

## **The Nature – Climate Nexus**

**Janet Sumner**

Welcome to the Clear Cut.

[Music]

**Janet Sumner**

Hi, I'm Janet Sumner, Executive Director at Wildlands League.

**Kaya Adleman**

And I'm Kaya Adleman, Carbon Manager at Wildlands League.

**Janet Sumner**

Wildlands League is a Canadian conservation organization, working on protecting the natural world.

**Kaya Adleman**

[The Clear Cut](#) is bringing to you the much-needed conversation on Canadian Forest Management, and how we can better protect one of Canada's most important ecosystems as our forests are reaching a tipping point.

**Janet Sumner**

Okay so I'm just going to start with a little bit of a context setting piece, because this conversation that Kaya and I are about to have with Harvey, or Dr. Harvey Locke is not just about forests. But I very much wanted to speak to him. And as you know *The Clear Cut* is essentially a conversation about forests and how we're managing our forests. The forests though are part of a global carbon cycle and they're also part of the planet, and they interact with all the other ecosystems etc. So this conversation is about Harvey's work that is on a global scale and it affects forests, and it's about the numerous agreements that Canada has signed starting with [our commitment to protect 30% of our oceans our lands and our fresh water by 2030](#) on the way to protecting [50%](#), which is what the science is actually saying that we need to do to have a healthy thriving planet. But in addition to that Canada and many other countries have made a global promise to [halt and reverse biodiversity loss by 2030](#). Species right now are on a

downward trajectory and we're talking about this being the [sixth mass extinction](#) on the planet. So this halt and reverse biodiversity loss is a really important piece, and it's to halt and reverse it by 2030 as we bend that curve and then move upward towards Improvement by 2050. Of course the one that actually has a direct relationship to forests is the [Glasgow Leaders Declaration on Forest and Land Use](#) which was signed by Canada in 2021. At the time of the signing, there was this [remark](#) made by the United Nations with the Glasgow leaders Declaration on Forest and Land Use: "the world has put nature and sustainable land use at the heart of the global battle against climate change and biodiversity loss." And they went on further to [say](#) that "we know the conservation, protection, sustainable management and restoration of terrestrial ecosystems, including forests and trees, is crucial to our survival as a species and to our collective efforts to combat the worst effects of land degradation, desertification and drought." So while Harvey's been asked to speak and write on many issues globally. I would characterize his focus in the last few years, he's very much turned towards how nature and climate really the same issue, and therefore how to approach the solutions as if the climate and nature are part and parcel as a planetary system, forests of course being an important part of this. This is why I wanted to interview Harvey, I wanted to talk about that big idea. That big idea that's going to have a huge amount of impact on forests and how we think about them, but to think about climate and nature as being part and parcel of the same issue. And therefore we need to tackle it as with much vigor and start to see that as one of the same. But we'll get into that in the conversation about Harvey. So I'm very interested in having this conversation with Kaya, and with Harvey. Kaya, do you want to say a couple words?

### **Kaya Adleman**

I mean I don't think I can follow that up with any additional breadth of information. But I guess I will just say that I really enjoyed speaking with Harvey, he has a lot to say (a lot of interesting things to say) and I'll let you introduce him in this next part.

**[Music]**

### **Janet Sumner**

OK, we're about to start the episode of *The Clear Cut* with Harvey Locke and. I can't tell you how excited I am about this because I get to talk to Harvey over many, many years over the entirety of my career as I'm working on conservation, which is more than 20. There's now, and he's been a true inspiration to me. He's a larger than life character and somebody that when you're in a room with Harvey, he has no shortage of big ideas and ideas that are really leading the conversation. So I'm deeply appreciative that we're now going to have this opportunity to speak with Harvey. And and get into that and his next big idea, but. Because I truly find it fascinating. And Harvey, Harvey and I have been in the trenches working on carbon accounting and and how that works out for nature, etcetera. So we'll unpack all of that, but I'm going to start by just asking Harvey to tell us a little bit about who he is and I know. He's going to tell you about how he loves where he lives. Harvey, go ahead.

## Harvey Locke

Thanks, Janet. And it is a pleasure to be talking to you about this because you and I share a common interest in how nature and the climate comes together. And we've been talking about that for a very long time and it feels really good that it's now got become topical and more people are interested than ever. And I really hope that we can help. Bring people's consciousness. That nature and the climate are actually the same conversation, and I'll walk through that. But before I do that, you asked me to talk. A little bit about where I am. I'm in Banff in Banff National Park where my family has very deep roots. And I was born in Calgary and for a while I was a lawyer. 14 years, actually. And now I just do environmental policy stuff, nature conservation, climate change, intersection with nature conservation. And I do that at multiple scales. So I work literally in my backyard. On issues relating to things in the valley, I live in all the way through to global policy stuff. So at any given time I'm meeting with the neighbor or I'm on the phone. To Bhutan. So that's a that's a typical week for me and it's it. It appeals to me. I I'm I love where I'm from, but I also love the world. And I also am super interested in other people in other cultures. Which is why the global stuff is cool for me, and so so I've I've enjoyed being able to work at all these scales, whether local, regional, national, international and so that that's a little snapshot of of. Who I am.

## Kaya Adleman

How did you guys meet?

## Harvey Locke

Where did we meet? Well, I was president of the Canadian Parks and Wilderness Society or vice president for many years. Janet became the chair or the executive director of the Wildlands League chapter of CPAWS. And we sort of met through that sort of institutional framework. But I think when we really started working together is there was an event at the Hummingbird Center in Toronto when we were [campaigning to expand Nahanni National Park](#). And I led a national speaking tour to 19 or 20 cities that the CPAWS organization did a fantastic job of. Enabling because it can actually turn people out everywhere in the country. Which is unusual for an NGO. And the Toronto Hummingbird Center event was sold out and we had, you know, we had the the he wasn't the Prime Minister then, but Justin Trudeau was with us and. We had actors and musicians and it it was a lot of fun and Janet organized the event and and somehow in that space we began talking more deeply about this nature, climate intersection, and at the time it wasn't very fashionable, but Janet and I have stayed in touch on it for many years. Because I really believe that we've got to bring these things together and and now there's, you know, world leaders are saying that. But 20 years ago, let's just say Janet and I weren't being crowded out of the room in that conversation.

## Janet Sumner

Yeah, I was actually. I was just gonna add to that. I mean, yes, I remember that event. But as Harvey said, he was doing a tour, so it was actually throughout southwestern Ontario. And I went to a number

of those events and. You know there's, there's always an opportunity when you meet some people that you, you kind, they become so memorable. And it was a chance to while I was there to talk about the work that while Lesley was doing and, you know, do sort of like a little bit of a pitch on what we were, we were up to and it. Was early days in in my career. It was a chance to stand with people who? Really knew their stuff and could speak in such and compelling ways about it. And I believe, Harvey, you were touring with the Herb Norwegian as well the the, the chief.

### **Harvey Locke**

Yeah, it was fantastic. We, we had so much support for this campaign and this is sort of I love campaigning for nature because I love nature and so and the Nahanni is a place I fell in love with. And Grand chief Herb Norwegian of the [Decho Dene](#) came on the road and did many cities and we drove across Ontario and he still teases me to this day about the day I got lost in Toronto when I. Said trust me, I know my way. And we had Dr. Derek Ford, who is an expert on cars landforms from McMaster University, and Derek was so compelling as a speaker about geology. And, you know, he made rocks exciting. And had John Weaver in places who was a Wildlife Conservation society scientist who studied the Nahanni grizzly bear and Caribou. And we had Neil Hartling, who was the head of the Nahanni River Adventures Canoe Company that had taken more people down the river, and he's been down the river more than anyone else probably ever will be. And Neil was was with us. And and then we had, you know, the in the case of, you know, when we were in Southern Ontario going to various cities, we, the Janet was there and then we did the same thing whether in Halifax or Victoria or you know, in the NWT or Yukon and had the anchors of the local CPAWS voice and sometimes local celebrities, often musicians. Doing it, I believe it was Sarah Harmer who was with us on stage at the Hummingbird Center, and so we just had this and Justin Trudeau helped us and a few venues as well. And actually the the event in Montreal is where I met my wife, so it was a pretty big impactful event in my life. But I think more than anything, it was the chance. We had to share the magic of the Nahanni as a Canadian thing, and I remember really well the person in Nova Scotia. When we packed a place in Halifax. And the person in Nova Scotia said to me, Alex. You know, I really care about this a lot, and I'll never go there. And and that is that just is this intangible thing about sense of country, a sense of the natural world, the sense of, you know, things don't have to be about me. I can be about them. I can be part of something bigger than me and I want to be and. And that feeling, it was incredibly energizing

### **Janet Sumner**

So as I set the context for the podcast Kaya, I really wanted Harvey to talk about his next big idea, because as you can see he's done a lot of local conservation in his backyard as he mentioned. He also has done conservation on the scale that is really on a landscape level, like protecting the Nahanni is an enormous landscape level outcome. And then he's thought about North America, he's worked on [Yukon to Yellowstone](#), he actually is one of the co-founders of the Y2Y effort which is creating conservation across the backbone (or one of the backbones) of the North American continent. And now he's got an idea that as big as the planet, because it's about bringing that nature-climate nexus together. So that's where we're going to go.

## **Kaya Adleman**

I'm excited to go there. Given the state of the world that we're in right now, we can have no shortage of big ideas.

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## **Janet Sumner**

I do want to get to the conversation around. What's the next big idea? And I will just say. While I had a lot of hope that nature and climate were going to be more joined up by now, because we had various agreements that were signed, we had the Glasgow Agreement on for us. We had, you know, various agreements that have been signed internationally. Yet it seems the world becomes myopic when it comes down to. Actually putting these into action and implementing them and in fact, and maybe it's because of the public debate being so centered around the emissions profile from tailpipes and smokestacks, and we just can't seem to break free of that. And it takes no. It's not accounting for the full carbon. This is, as you know, our you and I have unanimity of purpose on this. It's like it makes me crazy, so so, or crazier. Anyway, so maybe you want to unpack that for folks

## **Harvey Locke**

Well, First off, at at the level of you know how change occurs through time and and when things are achieve critical mass and and suddenly move. So I've been involved luckily in the development of some big ideas in the world, so one of them is called the Yellowstone Yukon Conservation Initiative, which is now become kind of a Global Icon for thinking about large landscapes and interconnections at a really big scale like. Many degrees of latitude scale thousands of square, you know, 10s of thousands of square kilometer scale. Not small, very big. And and and I watched how that sort of caught on. And then and then spread. I was also involved in creating the nature needs half idea. The idea that we need to protect at least half the world, which was all the science was saying that, but nobody was saying that that's what the [science was saying](#). So it took on saying it. And that was in conjunction with the [Wild Foundation](#) back when I was there. And then also this idea of a Nature Climate Nexus, which is, you know, I did [publish my first paper](#) on this in 2009 with an Australian scientist who's very strong on this named Brendan Mackey. And they're just laid out in simple terms, what it is. And then I was involved in the [UNEP Global Biodiversity Framework](#) with the development of the idea of the nature, positive global goal, to halt and reverse biodiversity or nature loss by 2030 from a 2020 baseline. And all those ideas caught on in various ways in various times, and the uptake can be very variable. So if you take Yellowstone to Yukon, it was an idea whose time hit. And it just was an explosion of interest. It was incredibly fun to be part of. At the other end of the scale, the nature climate paper hit a few people interested, and then it just kind of didn't hit it just sat there and people weren't interested. That nature positive, we developed that idea of group of global CEO's that I was part of from business organizations interested in nature and all those. Are just global. Environmental NGO's. So World Wildlife Fund and

Conservation International and Wildlife Conservation Society and WRI and The Nature Conservancy US and the global environmental facility. And we developed this idea and it hit really fast and it ended up being the vision for the global biodiversity framework, which is pretty nice thing. So you, you. See you see these these things that just go, they have to take off or they don't necessarily take off, but it doesn't mean the ideas aren't right on the ones that take off or don't. And that's the thing that I've learned is if you've thought it through. And you think it's right? You just need to stay on. Because eventually people have to come around to, it's actually been thought through it. It's right. And the nature climate thing I think is is the the, the and the nature needs half idea. We put it out there at first it kind of a lot of like I remember when we launched it at the Wilderness Congress in Mexico in 2009, it was a standing ovation. The 1500 delegates went crazy and then they went back to their organizations. And people like what? You know. And the credit Canadian Parks and Wilderness Society was the first NGO in the world to embrace. That idea, as its strategic plan, but it took a long time and now you know over the decade now, you'll have a hard time finding a scientist who doesn't say yeah, that's right. And there's lots of publications that say that's right. And there's literature reviews that show that it's supported in the literature and whether or not our political system can reach that far is a different question than whether that's right and what our political systems agreed on was protect at least 30% of the world by 2030. [194 countries](#) agreed to that. It's the basis of Canadian policy, but there's also a target about retaining all large intact areas important to biodiversity, and there's a restoration target as well as the 30x30 target. So you start to see that these ideas influence what happens at at scale. And it's always, you know, I like to describe it like a Windows program, an idea. You click you you want to do a Word document. You go find word and you click on it and you click on and then. But that's not where you stop, right? You then decide what font you want with this and and as you go deeper into the document you find all the support you need for the principle that you're going to type a document on your computer. I find ideas are like that. They they got to be simple enough to say I want to type a document in Word, but then as you click on them in Deacon and they have to be strong and they have to be robust and nobody can dig into them and say this is crap. They dig in and go Oh my God. You know. The more you look at it, the more this is important and the more I'm comfortable with it. So I'll go back to the top line message whether it be. No stoned Yukon or nature needs half or nature positive world. All those things are deeply supported. By by stuff the nature climate Nexus is one of those things and and I think the challenge has been getting people sort. It's such a battle and and it's such a concern. And it's so politicized as it should be because it's the energy systems of the world are in the conversation and the livability of the world is in the conversation. These are really, really big questions.

**[Music]**

### **Kaya Adleman**

I think what's interesting about what Harvey is saying here about the longevity of ideas, that are supported by science and are supported on a factual basis- like he says if you go into a Word document and there's things that are supporting the central message of the Word document... And I guess for my younger peers that would be like creating an Instagram aesthetic with posts that all match a certain theme, they have a certain color composition, the captions have a certain feel, a certain vibe to them and then they create this online profile that is presenting an image of what something is. And so it's

really about creating the building blocks. And it's interesting, he talks about how sometimes that can get bogged down by politics, he mentions how in the nature-climate nexus that that idea hasn't been so easy to catch on because involves the energy systems of the world. People who have their own interests and views in the conversation. So that was also really interesting, that the longevity of ideas or the ways that ideas take hold have different timelines, but they will eventually take hold based on the evidence and the science behind them. And so in the next section Harvey will kind of go further to talk about what the building blocks are of this nature-climate-nexus that we are talking about so much.

### **Janet Sumner**

And Kaya I think that's a great way to frame it in terms of putting an Instagram account together. But it also makes me think we are living in a political time where some ideas just seem right and yet the politics is not working out. So maybe this gives everybody a little bit of hope, that if you've got a sound idea you can actually see it come to fruition, but it may take a while.

### **Kaya Adleman**

And Harvey is very steadfast in his beliefs.

### **Janet Sumner**

Yeah, he's very determined.

### **Harvey Locke**

So the way I like to look at the nature climate thing is. The same way what? Are the basics OK? Let's just talk about what our problem is, so go back to the UNFCCC, which means the United Nations Framework Convention on Climate Change. OK, [that's the agreement signed in 1992 at the Rio](#). The same week, by the way, as [the Biodiversity Convention was signed](#), which is what I was just talking about, and that was in 1992, people knew there was a problem and the problem they identified was the need to prevent dangerous anthropogenic meaning human caused. Interference with the climate system. OK, so what's the climate system? Well, the Convention [defines](#) it. The climate system is the interaction of the atmosphere, the biosphere, the hydrosphere and the geosphere<sup>1</sup>. To take those out of Latin and put them in English. The geosphere is basically rocks, the hydrosphere is water, fresh and salt, including rain. The biosphere is the the living things on the surface of the earth that interact with natural processes like the hydrosphere and the and the and the atmosphere and the geosphere. So what soils you have coming from, you know, is the background thing relating to the rocks which tells you what will grow there and what grows there is related to the. The amount of rain there is and and so on, you know.

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<sup>1</sup> Official convention definition: "Climate system" means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

So it's its interaction and then you have the atmosphere. And so in the atmosphere. Is full of stuff that we breathe and full of chemicals. One of them is carbon dioxide. Carbon dioxide is part of something called the carbon cycle. It is not a thing isolated from the the climate system, and then this is not me coming up with clever stuff. This is just in the Convention, so you can just find it if you look at it and then you say, well, what is the problem with the atmosphere? Well, in historic terms, the last 200 years. Carbon is stored in all those spheres that I was describing, so it's in rocks. It's in oil and gas, it's in, you know, it's in the coal mines that's in the geosphere. Is in the atmosphere, which is this parts per million thing you hear about. Is it 350 parts per million or 420 or 270? All these numbers, which just reflect the amount of CO<sub>2</sub> in the atmosphere and all that is, is carbon stored somewhere else that then moved into the atmosphere and we'll go back into somewhere else eventually. In the ocean, there's a lot of uptake of the carbon. It it's stored in the living layer and then pumped down to the bottom and then it becomes stored for a long term of time. And then trees absorb carbon and store carbon. Grasslands absorb carbon and store carbon soils. Peatlands, especially for Canadians, is out of sight importance for the storage of carbon in the living layer of the Earth. And the only thing. That climate change is about as it. Relates to carbon. Is how much of it is in the sky. And how much of it is stored somewhere else? And if you and and that's all this is, is where is this? Where is the carbon? So when it's in oil and gas in the ground or in coal seeds, it's store. When it's burned, it's turned into CO<sub>2</sub> and it gets up into the atmosphere where it hangs out until those other processes pull it out of the atmosphere eventually. And so this thing is called the carbon cycle and why it's important is if you look in historic terms [1/3 of all the emissions that have created the climate problem came from the disturbance of nature. 2/3 from burning fossil fuels](#). Now the proportion is [10% disturbance of nature, 90% fossil fuels](#). But how much is 10%? Well, it's more than every car in the world. Forget electric cars. I'm talking about getting rid of every car in the world. And every cement plant in the world and you're still under 10%, that's how significant the destruction of nature still is to the emissions problem. So the just like if you burn coal that goes in the sky, if you destroy nature, the carbon goes. In the sky. But nature has a triple whammy. Unlike the the you know, unlike almost any other dimension, nature is also in the business of pulling it out of the sky. This stuff. So when you destroy it, you destroy the ability of it to pull the carbon out of the sky. And you also the ability to store the ability once it's pulled out to keep it there called storage. So. So what we have is a system that nature is indispensable. The biodiversity the the living layer of the earth and the interaction with what are called abiotic processes. All of that. Like a peatland, for example, Northern Ontario largest peatlands in the world, James Bay. That's why. Well, it's cool climate and it builds up these layers of peat, which is organic stuff. Organic means carbon, by the way. So you hear these words, organic carbon, that's what it is. You have these layers of of of very carbon rich soils that build and build and build. They depend on water. To stay wet. In order to be peatlands and if they dry out or are drained, that carbon goes into the sky. And so you've got to keep those big systems intact. And This is why this interaction stuff is so important, the hydrosphere, meaning rivers, oceans, rain is vital to peatlands and peatlands being attacked and continuing to store carbon, which they do and keep it there forever. So in other words, they, they pull it out of the sky and they keep it there. Is vital to meeting climate goals. And if we for example if we drain and road and mine all those people lands in Northern Ontario, the amount of carbon that will go into the sky is absolutely mind blowing and we don't keep track of that right now. Which is you're kidding me. Kind of a comment. Did you say that? Really, Harvey, I really said it. And and you know why? Well, it's because we've decided through the politics of the issue and the preferences of people involved in the climate issue that it's only about the interaction of the geosphere. And the burning of stored carbon in the form of oil and gas, coal and and



and natural gas, and that putting that in the atmosphere, we've decided to limit the conversation to that one dimension of the carbon cycle, which is vital and hugely important to address. Emissions have to be reduced. We need to shift energy systems. I wouldn't argue that for a fraction of a second and absolutely convinced that that's. True, but that isn't the whole system. So we do things that are inconceivably crazy, like Dam Rivers. To create clean energy. To combat that, when the damming of a river creates methane rich dams that release methane to the atmosphere and then shut down hydrology, which can be vital to the example, storing carbon and plants, and it's like we just aren't thinking about this clearly. And and we can't solve the climate problem if we don't think about the carbon cycle and the climate system, why do I say that with complete confidence? Because that's what the Convention actually says. If you read it, you can go and read this in the Convention and it the Convention talks about its goals, about what you're trying to do. [It talks about keeping ecosystems resilient](#). That's actually the goal of. The climate convention. And in what you hear people saying now as, oh, no, this is just about exclusively. Reducing fossil fuel emissions? Well, it's absolutely about that. And it's about how the Earth works, because it has to be and nature is not a luxury. This is one of the crazy things that you hear. You hear people say, oh, well, you know, I like nature. But you know, the economy is more important. No, it's not. The economy depends on nature 100%. And if you'd like, I'll elaborate on that. But I've been talking a bit.

**[Music]**

**Janet Sumner**

What I really like about where Harvey is going with this, and he's taking us back in time to when the Convention was signed and building the rationale (or the blocks of rationale) based on what was signed. But I'd actually like to suggest that it's not just what was signed and what's in the convention, although that's very very important and Harvey still has his lawyer brain because he thinks about policy and how to build that, and you can see that in his thinking. But my training is in physics. And so when you think about that initial convention that was signed, they actually built it based on the carbon cycle that says 'we need to measure the emissions, how much is actually going into the atmosphere, how are we increasing carbon in the atmosphere.' Which creates heat trapping gases is like carbon dioxide, carbon monoxide etc. Methane, etc. All of those are increasing the heat trapping capacity of the atmosphere, but in addition to that it required us to look at how much carbon can be taken out of the atmosphere. And I'm not talking about all these fancy carbon capture systems that everybody is trying to invent so they can escape the reality that we have to reduce our emissions. I'm talking about the fact that that's how the carbon cycle works. There are emissions that go into the atmosphere- it's kind of like rain, water molecules are absorbed and then and they go up into the atmosphere to become a gas, they're in the atmosphere then they fall as rain, they get absorbed and the cycle keeps going on and on. Similarly we have carbon. Carbon somehow, whether it's through evaporation, or whether it's through the decomposition of natural elements of the world, or breathing. And we put more heat trapping gases into the atmosphere and then they get absorbed. And what absorbs them? Well, it can be absorbed by our oceans, our freshwater and vegetation, all different kinds of ways. And so what Harvey is talking about here is we built a convention based on the actual science, and how the physics of the carbon cycle work. And what happened is we went from the science, and we put it into policy and then the public

discourse and how we implemented that policy became reduced to, almost defined by, just looking at the emissions profile. Which is a huge huge task to get the world to even just focus on that. But it meant for the last 30 years, we've not been paying as much attention to the other part of the cycle which is how much gets absorbed. And admittedly land use change and forestry practices or mining practices will lead to carbon going into the atmosphere. There is absolutely, there are carbonate missions that come from those activities. But the other piece that often gets missed is we're actually reducing the absorptive capacity of the natural ecosystems to pull carbon out of the atmosphere, and to store that carbon so this is why it is so important to be thinking in terms of that entire carbon cycle.

### **Kaya Adleman**

Real. I think that brings me back to our conversation with David Flood- and if you are listening and you haven't listened to it yet, it's our last three episodes with David Flood who's an indigenous forester and he heads up a social enterprise called [Wahkohtowin Development](#)- he talks about how everything is interconnected and how we need to transform towards more holistic approach. Just looking at the geosphere, just looking at the emissions profile, is not a very holistic look at the carbon cycle. It's actually a very linear view of the carbon cycle. And the idea that things exist in vacuums is very limiting in our approach to actually implementing change. We see it time and time again. And I also think ideas don't exist in vacuums either, or good ideas, don't exist in vacuums. If you have a good idea, it's going to be supported by a bunch of things that make it a good idea, and it's an even better idea if you look at the arguments against it, and you realize the arguments against that idea don't stack up ultimately. So I really really enjoy Harvey's view of looking at the whole carbon cycle, and how that interconnects to taking a more holistic view of climate and nature issues and why we need a climate-nature nexus.

### **Kaya Adleman**

I would like you to elaborate more on that. That was kind of what I was going to ask because you mentioned like the politics earlier and I think the like the politics, the other side or the against protecting nature side or the political muddiness of environmental issues kind of comes in with like the economic framework. Well, what about jobs? What about businesses, etcetera, etcetera, so. I guess what would what? What's your response to that? We talk a lot about forestry on this podcast, so if you want to maybe use that is an example.

### **Harvey Locke**

I would be delighted to go in that direction. So first at the higher. Level about this conversation about the economy and jobs and people and and nature and you know, what's that all about? Well, if you go back to the the roots of things and there's a paper that that elaborates this, it's called the [Nature Positive- The Global Goal for Nature](#). You can find it online. I'm the lead author along with the with Johan Rockstrom from Potsdam Institute in in Germany and then the CEO's of all these global organizations I mentioned. And one of the things that's got in it a really simple graphic. That that shows just how we need to conceive of the relationship between nature and the economy and people. So one

of the most ridiculous things you'll ever hear said is the economy can't afford this. Or the economy is we have to focus on the economy and and we can't think about anything else because if the economy is not happy, nothing's happy. OK, this is a form of delusional madness. And so 25 years ago, people said, well, then we need to look for the sweet spot. Then with the economy overlapping with social goals and overlapping with environmental goals, and that becomes the sustainable development Venn diagram. You know, the overlapping 3 circles. With a point of overlap being the sweet spot called sustainable development. Well, that is also crazy because it's not true that they're equal and competing interest. There's an absolute high. The earth. Is the context for everything. The air we breathe, the water we drink, the food we eat. The thing is a function of nature and the planet Earth. Humans can exist on planet Earth or not. Earth will function without people that did for a very long time, and it could again. Humans are entirely dependent on that Earth system for what you might call a niche that is good for us. So breathable air, liveable climate. Drinkable water and then this is this basic basic basic. And if you think I'm wrong about that, just do this test. Please make water for me now. Please make breathable there for me now. Come on. What's the recipe? Make it quick. If we're in charge of this planet, make it for me. I'm. I'm waiting. I'm waiting. You're not going to be able to because. You don't even. Know how and yet you can't function without those things. Humanity is something like a quarter million years old in our present form. Or 240,000 of those years. We didn't have a market economy. We can do just fine. Without an economy, the economy is only invented to serve people. And there are some uncontacted people in the Amazon who continue to choose to live without a modern economy. They're proof positive that people can live without a modern economy. It's a convenience. It's a it's a thing that we like, but it's it's a thing designed to serve the. Goals of people. And if you don't believe that? Think about how the economy would exist without people. But you can't. There's no one to do things. There's no one educated. I mean, no one there to, to make things, to dig things up to, to serve things that economy doesn't exist without people. And it's wholly there purely for the service of people. And that hierarchy is absolutely true. Yet our language doesn't recognize it, and why that matters so much is when you are literally creating for humans risk about the livability of the planet at the scale of the host institution, which is the planet, and you elevate the economy as to a reason why you can't keep humanity. Safe. You've really messed up your thinking in the deepest possible way because the economy is only there to serve people, it has no other function, no other life, and it's just an iron tree. And yet we talk about it as though it's separate and lives on in its own space. And you know this, the the invisible hand that Adam Smith talked about is is seen as some kind of a cult like thing that tells you and moves you around the chess board. And if you read Adam Smith, he said, you know, the economy works best when this invisible hand runs. But then you need to set social goals for it. He's super clear that the economy was [there to serve social goals](#), but people have detached it now and now the invisible hand runs a mock on the landscape like some kind of a vampire. And we think it's God and it's not, it's about. You know, so you come back to, OK, if if we're imperiling the envelope in which humans live. Through the economy. You would change that, wouldn't you? Of course you would. And so that's our conversation. I happen to be lucky that I was born when I was, so I've lived through a period of enormous economic prosperity. My parents were kids of the depression. They lived through extremely difficult times in Canada, but I never have, and I've been a beneficiary of this great economic activity and I recognize it. But for the last 30 years plus, it's been really obvious that this economic activity is now. Moving into the realm of sort of degrading its own context. We have to fix that and it's not a debate about people versus nature or whatever. This is just a fact.

**[Music]**

### **Janet Sumner**

So one of the things that this conversation reminds me of, is the one that we had (or maybe it was a concluding statement) by François Dufresne who's the CEO of FSC Canada. And to me he made a statement that is a little bit like a mic drop, because it was here's a guy who's worked in the forestry industry for you know 20-30 years as a professional, he understands how forestry works. He's, if you will, if I'm from the environmental or conservation side of the equation, he's from the industry side of that's where his experience comes from, and yet his conclusion was that instead of taking what we need from the forest, we need to decide what the forest can provide and then build an economy around that. And I think that's what's Harvey saying, and they only debate I have with what he says is he said we're moving into the realm of sort of degrading the context for the economy, and I would say that we're not just sort of moving into that or it's not sort of degrading its context, that it actually is in fact degrading the context from which our society, our economy, everything is derived. If we don't have a healthy environment, we saw that this year with the forest fires, people couldn't go outside, they couldn't live, it was impacting the economy, it was it was affecting everybody. And so that's what you get when you overreach, when you go beyond the realm of what the natural world can provide and what it can sustain over time, we've actually you're clearly stepped over that line.

### **Kaya Adleman**

Right. And I think how Harvey puts out as not setting social goals, or the economy not serving social goals really ties into that. Like, this is just my own self plug but I really encourage everyone to read the essay "[Economic Possibilities for Our Grandchildren](#)" by John Maynard Keynes. For some of you who like economics, you'll probably know him, he's a famous economist from the 20th century- developed Keynesian Theory. But he also published this essay that is really interesting that kind of expands on this idea of unchecked capitalism and how the way that the economy should ultimately work and how his vision for how the future would look is vastly different than what the future looks like now. But yeah I do think that this idea that we haven't organized our economic models to serve social interest and serve the interest of nature is deeply limiting to everyone as a whole. And what does this all have to do with forestry? Well Harvey will expand on that further in the next section.

### **Harvey Locke**

So then you come to something like forestry. OK well. All my life, I'm 64. I've been hearing about sustainable forestry and I've been hearing about how don't worry, we plant trees after we cut them down. Well, you know, and silly me, I listen to that, believed it for a long time. And then you look into it and you say, well, if that's true and you've been talking about tree planting for 100 years and you have sustainable for it, why are? You still cutting down old growth forests? You didn't plant. Those are part of the Earth's capital. Those are part of the climate system. Those are the things that sustain biodiversity, meaning, you know, using biodiversity to mean species and ecosystems and natural processes. You

didn't plant those. So you're basically just taking them. You're mining them and you're not putting them back because when you put back a little tree, you're not putting back an old growth. Forest, you're putting back a seedling. And surely we've done enough of that 100 years with one of the biggest forest industries in the world to just be living on this sustainable model of cutting what we've planted. But we're not. And why this has become so critical? Is we've even distorted the accounting rules around climate change. Two mask that. So. So it's really weird when you get into it so. In Glasgow, Janet mentioned the Glasgow Forest Pack and there was this big announcement coming out of the climate meeting in Glasgow. I was there. The announcement is many countries come together, including Canada, to agree to halt deforestation by 20. Well, sounds good. Right hall, deforestation. That must surely mean you're not going to cut down anymore trees. At least not ones he planted. He didn't plant like that's kind of an obvious thing, right? And I that's not. What it means? And you said, come on, what do you mean it's not what it means? Oh, no. Deforestation only means in the climate language. That you're not cutting down the forest and converting it to a. City or a farm? You can cut it down and even leave it bare as long as no put any cows on it or call it a farm or call it a city. That's not deforestation. And you like, say what? No, you you can't be serious about this. Well, yes. And if you want to see how serious it is, go to Natural Resources Canada's [website](#). Myths about deforestation, easy to find. You just Google it and click away and you'll see #2 logging causes deforestation is a myth, and Canada has zero deforestation because. And it's like, no, really. And how this is just reality and what's stunning about it is people don't know this. So that's why you can cut down 700 year old trees in British Columbia. Plant a seedling and call it. No deforestation. And it's just mind blowing when you think about that. And you know, I I did a test. I came back from Glasgow and I did a debrief for the the climate community on the experience of being in Glasgow. And blah blah blah. And one of the things that we were talking about was this stuff. So I did a test and this is 100. Climate activists were on the call, not, not tree huggers. These are climate activists. And they said, how many of you think that that pledge to end deforestation means it will stop logging, you know, old forests by 2030? 93 out of 100 hands went up. That's how hidden this is. This is really crazy. We we've, I mean. And why is crazy is there's a great paper out there called [Irrecoverable Carbon, led by Goldstein](#). And it shows that when you cut down. They they looked at 20 large kinds of biomes or ecosystem types and said OK, if you cut it down or disturbed it today dug it up, cut it down. When would the carbon that was lost from that disturbance be recovered in relation to the global goal of being carbon neutral by 2050, which is the focus of all of our climate policy, we must not have carbon going into the sky more than we're pulling out of the sky by 2050, right? That's what that goal is called carbon neutrality, or NET 0. This paper looks at, I think, 20 systems. You can check it might be 18. And only two of them if disturbed tomorrow and then immediately fully restored. The next day. Which you can't do. But let's assume you could do it. Only two of them would recover their carbon loss by 2050, and none of those two are in Canada. So what we do is we say we're not, so we we these little trees that we plant today do not hold as much carbon as the trees we're cutting down. And we're. Dealing with that and then you say, well, well, surely it's got to show up somewhere in the accounting that there's some carbon loss. Well, it kind of does. Because it gets counted when you cut it down, but then this is amazing. For some reason, we decided that if trees grow in Canada, the forest industry gets that as a credit against their carbon emissions. Not the whole country, not the car industry, not the oil industry. Not you and me, with our home heating oil or our our natural gas. The carbon credit for growing forests in Canada on public land that the forestry companies had nothing to do with making. They get all of that as a credit built into the way we account for forest cutting. Such that we don't have any emissions from forestry in Canada. That I'm. I'm not kidding you. And and it takes you

a while to to go down the the sort of bobsled track care of being off the edges of all these policies to find that this is true. And then, you know, you land on it and. You go like you're kidding me. Is that really true? So one sector? Gets the benefit of all the trees growing in Canada. For their accounting so they can hide the fact they're causing all these emissions. That doesn't seem to be sensible to me. You know how much are we putting? In the sky. How much carbon are we pulling out of the sky? Those should be questions judged objectively and interestingly, the oil and gas industry. Doesn't get. A credit for anything like that, they just get. They just count emissions. And the cars, we just count the emissions from the cars, but for forestry? No, no, no, no, no, no, we don't do that. We let them put the emissions. From their operations inside the forest that's growing and they didn't make the forest grow, the forests are growing, and Janet and I have talked about this a few times, Janet. And then [you've done some work on showing that there's also we're hidden emissions just from logging roads](#) and things like that. That that just weren't being counted. For a while. You want. You might want to explore that with me a little bit, but it's an example of. Where? You know we need to take what nature is doing in the system as seriously as what cars do. And we need to think about how the system works, and we have these perverse anomalies and the in in our system. And it isn't just the only gas industry that's at work here. There's other things that work here.

**[Music]**

### **Janet Sumner**

Yeah so one of the things that Harvey's referencing is there is something that we covered in a couple of episodes ago that we did with [Nature Canada and NRDC](#), which is about the whole carbon accounting, and that's you know when we cut trees down, yes you have to report on that, but then because the forest industry gets to also count all of the trees grown and the carbon emissions that they take up, that seems to balance out so we have almost zero emissions coming from forestry. The other thing that he comments on here is that we don't have any deforestation, or we don't count any deforestation in Canada, because the actual definition is 'has there been a land use change?' And Harvey makes that really simple to understand, like, did you turn it into a city or are the cows on it kind of thing? So in the parlance of the agreement was there a land use change, and that means did it change from being a forestry unit to becoming agricultural use or a huge city or a shopping mall, something like that. And this is also a skewed thing because we see deforestation happening in the Amazon, that deforestation is about turning that land into agricultural land for beef or soy production, etc. So we tend to look at the Global South and say oh they've got massive deforestation there. Yet when we go in and clear cut a forest because it's still going to be used for forestry ultimately, we don't talk about that as deforestation. We talk about it as still the same land use, so it's totally fine. But the reality is if you cut that carbon down today, trees that take 80/90 years to replace in the Boreal for example are still going to be 80/90 years before they come recover that carbon and that's well past our 2050 target. Similarly if you cut down a 500 or 700 year old Cedar, and we've almost completely run out of those in British Columbia, that carbon is not coming back anytime soon. And then I'll just add one last thing, Kaya, before I go on and on about this is that when you replant a tree, you're not replanting a forest. I mean that's just the sheer reality- that we've converted it to a managed stand of trees.

**Kaya Adleman**

Right. And Harvey even points to that paper that I think would be really interesting to read, about only two out of 18 or 20 systems not being fully recoverable by 2050. So even though you're planting trees you're not going to get the same quality of stand that was there by 2050, which is which is not so far off from today. And also just as an aside, I think it's just funny that he says 'I was in a meeting with climate activists, not tree huggers' and they weren't familiar with the obfuscation of the deforestation definition, really I mean like I didn't know about it until I started working at Wildlands League, so yeah.

**Janet Sumner**

Yeah. Well I come from the climate world right? Like that's where I was before I was at Wildlands League. And because I have a physics background I looked at the math on the carbon cycle and I was like 'What? Hang in a second -yeah you're going to be measuring all this stuff that's coming out of cars, but what about all this stuff that's in the ground and in the trees and why are we thinking about that?' And I had to learn a lot when I came over to Wildlands League. But there is a divide in the environmental community, not everybody is looking at the whole system. And even on the nature side we're not always thinking about the climate aspects right? So being able to bring those two world views together and really understand that it's a system that actually interacts and works together and it's not separate

**Kaya Adleman**

Also just one last thing before we move on, is the episode where we talk more in depth about forest carbon accounting with the NRDC and Nature Canada is called "Flawed Forest Carbon Accounting." And it is I believe our third episode that we have released on this podcast so far. It's very interesting what would highly recommend.

**Janet Sumner**

Can I ask Harvey? Yes, we have had that conversation. But can I ask the question? You and I, and there's a few others in Canada who are aware of this flawed carbon accounting. And we talked about that in a previous episode, but. Does the rest of the world know this? Like when you cause, you're going out and you're having these conversations and and people have this myth about Canada and its forestry and how fabulous it is, and you know, et cetera, et cetera. So. So what are you hearing out on the street when you go out in the world?

**Harvey Locke**

Well, First off, this isn't just. Canada doing it, Australia, the United States and Russia do it too. And there's a [great paper](#) out of Australia that shows how widespread this this accounting anomaly is. One of the co-authors is my long, long standing colleague, Brendan Mackey, who used to work for the Canadian Forest Service. Actually. So, so. So this is a thing built in the global rules. So I should be very clear. Nobody's cheating by doing this in Canada. This is just how the rule book was created.

### **Janet Sumner**

Yeah I've personally been in meetings where Canada has defended how we do our carbon accounting, and said this is consistent with the rules, we're consistent with how other countries are doing this. But it doesn't matter. I mean yes great you're following the rules etc., but you might not be cheating the climate rules that we've set up in our agreements, but you're cheating based on how carbon actually works in nature in in the planetary carbon cycle. You are cheating because nature or the atmosphere still counts every emission. And it still counts if those emissions aren't absorbed by those ecosystems because you've clear cut them or they won't be regrown for another 80 years well past the 2050 timeline. So it's not cheating on the on the global "what's written in an agreement scale but it is cheating the carbon accounting for the planet.

### **Kaya Adleman**

And just because everyone else is doing it doesn't make it right.

### **Harvey Locke**

When you take the magic of nature. The case of the Nahanni, protecting intact nature in the case of Buffalo restoring A damaged part of nature, both of which we need to do. And we need to do both, not not one or and we. You know, as it rolled forward in time, Janet and you and I talked about this is I developed an idea that first started in Canada and then went around the world, which is this. [Idea that you know the condition the country is in for nature varies a lot](#). So if you're in Southern Ontario, southwestern Ontario, we've gone too far. We've damaged nature too much. We really need to do restoration as well as hang on to all the little fragments that are there, and we need to reweave the web of life. The Carolinian ecosystem, let's say if you scale up to in just another Ontario example, but what you do around tomography is very different than what you do around Southern Ontario, right? Because that that condition is more, there's forestry, there's mining, but there's also big forests, and there's indigenous people who sometimes pursuing traditional lifeways and. And we gotta think about all of that in some way. And that's the same as, say, the Banff area where we have these parks that are need to be interconnected. Banff needs to be connected to water and glacier and so on. Ideas like the Yellowstone Yukon Conservation Initiative, which I Helped Co found and and still very involved in and then in the North you have this third wild condition. So James Bay lowlands much of the Mackenzie Basin. The Arctic Ocean entirely. And these large wild areas are different again. And what we need to do is leave them alone. And I mean alone. Very, very little stuff should be done in those places because of their incredible importance to the function of the planet, not just local. Nature and that tends to be



where indigenous cultures relationship with the land tends to be still quite strong because they're still intact. And so you have this, this, that value needs to be part of the whole mix. And so this this idea of three conditions, the Southern and middle and northern Canada, we're fortunate that that you know, institutions like Parks Canada found it interesting, as did some of the political people in the current government. And it turns out, and when I did a global consultation and for the IUCN World Commission on Protected Areas on what the next conservation targets for the world should be for five years before the new global biodiversity framework turns out, that pattern holds all over the world. There's basically these three conditions, so with a team of global scientists, we wrote a paper called the [Three global Conditions for Biodiversity Conservation and sustainable use](#). And then we [map](#) the entire world by those three conditions. And what you find is large countries like China, Canada. Yeah, all have all three small ones like Rwanda, maybe all just that cities and farms conditions with a couple of that sort of middle landscape or shared landscape. Some countries have you know. A lot of or or third, a third, a third like Colombia, is the third, third, third. And you know what you do in the Amazon Columbia is really different than what you do around Bogota. The same kinds of challenges are arise everywhere. And China, interestingly, has very large wild areas up in the Tibet Jingai Plato. Big migrations are still of antelope and things you you know you don't think of that necessarily when you think of China and then their middle condition where the pandas are is exactly where they need to pack, practice interconnected conservation and they're well aware of it and know it. So it's I like this, you know, going to a global scale and then figure out how it gets granular. In your backyard and and I like the idea that nobody matters more than anybody else. So someone working on restoration. In the city of Windsor is no less valuable than somebody working on saving the Amazon and no less valuable than somebody working on interconnecting protected areas like big places like Banff across the landscape to water and glacier, something else. It all matters. It's all part of how the world works in saving nature. And we've fallen into sometimes competing interests. So like my stuff is more important than yours. Mine's under more threat than yours. Therefore, I'm more important than you. And I just, like, know it all matters. We're all in this together. What we need to do is shift our relationship with nature. We need to shift it to a repair mindset and a restoration mindset and A and a retention or keeping intact nature mindset. Where it's intact and then sewing it together where it's in pretty good shape, but not perfect shape and and and that's all of our business in my view it all matters and you know. Does Rondeau Park remain an island in the landscape, or can you reconnect all the great things in Rondo that Little Peninsula in Lake Erie to a broader landscape where long point and point Pelee national parks could maybe all kind of somehow hang together? That's really exciting to me as a guy who? Lives in Alberta. I've been there. Those are cool places. You don't have grizzly bears and wolves. I know that. I don't care. You've got wonderful things, and it all matters. And and and that to me is where, you know, we need to be. Advancing with our hearts. In some place that says everyone who cares about this is part of the same team and this is part of why the reconciliation conversation can be so powerful is many, many indigenous people would say, well, of course we're in a relationship with nature. And of course, that's a relationship of mutual responsibility and kinship. It's not a relationship of dominance and inconvenience. Or saving the parts I like. It's like a responsibility and I find that very appealing. And I actually believe all of us should be thinking that way and. So I call that forward reconciliation where how about we just agree as Canadians that the first people here had the right attitude one and the rest of us get that attitude too as we go forward and try to restore and retain what we what we've been blessed with this country.

### **Kaya Adleman**

That paper that you talk about, there's an interactive map on your website, right? I think I checked it out, it's pretty cool.

### **Harvey Locke**

Yeah. So there's a paper which is in the National Science Review, Oxford University Press. Easy to find. And there's also a website, called [naturebeyond2020.com](http://naturebeyond2020.com). And if you Scroll down, you'll find the paper and then you can find. Map of every country in the world. That's been done by those three conditions, so if you like, if you're kind of person likes to explore, you can see it at a continental scale. You can see at a global scale. You can see it at a national scale.

### **Janet Sumner**

I'm so glad you used all those examples, global examples, all the way down to Windsor, you know or or Lake Erie and Rondeau, because just so you know, in terms of the podcast right now, I think we're at somewhere around. We're we're global. We have countries all over the world who are listening in on the podcast. We have over 100 and over 100 cities, majority are in North America, but we have a good listenership in Asia and in South America and in Europe, we haven't yet hit Australia. So that's one of our goals. And and Africa, we haven't yet got listeners in Africa. So but we are we are global at this point in terms of who's listening. To the podcast, so it's important to include that all.

### **[Music]**

### **Janet Sumner**

What I find interesting about these three conditions, I mean really just think about it in very simple terms, if you're in an area that's already got development settlement like a city or near an urban area, that's sort of the Southern condition that Harvey talks about. And there's a real need there to rebuild and restore nature, and we talk about it in in the work that we do around creating networks of nature to rebuild that, and reweave that web of life. Will we do it as good as how we found it? Maybe not, probably not. It's going to take lots of years to do that, but it is the task at hand. What we need to do is protect the remnants of nature that are still left. So that's why we're working on it new national park in Windsor, it's also why we worked on creating Rouge National Urban Park. But then starting to connect that through corridors and connectivity and much of that can rely on, for example in Canada, there's a 2 billion tree program and you're seeing globally there's the 1 trillion tree program where people are taking it upon themselves to start restoring and rebuilding nature. Again, it doesn't necessarily build back a forest, but it is a start. And it's a way to start bringing back some of the very things that we're going to rely on for climate resilience for absorbing some of that carbon etc for droughts and for heat events. All of that is going to be important as we rebuild nature for the habitat for species as well, but it also gives all of those ecosystem functions to the rest of us. And then I would say as you get further

north we work on objectives around keeping at areas that are intact, and again creating that interconnected network. And it's not so much rebuilding but it's about saying 'well let's not cut here, let's stay out of these intact areas.' Further up in the podcast today Harvey's talked about the fact that you know we've lost some of these forests, and if forestry is truly sustainable, how do we actually make that reality? Stop expanding into new intact areas. Harvest where we are and figure out how do we actually redefine that forestry footprint, so were not in this ever expanding mode. Because it's just not coming back the way we thought it was. Or the way we hoped it was. Or maybe the way we intended it to be. And so we need to have a rethink about that. And it's an exciting time and there's some big opportunities and there's a way to think about this and frameworks that allow you to take action and I find people in cities that want to see nature come back and have access to nature and an ability to live and breathe clean air and drink fresh water are very excited about nature and bringing it back. 2 billion tree programs, doing plantings etc. All good that he talked about that.

**Kaya Adleman**

I guess just to add to that I liked that he emphasized that these three conditions and working on these three conditions and their various separate approaches are not hierarchical. So I think there's often times, some people think that one type of conservation or one type of restoration is more important than the other and thus we need to focus all of our energy on this one and not the other one, and I think all of it is equally important. And yeah, I liked that sentiment a lot as well.

**Janet Sumner**

Kaya that was a really good point you made about all the ecosystems being equal because the other thing that Harvey didn't mention, is a lot of times his interaction between those between those different states. So you can go out and protect great big wild areas in the north. And if you don't protect the little places down in the South or where we have cities then where do the birds fly, where do the monarchs fly, all the migratory creatures fly, right? So we definitely have to think about all of these ecosystems. So that was a great point that you made right there at the end, thanks so much

**Kaya Adleman**

Everything's interconnected for sure.

**Janet Sumner**

Everything's everywhere all at once it's so consistent.

**Kaya Adleman**

And yeah, there's a lot more interesting topics to come up in our next conversation, or the next part of our conversation with Harvey. We talk a little bit about offset programs and go a little bit more into forest carbon accounting, and we also talk a little bit about Taylor Swift so stay tuned for that

**Janet Sumner**

Taylor Swift? Oh goodness, Harvey is a modern man

**Kaya Adleman**

He really is. And if you want to learn more about Harvey and the work that he's doing, he has his own website it's harveylocke.com that's h-a-r-v-e-y-l-o-c-k-e.com. His social handles are linked on the website as well, and we'll be linking them in the show notes and the episode description. He's also a photographer and he takes like really amazing photos, so if you're into nature photography like please go to his website it's really really some really beautiful images on there.

**Janet Sumner**

Yeah, he sent me a calendar of his images, and I sat there looking at it going 'awe, he gets to go to all these great places.' I know I get to travel to some pretty fantastic places in Canada for sure Hudson Bay and James Bay etc. But you know, big majestic creatures in nature and sometimes beautiful birds as well so totally jelly.

**Kaya Adleman**

Yeah, me too. Anyway, thanks for listening and stay tuned for our next episode next week!

**Janet Sumner**

Thanks Kaya

**Janet Sumner**

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**Kaya Adleman**

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See you next time!!