Podcast Series: Holistic Nature of Us

Episode # 46: Meet Mark Shepard, RAD

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Hi I'm Judith Dreyer,

Thank you for joining me for this pod cast series "The Holistic Nature of Us".

My intent is to take us, you and I, into a better understanding of the concepts behind our holistic nature and how that ties directly to the holistic nature of the world around us. How can we connect the dots in practical ways that we are nature and nature is in us?

I feature authors and educators, practitioners and others whose passion for this earth helps us create bridges. We'll see what's trending, what's relevant to our world today, not just for land use, but to connect the dots between nature and ourselves. It's time for practical action and profound inner change so our natural world is valued once again.

Today I'm delighted to introduce you to Mark Shepard, founder of the restoration agricultural firm known as RAD which is a full service environmental, consulting, research and development firm committed to developing agricultural ecosystems that provide nutritious food for humankind while enhancing the life supporting ecosystems services of planet earth. Mark as founder has over 30 years of experience in environmental consulting, production agriculture and real estate development. RAD itself has worked on 100 products or more, in multiple climates across four continents. Through active ecosystem management RAD combines ecological restoration with agricultural development to improve your landscape.

Good morning Mark, it's a pleasure to have you here today.

MARK: Good morning Judith. That was a mouthful you just went through.

JUDITH: I know but it's important. I want my listeners to know the wonderful things that your company is doing. I'm excited to hear more about it because we know that there are some very serious problems out there, one of which is mono-crop farming and the hole we've dug for ourselves with not understanding how to take care of our land and our natural resources. So, Mark, tell us something about your company and your passion and how you got going.

MARK: Wow, that's a long story, much longer than we have time for. But basically, all of what I do and what I've been doing both professionally and personally, inner work, all of that for the past, since I was 18 years old anyway was: how do we as human beings live on this planet #1) without screwing it up worse and #2) making it actually better, healthier, more productive through time? So, I trained in ecology at Unity College in Maine and shortly after graduating took my sweetheart up to Alaska. We homesteaded in the bush 300 miles northeast of Anchorage for 8 years. It's everything that you've ever heard in storybooks as far as how beautiful and brutal and all that kind of stuff that it is. And what I realized really obviously, in your face, was that we were actually eating like a colonial parasitic being. We were buying food in grocery stores in town, you know six hours away, hauling it all out. The food that we were eating came from annual agriculture. And annual agriculture is the agriculture that depends on annual plants. An annual plant is one that you plant the seeds in the spring of the year. It grows through one season and then the plant dies. Annual plants have a role in nature. They colonize immediately after a disturbance. If a tree blows down or there's silt deposited on a floodplain or a landslide the first plants that come in are annual plants. They grow. They produce a prodigious amount of seeds and then those seeds are able to persist until the next disturbance that could be, you know, 3 years, 5 years, 400 years, and then once that disturbance happens the seeds spring up again. The problem with relying on annual plants for our staple foods, our carbohydrates, proteins and oils is the fact that we have to destroy a perennial ecosystem every single season just to plant our annual plants. And once you destroy that ecosystem you have short-circuited all of the beneficial life agrating cycles on that particular site you're no longer building soil. You're no longer promoting soil life. You're no longer promoting biodiversity. You're no longer creating clean air and clean water. In fact, you're contributing to just the opposite you know with de-poplarization of wild life, insect life, soil life, soil carbon and it's off gassing into the atmosphere. Soil

is washing away into the streams. That's what annual agriculture does when it's practiced at the scale that it is.

So, some of my goals were how do I personally not participate in that system any more? So that meant acquiring real estate, which if you can imagine a student right out of college $50,000 in debt is really not in a position to purchase a lot of real estate and pay for it. They get creative so I learned a whole bunch of creative real estate investment strategies, began purchasing properties. And one of the easiest and most affordable pieces of real estate that you can get is the clear cut. So, I bought a clear cut. It was one of my first pieces of property. And then later on you can get a washed-out, worn-out eroded farm for also on the low end of the spectrum and both of those situations, a clear-cut that's been just every single tree harvested and taken away, even the stumps pulled out and chipped, that site needs ecological rehab. Well an eroded washed-out farm needs ecological rehab. Well how do you do the ecological restoration? A restorationist might come in and start planting all kinds of seeds of native species, start to manage with fire. A lot of restorationist use a lot of herbicides and they manage a natural system and it's all an expense. Where as the idea of a restoration agriculture, and that's the title of my book, my first book is "Restoration Agriculture" is that we can actually do the ecological restoration by farming the property a certain way. What we do is, whether we're working on your site, somebody else's site, an industrial reclamation situation, we imitate local plant community types and then arrange them in such a way that the rain fall that falls on the site is redistributed evenly and doesn't have erosion gullies, etc. We plant them in rows following the water management pattern so that we can actually plant the trees mechanically, maintain them mechanically, harvest them mechanically if desirable. You pick trees, shrubs, bushes, vines, perennial ground covers that are mimics of a natural plant community type. And if you think about the brush on the side of the road, it grows all by itself with no care and no expense to take care of it. There are all kinds of food plants growing out there. Well why can't we go in and plant a natural system that happens to have food in it, so when we harvest that food it was free because we did very little work to acquire it. That doesn't mean you don't have to do any work and if you want to nudge parts of the system with more intensive management that's your choice as a landowner. There are people who really push it for the production side and there are people who are totally hands off and let it do all the change on its own.

JUDITH: That's really interesting. You started this when going green and ecological restoration was probably a very new concept.

MARK: It was very new. You know back when I first got started, one of my first jobs, ecological restoration meant getting the leaky oil drums and chemical drums out of a brown field. And that was the extent of it. That was called restoration, but it's changed a lot since then.

JUDITH: Well you're doing so much more. I'm in the Master Gardener field. I don't claim to be a great gardener. I'm more in the meadow, wild plant field than anything. That's where my passion is. I have not heard about mono crop farming referred to as annual agriculture but what you've said, "that we destroy that ecosystem with every mono crop that we harvest," is a point that I don't think my listeners are aware of. I don't think most of us are aware of the consequences on that level of what we're doing with our mono crop farming.

MARK: I don't know where most of your listeners are located. Let's just use your example of where you live in Connecticut. There are disturbances that happen in nature. Disturbances happen. There'll be ice storms that break things all over the place. A big tornado bops in and rips a hole. Hurricane smashes through. The hurricane of "38" was devastating to the New England States when it knocked a whole bunch of trees over. It rips up root balls and it's exposed soil all over the place. A process begins called succession, natural succession. The first plants to colonize are predominately annual plants with those hard seeds. Then some biannuals come in that last 2 years, sometimes 3 years. Then perennials and the grassland phase. So, if we think about prairie. A prairie isn't a thing. It's not a static form. It's a phase in succession, an ecosystem is developing. Once it goes through grassland phase, there are sun loving plants that will colonize the site, woody plants that colonize the site, perennials. Then once the sun loving perennials close the canopy, such as the case in Connecticut, if it's a human environment like the New England States, the grasses underneath will eventually die, you'll get a thick duff layer on the forest floor. You'll have a lot of spring ephemerals like Lady Slippers and Cardinal flower, Dogtooth violet, that sort of thing. You'll actually get less photosynthesis going on because photosynthesis turns into this top layer on top of the forest and it's deep and dark underneath and some little plants below. Well if you let that same process occur in say California for example, once the sun-loving trees close the canopy you lose the grass component down below, all of a sudden

there are too many trees for the actual rainfall that falls and there's a collapse in diversity. Then the system simplifies into a scrub chaparral, a brush land, a shrub land. What you have with the closed canopy forest of New England and the scrub chaparral brush lands of California are two systems that have had long periods of time without disturbance. The disturbance is what nature does, basically a reset button for the whole thing. A disturbance can keep it in this phase where we get maximum photosynthetic surface area. We've got green all the way from the ground, all the way up to the top, all the way up, all the way down. That phase in nature is the Savannah phase. And if you think of the Savannah's, mostly the large remaining ones now are in Africa where you have grasslands and trees and shrubs, what's the thing that you see the most in these Savannahs? What's the most striking in Savannahs of the world? Mammals. There are mammals everywhere all over the place. The savannahs are the homeland to mammals. There are specialists that live in closed canopy forests and shrub lands and dessert and all that, but the savannah is where most of the mammal diversity is. And therefore, if we are mammals isn't that kind of our ecosystem where we were adapted, evolved, created, planted, whatever – sent from the geocentric spaceship at the South Pole. We're savannah people.

JUDITH: Right, that's funny. Continue on. That's interesting. I had a chance to visit a savannah in Africa.

MARK: Where did you go?

JUDITH: I went to Tanzania.

MARK: Where about?

JUDITH: Went to the Serengeti, the Nagoragora Crater.

MARK: Isn't that crater beautiful?

JUDITH: It's absolutely gorgeous and the wildlife that's there is stunning. It's breathtaking and stunning.

MARK: (African saying)

JUDITH: "Jambo" (Swahilli for welcome), that's all I remember from my African trip. That was a little while ago, so, but that's interesting. So again,

you're an expert at understanding the succession of changes that occur in a system. Take me to an example. Give me an example of one of the farms you've helped and how has that worked out.

MARK: Well the farm, you see a picture of it right behind me here that I've been on personally. (See pic with podcast or go to mark's website: http://restorationag.com) I've lived here for the past 24 years. It's new forest farm in southwest Wisconsin. It's smack dab in the middle of the oak savannah, you know the mid-western oak savannah complex, and in an oak savannah the oak plant community type. Now every place you go around in the world, there are plant community types that will grow there. You know in northern Maine there will be a lot more pine plant community types associate with that, hickory, pecan, etc. But in the oak plant community type we have an over story of the phagacy, which are oak, chestnut or beech, an under story of prunus which are cherries and malus which are apples. Some other prunus' are shrub forms which are plums. One of the dominant shrubs in the mid west was the American hazelnut. A shade tolerate shrub underneath were currants and gooseberries. There are grapes climbing all over the whole mess, raspberries and black berries that are growing out into the grass. The whole thing has grass, all the way through it and mammals. And so, if we go mimic that system, if I'm going to pick one from oak, chestnut or beech, I've got all three, but I'm going to dominate the system with chestnut because that one produces a crop every single year that I can either eat, sell or harvest with livestock. With the cherry component or the apple component, instead of going with wild black cherry and pin cherries and with wild crabapples why not go with domestic apples and domestic cherries, pie cherries and so on? And so, in every little part of that system substitute some improved cultivars and then manage it similarly as it would be managed in nature. The natural disturbances in the oak savannah in the Midwest would be fire or grazing. The substitute for fire, although we have used fire on occasion, the substitute for fire that we use is mowing. So, mow and let the residue decompose. Then grazing, we substitute cattle and hogs mostly, also poultry. Sometimes we've had sheep. We substitute those animals for the dominant grazing animals that were here before people got here. Do you know what those were?

JUDITH: No.

MARK: Mastodons. The boaz mastodon is the first skeleton, or it's basically the mastodon skeleton that ended the debate of whether human

beings actually butchered and ate mastodons in North America. Boaz Wisconsin is 5 miles down the road. That's where they found that skeleton.

JUDITH: Wow, and did we actually eat the mastodons?

MARK: Yes. Humans have been elephant eaters for a long time. But part of the whole point of why the elephant, you've been to Africa. I don't know if you ever saw or heard of elephants working over a grove of trees. Once that canopy closes, they're in there and they're pushing trees over, ripping them right out of the ground. They're pushing them over and then everybody else eats the leaves. They'll break off branches and eat the branches.

One of the interesting things about the savannah, the oak savannah plant community type is every one of those species can be burned completely to the ground and it will sprout back. Everyone of those species can be, you know, knocked down and uprooted by a wind storm or an elephant or a tractor or a chainsaw and they sprout back. So, what we have is, we have a system that once it's planted and established, it's there basically forever and all we do is harvest the yields from it. And if it was designed as an agricultural system, you think you can eat chestnuts and apples and cherries and plums and grapes and raspberries and currants and gooseberries. Oh I forgot, a major component of this. We're producing so much biomass in the form of leaves twigs, branches, bark, root exudates. What eats carbon in the economy of nature is fungus. And fungus is going to show up to decay all this organic matter we might as well inoculate it with the fungus that we can eat ourselves, which is what we do.

JUDITH: So. you do inoculation in your forest system there?

MARK: Well technically it's not a forest system. Part of the system I allow to go to closed canopy forest and that becomes forest. This particular one we're intentionally managing as a savannah, as an open 30-60% canopy closure. There's always grass growing everywhere, the whole 110 acres. There are always trees growing everywhere on 110 acres but it's not an entire grassland and it's not an entire forest. It's a savannah.

JUDITH: So, you have the best of both worlds.

MARK: Right.

JUDITH: Yeah.

MARK: And I eat well.

JUDITH: What?

MARK: And I eat well.

JUDITH: I bet you do. This is fascinating. I did come across a You Tube video from, I believe it was either Argentina or possibly Brazil where they were taking fallow land, which is land that had not been used. It was desolate. The soil was very poor quality. They planted specific banana type trees down there and they cut them every day. They allowed all that leaf to fall on the ground and they're actually building up soil. But the one fact that I didn't know is that they're actually creating more rainfall. That by doing this, by taking over this dessert type land we can bring in rainfall to support the crops. And again, it's another aspect of looking at nature and how nature functions so that we can have vibrant healthy food using what's in front of us.

MARK: Yeah and part of what I was mentioning with clear cuts and degraded agricultural land, I believe that probably Ernst Getch down in Brazil whose doing that work right there. Of anybody doing ecosystem mimicry, you know more similar to me of anybody else, he's the guy whose doing it. And of course, being, I believe he's either Dutch or German, he has a real odd tendency for neatness, and everything is in perfect order. The problem with this wild American is that things go a little wooly on my farm. But in either case, part of what you'll notice is we can go into land where right now nobody is considering it agriculturally valuable land. It's not the top producing agricultural land. We're not taking land out of food production in order to do an ecological restoration, we're taking land where agriculture can't go or has been and failed before and we're going to restore it ecologically using agriculture as that practice. And we get all of the benefits of a natural system in that we have, you know, all kinds of endangered wildlife starts to come back. Streams and rivers come back. There's a project in Uganda that I've worked on that it only took 4 years to make a river come back.

JUDITH: Well that's amazing to me. It's amazing to me because we get the doom and gloom out there from some media sources, we only have 12 years to make a difference and how do you change a 1,000-acre farm into

something more sustainable in 2 years or 3 years? But it sounds like you know how to begin that process and to get it going.

MARK: Well the process that will happen on that site whether humans participate in it or not, the process that will occur is natural succession. So, if we know where that property is, we know what the site conditions are, soil type, general rainfall patterns. You know what species will work there, we set-up a successional pathway and then we farm it through sucessional time. And New Forest Farm has paid it's own way. It has paid for itself to be restored all along the way since day one. So, if we can take a 100-acre property in Wisconsin and have it pay it's own way and have a fully vibrant system in 15 years, we can do it all over the whole entire planet at a profit. It's really pretty simple but, what we're not doing is we're not doing orcharding. We're not growing crops the way people think of growing crops, it's going to look different and that's okay. It's a more of a natural system. We may not get as much yield per crop. Behind me is a system that has asparagus. This is asparagus and chestnuts and raspberries. We only get about half the yield of asparagus, half the yield of chestnuts, about a quarter of a yield of raspberries, oh and we also graze cattle through there and pigs through there. We've got five different things coming off the same system. Did you hear any place where I mentioned inputs? Did I add fertilizer? Did I spray? Did I, what kind of work did I do besides harvest and manage? It may get lower individual yields per crop but because our inputs are dramatically lower, there's actually more margin left behind for the landowner at the end of the day.

JUDITH: So again, you're talking about something that's economically feasible based on the parameters you've just explained, which we all need to give us the impetus, so to speak, to make the changes. We need to know we can make a profit. We need to know that there's a return on our investment so to speak.

I listened to a speaker at the BFA conference (Bionutrient Food Association conference in Southbridge Ma Dec 2018) which is where I met you folks recently. And one of the gals, a speaker, talked about farms in Iowa, out Midwest. She had kind of a sad story to tell us about how we're not doing much due to the mindset of some of the old timers who say "this is the way I've always been doing it. I don't want to change." What do you say to that?

MARK: Well um, it would be nice if that changed. There are so many people that are changing, and they are changing so fast. There are so many people that need help with that change that I'm helping those people and the people who don't want to change, that's not my business at this point in time. If you want me to come in and convince you why you should change everything, I'm not going to play that game. If you want me to come in and help you change, I'm there. We'll help you out.

JUDITH: That's fantastic though because then you're using your incredible expertise and knowledge to help the people who want to be helped now and they're going to make a difference now, today, based on your suggestions.

MARK: One of the big differences also about our company, RAD, and other ecological design companies is we don't just draw pretty pictures and say here go do it. Here's a management plan. No, no, we live this way. Every single one of us in our organization lives this way. We have an intimate understanding of how these systems work. And since we live this way on our own properties we know when a prescription that you might get on a management plan is stupid, because we're tried that before. You know? And to live on a piece of property like here at New Forest Farm for the past 24 years and actually make a go at it, isn't simple task. So, we've all learned a heck of a lot and all of us are in different systems. There's one of our folks who lives in Central Minnesota, more or a wet prairie situation. Johannes and Lindsey are in New Jersey and they're more in a shrub swamp situation. And then Karen is down in Arkansas in the Ozarks where soil is like crushed rock and it gets to be 300 degrees during the day. It rains but it happens in big huge storms and goes right away. So, we all have different experiences in different places living in systems that we've designed.

JUDITH: Well I like that. I know that's something that I would give high marks to because that kind of experience is invaluable because you can see some of the problems ahead of time. You can troubleshoot some things. And I know there's always surprises but you're working with nature in a way that supports the sustainability of nature.

MARK: And when we're designing it after the local plant community types, when nature does something to your place, it's designed to tolerate that. As an extreme example let's use Paradise California, gruesome fires that went through Paradise California. Go look at aerial photographs of Paradise California today. What you'll see is the human stuff that was designed in

denial of ecosystem fact. They put flammable things in a fire environment. That's what we call foolish planning, okay? Look at the trees. At the aerial photograph of the trees today there are green trees alive. There are shrubs that are alive. The grasses will be springing back in the springtime. Why don't we design our human systems to be adapted what nature throws at it? And whether the climate actually is changing or not, or we're getting more frequent storms or more frequent this or that or the other thing, these natural plant community types have been through it all. They've been through ice ages, volcanic cataclysms. They've been through asteroid impact. They belong here. They're designed to deal with it. If we use that as our model, how wrong can we go?

JUDITH: I agree with you. I agree with you and the more that I talk to folks all over the country, the more I'm seeing beautiful efforts out there. I'm seeing incredible innovation out there and I'm seeing people really are walking the talk. They're making a difference.

Mark, one thing before we leave, do you have 3 tips that people can apply today in their own yards, with their own landscapes?

MARK: Well first of all, a big one is **know your biome**. **Know your plant community types**. Where do you live? What are the natural native plants around you? That's a great place to start. Well then which plants that are around you in your area are edible, are medicinal, are useful for tying things or making baskets or clothes. Learn about the plants of your area and then learn a little bit about the economy of the first peoples that were here. How did they survive before technology and cell phones and all that kind of stuff? What did they eat? Where did they live? You know what were their dwellings like, etc.? You know human beings have been living in every single environment on the planet except for Antarctica but we already talked about the space station and all that. We've lived in every single environment around the globe during heat cycles, during cold cycles and the highest technology that we had at the time was a stick and a stone. If human beings can survive anywhere on this planet with a stick and a stone, why can't you?

JUDITH: Well that's because we can't easily; because we've stepped away from listening to nature's rhythms and how nature operates. We've forgotten to be observant. We've forgotten to walk in the silence in the

forest and pay attention, you know? And hopefully we're getting back to that because we don't have time to waste.

MARK: And that's why when you asked me what my recommendations would be I immediately learn about **"where do you live?" What are the plants and animals around you? How can you live with this system with this beautiful planet, interact with it and help it to be a better place?**

JUDITH: I agree. And just one comment that's an aside. I remember years ago when the Mississippi River flooded. It deeply flooded and caused great catastrophe, but my thought was why do we build so close to a river for the view when it's supposed to flood its bank and that's how it renews the soil? You know, so again we could talk another half an hour just on that alone.

MARK: A flood is not a natural disaster. A flood is natural.

JUDITH: Exactly.

MARK: We're making it worse with our agriculture because now our water is not soaking in and spreading out. It's just washing away really fast and then we make it worse upon worse by going and building cities and towns down there. It's just poor planning.

JUDITH: It is. Well Mark I can't thank you enough. I think this has been very, very inspiring. I would love you to give your contact information and tell us the name of your book again and where people can find it.

MARK: Sure. The book is "Restoration Agriculture". It's published by Acres USA and that's where you can find it. You can contact Restoration Agriculture at www.restorationag.com. Wait a minute. www.restoration.ag and then the tree and shrub breeding nursery, we didn't get to talk much about breeding the plants and animals once we get them in place. That's www.forestag.com

JUDITH: Okay, that's wonderful. Well I want to thank you again for your time, your expertise and your practical advice. Thank you for joining all of us today.

This is Judith Dreyer. I'm the author of "At the Garden's Gate", book and blog. My book is available through my website www.judithdreyer.com as well as several distribution arms such as Amazon, Nook, Goodreads and

more. I'd like to remind all of you that a transcript is available for each podcast. And please like and share these podcasts. Let's get the word out and support each other.

And remember, **NOW** is the time for practical action and profound inner change so we value our world again.

Enjoy your day.

MARK: Thank you Judith. We'll talk to you again soon.

JUDITH: Bye now.