

WITW-Podcast-S1E1 Welcome to Working In The Weeds_mixdown

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SPEAKERS

Jay Ferrell, Christine Krebs

J Jay Ferrell 00:00

We start thinking that a plant is all good or all bad. Let's take a second and step back from that and realize that even in life almost never is something all good or all bad. There's nuances there's gray.

C Christine Krebs 00:26

Welcome, this is the Working in the Weeds podcast at the University of Florida IFAS Center for Aquatic and Invasive Plants. We are excited to connect our scientists with you to clarify and discuss issues surrounding aquatic and invasive plants, while also highlighting the research being conducted here at the Center. My name is Christine Krebs. I'm the Education and Training Specialist out here at the center. And for our first season I'll be sitting down with center director, Dr. Jay Ferrell, to introduce this podcast and to set the stage for future conversations. In our first season, we'll be talking about the center in general, provide an overview of our invasive plant problem, and finally discuss what makes Florida uniquely prone to invasives. So with that, let's dive into my conversation with Dr. Ferrell. So I'm here with center director, Dr. Jay Ferrell on our first podcast episode. How does it feel to finally be in the studio?

J Jay Ferrell 01:19

Feels great. We've been talking about this for a long time. I'm glad we're finally doing it.

C Christine Krebs 01:21

Yep. Yep. So can you tell our listeners a little bit about the center?

J Jay Ferrell 01:25

Sure. So the center was formed in 1978 by the Florida Legislature, because it was a critical time in what was going on in the environment of Florida. So hydrilla was moving across this state at an unprecedented rate. And resource managers as well as anglers and homeowners were seeing these lake resources change before their very eyes. And they were getting concerned that we were reaching a point of no return that these lakes were going to be very damaged forever. But the real problem is when we were starting to talk about solutions, we didn't have any good data to address this issue. So every time there was a discussion about what to do, there was a lot of "I think we should" or "maybe we should try." And folks started getting very concerned, and rightly so, that we were getting ready to start implementing cures that were potentially worse than the disease. So were we going to do something that's actually worse than the hydrilla infestation, like add a bio control that's untested, that we don't know what it's actually going to do to our native plants, or start doing things like maybe we pour acid into the lakes. Those were concepts that were being discussed. So people were wanting to timeout for a second and really discuss, what should we be doing? So that is when the legislature stepped in and said, we need a scientific organization that is going to study these plants, understand their impact on the environment, and then provide that data to our state and federal partners, so they can make informed decisions. So that is how the center was formed. And under that, we've developed a mission statement that we still use to this day. And the mission is to develop and disseminate strategies for addressing the impact of invasive plants. And I think there are two things in that mission statement that really make us unique. So one word that I want to focus on is impact, and the other is strategy. So one of the primary things we do is study the impact of these plants, what are they doing? What are they not doing? There's a lot of room for conjecture. There's a lot of room for that plant is bad, because I don't like it. But what is it really doing to the system? What are the pros? What are the cons? Because very few plants are all good, all bad, they're almost always in the middle. So we need to understand both sides of these plants so we can make informed decisions. So that's in studying the impact. But there are scientists all over the world that study the impact of these plants. What makes the UF/IFAS Center for Aquatic Invasive Plants different is that we also disseminate strategies. So we don't stop with just "hey, this is the problem." We say, okay, here are potential solutions. And that's what sets us apart. And we were started in 1978. And we're still doing the things today.

C Christine Krebs 04:25

So that's a lot, mission statement, hydrilla taking over lakes. Who makes up the center what kind of scientists and researchers we find there?

J Jay Ferrell 04:32

Well, we have two groups of scientists. We have what I call in resident scientists that are there altogether at the center in Gainesville. We also have affiliate faculty that are around the state and we're all part of the University of Florida IFAS. But those that are there at the Gainesville location, there are four of us. So you have myself as the director, I have over 25 years and background as an agronomist and plant manager. So I have spent a number of years working in a lot of different scenarios. But my focus now as the director is to help connect our scientists to our state and federal partners. I want them to know the type of work that we're doing, as well as the type of work that we're capable of. Because if they know those types of things, they can

come back to us and say, you know, we're really having a problem with this, can you guys help us, and then I can help partner that program or that project with a scientist who can then go out and get the work done and deliver the data for them. Now, outside of me, we have Dr. Stephen Enloe. He is also an agronomist by training with degrees from NC State, Colorado State and UC Davis. And he has a very wide skill set, because every time he moved to a different university, he did different things, finally ending up at UC Davis with a very strong ecology background of understanding what are these plants doing on the landscape? What happens when they're removed from the landscape? And then what impact does that practice have? So Stephen was at Auburn, we were able to steal him away a few years ago, about six years ago. And he has really reinvitalized our group and really got us going in the right direction. And if you ever want to be around somebody with high energy, you need to be around Stephen Enloe for a few days. With that we also have Dr. Candace Prince. Dr. Prince is a triple Gator receiving her bachelor's and PhDs all at the University of Florida. And we were able to hire her as soon as she graduated. And she has a very unique skill set as well. And we usually call her a physiological ecologist. So an ecologist looks at why do certain plants grow in one area versus another? Well, Candace is looking at that answering those questions, but she's doing it from a physiological basis. So how is photosynthesis different? How does this plant do one thing versus another at kind of a cellular level, and she's been very successful at it. And she also heads up our teaching program. She does all of our in classrooms as well as online teaching, and she runs our certificate program. And we need to talk about that in depth at some point because it's a great opportunity for people that want to go back to school but not necessarily be degree seeking. We also have Dr. James Leary. Dr. Leary is from Michigan State with also two degrees at the University of Hawaii. He worked in Hawaii for over a decade working with invasive plants. And he was always the guy that was out there thinking thoughts that no one else was thinking about. He's the most creative person I've ever met, as far as a scientist. He was addressing issues in Hawaii with these plants growing on the side of mountains at 4000 feet above sea level, and you can't access them, but they're just destroying the environment of Maui, the island he was on. So he started thinking if I can put herbicides in a paint ball and pull up next to them in a helicopter and shoot them. I bet I can take care of them. So he worked with a paintball company worked with a helicopter company. Next thing you know, Dr. Leary has preserved thousands of acres of this wonderful preserve in Hawaii because of that creativity. So now he's working with us helping us figure out better ways to monitor invasive plants after management. What is going on? Do the native plants come in? Do they not? Does practice one, give us more longevity than practice two? And he's thinking big thoughts in Florida, just like he was in Hawaii. Everyone I just mentioned are University of Florida employees. We also have a long standing partnership with the US Army Corps of Engineers. We have a US Army Corps of Engineer scientist with a PhD that is located at our Gainesville facility, and he is doing plant management. His background is as an agronomist, and as a plant manager. And he is doing all sorts of work trying to find better solutions. How can we use less herbicide and get better management of these invasive plants?

C Christine Krebs 09:08

Yeah, and that for everyone listening, our Army Corps representative is Dr. Benjamin Sperry. And he's also a graduate of the University of Florida. Correct? He's a gator as well. So he came back.

J Jay Ferrell 09:18

Two degrees from the University of Florida, one from Mississippi State.

C Christine Krebs 09:21

That's okay. Well forgive him. That's okay. All right. So moving on to our next question. I guess before we really get into the weeds talking about invasives in general. Can you give us a brief description about invasive plants, and some terminology that we commonly use when we're talking about them?

J Jay Ferrell 09:37

Absolutely. Terminology is a big thing because as scientist, our words have very, very specific definitions. And a lot of folks in the public don't understand that. And they use a word that we use very differently. We have a lot of confusion and we have a hard time communicating because we think we're on the same page, but a lot of times we're not. So there are four classifications of plants I think it's important for us to talk about. And we're going to mention these plants over and over again in the episodes in the future. Because it's very important, we stay on the same page with terminology. So the first one we need to talk about is, what is a native plant? So a native plant is a species that occurs within a specific geographic area. So we usually think of these plants as ones that have an origin story. We know where they're from, and they're from this area, and they do these things in this area. Now, by and large, we see them as very beneficial, because they have developed in that specific space, they have also kind of grown up, for lack of a better term, with insects, diseases, and other factors that help keep them in check. So by and large, native plants work together in harmony with a lot of other species. And we say that's a large biodiversity. The more diverse the ecosystem is, the more resilient it is, and the more different things that can help provide. Okay. The second plant we need to talk about is a non native. Okay, so folks for years have called this an exotic, so an exotic plant, same thing as a non native, but non native is the new term that we're starting to use. So this is a plant that developed somewhere else that has been brought here. Now, just because it's not native doesn't mean it's bad, it just means it was somewhere else. And now it's here. And there are a lot of non native plants that are very beneficial. A lot of our food plants are that way. Soybean developed in Southeast Asia. Potatoes were in the Andes Mountains. So there are a number of non native plants that have been brought here that have been wildly successful, and very helpful to our society. Now, the next plant we need to think about is an invasive plant. Okay, so we've got native, non native, and now invasive, and invasive is a non native plant. So it's from somewhere else, it was brought here, but it causes ecological or economic harm, okay, so it is a special subset of non native plants. So not all non native plants are invasive, but all invasive plants are non native. Okay, so this is a special subset of plants that we know are particularly troublesome and damaging to the environment. And then lastly, we have Nuisance Species. Now a lot of people will use the term invasive native, and what their meaning is, this is a native plant that is really weedy or really troublesome. But remember, invasive means it's non native. So to say invasive native, that doesn't work.

C Christine Krebs 13:00

It kind of contradicts.

J Jay Ferrell 13:01

Its contradictory. So if we're talking about a troublesome native plant, we call those nuisance species. Cattails, Carolina Willow, poison ivy, oak crabgrass. All of these are native plants. But they are troublesome. Now doesn't mean they're invasive, because they are a native plant, but they're just problematic. So just because a plant is native, it doesn't mean it's wonderful, right? So there are troublesome natives that we have to deal with. So the reason all of this is important is starting probably 40 or 50 years ago, we began to see there were huge impacts of importing plants here, then becoming invasive and causing great damage to our society, in our ecosystems. So we started messaging campaigns that said, hey, native, good, invasive bad. And that's 90% of the time, that is a very good and proper distinction. But we also need to realize that we need to be able to think a little bit broader than that, that there are some native plants that are troublesome, and there are some non native plants that aren't necessarily invasive. So keeping all of these things separate in our mind will help us as we go through this podcast.

C Christine Krebs 13:10

Cattails? Okay, yeah. So just to review for our listeners, we have native, invasive, non native, oftentimes called exotic, and then finally nuisance, or troublesome, problematic plants again. And so a native plant can sometimes be a nuisance, right? Oftentimes, natives are excellent for an environment because they're able to, quote unquote, share the space with other plants so that everyone basically in the environment has a chance to contribute and thrive.

J Jay Ferrell 14:46

By and large when you have good biodiversity is because you have a big collection of native plants.

C Christine Krebs 14:51

Whereas invasives, because they are established from a different area in the world, tend to take over an environment if not managed properly or understood properly.

J Jay Ferrell 15:03

Exactly. So as I mentioned earlier, where a native plant, it sort of evolved with all of these other things that are helping suppress its growth and keep it in check, an invasive plant doesn't have that pressure. So it was brought from somewhere else. Now back in its native range, it has all of those, those diseases and insects that are eating on it and suppressing it. But then you bring it here, and what is keeping it in check isn't here, because we're halfway across the globe. So that is why an invasive plant often wants to take over, because nothing is keeping it in check.

C Christine Krebs 15:04

Kind of has escaped its natural predators, and is now in this ideal situation where it can just take over, oftentimes.

J

Jay Ferrell 15:36

And it's very good at doing that.

C

Christine Krebs 15:41

So you started mentioning how people oftentimes would say, native good, invasive bad. And this sort of black and white yes or no thinking is oftentimes what gets troublesome with science communication and talking about plant management. And I guess that's the purpose of this podcast, right? So what makes Florida specifically as a state and area so unique to this problem? I feel like we turn around everywhere outside, and there's an invasive plant is that everywhere in the United States like that, or is Florida kind of a unique situation?

J

Jay Ferrell 16:14

Florida is uniquely situated to be a home base for invasive species. And not just plants, but invasive species, from lizards, to pythons to all sorts of things. And there are several reasons for that. And we're gonna deep dive into some of these things in later episodes. But just to kind of get us thinking in this way. One of the things that makes Florida ideal is its climate. Realize that a lot of people want to move to Florida for our climate, well, invasive plants want to move to Florida for its climate too. Because think about if you're in the Midwest, and you've got cold temperatures, snow, ice cover on lakes for a big part of the year, that really suppresses growth of a lot of plants. Florida, depending on where you are in the state, you can have either 10 or 12 months of growing, there is no winter break to break that cycle and slow these plants down. So our climate is ideal. Another thing is our population, there's 22 million people in this state. And when you have people, you have nutrients that are going to be in the system, you have more agriculture to support those people, you have more concrete because you need roads and sidewalks. So all of this grass and all of this native soil, where leaves fall off trees, they hit the soil, they break down, those nutrients are released back into the soil. But when you have streets, they hit the street, they go into the storm drain, and now those nutrients are released directly into the watershed where we're going. So 22 million people, lots more concrete, and also lots more septic tanks and things like that, lots more yard fertilization. So nutrients are just coming with people. And also the way our lakes have just naturally formed is also very unique when you consider the most of the rest of the country. So northern lakes, they were formed by glaciers that came through and carved out really deep scars into the ground. And those those systems are usually really deep and really cold. So if you've got a lake that's 200 feet deep, like some of the Finger Lakes in New York, no plant can grow at 200 feet deep for a lot of reasons pressure, as well as there's no light penetration down there. So some of these lakes are really deep and there's very little shallow. So you'll have a few plants around the edge, but the rest of it is just deep and won't support plant life. In Florida, our lakes were formed from sinkholes, so they the ground just sort of settled in, that's why a lot of our lakes are four, five, six feet deep. Because of that, that's a perfect environment for just about any plant because the water is shallow, light will penetrate down, and we have a nutrient rich state naturally. When you look at

Central Florida, we mined phosphorus out of that area is some of the richest phosphate deposits in the world are in Central Florida. We have lakes that actually the bottom of the lake is phosphate rock.

C Christine Krebs 16:35
Wow.

J Jay Ferrell 16:50
So you have shallow water, high nutrients, plenty of sunlight, long growing seasons. It's just a perfect situation just time after time after time again, for these plants to come in, find a happy home, be established, and start to take over.

C Christine Krebs 19:37
And it just it sounds like such a tangled mess because we are so, as humans, so intimately involved and connected to this problem. And we oftentimes are turning for a solution but we need to realize that it sometimes needs to just be conversations and figuring out kind of where do we look next with all of this. So thanks to these sort of conversations that we hope to kind of continue with on this podcast, as we start these podcasts and these episodes, how do you hope this will serve our community and our listeners?

J Jay Ferrell 20:03
What I'm hoping is that this podcast will elevate us to have better conversations about invasive plants. So invasive plants are very complicated. And my goal is not to end up with everybody agreeing with me, or saying, hey, that person's right or that person's wrong. My goal is to start showing this complexity, right? Because over the last 50 years, we've had these conversations, but the conversation hasn't advanced. We are still saying, this plant is good, this plant is bad. Stop saying that plant is good, stop saying that plant is bad. And we're going back and forth, we're not advancing. And any time we start thinking that a plant is all good, or all bad, let's take a second step back from that and realize that even in life almost never is something all good or all bad. There's nuances, there's gray. And what I want us to see is where that gray exists, because when we take hard stance, yes, no, good, bad, black, white, we end up painting ourselves into a corner. And then it becomes very difficult to be open minded about, well, this thing about hydrilla is actually good, or this thing about these eight things about hydrilla may not be as good. So where is hydrilla on that continuum. So what I'm hoping we can do is think about these plants in a different way, grow in our understanding, so that we can have better, more advanced conversations, and kind of stop with where we've been pointing fingers and just arguing about very basic things.

C Christine Krebs 21:43
So speaking of the conversations, what can our listeners expect?

J Jay Ferrell 21:47

Well, our listeners can expect a series of good conversations from really good scientists coming together and talking about these topics. So we're gonna dive into things that are complicated and sometimes controversial. And our goal isn't to be controversial or to try to add noise to the debate. What we really want to do is talk about why there is controversy, why do people have differing opinions on this thing, and then bring data into that discussion. And if we can do that, I think we can start to see where we're all coming from. But our overall goal is to educate, we want to show all sides of this subject, show why it's complicated, and show why good argument on these topics is really necessary.

C Christine Krebs 22:32

So as we're wrapping up, are there any last thoughts that you'd like our listeners to leave with today?

J Jay Ferrell 22:36

Yes, I would like to, you know, in this first session with talking about a commitment I would like to make to our listeners. So I would like to say that we're going to commit to being as fair and honest to these topics as we possibly can be. Now, this means that we're not always going to have all the answers. So there's going to be times that we leave with some I don't know's, we just don't have the data to describe this in a way that I think some people may want. But I want you to know that we're going to stick to the data as best we can. And we're really going to try to minimize opinion, or the bias that we're bringing into this because we want this to be science driven. And we want people to understand why we have taken the positions we've taken. Now with that, I also want to ask the listeners to help us. If there are plants that are really important to you, or situations that we're not talking about that you're passionate about. Let us know. We want this podcast to be relevant. We want it to be helpful, and we really need your help to do that. So write to us, call us, send us emails. Help us know what you want to hear, and we're going to try to answer those questions in future episodes.

C Christine Krebs 23:48

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