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Project Zion Podcast

Josh Mangelson 00:17
Welcome to the Project Zion Podcast. This podcast explores the unique spiritual and theological gifts Community of Christ offers for today's world.

Laurie Gordon 00:33
I do want to welcome all of us and all of our listeners to the Project Zion Podcast. I'm one of your hosts, Laurie Gordon, and I live in Bend Oregon. I also want to welcome you to this mini-series that we're calling Climate Brewing. And it's a series in which we interview some of the amazing scientists who are working at the forefront of climate change and, and raising awareness around climate change. These are scientists as we will have the privilege to hear today who are experts in their fields, but also very generous in sharing their time, their knowledge and a passion for creating a more sustainable future. So, thank you all for joining us.

Susi Wight 01:22
And I'm Susi Wight, your other host from Bellingham, Washington. Both Laurie and I are members of Community of Christ North American Climate Justice Team. And as part of that team, we have the privilege to participate in an ongoing series of monthly webinars and follow up conversations on climate crisis, titled “All of Creation: From Crisis To Transformation”. Our goal is to generate greater awareness of the climate emergency and to create community response around this issue to support what we in Community of Christ call prophetic action, at personal and systemic levels. Our work is sponsored by the Greater Pacific Northwest Mission Center.

Laurie Gordon 02:16
And our guest today is Dr. Phoebe Barnard. Did I say that right? Under my mother, I answer to anything. Okay, great. Dr. Barnard is the Associate Science Policy and Communications Strategist for the Conservation Biology Institute. And she is an affiliate full professor at the University of Washington. There's more on her resume from Susi in a moment. But I wanted to let all of you know that Phoebe presented a talk for our March 2021 webinar. And it was on a topic that we initially billed as biodiversity loss. And I feel like it tells something about who Phoebe is that the first of her very many acts of generosity to us, was to help us reframe our topic as biodiversity love, loss and healing, a much more holistic approach to the issue at hand. And the issue at hand is this: to protect the grand diversity of non-human others who share our planet as one interdependent, interconnected whole. So our hope today is to make visible this arc of love, loss and hope for healing in the flow of our conversation together. And as an extra side, you can find a recording of Dr. Barnard’s talk, I'm going to start calling it Phoebe. That's where I'm going to do that, as well as an archive of all the presentations in our series at the website https://cofchristclimatejustice.org.

Susi Wight 03:54
So I also am going to use ‘Phoebe’. And there's so much to say I could say about Phoebe's long career, and all of the wonderful things that she's done. But the overall impression that I came away with, after meeting Phoebe about two years ago, is the depth and durability of her passion for life on

Earth, and its biodiversity. From ???, Phoebe lived 38 years outside the US, 34 of them in Namibia and South Africa. The last 13 years of that period in South Africa, of course, she was lead scientist for the South African National Biodiversity Institute. Her work in South Africa stands out, in southern Africa stands out, particularly concerning survival and loss of bird species. More recently, Phoebe is professor at the University of Washington and on the Conservation Biology Institute's executive leadership team. Most recently, she has collaborated with other leading scientists drawing attention to the impact of our climate emergency, her latest contribution to our beloved Earth. So Phoebe has worked globally, nationally, bio-regionally and locally, often with one foot in government and the other in academia, on climate change, biodiversity, fire ecology, wild lands and urban landscapes, Human Ecology, and behavior change. And just yesterday, she helped launch an initiative, elevating women's voice in the climate emergency conversation. Phoebe, is there anything about how I described your career that you wanted add or change?

Phoebe Barnard 06:01
I don't think so. You said so much. Thank you, Susi. Thank you, Laurie, for the privilege of joining you, it really is enjoyable to speak to you both. All of that describes my career. Of course, like all of us, there's a parallel and almost equally weighted level of stuff that we do after hours, and I do after hours. But I think let's keep the conversation to most of these things, although what I do after hours, hopefully extends and implement some of the stuff that I do during my day job as well.

Susi Wight 06:39
So in listening to you, and in reading some of the articles that you've written, your love of nature, and creation comes across so clearly. And I'm just wondering if you could share with the podcast audience, about your appreciation for the sacredness of forests, if, if you could tell a story about how that first inspired you.

Phoebe Barnard 07:04
For sure, um, it's one of my favorite subjects, really. But like some of us, I was privileged to grow up at the edge of a forest in Massachusetts, in New England in the early 60s, and early 70s. And, like a lot of kids, I was the last born in the family. And therefore, because my siblings were older, I had a lot of time to just explore freely in the neighboring forest, and on the farm across the road. So I spent a lot of time making little homes in the roots of trees in this forest and, and just spending hours and hours lying in the pine needles looking up at the sky, listening to birdsong, breathing in the humerus, and the earth, and the pine pitch around me, and really just imbibing not only a sense of peace, and tranquility and beauty that was all around me. But probably at a very practical level, also getting dirt under my fingernails, and developing a healthy gut microbiome, which is probably also helped keep me cheerful in a lifetime of working on biodiversity extinction and climate change, two pretty difficult and, you know, potentially depressing subjects. But I think, to this day, I always feel at peace and tranquil and able to reconnect with my own little sense of superpower by going into a forest and hiking, walking or sitting or trail running through that exquisite enchanted space of mist and light, and oxygen, and biodiversity.

Susi Wight 09:07
I sort of felt like I was sitting in that forest just listening to you talk about it.

Phoebe Barnard 09:13
I'm very lucky to have a beautiful little forest near where we live now in in northwest Washington, that my husband and I take our dogs to visit almost every day. And that little mountain - its name is little mountain - is especially refreshing to me when I'm working 12 hours a day. It really helps ground me. So thanks for thanks for saying that.

Susi Wight 09:40
When you spoke in the webinar, you talked about volcanoes. And there was really an observable sense of excitement and mystery that I kind of got about your interest in volcanoes and I'm wondering if you could share some of that with us, some story?

Phoebe Barnard 10:04
If I could have nine lives, certainly at least one of them would be a volcanologist. But let's see, I guess at some point in my life, I decided not to try and get a duplicate PhD in volcanology, I was afraid that the physics of it would kill my love for it, because essentially, I'm more of a volcano climber, and a volcano, almost, I guess, I have some spiritual connection to volcanoes and their power, and the deep Earth dynamism that is expressed through volcanoes. So I decided to leave it at that and not try to be a volcano scientist as well. I've been lucky to travel all over the world through my work. And although I've never had the money or the inclination to take a plane separately to go visit a volcano, it's so happened over the years that, you know, my work has taken me to Thailand, just a little hop, skip and a jump from Java, for example, and to Tanzania, which has fantastic volcanoes and to Costa Rica and other countries. So usually, after my work is done, I try and make space in my schedule to go for a few days to climb volcanoes, and the more active and even the more erupting they are to, all the better up to a point. Of course, if pyroclastic flows are, you know, barreling down a volcano, I do not climb it, I run the other way. And a lot of this was due to my father who trained as a geologist, he loved volcanoes, and he and my mom actually retired to the island of Montserrat, in the Caribbean while I was still in high school, and so when I was 13, and then again 19, I had the opportunity to go visit. And, you know, they live part of the time in the states and part of the time on Montserrat. But my dad and I used to hike up this volcano and just I loved being with my dad, he was consummate naturalist. He showed me both the biodiversity and the geology of the area that told me wonderful things not only about the volcano in the island, but about his observational powers, and his quiet sense of, of delight in our natural world. So when the volcano on Montserrat, which is called the Soufriere hills, erupted out of a period of 400 years of dormancy in 1995, and started sending down pyroclastic flows and very dangerous, mud and ash flows down the mountain, burying the capital town of Plymouth, on Montserrat, this was a big thing. And of course, my mum, who was quite risk averse, was very nervous about this volcano, but I could see my dad just get more and more excited on the one hand, and of course, grim because our house there was, was under threat. But from that time, and eventually they had to abandon that house. From that time, I have had a growing love for volcanoes. It's part of my, I guess, reverence for our beautiful, dynamic, exquisite planet, and its constant process of creation and recreation of the land surface. I love it. And you know, almost every evening, my husband, John, and I watch the YouTube videos from Hawaii, or Iceland, or wherever there's a wonderful volcano erupting at the moment. {Wow, thank you for sharing tha!}. Sorry, I get carried away. Oh, yeah, it's great. I do love forest cathedrals. And I do love volcanoes. So it's quite nice to start out with both.

Laurie Gordon 14:10
Well, and again, that love beginning with this place of love, for the beauty of nature in the goodness of Earth is the place that we always have to begin in order to empower ourselves and each other for this task of protecting the beauty that we so love. What strikes me as I listened to you, too is the power of parent helping a child, learn how to love and be present and be immersed in it.

But let me just ask this question, although in a way you've already addressed it: As we consider this threat to our ecosystems, to climate change and the loss of so much of the diversity of this good planet, how does that sense of love for all of it just empower you? And how might it empower us? To overcome our hesitation to get involved or are the grief that sometimes gets us stuck and keeps us from moving forward? I love the image of the volcano empowering, you know, the Mother Earth. And so I'm asking you a question about that sense of being empowered.

Phoebe Barnard 15:27
Yeah, absolutely. I think it's the fuel that, you know, it's almost the rocket fuel that propels me through life. And many of us in our generation were kind of, you know, all somewhat, middle-aged person middle-aged, we were lucky to grow up with contact, in of nature, in a way that brought us happy childhood memories, but also a tangible connection to the earth that we can take through us in our, with us through our busy lives. Not everybody these days has that so much of the planet is urbanized. And many people don't quite know what they're missing. But of course, we've had 100,000 years of evolution, you know, as primate species out in nature, and it's a very, very recent thing in our human evolution, to be so divorced from nature. So people may develop mental health syndromes. And sometimes, you know, if not something clinical, they may have some kind of intangible sense that something's missing, something's wrong. And often those people can be profoundly helped by going out in nature and learning to experience it even as adults for the first time. Of course, it's not always a welcome contact. I've had friends and colleagues even at the South African National Biodiversity Institute, who grew up as urban children. And when they went up nature, for the first few times, they were actually pretty uncomfortable, you know, where are the spiders? Where are the bugs, you know, what's going to happen? But I think, made to feel comfortable in nature, made to feel a sense of the peace, and the embracing nature of nature, is profoundly helpful and therapeutic to a lot of urban people. So definitely, my love for the beauty of nature and the incredible, exquisite diversity of life on this planet, does power me through what could otherwise be some very dark days. And I think this can happen for anybody and everybody. I know that I'm probably a little bit out on the extreme side of a continuum, where I've got a pretty inveterately cheerful DNA. I do sometimes experience periods of what we now call ecological grief, frustration, feeling of helplessness, and a worry about the future. I can, I can grieve and shed tears on that, on those issues. But fortunately for me and my work, I guess, I tend to bounce back from those within a minute or two. And then I can take a deep breath and carry on

Laurie Gordon 18:48
That helps. I know that I, and perhaps any of us listening today, have been experiencing that sense of helplessness of being so overwhelmed and frustrated with ecological grief. And I'm reminded that if it's really true that we only grieve for what we love, feeling the depth of that grief seems like a necessary

step to move us forward, helping us to find energy to take some action and bring about a new and better way of being in the world that's more sustainable.

So as we consider our love of this earth, and also the moreness of non-human creatures, the way we are bound together, both evolutionarily through time and ecologically through space, it's so inescapable that we're so radically interconnected.

When you did your presentation for us in the webinar, you began with a picture of a tapestry, and it carried this caption:

> Just like a prayer, a poem or a painting, the beauty, richness and strength of the tapestry of life comes via the interconnectedness of its threads.

I also noticed immediately that the image woven into that tapestry that you shared was of the tree of life. And that is such a potent symbol, one that bridges biological and spiritual and cultural considerations. So also, in keeping with our theme of trees and forests, I was reading a letter that you co-authored in 2020 for the journal BioScience. And the article is titled, “The Climate Emergency Forests and Transformative Change”. I found myself really drawn by this comment that you wrote, or you or one of your colleagues wrote: “a trillion trees do not make a forest”. The sentence was intended in the letter as a response to a commitment made by world leaders at a World Economic Forum earlier in that year of 2020, to plant a trillion trees, but you were pointing out that planting trees is not a sufficient response to the climate emergency, it's not nearly enough. And it's definitely not a license to continue on with business as usual. But given our conversation so far today about the sacredness of forests, and about how we are empowered when we encounter the beauty of a living forest, your selection of the tree of life as an image to represent that intricate complexity that's woven into the tapestry of life. I want to turn this comment “a trillion trees do not make a forest” into an invitation. So could you help us understand how this biological complexity, this intricacy or radical interconnectedness, the diversity of life is so necessary for the life and health of our planet, and so essential for the tree of life to thrive? So here's the question made simple. What is it about a forest that makes it different from a trillion trees?

Phoebe Barnard 22:20
Sure, so I think it was a good quote, and No, I did not write it. “A trillion trees does not a forest make”. Very few people, if they haven't grown up in forests, or on farms on the land in some way, very few people notice the real diversity of an ecosystem. And, you know, many people know the phrase “food webs”, and the relationships between animals and plants that eat each other, and are in turn eaten by others. But you know, these are often immensely rich. And in fact, even in science, we barely understand them; we ecologists tend to call this trophic complexity. And the trophic levels are the levels at which a plant or animal exists in terms of the flow of energy ecosystems, you know, plant, maybe towards the bottom of the trophic levels, and an apex predator like a lion, maybe at the top. But many of us don't see the millions of other species, and often, it's certainly dozens, if not hundreds of species, and millions of individual organisms involved in a trophic web, even in a small area.

So if you go out into your garden, and you dig up a handful of Earth, you may not see the organisms in that soil unless you have a really good hand lens or the scanning electron microscope. But these food webs and these complex trophic interactions between species are so complex that you may be holding billions of individual organisms: bacteria, micro invertebrates in the soil, macro invertebrates like worms, and mycorrhizal fungi. All of these things drive the richness and the diversity and the productivity of a garden, or a forest, or a wetland or a watershed. And without understanding those, it's important for us to sit and just peacefully observe nature around us - pollinating bees, and flies and little tiny mite that we don't notice in our busy lives. So these, these food webs often play out at scales that are too small. Or alternatively, they're too large scale for us humans to really see them properly and understand them, that they can all really underpin our survival. And of course, soil. and the ecosystem within soil underpins our food security. So we literally cannot survive without those organisms. So to me, it is absolute travesty, a crime against humanity and the planet for people to put down poisons on this planet, for farmers to use toxic insecticides, nematicide herbicides, to improve the profitability of the crops. And I'm not getting on farmers here, I know that for many, the profit margin is very narrow. But we need to understand that the way we've been treating soil has killed it, it is dead in many parts of this continent, especially. And we cannot continue to do that. If we are to avoid famine. And I, I use that word very deliberately.

Laurie Gordon 26:30
Thank you, that's an amazing way of envisioning how we are all related within these vast web is what you know, here's a trophic system. And here's a trophic. And those two are all interconnected and larger and larger, almost like an expansion of a fractal relationship. And I like to use this term radical kinship.- I was a molecular biologist. And so my recognition of looking at DNA sequences in very disparate creatures has a recognition that if you trace the family tree back far enough, we're also all we're all related. These are our sweet cousins, it right down to those bacteria in the soil that were, as you saying,

Phoebe Barnard 27:21
I love that phrase, Laurie, and in another one of my parallel lives, I would love to have been a molecular ecologist and geneticist, because I share that love. I started as an evolutionary biologist, but I didn't do the lab side of it. And I think you're right. Even people who have looked at vertebrates, if they've done a biology class, somewhere along the line in their college education, if they've been lucky enough to have one, they will remember reading, and seeing diagrams of how, at before birth, a vertebrate pig looks just like a vertebrate horse looks just like a vertebrate bird looks just like a vertebrate, a neonatal dog. And so the, the embryos of all of these organisms are so similar, but it's only another step to take that backwards to our relationship with bacteria and mycorrhizal fungi that keep the Internet of the forest, as people call it, happening to keep our forests productive and dynamic. So yeah, thank you for mentioning that.

Susi Wight 28:44
I do remember how excited and hopeful I felt when I talked to you, Phoebe, about biodiversity and the climate crisis. I have not understood that interdependency and connectedness down to that cellular

level. But I think now what I think about need to talk about poisoning the soil I, I think about when I slap a mosquito off my arm, or I step on the ants that are just all over the outside, and I had this, what am I doing feeling about it? So can you can you give us an idea realistically of how we should go forward?

Phoebe Barnard 29:36
Well, yes, and I think it's almost less of a matter of science than of philosophy and wisdom and faith. I think that my own view, and I know it shared by some of you in the Community of Christ is that we have a lot to atone for in the way that our Judeo-Christian heritage has helped us think, not always positively, about our relationship to the planet. And so for me, it's, it's helpful to connect with spiritual traditions that have more explicitly encouraged a sense of deep reverence for other life. And of course, there I think are, you know, a number of elements where we can find Christian teachings, that encourage that reverence. But it's often a sense of top-down stewardship, that, I think faith communities that are questioning our relationship to nature and our responsibility for it and, and for our climate, and for the future generations will, will be pushing forward, a more humble and a more wise form of living on this planet. There's, there's a lot of ways that we can, that we can do that just by learning from the way other people approach the world. My neighbor, for example, is a Japanese American Buddhist, and she often pops in and knocks at the door with, you know, some vegetable garden produce that she has too much other than she and I exchange stuff from our gardens. And I always appreciate her because she's so careful not to step on an ant or to swat a mosquito. And I confess I sometimes swat, mosquitoes too, but I've been, as a scientist, I've been probably for much of my life, somebody that I would describe more as a kind of spiritual atheist, rather than a religious person. Nonetheless, within that, I don't really like to categorize myself, but within that rough box, I have long had an interest in how other world religions approach our planet. And I've been taking practical Buddhism classes from a lovely colleague of mine, Professor Warren Bock, who was the founding Chancellor of the University of Washington at Bothell, and is the most amazing man because he's also an artist, a sculptor, a string theorist, physicist, a civil rights activist,

32:55
an African American and a yachtsman, a whole bunch of, you know, adjectives that don't often go together within one person, but he is claiming to be a Buddhist monk himself. And he's gathered a very small number of his friends around to, to sit with and meditate about the world and life and spiritual journey, as he goes through that process. And in a way that helped me understand that much of the transformation that we need as a global society is not so much in the realm of science, but a faith. And so I think your the work of your mission and the climate team that you have is profoundly important.

However, I would also say there's a level of enlightened self-interest that we can learn about which is based on scientific evidence. For example, you know, what, what I have just mentioned about understanding that soil is a living medium. It's not a dry, geological substrate in which we grow plants. Yes, we need minerals, but we also need organisms to help us grow crops, and without that, we will starve. Without pollinators, we will have very few foods to rely on. You know, most of the things that many of us absolutely love to eat and cherish in the summertime like blueberries and raspberries and melons and squashes and so on, are all bee-pollinated and many of my gardening friends are noticing drops of pollinators in their area. I myself have noticed it. And I'm profoundly concerned about that. So, yes, I think we need to aim, each of us, to becoming more observant of our natural world, more

responsible about taking care of that natural world, and learning a little bit about the science that helps us do that. But also deepening our love and our spiritual connection to this planet.

Laurie Gordon 35:21
Amen. Thank you. One of our Enduring Principles for Community of Christ is called the Sacredness of Creation. And it's a very different paradigm than just a mere stewardship model, that we take care of something so that, because we're told we're supposed to. Sacredness of Creation recognizes the, the, the holiness of the whole, the, the Holy One in and through all things, this vitality, this aliveness. And we'll come back to this if we get a chance a little bit more at the end. But my sense is that if you take the Lynn White position, which justify, there was this article in 1967, that really said, Christianity has driven Western civilization, and has driven the rise of the kinds of societies that are wreaking so much havoc. To me the art is if we come from a community of faith, that has this sense of Spirit being in and through all things, not separate, not as a dual duality, but Spirit and element, inseparably connected is a phrase from, from our tradition, brings joy, that not that they're two separate things, but they're inseparably connected. If that is the creativity, you know, through evolution of relationships forming of the Holy One, then it seems to me It matters that we respond, and that we should, should be responding not simply because it's the right thing to do, but because it's organically woven with our sense of, of sacredness of all beings, not just not just humans.

Phoebe Barnard 37:21
Absolutely. And I'm really happy to hear you say that. And I, I know that it is true, and almost like any other area of human endeavor, faith is a dynamic thing. And faith, subject to teaching of wise people can transform the planet. So thank you for that. And, you know, the leaders and spokes people, for that view, have a profound role to play in our future. Because I think that we have had a fatally reductionist command and control kind of relationship to our planet, that has really served everyone on this planet terribly badly. And, you know, while every world religion has aspects where it's taken completely out of context, and, you know, represented badly on the world stage, I think that we have a lot to atone for, and we can change that, we can move this, this dialogue and these teachings forward in a much wiser and more constructive and more holistic way.

Laurie Gordon 38:48
Yes.

Laurie Gordon 38:51
Well, as we have talked about our love of nature, and the beauty of an amazing diversity on this planet, I think we'll all refer folks to the webinar to do some of the more deep statistical, this is where we are in terms of biodiversity loss. But what I wanted to do is invite you but also those who are listening to this podcast, to pause and consider where have you personally noticed and been affected by the diminishment of biological diversity over the course of your life lifetime. It's one thing to hear statistics, and know that all of these species are being lost, you know, amphibians and coral reefs. I guess, I'll let you speak to that. But to begin with that place of our own noticing as you call this to our own awareness, not just taking it because we read it in an article or heard a webinar. But where have you experienced the diminishment of biological diversity even in the short span of our lives and lifetimes?

Phoebe Barnard 40:17
Well, you know, if the person who works in conservation biology has the rapture of experiencing our beautiful planet, every day, or almost every day, we're also saddled with the curse of being observant about it. You know, that's my job, I am observant about changes in the biological world, and have spent years setting up systems to help people document that and learn from it. So yeah, I have observed the diminishment of biological diversity everywhere that I have lived with the possible exception of places that I've lived for a very short amount of time. And like Sweden, where I lived for only nine or 10 months when I was finishing my PhD, and I was working so hard during that time, that I, you know, when I did go outside, I wasn't looking at what might be different, but also I didn't have the background. I hadn't lived there for 30 years. And so I didn't detect changes. But almost everywhere else that I've lived, the US, Canada, Namibia, South Africa, Tanzania, Uganda, Kenya, everywhere I have noticed changes the loss of pollinating insects, the loss of songbirds, a profusion of domestic and feral cats, the invasion of weedy plants, and the loss of reptiles and frogs, to disease, to habitat loss.

You only need to go to a small country like New Zealand, where people first understood the vulnerability of Island ecosystems, to invasion by other organisms, to see how tragically it can change the country. I've been in places in, in the northern South Island of New Zealand, agricultural landscapes, where you can stand at the edge of a valley and struggle to see a single indigenous species. There are European crops, there are South American trees, there are Central American weeds, there are British birds, it goes on and on and on. And all of those have had profound impacts on all these exquisitely evolved indigenous species of New Zealand, many of which have been extinct. So I see it everywhere. And that is the curse of all of us who work in conservation biology. But humanity as a whole tends not to notice this, and we have failed as a science and as scientists if we have not been able to help people connect with nature, in a way that allows them to, to see a little bit more carefully.

You know, most people, as I said earlier, are so busy and so preoccupied with their daily ephemeral lives, you know, their grocery shopping, their work tasks, that that they don't notice changes in the natural world. And that's why I spent some time particularly in South Africa, at the South African National Biodiversity Institute, setting up with a whole team of people across government and academia and nonprofits and civil society groups, things like biodiversity early warning systems that allow citizen scientists - or we more often call them community scientists now - to get involved in tracking changes in the natural world, by observing species in space, and in time, where they're moving to, when they're arriving for migration, when they're breeding, you know, what changes are actually happening. And with a very little amount of training that can be quite fun. And with going out with small groups of people to do this work, most people find it incredibly enjoyable to get involved in these kinds of biodiversity citizen science projects. And so we provided there in South Africa and regionally a structure for those community scientists to participate. And not only does it help, you know, deliver wonderful new sources of data to help support Government and Public Policy and Planning and management. But it's also a profound

45:09
source of awareness and learning and socialization for people that are involved. So massively beneficial projects that we are now trying to establish in the Cascadia region of, of the US and Canada. And in a slightly different context in the Albertine rift of Africa, with Rwanda. So you know, those kinds

of things can help people observe and really see changes. But you need a systematic structure to help you do that. Most of us will notice a new bird that comes into our area for the first time if we suddenly hear something, a song that we've never noticed before. And you know, there are a lot of people that don't even notice birds or bird song no matter what you do. But for those of us who do, you know, you can more easily see something that's new, that you've never seen before, then to notice when something quietly slips away, that they become locally extinct, and they drop out of the system. It's hard for us to notice when that happens, and how much it happens if we don't have a systematic project to structure our observation. So that's what biodiversity early warning systems are all about. And it's been remarkably successful, where it's been developed.

Laurie Gordon 46:40
And I do believe that you provided us with a number of those URLs that are on our website at https://cofchristclimatejustice.org. So just quickly, because I want to spend most of the rest of our time I think, on this, the hope for healing and the and more along the lines of things we can do. I know that Susi has some real questions going there. But we want to just briefly the drivers of biodiversity loss, and particularly because this is a podcast about climate change, in particular, what are some of those human activities that are driving this catastrophically rapid loss that's being caused by human activities? And I know it's different than the other losses that didn't have a complication of what humans were doing. So if you could speak to that, and I know Susi has another question about another driver that will take us on but for now, but yeah, just speaking a little bit about those activities that we are doing that are just so dangerous.

Phoebe Barnard 47:46
Sure, let me speak together then about environmental change drivers and about species responses to those drivers. Environmental change drivers at the moment, mainly fall into the categories of climate change related drivers, heat, changes of seasonality in rainfall, you know, increased frequency of storms, heat waves, cold snaps, and things like that. There's a whole range of climate change related drivers. And that's completely apart from things like sea level rise, which you know, are significant additional and related set of drivers.

But before we even became aware of the really pervasive impacts of climate change, we were very aware of the degree to which land transformation or land destruction has really affected most species. And, of course, it's not just on land, it's also in waters that both freshwater and Marine, but particularly aspects like the expansion of agricultural land, to support ranching, and to support extensive feedlot development, and the transformation of land for urban sprawl, mining, industry, other kinds of industry, all of those fall into a category of habitat loss, which is profound, and we knew it was serious, long before most people started to understand the seriousness of climate change.

And then there's a whole other category of invasive species - we call it biotic invasion, where our globalized world is transporting species into ecosystems that they've never experienced before. And that's having effects on sometimes driving other native species as I referred to in New Zealand just a minute ago, to extinction and or bringing in disease or behaviors that will lead to the extinction of those species pretty soon. Many of you may have seen some pretty horrific gory films on YouTube of mice eating small, young albatross chicks, for example, on sub-Antarctic islands. And I know the people that

have done this were kind of associated still with the University of Cape Town, and the Fitzpatrick Institute of ornithology where a lot of that work was done. And honestly, it's very difficult to watch. But mice, and then cats were brought often to these islands in ignorance of the ecological impacts that those invasive mammal species would have. And so, biotic invasion is a third category.

Then there's a whole separate category of pollutants, and toxicity that are referred to. And then on top of that, there's a whole different category of over-exploitation to hunting or persecution, or, you know, over-harvesting of fish, or medicinal plants, or whatever it may be.

So all of these things, habitat loss, climate change, biotic invasion, pollution, over exploitation, these tend to form what my colleague and friend, Dr. Guy Preston in South Africa used to refer to as a lethal cocktail of global environmental change. Now, in terms of how species respond to that very briefly, you know, they can respond in space, species are moving with climate change, generally closer to the poles to get cooler environments and escape the really punishing heat that we are experiencing all over this planet right now. Or they move may move uphill, up mountains to achieve the same effect. And whether you're in the southern hemisphere moving south to the South Pole, or the northern hemisphere, moving north to North Pole, it's generally summarized as a kind of pull words and upwards effect.

But the reality is that many species are constrained from moving smoothly from A to B, you know, there are cities in the way or there are farmlands in the way and they simply can't cross. So we in our rapacious urge to transform this planet for our economic well-being have completely forgotten up until quite recently, that we are not the only species here that we share it with a number of species, for whom our own easy connectivity, our concrete highways and so on, are completely blocking the connectivity of other species, and disabling their ability to migrate in response to climate change. So those are some of the spatial impacts of climate change specifically, but then there are changes in time as well as space. And I referred to the seasonality of rainfall and changes in the arrival of birds on migration, for example, that's a whole body of knowledge called phenology, the changes in the timing of the lifecycle of different species. And there's been some amazing work, particularly from Europe, on how, you know, a species of bird, for example, like a blue tip, which is a common little bird species of much of western and northern Europe.

53:54
That bird may arrive on migration at a slightly different time, then climate change is affecting its Caterpillar prey. So the caterpillars may arrive late, but the birds arrive early, and then they're dying because there's nothing to eat. So there becomes this mismatch of temporal changes in time for different species, and that is unraveling the tapestry of life. Species are dying because they're becoming extinct, not just the individuals are dying, but species are becoming extinct and becoming committed to future extinction, even if they're not already extinct by this kind of unraveling. So we have profound reasons to become much more observant and much less wasteful and mindless, gormless, if I can use that horrible British word, we are gormless about our own world. And we've let all these things happen.

So if I can talk about waste now, just briefly, I would say, one of the most important things that we can do is to learn to live with sufficiency, rather than excess. Particularly in the USA and Canada, we are

used to material excess. And if we can just let get by with a house, that's enough, big enough, and food, that's enough, but not excessive, and water. And, you know, our things are stuff that we have around our house that we have. If we have things that are just enough, and not too much, then we will be able to turn around this climate drama faster, then not.

Susi Wight 56:09
So on the climate crisis issue, I had the opportunity yesterday to listen to you on the World Population Day panel that you were on. And it brought me back to what you said, one of the things you said in our webinar, about six really crucial areas that we all need to act on right now to do something about slowing down or whatever with our climate crisis. The areas were energy, food, nature and land, land pollution, economic goals and population stabilization. Well, yesterday, I heard Chris Tucker echo your strong belief in the importance of empowering women and girls to deal with reaching a sustainable population. You talked about your new initiative, girlplanet.earth. And I'm just wondering if how that fits in to the crisis that we're in and how given World Population Day yesterday, that sort of empowering women with health education, and just reproduction, reproductive education, how does that all fit together?

57:42
Yeah, it was so wonderful to see you and Dean there. Susi, thank you so much for coming yesterday. Yeah, this is an exciting new thing. And yes, indeed, population is one of the six core areas that our paper world scientists warning of a climate emergency, identify identified as absolutely crucial for urgent attention by humanity. And, for me, this is one thing that I felt called if I can use language from faith communities. I felt called to do something about this, currently, because when I was born in 1961, I was born into a family, which was pretty wide awake about the environment, and very caring of the environment. And so there was discussion around when I was a child about zero population growth, you know, back in the late 60s and early 70s. And so I carried that forward into my adult life.

But I think you'll agree there's been since that time, deathly silence on the subject of population. And there are two reasons for that. One, it's the complex issue. But two, I think that the discussion around population was sadly tainted and maybe hijacked by a lot of quite arrogant and potentially racist discussion about who was reproducing too much. And, and there was the really unfortunate time at which people just decided they were not willing to address the issue. They were not willing to confront the issue, because it had been tainted by that racist, misogynist history of discussion with cultural colonial arrogance thrown in for good measure. I mean, frankly, it really was sometimes quite horrible. But that did not excuse us, I believe, from the responsibility to talk about it as a problem that needs a solution. Now, we have a lot of finger-pointing going on in the world, even among professionals, working for human betterment, who should know better. We tend to point fingers. No, it's not pollution, it's hyper consumption. No, it's not consumption, it's pollution. We should be grown up enough to say, here it is both, they need to be treated both together. Because the algebra of the two, basically population times consumption, you know, with a little bit of technology and culture thrown in there,

1:00:30
that that algebra is unavoidable. The number of babies, and the net growth and population on our planet is, I think, 87 million people every year. And that's a huge number. You know, that's 10 times. I

think Chris Tucker said this yesterday, that's 10 times the population of all of New York City added to the planet every year. But of course, there's no more food, there's no more water, there's no more soil, there's no more space added to the planet every year. So our pie of what we expect to eat, and use in terms of space and the water that we drink, should in theory, and you know, really in practice, shrink, with every net extra mouth that there is to feed. But we don't talk about it, we've been avoiding it. We've said that it's politically incorrect to talk about it. So as the only woman in the co-authored paper, “World Scientists Warning of a Climate Emergency”, and also the only person that had been working in developing countries, I felt I had a calling to get us out of this bottleneck by: (a) starting the conversation and (b) letting the voice voices of women, particularly women from developing countries start to be heard on these issues. For a long time, it's been dominated by often mostly very well-meaning people. But you know, a lot of white people and a lot of people from faith communities, some of whom have had very good intentions, and others of whom have been operating to be honest with quite a colonial mentality, or at least an arrogant mentality about their superiority relative to the people that they felt needed to stop breeding. And, you know, it, it's been such a treacherous topic. But we don't have a choice but to find a way to talk about it, to find a way to solve it. And to solve it at the same time, as hyper consumption. Every person born in the USA consumes the resources of numerous people born in Bangladesh, or Sierra Leone. And yet, all that that point has really helped people do is start to point fingers, oh, well, you know, we can talk about it, because it's actually the rich North that have to do something about it.

We all have to do something about it. And in fact, women in developing countries profoundly want to do something about it. So this newish initiative, www.girlplanet.earth, is a global forum for women to speak up about population, hyper consumption, planetary boundaries, the limits to what this planet can, can sustain, and personal choice, and just get women talking to so that their voices can be heard. And I love being able to do that. Because many of my friends and students and colleagues have lept on to the task. I mean, it's early days yet, but already, we've got 35 women from 20 countries around the world, speaking up about this issue, with some very poignant and sometimes quite alarming and interesting stories, very valuable, raw, authentic stories. So I'll soon be directing a new program around these issues. And we are hoping to help support the work of existing organizations in really making transformative change on this issue, by enabling people to come back to the twin issues of population and hyper-consumption and how we address them so that we can live in the future more wisely and more sustainably within our planetary boundaries.

Laurie Gordon 1:04:53
Thank you, and I was just going to pop in here. No Susi's got more questions, but the article that Phoebe has been referring to, is in BioSciences. January 2020, the lead author was William ripple for those of you who would like to find this and it details in those six areas of energy pollutants, nature, food economy population, for those who'd like to follow up and know more. Sure, and I just want our Scientific American right. The there was, yeah, go ahead.

Phoebe Barnard 1:05:33
Yeah. Yeah. And if they want to Google it, I mean, again, I could provide the link again, if needed. But the key phrases, “world scientists warning of a climate emergency”. Okay, so there were three papers. And in total so far, and I've just committed myself to writing a fourth that is action oriented and policy

oriented, in terms of translating these things into action on the ground at different levels around the world. But yeah, world scientists warning of a climate emergency by Ripple, FL, in 2019 and 2020, in the online and print editions, with two follow up papers in bio science, and Scientific American, in 2020, and 2020.

Laurie Gordon 1:06:24
Thank you. Thank you. Sure.

Susi Wight 1:06:30
What I'm really interested in is, is the conflict between human poverty and social injustice, social economic injustice, as a driver of biodiversity loss. And I'm, are there ways that this equal justice and social justice can complement each other?

Phoebe Barnard 1:06:53
Yeah, I think so. And there are two levels at which I want to answer that - one is at the level of the global economy. And the other is the level at local livelihoods, household livelihoods for people that are engaged in survival.

On the global economy, I'm a believer that the economy does not have to be this way we can change it, we have every right and ability to design an economy, which actually works for people in the planet, so that people are not driven by economic imperatives to degrade the earth, whether they are mining executives, or small rural farmers in Africa or South America or Asia. There's no reason that we can't devise the economy better to incentivize people investing in land, and investing in biodiversity, restoring them, or protecting them, for various purposes. It's not that easy. But we've spent the last three decades doing a heck of a lot of thinking about how we can rejig the economy, so let's make it happen. The circular economy where we're not just wasting things, and we're not just encouraging people to buy stuff they don't need, or for small scale farmers in Africa, for example, to produce stuff that they can't eat. But the people in Sweden or the US might feel like importing and having with their morning latte. You know, the inequities of this planet, have been driving some really tragic inequities and farming decisions. But so, so yes, the economy needs to work better for people and planet and not drive the destruction of this planet, and not to erode our human social fabric either.

But at the level of the household. You know, at the moment, it is still fair to say that people that are engaged in survival, and who are barely coping with their household financial security, they may be socially, socially marginalized. They still don't have room to care in their lives about biodiversity loss. But when I say that I'm mainly actually thinking about people who have been removed from their own land, and may have moved to cities. I think it's true to say that poor people in countries around the world who have not moved, who have not lost their autonomy, and have not lost their self-reliance, do care about the health of their fields, about the state of their forests, and they do invest in traditional authorities. You know, there are traditional authority structures in Africa, for example in Namibia, South Africa, Uganda, Tanzania, Kenya, anywhere that I've spent time working with people, where chiefs have set aside sacred groves, and people respect that. That's where they have a long history on the land. But unfortunately, now in our globalized world, that is all breaking down, people are moving to the cities, city people are sometimes buying up land. And so people have lost that autonomy and self-

reliance. And they're therefore losing their care about nearby forests and soils, and you know, other species.

1:10:44
It follows then that the displacement of people through climate change on a grand scale, I mean, millions of people will be displaced by climate change over the next few decades. And already hundreds and hundreds of 1000s, if not millions, have already become displaced. So this presents an enormous challenge to biodiversity and resource management. When people are on the move, and they are stressed. Whether they're migrating from climate change, or from warfare, or escaping wildfires, they do not have the bandwidth, to worry about anything else, they are engaged in survival. So this poses an enormous threat to biodiversity and resource management. And therefore, it seems to me that we need to understand right at the core of all of our climate, and biodiversity and social reform, economic reform issues, that justice and autonomy and integrity must be at the heart of everything we do. Otherwise, our actions will inadvertently exacerbate those inequalities. And that will unravel everything else.

Susi Wight 1:12:12
So it's going from listening to I mean, I'm talking using the word ‘horrific’ in sometimes when you're grieve about the loss that that we're experiencing, and then you talk about your mother's DNA that brings you happiness and positivity and hope. And I'm wondering, I'm going to kind of put two questions together. I'm, I'm wondering what you think our highest priority is for the audience listening in terms of the climate crisis issue? And then, given this climate crisis, crisis issue, what is it that brings you through, and that keeps you so hopeful and positive?

Phoebe Barnard 1:13:05
Let me address the for the last one first, Susi, I think I am hopeful, not just because I am naturally cheerful,. Because there's so much at stake. And it's hard to work on global issues of this severity, without sometimes feeling terribly daunted. But having been working in this field for almost 35 years, maybe 37 years, actually, I am finally seeing profound evidence of social change. The world now is changing. I used to say up until a couple of years ago, the world does not have to be this way we can change it. But now I find myself saying the world does not have to be this way we are changing it. And people can see that. So I'm really hopeful about that.

But in terms of priorities, I think there are four fundamental things I'd like to say because there is no single bullet, silver bullet, there is no single silver bullet. And a lot of people may feel that they are doing their bit and they're you know, recycling, and therefore they don't need to do anything else. Somebody used the word ‘radical incrementalism’ yesterday in our World Population Day discussions, and I would like to bring that to the fore. It's important to realize that individual actions do matter, because there are 7.8 billion of us. And if an increasing proportion of that 7.8 billion people can make incremental changes, but make additional incremental changes each day each week each month. So they are slowly drawing down their own impact on the earth. And that becomes a big wave of change that will be enough to start to tip us on to a more sustainable, wise and just future.

But the four things that I would say is:

(1) People need to get comfortable with frugality. I grew up in a frugal family in New England, not everybody does. But honestly, most people who have too much have become aware that they don't need that much. And in fact, sometimes it's making them unhappy. So get comfortable with a modest sufficiency, rather than trying to accumulate more stuff;

(2) At the global level, reform that global economy so that people and the planet actually matter, so that we are incentivized to, for example, invest in ecosystem restoration, rather than invest in ecosystem destruction. And we invest in our social structures, rather than setting up profiteering companies and corporations that dehumanize people and strip them of their meaningful relationships;

(3) Have fewer children, and eat less meat and dairy. That may seem like it's two separate things. But ultimately, it's, it's part of the same thing, reduce your impact, have fewer children, if you have not yet bred and you're thinking about having three children ask yourself wouldn't to be okay; if you're considering two children, wouldn't one be okay, but investing in good friend relationships with that child for that child so that you don't need to have children of your own, but you have more of a village community atmosphere. And if you are thinking about whether or not you want to have children, be comfortable and confident with saying so that I'm not sure whether I want to have children and feel free to invest in your nieces and nephews, or the kids in your neighborhood, or your friends' kids, because that can be just as meaningful having a godparent relationship as having your own children. And honestly, it's a heck of a lot less expensive and less demanding than having your own children.

1:17:26
And if you can eat less meat and dairy, even if you don't want to become a vegan, and I'm not completely a vegan, I do sometimes eat cheese, and I do occasionally eat sardines. But try to eat significantly less meat and dairy. Your health will thank you, your planet will thank you, and the animals kept in servitude in farms across this planet will thank you.

(4) And finally, elect strong and visionary leaders to take us forward in the future. I often ask people, what is the kind of leadership that led us to this parlous state that we are in now? And what is the kind of leadership that will get us forward into the future? So elect these strong and visionary leaders for whom a just and sustainable and wise future is both possible and achievable. So those are my four things. Those would be my four priorities.

Susi Wight
Well, that's a lot. And, and something to aspire to, I guess. But I thank you for that. That the priorities are very helpful to know.

Phoebe Barnard
You know, we can all do something and I'm living in a house which really is quite luxurious. But it's small. It has two bedrooms and a little office, but that is more than enough that I need even when our kids are visiting. They can stay in the garden shed in the summer. They can you know, they can sleep on the couch. We have enough. We don't have to have a McMansion, nor can we afford one, nor do we want one. Each of us can do something good each day by asking me they're asking themselves, do we

really need this? Do I really want this? And is it possible for me to do without it? Or give it to someone who might be able to use it better than I.

Laurie Gordon 1:19:45
I always come back to the question, as we look at this beautiful, complex biodiverse world in which we're all related and radically kin with each other, radically related to each other. What is the proper role of a human being? So many of the things that we consider this needs to be done because it affects humans. Not that that's a bad thing. But what can we do to expand our circle of concern? - to include the soil that you know, to scoop up that soil and have it rich with micro-organisms and know I hold in my hands all that diverse life? How can I plant my garden so that pollinators will come? How can I consider in the heat dome, that we just have gone through, what they estimate the 1 billion ocean-creatures who died? So I just kind of want to read that as a possible ending for us, which is what is the proper role of humans? I feel like we've been talking about that this whole time. But just more wanting to come back to the beautiful complexity of this biologically beautiful world that is losing unless we do take our proper place. So that was a rhetorical question on my part, trying to ask you something, your response in it, as we wrap up here?

Phoebe Barnard 1:21:25
Do we need to think of ourselves as a center of the universe? Has it done us any good? I think it's got us to this part of the state that we're in. Yeah. So if we are indeed homo-sapiens, and we do value knowledge and learning, that hopefully we can learn from that and adopt a more humble approach. Now, of course, not everybody will do that. And so our economy is currently driving bad behaviors in people that leads to billionaires competing with each other to race into space, rather than putting money to solve the crises of this planet. So something's terribly wrong here. I'll leave it at that.

Laurie Gordon 1:22:08
I think it's a great question just for all of us to go away and say what is, you know, how do I take my place within the web of life, it to be valued, but to recognize the value of all the other creatures that inhabit this planet with us?

Phoebe Barnard 1:22:24
I would invite people simply to take an hour, or even half an hour, at a comfortable time of day and go to a beautiful place near them, and just sit in it and look at the other creatures that share that place with them. and meditate on that. That will be a good start.

Laurie Gordon 1:22:52
Amen. Yes, yes. Well, thank you so much for being with us for the generosity of your time.

Susi Wight 1:22:58
It's always wonderful to hear you speak. You're very inspiring, Phoebe.

Phoebe Barnard 1:23:04

Thank you, Susi. It's such a privilege to talk to you both. I have such admiration for you both, the work that you're doing, and the beauty and grace, which you bring to the table on these issues. Thank you both for the opportunity.

Josh Mangelson 1:23:27
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