going to be lucky because of our environment, but we're going to be even luckier because this is where the science is being done. These are where the solutions are coming from. And in large part because of the work that the two of you and your colleagues are doing in environmental biology and particularly in the Restoration Science Center, I know you overlap with the Center for Native People and the Environment. You're kind of alluding to the cultural work. So, thank you for the good work that you do here, and thank you for taking a little bit of time to share that with folks so that you can help us on our effort to get the word out about the great things that go on here at E S F. So, Dr. Leopold, Dr. Farrell, thank you very much.

John Farrell:

Thank you for the opportunity.

Don Leopold:

Yeah, thanks for having us.