

Join me in the audio garden to cultivate our collective wisdom, nurture creativity, and spread love. My name is Martha Cinader. Welcome to Listen and Be Heard.

Welcome back to The Garden my friends. I'm grateful to be here for all that Mother Earth provides to be alive and to be able to present to you this commercial -free summer season special on resilience and climate change.

I'm not going to report on all the latest news good or bad. just chat with you here in the audio garden about stuff I've learned,

what I'm still learning, and really how little I feel like I know. In the past, I've featured Laura Langnick, author of Resilient Agriculture, and Meredith Lee, author of the Ethical Meat Handbook. And I feel like they planted so many seeds since we started these climate resilient specials that it's worth digging up some of what has grown from all of that here in past seasons and spreading it around while it's flowering and hopefully it will spread from this garden to your garden and your friends gardens and we'll all want to and be ready to change our behavior and the structure that is keeping us all in prison together in this system that's really not working that well for us.

So let's sit in the shade here with the bees and the miscovy ducks and enjoy the gifts of the audio garden. To get things started right I would like to share this poem with you from Vanessa Lee Miller who Tony Robles interviewed back in season one of the Listen and Be Heard Hour for readers and writers.

She reminds us to be grateful for and respectful to water. Why look who?

Why look who? The raging kahabai, the river. Her ka holo, her long, sinuous journey begins as a watery, pencil -sin line,

a mere trickle, mauka, way up eye, looking towards naa lani on monakea. Her awana is a graceful journey iho,

downslope, towards reini hilo, ay, hilo ikaua kanilehua. As she continues to iho, journey downslope,

a magical transformation ensues. From her embodiment of a graceful, intricate trickle.

She widens, becoming voluptuous. She's now a raging beast,

plunging turbulently downward, full of enna -enna, capable of arbitrarily grasping in her watery fist a young,

reckless life and smuggling it into one of her many deep cavernous pockets in her slimy Anna. She'll stash it there,

it's hers, until the pale, lifeless form struggles through a multitude of tempestuous undercurrents to surface somewhere evil down slow.

But during the course of her journey, she leaves a trail of dazzling performances after week upon week of infinite drops of rain from Nalani.

All struck Malihini, call these wonders Pihonua camp cascades, boiling pots, rainbow falls. Old Hawaii calls them Pua Kana.

Pua Kanini Tepe 'e Waya Nui Nui. She weaves ever so gracefully, skirting around sacred, smooth boulders,

leaving her mossy footprints of slippery limo. She continues to awana. In the wee hours of the morning, from my hamakua facing bedroom window,

I hear her raging, bellowing sounds, drowning out the lonely searching calls of the small, scaly river creatures of the night.

Searching in blind range, she leaves no boulder, no jagged rock, no slimy pebble unturned. River mo' awaits, watching her every move, hearing her belches and snorts and eerie releases. He, shaking out the raindrops from his mane of writhing eels, belts out a wicked laugh.

"Get plenty time," he says, slowly, sharpening his battle -ready claws against the skull boulder. He waits patiently for the right moon.

"O I look who you watery, undulating Wahineali, once a graceful trickle from Nalani, you've morphed. It was skull crusher,

you stone carver, you mo 'o slayer, so bloodthirsty, for the fearless, sweet weed -scented swimmer, or was it the claw of the mo 'o,

of the rain -drenched cave of goddess Hina, that dragged the young Baga into the murky depths. Upon reaching her deep, dark,

limoed and green mouth, Maka Ola Nakila, she forcefully surrenders her full, swollen self -plunging once more into the wide,

stormy bay. Both river and sea currents reluctantly mingle. She truly is what Old Hava 'i called her, destructive waters,

Wa 'iluku, the river, life -giving, life Grasping, Ruthless, Kahawaii. The first rule is to create relationships of mutual benefit or reciprocal relationship.

And so thinking through what that means very specifically is thinking through all the relationships in the food system and making sure that each relationship,

both parties, are being cared for. Laura Langnick, author of Resilient Agriculture. Having an understanding,

a better understanding of what it takes to feed yourself and to feed others or to feed your community is a really important skill to have or just an understanding or a

remembering of what that was like And it wasn't that long ago that we all,

that most of us in this country were engaged in farming. Not that long ago. How long ago?

A hundred years ago. Just a hundred years. Maybe a hundred and fifty years ago.

So that's why I think of it as a remembering.

And yeah, we have to relearn. But we also can look back in our own family stories at some point to find who in our families is. - Some of that knowledge.

- Yeah, who knew how to do this? - In that area that you were from too, some of that particular knowledge. - Yes, yes. And a value of learning something about that in these

times is that it used to be that we fed ourselves by community action without fossil fuels, without chemicals, without processed foods and distribution systems and freezers and

all of that. Now I'm not saying, I'm not one of these folks who are saying go back.

- Let's go back, but. - But what I'm saying is there are probably some really good ideas that we could bring forward and make it part of the solution to climate change. -

Meredith Lee,

author of the Ethical Meat Handbook. gravitate towards something that requires you to develop a ritual because I have found that that's one of the things that really becomes

transformational for folks in terms of changing the way they feel their relationships are oriented or changing the way that their life is going is and and so sourdough is a great

example you've got to feed that baby every day or every week and

something that requires repetitive checking in with the project and a slowing down of the story that I'm too busy to take that on I think is is just really transformational so you're

not only building the skill set and having the more nourishing food item,

but you're also, you're establishing something really sacred in your schedule. Sometimes cultivating these skills, whether it's like making your own oat milk or making sauerkraut or gardening or it tends to connect people to what feels like an old way of knowing that they've always had. It's like a remembering of something that feels really right. There is no more effective way for eaters to reduce the emissions associated with food, the food system, than to grow something on a box on their balcony or in their backyard and take it into their kitchen and cut it up by hand and put it in a jar and add some salt. No truck involved, no gasoline, no... know nothing. Stop wasting food. That is based on so much research that suggests that one of the top five most cost-effective kind of I think of these as win solutions that are low cost and high impact, that stop wasting food is actually one of the top five things we can do to act on climate change. The whole food system produces a pretty significant proportion of greenhouse gas emissions. Let's talk about in this country. Okay. And when we waste food, we are wasting all of the resources that were put into creating that food and getting that food to your it, and all of those resources have associated greenhouse gas emissions. And so if we simply stop wasting food, purchase what we need to eat, we send a signal back through the food system to reduce production. In this country, about 30 between 30 and 40 percent of all edible food is wasted. I'm going to say that again. 30 to 40 percent of what we buy is thrown away. It turns out that if food waste was a country, it is the third, it produces behind just China and the US, the third most greenhouse gas emissions. Every pound of food that is wasted, even if you compost it, that pound of food goes back through the food system and takes seven times the energy in that pound of food to produce that food that is in the food itself. That's an average. But the idea is that if you never waste that food, then that food, eventually the message will get back through the food system to not grow that food and then you save seven you have seven times the impact then you would if you were to compost that food. Having a pantry full of food, you know, that's the type of wealth and that is, but how about if part of that food came from your yard? Absolutely. That deepens that hole, or how about if some of that pantry is full of food that you've processed yourself? What are the implications of making a blanket decision about my diet on like the socio-political community ramifications of food. I think it's important to mention that like of the sectors of our food system like the meat system wastes less than any other sector because there are the parts and pieces of the system in place to really make use of the whole animal, like animal products are used in all kinds of different consumer goods, and that is made possible by like the rendering conglomerate of companies that come and take all the things that we don't necessarily choose to eat, but and we don't necessarily have that in the vegetables, nuts, oils, eats, and pulses sectors of our food system, so a lot more of that type of food is wasted from like farm

gate to home waste can.

I have been invited to become the, at times, controversial, you know, spokesperson for how our,

like, fear of this topic, you know, and the immediate controversy of the topic of eating meat, really invites us into this sort of, like, uncomfortable question of like what are all the things that we're sort of ignoring because we have like the privilege to do so or because this food system that we're beholden to separates us from the concepts of death right that happen in order for food to be available to us.

Laura Legnick and Meredith Lee experts in the field of both climate change and agriculture.

Laura Legnick wrote "Resilient Agriculture" and Meredith Lee wrote The Ethical Meat Handbook. I highly recommend both of those books for you to find at the library or your local bookstore.

I'm Martha Cinader and this is the Listen and Be Heard Hour for Readers and Writers. This whole thing about how it used to be not so long ago.

I feel like I've been misled my whole life and I was thinking like the way things are is just the way things are, right?

When it's really the way things aren't. It's like we're all victims of gaslighting and the corporations have taken on the rights of people and they're the narcissists who think they can take and never give back and they've led us to believe that it's more convenient to let other people feed us like them and we have to pay them for that pleasure and we've turned away from the evidence that our diets are controlled and not anything like what they were for thousands of years. So, when we did that show live, I don't think I fully understood the connection between my relationship with food and climate change,

because it's about so much more than what's healthy food. It's about the energy that it took to raise that food and package it and get it to your table.

And so they've got everyone horn -swaggled on thinking that sitting in traffic is better than picking your own food that could be plentiful and available everywhere.

And it's all that stuff in the middle of the supermarket and cardboard boxes and plastic and tin bottles. It's not even real. It's like you're a battery and they're charging you with just enough to keep you consuming.

And they've added ingredients that make that food as addictive as any illegal drug and it sends you to the other culprit in this climate change debacle which is the health care industry that makes money off your misery.

Okay I'm gonna relax like I said I was going to do But, you see, I've digested these things since I first spoke to these very intelligent and informed women.

Let's listen to a little more from our previous specials on resilience in the face of climate change. You'll hear first the voice of Laura Lemnick in conversation with me, Martha Cinader, followed by the voice of Meredith Lee. The second rule is regional self-reliance,

so set up the food system so that it has a very little requirement for outside water, water, energy, materials from outside the region.

What we need to actually size our food system, our food sheds, the way we need to size our food sheds is to look at the capacity,

the ecological capacity of a place to produce the foods that we need. And to be able to

produce those foods without an ecological deficit.

So the idea is that by doing it regionally and not pulling foods from all over the world say that we're reducing the footprint of producing that food and getting it to our table.

And we're also in enhancing or increasing their self-reliance of that region. We're not so dependent on faraway places. That's the resilience piece.

- You're not always gonna be like the person that goes to the farmer's market. While going to the farmer's market is an excellent way to start participating in a regional food shop because it's putting you in a relationship with the food producers.

Some, that's not culturally appropriate for everyone. Some people don't have the transportation. Some people don't have the money. And so maybe the way that they participate is with their voice, or maybe the way that they participate is through opting out of certain products,

or maybe the way that they participate is through just feeding neighbors and sharing, right? Like if we decide to stop wasting food, then maybe one thing we're doing is, you know, sharing it with our neighbors. Instead of letting it go to waste. Yeah, and it doesn't have to be perfectly ethical, organic, right? It just has to be like wherever you're at with whatever you have,

trying to step into community relationship participation, right, in the way that's accessible to you. Because we do know that there are real problems with cost, accessibility, all the things. And it's not about like preachy one-size-fits-all solutions. You find a lot of rhetoric in in food movements about one-size-fits-all solutions or specifically within the meat world,

like, oh, animals can be so helpful for sequestering carbon, therefore we need more of them and everyone should eat more meat. And I'm very, very adamant that that's not correct because we don't have the systems,

right, to process all those animals, even produce all those animals or make them, you know, that meat affordable to everybody. So it is the solution to not eat meat.

It is part of the solution, right? And so, so eating less meat, eating no meat, eating better meat, you know, those are all acceptable, acceptable solutions to participating in a regional resilient food shed.

If we started thinking about trying to create an abattoir that could serve the meat-eating public of every locality, then we could very quickly see that that's not realistic, right? But if we start looking at like bioregions or regions that include cities and their outlying rural areas, then we can start to see, oh, how do we create smaller than global or smaller than national but larger than local systems that have the right number of players and the interdependence that is realistic towards decentralizing.

That final rule is to cultivate the common wheel and the word common wheel is actually an old old word that my ancestors invented to describe the wealth of community, the broader wealth, not just money, but natural resources and human resources and social resources. All of that broad sense of wealth that we all know is important for community well-being.

Can we look to the past to see how our ancestors nursed their communities because it turns out there's a lot of good ideas out there for how we create essentially fast food that nourishes our communities.

For example, it's about learning your own history. If you live in a city, how the heck with you're not going to butcher a whole pig, you know,

but maybe you can get in community, right? And there can be some people who can participate with their skill and some other people who participate with their money and some other people who participate with like organizational capacity and not everybody wants to eat everything.

So we share in that. And I think that's something that our ancestors left, you know, that capacity for us and we inherited it like it takes a village you know to to really build systems that nourish humans are of nature therefore nothing that humans do is unnatural so so when we're leaning all the way into the big ugly thing like everything that we've done and even if it's like you know categorized by us as anti nature. It is of nature. It's our nature. Because we've done it and we are of nature, right? But what's missing is a certain level of consciousness about how we're going about being participant,

natural beings, right? And that's something our ancestors did bring was a certain level of consciousness of like this plant, this herb, this animal is my brother, you know, And I have to ask permission or I have to be in a reciprocal relationship. And I think that that's something that, you know, the practices of fermentation or even composting or butchery or farming really opens people to like you get your hands into the microbes and the fermentation or the soil and it's like something wakes up where you're like,

oh yeah, I am like connected to this and everything that's trying to convince me that I'm not connected to this is just wrong. I think a lot of times especially white folks don't feel like we have the authority to speak about ancestors,

right? Because like we are colonialists. Yeah, but we do. We know everybody has an ancestor that knew how to live on the earth in a way that was conscientious, right? And so, while people of color and native folk do have a closer cultural tie to that knowledge and should be listened to,

absolutely. I think that it's also time for everyone to like just step into a recognition that we all have ancestors. We are not by ourselves on our own,

but we are standing on the shoulders of our ancestors that we have, we all, no matter where we come from or what our family history might be, there are ancestors in our lines and sometimes they're not even related by blood but they're related by spirit and that we have,

we can ask for help and we we can find strength and courage and wisdom by calling on those ancestors. I think that's a really important aspect of understanding how Indigenous communities operate as well and something that we can do,

we can do again. This is the Listening Be Heard Hour for readers and writers.

I'm Martha Cinader bringing to you a summer climate special how we can learn to be resilient and when we come back from this brief break I will share some of my thoughts with you that I had while sitting here under the willow tree in listening.

This is WPVM LP Asheville, North Carolina 103 .7 FM. The voice of Asheville.

I swear just sitting near the pond and listening to all the sounds here in the audio garden, it's enough to restore my spirit and make me fierce about protecting this bit of Mother Earth that right now I'm the custodian of.

The water that flows through here, hawks and eagles and herons and fish and deer and even the squirrels and possums and skunk and of course brother raccoon.

What would our lives be without them? And what I take away today from those previous

conversations we just highlighted in this hour that we're sharing in the audio garden is that we have to appreciate the people around us too and look to each other for support and to understand what we can provide for ourselves and also what's really necessary to obtain from somewhere else.

And where is the closest somewhere else we could get that from, without a car or airplane? And the way to figure that out is to call on our ancestors, for one thing. the ones who did all that for so much longer than we have actually been caught up in this supposedly traditional way of doing things, traditional agriculture. That's what they call what's practiced by the agricultural industry today.

And Alternatives, so -called untested agriculture, is what we practiced until the warmongers decided their unused poisons could be turned into pesticides. So now fertilizers called "traditional" since after World War II, you know? But how long a period of time is that compared to all those thousands of years that we learned how to feed ourselves in reciprocity with Mother Earth who, you know, we're not actually feeding ourselves, she's feeding us. And we've just learned how to work with her over thousands of years. And now it's like we just forgot.

No, that knowledge is still there, it's just that we, and it's not our fault, we've been prevented from learning it, you know, but it's like which pill you're going to take, the blue one or the red one, once you've figured this out, you know, and that's what Meredith and Laura have spent a lot of time,

You know, studying, gathering the data, and really learning some of these practices. And I've learned too. I've learned how to ferment. I've learned how to make sourdough bread.

I've learned how to can and freeze and freeze dry things. And some of those have been more traditional way of doing things than others, like you learn the difference between vinegar and fermentation in a more natural kind of way to pickle things. And so,

you know, a lot of things are a scam. What do you think? I would love to get your feedback, which you can give by visiting listenandbeheard.net and leaving a comment on the post for this episode,

which is number 25 of the "Listen and Be Heard Hour" for readers and writers. And now I'm going to stop talking and we're going to listen a little more to some of the seeds that were planted by Laura Lenick and Meredith Lee.

Our capacity for that regional resilience is threatened and so the decisions that we're making must become more informed, they must become more relational, they must become more in service of that regional wealth, that regional resilience, that reciprocal relationship and they can't remain simplified or weaponized. - Meredith Lee, author of the Ethical Meat Handbook. - What we're after here is an opening of consciousness and that opening of consciousness allows us to say, "Do I have another option?" - Not all of us know this.

Here we go. - Right. - A lot of the food that we're buying very cheaply at the point of sale is actually subsidized, so we're paying for it with our tax dollars or just not paying for it at the grocery register,

so, you know, fun fact. And we're paying for it in all the damage that's being done with changing weather patterns and weather and our damage to our health. Yes,

yes. So we're paying for it. We're paying for it. In pieces over time and to different pockets, right, but it's still the true cost of the food. And so yes, it should cost more, but also we have systemic poverty in our country that makes people literally unable to pay the true cost of the point of sale. So that has to be acknowledged. It's not just about willingness. It's about capability and accessibility, right? And so yeah, that's a huge issue that certainly local food has not answered, right? And regional food sheds don't have any promise that therefore food will be affordable according to today's standards and also more. We're not going to solve climate change if you buy a certain kind of cereal, you know, a climate smart cereal or or really even any sort of a brand that's saying, you know, impossible means or whatever.

Yeah, it's going to take more than to make a change. That's sort of the elephant in the room, isn't it? I mean, when we look, it's more that we have to change the structure of how we live. I think that's true. Yes, we do. As people together, not just ourselves. Yeah. Laura Langnick, author of "Resilient Agriculture." In order to solve this we're going to have to work together to change our behavior not change our brand.

When we're thinking about resilience and we're thinking about relationships we have to understand that like the food system is controlled by a very consolidated corporate oligarchy essentially and so then we get to look at those memes and think about is following what this soundbite is saying or this dietary dogma is saying is it feeding this external non -regional fragile non - resilient crippled crippled by COVID corporate extractive system Or is it something that feels a little bit more at the center, the core of the onion? We are being encouraged to be afraid of each other and to not trust ourselves,

I think, by the dominant narrative. And I think because of the politics Being so divisive situations in the world becoming so divisive that has real ramifications on people being able to relate to each other So much of that colonial mindset has been applied to homesteading of us You know what homesteading means is you check out from society You buy yourself a little land if you have of privilege to do so.

And you start growing all the vegetables that you need. Like how insane is that? If you really think about it, to think about how we're all gonna become an island. - All self - sufficient.

- All self -sufficient. When really the more realistic thing is like, A, you're not doing it out of relationship with the earth or microbes or animals, but also it's gonna be more effective if we can become reliant on each other.

So learning skills, or completing skills in community, further sets up that regional self - reliance and that we are learning to become dependable and to depend on each other, and even lean on community as well as give to the community process. We have been fed a fantasy that,

you know, buying a certain kind of milk or, you know, an organic Twinkie, that's always my favorite example, is going to solve the problem.

And this is just one more example of this this individualism that is toxic. We really do have to remember that the main culprits in this situation are petrochemical companies and large corporations and oil and gas,

big oil, big gas, and the political framework that's attached to that. And so if we can just breathe and remember that, then I think it's easier to be like, "Okay, I'm just going to pick one thing today." Or I'm going to try to help my teen dangerous form this habit, right? Turning the lights off, maybe over whether the banana peel goes in the compost or the trash, and not beating ourselves up if we're not checking every box. Another thing that the food movement or other movements could learn from justice movements is that there's this real concentration on how do we create truly relational village -level networks to get things done.

And a lot of that comes from stripping away colonial thinking, learning how to get into relationships, learning how to be in radical conflict that's generative. There is something valuable about recognizing that we're alive and that that's a gift, right? And that, so if you think about receiving life as a gift, then you think about gratitude. And when we think about gratitude, we think about giving back. I think that's generally an acceptable way of thinking about how humans operate.

Like when we recognize that something's been, that we've been given something, that we have received something, then we are more inclined to give and return. Indeed. And we've all been given something. All of us here gathered in the audio garden for this past 40 minutes or so together.

We've been giving each other's company. We've been given life. We're alive and able to hear each other, listen, be heard. And we've been given books by people who have given a lot of thought to the books that they've written.

Of course, there's Laura Langnick, who we've been listening to some gems of information from,

and you can find much more in her book, Resilient Agriculture, Cultivating Food Systems for a Changing Climate,

and You've also heard the voice of Meredith Lee, who is the author of the Ethical Meat Handbook, Complete Home Butchery,

Charcuterie and Cooking for the Conscious Omnivore. You should, well, I won't tell you what you should do, but you can go to your library or your local store and locate those books.

And I promise you that they will be worth your time. Another one is a classic that keeps coming around. And actually,

Laura recommended it back in one of those previous episodes, previous climate resilience specials that we did together,

which is Braiding Sweetgrass by Robin Wall Kimmerer, indigenous wisdom, scientific knowledge, and the teachings of plants.

I loved this book. It's inspiring and I put it down in the library down by the street of Martha's kitchen garden and it has passed around from hand to hand.

I know people have even left notes in the book sharing some of their thoughts for the next person and you know a lot of these books are confirming ancient knowledge with modern science and along that line is a book called "Finding the Mother Tree - Discovering the Wisdom of the Forest" by Suzanne Simard,

which is both a national bestseller and a bit controversial, but I think some of the controversy is missing the point you know like we from what I understand after watching a lot of YouTube videos I confess but you know that's another source good source of

alternative information YouTube is kind of like what used to be a more robust local access cable television kind of situation where people are you know free to share things that they really can't share on more traditional commercial type networks and so you find sometimes those cutting -edge people who are trying to share important knowledge that's being stymied by the mass media.

And so I think the point that they're missing about finding the mother tree is that the whole idea of like a monoculture forest is nonsensical and actually tragic for Mother Earth and for us because of the problems it's creating with climate change.

And there's all kinds of things that I've discovered that I really didn't understand when I first came to this land and really honestly I was talking about homesteading And I was married and we were doing this more so -called traditional,

like I was saying, you know, tilling of the land, and we were doing it organically, but we were adding fertilizer, which, like, now I don't do any of that, it's no -mo and, you know, more like adding to the soil rather than trying to dig it up because of the whole structure of what's underground.

And so if you look at a mature tree, that's different from a tree that's a year or two old.

And it's like the diversity of the age of the trees is also important.

It's just like the whole underground network and it's actually part of the same thing. It's like the above ground is connected to the underground, too. So the idea that, you know, we're doing something renewable by replanting these monoculture forests is not really tenable,

and it's not sustainable. And that's not explaining the whole book to you, but there's no way I could do that in these few minutes that I have left in this wonderful hour that we've spent together in the audio garden.

But I'm still reading this book, so I certainly can't summarize it for you, but I would recommend to find Finding the Mother Tree,

Discovering the Wisdom of the Forest by Suzanne Simard. And someone else who I've discovered on on YouTube that tells you how you could bring nature home to your garden,

alternatives to keeping a lawn, you know? And this is something else that's really kind of crazy in our culture and it's not helpful to our native sex,

our native pollinators, our native plants. So Douglas W. Ptolemy, he's written several books and so I'm mentioning two.

One is Bringing Nature Home, How You Can Sustain Wildlife With Native Plants and so anybody who has a yard,

or even a balcony, or even a window, you know, that gets a little bit of sunlight. You can get an idea, or you know,

maybe you could even start a roof garden in some urban area or community garden.

But that's a whole other topic. But so, Bringing Nature Home is one book by Douglas Ptolemy and another one is the nature of oaks and oaks,

oak trees are one of those like keystone um keystone beings let's call them beings just like we are and uh we need oaks to continue to survive.

And not only do we need that, but there's a whole lot of creatures, large and small, who also depend on the oak tree.

And understanding that can help us understand how to live within the boundaries of reciprocity in the world.

And how wonderful that can be, how things could actually be plentiful for us and for those creatures that remain because we all know that the list of things of beings who have gone extinct is getting longer, and there's no way to make it shorter. There's no going back. We have to all go forward. And with that idea,

there's also the ecology of care by DeeDee Perseus, which gets into the whole waste and things that happen in the health care industry and how that is also a key player in how we need to think about being resilient in the future when some of these things that we take for granted.

We won't be able to take them for granted anymore. Okay so that's a few things for you to check out and writing a book or reading a book is one way to spread the message, sharing that same book so that all of us can Learn to, you know, make that choice between the blue pill and the red pill and know which one is which, right? Another way is through music and lyrics and now seems like a great time to play this from Boba Brinkman something called greenhouse featuring Aaron Nasroul.

♪ And on and on and on ♪ ♪ Let's take it back 200 years ♪ ♪ To the 1800s up in here ♪ ♪ When we only had 290 CO₂ parts ♪ ♪ Per million in the atmosphere ♪ ♪ We had one billion homosyphians ♪ ♪ On the planet trying to get the groove on ♪ ♪ And soon lots of them would ♪ ♪ Thanks to industrial revolution ♪ ♪ Joseph Fourier was a Frenchman ♪ ♪ A physicist and a mathematician ♪ ♪ He discovered the fact that the atmosphere ♪ ♪ Acts like a blanket for heat retention ♪ ♪ The greenhouse effect first described in 1824 ♪ ♪ Visible light from the sun meets the resistance inbound ♪ ♪ 'Cause the size of the wavelengths is helitide ♪ ♪ But then when it hits the earth, the emits infrared radiation ♪ ♪ With longer waves and they get trapped and bounce back when they try to escape on their way back up into space in the 1860s John Tyndall investigated methane and CO₂ and water vapor to see whether any of them block infrared radiation they all do but methane and water vapor don't stick around in the atmosphere for long it took a Swedish genius to identify carbon dioxide as ♪ ♪ Six font -painted the math ♪ ♪ If you double the level of CO₂ gas ♪ ♪ You get a five to six degree temperature increase ♪ ♪ All across the map in the greenhouse ♪ ♪ We heated up, now we gotta figure it out ♪ ♪ Yeah, yeah ♪ ♪ And though it may not be around ♪ ♪ When it all goes down ♪ ♪ And now we live on ♪ ♪ In 1927,

In 1927, Arenas died, a celebrated Swedish civilian, and three years later, the population on planet Earth exceeded two billion. In 1938, a British engineer by the name of Guy Tallander,

discovered a rise in carbon dioxide and also measured a rise in temperature. In 1958, Roger Revelle demonstrated that the oceans couldn't take care of it. He said, "Humans are now,

carrying out a massive geophysical experiment. In 1960 Charles Keelan did some measurements on Malnoloa, a carbon dioxide in the atmosphere, and every year the level appeared to go up.

It was rising at a steady rate, the same rate as emissions from us burning oil and coal. Also in 1960, the population hit 3 billion souls, and it only took 56 years to get more than 7 billion in the same boat.

This has been the Listen and Be Heard Hour for Readers and Writers. My name is Martha Cinader and I want to thank you for joining me here in the Audio Garden.

Our guests today were Vanessa Lee Miller, Laura Langnick, and Meredith Lee. Our associate producer is DJ Jeannie Hopper, editing by Jeremiah Cotherin. The music came from DJs for Climate Action, and from Baba Brinkman CD, The Rap Guide to Climate Chaos.

You can find more information about everything that you heard today, the books I mentioned, and the music that I played at [listeningbeheard .net](http://listeningbeheard.net).

This is episode 25, our summer climate action, climate resilience special. I want to thank you for listening And for giving me the opportunity to be heard.